

Dosing Scales **DSW-2 and DSW-2/4K**



Dosing Scale DSW-2/4K



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

1.1 Product Description

Electronic scales with control system of 1 to 6 liquid pumps. Depending on whether plaster or embedding powder is being weighed on the scales, this unit can, at the press of a button, accurately reproduce up to 30 previously defined quantities. This feature derives from the fact that up to 6 liquids can be dosed in sequence with a very high level of accuracy.

The DSW-2/4K dosing center is especially suitable for this purpose.

This patented product also allows you to cool liquids to temperatures recommended by the embedding-mixture manufacture. The unit delivers the same degree of precision over the long term, yet pays for itself very quickly.

- precision scales for modern dosing and weighing technologies for mixing all common plasters and embedding materials
- DSW-2/4 K: comes standard with 4 pumps for cooled liquids, it is possible to add 2 additional pumps (non-cooled)
- DSW-2: comes standard with 1 pump non-cooled, it is possible to add 5 additional pumps (non-cooled)
- memory for up to 30 mix recipes, many program and expansion configurations
- constant mix ratios of powder and liquids
- precision scales: accuracy +/- 0.5 g, max. load 6 kg
- large, clear LCD display
- extremely durable, easy-clean housing, plastic powder coated
- scales in high-quality stainless steel

1.2 Product Design

The DSW-2 dosing scales contains the following components:

- Scales
- Controller
- Dosing housing with 1 to 6 pumps (cooling unit), depending on configuration.
- Rubber plugs to seal hose ends

Pumps 1 to 6 (A to F) are located in a housing and are interchangeable.

1.3 Mathematical Basis for Control and Programming

Dosing control is based on the following formula:

$$G_{ges} = GY + MX_1 * \gamma_1 + MX_2 * \gamma_2 + MX_3 * \gamma_3 \quad \text{Equation 1}$$

G_{ges}	=	total quantity [in g] of all weighed amounts of different materials
GY	=	weight component of, eg, plaster powder or similar material
$MX_1... MX_3$	=	quantity [in ml/100g] of liquid to be dosed from any selected pump
$\gamma_1 \dots \gamma_3$	=	density [in g/cm ³ or g/ml] of particular material/liquid

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 **service manual**. 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.



When dosing, use only liquids recommended for mixing embedding materials and plasters for dental applications. Do not use petrol, oil or acids, solvents or flammable substances.

Concentrated embedding materials can damage your health. Read the manufacturer's data sheets carefully.



It is not allowed to reduce the hose ends e.g. by sieves, filters, reductions!

The entire hose cross-section always has to be used otherwise the pump may
overheat.

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 DSW-2 dosing scales allow you to mix embedding materials and plasters with consistent accuracy.

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.

Choose a location for the scales and container where they are protected from direct sunlight or other sources of warmth such as heaters.

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



Install the device in a place where it will not block the working area and the functionality (take the dimensions into account). Make sure that there are about 10 cm of free space on each side to guarantee air circulation (heat dissipation).



It is not allowed to reduce the hose ends e.g. by sieves, filters, reductions!

The entire hose cross-section always has to be used otherwise the pump may overheat.



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



The scales has always to be horizontal.

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.



If the unit is not to be used for an extended period, seal the concentrate hose ends with the rubber plugs.

7 Installation/ Start-up



Make sure that the safety packing has been removed before you start the unit.

- Follow the procedure below to remove the securing piece from the scales before you start work:
 1. Remove the stainless steel pan from the scales.
 2. Remove the safety packing between the pan and the housing.
 3. Replace the pan.
- Select the appropriate quantities of the individual liquids. If using containers without a 6.5mm hole, unscrew the cover. Use a tool such as a drill press and a conventional drill bit to make a 6.5 mm hole in the center of the container lid.
- If the density of the media is known (if not, see 6.3.1), fill the containers with the relevant liquids, then seal the containers. Mark each container and its lid with the letter of the dosing pump. The sticker (Fig. 1) on the rear or top of the housing indicates which hose belongs to which pump.

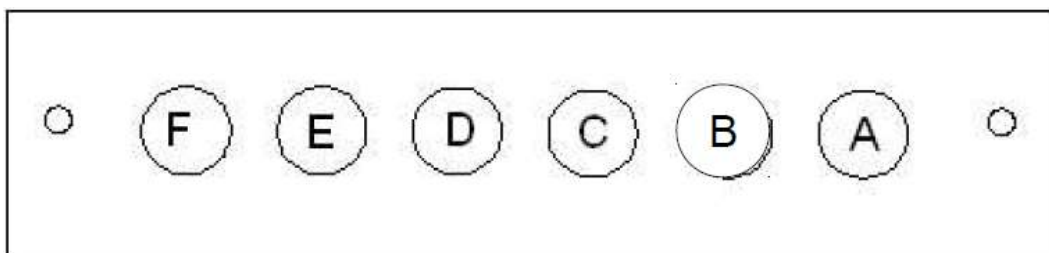


Fig. 1: Pump outlets



When removing or replacing a lid, hold the lid firmly and turn the container to avoid twisting the hose.

- The hoses are now filled by flushing (see 6.4 / 6.4.1). Make sure there are no air bubbles in the dosing hose.
- If a pump has been loaded with embedding material but you do not want to dose immediately, seal the hose end with the rubber plug provided.

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

- The scales should be level, clean and free of any unwanted loads.
- When you turn on the power, autotest characters (**C1** to **C6**) appear on the display, followed by the character or number of the program, then **0** to indicate the scales have been tared.
- Now you can **weigh, dose, rinse** or **program**.

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.

8.2 Programming

1. Turn on the power. The **READY** light comes on.
2. Press **P**. **Pr nr** appears on the display and the **READY** light goes out.
3. Use the numeric keypad to enter the program number. If you choose **0** or a number greater than **30** and press **ENTER**, the characters **Err-P** appear on the display, followed by **Pr nr**.
4. Press **ENTER**. **Set P** appears on the display.
5. Press **A, B, C, D, E** or **F** to select the pump for the appropriate liquid.
6. On model **DSW-2**, make sure that only one pump is installed (**A**) and that on model **DSW-2k**, pumps **A, B, C and D** are active.
7. **P-A** or the letter of the relevant pump appear on the display, with an **o** on the left to indicate the "programming option".
8. The program stores the identifier of the first pump to be switched on, the sequence of pumps to be activated, and the quantity assigned to each pump for dosing.
9. You then use the numeric keypad to enter the quantity of liquid (in **ml/100g** powder) to be weighed.
10. That value appears immediately on the display.
11. Press **ENTER**. **Pr-A** or the identifier of another pump (depending on the key pressed) appears on the display.
12. If you are not entering a liquid density for the selected pump, press **ENTER** again. A standard value ($\gamma = 1$) is assumed.
13. If the density of the liquid is to be specified, that value should be entered using the numeric keypad. The value entered appears on the display.
14. Press **ENTER**.
15. **SET P** appears again on the display.
16. Repeat points 4, 5, 6, 7, 8 for the following pump(s).
17. End programming by pressing **ENTER**. All ratios for mixing components and the order in which the pumps are to be activated remain stored in memory until new data are entered under that program number.
18. The **o** disappears and the **READY** light comes on. You can now **weigh, dose, program or rinse**.

8.2.1 Correcting Incorrect Input

- You can press **CLR** at any time during programming to change incorrect data (eg, pump number or density) in the current program.
- If **CLR** is pressed again, the program is stopped.
- When you press **CLR**, the letters **CLR** appear on the display, and lights **READY** and **END** go out. You now press **ENTER** to continue working.

8.3 Calculating Dosing Quantities per Pump

Generally speaking, all dosing quantity data [ml] relate to 100g powder. Thus, the dosing quantity [in ml] and the density [in g/cm^3 or g/ml] should be known for each liquid.

8.3.1 Determining the Density of Concentrates

If the manufacturer does not indicate the density of the concentrate, you can determine it yourself quite easily. To do so, place a large calibrated beaker on the scales and press **TARE**. A **0** will appear on the display. Fill the beaker to the 1000ml mark with concentrate. Carefully note the weight. Then, simply divide the value shown by 1000 to get the density in g/cm^3 or g/ml . If the volume of concentrate is less than 1000ml, divide the weight of the concentrate shown on the scales by the volume of concentrate to obtain the density.

If you do not have a large beaker, carry out several (say, 5) measurements with a smaller beaker, then calculate the average value.

8.3.2 Example of Calculating Embedding Materials

Manufacturers of embedding materials (powders) specify concentrate quantities in Xml to Yg, which generally translates to Xml liquid to 100g powder. This relies on the fact that embedding materials are sold mostly in small bags (eg, 100g). You will find that this is much more expensive than buying a 5kg container of the material. The bags of powder come with a measuring beaker for measuring the concentrate (1st liquid). The concentrate can also be diluted with distilled water.

Say a manufacturer of embedding material states:

30 ml total liquid per 100g powder yields enough mixture for 1-2 molds.

Possible dilution of concentrate: *10%-50% depending on expansion.* The percentage figure refers to the volume or quantity in ml of liquid.

The laboratory technician has the task of mixing enough embedding material for 3 molds (models) and wants to dilute the concentrate by 30%. He sees that there is no program so far for this dilution, but program number 30 has not been used.

Now the technician calculates the quantity of concentrate (liquid 1) and the dilutant (liquid 2).

It is important for all figures to relate to 100g powder.

Concentration mix quantity:

= quantity mixing liquid (ml/100g)* quantity concentrate

$$= 30 \text{ [ml/100g]} * 70/100 = 21 \text{ ml/100g}$$

Dilutant quantity:

= quantity mixing liquid (ml/100g)* total dilutant of total liquid

$$30 \text{ [ml/100g]} * 30/100 = 9 \text{ ml/100g}$$

The scales are now programmed for this concentration.

- He presses **P**. **Pr nr** appears on the display and the **READY** light goes out. He enters **30**.
- He presses **ENTER**. **Set P** appears on the display.
- He presses **A** because that is the pump which will dispense the concentrate from the powder manufacturer. **P-A** appears on the display, as well as **o** to indicate the programming option.
- He then uses the numeric keypad to specify the quantity [in **ml/100g**] powder of the first liquid to be weighed (in this case the amount of concentrate). He enters **21**. The value entered appears immediately on the display without indicating the unit.
- He presses **ENTER**. **P-A** appears on the display.

The technician knows the density of the concentrate from the manufacturer's data (the density of the concentrate is generally provided by the manufacturer) or by weighing. Here, we assume the density is **1.2 g/cm³ = 1.2 g/ml**.

He enters **1.2**.

- He then presses **ENTER**. **Set P** appears on the display.
- He presses **D** because the distilled water (dilutant) will be dispensed from that pump.
- He then uses the numeric keypad to specify the quantity [in **ml / 100g**] of powder of the second liquid to be weighed (in this case the quantity of dilutant). So he enters **9**. This value appears immediately on the display without indicating the unit.
- He next presses **ENTER**.
- Since the technician knows that the density of the water is approx. **1 g/cm³ = 1g/ml**, he presses **ENTER** again or **1** because the density of 1 is stored as a standard value.
- He presses **ENTER** again to end the program and store the data under program number **30**.

He now places two empty mixing beakers on the scales and presses **TARE**.

Then, he takes a small spatula and transfers the approximate quantity of powder from the 5kg container to one of the beakers. The scales' display reads **281g**. This is too little powder, so he adds the rest. The display now reads **315g**.

- The technician presses **START**. **Pr nr** appears on the display and the **READY** light goes out.
- He uses the numeric keypad to specify the program number and enters **30**. He then presses **ENTER**. Dosing starts and the **READY** light goes out.

The scales calculate the weight of the dosing liquids.

Of the concentrate

$$\begin{aligned} & \text{powder weight (g)} * \text{concentration (ml/100g powder)} * \text{density (g/cm}^3 = \text{g/ml)} \\ & = 315\text{g} * 21\text{ml}/100\text{g} * 1.2\text{g}/\text{cm}^3 = 66.15 \text{ ml} * 1.2 \text{ g}/\text{cm}^3 = 66.15\text{ml} * 1.2 \text{ g}/\text{ml} \end{aligned}$$

we must now add an extra
= 79.38g.

Of the dilutant (distilled water):

$$315\text{g} * 9\text{ml}/100\text{g} * 1.0\text{g}/\text{ml}$$

we must now add an extra
= 28.71g. The technician transfers the powder into the liquid and it's finished.

8.4 Rinsing/ Filling/ Emptying

If the pumps will remain unused for an extended period such as during holidays or when the medium is being changed, the entire dosing system will need to be cleaned. This is done by connecting a particular pump to the container filled with tap water or rinsing liquid.



Never blow compressed air through the hoses.

8.4.1 Filling/ Rinsing/ Emptying the Pump System



Squeeze off the tube end briefly during flushing to remove air bubbles from the system. There should be no more air bubbles present when the tube end is released. This procedure can be repeated as often as you like.

- Screw the cover with the suction hose of the pump system to be filled or rinsed to the container holding the water/rinsing liquid. Remember to turn only the container to avoid twisting the hose.
- Place a suitable container under the dosing hose. If necessary, set the hose to the correct height.
- There are 4 switches at the rear of the pump housing on the DSW-2K. These are used to set the feed direction.
- Press **S**. **SET P** appears on the display and the **READY** light goes out.
- Press one of the six buttons assigned to the pumps (**A, B, C, D, E** or **F**). **P-n** appears on the display (n = the letter of the selected pump).
- Press **START**.
- Rinsing begins and the ∇ symbol corresponding to that pump lights up.
- The rinsing process for cleaning the circuit should last for approx. 30 seconds.
- Once the rinsing is finished, the **END** light comes on.

- You can continue by pressing **ENTER**. The **READY** light comes on and **END** goes out. If the liquid circuit does not fill completely, there are air bubbles at the hose opening. You will need to repeat the rinsing process.
- Press **CLR**. The letters **Clr** appear on the display. The rinsing process can be interrupted immediately. You can continue after pressing **ENTER**. The **READY** light comes on.



Rinsing can be stopped at any time by pressing CLR.



Before changing a medium, check that the circuit has been rinsed clean.



If you have changed the feed direction, remember that the switch must be returned to the correct position for dosing.



Make sure that there is as little air as possible in the feeder circuit. This is especially important with the DSW-2/4K as it can reduce pump performance.

8.5 Dosing

1. The liquid amounts and densities are known.
2. Place two mixing beakers on the scales and press **TARE**.



If no 0 is displayed, press TARE again.

3. Transfer the desired amount of powder into a mixing beaker.
4. If the **READY** light does not come on, press **ENTER**. The **READY** light will come on.
5. Press **START**. **Pr nr** appears on the display and the **READY** light goes out.

6. Use the numeric keypad to enter the program number. If you enter **0** or a number greater than **30**, **Err-P** then **Pr nr** appear on the display.
7. Press **ENTER**. Dosing starts and the **READY** light goes out.
The program checks that the quantities do not exceed the maximum value. If the maximum value is exceeded, **Err-H** appears on the display and dosing is stopped.
8. The program also checks that the amount of powder is greater than **5g**. If it is less, **Err-L** appears on the display and dosing does not start. Another check is carried out to make sure the maximum dosing portion does not exceed **1000%** of the powder amount (**Err-H** message) and that the minimum dosing portion is greater than **2g** (if not, message **Err-L**).
9. To interrupt the process, you press **CLR**, then **ENTER** to continue.
10. If no errors are detected, the symbol ∇ appears on the display to indicate which pump is working.
11. The pump (or pumps) automatically dose(s) the predetermined quantity of liquid.
12. When the next pump is switched on, the display shows the ∇ symbol of the pump which is working. When dosing finishes, the **END** light come on.
13. After **ENTER** is pressed, the dosing scales are ready to start again. The **READY** light comes on and **END** goes out (only to program level C2_08).

8.5.1 Stopping the Dosing Process

- The dosing process can be stopped immediately by pressing **CLR**. **Clr** appears on the display. You press **ENTER** to reset the unit. The **READY** light comes on.



Dosing can be stopped at anytime by pressing CLR.

8.6 Using Cooling

- Turn on the green main switch (on the side of the unit).
- Select the temperature using the rocker switch at the side.
- Temperatures 17°, 19° and 21° Celsius are available. (The middle temperature (19°) is usually recommended.)
- Wait for the green LED to flash. This can take up to 45 minutes, depending on the ambient temperature. The liquid will then have reached the tolerance range of the set temperature.
- **Green light** means minimum permissible temperature reached. The cooling switches itself off automatically. An occasional change between a steady and a blinking green light on the display does not indicate a fault.
- **Red light** means "Warning" – cooling is faulty. Switch off immediately.

You are recommended to switch the cooling unit on in good time (timer) or to have it on continuously. Try working at a higher temperature – this often yields better results.

8.7 Tips and Tricks

- If you are mixing large quantities, add material by hand during the dosing process. Take care, however, not to exceed the weight you want to weigh. Stop if you hear the pump laboring before the nominal weight is reached.
- Remember that some embedding materials can only be worked for a short time at temperatures above 25°C. Locate the dosing scales and the liquid container in a cool place.

9 Troubleshooting

Fault	Cause	Solution
No weight shown on display	Transport packing not removed	Remove transport packing.
Err-H displayed	Maximum weight exceeded	Remove powder from mixing beaker and repeat dosing process.
Err-L displayed	Under minimum weight or dosing quantity too small	Add more powder to beaker and repeat dosing process.
Err-b displayed	End stop of the balance beam inconsistent	Heat the grub screw at the bottom of the unit and loosen it. Adjust so that 6 kg can be weighed.
No response from keys P , S and START	END light is on, process is finished or was stopped	Press ENTER and start process again.
Pump works but feeds nothing or too little	<ul style="list-style-type: none"> At first please see 6.2 	
	<ul style="list-style-type: none"> Dirty hose Pinched hose Container empty Suction hose length in container too short 	Clean hose and/or remove contamination. Check hose line and liquid level in container.
	<ul style="list-style-type: none"> Pump slipping 	Unscrew unit at rear, demount pump head, see 10.8
Irregular liquid flow	Air bubbles in system	System has to be vented (see 8.4.1)
Pump does not respond	<ul style="list-style-type: none"> At first please see 6.2 	
	<ul style="list-style-type: none"> Pump faulty Pump blocked Pump not plugged in 	Check pump (see 10.8) or contact our Service Department.
Wrong medium supplied	<ul style="list-style-type: none"> Wrong lid and/or container Wrong material in container Error in program parameters 	Check container and program. If necessary.
Red LED glows (only DSW -2K)	Cooling system breakdown	Contact our Service Department.



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

It requires only normal cleaning (sponge, damp cloth, mild detergent) and no further chemical additives.

- The ends of the hoses used to supply embedding material concentrate should be cleared regularly of crystallized material.
- Remember to clean the rubber plugs used to seal the hose ends.



Avoid skin contact with concentrates. Follow the manufacturer's guidelines.

Never blow compressed air through hoses.



If the unit is not to be used for an extended period, seal the concentrate hose ends with the rubber plugs.

10.2 Maintenance

- The mechanical and electrical components of our dosing scales do not need maintenance.
- Check the condition of the hoses on a regular basis. Hardened, dirty or severely discolored hoses can be replaced by service personnel in a few minutes.
- Make sure that the unit is kept clean.

10.3 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.

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 parts	Item no.
DSW-2/4 K with 4 pumps, cooled	172989 / 172986
DSW-2 with 1 pump, non-cooled	172988 / 172985
Accessories	Item no.
Upgrade with one pump, non-cooled	172299

10.7 Repairs

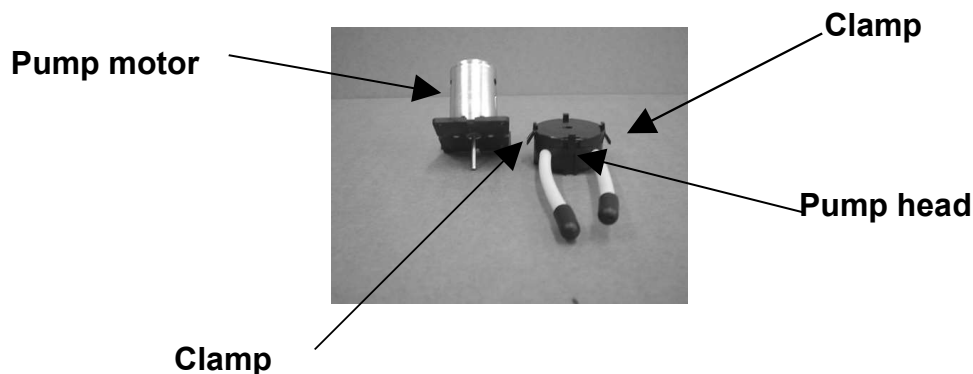


Servicing or repairs to the unit has only to be carried out by qualified technicians. Only original spare parts are to be used. Responsibility for the product is voided if unauthorised persons alter it or if inappropriate components are installed.

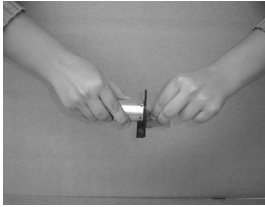
10.8 Repairing the Pump

Turn the unit off and pull the plug out of the mains socket.

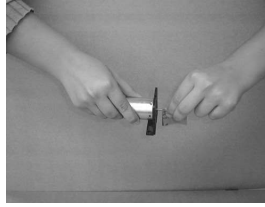
1. Undo the four screws at the rear so you can see the pump arrangement.
2. You can remove the pump head from the pump motor without taking the head apart if you press the right and left clamps in at the same time.



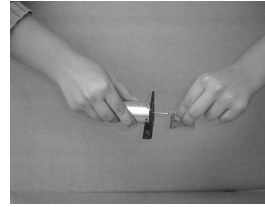
3. Rub a piece of 180-240 grit abrasive paper up and down the pump motor shaft several times (see steps 1-3).



Step 1

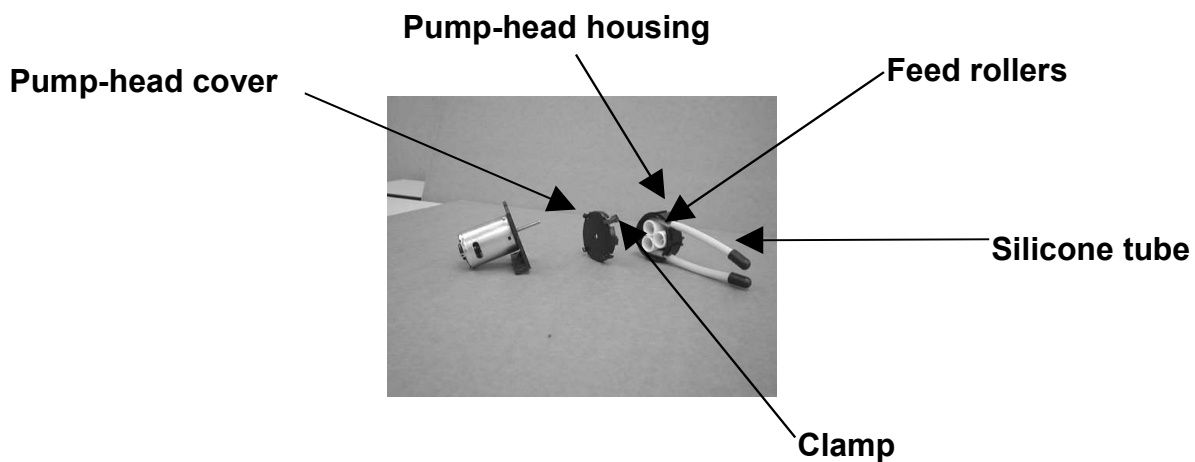


Step 2



Step 3

4. Remount the pump head on the motor and check that it works correctly.
5. If the pump still does not deliver, demount the pump head by pressing in both clamps (see pic.).



6. Check the silicone tube and feed rollers for residue. If the residue cannot be removed, a new pump is required.
7. Also check the connections between the pump tube and PVC tube for blockages.



Warning! The connections must be held in place with hose clamps.

Warning! The pump must be built up grease-free.

11 Technical Data

11.1 Weighing System:

Min. start weight: approx. 5g

Min. dosing amount: approx. 2g

Max. dosing amount in [%]: 1000

Start weight [g]	Max. dosable in [%]	Min. dosable in [%]
5	1000	100
10	1000	50
20	1000	25
50	1000	10
100	1000	5
200	1000	3
500	1000	1,5
>1000	<=500 at 6000g	1

Fig. 1: Weighing table

11.2 DSW-2/ DSW-2/4 K

DSW-2/4 K****, DSW-2/4 K (115 V)***	Item no.: 172989****, Item no.: 172986****
DSW-2*, DSW-2 (115 V)**	Item no.: 172988*, Item no.: 172985**
Voltage	220–240 V / 50/60 Hz*/****, 115 V 50/60 Hz **/****
Power consumption	0.7 A****, 0.5 A*, 1 A**, 1,4 A***
Output	100 W****, 75 W*/**, 100 W***
W x H x D	210 x 470 x 410 mm
Weight	17.5 kg ****/*** 13.0 kg*/**
Weighing range	min.=5 g, max.= 6000 g, min. dosing quantity (e)= 2 g
Weighing accuracy	+/- 0.5 g
Temperature operative range	5 – 35 °C
Temperature ranges cooling system (DSW-2/4 K)	17°C, 19°C, 21°C ****/***

11.3 Cooling System

Microprocessor-controlled electronic cooling unit.

Temperature ranges: 17°, 19° and 21° Celsius

Tolerance at measuring point: +/- 0.3° Celsius

Tolerance of entire cooling system: +/- 1° Celsius

No. cooling chambers: 4

Cooling volume per chamber: approx. 125ml

Cooling power: 28 W

Other voltages on request.

The noise level of the unit amounts to ≤ 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 authority.

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** Product description: Dosing Scale for
Dental-Maschinen GmbH dental
Rudorffweg 15-17 applications
21031 Hamburg
Germany

Model: DSW-2 with one pump Item-no. 172988 / 172985
DSW-2/4K with four pumps Item-no. 172989 / 172986

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

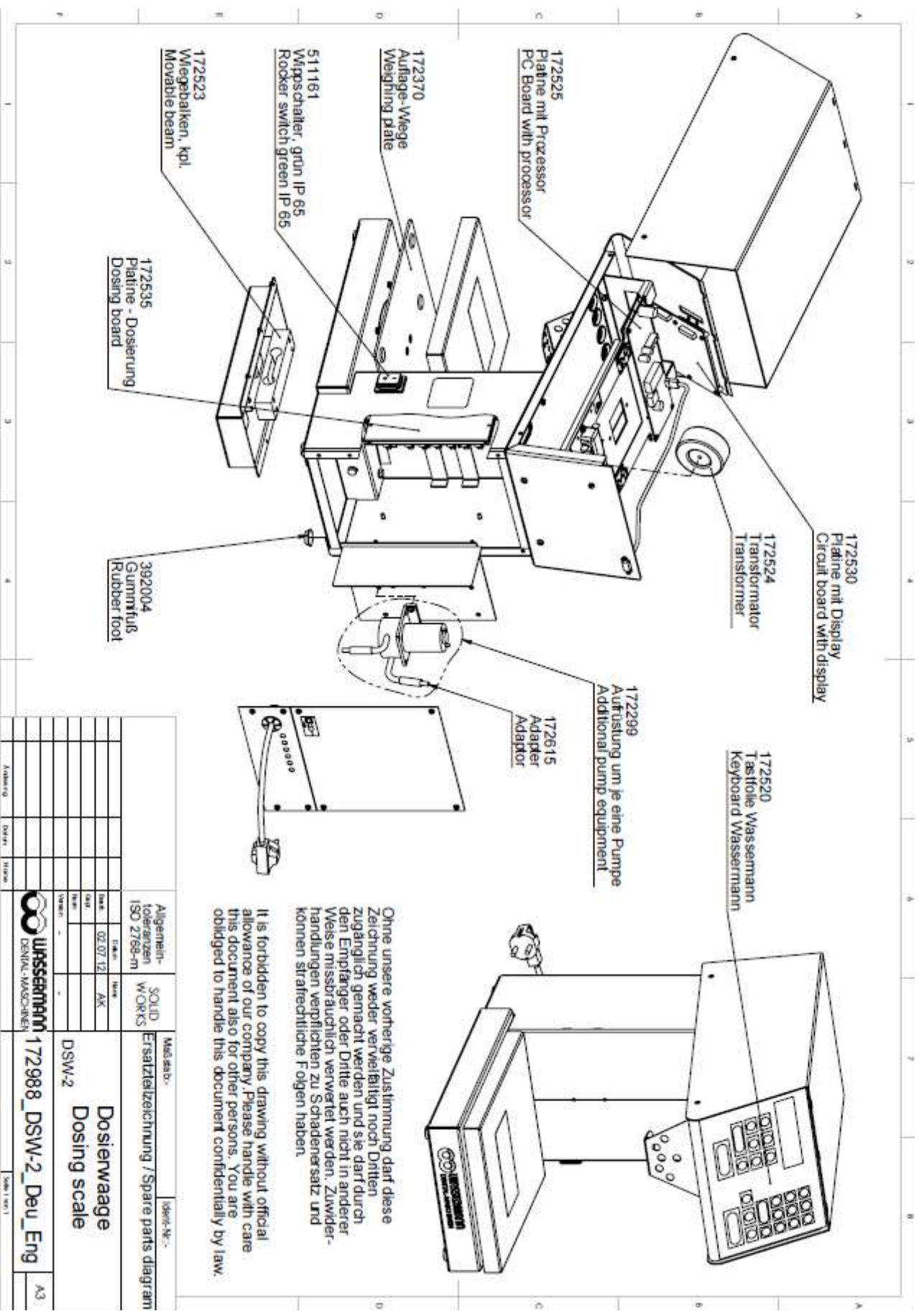
14 Short Instruction for Programming

1	<div style="border: 1px solid black; padding: 5px; display: inline-block;">P</div>	Start of the Program "PR NR" appears on the display
2	<div style="display: flex; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">1</div> bis <div style="border: 1px solid black; padding: 5px; display: inline-block;">30</div> </div>	Choose a program number on the numeric keypad
3	<div style="border: 1px solid black; padding: 5px; display: inline-block;">ENTER</div>	"Set P" appears on the display
4	<div style="display: flex; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">A</div> bis <div style="border: 1px solid black; padding: 5px; display: inline-block;">F</div> </div>	Press A to F to select a pump "P-X" appears on the display
5	<div style="border: 1px solid black; padding: 5px; display: inline-block;">XX</div>	Please use the numeric keypad to enter the quantity of liquid(ml/100g powder)
6	<div style="border: 1px solid black; padding: 5px; display: inline-block;">ENTER</div>	"PR-X" appears on the display
7	<div style="display: flex; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">ENTER</div> oder <div style="border: 1px solid black; padding: 5px; display: inline-block;">1.XX</div> </div>	Please indicate the density or confirm with "ENTER" the density of 1
8	<div style="border: 1px solid black; padding: 5px; display: inline-block;">ENTER</div>	"Set P" appears on the display
9	<div style="display: flex; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">ENTER</div> oder <div style="border: 1px solid black; padding: 5px; display: inline-block;">Zu 4</div> </div>	You can store the program when pressing "ENTER" or you can go further in programming starting with point 4 again

15 Instruction to Start a Program

1	<div style="border: 1px solid black; padding: 5px; display: inline-block;">START</div>	Start of the program "PR NR" appears on the display
2	<div style="display: flex; align-items: center; gap: 10px;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">1</div> bis <div style="border: 1px solid black; padding: 5px; display: inline-block;">30</div> </div>	Choose a program number on the numeric keypad
3	<div style="border: 1px solid black; padding: 5px; display: inline-block;">ENTER</div>	To confirm the program no.

17 Spare Part Diagram 172988

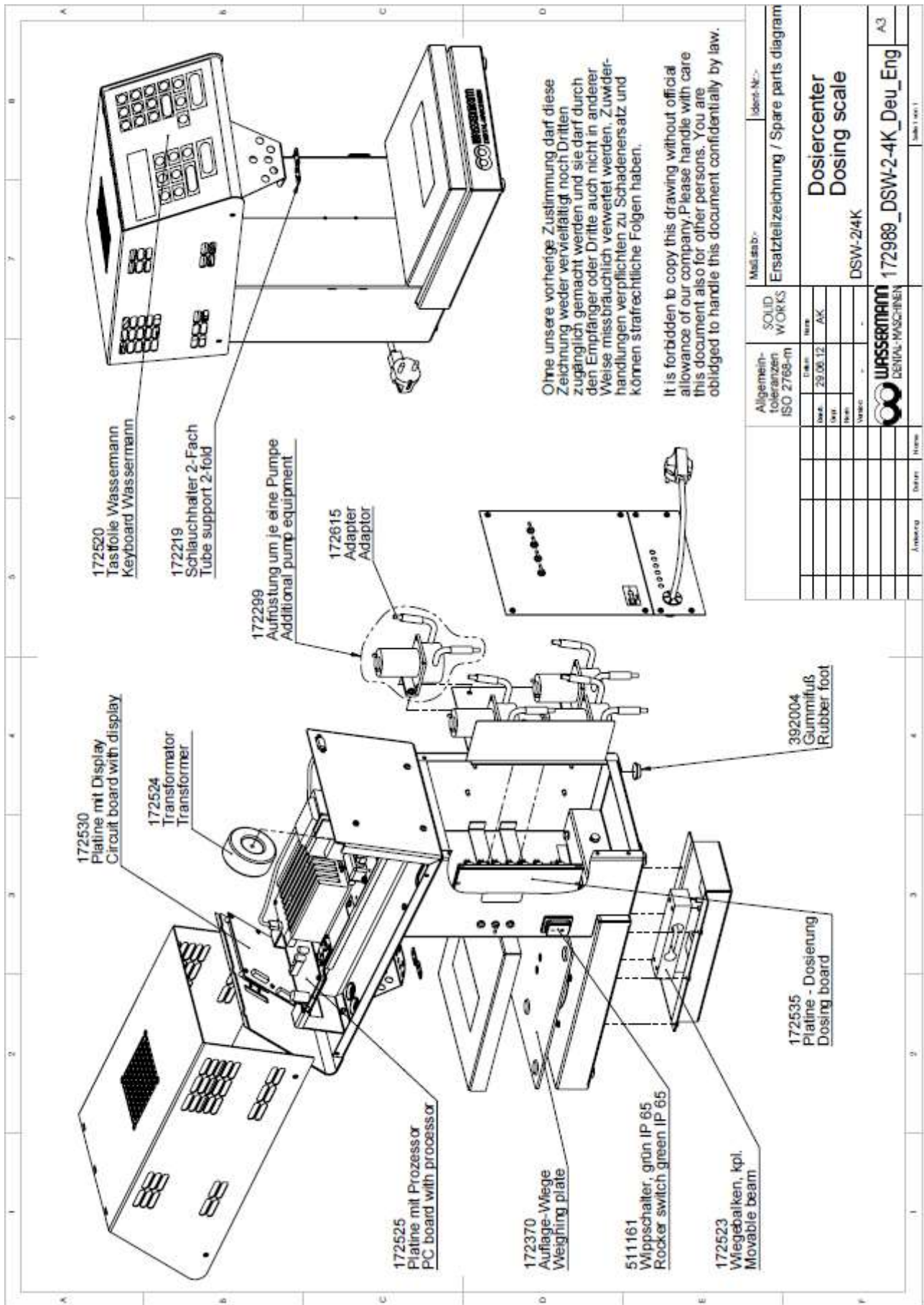


Ohne unsere vorherige Zustimmung darf diese Zeichnung weder vervielfältigt noch Dritten zugänglich gemacht werden und sie darf durch den Empfänger oder Dritte auch nicht in anderer Weise missbräuchlich verwertet werden. Zuwiderhandlungen verpflichten zu Schadenersatz und können strafrechtliche Folgen haben.

It is forbidden to copy this drawing without official allowance of our company. Please handle with care this document also for other persons. You are obliged to handle this document confidentially by law.

Allgemein- kennzeichen ISO 2768-m		SOLID WORKS		Maschinen- Ersatzteilzeichnung / Spare parts diagram		Ident.-Nr.:	
Norm	02.07.12	AK		DSW-2	Dosierwaage Dosing scale		
Hersteller	Wassermann DOSIER- MASCHINEN		172988_DSW-2_Deu_Eng				A3
Änderung	Datum	Name	Seite 1 von 1				

18 Spare Part Diagram 172989



Allgemein- toleranzen ISO 2768-m		SOLID WORKS		Ident. Nr. >	
Maßstab	29.06.12	AK	Ersatzteilzeichnung / Spare parts diagram		
Maß			Dosiercenter Dosing scale		
Maß			DSW-24K		
Maß			172989_DSW-24K_Deu_Eng		
Maß			A3		
WASSERMANN DENTAL-MASCHINEN		Seite 1 von 1			

Notes:



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/WassermannDentalmaschinen