More

Culligan®

Culligan® Automatic Water Softeners

assisted living facilities

cafeterias

casinos

educational facilities

food service

grocery

hotel/hospitality

institutions

laundry

corporate campuses

theme parks

vehicle wash

Hi-Flo® 3 Automatic Water Softener

Culligan Hi-Flo® 3 Water Softener Standard Features

- Corrosion Resistant Tanks–made from fiberglass-reinforced polyester. Additional reinforcement from continuous fiberglass overwrap. Underdrain design maximizes softener's capacity, reduces pressure loss.
- Softening Media—High quality resin provides stability and uniform size for top performance and long life.
- Choice of Cycle Controllers—Regeneration cycle may be initiated by timeclock any or every day of the week. Optional meter starts cycle after preset volume of water has been softened.
- Positive Motor-Driven Regeneration Valve–Motor driven piston is reliable under severe water conditions, resists dirt, iron, turbidity.
- Automatic Brine Control—Automatically measures the correct amount of brine. A single turn of dial sets correct amount dosage and capacity.
- Dubl-Safe™ Brine System—Positive overfill protection. Automatic refill control is backed up by shutoff float valve to minimize chance of overflow.

The *Culligan* Hi-Flo® 3 Automatic Water Softener

Applications and Benefits

- RO/DI Pretreatment
- Apartment buildings, assisted living facilities and hotels—Quality water for laundry, dishwashers, boilers.
- Office buildings—For heating plant pretreatment, tenant convenience, general housekeeping.
- Restaurants—For dishwashing, cleaning material savings, scale reduction.
- Car washes—Quality results, detergent and water heating savings, scale reduction.
- Light industry—For process and make-up water, boiler and cooling system pretreatment, general housekeeping.

Options

- Regeneration Flexibility—There are several choices for regenerating a Hi-Flo® 3 water softener to meet your requirements. The simple, economical choice is timeclock operation for both single and duplex units. If water usage varies, meter operation is available to signal regeneration immediately or delay regeneration until a pre-set time. Duplex meter operated units may be operated in parallel or on an alternating basis, depending upon your needs.

Warranty

Culligan® Hi-Flo® 3 water softeners are backed by a limited 1-year warranty against defects in materials, workmanship, and corrosion. The plastic conditioner tank has a 5-year warranty. See printed warranty for details.*

Some localities have corrosive water. A softener cannot correct this condition, so its printed warranty disclaims liability for corrosion of plumbing lines, fixtures, or water-using equipment. If you suspect corrosion, your independently operated Culligan dealer has equipment to control the problem.

*Culligan will provide a copy of warranties upon request.

System Specifications

Pressure:	30–120 psig 210–830 kPa
Vacuum:	None[1]
Temperature:	40–100°F 4 - 38°C
Electrical:	120V, 60 HZ
Turbidity:	5 NTU, max.[2]
Chlorine:	1 mg/L, max.[2]
Iron:	5 mg/L

[1]Tank warranty is void if subject to vacuum
[2]See media specification for details

Model	Resin Qty. (Ft^3)	Pipe Size	Flow Rates		Tank Size***	
			Continuous*	Peak**	Softener	Brine
HC-150	5	2″	60	78	21 x 54	24 x 48
HC-210	7		58	76	21 x 69	24 x 48
HC-300	10		65	85	24 x 72	30 x 48
HC-450	15		75	100	30 x 72	30 x 48

*Flow rate at a 15 psi pressure loss.
**Flow rate at a 25 psi pressure loss.
***Dimensions are diameter by tank height.

The contaminants or other substances removed or reduced by this water treatment device are not necessarily in your water.

"Hey Culligan Man!"®

Culligan®

Culligan Commercial @ Work™

www.culligan.com

1-800-CULLIGAN

SL-0090 DCO 992824
Printed in USA (2/01)
MOORE PART NO. 46956

ISO 9001 Certification

HI-FLO® 3

FULLY AUTOMATIC WATER SOFTENERS

SPECIFICATIONS AND OPERATING DATA

Single Tank	Exchange Capacity[1] @ Salt Dosage		Service Flow Rates[2]				Pipe Size	Resin Qty.	Softener Tank Size	Brine Tank Size	Approx. Ship. Weight
			Peak		Continuous						
	Minimum	Maximum	Flow	Press. Drop	Flow	Press. Drop					
	gr @ lb	gr @ lb	gpm	psi	gpm	psi	in	ft^3	in	in	lb
Model	g @ kg	g @ kg	m^3/hr	kPa	m^3/hr	kPa	in	L	mm	mm	kg
HC-150	100,000/30	150,000/75	78	25	60	15	2	5	21 x 54	24 x 48	540
	6,480/14	9,720/34	17.7	172	13.6	103	2	142	530 x 1,370	610 x 1,200	460
HC-210	140,000/42	210,000/105	76	25	58	15	2	7	21 x 69	24 x 48	640
	9,070/19	13,600/48	17.2	172	13.2	103	2	198	530 x 1,750	610 x 1,200	290
HC-300	200,000/60	300,000/150	85	25	65	15	2	10	24 x 72	30 x 48	865
	12,960/27	19,400/68	19.3	172	14.7	103	2	284	410 x 1,830	760 x 1,200	395
HC-450	300,000/90	450,000/225	100	25	75	15	2	15	30 x 72	30 x 48	1,250
	19,440/41	29,160/102	22.7	172	17.0	103	2	426	760 x 1,830	760 x 1,200	570

1 Exchange capacities based on treating water containing 10 grains per gallon (171 mg/L) of hardness (expressed as calcium carbonate), free of color, oil, turbidity and at a service flow rates not exceeding 20 gpm per square foot (49 $m^3/m^2/min$) of bed area. These are nominal capacities and will vary with influent water characteristics, temperature, pressure and other factors.

2 Operation of a softener at peak flow rate for extended periods of time may result in a slight reduction of softening capacity. This is due to premature hardness breakthrough.

NOTE: Operational, maintenance and replacement requirements are essential for this product to perform as advertised.

Specifications are shown for single models. Duplex models have two softener tanks and one brine tank system.

Culligan®

Commercial Systems

1-800-CULLIGAN
www.culligan.com
Printed in USA 4/00
DCO 992587
SL-0074

Culligan®

LIMITED WARRANTY

SOFT-MINDER® TWIN PLUS/HI-FLO® 3 WATER SOFTENERS

You have just purchased one of the finest water conditioners made. As an expression of our confidence in Culligan products, your water conditioner is warranted to the original end-user, when installed in accordance with Culligan International Company specifications, against defects in material and workmanship from the date of original installation, as follows:

For a period of ONE YEAR	**The entire unit**
For a period of THREE YEARS	**The control valve body, but excluding its internal parts**
For a period of FIVE YEARS	**The fiberglass-reinforced conditioner tank***
For a period of FIVE YEARS	**The conditioner tank if it has an epoxy-phenolic coated interior**
For the LIFETIME of the original consumer purchaser	**The Tripl-Hull™ conditioner tank.**

*The tank must be protected by a vacuum breaker device as described in the unit's operating manual. Damage to the tank caused by vacuum is not covered by this warranty. The unit must be used in operating conditions that conform to Culligan's recommended design guidelines.

If a part described above becomes defective, within the specified period, you should notify your independently-operated Culligan dealer and arrange a time during normal business hours for the dealer to inspect the water conditioner on your premises. Any part found defective within the terms of this warranty will be repaired or replaced by the dealer. You pay only freight from our factory and local dealer charges.

We are not responsible for damage caused by accident, fire, flood, freezing, Act of God, misuse, misapplication, neglect, alteration, installation or operation contrary to our printed instructions, or by the use of accessories or components which do not meet Culligan specifications, all of which are not covered by this warranty.

Our product performance specifications are furnished with each water conditioning unit. TO THE EXTENT PERMITTED BY LAW, CULLIGAN DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE; TO THE EXTENT REQUIRED BY LAW, ANY SUCH IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE ONE-YEAR PERIOD SPECIFIED ABOVE FOR THE ENTIRE CONDITIONER. As manufacturer, we do not know the characteristics of your water supply or the purpose for which you are purchasing a water conditioner. The quality of water supplies may vary seasonally or over a period of time, and your water usage rate may vary as well. Water characteristics can also differ considerably if your water conditioner is moved to a new location. For these reasons, we assume no liability for the determination of the proper equipment necessary to meet your requirements, and we do not authorize others to assume such obligations for us. Further, we assume no liability and extend no warranties, express or implied, for the use of this product on a non-potable water source. OUR OBLIGATIONS UNDER THIS WARRANTY ARE LIMITED TO THE REPAIR OR REPLACEMENT OF THE FAILED PARTS OF THE WATER CONDITIONER, AND WE ASSUME NO LIABILITY WHATSOEVER FOR DIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, GENERAL, OR OTHER DAMAGES.

CONSUMERS:

Some states do not allow the exclusion of implied warranties or limitations on how long an implied warranty lasts, so the above exclusion may not apply to you. Similarly, some states do not allow the exclusion of incidental or consequential damages, so the above exclusion or limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

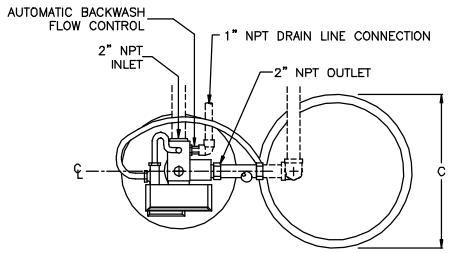
Consult your telephone directory for your local independently-operated Culligan dealer, or write Culligan International Company, for warranty and service information.

CULLIGAN INTERNATIONAL COMPANY
One Culligan Parkway
Northbrook, Illinois 60062

00-8815-51 (Rev. 9/96)

Printed in U.S.A.

Hi-Flo 3



TOP VIEW

NOTES:

(1) ITEMS SHOWN IN BROKEN LINES TO BE FURNISHED BY OTHERS.

(2) AN ELECTRICAL OUTLET SHOULD BE PROVIDED WITHIN 5 FEET OF THE EQUIPMENT.

(3) SYSTEM USES FRP TANKS WHICH MUST NOT BE SUBJECTED TO VACUUM. INSTALL VACUUM BREAKER ON INLET PIPING AND/OR STANDPIPE ON DRAIN LINE.

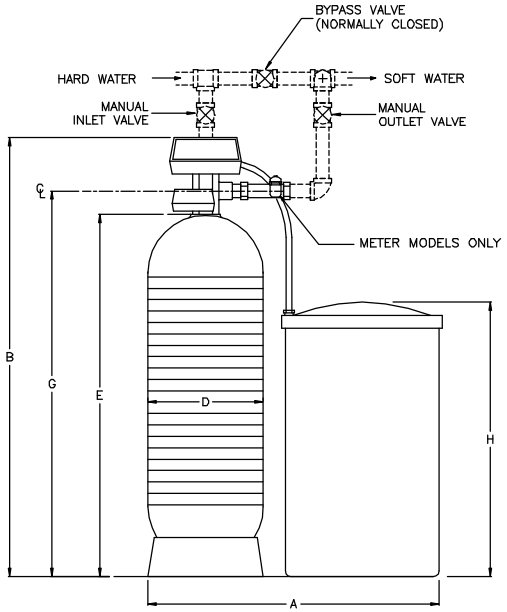
(4) UNIONS SHOULD BE LOCATED ON INLET, OUTLET, AND DRAIN CONNECTIONS OF CONTROL VALVE TO FACILITATE SERVICING

(5) DO NOT MAKE A DIRECT CONNECTION TO THE DRAIN. PROVIDE AN AIR GAP OF AT LEAST FOUR TIMES THE DIAMETER OF THE DRAIN PIPE TO CONFORM TO SANITATION CODES AND TO PERMIT THE OBSERVATION OF THE DRAIN FLOW. DO NOT INSTALL A VALVE IN DRAIN LINE OR USE PIPE SMALLER THAN LISTED IN TABLE

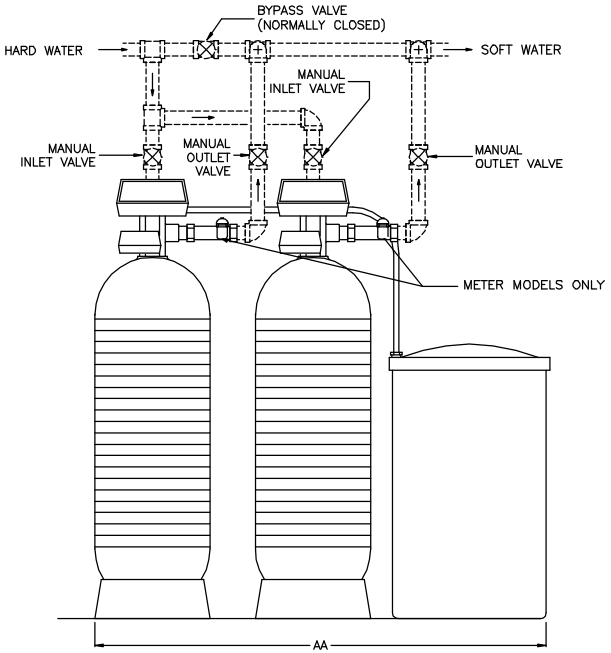
(6) ALLOW 24 INCHES ABOVE SOFTENER FOR FILLING.

(7) ALL DIMENSIONS ARE ± 1 INCH (25mm) AND SUBJECT TO CHANGE WITHOUT NOTICE.

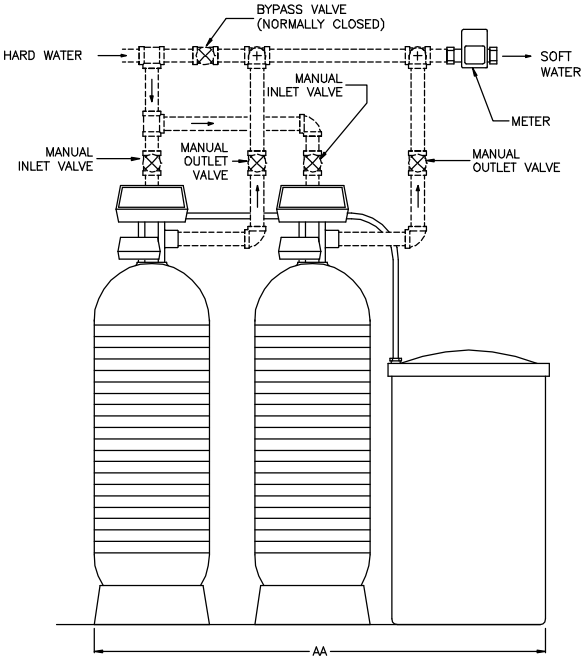
MODEL	DIMENSIONS (INCHES) A	AA	B	C	D	E	G	H	MIN. DRAIN PIPE SIZE	DRAIN FLOW	SIMPLEX OPER. WT.
HC-150	53	82	64	28	21	55	59.25	50	1"NPT	12gpm	1960 lb
HC-210	53	82	85	28	21	71	75.25	50	1"NPT	8gpm	2070 lb
HC-300	62	93	87	34	24	73	77.25	50	1 1/4"NPT	15gpm	2580 lb
HC-450	68	106	95	34	30	81	85.25	50	1 1/2"NPT	25gpm	3300 lb



SIMPLEX INSTALLATION



PARALLEL
DUPLEX INSTALLATION



ALTERNATING
DUPLEX INSTALLATION

LET	CHANGE	BY	APP	DATE

PRINT & BILL OF MATERIALS ARE NOT TO BE USED WITHOUT THE WRITTEN CONSENT OF CULLIGAN USA

DO NOT SCALE FROM DRAWING

Culligan®
NORTHBROOK, ILLINOIS

SCALE	DETAILED BY	CHECKED BY	APPROVED
00.00	KMR		
REF. NO.	DATE 2/17/99	DATE	DATE

NAME: HI-FLO® 3 AUTOMATIC SOFTENERS TECHNICAL DATA SHEET

PART NO. S3

SHEET 1 OF 1

CAD File: Soft_HF3.dwg

ENGINEER'S SPECIFICATION

AUTOMATIC WATER SOFTENER HI-FLO® 3	CUSTOMER:
	DATE:

1.0 SCOPE

1.1 Provide as indicated a vertical pressure type water softener system complete with pressure vessel, softening resin, control valve, brine maker and controller. The system will be of an approved design as fabricated by a manufacturer regularly engaged in the production of water treatment equipment. All equipment and material will be supplied in compliance with the specifications as intended for a complete and operational system.

☐ *(Open Bidding Arrangement)*

1.2 Qualified manufacturers of water treatment equipment of the type specified are Culligan International Company or the Engineer's approved equal.

☐ *(Closed Bidding Arrangement)*

1.2 Qualified manufacturers of water softener equipment must be engaged in the manufacture of this equipment for a period of not less than fifteen (15) years. Acceptable manufacturers are Culligan International Company or the Engineer's approved equal.

2.0 GENERAL DESCRIPTION

☐ *(Selection for statement of specific model)*

2.1 The system specifications are based on Culligan International model _____.

The purpose of the Culligan International Series Hi-Flo® 3 automatic water softener will be to remove mineral hardness from a known water supply to a level not to exceed _____ mg/l, as determined by an accepted ASTM or EDTA test method, when the system is operated at _____ gpm and in accordance with the operating instructions. The system will be capable of supplying _____ gallons of softened water between regenerations based on the influent water analysis listed in Section 3.1 of this equipment specification.

The systems performance is rated at a design flow rate of _____ gpm with a rated pressure drop of _____ psi, and will be capable of a peak flow rate of _____ gpm for sustained periods of 90 minutes with a pressure drop of _____ psi.

There shall be a quantity of _____ of the above described systems.

☐ *(Selection for general statement)*

2.1 The system, in compliance with the equipment specification, is described as an automatic _____ water softener system meeting the performance and design data requirements as hereinafter specified.

3.0 PERFORMANCE AND DESIGN DATA

3.1 INFLUENT WATER ANALYSIS

Calcium, Ca: _____
Magnesium, Mg: _____
Total Hardness: _____
(Constituents above are expressed in ppm or mg/l as $CaCO_3$ or as otherwise specified.)

Iron, Fe: _____
Manganese, Mn: _____
Total Dissolved Solids, TDS: _____
(Constituents above are expressed in ppm or mg/l.)

Turbidity, NTU: _____
Color: _____
pH: _____

3.2 DESIGN PARAMETERS

Normal System Flow & Pressure Drop:	_____ gpm @ 15 PSI
Maximum System Flow & Pressure Drop:	_____ gpm @ 25 PSI
Backwash/Rinse Flow:	_____ gpm
Backwash Volume:	_____ gallons nominal
Daily Water Usage:	_____ gallons per day (gpd)
Daily Hours of Water Demand:	_____
Operating Temperature Range:	40°–100°F
Operating Pressure Range (System):	30–120 PSI
Electrical Requirements:	120 Volt, 60 Hz, 1 phase (receptacle required)
System Dimension (L x W x H):	_____"L x _____"W x _____"H

☐ *(ASTM soap test method)*

3.3 EFFLUENT WATER QUALITY ZERO GPG HARDNESS

☐ *(Hardness EDTA test method)*

3.3 EFFLUENT WATER QUALITY _____ MG/L HARDNESS

4.0 EQUIPMENT SPECIFICATIONS

4.1 SOFTENER TANK(S)

Each system shall include _____ tank(s). Each softener tank shall be _____ inches in diameter. The sideshell height shall be _____ inches, sufficient to allow for proper freeboard space above the resin bed for adequate expansion of the resin during backwashing.

4.1.0 Tank Construction

Tank(s) shall be manufactured of polyester reinforced by a continuous roving glass filament overwrap. The top opening will be 4"-8 UN threaded and the tank bottom will be supported on a molded structural base.

4.2 INTERNAL DISTRIBUTION

4.2.1 The upper distribution system shall be of the single point diffuser type to dispense water laterally to avoid channeling within the resin bed.

4.2.2 The lower distribution system shall be of the single point distributor type, constructed of PVC pipe and a fine slotted strainer to provide even flow distribution through the resin bed. The distribution system shall be embedded in a subfill of washed inorganic material to support the resin bed.

4.3 MAIN OPERATING VALVE

The main operating valve shall be of a top mount design constructed of all brass and sized with 2 inch NPTI inlet and outlet connections.

The main operating valve will be of the motor driven, mechanically activated design with four (4) positions to accomplish the regeneration steps of backwash, brine draw/rinse and fast rinse/brine refill, in addition to the service position.

The main operating valve shall incorporate self adjusting flow regulators to control the rate of flow and prevent resin loss during backwash regardless of system pressure fluctuations between 30 and 120 psi.

The main operating valve will be fitted with a fixed orifice eductor.

☐ *(Single units only – hard water bypass)*

The unit shall be supplied so that the valve will allow automatic bypass of untreated water during regeneration. The bypass shall be integral to the main operating valve body and be capable of being easily modified to prevent hard water bypass.

☐ *(Single units only – NO hard water bypass)*

The unit shall be supplied so that the valve will not allow automatic bypass of untreated water during regeneration. The bypass shall be integral to the main operating valve body and be capable of being easily modified to allow hard water bypass.

4.4 CONTROLS

The main operating valve will be controlled by an integral clock timer.

The controller shall sequence all steps of an automatic regeneration and automatically return the softener to a service or stand-by mode.

The controller shall allow for a manual initiation of the automatic regeneration sequence by utilizing a manual regeneration knob on the timer.

4.4.1 System control options

☐ *(Time Clock, Single Unit)*

A time-initiated regeneration for single units shall be available. The clock timer will be capable of regenerating the softener at any time of day or night and on any or every day of the week. The timer will activate a motor drive that will perform the regeneration functions on the exhausted tank and return it to service.

☐ *(Meter Initiated Delayed, Single Unit)*

A volumetric meter, mechanically coupled to the timer control, shall set the timer for regeneration at a preset time of day or night after the preset volume of water has passed through the water softener. The timer will activate a motor drive that will perform the regeneration functions on the exhausted tank and return it to the service position.

☐ *(Time Clock, Parallel Twin Unit)*

A time-initiated regeneration for parallel twin units shall be available. Each clock timer will be capable of regenerating the softener at any time of day or night and on any or every day of the week. The timer will activate a motor drive that will perform the regeneration functions on the exhausted tank and return it to service. Simultaneous regenerations shall not be possible.

☐ *(Meter Initiated, Parallel Twin Unit)*

Each unit shall include a volumetric meter, mechanically coupled to the timer control. Upon exhaustion of either tank, its control shall activate a motor drive that will immediately, or at a preset time of day or night, perform the regeneration functions on the exhausted tank and return it to the service position. The controls shall include an electrical interlock to prevent simultaneous regeneration of both softeners in the event the second tank exhausts while the first tank is in regeneration.

☐ *(Meter Initiated, Alternating Twin Unit)*

A single, remote mounted volumetric meter shall signal the softeners to regenerate on an alternating basis after the preset volume of water has passed through the water softener. One unit remains in a fully regenerated stand-by condition while the other unit is in service. Upon exhaustion of the service unit, the stand-by unit shall immediately be placed into service and the exhausted unit shall be removed from service and the regeneration initiated. The timer will activate a motor drive that will perform the regeneration functions on the exhausted tank and return it to the stand-by position. No external alternating devices will be acceptable. The alternating function must be contained in the sequencing controller and each controller must communicate via a single pre-wired cable assembly, simultaneous regenerations shall not be possible.

☐ *(Meter Initiated systems ONLY)*

4.4.2 Flow Meter(s)

☐ *(Meter Initiated single and parallel systems ONLY)*

A flow meter package shall be provided consisting of a mechanical turbine-type meter; the package shall include a total of _____ meter assemblies.

The meter provided shall be 2.0 inches, compatible with the specified piping. It will be designed to allow ease of removal of the turbine for inspection without modification of the piping system. A cable shall be provided for direct connection to the operating valve.

The meter package provided shall be functional within the flow range of 3 to 130 gpm and will be provided with a threaded tee meter fitting.

☐ *(Meter Initiated alternating system ONLY)*
One remote mounted mechanical turbine-type meter will be provided.

The meter provided shall be 2.0 inches, compatible with the specified piping. It will be designed to allow ease of removal of the turbine for inspection without modification of the piping system. The meter will be electrically connected to the cycle timer.

The meter provided shall be functional within the flow range of 3 to 130 gpm and will be provided with a threaded tee meter fitting.

4.5 EXCHANGE RESIN

The ion exchange resin shall be virgin high capacity "standard mesh" of sulfonated polystyrene type stable over the entire pH range with good resistance to bead fracture from attrition or osmotic shock. Each cubic foot of resin will be capable of removing 30,000 grains of hardness as calcium carbonate when regenerated with 15 lbs. of salt. The resin shall be solid, of the proper particle size of 20-50 mesh, U.S. standard screen and will contain no agglomerates, shells, plates or other shapes that might interfere with the normal function of the water softener. The resin shall be manufactured to comply with the food additive regulation 21 CFR 173.25 as set forth by the USFDA.

The system shall include _____ cubic feet of exchange resin per vessel and a total of _____ cubic feet of resin for the system.

4.6 BRINE SYSTEM

Provide a complete brine system consisting of a plastic tank, salt platform, brine well, an automatic brine valve and all necessary fittings for operation with the water softening system. The system shall consist of a combined brine measuring and salt storage tank with salt platform. The tank will be sized ____ inches x _____ inches; the system will include a total of _____ brine tank(s).

The brine tank will be equipped with a float operated non-corrosive field serviceable brine float valve for automatic control of brine withdrawal and fresh water refill.

The brine valve will automatically open to admit brine to the resin tank during eduction and close automatically providing positive shut-off to prevent air from entering the system. The brine valve will also regulate the flow of soft water into the brine tank during refill. The brine valve works with the timed fill feature of the main operating valve controls to admit the correct volume of fresh water to the brine tank in accordance with the salt dosage setting on the controls. The brine valve will include a float operated safety shut-off valve as a back up to the timed refill from the main operating valve control to prevent brine tank overflow.

4.7 ACCESSORIES

(All Optional selections)

4.7.1 ☐ Water test kits for hardness tests will be supplied.
4.7.2 ☐ Pressure Gauges for hard water inlet and soft water outlet.
4.7.3 ☐ Sampling Cocks for hard water inlet.
4.7.4 ☐ Vacuum Breaker for protecting Fiberglass tanks from vacuum.

5.0 INSTRUCTIONS

_____ complete sets of installation, operating and maintenance manuals shall be provided.

6.0 FIELD SERVICE

The services of a factory authorized service representative can be made available to supervise, inspect and provide operator training as required for initial start-up and system operation. Contact your local Culligan dealer for service rates and scheduling.

7.0 WARRANTY

A single written warranty must be provided from the manufacturer of the water softener system covering workmanship and materials.