

Chemical Removal Filter Engineering Specifications

Excalibur Water Systems Model EWS FSC16CS5 Sixplex Progressive Chemical Removal Filter Electronic Metered Initiated Service Operation

Supply one (1), only Excalibur Water Systems Model EWS FSC16CS5 Sixplex Progressive Chemical Removal Filter. The system shall be designed to operate under pressure from 40 psig (minimum) to 110 psig (maximum).

Mineral Tank: Supply six (6), only 18" diameter x 65" high 4" top opening premium quality PE liner with FRP filament winding mineral tank. Maximum operating pressure up to 150 psig with a maximum operating temperature of 120°F. Mineral tank must be NSF/ANSI Standard 44 as well as PED certified. PVC bushing 4"x2.5" with EPDM O-Ring valve connection.

Collection & Distribution: Supply six (6), only 1.05" high impact FDA approved ABS hub and lateral high flow distributor at bottom and upper basket at top shall be utilized to evenly collect and distribute the flow of water over the entire bed.

Control System: Supply six (6) main operating 1" control valve shall be made of Noryl™. The inlet/outlet connection needs to allow for either a quick connect bypass valve or quick connect inlet/outlet fitting kit that utilize a union style nut that only needs to be hand tightened to mount to the control valve. The drain port consists of a 1" Male NPT quick disconnect straight adapter that can swivel 180 degrees for easy orientation. The distributor pilot for the control valve is 1.05" OD pipe. Control valve utilizes a built in internal electronic flow meter with Hall Effect sensor off of the side of the outlet port of the control valve for easy maintenance. This meter shall be accurate from 0.25 to 27 gallons per minute at +/- 5%. Control valve will have a single main piston, patented 1-piece compressible seal/ spacer stack assembly. Valve must be a top-mount design with a 12-volt electronic microprocessor controller. Control valve shall have fully adjustable regeneration cycle duration times for backwash, fast rinse and return to service. Control valves shall be made of non-corrosive materials, including all wetted parts.

System Controller: Supply one (1) Polycarbonate wall mount enclosure with an easy access hinged smoke gray transparent cover and quick release latch. The System Controller will be provided with an 110V power cord for installation. The solid state microprocessor has a user-friendly front panel design for programming and multi-colored LED status indicators for On-line, Standby, and Regeneration mode. This controller shall operate from 2 to 6 water filter units with control valves from 1" to 2" valve type. All connecting units need to be wired into the System Controller. The controller shall be capable of programming the system to operate in a Progressive Flow system type. This Progressive Flow system utilizes no hard water bypass valves, alternating between units, and opening or closing water flow based on flow rate demand. The System Controller will have an on board USB port for software program updates and/ or extracting diagnostic data history. Two fused single pole double throw (SPDT) relay outputs and a single demand-based meter output are provided. A coin cell lithium battery backup for time of day shall be on board as well. The System Controller shall have a multi-color backlit LCD which will display current time of day & day of the week, days until next regeneration, current system flow rate, and total system volume used (totalizer).

Progressive Flow: Progressive Flow systems utilize motorized no hard water bypass valves on the outlet of each filter control and opening or closing water flow based on flow rate demand. The valves allow multiple control valves to become a multi-tank progressive flow system with one unit on line at all times and the remaining units in stand-by or in regeneration. Note: only one unit is in regeneration at a time. The progressive flow systems use a predetermined flow rate set point to bring on-line additional units to meet peak flow rate requirements. Once the flow rate set point is reached for greater than 30 seconds the unit(s) in stand-by will be driven on-line or immediately if the flow exceeds 120% of the predetermined set point to meet peak flow rate demands. Once the peak flow rate demand decreases by 90% of the set point for greater than 1 minute the stand-by unit(s) that were driven on-line will return back to stand-by mode. This system configuration determines the need to regenerate based on a unit reaching zero capacity or day override.

No Hard Water Bypass Valve: Supply six (6), only 1.25" full ported no hard water bypass valve which prevents the raw water bypass during the regeneration cycle at a time while the other unit is in service. This system shall provide a continuous supply of filtered water with the control valves and system controller indicating which unit is on-line and in stand-by operation. Its internal non-corrosive single piston & patented 1-piece compressible seal/ spacer stack assembly allow it to be hydraulically balanced. The no hard water bypass valve has a sight glass that allows you to view the position of the valve to know whether the unit is on-line or on stand-by without removing any covers.

Turbine & Volumetric Meter: Supply six (6), only internal magnetic pulse hall effect turbine meter accuracy must be +/- 5% with a flow rate range of 0.25 – 27.0 GPM. External flow meters are not acceptable.

Bypass Isolation Valve: Supply six (6), only Injection molded bypass Isolation valve full 1.25" porting plastic Noryl to be connected threaded connections adapter to the control valve for proper isolation. Isolation bypass valve operating pressures 20-125 psi, temperature range 40-110 F. Bypass isolation valve to offer normal operation, bypass operation, diagnostic mode, and shut off mode.

Coconut Shell Media: Carbon media shall be a virgin granular activated carbon produced from coconut shell char through a high temperature steam activation process under stringent quality control. The media must have a mesh size of 12X30 with 5% of quantity greater of less size. The media shall be ANSI/NSF 42 certified.

Performance: The unit shall be available to remove the chloramine at flow rate of 0.75 GPM per cubic foot of media, Total organic carbon removal at 1.0 GPM per cubic foot and chlorine removal at 3.0 GPM per cubic foot of media. The peak flow rate for unit shall be 4.0 GPM per cubic foot of media.

Flow Rate: The minimum flow rate shall be 2.0 GPM (0.13 l/s) and the progressive maximum flow rate shall be 22.8 GPM (1.44 l/s) for chloramine removal, 30.0 GPM (1.89 l/s) for total organic carbon removal and 90.0 GPM (5.68 l/s) for chlorine removal. The progressive peak flow rate shall be 120.0 GPM (7.57 l/s). During regeneration cycle the flow rates shall be five-sixths of progressive flow rates.

Drain Flow Rate: Water shall be discharged during the regeneration process at a flow rate of 17.0 GPM (1.07 l/s) for proper regeneration bed expansion process.

Start-Up: Successful equipment provider shall follow the manufactures printed instructions to start up the system after plumbing and electrical requirements are completed. This includes raw water testing, programming, individual start-up for each filter column, system operation, and product water testing for each column and training of personnel. Set system for medium salting/capacity levels with fixed reserve and immediate regeneration. If needed, the successful bidder shall contract an approved authorization service agent from the manufacture to assist with these procedures.

Warranty: Equipment and /or parts shall be covered by manufacturer's replacement warranty as follows:

- Fiberglass Mineral Tanks – TEN (10) YEARS
- Coconut Shell Media – TEN (10) YEARS
- Control Valves & Electronics – FIVE (5) YEARS
- All other components – ONE (1) YEAR