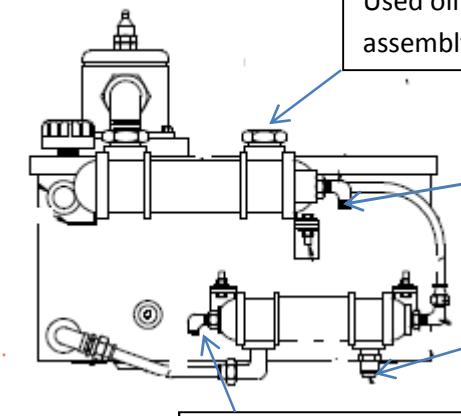
Check your cooling system (intensifier pumps)!

Cooling systems like everything else need to be checked and maintained. Your intensifier pump has either 2 heat exchangers where used oil is run to from the intensifier and pressure control circuits or 1 heat exchanger that has a gear pump forcing hydraulic fluid through it at a higher rate of flow.



Used oil from intensifier manifold assembly empties into heat exchanger

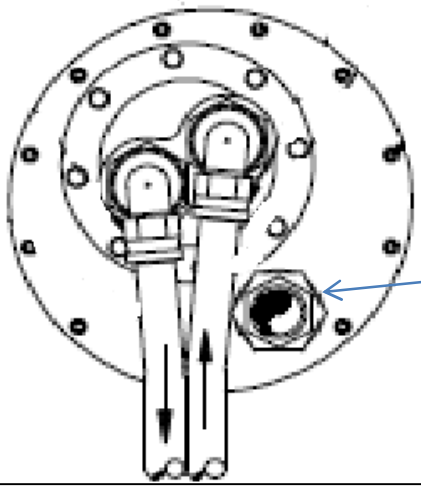
Water goes through small heat exchanger and flows through hose into large heat exchanger inlet port and out of heat exchanger outlet port and out to cooling water out port

Used oil from pressure control valve and related circuits empty into heat exchanger

Water from cooling water in port flows into heat exchanger

Dual heat exchanger setup as found on 5X, 7X, 9X and 50i.s. intensifier pumps.

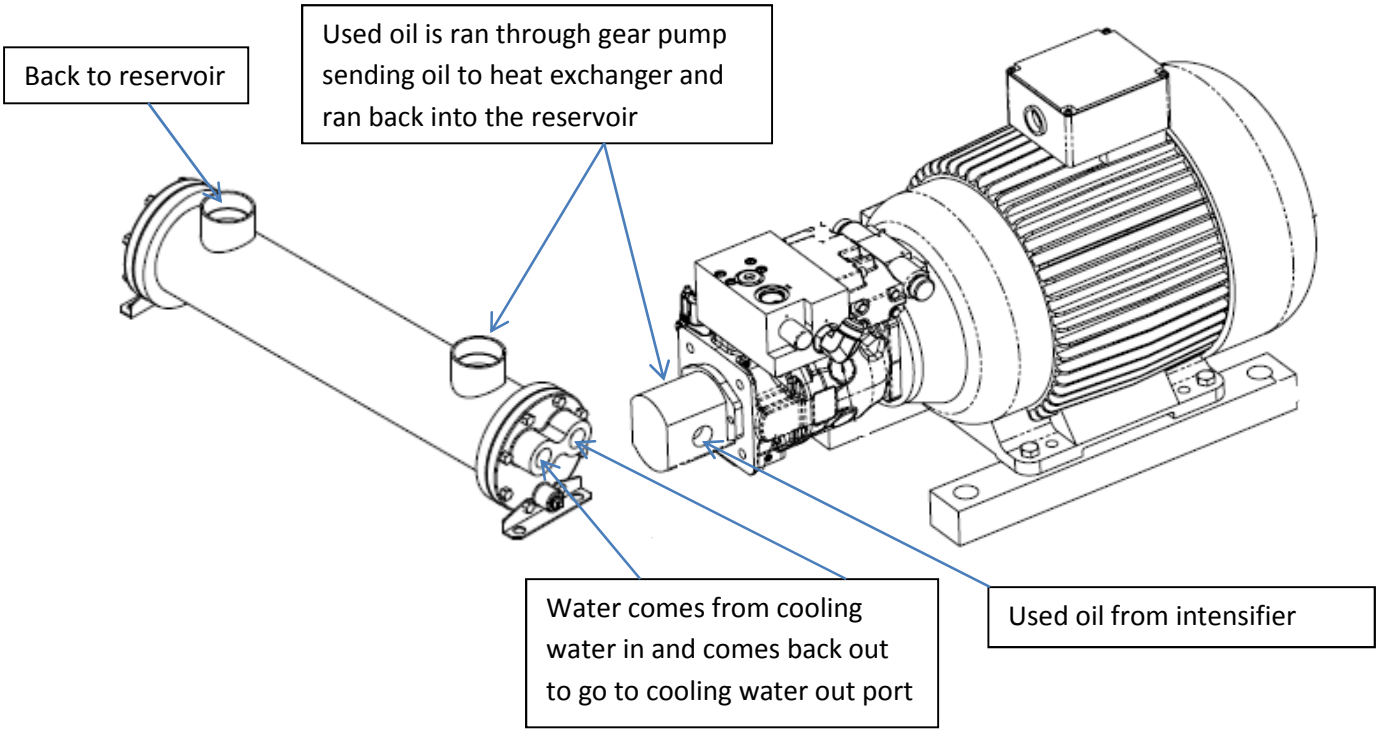
Single heat exchanger pumps usually have a gear pump forcing oil through the system. The only exception is the 30SA pump which has a single larger heat exchanger with no oil pump.



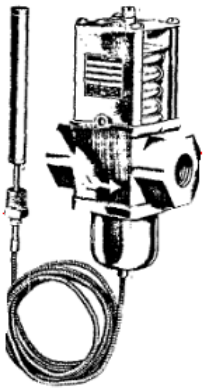
Oil flow is forced from gear pump to the heat exchanger. The heat exchanger is mounted in tank, so the oil flows into heat exchanger to get cooled and directly into the reservoir.

Water comes into heat exchanger from cooling water in port and exits out going to the cooling water out port

Pumps using the single in tank heat exchanger with gear pump are the 100hp i.d. (87K stonecrafter models included) and 25X pumps. Pumps using the single heat exchanger mounted outside of the reservoir with gear pump are the 20X models and 94K Hyperjet pumps.



There are other devices or accessories in the cooling system also. Most pumps except for the 5X and some much older model pumps, have a cooling water control valve. The cooling water control valve has a probe that is gas filled that is installed in the oil reservoir. When oil gets to a certain temperature, the cooling water control valve will open at a point set to let water flow through the cooling water system, regulating oil to a set temperature. Remember, if you set the cooling water control valve at a cool room temperature, it may have to be reset for a room at a higher temperature and vice versa.



Cooling water control valve; part number A-6851. Turn adjustment screw clockwise to allow more water to go through cooling system. Remember this is a mechanical device so give the system 30-45 minutes to regulate and stabilize.

Another part of the cooling system is the solenoid. Most systems have the same solenoid on the filtered water in port that is on the cooling water in port. Make sure that the solenoid is opening and allowing water to pass.

Typical solenoid. This model is part number A-12812 which is popular with most Flow pumps. Always check to see if components like solenoids are bi-directional installing a replacement unit. This model is not and has an "in" port and an "out" port. If solenoid is not working, check for control voltage at din connector. Most modern pumps are 24VDC while older models are 110 VAC.

Another very important part of the cooling system is the reservoir and hydraulic filters. Keeping track of the temperature of the reservoir from time to time will go a long way in the long run. If you have the temperature set at a certain point (105 degrees Fahrenheit is recommended), then if the temperature goes up from there, you have an indication of a problem in the hydraulic system. Make sure hydraulic filters internal and external to the reservoir are changes on a good schedule with the oil (at least once a year and more if the operation of your system exceeds 40 hours per week).

If something in the hydraulic system is failing, i.e. hydraulic pump, low pressure cylinder of intensifier etc., sometimes the cooling system will not be able to keep up and this problem must first be fixed to continue on.

A note about heat switches or sensors, sometimes the switch can go bad. Compare the temperature break point with taking an actual temperature reading of the oil in the reservoir. Most switches will shut down at much higher temperatures than the recommended running temperature of the oil i.e A-10634 temperature switch used on 50i.s. pumps have a warning temperature of 149 degrees and a shutdown temperature of 158 degrees.

The first thing to check in the cooling system is proper amount of water or fluid is moving through the system. You can take the hose coming off of the cooling water out and allow fluid or water to empty into a large bucket and measure the amount after one minute. With the pump still warm, try a second time to make sure. Make sure pump is turned off when doing this.

Start the pump up cold and feel around to see if any hydraulic component starts to get hot or hotter than normal first. This can indicate a problem at that point. Case drain hoses on a hydraulic pump getting very hot can indicate too much blow by and wear in the pump, so it may be on its way out. Further troubleshooting can be done at this point. The low pressure cylinder of the intensifier getting very hot can indicate a need to rebuild the low pressure cylinder or even a bad relief valve or even shift valves.

Customers with chillers and similar systems must always consider those pieces of equipment also and check with manufacturers when troubleshooting. Feel inlet hose going into heat exchanger(s) to see if the water going out of heat exchanger is warmer or same temperature. Water going through cooling system should be warmer than water going in.

If a heat exchanger is hot, it could have lost its cooling capacity or in the case of a single heat exchanger supplied oil by a gear pump, the gear pump may not be moving the oil and needs to be addressed.