



*"Making Water Better!"*

## **OPERATIONS MANUAL**



**COMMERCIAL SOFTENER SYSTEMS  
WITH FLECK 9500 CONTROL VALVE  
TWIN ALTERNATING**

MODEL NO. \_\_\_\_\_  
SERIAL NO. \_\_\_\_\_

## FORWARD

Specifications for each model in this series of water treatment equipment are listed on page 4 of this manual.

This operating manual presents information that will help to properly operate and care for the equipment. Study its contents carefully. The unit will provide good service and continued operation if proper operating and maintenance instructions are followed. No attempt should be made to operate the unit until the principles of operation and all of the components are thoroughly understood.

This equipment is designed and engineered to give long life and excellent service on the job. The electrical and mechanical devices supplied as part of the unit were chosen because of their known ability to perform; however, proper operating techniques and maintenance procedures must be followed at all times.

Any "automatic" features included in the design do not relieve the operator of any responsibility. These features reduce certain repetitive chores and allow more time to devote to the proper upkeep of equipment.

It is solely the operator's responsibility to properly operate and maintain the equipment. No amount of written instructions can replace intelligent thinking and reasoning and this manual is not intended to relieve the operating personnel of the responsibility for proper operation. A thorough understanding of this manual is required before attempting to operate, maintain, service, or repair this equipment.

Operating controls will normally function for long periods of time and we have found that some operators become lax in their daily or monthly testing, assuming that normal operation will continue indefinitely.

Malfunctions of controls lead to uneconomical operation and damage and, in most cases, these conditions can be traced directly to carelessness and deficiencies in testing and maintenance.

It is recommended that a log or record be maintained. Recording of daily, weekly, monthly and yearly maintenance activities and recording of any unusual operation will serve as a valuable guide to any necessary service or troubleshooting required.

It is essential to obtain the services of qualified water treating company or a water consultant to recommend the proper water treatment practices.

The operation of this equipment by the owner and his or her operating personnel must comply with all requirements or regulations of his insurance company and/or other authority having jurisdiction. In the event of any conflict or inconsistency between such requirements and the warnings or instructions contained herein, please contact Blake Water Solutions before proceeding.

### PRE-INSTALLATION DATA

Read all instruction manuals before you begin installation.

Failure to install and operate the system as required will void the warranty. The system will perform at maximum efficiency, when installed and operated as designed.

Obtain all the materials and tools needed for the installation before beginning. Always use the correct tools to install and maintain the system. The installation must conform to local plumbing and electrical codes. Code compliance is the responsibility of the installer or contractor.

### Operating Parameters - Softeners

Maximum pressure is dependent on components. High pressure designs are available.

High Temperature systems available on special order – consult factory.

Protect the system from pressure extremes. Do not expose the system to surging pressures or water hammer. Water hammer will cause damage to the control valves, mineral tanks, and plumbing.

If a condition of this type exists, a "Water Hammer Arrestor" must be installed to prevent damage.

Protect the system against back-pressure caused by a pump or any type of water storage system. If pressure on outlet exceeds inlet pressure, resin can be flushed into the inlet water supply during the service cycle.

When routing the outlet piping to an atmospheric storage tank, a valve or flow control must be installed in the outlet piping to prevent over running of the system. A back-pressure of 15 to 20 psi should be maintained on the system at all times.

Protect the system from freezing weather conditions. Temperatures at and below freezing will cause damage to tanks, valves and plumbing. Water expands when it freezes and can cause the tanks and plumbing to burst.

Protect the system from high temperatures in excess of 100° F.

Some of the components used in the manufacture of the system will not withstand high temperatures. Do not connect the system downstream of a hot water system. Also protect the outlet of the system from backup of hot water from a water heater or boiler.

The system operates on 24 Volts AC supplied from a step down transformer using 120 Volts on the primary side. The 120 volts operates from a normal 15 amp wall outlet receptacle which is properly grounded. The power reduction transformer supplied with the equipment is UL listed. Conformance to local and National

Electrical Codes must be observed and are the responsibility of the installer.

The system must be located within 10 feet of an open floor drain or sump. The drain from the system must contain a vent, in accordance with the local plumbing codes. The flow of drain water should be observable. Water softeners use an educator system to draw the brine into the mineral tank. Back-pressure from overhead drain systems can affect the draw rate of the softener, therefore; it is not recommended to run the drains any higher than 8 feet above the control valve assembly. On overhead drains, an air gap must be installed in the highest point of the drain line, and local plumbing codes and regulations should be followed.

It is recommended that inlet, outlet and by-pass valves be installed on the unit for future service ability.

The inlet and outlet valves are utilized to turn off the water to the unit so that the valve and other components can be serviced. The by-pass valve allows water downstream to the process (by-passing the unit) so that water can still be supplied, even though it is raw water, should it be needed.

Metal shavings, solder flux, threading compounds and other contaminating materials from the installation of the piping; must be flushed from the piping prior to allowing water to enter the system.

These foreign materials can cause damage to the control valve.

### **Locating the Equipment**

Locate the mineral tank on a firm, level foundation, preferably concrete.

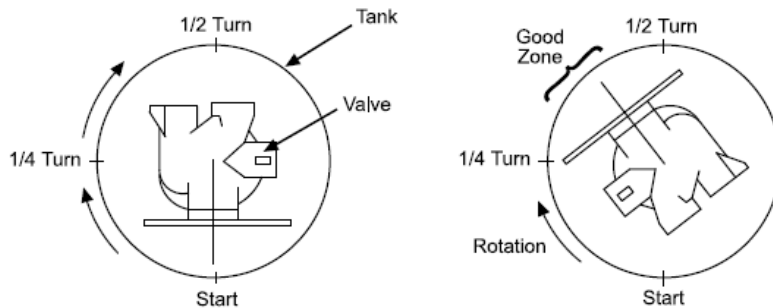
The system should be within 10 feet of an electrical outlet. A floor drain capable of handling the maximum backwash flow rate must be located near the system (refer to drain line flow control chart below). Trial fit the control valve to the tank, in order to properly align the control valve and mineral tank to the plumbing. Once loaded, the tank is not easily moved.

Locate and connect the brine tank as shown in the installation drawings. Brine hose and adapter fittings are shipped inside the brine tank. The brine draw hose supplied is 10 feet long. The brine tank must be located on a smooth, clean surface. Do not set on bricks or wooden blocks. The bottom of the brine tank can distort, if placed on an irregular surface, when filled with salt, which could cause damage to the brine tank.

## Assembly of Equipment

### Valve to Tank Installation Instructions

1. Spin the valve onto the tank, ensuring the threads are not cross-threaded.  
**NOTE: All Fleck® valves are right-hand threads, or clockwise, to install**
2. Rotate the valve freely without using force until it comes to a stop (this position is considered zero).
3. Rotate the valve clockwise from zero, between ¼ turn and ½ turn (see the diagram below).



The system is not assembled prior to shipment.

The standpipe and distributor are shipped installed in the mineral tank. Be sure the distributor and standpipe assembly is centered in the tank and is resting on the bottom of the tank. Verify that the length of the standpipe is correct (flush to 1/8" above top of tank). If needed, cut to proper length and chamfer. Once the mineral tank is in the proper location, fill the mineral tank with approximately 12" of water. The water will help absorb the shock when the gravel is loaded into the tank. Plug the end of the standpipe to prevent resin or gravel from entering it during the filling process.

A funnel is recommended for loading the resin and gravel into the mineral tank.

Care should be exercised to avoid damage to the distribution tube and screen while loading the selected media for the application.

2. Plug the open end of the riser tube to ensure that no filtration media or gravel falls down into the riser tube. The riser tube should be firmly seated and centered in the tank and should be flush with the top of the tank opening (or tank top bushing if required). Underbed support gravel if required should be pre-rinsed to remove fines and grit which could clog the screens and then carefully loaded covering the distributor basket. Adding a sufficient amount of water (approximately 12" above the distributor) to the vessel prior to adding the gravel will minimize the potential for damage and help to level the support bed.
3. Next load the required amount of media selected for the application. Again, adding additional water to the vessel will assist in loading by minimizing dust and optimize leveling.

4. Unplug the riser tube, carefully position the valve over it and turn the valve into the threads in the fiberglass tank, tightening securely into tank and secure to the existing piping bypass.

**Note: Ensure that the internal O-ring in the valve fits securely over the riser tube.**

**Silicone lubricant should be applied to the O-ring to ease installation of the riser tube.**

**DO NOT use petroleum based lubricants as they will cause swelling of O-ring seals.**

**Caution: Resin left in threads on top of the tank can cause the valve to cross thread damaging the sealing area and causing leaks.**

Thread the control valve onto the top of the mineral tank, being careful not to cross thread. Assemble the drain line flow control (DLFC) to the drain line connection on the control valve assembly.

A missing flow control can result in resin being washed out of the mineral tank and down the drain.

Connect the drain line from the control valve to the nearest floor drain. If the drain line must be installed overhead, do not exceed 8 feet above the control valve, and provide a vacuum break, before returning to the floor drain.

Piping can now be connected to the inlet and outlet of the control valve. It is recommended that inlet, outlet isolation bypass valves be installed on each system. The flow meter should be 10 pipe diameters downstream from the last fitting and there should be 5 pipe diameters after the flow meter. See the typical installation drawing.

Connect hose provided from the brine tank to the brine valve located on the side of the control valve assembly. An air check assembly is provided inside the brine tank, which prevents air from being drawn

into the softener during the slow rinse cycle of regeneration. It acts as a check valve when all the brine has been drawn out of the brine tank.

### **BRINE TANK ASSEMBLY**

The brine tank assembly consists of a plastic storage tank for salt and an air-check assembly. Some systems are installed with more than one brine tank and / or multiple air-check assemblies. Locate the brine tank on a firm foundation. Install the air-check by putting the top elbow through the side wall of the brine tank into one of the holes provided, and screw on the adapter supplied. A black poly fitting is supplied with the black poly tubing which is used for the brine hose. Install the poly fitting into the adapter; loosen the nut and push the poly tubing into the fitting as far as it will go.

Disassemble fitting to make sure that the metal grab ring is at least ¼" past the end of the tubing and that the O-ring and plastic spacer are in place. Put the fitting back together and tighten the plastic nut.

The other end of the tubing connects to the control valve. A brass nut, ferrule and tube support are provided with the control valve assembly. Slide the nut over the end of the tubing. Then slide on the ferrule over the tubing. The tube support is inserted into the tubing.

Push the assembly onto the fitting and tighten the nut.

**Caution: the tube support must be in place to prevent the hose from blowing off the brine valve.**

On duplex systems two brine wells and two brine lines are supplied. Load salt into the brine tank (at least half full). Fill the brine tank the rest of the way with water. Warm water will produce the required brine concentration much faster than cold water. The resin in the softener comes in regenerated form and does not require an initial regeneration, however; a manual regeneration should be initiated and the softener allowed to cycle through the various regeneration cycles to insure proper operation. The overflow drain fitting on the brine tank should be connected to the nearest floor drain. This drain is not under pressure, so pressure piping is not required.

Turn on water and check for leaks. Installation is complete.

Program the control as required. Refer to NXT Control manual supplied for complete program instructions.

Refer to the Service manual supplied for parts lists service kits and troubleshooting guides for the control valve supplied with this system.

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