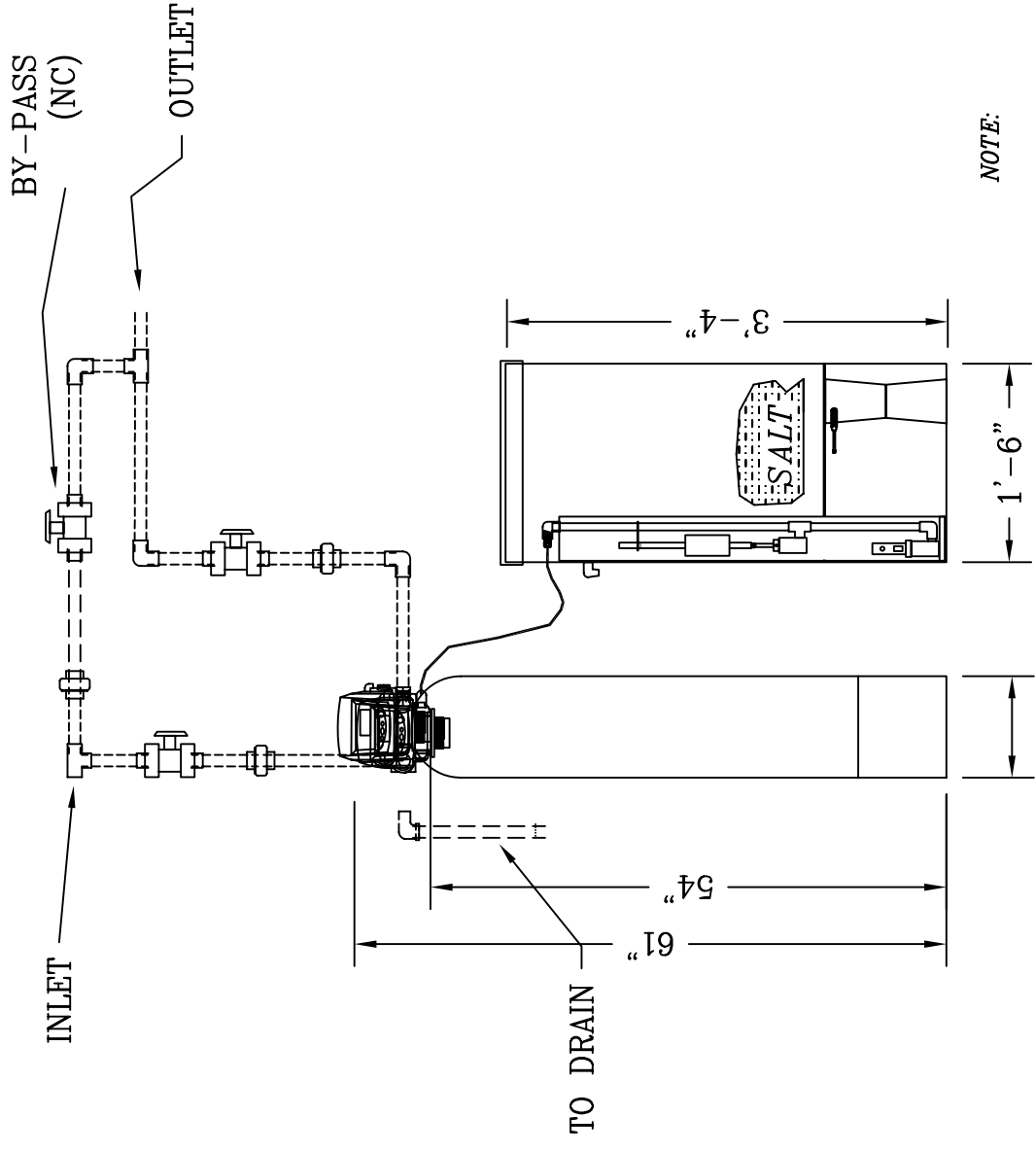


| Inventory ID | Description | Loc ID | Quantity | Unit |
|--------------|---|--------|----------|------|
| 930559 | BF-30-3/4"-SX w/ERct CONTROLLER | 1 | | |
| 100188 | 9x48 POLYGLASS MINERAL TANK CONNECTION: 2.5" NPSM HEIGHT W/BASE: 48.2" CAPACITY: 11.8 GAL / 1.58 CU.FT. COLOR: BLUE | 1 | 1.0000 | EA |
| 703005 | 3/4" MANIFOLD ASSEMBLY 54" TANK 3/4" SCH 40 PVC PIPE 3/4" SLOTTED DISTRIBUTOR | 1 | 1.0000 | EA |
| 479900 | RESIN PK 30 9X48 F 1, 0.10 1 FT3 8% CATION RESIN 0.10 FT3 GRAVEL | 1 | 1.0000 | EA |
| 805060 | 18X40 BRINE TANK ASSY BM/4SP BF BRINE TANK ASSEMBLY DIAMETER: 18 INCHES HEIGHT: 40 INCHES BLOW MOLDED HDPE TANK 4" BRINE WELL 3/8" TUBULAR BRINE VALVE W/ SAFETY CHECK | 1 | 1.0000 | EA |
| 200126-5 | 5" HIGH POLYETHYLENE SALT PLATFORM BRINE LINE ASSEMBLY 3/8" BV 3/8" BL KIT CONSISTING OF 3/8" POLYPROPYLENE TUBING AND FITTINGS TO CONNECT PROFORMA VALVE TO 3/8" TUBULAR BRINE VALVE BF-30 THRU BF-70 SX AND SM SINGLE TANK SOFTENERS | 1 | 1.0000 | EA |
| 707101-1 | CTL PKG BF-30-3/4" OR 1" W/ ERct PERFORMA VALVE WITH: GLASS FILLED NORYL BODY INJECTOR: H BACKWASH: 2.5 GPM (NO 9) ERct (742 LOGIX) CONTROLLER 120 / 12 VAC ADAPTOR | 1 | 1.0000 | EA |
| 707140-3 | 3/4" NPT ADAPTER KIT, ABS, BF LC ADAPTOR FOR PROFORMA VALVE SET OF TWO 3/4" MNPT REQUIRES ONE SET PER VALVE | 1 | 1.0000 | EA |
| 400903 | 2-1/2" FUNNEL | 1 | 1.0000 | EA |

930560 BF-30-1" IS SAME AS
930559 EXCEPT 1" VERSION
INCLUDES 707140-4 1" ADAPTOR
ALL PERFORMANCE DATA,
SUBMITTALS AND DRAWINGS
ARE THE SAME FOR BOTH
3/4" AND 1".

End of Report



NOTE:

PIPING SHOWN IN DASHED LINES IS TO BE SUPPLIED BY CUSTOMER
ACTUAL LOCATION & LENGTH MAY VARY

9 3/16"

| BY: | No. | REVISION | DATE | CK'D |
|-----|-----|-----------------------------------|---------|------|
| | 0 | PRELIMINARY | 9/30/09 | |
| | 1 | UPDATE BRINE TANK & CONTROL VALVE | 9/24/07 | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| | | | |
|-------------------|------------|--------------------------|---------------|
| DR. R. RICHARDSON | | ENG.: XXXX | DRY WEIGHT |
| CH. | | FILE: | OPERATING WT. |
| BT | | C:\CATALOG\WKBFB03SX.dwg | |
| DATE | 9-8-08 | DRAWING NUMBER | |
| SCALE | 1/8"=1'-0" | WKBFB-30-SX | |
| | NONE | | |

| | | | |
|--|--|---------------------------|--|
| Water King | | WATER CONDITIONING | |
| Water King, Inc. | | | |
| 102 Charbonnet Rd., Duson, Louisiana, U.S.A. 70529 | | | |
| Telephone: (337) 988-2360 * Fax: (337) 981-7922 | | | |
| www.waterking.com | | | |

| | | | |
|-----------------------------------|--|----------------------------|--|
| BF-30-SX TWIN ALT. WATER SOFTENER | | TYPICAL PIPING ARRANGEMENT | |
| PLOTTED / PRINTED: 2009-06-02 | | | |
| SHEET 1 / 1 | | | |



PERFORMANCE

Model BF 30- 3/4" and 1" Simplex Water Softener Performance

| | |
|------------------------|-------------------------------|
| Rating: | Based on Head Loss |
| Rated Continuous Flow: | 17 gpm ($\Delta P = 15$ psi) |
| Rated Peak Flow: | 24 gpm ($\Delta P = 25$ psi) |

| Rating Based on Head Loss | Flow |
|---------------------------|--------|
| Head Loss | |
| 5 psi | 9 gpm |
| 10 psi | 13 gpm |
| 15 psi - continuous | 17 gpm |
| 20 psi | 21 gpm |
| 25 psi - peak | 24 gpm |

Capacity Per Vessel: 30,000 grains per vessel at 10 lbs salt per ft³ resin

Brine Tank Salt Storage: 390 lbs

Brine Draw: Timed brine system can be set by controller. Refill rate is 0.33 gpm.

Regenerations in Storage: Assume 10 lb salt per ft³ resin and 1 ft³ resin gives 39 regenerations in storage.

Backwash Rate: 2.5 gpm

Simplex Timed (- SX). In simplex mode the system operates so that regeneration is performed automatically at a predetermined time of day or at a predetermined interval. The days of the week and time of day of regeneration is preset. The Logix controller controls the regeneration cycles for the softener and regeneration initiation. Simplex systems shall have one mineral tank, one Proforma valve, one brine tank, one Logix controller, and no flow meter (since regeneration initiation is based on time).

Simplex Metered (- SM). In simplex metered mode the softener operates so that once a predetermined amount of water has passed through the flow meter the Logix controller initiates regeneration. The Logix controller controls the regeneration cycles for the softener and regeneration initiation. Simplex systems shall have one mineral tank, one Proforma valve, one brine tank, one Logix controller, and one internal turbine flow meter.

During regeneration, the softener can be in bypass mode allowing hard water to bypass the softener OR it can be "shut off". If "shut off" the water to downstream equipment will be stopped. Hard water bypass is standard for single tank systems.

BF Simplex Water Softener



BF SERIES SPECIFICATION – Simplex Timed (-SX) and Simplex Metered (-SM)

BF. The BF series water softeners have composite (fiberglass tanks with polyethylene liners) with top mounted Performa™ glass filled Noryl control valves. These fully automatic softener packages consist of mineral tank(s) with resin (resin pack), Performa™ control valve(s), and brine tank(s) using the Accumatic Brine System. For demand initiated regeneration, the units include a flow meter(s). BF series softeners can have regeneration initiated by time of day with the ERCt controller or by demand (accumulated flow) with the ERCd controller. Model numbers indicate the capacity, operation mode and whether the unit is demand or time clock initiated.

Composite Mineral Tank. The mineral tank shall be “polyglass” consisting of an inner shell of virgin polyethylene and an external shell of continuous fiberglass roving. Tanks shall be rated at 150 psi operating pressure, 120°F operating temperature with a 2½” -8 UN threaded top opening for the BF 30 and a 4” -8 UN threaded top opening for the BF 50 and 70. The BF 50 and 70 include a 2 ½” x 4” - 8UN reducer.

Manifold Assembly. The distributor shall be a 2½” Ø single point molded distributor head with 2½” of slotted length and a ½ inch female socket welded connection. The slots shall be 0.012” - 0.016” wide to retain mineral and the total slot area shall be equal to or larger than the unit pipe size. The distributor pipe shall be 1½” schedule 40 white PVC.

Resin Pack. The resin shall be sodium form polystyrene 8% divinyl benzene cross linked resin with clear spherical beads. Resin beads shall be 16-50 US Standard Mesh with a particle size range of 0.3 to 1.2 mm. The resin shall be clean and packaged in sealed plastic bags weighing 55 lbs or less. The bottom of this mineral tank shall be filled above the distributor with #20 graded washed flint gravel sieved between 1/8” and 1/16”

Brine Tank. The brine system shall be of the Accumatic™ high grid plate design. The brine tank shall be blow molded or rotationally molded HDPE, including a cover. The system shall include a float operated brine valve to control refill shut-off and refill flow rate. Brine volume is to be repeatedly accurate within 10% and not dependent on salt bed void space for brine volume. Brine draw is to be volumetrically controlled, not timed.

Brine Line Assembly (BLA). The brine tank is connected to the mineral tank with a Polyethylene tubing and Liquid-Tite Tube x NPT connectors. The brine inlet fitting to the valve is ½” MNPT and the connection to the brine tank matches the brine valve fitting.

Control Valve. The main control valve(s) shall be the Performa™ controlled with electronic controller to actuate the cycles of backwash, brine, slow rinse, fast rinse, and service. The control valve(s) shall be Performa™ 5-Cycle, 100 psi, multi-port control valve(s) with glass filled Noryl-NSF listed material, camshaft, drive motor assembly, and NEMA 3 enclosure (115VAC/60Hz). The valve shall be of a single camshaft design and not use multiple plungers or diaphragm valves. Hard water by-pass shall be available during all regeneration cycles. The drain line connection shall be ¾” NPT, female. Service C_v=6.5, Backwash C_v=4.0 (Valve Only). Water Temperature 35-100°F. Ambient Temperature 35-120°F.

Controller. The ERCt shall be up to 99-day regeneration frequency. Both the ERCt and ERCd Controllers shall have a calculated brine time when salt and resin quantities are entered.

Demand Regeneration. (optional) The BF series can be demand regenerated by using the ERCd Controller and the internal 1” Turbine Meter. The ERCd Controller shall be a 28-day variable reserve.

Funnel (2”). A plastic funnel is provided for adding media to mineral tank.

Operating Conditions. Maximum temperature shall be 100° F. Pressure shall be 25 to 120 psi.

Other items. A standard soft water soap test kit shall be provided. A complete set of instructions, including installation, loading, start-up, adjustments, servicing, and a parts list shall be provided with the equipment.

Qualifications. A company that has continuously manufactured water softeners for at least twenty (20) years shall construct this equipment.

Fiberglass Composite Mineral Vessels

FIBERGLASS COMPOSITE TANKS

Water King BF Series systems use fiberglass composite vessels with a fiberglass exterior and polyethylene liner.

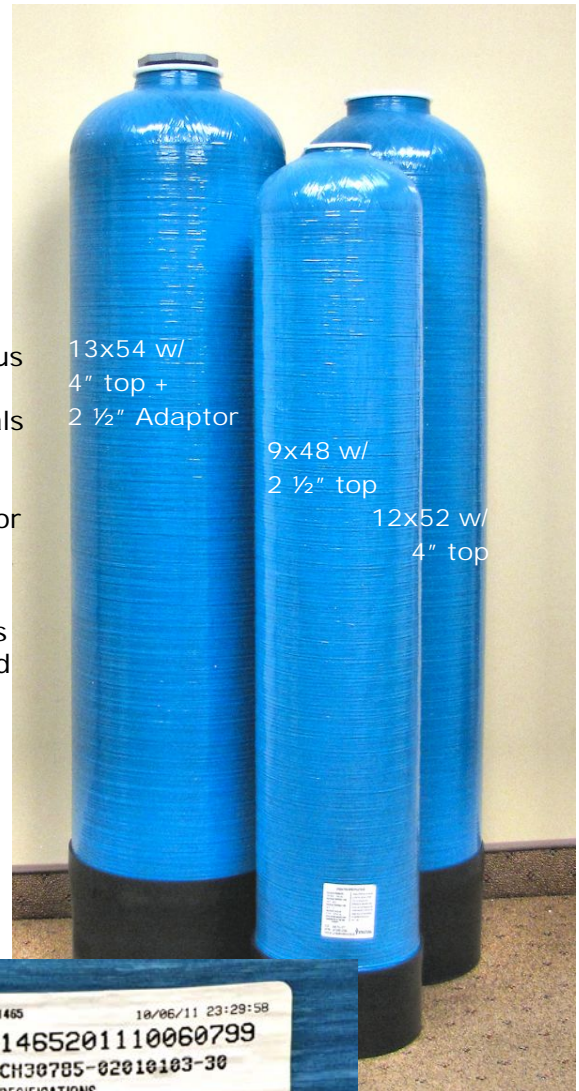
SPECIFICATIONS

Standard Vessels. Composite tanks shall be 100% non-metallic construction, seamless, molded vessels with no welds or joints. The inner shell shall be constructed of polyethylene and the outside shall be wound with continuous fiberglass, roving to provide superior strength under pressures up to 150 psi. All tanks, vessels, and the materials used in their construction shall be accepted or certified by the Water Quality Association and ANSI/NSF Standard 44. Working pressure rating shall be 100 psi with a design factor of safety of at least 4:1. The tanks have a circular plastic base. Standard color shall be blue.

Note on temperature ratings. Composite polyester tanks with polyethylene lining with threaded fittings shall be rated at 120°F. Composite tanks with flanged fittings shall be rated at 150°F. Vinyl ester FRP tanks, without liners, with threads shall be rated at 150°F.

Residential / Light Commercial Application. The BF Bayou Series 3/4" and 1" plastic valves mount on a 2 1/2" threaded top opening.

703005 Single Point 3/4" Distributor.



WK 100 Softener Resin

WK100 IS A MULTIPURPOSE, PREMIUM GRADE, STRONG ACID CATION EXCHANGE RESIN
WK100 IS SUITED FOR SOFTENING, AND CHEMICAL PROCESSING APPLICATIONS.

OPERATING CONDITIONS

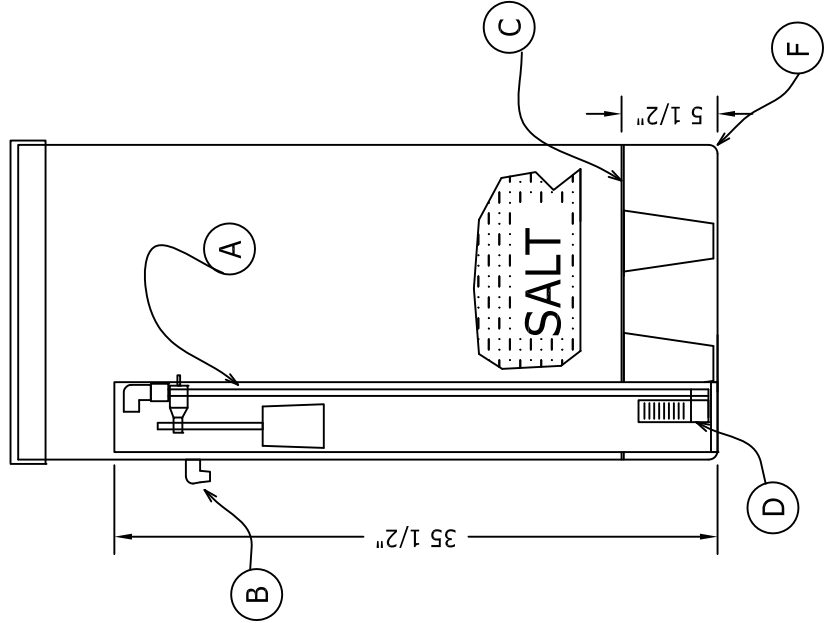
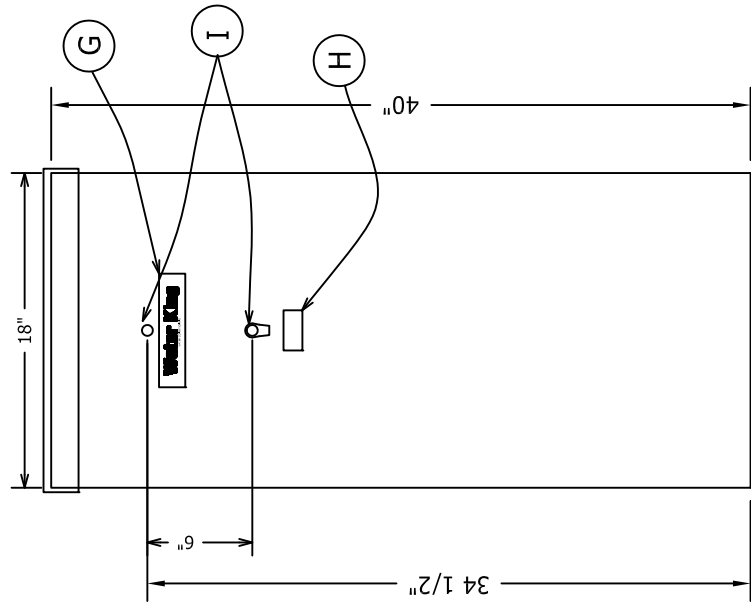
| | |
|---|---|
| Maximum Operating Temp: | 250°F (120°C) in H ⁺ form 280°F (140°C) in Na ⁺ |
| Form: | Shipped in Sodium Form |
| Resin bed Depth: | 24"(600 mm) to 36"(900 mm) |
| Maximum Service Flow: | 15 gpm/ft ³ (120M ³ /Hr/M ³) |
| Backwash Expansion space: | 40 to 75% |
| Backwash flow Rate for 40 to 75% expansion at 77°F (25°C) | 4 to 10 gpm/ft ² (9 to 25 M ³ /Hr/M ²) |
| Regenerant: | NaCl for Na ⁺ form. |
| Regeneration level: | 3.7 to 10.0 lbs NaCl/ft ³ (60-160 g NaCl/l) |
| Regenerant concentration: | 5.0 to 15.0% for NaCl |
| Regeneration flow rate: | 0.25 to 2 gpm/ ft ³ (2 to 16 M ³ /Hr/M ³) |
| Regeneration time: | 20-60 minutes |
| Fast Rinse: | At service flow rate |
| Slow Rinse: | At regeneration flow rate |
| Rinse Volume: | 25 to 40 gal/ft ³ (3 to 5 M ³ /M ³) |

INFLUENT LIMITATIONS

| | |
|----------------|-------------------|
| Free Chlorine: | Not traceable |
| Turbidity: | Less than 2 N.T.U |

| WK 100 RESIN CHARACTERISTICS | |
|------------------------------|---|
| Type | Strong acid cation exchange resin |
| Matrix Structure | Cross linked polystyrene (8%) |
| Functional group | Sulphonic acid |
| Physical form | Moist spherical beads |
| Ionic form | Hydrogen/ Sodium (KW100 is the sodium form) |
| Particle Size | 0.3-1.2mm |
| Screen Size U.S.S (wet) | 16-50 |
| Total Exchange capacity | 2.0 meq/ml (Na ⁺) form / 1.8 meq/ml (H ⁺) |
| Swelling (approx.) | Na ⁺ to H ⁺ 7% |
| Moisture content (approx.) | 52% (H ⁺), 45% (Na ⁺) |
| Backwash settled density | 50 to 52 lbs/ft ³ (800 to 840 g/l) in H ⁺ form 52 to 55 lbs/ft ³ (840 to 880 g/l) in Na ⁺ form |
| Operating pH range | 0-14 |
| Solubility | Insoluble in all common solvents |
| Shipping weight | 0.82 Kg/l (approx.) in H ⁺ form 0.86 Kg/l (approx.) in Na ⁺ form |

| BILL OF MATERIALS | | | 805061 18" x 40" BRINE TANK ASSY. | | |
|-------------------|----------|-------------------------------------|-----------------------------------|--|--|
| ITEM | PART# | DESCRIPTION | QTY. | | |
| A | 505007 | 4"x36" BRINE WELL ASSEMBLY | 1 | | |
| B | 200145 | 3/8" OVERFLOW FITTING | 1 | | |
| C | 200190-1 | 18" x 5" HIGH SALT PLATFORM PLASTIC | 1 | | |
| D | 706026 | 3/8" BRINE VALVE W/ SAFETY FLOAT | 1 | | |
| E | -- | -- | 0 | | |
| F | 200010-1 | 18" x 40" BRINE TANK WITH COVER | 1 | | |
| G | 400258 | WATER KING DECAL - WIDE | 1 | | |
| H | 401237 | OVERFLOW WARNING LABEL | 1 | | |
| I | INST | USE 3/8" DRILL BIT TO DRILL HOLES | | | |



| | | | |
|-------------------|----------------|---------------------------------|--|
| 805060 | | 18" X 40" BF BRINE TANK- 5.5"SP | |
| ASSEMBLY DRAWING | | | |
| SCALE | DRAWING NUMBER | SHEET | |
| N.T.S. | 805060 | 01 / 01 | |
| www.waterking.com | | | |

Water King

Telephone: (337) 988-2360 * Fax: (337) 981-7922

| BY: No. | REVISION | DATE | CK'D |
|---------|-----------------|------------|------|
| REL. 1 | FOR FABRICATION | 11/26/2013 | JB |
| | | | |
| | | | |
| | | | |
| | | | |

102 Charbonnet Rd., Duson, Louisiana, 70529, U.S.A.

BF TUBULAR BRINE VALVE

TUBULAR BRINE VALVE

1. 1/2" Riser Tube (O.D.)
2. BF Systems have 3/8" Elbow to attach to a 3/8" Brine Line
3. Back up float assembly (safety float) that prevents overflow of brine tank if timed brine does not shut off.

The BF Tubular Brine Valve Features:

Air Check Valve avoids drawing air in the mineral tank during the brine cycle.

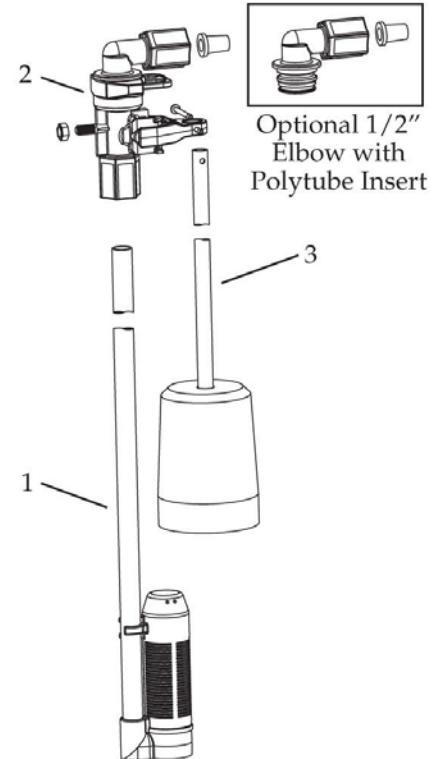
Provides brine draw and refill up to 1 1/2 gpm with 3/8" tee used on BF systems.

Fits in 3 1/2" or 4" brine wells. (BF systems use 4" brine wells.)

Components are air tested prior to shipment to ensure proper performance.

Clack Model 474 Brine Valve

Water King Part No. 706026



PERFORMA / LOGIX

Softener and Filter Valve / Controller



Control Valve. The main control valve(s) shall be the Performa™ controlled with electronic controller to actuate the cycles of backwash, brine, slow rinse, fast rinse, and service. The control valve(s) shall be Performa™ 5-Cycle, 100 psi, multi-port control valve(s) with glass filled Noryl-NSF listed material, camshaft, drive motor assembly, and NEMA 3 enclosure (115VAC/60Hz). The valve shall be of a single camshaft design and not use multiple plungers or diaphragm valves. Hard water by-pass shall be available during all regeneration cycles. The drain line connection shall be ¾" NPT, female. Service $C_v=6.5$, Backwash $C_v=4.0$ (Valve Only). Water Temperature 35-100°F. Ambient Temperature 35-120°F.

Controller. The ERCt shall be up to 99-day regeneration frequency. Both the ERCt and ERCd Controllers shall have a calculated brine time when salt and resin quantities are entered.

Demand Regeneration. (optional) The BF series can be demand regenerated by using the ERCd Controller and the internal 1" Turbine Meter. The ERCd Controller shall be a 28-day variable reserve.

CAT402.2

Features

- Single controller for any configuration
- Softeners and filters
 - Twin alternating
 - Twin parallel
 - Single tank
- Remote regeneration start
- Multi single tank lockout capability
- Easy 3-step program control
- Fully programmable or manual operation
- Simple piping installation
- Flow meter on each valve
- Simple, economic electronic demand (volumetric)
- Calendar override
- 12-volt operation
- 28-day variable reserve
- High efficiency regeneration sequence
- Automatic capacity calculations
- Fully programmable cycle times
- Salt setting in 1-pound increments

