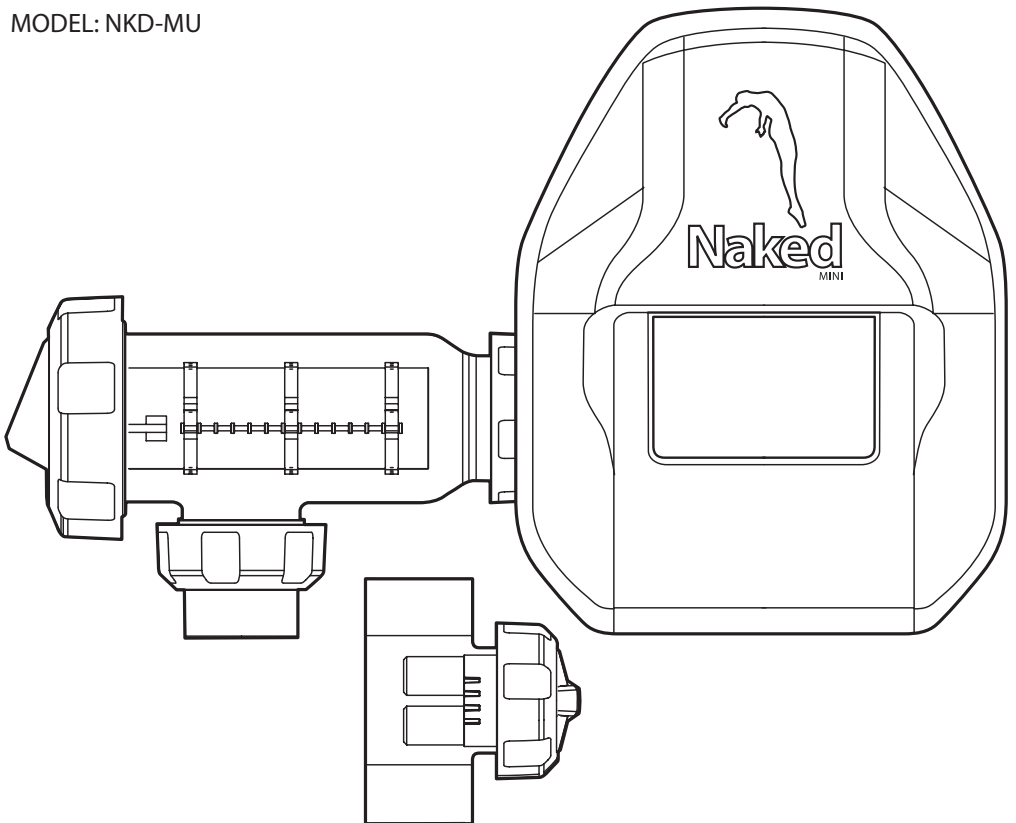


# FRESHWATER SYSTEM

## INSTALLATION & STARTUP GUIDE

MODEL: NKD-MU



### NOTE:

1. READ THIS DOCUMENT PRIOR TO INSTALLATION. IMPROPER INSTALLATION WILL VOID WARRANTY.
2. PRODUCT ONLY TO BE INSTALLED & SERVICED BY A SUITABLY QUALIFIED PROFESSIONAL.
3. THIS MANUAL CONTAINS IMPORTANT INFORMATION. ONCE INSTALLATION IS COMPLETE INSTALLER MUST PROVIDE THIS MANUAL TO OWNER/OPERATOR TO STORE IN A SAFE PLACE.

## **IMPORTANT SAFETY INSTRUCTIONS**

**When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:**

1. READ AND FOLLOW ALL INSTRUCTIONS.
2. **WARNING:** To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
3. **WARNING:** Risk of Electric Shock. Connect only to a branch circuit protected by a ground-fault circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the receptacle is protected by a GFCI.
4. **WARNING:** To reduce the risk of electric shock, replace damaged cord immediately.
5. SAVE THESE INSTRUCTIONS.

The NKD-MU Freshwater System shall be installed according to US state, local ordinances, installation local codes and current National Electrical Codes (NEC), NFPA 70 standards.

The electrical supply for the NKD-MU Freshwater system MUST include a suitably rated switch or circuit breaker to open all ungrounded supply conductors that comply with the current National Electrical Code (NEC), NFPA 70, and must also adhere to all applicable local installation codes and ordinances.

To reduce the risk of accidents or incidents, when servicing the unit all pumps must be switched OFF and disconnected from any power source. If you are not familiar with the pool equipment, DO NOT adjust or service the NKD-MU Freshwater System without consulting a pool dealer or a qualified pool technician.

 **WHEN MIXING ACID WITH WATER:**  
ALWAYS ADD ACID TO WATER. NEVER ADD WATER TO ACID.

 DO NOT PLUG UNIT IN IF CARTON HAS BEEN WET.

 GAS BUILD-UP CAN OCCUR WITH IMPROPER WIRING.

To reduce the risk of personal injury, the NKD-MU Control Unit is designed so that the OXI Cell and ION Rods will only receive power when the pool pump is on otherwise, possible build-up can occur. Make sure the NKD-MU Control Unit and the OXI & ION are never energized when the pool filter pump is OFF, or water is not flowing through the Cell Housing.

## **WARNING: MURIATIC ACID HANDLING**



**INHALATION:** If inhalation of muriatic acid vapors occurs, immediately move to an area with fresh air. Inhaled vapors can cause coughing, inflammation of the nose, throat and upper respiratory tract and death.

**INGESTION:** If acid is swallowed, seek immediate medical attention, it can be fatal. Contact local poison control center or physician immediately. Give large amounts of water or milk. Allow the person to vomit. If vomiting occurs, keep head lower than hips to avoid aspiration. If the person is unconscious, turn their head to the side.

**STORAGE:** Store acid in a container in a dry, ventilated location away from excess heat and direct sunlight. Acid must be stored at a temperature below 80 °F / 27 °C. Make sure drainage is located away from the storage location of the acid container.

**ACID SKIN CONTACT:** Wash the skin with soap and water for at least 20 minutes. Remove contaminated clothing and shoes and clean before re-use.

**ACID EYE CONTACT:** Flush eyes immediately with water for at least 20 minutes. Seek immediate medical attention.

## **PERSONAL PROTECTION**

**VENTILATION:** Use a container for the acid in an outside well-ventilated area.

**EYE PROTECTION:** Use splash-resistant safety goggles.

**CLOTHING:** Wear chemical-resistant clothing when handling or working with acid and chlorine.

**GLOVES:** Wear chemical-resistant gloves when handling or working with acid and chlorine.

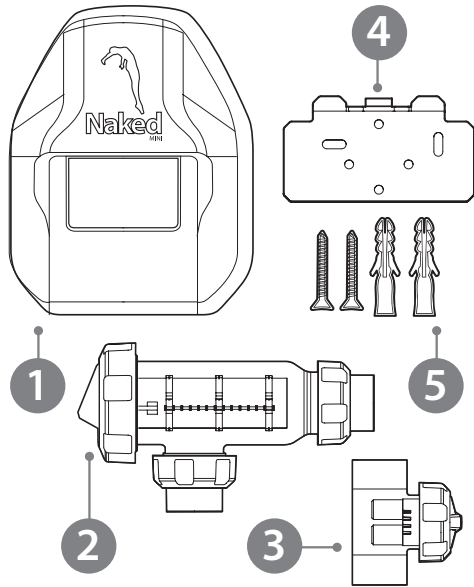
**DISPOSAL:** Because acid is corrosive, muriatic acid is classified as hazardous waste when spilled or discarded. Dispose of used acid at an approved hazardous waste facility or at your municipal household hazardous waste collection facility. Use baking soda to neutralize the acid. If this occurs, carefully pour baking soda onto the acid until the fizzing stops, then mop or scoop up the residue. Large acid spills must be handled by the local fire department or hazardous materials experts.

Specifications subject to change without notice.

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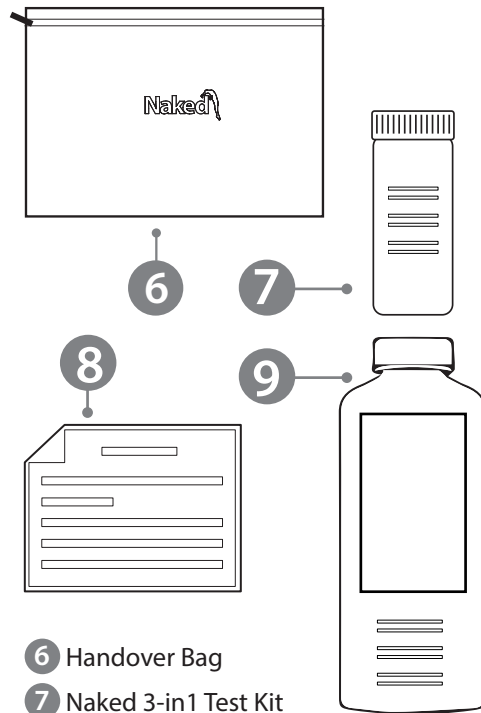
# FRESHWATER SYSTEM | PARTS SUMMARY

## FOR THE BUILDER / INSTALLER



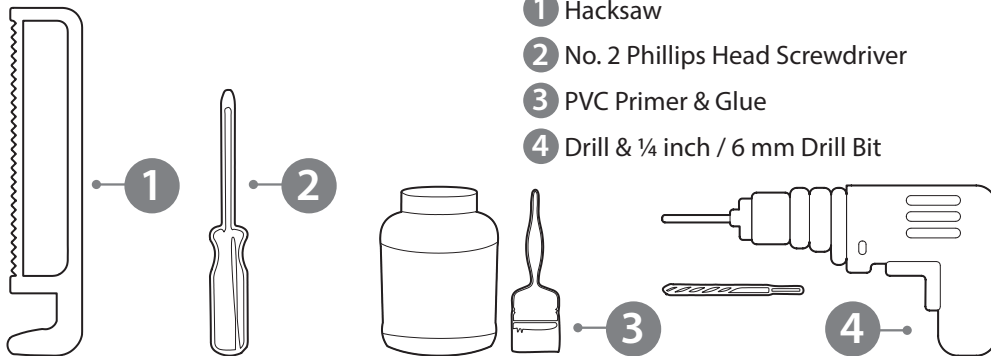
- 1 NKD-MU Freshwater Control Unit
- 2 Oxidizer Housing with Unions
- 3 Ionizer Housing
- 4 Wall Mounting Bracket
- 5 Wall Plugs & Mounting Screws (x2)

## FOR THE CUSTOMER



- 6 Handover Bag
- 7 Naked 3-in1 Test Kit
- 8 System User Guide
- 9 Naked Water Test Bottle

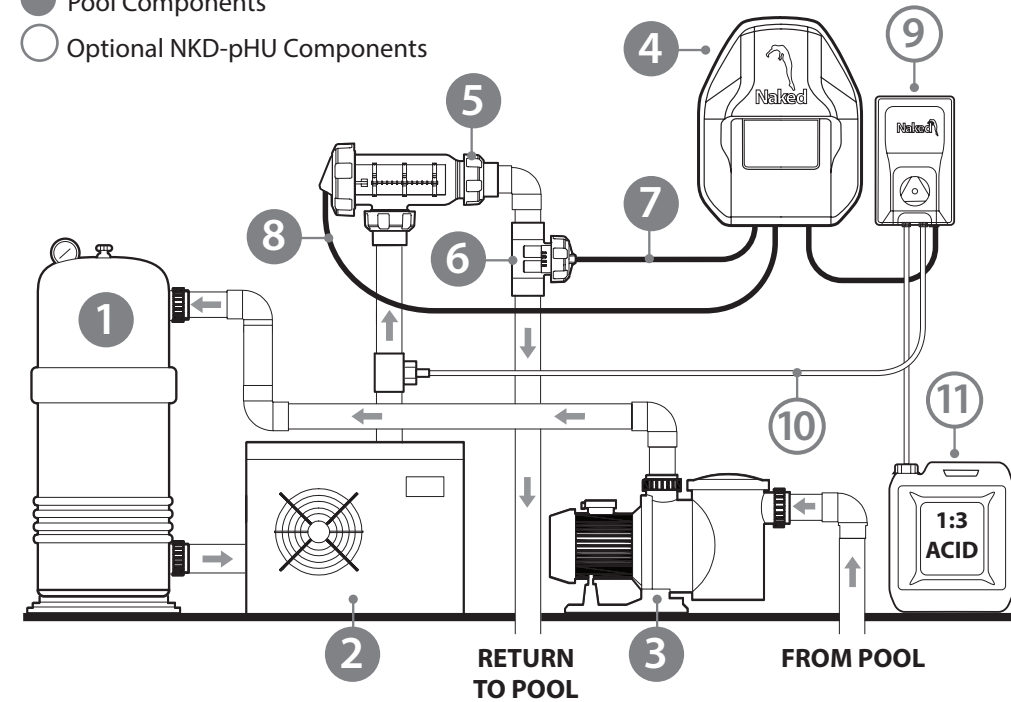
## TOOLS REQUIRED



- 1 Hacksaw
- 2 No. 2 Phillips Head Screwdriver
- 3 PVC Primer & Glue
- 4 Drill & 1/4 inch / 6 mm Drill Bit

# TYPICAL SYSTEM INSTALLATION

- ➔ Indicates direction of water flow
- Pool Components
- Optional NKD-pHU Components



- 1 Filter
- 2 Heater
- 3 Pump
- 4 Control Unit
- 5 OXI Cell Housing
- 6 ION Cell Housing
- 7 ION Cable
- 8 OXI Cable
- 9 NKD-pHU Controller
- 10 PVC Tube and Injector T-Piece
- 11 Acid Drum and Drum Weight

**⚠ ALWAYS WIRE THE NKD-MU CONTROL UNIT TO THE FILTER PUMP RELAY. NEVER WIRE THE UNIT "CONSTANT HOT" TO ENSURE THE SYSTEM IS WORKING, ONLY WHEN THE PUMP IS OPERATING.**

## ⚠ BEFORE YOU START:

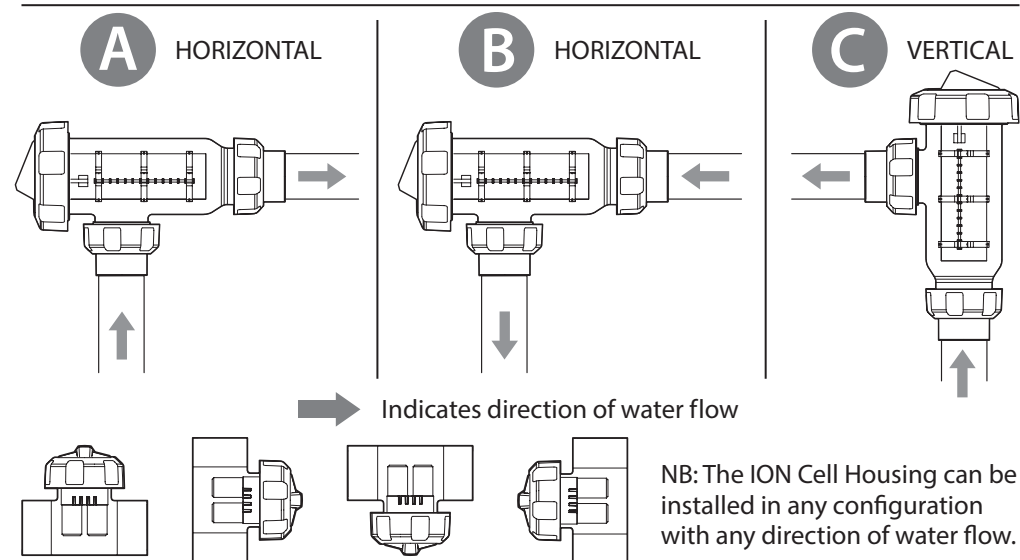
- We **DO NOT** recommend the use of valves on the inlet or outlet of the Cell Housing. If you do use a valve then it is important to ensure that the valve cannot deadhead (lock closed) while the pump is running. It is the installer's responsibility to ensure some form of flow control is installed in this instance and it disables the pump.
- **ALWAYS** ensure that pipe work and equipment do not allow gases generated to collect and build up in any part of the installation.
- **DO NOT** apply priming fluid to the Cell Housing, it is not needed and may react with the plastic.
- **WARNING:**The NKD-MU Control Unit **MUST ALWAYS BE** connected to the **LOAD SIDE** of the Associated **AUX RELAY** located in Controller being used. This ensures the Control Unit receives power **ONLY WHEN THE FILTER PUMP IS ON**.
- **NEVER** power on the Control Unit when the pool filter pump is OFF and water is not flowing through the Cell Housing. This prevents a gas build-up if the pool pump stops or a pool valve is closed.

## INSTALLATION | CELL HOUSING

### ⚠ BEFORE YOU START:

- A Venturi Pipe is incorporated within the Cell Housing designed to eliminate any possible gas build up, although it is always recommended to ensure proper installation to eliminate this from happening. See **WARNINGS** on Page 5 Typical System Installation.
- The Cell Housings must be installed in the **RETURN** pipework to the pool. It must always be installed **AFTER** the filter, gas heater, solar heating or heat pump. The ION Cell can be installed either before or after the OXI Cell.

### CELL HOUSING CONFIGURATION OPTIONS



### INSTALLATION STEPS (Refer to Typical System Installation diagram)

- STEP 1:** Connect the OXI Cell Housing horizontally (A or B) in the return line to the pool using high pressure PVC glue. The OXI Cell Housing can be mounted vertically (C) but provision must be made for a gas trap.
- STEP 2:** Check that the O-rings are clean, greased with silicone grease (**DO NOT** use petroleum based jelly) and securely located in the Cell Housings.
- STEP 3:** Fit the OXI Cell and ensure the Locking Ring is firmly tightened by hand. **DO NOT USE A TOOL TO TIGHTEN**
- STEP 4:** Connect the ION Cell Housing in the return line to the pool using high pressure PVC glue.
- STEP 5:** Connect the OXI and ION cables to the Control Unit.

## INSTALLATION | CONTROL UNIT

### ⚠ BEFORE YOU START:

- The NKD-MU Control Unit has an Ingress Protection Rating of IP34 enabling it to be installed outdoors. Regulations require the Control Unit to be installed according to US state, local ordinances, installation local codes and current National Electrical Codes (NEC), NFPA 70 standards.
- The Control Unit should be installed in a well-ventilated position, ideally away from sunlight and rain to prolong life and at least 3.2 ft / 1 m above ground to prevent run off water entry.
- Ensure that the Control Unit is not stored near chemicals, fertilizers or in a closed unventilated shed with similar products as the fumes will cause excessive corrosion and damage to the internals of the Control Unit and may void warranty.
- When mounting the Control Unit on a post it is recommended to install a flat panel of at least the same size or larger to act as a waterproof backing plate.
- Mounting the Control Unit horizontally or leaving it on the ground will void all warranty.
- The Control Unit should be mounted no further than 12 ft / 3.6 m (cable lengths) from the Cell Housing for ease of operation.

### INSTALLATION STEPS (Refer to Typical System Installation diagram)

- STEP 1:** Attach Wall Mounting Bracket in the desired location for Control Unit using Wall Plugs and Mounting Screws provided.
- STEP 2:** Connect the OXI and ION plugs to the base of the Control Unit ensuring a **FIRM CONNECTION**.
- STEP 3:** Connect the Control Unit cable into the LOAD SIDE of the associated AUX RELAY located in the Controller being used. **ALWAYS WIRE THE NKD-MU CONTROL UNIT TO THE FILTER PUMP RELAY. NEVER WIRE THE UNIT "CONSTANT HOT" TO ENSURE THE SYSTEM IS WORKING ONLY WHEN THE PUMP IS OPERATING.**

## CONTROL UNIT GROUND BONDING LUG

### WARNING: IMPORTANT

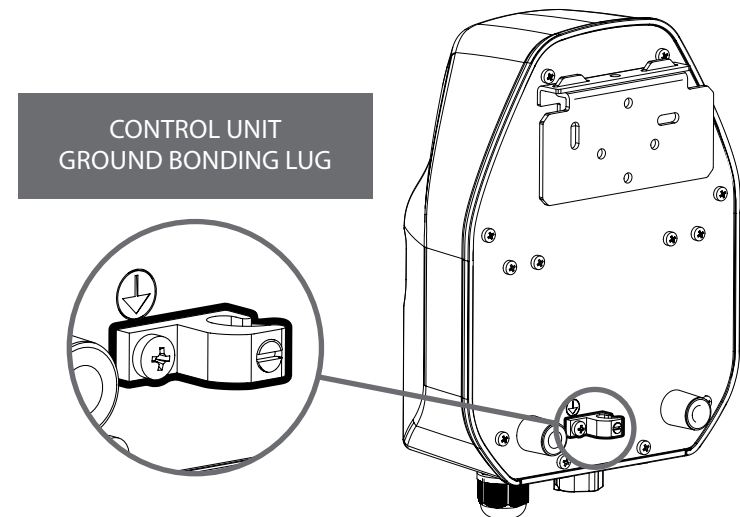
The NKD-MU Control Unit **MUST** be grounded to reduce voltage gradients in and around the pool location. The Control Unit and all pool system equipment **MUST** be electrically grounded and **BONDED** together using a solid copper conductor (8 AWG or larger) connected to the Control Unit bonding terminal lug located at the rear.

Risk of electrical shock and damage to the Control Unit can occur if not properly bonded as described above.

Be sure all wiring complies with all applicable state and local codes. The installed Control Unit must be electrically grounded and **BONDED** together and comply to US state, local ordinances, installation local codes and current National Electrical Codes (NEC), NFPA 70 standards.

Connect a copper conductor (8 AWG or larger) to the Control Unit bonding lug located on the rear of the controller chassis. Connect the other end of the copper wire to the pool rebar or an in-ground gas pipe. Note: The copper wire can be one continuous piece or joined together with separate pieces of wire.

- **GROUNDING:** Bonding is **NOT** the same as grounding. Grounding is for equipment and fire protection; it is designed to provide a path for short circuit currents high enough so that a short in the circuit breaker in the main panel will trip.
- **BONDING and GFCI:** Is for personnel protection and designed to keep the pool equipment voltages level.
- Testing and bonding of the pool system should be done annually during a normal maintenance and service.



# STARTUP | BALANCE THE POOL WATER



## BEFORE YOU START:

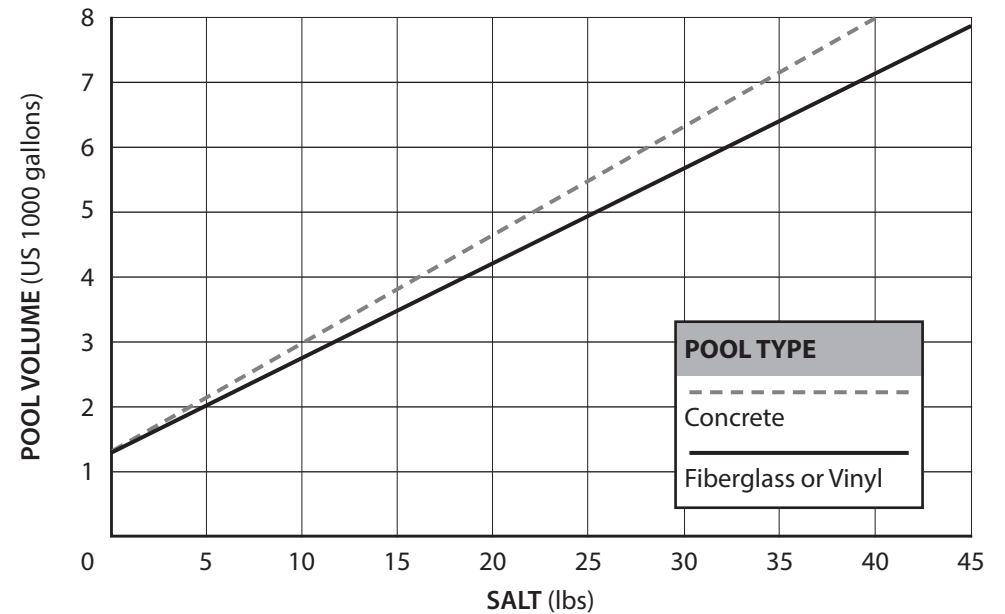
- **ADD REQUIRED CHEMICALS AND SALT AS PER WATER BALANCE GUIDELINES BEFORE STARTING THE NAKED SYSTEM.**
- Recommended TDS Levels are 800 - 1200 ppm meaning salt levels are typically 500 - 700 ppm only.
- **DO NOT** add Cyanuric Acid to the pool.
- **DO NOT** add Stabilized Chlorine to the pool.
- **DO NOT** add Copper based Algaecides to the pool.
- **NEVER** add Salt directly to the skimmer box.
- Over time, deterioration, discoloration and brittleness of any pool finish can be caused separately by, or in combination with, age, an imbalance in pool water chemistry, improper installation and other factors. Naked Pools International Pty Ltd disclaims any liability for repairs or replacement to any of these structures or components of the owner's pool.
- The pool owner must assume all responsibility for the condition and maintenance of the pool's surface, water and deck.
- It is important to test the pH level of your pool water with a reliable test method. Naked Pools International Pty Ltd recommends testing and adjusting pH levels according to the advice given by your pool professional. Depending on your pool surface type, an acceptable pH range under APSP's guidelines is 7.2 to 7.8.

Before starting the Naked System balance the pool water using the calculators in the Naked App (download using the QR code on the back cover) or use the information below:

## WATER BALANCE GUIDELINES - Ideal Levels

POOL TYPE	pH	Total Alkalinity	Calcium Hardness
Concrete	7.4 - 7.6	80 - 150 ppm	200 - 250 ppm
Fiberglass or Vinyl	7.2 - 7.4	80 - 120 ppm	80 - 200 ppm

## SALT LEVELS



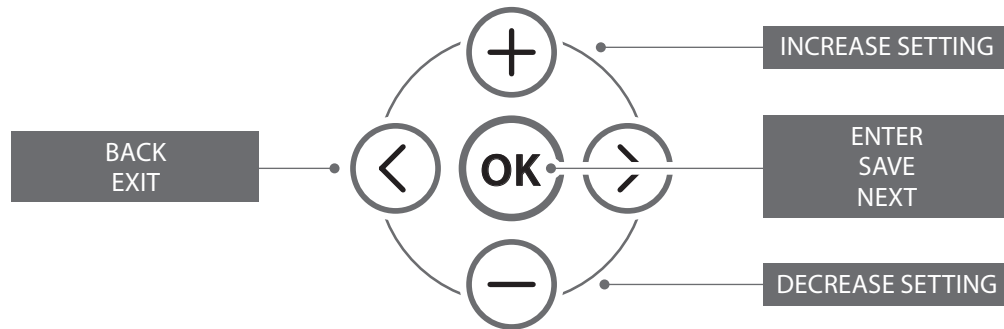
# STARTUP | PROGRAMMING THE SYSTEM



## DID YOU KNOW?

The digital display on the Control Unit will typically explain each step and how to adjust or save the desired setting.

Programming the Naked System is completed in 4 simple steps using the following controls which are located in the center of the Control Unit keypad:



**STEP 1: Set the Clock's Time of Day. (24 HOUR CLOCK FORMAT)**

**STEP 2: Choose whether there is existing copper in the pool.**



For retrofitting existing pools, check copper levels prior to starting the system. If copper is existing at adequate levels of 0.2 - 0.7 ppm, choose YES.



## DID YOU KNOW?

Typically, all new pool installations will not contain copper. When the system is started for the first time the ION SET will be automatically set to 100% to achieve correct copper levels.

The pool can be used immediately by the customer.

**STEP 3: Set the Pool Size (Gallons).**



## DID YOU KNOW?

The volume of water in the pool determines the run times of the ION SET at 100% and will automatically reduce to 20% once completed. Pressing ION BOOST will display the time remaining.

**STEP 4: Choose Outdoor or Indoor Pool.**



## DID YOU KNOW?

When selecting indoor pools during startup the system will automatically reduce the OXI output to 50% to avoid chlorine levels increasing. Once the startup process is complete, the OXI output will automatically default back to 100% and the ION SET will be set to 10%.



Consider reducing OXI output ongoing for indoor pools depending on usage.

The Naked System has 2 built-in timers and can be set to run based on your pool size. We recommend running the system for 1 hr per 3000 gallons. Always ensure the system run times are set within the pump running times. Timers may require adjusting depending on the environment and bather load to ensure adequate circulation and filtration.

**TIMER 1 (T1) = SANITISATION:** Oxidizer, Ionizer are running.

**TIMER 2 (T2) = SANITISATION & CIRCULATION:** Oxidizer is running.

## STARTUP | EXTERNAL CONTROLLERS

The Naked System is compatible with any external pool control system and will slave to the controller allowing it to switch the unit ON and OFF. When first started, the Unit will default to EXT.CONTROL which sets all timers to 00:00. This allows the timers to be set in the external control system based on the pool size.

**NOTE:** The Unit cannot be put in AUTO mode when the EXT. CONTROL option is set via the Clock/Timer.



### OXI OUTPUT LEVELS:

When using the External Controller Mode (EXT) the OXI will always be producing when unit is running.

Pressing BLANKET/COVER decreases the OXI OUT to 50% to stop chlorine levels increasing, particularly with indoor or covered pools.



### DID YOU KNOW?

The Ionizer will always switch off based on the volume of water entered so that copper levels will not increase regardless of the Timers set.

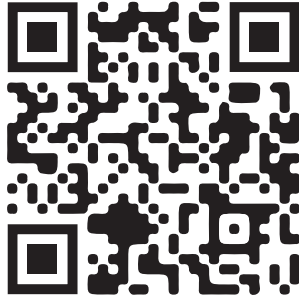
There is a Water Flow Sensor in the OXI Cell. Please make sure the pump is running whenever the Naked System is ON.

A Flow Switch can be installed with the Naked System if required.

## TECHNICAL SPECIFICATIONS

MODEL	NKD-MU
Volts Input (Vac)	120 - 240
Amps Input (Aac)	0.93 / 0.46
Total Power Consumption (W)	108 / 109
OXI Volts Output (Vdc)	10.9
OXI Amps Output (Adc)	5
Chlorine	0.5 lbs / 24 hrs (10 g/hr)
Frequency (Hz)	50 / 60
Control Unit Dimensions (in) (mm)	8.03 W x 10.39 H x 4.92 D 204 W x 264 H x 125 D
ION Cell Housing Dimensions (in) (mm)	14.09 L x 5.71 D x 8.07 H 358 L x 145 D x 205 H
OXI Housing Dimensions (in) (mm)	6.22 L x 3.93 D x 5.43 H 158 L x 100 D x 138 H
Cell Design (in) (mm)	9 Plate 5.91 x 2.36 9 Plate 150 x 60
Water Connection (in) (mm)	2 50
Water Flow Rate (GPM) (L/min)	21 - 172 80 - 650
IP Rating	34
Unit Shipping Dimensions (in) (mm)	17.80 L x 16.93 W x 8.11 H 452 L x 430 W x 206 H
Net Weight (lbs) (kg)	24.7 11.2

All measurements conducted at 78.8 °F / 26 °C water temperature and ideal TDS.



**SCAN THIS CODE TO GET THE NAKED APP!**

Or visit your App Store and search 'Naked Pools'



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