

STEAM GENERATOR

HYDROVAP PRO



MAINTENANCE AND INSTRUCTION MANUAL



1. DESCRIPTION

The **HYDROVAP PRO** steam generator has been designed for professional use in Dental Laboratories. It is commonly used in dental field to fulfil disparate requirements. In Dental Laboratory, it allows to degrease the instruments, to clean and neutralize metal frameworks, to eliminate film residues such as dust particles, wax, polishing residues, fatty layers, insulating agents, etc. Quite often, it is successfully used in Dental Cabinets to accomplish specific cleaning and sanitising operation and to remove impurities.

HYDROVAP PRO is fitted with a flexible hose for easy handling - gun can be suitably pointed to take full advantage of the powerful steam or "hydrated steam" (Wet&Dry feature). The steam pressure (5.5 BAR) is related to the water temperature inside the boiler (155 °C). The boiler pot (4,9 litres) is filled with water up to one third of its capacity thus devoting a considerable room for the steam which assures a long operating time. The time necessary to attain the maximum temperature (15 minutes approx) is quite relevant. Refilling is automatically activated as the water level slightly decreases, in such a way small quantities of cold water are frequently poured in, thus preventing the internal temperature from falling down.

The specific feature of **HYDROVAP PRO** is the adoption of a heating resistance not plunged in water. This unique solution avoids the suspended salts to stratify on the resistance and assures not to lose in performance which would inevitably lead the components to break down.



Controls and main components

A	Main switch	I	Heating switch
B	Steam and steam/water dispensing gun	L	Rear connection compartment with water inlet, main cable and fuse-holder
C	Steam button (red)	M	Pressure gauge
D	Hydrated steam button (gray)	N	Warning light (red)
E	Gun support	O	Heating control light (green)

2. SAFETY PRECAUTIONS

ATTENTION: when using electrical appliances, in order to prevent electrocutions, wounding and risks of fire, the following safety precautions must be strictly followed.

1. **Do not use the unit improperly and for purposes differing from the one described in the present manual**
2. **Keep your working place in order** – disorder in the working place involves risk of accidents.
3. **Keep children away** – do not allow third persons to touch either the cable or the unit itself, keep them away from the operating area, above all children.
4. **Working clothes** – during work, always dress in a convenient manner, avoid loose-fitting or loose-sleeved clothes.
5. **Wear safety goggles and gloves** – always use protective goggles and heat-insulating gloves to avoid injuries and scalds.
6. **Environmental conditions** – do not use electric appliances in damp or wet places or close to inflammable liquids or gas.
7. **Avoid unsafe positions** – be careful in choosing a safe position allowing to keep always a stable balance.
8. **Do not use the machine outdoor** – the machine has been designed for indoor use, in well lighted and aired rooms.
9. **Avoid any accidental starting** – before plugging in, make sure that the main switch is in idle position.
10. **Pay always utmost attention when working** – during any working operation, never be distracted. Any negligence may cause an accident. Should more attendants work close together, we recommend to stay at a safety distance from both the operator and the machine.
11. **Protection against electrocution** – avoid any coincident contact with any device fitted with ground connection, namely wires, radiators, refrigerators.
12. **Do not overload the tool** – any machine will assure the best performance and work more safely if used within the rating specifications on label.
13. **Fix in place the piece to be operated** – make sure that the piece is accurately secured and firm in place. We recommend to work carefully and grasp firmly the steam spraying gun and avoid to point it towards persons or any object nearby.
14. **Do not lay any objects on the steam cleaner** and keep the ventilation slots free from any obstruction.
15. **Take care of your machine** – check regularly the cable and in case of damage have it repaired or replaced by skilled personnel. Check periodically the handpiece cord and its content and replace whenever damaged – bear in mind that both handpieces and controls must be well dry and clean.
16. **Check that no component of the machine has been either damaged or tampered** – before using the unit check accurately the efficiency and the perfect running of the safety devices and of the parts eventually damaged. Check operation of the moving components, that they are not locked, that there are no damaged parts and that every component has been assembled in the correct way and that all the conditions which may affect the regular operation of the machine are at the best. Safety devices or damaged parts must be repaired or replaced by skilled after-sale servicing centre, if not otherwise specified in the User Manual.
17. **Maintenance** – do not perform any maintenance or repair on this device while unit is plugged in. Always unplug and disconnect from socket.
18. **Use only genuine parts and recommended accessories** in our instruction manual or as part of our catalogue offer. The use of non-genuine parts can cause damage and accidents, void your warranty and make unit non-compliant.
19. **Have it repaired by skilled personnel only** – this electrical appliance complies with Safety Regulations in force. The repair of electric tools must be carried out exclusively by appointed servicing centres.

3. INSTALLATION

Please take care to unpack the unit and remove it from inside the carton, dispose of any packaging material and keep the special accessory set.

Find a suitable position in your Laboratory, ideally on a safe and stable work surface, preferably near the sink to collect the steam residues. Be careful to arrange the steam cleaner so as not to obstruct the cooling slots all around the housing.

The **HYDROVAP PRO** steamer has not been designed for wall mounting. Should you opt for this solution, it will be necessary to fit a sturdy shelf to bear its weight under full load (16 kg) and to fix it at a proper height allowing free operation of the steam gun.

Confirm that electrical ratings listed on the back plate of the unit meet the local mains electricity supply data. The socket must feature 10 A with suitable ground connection.

Mount the gun support hook (E) in the proper seat on the preferred side (left or right) and hang the spraying gun (B).

HYDROVAP PRO has been developed to work with a water softener. Connect the water inlet on the back of the machine with the mains water outlet with the use of a pipe (rilsan diam. 8x6). For safety reason we recommend to mount a faucet on the inlet and to close it when the machine is not in use.

4. OPERATION

Press the Main Switch (A) while maintaining the Heating Switch in the "0" position (Off). The electronic control detects the lack of water and it immediately activate the pump that will then fill in the boiler.

When the boiler is filled up to the correct level, press the Heating Switch in the "1" (On) and the heating process will start. While the water is reaching the operating temperature, the green light (O) will be on.

When the maximum temperature is attained, the green light will be switched off and the unit will be ready to work. Wear the proper heat-insulating gloves due to the high steam flow temperature.

Take care to hold tightly the object to be cleaned (better if pliers are used), grasp firmly the gun and press the button C (red) for stem only or button D (gray) for "hydrated steam".

At the end of the work, hang the gun to the proper hook.

When steam is drawn, the pressure decreases, but the resistor is immediately activated, which brings it back to the optimum level in a very short time. As soon as the water level decreases, the loading pump intervenes. Refill operations are very short and frequent so as not to lower the internal temperature and always have the machine ready for use. In the evening, please ensure that the main switch (A) is turned off and the water supply tap is closed.

Attention:	When the machine is switched off, the cooling phase starts during which the steam condenses and the boiler goes under vacuum. The next morning, immediately after switching on, it is advisable to press the red button on the gun for a few seconds to allow air to enter the boiler, thus eliminating the vacuum effect.
Attention:	If the amount of water in the boiler decreases too much, the safety thermostat intervenes, which monitors the water temperature, simultaneously activating a visual alarm (warning light /! on) and an audible signal. This problem is caused by improper water supply inside the boiler.

5. INSTRUCTIONS FOR THE REGULAR MAINTENANCE

Any maintenance operation has to be carried out under cold unit, in idle mode and unplugged from mains.

Cleaning

For external cleaning, wipe any moist residues from the unit housing, using liquids free from chemical abrasive or corrosive agents.

Feeding cable

Check regularly the conditions of the electric cable, if damaged have it replaced by skilled personnel.

Handpiece cord

Check regularly the conditions of the gun cord, if damaged it could compromise safety. Replace, when necessary, by skilled technical personnel.

6. POSSIBLE INCONVENIENCES

All the above-mentioned operations must be carried out in idle mode, when the machine is cold and unplugged. Do not carry out any maintenance, adjust or repair operations if not expressly stated in the present User Manual. Should occasion arise, please contact our servicing centre.

Problem: THE UNIT DOES NOT START	
Possible cause	Easy fix
No current to the steam machine.	Check that the connection wire between the unit and the mains has been correctly plugged in the socket and if suitable fuses have been fitted upline.
No current to the resistance.	Check the network fuse.

Problem: AT STARTUP THE UNIT IS NOISY	
Possible cause	Easy fix
The boiler is under vacuum.	Activate the red push button on the gun, for few seconds.

Problem: THE UNIT DOES NOT HEAT UP	
Possible cause	Easy fix
No power is reaching the heating element, the safety thermostat has tripped.	Check the functionality of the thermostat, make sure the pump is working, and check the water inlet connection to the boiler (possible obstruction).
Pressure switch open or damaged.	Check the functionality of the pressure switch.

Problem: THE UNIT DOES NOT DELIVER STEAM	
Possible cause	Easy fix
No current is getting to the solenoid valve, there may be damage to the gun button or the solenoid valve coil.	Check the functionality first of the gun button and then the coil (which the button controls).

Problem: THE PUMP IS CONTINUOUSLY WORKING	
Possible cause	Easy fix
The level control sensor may be dirty, not detecting the presence of water. Check the sensor and clean it of any limestone residue, if necessary.	Check the sensor and clean it of any lime residue if necessary.

Problem: SAFETY VALVE DRAINS PRESSURE	
Possible cause	Remedy
The safety valve has opened due to an excessive increase in pressure inside the boiler.	Contact Dentalfarm Technical Service

7. TECHNICAL REFERENCE REGULATIONS AND TEST PROCEDURES

HYDROVAP is mass-manufactured by DENTALFARM Srl in compliance with technical and safety rules in force, as provided for by the 2006/42/EEC Community Directive on Machinery.

Careful inspection and full routine testing are carried out singularly on each machine, which is furtherly tested by an automatic test installation assuring compliance with the fixed limits.

8. DEMOLITION AND WASTE DISPOSAL

According to International regulations, this unit has been classified as AEE (electric and electronic device, whose correct operation depends on electric currents and electromagnetic fields) and as a consequence, at the end of its lifetime, it cannot be treated as normal waste material but it must be disposed separately, complying with the Directive 2002/96/EEC.

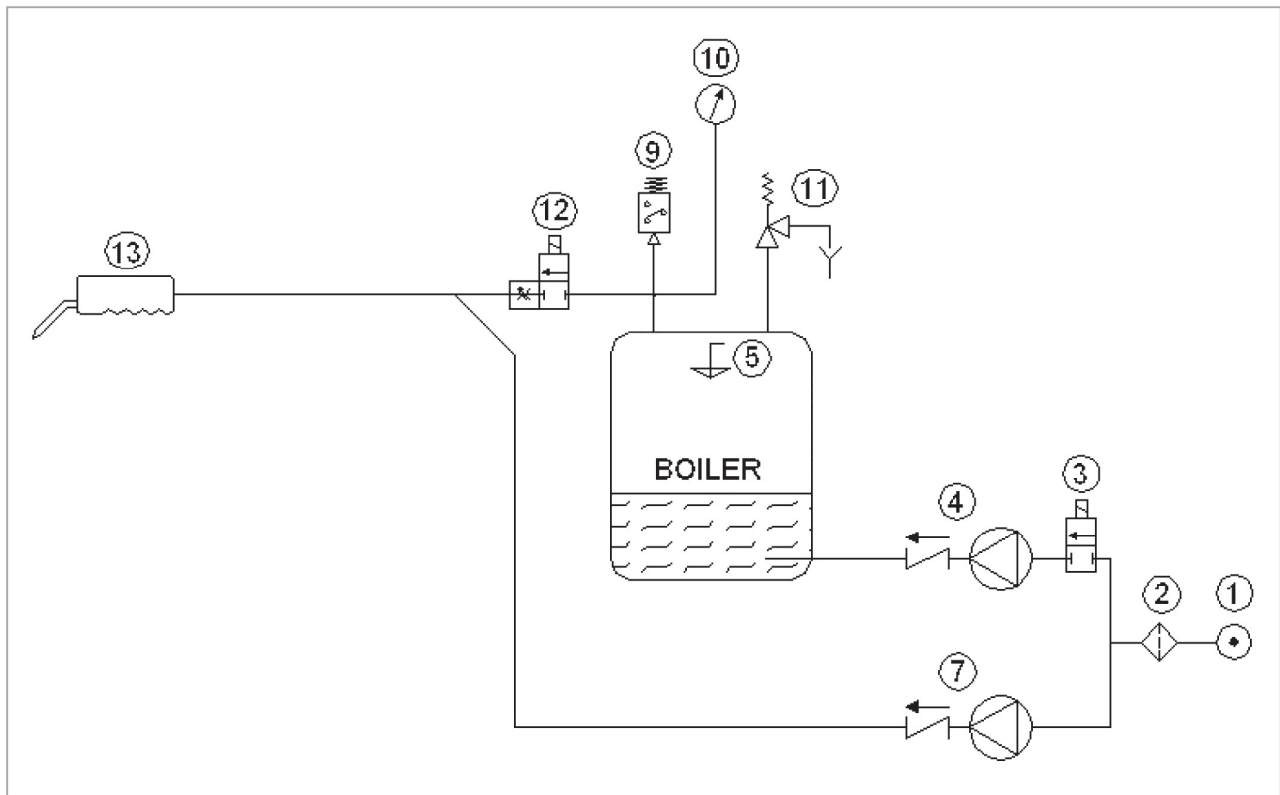


9. TECHNICAL FEATURES

Feeding tension	230V AC – 50/60Hz
Fuses	10 Amp
Absorbed Power	1500 W
Rated Current	5.8 Amp
Tension on controls	24 V
Boiler total volume	4.9 l
Water capacity	2.0 l
Water temperature	155 °C
Max pressure	5,5 BAR
Time necessary to attain the heating temperature	15 min
Overall dimensions	mm 400x470x410h
Weight (Net/Gross)	kg 16.0/ 19.0

	DESCRIPTION
IG	Main switch
F1	10Amp. Network Fuse
L1	Heating control light
IR	Heating switch
L2	Warning light
A	Acoustic signal
R	Heating resistance
T	Safety thermostat
P	Pressure switch
WATER LEVEL BOARD	Level control board
S	Level indicator
RELAIS BOARD	Push button control board
EV	Solenoid valve for handpiece steam jet
EVH	Boiler water feeding solenoid valve
EVH2	Water hydrated steam solenoid valve
PUMP H	Boiler water inlet pump
PUMP 2	Water hydrated steam pump
P1	Handpiece push button (steam)
P2	Handpiece push button (hydrated steam)

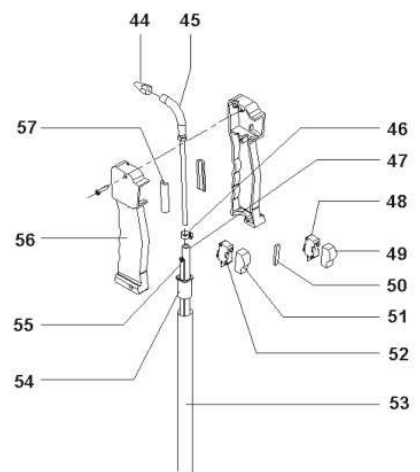
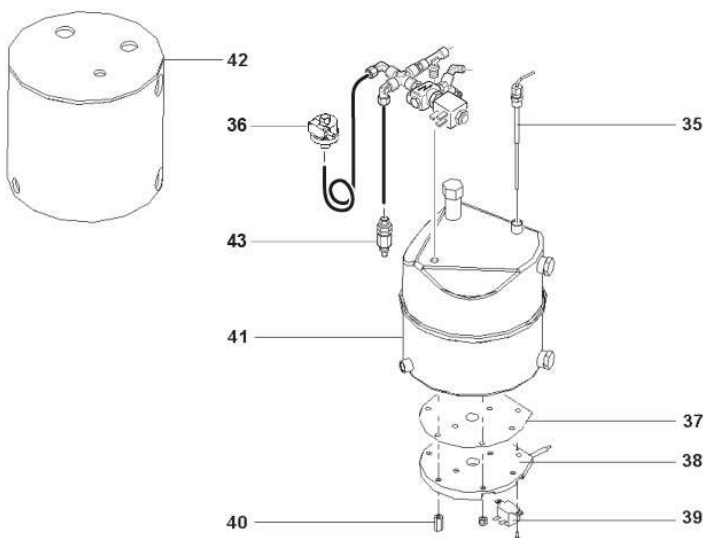
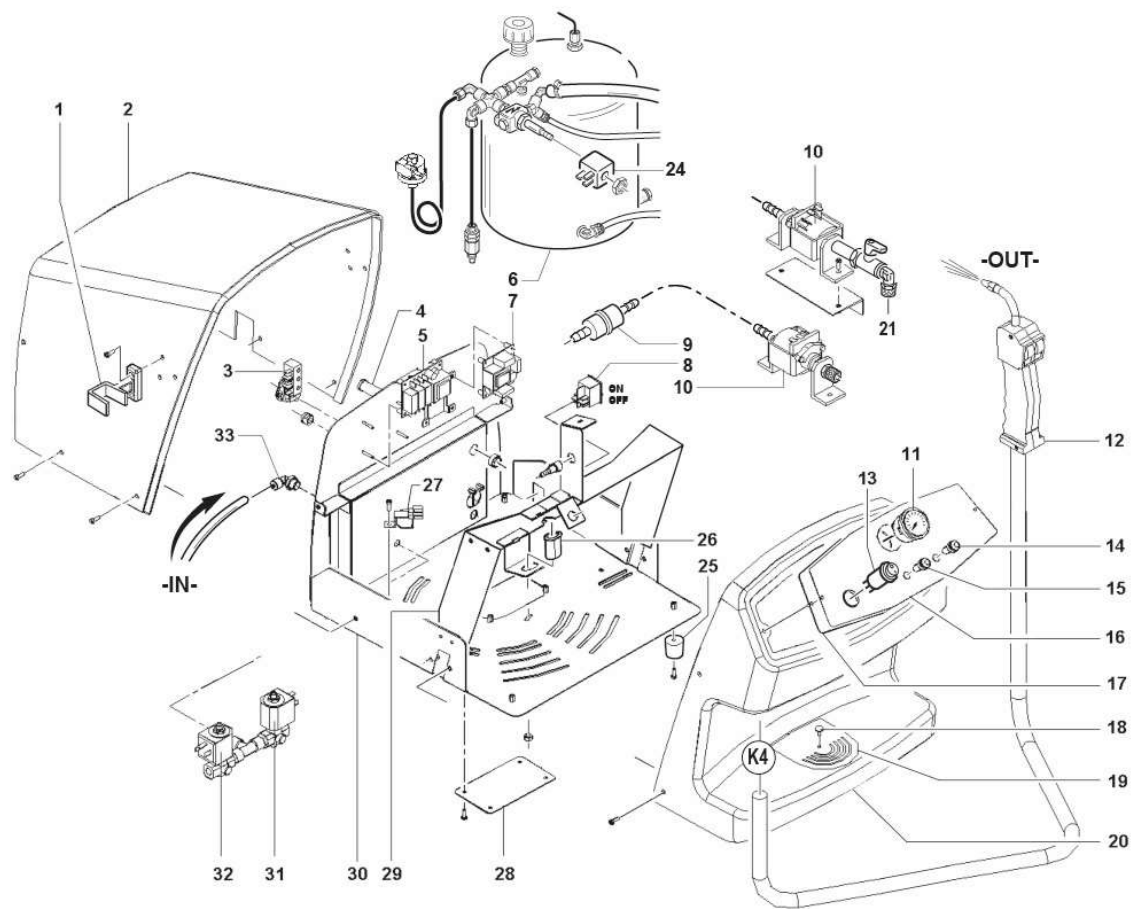
11. HYDRAULIC CIRCUIT



	DESCRIPTION
1	Water inlet pipe-fitting
2	Water filter
3	Boiler water feeding solenoid valve
4	Boiler water inlet pump
5	Level indicator
7	Water hydrated steam pump
9	Pressure switch
10	Pressure gauge
11	Safety valve
12	Solenoid valve for handpiece steam jet
13	Handpiece
BOILER	Boiler

12. EXPLODED VIEW AND SPARE-PART LIST: HYDROVAP PRO (A2104P)

#	CODE	DESCRIPTION
1	2104012	HANDPIECE SUPPORT
2	2104007	REAR PANEL
3	2103045	WIRE LOCKING SYSTEM WITH TERMINAL BOARD
4	2103030	FUSEHOLDER
5	2104020	PUSH BUTTON CONTROL BOARD
6	---	BOILER UNIT
7	2103037	LEVEL CONTROL BOARD
8	2103028	BIPOLAR LIGHT SWITCH
9	2104017	WATER FILTER
10	2103036	WATER PUMP
11	2103027	STEAM PRESSURE GAUGE
12	2104500	HANDPIECE UNIT COMPLETE
13	NEC205	HEATING SWITCH
14	2103029	RED WARNING LIGHT - ATTENTION
15	2103029V	GREEN WARNING LIGHT - HEATING
16	2104009	MARK LABEL
17	2104005	CONTROLS PANEL
18	1076019	OVAL-HEADED SCREW
19	2104015	STAINLESS-STEEL PANEL
20	2104006	REAR PANEL
21	NPS053	RELIEF VALVE M/F 1/8 GAS
24	2103023S	STEAM SOLENOID VALVE (HANDPIECE) 220v
25	2103026	RUBBER FEET
26	2104013	BUSH ON HOUSING
27	2103024	ACOUSTIC SIGNAL
28	2104003	LOWER CLOSURE
29	2104002	OUTLET SUPPORT
30	2104001	HOUSING
31	NES029	BOILER WATER SOLENOID VALVE
32	NES029	HANDPIECE WATER SOLENOID VALVE 220v
33	2104022	90° REVOLVING PIPE-FITTING - 8x6 PIPE 220v
35	2103038	LEVEL INDICATOR
36	2103022	PRESSURE SWITCH
37	2103010G	RESISTANCE JOINT
38	2103010	HARMORED RESISTANCE
39	2103021	SAFETY THERMOSTAT
40	2103034	SPACER FOR BOILER
41	2103008	STAINLESS STEEL BOILER
42	2103009	BOILER INSULATION
43	2104023	SAFETY VALVE
44	2103013	HANDPIECE STEAM NOZZLE
45	2103043	HANDPIECE INTERNAL METALLIC PIPE
46	2103044	HOSE CLAMP
47	2104024	LINENIZED STEAM PIPE
48	2104025	MICROSWITCH (HYDRATED STEAM)
49	2104026	WHITE SILICON SWITCH COVER
50	---	SPACER
51	2104026V	RED SILICON SWITCH COVER
52	2104025	MICROSWITCH (STEAM)
53	NVG025	GREY SILICONE MEMBRANE
54	2104014	BUSH ON HANDPIECE
55	2104027	4-POLE ELECTRIC WIRE
56	2104016G	SET OF HANDPIECE SHELLS - GREY
57	2104028	INSULATION FOR METALLIC PIPE



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