



OWNER'S MANUAL



CDL'S TANK OF THE FUTURE DRAW OFF TANKS WITH FILTER PRESS

Les Équipements d'Érablière CDL inc.

Thank you for choosing a CDL tank of the future. Our 40 years of experience working with sugarmakers ensures you that you acquired a performant and quality piece of equipment. Before using this product, make sure you understand all the following instructions. If there is any problem upon reception of this product, please immediately contact CDL or your local representative.

FINDING INFORMATION

Make a record for future use

Brand: _____

Purchased Date: _____

Model Number: _____

Serial Number: _____

Serial number location

The serial number is located on the back side of the tank



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SAFETY

Operate your tank of the future safely. **Never run the pump with the valves closed.** Pressure will build in the system and a hose could unplug, shooting hot syrup out of the machine. **Never run the system at a pressure higher than 60 PSI.** The pressure could cause the blue hose to unplug or burst open.

A filter press can be a dangerous piece of equipment. It processes very hot maple syrup, so when it is in operation, the plates get very hot. Make sure that no one touches the press. Also, before operating, inspect every hose to make sure they are in good condition, especially the one between the pump and the plates because it's the one that sustains the highest pressure.

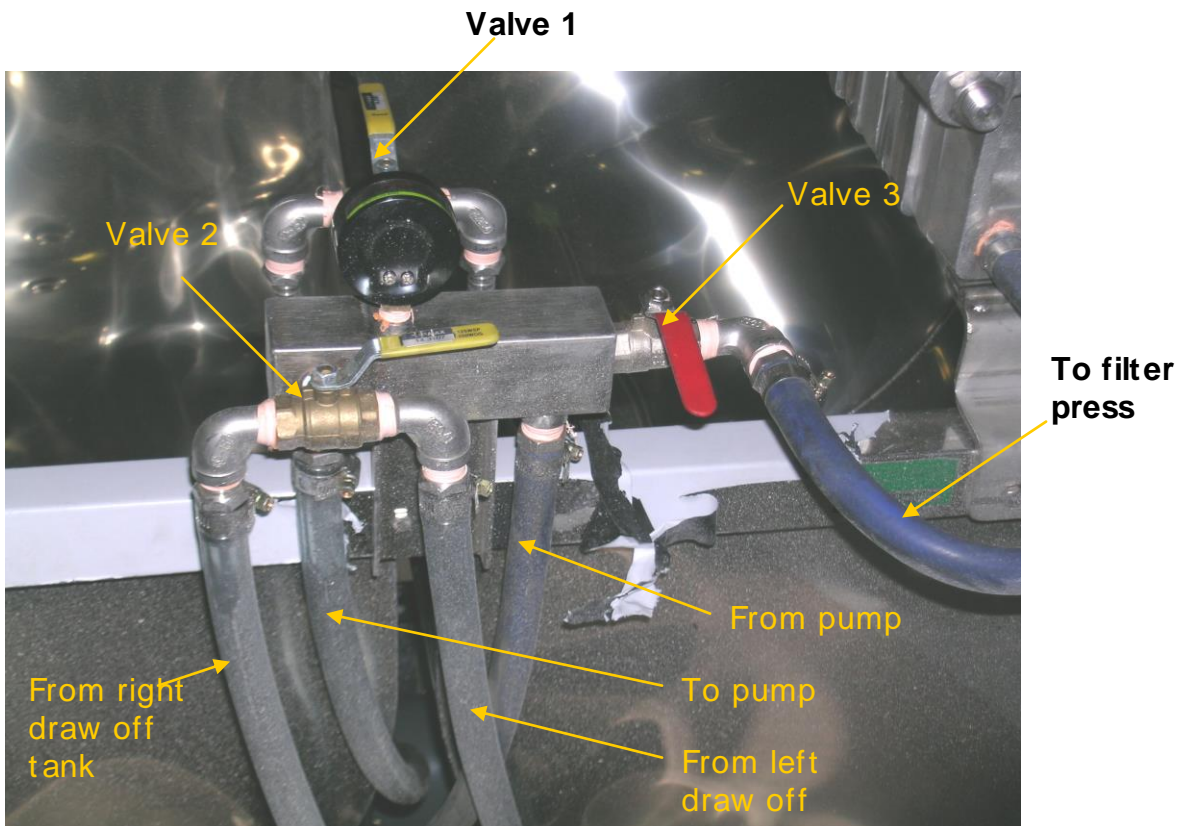
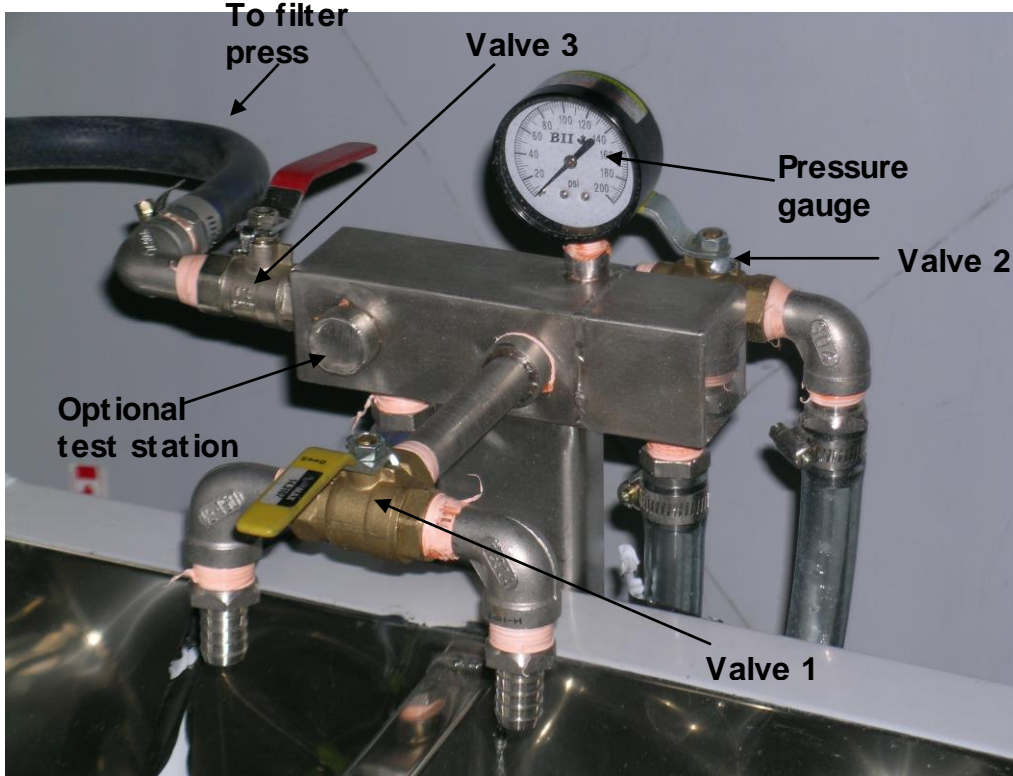
If you have to replace any hose, make sure it is strong enough to take a temperature of at least 230⁰ F and a pressure of 200 psi.

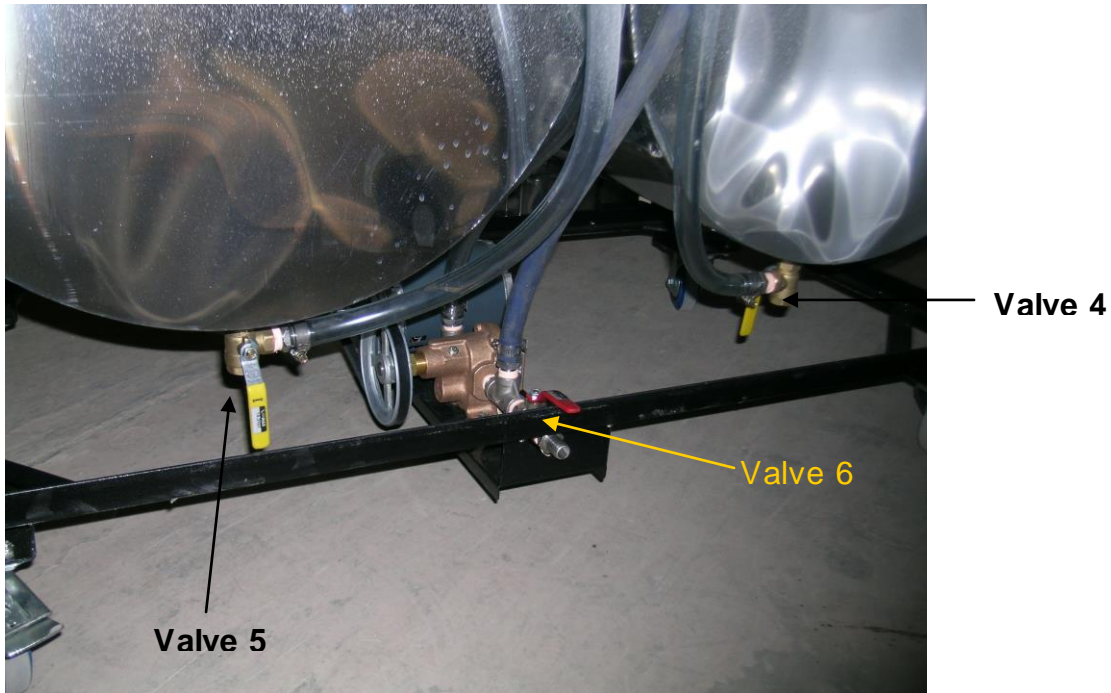
Finally, always watch the pressure gauge of the press. If the pressure gets over 60 psi, it means that it's time to replace the filter papers. If you don't, there is a chance that a hose might either burst or pull out of its fitting, splashing hot syrup all over the place. If it happens, anybody near may suffer severe burns.

Manipulate hot maple syrup can also be hazardous. Always wear heat resistant gloves and be very careful not to spill any hot liquid on you or someone nearby. Serious burns can be caused by hot maple syrup.



Double tank of the future (without hydrometer test station)





OPERATION

IMPORTANT: Grease the pump every 3 days with white food grade grease

***Your tank could be hooked up differently, call CDL if you need help.

1- Filtration

- 1.1 Close valve no 1 (center position)
- 1.2 Select from witch tank you will feed the pump with valve no 2
- 1.3 Turn on valve no 3
- 1.4 Open valve no 4 (or 5 if syrup is in other tank)
- 1.5 Close valve no 5 (or 4 if syrup is in other tank)
- 1.6 Verify that valve no 6 is closed
- 1.7 Turn on the pump
- 1.8 Watch often the pressure gauge. Pressure should be between 10 and 40 PSI
- 1.9 If pressure exceeds 45 PSI, lower it by opening slightly valve no 1 and clean the machine after you are done with the current batch

2- Use the tank for a pan change (empty a syrup pan)

- To put the content of the syrup pan in the tank of the future
- 2.1 Open valve no 1 to one of the 2 tanks
 - 2.2 Close valve no 2
 - 2.3 Close valve no 3
 - 2.4 Close valve no 4

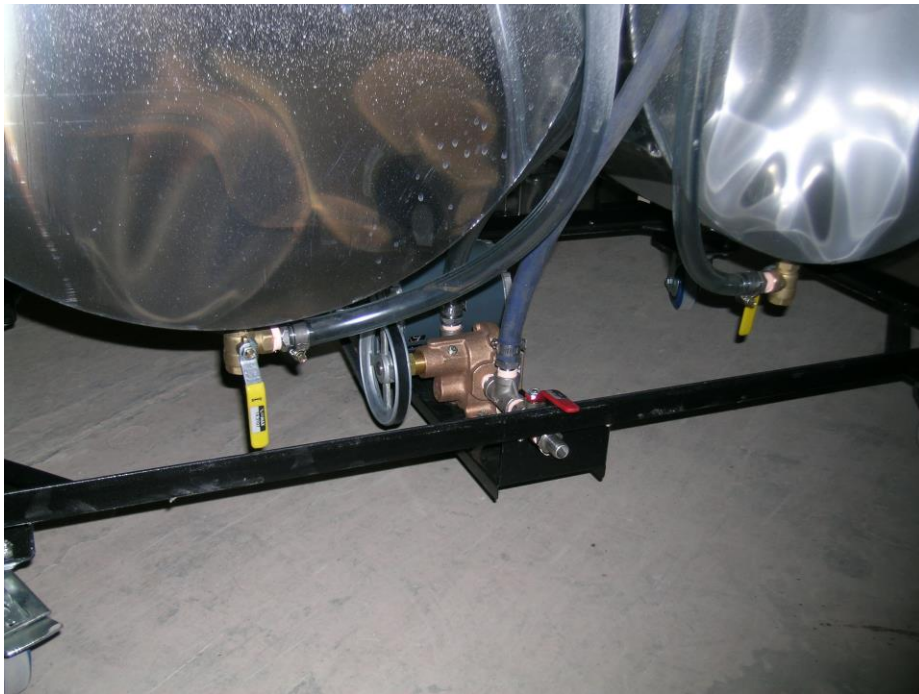
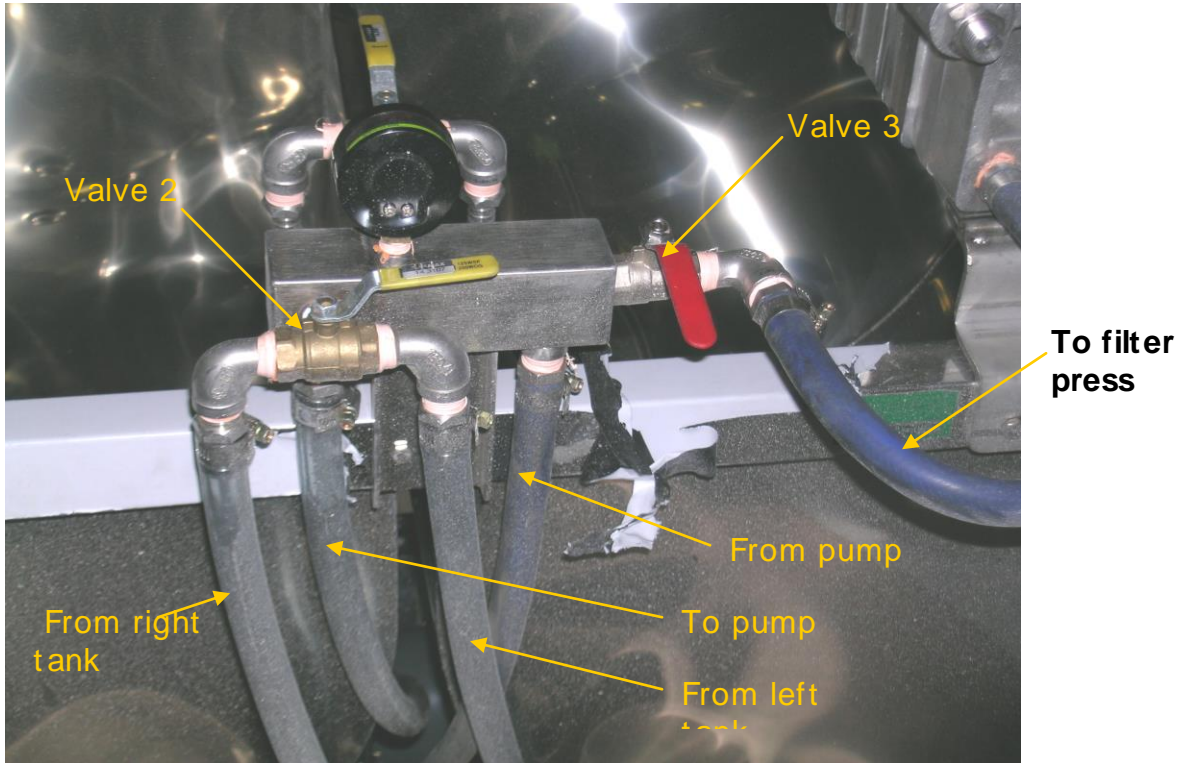
- 2.5 Close valve no 5
 - 2.6 Verify that valve no 6 is in horizontal position
 - 2.7 Turn on the pump
 - 2.8 Put the hose of valve no 2 in the clean pan
- 3- Use the tank for a pan change (send syrup from tank to clean pan)
- 3.1 Close valve no 1
 - 3.2 Close valve no 3
 - 3.3 Turn valve no 2 to choose the full draw off tank
 - 3.4 Open the full tank valve either valve 4 or 5 and leave the other closed
 - 3.5 Install a hose between valve no 6 and the syrup pan
 - 3.6 Open valve no 6 and start the pump
- 4- Hydrometer test (if you have the option)
- 4.1 Close valve no 1
 - 4.2 Close valve no 2
 - 4.3 Close valve no 5
 - 4.4 Turn on the pump
 - 4.5 Gradually open valve no 3 and fill your cup
 - 4.6 Close valve no 3 and take your reading
 - 4.7 Empty the tube by opening valve no 2



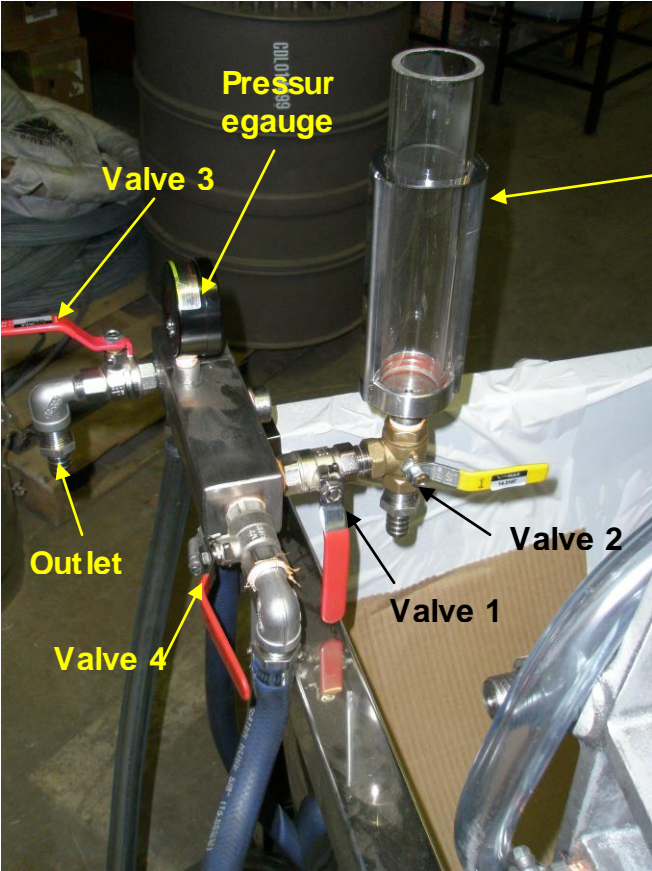


Double tank of the future with hydrometer test station option, the back is connected identical to the model without the test station.



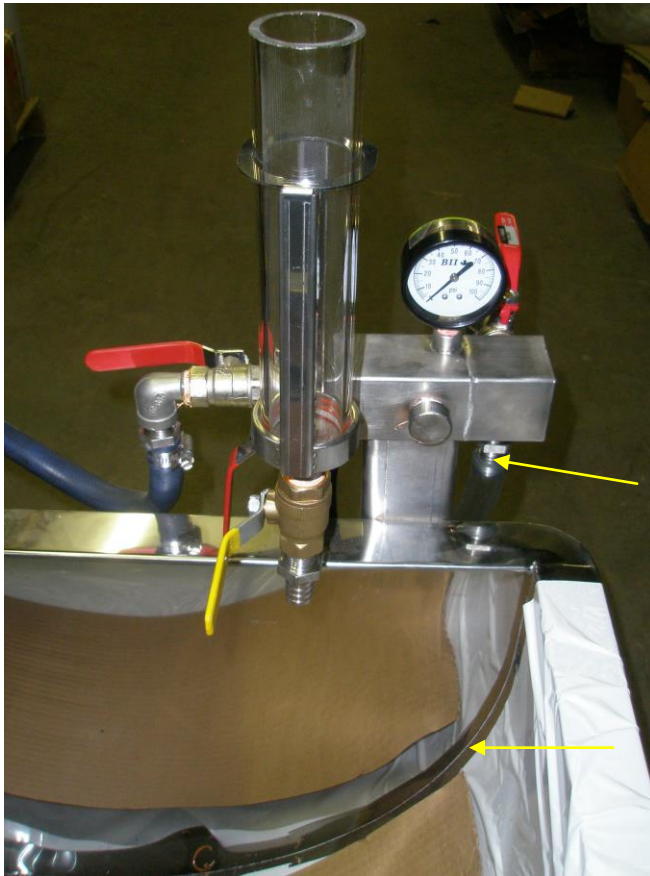


SINGLE TANK OF THE FUTURE

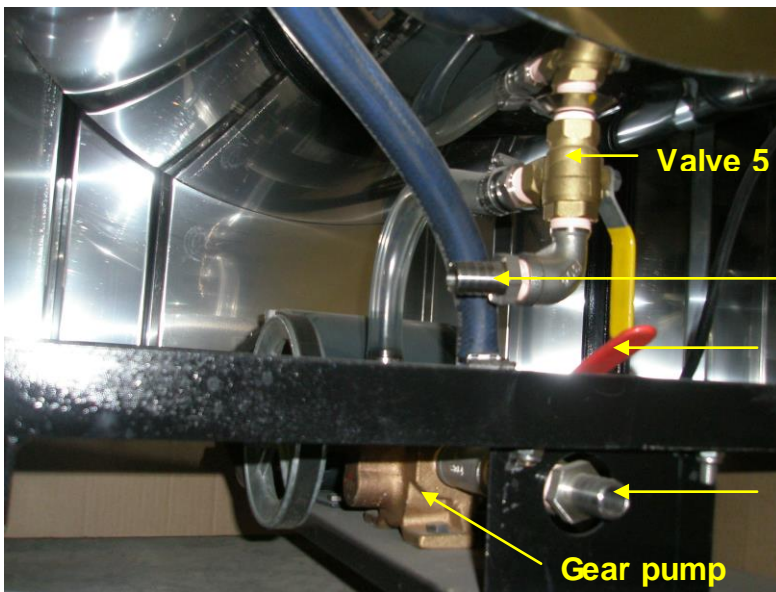


Hydrometer test tube





**Outlet C
(under the manifold)**



**To outlet C
(manifold)**

Valve 6

Outlet B

Gear pump



OPERATION

IMPORTANT: Grease the pump every 3 days with white food grade grease

***Your tank could be piped differently, call Maple Pro if you need help.

1- Filtration

- 1.1 Close valve no 1
- 1.2 Valve no 2 to send syrup to tank if needed (see step 1.8)
- 1.3 Close valve no 3
- 1.4 Close valve no 4
- 1.5 Valve 5 turned to send syrup to pump
- 1.5 Verify that valve no 6 is closed
- 1.6 Put the hose coming out of the syrup press in a barrel or container
- 1.6 Turn on the pump
- 1.7 Watch often the pressure gauge. Pressure should be between 10 and 40 PSI
- 1.8 If pressure exceeds 40 PSI, lower it by opening valve no 1 and clean the machine after you are done with the current batch

2- Use the tank for a pan change (empty a syrup pan)

To put the content of the syrup pan in the tank of the future

- 2.1 Open valve no 1
- 2.2 Valve no 2 to send syrup to tank
- 2.3 Open valve no 3
- 2.4 Close valve no 4
- 2.5 Verify that valve no 5 is in horizontal position
- 2.6 Close valve no 6
- 2.7 Take a hose from outlet A to the syrup pan filled with syrup
- 2.7 Turn on the pump until the pan is empty
- 2.8 Turn off the pump

3- Use the tank for a pan change (send syrup from tank to clean pan)

To put the content of the tank of the future in a clean syrup pan

- 3.1 Close valve no 1
- 3.2 Valve no 2 to send syrup to tank
- 3.3 Open valve no 3
- 3.4 Close valve no 4
- 3.5 Verify that valve no 5 is in horizontal position
- 3.6 Take a hose from outlet B to the syrup pan to be filled with syrup
- 3.7 Open valve no 6
- 3.7 Turn on the pump until the tank is empty
- 3.8 Turn off the pump

4- Hydrometer test (if you have the option)

- 4.1 Close valve no 1



- 4.2 Valve no 2 to send syrup to the glass tube
- 4.3 Close valve no 3
- 4.4 Close valve no 4
- 4.5 Valve no 5 in horizontal position
- 4.6 Valve no 6 closed
- 4.7 Turn pump on
- 4.8 Gradually open valve no 1 and fill your cup
- 4.9 Close valve no 3
- 4.10 Turn off the pump
- 4.11 Take your reading
- 4.12 Empty the tube by turning valve no 2 to drain to tank

If you don't have the hydrometer test station, the procedure is the same except that you don't have valve no 2. Just ignore any instruction concerning valve no 2.



FILTER PRESS DESCRIPTION (drawing 1)

A filter press is a piece of equipment made to filter liquids. This CDL press is primarily used to filter maple syrup, but it can also filter all kinds of liquids as wine, honey or beer. The plates are made of cast aluminum, providing lightweight and good heat conductivity. It is essential to filter maple syrup to get a better tasting product, free of impurities.

Rear plate: The rear plate is fixed to the frame of the press. The syrup inlet and the outlet are located on this plate

Filter paper: You must insert one filter paper between each plates of the press. These papers do the filtering of the maple syrup. We recommend 2 papers between each plate in case of a paper tear.

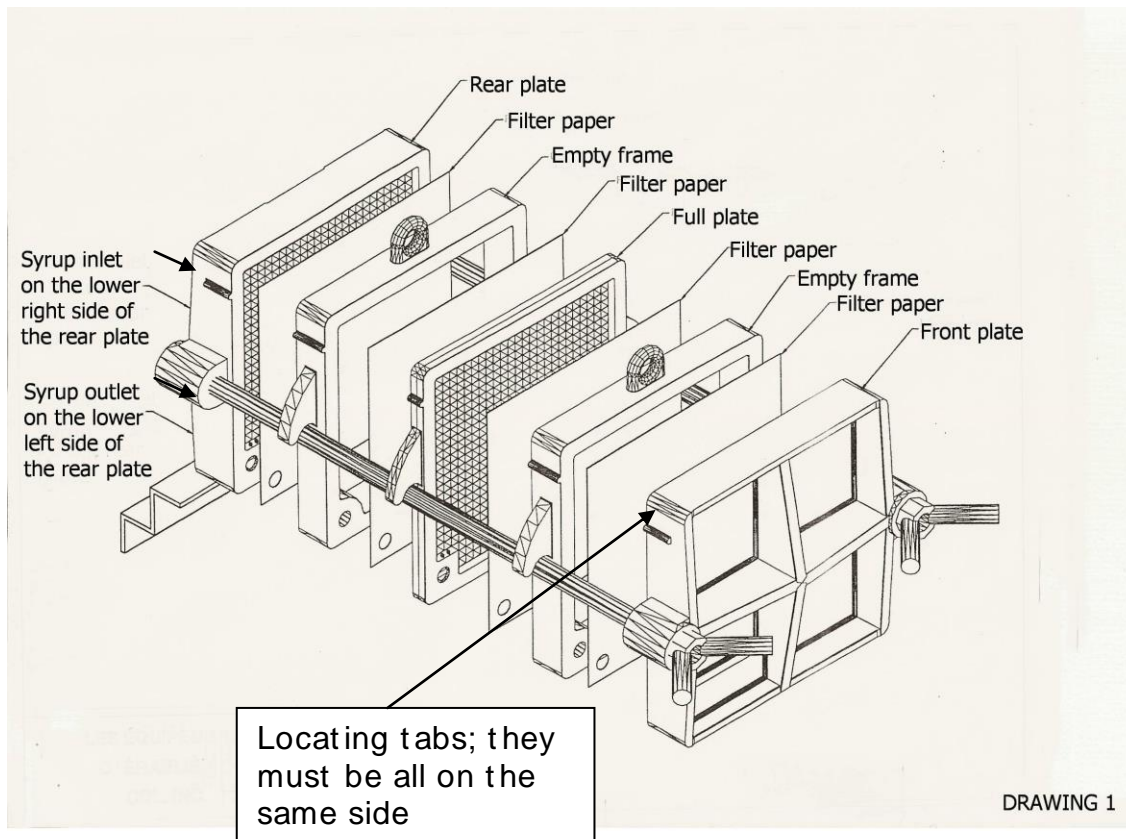
Hollow plates: When assembling the press, you must always alternate between a full plate and a hollow plate. These hollow plates allow the syrup in the press and they keep the filtering residues and the filter powder in the press.

Full plates: These plates give the syrup access to the outlet of the press. The small holes in these plates must stay unplugged or the syrup will not leave the press.

Front plate: This plate must be installed after an empty frame and tighten in place using 2 wing nuts.

NOTE: The thickness of the hollow plates is important. The thicker the plates, the more filter powder they can hold, the longer you will be able to run between filter paper change.





FILTER PRESS ASSEMBLY (drawing 2)

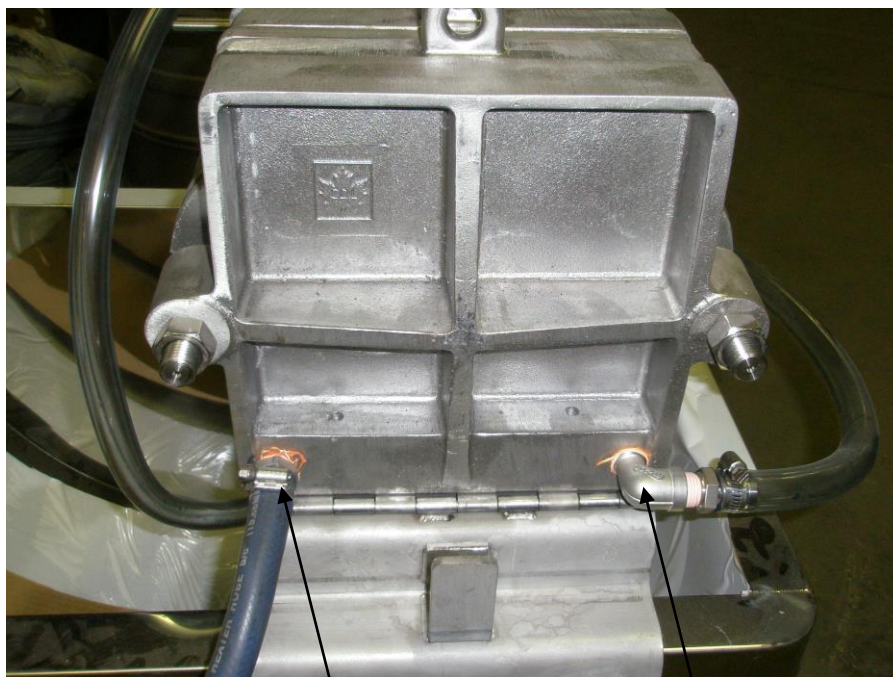
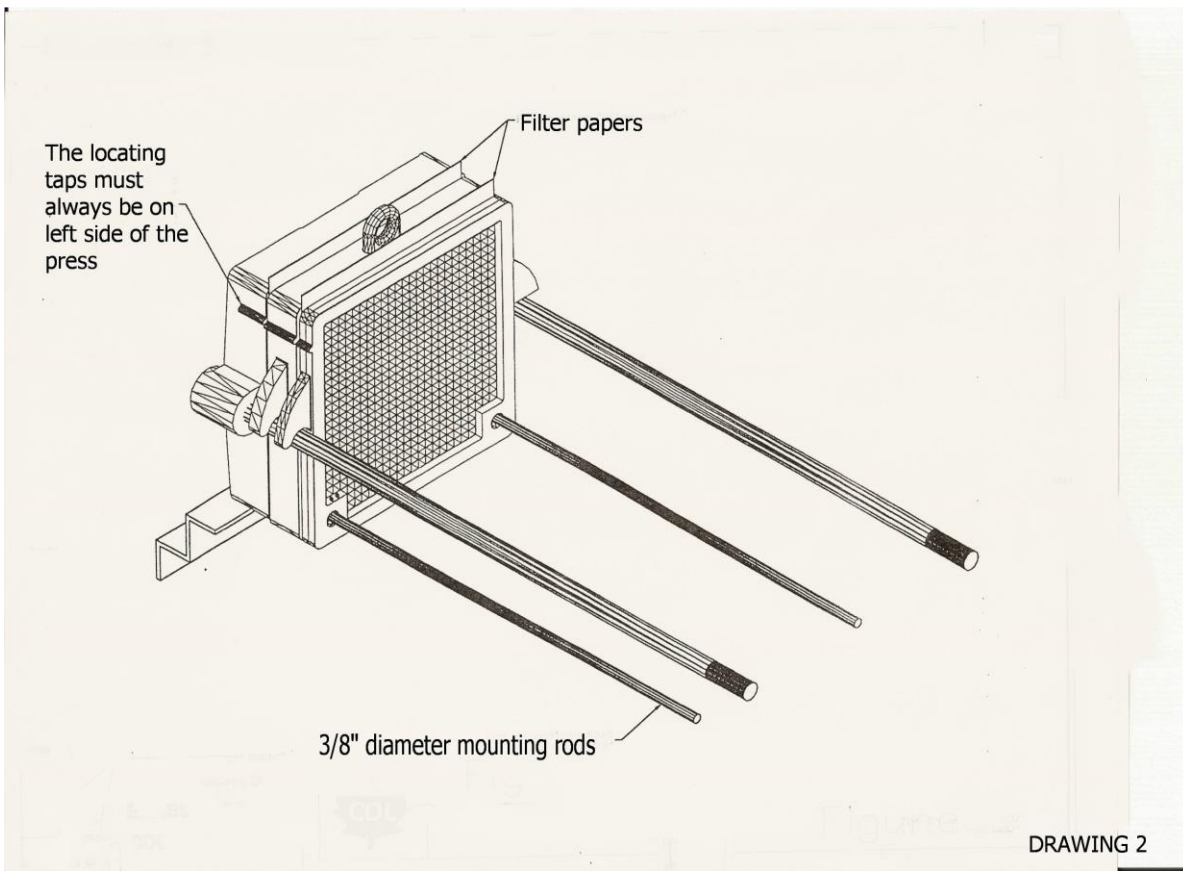
Insert the 3/8" metal rods in the 2 threaded holes of the rear plate.

Assemble the press in the order as shown in Drawing 1. Make sure that all the locating tabs are all lined up on the left side.

Before installing the front plate, remove the steel rods.

Insert the front plate making sure that the filter paper is in the right place.

Tighten the plates together with the winged nuts. Note that during the filtration process, the press will become warm. When it gets there, retighten the winged nuts.



Syrup inlet

Syrup outlet



OPERATING THE FILTER PRESS

Put 4 cups of filtration powder in 12 liters (3 gallons) of hot water and mix well.

Start the pump and run the entire mixture through the press, making sure that the water coming out of the press is clear. Throw away the water. If the water is not clear, it means that the press is not assembled properly.

IMPORTANT: never run the gear pump dry. It will wear very fast.

When you have enough syrup in the draw off tank, mix more filter powder in the syrup.

Start the pump and eliminate the water from the press using hot syrup from the sap pan.

Once the water is removed from the press, keep going and put syrup in barrels or other container. Always verify the quality of the filtration of the syrup before filling the barrels. If there is any cloudyness in the syrup, there is a problem.

Always filter quickly after you draw off. Syrup must be packed and sealed at 185⁰F or more. Packing at a lower temperature might cause the syrup to ferment after a while.

Keep filtering until you run out of syrup or the system pressure gets higher than 80 psi. When the pressure reaches that level, stop, take press apart and change the filter papers.

Reassemble the press and start filtering following the same procedure.

Add filter powder occasionally in the draw off tank. The rule of thumb is to add 1 cup per 5 gallons of syrup. Depending on the quality of the syrup, you might need more or less.



USE OF FILTERAID

In general, diatomite (diatomaceous earth) has a more intricate particle shape and thus provides a more tortuous path for suspended particles to be trapped.

Because filtering is basically a surface trapping phenomena (over simplified) and thus one always strives to use a filter aid that has a median pore size (the opening of the tortuous channels) just slightly smaller than the average particle size of the suspended matter that you are trying to remove. Diatomaceous Earth has many grades to select from for the specific application.

Diatomaceous Earth (also known as DE, diatomite and Kieselghur) is the fossil remains of plankton that died in the oceans millions of years ago and sank to the bottom to form deposits. Chemically it is predominantly silica, one of the most abundant minerals on the upper crust of our planet, earth! It's odorless, non-toxic and foodgrade.

FILTRATION "THEORY"

Filtration using diatomite is a two step operation. First, a thin protective layer of filter aid, called the precoat, is built up on the filter septum by recirculating a filter aid slurry. After precoating, small amounts of filter aid (body feed) are regularly added to the liquid to be filtered. As filtering progresses, the filter aid, mixed with the suspended solids from the unfiltered liquid, is deposited on the precoat. Thus, a new filtering surface is continuously formed. The minute filter aid particles provide countless microscopic channels which entrap suspended impurities but allow liquid to pass through, without clogging.

An efficient, economical filter aid must:

- 1) have rigid intricately shaped, porous individual particles.
- 2) form a highly permeable, stable and incompressible cake
- 3) remove even the finest solids at high rates of flow
- 4) be chemically inert and essentially insoluble in the liquid being filtered.



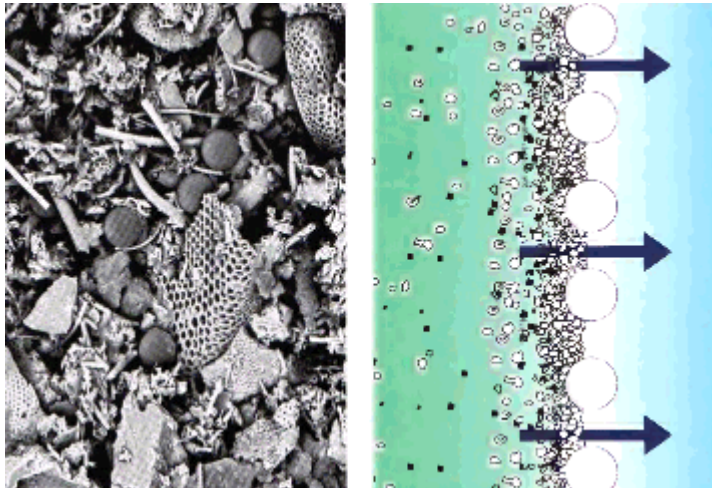
Diatomite meets these requirements due to the wide variety of intricately shaped particles and inert composition which makes it practically insoluble in all but a few liquids.

THE FILTRATION SYSTEM

The essentials of a filter aid filtration system consist of the filter, the filter feed pump, tanks containing filter aid for precoat and body feed pump for continuous addition of filter aid

Continuous addition of filter aid (body feeding) is accomplished either by feeding filter aid as a slurry or by dry feeding. Slurry feeding is usually done with plunger or diaphragm pumps. If filtration is a batch process, the filter aid can be added directly to the batch as admix.

In the operation of a filtration system, the filter is first precoat by circulating a mixture of filter aid and clear or filtered liquid from the precoat tank through the filter and back to the precoat tank. This is continued until all the filter aid is deposited on the filter septum. The body feed injection system is then started and the filter is changed over, with minimum fluctuations in pressure, from precoat to filtering.



PRECOATING

The first step in the use of filteraid is to build up a "precoat" of filter aid on the filter septum. The purpose of the precoat is threefold:

1. To prevent the filter septum from becoming clogged by impurities, thus prolonging septum life.
2. To give immediate clarity.
3. To facilitate cleaning of the septum at the end of the cycle.

Precoating is accomplished by circulating a slurry of filter aid and filtered or clear liquid between the filter and the precoat tank. Since most of the filter aid particles are smaller than the openings in the septum, they must form the precoat by bridging these openings. These bridges can be upset by air bubbles, sudden changes in pressure, or vibrations, causing the filtrate to become turbid until the upsetting influences have been corrected.

AMOUNT OF PRECOAT

The amount of precoat should be from 1 to 2 lbs. of filter aid per 10sq. ft. of filter area, the greater amount being used when distribution of flow in the filter is poor. If it is perfectly distributed, 10 lbs. (4.5 kg) of filter aid per 100 sq. ft. (9.29 sq. m) of filter area will give a precoat of approximately 1/16" (1.6 mm) in thickness. Precoat

slurry concentration will depend primarily on the ratio of filter area to the liquid volume of the filter and piping. If the concentration is much below 0.3%, precoating may be difficult since the formation of the bridge depends partly on the "crowding" effect of the particles of Celite trying to get through the septum openings.

Surface of a 7" plate: 0.34 ft²
Surface of a 10" plate: 0.69 ft²
Surface of a 20" plate: 2.78 ft²

Exemple: A 10" press with 6 full plates gives 4.17 ft²
So, use about ¾ lbs of filter aid.

1 cup of filter aid = 0.259 lbs
¾ divided by 0.259 = 2.89 so, use 3 cups of filter aid

PRECOATING RATE

The precoat pumping rate will depend mainly on the viscosity of the liquid used. The rate should be sufficient to keep all the filter aid in suspension but should not be fast enough to cause erosion of precoat in the filter. For water, a typical rate is from 1 to 2 gals. per sq. ft. of filter area per minute (gsfm), or 40-80 liters per sq. m of filter area per minute. For viscous liquids, the rate may be as low as 5 gals. per sq. ft. per hour (gsfh), or 20 liters per sq. m per hour. A general rule for precoating is to precoat at that rate which gives a differential pressure of approximately 2 lbs./sq. in (13.8 kilopascals). For water, an upward velocity of at least 4 1/2 ft./min. (1.4 meters/min.) is required for proper filter aid suspension. The suspension of filter aid can be improved in the tank type, or pressure leaf filter, by recirculating part of the inlet flow from the top of the filter back to the precoat tank.

TROUBLESHOOTING

Precoating filtrate should clear up in 2 to 5 minutes. However, this does not mean the precoat is all in place. Continue precoating for a few more minutes. Lack of clarity of filtrate could be caused by any precoat erosion caused by too high a circulation rate; blinding of filter septum; insufficient precoat at top of leaves caused by too little circulation; tears in septum; old screens with worn and/or separated wires; leaks between septum and rim of leaf; worn gaskets between leaf discharge nipple and discharge manifold; wrinkles in septum; negative pressure on discharge manifold causing flashing inside the leaf.



CLEANING THE FILTER PRESS

Once all the syrup is filtered, stop the pump.

Fill the draw off tank with hot water.

Start the pump to push the syrup remaining in the press out until you see water in the clear hose and stop the pump.

Remove the clear hose from the container and put it over a floor drain.

Restart the pump and empty the draw off tank.

Take the press apart, throw away the papers and clean with water all the plates. Careful not to splash the electric motor with water.

Reassemble the press with papers to be ready for the next round.

FILTERING CAPACITY

7" press: 0.2 to 0.4 barrels (40 us gallon) per plate, for roughly 2000 taps with a full bank press

10" press: 0.4 to 0.75 barrels per plate, for roughly 4000 taps with a full bank press

20" press: 1.5 to 3 barrels per plate, for 15000 taps or more

Note: those numbers are approximative. Many factors will affect the press performance (syrup temperature, quality of syrup, quantity of niter in the syrup etc.)



MAINTENANCE

Graisser périodiquement les filets des tiges de support des plaques .

The only other maintenance required for the press is to keep it clean by washing it with hot water.

See the pump manual to see how to maintain it.

TROUBLESHOOTING

<u>Problem</u>	<u>Solution</u>
Syrup is cloudy	<ul style="list-style-type: none">- Plates are assembled wrong, verify tabs on the plates- A paper is blown, replace the papers- Not enough filter powder, add more powder
Keep blowing papers	<ul style="list-style-type: none">- Plates are assembled wrong, verify tabs on the plates- A plate has a problem that is poking a paper, inspect All full plates
Press stop filtering (no flow)	<ul style="list-style-type: none">- Verify pressure, if above 80 psi, replace papers- if pressure is normal, pump problem, repair or replace



WARRANTY

Your new CDL filter press is covered by limited 2 year warranty against manufacturing defects. For two years from your original date of purchase, Les Équipements d'Érablière CDL (CDL), will replace or replace any parts of this press that prove to be defective in materials or workmanship when such evaporator is installed, used and maintained in accordance with the provided instructions.

Exclusions

This warranty does not cover the following:

1. Product that has been transferred from its original owner to another party or removed outside the USA or Canada.
2. If anything else than maple syrup is processed in the machine.
3. If the pump is run dry.
4. If normal maintenance is not performed as specified in the CDL owner's manual.
5. Production loss due to any kind of failure of the press.
6. Revenu losses due to syrup quality.
7. Service calls which do not involve malfunction or defect in materials or workmanship, or used other than in accordance with the provided instructions.
8. Service calls to correct the installation of your press or to instruct you how to use it.
9. Any service beyond the first two years.
10. Damages caused by: services performed by unauthorized service companies; use of parts other than genuine CDL parts or parts obtained from persons other than authorized service companies; or external causes such as abuse, misuse, inadequate power supply, accidents, fires, or acts of God.
11. It doesn't cover the consumable products or accessories.
12. If the product was damaged by abusive use, negligence, accident caused by the customer, modification made by the customer, variation in the electric power.
13. Damage cause by the use of products that are not meant for use with our equipment or a bad use of cleaning products.

Disclaimer of implied warranties; limitation of remedies

Customer's sole and exclusive remedy under this limited warranty shall be repair or replacement as provided herein. Claims based on implied warranties, including warranties of merchantability or fitness for a particular purpose, are limited to two years or the shortest period allowed by law, but not less than two years. CDL shall not be liable for consequential or incidental damages such as property damages and incidental expenses or loss or revenues caused by any event covered by this warranty. Some states and provinces do not allow the exclusion or limitation of incidental or



consequential damages, or limitations on the duration of implied warranties, so these limitations or exclusions may not apply to you. This written warranty gives you specific legal rights. You may also have other rights that vary from states to states.

If you need service

Keep your receipt, delivery slip or some other appropriate payment record to establish the warranty period should service be required. If service is performed, it is in your best interest to obtain and keep all receipts. Service under this warranty must be obtained by contacting CDL at the addresses or phone numbers below. Obligations for service and parts under this warranty will be performed by CDL in Canada. Products features or specifications as described or illustrated are subject to change without notice.

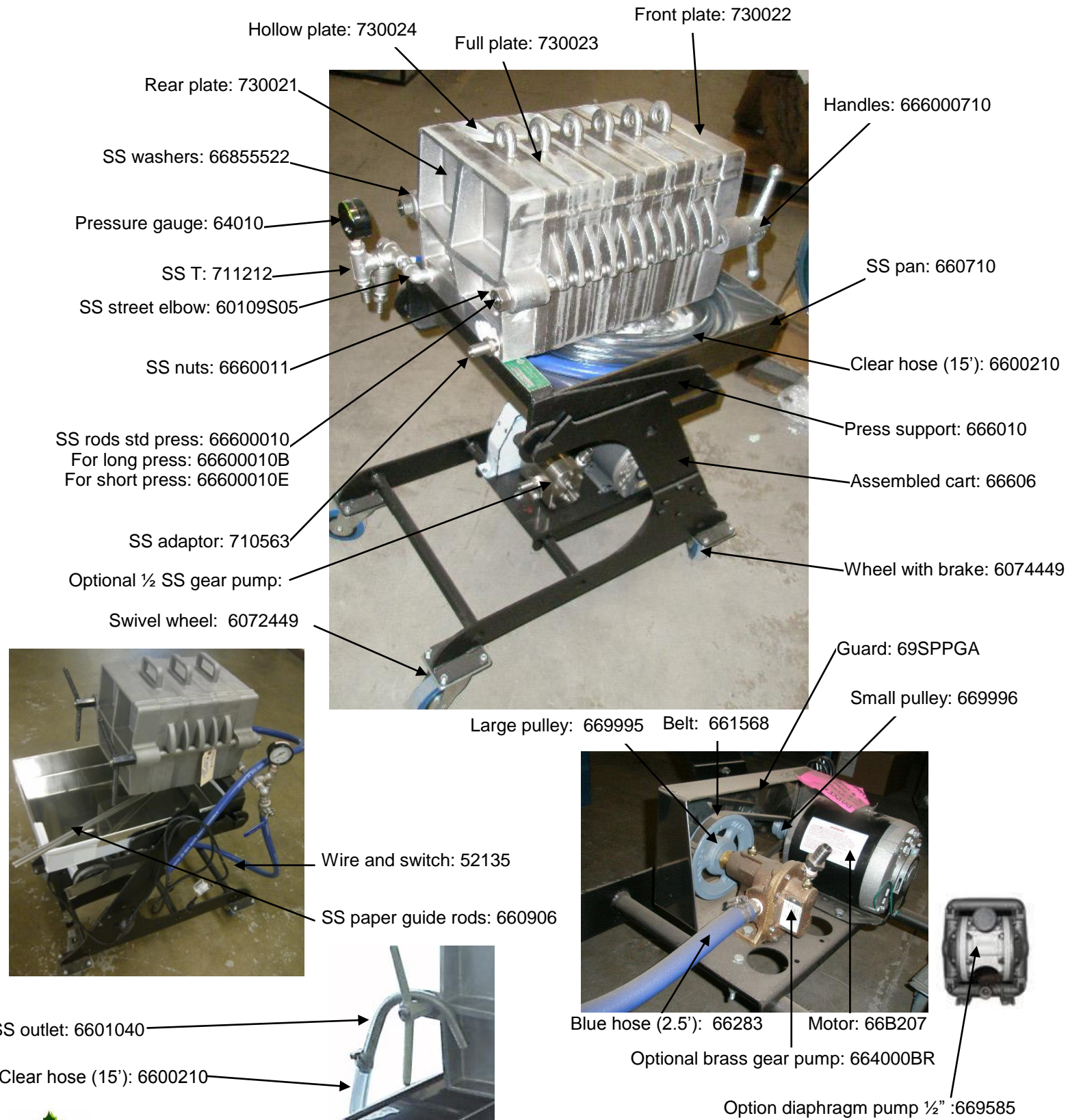
Les Équipements d'Érablière CDL
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(418) 883-5158

CDL USA
3 Lemnah Drive
St. Albans, VT, 05478
(802) 527-0000



CDL's 10" filter press

Note : model may look different, but part numbers remains the same



7" CDL filter press

Front plate: 730026

Hollow plate: 730028

Rear plate: 730025

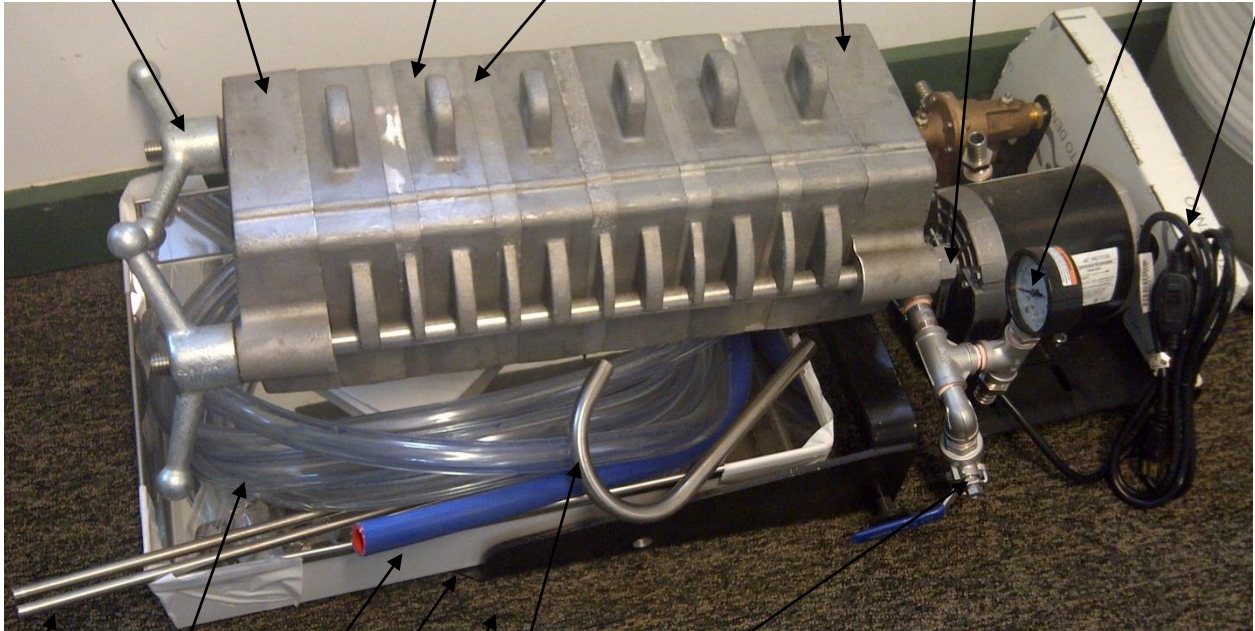
Handles: 666000710

Full plate: 730027

Pressure gauge: 64011

3/4" Nuts: 52135

Wire and switch: 52135



Guide rods: 660910

1/2" ball valve: 661110

Brass gear pump: 664000BR
Optional SS CDL gear pump: 664000SSDI

Clear hose 5/8": 660010

Syrup nozzle: 660010

Blue hose: 66283

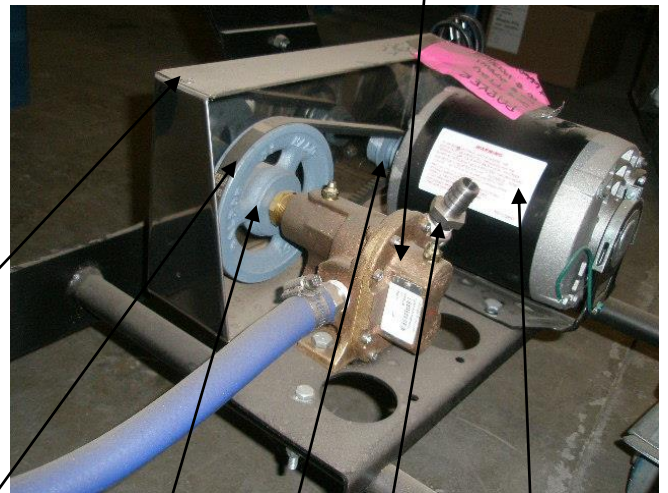
Press support: 660010

Drip tray: 660710



Option diaphragm pump 1/2": 669585

Guard: 69SPPGA



Belt: 661500

Large pulley: 660005

Motor: 660005



Small pulley:

○○○○○○

Adaptor 1/2" x 5/8":
710563

