

# User manual

DEG - 1

DEG - 2

Pressure hardening ovens



Figure 1: DEG - 1



Figure 2: DEG - 2

WASSERMANN  
DENTAL-MASCHINEN



Die Basis für ihr Labor

***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 from the equipment, please read this user manual carefully before you start work, and operate the unit according to the recommended guidelines.

**Keep this user manual on hand for ready reference.**

**Company address:**

Wassermann Dental-Maschinen GmbH

Rudorffweg 15-17

D-21031 Hamburg

Germany

Tel.: +49 (0)40/730 926-0 Fax.: +49 (0)40/730 37 24

email: info @ wassermann-dental.com

URL: <http://www.wassermann-dental.com>

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## 1 Features

The **DEG-1/DEG-2** ovens use pressures above atmospheric to compress materials. As these materials harden under compressed air, any residual air in the material mix is also condensed, resulting in a more homogeneous material structure, free of bubbles.

The technique is an excellent first step in the preparation of smooth unfinished castings, and is best suited to the hardening of embedding materials and silicone-rubber moulds.

Both units have a timer which can be set for up to 60 minutes, and which can be turned off at any time, either automatically or by using an ON/OFF switch. The ovens allow you to set pressures up to a maximum 7 bar, which are maintained by a non-return valve, even if the air supply is interrupted.

*In addition* to these features, the **DEG-2** also incorporates a heater to keep the temperature in the pressure chamber constant. You can select one of two temperatures: 37°C or 55°C. The polymerisation tray (see 8.4) allows you to compress material in a water-bath.

## 2 For your safety

### 2.1 Your user manual

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

**Very important points** in this user manual are indicated 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.

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**Information!**

This symbol draws your attention to specific features, which should be noted.

**2.2 Safety guidelines**



**This unit is designed for a mains voltage of 230V/50Hz. Make sure that it is connected to the correct mains voltage.**

**Always disconnect the power cable before undertaking cleaning or maintenance.**

**The safety valve on the pressure chamber open automatically if the pressure exceeds 7 bar.**

**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 user 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 user manual is accessible at all times and has been read and understood.**

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## Applications

The **DEG-1/DEG-2** ovens use pressures above atmospheric to compress materials. As these materials harden under compressed air, any residual air in the material mix is also condensed, resulting in a more homogeneous material structure, free of bubbles.

The technique is an excellent first step in the preparation of smooth unfinished castings, and is best suited to the hardening of embedding materials and silicone-rubber moulds.

With a view to improving the processing of certain materials and more accurately casting moulds, the **DEG-2** also incorporates a heater to maintain a constant temperature in the pressure chamber. Two temperatures are possible (37°C or 55°C), and you can also compress material in a water-bath.

## 3 Before you start

### 3.1 Unpacking / Transport

- Open the cartons, remove the packing materials, and carefully lift out the instrument and accessories. Check 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.

### 3.2 Set-up and storage

- Set the unit up on a level surface.
  - 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.
  - **Before** starting the unit, connect up the following:
-

1. Insert the mains plug in the power socket, making sure that the oven and the power supply are the same voltage.
2. Connect up a compressed-air supply of **at least 3.5 bar**. If using a long hose, make sure its ID is at least 6 mm. Provide each compressed-air hose with a protection filter with water separator and use a regulator to set the pressure to a constant level.

#### 4 Start-up

- Start the compressed air flow.
- Turn on the pressure switch (green) – in the case of the **DEG-2**, turn on the main switch (green) *first*.
- Use the regulator (black knob on the left, next to the vacuum flange) to set the embedding pressure (max. 7 bar – safety valve). To do so, release the knob by pulling it towards you, then turn it to set the desired pressure. Push the knob in again.

**NOTE:** To set a lower pressure, first turn the unit off (vent the chamber), because the chamber pressure is maintained at its current level by a non-return valve. You release the regulator and set the pressure, then, when the pressure gauge shows the desired pressure, you reset the regulator.



**If the unit is not to be used for an extended period, turn it off and shut off the compressed-air supply.**

## 5 Use

**i**

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.

1. Set the timer (max. 60 minutes).
2. Open the black door by **turning the knob in the opposite direction to the arrow** – do not pull it towards you.
3. Place the work in the chamber - max. 3 large collar rings or 1 polymerisation tray (for **DEG-2**, see 8.4).
4. **DEG-2 only:**  
If a material requires a certain temperature in the pressure chamber, first set the temperature (black rocker switch, lower right), then switch on the heater (red rocker switch next to green main switch). **Allow for warm-up times (see below).**
5. Close the chamber and activate the green pressure switch.
6. The pressure will increase to the set level (pressure gauge).
7. After the set time has expired, the pressure chamber will vent automatically, and the work can be removed. You can turn off the pressure switch at any time to interrupt the pressure-embedding process, i.e., to vent the chamber.

**i**

If the pressure in the hose drops at any time during the set period, the level previously reached will be maintained by a non-return valve.

**i**

Open the pressure chamber only when the pressure has dropped *completely* to zero. If you open the chamber prematurely, you could tear the rubber sealing ring from its groove and damage it.

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- i** **DEG-2: Warm-up times when heating**
  - from 20 to 37°C, approx. 15 minutes
  - from 20 to 55°C approx. 35 minutes

**i** **DEG-2: The heater has a temperature cut-off which triggers at approx. 112 °C. It can be restarted once the unit has cooled down. To do so, press in the reddish-brown rubber knob on the left-hand side of the housing (above the model plate). You'll hear it click into place.**

**6 Troubleshooting / Correcting errors**

<b>Fault</b>	<b>Likely cause</b>	<b>Likely solution</b>
Pressure does not build in chamber	Faulty O-ring cover seal	Check O-ring and replace if necessary
	Pressure regulator set to "0" (pressure gauge)	Check and/or set pressure
	Timer set to "0"	Set timer
Chamber does not heat ( <b>DEG-2</b> )	Heater not switched on	Switch on heater
	Temperature cut-off triggered and/or faulty	Push in safety knob (see 6) and/or replace knob (Service Workshop)
	Faulty heater	Repair (Service Workshop)

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

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## 7 Maintenance

### 7.1 Cleaning

The unit should be cleaned at regular intervals to ensure problem-free operation. It requires only normal cleaning (sponge, damp cloth, mild detergent). Do not use chemical additives.

Solvents **must not** be used to clean the mounting plate!

The **model plate** must always be legible and should not be removed.

### 7.2 Maintenance

Check the door seal (item no. 380032) for damage at regular intervals. To do so, use a round-ended pair of tweezers to remove the red silicone ring from its groove in the pressure chamber. The groove for the seal **must** be kept clean.

**Use a lubricant** such as Vaseline or oil to reseal the ring in its groove.

Wassermann pressure hardening ovens do not require any maintenance. The units only need to be kept clean.

### 7.3 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 pressure-hardening oven 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.

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#### 7.4 Spare parts and accessories

<b>Spare parts</b>	
Item number	Description
171252	Power distribution board <b>(DEG-1 only)</b>
171254	Timer board 60 min.
180005	Collar mount <b>(DEG-1 only)</b>
180012	Light switch <b>(DEG-1 only)</b>
180072	Main switch – pressure - <b>(DEG-2 only)</b>
180078	Board, compl. <b>(DEG-2 only)</b>
291008	Conical door knob
380032	O-ring 166.4 x 3.8
392008	Rubber foot 32x32 - H6 black
392026	Vibration damper D8 - H1.6
511030	Bulb 12V 1.2W
511087	Temperature limiter 112 <b>(DEG-2 only)</b>
511091	Rocker switch, green, w. LED <b>(DEG-2 only)</b>
511099	Light, red <b>(DEG-2 only)</b>
511101	Switch 1-pole (for selecting temperature) <b>(DEG-2 only)</b>
511106	Main switch 1-pole, red w. LED <b>(DEG-2 only)</b>
560111	Cover with stripe
560112	Knob with stripe
581038	Socket for 2 fuses
582002	Fuse, 2 A T 250V - D5x20 <b>(DEG-1 only)</b>
582013	Fuse, 6.3 A MT 250V - D5x20 <b>(DEG-2 only)</b>

<b>Accessories</b>	
Item number	Description
180053	Polymerisation tray <b>DEG-2 only (not standard)</b>
320026	PVC-woven hose D8x6 blue (2 m)
592012	Cable, 3-core, with angled plug

#### 7.5 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.

**8 Technical data**

**8.1 180996 DEG-2 pressure hardening oven  
with heater and two temperature settings**

Voltage:	230 V / 50 Hz
Power consumption:	4.2 A
Output:	1000 W
Comp-air supply:	min. 3.5 bar
Pressure chamber:	interior 130 mm high, 285 mm deep
Capacity:	3 collars or 1 polymerisation tray
Overall size	Operating pressure: max. 7 bar Width 345 mm Height 285 mm Depth 450 mm
Weight:	21 kg



**8.2 180999 DEG-1 pressure hardening oven**

Voltage:	230 V / 50 Hz
Power consumption:	0.1 A
Comp-air supply:	min. 3.5 bar
Pressure chamber:	interior 130 mm high, 250 mm deep
Capacity:	3 collars
Overall size	Operating pressure: max. 7,5 bar Width 300 mm Height 230 mm Depth 380 mm
Weight:	13.8 kg



Noise emission  $\leq 70 \text{ dB(A)}$



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

## 9 EC CONFORMITY CERTIFICATE

**in accordance with 73/23/EWG (low-voltage guidelines) modified by 93/68/EWG and 89/336/EWG (EMV guidelines) and 89/392/EWG (Machinery guidelines), with modifications**

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

Model:                      DEG-2 with heater and two temperature settings                      (180996)  
                                    DEG-1    (180999)

Applicable standards:    EN 61010-1:1993 + A2:1995  
                                    EN 50081-1 + EN 50082-1  
                                    Pressure vessel ordinance  
                                    DIN 45635 Pt.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.

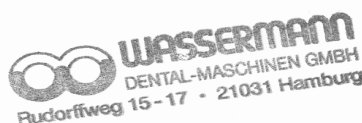
Cette machine est conforme aux normes en vigueur de la Communauté Européene. Cet avis est nul et non avenant si cette machine est modifiée sans notre accord.

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, 10.12.02

Company stamp:



Wilfried Wassermann  
(Managing Director )







WASSERMANN Dental-Maschinen GmbH  
Rudorffweg 15 – 17, D-21031 Hamburg

Tel.: + 49 (0)40 / 730 926 – 0

Fax: +49 (0)40 / 730 37 24

e-mail: [info@wassermann-dental.com](mailto:info@wassermann-dental.com)

Internet: <http://www.wassermann-dental.com>