

## **SPECIFICATIONS**

### **E. Compak Vacuum Sand Filter**

This specification describes a water filtration system complete with all necessary items supplied and guaranteed by one manufacturer. Any filter offered under these specifications shall be NSF listed at the time of offering (bid date). The filter specified shall be fully automatic, operated by a control panel supplied by the filter manufacturer. The filter shall be a product of a manufacturer regularly engaged in the fabrication of water filtration equipment and who has a minimum of five (5) years experience in manufacturing this type of filter, with a minimum of ten (10) installations within the past two (2) years.

#### **E.01 Filter Requirements**

The filter shall be a Compak Vacuum Sand Filter (VSC) as manufactured by the Paddock Pool Equipment Co., Inc., of Rock Hill, South Carolina, having an area in square feet and filtration rate per square foot as shown on the project drawings. Filtration shall be accomplished by drawing water through a permanent media bed of sand. A specially designed vacuum equalization system shall maintain a uniform flow through the media bed to the recirculating pump after which the filtered water shall be returned to the pool. A direct connection between the pump suction and pool main drain shall be provided to permit emptying of the pool without passing through the sand bed.

#### **E.02 Filter Tank**

The filter shall be a single chamber, open rectangular tank, custom-fabricated for the requirements of the pool, with dimensions shown on the project drawings. It shall contain a vacuum equalization screen, media, underdrain system, backwash trough, control piping, valves, instrumentation, air release system, and pump and motor to make a complete filtering unit. The filter bottom shall be completely constructed of low carbon Type 304 stainless steel, 1/8" thick. The sides shall be constructed of Type 316L stainless steel. The tank exterior shall be coated with a protective Bitumastic coating for buried installation. Connections for the main drain, perimeter overflow, filtered water return, and backwash to waste shall be as indicated on the drawings. A 3" IPS male overflow connection and a 1½" IPS female water make-up connection shall be provided. An adjustable mechanism shall be located accessibly below the grating that covers the filter tank, to manually set the minimum operating level in the filter. The open top of the filter tank shall be covered with 1" thick blue fibergrate.

#### **E.03 Automatic Filter Control**

Backwash shall be initiated automatically by the Paddock TOUCHMASTER system controller. The controller shall be programmed to initiate backwash according to (1) a pre-set vacuum level, or (2) when a pre-set time and vacuum are *both* reached. After the backwash cycle, the filter will automatically return to filter mode. The system controller shall incorporate an automatic air release system so that at regular intervals, air removed from the water due to the negative pressure in the filter system can be released upwards to the atmosphere. Vacuum and pressure readings shall be clearly displayed electronically by the controller.

##### **E.031 Auxiliary Surge Recovery Pump (Optional)**

The auxiliary IFRS-ASR pump shall be installed within the filter tank at the factory. It shall be integrated into the filter operation by the Paddock TOUCHMASTER system controller. For pump characteristics and controls, see the stainless steel perimeter recirculating system section of the specifications.

##### **E.032 Air Scour Backwash (Optional)**

The backwash shall be an air-assisted, low-flow sequence, initiated and operated by the TOUCHMASTER system controller. The underdrain system shall be designed to accommodate air scour backwashing by use of lateral segments in which are semi-circular slots on 0.255 inch centers. Air scour cleansing shall be at an air pressure of 1 psi (gauge) and an air volume of 2 s.c.f.m. per square foot of filter area. A rotary blower as described on the drawings shall be supplied. Starter, circuit power and electrical connections to be supplied by the electrical contractor. After air scour, the dirt shall be flushed from media to waste at a flow rate of 5 GPM per square foot of filter area. The backwash rate of flow shall be specified on the drawings.

#### **E.04 Filter Media**

The filter media shall be a carefully selected grade of silica sand. The depth of media shall be 18 inches. The sand shall be free from clay or limestone deposits. The hydrochloric acid solubility shall not exceed 1%, the iron content 0.1%. The sand shall have a particle size between .45mm and .55mm with a uniformity coefficient not to exceed 1.6 mm, sphericity between 0.70 and 0.81, shape factor between 7.4 and 8.5, and porosity between 0.40 and 0.48. The sand shall rest on a 1/8" x #16 mesh gravel bed 4 inches deep placed in the bottom of the tank.

#### **E.05 Underdrain System**

The filter chamber shall be supplied with a pressure-equalizing underdrain system consisting of a central header drilled on 4" centers and tapped for 2" laterals. The laterals shall be molded ABS, slotted with orifice slots on .1985" centers, extending around 1/2 the perimeter of the lateral. The loss in the underdrain system from the entrance slots to the flange at the suction header shall not exceed 0.5 inches Hg. The slot area shall be covered with a type 316, 30 mesh, .012" stainless steel screen with a 40.8% open area.

#### **E.06 Face Piping and Valves**

The filter manufacturer shall supply all integral piping and valves required in the filter tank to carry out all normal functions of the filter, beginning with a flanged connection for the main drain and ending with a flanged discharge connection for the lines to waste and return to pool. Valves shall be cylinder operated for automatic transition to and from filtration to backwash cycles.

#### **E.07 Backwash System**

All backwash water shall transfer by hydraulic gradient from the pool through the sand and to the backwash chamber and then out of the tank to waste. The backwash rate of flow shall be equal to the filtration rate (unless air scour is used). The backwash line shall be brought to the filter tank by the Plumbing Contractor. At the disposal point into the sewer or storm drain, the Plumbing Contractor shall provide a suitable air gap. If a gravity drain from the filter is not available, the backwash discharge may be pumped to a suitable discharge point by means of the recirculation pump.

#### **E.08 Pump and Motor**

The main recirculation pump shall be integral to the filter, with characteristics as shown on the drawings.

#### **E.09 Effluent Quality**

The filter shall be capable of producing an effluent with a turbidity not to exceed 0.5 FTU measured with a Hach Model 1120A Turbidity Meter.

#### **E.10 Engineering Services and Warranty**

A qualified representative of the Contractor or the manufacturer shall visit the site work after the installation of the filter has been completed and shall put the filter into operation and shall assist and instruct the Owner's representative(s) in the operation of the filter. The filter manufacturer shall guarantee in writing that this filter, if operated in accordance with written instructions given and accepted by the Owner, will perform in complete accord with the specifications. This Contractor shall supply complete drawings and printed instructions for installation and operation of all equipment specified herein and shown on the plans.