

JCR ENGINEERING

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JCR Ionic Reduction Cleaning System

## SETUP AND INSTRUCTION MANUAL

# JCR 150R

*Ion Stream Commercial*

Professional In-Store Jewellery Cleaning System

 N14490

*Designed and Manufactured in Australia*

Document Revision: 1.4

## Getting Started

Thank you for buying the series 2 150R *Electrolytic Cleaner*. We are sure it will prove to be a valuable tool and give you many years of trouble-free service.



## Packing list

*Please thoroughly examine this list for missing parts.*

*Please note that this product is undergoing continual development, and consequently the exact appearance may vary slightly from the model pictured throughout this manual.*

- 1 x Ionic 150R Series 2 control unit.
- 1 x 12V DC plug pack battery charger (exact make and model may vary depending on market)
- 1 x Silver hook cleaning electrode with integral 4mm male connector.
- 1 x Chemical resistant silicon electrode lead set.
- 1 x 10mm machined stainless steel knurled rod-electrode with integral 4mm socket.
- 3 x 14g Sachets of electrolyte powder. (This will make 3L of solution).
- 1 x 1L resealable electrolyte container with screw top lid, and anti-spill electrode holder.

## Introduction to the Ionic 150R Electrolytic Cleaner

The 150R is a smart and versatile product designed for routine cleaning of jewellery for display and specifically to clean jewellery set with delicate or chemically reactive stones. It is made to be versatile and simple in use. Its principle use is the quick and safe removal of tarnish from the surface of gold and silver. It can also be used to clean stainless steel and other metals. The 150R can be used with great advantage

in conjunction with an ultrasonic cleaner provided the item is not set with delicate stones. To remove tarnish, oxidation and oil or grease residues from any conductive surface using the electrochemical process of electrolysis.

In use the item is placed in a non-hazardous electrolyte which has a pH of approx 9.5. This means that it is slightly alkaline and can't damage chemically active gems like opal, ironstone, lapis lazuli, turquoise, coral, pearls etc.

A carefully measured and regulated current is applied to the surface of the item being cleaned irrespective, of the distance between the electrodes. In practice millions of tiny hydrogen bubbles are formed on the conductive surface of the jewellery connected to the cleaning electrode. These bubbles dislodge and then mix oily molecules with the electrolyte, which contains an effective degreaser. Weak molecular bonds which hold the dirt in place are released by the action of the current. The removal of tarnish from silver is almost immediate taking approximately 2 – 20 seconds. Tarnish from gold takes slightly longer at around 10 – 40 seconds. This form of cleaning also removes oily and greasy deposits off the surface of gems and diamonds, leaving them sparkling.

The 150R contains an internal timer. This timer automatically starts when both electrodes are placed in the electrolyte. At the end of the cycle the 150R returns to standby mode. The clean cycle can be interrupted at any time by removing one or more electrodes. The timer immediately resets placing the unit in standby mode, ready for the next cleaning cycle.

## Charging the internal battery

The Ionic 150R contains an internal high quality Ni-MH rechargeable battery pack and battery management circuit. It has been designed to charge the battery at the optimum rate in order to maximise serviceable battery life.

To charge the battery pack plug the charger into the *Power* socket at the rear of the unit.

**Only use the supplied charger, and never exceed a continual charge time in excess of 14 hours.**



In practice, regardless of the state of charge of the battery, it is quite acceptable to perform an overnight charge before each day of service.

The blue charge light on the front panel will glow to indicate that charging is in progress.

*For safety reasons the internal battery is distributed in a discharged state. We recommend that it is given an overnight charge before it is put into service (an overnight charge is defined as a 10 - 14 hours)*

From this point forward it is quite acceptable to “top-up” the battery pack as required.

After a full overnight charge the battery will typically run for up to 210 cleaning cycles, or up to about 150 minutes of continuous cleaning.

If you intend to use your Ionic 150R sporadically it may be more convenient to quickly “top-up” the battery pack before or after each session. Please note that if not used frequently it is beneficial for battery longevity to perform an overnight charge each month.

When the battery is too discharged to clean, the blue *Check* indicator will consistently glow. At this point it is advisable to give the battery a complete overnight charge. To protect the operator from potential electrical hazards, the functionality of the unit is disabled during charging. Charging may be interrupted and resumed at any time by simply removing the charge jack from the rear of the unit. This ensures the user is isolated from line voltages at all times.

## Electrodes and Leads

You have been supplied with a set of premium quality leads and electrodes. The lead is made from a high quality durable, chemical resistant and flexible silicon insulated wires. There are two interchangeable cleaning electrodes – a silver hook, and an optional crocodile clip. These can be selected according to application. The electrodes simply plug onto the electrode lead using industry standard 4mm plugs. All parts are available as replacements.



*Rod Electrode (10mm machined stainless steel rod with 4mm socket)*

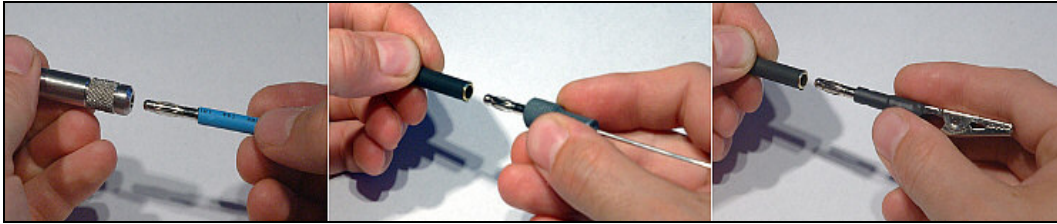


*Optional Crocodile Clip (Nickel plated crocodile clip with integral 4mm plug)*



*Hook Electrode (Silver hook with plastic grip and 4mm plug)*

The silver hook electrode is ideally suited to most applications. For gold or silver jewellery cleaning the silver hook should be used. The optional clip is provided to enable the user to attach their own custom made silver electrodes. It is sometimes useful to do this in order to clean an awkward or unusual shaped piece of jewellery. The clip simply provides a convenient method of connecting to this electrode. For best results avoid submersing the crocodile clip in the electrolyte – under some conditions it is possible to contaminate the solution, potentially staining the item being cleaned.



The electrode lead utilises standard 4mm plugs and sockets which simply push into place. Please note that the appearance may differ slightly from the image above through continual product refinement and development.

Plug the electrode leads into the electrode socket on the rear of the unit. Ensure the plugs are pushed firmly home and twisted into the bayonet sockets. **The black wire plugs into the Return socket, and the blue wire plugs into the Channel 1 socket.**

If longer leads or custom leads are required please contact JCR Engineering.



## Mixing the Electrolyte

For most applications it is favourable to mix 1 litre of electrolyte. This will last for many cleaning cycles and have sufficient volume to clean bulky items such as larger chains or watches.

It is necessary to store the electrolyte in the provided 1L air tight container to avoid contamination and evaporation when not in use. Evaporation will result in incorrect concentration of the electrolyte.

**CAUTION!** *Although the cleaning electrolyte is non-hazardous when fresh, through use it will gradually become increasingly contaminated with various metal salts, grime and general dirt. Please ensure the container is appropriately stored and labelled. Wash hands after use. Clean up any spills immediately. Observe all precautions reserved for using chemicals. Keep out of reach of children.*

Empty the contents of a single 14g sachet of electrolyte powder into a suitable 1L plastic bottle. Then pour 1L of deionised or distilled water on top of the powder. Measure the water volume carefully as the concentration of the electrolyte is important. In order to maximise the effectiveness. Put the lid on the container and shake thoroughly to mix the contents. The electrolyte is now ready for use.

Replenishment electrolyte powder can be purchased from your original distributor

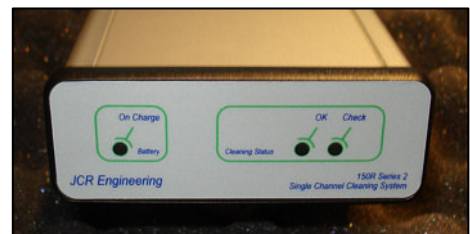
## Cleaning with the 150R

- *The electrolyte should be used at room temperature. Some stones such as opal are very vulnerable to sharp changes in temperature and may crack due to thermal shock.*
- *When cleaning silver or gold do not allow copper, brass or steel to come into contact with the electrolyte as under some conditions black staining of jewellery may occur. For best results only use the silver hook electrode for gold or silver jewellery.*
- *Jewellery with triplets or doublets should only be cleaned if absolutely necessary, as there is a very high risk that the cemented layers can become detached. We have done extensive tests on the effects using the Ionic 150R on pearls, solid opals, emeralds, ironstone, coral and other chemically active gems and have found it to be safe.*
- *The customer should assure themselves of the suitability of this cleaner for their jewellery as no responsibility for damage will be accepted by us. Should the customer wish to see the cleaner used on a particular stone of concern please contact us for a risk free demonstration.*
- *If cleaning jewellery containing opal, emerald and or other delicate gems **do not** use in conjunction with an ultrasonic cleaner to assist in the removal of grime. In this case a soft bristle brush should be used instead to dislodge particles of dirt or grime.*
- ***The item being cleaned should be in contact with the silver electrode at all times during cleaning.** If the item being cleaned inadvertently falls off the hook electrode during cleaning, immediately remove the electrode from the electrolyte to stop the current flow. With heavily used electrolyte, under these conditions it is possible to discolour the item being cleaned. Stopping the current flow by removing one or more electrodes from the electrolyte will prevent this from happening.*

## The 150R front panel

The 150R front panel has 2 indicators. *OK* and *Check*.

The cleaning cycle is automatically controlled. The **OK** indicator will be illuminated during cleaning if all electrical requirements are met. If the **OK** indicator is replaced with the **Check** indicator then cleaning should be terminated, and the **troubleshooting table at the back of this manual** should be consulted. **In most cases the Check light will be caused by a flat battery.**



## Cleaning silver and gold jewellery

- 1) Fill a suitable container with the prepared solution and immerse the stainless steel electrode into the solution. Plug the electrode lead into the Ionic 150.
- 2) Hook a single item of jewellery onto the silver electrode and simply immerse into the solution. If all is well the **OK** light will illuminate indicating the cleaning cycle is in progress. During the cycle it is good practice to slowly rotate the jewellery so all surfaces face the stainless steel electrode. Notice the gentle bubbling action. Initially there will be fewer bubbles because the surface of the metal is partially insulated by the grease, oil and dirt. As the metal becomes cleaner there will be more bubbles due to higher conduction levels. Depending on the level of tarnish or grease on the item, the cleaning time can be as short as a few seconds.

3) If the jewellery is very dirty or oily, it is advisable to remove it from the electrode, and lightly brush it to remove the now loosened dirt. Hook it back onto the electrode and perform another cycle if necessary. More cycles can be performed as necessary.

4) Rinse thoroughly in distilled or de-ionized water and pat dry with a soft lint free tissue. If finished replace the lid on the electrolyte to avoid contamination or evaporation. The solution can be used many times but will need replacing when it becomes dirty or less effective. As with all chemicals care should be taken to ensure that they do not come into contact with food or young children. Normal precautions apply in regards to the use of chemicals.

## Cleaning copper, brass and stainless steel

The 150R is also a fantastic cleaner for copper and stainless steel. It is however important that you follow this fundamental rule:

***Avoid cleaning gold or silver in an electrolyte that has previously been used to clean copper or brass. This can contaminate the electrolyte potentially staining the jewellery surface.***

***Gold silver and gems can be safely used in the same electrolyte.***

## Using the Ionic 150R in conjunction with an ultrasonic cleaner

The 150R can be used to enhance the effectiveness of any ultrasonic cleaner.

The 150R cleaning beaker can simply be placed inside the ultrasonic bath. The ultrasonic pressure waves are able to pass through the plastic container. This method avoids mechanical and electrical coupling between the bath and the electrodes. Mechanical coupling can cause abrasion and pitting to the bath through metal to metal vibrational contact.

In practice, the ultrasonic cleaner can be turned on, and the electrolytic cleaning can be performed simultaneously. This combines the strengths of both cleaning systems.



## Troubleshooting

In the unfortunate circumstance that trouble is encountered please refer to the following table for help.  
For further advice please email [sales@jcr-engineering.com](mailto:sales@jcr-engineering.com) or phone us on +61 7 3372 4282.

Symptom	Probable Causes	Solution
<b><i>Check indicator glows continually, or frequently flickers when the electrodes are in the solution.</i></b>	1) Battery exhausted	1) Charge battery overnight.
	2) Cleaning bath too large – too much distance separating electrodes.	2) 300mL – 1L is the ideal capacity for the bath. Depending on the surface area of the item being cleaned, the electrodes should typically be separated by no more than 100mm – reduce distance.
	3) Contacts on electrode plugs are dirty, or damaged.	3) Inspect and clean plug contacts. Replace if damaged
<b><i>Check and OK indicators on together</i></b>	Indicates a caution	Refer to solutions above (most probable cause is that the battery needs recharging)
<b><i>The timer stops the cycle prematurely</i></b>	This normally occurs when there is a poor electrical connection on either the electrodes or the lead. When this occurs the Check light will frequently flicker during the cycle.	Make sure all electrode contacts, plugs and sockets are clean. Pay particular attention to the connection between the item being cleaned and the hook electrode. The source of the poor connection can be traced quickly by moving each connection point during a cycle whilst observing the state of the Check light.
<b><i>When the charger is plugged in, the unit will not operate.</i></b>	This is normal.	For safety the functionality of this model is disabled when the battery is being charged.
<b><i>The CHARGE indicator will not light when charger is plugged in.</i></b>	No 110 / 240V, or incorrect plug pack.	Ensure you are using the correct plug pack!
		Check that the mains power is on, and that the plug pack is fully pushed into the wall socket.
<b><i>The battery does not hold it's charge</i></b>	The battery may need replacing.	1) If the battery has not been used for many months or years It may be possible to rejuvenate the battery by multiple consecutive charge/discharge cycles.  2) Contact distributor/manufacturer for a battery replacement kit or send the unit to JCR Engineering for service.