<table>
<thead>
<tr>
<th>Section</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter Press Specification</td>
<td>1</td>
</tr>
<tr>
<td>Set-Up Instructions</td>
<td>2</td>
</tr>
<tr>
<td>Operation of Filter Press</td>
<td>3</td>
</tr>
<tr>
<td>General Maintenance</td>
<td>4</td>
</tr>
<tr>
<td>Trouble Shooting</td>
<td>5</td>
</tr>
<tr>
<td>Hydraulic Closure System</td>
<td>6</td>
</tr>
<tr>
<td>Filter Plates and Cloths</td>
<td>7</td>
</tr>
<tr>
<td>Options</td>
<td>8</td>
</tr>
<tr>
<td>Spare Parts</td>
<td>9</td>
</tr>
</tbody>
</table>
Section 1

JWI FILTER PRESS SPECIFICATIONS

MODEL NUMBER 630G32-13-4DA
SERIAL NUMBER 1701
Total Volume - Cu. Ft. 4
Volume/Chamber - Cu. Ft. 0.3
Total Area - Sq. Ft. 83.2
Number of Chambers 13
Overall Length of Press 97 3/4
Overall Width of Press 37"
Clearance - Floor to Plates 26"
Plate Size - Inches 24.8
                  MM 630
Plate Style Gasketed
Gasket Style O-Ring
Filter Cloth 7100 Series
Closing Device Air Powered hyd. Pump
Control Location ACPS
Air Supply - Maximum 28CFM
Hydraulic Closing Pressure Max. PSI 4450
Relief Valve Setting - PSI 4750
Hydraulic Oil Recommended Quality Brand-Hyd. Oil
Hydraulic Cylinder - Size 4” bore, 18” stroke
                  Type Parker
Maximum Inlet Feed Pump Pressure 100 PSI
Discharge Manifold (Style) AIR
Options
    - Dumpster
    - Auto pump control system
    - Sludge pump
Section 2

SET UP INSTRUCTIONS

The JWI filter press is normally shipped completely assembled and pre-tested.

CAUTION: Use care in handling the filter press so as not to damage any components such as discharge extension pipes, plate handles, or hydraulic system.

1. Mount the filter press level to floor, platform, or extension legs through the base holes provided.
   NOTE: Press must be clamped up and square before exact dimension can be established. (See enclosed drawing)

2. Connect center inlet pipe to discharge of feed pump. (See enclosed filter press or manifold drawing)

3. Install drain pipe to bottom outlet of discharge manifold. (See enclosed manifold drawing)
   IMPORTANT! Be sure outlet of drain pipe is below level of discharge manifold outlet.

4. If optional air blow down manifold is used, connect air supply as shown on manifold drawing. Use regulated air pressure 50 PSI maximum

**Automatic Closure Models Only**

Connecting Air Supply

Air supply to the JWI filter press should be clean, dry air at 125 PSI maximum.

NOTE: An air line drying system should be installed if high levels of moisture are present in your air supply. This will prevent extensive damage to the air circuit components in the system.

1. Connect air supply, using a minimum of 3/8" I.D. pipe, to fitting marked air inlet located at hydraulic cylinder end of filter press.
   NOTE: Use shut off valve in air line prior to filter press; air filter and regulators are incorporated within the filter press system.
Section 3

OPERATION OF A FILTER PRESS

AUTOMATIC CLOSURE

JWI uses an air over hydraulic system to open and close the filter press. To close the filter press, air pressure is applied to the hydraulic fluid reservoir, forcing hydraulic fluid into the rear of the hydraulic cylinder, rapidly extending the ram. The hydraulic pump is then turned on to reach the maximum closing pressure. To open the filter press, the hydraulic pressure is released through a pilot operated valve. Air pressure is directed to the front of the hydraulic fluid back to the reservoir tank.

To Close Filter Press

1. With air supply connected to filter press, line air pressure will register on gauge.

2. Turn selector switch to close position.

3. Turn air supply switch to on position. Regulated air pressure will register on gauge. Hydraulic cylinder will extend, closing the press.

4. Leave open-close selector switch in close position. With ram fully extended, turn hydraulic pump switch to on position. Leave hydraulic pump switch in on position when press is in operation. The hydraulic pump will engage, developing maximum closing pressure on hydraulic gauge.

   NOTE: Small amounts of air escaping momentarily from the hydraulic pump prior to stroking is normal. If maximum hydraulic pressure (see specification page one) is not reached, follow the instruction titled "Regulated Air Pressure" on page 8.

5. Open inlet valve and start feed pump. With air diaphragm feed pump, cycling will show as press becomes filled. With air diaphragm feed pump cycling will slow as press becomes filled. With press completely filled, feed pump will stall. This usually occurs within 2 hours.

6. Turn off feed pump. This is done by shutting off its air supply.

7. Air blowdown (optional). Maximum pressure is 40 PSI.

   a. Close center inlet valve on line from feed pump.
   b. Close the three valves on discharge manifold. (See diagram #3.)
   c. Open air valve on discharge manifold, expelling any water left in the press (approximately 2 minutes or longer).
   d. Close air valve.
   e. Open the three valves on discharge manifold. Leave inlet valve closed. This will allow gravity drainage of press (approximately 2 minutes).
To Open Filter Press

Note: Make sure feed pump has been turned off, and pressure has been bled down.

1. Turn hydraulic pump switch to off position.

2. Turn selector switch to open position. Hydraulic cylinder will retract, opening the press. (Air supply switch must be in on position.)

3. With press open, turn air supply to off position.

   a. Manually separate the plates.  
      NOTE: New gaskets have a tendency to stick. Use care in separation of plates as not to damage them. A silicone spray can be used to eliminate this condition.
   b. Use the non-abrasive nylon paddles furnished to remove any cake that has not fallen free. NOTE: Failure to thoroughly clean the plates can cause cracking due to unbalanced pressure build up.
   c. All cake should be cleaned from sealing surfaces.

5. With the plates thoroughly cleaned, the press is ready for closing.
   NOTE: Follow instructions "To Close Filter Press."

CAUTION: If flow to the filter press is interrupted for a period of time, such as overnight, it is recommended that the feed pump be restarted at a low pressure for 5 to 10 minutes before slowly increasing to maximum pressure. When the feed to the press is interrupted, the sludge build up will have a tendency to fall from the sides of the chamber and settle to the bottom, possibly blocking the center feed hole. Restarting with itself in the chamber. Blockage of the center feed can cause uneven pressure build up and result in plate breakage.

Dual Ratio Hydraulic System

System Operation

With the pump switch turned to the "on" position, both pumps will start simultaneously. The high volume 21-1 ratio pump will stall out at around 2000 PSI. The standard 71:1 ratio pump will continue to operate until maximum closure pressure is reached. The 21:1 ratio pump operates at line air pressure while the 71:1 ratio pump operates on regulated air pressure to control closing pressure.

(To identify Dual Ratio Hydraulic System, refer to 6.00)
REGULATED AIR PRESSURE

1. The regulated air pressure to the hydraulic pump is proportionate to the hydraulic output pressure in an air to hydraulic ratio of 1 - 71. The air pressure regulator is mounted in the upper section of the pump cabinet (round, black knob) on the air line adjacent to the hydraulic pump. Regulated air pressure will be indicated on the control panel gauge.
   NOTE: Do not confuse this regulator with the pilot air regulator which is mounted below the hydraulic pump regulator. The pilot air regulator should read approximately 80 PSI on the accompanying gauge and is used only for pilot air supply.

2. With filter press tightly closed, increase air pressure clockwise until maximum hydraulic pressure (see specifications sheet) is indicated on hydraulic pressure gauges. NOTE: A preset hydraulic pressure relief valve at the pump will not allow pressure to exceed maximum limit. If hydraulic pressure does not reach approximate maximum, see hydraulic pump section.

3. If pump has reached maximum pressure, but continues to cycle, decrease air pressure until the pump stalls, yet maintains maximum hydraulic pressure.

4. With air pressure set, push in outer ring on regulator knob to lock in position.

5. The air powered hydraulic pumping unit is designed to maintain a constant hydraulic pressure using no air consumption. The pump will automatically start and stop to maintain the preset pressure. (See hydraulic pump section.)
Section 4

GENERAL MAINTENANCE

Manual Hydraulic System

Oil Reservoir: Check oil level in reservoir with ram fully retracted. Watch for any signs of hydraulic oil leaks.

Caution: Do not over pressure system above specified closing pressure.

Air Over Hydraulic System

Check reservoir level periodically. Check complete hydraulic system for any signs of leaks.

Oil Reservoir: Hydraulic oil - with hydraulic ram fully retracted, oil level should be approximately 1" from top of sigh tube on tank.

Caution: Be sure all air pressure is off to filter press prior to removing 1/2" fill plug located on top of reservoir tank.

Air Filter

The air filter is of the automatic self-draining type. For filter element replacement, see section on air filters.

Polypropylene Plates

Polypropylene plates should be inspected periodically for gasket deterioration and condition of filter cloths. See section on polypropylene plates and filter cloths.

Sealing surfaces of plates should be kept clean and free from buildup.
## Section 5

### TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump will not cycle.</td>
<td>1. Inadequate air supply.</td>
<td>Check air pressure and clean air system parts.</td>
</tr>
<tr>
<td></td>
<td>2. Air filter plugged</td>
<td>Check air regulator (see regulated air pressure section below).</td>
</tr>
<tr>
<td></td>
<td>3. Air valve off.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Restriction in air line.</td>
<td></td>
</tr>
<tr>
<td>Pump cycles without pumping or does not</td>
<td>1. Check valve in pump body malfunctions.</td>
<td>Clean, inspect, and replace, if necessary.</td>
</tr>
<tr>
<td>deadhead.</td>
<td>2. Low reservoir level</td>
<td>Fill reservoir with oil. (See air operated pump section.)</td>
</tr>
<tr>
<td>Pump continues to cycle after it has</td>
<td>1. Air pressure too high</td>
<td>Decrease regulated air pressure. (See regulated air pressure section below.)</td>
</tr>
<tr>
<td>reached maximum hydraulic pressure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sludge pump stalls out, indicating press</td>
<td>1. Too low sludge pump air pressure.</td>
<td>Increase pressure 100 PSI maximum.</td>
</tr>
<tr>
<td>is full. However, when the press is</td>
<td>2. Sludge pump not stalled out long</td>
<td>Stall until one stroke/minimum is reached.</td>
</tr>
<tr>
<td>opened, the filter cake is solid near the</td>
<td>enough.</td>
<td>Eliminate oil or add D.E. body feed.</td>
</tr>
<tr>
<td>cloth, but watery in the center.</td>
<td>3. Oil in sludge forming an impermeable</td>
<td>Start sludge pump at lower pressure, then slowly increase. (See operation of filter press.)</td>
</tr>
<tr>
<td></td>
<td>layer.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Too high initial sludge pump</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pressure causing particles to form</td>
<td></td>
</tr>
<tr>
<td></td>
<td>too tightly on filter cloth.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Filter cloth plugged</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water leaks out between plates.</td>
<td>1. Gaskets loose or torn.</td>
<td>Reinstall or replace (See section on polypropylene plates.)</td>
</tr>
<tr>
<td></td>
<td>2. Low hydraulic pressure</td>
<td>Increase to required PSI.</td>
</tr>
<tr>
<td>Filter cloths pull out of grooves during</td>
<td>A full cake was not developed before wash</td>
<td>Be sure chambers are completely full before wash or blow down. The filter cake will then support the cloth.</td>
</tr>
<tr>
<td>operation.</td>
<td>or blow down, causing cloth to be pushed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>out of caulking groove.</td>
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</tbody>
</table>

### Air Filter Troubleshooting:
- Check air pressure and clean air system parts.
- Check air regulator (see regulated air pressure section below).

### Gasket Troubleshooting:
- Reinstall or replace (See section on polypropylene plates.)
- Increase to required PSI.
| Filter cloths pull out of grooves during operation, even though full cakes are being built. | Improper size sash cord for cloth or application. | Future cloths should be made with a slightly larger sash cord. Contact JWI, Inc. for recommendations. |
Section 6

AIR POWERED HYDRAULIC PUMP

Description

On many applications involving polypropylene filter elements, especially where filtration temperatures are high and wash temperatures are low, it is best to have a closure that compensates for expansion and contraction of the filter stack. During high temperature filtration on a machine with a locked closing system, stack expansion can impose increased stresses on the filter skeleton. A wash with temperatures below ambient causes a subsequent contraction of the filter force. Excessive leakage and/or frame bowing or failure may result from insufficient clamping force.

Air powered hydraulic pumping units, supplied by JWI, Inc., can overcome problems of expansion and contraction of the filter stack simply and reliably. The pumps convert plant air to hydraulic pressure through a simple ratio system that uses a large air piston area at low pressure to produce a high hydraulic pressure on a small area hydraulic piston. Automatic reciprocation is controlled by the action of pilot operated selector valve in the pneumatic section of the pump.

As the hydraulic output approaches the desired pressure dictated by the air pressure regulator setting, the pump slows down and finally stalls when the hydraulic force balances is controlled by the action of a pilot operated selector valve in the pneumatic section of the pump.

As the hydraulic output approaches the desired pressure dictated by the air pressure regulator setting, the pump slows down and finally stalls when the hydraulic force balances the air force. Hydraulic force is therefore maintained with no consumption of power.

During filtration operations, the air supply is left on the pump. If stack contraction occurs, hydraulic thrust is reduced, causing an imbalance in the pump. The pump then cycles to restore the hydraulic thrust to the desired setting and once again stalls. Under conditions of stack expansion, hydraulic thrust is increased. The excess hydraulic pressure that results is bled back to the hydraulic reservoir through a relief valve, thus maintaining the desired hydraulic thrust.

Dual Ratio Hydraulic System

Description

Dual ratio hydraulic system can be identified by noting two hydraulic pump units (piggy-back), mounted in the pump cabinet. Filter presses provided with dual ratio hydraulic systems operate in the same manner as a standard single ratio unit. The dual ratio system provides larger volumes of oil to the cylinder during clamping, greatly reducing the time required to close the press.

System Operation

With the pump switch turned to the on position, both pumps will start simultaneously. The high volume 21:1 ratio pump will stall out at around 2000 PSI. The standard 71:1 ratio pump will continue to operate until maximum closing pressure is reached. The 21:1 ratio pump operates at line r pressure while the 71:1 ratio pump operates on regulated air pressure to control closing pressure.
Instructions for Adjusting Pressure Relief Valve

1. Pressure relief valve setting should be 300 to 400 PSI above maximum hydraulic closing pressure. (See specification sheet no. 1.0)

2. To prepare relief valve for adjusting, remove cap and washer from adjusting screw. (See drawing no. 6.18)

3. Close press and allow hydraulic pump to build hydraulic pressure. (See Operation Instructions No. 3.00)

4. If air hydraulic pump stalls out before maximum closing pressure is reached, air pump regulator will have to be turned clockwise to increase pressure to air hydraulic pump. This must be done in small intervals, allowing pump to stall between each interval until maximum hydraulic closing pressure is reached.

5. With maximum hydraulic closing pressure reached, turn hydraulic air pump regulator clockwise to increase hydraulic pressure 300 to 400 PSI above maximum hydraulic closing pressure.

6. If air hydraulic pump does not stall and keeps pumping after reaching 300 to 400 PSI above maximum closing pressure, relief valve is operating and is set at proper pressure.

7. If the air hydraulic pump continues to pump and hydraulic pressure does not increase above maximum closing pressure, pressure relief valve setting is too low and must be adjusted.

8. **WARNING:** If at any time, pressure exceeds 400 PSI above maximum closing pressure for your press, relief valve must be readjusted. Loosen locknut around adjusting screw and back out adjusting screw (counter clockwise) and proceed with instructions below.

9. To adjust relief valve, loosen locknut and turn screw with a hex key in a clockwise direction while watching hydraulic pressure gauge as pressure increases. Increase pressure to the 300 to 400 PSI above maximum hydraulic closing pressure for your press as indicated on the specification sheet. Tighten locknut.

10. To check adjustment of pressure relief valve, turn hydraulic pump switch to "off" and drop pressure by momentarily turning selector valve to open position until hydraulic pressure drops to zero on panel gauge. Once pressure has dropped to zero, return selector knob to closed position and turn hydraulic pump on.

11. Allow hydraulic pump to build hydraulic pressure and watch pressure gauge and note at what pressure pump continues to pump, but no longer builds any greater hydraulic pressure.

12. If pressure is in the 300 to 400 PSI range above maximum recommended closing pressure for your press, adjustment has been made correctly.

13. At this time, cap and washer can be reinstalled on adjusting screw.
Instructions for Adjusting Maximum Closing Hydraulic Pressure

14. Now press can be adjusted for maximum closing hydraulic pressure.

15. Return hydraulic pressure back to zero by momentarily turning selector valve to open position until hydraulic pressure drops to zero on panel gauge.

16. Turn air pump regulator in a counter-clockwise direction, two to four turns adjusting pump air pressure to about 20 PSI by watching pump air pressure gauge on control panel.

17. Now with press selector in closed position, turn hydraulic pump on, allow pump to build hydraulic pressure, waiting for pump to stall out.

18. Pump should stall out at a pressure lower than maximum hydraulic closing pressure.

19. Once pump has stalled, pressure to air hydraulic pump can now be increased. Turn pump air regulator in a clockwise direction, until hydraulic pressure on panel gauge reaches maximum hydraulic closing pressure. Allow pump to stall between each slight incremental adjustment.
POLYPROPYLENE FILTER PLATES

Description

Our standard polypropylene recessed, center feed, four corner alternating discharge chamber plates are superior in corrosion resistance, design and function, and are available in two basic types; gasketed and non-gasketed. We also offer flush plates/frames and membrane plates.

Maintenance

Gasketed Type

With this type of plate, the filter cloth is caulked into a groove located around the outer edge of the late recess.

Redressing Procedures:

To Remove Filter Cloth

To remove a filter cloth, insert a thin bladed screw driver into the groove at the outer edge of the caulking and pry a small section of the cloth out. Grab the exposed caulking with vise grip pliers and pull the remaining cloth out of the caulking groove. After the cloth is removed, inspect and remove any accumulated solids from the groove before inserting the new cloth.

To Install New Filter Cloth

On plates having a center feed eye with sewn centers, it will be necessary to fold the cloth on one side into a small section so that it can be inserted through the center feed eye. Once the cloth is pulled through the eye, it can be unfolded for caulking.

Sewn in Sash Corn Type

The drainage surface on a gasketed chamber plate has caulking groove approximately 3/8" wide by 3/8" deep. Filter cloths are made for this type of plate by sewing in a high density polypropylene sash cord around the outer edge of the cloth. Cord diameter will depend on type of cloth and relative thickness being used. In most cases, a No. 12 (3/8" diameter) cord is used. The filter press specifications will indicated the type of cloth used. NOTE: It is important to keep in mind that if you change the type of filter cloth, you may have to use a different number (diameter) sash caulking. Consult JWI, Inc. for proper sizing.

O-Ring Caulking Type

The drainage surface on this type gasketed plate has a machined caulking groove which utilizes an o-ring to hold the filter cloth in place.

The tool for caulking is a simple wedge of polypropylene or some other non-shattering type material. 1" thick x 3" wide x 8" long with one end tapered down to 5/16" thickness with 3" width, for use against the caulking material. Do not use a metal wedge.
Place the cloth against the plate and tap in a small section on the top to hold the cloth in position. Line up and caulk the diagonal sections first to ensure proper alignment of the cloth. Distribute the caulking on the sides, top and bottom by caulking in the center of these long sections first. Then proceed to insert the balance of the caulking, making sure you distribute the caulking properly. Even though there may appear to be a surplus of material, this can be worked in easily.

**NOTE: O-Ring Style Caulking:** A hot knife is used to trim the excess cloth from the outer edge of the groove. The hot knife eliminates fraying of the filter cloth.

**Regasketing Procedure:**

The o-ring type gasket material is retained in dove tail grooves around the sealing surfaces and corner discharge eyes. The gasket is installed into the grooves so that approximately .030” to .060” of the gasket is protruding out of the groove providing the plate to plate seal.

When installing the gasket, make sure the gasket end is cut square. Insert the gasket starting at the bottom center of the filter plate using a wood or plastic mallet. Many installers will stretch the gasket which reduces the cross section sizing, making it easier to insert. However, by stretching it for easier insertion, it has a tendency to creep and open the butted joints of the gasket and cause a leak.

Push the gasket into the groove around the outer edge of the plate until it mates up with the center of the plate. Cut the gasket approximately 1/2" to 1" longer than required, cutting the end square. Apply one or two drops of Eastman 910 (or super glue) to one end of the gasket and quickly join it to other end and hold it under hand pressure for approximately 30 seconds. Then, crowd the excess 1/2" to 1" of gasket into the groove to ensure fullness of gasket material.

The same procedure applies for the discharge eye (ring) gaskets including eh bonding together of the butted ends.

Gasket life will depend on many factors, such as length of filtration cycle, temperature, and excessive closing forces. Gasket replacement should take place if the gasket appears to be delaminating or shredding into small particles. Also, if excessive temperatures exist and cycles are very long, the Nordel may go into additional cure, causing it to harden slightly.

While the Nordel elastomer is our standard gasket material, many other types have been used including Hypalon, neoprene, and Viton A. If the gasket life is unsatisfactory, contact JWI, Inc. for a suitable replacement.

**Special Note:** When gasketed plates are first put into use, the new gasket material may be slightly gummy and cause a few gaskets to pull out of the grooves when separating the plates. This condition will eliminate itself as product films are built up and act as a releasing agent. If a few of the gaskets show this characteristic, apply a silicone spray until the filter has been used for several days.
Non-Gasketed Type

With this type plate, the filter cloth provides the seal between the plates. Leakage will occur during operation, even though JWI supplies most of the non-gasketed plate cloths with latex edging. The latex will cut down the wicking action somewhat but will not eliminate it.

Redressing Procedure:

To Remove Filter Cloth

Use diagonal cutters or snips to cut ties (if supplied) on vertical sides and lift one cloth side off cloth pins on top of plate. Fold cloth and push through center eye.

To Install New Filter Cloth

Fold and roll cloth on one side into a small section so that it can be inserted through the center feed eye. Once the cloth is pulled through, it can be unfolded and installed over the cloth pins on top of plate. Most types and sizes of cloth will be supplied with holes and/or grommets along the vertical sides for the installation of small plastic cable wire ties to further position and locate the cloth.
FILTER CLOTH WASHING

Filter cloths provided with the filter press have been selected specifically for use on each particular application.

Proper care and maintenance of the filter cloths are very important to the performance of the filter press.

During filtration, the filter cloth is the initial barrier that separates solids from liquid, therefore, the filter cloth must remain porous to provide high filtration rates.

During normal operation, the filter cloth may gradually become plugged with minute particles, such as those from a metal finishing sludge. These particles penetrate the cloth and become lodged in the depth of the weave, which leads to decreased filterability. These particles must be removed periodically to maintain high filtration rates and drier cakes.

Filter cloth washing is required when one of the following factors indicated plugging has occurred.

1. Initial high filtration pressure.
2. Long filtration cycles.
3. Wet filter cakes.

There are several methods used to wash cloths while they are still installed in the press. The most commonly used method with metal finishing sludge is acid washing, which requires the following:

1. Acid storage tank of sufficient capacity to fill press and allow for recirculation, approximately 1.5 x holding capacity of press (7.5 gallons per cubic foot).

2. A 25% solution of hydrochloric (muriatic) acid. A lower or higher concentration may be necessary due to solubility levels of entrapped particles. **NOTE:** Extreme care must be taken when handling acid.

3. Low pressure (2-30 PSI max.) Acid resistant pump.

4. Necessary plumbing (hoses or rigid PVC pipe) to isolate the press from the sludge stream that allows for both recirculation to the acid storage tank, and a final draining of the spent acid solution. A throttling valve installed in the return line to the acid tank may be necessary to ensure complete top to bottom press filling and washing of the cloths.
Method

1. Clean all filter cloths of all sludge cake with nylon spatulas furnished.

2. Close filter press.

3. Disconnect center feed line from sludge pump.

4. Connect outlet of acid pump to center feed line to filter press.

5. Connect lower outlet of filter press to acid recirculation tank.

6. Open acid feed line to filter press.

7. Start acid feed pump. It will take considerable time to fill all of the chambers of the filter press before the acid will return to storage tank. Continually inspect filter press for leakage during filling and re-circulating.

8. Allow pump to re-circulate for one to two hours.

9. Turn off acid feed pump.

10. Follow air blowdown sequence in operation instructions to purge acid from filter press (use maximum 15 PSI air).

11. Disconnect acid feed system and reinstall sludge pump and outlet lines.

12. Filter press is now ready for operation.

CAUTION: Acid washing is not recommended on non-gasketed type filters unless extra precautions are taken to contain the leakage between plates. You can also acid "dip" wash the plates by immersing them in a tank of acid. The immersion method though is less efficient than through washing in the press and will probably require at least an overnight soaking to clean out the depth of the weave. Another slight problem is that the plates are lighter than water and will float, so some method of keeping them submerged must be used.

Another method used for cloth washing is a portable high pressure (800 - 1200 PSI at 2-10 GPM) cold water spray unit. These units come with a hand held power wand with spray nozzle which is slowly moved over the cloths. They clean by not only flushing off the cloth surfaces, but by also penetrating the cloth to flush particles out of the depth of the weave. Contact JWI Inc. for more information on availability.
Description

The automatic pump control system is designed to automatically increase the feed pump pressure during the fill cycle. Low initial feed pressures will allow a soft layer of sludge particles to be deposited on the filter cloth. This layer will become the filtering media, enhancing the filterability of the incoming slurry. High initial feed pump pressures can build a very tightly packed impermeable layer of solids on the filter cloth, restricting the filterability of incoming slurry.

The automatic feed pump system allows the pressure to be automatically increased in four intervals throughout the fill cycle. These intervals and pressures are fully adjustable to suit the type of slurry and the percentage of solids. Continuous monitoring of the feed pump pressure allows the system to automatically shut down when the press has become filled. Also incorporated into the system is a low hydraulic pressure safety shut down device. Any time the hydraulic pressure drops below the preset limits, the system will completely shut down, eliminating any possible leaking. The control panel features various switches, pilot lights, and timers to give at-a-glance monitoring of the system.

Installation and Set-Up

1. Mount the control panel near the filter press (unless factory installed).

2. Connect the 110 volt, 60 cycle current to the panel. (Note: See wiring diagram.)

3. Connect wires from the low hydraulic pressure switch, located in the pump cabinet, to the control panel (unless factory installed).

4. Install the air piloted regulator at the feed pump. (See diagram 2.03 or 8.06)

5. Connect the pilot line and the pressure gauge line from the panel to the pilot regulator. (See diagram 2.03 or 8.06.)

6. Connect a filtered and regulated air line supply to the control panel. (See diagram.)

7. Air supply should maintain not less than 100 psi.
Pre-Operational Check Out

NOTE: Disconnect all power to control panel prior to making adjustments.

JWI recommends the following timer and regulator settings only as a place to start and can be changed to meet the needs of your system to give best cake density.

<table>
<thead>
<tr>
<th>Timers</th>
<th>Regulators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 TR</td>
<td>Stage 1 - 25 psi</td>
</tr>
<tr>
<td>2 TR</td>
<td>Stage 2 - 50 psi</td>
</tr>
<tr>
<td>3 TR</td>
<td>Stage 3 - 75 psi</td>
</tr>
<tr>
<td>4 TR</td>
<td>Stage 4 - 100 psi</td>
</tr>
</tbody>
</table>

The psi settings of the solenoid controlled regulators will only show when the system is in operation and will read out on the regulated pressure gauge located on the control panel.

NOTE: The solenoid controlled regulator number four (4) must always carry a 5 psi higher reading than the adjustable air pressure switch setting.

Sequence of Operation

NOTE: Read carefully before starting system.

Turn the on/off switch on the control panel to the "on" position. Push the green start button. System will start, showing a green systems on light. NOTE: If the green systems on light does not glow and the system does not start, a yellow low hydraulic pressure light may come on, indicating the press is not completely closed or up to its maximum hydraulic pressure. If the yellow light had come on during the filling cycle, the system would have completely shut down.

With the green systems on light on, timer 1 TR will be energized, opening the number one (1) solenoid valve directing air through the number one (1) regulator. A 25 psi reading will register on the regulated pressure gauge. The number one (1) regulator will open the air piloted regulator to start operating the feed pump at 25 psi. The feed pump will continue to operate at 25 psi through the duration of the 30 minutes on the 1 TR timer. The lapsed timer indicator will start operating the continue through the entire cycle unless shut down manually, automatically, or by the low hydraulic pressure switch. When the 1 TR timer has timed out, it will energize 2 TR timer which will open the number two (2) solenoid valve directing air through the number two (2) regulator, increasing the air piloted regulator to 50 psi which will also read on the regulated pressure gauge and increase the feed pump to 50 psi. This will continue at 50 psi through the duration of the thirty minutes on the 2 TR timer. When the 2 TR timer has timed out, it will energize the 4 TR timer which will open the number three (3) solenoid valve directing air through the number three (3) regulator increasing the air pilot regulator to 75 psi. This will show on the regulated pressure gauge and will increase the pressure at the feed pump to 75 psi for the duration of the thirty minute set on the 3 TR timer. When the 3 TR timer times out, it will open the number four (4) solenoid valve directing air through the number four (4) regulator, increasing the air pilot regulator to 100 psi. This will also show on the regulated pressure gauge, and will increase the feed pump pressure to 100 psi maximum. The feed pump will maintain the 100 psi or maximum pressure until shut down by the control system.
At this point, it is important to understand the operation of three selective components in the system.

First, the fourth timer, setting on the fourth timer from our first page it was suggested to start out at one minute. Setting on this timer will always be a very short time in comparison to the first three timers. The reason is that the timer does not directly control the time duration that the fourth solenoid is directing 1200 pounds pressure to our pilot regulator. The timer is used to monitor the amount of *time between strokes* of the feed pump.

The second item is the setting of the fourth-stage regulator in the panel. This regulator should be set at a pressure you would like to have the press operate at, as our full operating filtration pressure. For example, we used 100 psi.

The third item to understand is the adjustable air pressure switch (see page 8.24). This pressure switch is mounted in the bottom of the cabinet. The setting of this pressure switch should be at a pressure slightly below the setting of the fourth regulator connected with our fourth-stage setting. For example, we recommend 5 psi or less below the setting of the fourth regulator. This is to ensure that there is not enough pressure to operate the pressure switch. The purpose of the switch is to signal the number four timer that the system is holding 100 psi, and start timing.

**Operation of These Three Items Together**

When the press is operating and our feed pump stalls out at 100 psi and pressure is holding; at this same time, the pressure switch set for the pressure slightly below 100 psi is operated. Once this pressure switch is operated, timer number four will start to time the amount of time this pressure switch is held by the pressure in the pump control circuit. With number four timer set for one minute and maintained 100 pounds per square inch on this pressure switch for one minute or more, the timer will time out and switch our pump control system off and give us a press full indication on the panel. If the pressure switch is maintained at the 100 psi position for any period of time less than one minute and the pump makes a stroke, it will rob air from this pressure switch, drop the pressure switch back open again, and reset the timer back to zero. The timer will not start timing again until the pressure switch reads 100 psi once more. If it does, it will start to time again. Either time out and shut off, or reset as before. This could go on for any amount of time, depending on how close the other settings have been made. The press could be on this last cycle for two to three hours, depending on the type of operation on your press.

The end result is that the press could be on line for the total amount of time had on the first three timers. For example, using 30 minutes each for a total of 90 minutes, plus any amount of time accumulated by the fourth timer. This could be in the hours. These adjustments will have to be adjusted by the customer until satisfying results are obtained.

**Pressure Switch Adjustment**

In adjusting the setting of the pressure switch in the cabinet, it is recommend that the press first be run to the pressure you would like to see the final filtration pressure which, for example, use 100 psi, and the pump has stalled out, turn the setting on the pressure switch down until it trips the pressure switch and starts timer number 4. If timer is set for one minute, the press should shut off in one minute.
Operation of Pilot Operated Regulator

Operation of pilot operated regulator as shown on page 2.03, 8.06, and 8.20A of instruction manual, this pilot operated regulator controls the air pressure of the pump on a 1:1 ratio, or for each pound of air pressure in pilot line B, we get equal air to pump only in greater volume. Line A is a pressure monitor line which gives a gauge reading on the panel, and also is the control for the pressure switch.

Auxiliary Contacts

Available for other monitors which operate upon a press full condition. See wiring diagram for relay wire numbers.