



Weight Saver

INSTALLATION AND SERVICE MANUAL

Version: 1-2003

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1. WEIGHT SAVER OPERATION

1.1 The principle

The Weight Saver works on the ultrasonic principle (see figure 1). Using electronics, a ceramic vibrating plate (the transducer) which is fitted in an easily dismantled screw top (transducer mounting head) is made to vibrate at a specific frequency. Because of this vibration, water above the vibrating plate is also made to vibrate and microscopically small water droplets are flung upwards, high above the surface of the water. The transport air is led through these droplets by a fan and this carries these droplets with it.

In addition, the electronics control the level of water in the reservoir. This is set in the factory to open the water valve for 2 seconds every 45 seconds. Because of this the water is sprayed into the reservoir via 2 injection heads. The excess water disappears via the neck into the water seal and then via the overflow to the drain connection.

1. Transport air input
2. Rinse water overflow
3. Water seal
4. Transducer mounting head
5. Transducer
6. Injection head
7. Cone of droplets
8. Oversized droplet (falls back into reservoir)
9. Moisturized air output

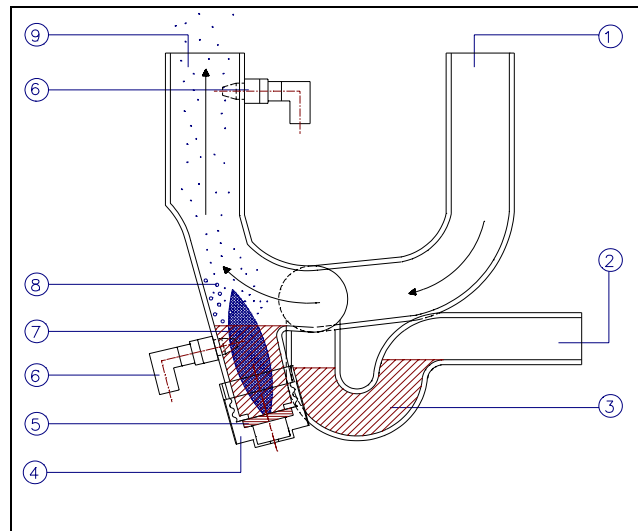


Figure 1: Schematic drawing of the pipe system

Level sensors check if the minimum required quantity of water is present in the pipe system. When this is not the case the electronics stop driving the vibrating plate and the “level” indicator lights up.

The Weight Saver is suitable for connection to the normal drinking water supply. The factory settings are based on an average water mains pressure of 4 Bar. The pulse and pause time can be adjusted for a higher or lower pressure. This is covered in more detail in chapter “Adjustments on the panel”. The maximum permissible water mains pressure on the equipment is 10 bar.

If the hardness level of the drinking water is higher than 8 German degrees a decalcifier

should be fitted, do not, however, decalcify further than ± 3 German degrees. Further information about this can be obtained from Smeva Products.

1.2 Installation

The unit must be installed in a horizontal place (level) above the level of the drip tray. On Smeva Products extra mounting brackets are fitted in the display case for this.

The unit must be connected to a drinking water pipe system. Ground water may not, therefore, be used for humidifying.

The connection to the drain cannot be a permanent connection. Discharge of the drain water must occur via a drip tray, a so-called "open" drain connection. There may be no contact between the drain and the unit.

The connection hose between the unit and the distribution system must be smooth. There should be no kinks in the hose. This can lead to a water seal.

A steam pipe has been fitted in the housing for the distribution of the humidified air in the display case. The maximum length of the steam pipe is 5 meters. For each external corner in the housing the maximum length will be reduced by 0.5 meters.

For the purpose of cleaning and service, the pipe is not glued and has been fitted in open clamping brackets so that it can be detached.

There are output openings in the steam pipe. The output openings should be pointed diagonally downward at approx. 7 o'clock to drain condensation.

The feed of humidified air has an overpressure and will decrease over the length of the steam pipe. Optimal distribution of the humidified air can be obtained by fitting the yellow sealing caps (supplied separately) in the output openings. Distribution depends on the length. Additionally, the layout of the goods to be displayed in the display case can be humidified more or less as required.

The electrical connection must be made in accordance with the instructions for operating the display case. Switching on and off must be done via the display case's control panel.

Depending on the position of the steam pipe in the housing ("warm" or "cold" section) a self-regulating heating cable will be fitted in the steam tube, if necessary, to prevent freezing. The electrical connection must be made in accordance with the instructions for operating the display case. Switching on and off must run parallel with the humidifying programme.

1.3 Periodical Cleaning

1.3.1 The Weight Saver's internal pipe system

The humidifier has the following design features to limit the consequences of any silting up, or the growth of algae in the pipe system, to a minimum:

- The choice of material and design of the pipe system is such that a minimum of algal and bacterial growth can occur.
- The walls of the reservoir are rinsed clean by the movement of the water in the reservoir created by the vibrating plate.
- The reservoir and pipe system are regularly filled with clean tap water at 2 locations and the pipe system is given an additional rinse once every four hours. Because of this, the water temperature remains low, which gives algae no chance to grow the reservoir.

Smeva Products advises cleaning the internal pipe system once each year. The unit can be removed from the housing and can be cleaned over a sink using a round brush. Normal tap water is sufficient for this purpose. Never use alkaline cleaners (soap)! Soap remnants have a negative effect on vapour formation.

1.3.2 Distribution system in the display case

Smeva Products advises cleaning the steam tube at least twice a year.

The inside of the distribution steam pipe can be cleaned using a spray head which can be obtained from Smeva Products. This is fitted to a 6 mm hose which, in its turn, can easily be connected to the display case's water supply.

If the spray head is not to hand, rinsing the system using a water hose will suffice.

- Turn off the water supply and disconnect the 6 mm water supply hose from the unit.
- Loosen the flexible output hose that connects the unit to the distribution system;
- Slide the spray head into the steam tube and turn on the water supply;
- Catch the dirty wastewater!
- The steam tube can be removed for thorough cleaning. This is not glued and is fitted in open clip brackets so that it can be detached.

2. ELECTRONIC CONTROL UNIT

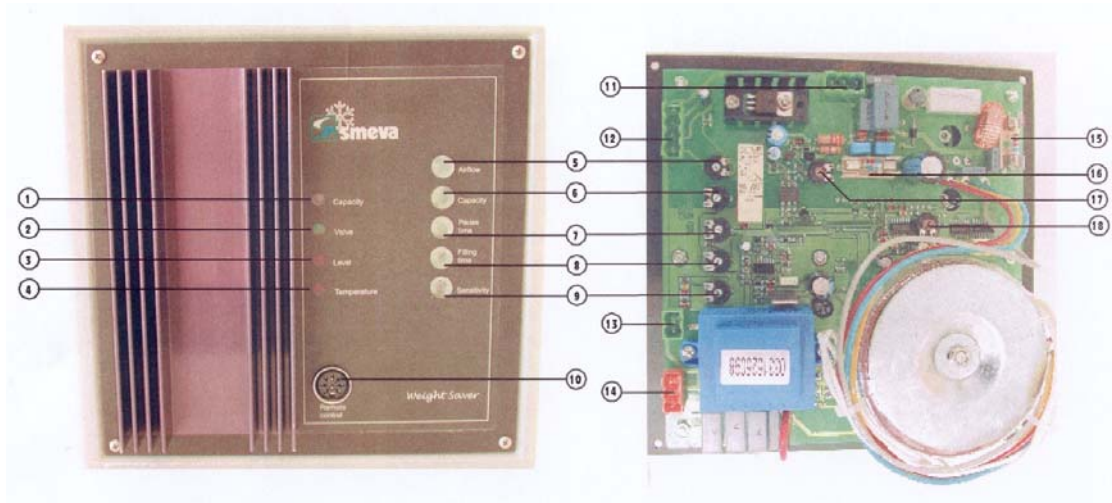


Figure 2: Front of pcb

Figure 3: Rear of pcb

Explanation of figure 2.

1. Capacity, vapour capacity indicator;
2. Valve, filling time indicator;
3. Level, water level indicator;
4. Temperature, temperature alarm indicator;
5. Airflow, air speed setting;
6. Capacity, vapour capacity setting;
7. Pause time, pause time setting;
8. Filling time, filling time setting;
9. Sensitivity, water level safeguard sensitivity setting.
10. Remote control, DIN plug connection for external control.

Explanation of figure 3.

11. Transducer connection plug;
12. Connection plug for fan and water supply valve;
13. Connection plug for water level safeguard;
14. Supply voltage connection plug;
15. Fuse – vibrating plate, 1A quick;
16. Fuse – water valve / fan 1A quick;
17. Current intensity potentiometer
18. Temperature safeguard potentiometer

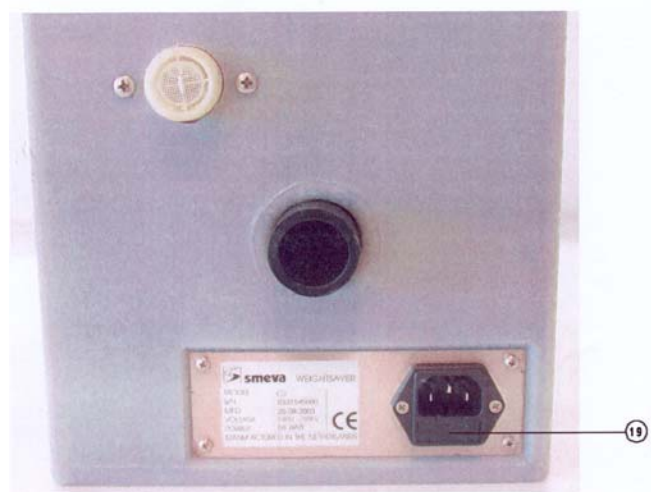


Figure 4: Rear

Explanation of figure 4.

19. Power supply external fuse – 1A slow.

3. ELECTRONIC CONTROL UNIT INDICATORS

Capacity

Capacity indicator. During normal operation the blue LED will glow brighter as the capacity is set higher.

Valve

Pulse time indicator. The green LED will light up during pulse time (water valve is open).

Level

Indicates that the water level in the reservoir is too low. If there is too little or even no water at all in the reservoir the red LED will light up from flashing to a strong glow.

Temperature

Indicates temperature too high. When the temperature of the main transistor is too high, the red LED lights up and the oscillator circuit is switched off

4. ELECTRONIC CONTROL UNIT SETTINGS

4.1 Settings on the front. All positions are based on making settings from the front.

4.1.1 Fan motor speed

Air flow

(Fig.2 pos.5)

This potentiometer can be used to regulate the flow of air through the pipe system. Turning clockwise increases the speed.

Factory setting is maximum speed. Position, fully right.

4.1.2 Capacity regulation

Capacity

(Fig.2 pos.6)

The vapour capacity of the humidifier (quantity of moisture per hour) can be set using this potentiometer. Turning clockwise increases the capacity.

Factory setting maximum. Position, fully right.

4.1.3 Water level control

Pause time

(Fig.2 pos.7)

The pause time (time during which the water valve is closed) is adjustable and can have a minimum value of ± 30 seconds and a maximum value of approximately 3.5 minutes.

Factory setting ± 45 seconds. Position, turn fully right and then turn 45° to the left.

Filling time

(Fig2 pos.8)

The filling time (period during which the water valve is open) is adjustable and can have a minimum value of ± 0.8 seconds and a maximum value of approximately 3.5 seconds.

Factory setting ± 1 second. Position, turn fully right and then turn approximately 45° to the left.

N.B. In general, an ideal water level will be obtained by using the standard pulse

time. The pulse time need only be increased if the water main pressure is very low. The pulse time may not be less than 1 second. The water level in the reservoir will then become too low, causing the “Level” indicator (3) to light-up and the level safeguard will regularly cut-off the supply of power to the transducer.

4.1.4 Water level safeguard

Sensitivity
(Fig.2 pos.9)

The water level safeguard is set ex factory so that the humidifier functions optimally with average European drinking water quality (of 400mS).

Factory setting as described below.

N.B. If the quality of the drinking water is such that insufficient minerals are present in the water, conductivity will be lower and the Level indicator (3) will light up and the safety device will cut off power to the transducer. This will happen despite the fact that the reservoir is filled. The sensitivity that the electrical conductors measure between the 2 sensors in the reservoir will have to be increased. If this situation arises, proceed as follows:

- The reservoir must be fully filled with water.
- Turn potentiometer 9 to the right (clockwise) until the Level indicator (3) stops blinking and humidification resumes.
- Next give it an extra turn of approximately 5° to the right (safety margin).

4.1.5 Rinse programme

For reasons of hygiene, the Weight Saver automatically flushes through every 4 hours.

4.2. Factory settings on the back of the pcb

4.2.1 Maximum current intensity in the oscillator circuit

(Fig.3 pos17)

The oscillator circuit is the circuit that provides the vibration frequency for the transducer. This is protected by a fuse (1.0 A F – 250 V). The setting of the maximum circuit intensity is set ex factory using a potentiometer. Never turn this potentiometer!

4.2.2 Temperature safeguard of pcb components

(Fig.3 pos.18)

A number of components on the pcb are cooled by a cooling element on the front. If the temperature is too high power to the transducer will be cut off. The temperature indicator (4) will then light up. After cooling down the power will be restored and this indicator will go out. The maximum temperature is set ex factory using a potentiometer. Never turn this potentiometer!

5. CONNECTORS

Front panel: External control. Fig.2 pos.10



DIN plug on the front of the Weight Saver.

This 8-pole DIN plug is for connecting an external capacity regulator, 0 – 10 volt.

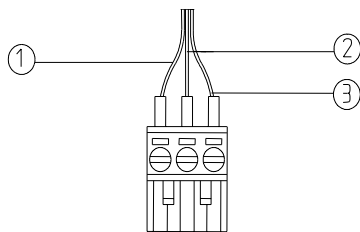
2-pole HKUTB-01-02 with cable for connection to SCU control panel.

8-pole HKUTB-02-02 with cable for operating a Weight Saver control panel.

N.B. After connection the capacity regulator automatically switches over to the external signal.

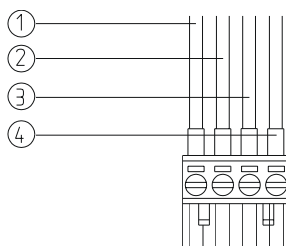
Rear of pcb: Transducer

Fig.3 pos.11

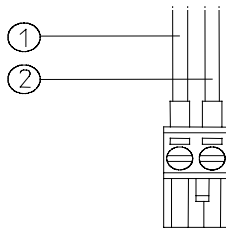


1. brown
2. white
3. grey (earth)

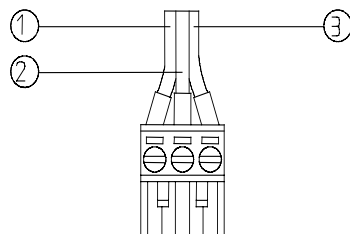
Rear of pcb: Fan and magnetic valve Fig.3 pos. 12



1. fan (black, -)
2. fan (red, +)
3. magnetic valve (blue)
4. magnetic valve (brown)

Rear of pcb: Water level safeguard Fig.3 pos.13

1. white
2. white

Rear of pcb: Power supply control Fig.3 pos.14

1. blue (neutral)
2. yellow-green (earth)
3. brown (live)

6. MAINTENANCE

The Weight Saver requires little maintenance. A few parts should be checked and/or replaced once a year.

Transducer

Smeva advises having the transducer checked annually. The manufacturer gives a service life of 10,000 operating hours at maximum capacity, thereafter this capacity will gradually reduce. The service life is, however, also dependant on the quality of the water. Replacing the transducer is described in chapter 7.

Fan

If the fan is dirty this can result in insufficient air being sucked in.

7. UTB COMPACT AND WEIGHT SAVER HOUSING COMPONENTS

7.1 Replacing the transducer plate on the Weight Saver

Parts required: WS transducer plate

- 1) Shut-off the water supply, disconnect from the mains and remove the unit.
- 2) Above a sink, tip the water out of the internal pipe system and the unit's reservoir through the discharge and the output opening.
- 3) Remove the side panel and using pliers detach the transducer holder connector and then detach the transducer holder from the pipe system. Keep the O-ring for a good seal on the pipe system.
- 4) Detach the earth lead from the rear of the transducer holder and remove the retaining ring by removing the spring washer using pointed pliers.
- 5) Detach the plastic holder and remove the rubber with vibrating plate from the plastic holder.
- 6) Remove the transducer plate from the rubber.
- 7) Place the new transducer plate in the plastic holder. Pay attention to the position of the boss. The rubber must make a good, flat fit.
- 8) Re-assemble in the reverse order and take into operation.

7.2 Replacing the transducer mounting head on a Weight Saver or UTB C

Parts required: WS transducer mounting head complete with O-ring

- 1) Shut-off the water supply, disconnect from the mains and remove the unit.
- 2) Above a sink, tip the water out of the internal pipe system and the unit's reservoir through the discharge and the output opening.
- 3) Remove the side panel and using pliers detach the transducer mounting head connector (11) and then unscrew the transducer mounting head from the pipe system. Keep the O-ring for a good seal on the pipe system.
- 4) Screw the new transducer mounting head with O-ring onto the pipe system and turn hand-tight.
- 5) Re-assemble in the reverse order and take into operation.

7.3 Replacing the UTB C electronics and panel with Weight Saver

Parts required: WS electronics and panel
Cap. regulating cable WS-SCU 2 mtr. (HKUTB-01-02)
Additionally, see chapter 5 Connectors.

- 1) Disconnect the unit from the mains.
- 2) If present, loosen the UTB Compact external capacity regulator control connection on the back of the unit.
- 3) Remove the panel with the electronics from the housing.
- 4) Disconnect the connectors from the pcb.

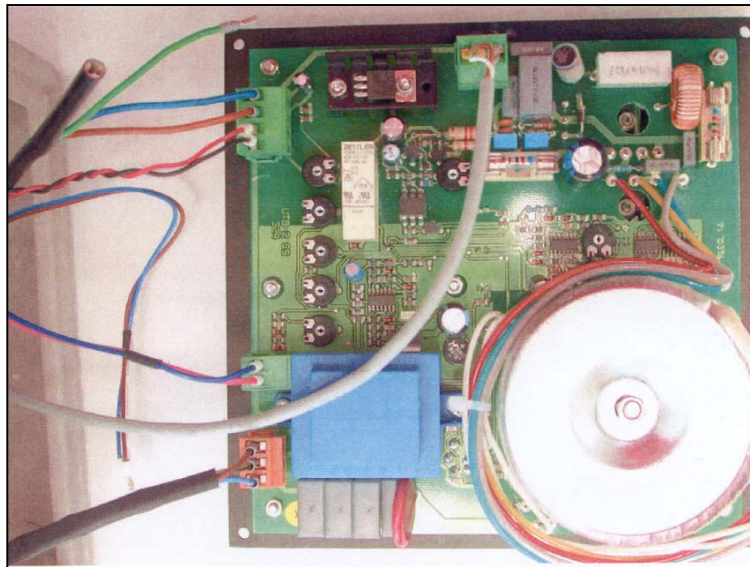


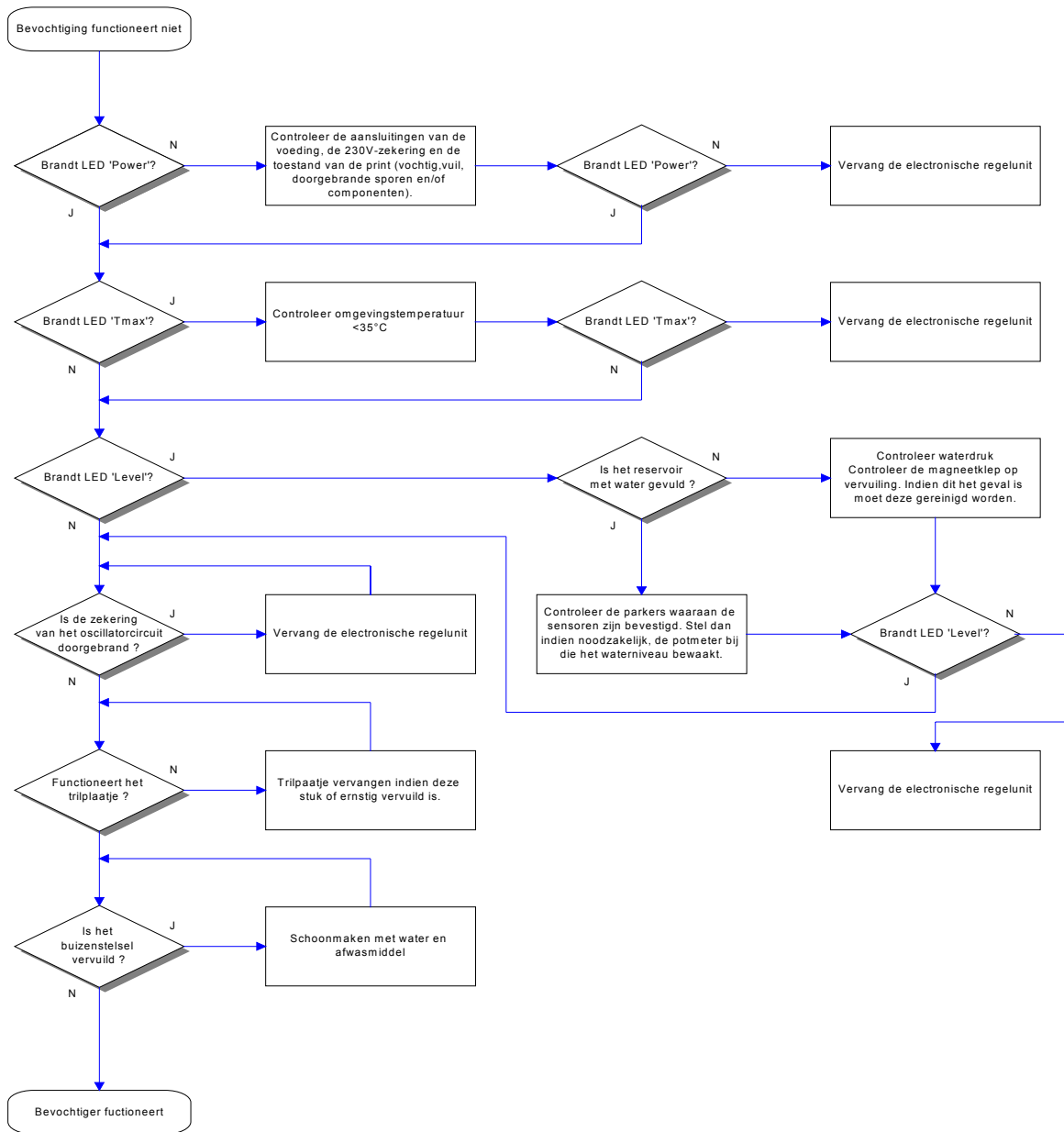
Figure 5 illustration of position of UTB and Weight Saver connectors on rear side of pcb

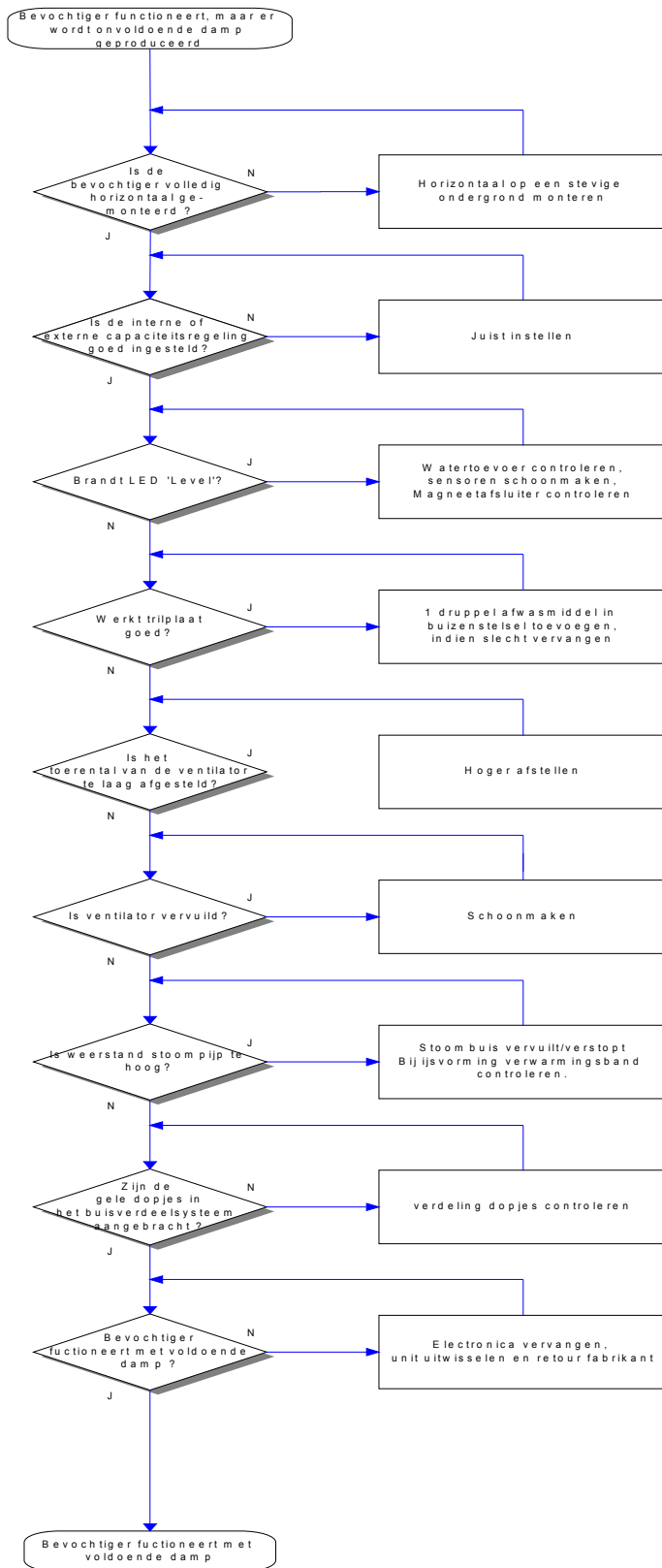
- 5) Detach both wires 1 (brown) and 2 (blue) from the 2-pole external capacity regulator connector and completely remove the wiring from the unit. Keep the pcb connector, see point 6.
- 6) Detach water sensor wires 1 (blue) and wire 2 (red) from the 7-pole connector and fit into the 2-pole plug from point 5 (red and blue can be swapped).
- 7) Place the 4-pole connector on the 4-pole connection. Remove the wires from the 7-pole plug and connect to the 4-pole plug.
Completely remove the magnetic valve earth wire (green/yellow).
- 8) Fit the water sensor 2-pole connection (from points 5 and 6).
- 9) Fit the 3-pole transducer plug.
- 10) Fit the 3-pole power supply (orange) connector.
- 11) Fit the electronics with panel and reassemble the unit in the reverse order
- 12) If present, replace the cable for connecting an external capacity regulator 0 – 10 volt loosened in point 2 with the 2-pole HKUTB-01-02. Connect the DIN plug to the front of the Weight Saver.

7.4 Replacing a complete UTB C unit with a Weight Saver

Parts required: Weight Saver unit complete with power supply cable.
 Cap. regulating cable WS-SCU 2 mtr. (HKUTB-01-02)

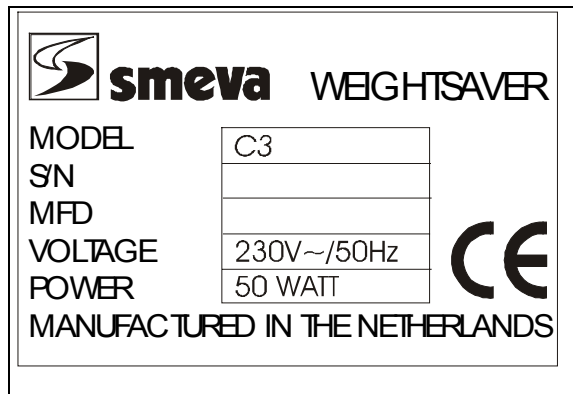
- 1) Shut-off the water supply, disconnect from the mains and remove the unit.
- 2) If present, loosen the UTB Compact external capacity regulator control connection and power supply connection on the back of the unit.
- 3) Above a sink, tip the water out of the pipe system and reservoir through the discharge and the output opening. Drain this away.
- 4) Replace the UTB Compact power supply cable with the new Weight Saver power supply cable with modified connection.
- 5) If present, replace the cable for connecting an external capacity regulator 0 – 10 volt loosened in point 2 with the 2–pole HKUTB-01-02. Connect the DIN plug to the front of the Weight Saver.
- 6) Install the new Weight Saver, see also chapter 1.2, and take into operation.





9. TECHNICAL SPECIFICATIONS

Type plate



Model: Weight Saver
 S/N: Serial number
 MFD: date of manufacture

Technical details:

Power supply:	230 V / 50 – 60 Hz
Power	50 Watt
Capacity:	500 gram / hour
External fuse:	1A Slow

Operating conditions

- Maximum hardness of drinking water:	6-8 German Degrees (demineralised water is recommended. Conductivity of the water should, however, be > 50µs.
- Water operating pressure:	1 - 10 bar
- Temperature	10 – 35 °C
- Humidity	20 – 80 % rL