

VN 3600 TO 8400 SOFTENER



STANDARD FEATURES

DM SERIES 125 PSI FLANGED CAST IRON
 DIAPHRAGM VALVES IN VALVE NEST
 CONFIGURATION
 99-DAY ERCT ELECTRONIC TIMER
 MPV1 125 PSI BRASS STAGER
 100 PSI EPOXY LINED AND COATED CARBON
 STEEL MINERAL TANKS
 DOUBLE DRILLED DOUBLE TAPPED PAD
 FLANGES ON INLET AND OUTLET
 EE SERIES – PVC EXTERNAL BRINE
 EJECTOR
 FIXED RATE EXTERNAL BACKWASH RATE OF
 FLOW CONTROLLERS.
 ACCUMATIC™ BRINE SYSTEM.
 RESIN POLYSTYRENE 8% DVB CL
 MULTIPLE POINT ABS DISTRIBUTOR
 PVC HUB AND LATERAL INTERNALS
 BRINE DISTRIBUTION HEADER
 110V, 60Hz, 1Ø

OPTIONS

ASME CODE TANKS
 DEMAND INITIATION WITH ERCd ELECTRONIC
 CONTROLLER AND WATER KING'S PW SERIES
 FLOW METERS
 MULTIPLE TANK CONFIGURATION WITH STAGERS
 AND ERC CONTROLLERS
 TWIN ALTERNATING WITH EDRd, PW SERIES
 METER, AND MPV3 STAGER
 PRESSURE GAUGE AND TEST TAP KIT
 SKID MOUNTING
 220V, 50Hz, 1Ø
 Operating Conditions 25 to 100 psi ♦ 100°F

CAT260.2

Model Nº	3600	4200	4800	5400	6000	6750	7500	8400
Dia.x Side Shell (in.)	78x72	84x72	90x72	96x72	102x72	108x72	114x72	120x72
Preset Capacity (Kilograins) ⁴	3134	3709	4294	4873	5454	6173	6897	7760
Salt Applied (lbs)	1053	1217	1431	1574	1791	2036	2164	2473
4" Pipe –Cont Flow Rate ¹ (gpm)	415	420	420	420	425	425	425	430
4" Pipe - Peak Flow Rate ² (gpm)	545	545	550	550	555	555	555	560
6" Pipe –Cont Flow Rate ¹ (gpm)	890	910	915	930	940	950	955	960
6" Pipe - Peak Flow Rate ² (gpm)	1180	1200	1210	1220	1235	1245	1250	1255
Backwash ³ (gpm)	165	195	220	250	285	320	355	395
Resin (ft ³)	120	140	160	180	200	225	250	280
Gravel (ft ³)	28	35	42	51	60	70	82	95
Brine Tank-Dia x Side Shell (in.)	72x61	90x59	90x59	90x59	96x70	96x70	108x57	108x83
Salt Storage (lbs)	6600	10000	10000	10000	15000	15000	14000	24000
Brine Line Size (in.)	2	2	2	2	2	2	2	2

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

NOTES FOR VN SERIES 3000 TO 9000 SIZING INFORMATION:

1. Allowable continuous flow is flow at **15 psi** max head loss or **10 gpm/ft³** which ever is less.
2. Allowable peak flow is flow at **25 psi** max head loss or **15 gpm/ft³** which ever is less.
3. Backwash Flow Rate is 5 gpm/ft², which provides 50 to 75% resin bed expansion.
4. 95% of calculated capacity at "Salt Applied".
5. Six-inch diaphragm valves require Humphrey pilot valves.

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DELIVERING EXPERIENCE, QUALITY, AND SERVICE SINCE 1934

VN SERIES 3600 TO 8400 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.

CAT260.4

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. Simplex systems shall consist of one mineral tank with attached valve nest and one brine tank. Simplex systems shall be controlled using the ERCT 99-day electronic timer and an MPV1 stager both housed in a single NEMA 4 enclosure. Regeneration shall be initiated at preset times of the day. Manual regeneration shall be available at the stager.

Twin. Twin systems shall consist of two mineral tanks with attached valve nest and one brine tank with a brine director. Twin systems shall be controlled using the ERCT 99-day electronic timer and two MPV1 stagers all housed in a single NEMA 4 enclosure. Regeneration shall be initiated at preset times of the day. Softeners run in parallel and are out of service only during regeneration. Simultaneous regeneration is prevented by setting different regeneration times for each unit. Manual regeneration shall be available at the stager.

Twin Alternating Demand Initiation. Twin alternating systems shall consist of two mineral tanks with attached valve nest and one brine tank with a brine director. Twin alternating systems shall be controlled using the ERCd electronic controller and an MPV3 stager housed in a single NEMA 4 enclosure. Regeneration shall be initiated based on the total quantity of water treated by the softener. One softener is in service and one in regeneration or standby. Manual regeneration shall be available at the stager. Twin alternating systems provide a continuous flow of softened water with no bypassing of unsoftened water during regeneration.

Multiple Tank Demand Initiation. Regeneration shall be initiated based on the total quantity of water treated by the softener. For pipe sizes 3" and below, the VN Series uses PW series flow meters with the ERCd controller, and MPV 1 or MPV3 stager. 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.

