

Extract from the ZERO+ manual



Operation & maintenance instructions for UV cleaners



14. operation & maintenance instructions

The operation and maintenance of ZERO+ includes regular cleaning of the UV tubes.

The UV tubes should also be replaced at regular intervals. In case of tube replacement, the UV tubes should be recycled in a specific way. These three sections are discussed below.

14.1

Cleaning intervals

UV tubes need to be cleaned regularly - one of the by-products of the degradation process is a fine polymerised powder. This powder sticks over time to the glass surface of the UV tubes, which therefore need to be wiped as described below.

In a normal restaurant kitchen, the UV tubes should be cleaned once every two weeks to optimise the functioning of the ZERO+ system. In case of high load, such as when the kitchen is a grill kitchen or similar, cleaning may be needed once a week.

The Touch Panel will remind you when it is time to clean the UV tubes. The factory setting is that the reminder comes every 200 hours. Once the UV tubes have been cleaned, the cleaning interval is reset (see "14.2 Cleaning UV tubes" below).

You can increase or decrease the cleaning intervals if necessary:

- 1) Press the arrow key four (4) times until the display shows "Cleaning interval increase by +".
- 2) Set the desired interval with the "+" and "-" buttons.

The cleaning interval can only be changed once the 60-minute calibration has been completed.

14.2

Cleaning of UV tubes

- 1) Stop the ZERO+ system on the Touch Panel by pressing "Start/Stop" once. The display should now show "Not operating"
- 2) Remove the grease filters located in the hood's filter housing.
- 3) Gently wipe the UV tubes with a damp cloth.
- 4) If the pipes are not glass-clean after step 3, spray on a high pH cleaner (pH10-13) and leave for one (1) minute. Then gently wipe the pipes with a damp cloth.
- 5) Replace the grease filters in the hood's filter housing.
- 6) Start the ZERO+ system on the ZERO+ Control by pressing "Start/Stop" once. The display should now show "Operation"
- 7) Press the arrow key five (5) times to go to "Reset after cleaning". Press the "+" button.

NOTE! Avoid touching the UV tubes with your fingers when cleaning, as fingerprints may cause the UV tubes to become dirty faster.

14. operation & maintenance instructions continued

14.3

Intervals for replacing UV tubes

UV tubes have a lifetime of 12,000 hours or 2 years, whichever comes first. The Touch Panel keeps track of the time left until replacement and gives two different alarms:

- **"Lamp replacement prepare"**. From the factory, this alarm is preset to come when there are 1,000 hours of total life remaining - When this alarm comes, it is time to contact the supplier to plan the replacement of UV tubes.
- **"Lamp change"**. From the factory, this alarm is preset to occur when only 300 hours remain. This alarm is accompanied by an audible signal. The UV tubes must be replaced.

14.4

Checking the time remaining before replacing UV tubes

To check how much operating time is left on the UV tubes in the installation:

- 1) Press the arrow key twice (2) until the display shows "Operating time xx hours left". This shows how many hours of operation remain before the UV tubes must be replaced.

14.5

Replacement of UV tubes

- 1) Stop the ZERO+ system on the Touch Panel by pressing "Start/Stop" once. The display should now show "Not operating".
- 2) Remove the grease filters located in the hood's filter housing.
- 3) Remove the UV tubes mounted in the ZERO+ cassette by pressing each tube against the side of the ZERO+ cassette where the large rubber gaskets around the UV tubes are located. The contact is spring-loaded and when the tube is pushed in to the maximum it will release from the opposite side.
- 4) Replace the rubber gaskets, both small and large.
- 5) Insert the new UV tubes into the ZERO+ cassette. Note! Avoid touching the UV tubes directly with your fingers, please use gloves.
- 6) Replace the grease filters in the hood's filter housing.
- 7) Start the system by pressing "Start/Stop" once. The display should now show "Operation".
- 8) Press the arrow key three (3) times until the display shows "Extended menus".
- 9) Press and hold the "+" button for five (5) seconds until the display shows "Power on".
- 10) Press the arrow key seven (7) times until the display shows "Reset".
- 11) Press the "+" button. The system is now updated to show that the remaining lifetime is 12,000 hours.

14.6

Recycling of UV tubes

NOTE! The used UV tubes contain mercury and should therefore be recycled at a recycling centre. UV tubes are left in the same place as fluorescent tubes for lighting fixtures. During transport, the tubes must be treated as dangerous goods and thus protected from shocks or other impacts that could cause the tubes to break.



15. Alarms and troubleshooting

The ZERO+ Control Touch Panel keeps track 5 different alarms:

15.1

Reminder "Cleaning intervals"

This alarm is displayed when the set interval between UV tube cleanings has passed since the last reset after cleaning. The number displayed after "Cleaning interval" indicates number of hours since the cleaning reminder was first displayed.

15.2

Alarm "Pipe fault"

If one or more UV tubes are switched off for any reason. See "12.1 Adjusting the alarm levels for tube failure".

15.3

Drift error" alarm

If several UV tubes are switched off for some reason. See "12.2 Adjusting alarm levels for operational errors".

15.4

Alarm "Ext Stop"

If the pressure switch in the Power Box has tripped and switched off the ZERO+ system. This alarm will also be displayed when the interlocked equipment connected according to "8. Installation of interlocking with other equipment" has tripped.

15.5

Alarm "Replace UV tube"

When the operating time is nearing its end:

At 1000 hours left, the display shows "Prepare lamp change hours left XXX". If there are less than 300 hours left, the display shows "Replace lamps, contact service".

When the UV tube life has fallen below zero (0) hours, the ZERO+ Control automatically switches off the UV system and the display shows "System stop"

See further information on the next page in "ZERO+ troubleshooting scheme".

ZERO+ troubleshooting

Warning: Make sure to always protect your eyes from the blue light to avoid painful conjunctivitis. Never work inside the ventilation ducts when the UV lights are switched on to avoid exposure to ozone concentrations above the hygienic limit.

Message on the Touch Panel		Reason		Action	
1	"OPERATION" changes to "Cleaning interval" Green LED lights up steadily Red LED flashes slowly.	A	It's time to the UV tubes.	I.	Clean the UV tubes. Follow the instructions in section 14.2 of this manual.
2	"DRIFT" changes to "Stop EXT" Green LED flashes rapidly.	A	Exhaust fan not running.	I.	Switch on the fan, let it warm up and see if the alarm goes off.
		B	The pressure switch in the Power Box is not installed correctly.	I.	Make sure that the hose is connected to the front nipple of the pressure switch marked "-" (as opposed to the rear one marked "+"). Check that the hose is correctly connected to the exhaust air duct. The nipple should be fitted with the tapered part in the duct. Check that the hose fits tightly against the nipple.
		C	The pressure switch in the Power Box does not pull	I.	Unscrew the transparent plastic cover of the pressure switch in Kraftbox. Turn the small screw anti-clockwise until the pressure switch clicks into place.
		D	The pressure switch in the Power Box is defective.	I.	If all the above points have been addressed, the pressure switch may be defective and need to be replaced.
3	"DRIFT" changes to "Pipe fault" Green diode lights up steadily. Red diode flashes rapidly.	A	One or more UV tubes are defective.	I.	Replace the UV tubes. If the UV tubes do not light up after replacement, it means that one or more ballasts inside the cassette are defective. Replace the ballasts.
4	"OPERATION" changes to "Operational error, service". Green diode lights up with a steady light. Red diode lights up with a steady light.	A	The pressure switch in one or more UV cassettes does not pull.	I.	Check that the cassette pressure switches are engaged. See point 5.8 of this manual.
				II.	With point I. done and the problem persisting, the pressure across the hood grease filter must be checked. The pressure switch in the UV cassette draws at 15-18 Pa. If the pressure is below 20 Pa, the pressure must be increased, this is most easily done by replacing the grease filter with blanking plates.
		B.	Several UV tubes are defective.	I.	Replace the UV tubes. If the UV tubes do not light up after replacement, it means that one or more ballasts inside the cassette are defective. Replace the ballasts.
5	"DRIFT" changes to "Replacement UV tube hours left <1000" Green LED lights up steadily Red LED flashes slowly.	A	1000 hours (or less) left until UV tube replacement is necessary.	I.	Plan for the replacement of UV tubes. Contact your supplier for ordering and planning.
6	"DRIFT" changes to "Replacement UV tube hours left <300" Green diode lights up steadily Red diode flashes rapidly.	A	300 hours (or less) left until UV tube replacement is necessary.	I.	Replace the UV tubes. Follow the instructions in section 14.5 of this manual.
7	"DRIFT" changes to "System stop" Green LED off Red LED lights up steadily Sound signal every minute.	A.	The UV tubes are worn out and the system has therefore shut down automatically.	I.	Replace the UV tubes. Follow the instructions in section 14.5 of this manual.
8	The Touch Panel shows "DRIFT" but the UV lights are off.	A.	Due to repeated switching on/off over a short period of time, the in-built sticky protection has kicked in.	I.	Switch on the system. Wait up to four (4) minutes for the anti-sticking device to switch on again.

