

# Roots-Pump System Manual

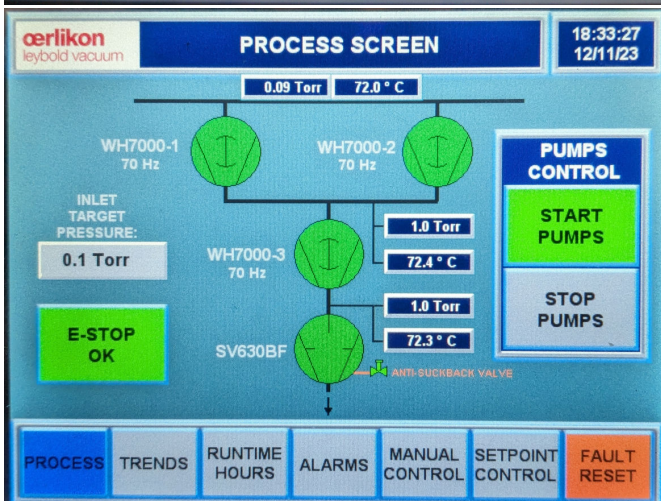
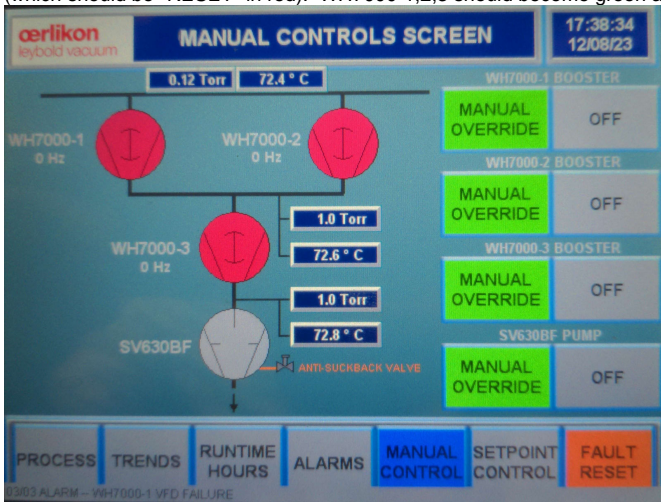
## Operations

### Turning On

1. Switch the main AC power to "ON", using the black handle.

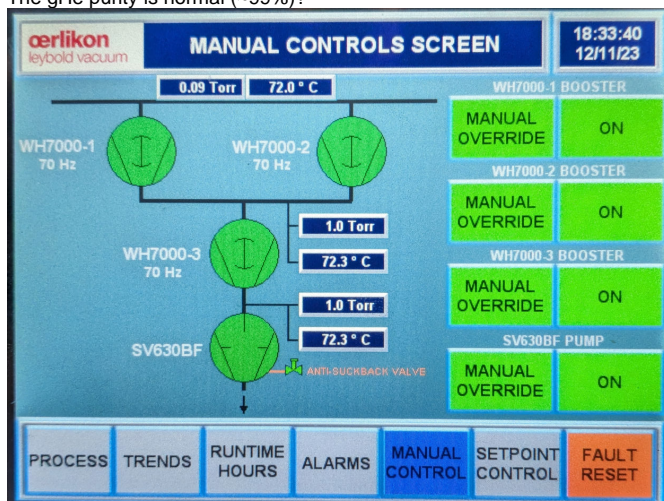


2. You might observe that WH7000-1,2,3 are red due to "VFD FAILURE". In this case, touch the "PROCESS" button and then the "E-STOP" button (which should be "RESET" in red). WH7000-1,2,3 should become green and the "E-STOP" button becomes "OK".



3. Touch the "MANUAL CONTROL" button and enter the password, which can be found on the left top corner of the cabinet.
4. Reconfirm that the system is ready for pumping.

5. Touch the "OFF" button of "SV630BF PUMP" (i.e. the rotary vane pump). The button should turn to "ON".
  - a. You (and others nearby) will hear huge scraping noise. Be prepared.
  - b. Check if the relief valve PRVVAC02 (2 psi) is not kept opened.
  - c. Wait for 40 seconds.
6. Touch the "OFF" button of "WH7000-3" (i.e. the 3rd booster). The button should turn to "ON".
  - a. Wait for 40 seconds.
  - b. Confirm that the rotation frequency becomes 70 Hz.
7. Repeat step 6 for "WH7000-2" and "WH7000-1".
8. Confirm that all components are normal.
  - a. The upstream pressures (i.e. fridge, magnet, etc.) are not too high/low?
  - b. The gHe purity is normal (~99%)?



## Turning Off

1. Touch the "ON" button of "WH7000-1" (i.e. the 1st booster). The button should turn to "OFF".
  - a. Wait for 40 seconds.
  - b. Confirm that the rotation frequency becomes 0 Hz.
2. Repeat step 1 for "WH7000-2" and "WH7000-3".
3. Touch the "ON" button of "SV630BF PUMP" (i.e. the rotary vane pump). The button should turn to "OFF".
4. Switch the main AC power to "OFF" if necessary, using the black handle.
5. Confirm that all components are normal.
  - a. The upstream pressures (i.e. fridge, magnet, etc.) are not getting too high?

## Specifications

SV630 BF Coolant Flow Rate: 12.2 L/m 3.2 Gal/m

Maximum flow rate (730 L/h 12.2 L/m) is used for worst case senario. More info at [SV630 BF Manual](#)

### Water Quality

In order to ensure long trouble-free operation the cooling water must not contain any oils, greases and suspended solids. Moreover, we recommend compliance with the following limit values:

Position thermo. valve		50 Hz				60 Hz			
		Ultimate pr.	40 mbar	Ultimate pr. and gas ballast	250 mbar and gas ballast	Ultimate pr.	40 mbar	Ultimate pr. and gas ballast	250 mbar and gas ballast
1	ΔT water (°C)	7	10	9	13	8	11	11	15
	δ H <sub>2</sub> O (l/h)	643	667	668	656	690	668	676	685
	P (kW)	6	7	7	10	7	9	8	12
2	ΔT water (°C)	52	17	18	12	27	14	10	14
	δ H <sub>2</sub> O (l/h)	99	307	292	726	181	511	718	730
	P (kW)	4	6	6	10	6	8	8	12
3	ΔT water (°C)	45	32	35	17	38	23	34	14
	δ H <sub>2</sub> O (l/h)	78	158	139	462	129	276	185	703
	P (kW)	4	6	6	9	6	7	7	11

ΔT water (°C) : Cooling water temperature increase

δ H<sub>2</sub>O (l/h) : Cooling water flow

P (kW) : Absorbed power by cooling water

Max. cooling water temperature : 30°C (86°F)

WH 7000 (Upper Pump) Coolant Flow Rate: 5.7 L/m 1.51 Gal/m. More info at [WH 7000 Manual](#)

Type	Power loss to be dissipated by the cooling water	Cooling water demand at feed temperature		
		(assuming a constant discharge temp. of 50 °C (1) or 40 °C (2))		
		25°C...30°C	20°C...25°C	<20°C
	kW	l/min	l/min	l/min
WH(U) 2500 (1)	3	2.2	1.7	1.4
WH(U) 4400/7000 (2)	4	5.7	3.8	2.9

Maintenance



Roots pumps oil types:

PDF



Rotary vane pump oil type (recommended by Leybold Tech): LVO 130

Parts list

- 1. <https://www.solbergmfg.com/Solberg/media/Solberg/Combined%20Datasheets/STS-combined-series-US0621.pdf>
- 2. <https://www.doigcorp.com/NUMATICS-F901G-16Z>