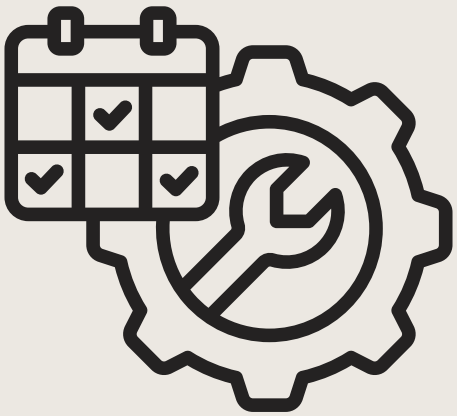
Nanobubble water conditioning for Swimming Pools and Spas.

CRS
CHEMICAL REDUCTION SOLUTIONS

Transform Your Pool and Spa Experience.



Pool and Spa Maintenance Is Hard

Mineral scale, biofilm, and organic buildup cloud pool water, strain circulation equipment, increase chemical demand, and drive frequent shock treatments and service calls

All of this adds cost, labor, and downtime to any residential or commercial pool operation

CRS Solution

CRS installs a patent-pending, passive nanobubble generator inline on the pool pump water loop. Using hydrodynamic cavitation and electro-ionization, the system continuously conditions incoming water before it reaches the filter

Key Benefits

- Increases Filtration Efficacy
- Biofilm and bacteria control
- Reduced chemical usage
- Improved efficiency and reliability
- Clearer more sparkly water
- Extended equipment life
- Fewer service calls
- No electricity or consumables

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WHAT IS A NANOBUBBLE?

Tiny. Stable. Game Changing.

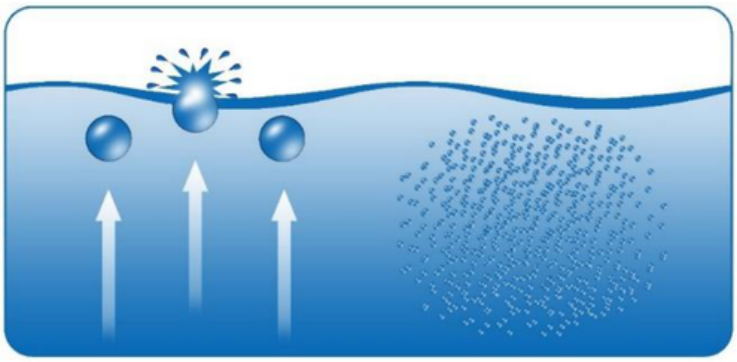
2500 times smaller than a grain of sand, nanobubbles are so small that they have a lower bouyancy and will remain suspended in water for a long time

Industrially Useful

Nanobubbles are useful in removing and preventing scale and biofilm growth, improving heat transfer, inhibiting rust, reducing surface tension and improving filtration efficacy

We are the future of your business

CRS is on a mission to use their economical and simple nanobubble generator, The Shaft, to improve profitability and reliability of water systems



nanobubbles remain suspended in water

575+
CRS SHAFTS DEPLOYED IN 2025

MORE THAN
15 years
OF EXPERIENCE

500+ million
GALLONS OF WATER TREATED BY THE SHAFT PER MONTH

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HOW ARE NANOBUBBLES FORMED?

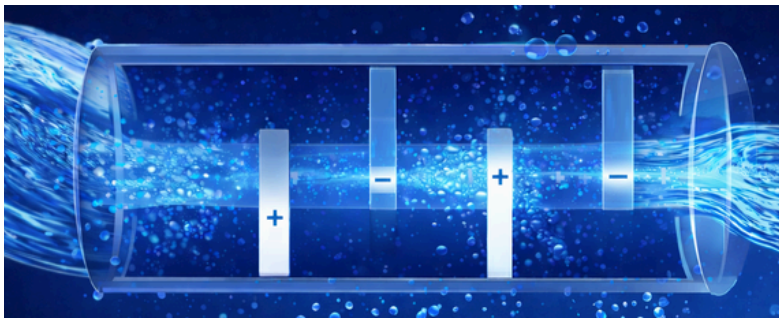
Hydrodynamic Cavitation

As water flows through The Shaft, the internal geometry creates localized pressure differentials and high shear zones. Under appropriate flow conditions, these effects induce controlled hydrodynamic cavitation

Ionization of Entrained Gas

Nanobubbles are formed under more lenient flow conditions when the gasses that are entrained in water are ionized or charged by The Shaft's proprietary metal alloy baffles

Hydrodynamic cavitation plus entrained gas ionization



Hydrodynamic cavitation is a well-documented physical phenomenon in which microscopic vapor- or gas-filled cavities form and collapse due to transient pressure reductions in a moving liquid. In The Shaft, this process also results in the formation of stable micro- and nanobubbles

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CRS SHAFT® NANOBUBBLE GENERATOR

Swimming Pool Installation Instructions

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APPLICATIONS

- Suitable for residential and commercial pools of all sizes
- Designed for municipal or treated fill water
- No power, no programming, no maintenance required
- Installs inline on the circulation loop
- Can flow in either direction

IMPORTANT INSTALL LOCATION

The CRS SHAFT may be installed BEFORE the water filter

Why? Nanobubbles cause suspended minerals and impurities to coagulate, which:

- Extends filter life
- Improves filtration effectiveness
- Reduces scale and biofilm inside the filter

THREAD SEALANT REQUIREMENT

- Use Loctite 55 cord or another NSF-certified thread sealant
- Apply to all NPT threads
- Do not use excessive sealant

INSTALLATION STEPS

01 Shut Off Pool Pump

02 Install PVC Socket to NPT Unions on the CRS SHAFT

03 Cut PVC and Deburr
ideal installation location is immediately on the discharge of the pump

04 Install CRS SHAFT and Unions Using PVC Cement

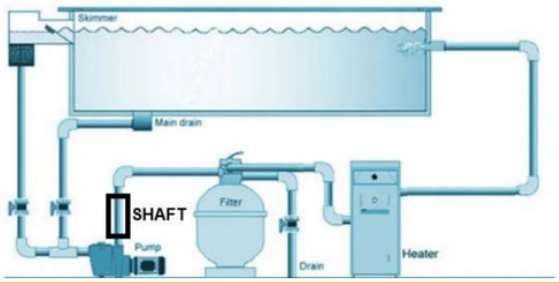
05 Connect the unions and Install the SHAFT

06 Turn on Pump and Check for Leaks

TECH NOTES (FOR SERVICE MANAGERS)

- Use 2" NPT to PVC Socket Unions for easy install
- Passive device – cannot fail electrically
- Use a bonding clamp if local code requires

Installation Diagram



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