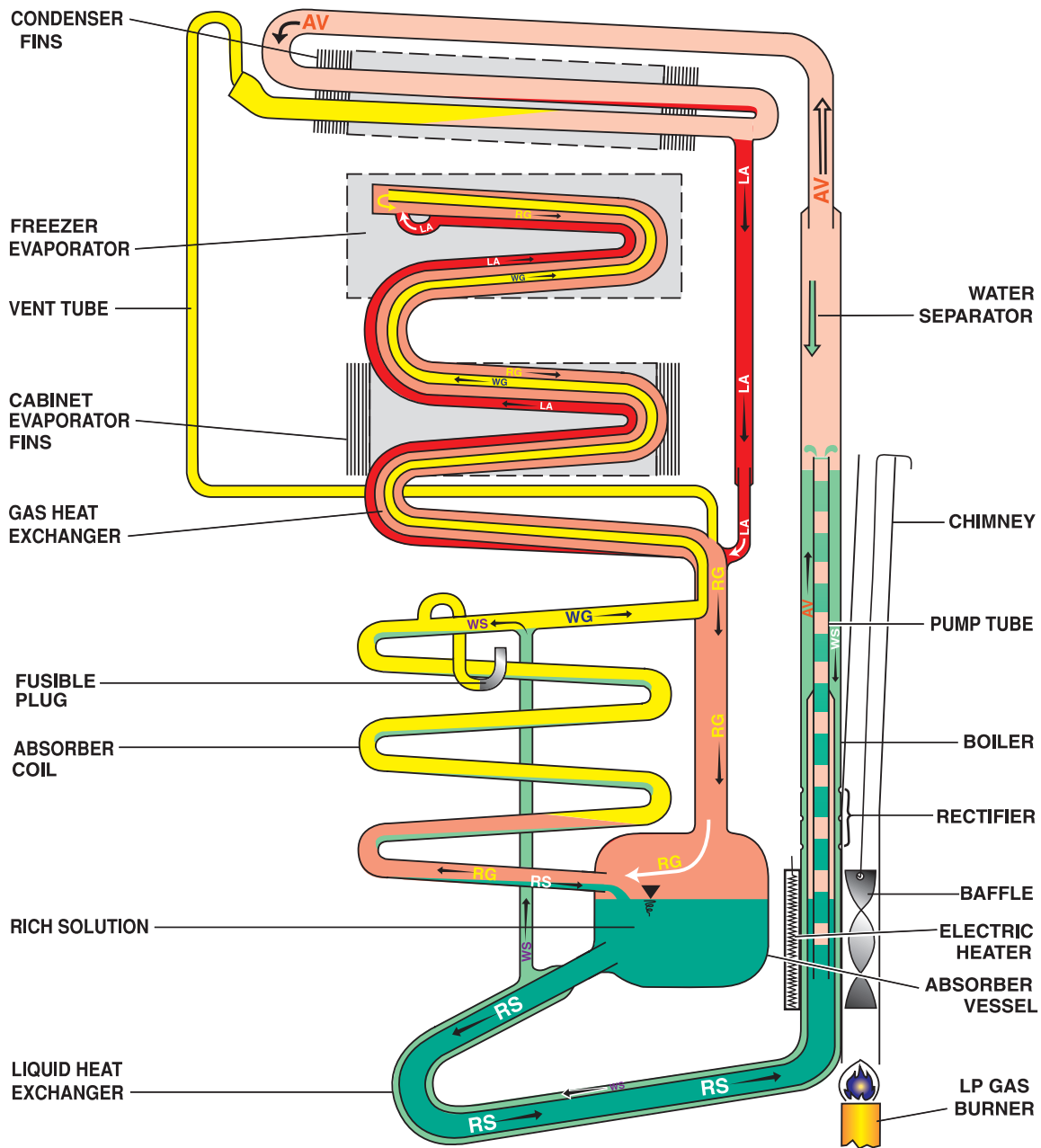


The Absorption System



RS RICH AMMONIA/WATER SOLUTION
 WS WEAK AMMONIA/WATER SOLUTION
 AV AMMONIA VAPOR
 LA PURE LIQUID AMMONIA
 WG WEAK AMMONIA/HYDROGEN GAS
 RG RICH AMMONIA/HYDROGEN GAS

The rich solution leaves the absorber vessel and passes through the liquid heat exchanger to the bottom of the pump tube. The heat source (gas or electric) causes the temperature of the solution to rise. This temperature increase causes ammonia and some water vapor to be driven out of the solution, forming vapor bubbles which push columns of liquid up the pump tube. The liquid falls downward through the rectifier where the temperature is increased causing additional ammonia vapor to be released. The remaining liquid is now a weak ammonia solution and flows through the external shell of the liquid heat exchanger where it transfers its residual heat to the rich solution and enters the top of the absorber coil at a reduced temperature.

The ammonia/water vapor passes through the water separator whose reduced temperature causes any water vapor to liquefy and join the weak solution in the boiler. The ammonia vapor enters the condenser where it condenses to hot liquid ammonia. The liquid ammonia enters the tubular coil of the freezer and cabinet evaporators and wets the internal surface of the tubes.

As the weak gas passes over the wetted surface of the evaporator tubing, the liquid ammonia evaporates into the hydrogen, creating an initial refrigeration temperature of about -20° F. As the ammonia continues to evaporate into the hydrogen, the partial pressure of ammonia continues to rise slowly. As the ammonia pressure rises the evaporation temperature also rises.

This increase in ammonia partial pressure raises the evaporation temperature to about +20° F. The weight of the hydrogen and ammonia mixture is heavier than that of weak gas. Consequently, it falls through the gas heat exchanger into the top of the absorber vessel. From this point it enters the bottom of the absorber coil.

As this mixture travels up through the absorber it contacts the weak solution entering the top of the absorber from the boiler. As the weak solution drops through the absorber it absorbs the ammonia from the ammonia/hydrogen mixture. The relatively pure hydrogen passes through the hydrogen circuit to the evaporator and now the rich solution falls to the bottom of the absorber vessel where the cycle starts again.