

REV	PN REF #	ES REF #	OFC P/N	DESCRIPTION	MANUFACTURER	PART #	QTY	NOTES/PO #
				AIR CYLINDER AND AIRBAGS				
2			202-1020	AIRBAG, 17.4", #28, CRIMPED PLATE STYLE - NO RING	FIRESTONE	W01-358-7271	1	
2.1			SS0-220Y	AIRBAG COVER - URETHANE BOOT W/ POLYESTHER ELASTIC CORD	LAACKE & JOYS	FACTORY	1	
8			650-1075	AIR POPPET VALVE, 0.25" NPT, PLATEN CONTROL VALVE	NUMATICS	NF2PAN520G00000	1	
8.1			531-1008	MUFFLER - EXHAUST 0.25"	FESTO	2316 (U-1/4")	1	
				CAKE DRY				
12			573-1141	MANIFOLD REGULATOR, NON-RELIEVING, 0.25" NPT, PRESSURE GAUGE	NUMATICS	SEE MODULAR PNEUMATIC ASSEMBLY	1	MR14N-02G
14			620-1288	1/2" INTEGRAL BALL/CHECK VALVE, BRZ BODY, MANUAL	NIBCO	T585-70-IC-1/2"	1	
				PNEUMATIC ASSEMBLY				
29			605-1005	CHECK VALVE, 1/4" MINI, STAINLESS	NUMATICS	CV2FN	1	
30			646-1069	SHUTOFF VALVE, 0.25" NPT	NUMATICS	SEE MODULAR PNEUMATIC ASSEMBLY	1	VS14-02
31			456-1136	PARTICULATE FILTER, 5 MICRON ELEMENT, 0.25" NPT, POLY BOWL	NUMATICS	SEE MODULAR PNEUMATIC ASSEMBLY	1	F14B-02
32			456-1125	COALESCING FILTER, 0.3 MICRON ELEMENT, 0.25" NPT, POLY BOWL	NUMATICS	SEE MODULAR PNEUMATIC ASSEMBLY	1	F14D-02
				NUMATICS 2002 24VDC, PUSH-IN SOLENOID VALVES				
34			655-1255	SOLENOIDS - CONTROL, 4-STATION MANIFOLD, 0.25" PUSH-IN, 2CV, 4WAY, 24VDC, TERM BLK, MUFFLER	NUMATIC 2002	AKF6D00002LDWM	1	86656
34.1	O000, O001SOL		650-1098	DOUBLE SOLENOID - 0.25" PUSH-IN, 2CV, 2 POS 4-WAY, 24VDC, OPERATOR, PNP DOUBLE Z, STATION 1	NUMATIC 2002	022BB4Z4ML00061	1	86656
34.2	O002-O004SOL		655-1193	SINGLE SOLENOID - 0.25" PUSH-IN, 2CV, 2 POS 4-WAY, 24VDC, OPERATOR, PNP SINGLE Z, STATIONS 2-4	NUMATIC 2002	022BW4Z3ML00061	3	86656
				AIRBAG AND FILTER PRESSURE SWITCHES				
36		I005PS	379-1128	AIRBAG PRESSURE SWITCH, 1/4" NPT - 0-145PSI	EFECTOR	PK6224	1	
36.1			283-1045	PROXIMITY SWITCH CABLE 5M, 4 WIRE, RIGHT ANGLE	EFECTOR	E18013	1	
37		I006PS	379-1128	FILTER PRESSURE SWITCH, 1/4" NPT - 0-145PSI	EFECTOR	PK6224	1	
37.1			283-1045	PROXIMITY SWITCH CABLE 5M, 4 WIRE, RIGHT ANGLE	EFECTOR	E18013	1	
				AIRBAG AND FILTER PRESSURE GAUGES				
38			473-1205	PRESSURE GAUGE 3.5", 0-160 PSIG - AIRBAG, COLORED - NON-ANALOG AIRBAG	OBERLIN	473-1205	1	
39			473-1210	PRESSURE GAUGE, 3.5", 0-60 PSIG - FILTER, COLORED, SS CASE, SS INTERNAL	OBERLIN	473-1210	1	
				PLATEN SEALS				
89			592-1007	PLATEN SEAL - UPPER OPF01, EPDM	OBERLIN	592-1007	2	
89			592-1005	PLATEN SEAL - UPPER OPF01, NITRILE	OBERLIN	592-1005	0	
89			592-1009	PLATEN SEAL - UPPER OPF01, VITON	OBERLIN	592-1009	0	
89			592-1011	PLATEN SEAL - UPPER OPF01, SILICONE	OBERLIN	592-1011	0	
				FILTER PUMP CONTROLS				
110			573-1141	MANIFOLD REGULATOR, NON-RELIEVING, 0.25" NPT, PRESSURE GAUGE	NUMATICS	SEE MODULAR PNEUMATIC ASSEMBLY	1	MR14N-02G
112			650-1075	AIR POPPET VALVE, 0.25" NPT, FILTER PUMP CONTROL VALVE	NUMATICS	NF2PAN520N00000MUF	1	
112.1			531-1008	MUFFLER - EXHAUST 0.25"	FESTO	2316 (U-1/4")	1	
114			647-1010	VALVE-NEEDLE	PARKER	NV108P-4	1	
214			640-1088	CHECK VALVE 2" WAFER	TECHNO	CHECK MODEL 1200 - 2"	1	
				REROLLER				
300		0201MTR	474-1044	GEAR MOTOR, 1/13 HP, 1 PHASE, 115VAC, SINGLE PHASE, 60HZ & CAPACITOR	BALDOR	24E140W009G1	1	
300.1			208-1001	PILLOW BLOCK BEARING, 1.00" - MEDIA REROLLER	TORRINGTON FAFNIR	SAS-1.00	2	
300.2			664-1001	MEDIA THREADING DEVICE, 7 FT	J.T.D. ENTERPRISES	MHA-OR	1	
300.3			664-1004	BRACKETS FOR MOUNTING MEDIA THREADING DEVICE	FASTENAL	1723A24	2	
300.4			578-1013	WOOD 2X2 X 23.75" LG. SPENT MEDIA BAR, NOMINAL 1.5X1.5	OBERLIN	578-1013	1	

REV	PN REF #	ES REF #	OFC P/N	DESCRIPTION	MANUFACTURER	PART #	QTY	NOTES/ PO #
	300.5		479-1017	LANYARD TETHER, 10"	MCMaster CARR	90312A720	2	
	300.6		479-1022	RING GRIP PIN, 316SS 1/4" x 2"	MCMaster CARR	95255A272	2	
	310		217-1656	BELT - METALLIC (TEFLON COATED 304SS, SMALL PERF)	FACTORY	FACTORY	1	
				MEDIA				
	315		724-1320	FILTER MEDIA - SOLOFLO (TYVEK), 20" X 250 YDS	FACTORY	724-1320	1	
	315		700-4320	FILTER MEDIA - START-UP ROLL, EG125, 20" X 250YDS	FACTORY	700-4320	1	
	315		722-1320	FILTER MEDIA - 1.5 OZ SMS, 20" X 250 YDS	FACTORY	722-1320	0	
				VALVES				
VA1, VA3			625-1229	1" BALL VLV, SS BODY, 1000 PSI, SS TRIM, FULL PORT, ATO/ATC	BI-TORQ	IS-3PT-10-52-DA	2	
VA2			625-1218	1/2" BALL VLV, SS BODY, 1000 PSI, SS TRIM, FULL PORT, ATO/ATC	BI-TORQ	IS-3PT-05-32-DA	1	
FP			561-1105	AIR DIAPHRAGM PUMP, FLAP CHECK, 316SS, EPDM, 12 GPM @ 35 PSIG	WARREN RUPP	SA1A-D14-SI	1	86657
				MODULAR PNEUMATIC ASSEMBLY (FROM PARTS LISTED ABOVE)				
			656-1258	SIX STATION MODULAR ASSEMBLY MOD14-06 CONSISTING OF:	NUMATICS	MOD14-06 ASSEMBLY	1	86656
30			646-1069	STATION 1, SHUTOFF VALVE, 0.25" NPT	NUMATICS	VS14-02		86656
31			456-1136	STATION 2, PARTICULATE FILTER, 5 MICRON ELEMENT, 0.25" NPT, POLY BOWL	NUMATICS	F14B-02		86656
12			573-1141	STATION 3, MANIFOLD REGULATOR, NON-RELIEVING, 0.25" NPT, PRESSURE GAUGE	NUMATICS	MR14N-02G		86656
110			573-1141	STATION 4, MANIFOLD REGULATOR, NON-RELIEVING, 0.25" NPT, PRESSURE GAUGE	NUMATICS	MR14N-02G		86656
32			456-1125	STATION 5, COALESCING FILTER, 0.3 MICRON ELEMENT, 0.25" NPT, POLY BOWL	NUMATICS	F14D-02		86656
30.1			199-1010	STATION 6, MOUNTING BRACKET	NUMATICS	BRK14AB		86656



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See [Section 2.1.1.](#)

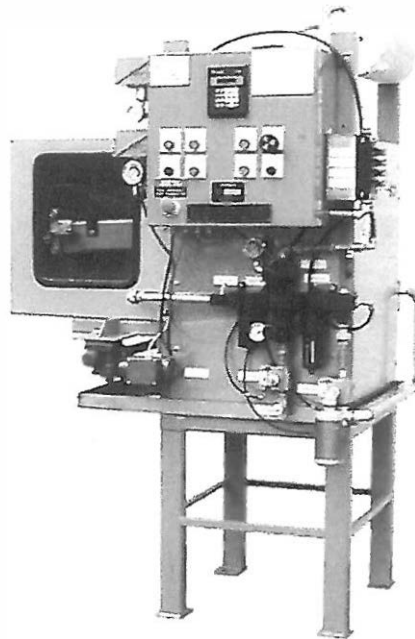
Warning!

Proper training is the best protection against accidents. Read, understand, and follow the instructions in this manual before installing, operating, cleaning, or servicing the filter.

Proprietary Information:

This manual contains proprietary information on the Oberlin Pressure Filter. Use of this information for other than the support of an Oberlin Pressure Filter is prohibited.

1.0 INTRODUCTION



The Oberlin Pressure Filter is an automatic filter system suitable for a wide variety of applications such as: coolant filtration (grinding or machining using straight oil, water soluble, or synthetic coolants), electroplating, heavy metals recovery, wastewater treatment, food processing, and medical manufacturing.

The system can remove particles as small as 0.5 microns from the dirty process liquid. The solids discharge in an easy to handle dry cake.

All Oberlin filter systems are custom engineered to suit specific customer requirements. The filter can be supplied as a stand-alone unit or as a complete system integrated with storage tanks, pumping equipment, chillers, different control options, and a number of other features to suit the particular application. Oberlin filters are available in sizes ranging from 1.0 sq. ft. to 50.0 sq. ft. of filtering area.

Operation of the system is completely automatic. Oberlin units are capable of running around the clock. They are ruggedly constructed and easy to maintain, with Oberlin Customer Support available on call 24 hours a day, 7 days a week.

The MLP-1 model filter is a factory assembled, package system requiring only simple connections to services and process equipment. The MLP-1 has approximately one square foot of filtering area.

1.1 DESCRIPTION

1.1.1 Main Components of the Filter and Filtration System

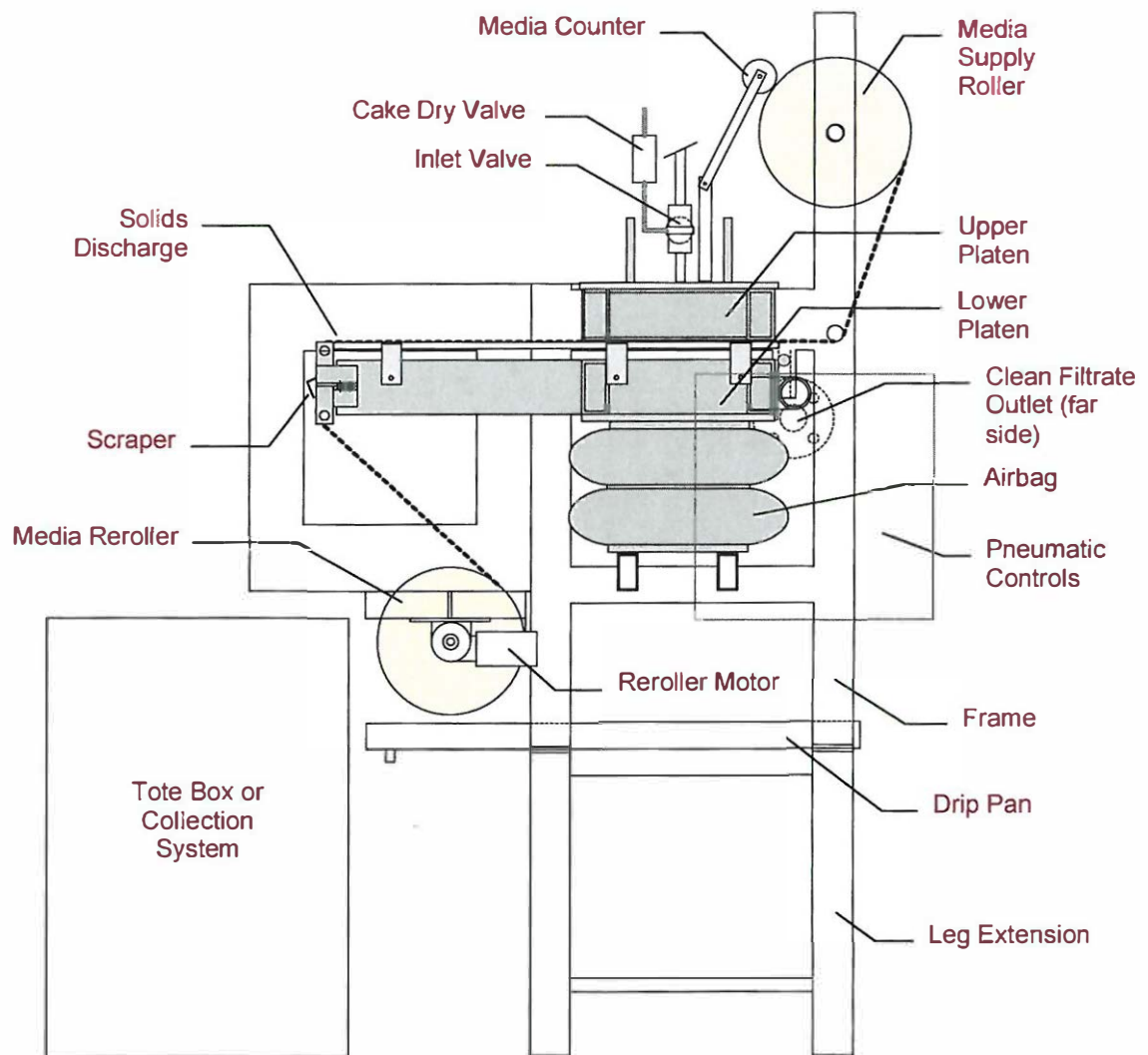


Figure 1-1 Main Components of the Filter

The main components of the filter include:

- The **frame** and **leg extension**, which support all components of the filter. A drip pan is mounted between the frame and leg extension.



- The filter media system including the **media supply roller, scraper, media counter, media reroller, and reroller motor.**
- The **upper platen**, where the filtering action takes place.
- The **lower platen**, where the clean filtrate is collected.
- The **airbag**, which applies pressure to seal the upper and lower platens against the filter media. The airbag also raises and lowers the lower platen.
- The **cake dry valve**, which controls the flow of compressed air for cake drying. The **inlet valve** which regulates the flow of dirty process liquid into the upper platen.

1.1.2 Control Systems

Pneumatic and electrical controls, panels, solenoids, and pressure switches are shown in the figure below for a typical unit. (Information on the function of the controls is found in [Section 3.3.1.](#))

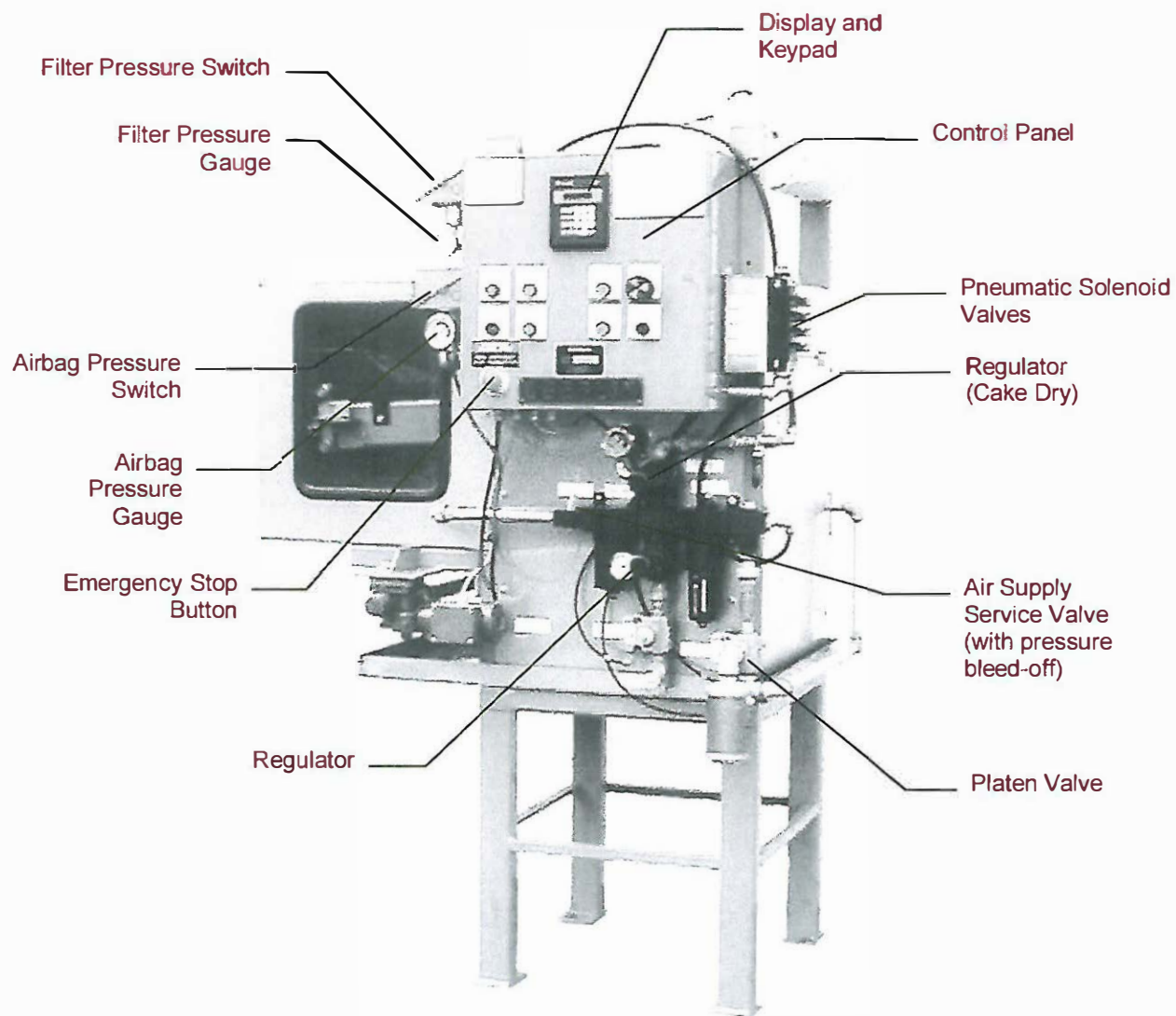


Figure 1-2 Controls for a Typical Unit

(Exact locations may vary.)

1.2 PRINCIPLE OF OPERATION

The basic filtering process for all Oberlin filters consists of three cycles:

- The Filtering Cycle,
- The Drying Cycle,
- The Discharge Cycle.

Operation is automatically controlled by a programmable logic controller (PLC). Once the system is set up and adjusted for a particular application, no operator attention is required during normal operation.

1.2.1 The Filtering Cycle

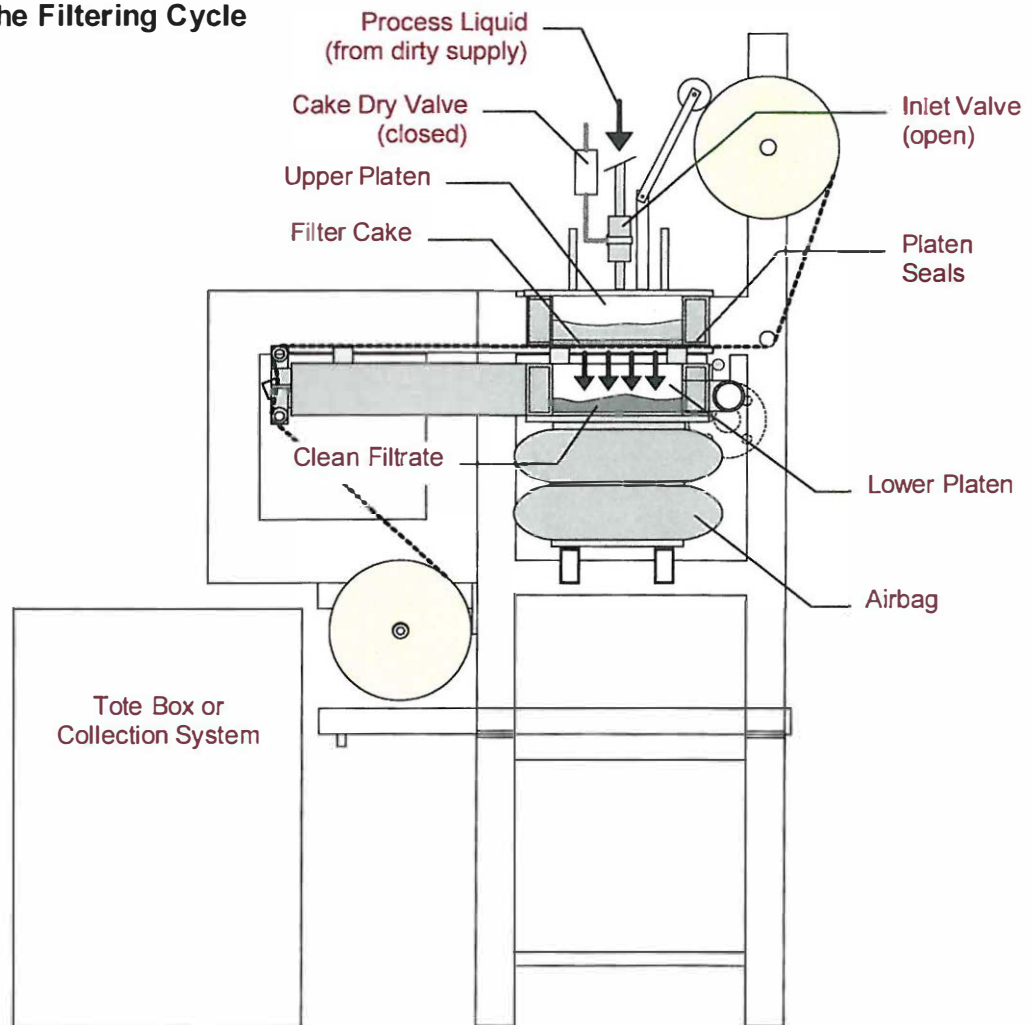


Figure 1-3 Filtering Cycle (active piping shown shaded)



The pneumatic **airbag** lifts and holds the **lower platen** against the **upper platen**. **Platen seals** on the perimeter of the platens create a liquid-tight seal completely around the **filter media**. Dirty process liquid is pumped into the upper platen. Pump pressure forces the liquid through the filter media. Solid particles begin to collect on the upper surface of the filter media, and gradually build up as a filter cake. The cake itself enhances filtering action.

The filtered liquid is collected in the lower platen and drains out.

When the filter pressure reaches 30-35 psi, the Filtering Cycle is complete and the Drying Cycle begins.

1.2.2 The Drying Cycle

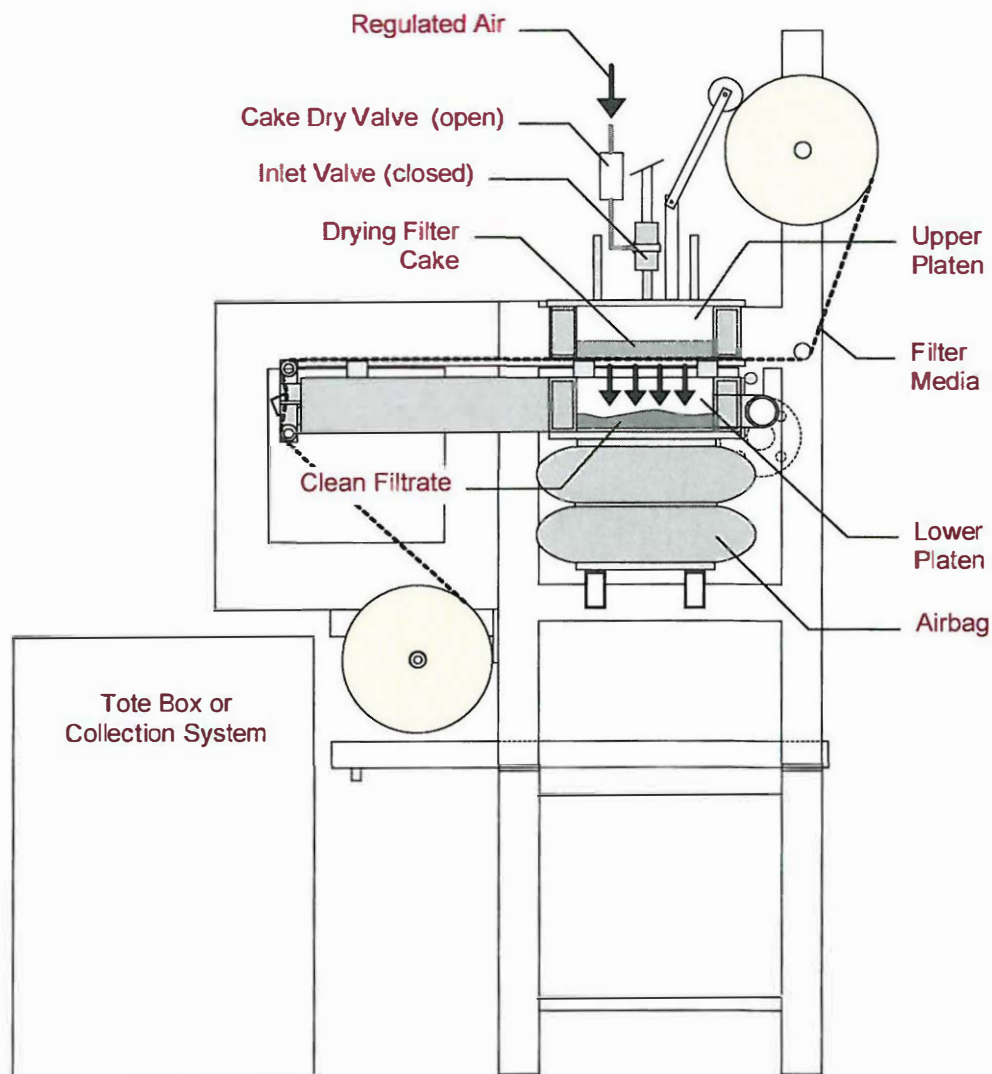


Figure 1-4 Drying Cycle (active piping shown shaded)

The **inlet valve** closes, shutting off the supply of dirty liquid to the filter. Regulated air is fed into the **upper platen**. This forces the liquid through the **filter cake** and **filter media**. After the cake is dried, determined by back pressure and time elapsed, the Discharge Cycle begins.

During the Drying Cycle, compressed air used for drying discharges from the lower platen along with filtered liquid.

1.2.3 The Discharge Cycle

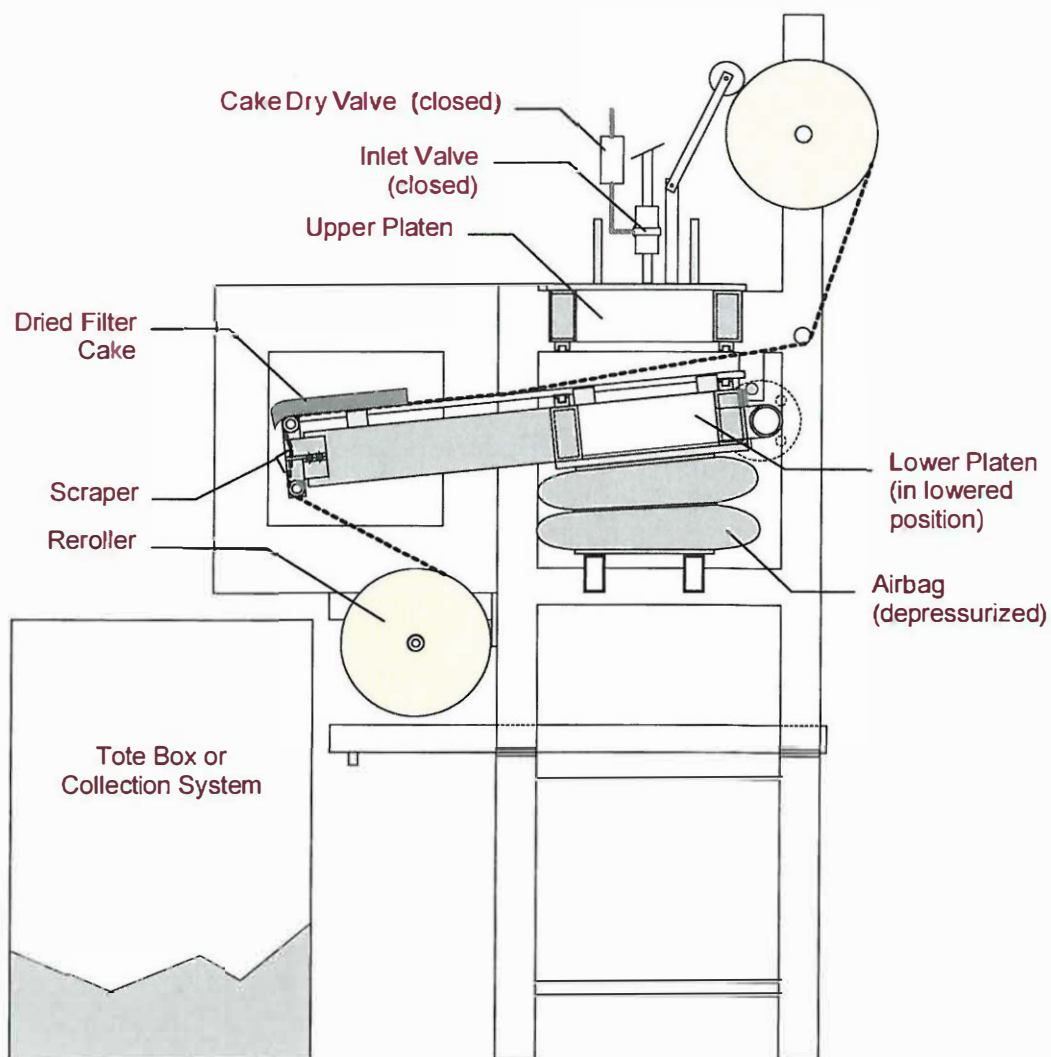


Figure 1-5 Discharge Cycle

Pressure is released from the **airbag** which allows the **lower platen** to pivot downwards. The **dried filter cake** is automatically discharged by the motor-driven **reroller** pulling the disposable **filter media**; a clean length of media is pulled between the platens. A scraper prevents excess filter cake from clinging to the media. After cake is discharged, the airbag is pressurized. The **lower platen** is pushed upward against the **upper platen** by the airbag, and a new Filtering Cycle automatically begins.



1.2.6 Customization of the Process

The cycle can be customized to suit a wide variety of filtering applications by changing a number of variables, such as:

- Liquid feed rate
- Air pressures.
- Cycle times.
- Different options for filter media.



1.3 PURPOSE OF THIS MANUAL

The purpose of this manual is to provide information on the **operation**, **maintenance**, and **installation** of the typical Oberlin filter system.

It is not intended to provide instruction on your particular application nor on specific safety issues applicable to your industry.

Information on auxiliary equipment, such as pumps, chillers, etc. is contained in separate documents provided with your system.

1.4 LIMITATIONS

The Oberlin Filter Company cannot be an expert in all possible flammable, toxic, or other hazardous characteristics of the substances that can be processed by this equipment. It is the responsibility of the customer and/or user to perform an appropriate hazard analysis for the entire process including upset conditions and processing errors.

Do not use the filter in an explosive environment unless the system is specifically designed for the application. Standard controls and other electrical equipment on the typical unit **are not** suitable for use in explosive environments.

Refer to [Section 2.1.4](#) for additional information.

2.0 SAFETY

2.1 GENERAL



Warning!

Failure to install, operate, clean, and service this machine in a safe manner can result in death, serious personal injury, and/or property damage.

The owner/operator is responsible to ensure that:

- The filter and its components will be installed, operated, and serviced only by qualified, trained personnel. The filter is **not intended** for use by untrained persons.
- The filter will be installed in accordance with OSHA, the National Electrical Code, and all other applicable national, state, and local codes, and in accordance with site designs by qualified facility engineers, including mechanical, structural, electrical, and any other applicable disciplines.
- The employer (owner or operating company) has installed separate lockable disconnects (lockout/tagout devices) if required by OSHA and/or the National Electrical Code and has in place appropriate lockout/tagout procedures, as is required of the employer under OSHA.
- The employer (owner or operating company) has implemented a comprehensive general safety program, and that anyone working on or around the filter has been trained in all procedures applicable to the owner's process, and to equipment of this type, including lockout/tagout procedures.

2.1.1 Read and Understand this Manual



Warning!

Proper training is the best protection against accidents.

Before attempting to install, operate, clean or service this equipment, installers, machine operators, and service personnel must read and understand this instruction manual. All personnel must be familiar the basic construction of the filter, hazards associated with the equipment, the use and location of the controls, and the functioning and adjustment of the different mechanisms. They must confirm that the required maintenance schedule has been followed.

Most importantly, all personnel must completely understand and follow all safety procedures required by the owner's safety program, as well as any specific safety precautions called for in this manual or required by law.

If you do not understand any of these instructions, **do not proceed** until and unless you have obtained clarification which answers your questions.

2.1.2 Signal Words - Safety Message Definitions

Three "Signal Words" may be used in this manual to indicate different levels of hazard:

DANGER! Indicates an extremely hazardous situation which, if not avoided, **will** result in death or serious injury. This Signal Word is limited to the most extreme situations of equipment operation and maintenance.

WARNING! Indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

CAUTION! Indicates a potentially hazardous situation which, if not avoided, **may** result in minor or moderate injury. It may also be used to alert against unsafe operation or maintenance practices or property damage.

2.1.3 Warning Labels

Oberlin has provided labels on the machine in support the operating company's safety program. Although we use labels of very high quality, they may eventually become dislodged from the machine or damaged to the point that effectiveness is diminished. For the protection of your personnel, Oberlin has replacement labels and decals available; contact Oberlin Customer Support Department at **262-547-4900**.

2.1.4 Hazardous Operating Conditions



Warning!

Potential burn, explosion, toxic, chemical, environmental and other hazards!

Do not process flammable, explosive, toxic, or otherwise hazardous materials without first performing an appropriate hazard analysis.

Oberlin cannot be an expert in the chemical and biological properties of the large number of substances that could be processed by this equipment. As sold, this machine is not designed to safely process hazardous materials unless additional precautions are taken.

Before processing any material that is or can react to become flammable, explosive, toxic, or otherwise hazardous, the owner/operator must perform a thorough hazard analysis and risk assessment of the entire process including contingency plans for dealing with processing errors and upset conditions.

Do not use the filter in an explosive environment unless the unit and controls are specifically designed for the application. Standard controls and other electrical equipment on the unit **are not** suitable for use in explosive environments.

2.2 SAFETY FEATURES OF THE EQUIPMENT

The safety features of this equipment include:

- Enclosure of the principal moving parts.
- Access door fasteners (with tool required for removal.)
- Safety labels on the machine.
- "Touch safe" electrical control cabinet.
- "Emergency Stop" button.
- Pneumatic disconnect with provision to bleed off pressure.

2.3 LOCKOUT/TAGOUT PROCEDURES



Danger!

Unexpected start-up of the filter, electric shock, or sudden release of stored energy can result in death, serious injury, and/or property damage.

It is the responsibility of the employer (owner or operating company) to establish comprehensive and effective lockout/tagout procedures appropriate to the specific process and installation. The following basic lockout/tagout instructions must be supplemented by procedures based on **your specific process and installation**. (Refer also to Section 2.4 below regarding all procedures requiring work between the platens.)

- Unplug the power cord (or disconnect electrical service if hard-wired) before cleaning, servicing, or adjusting any mechanical or electrical component or opening the control panel.
(The "**E-Stop**" button on the control panel **does not** de-energize all components inside the panel.)
- Lockout/tagout the filter and the compressed air supply and **bleed off pressure** using the air service supply valve before cleaning, servicing, or adjusting the filter or any pneumatic component. (When control power is shut off, air pressure is automatically released from the airbag but not from all parts of the system.)
- Perform lockout/tagout procedures as above before removing any guard or any part of the filter enclosure.
- Do not under any circumstances attempt to clean, service, or adjust the filter while it is in operation unless specifically instructed otherwise by this manual.
- If any connected equipment could unexpectedly start and/or release energy to the work area it must likewise be locked out/tagged out before working on the filter.
- Lockout/tagout procedures must include safe procedures for starting the equipment. Do not start the filter unless all guards and enclosure panels are in place and access doors are closed.

2.4 PRECAUTIONS FOR WORKING BETWEEN THE PLATENS



Danger!

Unexpected movement of the platen can result in death, serious injury, and/or property damage.

It is necessary to work between the platens to accomplish a number of procedures including loading filter media and servicing components inside the filter. In such cases the system must be locked out/tagged out and pressure bled off as described in Section 2.3 above. Turning the control power off using the E-Stop **is not** sufficient protection for working between the platens.



2.5 SAFETY PRECAUTIONS

2.5.1 Precautions During Installation

1. Lifting

Warning!

Crush hazards! The filter and its subassemblies are heavy and unbalanced. The unit must be lifted only by properly qualified personnel familiar with rigging techniques using equipment rated for the load. Do not allow personnel beneath the lifted load.

The weight of your unit is shown on the Bill of Lading.

Refer to Section 7.2 for specific instructions on lifting the filter.

Use spreader bars and multiple slings as necessary to protect all components.

Do not lift under the platen or the discharge and/or feed arms.

The filter and other components are top-heavy and may tip suddenly. The center of gravity of an assembled system is not always apparent. Keep plumb and level while lifting. Rig restraints as necessary to prevent tipping. Test balance before lifting higher than 1 ft.

2. Fastening in Place

Warning!

Crush hazards! The filter and other components are top-heavy and may tip suddenly. Make sure the filter is securely fastened to the supporting surface.

3. Electric Wiring

Warning!

Hazardous voltages! Danger of electric shock! All wiring must be in accordance with the National Electric Code and all applicable local, state, provincial, and national codes.

Provide dedicated hard-wired grounding. Do not rely on conduit for ground.

Typical connection to the electric service is by a plug-in power cord. If for any reason the unit is hard-wired, a lockable disconnect **must** be provided.

If explosive conditions exist, all motors and electrical devices must be explosion proof.

Make sure that the current characteristics correspond to those shown on the nameplate on the filter.



4. Piping Installation

Warning!

Tripping and burn hazards! Run piping high out of reach where possible. Insulate piping carrying hot fluids below a height of 7 ft (2.3m.).

5. Lockout/Tagout

Danger!

It may be necessary to temporarily energize certain components for testing, priming pumps, etc. during installation. Lockout/tagout all sources of energy before continuing installation procedures.

2.5.2 Precautions During Operation

10. Guards, Covers, etc.

Warning!

Crush hazards! Pinch points! Do not operate the filter unless all guards, covers, access doors, and enclosure panels are in place or closed as applicable.

11. Hazardous Operating Conditions

Warning!

Burn, explosion, toxic, chemical, environmental and other hazards! Do not operate the filter under hazardous conditions unless a hazard analysis has been performed. Refer to Section 2.1.4 above.

12. Eye Hazards

Warning!

Pressure, toxic, contact, and other eye hazards! Wear approved eye protection while operating the filter.

13. Working Between the Platens (or Inside the Filter)

Danger!

Crush hazards! Pinch points! Unexpected movement of the platen can result in death, serious injury, and/or property damage. Unplug the power cord (or disconnect electrical service if hard-wired). Lockout/tagout the air service and bleed off pressure. Refer to Section 2.3 for additional information.

2.5.3 Precautions During Service

20. Lockout/Tagout

Danger!

Unexpected start-up of the filter, electric shock, or sudden release of stored energy can result in death, serious injury, and/or property damage. Follow the approved lockout/tagout procedures for all sources of energy before cleaning, servicing, or adjusting any mechanical or electrical component. Likewise, lockout/tagout all connected equipment which could unexpectedly start and/or release energy to the work area.

(The "**E-Stop**" button on the control panel **does not** de-energize all components inside the panel, as noted on the enclosure door.)

Refer to Section 2.3 for additional information.

21. Working Between the Platens (or Inside the Filter)

Danger!

Crush hazards! Pinch points! Unexpected movement of the platen can result in death, serious injury, and/or property damage. Lockout/tagout the system before working between the platens or inside the filter.

22. Pneumatic Piping and Devices

Warning!

Pressure hazards! Do not service or adjust pneumatic components while under pressure. Lockout/tagout the filter and the air service and bleed pressure from the system using the air service supply valve. (When control power is shut off, air pressure is automatically released from the airbag but not from all parts of the system.)

3.0 OPERATION

3.1 BEFORE OPERATING THE FILTER

Before operating the filter make sure that all operators have read and understood this manual in its entirety including the separate document Sequence of Operation - Specific, all controls have been properly set as described in Section 4, and on new installations, an initial start-up procedure has been performed as described in Section 7.5. Load disposable media as described in Section 3.2 (or Section 7.5.2 if no media remains in the machine).



See Section 2.3,
and 2.4.

See Section 2.5,
Item 13.

Danger!

Follow approved lockout/tagout procedures before cleaning, servicing, adjusting, or restarting the system.

Lockout/tagout whenever it is necessary to reach between the platens.

3.2 LOADING AND UNLOADING FILTER MEDIA

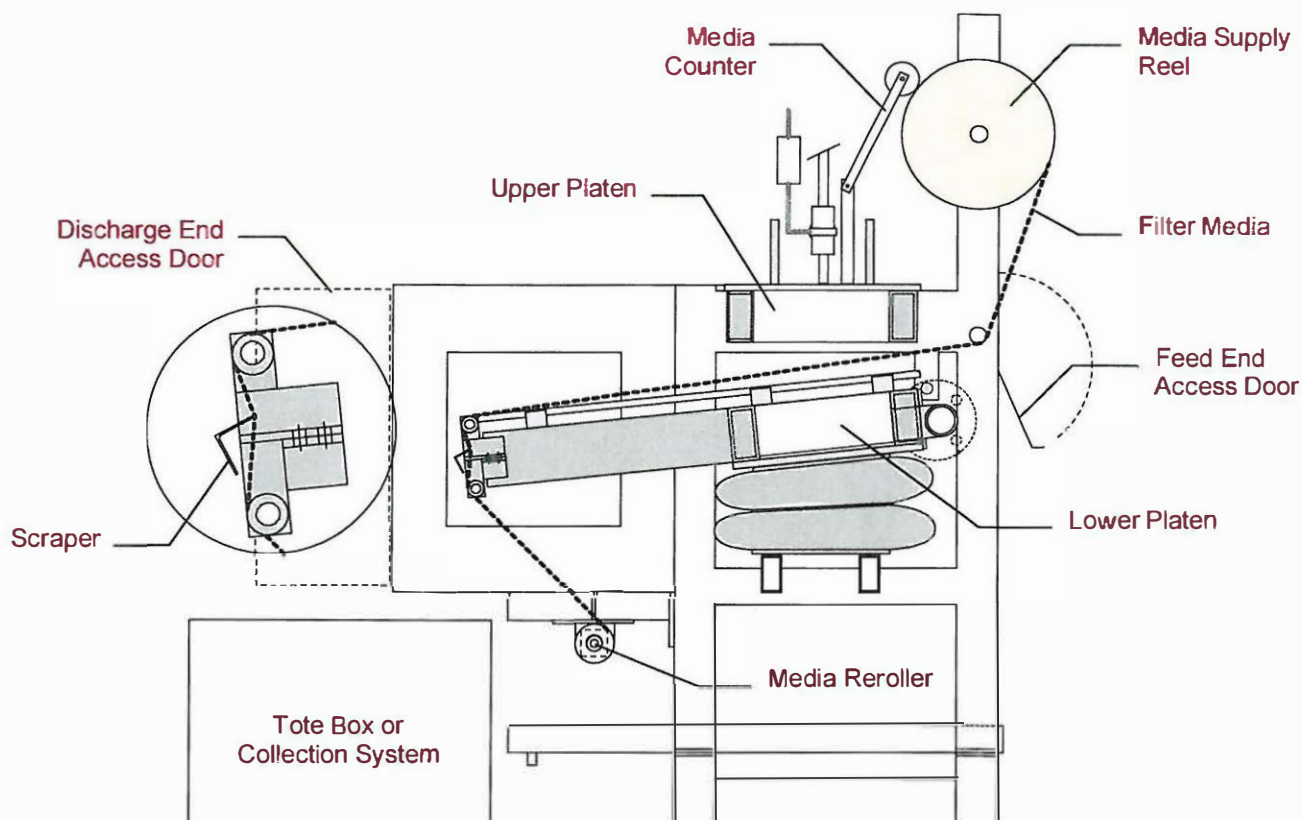


Figure 3-1 Loading the Filter Media

Follow the steps below to load and unload filter media if the end of a roll of media remains in the machine. (If the machine is entirely empty of media you will have to reach between the platens; **lockout/tagout**, then follow the instructions for loading in Section 7.5.2.)



See Section 2.3.
and 2.4.

See Section 2.5,
Item 13.

Danger!

Lockout/tagout whenever it is necessary to reach between the platens.

1. Push the **"Filter Auto Stop"** button on the control panel. Wait for the filter to complete the Discharge Cycle and go into "Standby" mode with the platen in the open (lowered) position.

2. Press the **"Media Jog"** pushbutton. Operate the **media reroller** until all the **filter media** has been wound off the **supply reel**, but **do not** pull the used media all the way through the filter. (This allows the new media to be attached to the old, making it unnecessary to reach between the platens.)
3. Place the **media counter** in the retracted position away from the reel.
4. Remove the empty supply reel and discard the core.
5. Install a clean roll of filter media onto the supply reel and set the reel in the supporting bracket. The media must unwind in the direction shown.
6. Attach the leading edge of the clean media to the tail of the used media, using duct tape and/or ordinary paper staples.
7. Press the **"Media Jog"** pushbutton and advance the clean media through the machine until it nearly reaches the reroller. Cut the clean media away from the tail of the used.

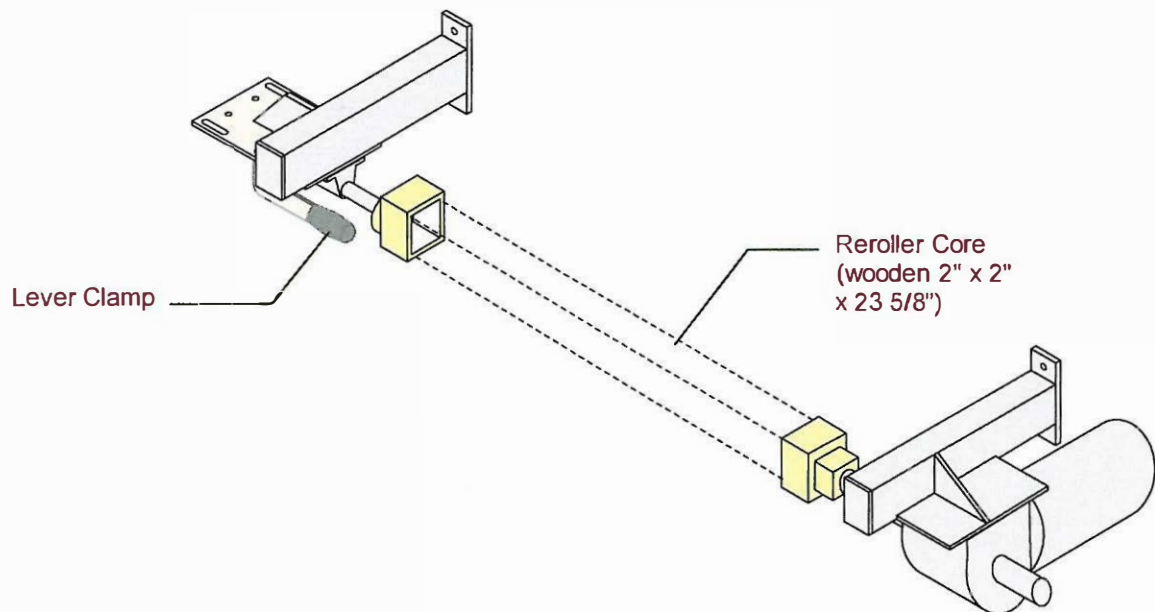


Figure 3-2 Reroller Assembly

8. Support the used media roll and release the **lever clamp**, allowing the used media to drop out. Remove the used media and discard. Place a new **reroller core** in the brackets and close the lever clamp. The reroller core is a standard 2" x 2", 23 5/8" long.
9. Wind about 1 foot (0.3 m) of clean media around the reroller core. Press the **"Media Jog"** pushbutton until the media is caught by the reroller cores and is pulled through the filter. (The media may also be stapled to the core.) Make



sure the media is centered, flat under the platen, and is being pulled in a straight path through the machine. Close the access doors.

10. Press the **"Media Jog"** pushbutton until approximately 20" (0.5 m) of new media is wound on the reroller.
11. Position the media counter so that it is resting on the supply roll.
12. Place a tote box or other receiver under the scraper bar at the discharge.
13. After the machine is completely reassembled, all access covers secured, and after following the approved lockout/tagout procedures to be certain that it is safe to start the machine, normal operation of the system may be resumed.

Restart the filter as described in the separate document Sequence of Operation - Specific.

14. Properly dispose of the used filter media.

3.3 SEQUENCE OF OPERATION - GENERAL

Each filter has a unique sequence of operation, based on the specific needs of the application. The sequence is described in detail in the separate document Sequence of Operation - Specific provided with this manual.

An **overview** of control functions for typical units is described below.

3.3.1 Overview of System Control

The system is controlled by a PLC (programmable logic controller).

Once the system is energized:

1. A clean section of filter media is pulled under the upper platen. The dirty liquid supply pump is started.
2. The airbag is pressurized, raising the lower platen.

Filtering Cycle:

3. When the airbag pressure reaches the "OK to Feed" setpoint, the inlet valve opens, and the process liquid flows into the platen. As the filter media begins to plug with solid particles, filter pressure rises.
4. Flow continues until filter pressure reaches the "Stop Feed/Start Drying" setpoint or after timed interval, ending the Filtering Cycle.

Drying Cycle:

5. After a very short time delay the Drying Cycle starts. Regulated, pressurized air is fed into the platen, forcing liquid through the filter cake, drying the cake.
6. As the filter cake dries, the resistance to air flow drops. When the filter pressure drops to the "Start Final Drying" setpoint a timed final drying period begins. After the timed interval the Drying Cycle ends.

Discharge Cycle:

8. The airbag is depressurized and the lower platen drops.
9. The reroller pulls a clean section of filter media under the platen as dried filter cake drops into the collection box. (The advance of the filter media is measured by a counter/proximity switch.)

3.4 NORMAL OPERATION



See Section 2.3.
and 2.4.

See Section 2.5,
Item 13.

Danger!

Follow approved lockout/tagout procedures before cleaning, servicing, adjusting, or restarting the system.

Lockout/tagout whenever it is necessary to reach between the platens.

Starting:

1. Check that sufficient media remains on the supply roller. Load new media if necessary as described in Section 3.2.
2. Start the filter according to the instructions in separate document Sequence of Operation - Specific.

During Operation:

1. Check the filter pressure gauge. If the gauge fluctuates during the Filtering Cycle, the dirty process liquid supply pump may be cavitating due to low levels in the supply system.
2. Monitor the usage of disposable filter media and load new media if necessary as described in Section 3.2.



4.0 SETTING OF CONTROLS

A number of switches, regulators, counters, and other controls must be set and adjusted for proper operation of the filter and to suit each particular application. (Additional fine-tuning based on operating experience may also be required to optimize the performance.)

4.0.1 Documentation of Settings

All settings (including any deviations from recommended values based on experience) should be carefully documented. As further adjustment are made this information should be updated; the record of previous settings should also be retained.

This information will be very helpful in obtaining the best performance for the system during the initial start-up period or thereafter. It can also be used to troubleshoot problems and/or restore optimal values after maintenance procedures.

4.1 PRESSURE SWITCHES

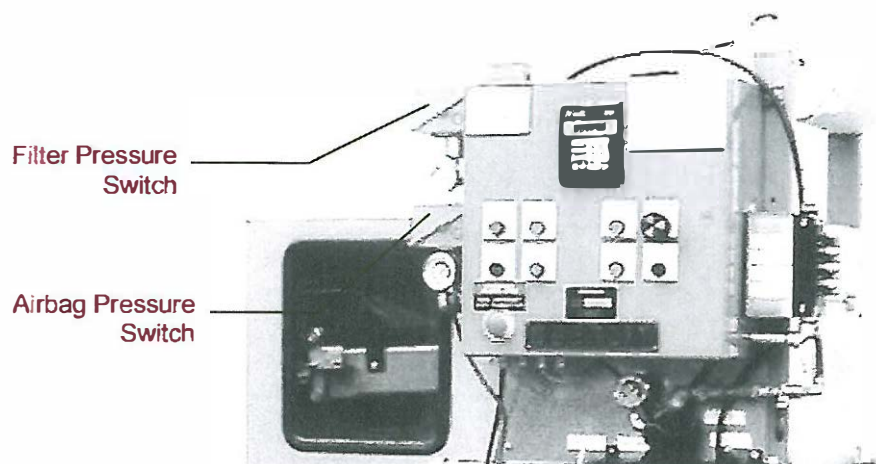


Figure 4-1 Pressure Switches

(Pressure switches may either be mechanical devices with the setting made on the switch, or analog transmitters with settings made in the PLC.)

(Setpoints below are based on 80 psi (5.5 Bar) plant air pressure. If your air pressure differs from this value, see Appendix F.)

Switch	Function and Normal Setting
1. Airbag Inflated (OK to run)	Proves adequate air pressure to run filtering and Drying Cycles. Normal setting: 80 psi (5.5 Bar)
2. Filter Pressure - Stop Feed, Start Dry	Senses pressure in upper platen, stops the Filtering Cycle when the pressure reaches the set value. When pressure is sufficient starts the Drying Cycle. Normal setting: 30 psi (2.1 Bar)
3. Filter Pressure - Start Final Dry	Senses pressure in the upper platen. As the cake nears a dry condition all the fluids have been forced through the cake and the pressure will drop. When the pressure drops to the set value this switch starts the Drying Cycle timer; refer to Section 4.2 below. (The timer controls the end of the Drying Cycle so that cake is dry when discharged.) Normal setting: 20 psi (1.4 Bar), or 5 psi (0.3 Bar) below the setting of the cake drying regulator; refer to Section 4.3.

4.2 TIMERS/COUNTERS

(Timers/counters are part of the PLC logic with settings made in the display/keypad.)

Timer/Counter	Function and Normal Setting
1. Initial Dry Timer	Minimum pre-break through timer. Drives fluid through cake. Normal setting: 30 seconds.
2. Final Drying	Times the end of the Drying Cycle and determines the dryness of the filter cake. Starts when the pressure in the platen drops to a set value. Normal setting: 30 seconds
3. Long Feed Timer	Timer of feed cycle. Normal setting: 240 minutes
4. Media Counter (See Figure 4-3.)	Measures length of media drawn into filter at the beginning of each Filtering Cycle. Reroller motor stops when correct value is reached. Normal setting: count 6.
5. Discharge Alarm Delay Timer	Sets time allowable for media counter to reach set value. Excessive time indicates media is jammed or is slipping or torn. Normal setting: 30 seconds.
6. Long Dry Timer	Maximum time to complete Drying Cycle before alarm occurs. Normal setting: 300 seconds.

4.3 REGULATORS

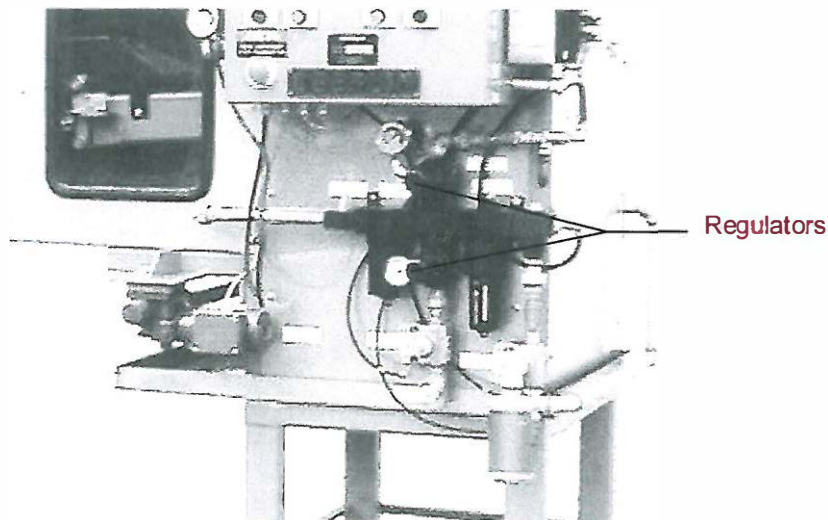


Figure 4-2 Regulators

(Regulators are mechanical devices with setting made at the regulator.)

(Setpoints below are based on 80 psi (5.5 Bar) plant air pressure. If your air pressure differs from this value, see Appendix F.)

Regulator	Function and Normal Setting
1. Cake Drying (filter pressure)	Regulates air pressure in the platen during the Drying Cycle. This is a non-relieving type regulator; simply backing off will not show pressure reduction until downstream pressure is relieved. Either cycle the filter manually or momentarily force open the cake drying valve using the manual override on the solenoid rack. Normal setting: 30 psi (2.1 Bar) to 35 psi (2.4 Bar) max.
2. Airbag (standard)	Regulates the pressure in the airbag. Normal setting: 80-100 psi (5.6-6.9 Bar)

4.4 LIMIT / PROXIMITY / INTERLOCK SWITCHES

The control system prevents the filter from operating (and will halt a cycle in progress) unless certain limit/proximity/interlock switches are satisfied.

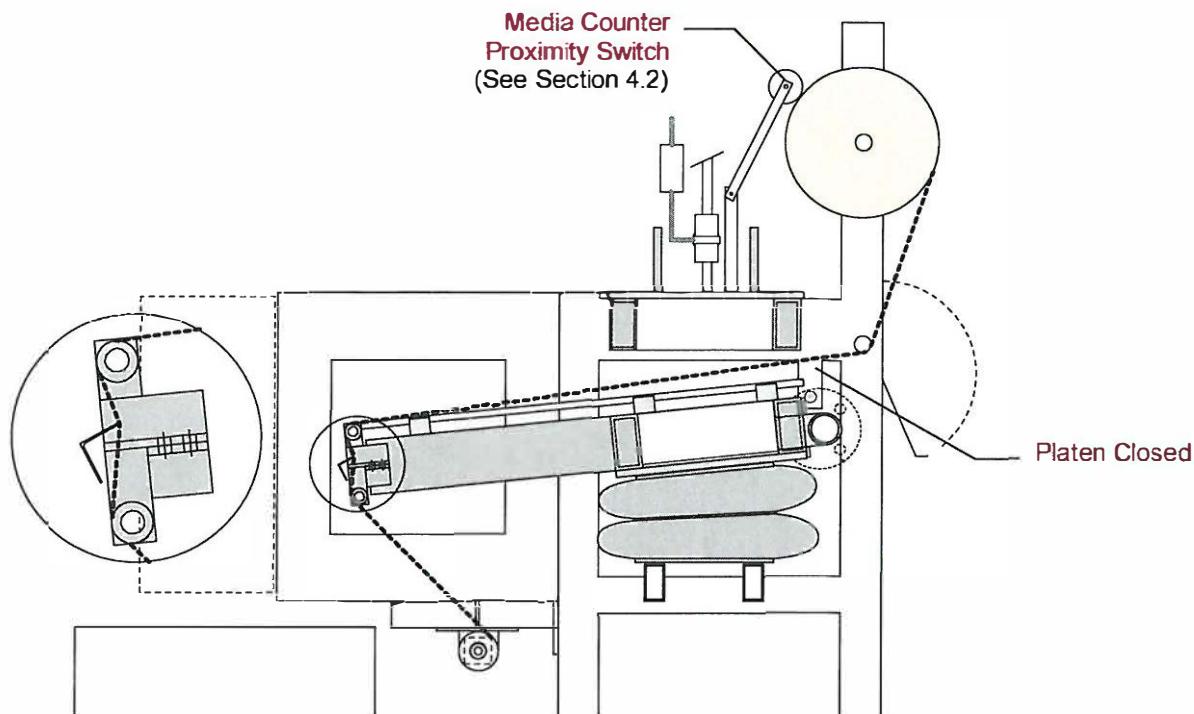


Figure 4-3 Typical Proximity Switches

(Limit/proximity switches are mechanical devices with any adjustments made at the switch. Adjustment consists of correctly positioning the switch.)

1. Platen Closed	Proximity switch, senses fully closed position of the platen. The switch must be satisfied to allow any of the three filter cycles to continue.
------------------	---

5.0 PROBLEM SOLVING



See Section 2.3,
and 2.4.

See Section 2.5,
Item 20, 21.

Danger!

Follow approved lockout/tagout procedures before cleaning, servicing, adjusting, or restarting the system.

Lockout/tagout whenever it is necessary to reach between the platens.

5.1 ELECTRICAL AND MECHANICAL PROBLEMS

Symptom	Cause	Remedy
5.1.1 System entirely inoperative.	Power cord not plugged in.	Plug in cord (or energize electric service if hard-wired.)
	Control power turned off.	Press "Control Power On" pushbutton.
	E-stop engaged.	Twist to release.
5.1.2 Filtering Cycle will not start.	Incorrectly adjusted or malfunctioning platen proximity switch.	Adjust or replace. Platen must be fully closed for cycle to proceed.
	Plant air off.	Turn air supply on.
	Airbag regulator set too low.	Adjust regulator in accordance with requirements of the Pneumatic Schematic.
	"Airbag Inflated - Start Feed" pressure switch set too high.	Adjust setpoint in accordance with requirements of Section 4.1.
5.1.3 Process liquid supply pump does not run. (electric pumps)	Defective inlet valve or solenoid.	Check for proper operation or defective components (blown fuse on solenoid, leaking pneumatic line, dirt in spool, etc.)
	No power to pump.	- Check power circuit. - Check starter, fuses, breaker, etc.
	Other pump malfunction.	Service in accordance with manufacturer's instructions.
5.1.4 Process liquid supply pump does not run. (air operated pumps on units so equipped)	Insufficient air pressure to pump.	- Check air supply line for leaks, blockage. - Make sure pump throttle needle valve on air supply is open. - Check pilot regulator for proper setting.
	Other pump malfunction.	Service in accordance with manufacturer's instructions.

Symptom	Cause	Remedy
5.1.5 Pump running but no liquid delivered.	Air leak in pump suction line, or line is plugged.	- Check line for leaks and repair. - Check line for blockage and remove.
	Centrifugal pump not primed.	Prime pump.
	Coupling between pump and motor loose or damaged. (centrifugal pumps)	Repair coupling.
	Fluid level in supply tank too low. (centrifugal pumps)	Check fluid level.
5.1.6 "Filter Pressure" gauges not reading properly.	Line to gauge broken or plugged.	- Check line for leaks and repair. - Check line for blockage and remove.
	Dirt clogging gauge inlet.	Clean inlet.
5.1.7 Pressure switches not activating at proper setpoints.	Line to switch broken or plugged.	- Check line for leaks and repair. - Check line for blockage and remove.
	Dirt clogging switch bellows inlet.	Clean inlet.
	Faulty wiring or faulty switch.	- Check wiring for faults or breaks and repair. - Check switch for proper operation
5.1.8 Leakage at upper or lower platen seals.	Cake dry pressure regulator set too high. (If leakage occurs at the beginning of the Drying Cycle, this is almost always the cause.)	Lower pressure regulator setting. Maximum setting 35 psi (2.4 Bar)
	Filter pressure too high with respect to airbag pressure.	Adjust settings on pressure switches. Refer to Section 4.1 for proper settings.
	Airbag pressure too low.	Adjust settings on pressure switches and/or regulators. Refer to Section 4.1 for proper settings.
	Airbag leaks.	- Check airbag for damage and replace if necessary. - Check retainer ring for tightness.
	Normal break-in of new platen seals or after prolonged downtime (over one week).	Seals require break-in period.
	Defective/worn platen seals.	Inspect and replace if necessary.



Symptom	Cause	Remedy
	"Filter Pressure Start Final Dry" switch setpoint not reached.	• Check for dirt in sensor line. • Reduce setpoint to correct value. (Refer to Section 4.1.) • Check for defective switch, loose or faulty wiring, etc. • Check for media blinding.
5.1.13 Media reroller will not function.	Motor starter not energizing.	• Check for blown fuse, faulty wiring, etc. • Check if overloads are tripped.
	Slipping clutch.	• Adjust to specifications.
	Defective motor.	• Check for jams, burn-out, etc.
	Defective wiring to motor.	• Check for breaks, loose connections, etc.

5.2 FILTRATION PERFORMANCE PROBLEMS

Symptom	Cause	Remedy
5.2.1 Reduced flow through filter.	Filter inlet valve not fully opened or clogged.	- Check actuator for proper operation or defective components (stripped coupling, pinched tubing, etc.) - Clean valve.
	Defective supply pump.	Service in accordance with manufacturer's instructions.
	Clogged supply piping.	Clean piping.
	Clogged perforated metal screen beneath media. (Pressure will build up rapidly at start of filtration cycle.)	Clean the screen as described in Section 6.4.3.
	Change in characteristics of process liquid: smaller particles, more solids, etc.	Contact Oberlin Customer Service for assistance.
	Clogged filter outlet or lower platen.	Clean outlet piping or lower platen.
5.2.2 Filtrate quality poor - too many suspended solids.	Hole, rip in media.	Check for defective media.
	Filter media too coarse.	Use different media - consult Oberlin Customer Support.
	Misalignment of media between platens.	Make sure media is feeding correctly.
5.2.3 Excessively long Drying Cycle.	Filter blinding - misapplied media.	Load media suitable for the application.
	Filter media blinding - pollution in coolant.	Contact Oberlin Customer Support for assistance.
5.2.4 Filter cake too wet.	"Final Drying" timer set too short.	Adjust to correct setting. (Refer to Section 4.2.)
	Hole in filter media or filter cake - air follows path of least resistance.	Replace media. Determine cause of physical damage and correct.
	Insufficient air from regulator.	- Check and adjust regulator. (Refer to Section 4.3.) - Check control valve - dirt in spool, pinched or broken signal tube, bad O-ring, etc. - Check solenoid - faulty wiring, air supply turned off or leaking, defective valve, etc. - Make sure manual valve in supply piping is open. - Check cake dry inlet valve for proper operation.



Symptom	Cause	Remedy
5.2.4 Filter cake wet in some areas only.	Partial blockage of air drying supply line.	• Check for closed manual valve, plugged line, etc.
	Filter not level.	• Check level and correct if necessary.
	Hole in filter media. (Air passes through without drying.)	• Replace media. Determine cause of physical damage and correct.
	Incorrect media type, if trailing edge is wet.	• Replace media with correct type. Contact Oberlin Customer Service for assistance.
5.2.6 Filter cake too thin.	Too little spacing between cycles if trailing edge is wet.	• Increase setting of discharge counter to increase spacing.
	Plugged suction line to filter feed pump.	• Clean piping.
	Media "blinding" by small dirt or tramp oil particles - only fine suspended particles in solution are being processed through filter.	• Contact Oberlin Customer Support for assistance.
	Excessive flow at inlet.	• Reduce pump flow rate.
	Media pores plugged with cake.	• Advance media to new section.
	Clogged perforated metal screen.	• Clean.
	Improperly adjusted controls.	• Adjust setpoints on pressure switches. (Refer to Section 4.1.)

5.3 FAULT MESSAGES OR INDICATIONS

Message	Cause	Remedy
5.3.1 "Low Airbag Pressure" fault.	Insufficient supply - leaks, excessive demand, compressor down, etc.	Investigate and correct.
	Regulator improperly adjusted.	Adjust setpoint. (Refer to Section 4.3.)
	Air service supply valve closed.	Open valve.
5.3.2 "Long Discharge" fault.	Media torn or out of media.	Check media and resupply if necessary.
	Loose media through filter - insufficient tension.	Adjust media supply reel tension spring.
	Media wheel not in contact with media.	Reposition
	Slippage at media counter.	Check for residue on wheel, damaged components, etc.
	Slippage of clutch at reroller.	- Check for misadjusted or worn clutch. - Check for dirty media roll too large or heavy.
	Media counter/proximity switch not working properly.	- Check for position, screws missing in wheel, etc. - Check for loose or faulty wiring.
	Misadjusted timer or counter in program.	Check counts vs. time.
5.3.3 "Platen" fault.	Faulty proximity switch.	Check wiring and/or replace switch.
	Faulty platen valve.	Check operation and pneumatic connections.
	Faulty pilot valve.	Check output signal. Perform manual override test.
5.3.4 "Long Dry" fault.	"Cake Drying" regulator not regulating.	- Adjust setpoint. (Refer to Section 4.3.) - Check regulator for proper operation.
	Filter blinding - misapplied media.	Load media suitable for the application.
	Filter media blinding - pollution in coolant.	Contact Oberlin Customer Support for assistance.



6.0 MAINTENANCE/CARE



See Section 2.3.
and 2.4.

See Section 2.5,
Item 20, 21.

Danger!

Follow approved lockout/tagout procedures before cleaning, servicing, adjusting, or restarting the system.

Lockout/tagout whenever it is necessary to reach between the platens.

6.1 MAINTENANCE SCHEDULE

	Frequency		
	Weeks	Months	Years
Compressed Air Supply - Inspect filters. - Replace filters.	1	6	
Oberlin Filter			
General Inspection.	1		
Inspect Perforated Metal Screen for Plugging.		1	
Disposable Media: - Inspect. - Empty reroller. - Load new roll.	1 As req'd. As req'd.		
Platen Seals: - Inspect. - Replace.		1	3-5
Airbag: - Inspect. - Replace.		6	5-10
Regulators, Valves, Solenoids: Inspect, check settings.		1	

continued



Maintenance Schedule - Continued

	Frequency		
	Weeks	Months	Years
Reroller Gearbox: • Check lubricant level.			1 or per mfgr.
Electric Motors:	In accordance with manufacturer's recommendations.		
Pumps (as applicable) • Routine maintenance. • Check deadhead pressure. • Check flow rate.	In accordance with manufacturer's recommendations.		
		6 months	
		6 months	
Auxiliary Equipment (such as chillers, compressors, etc. on machines so equipped)	In accordance with manufacturer's recommendations.		

6.2 ROUTINE CARE OF THE MACHINE BY OPERATORS

This section describes routine maintenance and service procedures to be performed by operating personnel as part of normal operating procedures. More extensive service procedures requiring trained maintenance personnel are described in Sections 6.3 and 6.4.



See Section 2.3.
and 2.4.

See Section 2.5,
Item 20, 21.

Danger!

Follow approved lockout/tagout procedures before cleaning, servicing, adjusting, or restarting the system.

Lockout/tagout whenever it is necessary to reach between the platens.

6.2.1 General Inspection

Make a general inspection of the entire filter system once a week, as follows:

- Observe the system in operation. Make sure the mechanism is operating smoothly without binding, vibration, excess noise, etc. Make sure the filter media is tracking properly through the filter - in a straight line without folding, binding, or tearing. Check the filter cake for proper dryness.
- Make sure no fault conditions are indicated on the control panel.
- Check regulators, valves, solenoids, pressure switches, etc. for correct settings in accordance with Section 4.
- Verify the correct operation of proximity switches.
- Check the condition of the perforated metal screen below the media. Clean if necessary. (Replacement is described Section 6.4.3.)
- Clean the drip pan below the unit. Remove any build-up of filter cake. Make sure the line to the sewer or other collection point is not clogged.
- Make sure there is sufficient media on the supply roller. Load a new roll of media if necessary, as described in Section 3.2 (or 7.5.2 if there is no media at all left in the machine.)
- Check the reroller. Empty the reel if necessary, as described in Section 3.2. Wipe the rollers and scraper bar to remove any residues of filter cake.
- Check the filters in the air supply and replace if necessary. Check the operating record of the plant air system to make sure no contamination has occurred that could affect filter performance.
- Check the entire machine for loose bolts or fasteners, leakage from piping or fittings, or other abnormal conditions.



- Clean the operator screen. Before doing so, disable screen control function to avoid entering unwanted commands. (Turn off power to the screen. Refer to the separate document Sequence of Operation - Specific for additional information.)

6.3 LUBRICATION



See Section 2.3.
and 2.4.

See Section 2.5,
Item 20, 21.

Danger!

Follow approved lockout/tagout procedures before cleaning, servicing, adjusting, or restarting the system.

Lockout/tagout whenever it is necessary to reach between the platens.

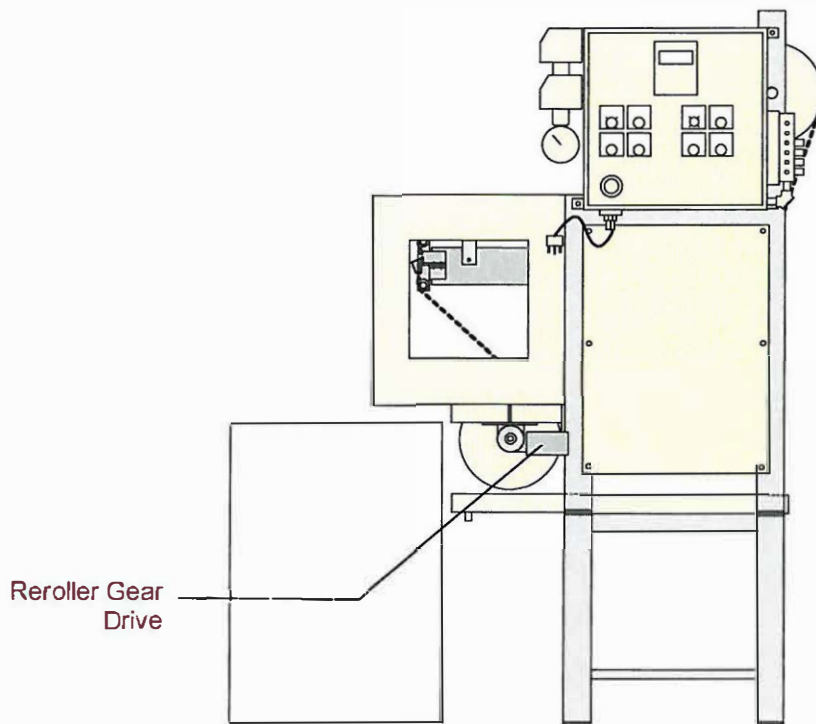


Figure 6-1 Lubrication Points

6.3.1 Reroller Gear Drive

1. Remove the plug from the case of the **gear drive**.
2. Check the lubricant level; it should be even with the plug hole. Top up if necessary with lubricant meeting manufacturer's requirements.
3. Replace the plug.

6.4 MAINTENANCE OF SUBASSEMBLIES

This section describes service and maintenance procedures applicable to the MLP-1 filter which are normally performed by trained maintenance personnel.

(Those inspection procedures which can also be performed by the machine operators are found in Section 6.2.)



See Section 2.3,
and 2.4.

See Section 2.5,
Item 20, 21.

Danger!

Follow approved lockout/tagout procedures before cleaning, servicing, adjusting, or restarting the system.

Lockout/tagout whenever it is necessary to reach between the platens.

6.4.1 Drawings Provided

Every filter is supplied with the following drawings:

- Floor Plans/Pneumatic Schematic Plans
- Electrical Schematic Plans
- Panel Door and Subpanel Layout

Drawings are provided with this Operator Manual, with a copy inside the control panel.

(A Parts List is included in the Appendix of this manual.)

6.4.2 Main Components of the Filter

The figure in Section 1.1.1 shows the main components of the MLP-1 filter. The figure(s) in Section 1.1.2 show typical control components.

6.4.3 Perforated Screen

The filter media is supported by a perforated metal screen held in place by six bolts. If it becomes damaged, excessively worn, or catches the media it must be replaced.

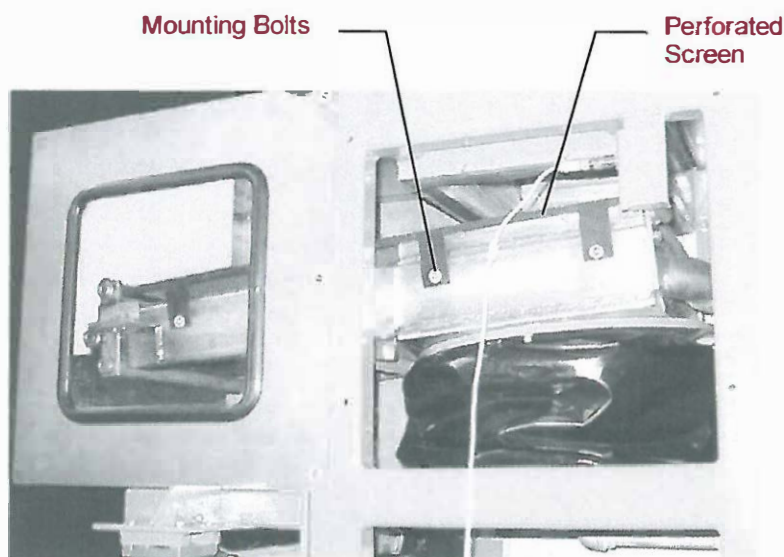


Figure 6-2 Removing and Replacing Perforated Screen

1. Push the **"Filter Auto Stop"** button on the control panel. Wait for the filter to complete the Discharge Cycle and go into "Standby" mode with the platen in the open (lowered) position.

Lockout/tagout all systems.



See Section 2.3.
and 2.4.

See Section 2.5,
Item 20, 21.

Danger!

Lockout/tagout whenever it is necessary to reach between the platens.

2. Open both access covers.
3. Remove the filter media.
4. Remove enclosure panels as necessary to afford access to the interior components.
5. Remove the bolts holding the **perforated screen** in place. Lift the screen out of the filter.
6. Examine the screen for damage. Repair or replace as necessary.
7. Reassemble in reverse order of disassembly. Replace all enclosure panels.



8. Reload filter media. (Refer to Section 7.5.2.)
9. Close the access covers.
10. After the machine is completely reassembled, all access covers secured, and after following the approved lockout/tagout procedures to be certain that it is safe to start the machine, normal operation of the system may be resumed.

6.4.4 Platen Seals

Platen seals must be replaced when they are damaged or leaking. Replacement at 3-5 year intervals is usually necessary.

It is recommended that an extra set of platen seals be kept on hand. They **must** be stored flat and unfolded.

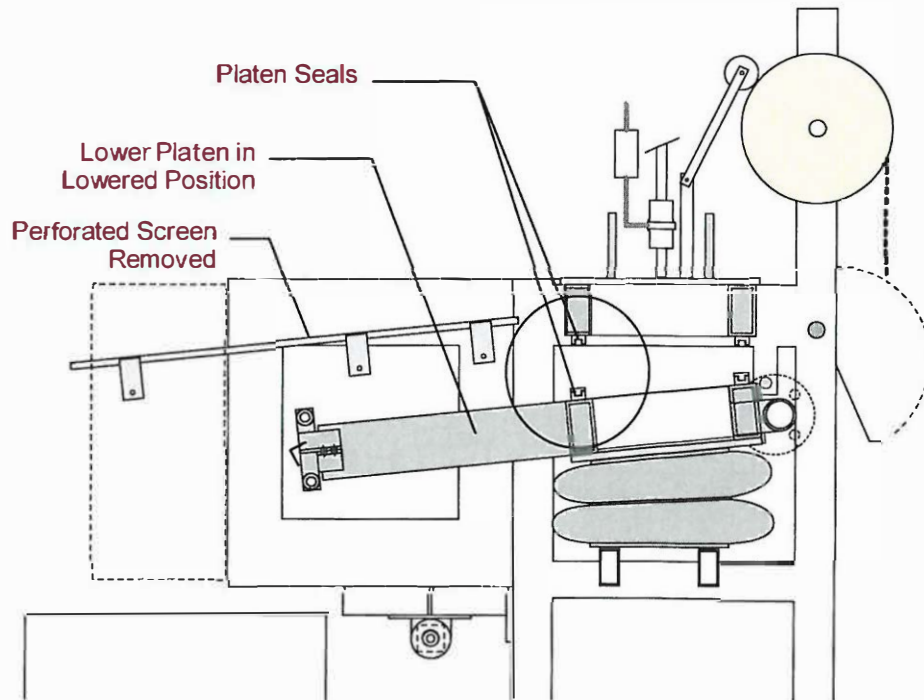


Figure 6-3 Replacement of Platen Seals

1. Push the **"Filter Auto Stop"** button on the control panel. Wait for the filter to complete the Discharge Cycle and go into "Standby" mode with the platen in the open (lowered) position.

Lockout/tagout all systems.



See Section 2.3.
and 2.4.

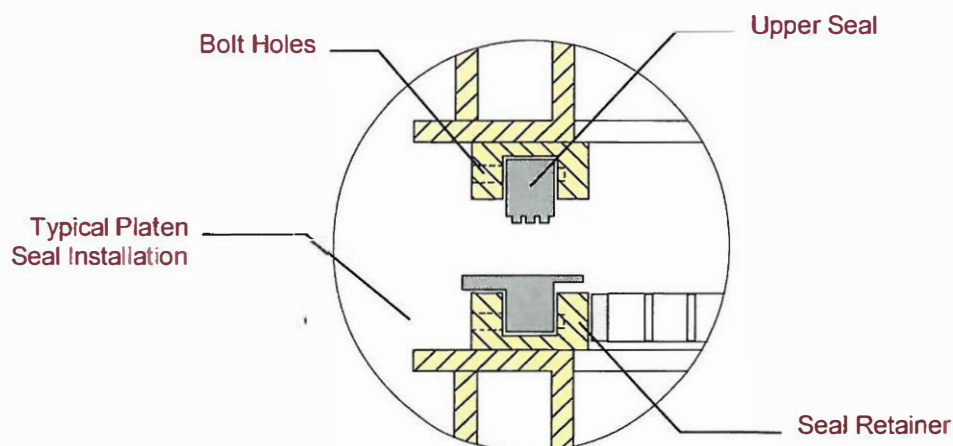
See Section 2.5,
Item 20. 21.

Danger!

Lockout/tagout whenever it is necessary to reach between the platens.

2. Open the filter and remove the perforated screen, as described in Section 6.4.3.
3. Remove the bolts holding the worn seals (upper and lower) and remove the seals.

4. Scrape out any accumulated debris in the **seal retainers**. Clean the surfaces using a solvent or degreaser.
5. Insert the new seals into their retainers, using a rubber mallet, block of wood, pneumatic hammer, etc. as necessary. **The seals must be fully seated and flat.**



6. Apply an anti-seize compound to the self-piercing platen seal bolts. Place a seal bolt washer on the bolt, and thread into the retainer. Tighten the bolts. Use only Oberlin supplied, US bolts; do not use metric bolts. (Spare bolts and washers should be ordered along with new platen seals.)
7. Replace the perforated metal screen and bolt in place. Replace all enclosure panels.
8. Reload filter media. (Refer to Section 7.5.2.)
9. Close the access covers.
10. After the machine is completely reassembled, all access covers secured, and after following the approved lockout/tagout procedures to be certain that it is safe to start the machine, normal operation of the system may be resumed.

6.4.5 Lower Platen

If it is necessary to remove the lower platen contact Oberlin Customer Support for assistance.

6.4.6 Airbag

The airbag supports and raises the lower platen. It must be replaced if it has been damaged, becomes brittle, or is leaking.

Consult Oberlin Customer Support for information on the exact mounting details for the airbag used on your particular unit.

6.4.6.1 Removal

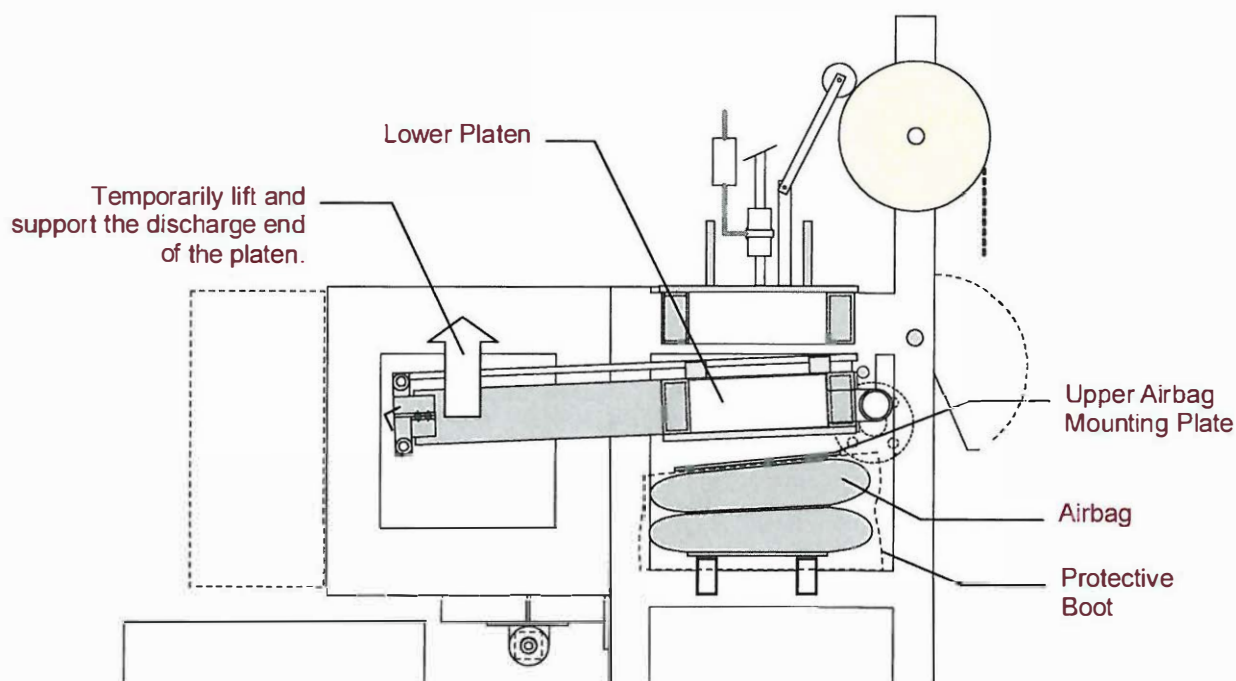


Figure 6-4 Airbag Removal and Replacement

1. Push the **"Filter Auto Stop"** button on the control panel. Wait for the filter to complete the Discharge Cycle and go into "Standby" mode with the platen in the open (lowered) position.

Lockout/tagout all systems.



See Section 2.3.
and 2.4.

See Section 2.5,
Item 20, 21.

Danger!

Lockout/tagout whenever it is necessary to work inside the filter.

2. Open both access covers.
3. Remove the filter media. (This is not absolutely necessary but will make the procedure easier.)
4. Remove enclosure panels as necessary to afford access to the interior components.
5. Remove the air supply piping that attaches to the bottom airbag plate.
6. Pull back the **protective boot** covering the airbag at the bottom.
7. Temporarily raise the discharge end of the **lower platen**. Rig temporary blocking to hold it in the raised position. Remove the angle bracket support brace.
8. Remove the temporary blocking and lower the platen by hand to rest on the deflated airbag.
9. Remove the two bolts that secure the **upper airbag mounting plate** to the platen.
10. Raise the lower platen by hand, and block securely in the raised position.
11. Lift out the entire assembly (**airbag** with its integral top and bottom plates, and the upper mounting plate). The airbag is positioned by four locating pins on the lower mounting plate. Place the assembly on a suitable work surface. (Note the orientation of the assembly.)

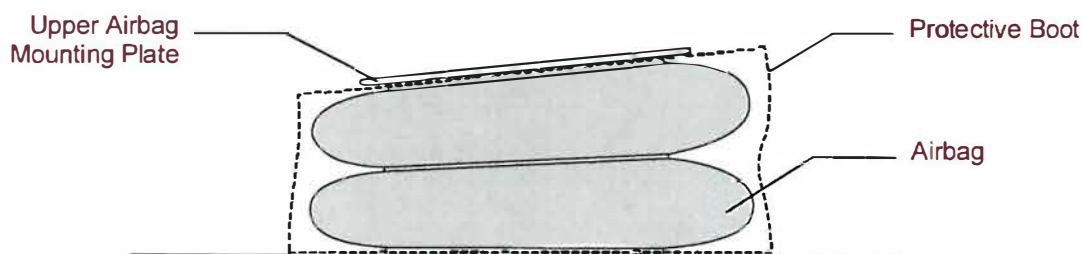


Figure 6-4a Airbag Removal and Replacement

12. Remove the four mounting screws holding the airbag to the upper airbag mounting plate.
13. Remove the protective boot.

6.4.6.2 Reinstallation

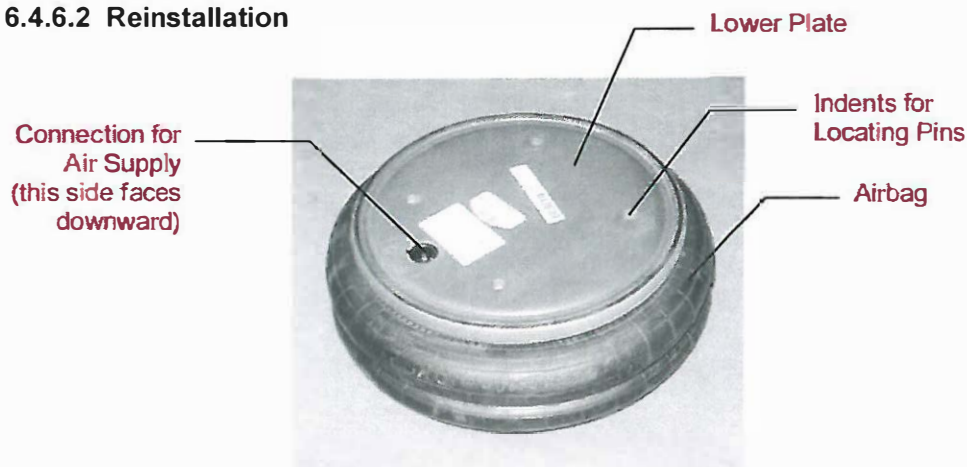


Figure 6-5 Airbag (shown upside down)

The airbag and plates are factory-assembled as a single unit.

1. Make sure that the plate with the hole for the air supply connection faces downward. Orient the plate so that the hole aligns with the air supply piping.
2. Stretch the protective boot over the top of the airbag. Attach the upper mounting plate to the airbag with the four mounting screws. (Refer to Figure 6-4a above.) Maintain correct orientation.
3. Slide the airbag assembly into position. Make sure the locating pins engage the indents on the bottom plate.
4. Remove the temporary blocking and lower the platen to rest on the airbag. Reattach the upper airbag mounting plate to the platen using the two mounting bolts.
5. Stretch the protective boot around the bottom plate. Integral shock cords hold the boot in place.
6. Replace the angle bracket support brace.
7. Reattach the air supply piping. Check all unions, fittings, clamps, and bolts for tightness.
8. Replace all enclosure panels.
9. Reload filter media. (Refer to Section 7.5.2.)
10. Close the access covers.
11. After the machine is completely reassembled, all access covers secured, and after following the approved lockout/tagout procedures to be certain that it is safe to start the machine, normal operation of the system may be resumed.



6.5 AUXILIARY EQUIPMENT

Generally maintain auxiliary equipment such as pumps, chillers, compressors, etc accordance with the manufacturer's recommendations in Appendix F. Specific additional recommendations are described below.

6.5.1 Pump Coupling Alignment



See Operator
Manual, Section
2.3.
See Section 2.5,
Item 20.

Warning!

Lockout/tagout the electrical service.

Check pump/pump motor coupling alignment at initial start-up of the system, after 300 hours of operation, and again after 1,200 hours of operation. If necessary, realign in accordance with manufacturer's recommendations in Appendix F.



7.0 INSTALLATION

Installation consists generally of:

- Receiving and unpacking,
- Lifting, setting, and fastening in place,
- Connecting utilities (electricity, compressed air),
- Connecting to process equipment.

7.1 RECEIVING

The filter is typically shipped fully assembled.

Remove packaging material (if provided.) Inspect carefully for damage that may have occurred during shipment, and make sure that all items on the packing list have been received. All damages and/or shortages should be noted on the Bill of Lading. The unit is shipped F.O.B. and title passes to the purchaser when it is loaded and accepted by the carrier. It is the responsibility of the purchaser to make claims for damages or shortages with the carrier.

7.2 LIFTING



See Section 2.5,
Item 1.

Warning!

The filter and other components are heavy and may tip suddenly! Use properly rated lifting equipment and correct lifting procedures.

It is strongly recommended that the assembled filter and any heavy components be lifted by trained and qualified rigging personnel. The filter may be top-heavy. The center of gravity of the assembled system is not always apparent. Rig restraints as necessary to prevent tipping. Test balance before lifting above 1 ft. Do not allow personnel beneath the lifted load.

The weight of your unit is shown on the Bill of Lading.

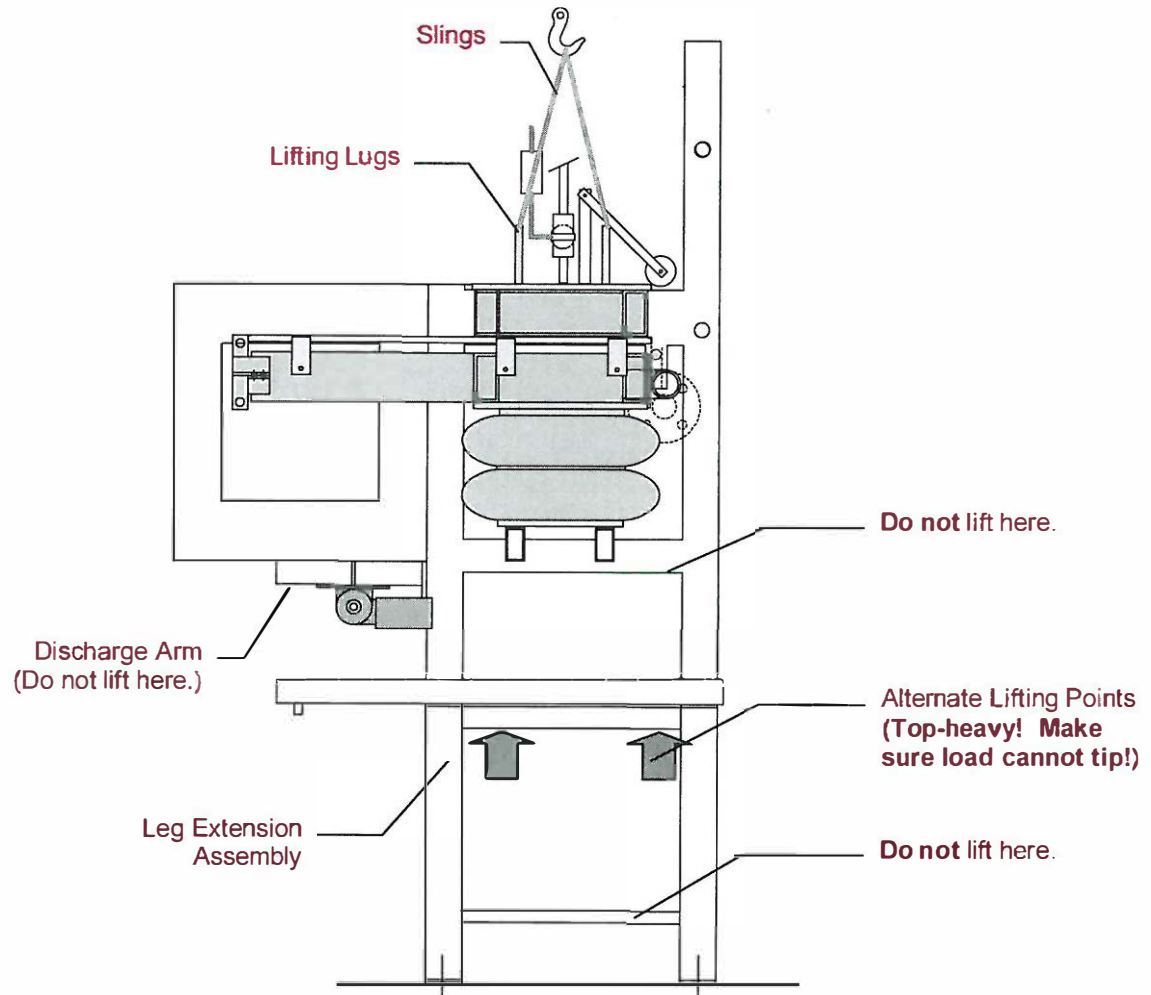


Figure 7-1 Lifting Typical Unit

The filter may be lifted using a properly rated forklift under the shipping skid. A forklift may also be used under the upper horizontal members of the leg extension assembly.

It may also be lifted using properly rated lifting equipment and slings attached to the **lifting lugs** provided. Use spreader bars as necessary to protect components. **Never** lift the filter by the discharge/feed arms.



7.3 SETTING UP

7.3.1 Location

Locate the filter system in a clear and clean area away from normal personnel traffic on a flat and solid concrete or steel surface. The supporting surface must be designed by qualified facilities engineers and must be adequate to support the filter, the weight of the material that could fill the filter during upset conditions, and all auxiliary equipment, including appropriate safety factors. The supporting surface should be smooth and level.

Ensure that there are unobstructed entrances and exits to and from the operation area. Ensure that the area has adequate lighting and ventilation.

Consideration should be given to orienting the system so that the control panel is visible to the operators of process equipment.

Free areas are required at the sides of the filter (and auxiliary equipment as applicable) for removal of media, removal of the platen, and other operating and service procedures. Good access to these components will greatly reduce maintenance downtime. At least 30" of free space is required around three sides. At the discharge end 4-5 feet is typically required for a tote box or collection system.

7.3.2 Fastening in Place

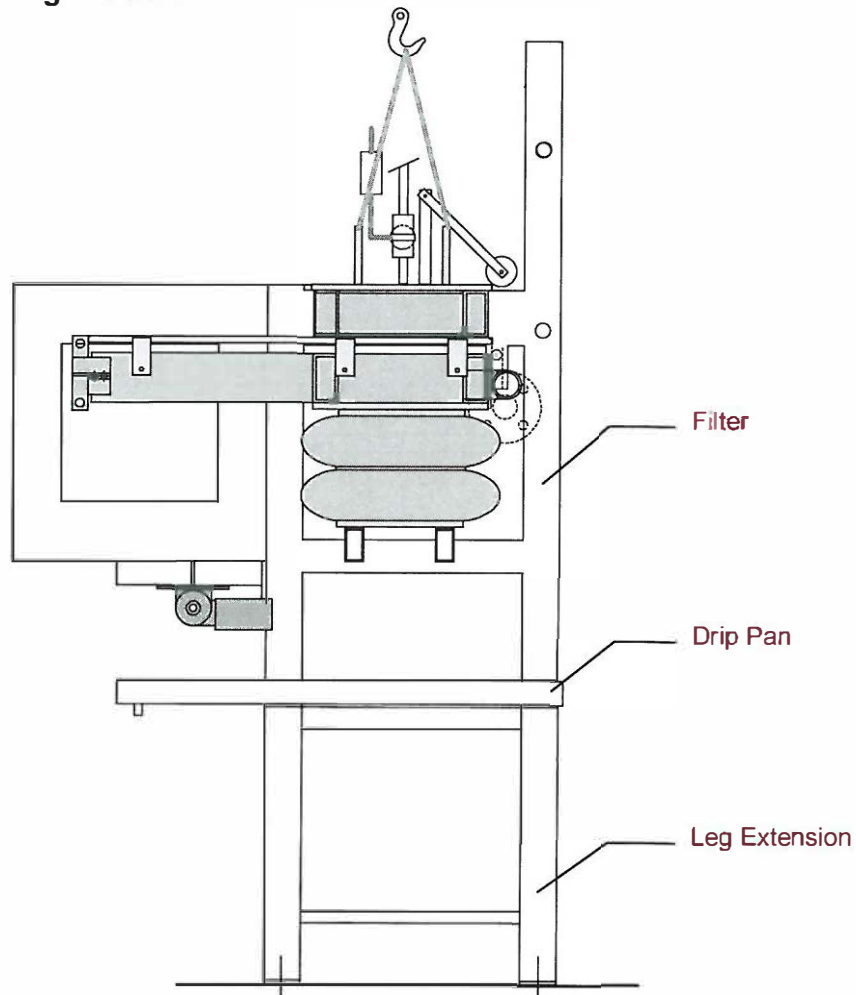


Figure 7-2 Fastening in Place

1. Install anchor bolts in the supporting surface. The use of stainless steel anchor bolts is recommended.
2. Set the leg extension over the anchor bolts and bolt in place.



See Section 2.5,
Item 2.

Warning!

The filter is top heavy and must be securely bolted in place.

7.4 CONNECTING THE FILTER SYSTEM

The connections required for your particular system are typically shown on the drawings provided in Appendix B as follows:

- Liquid piping connections are shown on the Floor Plan/Pneumatic Schematic drawing.
- Pneumatic connections are shown on the Floor Plan/Pneumatic Schematic drawing.
- Electrical connections are shown on the Electrical Schematic drawing.

Certain applications may also require connections to special auxiliary systems. If so, the necessary drawings have been supplied with your system.

The extent of field piping/wiring depends on the nature of the particular system. Field piping/wiring and customer supplied equipment are shown on the drawings using **dotted lines**.

Unless stated otherwise in the contract documents it is the Customer's responsibility to reconnect any piping and wiring that may have been disconnected for shipping.

7.4.1 Liquid Piping Connections



See Section 2.5,
Item 4.

Warning!

Tripping and burn hazards! Run piping high and insulate.

Insulate all piping carrying hot liquids below a height of 7 feet (2.1 m).

7.4.1.1 Process Piping

The process liquid to be filtered is pumped to the filter system from the manufacturing equipment or storage tanks. Clean filtrate is collected from the lower platen and flows back to the manufacturing equipment or storage tanks by gravity or by pumping, depending on the application. In addition to inlet and outlet connections, a bleed-off line runs from the upper platen back to the process liquid tank.

Generally it is the responsibility of the Customer to design and install the process piping between the filter system and process equipment. The Oberlin Filter Company can review and provide guidance regarding such piping. (Any such recommendations will be in accordance with accepted industry practices and standards. The specific application of these standards is the responsibility of the Customer. In any event, all installations must be in accordance with all applicable codes and regulations.) Design and installation by trained and qualified personnel is recommended.



Required field piping connections, and connection sizes are shown on the drawings; field piping is shown with dotted lines. (For some applications, flow rates may also be shown.)

Warning!

Insulate all piping carrying hot liquids below a height of 7 feet (2.1 m).

Very Important:

All piping **must** be independently supported so as to not apply loads to the filter or its components; piping connections on the filter system **are not** designed to support external piping loads. Horizontal runs must be supported at least every 6 feet, and braced to avoid sway. Long radius elbows are recommended to avoid blockages. Provide for thermal expansion.

Gravity Piping:

In many applications, liquid flows to process equipment by gravity. A slope of 1/4" per foot (1:50) is suggested. Additionally, the pipe size must be large enough to prevent flow from backing up and allowing solids to drop out. The table below shows the recommended industry standard for maximum allowable flow in drain lines. Extra flushing may be required if flow rates are low.

**Recommended Maximum Flow Rates to Avoid Back-up in
Gravity Fed Coolant Lines (Gallons/Minute)**

Pipe Size in Inches	Water		100 SSU	200 SSU	300 SSU
	1/8" per ft. pitch	1/4" per ft. pitch	1/4" per ft. pitch	1/4" per ft. pitch	1/4" per ft. pitch
3/4"		1.3	0.4	0.2	0.1
1"		2.3	0.7	0.3	0.2
1 1/2"		8	3.7	1.7	1
2"		17	10	5	3
2 1/2"		26	20	10	6
3"		46	30	23	16
4"	75	115	77	70	54
6"	230	320	200	176	160
8"	500	625	430	379	350

**Pressurized Piping:**

If process liquid is circulated by pumping, care must be used in selecting pipe size and designing the layout. Minimum flow rates are necessary to avoid settling out of solids; therefore bigger pipes are not always better. The table below shows the recommended industry standard for minimum flow rates for pressurized coolant return lines.

In addition, pumped liquids travel with higher velocities. Resulting water hammer can stress piping and connections. Provide air chambers or other means to prevent water hammer.

Recommended Flow Rates to Avoid Settling in Pressurized Coolant Lines (Gallons/Minute)

Pipe Size in Inches	Water Min. Flow ¹	Oil (SG - 0.8)	
		Min. Flow ¹	Max. Flow ²
1/2"	2.4	3	10
3/4"	5.4	6	17
1"	10	12	27
1 1/2"	29	34	65
2"	56	65	105
2 1/2"	88	103	250
3"	150	173	250
4"	300	350	400

1. Based on Durand equation for steel grit @225 lbs./ft³ and Durand factor of 1.0.
2. Maximum flow less than 10 ft/second.

7.4.1.2 Drip Pan Outlet

Connect drip pan outlet pipe to collection point as shown on the drawings required field piping is shown using dotted lines. Pipe size is shown on the drawings.

7.4.2 Pneumatic Connections

Pressurized air is used to operate the platen, dry the filter cake, and in some applications, to drive auxiliary equipment such as pumps.

Internal components and piping for the pneumatic system are installed and connected at the factory.

Air Service Requirements:

Air pressure requirements are shown on the Pneumatic Schematic drawing in Appendix B, but in any case must not exceed 110 psi (7.6 Bar). Air must be clean, dry, and filtered; (instrument quality air is not required.)

Air volume requirements depend on the nature of the application and area of the filter. Most of the air is consumed during drying of the filter cake. Air requirements for drying can be as high as 5 SCFM per square foot (25 l/sec/m²) of filter area.

Where plant air is not available, a compressor and receiver may be used. Contact Oberlin Customer Support for assistance in selecting the correct compressor and receiver for your particular application.

Air Service Connections:

Check and tighten any internal pneumatic piping that may have loosened during shipment.

Connect the filter to plant air in accordance with the requirements of the Pneumatic Schematic drawing; the required pipe size is shown on the drawing. (The filter is supplied with a lockable air service supply valve, which also can be used to bleed off downstream pressure.)

Auxiliary Equipment Connections:

Pneumatic connections may be required to auxiliary components; such connections are shown on the Pneumatic Schematic drawing using dotted lines. Pipe sizes, connections details, and piping materials are shown on the drawing.

7.4.3 Electrical Connections



See Section 2.5,
Item 3.

Warning!

Shock and other hazards. All wiring must be in accordance with all applicable electrical codes, and must be properly grounded.

Electrical Service Requirements:

Refer to the Electrical Schematic in Appendix B for the voltage, phase, frequency, and amperage requirements for your system. The total load requirement for the system is labeled on the electrical panel.

Electrical Service Connections:

The electrical service connection is a plug-in power cord. Provide a suitable receptacle with dedicated hard-wired grounding; do not rely on conduit for ground.

If for any reason the unit is hard-wired to the electrical service, a lockable disconnect must be provided.

Internal Connections:

All required internal connections have been installed at the factory.

Connections to Control Circuits:

Make all required connections to external plant control circuits, if any, in accordance with Electrical Schematic and otherwise as the customer may determine are required for the application. Terminals are provided within the control cabinet for connection to field installed control components, and also for connection to plant-wide control systems. Field wiring is indicated by dotted lines on the Electrical Schematic.

7.5 NEW INSTALLATIONS - INITIAL START-UP



See Section 2.3.
and 2.4.

See Section 2.5,
Item 13.

Danger!

Follow approved lockout/tagout procedures before starting the system.

Lockout/tagout whenever it is necessary to reach between the platens.

7.5.1 Prestart Checks

The following checks must be made before the filter is started for the first time.

Make sure the air service is locked out, and the electrical service is unplugged.

1. Make sure that the filter is level and is securely bolted in place.
2. Make sure pumps have been aligned and lubricated as recommended by their manufacturer.
3. Make sure that all piping and pneumatic connections have been properly made and are tight.
4. Make sure that the electrical service is of the correct voltage, phasing, amperage, and is properly grounded.
5. Open the access doors on both ends of the filter. Remove any shipping media from between the platens and elsewhere inside the unit.
6. Check, and adjust if necessary, the settings of all field-adjustable devices (such as pressure switches and regulators) in accordance with the requirements of the Section 4 and/or documented field experience.
7. Follow approved lockout/tagout procedures for starting the unit. Plug in the power cord (or energize the electrical service if hard-wired.)
8. Push the **"Control Power On"** button. **Review the operational status of all electronic controls in accordance with the requirements of the separate document Sequence of Operation - Specific, including:**
 - System Fault Status - if any faults are indicated investigate and correct.
 - Adjustable setpoints - set in accordance with Section 4.
9. Press the **"Media Jog"** pushbutton. Make sure the reroller motor operates.
10. Turn on the air service supply valve. Push and hold the **"Close Platen"** pushbutton on the pneumatic control panel. The lower platen should rise. Check for any binding.
11. Make sure the process equipment is ready to receive clean process liquid.

7.5.2 Loading Filter Media

(If some media remains in the machine refer to Section 3.2.)

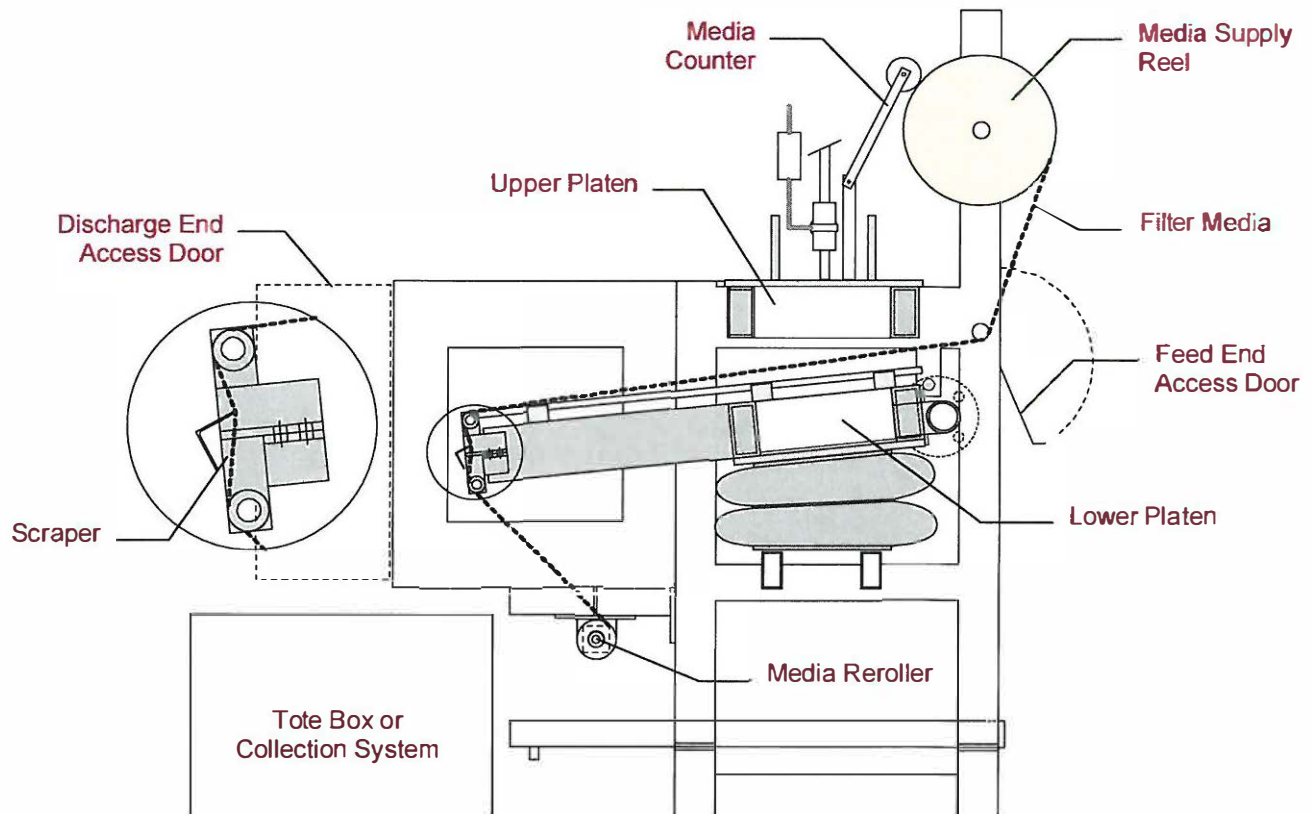


Figure 7-3 Loading Filter Media



See Section 2.3.
and 2.4.

See Section 2.5,
Item 13.

Danger!

Follow approved lockout/tagout procedures before loading media where none remains in the machine. Bleed off internal air pressure.

1. Place the **media counter** in the retracted position away from the **supply reel**. (The arm has a slot at the pivot point.)
2. Install a new roll of **filter media** onto the supply reel and set the reel in the supporting bracket. The media must unwind in the direction shown in the figure above.

3. Open the **access doors** at both ends. Feed filter media through the slot below the access door and through the filter. The media enters at the feed end, passes under a roller, rides on top of the perforated screen, and exits at the discharge end.
4. Pull the media over the **roller** at the discharge end, through the scraper bar (as shown on the detail), and around the **reroller core** for a distance of about 2 feet (.6 m).
5. Restore the electrical service and push the "**Control Power On**" button.

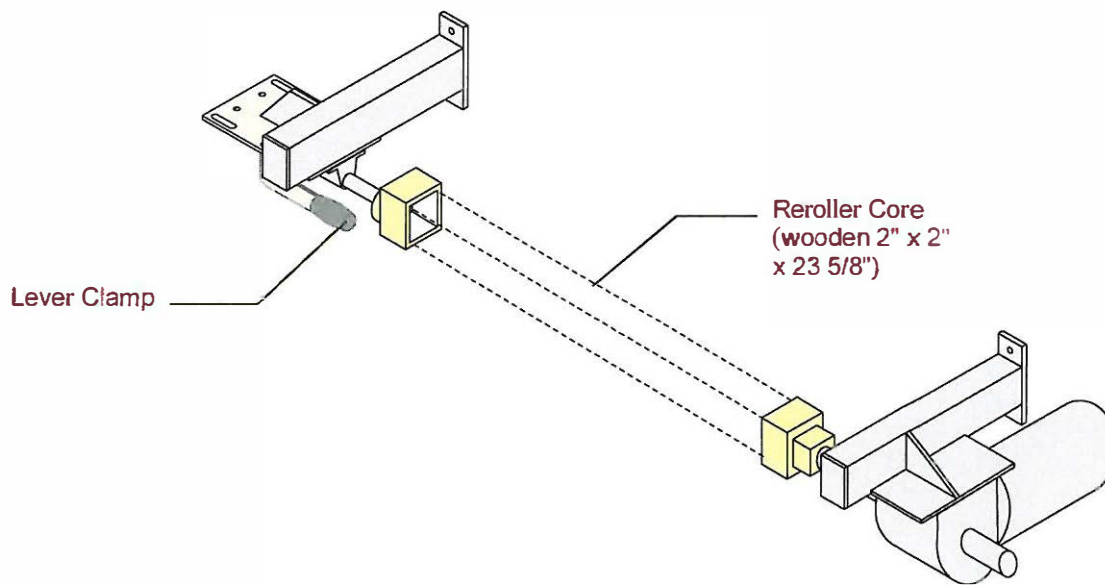


Figure 7-4 Reroller Assembly

6. Wind about 2 feet (0.6 m) of clean media around the reroller core. Press the "**Media Jog**" pushbutton until the media is caught by the reroller bars and is pulled through the filter. (The media may also be stapled to the core.) Make sure the media is centered, flat under the platen, and is being pulled in a straight path through the machine. Close the access doors.
7. Press the "**Media Jog**" pushbutton until approximately 60" (1.5 m) of new media is wound on the reroller.
8. Position the media counter so that it is resting on the supply roll.
9. Place a **tote box** or other receiver under the scraper bar at the discharge.
10. This completes the initial start-up procedure. After the machine is completely reassembled, all access covers secured, and after following the approved Lockout/tagout procedures to be certain that it is safe to start the machine, normal operation of the system may begin.



APPENDICES

APPENDIX A - DRAWINGS

APPENDIX B - PARTS LISTS

APPENDIX C - SOFTWARE LISTING

APPENDIX D - MANUFACTURERS' INFORMATION

APPENDIX E - PLANT AIR PRESSURES

APPENDIX E - PLANT AIR PRESSURES

Normal settings for pressure switches and regulators ([Sections 4.1, 4.3](#)) vary depending on the available plant air pressure.

The tables below show adjustments from the normal settings.

Pressure Switches:

Switch	Plant Air Pressure (minimum)		
	70 psig (4.8 Bar)	80 psig (5.5 Bar)*	90 psig (6.2 Bar)
1. Plant Air Pressure	65	75	85
2. Filter Pressure - Stop Feed, Start Dry	28	32	36
3. Filter Pressure - Start Final Dry**	20	25	30

* 80 psig is assumed and switches set at these values unless directed otherwise.

** At least 5 psi less than cake dry regulator setpoint.

Regulator	Plant Air Pressure (minimum)		
	70 psig (4.8 Bar)	80 psig (5.5 Bar)*	90 psig (6.2 Bar)
1. Cake Drying	29	33	35
2. Filter Feed Pump**	40	40	40

* 80 psig is assumed and switches set at these values unless directed otherwise.

** Depends on application. Optional.

SEQUENCE OF OPERATION FOR OBERLIN PRESSURE FILTER
S/N OPFXX-XXXMLP
for
CUSTOMER NAME.....

READ AND OBEY ALL OF THE SAFETY LABELS ON THE EQUIPMENT

The operator should read and understand the Instruction & Maintenance Manual before operating the filter. Before operating the filter ALL the sheet metal must be properly installed and fastened in place.

Within this document the Allen-Bradley PanelView Operator Interface will be referred to as OIT. Panel refers to the electrical control panel and the devices on the electrical control panel door.

I SYSTEM PREPARATION

1. IT IS IMPORTANT THAT THE SYSTEM COMPONENTS BE LEVELED. The performance of the system could be compromised if this is not done.
2. Ensure that all utilities including the electrical and the air supply are properly connected and enabled. Open the plant air lock out valve located on the pneumatic rack located on the filter. The air supply pressure to the filter should be a minimum of 80 psig and a maximum of 100 psig.
3. Plug the 120VAC connector into a typical wall outlet. This will energize the PLC and the Panelview Operator Interface Terminal (OIT). Wait for the OIT to go through the self-test routine and display the Main Menu before proceeding. This should take less than 30 seconds.
4. Press the MASTER START push button to energize control power to the system. All systems should be in standby and ready for operation.
5. Check that the filter media is adequate and is properly installed and fed through the filter to the media reroller system.
6. The system should be ready for operation. If at this point there are any questions concerning these steps or what is the next step, please do not hesitate to call Oberlin's Service Manager at (262-547-4900).

IA FILTER OPERATING SEQUENCE

This section describes the operation of the filter. Specific instructions for the Panelview operator interface terminal (OIT) operation follow this section.

1. Open the plant air lock out valve. The air supply pressure to the filter should be a minimum of 80 psig and a maximum of 100 psig.
 - Plug the filter in. Wait for the OIT to go through the self-test routine and display the Main Menu before proceeding. (About 30 seconds)
 - Pull the EMERGENCY STOP button to the extended position.

Press the MASTER START push button on the enclosure door. The FILTER CONTROL POWER ON light will turn on.

2. Push the AUTO SYSTEM START push button on the panel. The filter pump will start immediately.

If the filter system is equipped with an *optional* inlet recirculation valve, the filter pump will start immediately and feed liquid will begin flowing through the recirculation valve back to the tank. If the recirculation valve is not present, the filter pump will start immediately but will only stroke briefly until it stalls against the closed inlet valve. When the feed cycle begins and the inlet valve opens fully the filter pump will begin to stroke continuously.

The filter platen close solenoid is energized to shift the platen control valve to the CLOSE position. The platen will rise to close. The solenoid is de-energized after a time delay. When the platen fully closes, the platen close proximity switch is engaged. The airbag will also pressurize as the platen rises to close.

Status of the various filter cycles is displayed on the OIT - FILTER STATUS screen. This screen can be accessed by selecting it from the Main Menu or pressing the F2 function key.

3. When the airbag pressure reaches the "OK To Run" set point, the FILTER FEED CYCLE will begin. The filter inlet valve will open and coolant will begin flowing through the filter.
4. The filter pump is now pumping the feed liquid through the filter. The filter

will remain in the feed cycle until one of the following occurs:

- a. The filter pressure increases to the Stop Feed setting.
- b. The STOP FEED OIT pushbutton is pressed.
- c. The Feed Cycle Limit timer completes.
- d. The AUTO SYSTEM STOP push button is pressed.

If at any time during the FILTER FEED CYCLE, the airbag pressure falls below the "OK To Run" set point, the filter inlet valve will close. This will ensure that there is enough sealing pressure on the upper platen to prevent leaking. If the "OK To Run" set point is again reached the FILTER FEED CYCLE will resume.

5. When the FILTER FEED CYCLE is complete, the filter inlet valve will close. The filter will enter the CAKE DRY CYCLE. After a time delay, the cake dry solenoid is energized to open the cake dry valve. Pressurized air will flow into the upper platen to dry the filter cake.

The cake drying is split into two (2) parts:

- | | |
|---------------------------|--|
| a. Pre-break through free | The cake dry valve remains open. When all liquid has been driven through the filter cake, filter pressure will drop below the "Start Final Dry" set point (reset on filter pressure switch). This initiates the FINAL DRY CYCLE. |
| b. Final | When the filter pressure drops to the "Start Final Dry" set point, the final dry timer will start and the filter will enter the FINAL DRY CYCLE. |
| This | portion of the cake dry cycle will continue until the final dry timer is complete. |

If the long drying cycle timer is done before the FINAL DRY CYCLE is complete, the cake dry cycle will be terminated and a LONG DRY CYCLE fault will be activated. This is done to avoid excessively long dry cycles caused by abnormal conditions not controlled by the filter. The FORCE DISCHARGE OIT push button must be pressed to continue operation.

If the airbag pressure falls below "OK To Run" set point any time during the CAKE DRY CYCLE, the cake dry valve will close. This will ensure that there is enough sealing pressure on the upper platen to prevent leaking. If the "OK To Run" set point is reached again the CAKE DRY CYCLE will resume.

6. When the final dry timer is done and the cake dry cycle is complete, after a time delay the open platen solenoid is energized, shifting the platen control valve to the open position.

7. When the platen is fully opened after a time delay, the CAKE DISCHARGE CYCLE will start. The media reroller will operate to advance the media and discharge the filter cake. Automatic sequencing will return to step 3 and proceed.

IB OPERATOR INTERFACE TERMINAL - OIT

The screen displays the status of the filter sequencing and systems, and provides manual control for some independent systems. The following gives a brief description of the use of each screen display.

The **Main Menu** start up screen lists all the screens that can be selected. Use the Up/Down arrow keys to highlight the desired screen and push the Enter/Return key. When on any screen, pushing the F1 key will return you to the Main Menu or F2 will return you to the Filter Status screen. To perform any function, press the function key number display OR use the arrow and enter/return keys for selection and execution.

The **Filter Status** screen displays the overall operational status of the filter such as the specific filter cycle, the timing within that cycle or the platen status. When on any screen, pushing the F2 key will return you to this screen.

The **Timer Set Points** screen displays the changeable timer set points for the system as follows:

Cake Dry -Final: Sets the time allotted for the final portion of the cake drying cycle after break through.

Feed Cycle Limit: Limits the time allotted for a feed cycle. This setting is for better control of cakes that may build thicker without a substantial rise in pressure. When timed out, a cake dry cycle will be initiated.

Dry Cycle Limit: Limits the time allotted for a dry cycle. This setting is to ensure that the filter does not get stuck in a cake dry cycle if the cake is difficult to dry. When timed out, an alarm fault is activated and a forced discharge cycle cycle is allowed.

The **Manual Overrides** screen has manual push buttons for stopping the

feed cycle at any time and for forcing a dry cycle to complete after the Long Dry Cycle fault is activated.

The **Feed Cycle History** screen displays the last six feed cycle times for the filter and the filter's total running time.

The **Alarm History** screen displays a list of all the past system faults. The faults are displayed with a time and date of occurrence.

The **OIT Config** screen is for accessing the setup parameters for the screen.

II SHUT DOWN PROCEDURES

The filter should not be shut down or stopped with the airbag pressurized for more than 30 minutes. To do so will lead to premature failure of the platen seals.

Press the AUTO SYSTEM STOP push button. The following will occur:

- a. The FILTER PUMP will stop immediately.
- b. If active, the FEED CYCLE will end.
- c. The CAKE DRY CYCLE will sequence normally.
- d. The CAKE DISCHARGE CYCLE will operate to fully discharge the cake.
- e. The filter will go to a STAND-BY condition.

EMERGENCY

Press the EMERGENCY STOP push button. This will immediately halt all filter system operation including all pumps. This method should only be used in an emergency.

III ALARM CONDITIONS

Active faults will energize the alarm horn and beacon. The alarm horn can be silenced by momentarily pressing the ALARM SILENCE / RESET push button on the panel. The alarm beacon will remain energized while the fault is investigated. After the equipment fault is cleared, the fault must be cleared from the PLC by pressing and holding the ALARM SILENCE / RESET push button on the panel for 2 seconds. Normal operation cannot proceed until the alarm beacon has been turned off indicating no fault.

The Alarm Banner will be displayed on the OIT whenever a fault is active. The operator is required to press the ACKNOWLEDGE ALARM touch cell on the OIT to proceed.

1. GENERAL FILTER FAULTS

These faults are miscellaneous faults pertaining to the filter system.

- a. **LOW AIRBAG PRESSURE FAULT**
When the platen has been closed prior to the FEED CYCLE, the filter will not continue until the airbag pressure reaches the "OK To Run" set point. If the set point is not reached in the allotted time, a fault is activated.
- b. **PLATEN OUT OF POSITION FAULT**
If at any time the platen is not in the position it should be during a given filter cycle, a fault is activated.
- c. **MEDIA ADVANCE TOO LONG FAULT**
Media advancement during a discharge cycle is a timed operation. If the appropriate amount of media has not advanced within the allotted time, a fault is activated. This generally indicates that the filter is out of media, the media is torn or the media counter arm was not replaced back on the clean roll.
- d. **OUT OF MEDIA FAULT**
After the media counter sees the first pulse, it looks for another pulse every 5 seconds. If the pulses fail to register, a fault is activated. This generally indicates that the filter is out of media.
- e. **LONG DRY CYCLE FAULT**
If the filter remains in the CAKE DRY CYCLE too long, a fault is activated. If the fault is simply reset, the fault timer will be reset and the filter will try again to complete the drying cycle in the allotted

time. To manually force the filter out of the fault condition, use the FORCE DISCHARGE push button from the Manual Overrides screen when the fault is active. The filter will proceed to the discharge cycle and normal filter operation will continue. The fault needs to be reset.

IV DESCRIPTION OF CONTROLS

225PB1, MASTER START

Enables all of the filters electrical controls and illuminates 231LT when filter control power is on.

225PB2, MASTER E-STOP

Disables all of the filter's electrical controls. De-energizes the master control relay and de-energizes the PLC inputs and outputs.

I007PB, AUTO SYSTEM STOP

Begins automatic shutdown of the filter system.

I008PB, AUTO SYSTEM START

Begins automatic operation of the filter system. The filter is started or restarted with this push button.

I009PB, MEDIA JOG

Allows the media to be manually advanced as long as the platen is in the open position.

I010PB, ALARM SILENCE / RESET

Momentarily pressing this push button will silence the alarm horn. The alarm horn will remain silent unless a new alarm occurs. Once the fault condition has been cleared, push and HOLD this push button for two seconds to reset the filter alarm.

OIT Manual Override Screen,
Momentarily pressing this screen
STOP FEED / START DRY

push button will end the FEED

OIT Manual Override Screen,
Momentarily pressing this screen
FORCE DISCHARGE
push button will end the DRY CYCLE

VINITIAL SETTINGS

DEVICE

DESCRIPTION

DEVICEFACTORYFINAL

NUMBER SETTING SETTING

30.3 35 psig _____
 30.4 80 psig _____

1.PRESSURE REGULATORS

Cake Dry

Filter Pump

2.FILTER PRESSURE SWITCH

Filter - Stop Feed (Set)

I006PS 32 psig _____

Filter - Start Final Dry (Reset)

6PS20 psig _____

3.AIRBAG PRESSURE SWITCH

Airbag - OK To Run (Set)

I005PS 75 psig _____

Airbag - Low (Reset)

I005PS65 psig _____

4.TIMER SET POINTS

Cake Dry - Final

T4:0.PRE 40 sec _____

Feed Cycle Limit

C5:0.PRE240 min _____

Dry Cycle Limit

T4:28.PRE240 sec _____

* Final Settings should be filled in
 after the filter is installed and
 commissioning is completed.