DAVEY

Salt Pool Chlorination System

DNP15C, DNP25C, DNP35C, DNP15CLS & DNP25CLS

Installation and Operating Instructions

IMPORTANT
Please read carefully

daveywater.com

Please pass these instructions on to the owner of this equipment once the product has been installed.

Contents:

WARNING: Failure to follow these instructions and comply with all applicable codes may cause serious bodily injury and/or property damage.

ATTENTION: Your ChloroMatic Nipper is not intended for use by young children or infirm persons without supervision. Please ensure that young children are supervised to ensure that they do not play with the ChloroMatic Nipper System.

ATTENTION: All installations must comply with AS/NZS 3000 wiring rules, or equivalent local standards. Davey recommends that all installations are fitted with RCD (residual current protection device). Rated residual operating current not exceeding 30mA.

WARNING: This product contains a lithium button or coin battery which can only be accessed by using specialist tools.

This button/coin battery is mounted securely inside the electronic control circuitry of the power supply. Access to this battery requires the use of specialist tools and should only be undertaken by a suitably qualified technician or tradesperson.

In the unlikely event that the power supply has been dismantled, care must be taken to ensure all appropriate safety steps are undertaken including ensuring that young children or infirm persons do not have access to the button/coin battery.

If swallowed, a lithium button/coin battery can cause severe or fatal injuries within 2 hours.

If you think a button/coin battery may have been swallowed or placed inside any part of the body, seek immediate medical attention.

ATTENTION: The installation of this product should be carried out by a person knowledgeable in swimming pool plumbing requirements following the installation instructions provided in this manual.

- **ATTENTION: your Davey nipper is fitted with a flow switch which will prevent the cell operating in low flow conditions, however (to minimise the risk of gas build-up in the cell housing, you must ensure there is sufficient water flow through the cell when the unit is on and producing chlorine).**
- **It is essential that your pool pump circulates sufficient water through the cell housing to completely fill the cell housing with water during the chlorination process.**
- **Periodically check the paddle of the safety flow switch to ensure it is free to move back and forth and that the lock nut is done up hand tight.**
- **Ensure the flow switch arrow aligns with the water flow arrows on the cell housing.**

Diagram A

CORRECT OPERATION WITH A PUMP RUNNING

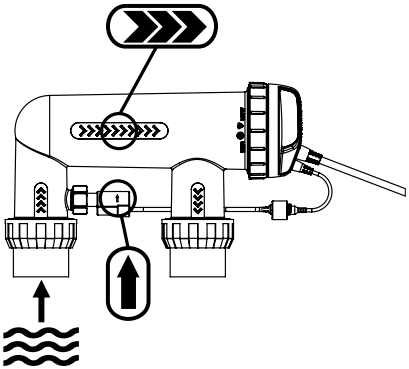
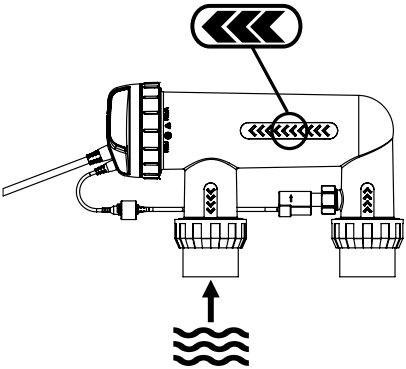


Diagram B

INCORRECT OPERATION WITH A PUMP RUNNING



IMPORTANT INFORMATION ABOUT YOUR Nipper

FACTORS THAT WILL IMPROVE THE PERFORMANCE & LIFE OF YOUR ChloroMatic Nipper. PLEASE READ THIS BEFORE OPERATING YOUR CHLORINATOR

POOL BUILDERS:
Please cover this information with your customer during the new pool "Handover Session".

Chlorinators are a valuable piece of pool equipment and must be cared for to get the best performance and life span. There are THREE main factors that will help to ensure the longevity of your ChloroMatic Nipper cell, please monitor the following factors in accordance with your installation and operating instructions.

1. MAINTAIN RECOMMENDED SALT LEVELS

RECOMMENDED OPERATING RANGE: (refer to SALT LEVELS page 19)

- Run your ChloroMatic Nipper at the salt levels stated within this document and on the product to ensure optimum performance and cell life;
- Operating the ChloroMatic Nipper at low salt levels will damage the cell and reduce its life;
- The control panel displays a flashing red LED indicator warning when the salt levels are low;
- If no action is taken to rectify the salt levels, damage to the cell may result which will not be covered under warranty.

2. MONITOR & MAINTAIN YOUR Nipper CELL

Nipper has a "reverse polarity" cell.

- To keep your ChloroMatic Nipper in the best possible condition, regular monitoring of the cell is recommended, which will help to prolong the life to the chlorination cell.. The cell is in the clear plastic housing and contains the Titanium plates.
- During the chlorination process a white powdery Calcium scale may naturally build up on the Titanium plates in the cell. Monitor the cell to prevent excessive scale build up. Excessive scale build-up will cause damage to your cell, and dramatically reduce its efficiency and lifespan.
- The control panel displays a red LED indicator warning that indicates that the cell may require cleaning.
- If Calcium scale builds up please clean the cell, following the cleaning instructions provided.
- **NEVER:** Use concentrated acid to clean your cell, refer to MAINTENANCE OF THE ELECTROLYTIC CELL on page 17.
- **NEVER:** Leave cell in cleaning solution for extended periods of time.
- **NEVER:** Use metal implements, scourers, or brushes to clean the cell.

3. BALANCED POOL WATER CHEMISTRY

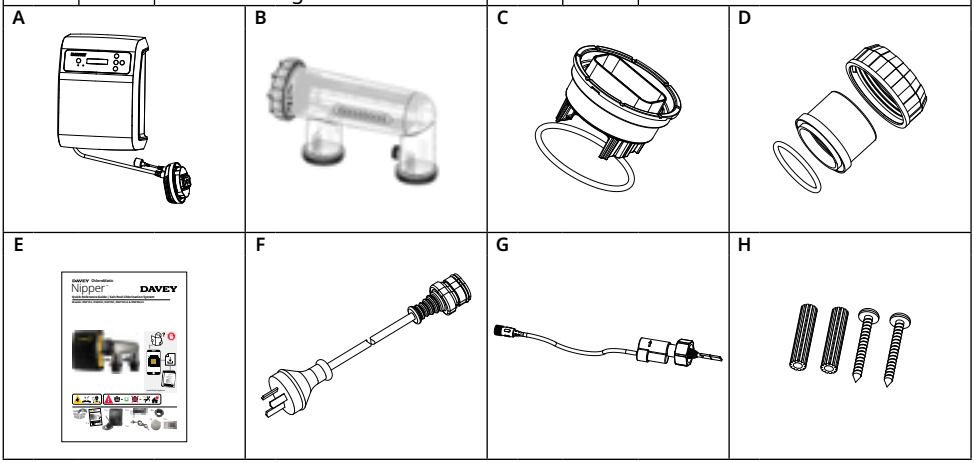
- Correct salt levels **MUST** be maintained for optimum performance and lifespan.
- Calcium Hardness levels **MUST** be kept to ideal ranges of **200 - 275ppm** (for Concrete and Tiled Pools) and **100 - 225ppm** (for other surfaces) to prevent excessive scale build up and damage to equipment.
- pH levels **MUST** be kept to ideal levels to prevent damage to equipment and pool surfaces and to obtain optimum chlorination effectiveness.
- Total Alkalinity and Stabiliser levels must also be kept in an ideal range.

Note: Please refer to GENERAL INFORMATION - Pool Water Chemistry Instructions on page 21 for more information.

PACKING LIST

Included with your ChloroMatic Nipper are the following items, please check the contents of the box carefully prior to attempting to install the system:

Item	Qty.	Description	Item	Qty.	Description
A	1	Power supply with cell lead	E	1	Quick reference guide
B	1	Chlorinator cell and housing	F	1	Power lead
C	1	Chlorinator cell housing blanking cap and O-Ring	G	1	Flow switch
D	2	Barrel unions, 40mm & 50mm tails and Orings	H	1	Wall mounting hardware kit



COMMON TERMS

Algae
Microscopic forms of plant life which enter the pool by rain, wind and dust. There are numerous varieties – some are free floating whilst others grow on walls and in cracks and come in different colours. Some are more resistant to chemical treatment than others.

Bacteria
The germs that contaminate your pool. Introduced by swimmers, dust, rain storms and other elements.

Balanced water
The correct ratio of mineral content and pH level that prevents pool water from being corrosive or scale forming.

Chloramines
Compounds formed when chlorine combines with nitrogen from urine, perspiration, etc. Chloramines cause eye and skin irritation, as well as unpleasant odours.

Chlorine demand
The chlorine required to destroy germs, algae and other contaminants in the pool.

Chlorine residual
The amount of chlorine remaining after chlorine demand has been satisfied. This is the reading obtained with your test kit.

Cyanuric acid
Also known as stabiliser or conditioner. It reduces dissipation of chlorine by direct sunlight.

Liquid acid
Chemical used to reduce the pH and total alkalinity in the pool water, and for cleaning Sanitiser cell.

ppm
An abbreviation for Parts Per Million the accepted measurement of chemical concentration in swimming pool water.
1 ppm = 1 mg/L.

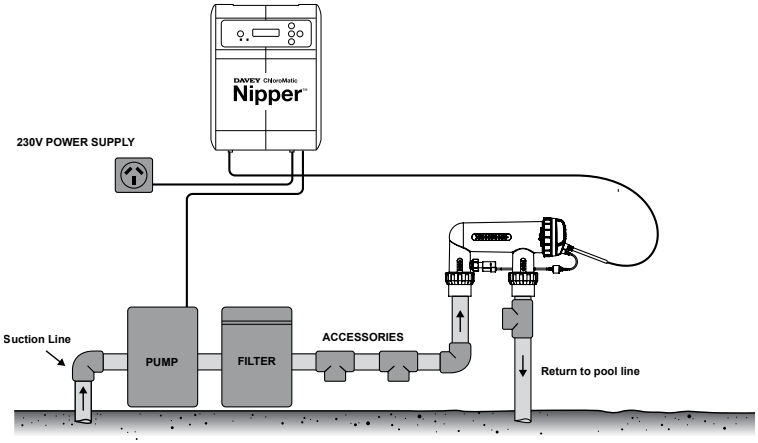
INSTALLING THE ChloroMatic Nipper

Installing The Power Supply

- Choose a convenient well-ventilated location within one metre of filter equipment and mount the power supply vertically onto a wall, or post at least as wide as the ChloroMatic Nipper power supply itself.
- Mount at a suitable height for easy access and viewing of the control panel.
- Davey recommends that the power supply shall not be located less than 3 meters of the pool water.
- Plug pump and chlorinator power supply into a suitable weatherproof power outlet/ controller. Where applicable, some model variants have a 3-pin socket on the rear of the power supply, provide pump power.
- The unit must be kept away from acid and other chemical storage areas. Acid and chemical vapours will corrode the electronics inside the unit. It must also be kept away from heat sources.
- Good ventilation is necessary for correct operation.
- Two self-tapping screws and wall plugs have been provided for fast and simple installation.
- Holes should be level and 164mm apart. Once screws are in position simply hang ChloroMatic Nipper power supply via mounts on back of unit.
- For adequate weatherproofing, the wall or post that ChloroMatic Nipper is mounted to, should be flat and at least as wide as the ChloroMatic Nipper power supply.

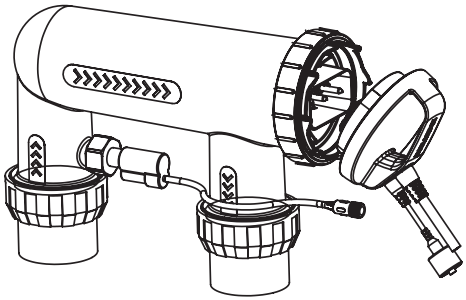
Installing the Cell

- The ChloroMatic Nipper cell should always by the last appliance in your system. Ensure the cell is installed after pumps, filters and any heating appliances.
- The cell must be installed with barrel unions underneath and the cell should be horizontal.
- Both 40mm and 50mm fitting have been provided. choose suitable fittings to use.
- When installing a 90° elbow before the cell's inlet barrel union, ensure there's equivalent to 5 x pipe diameter of straight pipe between the elbow and the union. **That is, if the pipe diameter is 40mm, straight pipe entering the barrel union should be no less than 200mm in length. This ensures best efficiency for the cell performance.**
- Isolation valves (used where equipment is located below pool water level) should also be installed no closer than 5 x pipe diameter from the inlet barrel union. This will assist laminar flow.



CONNECTING THE ELECTROLYTIC CELL TO THE POWER SUPPLY

The Nipper salt water sanitiser uses a reverse polarity electrolytic cell for low maintenance operation. The ChloroMatic Nipper power supply is fitted with a flexible lead terminated with the cell connectors built into a plastic moulding. The three in-line connectors are not "polarity sensitive".

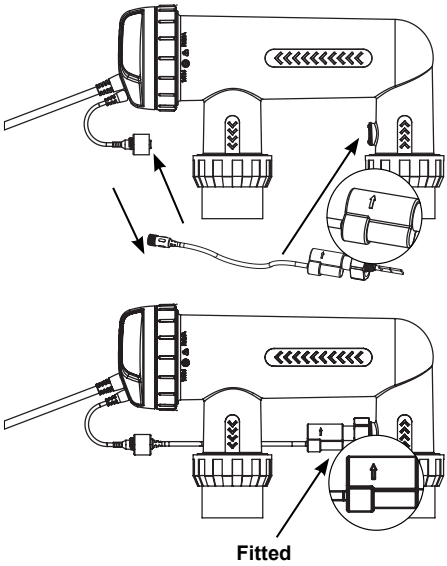


CONNECTING THE FLOW SWITCH TO THE CELL HOUSING

Ensure that the flow switch is installed into the cell housing.

NOTE: The ChloroMatic Nipper cell is supplied with a paddle type flow switch, which is to be installed on the cell as shown in the diagram on page 3 and connected to the cell lead via the connector on the end of the cable.

IMPORTANT: The flow switch must be mounted with the highlighted arrow on side of the switch pointing in the direction of flow.



Safety Device

Hydrogen Gas is a by-product of the chlorine producing process. A Flow Switch has been supplied with the ChloroMatic Nipper, which will stop output if low or no flow is detected. The ChloroMatic Nipper system will run to flows down to 4.8m^3/h (80L/min).

PRE-START UP PROCEDURE

Before operating your ChloroMatic Nipper salt pool chlorination system, please ensure the following quantity of pool salt has been added to your pool.

Please note:
For standard models, Salt level should be maintained around 4,500ppm but should never be allowed to fall below 3,000ppm. The correct salt level is important to cell life and the effective operation of your chlorinator.

WARNING: Some people recommend that you put salt directly in the skimmer box. This is a very bad practice as it allows very high concentrations of salt to be passed through your filtration and other pool equipment.

Pool Salt

To raise salt concentration by		Salt required															
ppm	%	30,000L		40,000L		50,000L		60,000L		70,000L		80,000L		90,000L		100,000L	
		kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs
1,000	0.1	30	66	40	88	50	110	60	132	70	154	80	176	90	198	100	220
2,000	0.2	60	132	80	176	100	220	120	265	140	309	160	353	180	397	200	441
3,000	0.3	90	198	120	265	150	331	180	397	210	463	240	529	270	595	300	661
4,000	0.4	120	265	160	353	200	441	240	529	280	617	320	705	360	794	400	882
5,000	0.5	150	331	200	441	250	551	300	661	350	772	400	882	450	992	500	1,102
6,000	0.6	180	397	240	529	300	661	360	794	420	926	480	1,058	540	1,190	600	1,323

Chlorine
For a new pool installation that has not been chlorinated, add sufficient Chlorine (liquid or granular) to achieve a reading of 3 ppm (with a suitable test kit). Alternatively, run the ChloroMatic Nipper salt pool chlorination system continuously on **BOOST MODE**, for approximately 24 hours, or until a reading of 3 ppm is reached.

Stabiliser
It is essential that pool stabiliser be added and maintained at the rate of 25 - 50 ppm at all times **(FOR OUTDOOR POOLS ONLY)**. For ORP controlled systems the stabiliser level should be maintained between 15-25ppm.

(Refer **DAY TO DAY OPERATION** section for further information).

OPERATION OF YOUR ChloroMatic Nipper

CHLORINE OUTPUT is expressed as a percentage of the maximum output of the ChloroMatic Nipper. Set the ChloroMatic Nipper to the percentage output required and the unit will automatically adjust the cell output to the set level. The ChloroMatic Nipper is fitted with an electronic control and warning system.

This regulates the output of the ChloroMatic Nipper to the pre-set maximum and changes cell polarity. The polarity will alternate over a number of hours of chlorination time, not necessarily pump-run hours.

CONTROL PANEL

Layout

Manual on/off

Menu up/down

Menu/setting select

Menu/setting cancel (go back)

Power indicator
(lit when Nipper on)

Alarm indicator
(flashes when alarm active)

Time out
(whenever device is left for 30 seconds without input from user, settings are saved, and home screen displayed)

-- Pump Running
To indicate when the pool pump is running a flashing bar appears in the lower right hand corner of the display.

Chlorinator Running
When chlorinating a small and large O flash up and down.

CONTROL KEY FUNCTIONALITY

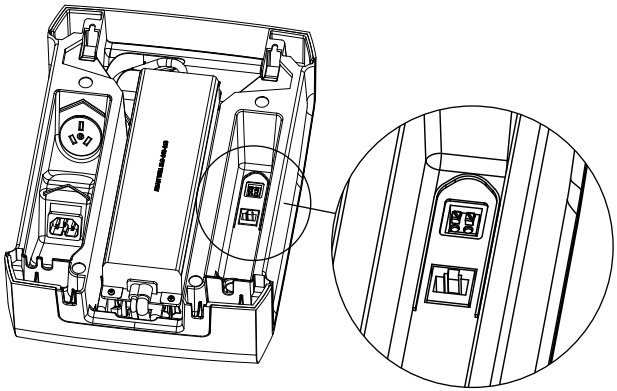
Op Order	Initial Setup		
	Screen Display	**Display Information**	**Operational Information**
1		**Displays:** Software version (V1.2.1) and the model type EU 15L	After a few seconds the Start up screen switches to the first of the initial setup screens
1		Language selection	Use arrow keys to select required settings then press the Menu / setting select key to scroll to next item once complete press Menu / setting select key to move to the next setup screen.
2		12 hour or 24 hour format	
3		Current time	
4		Current date	
		1st start / stop timer	
		2nd start / stop timer	
5		**Home Screen:** Chlorine output / Polarity (+/-) current time / Current mode	Press the Menu / setting select key to move into the first mode screen or use the arrow keys to move to the chlorine adjustment screen.

Op Order	Function Modes		
	Screen Display	**Mode Information**	**Operational Information**
1		The ChloroMatic Nipper has two separate timers available for automated operation. This is ideal if looking to run the pool a few hours in the morning, then a few hours in the afternoon. It is important to ensure that the timers do not overlap as this may create confusion when the timer turns on and off.	Press the Menu / setting select key to enter the mode and to toggle through the settings, use the arrow keys to adjust the settings as required. Once complete and returned to the mode screen (as pictured) use the arrow keys to toggle through the modes.
2			
3		A pool's exposure to UV contributes significantly to the pool's total chlorine demand. ie. the amount of chlorine the pool uses. Excessive amounts of chlorine in a pool with a cover on, can significantly shorten the life expectancy of the pool cover, if left for long periods of time (eg weeks). Turning on the COVER MODE reduces the cell set point to 20% of its current setting.	Press the Menu / setting select key to enter the mode selection screen, the use the arrow keys to adjust settings as required.
4		Should the pool experience a heavy bather load, debris/contamination, or extreme warm weather, there may be a need to super-chlorinate the pool. Turning on the BOOST MODE increases the cell duty cycle to 100% and overrides the cell current (output) to 100% for a period of 24 hours.	Press the Menu / setting select key to enter the selection screen, then use the arrow keys to turn on / off as required.
5		The ChloroMatic Nipper system is compatible with large swimming pool applications as well as much smaller spa applications. Turning on the SPA MODE reduces the cell set point to 20% of its current setting.	Press the Menu / setting select key to enter the selection screen, then use the arrow keys to turn on / off as required.
6		During winter your pools requirements for chlorine are reduced due to lower temperatures. Winter mode reduces chlorine output to 85%, this will help to prolong the cell life.	Press the Menu / setting select key to enter the selection screen, then use the arrow keys to turn on / off as required.

Op Order	Function Modes		
	Screen Display	**Mode Information**	**Operational Information**
7	MODE 7. CHLORINE OUTPUT	The CHLORINE OUTPUT controls the amount of chlorine produced by the cell over a given time. the output is control by a percentage value. Altering this will affect the overall output of the cell when in SPA or COVER mode (ie, if set to 80% then SPA mode will actually be 16%, "20% of 80% set point")	Press the Menu / setting select key to enter the selection screen, then use the arrow keys to adjust settings as required. Once complete and returned to the mode screen (as pictured) use the arrow keys to toggle through the modes.
8	MODE 8. BACKWASH	To aid with the backwashing of the system, backwash mode can be turned on. This mode prevents chlorine production. Backwash mode is set to run for 5 mins, displayed as a countdown from 300 seconds. No alarms and the flow switch are disabled for this period.	Press the Menu / setting select key to enter the selection screen, the use the arrow keys to turn on / off as required.

1. COVER MODE can be turned ON either when the user selects the Cover mode OR terminal block contact on pool cover is engaged.

2. COVER MODE can only be turned OFF when the user turns OFF the Cover mode OR terminal block contact on pool cover is DIS-engaged.



Op Order	Settings		
	Screen Display	Setting Details	Operational Information
1		The settings allow for specific adjustments to afore mentioned attributes. **ALARM HISTORY** provides a timer of cell run time and low salt time. **ABOUT** provides details of the Model and software version of the controller, as per the initial startup screen.	From the home screen press and hold the Menu / setting select key for 3 seconds to enter the settings menu. Use the Menu / Select key to enter the specific setting and adjust using the arrow keys . If ChloroMatic Nipper is left untouched for ~ 30 secs, or the “back logo” key is pushed, the display reverts to the HOME screen.
2			
3			
4			
5			
6			

Alarms		
Screen Display	**Alarm Details**	**Operational Information**
	LOW FLOW ALARM Should the ChloroMatic Nipper flow switch register a flow rate below 80 lpm (4.8m3/h or 21.1 gal/min), the ChloroMatic Nipper will enter LOW FLOW ALARM: In LOW FLOW ALARM, the ChloroMatic Nipper will not produce chlorine. Once the flow switch registers flow above 80 lpm (4.8m3/h or 21.1 gal/min), the ChloroMatic Nipper will return to normal operation. To achieve best efficiency, the ChloroMatic Nipper cell should be installed such that turbulent water is limited as much as possible. Do not install a 90° elbow closer than 5 x pipe diameter from the cell's inlet barrel union. Isolation valves used where equipment is located below pool water level, should also be installed no closer than 5 x pipe diameter from inlet barrel union. This will assist laminar flow.	Once condition is rectified press the Menu / setting select key to cancel alarm.
	**ADD SALT ALARM** Should the ChloroMatic Nipper register low conductivity within the cell, this could be triggered by cold water (below 15°C / 59°F), or a salt concentration below its minimum (refer to recommended salt range section in the manual), the ChloroMatic Nipper will enter ADD SALT ALARM. Additional salt may be added to overcome a lower temperature. However, the maximum salt level should also be considered and if water temperature drops too far, the system should be turned off. If salt levels are in range and water temperature is above 15°C (59°F), your cell may need to be cleaned. **ADD SALT ALARM AND LOW FLOW ALARM** Should the ChloroMatic Nipper register low flow and a salt concentration below its minimum (refer to recommended salt range section in the manual), the ChloroMatic Nipper will alarm. The display will toggle between the ADD SALT ALARM and the LOW FLOW ALARM. In LOW FLOW ALARM, the ChloroMatic Nipper will not produce chlorine. As shown previously once faults are rectified, normal operation will resume.	Once the ChloroMatic Nipper registers a salt concentration within range (refer to recommended salt range section in the manual), the ChloroMatic Nipper will return to normal operation.

Alarms		
Screen Display	**Alarm Details**	**Operational Information**
	LOW SALT CUT-OUT ALARM* Should the salt concentration continue to be diluted, the ChloroMatic Nipper will enter **LOW SALT CUT-OUT ALARM**. Once the salt concentration is corrected, the **LOW SALT CUT-OUT ALARM** must be reset by pushing the manual ON/OFF button (except for models where the ON/OFF button is deactivated). Alternatively, the ChloroMatic Nipper will conduct a system check automatically when powered up the next time (if operating via a separate power supply). Upon start-up if the ChloroMatic Nipper registers a salt concentration within range (refer to recommended salt range section in the manual), the ChloroMatic Nipper will return to normal operation. **LOW SALT CUT-OUT ALARM** is triggered at the following (approximate) salt concentrations: (If salt levels are in range and water temperature is above 15°C (59°F), your cell may need to be cleaned).	Once the ChloroMatic Nipper registers a salt concentration within range (refer to recommended salt range section in the manual), the ChloroMatic Nipper will return to normal operation.
	If the Chloromatic Nipper registers unusual cell behavior it will enter CHECK POOL CHEM ALARM. This could be triggered by unbalanced water chemistry. Davey recommends that you get a full water test at your local pool shop to identify the cause of the issue. Once the pool chemistry is corrected, the CHECK POOL CHEM ALARM must be reset by pushing the manual ON/OFF button. Alternatively, the ChloroMatic Nipper will conduct a system check automatically when powered up the next time (if operating via a separate power supply).	Push the ON/OFF button to reset this alarm

* Only applicable for firmware versions earlier than 2.1.5

LOW SALT CUT-OUT ALARM is triggered at the following (approximate) salt concentrations:

ChloroMatic Nipper model	**Low salt cut-out alarm (approx. salt concentration)**
DNP15CLS, DNP25CLS	1,200ppm
DNP15C, DNP25C, DNP35C	2,500ppm

MAINTENANCE OF POWER SUPPLY

Little, or no maintenance is typically required. However, it is essential that the wall or post to which the ChloroMatic Nipper is installed be sprayed (not the ChloroMatic Nipper itself) periodically with a good surface type insect repellent, since penetration by insects may cause damage, which is not covered by your warranty.

IMPORTANT. Certain local electrical regulations state "If the supply cord is damaged, it must be replaced by a special cord available from the manufacturer or its service agent".

MAINTENANCE OF THE ELECTROLYTIC CELL

The ChloroMatic Nipper cell is composed of precious materials, and although proper maintenance can prolong its life to the maximum, eventually the output will wear away its delicate coating, at which time it gradually ceases to produce chlorine. Calcium (scale) is deposited on the plates as electrolysis takes place. This build up will interfere with the flow of electrical current in the cell and thus lowers chlorine production. It is essential to inspect the cell regularly and clean when necessary. The rate at which deposits will form on the plate differs with each pool and can be influenced by the following:

- Calcium Hardness of the water;
- Water temperature;
- pH level;
- Water which has been chlorinated with calcium hypochlorite for an extended period; and/or
- Calcium in the plaster surfaces of a concrete pool.

Because these conditions vary so much, check the cell at least weekly to begin with to see if either scale or a blue/green soapy substance appears on the plates. You will then be able to determine the cleaning cycle necessary for your pool (more frequent cleaning may be required in summer). The intervals between cleaning could get longer to the point where cleaning is only necessary a couple of times each year.

Note: In areas with hard water, even reverse polarity systems may require occasional manual cleaning.

The life of the ChloroMatic Nipper cell varies substantially from one installation to another due to variations in operating time, water quality and composition, system and cell maintenance.

Please ensure that when cell replacement is necessary you use the correct genuine ChloroMatic Nipper replacement cell to match your system. The correct ChloroMatic Nipper replacement cells to use are shown in the table right:

Model	Replacement Cell Code
DNP15C	DES2C15REPAU
DNP15CLS	DES2C25REPAU
DNP25C	DES2C25REPAU
DNP25CLS	DES2C35REPAU
DNP35C	DES2C35REPAU

ALWAYS INSIST ON GENUINE DAVEY REPLACEMENT PARTS.

If it is necessary to replace the electrolytic cell, beware of "look-a-likes". Only the Genuine ChloroMatic Nipper cell is designed and warranted to operate with the ChloroMatic Nipper Power Supply.

SERIOUS DAMAGE MAY RESULT TO THE ELECTRONICS INSIDE THE ChloroMatic Nipper, IF CLONE CELLS ARE USED. THIS MAY ALSO VOID WARRANTY.

To Clean The Chloromatic Nipper Cell

Ensure that the ChloroMatic Nipper and pool pump is turned off. Failure to do so may result in the pool pump turning on while the cell is not in place. Disconnect the flow switch and cell lead from the top of the cell housing. Remove the cell from the pool return line by undoing the cell nut, taking care not to lose the o-rings.

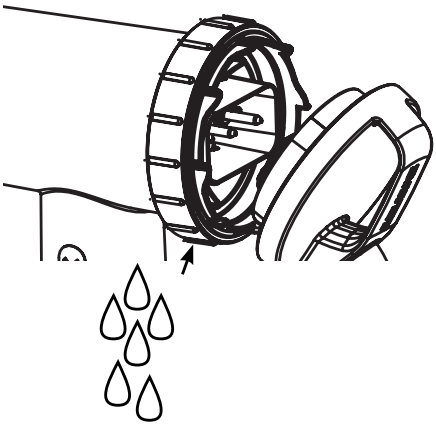
Method One
Add 1 part HYDROCHLORIC ACID to 10 parts WATER in a suitable container and immerse the cell in this solution. It should not take longer than a few minutes to clean, if it does the cell should be cleaned more frequently. If the build up is not excessive it may be possible to clean the cell plates with a jet of running water. Return the cell to its housing and connect leads to the head assembly.

Method Two
As an alternative, an approved commercial cell cleaning solution can be used a number of times effectively.

NOTE: Always add acid to water. Never add water, to acid. Always wear eye protection and rubber gloves. Always clean the cell in a well-ventilated area.

Re-Installing Cell After Cleaning Or Replacement

When re-installing the ChloroMatic Nipper cell into the housing, ensure that the cell locking nut is tight. Do this by turning on the pool pump once fitted, then checking for leaks.

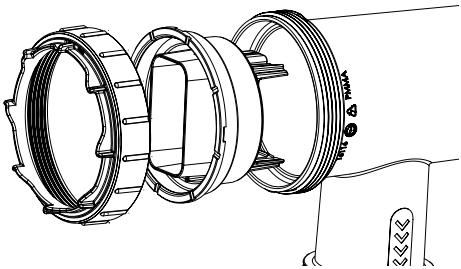


If there is a leak, remove the lock nut and inspect the o-ring for debris, or damage. Then re-try. Before re-fitting the cell connectors, ensure that the terminals are dry.

Using Blanking Cap

The blanking cap and o-ring can be fitted into cell housing to allow the pump and filtration to keep running for the following functions:

1. When cell is clogged by limestone and need to be cleaned.
2. To replace the cell body with this blanking cap for wintering. Especially when performing active filtration wintering.
3. Whenever adding chemical treatment in the water, it is recommended to remove the cell to prevent damaging it (example: active oxygen)



DAY TO DAY OPERATION

To obtain best results from your Chloromatic Nipper follow the outlined points listed below:

Stabiliser

The importance of pool stabiliser cannot be over – emphasised. It is essential in helping retain chlorine in your pool. Chlorine is rapidly dissipated by sunlight and the use of stabiliser will reduce this dissipation substantially. Without stabiliser, it may be necessary to run the Unit for up to three times as long!

Stabiliser should be added at the rate of 500 grams for every 10,000 litres of water. Stabiliser should be maintained at a level of 25-50ppm. If a ORP controller is used, Stabiliser should be maintained at a level of 15-25ppm. Before adding more stabiliser, have your pool water analysed at your pool shop to ensure that you do not add too much. **(FOR OUTDOOR POOLS ONLY, INDOOR DO NOT REQUIRE STABILISER)**.

pH and Total Alkalinity

A correct pH level must be maintained to prevent problems such as black spot, staining, cloudy water, etc. An incorrect pH level can damage the pool. Correct pH levels are as follows; Fibreglass – 7.2 to 7.4; Concrete & tiled – 7.4 to 7.6 If you allow the pH level to rise to 8.0 or above, the chlorine required could be as much as three times the normal amount, in order to correctly sanitise the pool.

Total Alkalinity should not be confused with pH. Although the two are closely related, Total Alkalinity determines the speed and ease of pH change. The ideal range is 80 – 150 ppm or, refer to your pool professional.

You should use a test kit which includes a test for Total Alkalinity. Low Total Alkalinity can cause unstable pH levels. An inability to keep the pH constant may cause staining, etching and corrosion of metals. High Total Alkalinity will cause constantly high pH levels and tends to encourage Calcium scaling.

TDS (Total Dissolved Solids) Levels

WARNING: Some people recommend that you put salt directly in the skimmer box. This is a poor practice as it allows very high concentrations of salt to be passed through your filtration and other pool equipment.

Salt is the essential element by which your ChloroMatic Nipper operates with. Insufficient Salt will damage your cell.

Salt Level Range

Nipper model	Salt level model / Recommended salt level	Operating salt level	Add salt alarm
DNP15CLS, DNP25CLS	Low Salt / 3000ppm	1500-6000ppm*	~ 1,500ppm
DNP15C, DNP25C, DNP35C	Standard Salt / 4500ppm	3000-6000ppm	~ 3,000ppm

*Parts per million – Salt levels should not be allow to fall below the alarm levels as this may effect cell life or cause premature failure and prevent effective operation of your chlorinator.

WARNING: Do not add Hydrogen Peroxide to pool water or through swimming pool hydraulic, or sanitiser system. Use of Hydrogen Peroxide will void warranty on Davey products.

Salt is NOT used up in the chlorination process, or by evaporation. It is only lost through dilution caused from: backwashing, splash-out, overflow, leakage from the pool, or plumbing. Heavy rain can dilute the salt levels in your pool therefore, salt levels should be checked during these events.

Low salt levels will destroy the coating on the cell plates and will void all Warranty.

The ChloroMatic Nipper has a built-in warning indicator to minimise damage resulting from insufficient salt levels however, the ultimate responsibility is on the owner to ensure adequate salt levels are maintained all year round.

See over for **Running Times**.

Running Times

These instructions cover Nipper for residential use only.

NOTE: The appropriate ChloroMatic Nipper for your pool is dependent on the local climate, bather load of the pool and running times. Please note that the ChloroMatic Nipper cell life can be increased with shorter running times during winter and lower output settings. Davey recommends the ChloroMatic Nipper be run for between 6 - 8 hours a day during summer, and 4 hours during winter.

CHLORINE PRODUCTION

The ChloroMatic Nipper must be run daily to generate sufficient chlorine to sanitise the pool. During summer a typical installation would require eight hours per day of chlorination. Depending on when you choose to run the ChloroMatic Nipper, it is best to test the residual Chlorine in the pool at the point where you would anticipate the levels be at their lowest. At that chosen time of the day, if the residual Chlorine level from your test is reading too high, reduce the ChloroMatic Nipper **CHLORINE OUTPUT**. Alternatively, if the residual Chlorine level from your test is reading too low, increase the ChloroMatic Nipper **CHLORINE OUTPUT** (refer to page 12). Correct chemical balances (see page 21) are critical to ensure the ChloroMatic Nipper performs correctly.

In cooler times of the year, it's typically possible to reduce running hours of the ChloroMatic Nipper. Follow instruction from your pool professional. Chlorine output can also be reduced throughout this time by entering **WINTER MODE**, (refer to page 12).

"Shock" Treatment

Periodically, especially during extremely hot conditions, it may be necessary to boost the chlorine level in the pool. This can be achieved by selecting BOOST MODE, which will run the system on full for 24 hours, (see page 11). Alternatively, add either liquid, or granulated chlorine. If granulated chlorine is added, the cell must be checked regularly, since the additives from this product can clog the electrodes.

Chlorine Types And Comparisons / Max Pool Size

Many chlorinator manufacturers calibrate their units to compare with 65% granulated chlorine, making it necessary to adjust their readings to a lower level in order to determine true chlorine production. Below is a comparison table of the available types of chlorine used to sanitise pools.

ChloroMatic Nipper Model	Production Maximum (g/hr 100%)	Production (g/hr 65% equivalent)	Chlorine produced over 8 hours (grams 100%)	Maximum Pool Size# (Litres)		
				Cool Climates <25°C	Temperate Climates 25°C to 30°C	Hot & Tropical Climates >30°C
DNP15C(LS)	15	23	120	60,000	48,000	36,000
DNP25C(LS)	25	38	200	100,000	80,000	60,000
DNP35C	35	53	280	140,000	112,000	84,000

pool size is calculated based on average temp and bather loads.
Appropriate sanitiser size for your pool is dependent on the local climate, bather load of the pool and running time.

CHLORINATOR MAINTENANCE

1. Maintenance Schedule

Chlorinator has moving parts operating in high velocity water and exposed to chemicals.

Recommend regular check and maintenance of parts to identify wear and tear before major breakdown.

Regular care and attention to the equipment will ensure its reliable condition.

2. Insects and bugs

Insects and bugs are often attracted to the warmer, dry environment inside the power supply enclosure.

Recommend with the main power is OFF, spray insecticide spray on surfaces surrounding mounting wall area to prevent insects/bugs infestation.

Repeat this every three months (season) or as necessary.

3. Maintenance schedule

Timing	Maintenance Check	Action (if applicable)
Fortnightly	1. Check pool water chemistry 2. Check leads/cables connection to cell 3. Check cell for Calcium build up	1. Balance water chemistry elements and adjust Chlorine output to ensure ideal reading (refer to water chemistry table) 2. Ensure no water on contacts and all leads/cables are secure in position 3. Refer to cell cleaning section
Tri monthly (Each Season)	1. Check for leakage on all connections 2. Check for power supply control box	1. If leakage found, isolate pump, OFF pool equipment. Disassemble leaked joint, clean and replace oring/connections. 2. Check for insects around power board, spray surface insecticide around the wall mounting area
Six monthly	1. Check operation of unit and Chlorine level	1. Confirm and adjust Chlorine output if required 2. Confirm and adjust TIMER ON if required

GENERAL INFORMATION

Pool Water Chemistry Instructions (see page 19 for salt levels)

POOL WATER BALANCE	Free Chlorine (ppm)	pH	Total Alkalinity TA (ppm)	Calcium Hardness (ppm)	Stabiliser - Cyanuric Acid (ppm)
Ideal reading / range	1.5 - 3	Concrete & tiled pools 7.4-7.6 Other surfaces 7.2-7.4	80 - 150	Concrete & tiled pools 200-275 Other surfaces 100-225	25-50ppm (15-25ppm if used with an ORP controller) Not to be used in indoor pools.
To increase	Increase output of sanitiser. Add chlorine. Increase filtration time.	Add Soda Ash (Sodium Carbonate)	Add Buffer (Sodium Bicarbonate)	Add Calcium Chloride	Add Cyanuric Acid
To decrease	Decrease output of sanitiser. Decrease filtration time.	Add Hydrochloric Acid	Add Hydrochloric Acid or Dry Acid	Partially drain & refill pool with lower hardness water to dilute	Partially drain & refill pool to dilute
Frequency of testing	Weekly	Weekly	Weekly	Weekly	Regularly

TROUBLESHOOTING

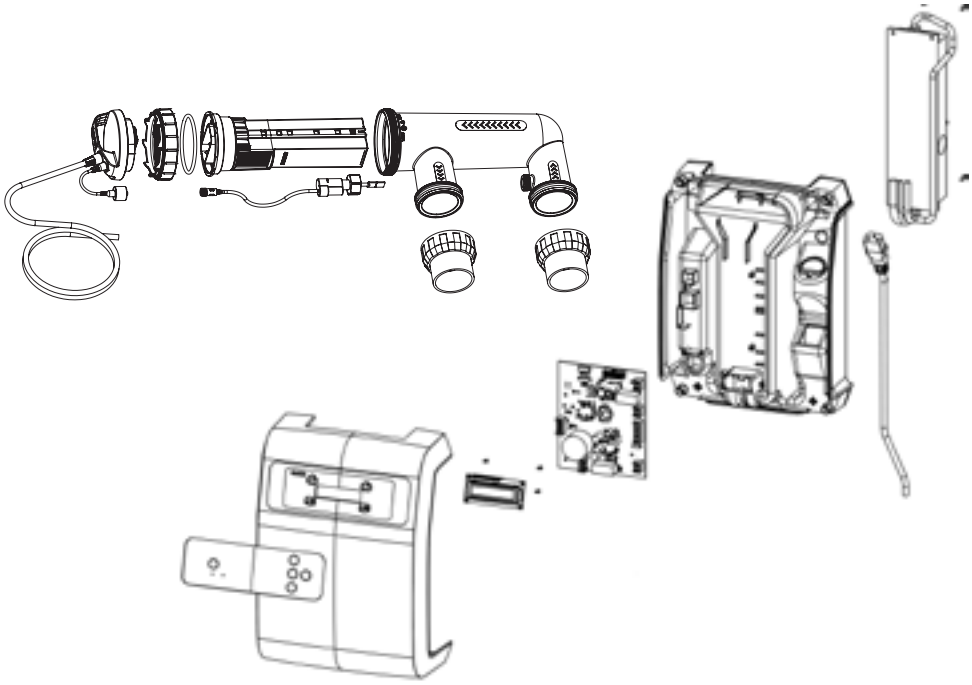
Alarm/Fault indication	Potential Cause/Check For	Solution
No Flow	1. Pump turned off/disconnected 2. Valves closed 3. Flow switch position 4. Flow switch lead disconnected from cell	1. Pump turn ON 2. Valve OPEN/water flow through system 3. Flow Switch Arrow UP and paddle 3 segments good condition 4. Connect Flow switch lead
Add Salt	1. Salt level in pool has dropped too low 2. Pool water temperature is low 3. Cell has failed	1. See section TDS levels above 2. Increase salt level or raise water temperature 3. Call a technician
Display blank	1. No Power to Controller 2. Fuse blown	1. Plug in controller and ensure mains power available 2. Call a technician
No or low Chlorine Production	1. No power to system 2. Main house electrical fuse blown 3. Leads/cables not connected to cell 4. Insufficient flow from pump 5. Faulty Pump 6. Cell failing or failed 7. Filter needs back washing 8. Dirty cell 9. Flow switch not connected or damaged 10. Chlorinator Control set to manual off 11. Chlorinator ON Timer period is too short/insufficient 12. Chlorinator CHLORINE OUTPUT set too low or “0” setting 13. Water Temperature below 15ºC 14. Pool water chemisty out of balance 15. Salt level too low triggering low salt cut-out 16. Pool stabiliser too low 17. Winter / Pool or Spa cover mode accidentally activated	1. Connect power ON to system 2. Replace electrical fuse in main house 3. Check and connect leads/cables to cell 4. Increase flow from pump 5. Check pump operation or replace 6. Check and / or replace cell 7. Run back washing on filter 8. Check and clean cell 9. Check Flow switch connection or replace new one 10. Chlorinator Control set to manual ON 11. Increase Chlorinator ON timer period 12. Adjust/Increase Chlorinator CHLORINE OUTPUT setting > 0 13. Increase water temperature to 20-24ºC 14. Take and test water sample (by pool tech/pool shop/calibrated equipment) 15. Increase Salt level as per recommended levels 16. Get stabliser ideal reading as per recommended levels 17. Check settings are correct
Clock fails to keep time when main power OFF	1. Battery life expired 2. Firmware is not updated	1. Call a technician 2. Call a technician

SPARE PARTS

Models and Exploded View

15g/h system	**DNP15C**
15g/hr low salt system	**DNP15CLS**
25g/h system	**DNP25C**
25g/h low salt system	**DNP25CLS**
35g/h system	**DNP35C**

Nipper Cell AU and NZ



Scan for further spare parts information

Davey Warranty

Davey Water Products Pty Ltd (Davey) warrants all products sold will be (under normal use and service) free of defects in material and workmanship for a minimum period of one (1) year from the date of original purchase by the customer as marked on the invoice, for specific warranty periods for all Davey products visit daveywater.com.

This warranty does not cover normal wear and tear or apply to a product that has:

- been subject to misuse, neglect, negligence, damage or accident
- been used, operated or maintained other than in accordance with Davey's instructions
- not been installed in accordance with the Installation Instructions or by suitably qualified personnel
- been modified or altered from original specifications or in any way not approved by Davey
- had repairs attempted or made by other than Davey or its authorised dealers
- been subject to abnormal conditions such as incorrect voltage supply, lightning or high voltage spikes, or damages from electrolytic action, cavitation, sand, corrosive, saline or abrasive liquids,

The Davey warranty does not cover replacement of any product consumables or defects in products and components that have been supplied to Davey by third parties (however Davey will provide reasonable assistance to obtain the benefit of any third-party warranty).

To make a warranty claim:

- If the product is suspected of being defective, stop using it and contact the original place of purchase. Alternatively, phone Davey Customer Service or send a letter to Davey as per the contact details below
- Provide evidence or proof of date of original purchase
- If requested, return the product and/or provide further information with respect to the claim. Returning the product to the place of purchase is at your cost and is your responsibility.
- The warranty claim will be assessed by Davey on the basis of their product knowledge and reasonable judgement and will be accepted if:
  - a relevant defect is found
  - the warranty claim is made during the relevant warranty period; and
  - none of the excluded conditions listed above apply
- The customer will be notified of the warranty decision in writing and if found to be invalid the customer must organise collection of the product at their expense or authorise its disposal.

If the claim is found to be valid Davey will, at its option, repair or replace the product free of charge.

The Davey warranty is in addition to rights provided by local consumer law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

For any internet connected products the consumer is responsible for ensuring a stable internet connection. In the event of a network failure the consumer will need to address the concern with the service provider. Use of an App is not a substitute for the User's own vigilance in ensuring the product is working to expectation.

Use of a Smart Product App is at the User's own risk. To the fullest extent permitted by law Davey disclaims any warranties regarding the accuracy, completeness or reliability of App data. Davey is not responsible for any direct or indirect loss, damage or costs to the User arising from its reliance on internet connectivity. The User indemnifies Davey against any claims or legal actions from them or others relying on internet connectivity or App data may bring in this regard.

Products presented for repair may be replaced by refurbished products of the same type rather than being repaired. Refurbished parts may be used to repair the products. The repair of your products may result in the loss of any user-generated data. Please ensure that you have made a copy of any data saved on your products.

To the fullest extent permitted by law or statute, Davey shall not be liable for any loss of profits or any consequential, indirect or special loss, damage or injury of any kind whatsoever arising directly or indirectly from Davey products. This limitation does not apply to any liability of Davey for failure to comply with a consumer guarantee applicable to your Davey product under local laws and does not affect any rights or remedies that may be available to you under local laws.

For a complete list of Davey Dealers visit our website (daveywater.com).

DAVEY

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