harmopool

Harmo Pool Twin water treatment on plate

ZWMX7520-P without flow switch without level switches

ZWMX7522-P with flow switch without level switches

ZWMX7523-P with flow switch and level switches

Table of contents

Geassembleerd door:
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Introduction

This manual contains all the necessary information for installing, troubleshooting and maintaining your Harmo Pool Twin. Please read this manual carefully before opening or using the dosing device. The manufacturer of this product cannot be held liable for any injuries and/or damage to the product or user, caused by incorrect installation or maintenance. It is imperative that the directions in this manual followed carefully. Installation by qualified personnel is required.

- Only a qualified installer, , personal or an authorized dealer should repair this product.
- Maintenance and operation should be performed according to the recommended time and frequency as stipulated in the manual.
- Only use original parts. Failure to do so will void your warranty.
- The measuring probes must be kept moist at all times, even during transport (for possible maintenance or repairs at the supplier).

Characteristics

- Durable: the materials used are chlorine, acid (sulfuric) and base resistant. These can withstand prolonged exposure to swimming pool water (even for salt electrolysis). The dosing devices are not suitable for use with hydrochloric acid (HCL)
- Easy to use: the unit is extremely easy to operate. Simply turn it on and set the desired pH (acid), redox value or electrolysis time (chlorine).
- The pH and Redox system must be calibrated on a regular basis. Proper functioning can be verified by using a proper colour measurement method (e.g. Poollab ZWMX1060).
- Low cost: the operational cost is very low because, when used correctly, the pool water is always of optimal quality and never turns green.

Note:

Maintaining the pH and chlorine levels of a new swimming pool can take several hours to days. In the start-up phase, it is important to perform calibration and measurements and adjust the settings.

An incomplete grounding of the pool pipes can have a negative effect on the measurement results and thus lead to abnormal pH and chlorine values.
A correct grounding must be made as follows:

- The pool pipe after the filter pump must be grounded via an in-line grounding to an independent grounding pole.
- The pool pipe near the measurement probes must be grounded via an in-line grounding to a second independent grounding pole.

Use only tap water, no rainwater or well water.

Specifications

	ZWWX7523-P
pH regulation	ZWMX2155 Peristaltic pump
Chlorine regulation	ZWMX2155 Peristaltic pump
Pool connection	50mm rubber ZALX5120
Flow switch	ZPHS0008
Plate size	48 x 38 cm
Display cars	Harmo pool ref ZWMX7010
Relaiscard	Harmo pool ref ZWMX7011

Technical specifications

pH/RX sensor	Connection via BNC connector
Measure range	pH : 5-9 +- 0.1
	Rx : 200-999mV +- 10mv
Configuration	Via display menu
Relais out	16 A AC 1
Display	Present
Dosing pumps	ZWMX2155
Flow switch	Optional or present with ZWMX7523-P
Level detection of acid and chlorine	present
Supply	230V ~, 50 Hz
Housing	IP65 IK07 Rohs
Installation	Wall mounting with screws and plugs
Dimensions	480x380
Weight	12 kg

Installation

Installation of items

Note!

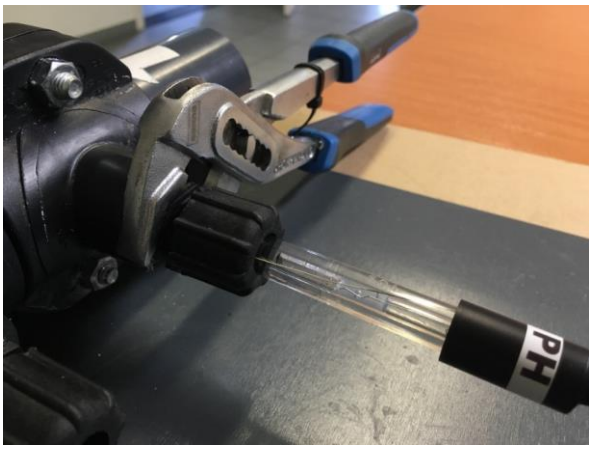
The electrical installation must be carried out in such a way that:

- The chlorine and acid pumps don't work when the filter pump is not operating. This can be done by adding a flow switch / flow controller ZWMX3552-P (preferred) to the installation or by using the same power line as the filter pump.
  With device ZWMX7522-P, the flow switch is already built into the device.
- The chlorine and acid pumps can be ***switched off*** when the filter pump is operating. This can be done by pressing the power button on your salt electrolysis and dosing device.
- Adding the chemicals for the pool should be done downstream from the pool.
- Chlorine and acid can react to chlorine gas. Make sure that the chemicals are placed outside or in a very well ventilated area, in a drip tray, and that they don't come into contact with each other and remain out of reach of children..
- It is recommended to put the installation of the water treatment unit in bypass configuration.
- Install the water treatment unit on a solid base or against the wall (always vertical).
- Always keep the product upright. If the product is tilted or placed on the side, the probes cannot measure correctly, resulting in incorrect measurements.
- The product must be installed indoors. If you wish to do this outdoors, you need to contact your supplier.
- The acid dosing device should not be used with hydrochloric acid (HCl).
- Acid and chlorine (liquid chlorine) should not be mixed. When mixed, chlorine gas is released. Storage must be done in such a way that the products don't come into contact with each other.
- The electronics of the appliance (dosing devices) must be installed indoors. Make sure that - in case of a leak - the water cannot run over the installation.
- The electronics or the device itself must never be connected to an output of a frequency inverter.
- Calibrate the pH and Rx probes for initial use and then at least every 3 months. "regularly" check the chlorine content and pH with a color method.

Installation of the water treatment plate

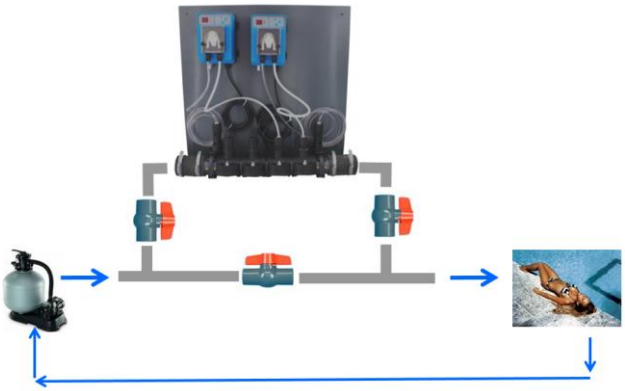
1 Attach the water treatment unit against a solid wall. Fix both the lower and upper part of the plate.

2 Insert pH and chlorine probes into the probe holders. Fix the swivel with pliers or wrench to tighten the cap. If you don't do this, there is a chance that a leak will occur, which is not covered under warranty.



3) Connect water inlet and water outlet so that the water first passes the pH measuring probe and RX measuring probe and then passes the Ph and Redox dosing (according to the direction of the yellow arrows on the tube). This is the preferred bypass configuration installation:

Installation in bypass configuration

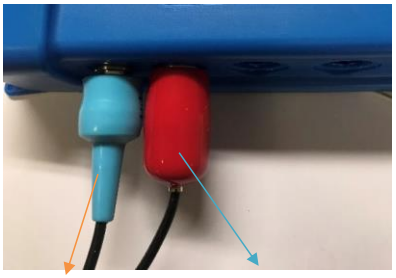


4 Make the electrical connections in such a way that:

The chlorine and acid pumps don't work when the filter pump is not operating.
The chlorine and acid pumps can be switched off when the filter pump is operating.

Turn off the acid and chlorine dosing device (pressing the button at the bottom of the dosing pumps at the top left) for the next steps during installation and calibration.

5 Connect the pH and redox measuring heads to the BNC connection to the positions provided for this purpose at the bottom left of the control box:



pH (left) RX (right)

6 Start the filter pump.

7 Verify the installation for leaks.

8 Stop the filter pump. Remove the probes from the holder and calibrate pH and redox probes.

Note!

(1) If you do not have a bypass configuration, you can insert two rubber caps (product code: ZFPX4640) or fake probes ZWMX2067-Z into the probe holders to prevent the water from spraying from the probe holders during calibration.
(2) If you do have a bypass, make sure that when the bypass to the dosing nipples is closed, the dosing pumps cannot pump liquid. This can be done by switching off the dosing pumps themselves, or by switching off the electricity supply.
(3) The probes calibration procedure may take several minutes. To guarantee an accurate reading, it is important to follow the steps below.
(4) Make sure that the calibration fluids used in the calibration process always correspond to the stated values and that the fluids are not contaminated.

9 Calibrate the probes

Using the following steps, you can calibrate the probes in no time:

1. Immerse the measuring heads (measurement probes) in the calibration fluids for pH (pH 7) and Redox (465-468 mV) and wait 5 minutes to balance before proceeding with the calibration process.

   Press the pH and Redox key for 10 seconds and (upper and lower key)

As soon as the calibration starts, a screen lights up, showing you what you are calibrating. You can either only calibrate Ph or calibrate only Rx or calibrate both at the same time.

2. A timer will stop after 120 seconds and give a notification as to whether the calibration has succeeded.
   <-

If the calibration was unsuccessful, the screen will show this notification:

Reasons for a failed calibration:

- poor calibration (try again);
- calibration liquid is contaminated (liquid replaced) recalibration;
- probe is broken (measuring probe replaced) and recalibrated.

When Ph and Rx are calibrated successfully, the screen will disappear automatically.

After 2 minutes the screens goes fades and you can read the values. Good calibration will show the following values:

a. pH 7.0 +- 0.1
b. Redox 468 +-10mV

If the values are not within the range described above, you can reprint the pH and Redox keys to repeat the calibration process.

10 Preparation of pool water

Make sure that the pH of the pool water is at least between 7.2 and 8.5, and as close as possible to 7.4.

Ensure that the chlorination stabilizer content (prussic acid) of the pool water is between 20-40 ppm (20-40g/10m³).

11 Parameter settings

A number of parameters need to be set. Press the middle key. You'll see the following screen:

11.1 Language

You can set a different language by pressing the middle key again. Then navigate through the upper or lower key to the languages Français, Castellano, Italiano, English, German: you can confirm your choice of language by pressing the middle button.

11.2 Dosing mode: proportional or continuous

Press the bottom key. The "dosing mode" setting is now checked. Press the middle key to activate this setting. You can now see that the dosing prop (= proportional) is selected. Press the middle key again. The dosing proportionally is now set.

Note!
For liquid chlorine addition, do NOT select the option *Salt*

Explanation of the dosing method Proportional:

In the case of "proportional" as a dosing method, the controller will continuously go through a cycle in which:

- pH and chlorine content are measured for 40 sec (no dosing at that time)
- the chlorine (if necessary) is dosed for 2 minutes.
- the pH min (if necessary) is dosed for 2 minutes.

The closer the PH and Rx value approaches the set point, the less the dosing pump runs. This dosing method (prop) is recommended for working with liquid chlorine / liquid pH- In this dosing method, pH and liquid chlorine will never be dosed at the same time.

Explanation of the dosing method Continuous:

- The pumps will always run if pH and/or redox setpoint are not reached.
- **If you choose this dosing method, the injection point for pH and chlorine must be at least 2 meters apart.**

11.3 PH+ or PH-

Press the bottom key. The "PH+ or PH-" setting is now active. Press the middle key to activate this setting. A sign - appears. Press the middle key again. You have now set the ph -.

PH- should always be set when using liquid chlorine. Liquid chlorine already contains PH+, which is always added as a stabilizer.

PH should always be set when using salt electrolysis. In the production of chlorine by the salt electrolysis device, PH+ (NaOH) is formed as a by-product.

It is not possible to add both PH+ and PH- : PH- or **of** PH+, never both at the same time.

In other cases, PH+ can be set.

11.4) PH SP

Press the bottom key. The "PH SP" setting is now activated . Press the middle key to activate this setting. You will now see a preset value. Now you can use the upper or lower key to set the value higher or lower, after which you can confirm by pressing the middle key. The value is now set to your wanted value

As a rule, the pH will be regulated at 7.4

11.5 Rx SP(Redox SetPoint)

The redox is a measure of chlorine content.
At start-up we recommend setting the set point at 700mV, in the same way as described above for pH. After the first start-up, measure chlorine content using a colouring method. Adjust the set point for redox if necessary (decrease if chlorine is too high, increase if chlorine is too low).

Carefully read the chapter "Adjusting Rx setpoint" of the manual.

11.6 Flow switch: no , yes

Here you can enter whether the installation is equipped with a flow switch.
If you **enter YES,** the device assumes that a flow switch is active. With a water flow, the dosing pumps Ph and chlorine will be able to function, with no flow the dosing pumps will not work.

With the version ZWMX7523 a flow switch is built in.

11.7 Safety alarm: on or off or info

The alarm function is required to ensure the safe use of this device and swimming pool.

Alarm on:

The alarm screen comes up at a:

- pH to high (pH>8,5)
- pH to low (pH < 5,5)
- pH end point not reached after 240 minutes of dosing

- Redox to low (<100)
- Rx end point not reached after 400 minutes

The alarm function is necessary to warn the user of abnormal behavior of the device, and to prevent, for example, a very large dose of pH liquid or too much chlorine being produced.

The alarm will disappear if the middle menu button (reset) is pressed or after a power outage.

If, after resetting the alarm function, the values deviate as described above, the alarm will come back into operation.

Don’t swim in the pool if the "alarm" indicates an anomaly.

Alarm off:

Never use the device in off mode during normal and automatic use. If you turn off the alarm, the alarm function as described above will not work for 240 minutes.

The OFF alarm mode is only used to control the values of a swimming pool that are significantly different (as with the first boot). For example, Initially, the pH can be very high and the Rx very low. In this case, it is necessary to use the alarm out function to get the pH and chlorine under control.

Don’t swim in the pool if the "alarm off" function is used.

12 Place the suction cap of the pH in the acid canister, and the chlorine sucking cap into the chlorine container. It is advisable not to lower the suction cap to the bottom of the bus. If something went wrong with the dosage, the whole can of chlorine or acid will not be pumped into the pool.

13 Unit start-up

Start installation by turning on the electricity from pump and dosing appliances.
Turn on the pH dosage (via the switch at the bottom of the unit) until the pH is in the range 7.2-7.6. If the pH is less than 7.2,manually add pH plus to the pool water.

Once the pH is in the range 7.2-7.6, turn on the chlorine dosage.

With dosing "Proportional" acid and chlorine pump will never work at the same time.

Verify that there is no leak to the dosing nipples for acid and chlorine, and that acid and chlorine are effectively dosed.

14 Regularly verify the operation of the probes and settings by measuring pH and Chlorine content with an alternative method (colour measurement). If necessary, adjust the set points of the installation.
Chlorine control via RX : Adjusting the RX setpoint
The Rx (Redox) is used to measure the chlorine content (oxidizing capacity) of the pool water. The higher the Rx, the higher the chlorine content. The Rx is expressed in mV (millivolt), the chlorine content in ppm (parts per million).
The chlorine content in a swimming pool is ideally between 1 and 1.5ppm.

There is no clear correlation between Rx and ppm Chlorine, but usually an Rx of 700-750mV corresponds to a chlorine content of 1 to 1.5ppm.
Therefore, it is necessary – initially and afterwards at regular intervals – to verify the chlorine content with a colour measurement method (e.g. Poollab ZWMX1060). If it is determined that the chlorine content is too high, the RX set point should be lowered. If the chlorine content is found to be too low, the RX set point should be increased. Repeat this operation several times if necessary, until the chlorine content remains consistent between 1.0 and 1.5 ppm.

As an additional safety measure, we recommend that the suction cap should not be lowered to the bottom of the bus at the start-up. If something were to go wrong with the dosage, the whole can of acid would not be pumped into the pool.

Read the safety regulations carefully before using chemicals.

Instructions of pH addition

Because liquid chlorine pH+ has been added, it is necessary to correct the pH with pH minus. For this we recommend the use of Sulphuric acid 15% - 30%. The "weaker" the sulfuric acid, the more accurate the pH dosage will work.

In the exceptional case where the pH drops below 7.2, it is best to be brought back into the zone 7.2-7.6 manually by adding pH plus.

As an additional safety measure, we recommend that the suction cap should not be lowered to the bottom of the bus at the start-up. If something were to go wrong with the dosage, the whole can of acid will not be pumped into the pool.

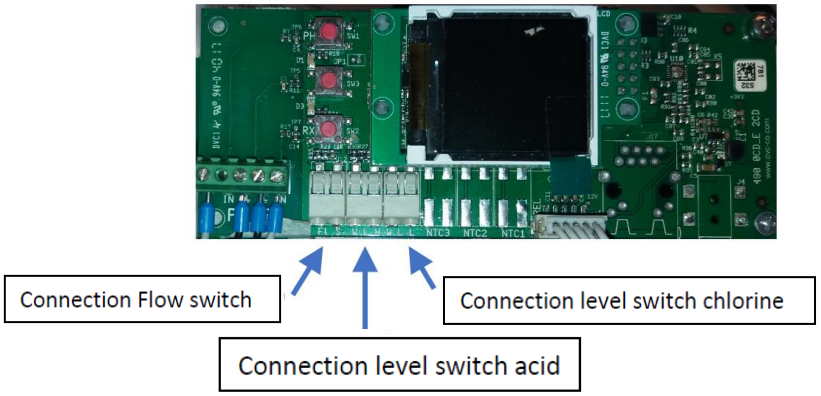
Carefully read the safety regulations before using chemicals.

Calibration and verification of chlorine/pH

The correctness of pH and chlorine must be checked weekly on the basis of a solid measurement of colour (e.g. Poollab ZWMX1060).
Each installation must be calibrated at least once a year. For a long season, or when deviating between colour method measurement and pH/Rx values, it is recommended to also calibrate every six months, so twice a year.
The procedure of calibrating and adjusting setpoint has already been described in detail above.

Connecting a flow switch

A flow switch can be added to the unit for appliances produced in 2020 or later.
On the circuit board with the display, the "FS" connection is on the left. These are connected to the two contacts of the flow switch. If no flow is detected, neither acid nor chlorine pump will run, and an alarm will go off.



Connecting a level switch

Two level switches can be added to the unit for appliances produced in 2020 or later.
On the circuit board with the display, the "WLH" and "WLL" connection sits at the bottom and right. These are connected to the two contacts of the level switch. Connect WLH with the level switch in the barrel with acid, and connect WLL to the levels switch in the chlorine vessel.

At low level detection, the relevant pump will stop pumping and an alarm will go off.

Table 1

Below is a table showing the ratios between mV, pH and the corresponding chlorine content in ppm. If your device has the following values on the screen: pH 7.2 and redox of 740 then your pool water has a chlorine content of 1.2 ppm.
Caution: this table is not always correct. By products such as flake, wall cleaner, settling agents, sulfates, copper sulfate, extremely dirty water (chloramines)... , by electromagnetic disturbances and/or by a non-ideal grounding it may be an Rx of 700-750 mV NOT corresponding to a chlorine content of 1-1.5ppm. Often, this is a temporary phenomenon that occurs especially when using salt electrolysis.

A colour measurement with a solid device (e.g. Poollab ZWMX1060) gives the best indication of the amount of chlorine in the pool.

Free Chlorine ORP/mV vs pH

pH

ORP/Mv

pH	6,9	7	7,2	7,3	7,4	7,5	7,6	7,7	7,8	7,9	8	8,1	8,2	ppm
mV	507	505	502	500	499	497	496	494	493	491	490	488	487	0,2
mV	561	558	553	550	548	546	544	541	539	536	534	532	529	0,3
mV	599	596	590	586	583	580	577	574	571	568	565	562	559	0,4
mV	629	625	618	615	611	607	604	600	597	593	590	586	583	0,5
mV	652	648	640	637	632	629	625	621	617	613	610	605	602	0,6
mV	663	658	650	646	642	638	634	630	626	622	618	614	610	0,65
mV	673	669	660	656	651	647	643	639	635	630	626	622	618	0,67
mV	682	677	668	664	660	663	651	647	642	638	634	629	625	0,75
mV	690	686	677	672	668	655	659	654	650	645	641	636	632	0,8
mV	698	694	684	680	675	670	666	661	657	652	647	643	638	0,95
mV	706	702	692	687	682	677	673	668	663	658	654	649	644	0,9
mV	713	708	698	694	689	684	679	674	669	664	659	654	650	0,95
mV	720	715	705	700	695	690	685	680	675	670	665	660	655	1
mV	733	727	717	712	707	701	696	691	686	680	675	670	665	1,1
mV	744	739	728	722	717	712	706	701	695	690	685	679	674	1,2
mV	755	749	738	732	727	721	716	710	705	699	694	688	682	1,3
mV	765	759	747	742	736	730	724	719	713	707	702	696	690	1,4
mV	774	768	756	750	744	738	732	727	721	715	709	703	697	1,5
mV	790	784	771	765	759	753	747	741	735	728	722	716	710	1,7
mV	798	792	779	773	766	760	754	748	741	735	729	722	716	1,8
mV	812	805	792	785	779	773	766	760	753	747	740	734	727	2
mV	824	818	804	797	731	784	777	771	764	757	751	744	737	2,2
mV	841	834	826	813	806	800	792	785	778	771	764	757	751	2,5

Winter ready

Note!
If you don't protect your product during winter, it may get damaged and it will no longer be covered by warranty.

In areas where it freezes a lot, you need to protect the pump, the filter and the dosing equipment from freezing.

It is advisable to keep the dosing appliances inside in a dry and warm environment. The probes must be kept frost-free, immersed in KCl storage fluid(SWWX7168).

The PVC pipes must be water-free.

Spring start-up

If your dosing equipment was protected during winter, follow the following steps before restarting the system in the spring:

1. Calibrate the probes.
2. Verify that the recoil valve in the dosing nipple is not clogged.
3. Verify that there are no leaks to the installation when the whole is under pressure, and when the dosing pumps are running. Preemptively replace the dosing hoses and the peristaltic dosing tube every two years

Maintenance and inspection

Maintenance

- Regularly verify the operation of the probes and settings by measuring pH and chlorine content using an alternative method (colour measurement). If necessary, adjust the set points of the installation.
- Regularly check the hose inside the peristaltic pump. This hose is immediately replaced in case of leakage. It is advisable to replace this hose preventively every year.
- Regularly check the injection nozzles for leaks. Replace these nozzles immediately in case of leakage.
  Regularly check the power supply and cable connection. If the pump starts to operate abnormally, turn it off and call a qualified technician.
  Maintenance of the peristaltic pumps:

heeft opmaak toegepast: Engels (Verenigde Staten)
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- The tube of the pump reaches its end of life after 500/600 working hours (chemical compatibility), and should in principle be replaced annually. The drainage and supply pipes should be replaced twice a year. A maintenance kit is available: ZWMX2201-Z.

heeft opmaak toegepast: Engels (Verenigde Staten)

The nozzles should be descaled and rinsed every two years. The lime may block the supply or return. We recommend using chlorine with anticalcification (ZWCX1232).The pumps should always be higher than the supply fluids. Use the correct prescribed products for the peristaltic pumps and for the Santoprene tube (to be replaced annually as indicated).

heeft opmaak toegepast: Engels (Verenigde Staten)

Warning:

- Improper installation can pose an electrical or chemical risk, which can result in serious injury.
- Never mix acid and liquid chlorine, since this can result in dangerous chlorine gas being released.
- Keep the installation and chemicals out of the reach of children. Always wear safety gloves and goggles when working on the system..
- NEVER make any internal adjustments inside the dosing equipment.
- If you are not familiar with the pool flirtation system and dosing equipment:
  - Don't try to tinker with it yourself without consulting your supplier or contractor.
  - Read the complete installation and operating manual before using the dosing equipment.

Note: very important:

1) Always cut the power when the product is being maintained or repaired.
2) When the unit is sent for inspection, make sure that the measuring probes are always in storage liquid during transport. If the measuring probes are dry for 3 to 4 hours, this may affect the next measurements, resulting in incorrect measurements.

Troubleshooting

Problem	Cause	Solution
The screen doesn't light up	No voltage present	Verity voltage
Acid pump is not dosing	Switch under the dosing pump is set to "O"	Set switch to "1"
	PH control settings are wrong: pH+ while pH- is dosed (or vice versa)	Verify settings
	A connected level detector gives a wrong connection	Disconnect level detector
	A connected flow indicates that there is no flow	Verify flow and flow switch (go to settings – flow switch: none
Acid pump keeps dosing	Setpoint not yet achieved	No action required
	Wrong parameter set: pH+ while dosing pH- (or vice versa)	Correct the parameter
	Relay is stuck on printboard	Contact the supplier
Acid pump only doses occasionally	Acid pump is set to proportional dosing	No action required
Chlorine pump is not dosing	Switch under the dosing pump is set to "O".	Set switch to "1"
	Rx control settings are wrong	Verify settings
	A connected level detector gives a wrong contact	Disconnect the level detector
	A connected flow switch indicates that there is no flow	Verify flow and flow switch (go to settings – flow switch: none
Chlorine pump keeps dosing	Setpoint is not yet achieved	Verify settings and verify chlorine content using a coloring method.
	Relay is stuck on printboard	Contact the supplier.
Acid pump and chlorine pump don't pump	A connected flow indicates that there is no flow	Verify flow and flow switch (go to settings – flow switch: none)

	Connected level detectors give a wrong contact	Disconnect the level detectors
Chlorine or acid pump does not suck up liquid	Vessel is empty or suction base hangs above liquid level	Replace acid or chlorine container. Reduce the suction base.
	Suction base is clogged	Replace the suction base ZWMX2205-Z
	Peristaltic pump tube leaks	Replace the peristaltic pump tube ZWMX2231-Z
	Injection nozzle is clogged	Replace the injection nozzle ZWMX2220-Z
Liquid (acid or chlorine) in dosing compartment of chlorine or acid pump	Leak in Santoprene dosing tube	Verify if the injection part is clogged and replace the dosing tube .
Dosing tube in pH or chlorine dosing forms a little balloon	Add acid or chlorine in the injection part that is clogged by dirt or calcification	Stop acid dosing and clean/replace the dosing tube immediately. Use liquid chlorine with anticalcification
Calibration failed	Calibration fluid is old or dirty	Replace the calibration fluid
	Probe not yet balanced	Repeat the calibration process
	Probe is broken	Replace the probe
	Probe was left dry for a long time	Leave the probe in pool water for 24 hours, and recalibrate
An alarm goes off and the screen shows: pH too high	pH > 8.5	Verifieer pH met kleurmethode. Corrigeer pH manueel of schakel de alarmfunctie eenmalig uit en laat doseertoestel de pH terugdringen.
	Acid container is empty	Replace the acid container
	Electrode is defective	Replace the electrode
An alarm goes off and the screen shows: pH too low	pH < 5.5	Verify the pH value using a colour method. Manually correct the pH value or disable the alarm function once and allow the dosing device to reduce the pH. Use pH+ once and select pH+ in the settings.
	Electrode is defective	Replace the electrode
pH value always remains at 7, also in calibration liquids pH 4 and pH 9.	defective pH probe	Replace the pH probe and recalibrate

An alarm goes off and the screen shows: Rx too low	Rx < 150: troubled pool water	Temporarily switch to manual addition of chlorine. Check chlorine via colour measurement.
	Chlorine container is empty	Replace the chlorine container
	Electrode is defective	Replace electrode
Rx shows a very different value compared to table 1	Troubled pool water	Schakel chloordosering uit, en voeg (tijdelijk) de chloor handmatig toe
	Probe is defective	Replace the probe
	Electromagnetic interference	Verify grounding