

Technical Note

SOLAR BOILER TECHNICAL UPGRADE

Installation of 125 psi Pressure Relief Valve (PRV)



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1.0 Installation of Pressure Relief Valve (PRV)

Attach the PRV to the 1/4" copper vent tube at the rear of the Solar Boiler™ module. This is the location where there used to be a 1/4" vent cap of orange or red plastic. The PRV is attached using a 1/4" compression fitting. Finger tighten the nut on the fitting body attached to the PRV, bottom the 1/4" copper tube into the nut and fitting and then use a 1/2" open end wrench to tighten the nut 1/2 to 1 complete turn. **DO NOT OVER TIGHTEN.**

2.0 Filling the Solar Boiler™ module

The Solar Boiler™ module reservoir is filled with heat transfer fluid (40/60 propylene glycol USP/distilled water) when it leaves the factory. When the Solar Boiler™ pump is in operation it draws glycol from the reservoir and pumps it through the solar collectors. This reduces the level in the reservoir from 15-16" down to 2 - 8". The level can be checked with the 24" dipstick supplied with the Solar Boiler™. Check the level after the pump has been operating at full speed

for at least 5 minutes and make sure the PRV is removed from the vent tube. Use a DC power supply that can deliver up to 3 amperes of current to run the motor directly. Set the voltage on the power supply to 15 volts for this operation.

To improve the performance of the Solar Boiler™ we recommend that the level of glycol in the reservoir be increased to 12", measured when the pump is in full-speed operation. **One** inch on the dipstick represents 0.25 liter of heat transfer fluid. **Four** inches represents 0.25 US gallon. Determine how much fluid must be added to bring the level in the reservoir to the 12" height in the fill tube and place this amount of 40/60 propylene glycol/distilled water in a container.

With the PRV removed from the 1/4" vent tube, add the required amount of the 40/60 mixture of propylene glycol USP/distilled water through the 1/2" fill tube. Use a funnel that fits snugly inside the fill tube. The pump must be operating at full speed while the reservoir is being filled so that the solar collector loop is completely filled with glycol. Check the level of glycol in the fill tube once more to make sure that it is at the 12" mark. Reconnect the PRV to the vent tube.

3.0 Pressurisation of Solar Boiler™ module

Do not replace the original knurled hose cap on the fill tube. Use the "new" brass cap fitted with the air valve (similar to the typical tire air valve). With a tire pump/air mattress pump - equipped with a quick disconnect for the air valve - pump air slowly into the Solar Boiler™ module, with the pump running, until you can hear the motor start to slow down a little bit. Remove the air pump and check the pressure with a tire gauge. It should be 5-10 psi if the system is cold and 10-15 psi with the system hot. Add/release air as required to obtain the required air pressure.

4.0 Normal Operation of Charged Solar Boiler™

The PRV may allow a small amount of fluid to escape the first time the system gets hot after charging with fluid. **Do Not Refill** if only a small amount escapes. Place a one-liter plastic container under the PRV to capture any fluid that may be expelled from the Solar Boiler™.

