



ExploraVac Systems with Huber Unistat Systems

(refrigerated heating circulators)

Installation Guide



For Huber Unistat Models 405, 705, 815

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If you have any questions concerning the installation or operation of this equipment, or if you need warranty or repair service, please contact us. Customer Service and Technical Support is available weekdays, from 8am-5pm, Mountain Time.

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TABLE OF CONTENTS

Warranty	2
Customer Service and Support.....	2
Intellectual Property	2
Table of Contents	3
Safety.....	4
Important Safety Information.....	4
1. Overview	4
2. Before you Begin - Important Information.....	5
3. Installation	6
4. Connect Power and Communication Cables.....	12
5. Fill with Thermal Fluid	13
6. Initial Start Up.....	14
7. Circulate Thermal Fluid	15
8. Fluid Draining Procedure	19
9. Degassing Procedure	20

SAFETY

IMPORTANT SAFETY INFORMATION

Thank you for purchasing this equipment from Ideal Vacuum Products. We want you to operate it safely.



- **Read this manual and all associated equipment manuals before installing or operating this equipment. Failure to follow the warnings and instructions may result in serious injury or equipment damage.**
- **Keep this manual in a safe location for future reference.**
- **This equipment should only be installed and operated by trained, qualified personnel, wearing appropriate protective equipment including gloves and safety glasses.**
- **Follow all codes that regulate the installation and operation of this equipment.**

1. OVERVIEW

This guide provides step-by-step instructions for connecting fluid hoses from a Huber Unistat 405, 705, or 815 to an ExploraVac instrument. It also includes instructions for filling and draining the thermal fluid, and the Huber systems initial startup procedure.

Huber Unistat refrigerated heating circulators provide heating and cooling of an ExploraVac platen. Three models are available: Model 405 for temperatures between -40°C to +225°C, Model 705, for temperatures from -60°C to +225°C, and Model 815, for temperatures from -65°C to +225°C. All are delivered with a measured quantity of thermal fluid.

The Huber system attaches to the ExploraVac platen via red, flexible, insulated Swagelok® supply and return lines. All Huber Unistat models are standalone and are positioned either behind or to the side of the ExploraVac instrument. A minimum of 5 ft. of additional space is needed behind or to the side of the Exploravac for clearance (see Datasheets for footprint).

Depending on the model and system configuration, the fluid circulating hoses are attached either to the chamber feedthrough or through the back of the ExploraVac cabinet. If they are through the Exploravac cabinet, the fluid hoses are attached and insulated on the ExploraVac side at the factory. If they attach to the chamber feedthrough, the hoses are attached and insulated on the Huber system.

Before use, fluid hoses must be connected and insulated and the unit must be filled with thermal fluid.

All Huber Unistat models require a separate power feed and power must be wired by a qualified electrician. Huber electrical requirements are as follows:

Huber Model	405	705	815
Voltage	208-240 VAC, 60 Hz, 1Ø	208-240 VAC, 60 Hz, 3Ø	440-480 VAC, 60 Hz, 3Ø
Current	20A	25A	15A

2. BEFORE YOU BEGIN - IMPORTANT INFORMATION

Do not power or run the ExploraVac or Huber system until the fluid hoses are connected and insulated and the Huber system is filled with thermal fluid.

All Huber models have their own on/off switch and must be turned on separately.

To maximize longevity and minimize wear and tear on the Huber refrigerated heating circulator system, follow these guidelines:

- Upon receiving power, the Huber system takes 50-60 seconds to initialize and run its internal diagnostics. Wait for it to complete its startup cycle before turning on platen heating or cooling.
- If the ExploraVac POWER button is pressed while the Huber is in its startup cycle, the ExploraVac will wait (go into a standby mode) to power down until the Huber startup cycle is completed.
- If the Huber system is in temperature control mode when the POWER button is pressed, the Huber must first stop circulating the thermal fluid before it will allow the ExploraVac system to power down. This takes approximately 30 seconds.

Things to do:

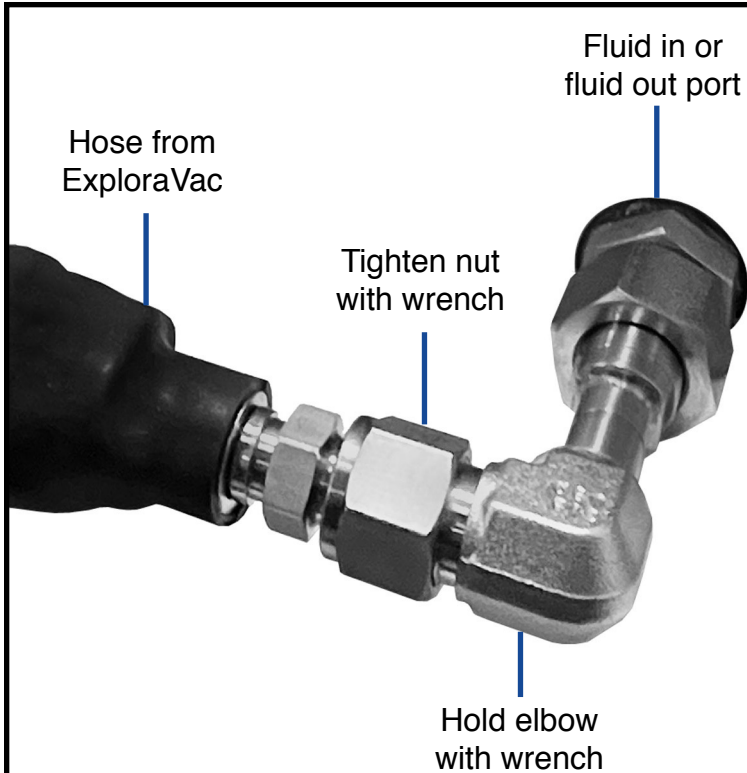
- Avoid running the Huber circulator for less than 5 minutes.
- Always use the POWER button in AutoExplor to turn off the system.
- Pressing the emergency stop while thermal fluid is circulating can damage the Huber.
- **DO NOT USE THE EMERGENCY STOP UNLESS IT IS AN EMERGENCY.**
- On dual platen systems, manual valves are installed in the thermal fluid lines. These are provided in case the user wants to heat or cool just one platen. When using only one platen, close the valve on the non-selected platen fluid outlet, and crack its fluid inlet valve slightly. This allows for thermal expansion of the fluid but fluid does not drain from the tubes or the second platen. Closing both valves completely can cause high tube pressures.

NOTE

Download and read the Huber Unistat Operation Manual to completely familiarize yourself with the capabilities of your system:

idealvac.com/files/manuals/Huber_Unistat_Operation_Manual.pdf

3. INSTALLATION



STEP 1

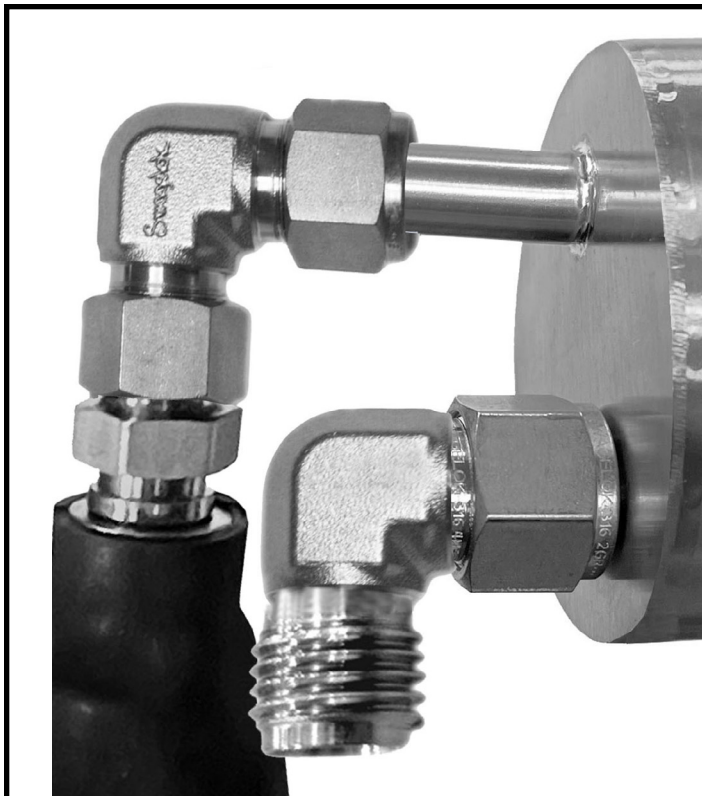
Remove the protective caps from the hose ends.

Note: There may be a small amount of thermal fluid in the hoses. Use a rag or paper towel to absorb any fluid.

You will need:

- Wrenches
- Diagonal Cutters
- Huber installation kit (included with system)

If the hoses are pre-installed on the ExploraVac, connect the hoses to the Huber system as shown in the image to the left.



STEP 2

If the hoses are pre-installed on the Huber system, connect the hoses to the ExploraVac chamber feedthrough as shown in the image to the left.



STEP 3

For either configuration, once the hoses have been connected, they are insulated similarly.

Included with the Huber system is the installation kit which includes:

- A 10 ft. long DB 15 male-to-male communications cable
- Funnel for filling thermal fluid
- Thermal fluid
- Strips of ceramic fiber insulation
- Zip ties
- Armaflex adhesive backed strips
- Nitrile gloves



STEP 4

Note: The insulation can be a skin irritant.

Put on gloves and safety glasses.

In this image, the lower Huber hose has already been insulated.

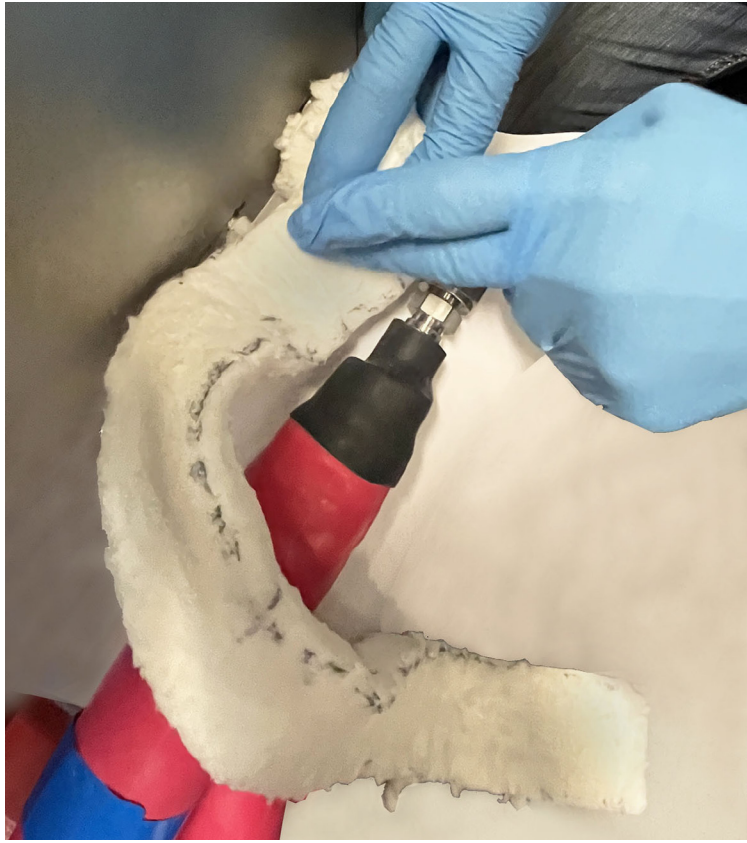
In the next steps, the other hose will be insulated and wrapped.

Note: Hose connections differ in location on each Huber model.

STEP 5

Get a strip of insulation.

Begin wrapping it around the pipe, starting where the pipe exits the Huber or to the flange on the chamber feedthrough.



STEP 6

Continue wrapping the insulation around the pipe.

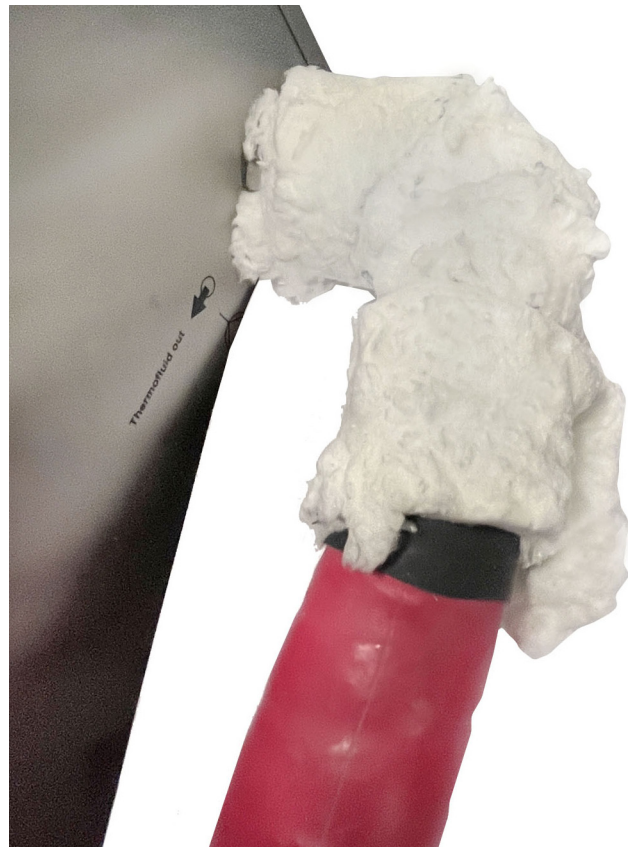
Try to keep it tight.

It can be challenging to slip it between the two hoses. Take your time.



STEP 7

Finish wrapping the insulation so that it completely covers all exposed pipe including over the reduced diameter section of the Swagelok hose.



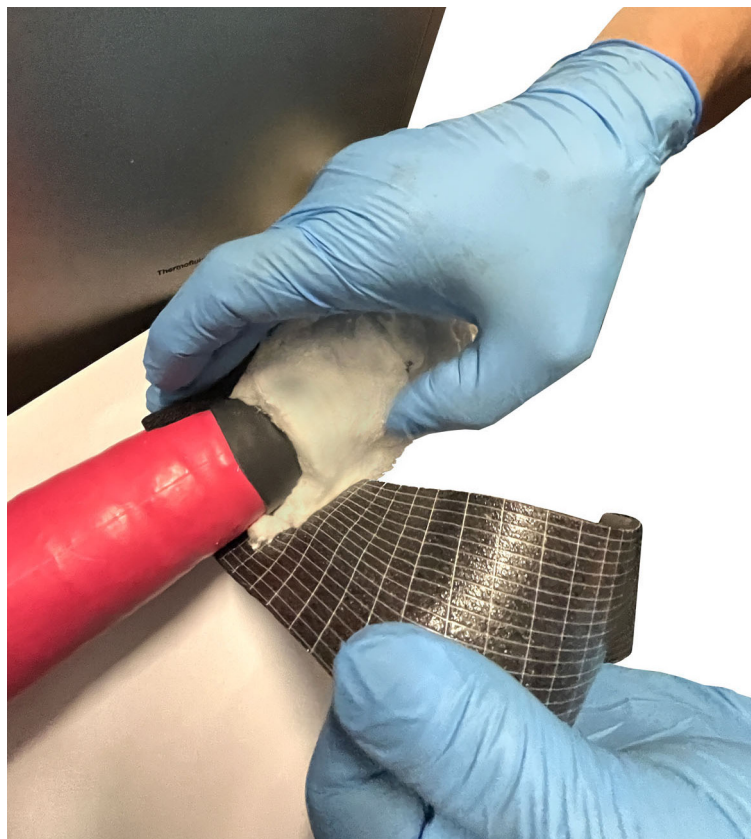
STEP 8

Get a piece of the Armaflex adhesive strip.

Remove the backing.

Begin to wrap the strip over the insulation, starting at the hose end.

Note: It may be helpful to cut the strips in half with scissors to make it easier to get the strip in between the two hoses.



STEP 9

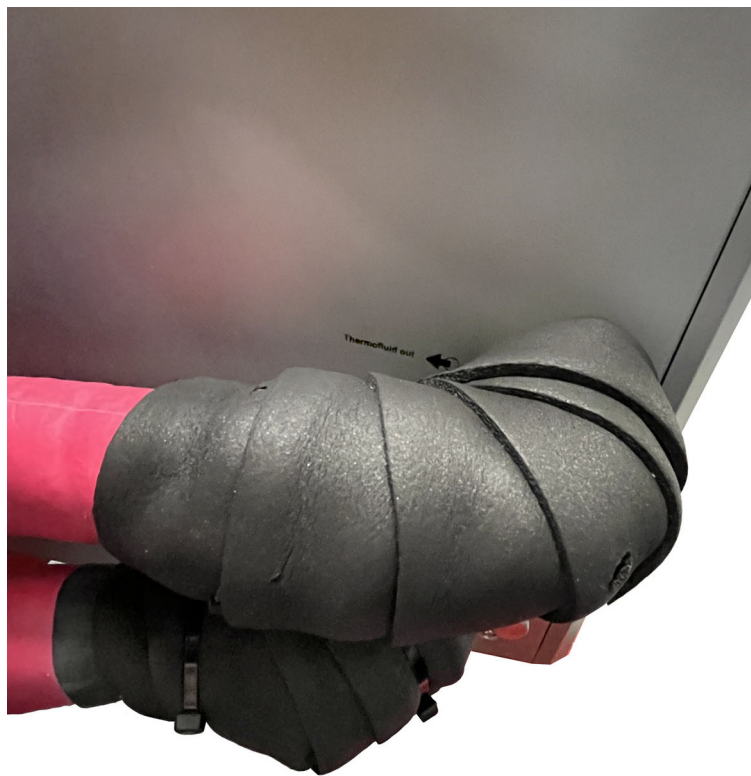
Continue wrapping Armaflex strips over the ceramic insulation.

Overlay successive strips so that no insulation is exposed.



STEP 10

Finish wrapping Armaflex strips over the insulation. Wrap the strips right against the Huber enclosure or feedthrough plate.



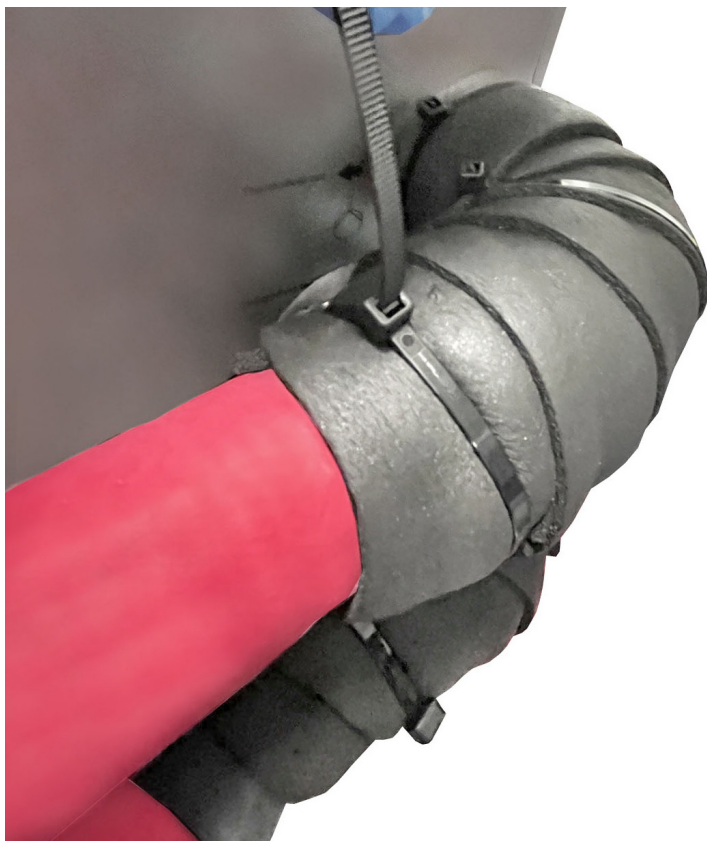


STEP 11

Get the zip ties.

Put one on the last strip close to the Huber enclosure or feedthrough flange.

Use the diagonal cutters to clip off the end.



STEP 12

Put zip ties at the elbow and on the strip at the hose end. Clip off the zip tie ends.

Insulate the second hose just like the first. (Repeat steps 4-12).

Hose connection and insulation is complete.

4. CONNECT POWER AND COMMUNICATION CABLES

STEP 13

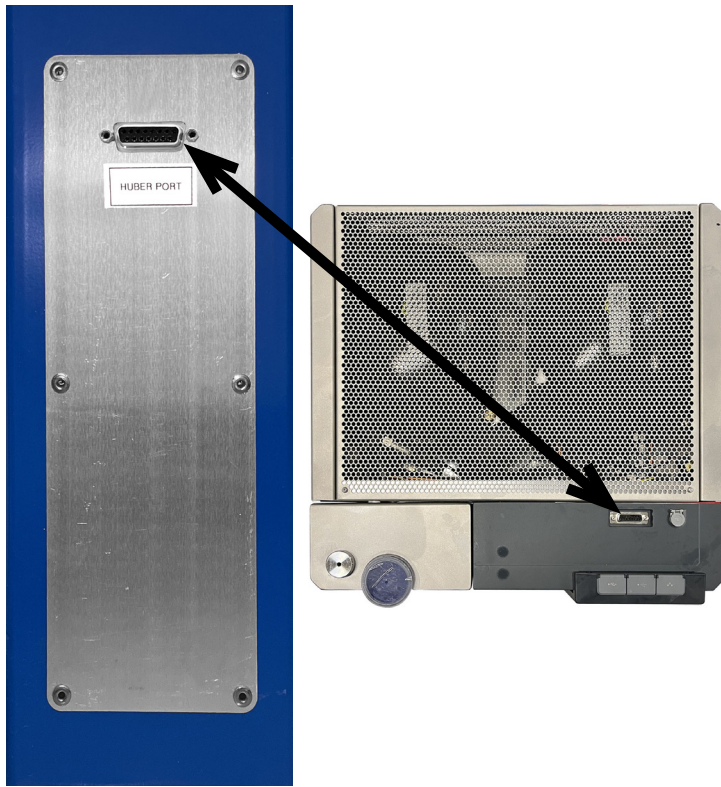
Get the 15 pin Male-to-male communication cable from the installation kit.

Plug one end into the Huber Port on the back of the ExploraVac, or the side of the control console.

Plug the other end into the 15 pin connector on the top of the Huber.

Energize the Exploravac system if it is not already on.

Wait for the Exploravac to initialize and AutoExplor to show on the screen.



5. FILL WITH THERMAL FLUID

STEP 14

Get the funnel and the thermal fluid from the Huber installation kit.

Unscrew the fill plug.



STEP 15

Pour the thermal fluid into the Huber. The jug has a fill line marked. Pour until the fluid is at the line. Do not overfill. There will be some fluid left over. The Huber sight glass will show approximately 75% full.

Screw in the filler plug.

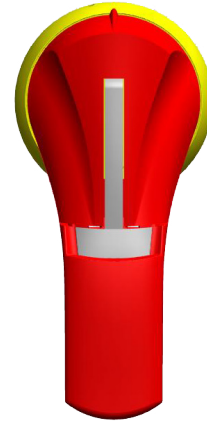


6. INITIAL START UP

STEP 16

On the side of the Huber, rotate the power switch clockwise to the on position.

Rotate the ExploraVac's main power switch/system disconnect clockwise to energize the ExploraVac.



STEP 17

On standard ExploraVac systems, press the console POWER button.

On ExploraVac MAX or UNLIMITED systems, press the POWER icon in AutoExplor.

The Huber system will perform its initialization process for about one minute.



7. CIRCULATE THERMAL FLUID

STEP 18

Once thermal fluid has been filled and the ExploraVac and Huber systems are on, the Huber system must circulate the thermal fluid through the fluid lines and platen to eliminate any air pockets.

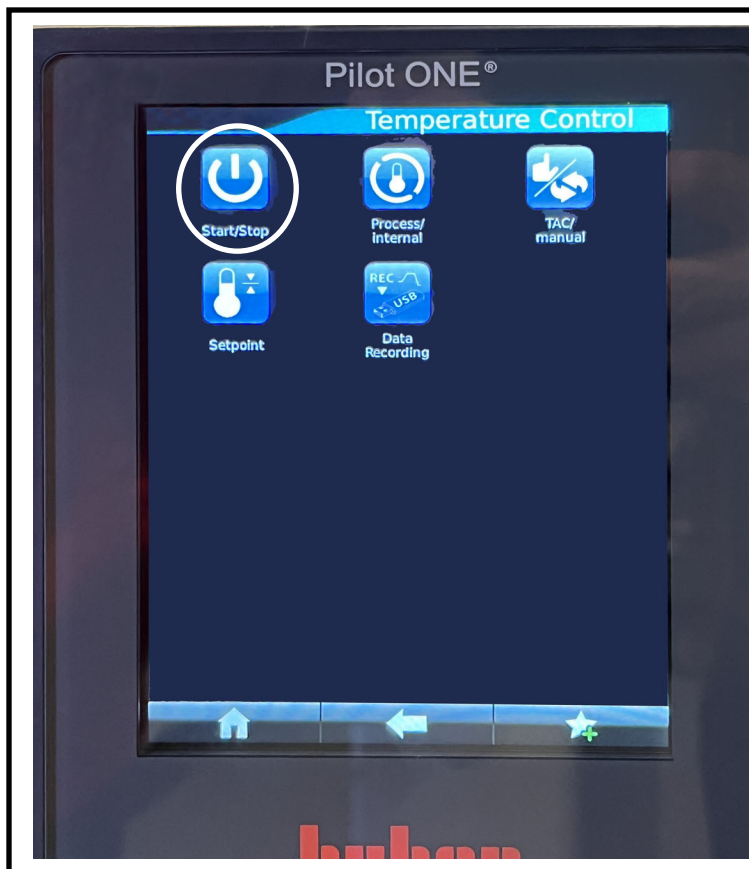
On the Huber home screen, press Menu at the bottom of the screen.



STEP 19

At the Categories Menu page, press Temperature Control at the top left.





STEP 20

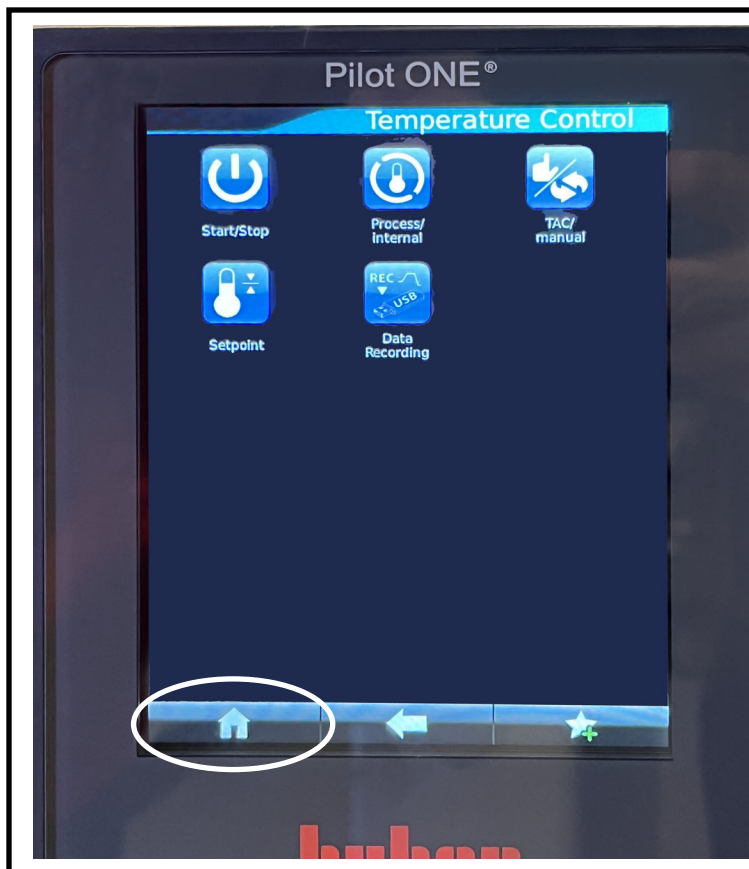
At the Temperature Control page, press Start/Stop at the top left.



STEP 21

At the Start/Stop page, press Start circulation.

Then, press OK.



STEP 22

Back at the Temperature Control page, press the Home icon at the bottom left.



STEP 23

At the Home screen, on the right, the machine will show the pump circulating (rotating blade).

It takes about a minute for the circulating pump to get up to full speed.

Watch for fluid leaks. If there is a leak, immediately turn off the Huber system and correct the leak.

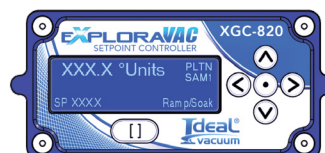
Note: Below the rotating fan blade image, the fluid level is displayed. Green is good.

STEP 24

Allow the machine to circulate fluid for about 5 minutes. Then, press Stop.

When fully primed, the fluid level decreases in the sight glass from its starting level of about 75% full to its normal operating level (about a third of the sight glass).

Commissioning is complete and the ExploraVac can be run normally. Use the ExploraVac Temperature Setpoint Controller to vary the platen temperature (see the ExploraVac and AutoExplor user manuals).



8. FLUID DRAINING PROCEDURE

STEP 25

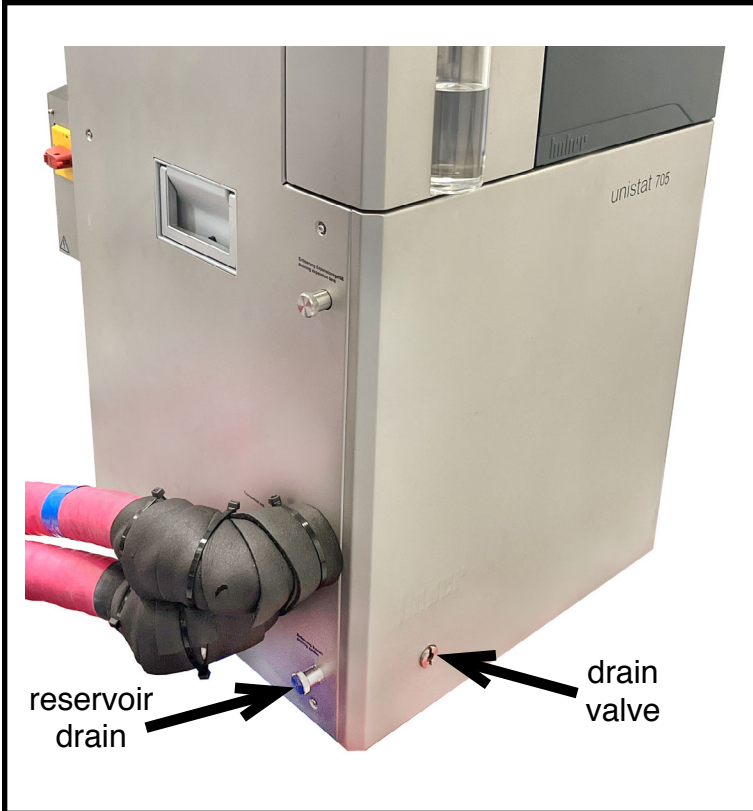
The Huber system should not need to be drained or refilled unless it is going to be transported or if a fluid line develops a leak.

The drain valve is on the bottom left of the machine's face or on the middle of the side depending on the model. Large units have two drains, both of which must be drained.

Expansion tanks do not need to be drained.

Tools and supplies needed:

- pair of pliers
- large flat screwdriver or coin
- drain pan
- isopropyl alcohol (IPA)
- paper towels



STEP 26

Get the drain pan and put it under the drain.

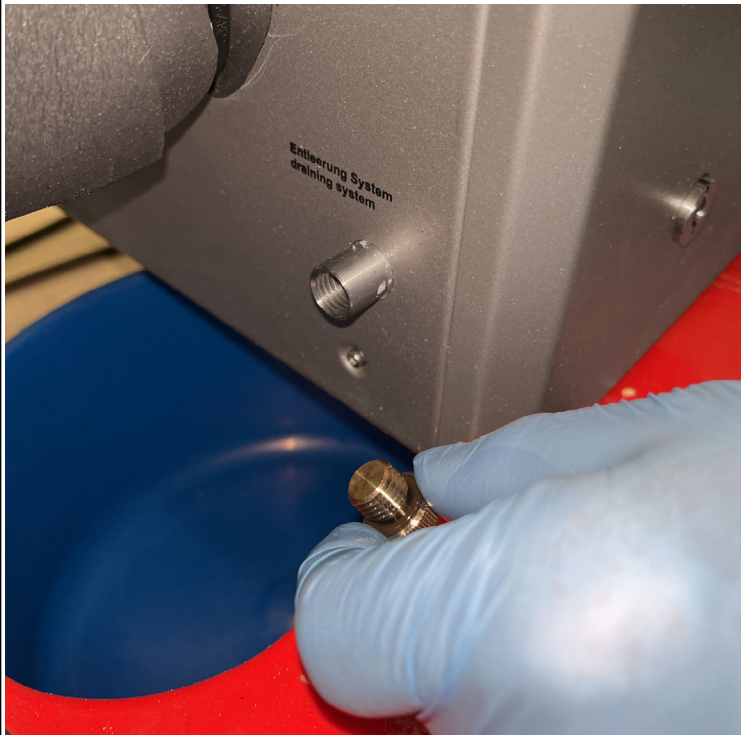
If the fluid will be reused, make sure that the pan is very clean (use IPA to clean the pan).

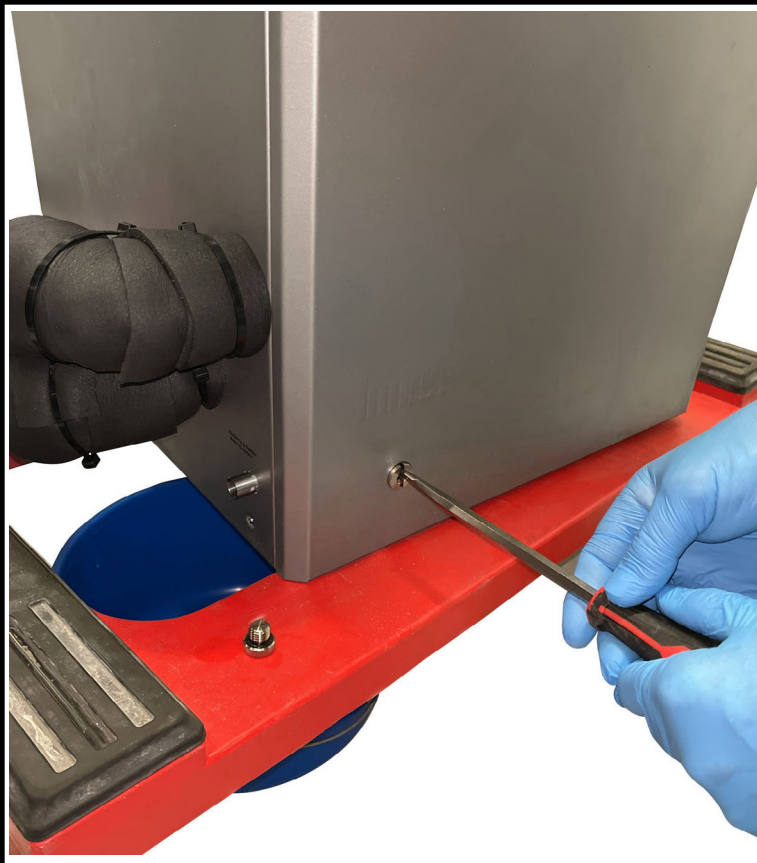
Note: Draining is easier if the Huber system is a few inches off the floor. Here it is on a rolling cart.

Unscrew the drain plug.

Fluid will not drain yet, even with the plug removed.

Note: The plug may be very tight. Use a pair of pliers to loosen if needed.

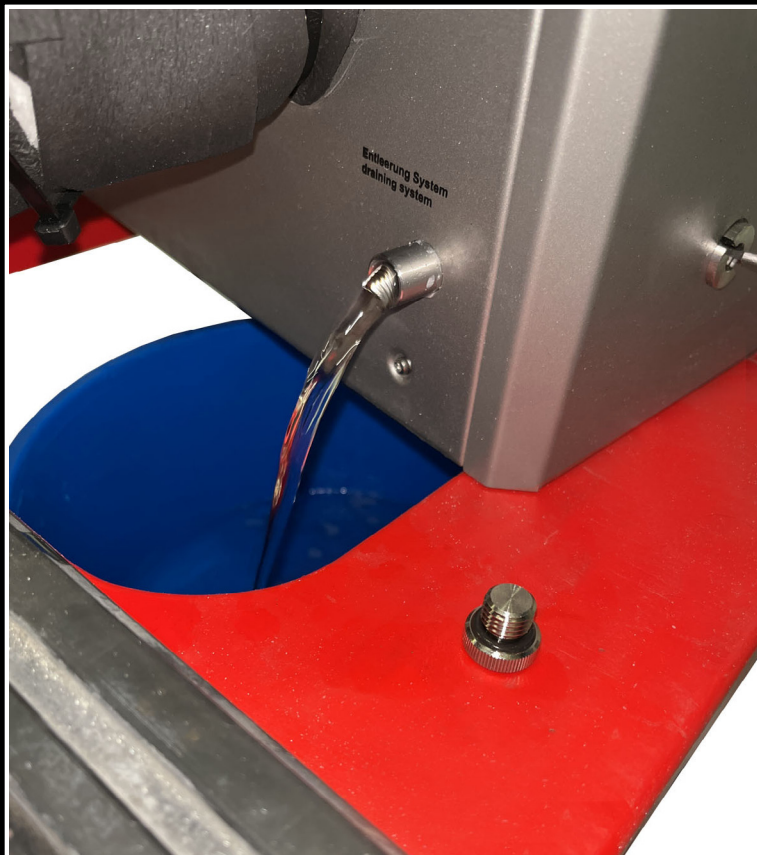




STEP 27

Get a large flat head screwdriver.

Slowly rotate the drain valve counterclockwise about 1/8 to 1/4 turn to open it.



STEP 28

Fluid will begin to drain from the system.

Allow it to drain for several minutes until empty.

Close the drain valve. Replace the drain plug.

Note: On larger systems, drain both fluid reservoirs (below).



STEP 29

If the unit needs to be moved or transported, the platen and fluid hoses might have to be drained.

Disconnect the hoses either from the Huber or the ExploraVac chamber feedthrough.

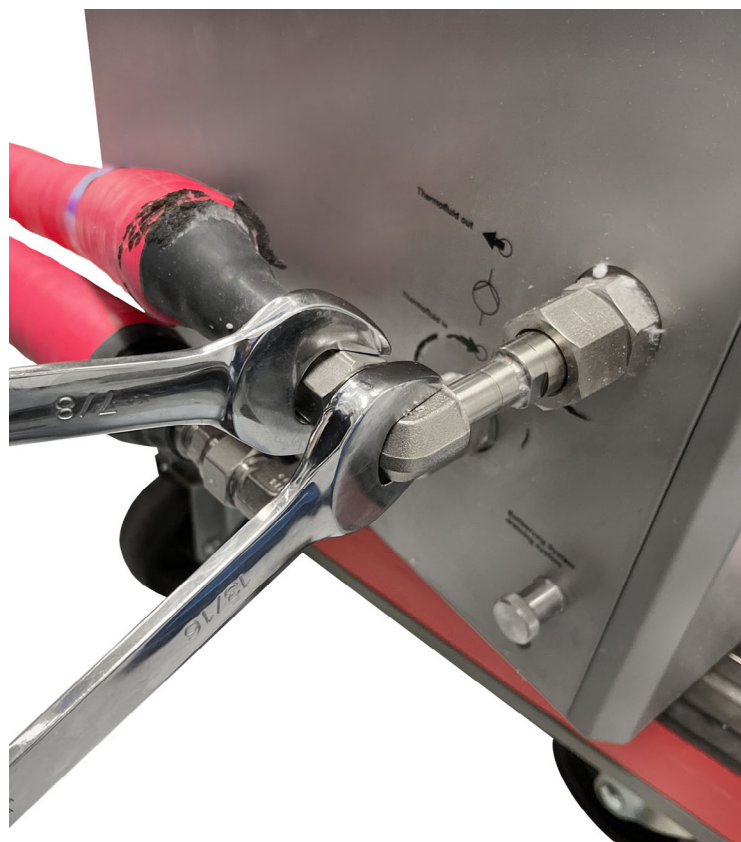
Cut the zip ties and remove the hose insulation from both hoses.

Place the drain pan under the hoses.

Disconnect the first hose from the elbow. Drain it into the pan. Repeat for the second hose.

Pour the fluid back into the Huber container.

Place Swagelok caps on both hose ends and on the exposed fittings of the Huber or ExploraVac chamber feedthrough.



9. DEGASSING PROCEDURE

When the Huber is filled with fluid, the fluid can become aerated and may need degassing. The Huber will generate an error if degassing is needed.

PROCEDURE

- Activate the menu item "Degassing" after completing the venting operation.
Prerequisite: You have filled and/or cleaned the temperature control unit in accordance with the instructions. → Page 69, section »Filling and venting externally closed application« and/or → Page 96, section »Rinsing the thermal fluid circuit«.
- Go to the "Categories Menu".
- Tap on the category "Temperature Control".
- Tap on the category "Start/Stop".
- Tap on the dialog entry "Start degassing".
- Touch "OK" to confirm your selection.
- Read the Note and confirm by tapping on "OK".
- Go to the "Home" screen.
- Tap on the keypad symbol next to "T_{setpoint}".
- Enter a setpoint using the number keypad that appears. This setpoint **must** be below the boiling point of the low-boiling thermal fluid. The setpoint will be increased in 10 K steps during the degassing process up to the maximum working temperature.
- Touch "OK" to confirm your entry.
- In the display that follows, confirm your entry again by tapping on "OK". The correct selection will be displayed graphically and the "setpoint" will be changed immediately. If tapping on "OK" is not correct, it will be displayed graphically for 2 seconds. The display will return to the "Home" screen. Try changing the "setpoint" again.
- Carry out temperature control to this setpoint until the temperature in the >Expansion vessel< [18] no longer rises or even falls.

STEP 30

Follow the procedure described on p. 72 of the Huber Operation Manual to degas the thermal fluid.

The Huber manual is located on the USB drive that came with the ExploraVac system, or download it here:

[idealvac.com/files/manuals/Huber
Unistat_Operation_Manual.pdf](https://idealvac.com/files/manuals/Huber_Unistat_Operation_Manual.pdf)



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