



ExploraVAC with Huber Unistat Systems

(refrigerated heating circulators)

Installation and Commissioning Manual



WARRANTY

Ideal Vacuum warrants to the original purchaser, this product to be free from defects in workmanship and materials for a period of one year from the original delivery date. The liability of Ideal Vacuum, under this warranty, is limited to servicing, adjusting, repairing or replacing any unit or component part which, at Ideal Vacuum's sole discretion, is determined to have failed during normal, intended use. This warranty does not cover improper installation, process related damage, product use in any way other than defined in this manual, or any misuse, abuse, negligence, accident, or customer modification to the product.

Prior to returning any product, we require that you contact us by phone or email to determine if the issue can be resolved quickly. A technical support representative will work with you to resolve the problem. If the issue cannot be resolved in that manner, we will issue an RMA number and provide product return instructions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR USE OR FITNESS FOR A PARTICULAR PURPOSE. IDEAL VACUUM SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR INDIRECT, SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING OUT OF THE USE OF THE PRODUCT. THE TOTAL LIABILITY OF IDEAL VACUUM SHALL NOT EXCEED THE PURCHASE PRICE OF THE PRODUCT UNDER ANY CIRCUMSTANCES.

CUSTOMER SERVICE AND SUPPORT

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.

Phone: (505) 872-0037

Fax: (505) 872-9001

Email: info@idealvac.com
techsupport@idealvac.com

Web: idealvac.com

INTELLECTUAL PROPERTY

At Ideal Vacuum we constantly strive to innovate and improve on existing products. Therefore, specifications and information are subject to change without notice. The Ideal Vacuum Logo is a registered trademark, ExploraVAC, AutoExplor, and the slogan "Our Products Develop Tomorrow's Technologies" are trademarks of Ideal Vacuum Products, LLC. Unistat is a registered trademark of Peter Huber Kältemaschinenbau AG. Swagelok is a registered trademark of The Swagelok Company. Armaflex is a registered trademark of Armacell International. Reference to products, trademarks, and registered trademarks owned by other manufacturers is made strictly for informative purposes and are the sole properties of their respective owners.

Copyright © 2023-2025, Ideal Vacuum Products, LLC. All rights reserved.

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. Tools, Materials and Supplies Needed	5
4. Release Transportation Lock	6
5. Make Water Connections.....	7
6. Connect and Insulate Fluid Hoses	8
7. Connect Power and Communication Cables.....	15
8. Fill with Thermal Fluid	17
9. Initial Start Up.....	18
10. Circulate Thermal Fluid.....	19
11. Fluid Draining Procedure.....	23
12. Degassing Procedure.....	24

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 and commissioning a Huber Unistat refrigerated heating circulator on an ExploraVAC instrument. Instructions include connections of water supply and return lines (for water cooled units) and thermal fluid hoses. Also included are instructions for filling and draining the thermal fluid, and the Huber system's initial startup procedure.

Huber Unistat refrigerated heating circulators provide heating and cooling of ExploraVAC platens. This manual is valid for Huber Unistat 405, 510, 510W, 615, 615W, 705, 815, 815W, 915W, and 920W units. The 'W' indicates a water cooled system. Different systems have different heating and cooling capacities. All are delivered with a measured quantity of thermal fluid.

All Huber Unistat models are standalone and are positioned either behind or to the side of the ExploraVAC instrument. Supply and return thermal fluid lines between the Huber unit and ExploraVAC are via red, flexible, insulated Swagelok® hoses which make a closed circulating system. Please see the datasheets included with your ExploraVAC system for minimum floor space and clearance requirements.

Depending on the model and system configuration, the hoses are attached either to chamber feedthroughs (ExploraVAC Unlimited systems) or through the back of the ExploraVAC cabinet (Standard and MAX systems). Depending on the ExploraVAC system, the hoses are delivered either connected on the chamber or on the Huber unit from the factory.

All Huber Unistat models require a separate power feed and power must be wired by a qualified electrician. Power requirements vary between Huber models. The smallest units require 208-240 VAC, single phase power. Larger units require either 208-240 VAC or 440-480 VAC, 3 phase power. Electrical requirements for your Huber model are specified in the datasheets or on the USB drive included with your ExploraVAC system.

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 larger units may also have a separate disconnect. Switches and disconnects must be engaged separately from the ExploraVAC system.

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 is on and the power button or icon 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 ExploraVAC emergency stop while thermal fluid is circulating may damage the Huber. **DO NOT USE THE EMERGENCY STOP UNLESS IT IS AN EMERGENCY.**
- On dual platen systems using a single Huber system for both platens, 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. For ExploraVAC systems with dual platens and a single Huber, the valve opening and closing procedure will be documented in the ExploraVAC manual.



Frostbite or Burn Hazard. Do not touch bare fluid valves, connectors, or lines during operation.

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. TOOLS, MATERIALS AND SUPPLIES NEEDED

- Huber installation kit
- Two adjustable wrenches
- Diagonal cutters
- Gloves
- Safety glasses

4. RELEASE TRANSPORTATION LOCK

STEP 1

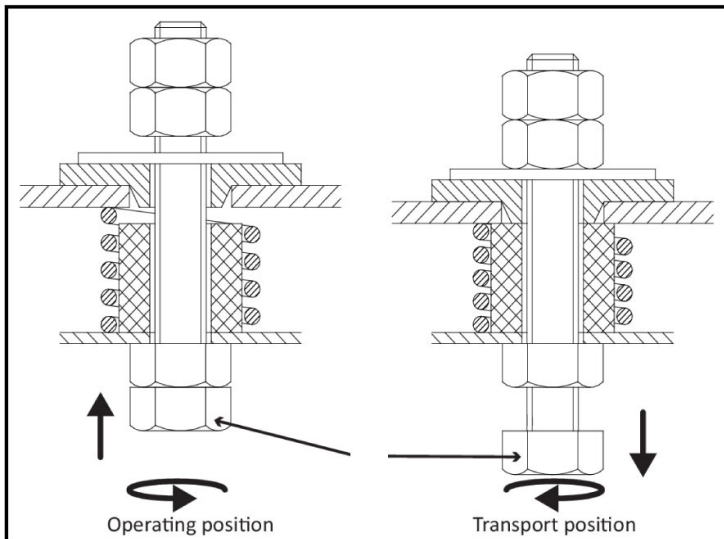
Only for Unistat 605 units:

The Huber Unistat 605 is equipped with a transportation lock (Type-A) for the compressor which must be released before commissioning the unit or be reactivated if it is decommissioned and transported to another location. Failure to release the transportation lock could damage the unit.



STEP 2

Under the back of the Huber, use an adjustable wrench or 17mm to rotate the transportation lock bolt clockwise to release the lock.



5. MAKE WATER CONNECTIONS

STEP 3

For water cooled Huber systems, the Huber has G-type 1/2" or 3/4" (BSPP) male water fittings located on the back of the machine at the bottom.

Water inlet and outlet hoses are provided in the Huber installation kit.

Note: The included water hoses have G (1/2" or 3/4" BSPP) fittings that attach to the Huber inlet and outlets. They are hand tightened. The other end of the hoses have 1/2" barb to 1/4" male NPT fittings and can be adapted as needed to connect to the facility water supply and drain.

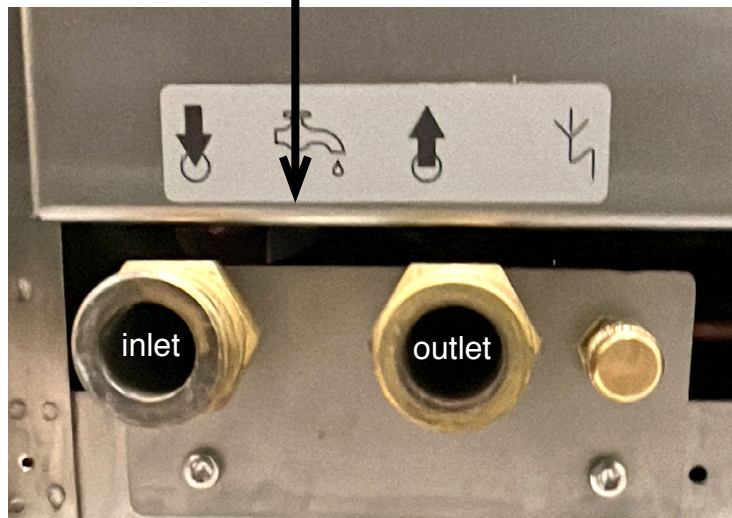
Note: Make sure the water supply can provide a sufficient flow rate for the Huber's cooling requirements.

STEP 4

Connect the Huber's inlet and outlet water supply to the facility supply and drain.

Make sure to connect the inlet (left side) and outlet (right side) to the correct fittings.

Note: If the inlet and outlet connections are reversed, the Huber will error.



6. CONNECT AND INSULATE FLUID HOSES

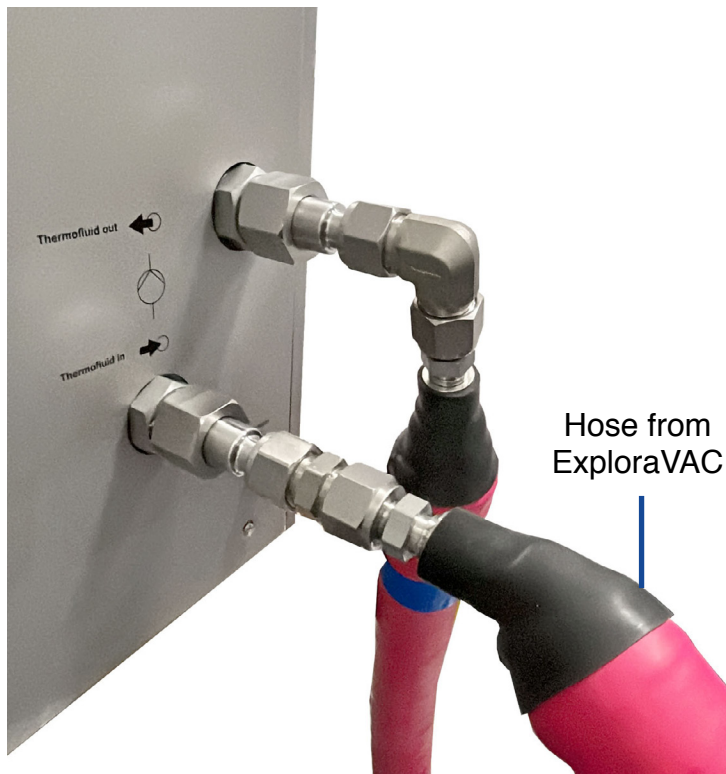
STEP 5



The coolant fluid connections are located on the side of the machine along with the fluid drain.

The specific location of the fluid connections and the drain(s) differ on the various models.

STEP 6



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.

If the hoses are pre-installed on the ExploraVAC, connect the hoses to the Huber system as shown. Use two wrenches to tighten the fluid hoses.

Note: The hose ends may have straight or elbow fittings.

Note: Hoses may be connected to either fluid port as convenient since it is a closed (recirculating) system.

STEP 7

If the hoses are pre-installed on the Huber system, connect the hoses to the ExploraVAC chamber feedthrough. It has Swagelok elbows pre-installed. Use two wrenches to tighten the fluid hoses.

Note: Hoses may be connected to either fluid port as convenient since it is a closed (recirculating) system.



STEP 8

Note: The insulation can be a skin irritant.

Put on gloves and safety glasses.

Here, the lower Huber hose has already been insulated.

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



STEP 9

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

The Huber system installation kit includes:

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



STEP 10

Note: The ceramic insulation can be a skin irritant. Wear gloves. Wear safety glasses.

Note: Different Huber models have fluid connections in different locations. However, the insulation process is the same for all of them.

Get a strip of insulation.

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





STEP 11

Continue wrapping the insulation around the pipe.

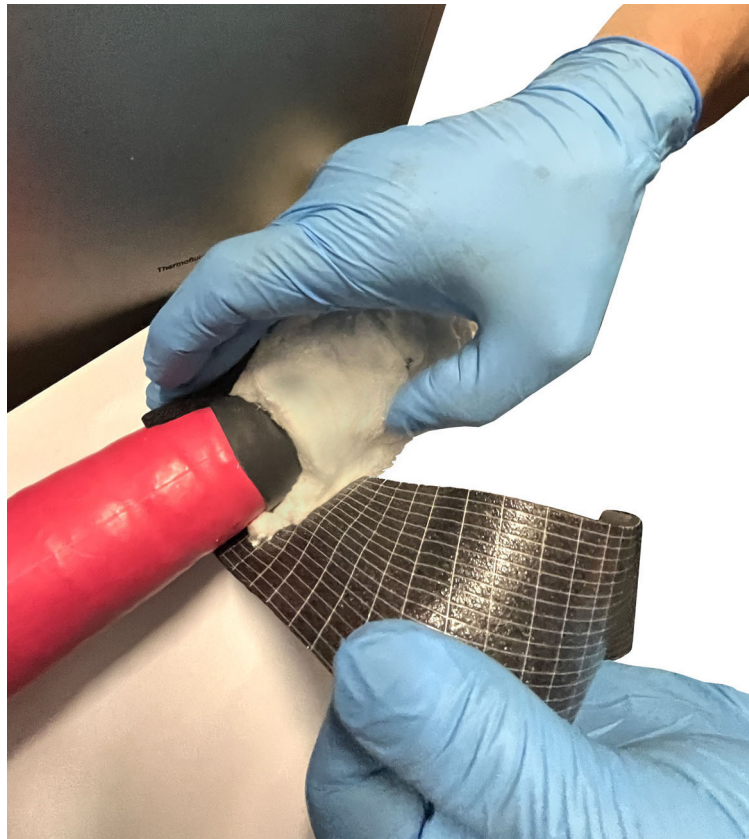
Try to keep it tight.

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



STEP 12

Finish wrapping the insulation so that it completely covers all exposed stainless fittings and over the black end of the Swagelok hose.



STEP 13

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 two close hoses.



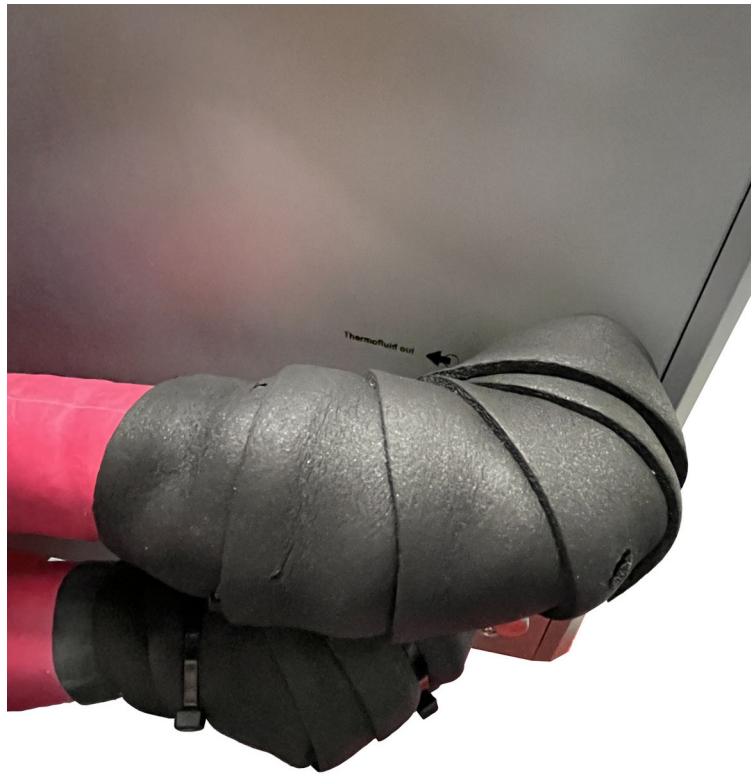
STEP 14

Continue wrapping Armaflex strips over the ceramic insulation.

Overlay successive strips so that no insulation is exposed.

STEP 15

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



STEP 16

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.

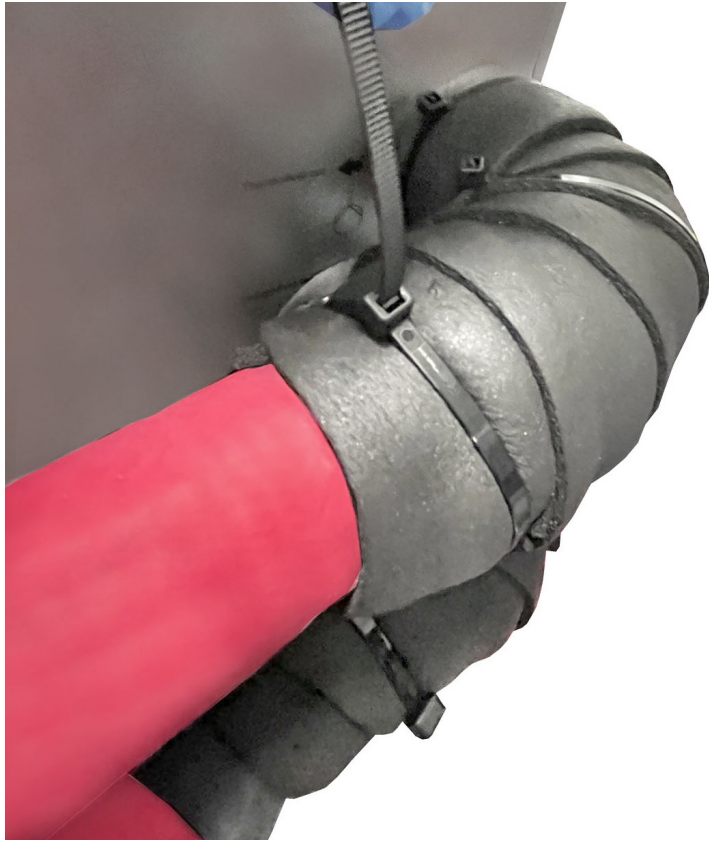


STEP 17

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

Insulate the second hose just like the first. (Repeat steps 8-15).

Hose connection and insulation is complete.



7. CONNECT POWER AND COMMUNICATION CABLES



STEP 18

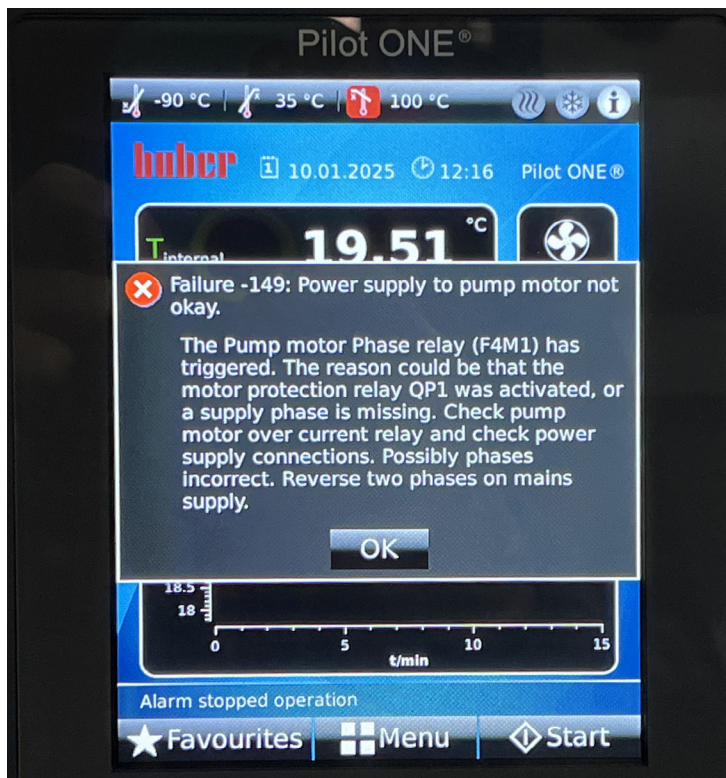
Smaller single phase Hubers come with an IEC 320 to NEMA 6-20P plug power cable. Larger systems have a prewired power cable which is unterminated.

Plug the power cord into the Huber or attach a plug to the end of the Huber power cord.

Make sure the facility disconnect or breaker is off.

Connect the power cable plug to an appropriate outlet, or wire to the facility disconnect.

Once connected, turn on the facility disconnect.



STEP 19

On 3 phase Huber systems ONLY:

Turn on the disconnect at the back of the Huber. Then, turn on the switch at the front of the Huber.

After startup (about 1 minute), if the Huber displays a Failure-149 error, the input power phases are wired in reverse.

Turn off the Huber and lockout/tagout the facility disconnect.

Switch any two power wires.

Turn the facility disconnect and the Huber back on. If the failure does not recur, the phases are correct.

STEP 20

Get the DB15 male-to-male communication cable from the installation kit.

Plug one end into the Huber Port on the back of the ExploraVAC Standard or MAX system, or the side of the control console on ExploraVAC Unlimited systems.

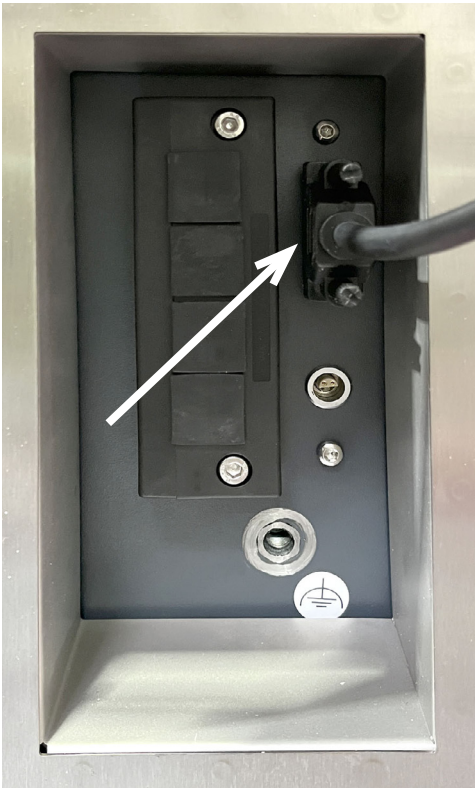
Plug the other end into the 15 pin connector on the top of the Huber.



STEP 21

Only for Unistat 605 units:

The DB15 communication port is on the right side of the unit.



8. FILL WITH THERMAL FLUID

STEP 22

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

Unscrew the fill plug on the top of the unit.



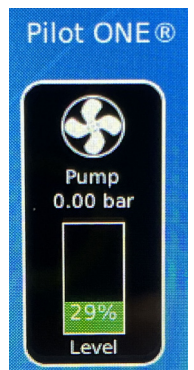
STEP 23

Slowly pour thermal fluid into the Huber. There may be multiple fluid containers. On larger systems, use a step ladder to reach the top of the unit.

On units with a sight glass, fill until the glass shows approximately 75% full or until all the fluid is used. There may be some fluid left over.

On some units (i.e., Huber 605), there is no sight glass. The level is indicated on the screen.

Screw in the filler plug.



9. INITIAL START UP

STEP 24

On smaller Huber systems, rotate the power switch clockwise to the on position.

On larger systems, at the back, rotate the disconnect to on. Then, on the front, rotate the power switch to on.

Rotate the ExploraVac's main power switch/ system disconnect clockwise to energize the ExploraVAC if it not already on.



disconnect

power

STEP 25

Wait for the ExploraVAC to initialize.

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.



10. CIRCULATE THERMAL FLUID

STEP 26

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.

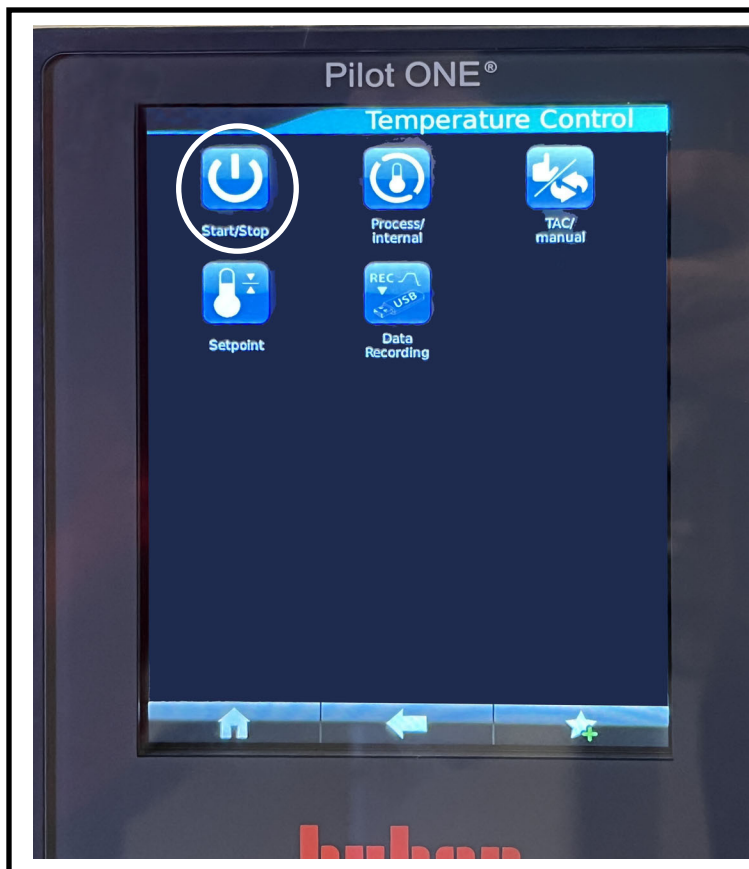
On the Huber home screen, press Menu at the bottom of the screen.



STEP 27

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





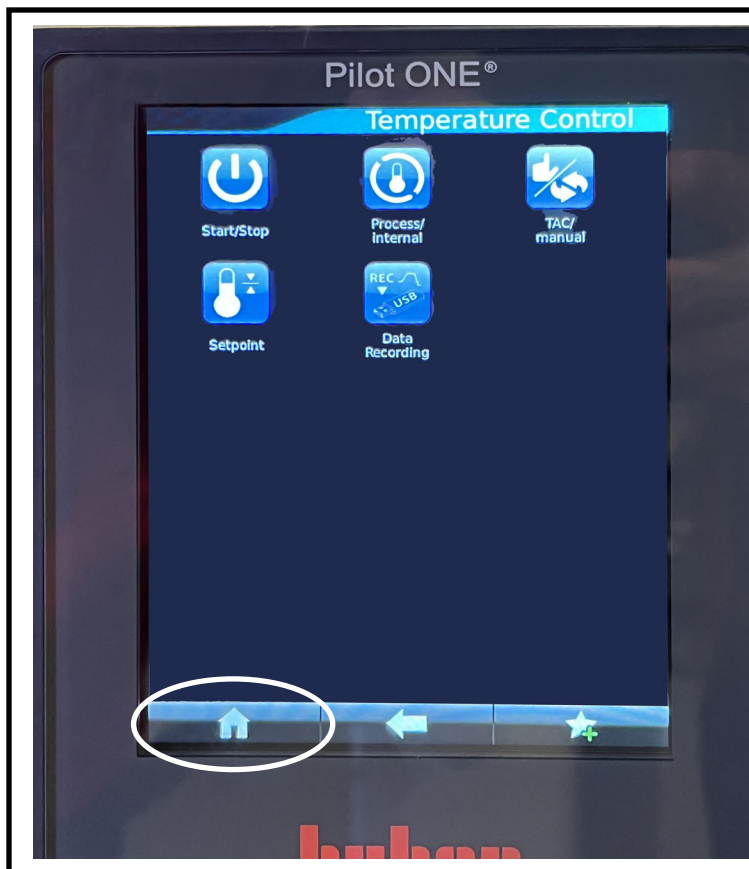
STEP 28

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



STEP 29

At the Start/Stop page, press Start circulation.
Then, press OK.



STEP 30

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



STEP 31

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 32

Allow the machine to circulate fluid for about 5 minutes.

Then, press Stop.

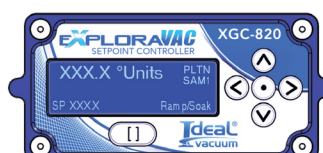


STEP 33

When fully primed, the fluid level decreases in the sight glass or on screen 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's PLATEN TEMP setpoint controller to vary the platen temperature (see the ExploraVAC and AutoExplor user manuals).



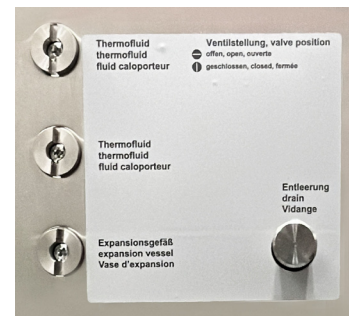
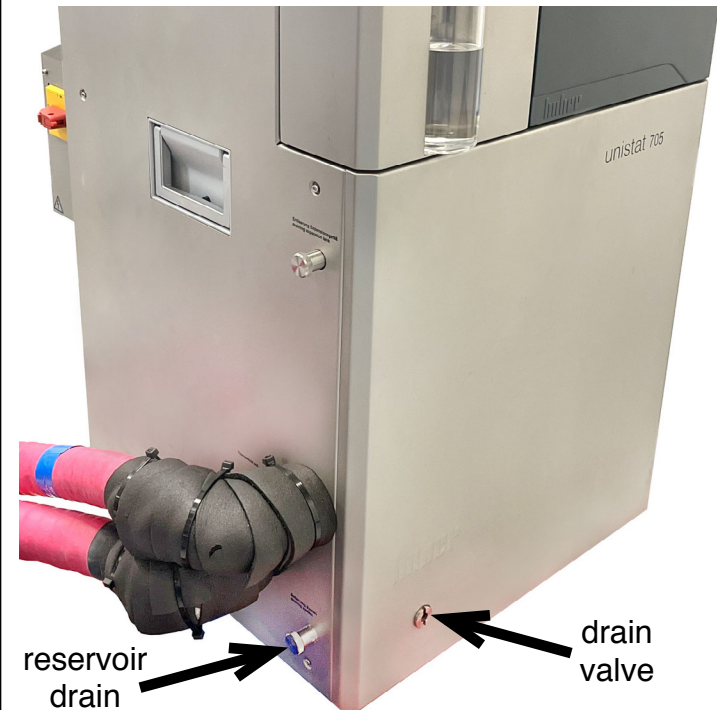
11. FLUID DRAINING PROCEDURE

STEP 34

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.

On smaller Huber systems, the drain valve and drain plug are at the bottom of the machine. Large units have multiple drains on the side of the machine.

Expansion tanks do not need to be drained.



PROCEDURE

- **Only valid for temperature control units with the function "Drain":**
For the thermal fluid circuit to be completely emptied, the function "Drain" must be activated. In the event of a water-cooled temperature control unit, this function also opens the control valve in the cooling water circuit, depending on the model. Thus, cooling water consumption can increase during the draining process. Skip the following instructions if the dialog entry "Drain" is not available:
 - Tap in succession "Category menu", "Temperature control", "Start/stop".
 - Tap on the dialog entry: "Drain".
 - Confirm your choice by tapping on "OK".
 - Read the message and confirm by tapping on "OK".
 - Do not confirm the subsequent message by tapping on "OK".
- Attach a suitable drain hose to the **>Drain<** [8].
- Attach a suitable drain hose to the **>Expansion vessel drain<** [9].
- Stick both ends of the hoses into suitable containers (e.g. original canister, which is compatible with the thermal fluid).
- Open the **>Drain valve thermal fluid<** [3] by turning it counterclockwise.
- Open the **>Drain valve<** [4] by turning it counterclockwise.
- Open the **>Expansion vessel drain valve<** [5] by turning it counterclockwise.
- Wait until the thermal fluid has drained from the external application via the pump chamber and the draining hose into the containers.
- Have another suitable container (e.g. a tub) ready to catch the thermal fluid from the **>Residues drain<** [10].
- Remove the knurled screw from the **>Residues drain<** [10]. The remaining thermal fluid will flow from the temperature control unit into the container as soon as you have opened the knurled screw.
- Open the **>Drain valve water separator<** [76] by turning it counterclockwise.
- Drain the external application. The description for the draining process can be found in the documents you received with the application.
- Disconnect the external application from the connection **>Circulation flow<** [1].
- Disconnect the external application from the connection **>Circulation return<** [2]. Leave the temperature control unit open for a while to allow it to dry out (without seal cap and with open drain valves).
- Connect the external application with the connection **>Circulation flow<** [1].
- Connect the external application with the connection **>Circulation return<** [2].
- Close the **>Drain valve water separator<** [76] by turning it clockwise.
- Fit the knurled screw to the **>Residues drain<** [10].
- Close the **>Drain valve thermal fluid<** [3] by turning it clockwise.
- Close the **>Drain valve<** [4] by turning it clockwise.
- Close the **>Expansion vessel drain valve<** [5] by turning it clockwise.
- Remove the drain hose from the **>Expansion vessel drain<** [9].
- Remove the drain hose from the **>Drain<** [8].
- Remove the containers used to collect the thermal fluid. Check if the thermal fluid can be reused. Follow the instructions for the proper disposal. → Page 17, section **"Proper disposal of resources and consumables"**.
- **Only valid for temperature control units with the function "Drain":**
Read the message on the **>Touchscreen<** [88] and confirm by tapping on "OK". The temperature control unit has thus been emptied. In the event of a water-cooled temperature control unit, the control valve in the cooling water circuit is closed, depending on the model.

STEP 35

Follow the procedure described in Section 4.3.1.3, page 74, of the Huber Operation Manual for draining the machine.

The manual is located on the USB drive that is included with the ExploraVac system.

Alternatively, download it here:

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

STEP 36

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.



12. 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 37

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:

idealtvac.com/files/manuals/Huber_Unistat_Operation_Manual.pdf



Ideal Vacuum Products, LLC.
5910 Midway Park Blvd NE
Albuquerque, NM 87109

Phone: (505) 872-0037

Fax: (505) 872-9001

Web: idealtvac.com

