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| Date Issued | June 2023 |
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## INFO SHEET

*Performance Through  
Technology and Service*

### Saltwater Chlorinator Management From The Manufacturer

Thanks to Autopilot Salt Chlorine Generators

| CHEMICAL                                | IDEAL RANGE                      | IDEAL TEST SCHEDULE | EFFECT OF LOW/HIGH LEVELS   | CORRECTIVE ACTIONS   |
|---|----------------------------------|---------------------|---|--|
| <b>Free Chlorine</b>                    | 1 to 3 ppm                       | Weekly              | <b>Low free chlorine:</b> Not enough residual chlorine to safely sanitize pool water.<br><b>High free chlorine:</b> Corrosive to metallic fixtures in pool water. Can bleach swimwear and hair.   | <b>Low free chlorine:</b> Check for combined chlorine level and shock as necessary. Increase purifier output to maintain a 1-3 ppm residual reading.<br><b>High free chlorine:</b> Decrease purifier output. Let chlorine dissipate normally until 1-3 ppm is achieved. In extreme cases, pool water can be diluted with fresh water or a chlorine neutralizer added. (Diluting will reduce salt and CYA. Check and adjust as needed.) |
| <b>Ph</b>                               | 7.2 to 7.8 ppm                   | Weekly              | <b>Low pH:</b> (acidic) Equipment corrosion, eye/skin irritation, plaster etching, rapid chlorine consumption.<br><b>High pH:</b> (basic) Scale formation, cloudy water, eye/skin irritation, poor chlorine effectiveness   | <b>Low pH:</b> Add sodium carbonate or soda ash<br><b>High pH:</b> Add muriatic acid or sodium bisulfate.  |
| <b>Total Alkalinity</b>                 | 80 to 100 ppm                    | Monthly             | <b>Low TA:</b> Eye irritation, pH "bounce", stained/etched plaster and metal corrosion.<br><b>High TA:</b> Constant acid demand, difficulty in maintaining pH, and contributes to scale formation or cloudy water conditions.   | <b>Low TA:</b> Add sodium bicarbonate.<br><b>High TA:</b> Add muriatic acid often, a little at a time (may take a week or more to lower the TA).   |
| <b>Salt</b>                             | 3000 to 3500 ppm                 | Monthly             | <b>Low Salt:</b> Below 2,500 ppm causes premature cell failure and reduces chlorine production<br><b>High Salt:</b> Above 6,000 ppm can cause corrosion of metallic fixtures and will taste salty. Note: DIG-220 can safely operate with salt levels up to 35,000.                          | <b>Low Salt:</b> Add salt according to digital display on Pool Pilot unit or salt chart.<br><b>High Salt:</b> If undesirably high, partially drain and refill the pool with fresh water. (Diluting will reduce CYA. Check and adjust as needed.)   |
| <b>Calcium Hardness</b>                 | 200 to 400 ppm                   | Monthly             | <b>Low CH:</b> Etching of plaster, equipment corrosion<br><b>High CH:</b> Scale formation, cloudy water. Rapid buildup of scale may exceed the system's self-cleaning capability and require manual cleaning of the SuperCell.  | <b>Low CH:</b> Add calcium chloride flakes.<br><b>High CH:</b> Partially drain and refill pool with fresh water to dilute. (Diluting will reduce salt and CYA. Check and adjust as needed.)<br>Please note – in some areas there may be higher than recommended calcium levels in the tap water. If this level is seen, call the factory for advice on this condition.   |
| <b>Cyanuric Acid (CYA) - Stabilizer</b> | 60 to 80 ppm<br><br>30 to 50 ppm | Monthly             | <b>Low CYA:</b> destruction of chlorine by the UV rays from the sun.<br><b>High CYA:</b> Requires more chlorine to maintain proper sanitizer levels.<br><b>Note: CYA not needed for indoor or bromine pool.</b><br>CYA can be reduced to 30 - 50 ppm for DIG-220 in colder climate regions. | <b>Low CYA:</b> Add cyanuric acid(1 lb/5000 gallons increases CYA 25 ppm)<br><b>High CYA:</b> Partially drain and refill pool with fresh water to dilute. (Diluting will reduce salt. Check and adjust as needed.)   |

Once your salt chlorine generator has been installed, and prior to starting up your salt system, you want to make sure that the water in your swimming pool is balanced (to the Saturation Index) and all chemicals are at the appropriate levels. This not only helps the unit perform better but it also helps optimize the life of generator's cell.

Also, warranties can be void if improper water chemistry is determined to be the reason for the equipment damage to your swimming pool equipment. Below is a sample chart of basic water chemistry, the ideal test schedule and the corrective actions that can be taken to rectify the imbalance.

It is highly recommended that you take a sample of your swimming pool water to your local pool professional and have it tested for the Saturation Index, as most professionals will have the equipment to calculate for this. What is the Saturation Index? The saturation index is the formula used to predict the calcium carbonate saturation of water, which is, if your water is precipitating, dissolving, or is in equilibrium with calcium carbonate.

Water is properly balanced if the SI (Saturation Index) is  $0 \pm 0.3$ . If SI is greater than 0.3, scaling and staining will occur. If SI is less than -0.3, then the water could be corrosive to metallic fixtures and aggressive in some plaster surfaces and vinyl liners.

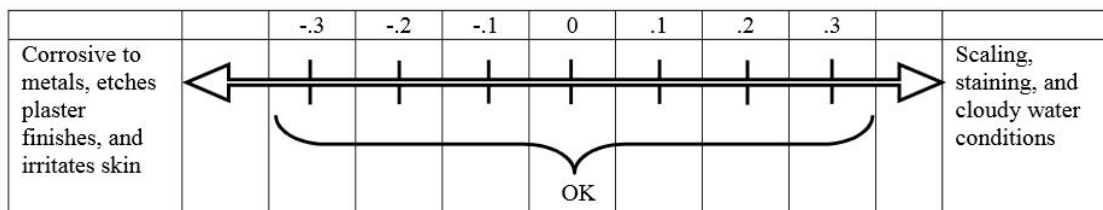
When the SI (Saturation Index) is too high or low it can also cause damage to the cell, pool finish or your swimming pool equipment. The basic rule is, high calcium concentration, total dissolved solids, pH, and alkalinity all promise a greater tendency for scale. Scaling potential also increases with higher temperatures.

Please look at the chart below, it can help you determine your swimming pool water balance. You should always test for pH, Temperature, Calcium Hardness, Total Alkalinity, and Salt Levels.

Remember:  $pH + TF + CF + AF - SC = \text{Saturation Index}$ .

$pH + TF + CF + AF - SC = SI$

| Temperature |       | TF  | Calcium Hardness |     | CF      | Total Alkalinity |                 | AF   | Salt Level |  | SC |
|-------------|-------|-----|------------------|-----|---------|------------------|-----------------|------|------------|--|----|
| 60 F        | 15.6C | 0.4 | 150 ppm          | 1.8 | 75 ppm  | 1.9              | 0 - 1000 ppm    | 12.1 |            |  |    |
| 66 F        | 18.9C | 0.5 | 200 ppm          | 1.9 | 100 ppm | 2.0              | 1001 - 2000 ppm | 12.2 |            |  |    |
| 76 F        | 24.4C | 0.6 | 250 ppm          | 2.0 | 125 ppm | 2.1              | 2001 - 3000 ppm | 12.3 |            |  |    |
| 84 F        | 28.9C | 0.7 | 300 ppm          | 2.1 | 150 ppm | 2.2              | 3001 - 4000 ppm | 12.4 |            |  |    |
| 94 F        | 34.4C | 0.8 | 400 ppm          | 2.2 | 200 ppm | 2.3              | 4001 - 5000 ppm | 12.5 |            |  |    |
| 103 F       | 39.4C | 0.9 | 600 ppm          | 2.4 | 250 ppm | 2.4              | 5001 - 6000 ppm | 12.6 |            |  |    |



As you can see, proper water balance is imperative to maintaining and extending the life of your salt chlorine generator and will not void your manufacturer's warranty. For more information about the warranty for your system please consult your manufacturer's manual.

Note: Above information is for the USA market, however the principles remain. Muriatic Acid is Hydrochloric or Pool Acid in Australia.