



# KKT Training Series:

## Do's and Don'ts of Filling



*Model(s):*

**ECO Series**

# Understanding the Glycol Circuit

The ECO glycol circuit is made up of: pump, expansion tank, evaporator, and pressure sensors.

What differentiates the ECO series chillers from the 1st generation is the following:

- A variable speed pump
- IFP communication to the chiller via fiber optic

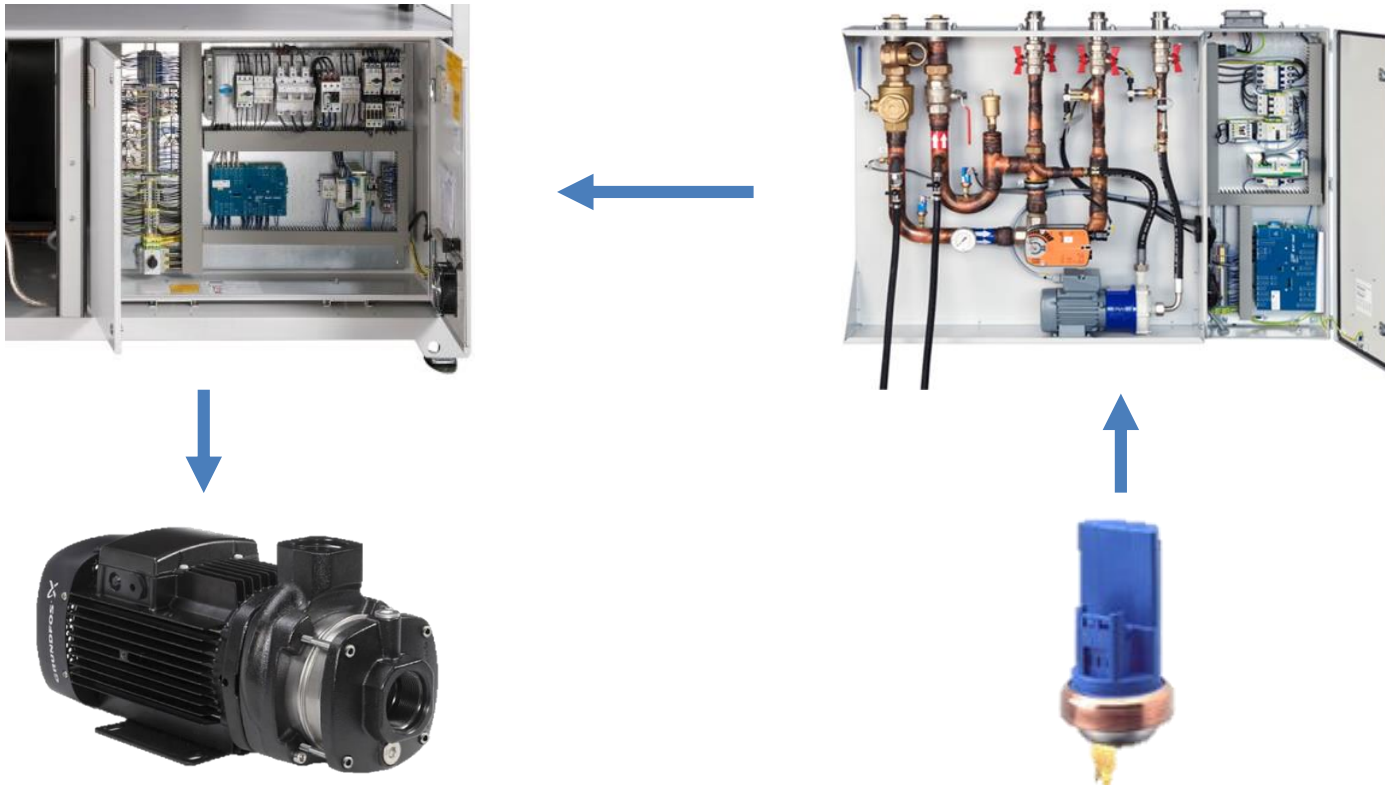


# Pump Operation

The pump is speed controlled. The values are transmitted via pressure sensor from IFP to chiller board. The pump operation is different in **Day** and **Night** mode.

**Day mode** Differential at the IFP is 3-4 Bar

**Night mode** Differential is 1.4 Bar



# When a top-off is needed

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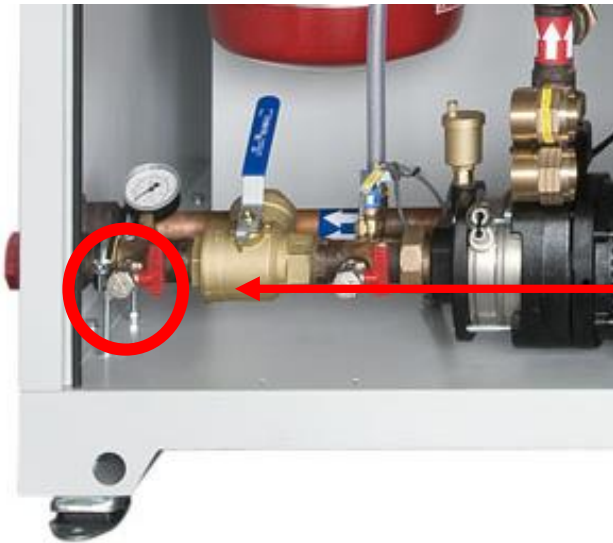
A top-off of the glycol loop may be needed if a service or preventative maintenance is done (example: filter strainer clean out, etc.).

It is important to make sure the chiller is **completely powered down** during filling.

Filling is performed at the **chiller**, **NOT THE IFP!!!**

# Where to fill at the Chiller

Remove door panel to the chiller to access the pump compartment. Connect hand pump to red handle ball valve.

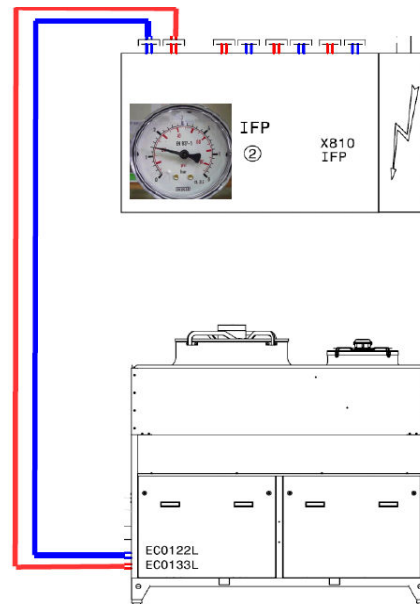


Filling of the unit is done according to chiller height from the IFP. The static pressure (pump off) is read at the chiller.

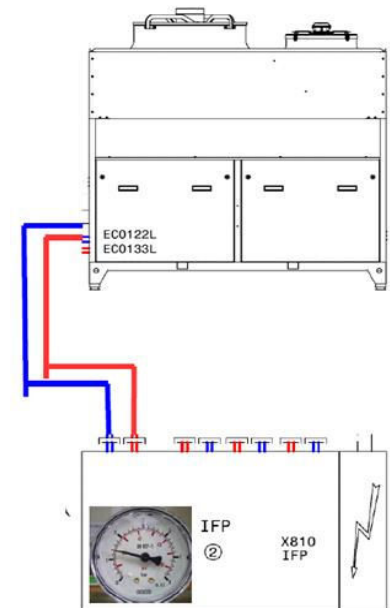


## Fill the system to static on the chiller.

Chiller Location Limitation: 17m below IFP	Chiller Static Fill
2.5 Meters <b>(8.2 Feet)</b>	1.5 Bar <b>(21.7 PSI)</b>
5 Meters <b>(16.4 Feet)</b>	1.7 Bar <b>(24.6 PSI)</b>
7.5 Meters <b>(24.6 Feet)</b>	2 Bar <b>(29 PSI)</b>
10 Meters <b>(32.8 Feet)</b>	2.2 Bar <b>(31.9 PSI)</b>
12.5 Meters <b>(41 Feet)</b>	2.4 Bar <b>(34.8 PSI)</b>
15 Meters <b>(49.2 Feet)</b>	2.6 Bar <b>(37.7 PSI)</b>
17 Meters <b>(55.7 Feet)</b>	2.8 Bar <b>(40.6 PSI)</b>



Chiller Location Limitation: 8m above IFP	Chiller Static Fill
Same Level as IFP	1.6 Bar <b>( 23.2 PSI)</b>
8 Meters <b>(26.2 Feet)</b>	0.9 Bar <b>(13 PSI)</b>
6 Meters <b>(19.6 Feet)</b>	1 Bar <b>(14.5 PSI)</b>
4 Meters <b>(13.1 Feet)</b>	1.2 Bar <b>(17.4 PSI)</b>
2 Meters <b>(6.5 Feet)</b>	1.5 Bar <b>(21.7 PSI)</b>



**Never fill the chiller loop while the system is running!!!!**

## Issues:

- Air cavitation causing damage to the pump impellers
- Damage to the expansion tank bladder because of over-pressurization.
- Glycol leakage at the chiller- 3 bar Safety Valve popped because of over pressurization.

