# Operating & Maintenance Manual

# TF-Filter Press
# TF-Slurry Skid


**SLURRY SKID TF-SS**

**FILTER PRESS TF-FP**

| | | |
|---|---|---|
| Document | : | Filter Press 1200 |
| Revision | : | 0 |
| Date | : | 30-09-2008 |

## NOTE

- First read the instructions for installation, use and maintenance carefully before installation of the Filter Unit.
- Keep the instructions for installation, use and maintenance for future usage.
- Twin Filter will not accept any damage to the Filter Unit due to wrong usage. In chapter 8 “TROUBLE SHOOTING” is described how to find solutions to problems yourself. During the guaranty period you are entitled to free service – despite handling according specific regulations – if you are not able to solve the problems yourself.[1]
- The Filter has been built exclusively for usage as described in paragraph 0. Every damage and/or injury caused by wrongly using the equipment other than described can not be claimed against Twin Filter.

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# 1. PRODUCT INFORMATION

## 1.1. INTRODUCTION

Twin Filter is specialized in the manufacturing of heavy-duty filter presses for on- and offshore use. Our presses are especially designed for complete fluid filtration; they will be delivered with a separate slurry skid and all necessary auxiliaries.

The filter press is supplied with a suitable slurry skid to mix and add filter aid to the press. The slurry skid is equipped with an air driven diaphragm pump for pre-coating and an air driven diaphragm pump for body-feed. The SS mix tank is equipped with an agitator air mixing sytem for homogeneous mixing of the DE with the fluid.

## 1.2. FIELD OF APPLICATION

### 1.2.1. *General*

The filter is designed for on- and offshore purposes. A summation of the different application fields is given below:

- Work over fluids
- Offshore brines (light and heavy)
- Seawater
- Waste water treatment

In case of deviation from the original specifications, always contact Twin Filter BV to determine whether the Filter Unit can be used for your application.

### 1.2.2. *Fluid discharge after Filtering*

Take notice of the local environmental regulations for disposal of the fluids without further treatment.

### 1.2.3. *Disposal of polluted Filter material*

Take notice that the polluted filter media are being disposed of according to the current environmental laws.

## 1.3. WORKING PRINCIPLE (FIGURE 1-1)

The working principle of the DE filter unit is based on the principle of a porous filtration layer (=filter cake) of DE filter aid which sticks to the stainless steel filter leafs, which are covered with heavy duty polypropylene cloth.
The porous filtration layer acts as a physical barrier to dirt particles, which are caught in the DE filter aid. The dirt particles are then removed together with the DE filter aid.

**NOTE**: Two very important rules, which should never be forgotten, when working with a DE filter:

1. DE filter aid is like sand; when the flow rate through the filter leafs is stopped, the filter cake will fall of the filter leafs and settle out at the bottom of the vessel. For a good working operation of the DE filter, it is crucial to have a continuous flow over the filter leafs, even when the filter process is halted or stopped for a few minutes, in order to keep the filter cake in place. If the cake has fallen of the filter leafs, due to unforeseen reasons, a new DE filter aid layer has to be applied.

2. The DE filtration layer should remain porous. However, the dirt particles will plug off the filter cake during filtration. In order to keep the filter cake porous, a continuous supply of DE filter aid is needed. This continuous supply of DE filter aid is called : BODY FEED.

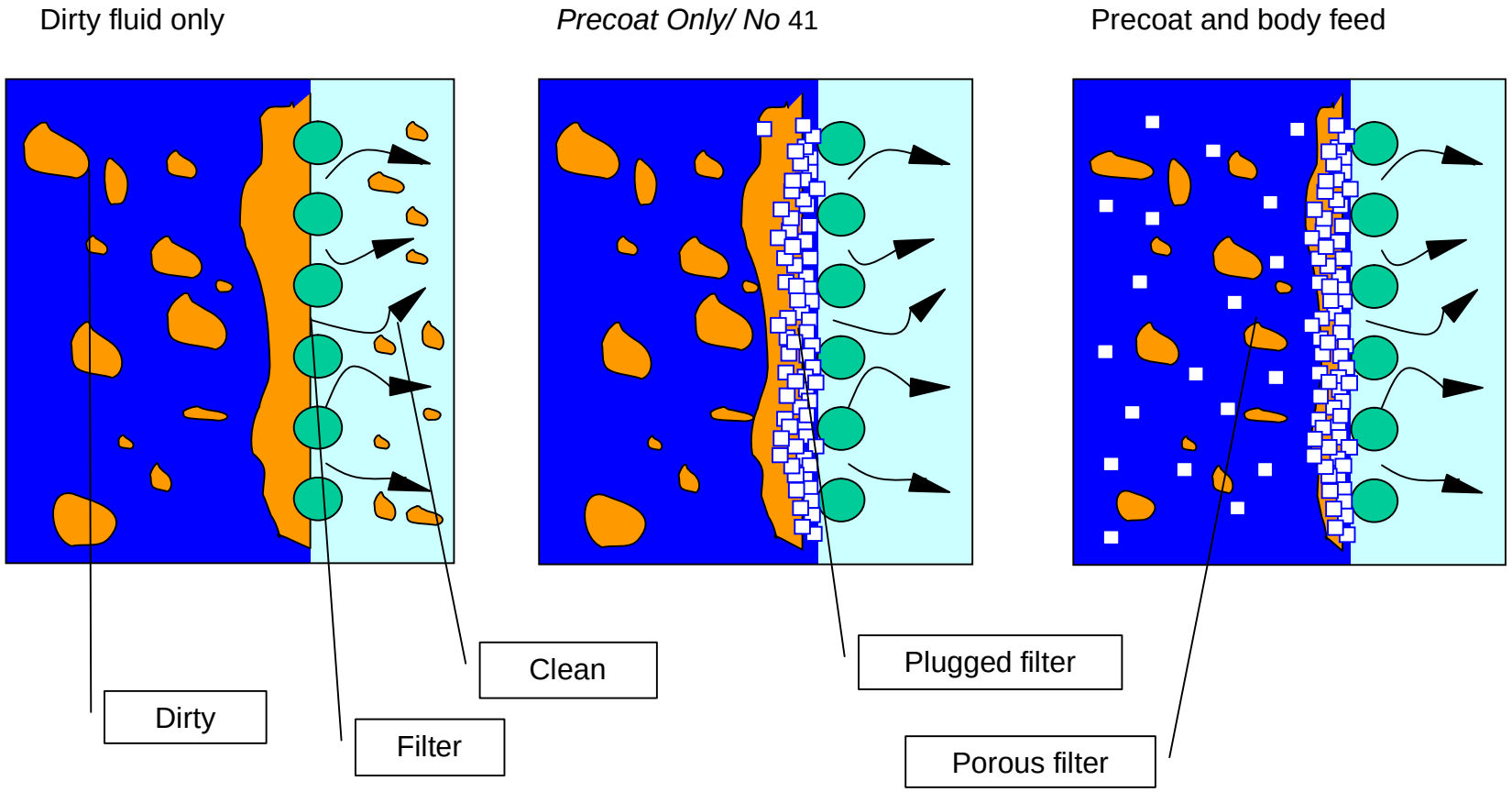



*Figure 1-1 Working principle of Diatomaceous Earth (DE) filter*

## 1.4. WORKING MODES

The following cycle will occur in operation of the DE filter vessel:

- Making up a layer of new DE filter aid (Pre-coat mode)
- Filtering including continuous supply of DE filter aid (Filtering mode)
- If applicable : temporary stop of filter unit (Circulation mode)
- Cleaning of the filter leafs when job is finished (Clean out mode)

Detailed information regarding above mentioned operational modes, are described in the chapter 4.

## 1.5. CLIENT SERVICE

To order spare parts and for questions, remarks and/or complaints please contact our office on the following address:

**Twin Filter BV**
**Zuiddijk 398**
**1505 HE Zaandam, The Netherlands**
**Tel. 0031 (0)75 6555 000 Fax. 0031 (0)75 6555 015**
**E-Mail: *info@twinFilter.com***

# 2. SAFETY REGULATIONS

## 2.1. HEALTH HAZARDOUS SUBSTANCES

When the Unit will be used for Filtration Health Hazardous Substances, make sure that all safety precautions are met on inspections and maintenance by using the proper means for personal safety. Make also sure you have connected al the Outlets of the pressure safety, Vent or/and Drain Valves to a dump.

## 2.2. PERSONNEL

Always use qualified personnel to install & operate the Filter Unit and Filter Media to avoid accidents and/ or damage to the Filter Unit.

# 3. OPERATION PROCEDURES

**Personnel**

Always use qualified personnel to install the Filter Unit and Filter media to avoid accidents and or damage to the Filter Unit.

## 3.1. GENERAL CHECKLIST BEFORE OPERATION

- Check flow schematic.
- Check if storage tanks and piping system are clean.
- Arrange high pressure cleaner.
- Check for sufficient working space around filter, i.e. to have enough space to clean filter plates with high pressure cleaner.
- Check for sufficient consumables (DE filter aid and filter cartridges) to filter complete batch.
- Consumables stored close to filter unit(s).
- Check dump area for dumping wash water.
- Check sufficiency of air supply; approx. 1000 l/min.
- Provide acceptable drainage to empty/ drain drip-pan/ duplex unit.
- Clean mix tank

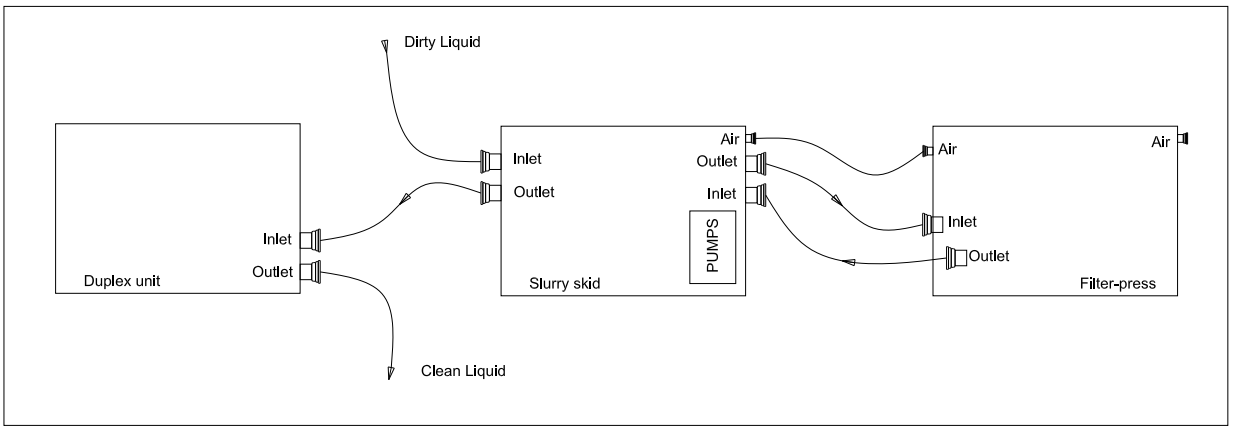
## 3.2. PROCEDURE BEFORE OPERATION

- Connect all (clean) hoses as per understanding drawing.
- Connect proper dry, clean and non-lubricated air supply 7 bar to filter-press and slurry skid.
- Empty water trap of the air regulator inside the control cabinet.
- Empty water trap of air conditioning on slurry skid.
- Close all valves.
- Always install new filter cartridges in duplex unit before every new job.
- Make sure all valves perform sufficiently: check all o-rings and lid seals for damage.
- Check the filter cloths on the filter-press for damages (holes). In case of damages repair them.
- Connect proper (fresh) wash water supply (1") to slurry skid.

**Note I:**

- Discuss usage of fresh water with responsible person.
- Measure NTU level of the dirty liquid.
- Check quantity of DE filter aid and filter cartridges for cleaning complete volume of dirty liquid.
- Check contamination of complete piping and storage system. Storage tanks and piping system must be clean to prevent contamination of filtered liquid.

*Figure 3-1 Connection drawing*




CONNECTION DRAWING

# 4. WORKING PROCEDURES

## 4.1. CLOSING THE PRESS

Before closing the filter press, make sure there are no persons or obstacles in between the filter plates.
The filter press is equipped with a semi-automatic closing system. After pressing all the plates together with approx. 30 bar, the hydraulic power pack will start compressing the package up to 340 bar. This is indicated by the green “AUTO CLOSE” indicator on the control panel.

1. Switch lever of selector valve to “CLOSE PRESS” and press and hold “START” button. The air operated hydraulic pump will start pumping and the cylinder will be moving out wards and compress filter plates with a pressure of approx. 15-30 bars.

If the “START” button is released while the “AUTO CLOSE” indicator id off, the cylinder will stop moving instantly.

2. When the pressure approx 30 bar is reached, the hydraulic system will automatic take over the compression of the filter plates with and maintain pressure of 340 bar during filtration.

The auto compression of the filter plates can easily be stopped by switching the lever of the selector valve to “OPEN PRESS”. The cylinder will stop moving instantly.

**The press is now ready for pre-coating.**

**IMPORTANT:**

- In order to maintain pressure in the hydraulic cylinder during filtration, air supply must be left connected to the filter-press and slurry skid.
  **DO NOT SWITCH OFF THE COMPRESSOR**.

## 4.2. PRE-COAT

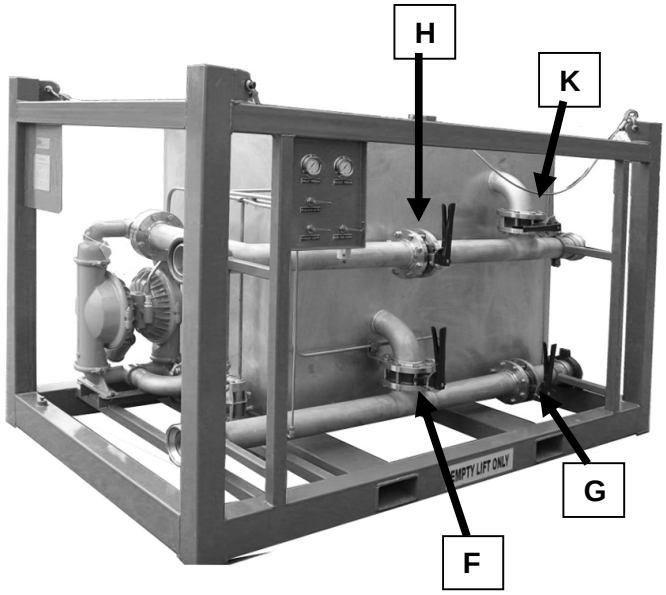



*Figure 4-1 Valves on Slurry Skid*

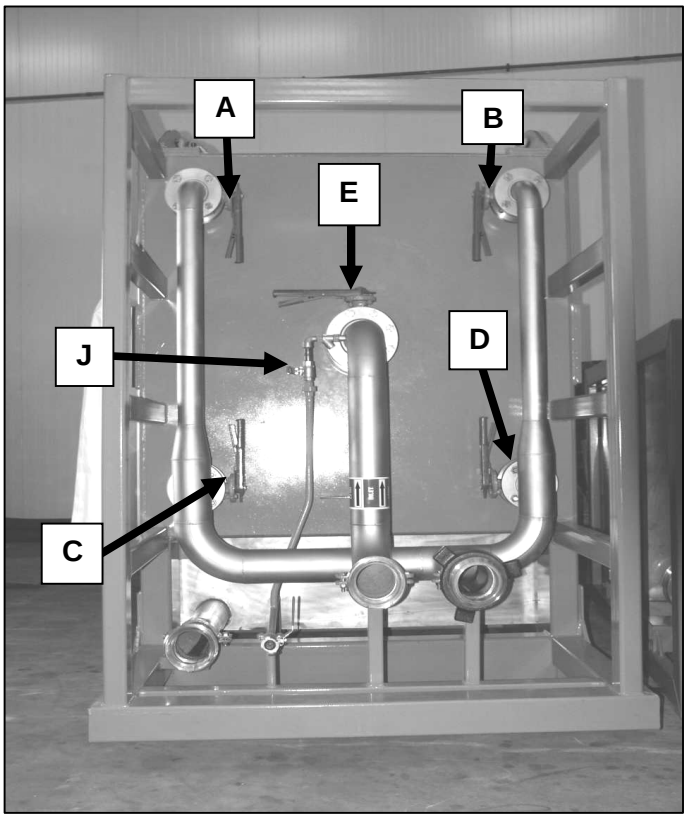



*Figure 4-2 Valves on Filter Press*

1. Fill up the mix tank with fresh water or use dirty fluid for the first pre-coat by using valve **K**.
2. Open both 2" top outlet valves on filter press. Valve **A** & **B**.
3. Open 4" inlet valve at filter press. Valve **E.**
4. Open 4" **"RETURN TO MIX TANK"** valve at slurry skid. Valve **F**.
5. Open "**PRE-COAT PUMP"** valve at slurry skid control board to activate pre-coat pump.
6. Slowly fill up filter press with fresh water.
7. When filter press is filled and there is no air inside the filter press, stop pre-coat pump and fill up mix tank again with fresh water or by opening valve **K**.
8. Crack "**AGITATOR AIR"** at slurry skid for optimal mixing D.E. filter aid.
9. Add 2 bags (50 lbs/bag) of D.E. filter aid to the mix tank.
10. Circulate for approx. 5 minutes at max. pump rate.
11. Open both 2" bottom outlet valves on the filter press, valves **C** & **D**, to establish an uniform pre-coat.
12. Circulate until water in mix tank is clear of D.E. filter aid traces. (Approx. 10 – 15 min.)

**NOTE:** Make sure that the liquid level in the mix tank is always approx. 20 cm above the outlet to the pre-coat pump in order to make sure there is no air pumped into the system.

**IMPORTANT NOTE:**

**Keep pre-coat pump running until further notice, to prevent DE filter cake of falling down from the filter cloths.**

### 4.3. FILTERING

1. After pre-coating start the external pump; **pre-coat pump is still running.**
2. To use a cartridge polish filter for final filtering, see paragraph "DUPLEX CARTRIDGE FILTER".
3. Open valve **"G"**, outlet, at slurry skid.
4. Close valve **"F"**, return to pre-coat, at slurry skid.
5. Open valve **"H",** inlet filter-press, at slurry skid.
6. Close valve "**PRE-COAT PUMP"**, situated at control board on slurry skid.

During filtration a continuous supply of D.E. filter aid is needed.

7. Fill up mix tank with cleaned fluid by using valve **F**.
8. Crack "**AGITATOR AIR"** by opening valve on control board on slurry skid.
9. Apply approx. ½ bag of D.E. filter aid to mix tank and mix for approx. 5 minutes.
10. Slowly open valve **"BODY-FEED PUMP"**, to apply D.E. filter aid to filter-press during filtration. The rate at which D.E. filter aid must be added depends upon the solids contamination of the fluid. Start 1 stroke/sec.
11. When the mix tank is almost empty, repeat steps 7 - 10.

**The unit is now filtering.**

**IMPORTANT:**

- The system pressure will increase during filtration, therefore the body-feed pump needs to be re-adjusted to its required speed.
- Do not use more than 9 bags (50 lbs) of D.E. filter aid.
- If pressure over the filter leaves raises with more than 5 psi per minutes, the body feed pump speed has to be increased.
- For high-contaminated liquids, the pre-coat pump can be used as a body feed pump.

## 4.4. CIRCULATION

For interrupting the filtering process and put the filter on unit standby, follow underneath written guide lines:

1. Fill up mix tank by opening valve **F**, return to mix tank.
2. Close valve **G**, fluid outlet.
3. Start **PRECOAT PUMP**.
4. Close valve **H**, inlet fluid, when mix tank is filled up.
5. Switch off feed pump.

**The unit is now in circulation mode.**

To set the unit in filtration mode again see chapter 4.3 FILTERING.

## 4.5. CLEAN-OUT DE FILTER

The two criteria for cleaning out the filter-press are:

- Differential pressure over the filter-press is 4 – 6 bar, or if there is no flow over the filter press anymore.
- 30 bags of D.E. filter aid have been added to the system.

**Clean wash water available**

1. Stop external feed pump.
2. Stop **BODY-FEED PUMP**.
3. Close valve **E**, inlet filter press.
4. Close valve **A** & **B**, 2 ½"top outlet on filter press
5. Open air valve **J** situated on the 4" inlet of the filter-press, in order to blow the remaining fluid out of the filter press.
6. Check if filter-press is empty by opening valve **F** on the slurry skid or opening the vent valve of the filter vessel from the duplex filter unit in use. If air is coming out, it indicates that the filter-press is empty.
7. Close valve **J**.
8. De-pressurize the filter-press by opening valve **F**.
9. Close valve **C** & **D** , 2 ½" bottom outlet on filter press.

**For opening filter press follow below guide lines.**

**NOTE:**

- Make sure splash curtains are closed.
- Make sure there are no persons close to the filter-press when releasing hydraulic pressure.

10. Turn the "**BOOSTER PUMP**" switch to the "**OFF**" position, the "**PRESS OPEN**" switch to the right and press and hold the "**HOLD TO RUN**" button. The hydraulic pressure will be released from the cylinder and the cylinder will be retracted.
11. When the cylinder is fully retracted, the "**HOLD TO RUN**" and "**PRESS OUT**" buttons can be released.

**NOTE:** For safety reasons it is recommended to disconnect the air supply to the cabinet.

12. Separate the filter plates by pulling on the handles, allowing the filter cake to fall down into the sluice pan.

- A plastic or wooden scraper can be used to remove filter cake that is stuck to the filter cloth, **NEVER** use a metal scraper as this can damage the filter cloth.
- The plate handles are suitable for manual separation only.
- Two operators are required to separate the plates, each standing on one side of the filter-press.
- A single operator should not attempt to discharge the filter cake from the filter-press by standing on top of the filter plate pack.

## 4.6. IMPORTANT NOTES

- When separating the press, the operator should ensure that any build up of compressed DE filter cake in the feed hole and around the edges of the plates, are removed.
- The importance of removing any build up of the plate faces and feed holes cannot be over emphasized, nor can ensuring that the filter cloths be flat and free from creases on the plate faces before closing the press, as failure to carry out this procedure will lead to leakage between the plates and, at worst, broken plates.
- The first pressing, tends to make the filter cloths take the shape of chambers and sit around the closing surfaces, and so it is particularly important that the first time that the press is closed and used, the filter cloths are free from creases - otherwise there is a tendency for these to be ironed in and become permanent.
- The peripheries of the filter cloths should be kept as clean as possible otherwise, under the pressure of the closing surfaces of the press plates, there may be a build-up of hardened filter cake which can lead to abrasion of the filter cloths and, due to spoiling the sealing at the edges, can cause "leakers" resulting in "bursters". This care is particularly important relevant to the centers of the bottoms of the filter cloths where slurry is apt to accumulate after running down from the feed pipes, which are often a little wet at the time the filter cakes are dropped.
- If scrapers are used then they should be of wood or plastic and not metal.

# 5. MAINTENANCE

## 5.1. GENERAL

A good standard of cleanliness and frequent lubrication will ensure the maximum trouble free operational life. Ensure the level of oil in the hydraulic reservoir is checked at weekly intervals and topped up as necessary. The oil should be drained and changed, using ISO 32 or equivalent, every 12 months.

### 5.1.1. *Periodic Maintenance*

After prolonged service the power unit may eventually need to be overhauled. Depending upon the type of unit and the operating conditions the interval between such overhauls will vary between 1 and 5 years although longer periods may be found to be acceptable from experience with the system. The need for overhaul will normally be prefaced by a fall off in performance, which if routine maintenance has been observed, will be detectable. Where routine maintenance has not been adequately adhered to then catastrophic failure of a component may be the first sign that attention is needed.
When it becomes necessary to overhaul a component, references should be made to the recommended practices in chapter 5. Should it not be possible to rectify a component at the facility, then it may be necessary to return it to our factory where the full range of services can be offered. Indeed, planned overhauls can best be carried out by the use for reconditioning. It should be borne in mind that the system supplied uses components which, because of their duty, are manufactured to fine working tolerances, it is therefore recommended that only in emergency situations should in situ maintenance be attempted. In all other circumstances maintenance should be carried out in a clean working area by suitably experienced personnel and where components can be properly dismantled, repaired and tested before being re-installed.
For these reasons we have included, as part of this section of the manual, some guide lines on recommended practices in dealing with hydraulic components.
It is recommended that these should be read before attempting any maintenance.

### 5.1.2. *Daily*

After each pressing cycle, inspect the filter cloths and plate faces and remove any accumulation of sludge that may have formed, particular attention being paid to the centre feed hole, the bottom cloth edges and plate faces. Due to the corrosive nature of brines it is important to ensure that all surfaces of the press are washed down thoroughly to remove any accumulation of salt which may corrode the protective paint work of the press. The press should be washed off at least once per day.

### 5.1.3. *Weekly*

1. Keep the main hydraulic ram clean and lightly lubricated.
2. The oil level should be checked and topped up as necessary. **This must be carried out with the cylinder fully retracted.** Oil level can be checked by the inspection glass, mounted on the left side of the hydraulic oil tank.
3. If necessary, top up using ISO 32 or equivalent.
4. All bearings are of the "sealed for life" type and need no attention.
5. Check the conditions of hydraulic and pneumatic hoses for wear or deterioration. Replace if in doubt.
6. Examine hydraulic and pneumatic pipe work for damage or leakage.
7. Check functioning and zeroing of pressure gauges.
8. Check security of all bolts and fasteners.

### 5.1.4. *Annually*

1. Change the oil in the hydraulic system.
2. Change the oil filter.

## 5.2. GENERAL MAINTENANCE GUIDE

### 5.2.1. *Oil*

1. The hydraulic system should be fitted with ISO 32, or an equivalent, oil only.
2. In the event of rapid lowering in the oil level all joints and seals must be checked.
3. New oil should be stored away from elevated temperatures.
4. Do not use dirty oil.
5. Do not use cotton waste to clean any part of the system as this may choke any valves or filters.

### 5.2.2. *Hydraulics*

1. Do not run the system above its rated pressure.
2. Inefficient operation of the hydraulic pumps may be caused by any condition that limits the flow of oil to the suction side of the pump, including:
    - Blockage of the suction filter.
    - Oil viscosity too high.
    - Air ingress into the suction side.
3. Smooth action of the hydraulic system will be impaired in the event of air entering the system. Air may enter in one of the following:
    - Holes in the suction line.
    - Oil level too low.
    - Loose joints on the suction side.
    - Oil/air mixture due to rapid topping up.
4. Should bleeding be necessary, it should be carried out at the highest point in the system, or at any point where there might be an air lock due to the pipe shape.
5. Cylinder bleeding should be carried out by operating the complete system 3 or 4 times to allow air to return through the pressure relief valve.

### 5.2.3. *Pneumatics*

1. Do not subject the system to an air pressure higher than that recommended.
2. If the press fails to close/open, pneumatic side only, the likely cause may be with:
    - The booster pump is still switched on.
    - The air operated valve (08) in the outlet line of the cylinder will/ is not open/ closed.

## 5.3. FILTER CLOTH MAINTENANCE

### 5.3.1. *General*

While discharging the filter press, the edges of the filter cloths should be examined to ensure they are correctly fitted into their mounting grooves. If they are not, it will be possible for the filtrating liquid to bypass the cloth and contaminate the filtrate. Follow the general cloth fitting instructions to re-fit a cloth back into its groove.
It is essential that tools with sharp edges are avoided either for normal cake discharge or for periodic cleaning. The best method of keeping the filter cloth surface clean is to sponge, brush or hose with water. Should more vigorous washing be necessary this can be done by soaking in a detergent or, if the cloth becomes blinded, it may be necessary to fully launder.

### 5.3.2. *Filter cloth cleaning*

Filter cloths need frequent laundering, the frequency of which is a function of the product being filtered and the number of pressing cycles.
As a general rule when filtration cycle times start to extend then the cloths need washing.

Washing can be carried out in a number of ways:

- Using a high-pressure water cleaner in the form of a hand held lance. The cloths are washed "in situ" and are not removed from the filter press.
- Removing the cloths from the press and soaking them in an acid bath.
    - not recommended for nylon cloth

### 5.3.3. *Installation of the filter cloth on the intermediate filter plate*

The filter cloth for the intermediate filter plate is a “double” filter cloth, fitted with a “molded rubber feed neck” in the centre and a sewed O-ring on the edges.

To fit these cloths, one side of the filter cloth must be collapsed and gathered together before pushing this side through the centre hole of the plate.
When the cloths “molded rubber feed neck” is snug in the centre of the plate, the collapsed side can be smoothed out.

Ensuring that the cloths are square with the plate edges, position the edges of the filter cloth above the O-ring groove. The sewed O-ring should then be forced into its groove by using a rubber or nylon faced hammer in order to avoid damage to either the cloth, rope or the filter plate. The process of pressing the O-ring into the groove should be continued around the perimeter of the cloth groove until the cloth is fully fitted. Ensure that there are no creases in the cloth during fitting as this could lead to inadequate sealing and subsequent leakage during filtration. Always re-check to ensure the O-ring is fully pressed into its groove all the way around the plate. Repeat the process on the other side of the filter plate.

### 5.3.4. *Installation of filter cloth on the end plate*

The filter cloth for the end plate is a “single” filter cloth. It has the same sewed O-ring on the edge as the intermediate filter cloths.
The cloth is fitted by laying it over the plate in such a way that the O-ring is over the O-ring groove.
For fitting the O-ring into the O-ring groove see above.

### 5.3.5. *Installation of filter cloth on the head plate*

The filter cloth for the head plate is a “single” filter cloth with a cut out hole in the centre. It has the same sewed O-ring on the edge as the intermediate filter cloths.
The cloth is fitted in the same way as the end plate , the only difference being that a stainless steel clamping ring must be fitted over the centre feed hole after installation of the Sealing O-ring into its groove.

**Note**: before installing the sealing O-ring into the O-ring groove, check if the position of bolt holes, cut out in the filter cloth, are above the bolt holes in the filter plate.

## 5.4. HYDRAULIC/ PNEUMATIC MAINTENANCE

Hydraulic power is supplied to the system by a two stage air/oil pump. The first stage is set at approx. 15 bar to extract the cylinder and push the filter plates in place. The second stage will pressurize the system up to approx. 350 bar.
A suction line filter is fitted to ensure system cleanliness and a pressure regulator ensures protection from over pressurization.

### 5.4.1. *Hydraulic/pneumatic power unit*

| **Pump** | |
|---|---|
| Pump type | - Pneumatic driven gear pump, max outlet press. 15 bar.<br>- Pneumatic driven piston pump, max. outlet press. 350 bar. |
| Working pressure | 340 bar (5000 p.s.i) |
| **Cylinder** | |
| Bore size | 200mm |
| Rod size | 120mm |
| Stroke | 500mm |
| Maximum working pressure | 345 bar (5000 p.s.i.) |
| Closing force | 100 tonnes at 345 bar |
| Hydraulic port | ¾" bsp |
| Pneumatic port | ½" bsp |

# 6. RECOMMENDED PRACTICES

Scheduled maintenance and good assembly practices will result in a prolonged service life of the hydraulic & pneumatic components.

The following practices have been, and always will be, good sound preventative maintenance and servicing procedures. They are not costly to institute but will invariably be beneficial to the user.

1. Cleanliness - The single, most important consideration.

2. The most obvious and essential point in stressing cleanliness is good housekeeping, regular scheduled cleaning, sweeping and washing of maintenance and service areas reduce the presence of environmental contamination.

3. As part of the good housekeeping practices, the location of the maintenance and service area is very important. This area should be separated from welding, sanding and painting operations. It should also be relatively clear of outside doors which may open, allowing dust or dirt to be blown into the area.

4. All hydraulic & pneumatic components should be stored in a clean dry place. Units and components should not be unpacked unless there is an immediate need for them. The units must be stored with ports plugged. Port protection such as plastic plugs or shipping plugs should not be removed until circuit components are ready for installation.

5. Defective material should be promptly tagged with the specific reason for rejection, its ports plugged, then removed from the work area for repair or replacement. This prevents rejected or defective parts from being used in error. Dirt must be prevented from entering the unit and causing contamination. System components can be ruined if dirt is allowed to enter through open ports. It is as important to protect a rejected unit as much as a new unit; otherwise the real reason for rejection may not be evident if the unit is further damaged or contaminated.

6. All openings in the reservoir should be sealed after cleaning.

7. No snag grinding or welding operations should be done in areas where hydraulic & pneumatic components can be contaminated.

8. All cylinder, valve, pump and hose sub-assemblies should be sealed and/or capped until just prior to use.

9. Mineral spirits should be kept in safety containers.

10. Air hoses (filtered and dry) should be used to clean fittings and other system components.

11. Examine pipe fittings and hose assemblies prior to use to be certain that burrs, dirt and/or scale are not present.

12. All pipe and tubing ends should be reamed properly to prevent restriction and turbulent flow.

13. When using Teflon tape or compound on pipe threads, always leave the two first inside threads bare.

14. Do not use Teflon tape or compound on straight thread fittings.

15. When changing hydraulic & pneumatic seals ensure that the new seals are not damaged by sharp edges or bruising which may have been caused during dismantling.

16. When examining a part which has failed consider what might have caused the failure. Particularly be aware of any contamination which may have been carried over into other parts and components of the system.

17. When fitting new parts check that they are to the original standard.

18. When components have been re-assembled, as far as practically possible, test the unit before re-installation.

# 7. STORAGE AND STACKING OF FILTER PRESS

If the press is to be stored for more than one week without use, the press main ram should be extended, but not closed up to pressure. This ensures the cylinder is filled with oil and should not be prone to internal corrosion. It is recommended that the press is opened and closed at least once every two weeks to circulate oil through the hydraulic system while stored. Furthermore, it is advisable to cover the filter press with weatherproof sheeting during extended periods of storage.

# 8. TROUBLE SHOOTING

- Inspection and Actions should always be carried out by qualified personnel
- Take the necessary precautions when working with health hazardous substances

**!** Take notice to change out damaged parts only with original Twin Filter spare parts.

(See Chapter **Fout! Verwijzingsbron niet gevonden.** of this Operating Manual '**Fout! Verwijzingsbron niet gevonden.**')

## 8.1. TROUBLE SHOOTING SCHEDULE

| Problem | Possible cause | Action |
|---|---|---|
| Minimum flow or no flow over the filter unit | • 1 or more valves not opened<br>• blockage in Piping<br>• Filter media plugged | • Open Valves as described in Chapter 4<br>• Stop process and check piping and vessel by disassembling the valves.<br>• Change out Filter media. |
| Leakage during filtering process | • Hydraulic pressure to low<br>• Filter leaves not compressed properly.<br>• Sealing rope filter leaves damaged.<br>• Valves not properly re-installed after maintenance | • Boost-up hydraulic pressure.<br>• Check that there are no object caught between the filter leaves<br>• Replace sealing ropes<br>• Re-install leaking Valves |
| No hydraulic pressure | • No air supply<br>• Air supply not sufficient<br>• Hydraulic and/ or pneumatic hose broken or kinked<br>• Valve (item 62) still open<br>• Non-return valve inside oil tank not properly closed | • Open all necessary valves.<br>• Check air supply<br>• Check all hoses.<br>• Check actuator and valve for movement.<br>• Clean inside of non-return valve. |

| Problem | Possible cause | Action |
|---|---|---|
| Hydraulic pressure losses during filtration | • Booster pump not switched “ON”<br>• Air supply switched of<br>• Pressure reducer booster pump set to low.<br>• Valve (item 62) still open | • Switch booster pump “ON”.<br>• Start air compressor.<br>• Adjust pressure reducer.<br>• Check actuator and valve for movement. |

## 9. ORDER FORM

With every enquiry please mention:

Client :

Address :

Place :

Date :

**Twin Filter BV**
**Zuiddijk 398**
**1505HE Zaandam, The Netherlands**
**Tel: 0031 (0)75-6555 000**
**Fax: 0031 (0)75-6555 015**

Unit type :

Serial number :

Order number :

| Quantity | Part number | Description | Fast delivery Yes / No |
|---|---|---|---|
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