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Service Manual

Switching Thermal Options:

Huber Unistat and Liquid Nitrogen

For EXPLORAVAC™ Systems

LNHS-11092023 - V 1.0.2

1. SAFETY

Read the Liquid Nitrogen Cooling Option, ExploraVac, and Huber User Manuals and Installaion Guides. Follow all safety warnings and instructions.

2. OVERVIEW

This document describes how to switch the ExploraVac's thermal platen system between resistive heating/liquid nitrogen cooling, to an outboard Huber Unistat refrigerated heating circulator. When extreme temperatures aren't required, the Huber Unistat systems are more cost effective since they use less electricity for heating and do not consume thermal fluid for cooling.

All procedures are performed with the ExploraVac and Huber systems de-energized and the main liquid nitrogen supply valve turned off.

3. LIQUID NITROGEN TO HUBER SWITCHOVER

1. Follow the instructions in the Liquid Nitrogen Cooling Option User Manual to disconnect the liquid nitrogen lines from the ExploraVac platen tube ends and the 1/4" air line tubing (if necessary).

   https://www.idealvac.com/files/manuals/LN2_Cooling_Option_User_Manual.pdf

Figure 1 - Disconnect LN_2 hoses at the Swagelok nut

2. Attach bare 1/2" Swagelok unions to the ExploraVac platen tube ends.

3. Follow the Huber installation instructions to connect the Huber fluid hoses to the Swagelok unions on the ExploraVac platen tubes.

   Make sure to insulate the bare fittings.

4. Connect the Huber power cable (if needed) and the communications cable.

   https://www.idealvac.com/files/manuals/Huber_Unistat_Installation_Guide.pdf

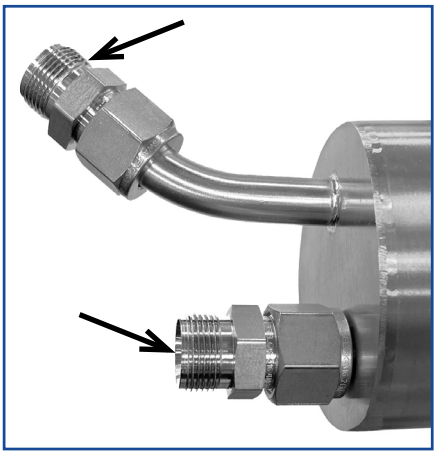

Figure 2 - Install bare Swagelok unions on to ExploraVac platen tubes

5. Open the ExploraVac electronics enclosure with a 10mm hex wrench.
6. Toggle the mode switch to the down (Huber) position. It is to the left of the K5 relay in the center of the enclosure.

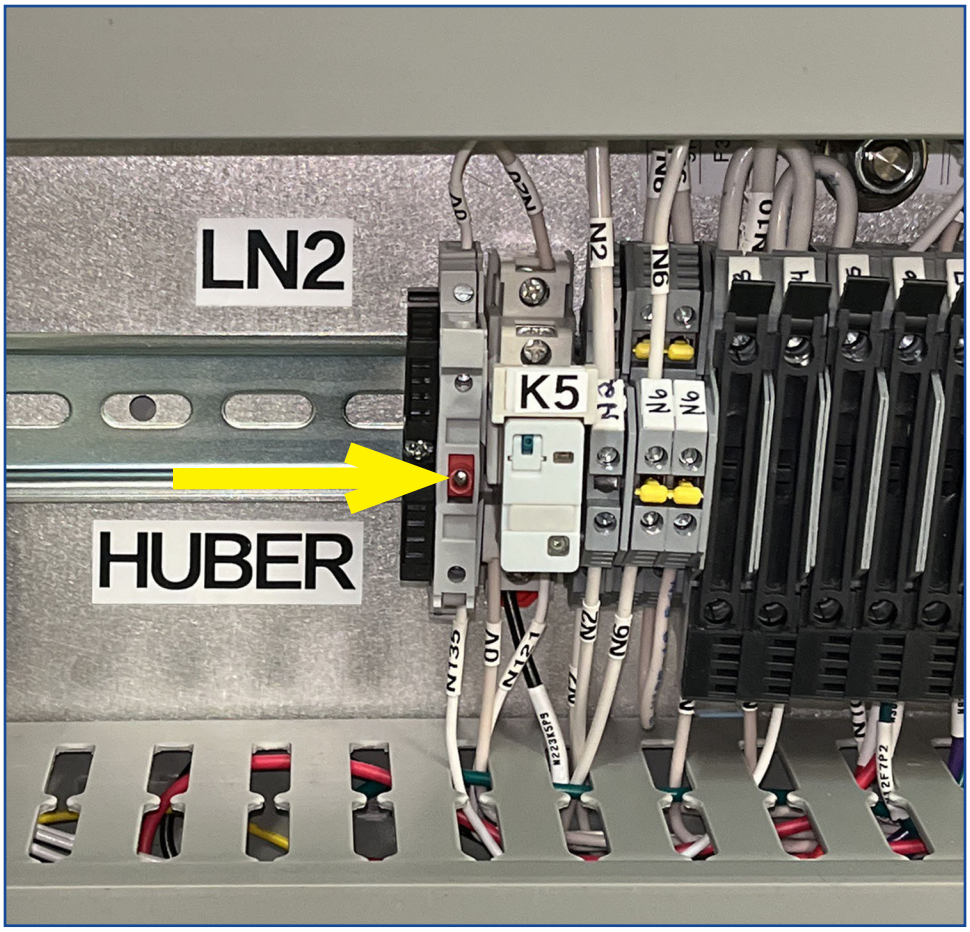

Figure 3 - Toggle mode switch to down (Huber) position

7. Close and lock the enclosure door.
8. Restart the ExploraVac and turn on the Huber system according to the Huber Unistat Installation Guide.
9. If this is the initial Huber startup, you must fill the Huber with thermal fluid before energizing the Huber system.

4. HUBER TO LIQUID NITROGEN SWITCHOVER

1. The platen and the Huber's thermal fluid should be at room temperature before proceeding.
2. De-energize the ExploraVac and turn off the Huber system's power.
3. Disconnect the power cable (if connected to the ExploraVac) or de-energize Huber at the facility disconnect.
4. Disconnect the communications cable from the J24/Huber connector on the ExploraVac.
5. Follow the Fluid Draining Procedure in the Huber Unistat Installation Guide:

   https://www.idealvac.com/files/manuals/Huber_Unistat_Installation_Guide.pdf

6. Remove the insulation and disconnect the thermal fluid hoses from the ExploraVac platen tubes.

   Disconnect the lines at the Swagelok nut closest to the feedthrough (Figure 4). Leave the unions attached to the Huber thermal fluid hoses.

7. Cap the exposed union ends in case there is any residual fluid left in them.
8. Use compressed air to gently blow out the remaining thermal fluid in the platen tube. There may be as much as a liter of fluid. It should be recovered to save expense.

   Affix a length of clean tubing (≈ 1" ID) over the other end of the platen tube or shield the outflow end to direct the fluid into a very clean container, or the container used to drain the Huber.

   The recovered fluid may become aerated. The next time the Huber is reconnected and run the fluid may need to be degassed.

Figure 4 - Disconnect thermal fluid hoses at the Swagelok nut

9. Get about 1/2 liter of Isopropyl Alcohol (IPA) and a funnel. Carefully pour the IPA into the same platen tube into which the air was blown. Gently blow the IPA out into another container. It will remove all the remaining silicone oil possible. Do not recover this oil. Dispose of it properly.
10. Connect the liquid nitrogen supply hose, exhaust hose, and air line from the cryogenic valve to the ExploraVac. The hoses should still have the brass and Swagelok adapters on them.
11. Open the ExploraVac electronics enclosure with a 10mm hex wrench. Toggle the mode switch to the up (LN2) position (Figure 3, previous page). Close and lock the door.
12. Open the facility's LN_2 supply valve. Energize the Exploravac and begin using the system.

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