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## Pressure Filter – Pressure Sand Filter

pressure filter consists of a pressure vessel-this could be either vertical or horizontal-fitted with a set of frontal pipe work and valves, graded silica quartz sand supported by layers of graded under bed consisting of pebbles and gravels, a top distributor to distribute the incoming water uniformly throughout the cross section of the filter, and an under drain system to collect filtered water.

Raw water flows down wards through the Pressure filter bed and as the suspended matter- which has usually been treated by addition of a coagulant like alum- is retained on the sand surface and between the sand grains immediately below the surface. There is steady rise in the loss of head as the filter process continues and the flow reduces once the Pressure sand filter drop across the filter is excessive.

The Pressure sand filter is now taken out of service and cleaning of the filter is effected by flow reversal. To assist in cleaning the bed, the backwash operation is often preceded by air agitation through the under drain system. The process of air scouring agitates the sand with a scrubbing action, which loosens the intercepted particles. The filter is now



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ready to be put back into service.

Picture Low Flow Pressure filter (FRP Vessel) and High flow custom Vessel (MS Vessel)

#### Advantages and Features

1. Efficient Turbidity and TSS Removal
2. Filter up to 20 30 Microns
3. FRP, CS, MSEP, SS Vessel available
4. ASME Pressure Vessel is also available
5. Standard and effective silica quartz sand media
6. Low Pressure drop across the vessel
7. Air scouring available for high flow Pressure filter filter vessel
8. Automatic Valves are provided as per customer need
9. Manual, Semi Automatic and Automatic features are provided

If the Pressure sand filter in the filter drops then this indicates that the filter is not getting sufficient pool water through the circulation system. This could be due to blocked skimmers and sumps inside the pool, restricted suction pipes in the balance tank, or the suction pipes from the pool are blocked off or restricted. Also the isolating ball valves could be partially turned off or blocked with debris, or even a blocked filter basket in the pump to a blocked pump chamber or impellor inside the pump, or finally a restricted inlet to the multiport fitted to the Pressure filter.



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Further investigation will be needed to find the reasons. If the plantroom is below water level, make sure you can isolate the pool totally including any returns and that the ball valves are installed in the correct direction. If the pump appears to be the problem and you need help with your investigations, please use the Contact Page to book an appointment for a PSP engineer to visit.

To obtain more information on the PSP Pool Owners Club, please visit the Members Page. The information on this page will be added to the appropriate section for members future searches.

Water is pushed through a bed of Pressure filter sand and removed through a set of lateral tubes at the bottom. The filter area of a sand filter is equal to the area of the filter itself. For example, a 24 filter will have 3.14 sqft of filter area. Only the top 1 of sand is actually used to filter the water. The principle behind this Pressure filter is that water is pushed through the filter sand, somewhat like an espresso machine. Dirty water goes in the top and clean water exits out the bottom. As the filter sand becomes plugged with debris from the pool, the pressure increases on the filter and the water flow drops.

In order to clean the filter, you just run it in reverse and dump the waste water; this is referred to as backwashing the filter. Once the filter is backwashed, you move to the rinse



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mode and that repacks the sand and then back to filter. This has to be done manually every few weeks. From a hydraulics standpoint, a backwash valve is typically the most inefficient piece of equipment you can add to a swimming pool system. Should the sand ever become really dirty, it is easily and inexpensively replaced. In terms of particle size filtered out, sand is the least effective method it can allow smaller particles to pass back into the pool.

Pressure filter offered by us is used for water purification processes for different types of water like river water, lake water, bore well water filtration and others. For delivering optimum performance, these pressure sand filter consist of a pressure vessel that can be either vertical/ horizontal-fitted with a set of:

- Frontal pipe work and valves