

# Combination Automat

## Wapo-Ex

Boil Out and Polymerisation Unit



SERVICE MANUAL

**Dear customer,**

Thank you for choosing a product from the Wassermann range. Wassermann Dental-Maschinen incorporates the highest standards of quality and the latest technology. In order to enjoy maximum performance and years of trouble-free operation, please read this service manual carefully before you connect this device and start work, and operate the device according to the recommended guidelines. The operation safety and the functionality of this device can only be guaranteed if you follow both the general safety guidelines and the applying laws to prevent accidents as well as the precautions given in this service manual. We are not liable for any damages which occur due to inappropriate usage or faulty operation of this device.



Make sure that anyone using this device has read and understood this service manual.

Keep this service manual in a safe place where it can be referred to as required at any time.



The unit complies with the relevant EU guidelines.



The unit is subject to the EU guidelines 2012/19/EU (WEEE Directive).

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## 1 Features

The approved Wassermann **Wapo-Ex** combination automat, with an easy-to-read multifunction display, is an extremely compact piece of bench top equipment, which is used for boiling out wax and for polymerisation. It can take 4 half-flasks for boiling out and/or 6 flasks in a denture for polymerisation. A housing and chamber in stainless steel contribute to its long service life.

The unit has a low-water monitor to protect the heater, and for boiling out small items, there is a recessed lid and a hand-held spray in non-heat-conducting plastic.

The special **Wapo-Ex/ IVOCAP** model has an automatic water-level regulator.

- Combined table automat for boiling out and polymerisation; simultaneous applications possible (see chapter 8.5)
- Prompt switch between the two modes thanks to its separate compartments
- Capacity: 4 flask halves for boiling out, 6 flasks for polymerisation
- Reproducible work processes via programmable boiling out and polymerisation sequences
- Informative display, enables a variety of functions in applications
- Clock timer settings accurate to the minute and to a specific degree
- Visual and audible water level indicator
- Splash protection made of stainless steel
- Energy saving thermal insulation
- Integrated hand spray for manual boiling out (Ball cock position: „lever horizontal“)
- High quality construction, most parts made of stainless steel
- In factory setting the main polymerization process cuts in 90 minutes automatically at 95° C 90 minutes before the program ends - the choice of 3 times and 3 temperatures is possible as an option

## 2 Safety Symbols used in this Manual



### **Warning!**

This is a warning of risk situations and dangers.  
Failure to observe this warning could be life-threatening.  
These warnings has to be observed.



### **Information!**

This symbol draws your attention to specific features that has to be observed.

## 3 Safety Guidelines

Configuring and operating this equipment requires **precise knowledge** and **observance** of the instructions in this **servicemanual**. The equipment is designed only for its intended application.



### **WARNING:**

Servicing and repairs should be carried out only by authorised specialists.  
Disconnect the power plug before starting any maintenance work.



Make sure that the equipment is connected to the correct power source.



### **Risk of scalding!**

Do not hold the hand spray by the nozzle or hose.  
Do not point the spray at living creatures.

The water from the nozzle can be as hot as about **95°C**, so should only be sprayed near the unit lid or the washbasin.



Wear heat-resistant gloves when working with the **Wapo-Ex**.

## 4 Responsibility for Operation or Damage

The responsibility for operating the device lies exclusively with the owner or user if said device is incorrectly serviced, maintained or altered by persons not employed by an authorised dealer or if the device is used in a manner contrary to its specified purpose. The unit has to be maintained and operated in accordance with this service manual. Wassermann Dental-Maschinen GmbH is not responsible for damage arising from the **nonobservance** of these instructions.

Warranty and responsibility provisions contained in the sales and supply conditions of Wassermann Dental-Maschinen GmbH are not extended by these instructions.

## 5 Application

The **Wapo-Ex** is suitable for boiling out of up to 4 flask-halves and for polymerisation of up to 6 flasks. A divider in the trough creates two separate chambers. You can also boil out manually small items using a hand spray.

Only use the device for this type of application.

## 6 Before Starting

### 6.1 Transport

Before transporting the unit, ensure that it has been unplugged from the power socket. Make sure that it is packed correctly in order to avoid accidental damage.



Be sure to check for any transport damage when unpacking the goods. Note down any damage if found.

## 6.2 Installation

Open the box, remove the packing materials, and carefully lift out the device and accessories. Check the included accessories.

The device has to stand horizontally on a steady and even surface.

We strongly recommend to install the unit firmly to the discharge system, since it is equipped with an automatic water overflow discharge system, i.e. too much filled water runs out automatically, **even when the discharge cock is closed**. Furthermore complete emptying for cleaning purposes etc. is thus simplified.



Install the device in a place where it will not block the working area and the functionality (take the dimensions into account).



Do not install the unit outdoors or in places without proper ventilation.  
Before start-up, be sure the device reaches room temperature.



Avoid overfilling and check the overflow system / drainage system. Strong overfilling can damage the electronics in the medium term. For damage caused by improper handling, no liability is assumed.



It is very important to have the unit connected rigidly to a drainage system as very **hot water (about 95°C)** is involved. It will also facilitate emptying the unit completely for cleaning, for example.

## 6.3 Storage

The unit location is very important when it comes to workplace safety, even if it is only to be set up there for a short period. The room should be dry, well ventilated and vibration-free. An even temperature and wooden supports also help. The unit should not be stored or set up outdoors. If the unit is to be stored for an extended period, protect it from moisture and dust.

## 7 Installation/ Start-up



**Before** starting the unit, connect up the following:

- Use clips to attach the drain hose supplied firmly to the unit and arrange a suitable drainage system.

**Finally**, insert the power plug into the socket, making sure that the mains and the unit operate on the same voltage.

- Insert the filter white side down.
- For boiling out fill the unit with water (approx. 20 litres) and **Wachs-Ex** at least up to the white plastic ring in the container.
- Dosage: approx. 40 ml / 20 litres water.
- Turn on the main switch (green rocker switch).
- The unit immediately heats up to its default setting (65°C), or to the last stored boiling out temperature.
- When the desired temperature has been reached, the yellow LED (9) goes out and the unit is ready for operation.



The **Wapo-Ex** has a dry-run protection device to prevent the heater burning out due to a lack of water (red LED). A warning signal also sounds while the program is running.

Make sure that the water level is always above the white plastic ring (in the container), otherwise the heater will cut out automatically and the red LED will flash.

If the unit is not to be used for an extended period, pull out the power plug.



Avoid overfilling and check the overflow system / drainage system. Strong overfilling can damage the electronics in the medium term. For damage caused by improper handling, no liability is assumed.



## 8 Operation

### 8.1 General Operating Instructions

All instructions for using the unit, whether in verbal or written form, are based on our own experience and experimentation and can only be regarded as guidelines.



Warning: Risk of scalding!

Do not hold the hand spray by the nozzle or hose.

Do not point the spray at living creatures.

The water from the nozzle can be as hot as about 95°C, so should only be sprayed near the unit lid or the washbasin.



Wear heat-resistant gloves when working with the **Wapo-Ex**.



The **Wapo-Ex** is ready for use when the temperature is above 60°C, that is, the pump starts operation once the set temperature has been reached. On addition there is a safety step: the heating stops automatically when the temperature of the heating is higher than 99 °C.



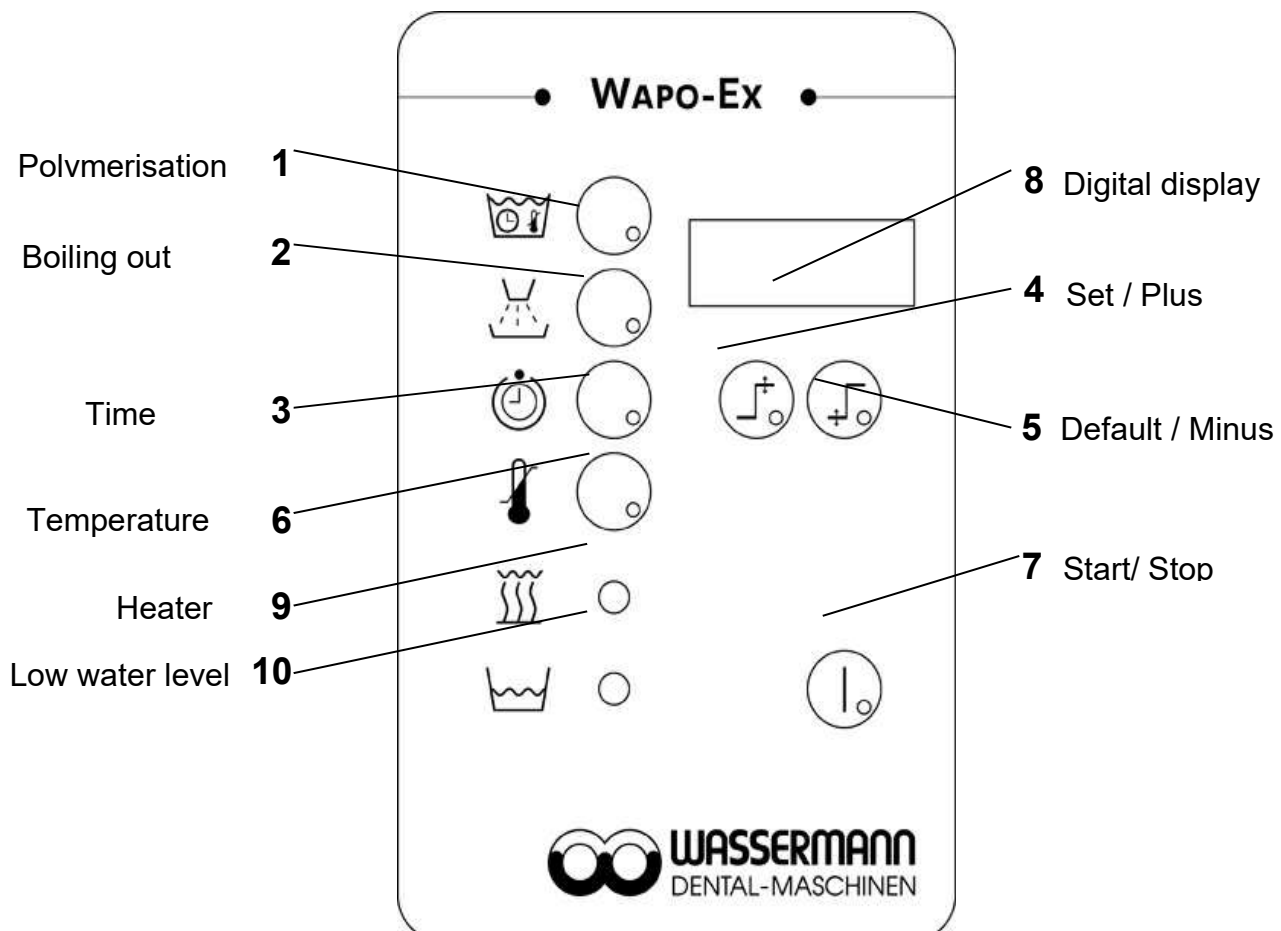
The ball valve (top right on housing) needs to be set horizontal when boiling out manually with the hand spray.

To relieve the hose and hand shower of pressure when not in use, the ball cock should always be returned to the vertical basic position.

**Note:** Each button has a built-in red LED. Start the program once the desired temperature has been reached.

## 8.2 Operation

- Turn on main switch (green rocker switch).
- The red water-level LED (10) should not come on or flash. If it does, check the water level or the water-level sensor.
- Avoid an overflow!
- Choose Polymerisation or Boiling out.
- Place prepared flasks in unit.
- Set desired time and temperature for boiling out (see 8.2.1).
- Set desired time and temperature for polymerisation (see 8.2.2).
- Use Start/Stop (7) to start the program.
- The yellow LED (9) comes on during heating.
- After the boiling out programm ends, a tone sounds and the heating and pump are switched off.
- After the polymerisation programm ends, the heating is switched off.



## 8.3 Setting Time and Temperature

### 8.3.1 For boiling out (button 2)

#### Setting the time:

1. Press Time (3).
2. Press Set (4).
3. Keep Time (3) pressed and set the desired time using Set (4) or Default (5).

#### Setting the temperature:

1. Press Temperature (6).
2. Press Set (4).
3. Keep Temperature (6) pressed and set the desired temperature using Default (5) and Set (4).

### 8.3.2 Conversion Table °C - °F

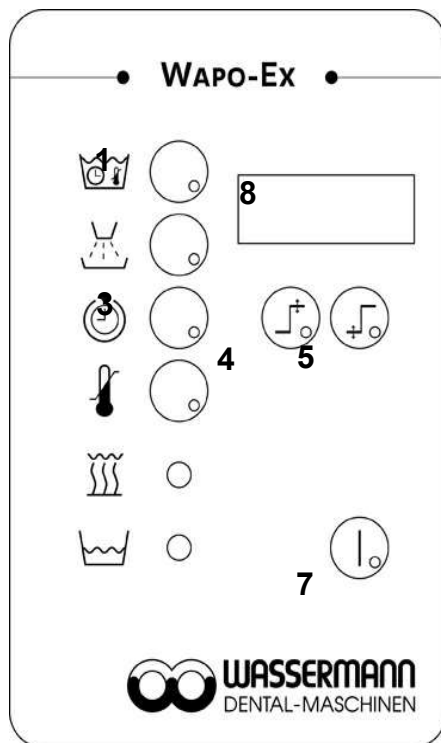
$$T_{\text{Celsius}} = (T_{\text{F}} - 32) / 1,8$$

100	°C	=	212	°F
95	°C	=	203	°F
90	°C	=	194	°F
85	°C	=	185	°F
80	°C	=	176	°F
75	°C	=	167	°F
70	°C	=	158	°F
65	°C	=	149	°F
60	°C	=	140	°F

### 8.3.3 Polymerisation (Choice of 3 Times and 3 Temperatures)

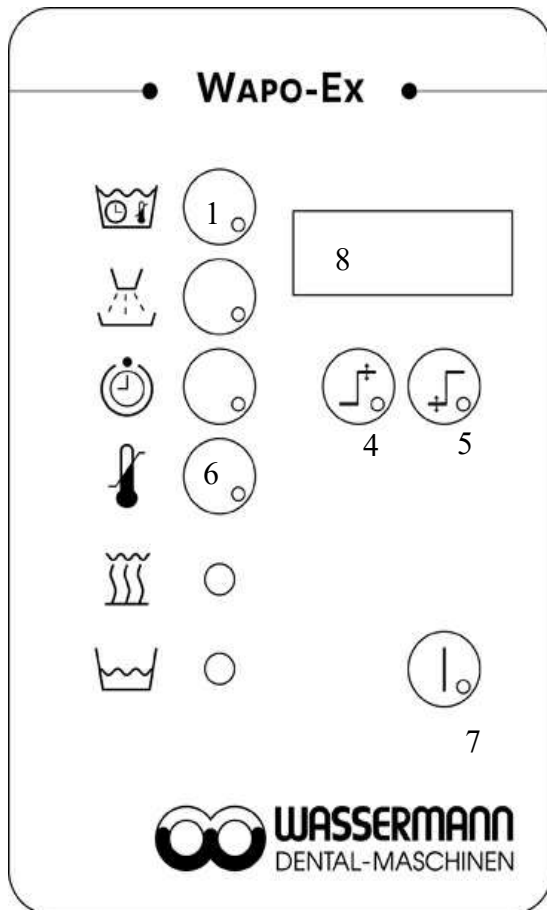
The Polymerisation (1) and Set-Point (4) LEDs must be on, but not Start/Stop (7). Use the buttons as described below to set the function. This allows you to check and/or change stored values.

#### 8.3.4 Setting the Time



1. Press and hold Time (3), then press Start/ Stop (7) once. The first character on the display (8) flashes to indicate that the value can be changed by pressing Set-Point (4) or True Value (5) while Time (3) is held on. Release all three buttons to store the changed value.
2. Store the value by simultaneously pressing Polymerisation (1) and Set-Point (4).
3. For the second value, press and hold Time (3) again, then press Start/ Stop (7) once. The second character on the display flashes. Follow the same sequence as above.
4. The procedure is the same for the third display character. Each change needs to be stored.
5. If Time (3) is pressed and held, and Start/ Stop (7) pressed a fourth time, the total of the three individual times is displayed.  
***Times assigned the value zero (0) are ignored.***

### 8.3.5 Setting the Temperature



1. Press and hold Temperature (6), then press Start/Stop (7) once. The first character on the display (8) flashes to indicate that the value can be changed by pressing Set-Point (4) or True Value (5) while Temperature (6) is held on. Release all three buttons to store the changed value.
2. The value is stored by simultaneously pressing Polymerisation (1) and Set-Point (4).
3. For the second value, press and hold Temperature (6), then press Start/Stop (7) once. The second character on the display flashes. Follow the same sequence as above.
4. The procedure is the same for the third display character. Each change needs to be stored.
5. If Temperature (6) is pressed and held, and Start/Stop (7) pressed a fourth time, the first of the three individual temperatures is displayed.

## 8.4 Storing

Individual set values can be stored by simultaneously pressing Boiling out (2) or Polymerisation (1) **and** Set (4). A “YES” on the display confirms that the values have been stored. As each new value is stored, the previous value is overwritten.

**Warning:** Pressing Boiling out (2) or Polymerisation (1) **and** Default (5) resets the Wassermann default values. Storing the value using Polymerisation (1) and Plus (4) is confirmed by a “YES”.

### Basic setting polymerisation

Time	Temperature
6:30 h	70°C
0:00 h	0°C
1:30 h	95°C

### Basic setting boiling out

Time	Temperature
15 min	65°C

## 8.5 Special Function: “Boiling out during Polymerisation”

Boiling out is possible while the polymerisation process is underway. The last stored boiling out time is used, not at the last stored boiling out temperature, but at the default temperature for the polymerisation process.

Boiling out is started by pressing boiling out (2). The boiling out process can be stopped by pressing boiling out (2) again.

**Warning:** All operations, including polymerisation, are stopped if you press **Start / Stop (7)!**

## 8.6 Manual Operation

Once the unit is ready for use, you can, at any time, activate the hand spray by turning the ball valve (horizontal). Settings should be as described under 8.2.

When you have finished, always return the ball valve to its basic position (vertical).

## 9 Troubleshooting

<b>Fault</b>	<b>Cause</b>	<b>Solution</b>
Wapo-Ex does not heat up	Dirty level sensor	Clean level sensor
	Water level too low	Add water
Water-level LED comes on and warning tone sounds	Dirty level sensor	Clean level sensor
	Water level too low	Add water until red LED goes out and tone stops
Water pump inoperative	Operating or set temperature not yet reached	Heat to operating temperature (min. 60°C) or set temperature
Multifunction display shows <b>A</b>	Water-temperature above 100°C (A3 means 103 °C) -faulty temperature sensor -faulty control board	Turn off the water supply, switch off the unit completely, contact service
Multifunction display shows <b>F 1</b>	Short-circuit: Faulty electrical component	Turn off the water supply, switch off the unit completely, contact service
Multifunction display shows <b>F 2</b>	Faulty temperature sensor	Turn off the water supply, switch off the unit completely, contact service



If the above recommendations do not solve the problem, contact your dental depot or our service department.

## 10 Care and Maintenance

### 10.1 Cleaning



Disconnect the power plug before starting any maintenance work.

The identification plate has always to be kept in easily legible condition and has not to be removed.



Remove external dirt from time to time with some form of cold cleaner.

Use only cold cleaners to avoid damaging the paintwork or removing the lettering. The outside of the unit and fittings are best cleaned with a sponge or soft cloth and mild detergent.

The equipment should be cleaned at regular intervals to ensure trouble-free operation.

At least:

#### **Once a week**

- Change water and add **Wachs-Ex**.
- Dosage: approx. 40 ml per 20 litres water
- Clean the level tracer (white plastic ring), i.e. with a nail-brush.

#### **Every 2 weeks**

- Change filter (white side down).

#### **Every 4 weeks**

- Clean unit with **Kalk-Ex**.
- Dosage: approx. 350 ccm Kalk-Ex per full tank (20 litres water).

**If heavy lime deposit, increase quantity appropriately!**





**Warning:** Do not use materials containing solvents to dissolve wax, as this will attack the unit's rubber components.

**Warning:** Let Kalk-Ex work for a maximum 12 hours.

Drain solution and rinse thoroughly.



To change the filter and clean the level sensor (white ring), first remove the flask containers. The perforated plate can then be taken out and you can remove the flat filter. When inserting a new one, make sure that the white side is face down and that the filter fits under the raised edge of the base plate. The base plate is easily removed, giving ready access to the level sensor and the heater coil. Re-insert the base plate with its raised edges facing upwards.

## 10.2 Maintenance

The unit does not need any special maintenance. Just make sure it is clean and free of lime build-up.

## 10.3 Repairs



Servicing or repairs to the unit has only to be carried out by qualified technicians. Only original spare parts are to be used. Responsibility for the product is voided if unauthorised persons alter it or if inappropriate components are installed.

## 10.4 Spare Parts

If necessary please contact our service hotline phone.

## 10.5 Service Hotline 0049 (0)40 730 926 -20/ -24

## 10.6 Scope of Delivery/ Accessories

Included in delivery:

Service set (10 filter mats, 1 L lime remover, 2 L wax remover)

Discharge hose, 1.5 m

Hose clip Ø 20-32 x 12.2

<b>Accessories</b>	<b>Item no.</b>
Mobile stand (W 560 x H 550 x D 410 mm)	170100
Service set (10 filter mats, 1 L lime remover, 2 L wax remover)	170020
Discharge hose, PVC-hose 19 x 4 (3/4") - per meter	320030

## 10.7 Warranty



The warranty period for our equipment is 12 months. If faults occur within the warranty period, contact your dental depot or get in touch directly with our service department.

Your equipment should only be operated in perfect condition. If faults occur which could harm operators or third parties, the unit should not be used until it has been fixed.

This warranty does not cover damage caused by improper use, external mechanical causes, transport damage or interference with the unit by unauthorized persons.

## 11 Technical Data

<b>Wapo-Ex</b>	<b>Artikel Nr.: 170996</b>
Voltage	220–240 V / 50/60 Hz
Power consumption	9 A
Output	2000 W
W x H x D	550 x 570 x 400 mm
Weight	35,5 kg
Water capacity	approx. 20 l

Other voltages on request.

The noise level of the unit amounts to  $\leq 70$  dB (A).



Technical changes reserved.

## 12 Disposing of the Unit

The unit has to be disposed by an authorized recycling operation. The selected company has to be informed of all possibly health-hazardous residues in the unit.

### 12.1 Information on Disposal for Countries within the EU



To conserve and protect the environment, prevent environmental pollution and improve the recycling of raw materials, the European Commission adopted a directive that requires the manufacturer to accept the return of electrical and electronic units for proper disposal or recycling.

Within the European Union units with this symbol should not therefore be disposed of in unsorted domestic waste.

For more information regarding proper disposal please apply at your local authorities.

**13 EU Declaration of Conformity**

in accordance with 2014/35/EU (Low Voltage Directive) and 2014/30/EU (Electromagnetic Compatibility Directive) and 2006/42/EC (Machinery Directive) and 2011/65/EU (RoHS Directive)

Manufacturer:	W A S S E R M A N N Dental-Maschinen GmbH Rudorffweg 15-17 21031 Hamburg Germany	Product description:	Boil Out and Polymerisation Unit for dental applications
Model:	Wapo-Ex	Item no.	170996
Applicable standards:	DIN EN 61010-1 DIN EN 61000-6-3 DIN EN 61000-6-1 DIN 45635-1 DIN EN 60335-1		

Hiermit wird bestätigt, dass die oben bezeichnete Maschine den genannten EU-Richtlinien entspricht. Diese Erklärung wird ungültig, falls die Maschine ohne unsere Zustimmung verändert wird.

This is to confirm that the above mentioned machine complies with the described EU guidelines. This declaration becomes invalid if the machine is modified without our approval.

Cette machine est conforme aux normes en vigueur d'Union européenne. Cet avis est nul et non avenant si cette machine est modifiée sans notre accord.

Esta máquina, anteriormente mencionada, cumple con los límites requeridos por el reglamento UE. Ahora bien, esta declaración quedará invalidada en caso de realizar modificaciones al aparato sin nuestra aprobación.

Hiermee wordt bevestigd dat bovengenoemde machine voldoet aan de voorgeschreven EU normen. Deze verklaring verliest geldigheid als er zonder onze uitdrukkelijke toestemming wijzigen aan de machine worden aangebracht.

Place, date: Hamburg, 2020-02-28

Company stamp :

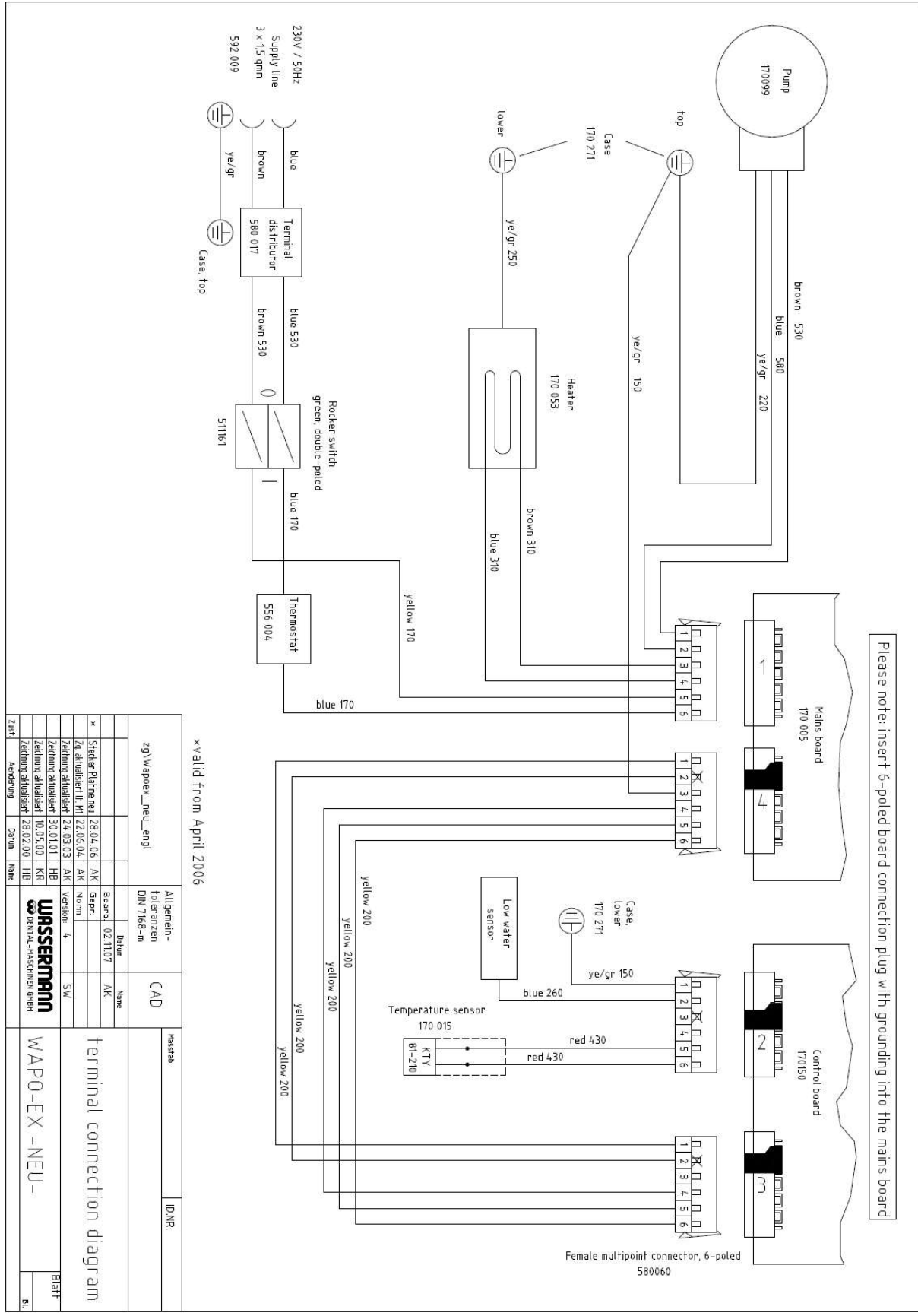


Signature: \_\_\_\_\_  
Sven Wassermann  
(Managing Director)



**WASSERMANN**  
DENTAL-MASCHINEN GMBH  
Rudorffweg 15-17 · 21031 Hamburg

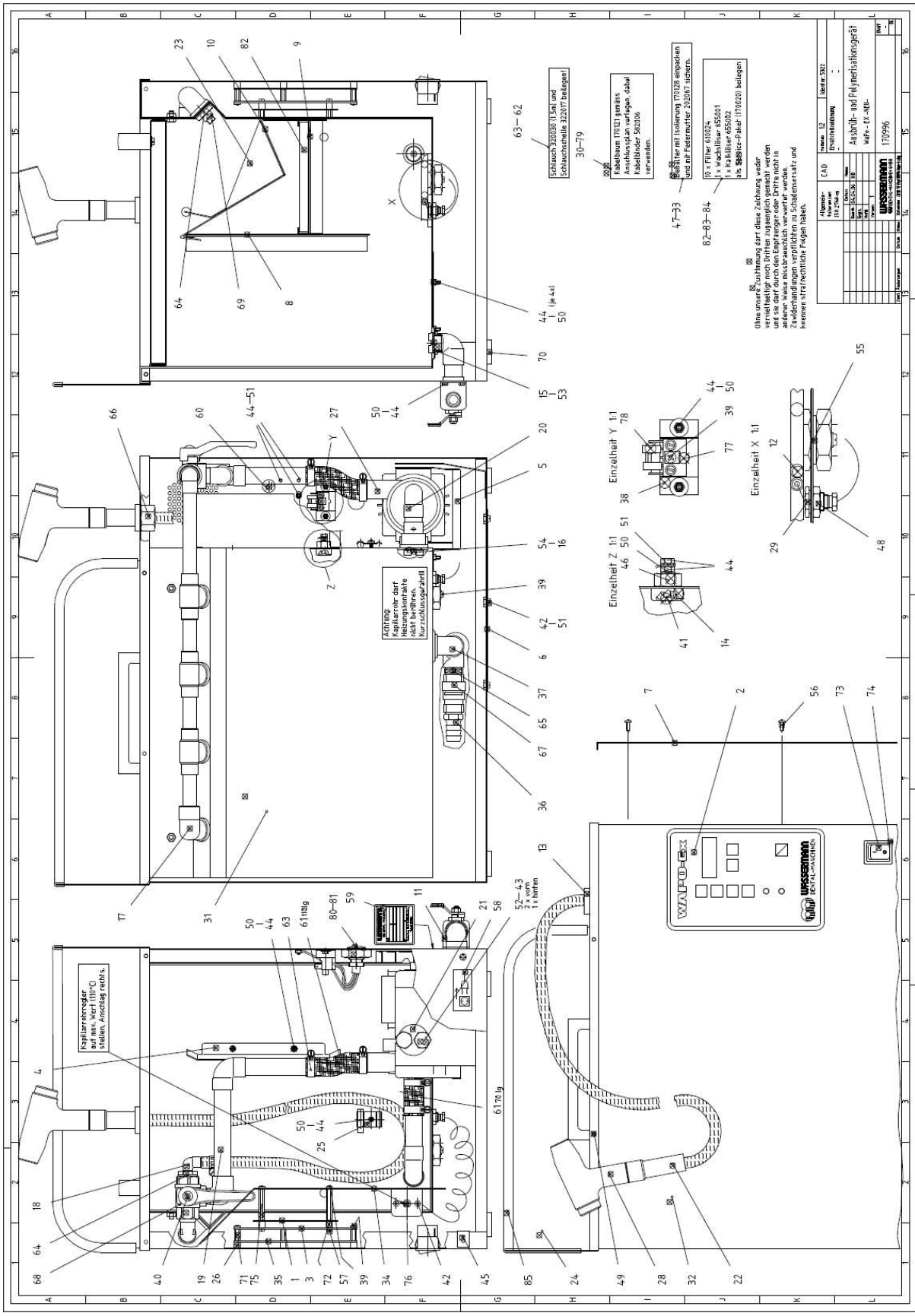
**14 Wiring Diagram**



xvalid from April 2006

zg\Wapoex_neu_engl		Allgemein-toleranzen DIN 7168-n		CAD		Masstrab		IDNR:	
*	Stecker/Relais neu	28.04.06	AK	gnep					
	ZfA aktualisiert	11.01.22.06.04	AK	norm					
	Zählung aktualisiert	24.03.03	AK	Version: 4					
	Zählung aktualisiert	30.01.01	HB						
	Zählung aktualisiert	10.05.00	KR						
	Zählung aktualisiert	28.02.00	HB						
Zust	Änderung	Datum	Name	terminal connection diagram					
				WAP0-EX -NEU-					
				Blatt					
				Bl.					

**15 Spare Part Diagram**



QTY	DESCR	ITEM	MATERIAL	NAME
1	Board - new - mains	1		170005
1	Foil for keyboard, self-adhesive	2		170009
1	Intermediate plate	3		170013
1	Hose guide	4		170016
1	Drip tray	5		170018
1	Covering	6		170024
1	Side panel	7		170025
1	Seperating plate	8		170033
1	Filter perforated plate - bottom part	9		170037
1	Perforated plate element	10		170038
1	Support angle	11		170045
1	Heater	12		170053
1	Hand shower entry	13		170055
1	Insulating sleeve	14		170057
1	Tap extension R1/2	15		170060
1	Tap extension R3/4	16		170061
1	Distributor spraying system	17		170066
1	Three way tap pistol manifold	18		170067
1	Inflow manifold, tap - pump	19		170068
1	Suction manifold	20		170069
2	Sheet (put under), pump-fastening	21		170070
1	Hand shower hose, cpl.	22		170072
2	Flask basket, cpl.	23		170074
1	Splash protection	24		170078
1	Clamp piece 1	25		170094
5	Spacer roll	26		170096
1	Pump, cpl.	27		170099
1	Hand shower, cpl.	28		170113
1	Plug bushing entry	29		170119
1	Cable loom	30		170121
1	Cask, cpl.	31		170123
1	Case, cpl.	32		170125
1	Insulating	33		170128
1	Splash protection, cpl	34		170129
1	Board - mains	35		170150
1	Hose connection - drain	36		170229
1	Tube system - drain	37		170261
1	E-angle	38		170614
10	Screw DIN 7985 M4 x 8	39	VA	200040
1	Screw M4 x 10	40	VA	200150
1	Screw DIN 966 M4 x 30	41	VA	201110
8	Screw DIN 7985 M4 x 6	42	VA	201111
3	Screw DIN 933 M6 x 10	43	VA	201113
16	Screw nut DIN 934 M4	44	VA	202019
6	Snapping screw nut 4,2	45		202021
1	Screw nut DIN 934 M10	46	PVC	202024
18	Spring screw nut D4	47		202067
1	Screw nut DIN 439 M12 x 1	48	VA	202095
10	Blind rivet D4 x 6	49	VA	203105
12	Washer DIN 9021 A4,3	50	VA	204005
5	Serrated lock washer DIN 6798 J4,3	51	VA	204037
3	Serrated lock washer DIN 6798 J6,4	52	VA	204038

QTY	DESCR	ITEM	MATERIAL	NAME
1	CU - gasket DIN 7603 A - R1/2	53		205202
1	CU - gasket DIN 7603 A - R3/4	54		205203
1	KFC - ring DIN 7603 - 26 x 32 x 2 (3)	55		205223
6	Screw DIN 7981 4,2 x 13	56	VA	208206
4	Screw DIN 7985 M4 x 20	57	VA	208214
1	Adhesive label "disconnect power plug"	58		310009
1	Type plate foil 52 x52 neutral	59		310035
1	Grounding sign, self-adhesive	60		310057
2	Textilehose	61	1x110lg, 1x	320021
1	PVC-hose 19x4 (3/4")	62	1500lg	320030
5	Hose clamp D20-32 x 12,2	63		322017
5	Reducing nipple G1/2-G1/4	64		325037
1	Double nipple G1/2	65		325048
1	Screw nut G3/4	66		325050
1	Ball valve with maximum pass	67		325051
1	Three way tap	68		325052
4	Scading jet 1/4"	69		623002
4	Pad 32x32 -H6	70	black	392008
5	Spacer bolt M4 x 20	71	plastic	511058
4	Spacer roll DR8/4,5 x 8	72		511078
1	Rocker switch, green	73		511091
1	Protection cap for rocker switch	74		511118
4	Spacer bolt M4 x 40	75	plastic	511203
1	Capillary tube controller 30-110 °C	76		556004
1	Flat plug screw terminal 2-poled	77		580017
2	Insulating sleeve for flat connection 2,8	78		581017
10	Cable strap KB 102	79		582006
1	Cable connection MZI 9	80		584006
1	Locknut GM13	81		584015
11	Filter Wapo-Ex - new version-	82		610024
1	Wax remover 2 liter	83		655001
1	Lime remover 1000 ccm	84		655002
1	Edge protector, small	85	950lg	660024
1	Packaging Wapo-Ex	86		673015



Notes:







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