User Guide

Quattro Trolley

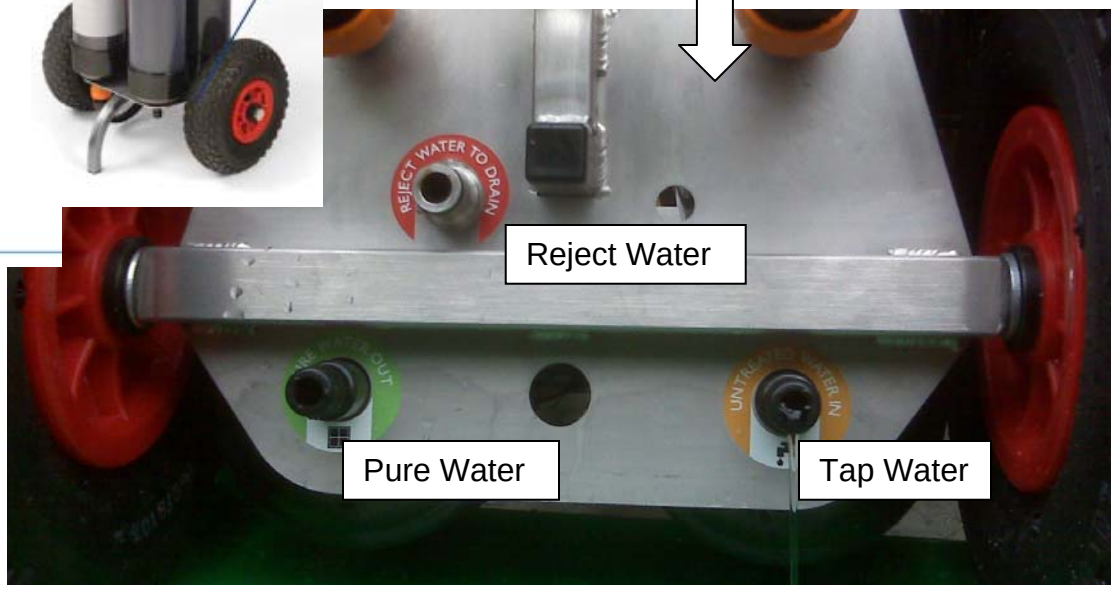
ionic SYSTEMS

Quattro Filter System consists of:

A. Carbon-Sediment Filter Cartridge
B. RO Membrane Cartridge
C. DI Resin Cartridge (blue)
D. DI Resin Cartridge (blue)

Connections:

1. Tap Water inlet
2. Pure Water outlet
3. Reject water outlet



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The Quattro is designed to be used lying down.

All of the day to day water connections are made on the bottom of the unit.

The system consists of:

Quattro Filter System consists of:

A. Carbon-Sediment Filter Cartridge Qty 1
B. RO Membrane Cartridge Qty 1
C. DI Resin Cartridge (blue) Qty 2

Each of the cartridges are replaceable:

The Carbon Cartridge lasts 1 year.

The DI Cartridge(s) are color changing
and are replaced when they are Brown in color.

The RO Membrane cartridge will last 3 to 5 years

Replacements are available at
www.jracenstein.com (800) 221 3748

INTRODUCTION
In 1997 Ionic Systems Ltd introduced the very first vehicle mounted waterfed pole system, known as the Reach & Wash™ system. Since then Ionic Systems has continued to lead the field with its proven designs. Ionic's customers can be reassured by the company's commitment to independent testing of its products.
Window Cleaning has become a safety driven industry. Ionic Systems' focus is to provide up to the minute products that are proven to be safe.
Ionic Systems Ltd manufactures the Reach & Wash™ ionic window cleaning system as well as a wide range of other ionic cleaning products. We specialize in making the tools that do the job in the safest, most effective, efficient and economical way. We offer the largest range of mobile water treatment systems and Waterfed Poles in the World and are sure you'll find our great range of ionic cleaning products to be the solutions that prove to be of immediate benefit to your business.

Prior to first use the RO Membrane should be flushed with ordinary water for 20 minutes.

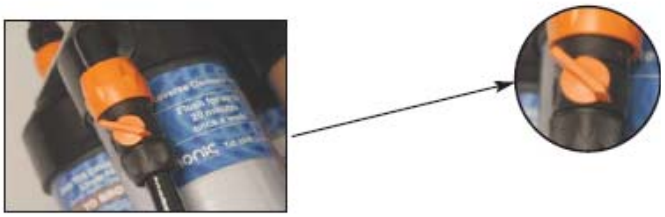
Prior to first use both the Carbon Filters should be be flushed with ordinary water for 2 minutes.

Quattro Regular Maintenance Procedure

RO - FLUSH TWICE A WEEK

On the RO Filter you will find the flow control valve, turn this valve to 12 o'clock position.

- Connect water supply to fill position on system, connect hose to drain away the reject water.
- Turn water supply on, flush for 20 minutes.



After 20 minutes turn the flow control valve to 4 o'clock position.

NOTE

- Reject water carries all the filtered impurities away to drain and its important that when running a ratio of 60% product water to 40% reject water is maintained.

- While the machine is working reject water will run from the connection marked DRAIN, ensure this water is run away to a suitable place. A ten foot piece of garden hose is recommended for attachment to the drain. (Not supplied).

- Water temperature will also play a part; cold water is denser and therefore cold water will take longer to filter.

Quattro Periodic Servicing

RO Membrane
The RO membrane is an expensive filter within the system.
The Carbon/Sediment filter is in place to protect the RO membrane.
A regular backwash of the RO Membrane Cartridge is very important to get long life from the cartridge.

Carbon/Sediment Cartridge
The Carbon/Sediment filter removes chlorine and sediment.

- The carbon filter is the first element within the filter.
- The blue 5 micron foam at each end of it acts as a "catch all" prior to the RO membrane.

If not filtered out,
Chlorine will cause oxidization and may burn holes in the sensitive membrane.

The combined Carbon/Sediment filter should be replaced every 12 months.

Color Change DI Resin Cartridge
The Color Change mixed bed DI resin cartridge is color changing.
As the resin cleans and de-ionizes the water the resin will consume the impurities in the water
As this occurs the resin's color will change from BLUE to BROWN.

Once all of the resin has changed to BROWN

- Watch your output water and when the TDS rises above 10 TDS.
- It is time to replace your DI cartridges.

If not changed, the Brown cartridges will begin to Add impurities into the product water.

Note:
When the second DI filter has turned about 60% brown, you should order
a new DI Cartridge set, (2 Cartridges) This will allow you to experience no down time.

Useful Tips
When first using the system, you should flush the hoses, to remove air locks and any manufacturing residues present in the hose. You should always flush the hoses prior to window washing to remove standing water in the hoses.

This takes approximately 2 minutes.

If you leave the system idle for any period of time flush out the water for 10 minutes before you start cleaning windows again.

Quattro Trolley

OPERATIONAL PROCEDURE

Setting up the Quattro.

The Quattro arrives with several “Quick” water hose connections.
The following illustrations will guide you through a typical setup.

The water flows through the Quattro in this manner:

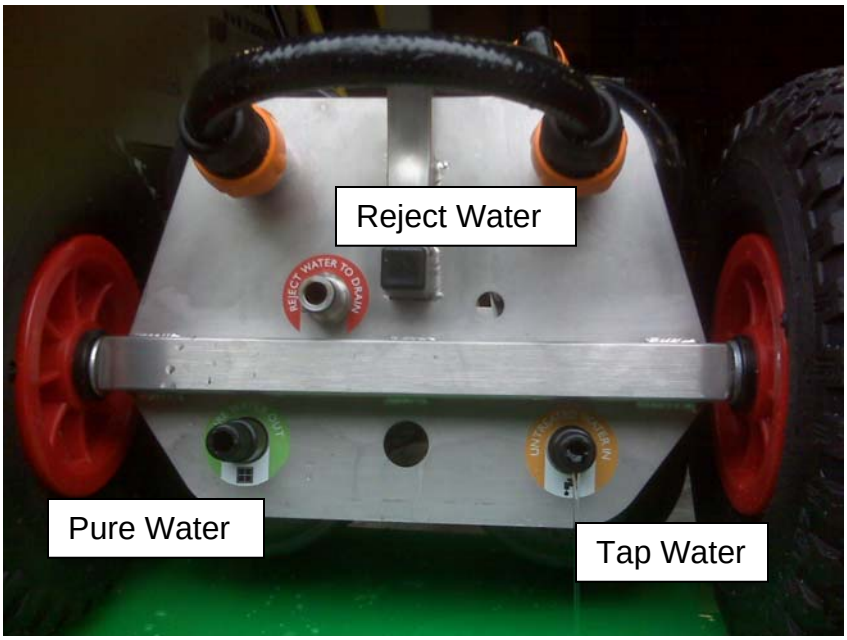
Running the Quattro

The Quattro is operated lying down with the water connections made on the bottom.
Stand the Quattro up during storage and disconnect one end of the quick connect hoses if you wish to drain water from the cartridges.

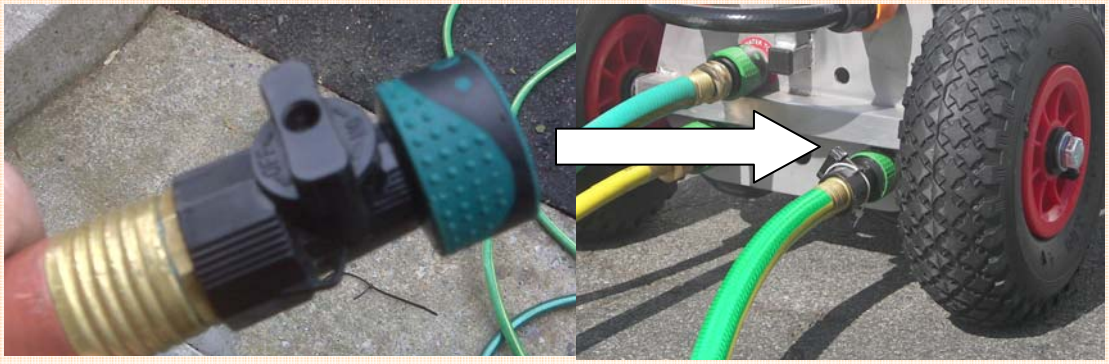
Setup

Rock the Quattro back on the wheels and set the unit on it's handle

Quattro Connections are made to standard garden hose fittings using the quick connect.



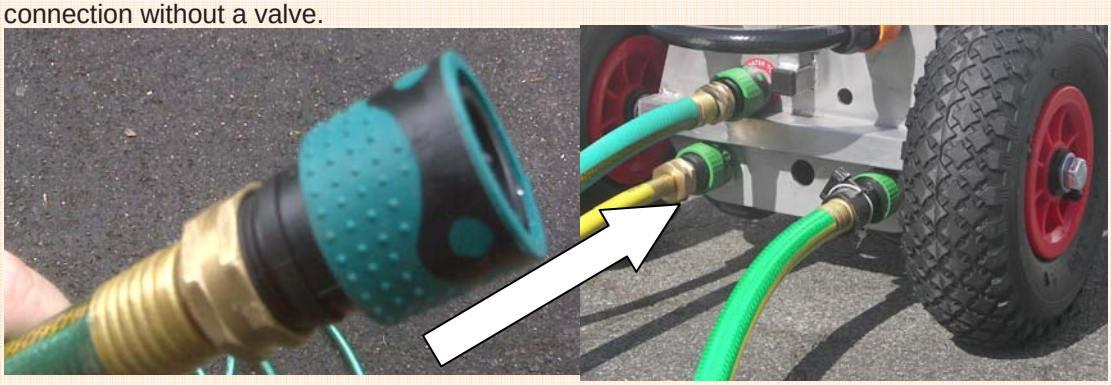
The **Tap Water** should use a connection that attached to the end of the hose and includes an on/off valve



This connection presses on to the tap water inlet.

The **Reject Water** hose connection uses a connection that has a male hose fitting and a connection without a valve.

The **Pure Water** output connection also uses the same “quick connect” a male hose fitting to a connection without a valve.



The Connections to the Quattro are complete.

Reject Water
Place your reject water hose in a flower bed, on the lawn, or in a fountain when possible to best reuse the water. Conserving water is important and you may want to collect the reject water in a barrel and pour the water into local fountains or flower beds if none are nearby this setup.

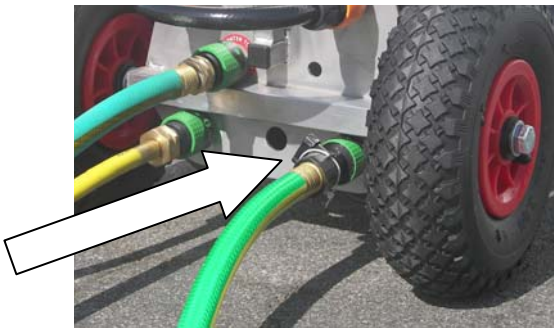
Connecting your Water Fed Pole

Ionic poles (any some other brands) come equipped with a quick connect fitting on the end of the pole.

Select the hose end quick connect with on/off valve and attach
that to the end of the hose attached to the pure water output of the Quattro.

Using the Quattro

Turn on the tap water supply at the source and on the quick connect valve.

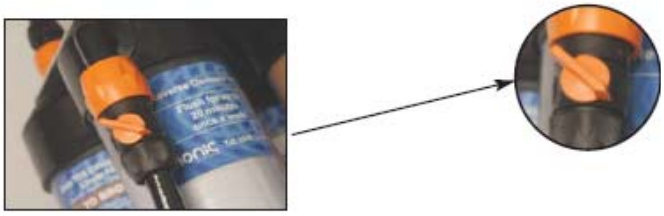


Turn the pure water supply to the pole to the on position

This picture depicts “off”

Connecting your Water Fed Pole (continued)

Turn the orange flow control on the RO bypass valve to set the water flow to 60% pure water and 40% reject water.

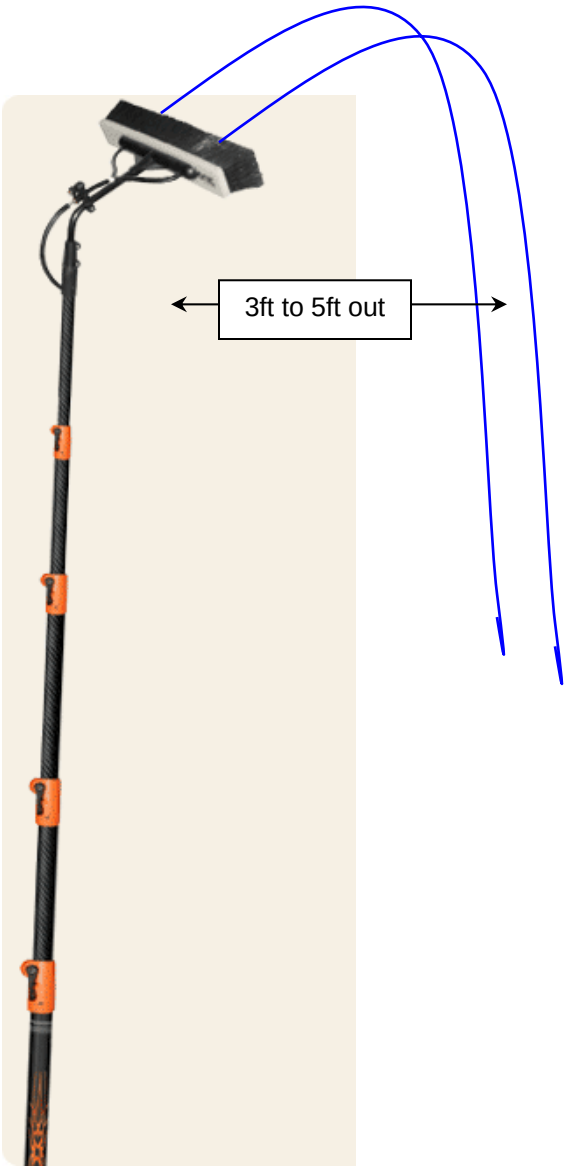


Use this “4 O’clock” position as a starting point for this setting.

Water should start coming out of the end of your water fed pole.

Note:
A strong stream that splashes water around when the water hits the glass is not recommended

With the pole held straight up the water should squirt out horizontally no more than 5ft or so.



Water Flow

You can test the flow of the pure water by timing how long it takes to fill a 5 gallon bucket.
Divide the gallons by the time and you get the gallons per minute.
A Pole should have 0.6 gallon per minute flow.

An RO/DI unit producing 0.6 Gallons per minute should fill a 5 Gallon bucket in 8 minutes 15 seconds.

If it fills faster than this you can use the quick connect valve attached to the connector to the pole to increase or reduce water flow until you are comfortable with the flow.

Please review the following section if your flow is too low.

Water Flow at heights and low water pressure

The Quattro Basic runs of the city water pressure

Typically this will be pressure from 40psi to 80psi

The Quattro will feed pure water well to a pole up to 40ft high with water pressure at 60 to 80psi
When water pressure is between 40psi and 60 psi the unit will produce water for one pole to 20ft high.

If you need to regularly go higher than 30ft it is recommended that you add a booster pump.

Adjusting the Quattro basic for Water Pressure

This is the same procedure as setting the RO Reject water to 60% Pure and 40% Reject.

When pressure falls or you are working at heights you will adjust the bypass valve on the RO Membrane cartridge.
Generally the starting position for adjusting the flow is 4 O'clock as shown below:

Slowly rotate the dial Counter Clockwise until you approach the 1 O'clock position. Or you have sufficient water flow at the pole.

This will send more Pure water to the pole

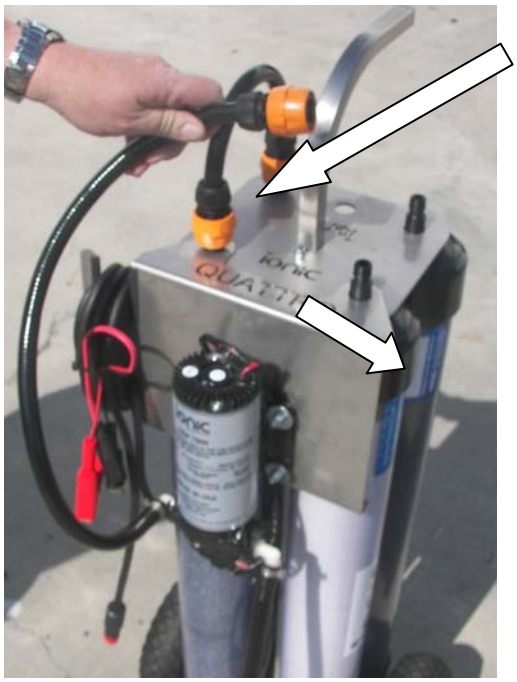
As the Pole heads up over 30ft or the water pressure drops you will notice that less and less pure water will be created.
This indicates the need for the booster pump.

Booster Pump Installation

The Booster Pump Hangs on the front of the Quattro.

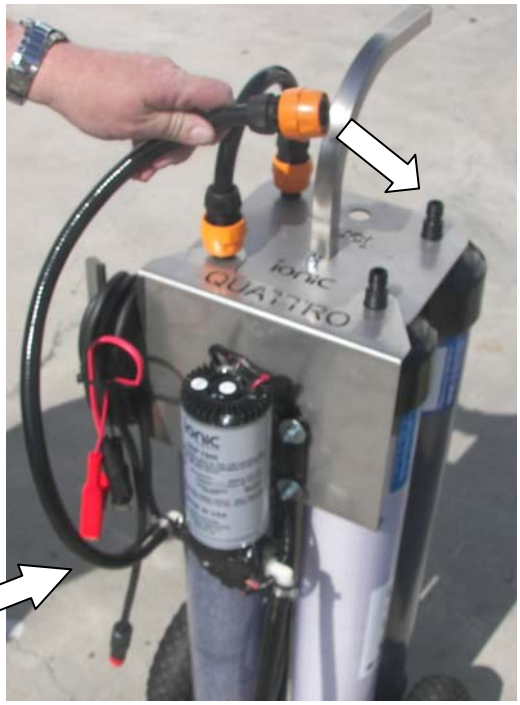
Remove three of the quick fittings as shown in the picture to the right.

Hang the Booster Pump On the “Front” of the Quattro



Reconnect the DI Cartridge connection on the left fitting as shown in this picture

Select the LEFT Pump Connection to and push connect that to the far back right connection to the Carbon Filter.



Attach the booster pump output to the Front right connection to the RO membrane cartridge input connection.

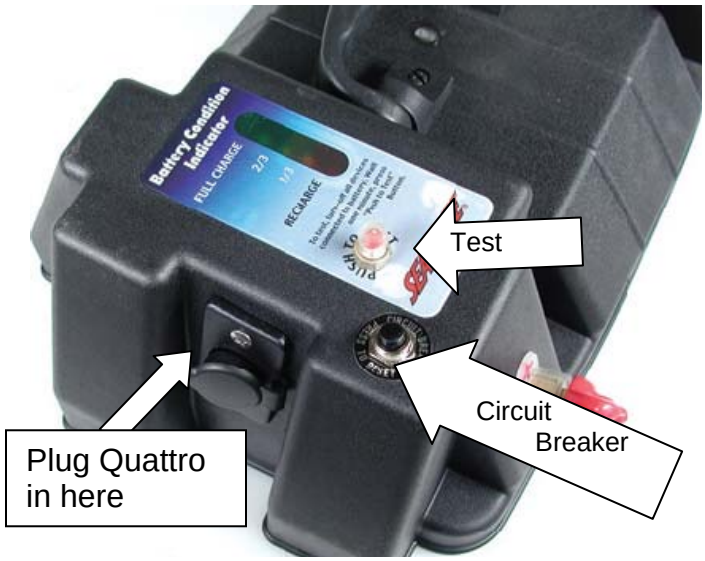
Once connected run the 12v electrical cord to the power source

Turn the water on before final 12v connection…

The pump will immediately start to operate Once plugged into the power source.

The power source can be any 12v receptacle. Many automobile receptacles can power the pump.

The power source supplied with the kit is a very capable 70+ Amp hour battery and special container box.



The 12v plug receptacle will plug directly into the Power Source box sent with the 12v pump kit
Alternatively the clips can be connected to the battery poles.

Press the red Test Button to gauge the level of charge in the battery prior to heading out for the day.

Should a short develop the circuit breaker will protect the Quattro and battery.
Push to reset the breaker.

A 10Amp Charger is included with the 12v Pump Kits it can be connected to the battery poles to provide an overnight recharge.

Using your Quattro and Water Fed Pole

Interaction with People

When working in areas accessible to others, deploy warning signs to indicate the presence of potential slip and trip hazards. Run delivery hoses from system head. As the brush reaches the top slow the motion and stop just short of the top frame by a margin of 1-2 inches (with practice a closer tolerance can be achieved). Then, taking care not to wet the top frame move the brush horizontally along the top of the glass to the opposite side of the window, move the brush down the window slightly and repeat the sideways motion to the opposite side. Repeat this side to side movement moving steadily down the window until the window has been completely rinsed. Continue until all the windows have been washed in this way.

Pole Technique

Experience will lead to the user developing correct pole technique, in time operators will learn to use the stored energy in the pole. Downward movement of the pole causes the pole to bend, as the pole seeks to straighten itself, using the spring in the pole will help the operator to raise the pole upward with less effort.
It is recommended that the operator controlling the pole allows the pull of gravity to create as much of the pole motion rather than physically pushing and pulling the pole around on the glass. Thus guiding the pole left and right when agitating the dirt from the glass.

Beginners tend to use their arms to move the pole up and down, while old hands simply sway/rock or step forward and back. It is worth remembering that poles feel heavier when used at a steep angle and lighter when standing further back from the building at a shallower angle.

In most cases after the initial clean the job becomes much easier. There will be some jobs where the frames/glazing are badly deteriorated. in these few cases it may be necessary to treat them as initial cleans. In the most severe cases of frame/glazing deterioration it may be best to avoid the top inch of glass.

SAFETY IN WINDOW CLEANING USING WATERFED POLE SYSTEMS

Introduction

Portable ladders have traditionally been used by window cleaners mainly for cleaning windows at ground, first, second and even third floor level. Most falls to window cleaners involve the use of portable ladders. In recent years figures for accidents reported to the HSE and local authorities show that between two and seven window cleaners have been killed each year in Great Britain and about twenty to thirty suffer major injuries as a result of falls involving ladders. Many more suffer less serious injuries that result in several days off work
.
Building owners, designers, and window cleaners need to understand that window cleaners will continue to suffer regular accidents unless a different approach is undertaken to furthest extent of work with a view to working back towards the trolley, select appropriate pole for height of work to be undertaken and extend sections to the desired height
.
In basic terms the technique for cleaning is one of an upwards and downward motion to agitate and loosen dirt, followed by a side to side motion working from the top downward in order to rinse away the loosened dirt. It will take a little practice to become proficient with this equipment.
Water is known to most as h2o; however, in its pre-treated form water is in fact much more than just h2o as it contains many other chemicals and minerals.

When water is processed through the Reach & Wash Quattro water treatment system all chemical and mineral content are filtered out to produce 100% pure water.

Pure water has a strong desire to return to its former impure state, when applied to any surface pure water rapidly imports all impurities it comes across. If sufficient pure water and agitation are applied, all impurities can be flushed away and the remaining mineral free water will dry leaving a clean, clear and spot free finish.

Nooks and crannies in window frames can harbor years of dirt and detergent build up. When washed, dirt and detergent residue within the frames will be diluted and driven further into the frames; and, drain out over the glass once the washing has finished and the window is left to dry. At this point, dirt and detergent residue from the frames will be left on the glass leaving a predictably poor finish to the glazing.

Armed with this knowledge initial window cleaning with The Reach & Wash recommended Water Fed Cleaning System must be carried out in the following manor if acceptable results are to be achieved.

Set the water to flow through the brush. With a side to side motion followed by short up and down strokes across the frame, followed once more by side to side motions thoroughly wash the top frame, glazing and the top 8-10 inches of glass.

If detergent is present bubbles will appear, continue until soap bubbles subside. Wash the remainder of the window including the side frames once only, sufficient to remove visible dirt. Continue in this manor around the whole building. Prolonged washing at this stage will achieve little, as capillary action will only drain soil and detergent from the frames and glazing once washing is finished.

Once the windows have dried, wash the windows for a second time, but this time wash the glass without wetting the frames. Once again set the water to flow through the brush. Place the brush on the glass at the bottom left or right hand side of the window, then steadily raise the brush towards the top of the glass, doing so will ensure that the bristles curl downward underneath the brush those in busy town or city locations where consideration must be given to the time of cleaning and traffic conditions.

Generally warning signs should be deployed to warn of trip hazards presented from trailing hoses and the slip hazard presented by wet pathways. While Hi-Visability clothing should be worn by the operators especially during winter months and when working in proximity to roadways.

Hazards associated with the use of waterfed poles:

- Trip hazard presented by trailing hoses.
- Slip hazard presented from wet pathways.
- Trip hazard for operator while concentrating on work.
- Falls while working from flat roofs.
- Electrocution from pole coming into contact with overhead power source.
- Injury to others from falling poles.
- Injury through handling of poles.
- Spread of legionella disease through poor maintenance of filter system.
- Poorly designed and installed tank systems fitted into vehicles that may become detached.

Road safety

Journeys to and from the workplace are subject to a documented risk assessment. Assessment of these risks will include security of the load to ensure that it does not shift under normal driving conditions, emergency braking or during a minor collision. Responsibility rests with the driver of the vehicle; however business owners have a responsibility to provide suitable vehicles, equipment, and means of securing the load. To assess road safety risks consideration should be given to the security of waterfed poles, hose reels and ancillaries etc.

Legionnaires Disease

Legionella Bacteria can be found in low levels in most water sources, the presence of a few bacteria is in itself unlikely to cause a problem, it is when they begin to multiply that the risk increases. They require nutrients to multiply; these can be provided by sediment, scale, sludge and biofilms. These materials build in recent years many window cleaners have adopted the use of waterfed pole systems that facilitate the cleaning of windows up to 60ft/20mtrs high from ground level. Avoiding the need to work at height is an obvious immediate attraction however there are various considerations to be taken into account.

These will include:

- Provision of uncluttered access to commercial building facades.
- Designers of buildings to ensure reasonable access.
- It must be understood that depending on the condition of the glass/frames the initial cleaning may take longer.

Scope

For the purpose of this guidance, the term "waterfed pole" is defined as a telescopic pole fitted with a brush and a means of delivering pure water for window cleaning. The use of pure water is an integral part of the cleaning process. The term "Load" is defined as the water treatment system/water delivery tank, waterfed poles, and other ancillary accessories such as hose reels and warning signs

Avoiding Risk

The use of waterfed poles removes the need to work at height and provided the window to be cleaned can be viewed from the ground without obstruction, it is possible to clean using a waterfed pole. Although adopting waterfed pole use may remove the risks involved when working at height consideration must be given to both operational risks and other less obvious risks that apply to waterfed pole use. When assessing operational risks consideration must be given to the location of the building, its design, and terrain underfoot, weather conditions and overhead power sources. The suitability of staff with regard to their level of fitness and medical history and the need to identify any muscular or skeletal disorders that may develop as a result of operating a pole using poor technique.

Less obvious risks include the consequences of carrying heavy tank systems when a vehicle is involved in a road traffic accident, as well as the potential for the spread of legionella disease caused by poorly maintained filter systems.

Buildings on industrial sites and domestic properties present different risks than

- The height of windows to be cleaned.
- The site conditions.
- The means of pure water delivery.

For some jobs waterfed poles may be used in support of other access methods, for domestic properties to reach conservatory roofs or other windows inaccessible to ladders. On high-rise buildings to reach the lower elevations and link bridges or on glazed structures in support of controlled decent. For many buildings however waterfed poles may be used for the entire cleaning operation.
Due to the physical rigor of prolonged use care should be taken to select the lightest pole for the task, the lightest pole being the one that adequately reaches the top of the window but does not over reach.

Composite poles will be best suited for use on sites such as those near to railways, factories, and electricity generating stations or substations or any other site that poses a heightened risk of electrocution.

Pure water may be delivered to the waterfed pole by flexible hose from a variety of sources, these include de-ionizing cylinders/columns or cartridges, vehicle and trailer mounted systems and static systems incorporated into the building design. Delivery hoses pose a trip hazard that can be minimized if brightly colored hose is used and warning signs are deployed were ever hoses cross a walkway.

Use of waterfed poles

When extending waterfed poles it is desirable to raise the pole vertically, when this is not possible it will be necessary to extend the pole to the desired length horizontally along the ground. Raising the pole from this position will be a two person operation, one to stabilize the base and steady the pole while the second "walks" the pole up.

Manual handling

It is natural to operate a waterfed pole by movement of the arms alone and this is acceptable for poles that extend to a height of 35 feet. For waterfed poles that extend beyond 35 feet excessive strain may be exerted upon the upper body when operated for extended periods. It is recommended that when operating poles that extend above 35 feet use of arms be reduced by greater use of leg/whole body movement. With experience comes the ability to work with the natural balance of the pole, less effort is expelled once the operator has the pole up

Bacteria in the Filters

The filters used to purify water, if not replaced at specified intervals may become a fertile breeding ground for legionella bacteria. Water temperature is a particularly important factor in the survival and multiplication of legionella, when the temperature of water rises above 68 degrees the bacteria begins to multiply, the optimum temperature being 98.6 degrees.

Contracting the disease

The disease is normally contracted after the inhalation of the bacterium in small droplets (aerosols) or in droplet nuclei that is the residue after the water has evaporated. Waterfed poles produce aerosols and it should be noted that aerosols are not restricted to the point of production. Under suitable wind conditions, viable bacteria can travel up to 1650 feet.

Legionella will not normally multiply in cold water systems or even hot water systems when the water is heated at point of use, or when the system is in regular use. However legionella will multiply when the right conditions exist, these are;

- When sediment, scale, sludge and biofilms build up in filters.
- When water temperatures rise above 68 degrees.
-

Measures that should be taken to control the risk of legionella are;

- Replacement of filters at specified intervals.
- Following the manufacturers servicing recommendations.
- Keeping the system stored in a cool place when not in regular use.

If system cannot be stored in a cool place, drain tank and filters whenever the system is to be left standing idle for more than three days during warm summer months.

Choice of equipment

The choice of equipment will be determined by:
- The duration and extent of work.
- Collision with pedestrians or road traffic.

The purpose of risk assessment is simply to identify particular risks on any job in order to take precautions to minimize them, typically these may include:
- Instruction in the need for the operator to be vigilant with regard to the surroundings.
- Providing adequate PPE and or roof edge protection.
- Giving consideration to the day and time of cleaning.
- Provision of hi-Visibility clothing.

In general no window cleaner should work alone with a waterfed pole in any area or location that would involve increased risk to their safety such as a busy pedestrian area or road.

Personal protective equipment (PPE)

PPE is not directly relevant to the use of waterfed poles and is limited to protection against adverse weather conditions.

Training
It is important that the operator gets the training needed to correctly use and handle the water fed pole It is important both for the development of new skills and in order to deliver acceptable cleaning standards, that new staff become experienced using short poles before moving up to poles that extend above 35 feet.

Measures to reduce fatigue:
- Operate poles with greater use of the legs, by stepping a single stride forward and back use of the arms may be significantly reduced.
- Pole sharing with other members of the team.
- Switching from the left hand side of the body to the right, and visa versa.
- Taking periodic breaks to undertake other tasks.
- Taking periodic breaks free from activity.
-

Adverse weather

Generally waterfed poles may be operated in more adverse weather conditions than ladders. In windy conditions care should be taken when moving from a sheltered elevation to one affected by the wind. Waterfed pole use is not recommended in winds above 30mph.
Regardless of wind strength, waterfed poles should never be left unattended in an elevated position.
Pure water is a poor conductor of electricity, however waterfed poles of any construction should not be operated in any environment where they may contact or come within 6.5 feet of a source of high voltage electricity.
Waterfed poles should not be operated when a risk of an electrical/lightning storm exists.
During cold spells the likelihood of pure water freezing in the delivery hoses will adversely affect the use of waterfed poles. Systems that deliver hot water will be affected to a lesser extent and precautions should be taken to ensure that any water that may fall on to walkways is prevented from freezing by the prior application of sodium grit.

SAFETY IN WINDOW CLEANING USING WATERFED POLE SYSTEMS (continued)

Working in exposed positions

The need to concentrate on overhead activity may expose the operator to further hazards that include:

- Trips or falls.
- Falls from flat roofs.

5. Limitations and Exclusions

Ionic Systems Ltd and J.Racenstein Company, LLC shall not be responsible for any implied warranties, including those of merchant ability and fitness for a particular purpose. Ionic Systems Ltd and J.Racenstein shall not be responsible for any incidental or consequential damages including travel expense, telephone charges, loss of income, loss of time, inconvenience, loss of use of the equipment caused by the equipment and its failure to function properly.

This warranty sets out all of Ionic Systems Ltd's responsibilities regarding this equipment.

LIMITED 12 MONTH WARRANTY

1. What your Warranty Covers

Ionic Systems Ltd's Reach & Wash Systems warranted to the original owner to be free of defects in material and workmanship from the date of purchase for a period of 1 year subject to the following;

1) Ionic Systems Ltd will, within 1 year of purchase, replace defective parts (excluding replaceable filters) at no charge.
2) Replaceable filters are warranted for defects in material and workmanship only. Service life of replaceable filters varies with local water quality and are therefore not warranted.

Conditions of Warranty

1) The system must be maintained and serviced using replacement parts and filters supplied by Ionic Systems Ltd. The performance and functioning of your Reach & Wash System is directly related to the quality of the water being treated and the particular application in which it is being used. Therefore Ionic Systems Ltd's liability is limited to the cost of repair or replacement (at our discretion) of any defective part and does not include Incidental or consequential damages of any kind.
2) Systems must be installed and operated in accordance with the manufacturers recommended procedures and guidelines.

Limitations of Warranty

The warranty shall be void if alterations or modifications are made to the equipment, or if servicing or repairs are carried out by anyone other than Ionic Systems Ltd or one of its appointed agents.
The warranty shall be void if product failure or damage results from freezing, neglect, misapplication, fouling with sediment or scale or failure to operate the system in accordance with the instructions contained in the owner’s manual.

Obtaining Warranty Service

For warranty service please contact J.Racenstein Company LLC to make arrangements for inspection of defective parts. Simply contact us by dialing 1-800-221-3748 or by e-mail to helpdesk@jracenstein.com.