SPECIAL INSTRUCTIONS

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SAFETY INFORMATION

This bulletin includes important safety information that should be read by owners, managers, service personnel, and anyone in charge of the pool or pool area. Also, we suggest a copy be posted for quick reference.

1. Only personnel trained and familiar with the proper use of pool chemicals should handle acid, liquid chlorine, or chlorine compounds. Chemicals should never be used when swimmers are in the pool. Acid and liquid chlorine should always be stored, carried, or handled in plastic containers.

2. If grating is a part of the perimeter system, it should be kept firmly always clamped down and in good repair. When a section of grating becomes loose or damaged that area must be immediately covered, and a replacement of grating ordered. Under no circumstances should swimmers be allowed to use any portion of the perimeter that contains loose or damaged grating. Perimeter grating is not intended for foot traffic. Swimmers should be advised not to walk, stand, or jump on perimeter grates.

3. Ladders and grab rails are intended for the use of one swimmer at a time; they are not designed for handstands or other gymnastic stunts, and they should not be used for this purpose. Ladder treads should be inspected regularly. If a tread becomes loose or damaged, the ladder should be taken out of service until repairs are made.

4. Lifeguard Chairs are intended for the individual use of trained "on duty" lifeguards, one (1) guard per chair. Lifeguard chairs are not to be used by swimmers, spectators, or by more than one (1) person at a time. There should be no diving from portable lifeguard chairs. Umbrellas should be closed or removed from portable lifeguard chairs during windy conditions. All frame connections are to be checked for tightness. The seat is bolted to the frame assembly. It is important to advise all users to periodically check to determine that the studs are firmly fastened to the seat and the nuts are tight. If they become loose or detached, it could result in serious injury. Regarding outdoor installations or usage, it is suggested that the lifeguard chair(s) / or (seat is to be removed) and stored inside during the winter.

5. Starting Platforms should only be used by trained competitive swimmers or under the direct supervision of an instructor. Swimmers should execute shallow racing dives only. Impact with the pool bottom can cause severe injury. Starting platforms have warning labels and inform the purchaser of the need to remove the platforms during non-usage. If your starting platforms do not have warning labels, please contact the manufacturer immediately.

6. Bulkheads are designed and built for strength and safety. Any grating should be kept fully secured to avoid injury. **NO swimming under bulkhead. Never use bulkhead as a support or staging for equipment.** The bulkhead includes a compressor; please refer to owner's manual provided with the unit.

For questions concerning the usage of our equipment, please contact Paddock Pool Equipment Co., customer service.

Notes and Tips

From the Engineering Department

General notes:

1. Filter aid(s) such as alum are generally not required. Consult manufacturer before use.

2. Clean and repack the recirculation pump and/or check the seal and overhaul the motor at least once a year.

3. Establish definite periods for using the vacuum cleaner and skimmer in removing leaves and other foreign matter from the pool.

    3.1. Do not allow nails, pins, or other metal articles to remain in the pool for any length of time, as a rust stain will mar the finish.

    3.2. If the pool is empty for any reason, do not allow any walking on the floor, as stains and marks will result.

4. Brush walls and the floor of the pool frequently.

5. Filter(s) requires the pump strainer(s) to be cleaned regularly to eliminate the pump operating without water.

    5.1. Leaves become waterlogged, sink to the bottom of the pool, are sucked into the strainer, and clog it. This causes the pump to run dry, overheating the motor and damaging the seal.

If you have a sand filter:

1. Only use a grade no. 20, or 16/20 filter sand.

2. Periodically check the filter media and remove any accumulation of pine needles, grass cuttings or the like. This type of material may enter the tank through the overdrain distributor and become trapped therein.

3. If an amount of fine sand or similar material has accumulated in the bottom of a new pool prior to start-up, it is recommended that the pool be vacuumed to waste.

4. Pressure sand filter(s) are equipped with an automatic air relief valve to expel all air from the tank interior. Air relief valve(s) should be inspected periodically to insure proper operations.

If you have a regenerative filter:

1. Only use a premium grade of Perlite or DE for filtration media.

2. Do not use flocculant agents as this can damage the filter elements.

Specific notes for your filter can be found in the filter instruction portion of this manual.

Pool Chemistry & Sanitation

Helpful Hints & Suggestions

National Swimming Pool Foundation: Water Chemistry Guidelines

The table below presents target ranges for important water chemistry parameters. These guidelines were last updated for the 2014 edition of the NSPF® Pool & Spa Operator™ Handbook and are taught to students in CPO® (Certified Pool/Spa Operator) classes (generally commercial pool operators). For more information on CPO classes, go to www.nspf.org.

Recommended Guidelines for Water Quality

Parameter	Min.	Ideal	Max.	Who
Free Chlorine, ppm	1.0	2.0–4.0	5.0	Pools, Waterparks
	2.0	3.0–5.0	10.0	Spas
Combined Chlorine, ppm	0	0	0.2	Pools, Waterparks
	0	0	0.5	Spas
Total Bromine, ppm	2.0	4.0–6.0	10.0	All types
PHMB, ppm	30	30–50	50	All types
pH	7.2	7.4–7.6	7.8	All types
Total Alkalinity, ppm as $CaCO_3$	60	80–100* 100–120**	180	All types
Total Dissolved Solids, ppm	NA	NA	1,500 over start-up***	All types
Calcium Hardness, ppm as $CaCO_3$	150	200–400	1,000	Pools, Waterparks
	100	150–250	800	Spas
Heavy Metals	None	None	None	All types
Visible Algae	None	None	None	All types
Bacteria	None	None	Local code	All types
Cyanuric Acid, ppm	0	30–50	****	All types
Temperature, °F	78°F	80.5°F	82°F	Competition pools
	-	Personal preference	104°F	Other pools
	-	-	104°F	Spas
Ozone, ppm	-	-	0.1 over 8 hr. time-wtd. avg.	All types
ORP	Calibrate to disinfectant level*****			All types

† *These commonly accepted chemical parameters do not supersede product label directions or local or state codes and regulations.*

* *For calcium hypochlorite, lithium hypochlorite, or sodium hypochlorite.*

** *For sodium dichlor, trichlor, chlorine gas, BCDMH.*

*** *Including TDS contribution of salt found in chlorine generating systems.*

**** *Dictated by state or local codes. Typically 100 ppm. (Some codes are higher, some are lower.)*

***** *Some state or local codes may dictate a minimum and maximum.*

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RECOMMENDED GUIDELINES FOR WATER QUALITY

SEE LOCAL HEALTH REGULATION

- Ensure water chemistry is properly maintained and consistently monitored.
- Indoor pools on average use approximately 1/4 lb. to 1/2 lb. of chlorine per 10,000 gallons of water per day.
- Outdoor pools on average use approximately 2/3 lb. to 1 1/2 lb. of chlorine per 10,000 gallons of water per day.
- Shock the pool when combined chlorine is .2 ppm or more.
    - Add one (1) pound of calcium hypochlorite per 10,000 gallons of water.
    - Add the chlorine to a bucket of water. Stir until it dissolves, then add it to pool water.
- To find your combined chlorine, take a free chlorine reading. Then, subtract that from your total chlorine. This number will be your combined chlorine.

There are different types of chlorine feed systems: Calcium Hypochlorite, Sodium Hypochlorite (Bleach) and Trichlor. It is best to set the chlorine feed in the **mid-range** position and feed at a steadier continuous rate. This may also prolong equipment life by limiting on/off cycles. If the feed is set too **low**, residuals could drop below acceptable levels therefore causing undesirable conditions or even pool closure. If the feed rate is set too **high**, residuals can overshoot therefore fading swimsuits or undesirable conditions or even pool closure. Free residual will drop during periods of usage in pools and in inclement weather on outdoor pools. Maintain about 0.5 ppm above the desired operating rate to help offset bather load consumption.

Total Alkalinity

Total alkalinity acts as a "buffer" in the water to prevent large changes in pH. Higher than desired alkalinity can result in cloudy water, with the pH measuring more than 8. Low alkalinity can cause corrosion of piping and pitting of concrete or plaster surfaces as well as erratic pH swings. Generally, maintain 80-100 ppm total alkalinity but if calcium levels climb above 700 ppm, alkalinity levels may need to be lowered below 80 in order to maintain overall water balance. Contact your pool specialist for recommendations.

pH

The pH scale measures the acidity or basicity of pool water on a 1 (most acidic) to 14 (most basic) scale. Because pH is a logarithmic scale even a 0.1 or 0.2 pH unit change can have a noticeable effect on water balance. Often a slightly cloudy pool can be made crystal clear by lowering the pH by 0.1 or 0.2 particularly if the water is around 7.6.

Sodium Hypochlorite - (Liquid Bleach)

If sodium hypochlorite is used, a little over a pint of Muriatic acid will be required to counteract the effect on pH of 1 pound of chlorine feed in the form of sodium hypochlorite. A mid-range setting on the acid feeder is also desirable and therefore, the acid should be diluted. Ten or more to one is usual. When diluting, always add acid to water, never add water to acid.

Calcium Hypochlorite – (Tablet)

If calcium hypochlorite is used, a little less than a pint of Muriatic acid will be required to counteract the effect on pH of 1 pound of chlorine fed in the form of calcium hypochlorite. A mid-range setting on the acid is desirable and therefore, the acid should be diluted. Ten or more to one is usual. If diluting, always add acid to water, never add water to acid.

Trichlor – (Tablet)

If trichlor is used, about 1pound of soda ash will be required to neutralize each pound of chlorine fed. A 15% solution is the maximum practical solubility of soda ash in water, therefore, dissolves approximately 1 pound of soda ash per one gallon of water (60 to 65 lbs. in a 55-gallon drum). On large pools, caustic soda may be used for pH control in lieu of soda ash. It is pumped directly from the container in which it is supplied and at full strength.

CO2 – (Gas)

CO2 is a safe alternative to Muriatic acid for pH control in swimming pools.

- CO2 becomes a mild acid when dissolved in water (Carbonic acid).
- On a standard feed CO2 flow meter, a normal setting would be 10 to14 CFH (cubic feet per hour). Larger feed systems are available.
- CO2 has a byproduct called bicarbonate which contributes to the rise of alkalinity. Alkalinity will need to be adjusted periodically with Muriatic acid, 1 pint per 10,000 gallon will lower 8 to 10 ppm.

Calcium Hardness

Calcium hardness is a measure of the dissolved calcium in the water. It has a wide range of acceptability and will be very dependent on how much and what type of make-up water is used to maintain the level of water in the pool. For ease of control, calcium hardness is typically allowed to find its own level in a pool (as long as it is between 200 and 400 is recommended) and then the alkalinity is adjusted to ensure balanced water. Only if the calcium falls outside of this range is any adjustment necessary on hardness.

Stabilizer - (Outdoor Pools Only)

Cyanuric acid, when added to pool water stabilizes the chlorine by converting most of it to a form that is resistant to sunlight. It significantly reduces chlorine consumption particularly on sunny days and in pools with large areas of shallow water. Maintaining a level of 20-50 ppm of stabilizer is recommended.

PADDOCK REPORTS

Technical Bulletin 08-01

GREEN BULLETIN

Are your pool operators taking full advantage of having an eco-friendly environment?

It is highly recommended that:

All pools should be vacuumed with a cartridge vacuum regularly to lighten the load on the filter and extend the filter runs.

Pools vacuumed with a cartridge vacuum on a regular basis remove heavy particulates and super fines which may be passing through the filter.

Pools should be brushed at regular intervals at the end of the swimming day to pick up the dirt overnight.

Paddock's Vacuum Sand Filter is a "GREEN" friendly product that is valued at a total of 7 LEED credits toward the "Green" project. **DELETE IF REGEN**

LEED Data off of www.arcat.com

- **Water Efficiency**
  - WE Credit 2 - Innovative wastewater technologies
  - WE Credit 3 - Water use reduction
- **Energy and Atmosphere**
  - EA Credit 1 - Optimize energy performance
- **Innovation and Design Process**
  - ID Credit 1 - Innovative design features