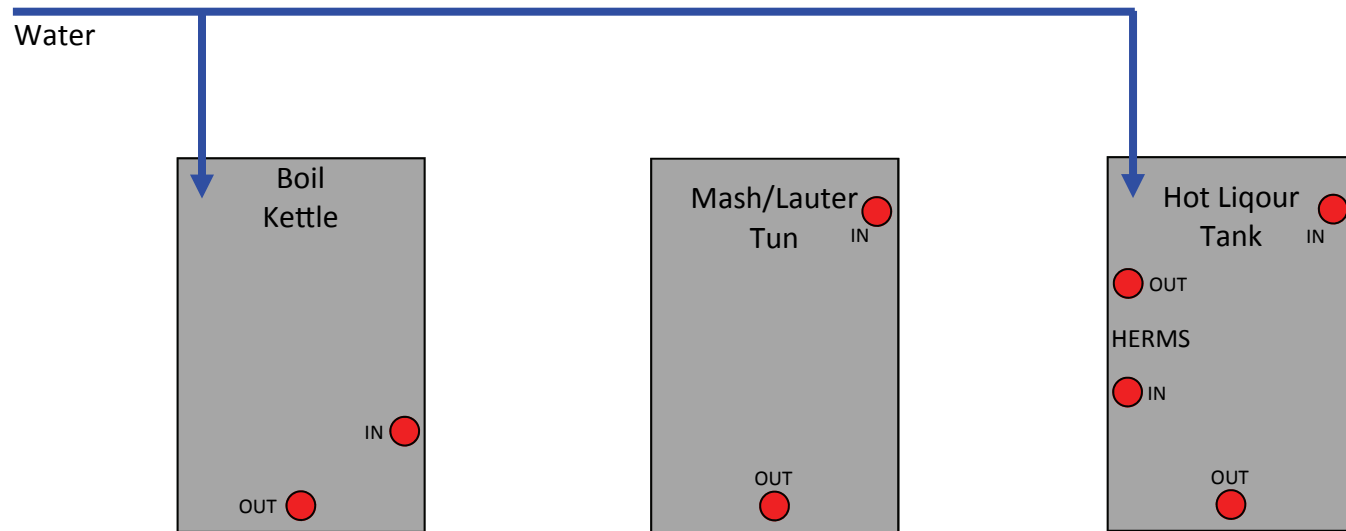


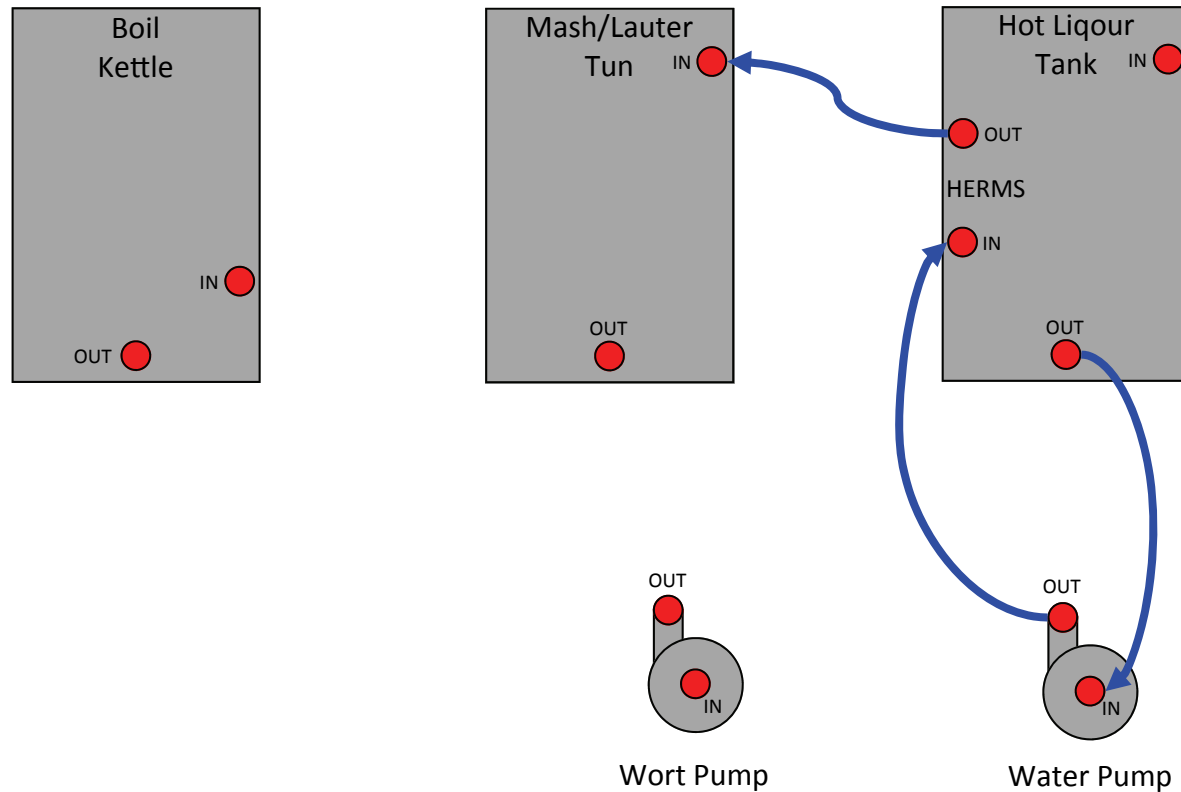
Step 1: Fill Boil Kettle and Hot Liquor Tank



Notes:

1. Fill Boil Kettle and Hot Liquor Tank with desired amount of water.
2. Set Hot Liquor Tank PID to calculated strike water temperature (typ. 165°-170°).
3. Set Boil Kettle PID to target mash temperature (typ. 150°-155°).
4. Turn Boil Kettle and Hot Liquor Tank Element Switches "ON".
5. Set target temperature Alarms on both PID's.
6. Have a homebrew.
7. Proceed to Step 2.

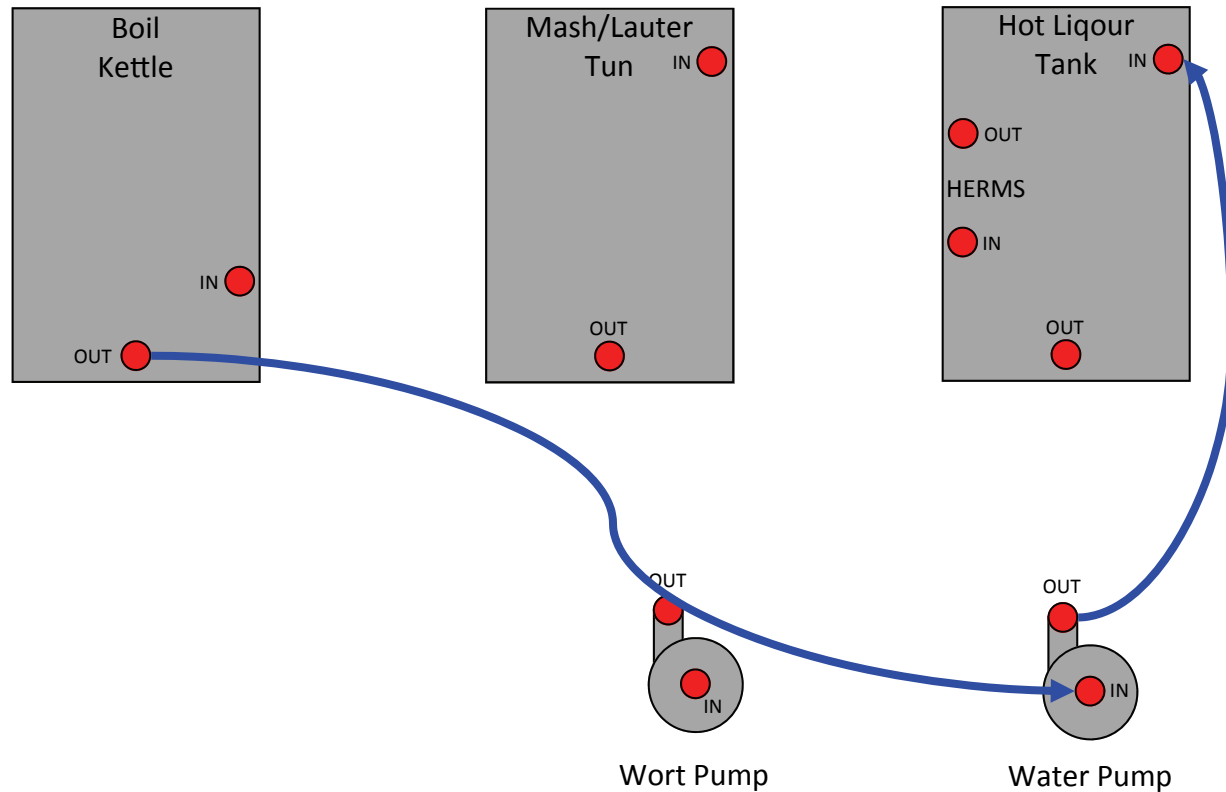
Step 2: Transfer Strike Water to Mash/Lauter Tun - Dough In



Notes:

1. Fill Mash Tun with desired strike water volume (typ. 1.25-2.0 qts./lb) from Hot Liquor Tank and add grains slowly while stirring.
2. Proceed to Step 3 (Optional) or Step 4.

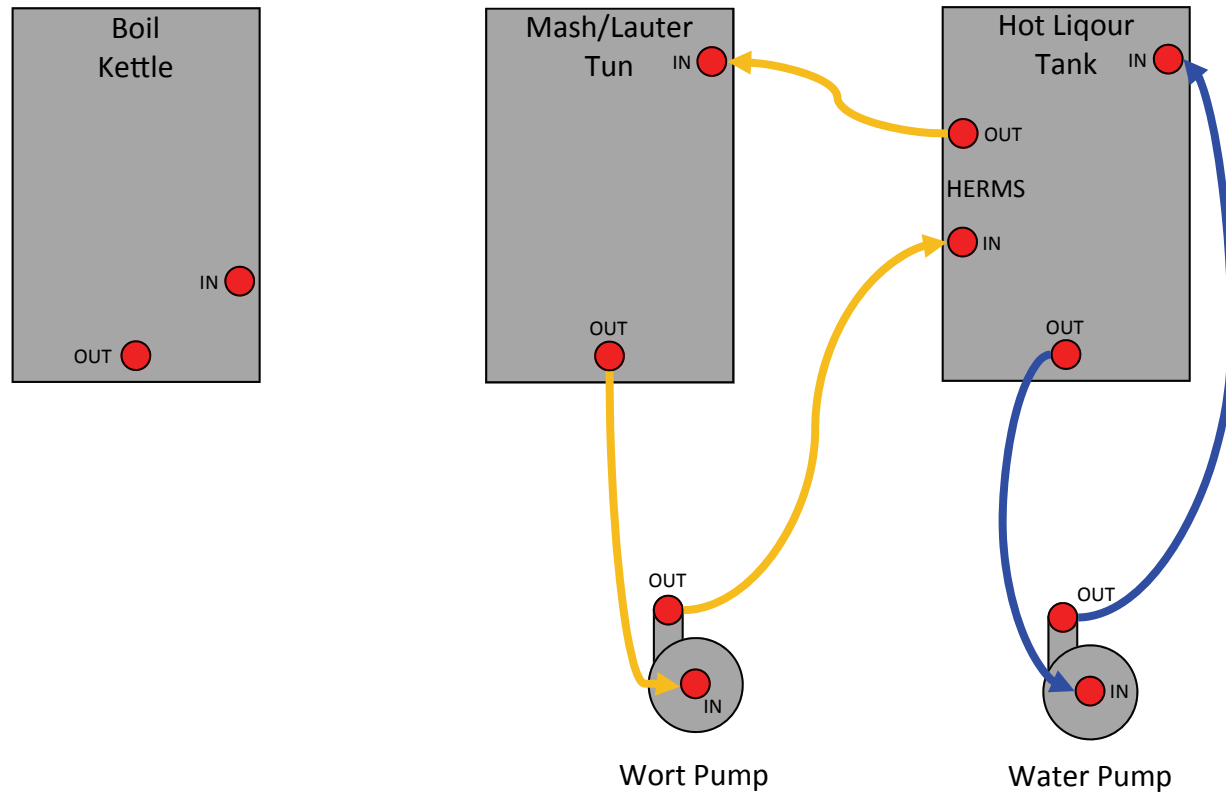
Step 3 (Optional): Transfer Hot Water from Boil Kettle to Hot Liquor Tank



Notes:

1. Transfer Boil Kettle water to Hot Liquor Tank if additional water is needed to cover HERMS Coil for Mash Recirculation . Transfer at target mash temperature (typ. 150°-155°).
2. Proceed to Step 4.

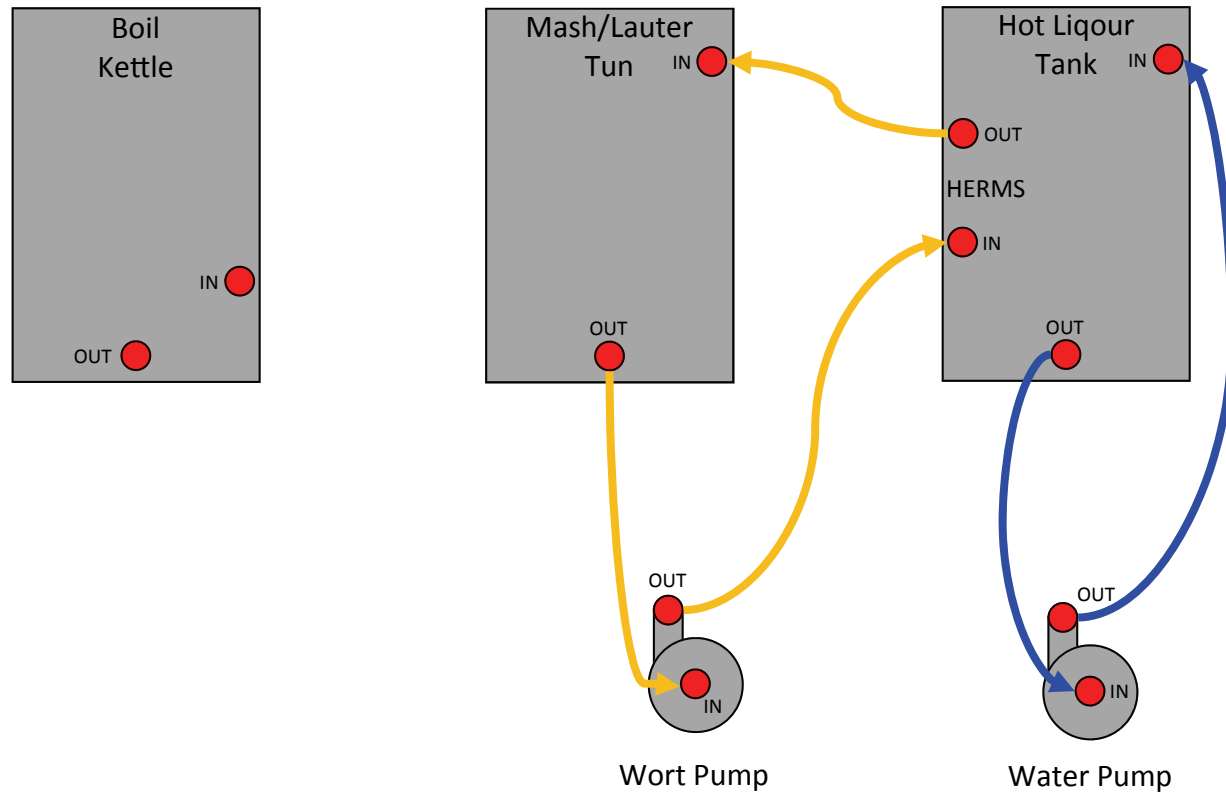
Step 4: Mash (HERMS)



Notes:

1. If not set, set Hot Liquor Tank PID to target mash temperature.
2. If off, turn Hot Liquor Tank Element Switch to "ON".
3. Set Timer to target mash time (minus 20 minutes for Mash Out).
4. Open Valves and turn Water Pump on and then turn Wort Pump on to begin recirculation.
5. Adjust Hot Liquor Tank HERMS Out Valve to achieve desired recirculation rate (approximately 0.5-1.5 gpm).
6. At end of desired mash time (minus 15 minutes for Mash Out), proceed to Step 5.

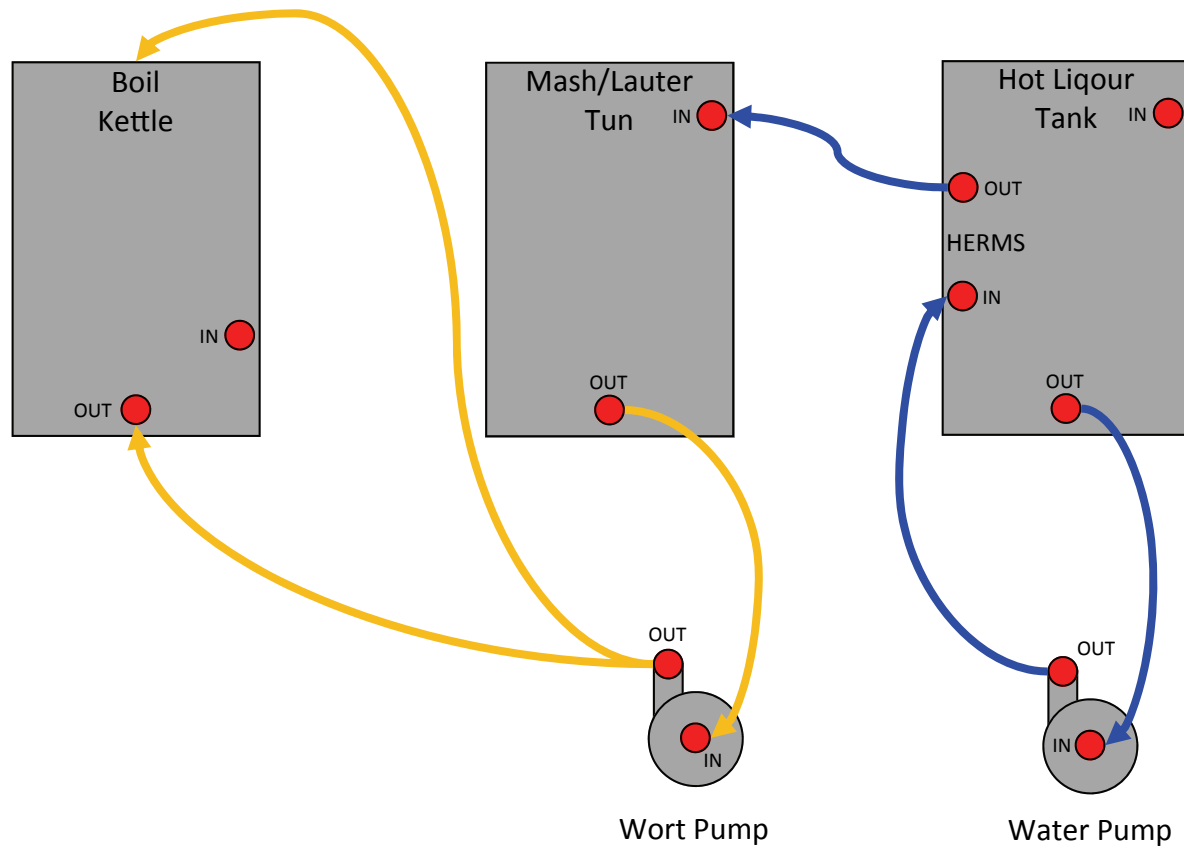
Step 5: Mash Out



Notes:

1. Adjust Hot Liquor Tank PID to 168°.
2. Set Mash/Lauter Tun PID Alarm to 168°.
3. *Alternatively, boil strike water in Boil Kettle and transfer desired volume to Mash Tun to raise mash temperature to 168°. Stir and let rest for 10-15 minutes.*
4. When Mash temperature reaches 168°, proceed to Step 6.

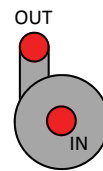
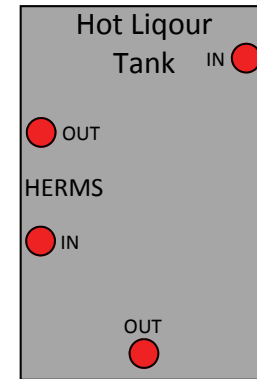
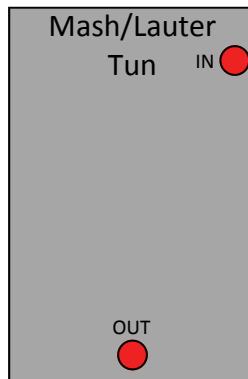
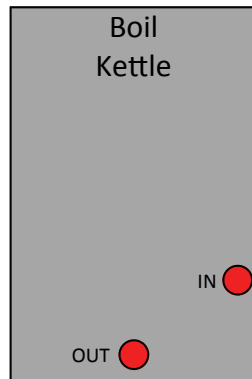
Step 6: Sparge



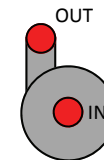
Notes:

1. Adjust Pump Out Valves to maintain target sparge rate (1 qt/min max).
2. Change Boil Kettle PID mode to "Manual 100%" when approximately 3/4 of the target wort volume has been collected.
3. Turn Boil Element Switch to "ON".
4. Set Boil Kettle PID Alarm to 200°.
5. Collect target wort volume in Boil Kettle.
6. When target wort volume has been collected, proceed to Step 7.

Step 7: Boil



Wort Pump

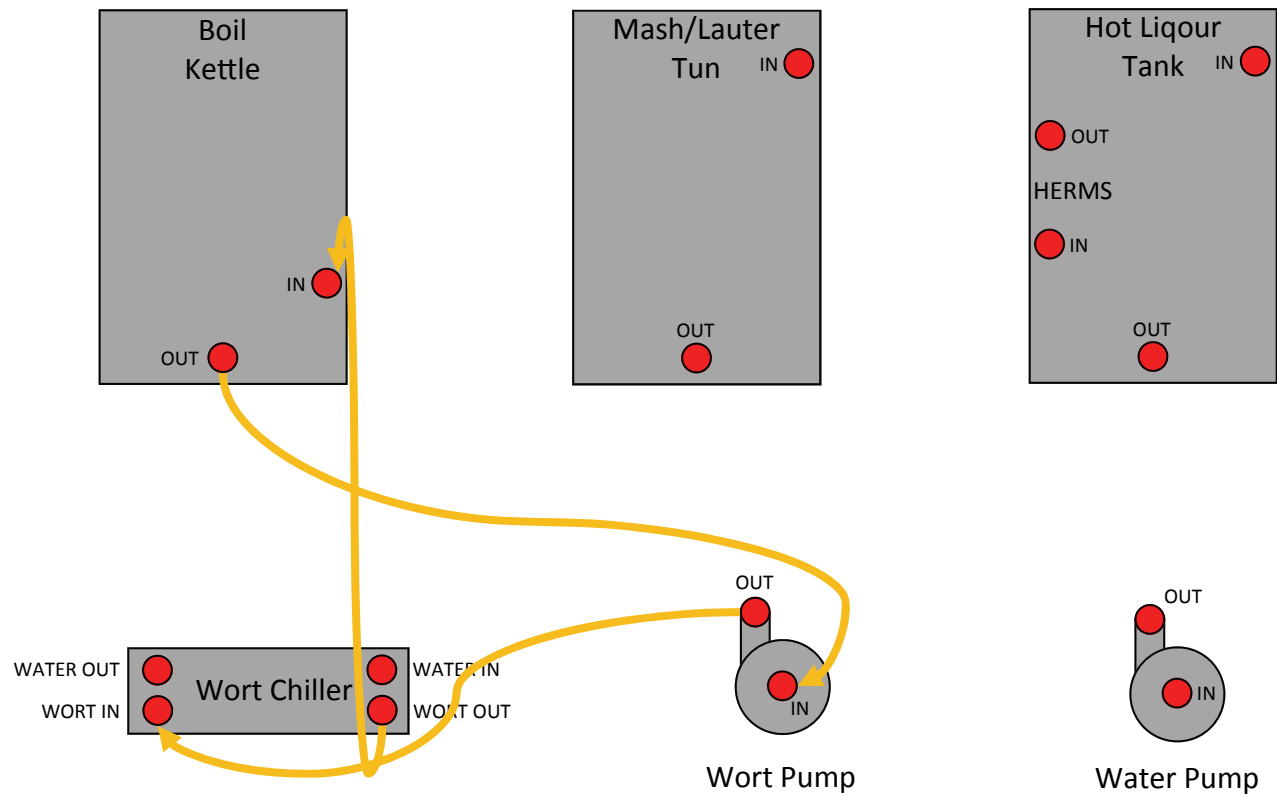


Water Pump

Notes:

1. Once boil is reached, reduce Boil PID manual percentage as needed to maintain rolling boil.
2. Set Timers for boil time and hop and misc. additions as needed.
3. Have a homebrew.
4. Once desired boil time is completed, proceed to Step 8.

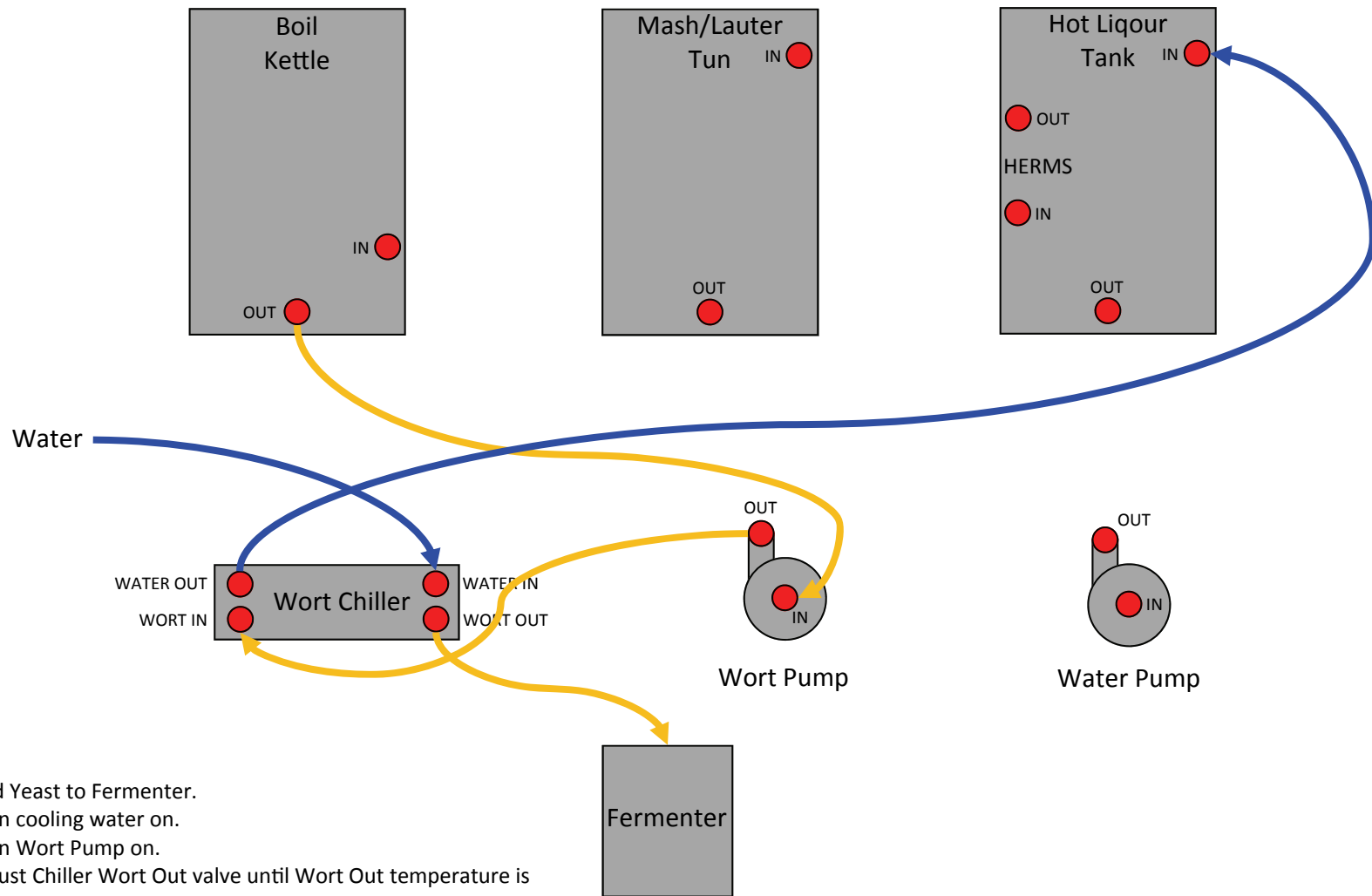
Step 8: Sanitize Chiller & Whirlpool Recirculation



Notes:

1. At end of boil, turn Boil Kettle PID and Boil Element Switch off.
2. Recirculate Wort for 10-15 minutes.
3. When finished with recirculation, proceed to Step 9.

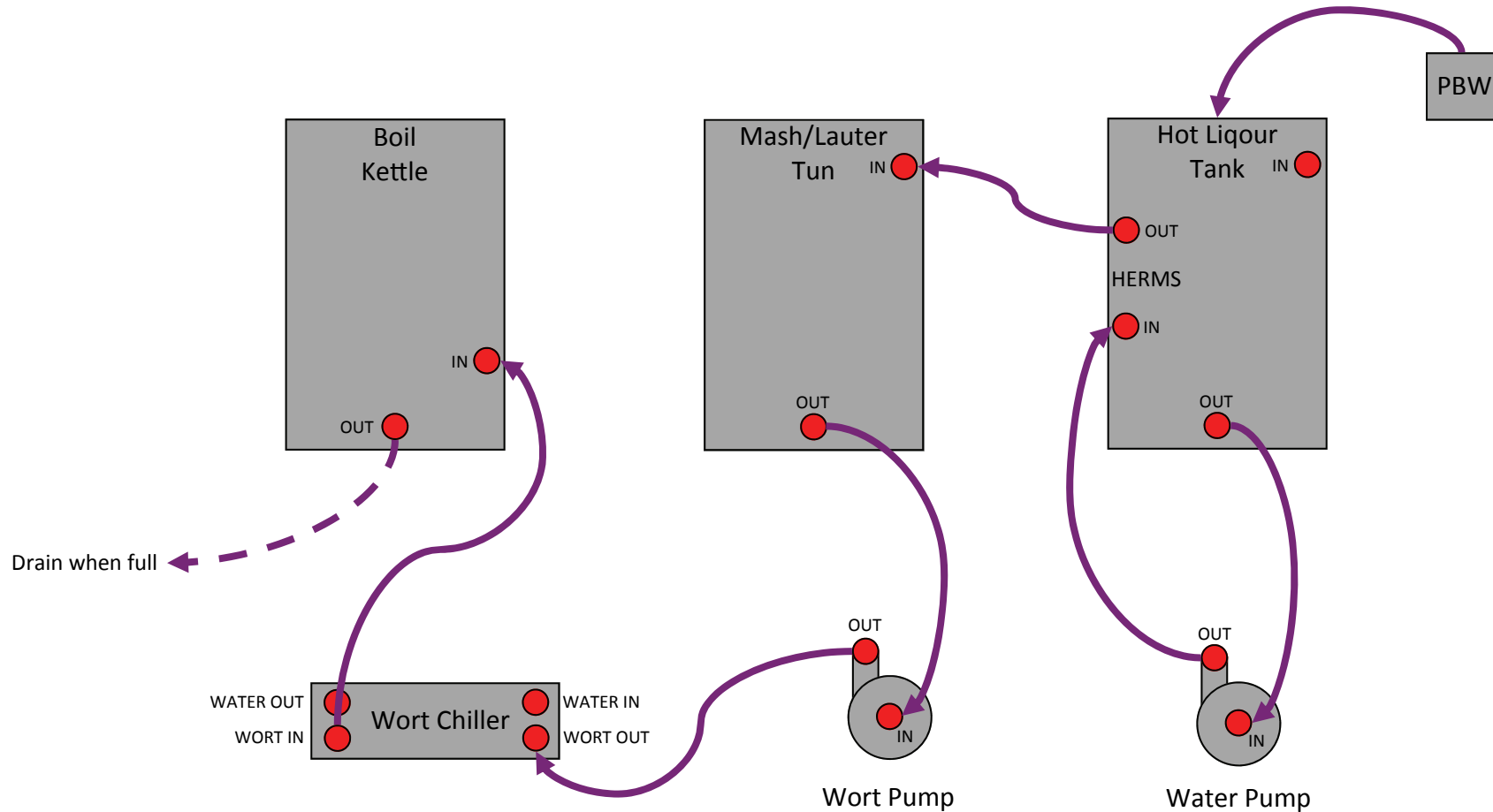
Step 9: Chill Wort



Notes:

1. Add Yeast to Fermenter.
2. Turn cooling water on.
3. Turn Wort Pump on.
4. Adjust Chiller Wort Out valve until Wort Out temperature is $\pm 70^\circ$.
5. Take sample of wort for OG measurement and tasting.
6. When finished collecting desired wort volume, proceed to Step 10.

Step 10: Clean



Notes:

1. Adjust Hot Liquor Tank PID to 180°F and set PID Alarm to 180°F.
2. Turn Hot Liquor Tank Element Switch to "ON".
3. Remove spent grains from Mash Tun and hose out.
4. Once desired temperature is reached, turn Hot Liquor Tank Element Switch to "OFF".
5. Add recommended amount of PBW to Hot Liquor Tank.
6. Turn on both Pumps.
7. Drain and rinse out system with clean water.
8. Hang hoses up to dry.
9. Have a homebrew and celebrate your accomplishment.