

Deionizer Installation, Operation & Maintenance Manual

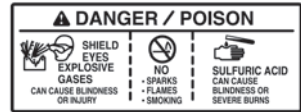
For Models:
BA-MS-340



BL-500
06/13/2014

General Information & Precautions

This publication provides detailed instructions for installing the single point watering system kit. Thoroughly review this document before any installation procedures are performed.



The following safety statements relate to specific safety issues and must be read, understood, and heeded before a kit is installed. Failure to do so could result in personal injury and/or property damage.

DANGER

- Battery – Explosive gases! Do not smoke. Keep sparks and flames away from the vehicle and service area. Ventilate when charging or operating vehicle in an enclosed space. Wear a full face shield and rubber gloves when working on or near batteries.
- Battery – Poison! Contains acid! Causes severe burns. Avoid contact with skin, eyes, or clothing.
Antidotes:
 - External: Flush with water. Call a physician immediately.
 - Internal: Drink large quantities of milk or water. Follow with milk of magnesia or vegetable oil. Call a physician immediately.
 - Eyes: Flush with water for 15 minutes. Call a physician immediately.

WARNING

- Follow the procedures exactly as stated in this instruction, and heed all DANGER, WARNING, and CAUTION statements in this instruction as well as those on the vehicle and battery charger.
- Only trained technicians should service or repair the single point watering system. Anyone doing even simple repairs or service should have knowledge and experience in plumbing, electrical, and mechanical repair. The appropriate instructions must be used when performing maintenance, service, or accessory installation.
- Prior to servicing the vehicle or leaving the vehicle unattended, turn the key switch OFF, remove the key, and chock the wheels.
- Wear safety glasses or approved eye protection when servicing any part of the watering system. Wear a full face shield and rubber gloves when working on or near batteries.
- Do not wear loose clothing or jewelry such as rings, watches, chains, etc., when servicing the vehicle or battery charger.
- Moving parts! Do not attempt to service the vehicle while it is running.
- Use insulated tools when working near batteries or electrical connections. Use extreme caution to avoid shorting of components or wiring.
- If wires are removed or replaced, make sure wiring and wire harness are properly routed and secured. Failure to properly route and secure wiring could result in vehicle malfunction, property damage, personal injury, or death.

Package Contents



Bracket
QTY x 1



Deionizer Cartridge
QTY x 1



Hose Assembly -
Output
QTY x 1



Assembly Hardware
As Shown



Cartridge forks
QTY x 2



Hose Holder
QTY x 1



Hose Assembly - Input
QTY x 1



Water Quality Light
QTY x 1

Step 1 - Determine Location

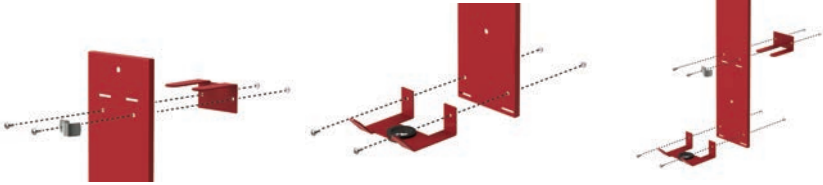
- Must have proper facility water supply



NOTE: For indoor use only.

Step 2 - Assemble Bracket

- Slide forks through slots in the bracket (from behind) & secure with included hardware as shown.



Step 3 - Mount Bracket

Mount securely using customer supplied hardware to solid surface suitable to hold at least 150 pound (68kg) load. The bracket has 2 predrilled holes that will accommodate customer supplied mounting hardware.

NOTE: Deionizer must be mounted in a vertical position. Flow-Rite recommends mounting bottom of deionizer bracket at waist height for ease of cartridge replacement.

Mounting
Holes



Step 4 - Install Cartridge

- Place into mounting bracket ensuring that the top of the cartridge is pointed up.
- Secure with retaining strap and connect hoses.



Installation Continued

Step 5 - Install Quality Light

- Insert the water quality light probe into the tee assembly as shown.
- Using the included 2 sided tape mount the light to the bracket or other desired location.



Step 6 - Connect Inlet Hose to Water Spigot

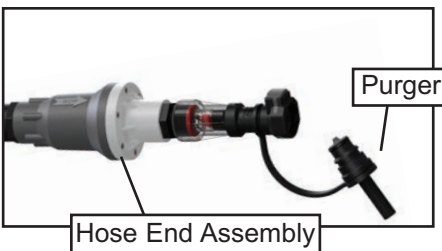
Step 7 - Open Water Spigot

- Open fully, ensuring full water flow and pressure is available to deionizer.

Step 8 - Qualify Water Supply

- Check flow rate through included purger by mating purger with hose end assembly. Verify that a minimum of 2 GPM (gallons per minute) is achieved. This can be measured with a bucket and a stop watch or a watch with a second hand.

Note: Should a 2 GPM flow rate not be produced refer to the troubleshooting guide in your water supply's instruction booklet.



Watering Procedures

1. Water After Charge

Electrolyte levels drop during discharge and rise during charge. In addition, charging generates heat, fluid expansion, and explosive gases. Watering a battery before charge (or with a low charge level) can lead to boil over, resulting in potential damage to the watering system, battery, and vehicle.

When needed, water must only be added to fully charged battery. If the battery has been neglected and water levels have fallen below the plates, water should be manually added to just cover the plates. After the battery has been charged you can finish topping up with the watering system.

2. Watering Intervals

Watering intervals are dependent on the local climate, charging methods, application, and age of batteries. Flow-Rite recommends checking consumption rates manually or with the optical indicator (when equipped). New batteries should be checked once a month and older batteries weekly until water consumption rates are known.

Typically for a heavy use application, watering a maximum of once per week is recommended, and for light use applications once per month. Do not water a battery that has been sitting for an extended period of time with no activity (non-use or not on charge) such as a battery that has sat idle over the weekend. It is best to water a warm battery that has just been fully charged.

Important: Water quality is important to maintain the life of your battery and watering system. Always use water that meets the quality requirements of your battery's manufacturer.

Operation

For successful operation of your Single Point Watering system always:

1. Only use Flow-Rite approved equipment.

Warning! Use of unapproved equipment or modification of approved equipment can lead to system failure and will void your warranty.

2. Always follow Flow-Rite's required watering procedures.
3. Perform regular scheduled maintenance!

Warning! Only fill batteries after they have been fully charged and require water.

Step 1 - Ensure Water Spigot is Fully Open

Step 2 - Qualify Water Supply

- see step 8 under installation

Step 3 - Check Water Quality

- Verify that the water quality light indicates acceptable water quality.
- Press and hold button for 2 seconds. Light should be green in color.

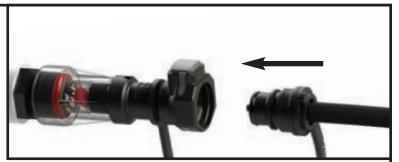
Note: If light indicates unacceptable water quality (red light), cartridge must be replaced.

Step 4 - Remove Dust Cover



Step 5 - Mate Couplers

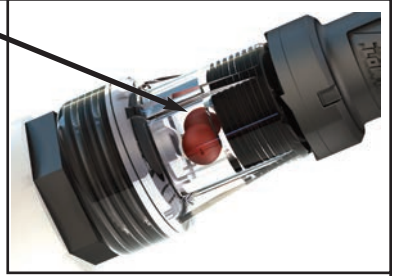
- Insert the male coupler on the SPW system into the female coupler on the end of the water supply.



Operation Continued

Step 6 - Observe Flow Indicator

- The red balls inside the flow indicator will begin to spin indicating that water is flowing into the battery. As the cells fill and the valves shut off, the balls will begin to spin slower until they come to a stop. This indicates that all valves have shut off and filling is complete.



Step 7 - Disconnect

- When the balls stop spinning, and not before, immediately disconnect the couplers by depressing the push button on the female coupler.

Warning! If the water supply is left connected after the filling process is finished, it could lead to an overflow.

Disconnecting before the balls come to a complete stop will lead to underfilled cells.

CAUTION: If at any time during the filling process you have a valve failure, disconnect immediately and refer to the troubleshooting section.



Step 8 - Replace Dust Cover

- Place dust cover back over the male coupler.

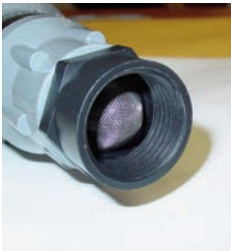


Regular Maintenance

Your single point watering system requires regular preventative maintenance on at least a quarterly basis.

1. Check all screens and/or filters on water supplies.

Clean or replace all filters / line strainers as necessary. Failure to do so can cause a reduction in the water pressure and flow rates needed to operate the system properly. A filter screen can be found on the inlet of all regulators, and a line strainer on all supply hoses. For deionizers be sure to replace the filter cartridges as indicated by the water quality light.



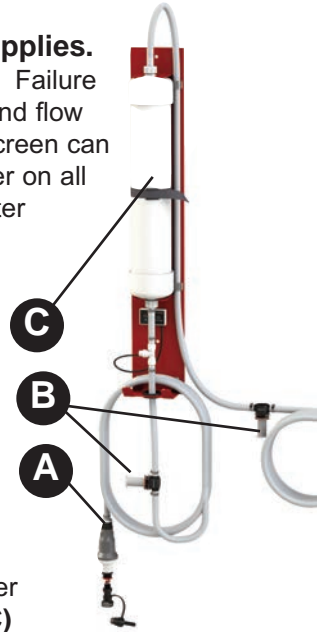
Regulator Filter Screen (A)



Line Strainer (B)



Deionizer Filter Cartridges (C)



2. Inspect the condition of all tubing, connections, and couplers.

Make sure that all parts are in good working condition, secure, leak free, and properly connected. The coupler must have an O-ring and the dust cover properly attached.

3. Clean optical indicators (when applicable).

If the optical indicators are dirty they should be cleaned by wiping down with a cloth.

4. Check electrolyte levels.

Flow-Rite recommends checking the electrolyte level in each cell for accuracy after the system has been installed and operational for three months. This can be done using the optical indicators (for Millennium Systems) or by looking in the cell during PM's. The indicators will appear black in color if the cell is full and white in color if they are low. In poorly lit areas we recommend using a flashlight for best results.

Seasonal Maintenance

Water Supplies

Water supplies must be drained and stored in an empty state if they will be exposed to freezing temperatures. Failure to do so can cause permanent damage.

Watering Systems

If you have vehicles that are taken out of service or put into storage for a period of 6 weeks or longer, your single point watering system will require seasonal maintenance. To prepare the SPW system, ensure the feed tube and coupler are on top of battery. Additionally, the following steps need to be followed when bringing your vehicle back into service.

1. After the batteries have been fully charged/equalized, connect the system to its water supply for 3-5 seconds, then disconnect regardless of whether or not the batteries are completely full.
2. Return the vehicle back to normal operation.
3. Place the vehicle back into its regular watering schedule (waiting at least one week until next watering).

Operating Specifications

Operating Requirement of SPW system

Flow-Rate:	2.0-5.0 gallons per minute* 7.6-19.0 Litres per minute
Pressure Range:	3.0 - 35.0 PSI (no flow, static) 0.21-2.4 bar
Temp. Range:	Freezing - 150 ^o F Freezing - 65.5 ^o C

Water Supply Operating Requirements

Inlet Pressure Range	40-100 PSI (no flow, static)
Temp. Range	33 - 150 ^o F 1 - 65.5 ^o C

All product specifications and requirements should be met for proper operation of your Flow-Rite SPW system. Contact your battery supplier or Flow-Rite Controls if you have any questions regarding product specifications or how to verify a water supply.

*Flow rate should be measured at the end of a purger (female / male coupler combination).

Troubleshooting

If you notice reduced run time on your vehicle, check to see that each cell is filled to the proper level. In the event that a cell is not showing water, connect system to its water supply. Recheck the level of low cells. If they are still low, call for service.

In the event that a valve does not shut off, qualify water supply to ensure that it is producing 2GPM (measured through the purger). If the water supply qualifies, call for service. If it does not qualify, perform Maintenance procedures and requalify. If it does not qualify after performing Maintenance, call for service.



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