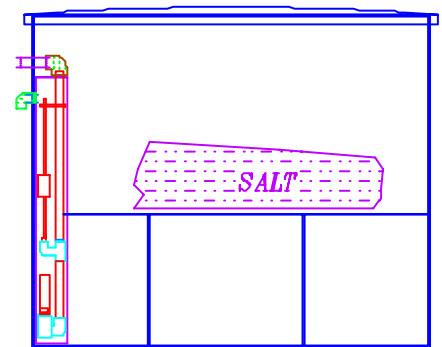
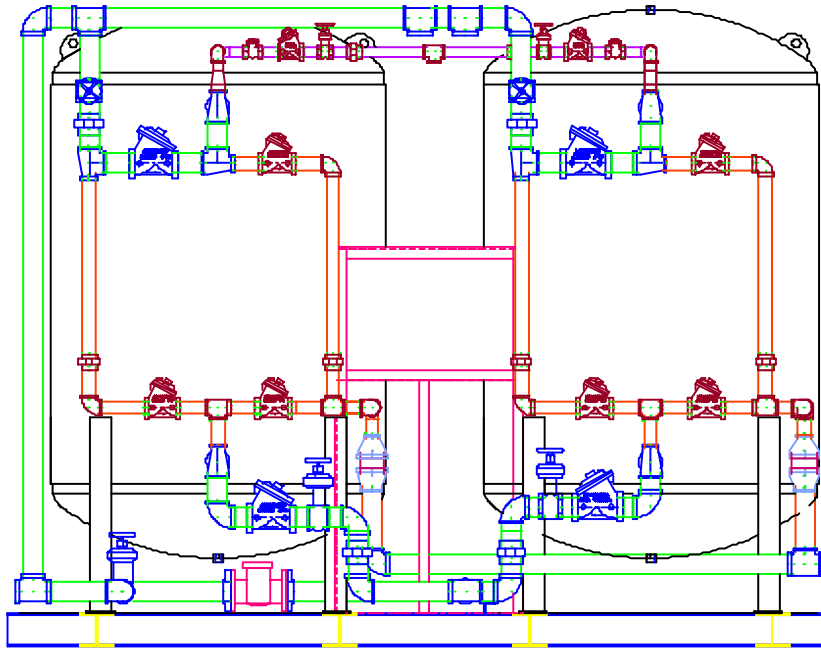


VN 3000 TO 9000 SOFTENER



STANDARD FEATURES

DM SERIES 125 PSI FLANGED CAST IRON DIAPHRAGM VALVES IN VALVE NEST CONFIGURATION
 6-DAY TIMER
 100 PSI EPOXY LINED AND COATED CARBON STEEL MINERAL TANKS
 EE SERIES – PVC EXTERNAL BRINE EJECTOR
 WATER KING ACCUMATIC BRINE SYSTEM
 FIXED RATE EXTERNAL BACKWASH RATE OF FLOW CONTROLLERS.
 ACCUMATIC™ BRINE SYSTEM.
 RESIN POLYSTYRENE 8% DVB CL
 PVC HEADER AND LATERAL INTERNALS
 110V, 60Hz, 1Ø

OPTIONS

ASME CODE TANKS
 7-DAY TIMER
 DEMAND INITIATION
 TWIN CONFIGURATION WITH STAGERS AND TIMERS
 TWIN ALTERNATING WITH WK520-84, PWS SERIES METER, STAGERS AND ARC TIMERS
 PRESSURE GAUGE AND TEST TAP KIT
 SKID MOUNTING
 220V, 50Hz, 1Ø
OPERATING CONDITIONS
 25 TO 100 PSI ♀ 100°F

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VN Series 3000 to 9000 Sizing and Design Information																
VN Model #	Valves		Capacity				Tank				Flow Rate			Resin		
	Serv	BW	Low Salt ⁴	Salt Applied	High Salt ⁵	Salt Applied	Dia	Side Shell	Area (ft ² .)	Volume ft ³	Cont ¹	Peak ²	Back-wash ³	Vol	Depth	Gravel
	(in.)	(in.)	(Kgr)	(lbs.)	(Kgr)	(lbs.)	(in.)	(in.)			(gpm.)	(gpm.)	(gpm.)	(ft ³ .)	(in.)	(lbs.)
3200	6	6	1923	500	3191	1500	78	60	33.17	165.83	890	1185	165	100	36	2800
3200	4	4	1923	500	3191	1500	78	60	33.17	165.83	415	545	165	100	36	2800
3800	6	6	2308	600	3830	1800	84	60	38.47	192.33	915	1210	195	120	36	3500
3800	4	4	2308	600	3830	1800	84	60	38.47	192.33	420	550	195	120	36	3500
4300	6	6	2596	675	4309	2025	90	60	44.16	220.78	930	1230	220	135	36	4200
4300	4	4	2596	675	4309	2025	90	60	44.16	220.78	425	550	220	135	36	4200
4750	6	6	2885	750	4787	2250	96	60	50.24	251.20	945	1240	250	150	35	5100
4750	4	4	2885	750	4787	2250	96	60	50.24	251.20	425	555	250	150	35	5100
5400	6	6	3269	850	5426	2550	102	60	56.72	283.58	950	1245	285	170	36	6000
5400	4	4	3269	850	5426	2550	102	60	56.72	283.58	425	555	285	170	36	6000
6000	6	6	3654	950	6064	2850	108	60	63.59	317.93	960	1255	320	190	35	7000
6000	4	4	3654	950	6064	2850	108	60	63.59	317.93	430	560	320	190	35	7000
6800	6	6	4135	1075	6862	3225	114	60	70.85	354.23	965	1260	355	215	36	8200
6800	4	4	4135	1075	6862	3225	114	60	70.85	354.23	430	560	355	215	36	8200
7400	6	6	4519	1175	7500	3525	120	60	78.50	392.50	970	1255	395	235	36	9500
7400	4	4	4519	1175	7500	3525	120	60	78.50	392.50	430	560	395	235	36	9500
3650	6	6	2212	575	3670	1725	78	72	33.17	199.00	890	1180	165	115	41	2800
3650	4	4	2212	575	3670	1725	78	72	33.17	199.00	415	545	165	115	41	2800
4100	6	6	2500	650	4149	1950	84	72	38.47	230.79	910	1200	195	130	40	3500
4100	4	4	2500	650	4149	1950	84	72	38.47	230.79	420	545	195	130	40	3500
4900	6	6	2981	775	4947	2325	90	72	44.16	264.94	915	1210	220	155	42	4200
4900	4	4	2981	775	4947	2325	90	72	44.16	264.94	420	550	220	155	42	4200
5700	6	6	3462	900	5745	2700	96	72	50.24	301.44	930	1220	250	180	43	5100
5700	4	4	3462	900	5745	2700	96	72	50.24	301.44	420	550	250	180	43	5100
6300	6	6	3846	1000	6383	3000	102	72	56.72	340.30	940	1235	285	200	42	6000
6300	4	4	3846	1000	6383	3000	102	72	56.72	340.30	425	555	285	200	42	6000
7100	6	6	4327	1125	7181	3375	108	72	63.59	381.51	950	1245	320	225	42	7000
7100	4	4	4327	1125	7181	3375	108	72	63.59	381.51	425	555	320	225	42	7000
8100	6	6	4904	1275	8138	3825	114	72	70.85	425.08	955	1250	355	255	43	8200
8100	4	4	4904	1275	8138	3825	114	72	70.85	425.08	425	555	355	255	43	8200
8900	6	6	5385	1400	8936	4200	120	72	78.50	471.00	960	1255	395	280	43	9500
8900	4	4	5385	1400	8936	4200	120	72	78.50	471.00	430	560	395	280	43	9500

NOTE: SPECIFICATIONS LISTED ARE NOT SKID MOUNTED SYSTEMS. SKID DIMENSIONS ARE GIVEN UPON REQUEST.

NOTES FOR VN SERIES 120 TO 3000 SIZING INFORMATION:

- Allowable continuous flow is flow at **15 psi** max head loss or **10 gpm/ft³** which ever is less.
- Allowable peak flow is flow at **25 psi** max head loss or **15 gpm/ft³** which ever is less.
- Backwash Flow Rate is 5 gpm/ft², which provides 50 to 75% resin bed expansion.
- Brining efficiency at 0.26 Kgr/lb of salt applied. Assumes 90% utilization of capacity.
- Brining efficiency at 0.47 Kgr/lb of salt applied. Assumes 90% utilization of capacity.
- Six-inch diaphragm valves require Humphrey pilot valves.

VN SERIES 3000 TO 9000 SPECIFICATIONS

Mineral Tank (Standard Non Code Vessels). The non-code vessel shall be A36 carbon steel or better rated at 100 psi working pressure designed to a factor of safety of 3.0.

Mineral Tank (Optional Code Vessels). ASME code stamped tanks shall be available. Tank shall be clearly specified as code or non-code with a specified working pressure. Tanks "built to ASME code but not stamped" shall not be acceptable as ASME code. An ASME U1 form shall be provided with each ASME code tank.

Coating and lining. Tanks shall be prepared for internal and external coating with a SPCC 11 near white sand blast. Internal and external coating shall be two 3 - 4 mill coats of white Series 20 Tnemic Epoxy. Paint shall be applied according to manufacturer's recommendations.

Internals (VN 1200, 48"Ø and up). The bottom distributor shall be header lateral design with SCH 80 PVC header or hub piping and SCH 40 PVC slotted laterals. The slots shall be .012" - .016" wide to retain mineral and the total slot area shall be equal to or larger than the unit pipe size. The piping size of the header lateral system shall be greater than or equal to the outlet pipe size. A SCH 80 PVC top dome splash distributor with an opening equal to or larger than the unit pipe size shall be installed in the mineral tank.

Face Piping. For models with a -4F or -6F designation the inlet and outlet connection shall be 4" or 6" flanges and the pipe shall be welded flanged SCH 40 black iron pipe. Piping shall be continuously seal welded and hydrotested at the vessel working pressure. Piping shall have the same exterior coating as the vessel. Piping shall be a combination of welded, threaded and Gruvlok fittings.

Media. 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. Underbedding shall be #20 graded washed flint gravel sieved between 1/8" and 1/16".

Valves. The valves shall be Water King DV Series cast iron body valves with screwed (or flanged if model number contains -F) connections. The valve can be operated by air or water. The diaphragm shall be preformed, stress relieved Buna N on Nylon of a long life. Static seals shall be Buna N. Internal parts shall be stainless steel and brass. Working pressure on the valve is per MSS SP88, class 125, category B. Maximum temperature is 150°F.

Stager. Diaphragm valves shall be operated by a rotary pilot valve (stager) with multiple ports through which control fluid is directed, thereby operating the diaphragm valves installed in a process system. Standard units shall use staggers constructed of durable, non-corroding, self-lubricating material for long, maintenance free life. The stager shall function by opening and closing its ports, singly or in combination, in a sequence that accomplishes the five cycles of softening. The stager shall use either water or air for the operating fluid. Process fluid, if pressurized, and not damaging to the internal parts of the stager or diaphragm valve, may be drawn from the main line to the inlet of the stager. Otherwise, an independent source of control fluid is required. The pressure of the control fluid must be equal to or greater than the line pressure of the system. The stager enclosure shall be a 10" x 8" x 6" NEMA 4 fiberglass control box which houses both the stager and the timer. Maximum pressure shall be 100 psi with a maximum temperature rating of 150°F. Ports are 1/8" NPT. Power shall be either 120 VAC/60 Hz or 230 VAC/50 Hz. Flexible tubing (1/4" O.D.) shall connect stager ports to diaphragm valves. To increase the closure speed, Humphrey® pilot valves shall be installed on all six-inch valves

Brine System. 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 SCH 80 PVC 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 volumetrically controlled, not timed.

Brine Header. Each softener shall be equipped with an internal brine distributing system. The brine distributing system shall be separated from the inlet distributor and shall be designed to evenly distribute the brine over the entire resin bed and shall be of the header-lateral design.

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

External Ejectors. Brine shall be drawn directly into inlet of the mineral tank using an EE series external ejector. This venturi type device shall be SCH 80 PVC with 1" or 1 ½" FNPT connections. The venturi shall be chemically bonded to the housing. The venturi shall be precision machined. Maximum temperature shall be 140°F. The external injector shall provide both brine flow and brine dilution.

Simplex. Standard single unit (simplex) shall be controlled by an electromechanical system using a 6-day timer and a stager. The timer shall be housed in the NEMA 4 control box with the stager and initiates regeneration at certain, preset times of the week. Manual regeneration shall be available at the stager. To increase the closure speed, Humphrey pilot valves shall be installed on all six-inch valves.

Twin. Twin systems shall consist of two mineral tanks with attached control valves and one brine tank with a brine director. Regeneration initiation shall be by a single 6 or 7-day timer controlling a stager on each unit.

Demand Initiation. For 4" and 6" and larger piping the VN series uses the PW 400S and 600S saddle mounted flow meters with the WK520-84 controller, stagers and ARC cycle timers. Twin alternating systems provide a continuous flow of softened water with no bypassing of unsoftened water during regeneration.

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 10 years shall construct the equipment.

Pressure gauge and test tap kit. A kit containing two liquid filled, stainless steel pressure gauges with 2 ½" Ø face, two brass ball valve sample taps with hose barb connections and associated brass connection fittings shall be provided for mounting in the 1/4" FNPT predrilled and tapped ports in the inlet and outlet diaphragm valves.