

## VERTICAL AIR SCOURED PRESSURE SAND FILTERS

### GENERAL DESCRIPTION

These are supplied in standard sizes from 1.52 m to 2.74 m dia. The steel filter shell conforms with the recognized specifications for plate thickness and method of construction. Each shell is tested hydraulically and coated internally with anti-corrosive paint before despatch. The domed ends of the larger units have a McNeil-type manhole cover and all units have faced pads for the inlet and outlet connections. The filter bed is supported on a steel nozzle plate welded in position, reinforced with heavy tie bars to the bottom dome and is fitted with domed air-scour-type nozzles. These nozzles, which are moulded in polypropylene and are fully resistant to corrosion, are spaced to give approximately 33 nozzles per square metre. The filter shell can be supplied plate small for welding on site but generally it is delivered whole with nozzles fitted and has only to be connected in position and charged with media to be ready for operation. No concrete fill or other internal work is required.

### CONTROL VALVES

The valves for inlet, outlet, washout, upwash when required, air and drain are provided together with terminal pipe connections. Additional equipment may be required where the washwater is from a separate source. The grouping of these valves usually follows an established pattern but it can be arranged to suit a particular layout of the plant. The mains connecting together a battery of filters can be above floor or in a covered trench. Normally the dirty washwater is discharged into an open sump or waste channel, so that it can be viewed, but the discharge can be piped directly to waste if this is preferred. On the front of the shell a multipoint valve coupled to a pressure gauge enables the inlet, outlet and loss of head pressures to be determined and unfiltered and filtered water to be sampled. utes according to conditions.

### FILTER BED CLEANING

The standard filter bed usually has a total depth of 0.85m and the grading of the sand and/or other material is selected according to the working conditions.

The operation of cleaning the filter bed is by closing the inlet and outlet valves and opening the washout valve, and turning on the air scour for 5 to 7 minutes followed by upwash for 5 to 8 min according to conditions

### AIR SCOUR SUPPLY

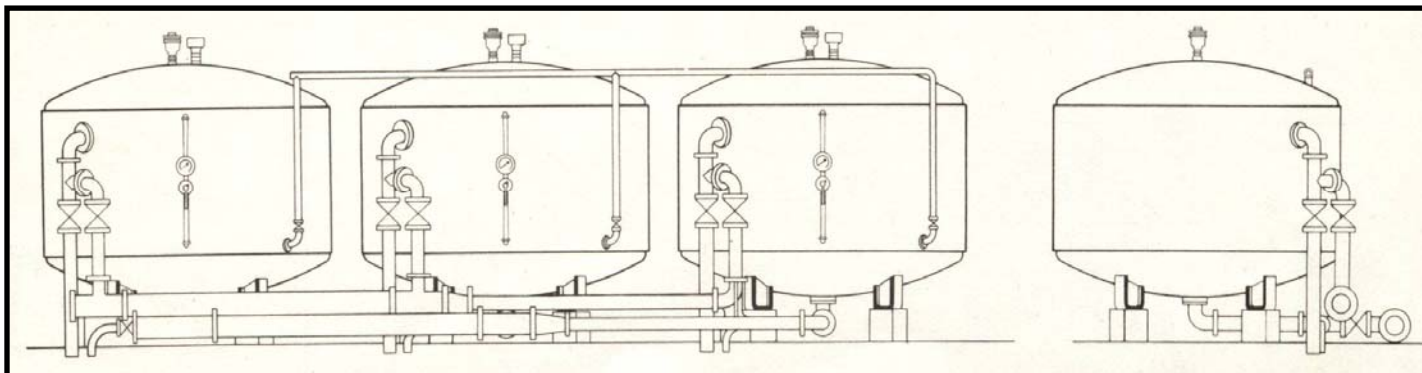
Air for scouring the filter is required at a pressure of 0.35 bars (5 p.s.i.) and at a rate of 6.5 litres/sec/sq. metre of free air. It is usually provided by a motor driven rotary compressor designed to deliver the correct flow at the required pressure.

Note. Filters below 1.52 m dia. are usually supplied with manually operated stirrer gear instead of air scour.

### WASHWATER SUPPLY

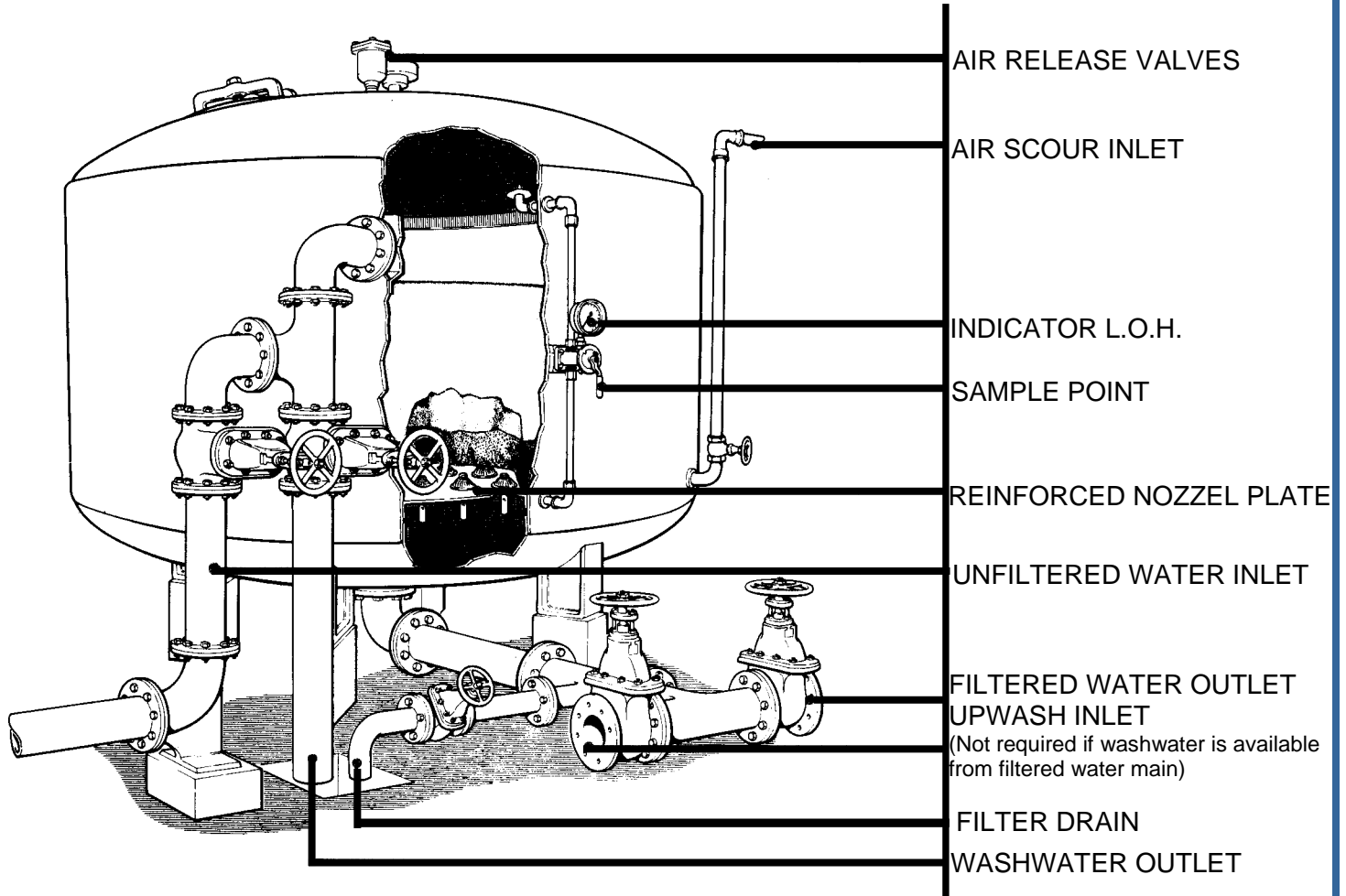
In a supply system in which the water is pumped directly through the filters into the bottom of a reservoir at higher level, the washwater can be drawn back from the reservoir, provided the filtered water main is large enough to supply the necessary wash rate. Where the installation consists of three or more filters, cleaning can be carried out without drawing from the reservoir, the discharge from two or more filters in operation providing the necessary upwash. This applies to gravity as well as pumped systems, provided that the hydraulic conditions are suitable and that the temporary reduction in the output of the plant can be tolerated. Where the washwater supply is to be independent of the system, a storage tank must be provided to give an available head of not less than 4 m measured at the filter outlet pad. This must be filled by a connection from the filtered water main or by pump. Alternatively, the tank may be a ground level and the water pumped from it.

In either case a separate upwash main with a branch and control valve to each filter is necessary. A Rate of Flow Indicator should be installed to enable the required upwash flow rate to be set



**TYPICAL ARRANGEMENT OF PCI VERTICAL PRESSURE FILTERS**

## SECTIONAL VIEW



## FILTER SIZES AND CAPACITIES

dia . of filter		inlet/outlet		max. filter flow at 200 gal/ft <sup>2</sup> hr 2.72 mm/s		airscour flow		washwater flow	
ft	m	in.	mm	gall/hr	litre/s	ft <sup>3</sup> /min	litre/s	gall/min	litre/s
5	1.52	3	80	3,920	5.0	25	12	120-160	9-12
6	1.83	4	100	5,650	7.1	35	17	170-230	13-17
7	2.13	4	100	7,700	9.7	48	23	230-300	17-23
8	2.44	6	150	10,000	12.6	63	30	300-400	23-30
9	2.74	6	150	12,000	16.0	80	38	380-500	29-38

Progressive changes in design and specification may be made without prior announcement.

PCI AFRICA

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