

**May 23, 2023****Sub: Circular letter No: 024****Page 1 of 2**

Dear partners,

We call your attention to water intake to a measuring cell with electrodes in the CRYSTAL Automatic Dosing Station.

There are generally two methods of water supply to the dosing station's measuring cell with electrodes:

1. Directly from the swimming pool's bath—as per GOST 53491.1-2009, subsection 9.7.1.2.
2. From the pipeline of a filtration system—a long established option for private swimming pools.

By all means, we promote the first option, which allows water for measurements to be obtained directly from the swimming pool's bath, thereby ensuring that use of replenished fresh water is prevented. In addition, if design, construction, and installation of the swimming pool were correct, water is taken from the middle of the pool bath's longitudinal wall at the depth of 0.2 m to 0.4 m from the water surface, and the movement time it will take for water from the intake point to reach the station's measuring cell does not exceed 30 seconds, which allows us to ensure maximum reliability for water used for measurements.

The second option can be found both in foreign suppliers' and our manuals. According to our connection diagram, water for measurements shall be taken from a pipeline between a circulating filtration pump and a filter, while measured water shall be returned to the circulating pump (to the place of discharge). However, some partners perform water intake for measurements downstream of the filter, arguing that the water flow to a measuring cell will be cleaner (because it is downstream of the filter) and the measuring electrodes will therefore be less prone to contamination, hence, they will require maintenance on a less frequent basis.

From our point of view, this station connection diagram is incorrect for the reasons as follows:

With this connection diagram, a problem occurs that it requires frequent adjustment of the flow through the measuring cell; since the filter tends to get clogged, the pressure in the pipeline downstream of the filter increases, which means that the water flow to the cell decreases. If the flow through the cell is less than 30 L per hour, a station controller display in upper lines from time to time will prompt the user to adjust the flow. Herewith, measurements and dosing continue as the station programmatically eliminates this decrease of the flow through the cell. The station will stop measuring and dosing if the flow through the cell is less than 15 L per hour.

In addition, free chlorine is measured incorrectly as its values upstream and downstream of the filter can differ insignificantly. Let us assume that the free chlorine value upstream of the filter is equal to 0.4 mg/L, and the filter is clogged; therefore, the free chlorine value downstream of the filter can be, for instance, 0.35 to 0.3 mg/L. A small amount of free chlorine is consumed in the filter to neutralise accumulated contaminations, and hence, as the filter gets clogged, minor chlorine overdosing occurs because water intake to the measuring cell takes place according to the incorrect diagram—downstream of the filter.

Conclusion: the station is to be connected according to a diagram provided in the CRYSTAL Station Installation and Operation Manual.

See also page 2 hereof for illustrations enclosed.

Sincerely yours,

DARIN

May 23, 2023

Sub: Circular letter No: 024

Page 2 of 2

