Mash Filter Press

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Mash Filter Press Anatomy

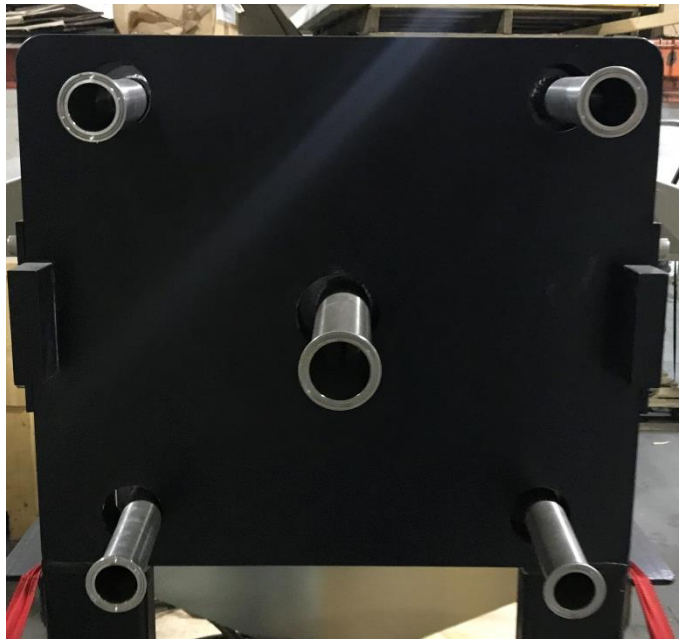
Mash Filter Press

Mash Filter Press Anatomy

- Frame
  - Carbon steel with FDA approved 2 part epoxy paint.
  - Unit is pre-treated and sand blasted prior painting process for high quality paint adhesion
  - Paint Can be custom or specific colors

Mash Filter Press Anatomy

- Inlet/Outlet Manifold
  - Stainless head plate connection
  - Pushes against filter plates under pressure to allow flow to go directly from stainless steel piping to polypropylene plates and clothes
  - All materials in press are FDA approved for direct product contact

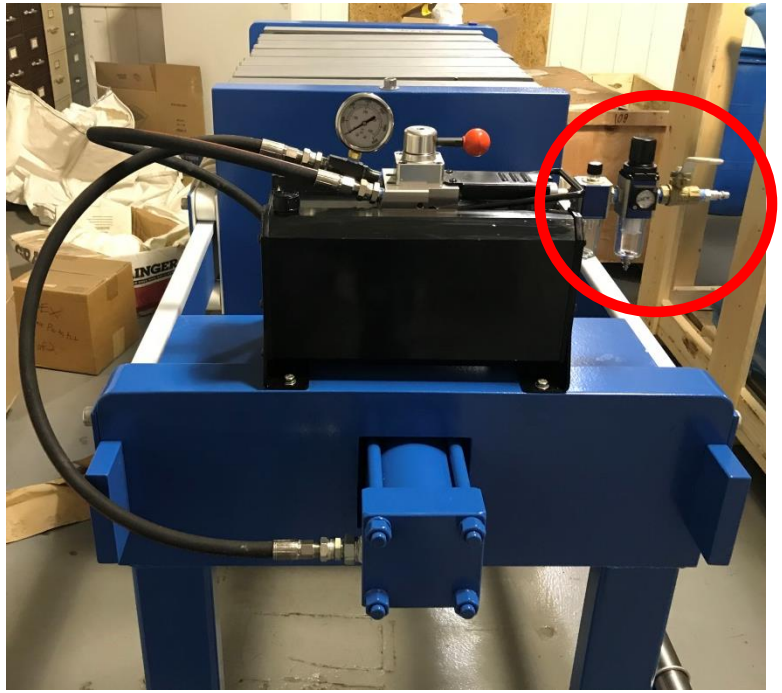


Mash Filter Press Anatomy

- Inlet/Outlet Manifold
  - Valves & Piping
    - Takes all outlets and pipes them to 1 central outlet
    - Valves are installed to control feed port, returns and possible cleaning procedures

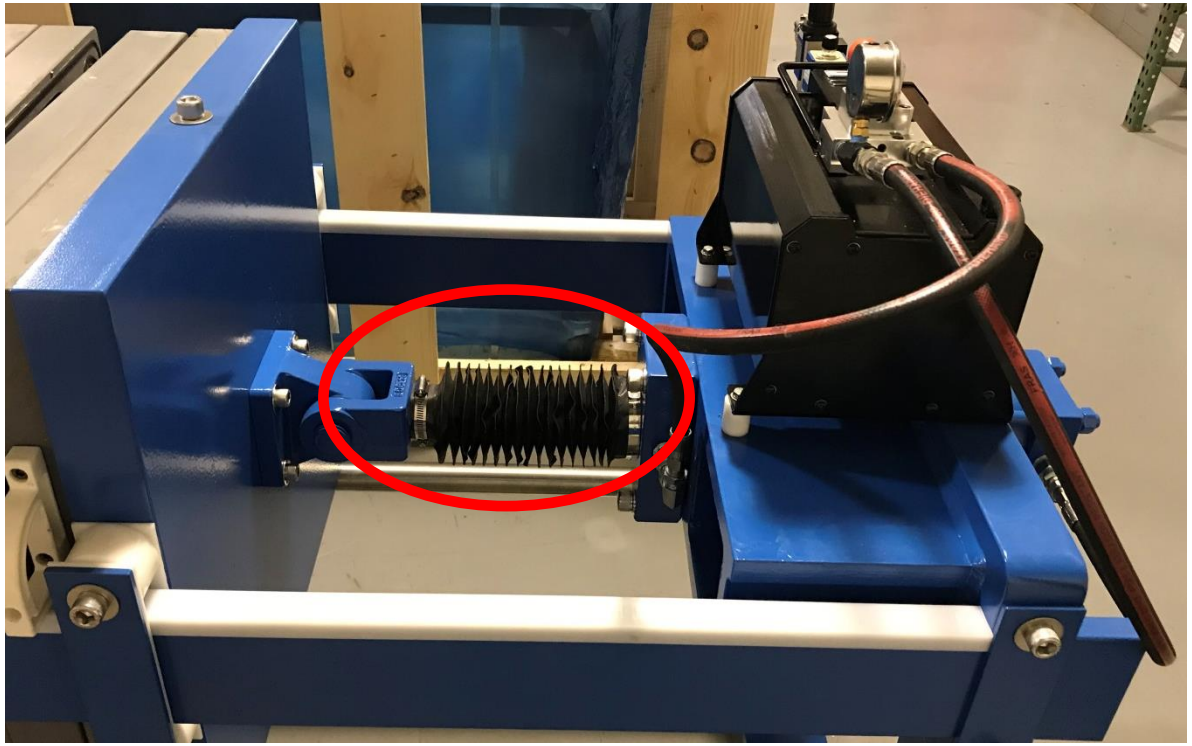
Mash Filter Press Anatomy

- Hydraulic closure unit
  - Unit is filled with FDA approved Hydraulic Oil(Vegetable Base)
  - Compressed Air is feed into inlet(circled in red)
  - As air enters, air pushes hydraulic oil into piston



Mash Filter Press Anatomy

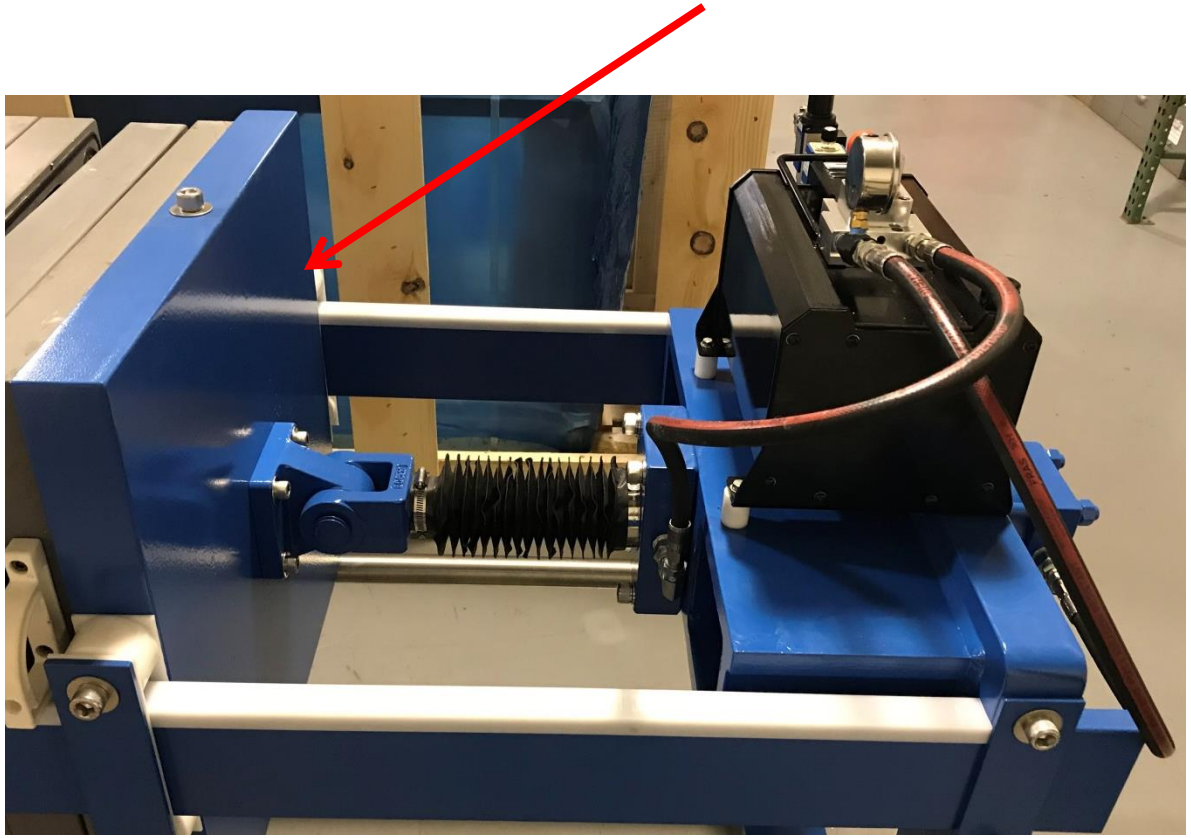
- Piston
  - As compressed air goes into hydraulic unit, the oil goes into piston to extend it, move the pusher plate as the unit compresses.



Mash Filter Press Anatomy

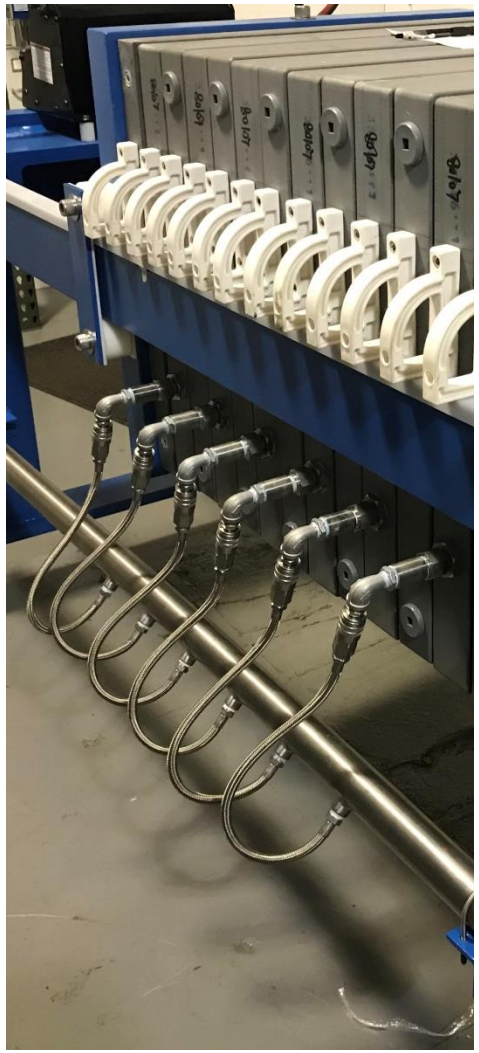
Pusher Plate

- Solid Steel Plate that hydraulics/piston push to keep pressure on plate stack while in operation



Mash Filter Press Anatomy

- Membrane squeeze manifold
  - Main Line is supplied with compressed air to get air to each membrane plate



Mash Filter Press Anatomy Option

Distance Piece

-Placed in between Pusher Plate and Piston

-Allows for future growth while Starting with smaller capacity

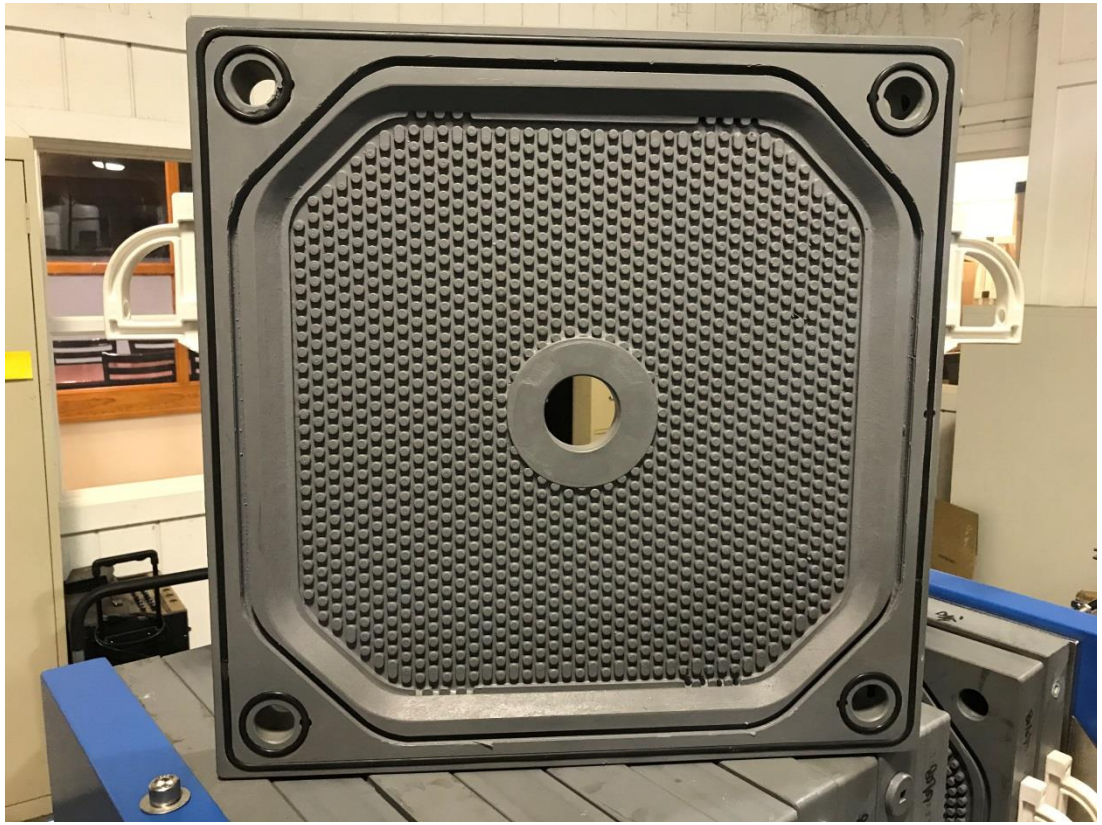
-Can be set up for any capacity Jump in same plate size

-Easy to remove and add more plates

-Gives brewer flexibility for system size

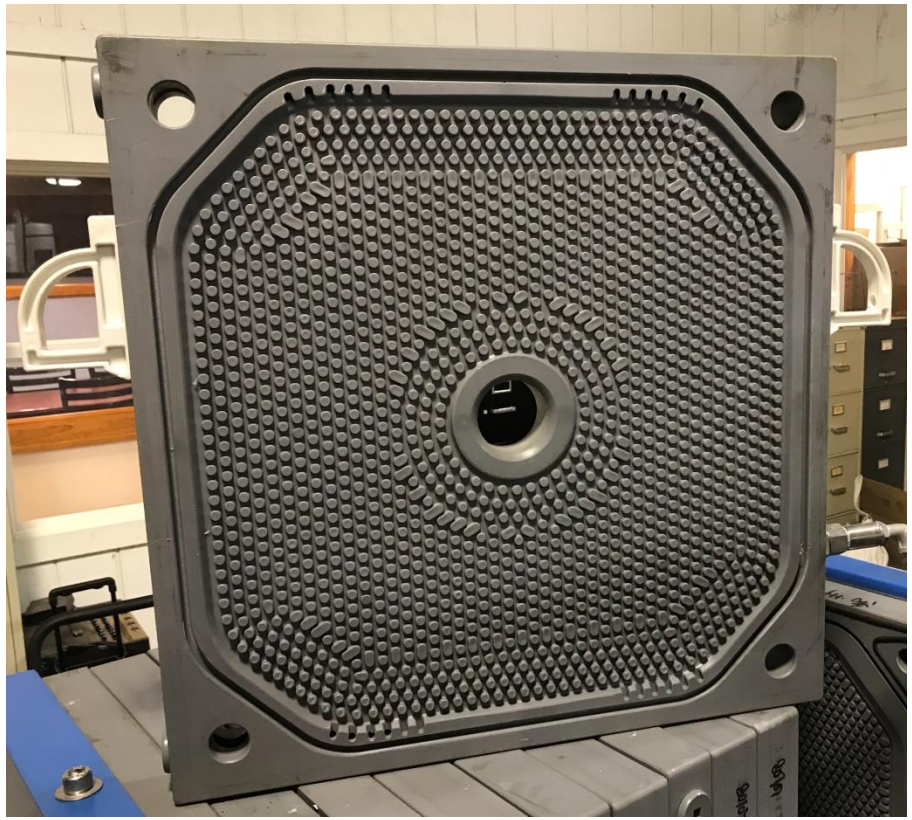
Mash Filter Press Anatomy

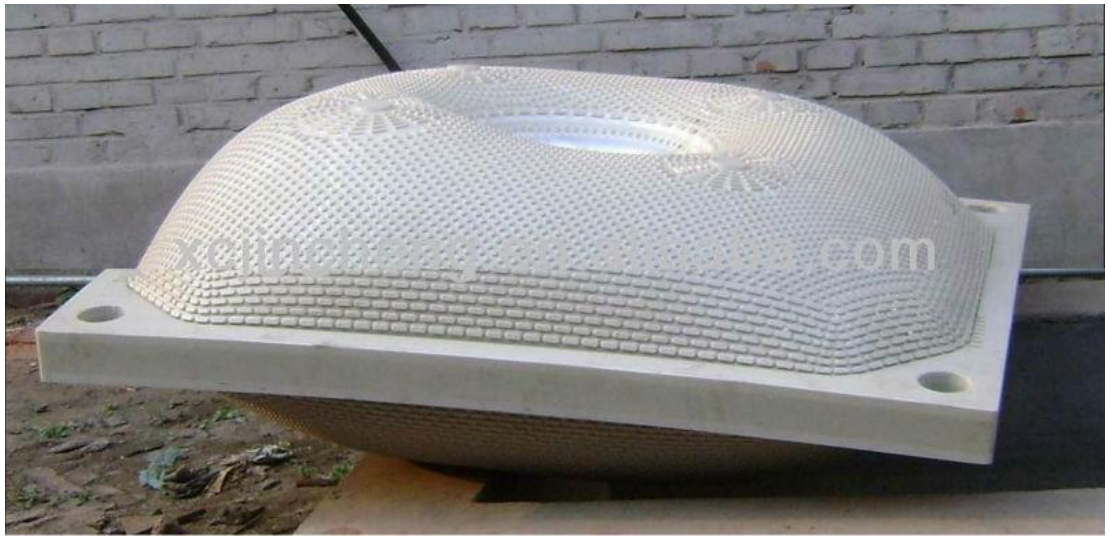
- Filter press plates
  - Chamber
    - Solid plate with drainage ports



Mash Filter Press Anatomy

- Filter press plates
  - Membrane
    - Flexible Plate that expands when air is fed inside it





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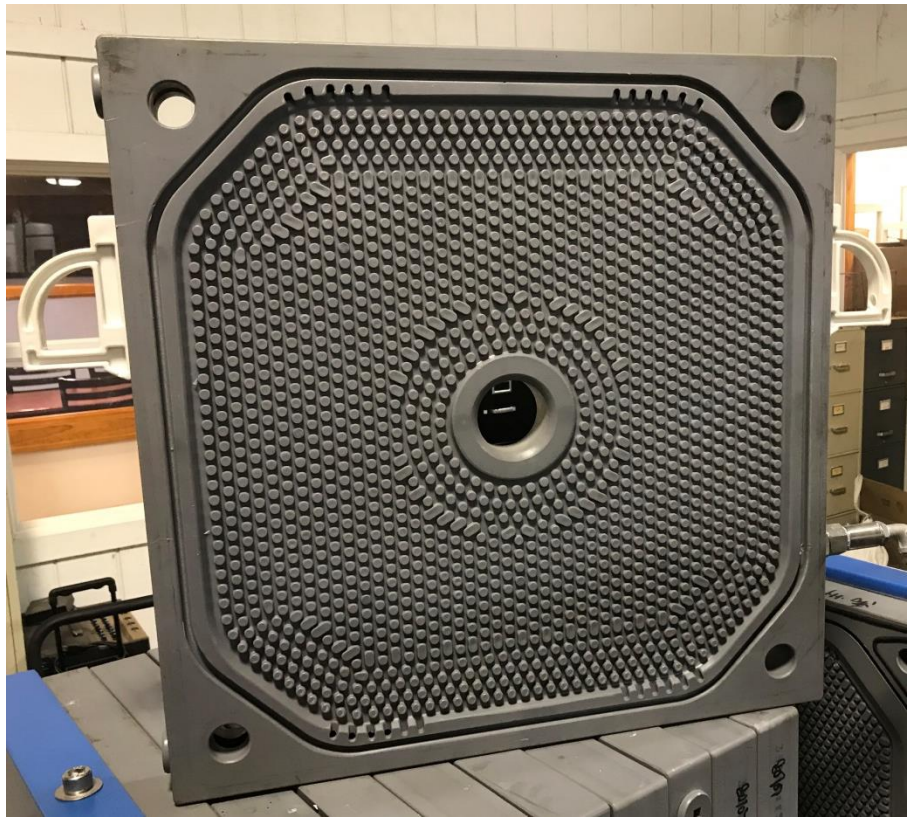
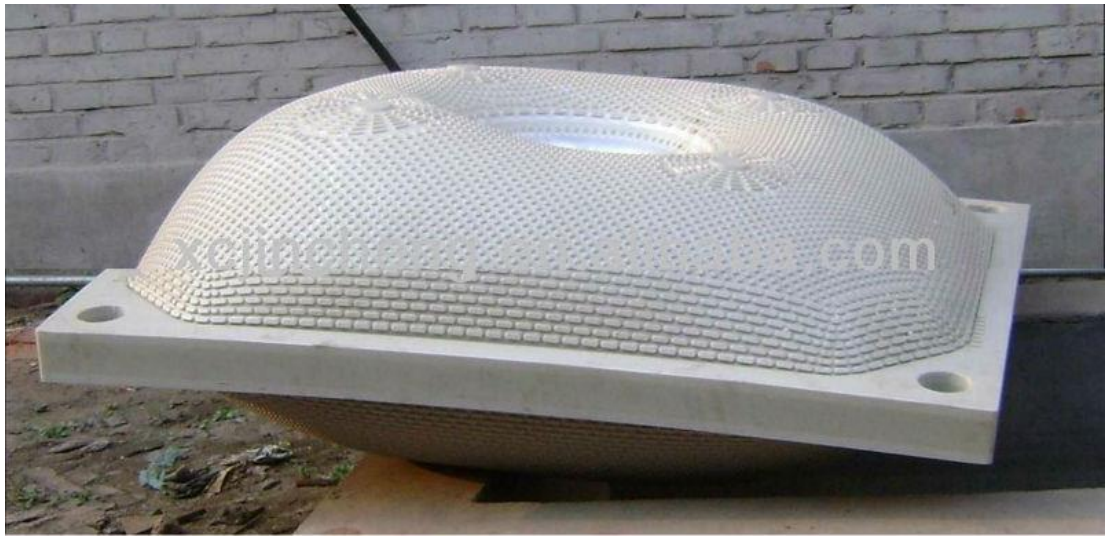




Mash Filter Press Anatomy

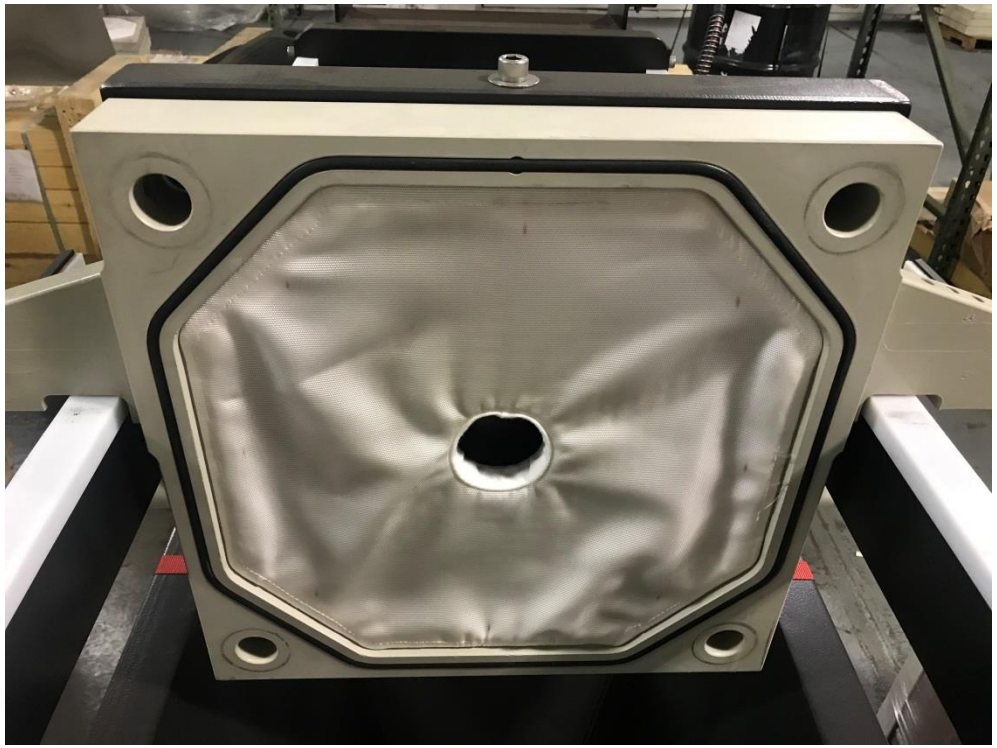
- Filter press plates
  - Head Plate
    - 1 sided version of chamber plate that is 1st plate in stack.

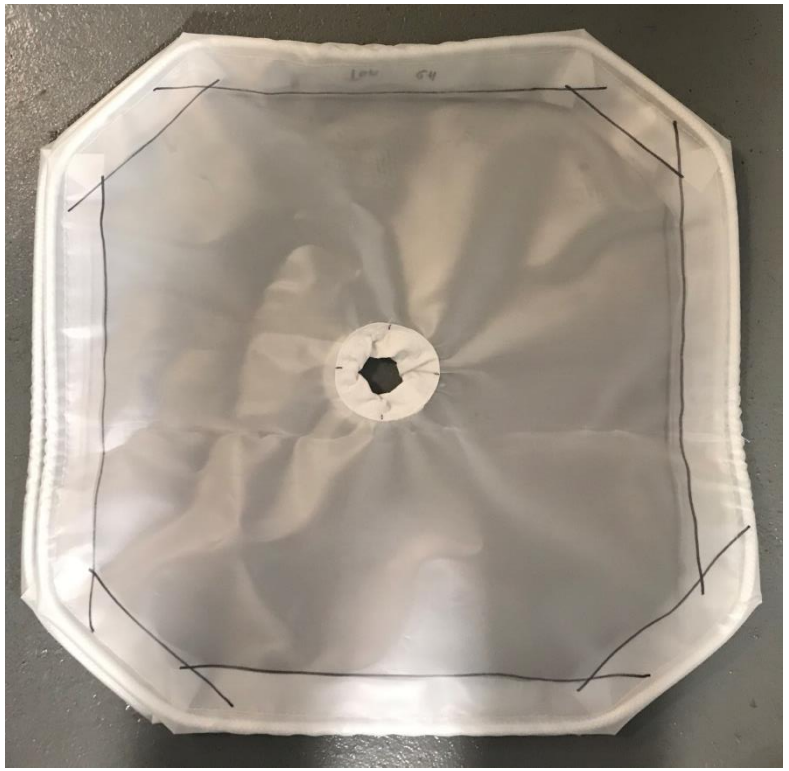
Mash Filter Press Anatomy

- Filter press plates
  - Tail plate
    - 1 sided version of chamber plate that is last plate in stack.
    - Solid with no feed hole or returns

Mash Filter Press Anatomy

- Cloths
  - Installed into plates
  - Does the separation between grain and wort
  - Can be made to various microns depending on need/application(1-100 micron)





Mash Filter Press Process Flow

Mash Filter Press Process Flow Overview

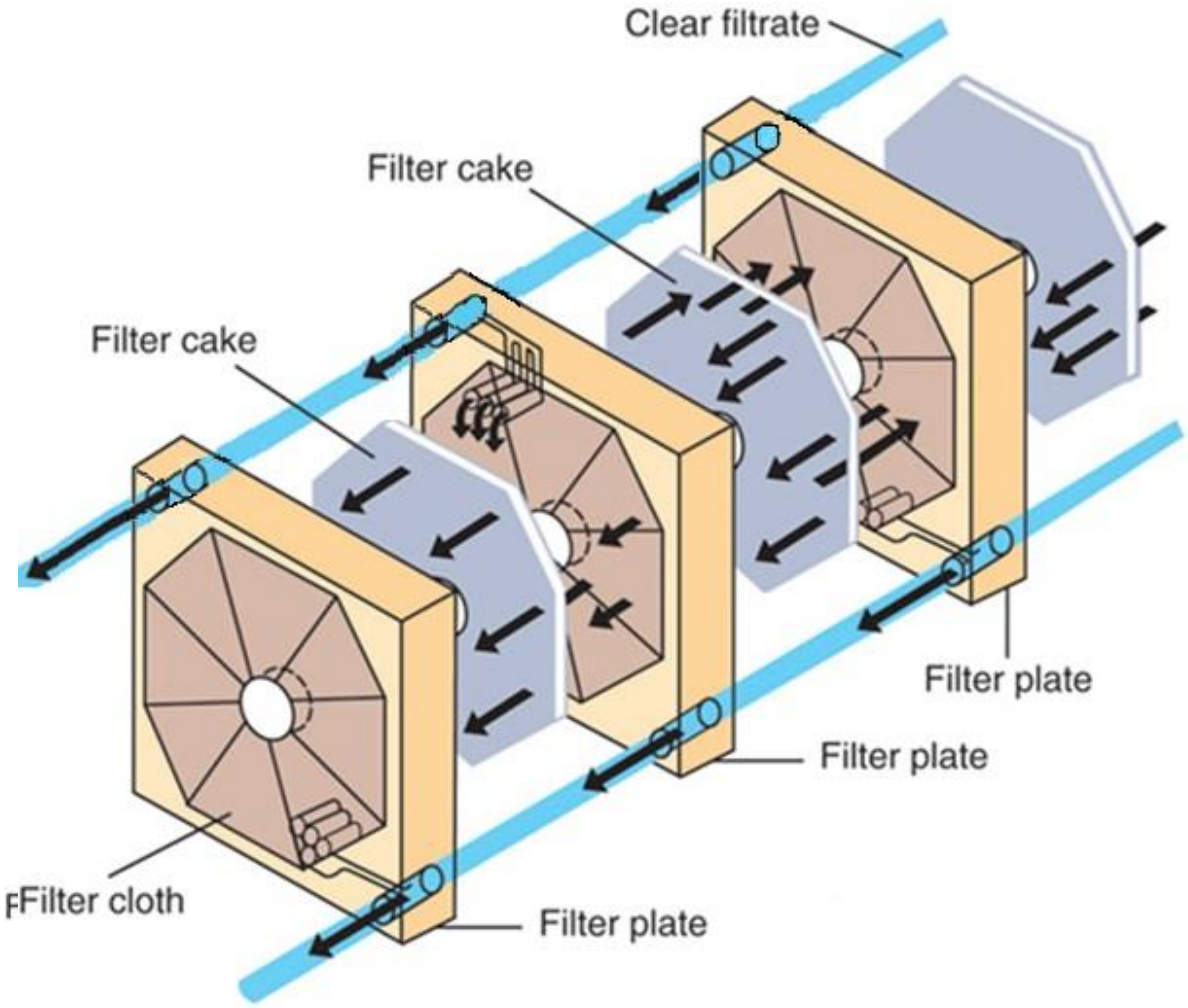
1. Close hydraulics and put plate stack under pressure.
2. Feed filter press with mash from mash kettle via pump.
3. Turn off Recirculation and send wort to grant tank
4. When press is full, shut off feed valve.
5. Start membrane squeeze procedure.
6. Release squeeze and sparge
7. Optional second Squeeze

Mash Filter Press Process Flow

- Pump into feed valve/port
- As you are filling, outlet valves are open for wort to go to grant/buffer tank or recirculation.

Mash Filter Press Process Flow

- Chambers Fills
  - Fill follows path of least resistance.
  - Goal of fill is uniformity across all chambers
  - When tank is empty, filter press(All Chambers) should be completely full of solids

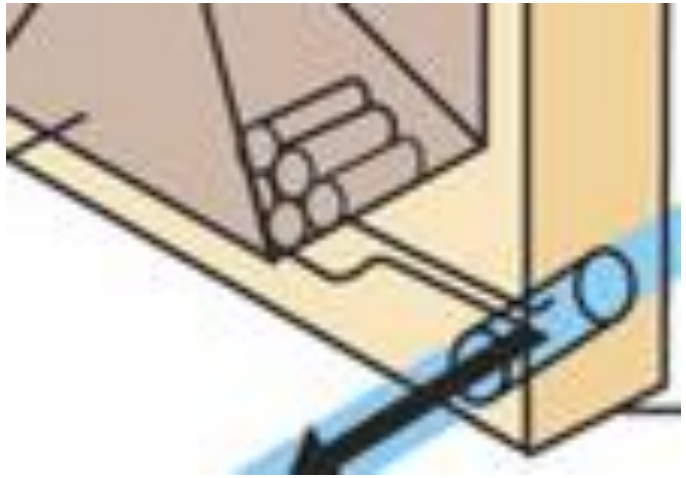


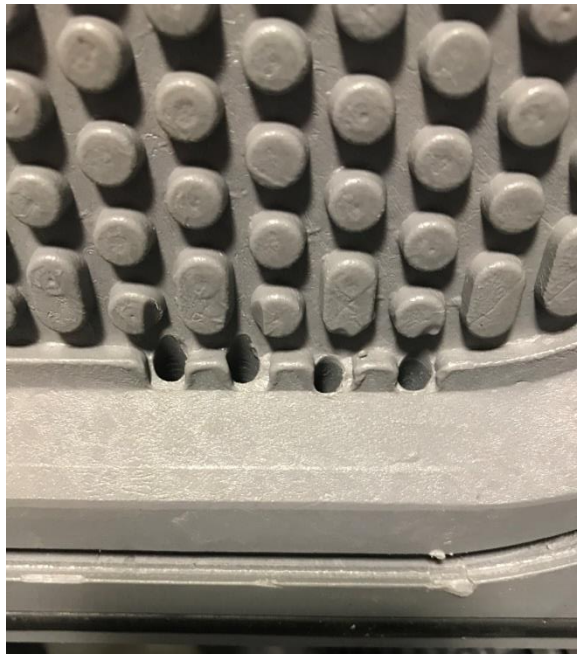
Mash Filter Press Process Flow

- Recirculation for wort clarity
  - Outlet pipe is connected back to Kettle as return.
  - This important to set up grain bed across all chambers in filter press.
  - Recirculation is done for short portion of time at beginning of filter (Compared to overall operation timeline)
  - Visual Inspection is simplest & easiest judge of wort clarity
  - This procedure and its overall time will be dependent on your cloth selection and overall wort clarity that is trying to be achieved.

Mash Filter Press Process Flow

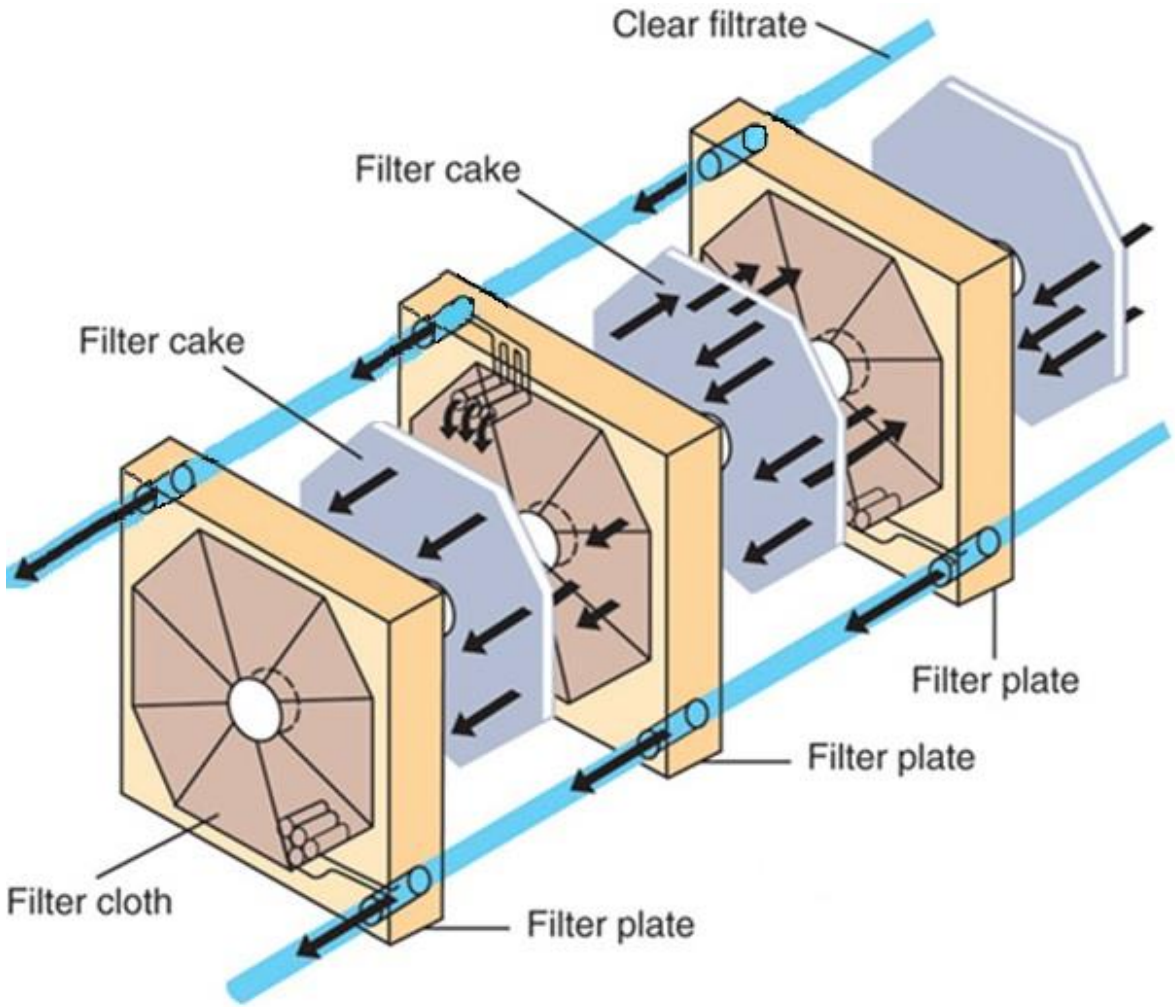
- Mash Fills Chambers throughout entire press
- Wort goes through cloth while grain stays in chambers
- After going through the cloth, wort goes through plate eyes into corner returns
- Returns take wort to central outlet.





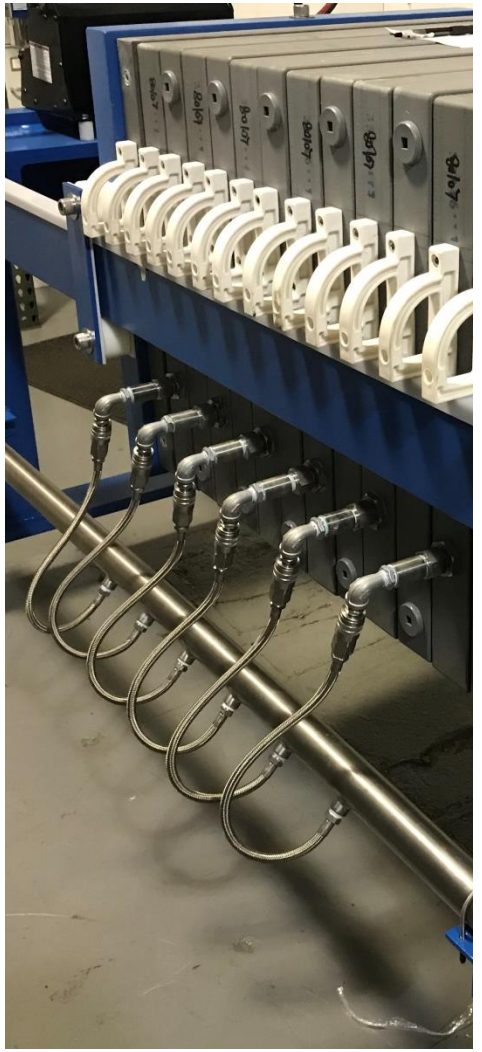
Mash Filter Press Process Flow

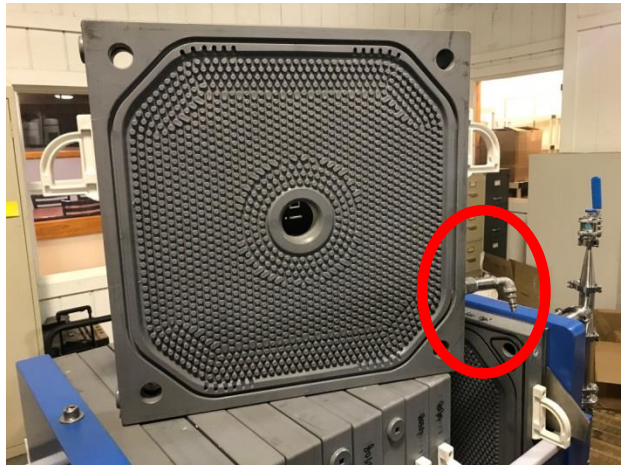
- Wort goes through plate eyes into corner returns
- Returns take wort to central outlet & Grant Tank

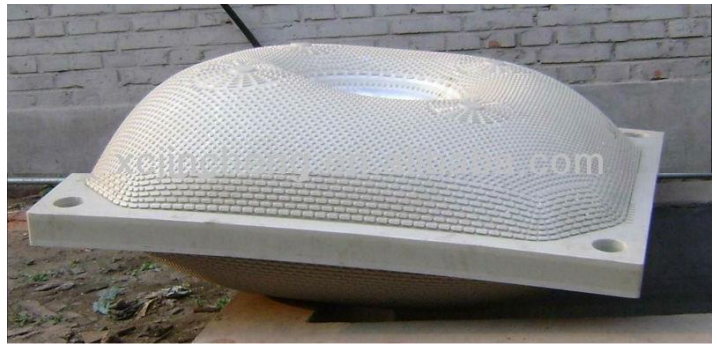


Mash Filter Press Process Flow

- After press if completely full, the feed valve is shut off. Compressed air is supplied to membrane plates and they expand to push more wort out of the grain







Mash Filter Press Process Flow

- Optional Sparge
  - Core Fill
  - Top Corner fill
  - Saving Solution vs Extra Water
- Optional Second Squeeze

Mash Filter Press Process Flow

- Clean up
  - Remove Hydraulic Pressure
  - Scrape solids off plates. Most will fall out on their own.
  - Hose off plates and cloths to remove large debris and film
  - Cakes should be dry and light

Mash Filter Press Sizing

Mash Filter Sizing

- Flexibility
  - Can be added to existing brewhouse or designed into a new brewhouse
  - Ability to move tail plate or blanker plate to match needed brew size.
- Possible sizes
  - Presses as small as 1 bbl
  - Presses as large as 100 bbl
- Sized of press based on
  - Typical Grain Bill Range
  - BBL capacity of your brewhouse

Mash Filter Press Advantages

Mash Filter Advantages

- Flexible Use of Materials
  - High Grain Bills
  - Alternative Starches
  - Unique Additives
- Consistency
  - Low Variety in results
  - Lauter times are predictable
- Savings
  - Lower Water Usage
  - Lower Grain Usage
  - Less Manpower
- High Extract Potential
  - Typical 98+%
  - Achieve Lab like results at scale
- Easy Clean up
  - 70+% Spend Grains Solids
  - Not sloppy or sticky
  - Can be stored on site longer prior to smell/order