

# Service manual

## Wapo-Ex

Wax scalding and  
polymerisation unit



Figure 1: Wapo-Ex

WASSERMANN  
DENTAL-MASCHINEN

The Wassermann logo, consisting of a stylized infinity symbol or two interlocking circles, is positioned below the vertical text.

**Dear customer,**

Thank you for choosing a product from the Wassermann range. Wassermann dental equipment 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.**

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## 1 Features

The proven Wassermann WAPO - Ex combination unit, now with an easy-to-read multifunction display, is an extremely compact piece of bench top equipment, which is used for scalding wax and for polymerisation. It can take 4 half-caps for scalding and/or 6 caps 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 scalding 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.

## 2 For your safety

### 2.1 Your service manual

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

**Very important points** in this service manual are signalled as follows:



#### **Warning!**

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



#### **Information!**

**This symbol draws your attention to specific features, which must be observed.**

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## 2.2 Safety guidelines



**This unit is designed for a mains voltage of 220-240 V / 50/60 Hz.  
Make sure that it is connected to the correct mains voltage.  
Always disconnect the power cable before undertaking cleaning or  
maintenance.**

## 2.3 Responsibility for operation and damage

The responsibility for operating the unit lies exclusively with the owner or user if the said unit is incorrectly serviced, maintained or altered by persons not employed by an accredited dealer or if the unit is used in a manner contrary to its specified purpose.

The unit must be maintained and operated in accordance with this service manual. Wassermann Dental-Maschinen GmbH is not responsible for damage arising from the **non-observance** of these instructions.

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



**Ensure that this service manual is accessible at all times and has been read and understood.**

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### 3 Applications

The WAPO - Ex is used for scalding up to 4 half-caps and up to 6 caps for polymerisation. A divider in the trough creates two separate chambers. You can also scald small items using a hand spray.

Only use the device for this type of application.

### 4 Before you start

#### 4.1 Unpacking / Transport

- Open the cartons, remove the packing materials, and carefully lift out the instrument and accessories. Check that the accessories are correct (see 8.4).
- When transporting the unit, make sure that it has been disconnected from the power supply. Use appropriate packing materials to avoid accidental damage.

#### 4.2 Set-up and storage

- Set the unit up on a level surface.
- Use clamps to attach the drain hose supplied firmly to the unit and arrange a suitable drainage system.
- Always set the unit up with sufficient workspace around it (check its dimensions). **Do not set it up out of doors.**
- If the unit is to be stored for an extended period, protect it from dust and moisture.



**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.**

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## 5 Start-up

- Insert the power plug into the mains socket (220-240 V / 50/60 Hz).
- Insert the filter white side down.
- Fill the unit with water (about 20 litres) at least up to the white plastic ring in the container.
- Turn on the main switch (green rocker switch).
- The unit immediately heats up to its default setting (65°C), or to the last stored scalding temperature.
- When the desired temperature has been reached, the yellow LED (9) goes out and the unit is ready for operation.



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



**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.**

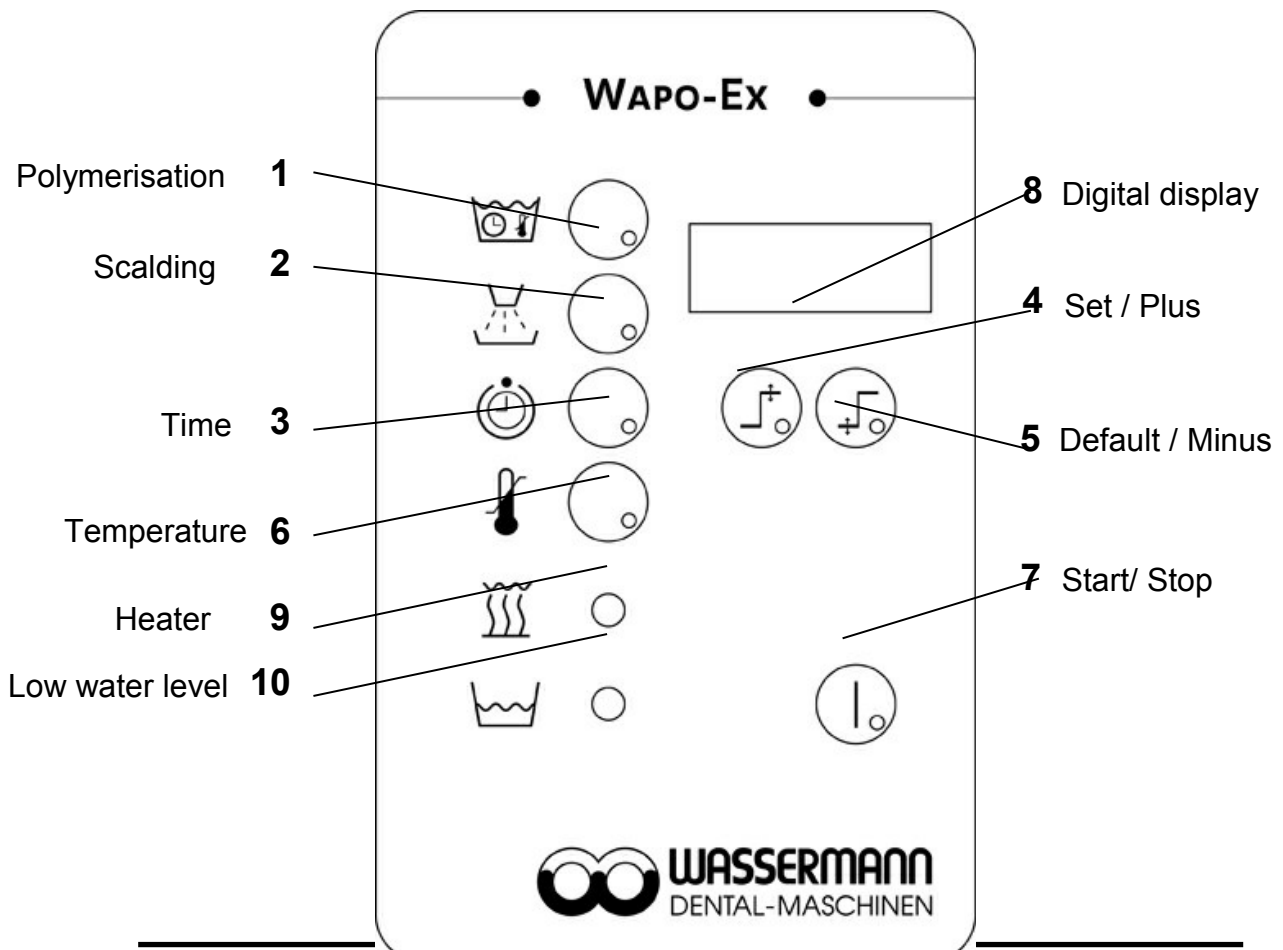
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## 6 Operation

### 6.1 Operation

1. Turn on main switch (green rocker switch).
2. The red water-level LED (10) should not come on or flash. If it does, check the water level or the water-level sensor.
3. Choose Polymerisation or Scalding.
4. Place prepared caps in unit.
5. Set desired time and temperature for scalding (see 6.2.1).
6. Set desired time and temperature for polymerisation (see 6.2.2).
7. Use Start/Stop (7) to start the program.
8. The yellow LED (9) comes on during heating.
9. After the set time, the unit switches off automatically and a tone sounds.

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





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## **6.2 Setting time and temperature**

### **6.2.1 For scalding (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).
- 4.

### **6.2.2 Conversion table °C - °F**

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

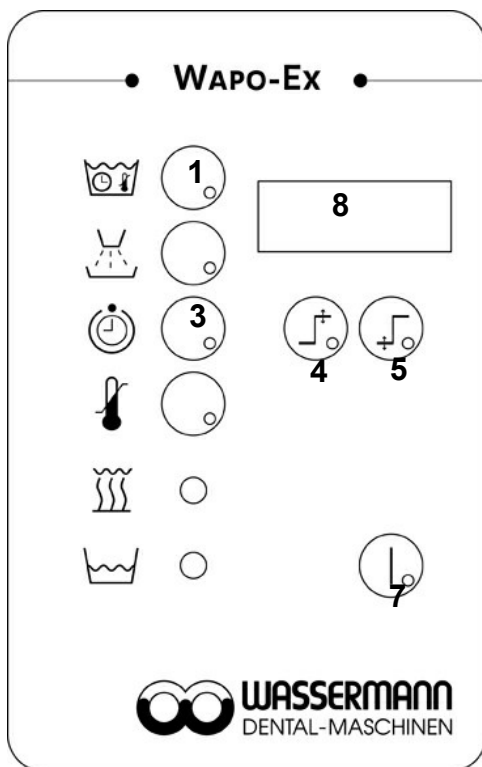
100 °C	=	212 °F
95 °C	=	203 °F
90 °C	=	194 °F
85 °C	=	185 °F
80 °C	=	176 °F
75 °C	=	167 °F
70 °C	=	158 °F
65 °C	=	149 °F
60 °C	=	140 °F

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### 6.2.3 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.

### 6.2.4 Setting the time

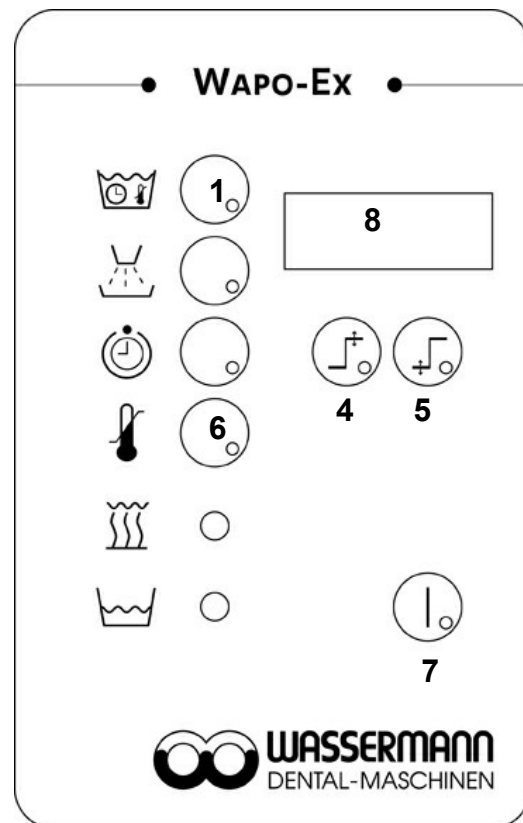


1. Press and hold Time (3), then press Start/Stop (7) once. The first character on the display (8) flashes to indicate that the value can be changed by pressing Set-Point (4) or True Value (5) while Time (3) is held on. Release all three buttons to store the changed value.
2. Store the value by simultaneously 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.***

### 6.2.5 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.



**All instructions for using the unit, whether verbal, written or in the form of practical guidance, are based on individual experience and experimentation and can only be regarded as guidelines.**

### 6.3 Storing

Individual set values can be stored by simultaneously pressing Scalding (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 Scalding (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”.

#### Defaults: Polymerisation

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

#### Scalding

Time	Temperature
15 min.	65° C

### 6.4 Special function: “Scalding during polymerisation”

Scalding is possible while the polymerisation process is underway. The last stored scalding time is used, not at the last stored scalding temperature, but at the default temperature for the polymerisation process. Scalding is started by pressing Scalding (2). The scalding process can be stopped by pressing Scalding (2) again.

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



## 6.5 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 6.2. When you have finished, always return the ball valve to its original position (vertical).



The WAPO - Ex is ready for use when the temperature is above 55°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.

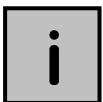


### **Warning: Risk of scalding!**

**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.**

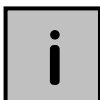


The ball valve (top right on housing) needs to be set horizontal when scalding with the hand spray. To take the pressure off the hose and hand spray, always reset the valve to vertical when they are not being used.

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**7 Troubleshooting / Correcting errors**

Fault	Likely cause	Likely solution
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
Multi-function display not working correctly	Variations in mains voltage (220-240 V / 50/60 Hz)	Turn of main switch and turn on again in about 1 minute.
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.



**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.**

## 8 Maintenance

### 8.1 Cleaning

In order to guarantee trouble-free operation, the unit should receive the following attention:

#### **At least 1x per week**

- Change water, adding Wax-Ex.

Quantity: approx. 4 ccm/1 litre water, corresponding to approx. 90 - 110g per 20 litres.

- Clean level sensor (white plastic ring) with nailbrush or similar.

#### **Every 2 weeks**

- Change filter (white side down).

#### **Every 4 weeks**

- Clean unit with Kalk-Ex.

Quantity: approx. 5ccm/1 k litre water, corresponding to approx. 170 - 220g of Kalk-Ex per 20 litres. – **If heavy lime deposit, increase quantity appropriately -**

The outside of the unit and fittings are best cleaned with a sponge or soft cloth and mild detergent.

The **model plate** must always be easy to read and should not be removed.

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To change the filter and clean the level sensor (white ring), first remove the cap 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.

## **8.2 Maintenance**

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

## **8.3 Warranty**

The warranty period for our instruments is 12 months. If faults occur within the warranty period, contact your dental depot or get in touch directly with our Service department. Your WAPO-EX combination unit 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.



#### **8.4 Spare parts and accessories**

<b>Spare parts</b>	
Item number	Description
170074	Cap container
170009	Button cover
326002	Scalding nozzle
392008	Rubber foot 32 x 32 - H6, black
511091	Rocker switch, green

<b>Accessories</b>	
Item number	Description
170020	Service packet for WAPO - Ex
170100	Wheeled chassis for Wapo - Ex (not standard item)
320030	PVC hose 19 x 4 (3/4") - 1500mm long
322017	Hose clamp D20 - 32 x 12.2

#### **8.5 Repairs**

Servicing or repairs to the unit must only be carried out by trained technicians. Only original spares are to be used. Responsibility for the product is voided if altered by unauthorized persons or if inappropriate components are installed.



## 9 Technical data

### 170996 WAPO – Ex / 170995 WAPO – Ex IVOCAP

Voltage:	220-240 V / 50/60 Hz
Power consumption:	9 A
Output:	2000 W
Water capacity:	approx. 20 litres
Overall dimensions:	Width 550 mm Height 470 mm Depth 400 mm
Weight:	35.5 kg



Noise emission  $\leq 70$  dB(A)



**We reserve the right to make technical changes.**

**10 EC CONFORMITY CERTIFICATE**

**In accordance with 2006/95/EG (low-voltage guidelines), 2004/108/EG (EMV guidelines), 2006/42/EG (Machinery guidelines) and 97/23/EG (Pressure Equipment Directive)**

Manufacturer: W A S S E R M A N N Product description: Wax scalding unit for  
Dental-Maschinen dental applications  
GmbH  
Rudorffweg 15 - 17  
D-21031 Hamburg

Model: WAPO-Ex (170996)  
WAPO-Ex IVOCAP (170995)

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 EG-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 EC rules. This declaration becomes invalid if the machine is modified without our approval.


Cette machine est conforme aux normes en vigueur de la Communité Européene. Cet avis est nul et non avenant si cette machine est modifiée sans notre accord.

Esta máquina, anteriormente mencionada, cumple con los limites requeridos por el reglamento EC. 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.

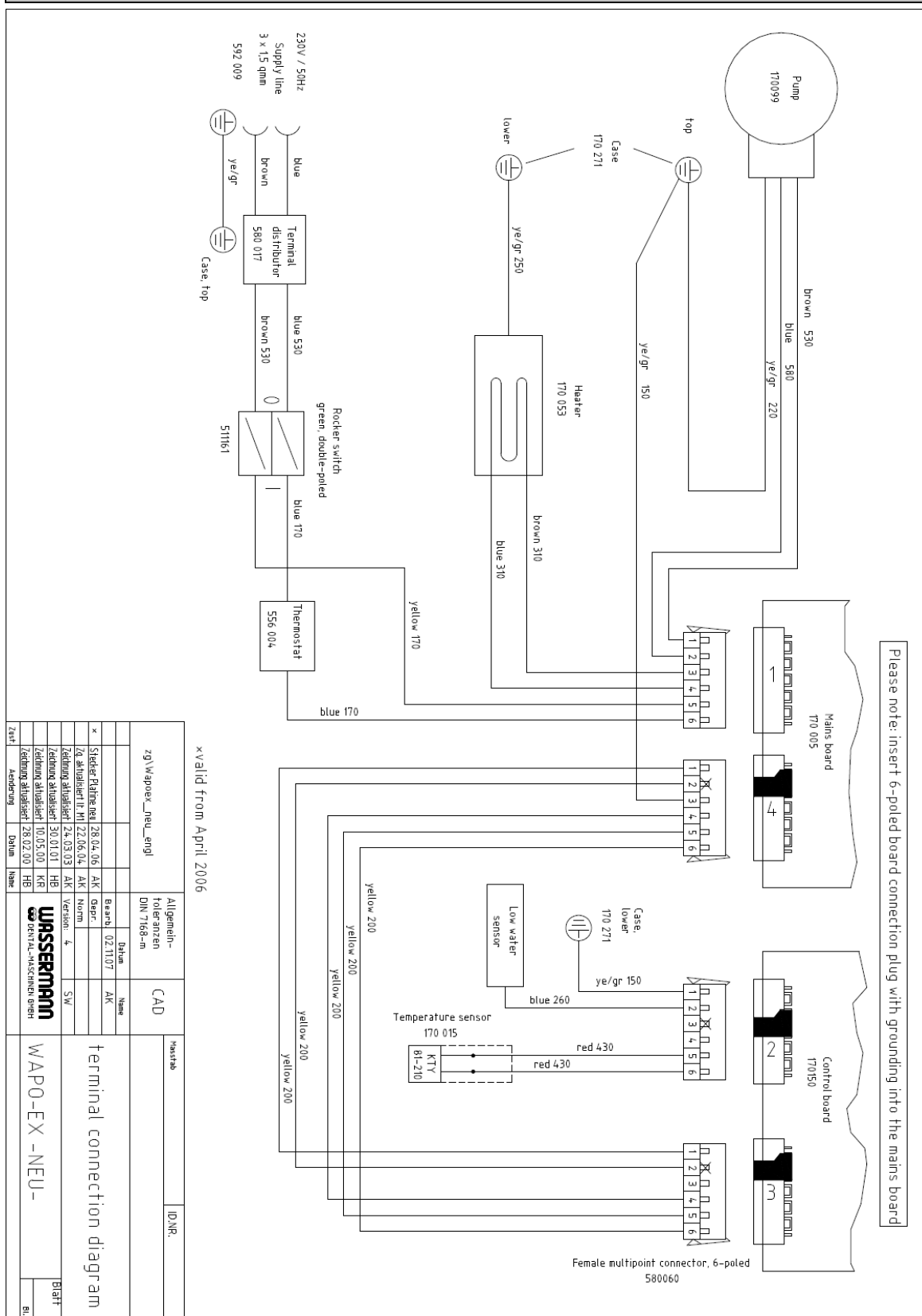
Place, date: Hamburg, 05.03.13

Company stamp:

Signed:   
Wilfried Wassermann  
(Managing Director)



## 11 Wiring 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		170039
1	Filter perforated plate - bottom part	9		170037
1	Perforated plate element	10		170039
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		170069
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 7995 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 7995 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	204039

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	Textilhose	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



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