

Fluid control equipments



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FREQUENTLY ASKED QUESTIONS / TROUBLE SHOOTING FOR FILTER PRESS

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Filter press

What is the difference between plate and frame and recessed type filter press?

Plate and frame type filter press has corner feed and corner filtrate outlets. There are two distinct elements – solid plates with pipped button surface which provide the filtration surface & filtration area and hollow frames, which provide the cake holding volume. Recessed type presses are provided with central feed inlet and corner filtrate outlets. The recess on the plates provides the cake holding volume, as well as filtration surface for filtration. Normally, plate and frame type filters provide better clarity of filtrate as compared to recessed type presses.

Which type of filter press is better suited for my application?

Plate and frame	Recessed
Slimy and difficult suspensions	Fast settling suspensions
Biological slurries	Chemical slurries
Filtrate clarity is important	Solids recovery is important
Typical applications – food and beverage, pharma, wine and beer filtration, phosphating sludge removal, Latex and rubber industry, paints, resins, adhesives	Typical applications – ETP & STP, Ceramic industry, Textiles and dyestuffs, paper and pulp, lime sludge, battery and electronics industries

The best method of determining the right equipment is to conduct a pilot trial. We undertake pilot scale studies with about 35 L of your sample at our site at nominal charges. We also provide industrial level long term rental solutions and pilot studies services at client sites, if required.

How do I identify the inlet in plate and frame type filter press?

Check for the side with cross holes on the Moving end plate. This is the outlet. The other side without the cross holes will be the inlet. (All the frame cross holes will be assigned on the inlet side). Check for filtrate taps on the side of the plate in open delivery plates. This is the filtrate outlet side. The other side is the inlet. All taps should be aligned on one side (filtrate side). All frame cross holes should be on the other side relative to the taps.

How do I identify the inlet in recessed type filter press?

In recessed type filter presses, the inlet is in the center. Corner header ports convey the outlet. The tap valves provided are for testing the clarity of each individual plate.

I am not getting sufficient clarity.

Increase the by-pass flow rate and allow filtration to occur at low back pressure. The optimal filtration-by-pass rate has to be determined through trial and error only. Suggested working pressure is below 3.5 kg/sq cm. Bottom inlet and top outlet configuration can be used for highly viscous slurries to obtain better clarity in plate and frame filter presses. In

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recessed type filter presses, check clarity in individual plates through tap valves. If there is cloth wear out/ gromette wear out, then the solids will escape into the filtrate side.

I am not getting sufficient clarity even after adjusting bye-pass flow.

Check for alignment of inlet and outlet cross holes in frames and plates, respectively. All the plate cross holes should be on the filtrate side only and all the frame cross holes on the inlet side. Any mixing of this configuration will result in slurry being mixed with the filtrate and clarity will never be obtained. Also, check for wear and tear of filter cloth.

If you are using recessed type filter press and higher clarity is required, consider switching to plate and frame type filter press.

Excessive dripping is observed.

Some amount of filtrate dripping will be observed during filtration. This is normal. A drip collection tray is provided on request to collect the dripping filtrate. In case of excessive dripping, check bye-pass valve operation and increase bye-pass flow as required. Operation under high pressure will result in excessive dripping. Also, check for wear and tear of filter cloth. Check for filtrate piping going down by gravity. If filtrate is being taken above the level of the filter press, this will also result in excessive dripping. Always ensure that filter press is at elevated level compared to filtrate delivery level.

How often should I change the filter cloth?

The normal industrial grade T-255 (5micron air permeable) PP – filter cloth or equal is provided along with the filter press. These filter elements normally last between 1500 to 1800 working hours and should be replaced after that.

How do I know that the filtration cycle is over?

Filtration starts at zero pressure and as the frames start to get filled with the cake, the pressure gage on the filter press starts to register an increase in pressure. When the pressure gage registers between 3.5 to 4.0 kg pressures, the frames are filled with cake and the press has to be opened and cleaned. (Note: By this time, the filtrate flow will also have decreased significantly)

How do I get a dry cake?

After the filtration cycle is completed, compressed air can be passed through the inlet, to provide drier, easily handleable cakes from the filter press. Provision for compressed air entry can be made in the inlet piping on request.

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Hydraulics

Hydraulic hand pump is not functioning properly.

Oil and plunger seals on the hydraulic hand pump are easily worn out and are the most frequent cause of malfunctioning of the pump. 4 sets of spares (oil and plunger seals with retainer springs and ball bearings) are suggested on an annual basis. In case of very old pumps (over 3 to 5 years), ovalization of the head might result in non-build up of pressure. In such cases, new pumps are suggested.

Motor hydraulic jack is not getting pressurized

Check if forward and reverse high pressure hoses are connected in the right direction. If their alignment is reversed, the non-return valve becomes dysfunctional and the jack will be unable to hold the pressure.

Motor hydraulic jack is jammed and is not moving

Check if starter is switched on and the right direction switch (forward/ reverse) is being pushed. If it still does not work, the direction control valve (solenoid valve) might be damaged. Replace and test.

Oil is leaking through the jack ram shaft

Replace oil seal/ O-rings in the jack shaft head.

Feed pumps

How do I select an appropriate feed pump?

Filter presses are pressure filtration devices and the feed pump plays a very vital role in filtration. Normally, positive displacement pumps (ie) pumps that enclose the liquid within a cavity and directly impart energy to it pushing it forward work best with filter presses. Screw pumps, piston pumps, AODD pumps and gear pumps are commonly used in tandem with filter presses.

Various factors affect feed pump selection, including temperature, solids concentration, material to be pumped, pH, presence of solvents, availability of compressed air etc. If you are already using any specialized pumps for your applications, we can determine its suitability for being used as a filter press feed pump.

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Application	Type of pump suggested
Oil, resin, ghee	Gear pump – M.S. or S.S. depending on application
Sugar syrups, beverages, dairy	S.S. screw pump or S.S. dairy pump
ETP, STP*	C.I. screw pump with S.S. contact parts
Phosphating sludge	PP Air operated double diaphragm pump/ vertical centrifugal pump
Adhesives	Screw pumps
Alginates, sea weeds	AODD pump
Ceramics	AODD pump/ piston pump
Wine, beer, solvents	Flame proof SS centrifugal pump
Extreme pH	PP AODD pump/ Anticorrosive centrifugal pump

*-If solvents are present, screw pumps will not be suitable, as solvents react with nitrile rubber components inside the pump.

Can I use centrifugal feed pump for filter press?

Centrifugal pumps provide receding flow against build up of head loss inside the filter press and cease to function once the shut off head is reached. In order to avoid this, the centrifugal pump has to be oversized. This will result in higher power consumption, as well as very high through put rates during the initial stages of filtration affecting filtrate clarity. If there are no other suitable alternatives available, centrifugal pumps can be used with a larger bypass valve.

Screw pump is not functioning properly.

Screw pumps are very effective in pushing the slurry into the filter press. However, due to constant moving action of the screw, the stator needs frequent replacement. Maintenance of spares (3 no.s of stators and 1 no. rotor per year) is suggested for trouble-free functioning. **Do not run the pump dry.** A positive head on the inlet side will also improve the functioning of the pump.

Can I dry run the pump?

It is a good practice to **avoid running any pump dry.** AODD pumps and gear pumps do not get adversely affected with dry running. If in doubt, contact pump manufacturer and confirm suitability for dry running.