EcoDenser

Patent: US2013-0331018

Installation Manual

Congratulations on your purchase of the EcoDenser. This revolutionary product will complement your labhood device by providing a unique experiment cooling mechanism which saves money and provides a safer environment through its unique closed loop design.

LISTED
PACKAGED PUMPING SYSTEM
E494902

Smart Labhood Solutions, Inc.
2450 Marion Road SE, Suite 1
Rochester, MN 55904

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Please note: The pictures used in this manual are for information only and describe two installation scenarios based on whether the fume hood side access panel can or cannot be removed. Refer to the actual fume hood instructions for specific measurements.

WARRANTY AND LIABILITY

Smart Labhood Solutions (SLS) warrants the EcoDenser unit (defective parts replacement only) for a period of six months from the date it was delivered. Should you encounter a defective part within this warranty period, a Return Material Authorization (RMA) number must be obtained from Smart Labhood Solutions before any parts can be returned for replacement. To obtain an RMA number, please contact your SLS Customer Service Representative or submit a request through our website (www.smartlabhood.com) by using the Contact Us option.

In no event, whether based in the purchase order, contract, or tort, shall Smart Labhood Solutions be liable for incidental, consequential, indirect, punitive, or special damages of any kind or for any loss of profits or revenue or loss of assets, or business whether or not a party was advised of the possibility of such damage.

Installation:
The customer will be responsible for installing the EcoDenser. This includes mounting the EcoDenser into the fume hood and making the connections from the building chilled water system to the Primary loop inlet and outlet ports of the EcoDenser.

See ***About The EcoDenser*** section for additional information on the Primary loop/chilled water line connections to the EcoDenser.

SAFETY

This manual is published for the purpose of installing and operating the EcoDenser within a laboratory fume hood with an access cutout panel on either side of the hood interior.

IMPORTANT

Safety

Ensure that power going to the lab hood is turned off during the EcoDenser installation process. This includes during the installation of the optional ON/OFF switch to the labhood front bezel.

Plumbing

It is the responsibility of the customer or parties assigned by the customer to ensure proper and safe connections of the EcoDenser to the Primary plumbing loop components. This includes the chilled water line connections and the flexible water hose connections, both to the chilled water lines and to the heat exchanger ports on the EcoDenser. The Secondary plumbing loop component connections of the EcoDenser are tested and approved against leaks during the final inspection stage at Smart Labhood Solutions.

See ***About The EcoDenser*** for further explanation of the Primary and Secondary plumbing loops.

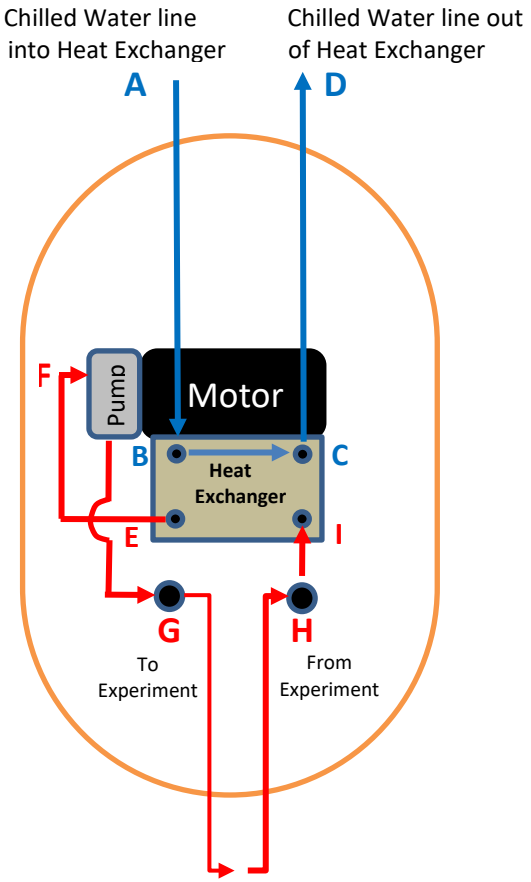
ABOUT THE ECODENSER

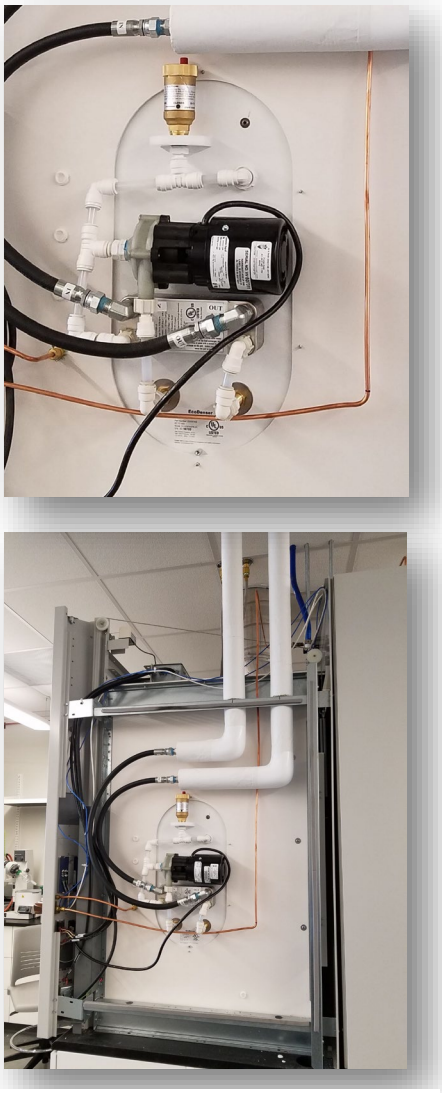
The EcoDenser is a uniquely designed, closed-loop heat exchanger system installed in-line with a lab hood condenser that is used to cool chemical reactions for an experiment. The EcoDenser consists of a **Primary and Secondary loop system**. The *Primary system* draws chilled water from the facility plumbing network through the heat exchanger on the EcoDenser, cooling the *Secondary system* fluid before flowing back into the facility chilled water system. The *Secondary system* cycles a fixed amount of fluid through the condenser used for the experiment, into the heat exchanger and back.

Diagram of the back side of EcoDenser

Primary Loop System = A → B → C → D

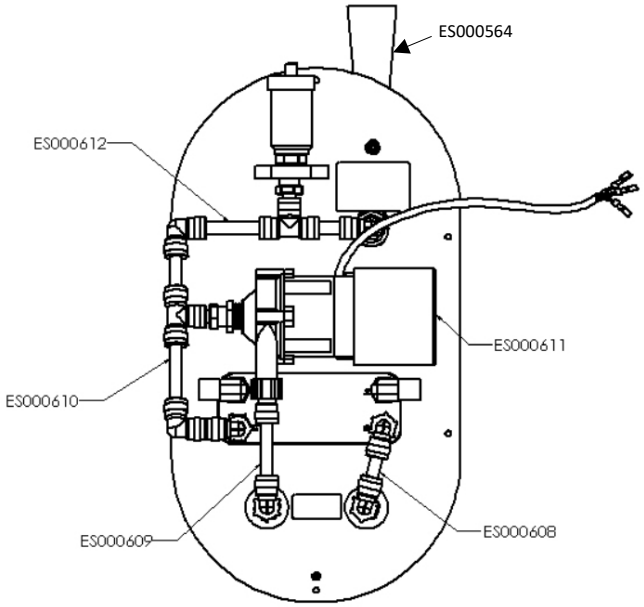
Secondary Loop System = E → F → G → H → I

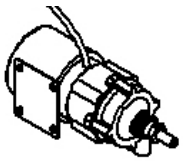
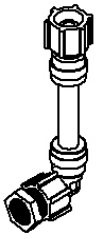
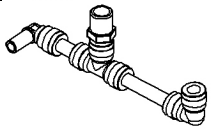




Examples of chilled water line installation

FIELD REPLACEABLE UNITS



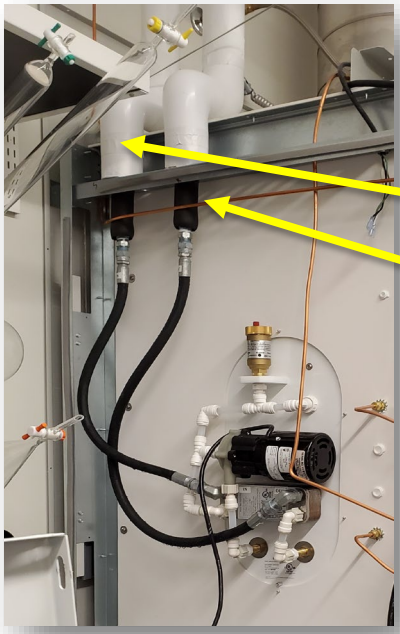
Part Number	Description	Drawing
ES000611	Pump Subassembly	
ES000564	Fill Cup	
ES000608	Heat Exchanger Output Tubing	
ES000609	Pump Output Tubing	
ES000610	Pump Input Tubing	
ES000612	Upper Tubing	

PRE-INSTALLATION PLUMBING

This section pertains to plumbing the EcoDenser to the chilled water system of the building.

When installing the chilled water connection drops for the EcoDenser, it is important to consider variables such as whether or not the hood side panel can or cannot be removed, ceiling height with respect to the height of the fume hood, etc. The information contained in this section is intended to be used as a reference and should not be considered a specification for every installation.

Chilled Water Line Drop Alignment



(Left side installation)

IMPORTANT:

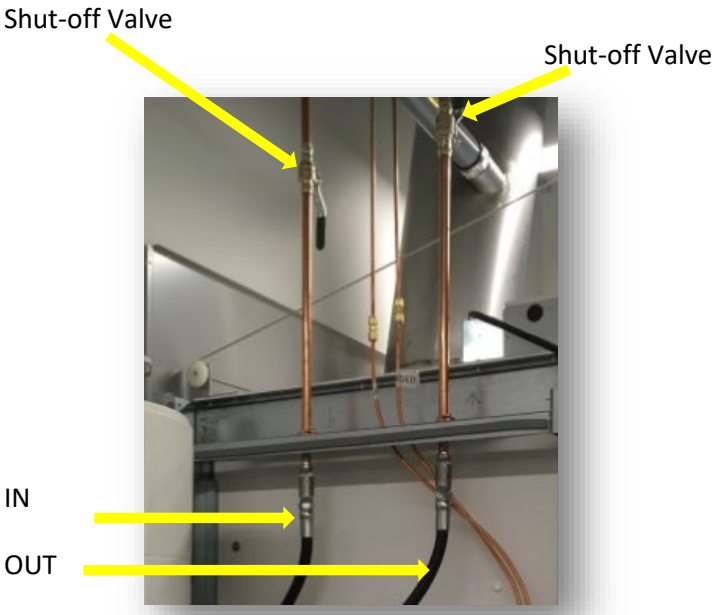
When installing the chilled water line drops, be sure to align the S**upply line drop** with the IN (Supply) port on the EcoDenser Heat Exchanger and the **Return line drop** with the OUT (Return) port on the EcoDenser Heat Exchanger.

Each EcoDenser will be shipped with an **IN (Supply)** and **OUT (Return)** flexible water hose. The hoses have female, swivel connectors on both ends with a thread size of 1/2-14.

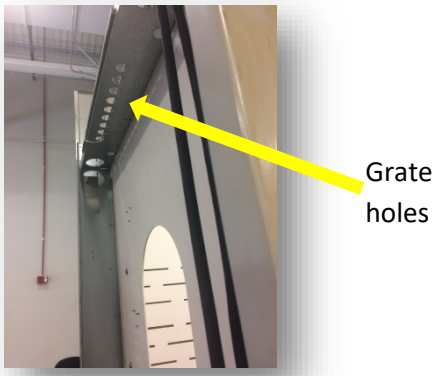
Note: Install to local plumbing codes. Based on the plumbing configuration, the 90° elbows attached to the heat exchanger IN and OUT ports are typically necessary to accommodate the flexible water lines.

Pre-Installation Plumbing with the Hood Side Service Panel Removed

Step 1: Route the chilled water line drops down through the center of the hood utility grate.



(The flexible IN and OUT hoses are provided by SLS)



Step 2: The chilled water drops should extend into the side panel cavity, below the grate holes.

Pre-Installation Plumbing with the Hood Side Service Panel Attached

Step 1: Without access from the side panels of the hood, the flexible hoses (provided by SLS) will need to be attached to the chilled water drops first and then attached to the EcoDenser IN and OUT ports after feeding them through the fume hood utility grate.

Recommendation: If the flexible hoses provided by SLS pass through the lab hood grate, an edge grommet should be installed to protect the flexible hoses from any damage caused by the potentially sharp edges of the lab hood grate.

INSTALLATION PREPARATION

Remove EcoDenser unit and the Installation Kit from shipping package

Installation Kit Contents:

- #29 Drill Bit
- T20 Torx Bit
- Self-tapping screws (Qty 6)
- IN and OUT labels (2 each)
- Power ON/OFF switch
- Fill Cup
- Items not shown:
  - Flexible hoses (qty 2)
  - Priming Pump
  - 90° elbow insulation fittings (qty 2)
  - Operations Manual
  - Installation Manual (this document)

Remove the existing lab hood service access cutout panel.

For your SAFETY: Disconnect the power to the fume hood for protection from electrical connectors and wiring. **Use gloves** for protection from the access panel edges during removal.

INSTALLATION INSTRUCTIONS

Attaching the EcoDenser when the hood side panel can be removed

Step 1: Attaching the EcoDenser

Prior to attaching the EcoDenser, **remove the fume hood exterior side panel** to allow for easier access to the chilled water and electrical connections.

The EcoDenser is attached to the **inside** of the fume hood directly over the service access cutout panel opening. It is held in place with **six self-tapping screws** included in the Installation Kit (blue arrows in Figure 1).

Figure 1

When installing the EcoDenser, feed the power cord through the access cutout panel opening and into the switch box in the hood. Next, tilt the top of the EcoDenser toward the panel opening to allow for the **Auto Vent** (on the top, back of the EcoDenser) to fit through the opening.

Tilting the unit back in place, allow the EcoDenser to rest on the standoff, (located on the bottom, back side of the EcoDenser) centered in the access opening. This will allow for easier placement of the EcoDenser while drilling the six mounting screws (see Figure 2).

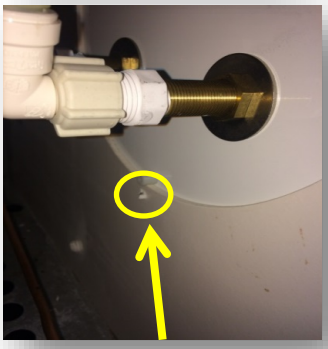


Figure 2. Standoff

Note: While resting on the stand-off (prior to drilling the screws, ensure that the EcoDenser is centered and leveled within the access panel opening so that the mounting screws penetrate the hood wall (see Figure 3).

<u>Predrill one hole at-a-time, followed by each screw.</u>
Use the #29 drill bit and the T20 Torx bit provided in the Installation Kit for the screws. Start with the top screw to allow for EcoDenser alignment. Once aligned, drill and insert the bottom screw, followed by the remaining side screws.

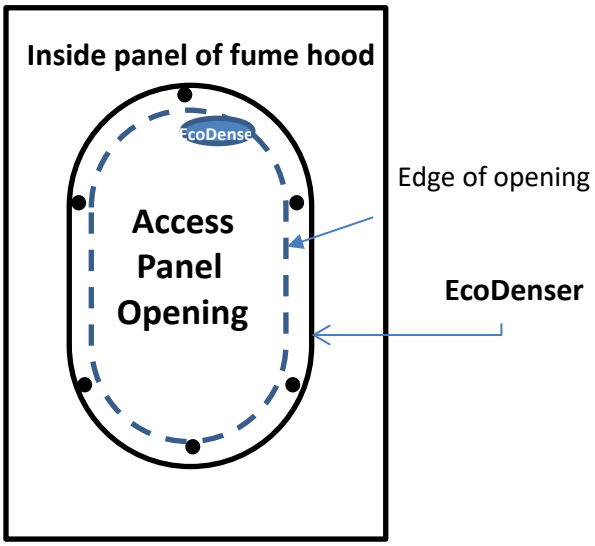


Figure 3. Mounting Diagram

Step 2: Connect the chilled water lines to the EcoDenser

Prior to this point, chilled water line drops will have been installed. Refer to Section, ***Pre-Installation Plumbing.***

Connect the "**IN**" and "**OUT**" flexible hoses (provided in the Installation Kit) to the corresponding chilled water line drops.

WARNING

When tightening the flexible water hoses to the elbows on the heat exchanger, hold the elbows in place with a wrench to avoid pressure on the heat exchanger port. Undue pressure may cause the port to leak.

Typical connection to facility chilled water and EcoDenser Heat Exchanger.

Important: Be sure to align the flexible hoses as depicted above.

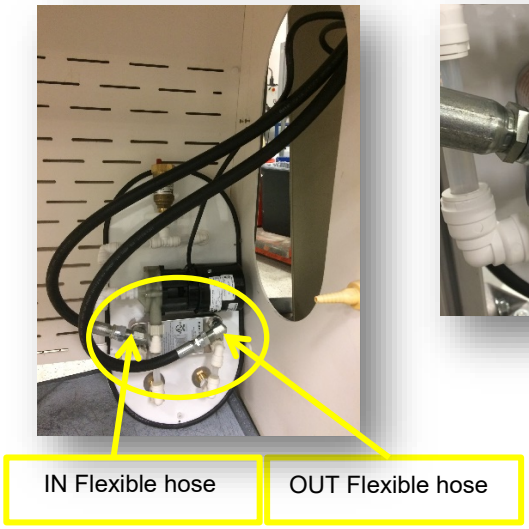
Attaching the EcoDenser when the hood side panel remains attached

Step 1: Connect the flexible water hoses

If it is not possible to remove the fume hood exterior side panel, the flexible water hoses will need to be attached to the chilled water line drops first, then fed through the large grate opening in the hood – **see Pre-Installation Plumbing Section.** *To avoid confusion, label each end of the flexible hoses with the "IN" and "OUT" labels provided in the Installation Kit before feeding them into the side panel.*

Make the connections to the heat exchanger on the back of the EcoDenser prior to attaching it to the fume hood interior side wall. This is accomplished by reaching through the access cutout panel opening and pulling the flexible water hoses through. **IMPORTANT:** Be sure and attach the flexible water lines to the correct ports, (IN, OUT) on the heat exchanger. It may be helpful to attach the OUT hose first.

Important: *Be sure to align the flexible hoses as depicted below. If longer flexible hoses are required, please contact your SLS customer service representative directly or through the SLS website.*



WARNING

When tightening the flexible water hoses to the elbows on the heat exchanger, hold the elbows in place with a wrench to avoid pressure on the port. Undue pressure may cause the port to leak

Step 2: Attach the EcoDenser to the fume hood

When installing the EcoDenser, feed the power cord through the access cutout panel opening and into the switch box in the hood. Next, tilt the top of the EcoDenser toward the cutout panel opening to allow for the **Auto Vent** (on the top, back of the EcoDenser) to fit through the opening.

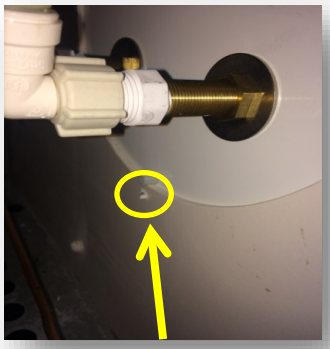


Figure 4. Standoff

Tilting the unit back in place, allow the EcoDenser to rest on the standoff, (located on the bottom, back side of the EcoDenser) centered in the access opening (see Figure 4). This will allow for easier placement of the EcoDenser while drilling the six mounting screws (see Figure 5).

Figure 5

Note: While resting on the stand-off (prior to drilling the screws, ensure that the EcoDenser is centered and leveled within the access panel opening so that the mounting screws penetrate the hood wall (see Figure 6).

<u>Predrill one hole at-a-time, followed by each screw.</u> Use the #29 drill bit and the T20 Torx bit provided in the Installation Kit for the screws. Start with the top screw to allow for EcoDenser alignment. Once aligned, drill and insert the bottom screw, followed by the remaining side screws (see Figure 5).

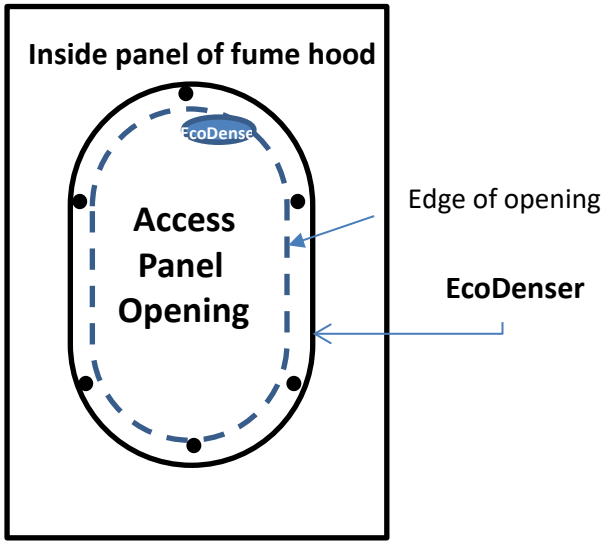


Figure 6. Mounting Diagram

FINAL INSTALLATION

Step 1: Attach Fill Cup

Remove the strip of tape covering the Ball Valve and discard. Gently insert the Fill Cup into the Ball Valve until it locks into place (Figure 7).

Figure7

Step 2: Auto Vent Position

Ensure the Auto Vent is in the “OPEN” position (Figure 8).

Figure 8

Step 3: Power Switch Installation (Optional)

If the optional power switch provided in the Installation Kit is to be used, it should be installed by a licensed electrician. An existing switch and/or bezel knock-out for a switch may be available on your lab hood (Figure 9).

Figure 9


Smart technology supporting green ecology.
SLS