

Charging a Yazaki Chiller-Heater with Pre-Mixed Z-Inhibitor

Preparation

1. Select cooling operation.
2. Use a vacuum pump to evacuate non-condensable gas from both the gas storage tank and absorber. Measure the volume of evacuated gas with a graduated collection flask and record it on a CH Evacuation & Solution Service Log.
3. Test the evacuated gas to determine its composition. Allow the gas to escape by tilting the flask and ignite it with a lighted match. If the gas bubbles burn or 'pop' the gas is hydrogen, otherwise it is air. When the volume of evacuated gas is less than 400cc it is harder to judge if the gas is hydrogen (flammable) or air (nonflammable), so caution is advised.
4. During high fire operation, measure the condenser temperature and the cooling water outlet temperature to determine the LTD. The LTD is calculated using the formula:

$$\text{LTD} = \text{CT} - \text{CWO}$$

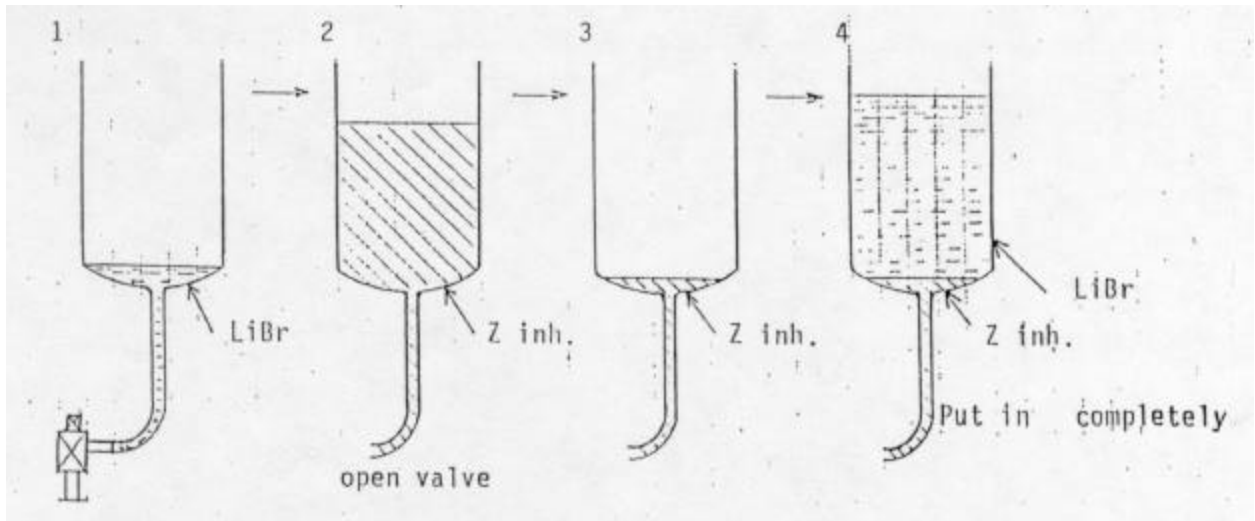
where CT = Condenser Temperature
CWO = Cooling Water Outlet Temperature

If the LTD is more than 7.2 the condenser and absorber water circuits are scaled and need to be chemically cleaned.

5. Investigate the machine's service history for signs of previous trouble (overheating, vacuum leakage, scaling, etc.).

Charging

1. If the chiller-heater is operating in cooling mode, force the burner to operate in low fire by removing the TB timer from its base in the control box. As an alternative, stop the chiller-heater operation and wait for the solution pump to cycle off.
2. Remove about 1 to 2 liters of dilute solution into a collection flask.
3. Connect the inhibitor charging assembly (funnel and clear vinyl tube) to the dilute solution service valve. Refer to the service manual for further details.
4. Shake the bottle vigorously until the white particles are completely mixed. This may take 2-3 minutes. The white particles will not dissolve but will settle to the bottom of the bottle as soon as shaking is stopped.
5. Fill the funnel with inhibitor and open the service valve fully to draw inhibitor into the chiller-heater. Do not allow any air to be drawn into the machine.
6. When there is only a small amount of Z-Inhibitor left in the bottle, add dilute solution to remove all residue of inhibitor and charge it into the chiller-heater. Do not add any distilled water to the machine.



7. If air is allowed into the machine, it must be evacuated during cooling operation.

Notes:

1. Z-Inhibitor is used to control hydrogen generation, and should not be used for routine maintenance. It is consumed during the operation of the machine and must be occasionally replaced. It can be added during cooling operation, or during heating operation if hydrogen is present.
2. Add inhibitor through the dilute solution service valve. If the inhibitor backflows from the valve when adding it to the chiller-heater, force the chiller-heater into low fire operation until the pressure at the valve becomes a vacuum. After adding the inhibitor return the machine to normal operation.
3. Do not store the inhibitor in direct sunlight or above 95°F.
4. After charging a chiller-heater with Z-Inhibitor operation of the machine at reduced input is not necessary and evacuation after one week is not required.