

STEAM CLEANER

Hydrovap PRO

 MAINTENANCE AND INSTRUCTION MANUAL



1.0 DESCRIPTION

The **Hydrovap PRO** steam cleaning machine 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, too 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 water jet. The saturation and the steam pressure (6 BAR) are referred to the water temperature inside the boiler (155°C). The boiler pot (4,9 liters) can be filled with water up to 1/3 of its capacity thus devoting a considerable room for the steam which assures a long operating time. Time necessary to attain the final temperature (10 -12 minutes approximately) is quite restricted. The water filling system is automatic: a pump collects at a steady rate small quantities of water to restore the level and prevent the temperature from decreasing too much.

The specific feature of our **Hydrovap PRO** is the adoption of a special 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	H	Fixed steam jet
B	Gun	I	Foot control
C	Steam button on gun	L	Rear connection compartment with water inlet, main cable and fuse-holder
D	Hot water button on gun	M	Pressure gauge
E	Gun support	N	Warning light
F	Steam adjust knob	O	Heating control light
G	Water adjust knob		

2.0 SAFETY PRECAUTIONS

ATTENTION: when using electrical appliances, in order to prevent electrocutions, woundings 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 on 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 machined** – 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. **Repair 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.

3.0 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 put it on a safe and stable work surface, preferably near the sink to allow the steam to start emitting evenly and to collect the steam residues. Be careful to arrange the steam cleaner so as not to obstruct the cooling slots all around the housing.

Our **Hydrovap** steam cleaner 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.

Introduce the gun support hook in the proper seat aside the cap and hang the spraying gun.

Hydrovap PRO has been developed to work with tap water, no distilled or demineralised water are required. If, on the other hand, it is commonly known that the water from the local supply network is particularly rich in lime salts and the use of distilled water is preferable, we recommend to pour a tablespoon of salt in the external tank every time you refill water (minerals improve the action of the electronic sensors which detect the level).

Unscrew the tank cap, remove the pipings, pour in water and close. The refill tank can be positioned anywhere on the floor as far as allowed by the length of the pipe, even on the same work surface of the unit.

4.0 OPERATION

Switch on the main switch (A).

As the required pressure and temperature are attained, the central control light is ON and the unit is 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 button.

It is possible to adjust the steam flow according to the requirements: by turning clockwise, it will decrease, when counterclockwise, it will increase.

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

As steam is used, the pressure will decrease but the resistance will restore the normal working conditions.

As the water level decreases, the pump will start working. The refill operations are quite short and very frequent in order not to lower down the inner temperature and have your steam machine always ready for use.

At the end of the day, turn off both switches.

Attention:	During the cooling stage, steam will be condensing and the boiler will thus be under vacuum. Should water not be refilled, it would be better to activate the gun button to allow air to flow in which will be replacing the free room at the inside.
Attention:	Should the quantity of water in the outer tank drastically drop, a sound alarm will advice you to refill water. Should the water level at the inside drop too much, a safety device will automatically stop the resistance feeding and both a light indicator (warning light /!/) and a sound alarm will be activated.

5.0 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, cleanse with 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.

Water outer tank always filled in

To avoid any nuisance and inconveniences leading to idle condition of the unit, we recommend to check daily that water level does not fall too much and keep the tank always filled in (the refill operation can be carried out whenever required, even when the unit is working)

6.0 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	Remedy
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: THE UNIT IS NOISY WHEN COLD	
Possible cause	Remedy
The boiler is under vacuum.	Open temporarily the water load cap or activate the gun push button for few seconds.

Problem: THE UNIT DOES NOT HEAT UP	
Possible cause	Remedy
No current to the resistance.	The safety thermostat is in, check if quantity of water is sufficient.
Pressure switch open or damaged.	Contact the technical service.

Problem: NO STEAM RELEASE	
Possible cause	Remedy
Flow regulator is closed.	Check that the flow adjust knob is not completely tightened.
No current to the solenoid valve	The gun push button is damaged. Coil has burnt.
Clogged spraying nozzle or dirty solenoid valve	Check that the gun nozzle is not clogged and that lime salts have not obstructed the valve inner channel.

Problem: THE WARNING LIGHT  IS ON	
Possible cause	Remedy
Water inside the boiler is lacking	The pump is not charging water and then the level has dropped too much. No water comes from the hydraulic network.

Problem: THE PUMP IS CONTINUOUSLY WORKING	
Possible cause	Remedy
The filter is clogged.	Replace the filter fitted in the outer tank.

Problem: SAFETY VALVE DRAINS PRESSURE	
Possible cause	Remedy
The safety valve is open	Contact the technical service.

7.0 TECHNICAL REFERENCE REGULATIONS AND TEST PROCEDURES

Hydrovap is mass-manufactured by DENTALFARM 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.

8.0 DEMOLITION AND WASTE DISPOSAL

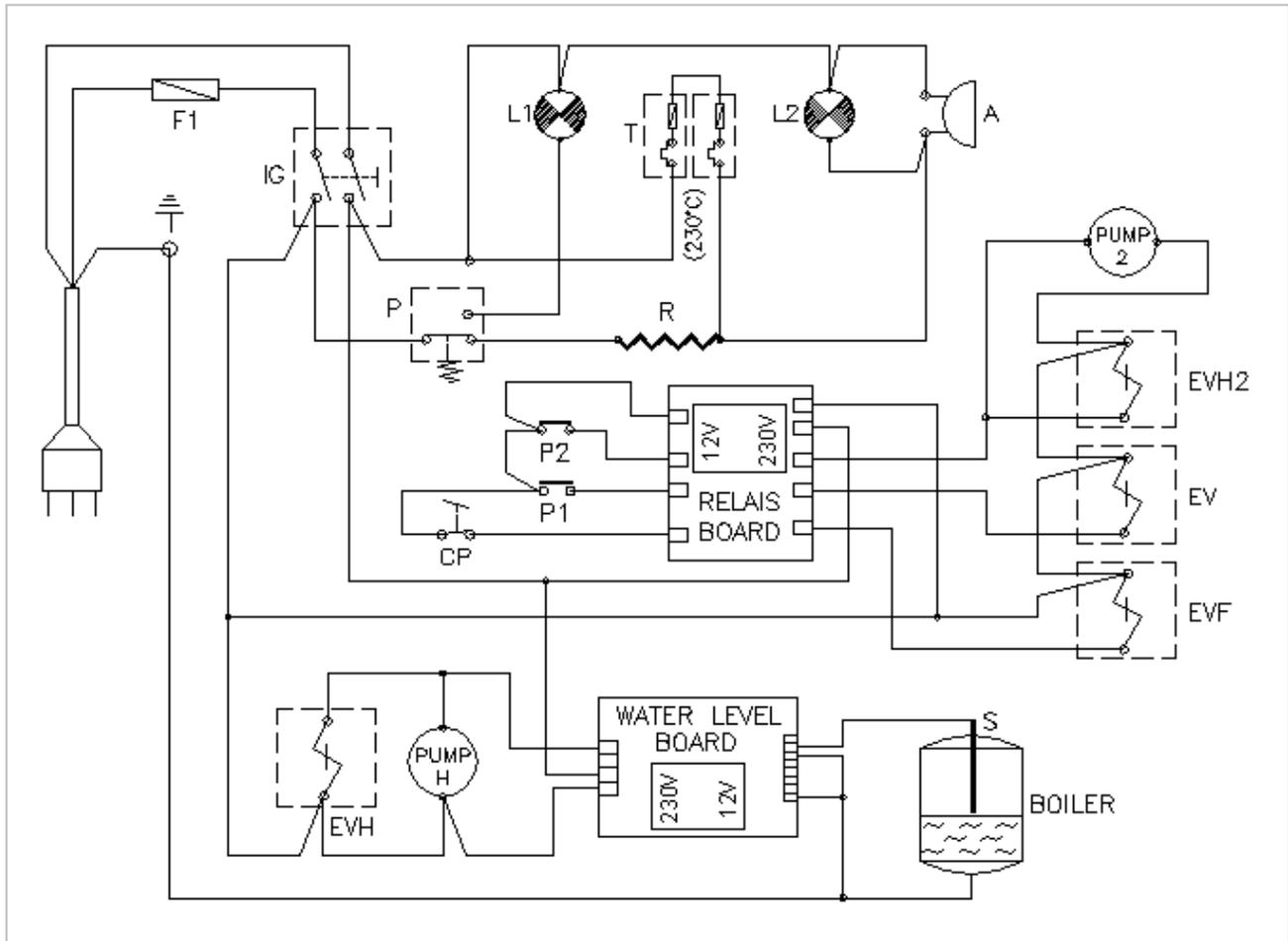
According to International regulations, this unit has been classified as AEE (electric and electronic device, whose correct operation depends on electric currents and electromagnetic fields) and as a consequence, at the end of its lifetime, it can not be treated as normal waste material but it must be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



9.0 TECHNICAL FEATURES

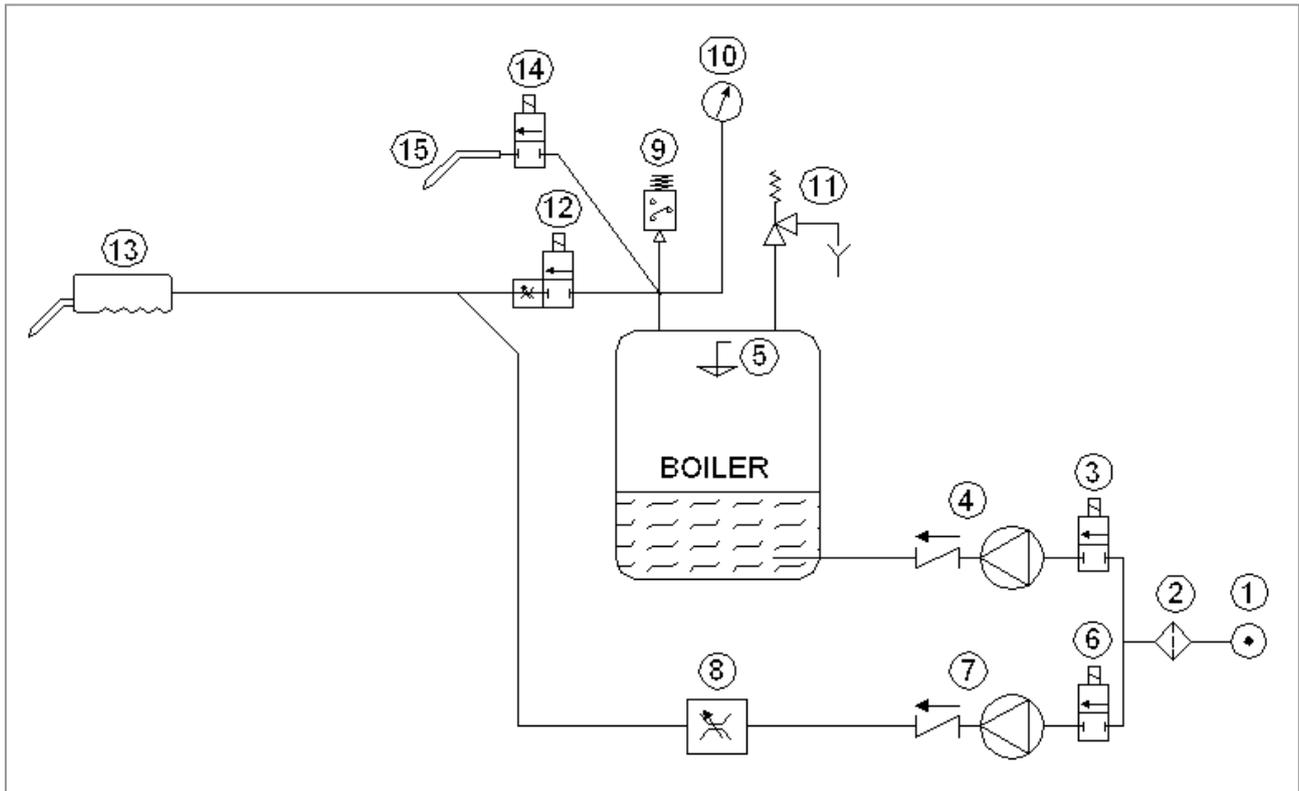
Description	Data
Feeding Tension	230VAC – 50/60Hz
Fuses	10 Amp
Absorbed Power	1500 W
Rated Current	5.8 Amp
Tension on controls	24 V
Boiler total volume	4.9 l
Water Capacity	2.0 l
Water temperature	155 °C
Pressure	6 BAR
Time necessary to attain the steam temperature	10-12 min
Overall dimensions	mm 380x480x420h
Weight (net /gross)	kg 16.0/ 19.0

10.0 WIRING DIAGRAM



REF.	DESCRIPTION
IG	Main switch
F1	10Amp. Network Fuse
L1	Heating control light
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
EVF	Solenoid valve for steam fix 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)
CP	Foot control (steam fix jet)

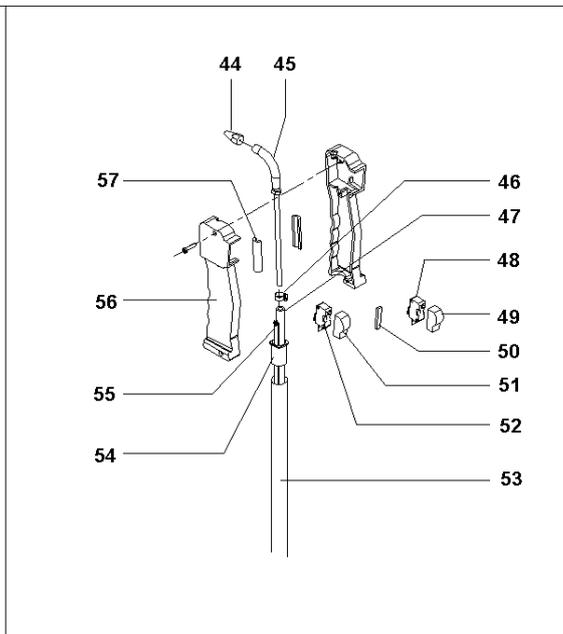
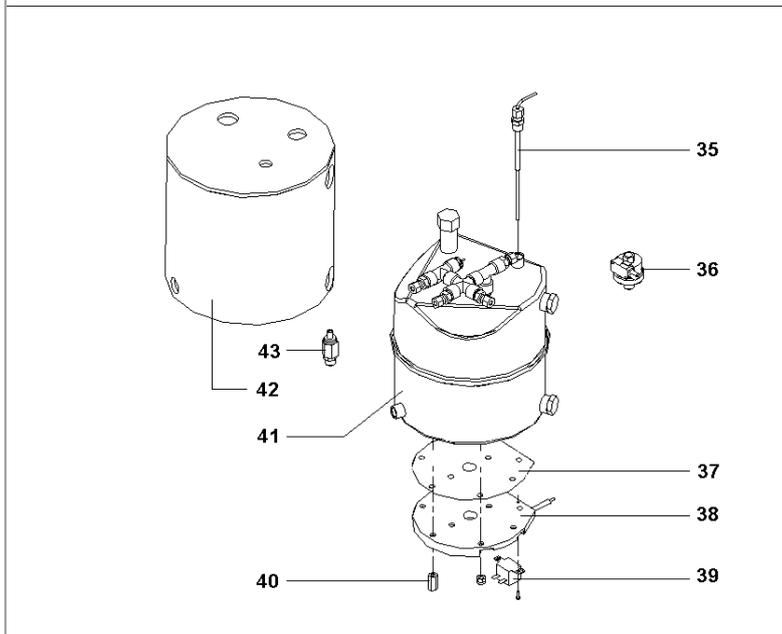
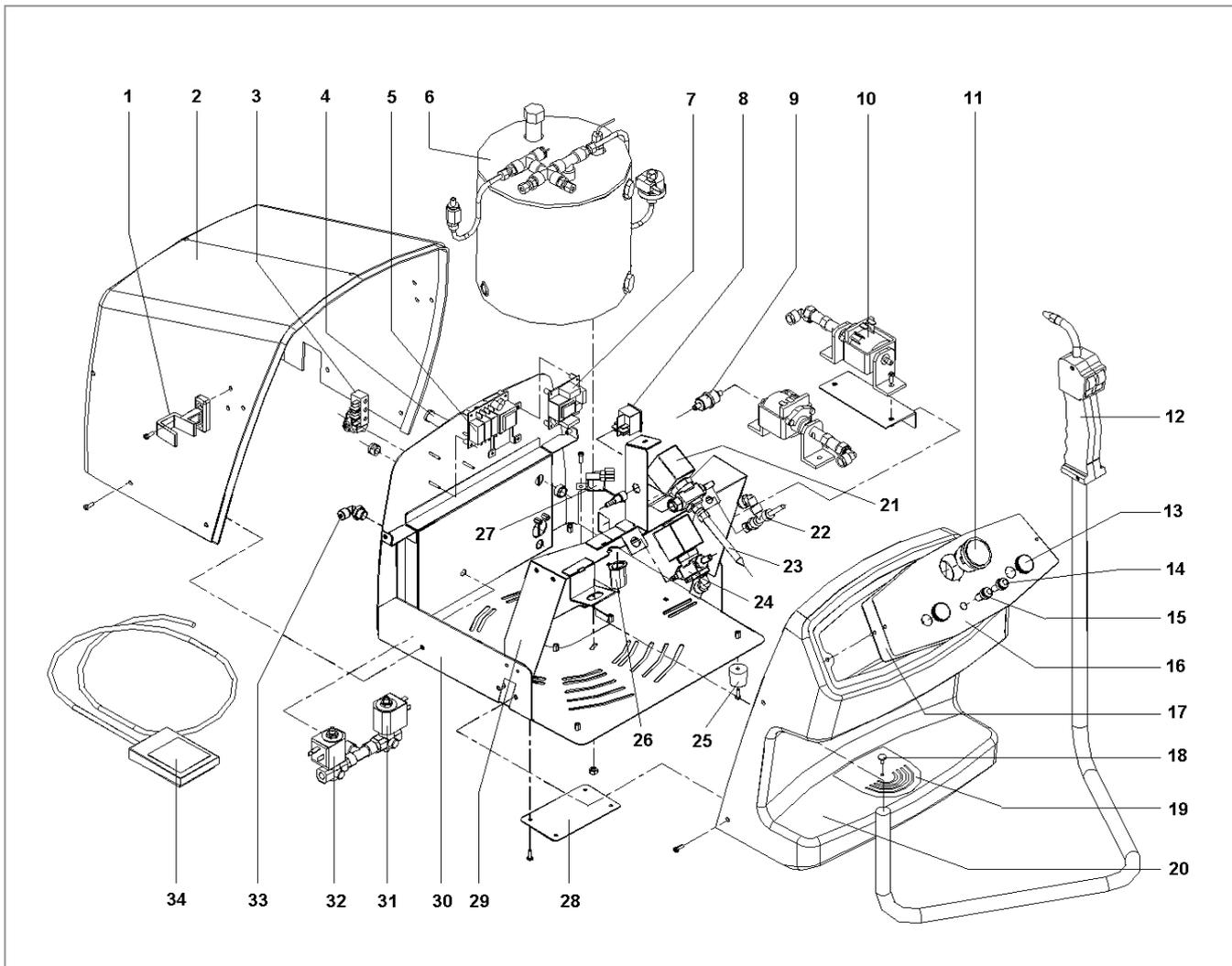
11.0 HYDRAULIC CIRCUIT



REF.	DESCRIPTION
1	Water inlet pipe-fitting
2	Water filter
3	Boiler water feeding solenoid valve
4	Boiler water inlet pump
5	Level indicator
6	Water hydrated steam solenoid valve
7	Water hydrated steam pump
8	Hydrated steam adjustment valve
9	Pressure switch
10	Pressure gauge
11	Safety valve
12	Solenoid valve for handpiece steam jet
13	Handpiece
14	Solenoid valve for steam fix jet
15	Fix nozzle
BOILER	Boiler

12.0 EXPLODED VIEW AND SPARE-PART LIST HYDROVAP PRO

POS.	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	2103046	FLOW ADJUSTMENT KNOB
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	2103023S	STEAM SOLENOID VALVE (FIX JET) 220v
22	2104019	WATER ADJUSTMENT VALVE
23	2104018	STEAM NOZZLE (FIX JET)
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	2104021	BOILER WATER SOLENOID VALVE
32	2104021	HANDPIECE WATER SOLENOID VALVE 220v
33	2104022	90° REVOLVING PIPE-FITTING - 8x6 PIPE 220v
34	NEC050	ELECTRIC FOOT-CONTROL
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	GREEN SILICON SWITCH COVER
52	2104025	MICROSWITCH (STEAM)
53	NVG025	GREY SILICONE MEMBRANE
45	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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