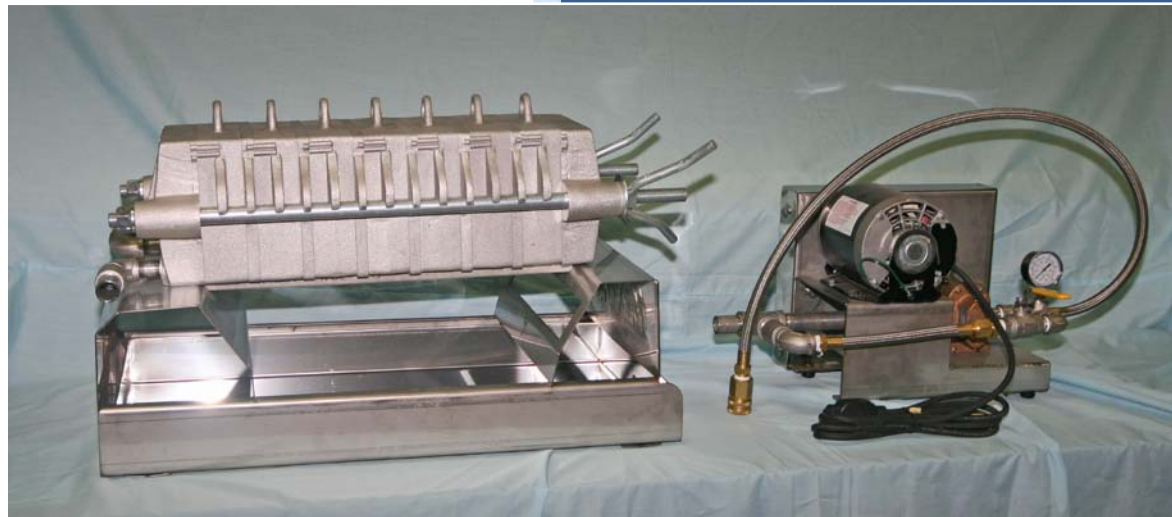




## Filter Press Documentation 7" and 10"



Leader Evaporator Co., Inc.

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[www.leaderevaporator.com](http://www.leaderevaporator.com)

# Filter Press Documentation 7” and 10”

## DESCRIPTION

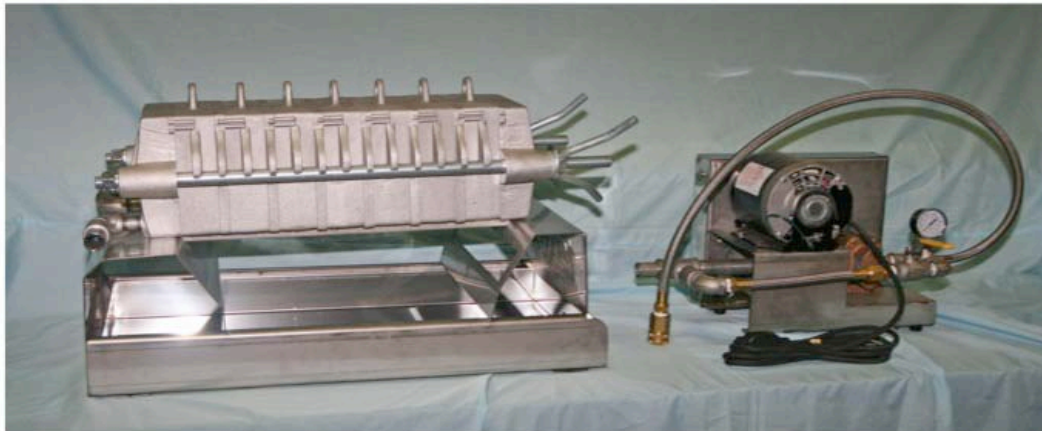
A filter press is an effective and efficient method for filtering maple syrup to improve its clarity. A combination of diatomaceous earth, filter papers and specially designed waffle plates and frames act together under pressure to remove niter and sugar sand from your maple syrup. Removal of niter and sugar sand will reduce the cloudiness of the maple syrup.

## EQUIPMENT INCLUDED

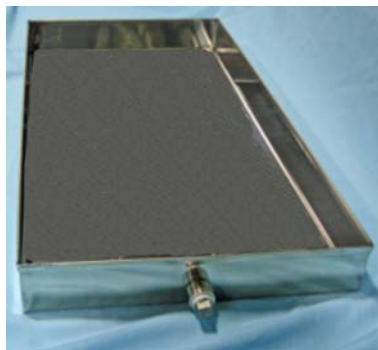
The following equipment is included in a complete filter press unit:

Filter Bank Complete

Filter Press Pump Assembly

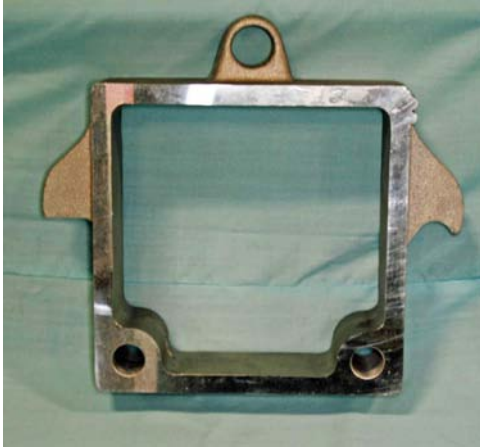


Drip Tray with Drain:



# Filter Press Documentation 7" and 10"

Aluminum Frame (7 supplied)



Aluminum Frame with Inlet Shown



Waffle Plate (6 Supplied)



Waffle Plate with Outlet Shown



Inner End Casting (Starter Plate)



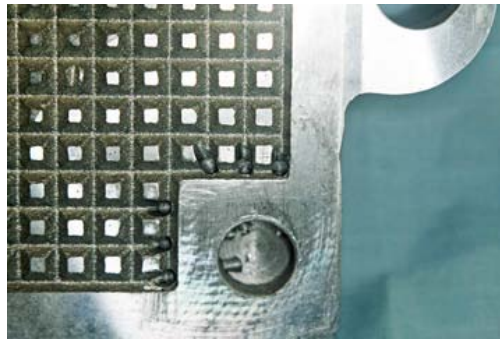
Outlet Holes In Starter Plate

# Filter Press Documentation 7" and 10"

Outer End Casting



Outer End Casting with Outlet Shown



Exploded View

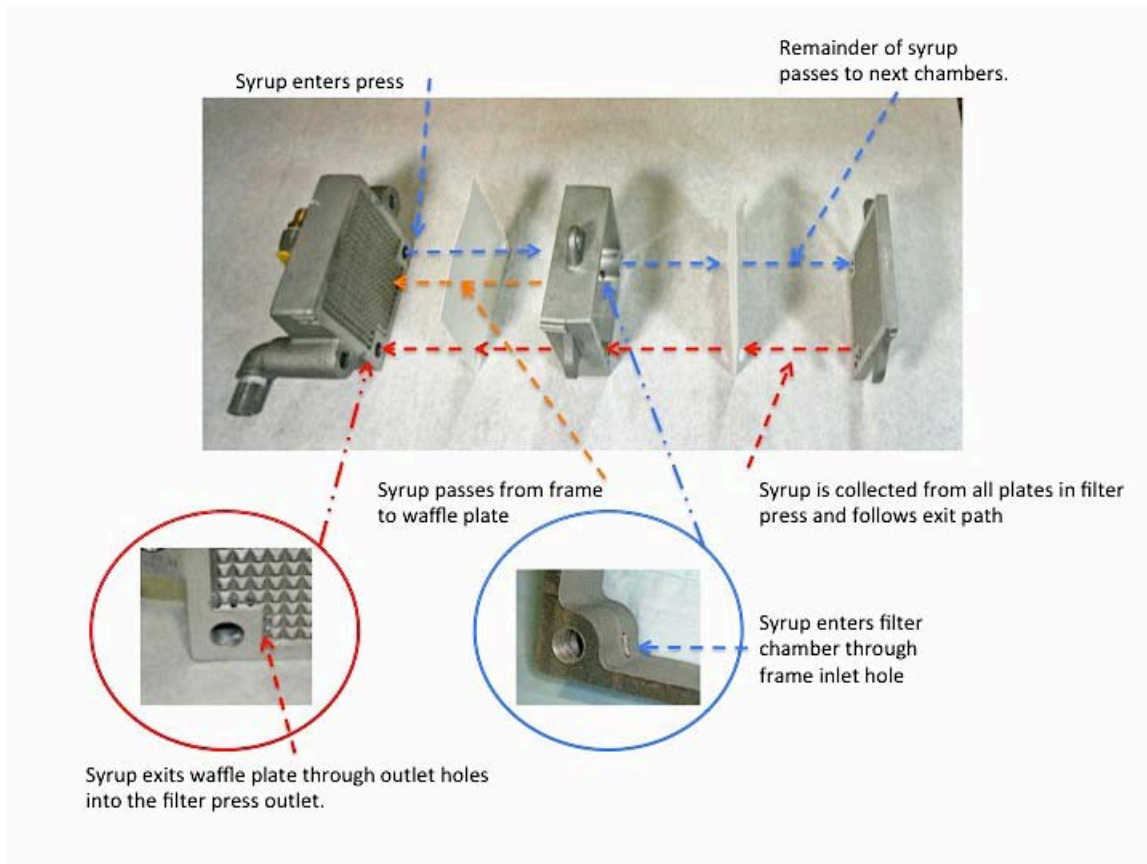


See Attachment #1 for Setup and Operational Supplies, and Optional Equipment available from Leader Evaporator.

## OPERATION DESCRIPTION

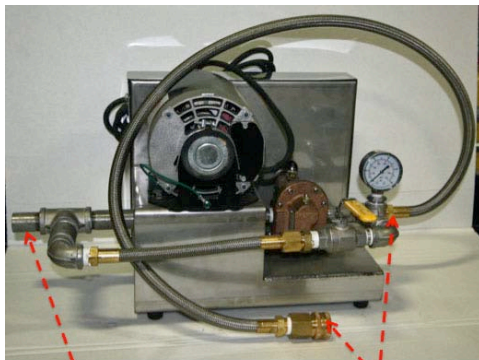
A filter media (filter press paper) is placed between each frame and plate of the filter press. Additional filter media (DE – diatomaceous earth) is added to the syrup to be filtered. The pump then pushes the syrup mix through the inlet side of the filter press. As the syrup mix enters the filter press frame it passes out the inlet of the frame into the frame “chamber”, passes through the filter press paper coating the filter press paper with DE and the materials to be removed, then collects on the waffle plate and exits through the outlet in the waffle plate. This process occurs at the same time down the length of the filter press (i.e. at each frame and plate), which means the input side of the filter press is essentially a manifold. The filtered syrup exits the filter press through the outlet in the end casting.

# Filter Press Documentation 7" and 10"



## SETUP OF THE FILTER PRESS

1. Place the filter press and the pump assembly on a stable surface. The filter press can be bolted to hold it in position.



2. Position the pump assembly so as to be able to connect to the filter press input. To connect the pump to the filter press, slide the fitting on the end of the stainless steel braided hose onto the matching fitting on the filter press.



## Filter Press Documentation 7" and 10"



3. Connect the input side of the pump assembly to the syrup source. In order to prevent failure of the material used to connect to the source, it is recommended that 1" ID, 1.50" OD, food grade hose (such as Leader Order #60028) be used to make the connection. Ensure you have sufficient length of hose to reach between the source and the filter press. Secure the hose to the pump using a #24 band clamp (such as Leader Order #60046). Attach and secure the other end of hose to the source.

Sample Hose



Completed Input Hose Connection



4. Connect the filter press outlet to 1" ID X 1.50" OD food grade hose of sufficient length to reach between the filter press and the final collection container. Secure the hose with a #24 band clamp. Position/connect the other end of the hose to the collection container.

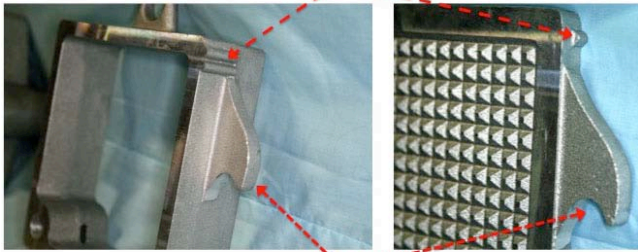
Filter Press Output Connection

### PREPARING THE FILTER PRESS TO FILTER SYRUP

In order for the filter press to perform its function, filter paper must be placed between the parts of the filter press.

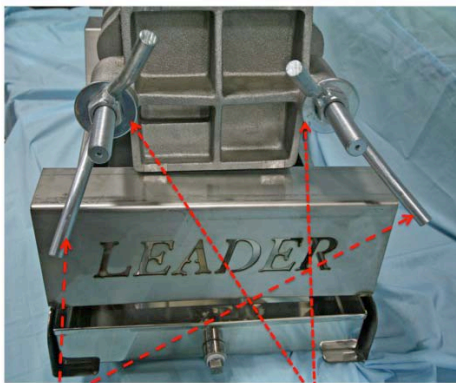
# Filter Press Documentation 7" and 10"

Alignment Mark



*NOTE: All frames and plates are placed on the filter press rack such that the alignment marks (which are on the same side as the half moon shaped support) are on the left as you face the front of the filter press.*

Half Moon Shaped Support



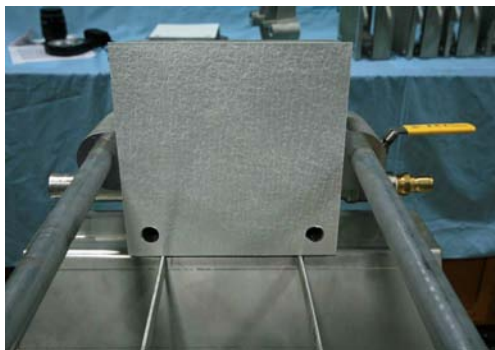
Wing Nuts

Washers

1. Loosen the wing nut on each side of the filter press rack. Turn it back to approximately 1" before the end of the rod.

2. Remove the first two waffle plates and two frames and set them near the filter press.

3. Slide the remainder of the frames and plates forward to the washers and wing nuts. Ensure the filter press does not become unstable.



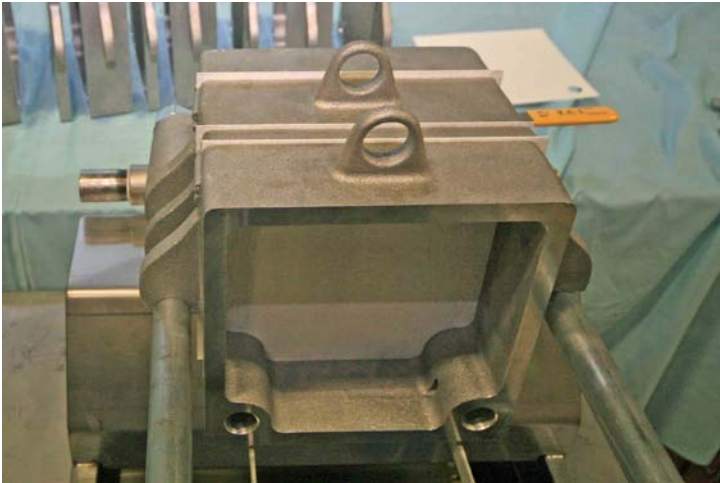
4. Place a piece of filter paper on the starter plate such that the holes of the filter plate and the paper are aligned as best possible.



5. Slide the next frame on the rack (in correct alignment) and press against the base plate to hold the filter paper in place. Ensure the filter paper stays aligned as you press the frame against the plate.

6. Place a piece of filter paper against the frame aligning the holes in the frame with the holes in the filter paper as best possible.

## Filter Press Documentation 7" and 10"



7. Slide the next waffle plate on the rack (in correct alignment) and press against the frame to hold the filter paper in place. Ensure the filter paper stays aligned as you press the plate against the frame.

8. Place a piece of filter paper against the plate aligning the holes in the plate with the holes in the filter paper as best possible. Then press a properly aligned frame against the plate to hold the paper in place. Ensure the filter paper remains aligned.

9. Repeat Steps 6 to 8 until all plates and frames are in place (5 times through the cycle). For the last two frames and plates you will need to reinstall them on the rack.
10. Place a piece of filter paper onto the last frame aligning the holes in the frame with the filter paper as best possible. Slide the end casting against the frame ensuring the filter paper remains aligned.



11. Tighten the wing nuts against the plates. Inspect the filter press to ensure the filter papers are all installed and aligned. Ensure all plates and frames are aligned. Filter papers will appear approximately aligned the same in the completed press.

### CLEANING OF FILTER PRIOR TO FIRST USE

Use the following procedure to make sure all unwanted material is removed before using the filter press for the first time.

1. Assemble the filter press with filter papers as instructed in the section titled "PREPARING THE FILTER PRESS TO FILTER SYRUP".

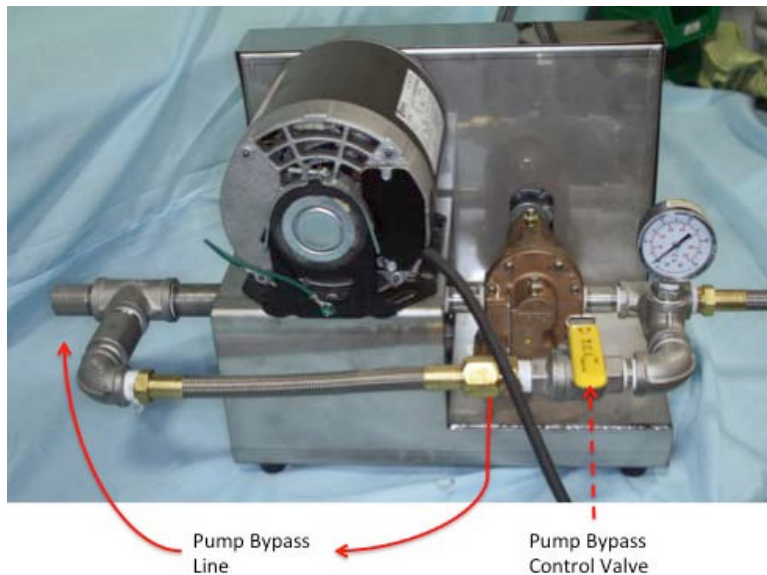


## Filter Press Documentation 7" and 10"

- Heat clean water to 170°F to 190°F and pump it through the filter press.
  - 2 to 3 gallons for a 7" filter press
  - 3 to 5 gallons for a 10" filter press
- Disassemble the filter press and discard the filter papers. NOTE: Whenever the filter press is loosened the liquid inside will drain out under the filter press.
- Reassemble the filter press with new filter papers and proceed to filtering syrup.

### FILTER PRESS PUMP BYPASS

In order to minimize the pressure in the filter bank when starting a cool filter bank or using a filter bank that is approaching need of maintenance i.e. filter paper change, the pump assembly is constructed with a bypass. The bypass allows all or part of the maple syrup to be diverted away from the filter bank thus reducing the pressure on the outlet side of the pump.



### FILTERING OF SYRUP

**NOTE: In the following sections, the *recommended* additions of DE will need to be adjusted to meet the requirements of the syrup to be filtered. It will be dependent on the niter and sugar sand present.**

- The filter press needs to be run heated. Syrup temperature should be a minimum of 170°F. In order to heat the filter press, the minimum recommended batch size for the first batch of syrup to be filtered is as follows:
  - 7" filter press – 2 gallons
  - 10" filter press – 3 gallons

Note – the larger the batch processed at each running, the more efficient the filter press will work.

## Filter Press Documentation 7" and 10"

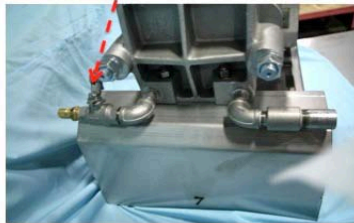
2. In the source container, thoroughly mix DE (diatomaceous earth) with the syrup to be filtered. Use the following ratio for the initial filtration after a filter paper change:
  - a.  $\frac{2}{3}$  cup per gallon of syrup
3. For the second and subsequent batches of syrup, mix the DE in the following ratio:
  - a.  $\frac{1}{4}$  cup of DE per gallon of syrup.



Close Valve to filter

4. Open the valve on the by-pass line of the pump so it is approximately  $\frac{3}{4}$  open.
5. Open the inlet valve on the filter press.

Inlet Valve



Inlet Valve "open" position



6. Turn on pump to start the flow of syrup. Pump switch is located on the motor power cord.

7. As the filter press warms with the syrup passing through, slowly close the bypass valve.

## Filter Press Documentation 7” and 10”

8. When starting the second and each subsequent batch, open the bypass valve at least halfway to reheat the filter press prior to closing the bypass valve. Ensure you check the pressure on the gauge carefully (40 psi maximum).
9. Run the batch of syrup through the filter press until only a small stream of syrup is flowing from the outlet hose.
10. Continue steps 3 to 9 to filter batches of syrup. It is recommended the time between filter batches be a maximum of 20 minutes so the filter press will remain heated. If the filter press cools it will not function as designed.
11. When running the filter press, periodically check the pressure by looking at the gauge on the pump assembly.
  - a. It is recommended when a pressure of 40 psi is reached, the filter papers should be changed.
    - i. If you need to run a batch to completion and the system is over pressure, slowly open the bypass valve until the correct pressure is reached.

### FILTER PRESS PUMP USED AS A SYRUP TRANSFER PUMP

The filter press pump can be used as a syrup transfer pump.

1. Remove the pump inlet hose from the unfiltered material source.
2. Connect the pump inlet hose to the source to be transferred from.
3. Remove the pump outlet hose.
4. Place the pump outlet hose in the container to receive the syrup.
5. Activate the pump and run until the transfer is complete.
6. Reconnect pump hoses to their original connection points.

### FILTER PRESS BANK MAINTENANCE

#### DAILY

The pump and press should be flushed each day. This will remove contaminants from the pump and filter press.

1. Obtain either hot water or hot “sweet” from the evaporator.

NOTE: If you use hot “sweet” you can recycle the syrup back to the evaporator from the flushing of the filter press and pump. Hot “sweet” can be obtained from the evaporator either by drawing off as close to the concentrated side of flue pan as possible or by inserting the intake hose from the filter press pump into the concentrated side of the flue pan.

2. Place the filter press outlet hose into a collection container. (If using hot “sweet” you can return the fluid to the flue pan.)
3. With the filter intake hose in the “cleaning” source (hot water or hot “sweet”), start the filter press pump.
4. Run the filter press pump until the liquid exiting the filter press is as clear of the liquid from the source.
5. Drain hoses then reconnect them to the normal operating locations.

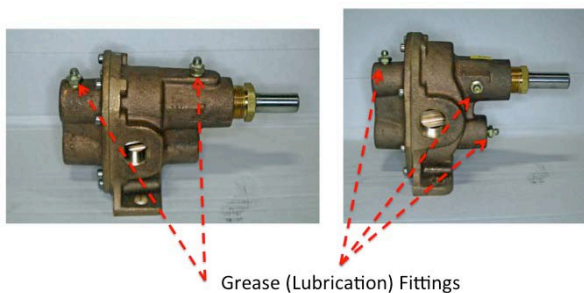
# Filter Press Documentation 7" and 10"

## AT OR OVER PRESSURE

1. Change filter papers when pressure limit is met or exceeded.
2. To aid in draining the remaining syrup from the filter press, the inlet hose can be disconnected from the filter press and the syrup mix drained back to the source container. Do NOT disconnect the inlet hose until the source container is positioned to receive the syrup from the filter press.
3. When changing the filter papers, clean the frames and plates.
  - a. Loosen the wing nuts and remove and discard the filter papers.
  - b. Immerse the frames and waffle plates one at a time in a container of hot water. This is best done immediately after use. Ensure intake slots in the frames and the outlet slots in the waffle plates are clean.
  - c. If necessary to scrub to remove the sand and niter from the frames and plates use a nylon brush.

## PUMP MAINTENANCE

1. The Oberdorfer pump should be lubricated every 500 to 1000 gallons of syrup processed. It also recommended that you lubricate the pump at the beginning and the end of the producing season.
2. To lubricate the pump, inject a light, non-toxic lubricant such as food grade grease (Leader Evaporator order #55095). A small amount of lubrication is needed. The pump can be lubricated through the installed grease fittings:
  - a. ½" pump – 2 fittings
  - b. ¾" and 1" pump – 3 fittings




3. After lubricating ensure you clean off any excess lubricant.
4. Inspect all hoses and fittings for leaks. Tighten or replace as necessary. See ATTACHMENT #2 for replacement parts available from Leader Evaporator.

# Filter Press Documentation 7" and 10"



## ATTACHMENT #1

### Setup and Operation Supplies

Item Description	Leader Order #	Further Information
Filter Press Hose	60028	Sold by the foot
Stainless Steel Band Clamp #24	60046	
Food Grade Grease	55095	14.5 oz tube
HD Filter Press Paper 7"	60040	Package of 400 pcs.
HD Filter Press Paper 10"	60043	Package of 400pcs
Filter Aid	64046	50# bag
Stainless Steel Wisk for Filter Aid 	64042	30" Length

# Filter Press Documentation 7" and 10"

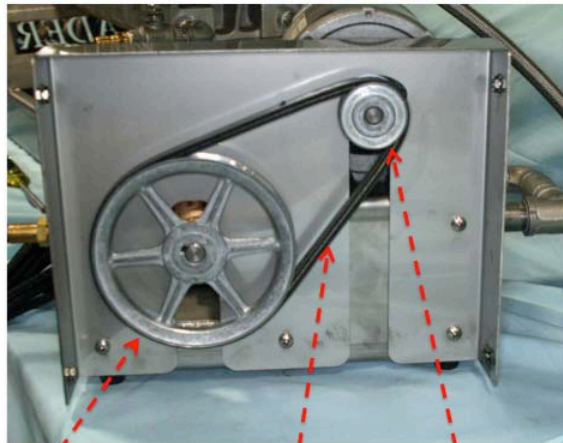
## Optional Equipment

Item Description	Leader Order #	Further Information
Air Diaphragm Filter Press Pump	55118	Requires 4 SCFM @ 40 to 60 psi
<p>S/S Filter Press Cart</p>  <p>Filter Cart Shown with Filter Press</p>	55091	Wheeled with locking casters (Order # is for cart only)
<p>Small Draw-Off Tank</p> 	55172	13 Gallon Cap.
Medium Draw-Off Tank	55171	19 Gallon Cap.
Large Draw-Off Tank	55170	39 Gallon Cap.

# Filter Press Documentation 7" and 10"

## ATTACHMENT #2

### Pump Parts



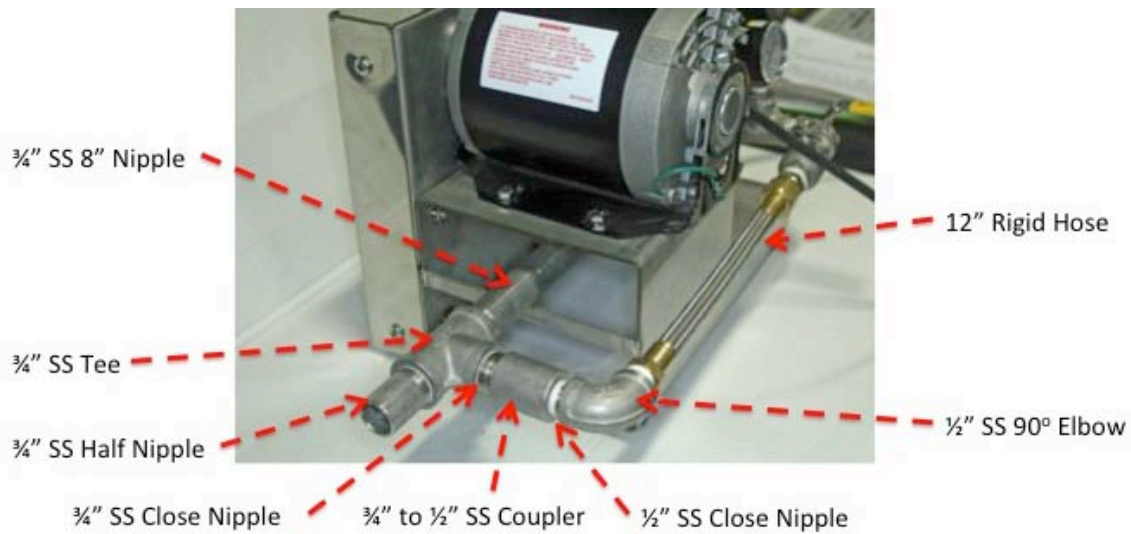
6" Pulley

Belt

2" Pulley

<b>Item Description</b>	<b>Leader Order #</b>	<b>Further Information</b>
Filter Press Pulley 6"	55104	
Filter Press V Belt	55107	
Filter Press Pulley 2"	55101	

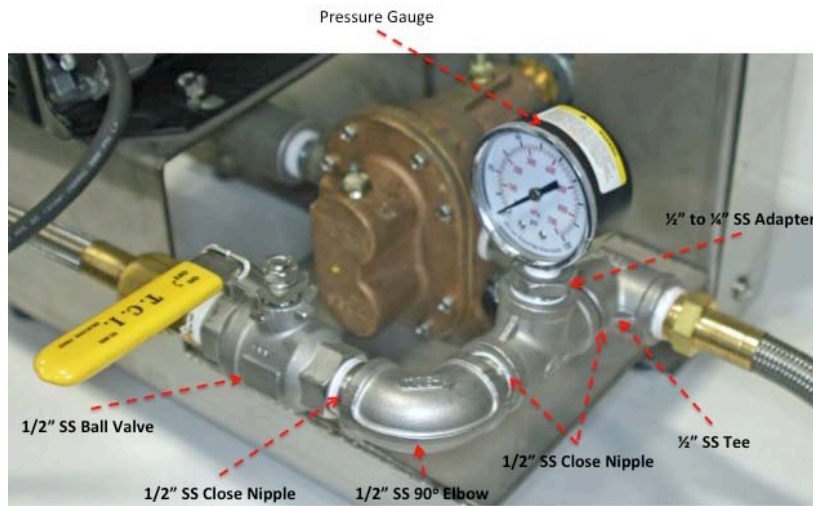
## Filter Press Documentation 7" and 10"



Item Description	Leader Order #	Further Information
3/4" SS 8" Nipple	72124	
3/4" SS Tee	72333	
3/4" SS Half Nipple	72187	4" Nipple that is cut
3/4" SS Close Nipple	72106	
3/4" to 1/2" SS Coupler	72189	
1/2" SS Close Nipple	72101	
1/2" SS 90° Elbow	72321	
12" Rigid Hose with Swivel Coupling	55121	
Teflon Tape	66106	All threads on fittings are wrapped with Teflon tape.

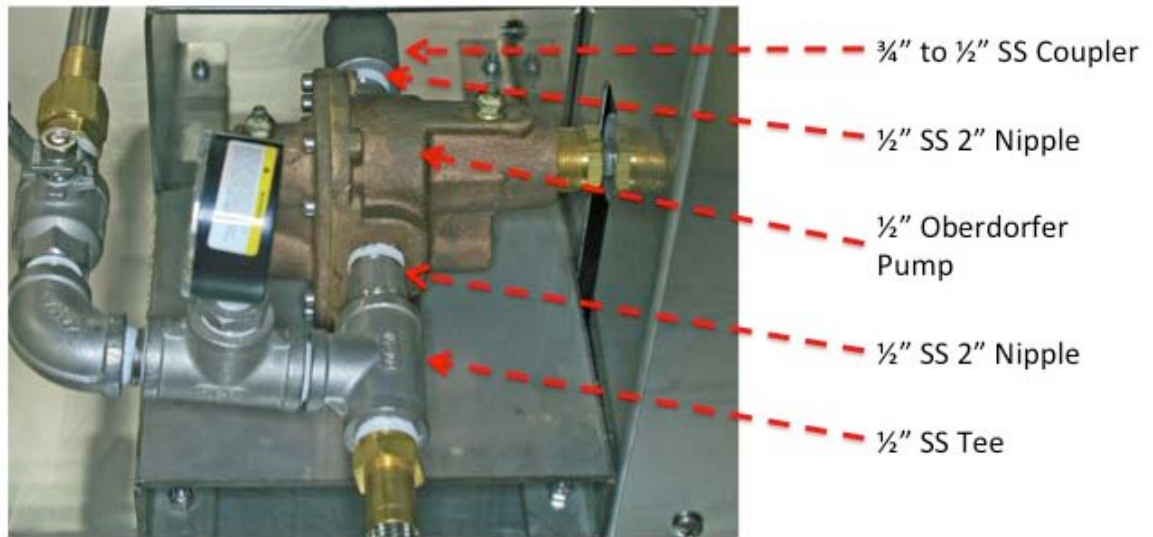


## Filter Press Documentation 7" and 10"

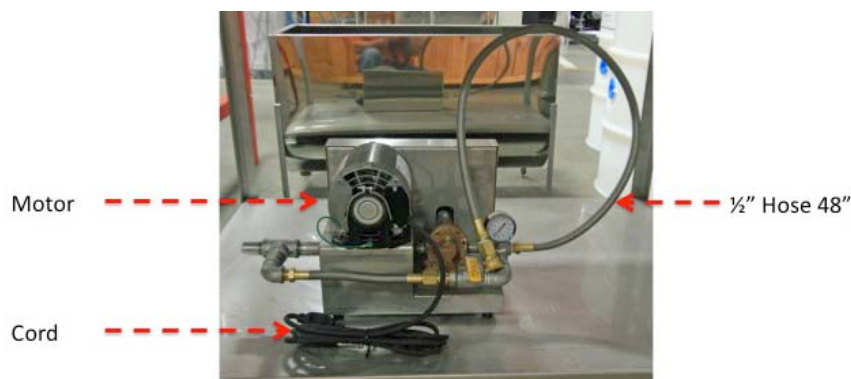


Item Description	Leader Order #	Further Information
Pressure Gauge	55110	
1/2" to 1/4" SS Adapter	72311	
1/2" SS Tee	72331	
1/2" SS Close Nipple	72101	
1/2" SS 90° Elbow	72321	
1/2" SS Ball Valve	60100	

## Filter Press Documentation 7" and 10"

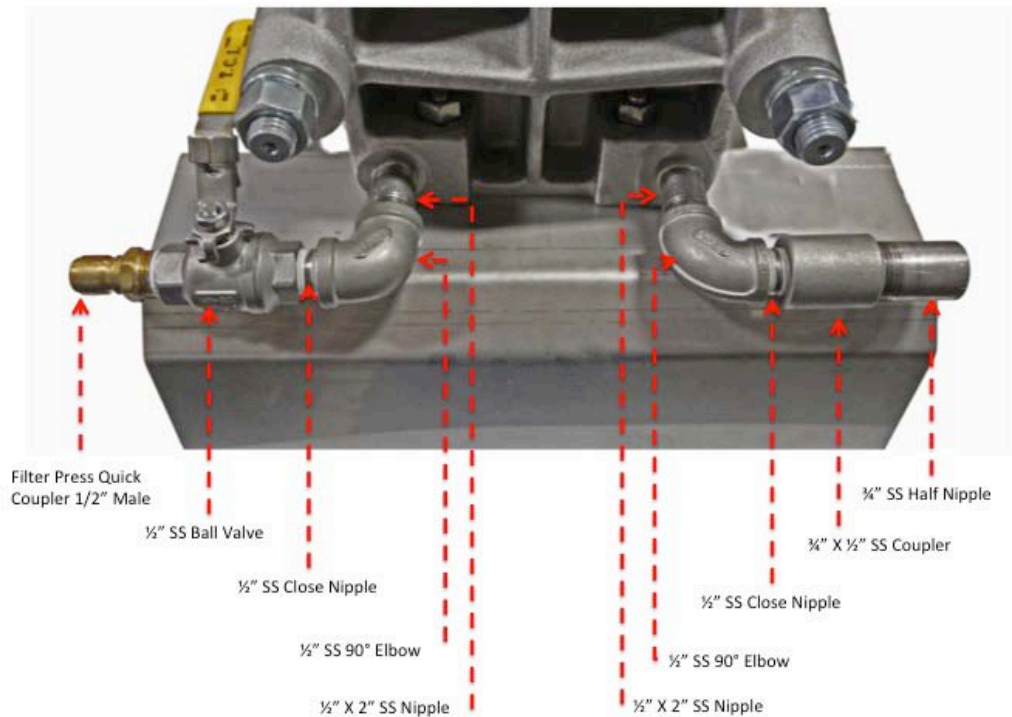


Item Description	Leader Order #	Further Information
3/4" to 1/2" SS Coupler	72189	
1/2" SS 2" Nipple	72103	
1/2" Oberdorfer Pump	63075	
1/2" SS Tee	72331	
Oberdorfer 1/2" Pump Gasket	63082	



Item Description	Leader Order #	Further Information
Hose 1/2" X 48"	55112	
Motor	55113	
Cord	55116	

## Filter Press Documentation 7" and 10"



Item Description	Leader Order #	Further Information
Filter Press Quick Coupler 1/2" Male	55115	
1/2" SS Ball Valve	60100	
1/2" SS Close Nipple	72101	
1/2" SS 90° Elbow	72321	
1/2" X 2" SS Nipple	72103	
3/4" X 1/2" SS Coupler	72189	
3/4" SS Half Nipple	72187	4" Nipple that is cut

## Filter Press Documentation 7" and 10"

Item Description	Leader Order #	Further Information
 <p>Filter Press Empty Frame</p>	<p>7" 55238</p> <p>10" 55242</p>	
 <p>Filter Press Waffle Plate</p>	<p>7" 55237</p> <p>10" 55241</p>	
 <p>Filter Press Wing Nut</p>	<p>7" 55232</p> <p>10" 55235</p>	

**Notes:**

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