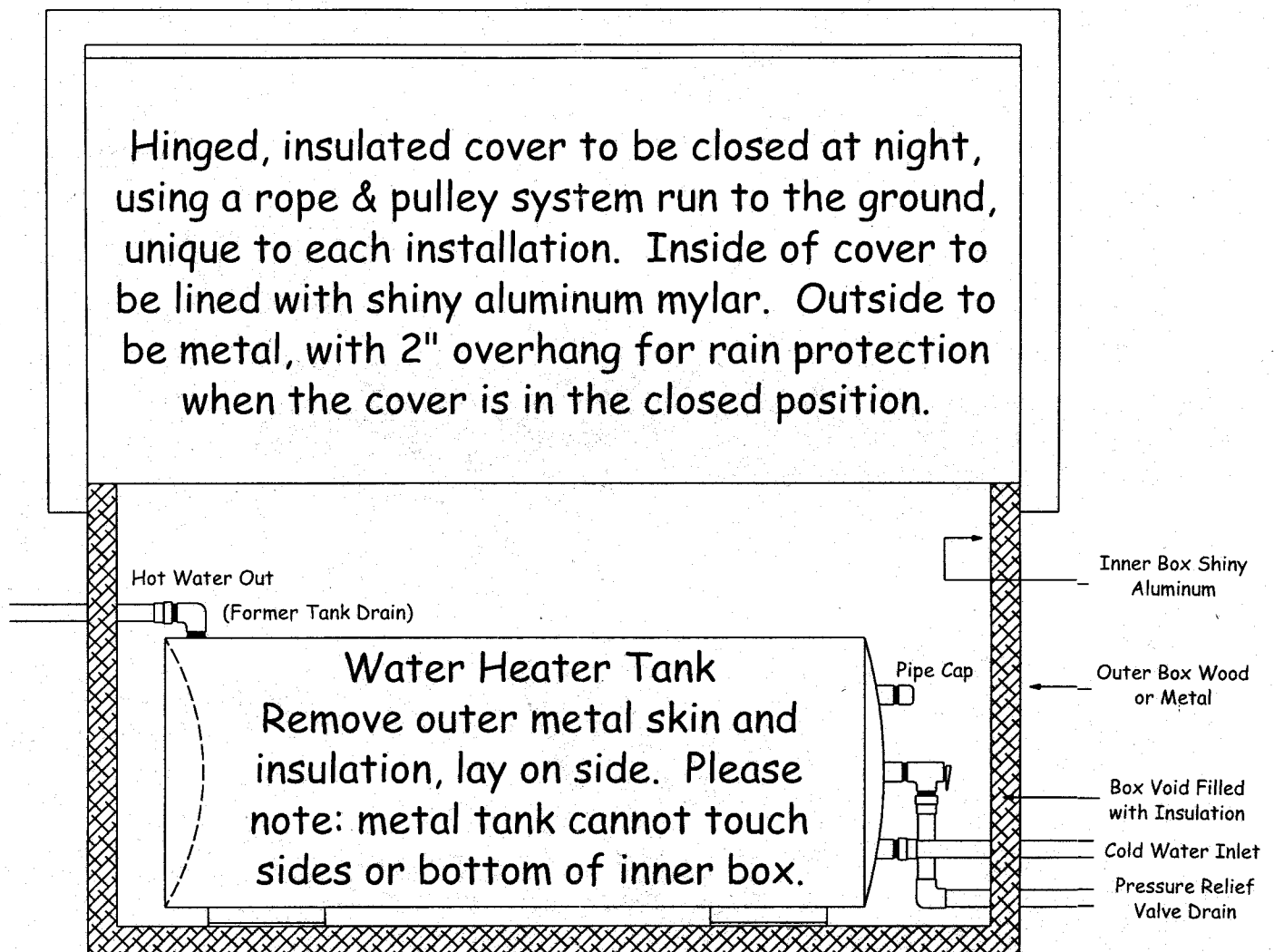
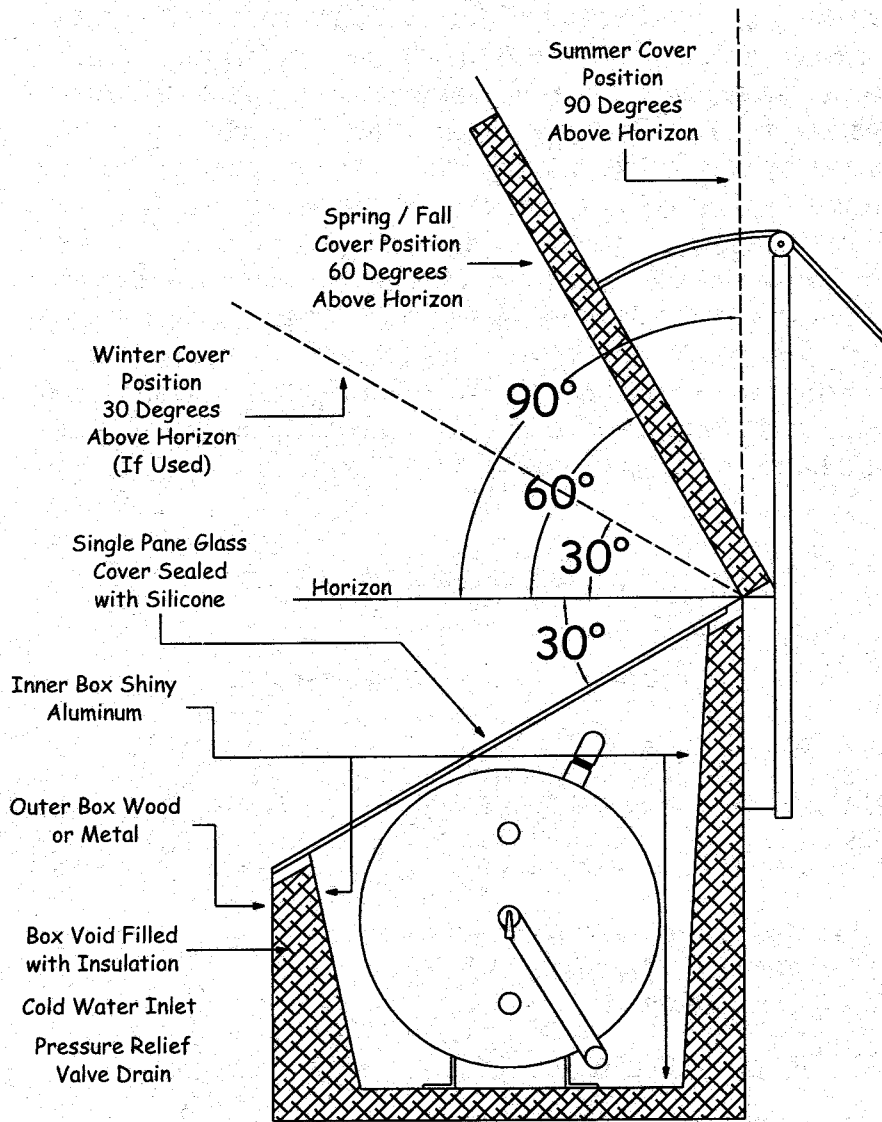


"Bread Box" Solar Water Heater



The single pane glass cover is sloped 30° from the horizon. The outer box is assembled using wood or sheet metal while the inner box is assembled from shiny aluminum (one good source of this metal is a large print shop, where they are used as printing plates for newspapers). The space between the boxes is filled with insulating material and sealed at the top with a wooden rim. The wood rim keeps the heat from leaking from the hot inner metal box to the cooler outer one. All construction joints and seams, plumbing entrance and exit holes, as well as the single pane glass cover are sealed with silicone RTV to prevent heat loss by air convection.



The box type solar water is one of the earliest solar heater designs. They were developed in the 18th century and thousands of these were built and used by the late 19th century. The Victorian middle class loved the idea, since they generally took their baths in the late afternoon just before dressing for dinner and the box had all day to heat up. However, Americans are used to taking their showers in the early morning when they get up and by then, the water was dead cold in these early solar heaters, which had no covers. The well insulated cover will keep the water warm until morning, but it is still better to plan to use the hot water in the evening.

Since this design has no real freeze protection, it is best used in a remote camp or other place where the solar water heating is only needed in the warmer months (from late May to mid October here in Maine). A year-round remote cottage can use a coil in the wood stove to furnish the hot water the rest of the year. The design is quite flexible and can be used with two smaller diameter tanks, (for example) laid next to each other in a wider shallower box for a more efficient design with a bigger solar aperture.

*design by Richard Komp
antwork by Jim Coder*

This drawing is not to scale. The correct BOX TYPE SOLAR WATER HEATER dimensions will be determined by the size of the water heater tank available. If installed on a sloping roof, legs or mounting brackets will be required to maintain the 30° (from the horizontal) slope of the glass pane cover. A single pane of glass is actually better than a double pane would be, since each pane absorbs or reflects about 10 % of the incoming light; and the extra insulation is not really useful in the warmer months when this Batch Type heater will be used.