



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

schools



SMS Model Shown

Soft-Minder® Twin Plus Water Softener by Culligan

Soft-Minder® Twin Plus Water Softener Features

- Corrosion Resistant Tanks—made from fiberglass-reinforced polyester for SMF models.
- SMS models feature the Culligan exclusive Tripl-Hull™ steel tank which has a lifetime warranty.
- Alternating Twin Tank Design—allows for a continuous supply of softened water.
- Meter Initiated Regeneration
- Positive Motor-Driven Regeneration Valve—reliable motor driven pistons. Rugged long-life construction featuring lead-free brass valve body.
- Softening Media—high quality resin provides stability and uniform size for top performance and long life.
- Automatic Brine Control—A single turn of the dial sets the correct brine dosage and capacity
- Dubl-Safe™ Brine System—features positive brine overflow protection. Automatic refill control is backed up by shut-off float valve.
- Uses conditioned water for regeneration.



Soft-Minder® Twin Plus Water Softener by Culligan

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, and 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.

Warranty

The *Soft-Minder* Twin Plus Water Softeners by Culligan are backed by a limited 1-year warranty against defects in material, workmanship, and corrosion. The plastic conditioner tank has a 5-year warranty. Tripl-Hull™ steel tanks have a lifetime warranty. See the 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.

System Specifications

Pressure:	30–100 psig 210–690 kPa
Vacuum:	None ¹
Temperature:	40–100°F max. 4–38°C
Electrical Requirements:	120V, 60 HZ
Turbidity:	5.0 NTU, max. ²
Chlorine:	1.0 mg/L, max. ²
Iron:	5 mg/L

¹Tank warranty is void if subject to vacuum. Use of a vacuum breaker with fiberglass tanks is recommended.

²Refer to media specifications for details.

Space Requirements

Model	Resin Qty. (Ft. ³)	Pipe Size	Flow Rates		Tank Size***		
			Continuous*	Peak**	Softner	Brine	
Tripl-Hull™ Tanks	SMS-61	1	1"	15	20	9" x 42"	18" x 38"
	SMS-91	1.5	1"	15	20	12" x 42"	18" x 38"
	SMS-181	3	1"	15	20	16" x 43"	24" x 42"
Fiberglass Tanks	SMF-185	3	1.5"	30	40	14" x 65"	24" x 42"
	SMF-245	4	1.5"	30	40	16" x 65"	24" x 42"
	SMF-365	6	1.5"	30	40	21" x 69"	24" x 48"

*Flow rate at 15 psi pressure loss

**Flow rate at 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

© 2001 Culligan International Co.

SL-0032-A DCO 992839

Printed in USA (3/01)

MOORE PART NO.46916



Culligan, Hey Culligan Man, Culligan Man, Culligan Commercial @ Work, www.culligan.com and Culligan Service Network are trademarks of Culligan International Company.

SOFT-MINDER® TWIN PLUS

WATER SOFTENERS

SPECIFICATIONS AND OPERATING DATA

Model	Exchange Capacity ¹ @ Salt Dosage		Service Flow Rates ²				Pipe Size	Resin Qty.	Softener Tank Size	Brine Tank Size	Approx. Ship. Weight
	Minimum	Maximum ³	Peak ⁴		Continuous						
			Flow	Press. Drop	Flow	Press. Drop					
	gr @ lb g @ kg	gr @ lb g @ kg	gpm m ³ /hr	psi kPa	gpm m ³ /hr	psi kPa					
SMS-61	20,000/6	30,000/15	20	25	15	15	1	1	9 x 42	18 x 38	290
	1,300/2.7	1,950/6.8	4.5	173	3.4	104	1	28	230 x 1,070	460 x 970	130
SMS-91	30,000/9	45,000/23	20	25	15	15	1	1.5	12 x 42	18 x 38	410
	1,950/4	2,930/10	4.5	173	3.4	104	1	42	300 x 1,070	460 x 970	190
SMS-181	60,000/18	90,000/45	20	25	15	15	1	3	16 x 43	24 x 42	700
	3,890/8	5,830/20	4.5	173	3.4	104	1	85	410 x 1,095	610 x 1,070	320
SMF-185	60,000/18	90,000/45	40	25	30	15	1.5	3	14 x 65	24 x 42	600
	3,890/8.2	5,830/20	9.0	173	6.8	104	1.5	85	360 x 1,650	610 x 1,070	270
SMF-245	80,000/24	120,000/60	40	25	30	15	1.5	4	16 x 65	24 x 42	680
	5,180/11	7,780/27	9.0	173	6.8	104	1.5	113	410 x 1,650	610 x 1,070	310
SMF-365	120,000/36	180,000/90	40	25	30	15	1.5	6	21 x 69	24 x 48	815
	7,780/16	11,700/41	9.0	173	6.8	104	1.5	170	530 x 1,750	610 x 1,220	370

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

2 The service flow rate is based on one tank regenerating while the other tank is delivering soft water. Performance is slightly improved when regeneration is complete and the non-service tank is in standby.

3 It is recommended that the frequency of regeneration be limited to once every eight hours.

4 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.

Culligan

Commercial Systems
 ©2000 Culligan
 1-800-CULLIGAN
 www.culligan.com
 Printed in USA 4/00
 DCO 992587
 SL-0073





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.

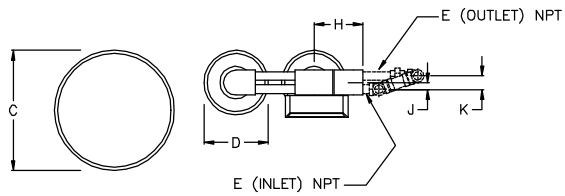
Our product performance specifications are furnished with each water conditioning unit. TO THE EXTENT PERMITTED BY LAW, CULLIGAN DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE; TO THE EXTENT REQUIRED BY LAW, ANY SUCH IMPLIED 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:

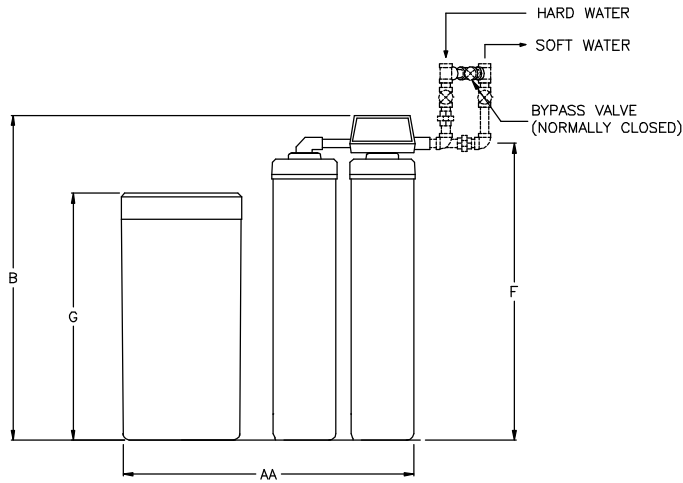
Some states do not allow the exclusion of implied warranties or limitations on how long an implied warranty lasts, so the above exclusion may not apply to you. Similarly, some states do not allow the exclusion of incidental or consequential damages, so the above exclusion or limitation or exclusion may 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



TOP VIEW



FRONT VIEW

MODEL	DIMENSIONS (INCHES)											MIN. DRAIN PIPE SIZE	DRAIN FLOW	OPER. WT.
	AA	B	C	D	E	F	G	H	J	K				
SMS-61	45	50	18	9	1	44	38	7-1/2	1/4	2-1/8	1/2"	2gpm	760 lb.	
SMS-91	51	50	18	12	1	44	38	7-1/2	1/4	2-1/8	1/2"	3.5gpm	940 lb.	
SMS-181	65	51	18	16	1	45	42	7-1/2	1/4	2-1/8	1/2"	5gpm	1,600 lb.	
SMF-185	60	76	24	14	1-1/2	70	42	14	1-1/2	3-1/2	1"	5gpm	1,600 lb.	
SMF-245	64	74	24	16	1-1/2	68	42	14	1-1/2	3-1/2	1"	7gpm	1,750 lb.	
SMF-365	78	80	24	21	1-1/2	74	50	14	1-1/2	3-1/2	1"	12gpm	2,000 lb.	

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) SMF SYSTEM USES FRP TANKS WHICH MUST NOT BE SUBJECTED TO VACUUM. INSTALL VACUUM BREAKER ON INLET PIPING AND/OR STANDPIPE ON DRAIN LINE.
- (4) 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.
- (5) ALLOW 24 INCHES ABOVE SOFTENER FOR FILLING.
- (6) ALL DIMENSIONS ARE ± 1 INCH (25mm) AND SUBJECT TO CHANGE WITHOUT NOTICE.

				Culligan®			
				NORTHBROOK, ILLINOIS			
SCALE		DETAILED BY		CHECKED BY		APPROVED	
00.00		KMR					
REF. NO.		DATE		DATE		DATE	
		2/22/99					
LET	CHANGE	BY	APP	DATE	NAME		
					SOFT-MINDER® TWIN PLUS		
PRINT & BILL OF MATERIALS ARE NOT TO BE USED WITHOUT THE WRITTEN CONSENT OF CULLIGAN USA DO NOT SCALE FROM DRAWING					AUTOMATIC SOFTENERS		PART NO.
					TECHNICAL DATA SHEET		SSMT
							SHEET 1 of 1



ENGINEER'S SPECIFICATION

AUTOMATIC WATER SOFTENER SOFT-MINDER® TWIN PLUS	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, controller and water meter. 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 Soft-Minder® Twin Plus 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 CaCO₃ 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°–110°F
Operating Pressure Range (System): 30–100 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 two (2) tanks. 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

(*Tripl-Hull™ vessel*)

Tank(s) shall be electrical welded pressure vessel quality low carbon steel construction rated for 100 psig working pressure.

(*Fiberglass vessel*)

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

4.1.1 Tank(s) will be of the Culligan Tripl-Hull™ construction.

(*Tripl-Hull™ vessel ONLY*)

4.1.2 Access Openings

Each tank will be equipped with openings for mineral filling and periodic inspection.

(*Tripl-Hull™ vessel ONLY*)

4.1.3 Tank Finish – Exterior

The tank exterior will be protected by a molded plastic jacket for corrosion resistance. The jacket will also act as an insulator to minimize condensation on the surface of the tank.

(*Tripl-Hull™ vessel ONLY*)

4.1.4 Tank Finish – Interior

The tank interior will consist of a 20 mil thick vinyl bag liner, hermetically sealed within the steel tank to protect against internal corrosion.

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 <1.0/1.5> inch NPT inlet and outlet water pipe connections.

The main operating valve will be of the motor driven, mechanically activated design with six (6) positions to accomplish the regeneration steps of backwash, brine draw/rinse, fast rinse, brine refill and stand-by, 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 100 psi.

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

4.4 CONTROLS

The main operating valve will be controlled by a single electrically controlled timer to control the regeneration and to alternate the tank in service. The timer will activate a motor drive which will shift the stand-by tank into the service position, perform the regeneration functions on the exhausted tank and return it to the stand-by position.

The timer will permit individual adjustment of the backwash, brine-rinse, fast rinse and brine refill cycles.

No external alternating devices will be acceptable. The alternating function must be contained in the sequencing controller. Simultaneous regenerations shall not be possible.

4.4.1 Flow Meter

The main operating valve will include one (1) mechanical turbine-type meter on the outlet side of the water softener. The meter will be directly connected to the cycle timer by a cable.

The meter provided shall be the same size as the outlet of the softener.

The meter provided shall be functional within the flow range of 0.7 to 40 gpm.

The operating temperature/pressure range of the meter shall be 34°F - 110°F at 120 psi max.

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, salt dosage 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.