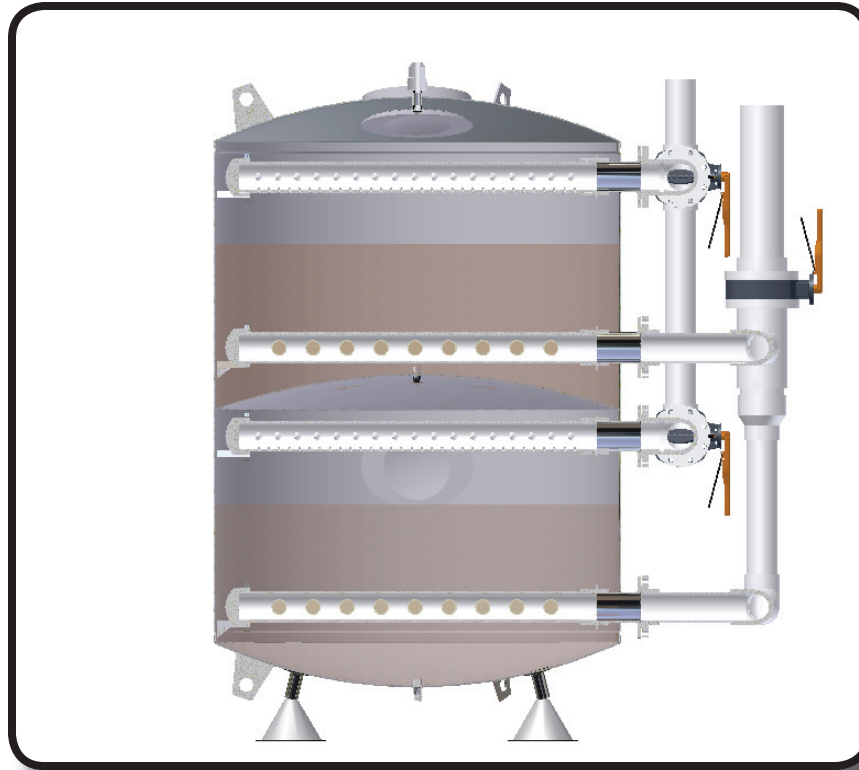


# VERTICEL FILTER

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Paddock's Type 316L Stainless Steel **Verticel** filter saves both floor space and water. It's two or three vertically oriented cells are backwashed individually and sequentially with filtered water, reducing the flow of water to waste, and allowing the reduction of piping and elimination of holding tanks. Underdrain ABS laterals are covered with stainless steel mesh and fitted to a sand bed of 18" minimum depth. **Dual cell** filters range from 36" diameter (212 gpm) to 120" diameter (2,356 gmp).

## Standard Features

- § Type 316L stainless steel construction
- § Non-corrosive Internals
- § ABS laterals
- § All models are NSF listed
- § Domed diving head (in lieu of a flat plate)

## Options

- § Carbon steel w/epoxy lining
- § ASME code and labeled filters
- § Fully Automated
- § Two or three cells



### Drawing Description

Job Name:	
Location:	

Paddock Industries, Inc.  
555 Paddock Parkway  
Rock Hill, SC 29730  
Ph: 803-324-1111  
Fx: 803-324-1116

## SPECIFICATIONS

### E. Vertical Pressure Sand Filter System

It is the intent of this specification to describe a water filtration system complete with all necessary items. It is the further intent of these specifications that the filtration unit from the pump through the backwash system, including all filter control valves as hereinafter specified, and all accessories, be 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 of the Pressure Sand type. 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. The filter plant shall consist of a Vertical Sand Pressure Filter manufactured by Paddock Industries of Rock Hill, SC. The number of tanks, number of cells per tank, diameter, head and shell thickness, influent and effluent connections, area, filtration rate, backwash rate of tank(s), and method of operation shall be selected by the Project Engineer from the Paddock Vertical Filter Data Table to meet the requirements of the pool and shall be provided on the drawings or in these Specifications.

#### E.01 Type 316L Stainless Steel Filter Tank(s), ASME Code & Labeled

The tank(s) shall be constructed of ASME approved and certified Type 316L stainless steel material suitable for unfired pressure vessels with a working pressure of 50 psi and a 4 to 1 safety factor. The tank side shell shall be offset to form a backing strip for the fillet weld to ASME flanged and dished heads. The cells shall be separated by a shallow dished head of the same material as the tank heads. Flat divider plates between cells shall not be acceptable. The tank shall be manufactured according to ASME label so stating; written certification shall be provided with the filter. The tank heads shall be welded to the side shell by an automatic submerged arc process weld. Hand welding will not be permitted. Located in the top head for the upper cell and in the side shell for the lower cell(s) there shall be a 14" x18" manhole complete with gasket, yoke and bolt. A 3/4" coupling for air release shall be welded to the top head of each tank. Two 3/4" pressure equalizing orifices with strainers shall interconnect each cell.

#### E.011 Type 316L Stainless Steel Filter Tank(s), Non-Code (optional)

The tank(s) shall be constructed for a working pressure of 50 psi and tested to 75 psi. The tank side shell shall be offset to form a backing strip for the fillet weld to standard dished and flanged tank heads. The cells shall be separated by a shallow dished head of the same material as the tank heads. Flat divider plates between cells shall not be acceptable. The tank heads shall be welded to the side shell by an automatic submerged arc process weld. Hand welding will not be permitted. Located in the top head for the upper cell and in the side shell for the lower cell(s) there shall be a 14" x18" manhole complete with gasket, yoke and bolt. A 3/4" coupling for air release shall be welded to the top head of each tank. Two 3/4" pressure equalizing orifices with strainers shall interconnect each cell.

#### E.012 Carbon Steel Filter Tank(s), Non-Code (optional)

The tank(s) shall be constructed for a working pressure of 50 psi and tested to 75 psi. The tank side shell shall be offset to form a backing strip for the fillet weld to standard dished and flanged tank heads. The cells shall be separated by a shallow dished head of the same material as the tank heads. Flat divider plates between cells shall not be acceptable. The tank heads shall be welded to the side shell by an automatic submerged arc process weld. Hand welding will not be permitted. Located in the top head for the upper cell and in the side shell for the lower cell(s) there shall be a 14" x18" manhole complete with gasket, yoke and bolt. A 3/4" coupling for air release shall be welded to the top head of each tank. Two 3/4" pressure equalizing orifices with strainers shall interconnect each cell. After fabrication, the exterior surface shall be prime-coated prior to shipment. The interior of the filter shall be coated with PAD-COTE, an NSF listed chemically cured semi-gloss epoxy specifically formulated to protect immersed tanks and steel surfaces from solvents and chemicals in corrosive environments. All interior surfaces shall be sandblasted to near-white metal, all welds thoroughly cleaned with wire wheels, and all weld splatter removed. Prime and finish coats shall be applied by spray, brush, or roller to obtain a thickness of between 4 and 6 mils dry. Twenty-four hours of full ventilation must be allowed between coats. A cure time of seven days is required prior to putting the filter into service.

#### E.02 Internal Distribution System

Each filter shall be supplied with a pressure equalizing overdrain system consisting of a Schedule 80 PVC Header with PVC laterals. Orifices shall be pointed

upward. Each filter shall also be supplied with a pressure equalizing underdrain system consisting of a Schedule 80 PVC header drilled and tapped for 2" diameter molded ABS laterals. Non-clogging, self-cleaning orifice slots not to exceed .1985 inches on center shall be pointed downward.

#### E.03 Face Piping and Valves

All filter face piping required for the operation of the filter plant from the tank influent to and including "return to pool" valve and the "backwash to waste" valve shall be supplied. All fittings and piping material shall be as shown on the drawings. The filter system shall be supplied with nylon coated cast iron bodied wafer type butterfly valves with stainless steel shaft and aluminum bronze disc.

#### E.04 Automatic Backwash

Cells shall be backwashed individually and sequentially. The Paddock PC 6000 control panel supplied with the filter system shall automatically control chemicals, heater, recirculation pump, and filter backwash (time and/or pressure based). For details refer to Section F of these Specifications.

#### E.041 Manual Backwash (optional)

When the design flow rate can no longer be maintained, the media bed shall be cleaned by manually reversing the flow through the media. The backwash flow rate shall be 15 GPM per square foot of filter area and shall be directed to waste. Cells shall be backwashed individually and sequentially. The process shall be manually actuated by direct control of individual valves or by linkage assembly, as specified with the filter data provided by the Project Engineer.

#### E.05 Accessories

There shall be supplied an air release system, an influent and effluent pressure gauge in a common gauge holder, and a rate of flow indicator for each tank.

#### E.06 Filter Media

Each tank shall be supplied with a single grade of filter media supported upon a layer of 1/16" to 1/8" gravel. The filter sand shall be No. 20 with a particle size of .45 mm with a uniformity coefficient of 1.6 maximum. The gravel shall be placed in the bottom of the tank to a point 1/2" above the laterals. The media shall be supplied in separate bags, each containing approximately 1 cubic foot.

#### E.07 Pump and Motor

There shall be supplied a single or dual centrifugal pump and motor, with strainer. Pump characteristics and strainer sizes and product information shall be as on the drawings.

#### E.08 Guarantee and Instructions

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