



## **Installation, operation, and maintenance instructions for the Puropal-300, Puropal-500, & Puropal-1000 H<sub>2</sub>O demineralizing cartridges**

### **Function:**

The Puropal cartridge filters lime and aggressive dissolved substances such as sulfates, nitrates and chlorides out of the local domestic water. The device operates on the basis of a mixed bed ion exchange resin that completely demineralizes the water. This method does not release any chemical additives into the water and operates without an external power supply. Not for drinking water.

### **Installation:**

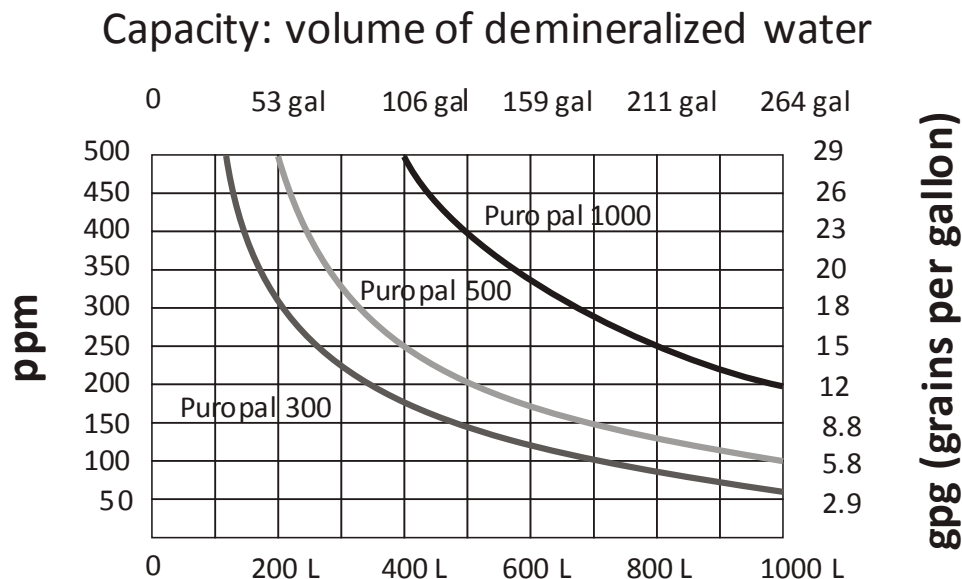
The closed loop system is filled using local domestic water which has been run through the Puropal cartridge. In doing so the water is demineralized, meeting fill water specifications of glycol and boiler manufacturers. It is also possible to demineralize an existing “water only” system by circulating the system water through a Puropal demineralizing cartridge.



**Demineralize water prior to blending with glycol and/or inhibitor**

### **Capacity:**

Figure 1 below shows that the capacity of the demineralizing cartridge depends on the total hardness of the domestic water. For example: With a hardness of 11.7 gpg (200 ppm), the Puropal 300 provides 92 gal (350 L) of completely demineralized water, the Puropal 500 provides 132 gal (500 L) and the Puropal 1000 provides 264 gal (1000 L).



**Figure 1:** Capacity of demineralizing cartridges based on TDS (Total Dissolved Solids) or gpg (grains per gallon)

## Estimated run times

System water content	Recommended running time
132 gal (500 L)	➔ 60 min (Puropal 500)
264 gal (1,000 L)	➔ 150 min (Puropal 1000)

With a supply pressure between 44 - 58 psi (300 - 400 kPa), the flow rate through the Puropal-500 and Puropal-1000 cartridges is approx. 2.6 gpm (10 L/min). This results in a maximum cartridge run time.

These run times only apply to filling via PUROPAL with the untreated domestic water supply. If the cartridge is used without the use of a flow meter and conductivity meter, then the specified run times should not be exceeded. In order to monitor the effective performance more closely, use the optional meter.

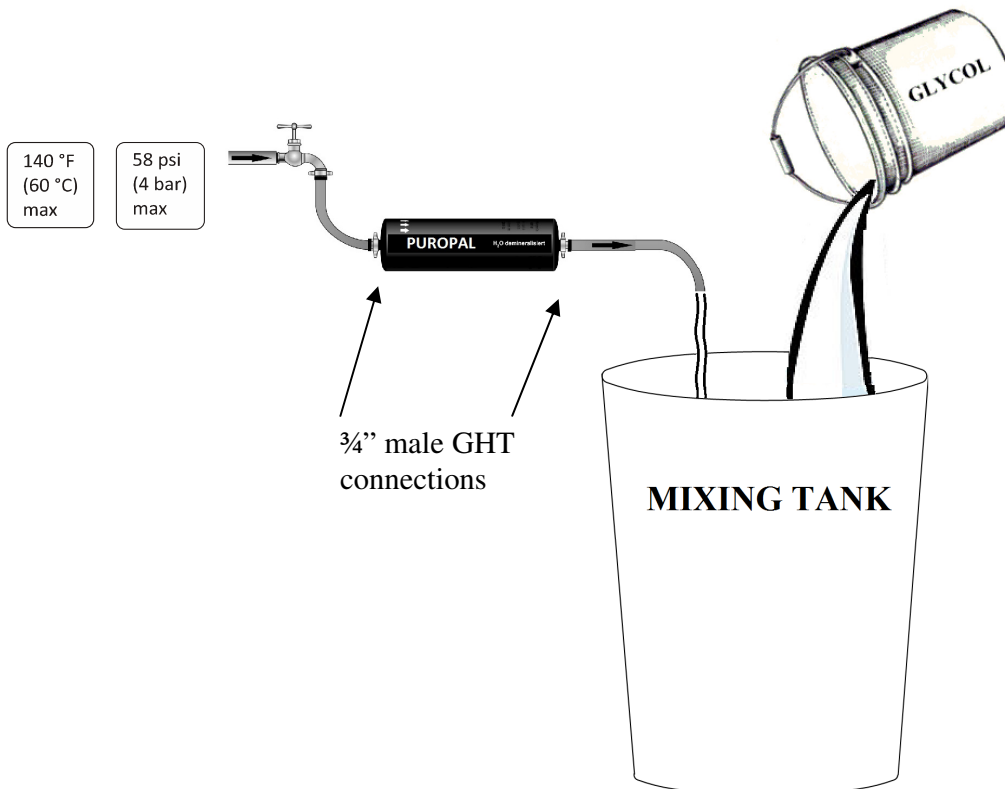
## Filling the system with demineralized water, and glycol/inhibitor

If using glycol and/or inhibitor, pre-mix demineralized water with glycol before filling the system using a purge cart. See figure 2.



The cartridge may only be under pressure during the duration of the fill-up and must be constantly monitored while in use. The maximum pressure is 58 psi (4 bar) at 140 °F (60 °C).

If the fill-water is not measured for water quality, only use the cartridge once. After use, dispose of in the household waste.



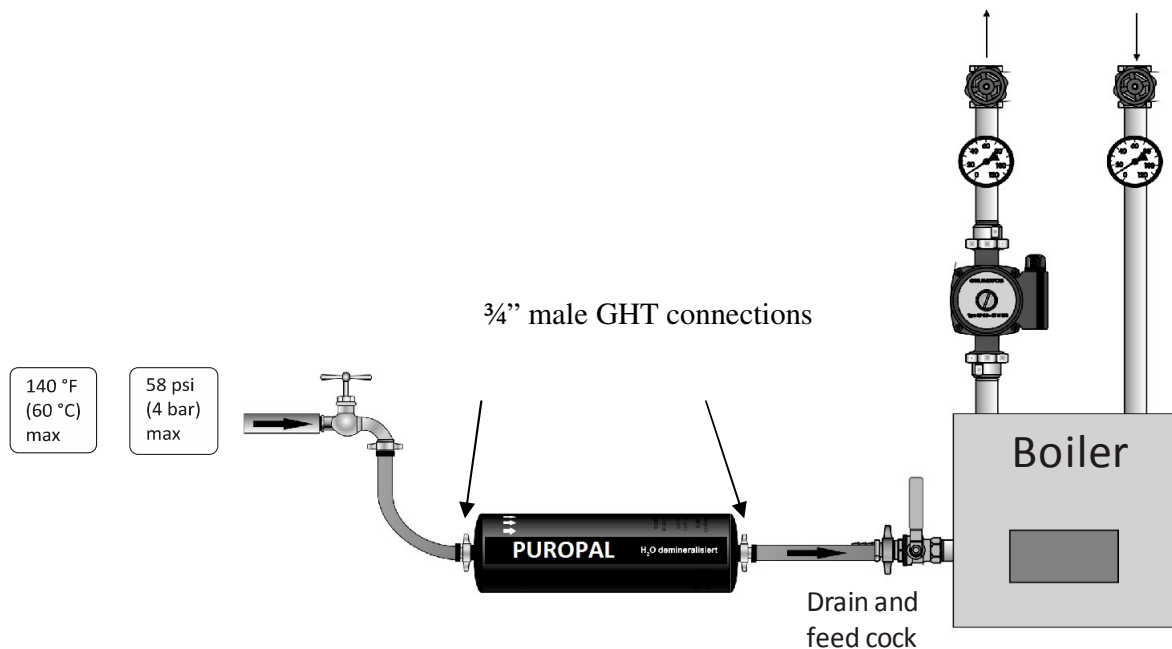
**Figure 2:** Pre-mix glycol with demineralized water before filling the system

The connection variant shown in figure 3 is not suitable for closed loop systems that can only be de-aerated through purging. The flowrate rate through the ion exchanger is insufficient for purging air from a horizontal line. In these cases, we recommend the use of a purge cart for separate filling.



The cartridge may only be under pressure during the duration of the fill-up and must be constantly monitored while in use. The maximum pressure is 58 psi (4 bar) at 140 °F (60 °C).

If the fill-water is not measured for water quality, only use the cartridge once. After use, dispose of in household waste.



**Figure 3:** Demineralizing the domestic fill water

## Cleaning the system with an auxiliary pump

It is possible to demineralize a system that has already been filled with untreated water.

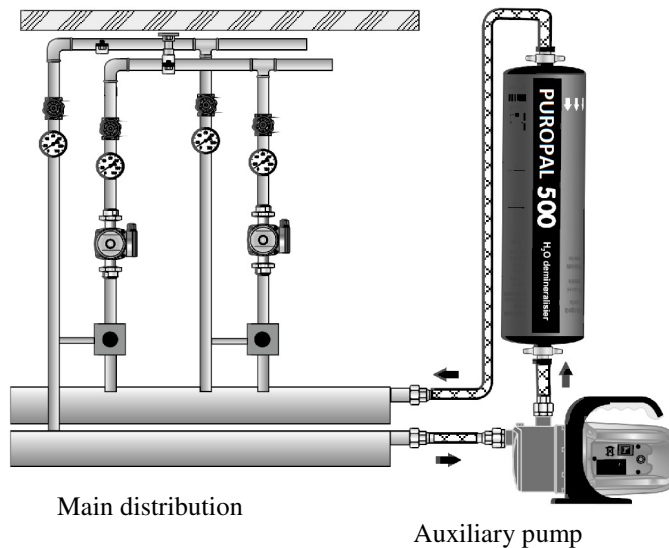
In doing so, the ion exchanger is integrated into the closed loop heating or cooling system circulation with the help of a separate pump (e.g. jet pump, impeller pump, centrifugal pump) and two reinforced hoses (see figure 4 below). Ensure the circulation pumps are operating and all valves are open enabling the system water to be mixed thoroughly.



**Do not demineralize system fluid that has been blended with glycol and/or inhibitor.  
Demineralize water prior to blending with glycol and/or inhibitor.**



The temperature of the cartridge may be a maximum of 140 °F (60 °C) for a short period. It must be connected to a return line with the lowest possible temperature. Only hoses that are sufficiently pressure and temperature resistant should be used (reinforced hoses). Work must be monitored at all times.



Run the cartridge until it is exhausted. Determine the number or size of the required cartridges based on the system content and the capacity diagram on page 1.

The use of a measuring device makes system cleaning easier. The Puropal Meter enables flow rate and water quality monitoring. The cartridge can be completely used up and then replaced at the appropriate time.

The cartridge can easily be used several times with the Puropal Meter for smaller amounts of water until it is exhausted.

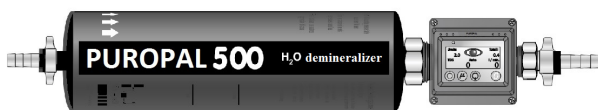
**Figure 4:** Cleaning system with auxiliary pump



## General safety instructions

The resin from the cartridge must not enter the heating system. Before each use, check the retention sieves on both sides of the cartridge. The cartridge must always be monitored while in use.

It is recommended to do a test run of the system and purge the oxygen and carbon dioxide gases that are normally present in tap water.



**Figure 5:** Use of the PUROPAL-METER

If the Puropal is used to demineralize the water of an existing system it needs to be used in conjunction with a flow and conductivity meter in order to know when the cartridge is spent.