Heat Exchanger Installation and Maintenance for Trendsetter VLF and 3230/3244 (TS3 & TS3/8)

The Lytron heat exchanger is a replacement for the PolyScience chiller. The heat exchanger contains no refrigeration components. The unit pumps ambient temperature coolant through the hoses to the exposure head. The heated coolant returns through a radiator where it is cooled, and then to the reservoir tank. There is no electrical interface, so the coolant circulates constantly.

The Lytron heat exchanger can be installed on any Trendsetter VLF and Trendsetter 3230/3244 (TS3 & TS3/8) output device that has a 40W, TH1.7 thermal imaging head.

1.1 Installation Kit

One of:

- 500-02031B – 120v, 50/60 Hz
- 500-02032B – 208-240v, 50/60 Hz (includes heat exchanger, funnel, coolant, jumper plug and brass fittings)

1.2 Tools Required

- 5/8” wrench
- 11/16” wrench
- Teflon pipe thread tape
- Cross-head screwdriver
- Paper towels

1.3 Installation

If the heat exchanger is replacing a chiller, you must remove the chiller.

1.3.1 To remove the chiller:

1. Disconnect the interface cable between the chiller and the Universal Debris Removal Cabinet (UDRC).
2. Remove the chiller.

1.3.2 To install the heat exchanger:

1. Unpack the heat exchanger from the box and roll it to the output device.
2. Check the voltage and frequency label on the back of the heat exchanger to make sure that it is correct for your region.
3. Attach the cable detect jumper plug (220-01149A) to the chiller connector on the UDRC.

The heat exchanger does not have an interface cable and the cable detect jumper plug is used to prevent a cable error on the UDRC.

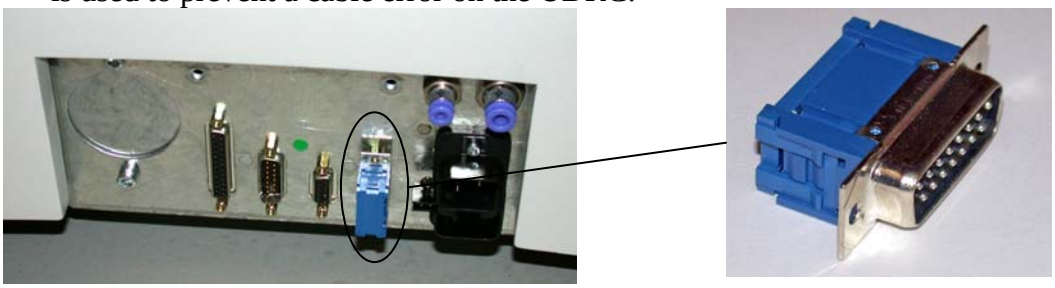


Figure 1: Cable detect jumper plug

4. If the brass fittings are already attached on the back of the heat exchanger, check to make sure that they are tight. If they are not attached, follow the procedure below:
   i) Assemble 3/8" fitting (55-1312) with elbow fitting (55-0422)
   ii) Attach the assembly in step i) to the outlet on the heat exchanger marked "Return to Cooling System"
   iii) Attach the quick disconnect fittings (55-0679) to the elbow assembly
   iv) Assemble the other set of fittings and attach to the outlet on the plastic filter unit.

   Make sure that the filter cover is tight, because it can leak. Be careful not to overtighten the brass fittings on the plastic filter container—the plastic could crack or the threads could strip.



Figure 2: Coolant fittings on the back of the heat exchanger

5. Remove the reservoir access cover using a cross-head screwdriver.
6. Open the plastic top of the reservoir and insert the funnel.
7. Fill the reservoir with coolant to the full line. Use paper towels to clean up any drips of coolant from the funnel.



Monitor the fluid level using the fluid level indicator on the front of the heat

Figure 3: Fluid level indicator

8. Connect the coolant hoses of the output device to the heat exchanger.

Note: The flow direction to the thermal imaging head is not important—either hose can be connected to either side.

9. Connect the power and switch the heat exchanger on.

10. Monitor the fluid level in the fluid level indicator. If it goes down, pour more coolant into the reservoir.

11. Remove the funnel and close the plastic top of the reservoir. Replace the reservoir access cover using a cross-head screwdriver.

12. Turn on the power to the output device.

13. When the device is ready, set the `casehigh` parameter to 32. Type `>>set head casehigh 32`, then type `>>nvs save head`.

14. Change the `caselow` parameter from 28 to 16 as follows: Type `>>set head caselow 16`, then type `>>nvs save head`.

Note: `caselow` should be lower than the lowest expected room temperature.

The temperature of the head will be lower with the heat exchanger installed and will prevent nuisance temperature warnings: For example, 17742: Exposure Head: shutdown of thermal head due to temperature or humidity alarm. The chiller that was previously installed would maintain the coolant temperature at 30 degrees C regardless of the room temperature.

If the device is installed in a cooler environment and is shut down for a period of time, the head will eventually stabilize at room temperature. If this is the case, set the **caselow** parameter so that it is a degree below the typical room temperature. When the device is first turned on, the laser will not start until it warms up above the **caselow** setting. The minimum head temperature is hard-coded to 10 °C and cannot be changed.

15. Type `>>head status` to check the temperature of the thermal head. The following is an example from a Trendsetter VLF:

```
>> head status

*** State message: Head command (35)
       Laser Status: Disabled
         PHC Status: 0x04
         LVD Status: 0x06
         DTD Status: 0x00
           Humidity: 18.4 [%]
    Head case temp: 28.3 C
  PHC ambient temp: 29.8 C
```

16. Type `>>ale` to determine the internal temperature of the machine. The following is an example from a Trendsetter VLF:

```
>> ale
Autoloader System Status:
        Not initialized
        Not suspended
        Commamd code x0
        No active command
        System pressure           = 83.8 psi
        Air supply filter differential 0.0  raw nulled 0
        Engine pulley-end temp    = 25.4 ?C
        Carriage nut temperature  = 25.8 ?C
        VAL (pdb) 48V OK
        VAL (pdb) 24V OK
        Cassette  Not suspended
        Conveyor  Not suspended
        ALE (state al sus) Not suspended
        Yaxis    Genine 0 48V Ok,  24V Ok
        Picker   Genine 2 48V Ok,  24V Ok
        MCU/SCU  Genine 1 48V Ok,  24V Ok
        Conveyor Genine 4 48V Ok,  24V Ok
```

17. Once the machine stabilizes, the head case temperature will be 2-3 degrees C higher than the carriage nut temperature (shown as leadscrew temperature on Trendsetter 3230/3244).

18. Run an image on the largest plate size available and type `>>head status` to monitor the head case temperature during imaging. The head case temperature will increase and stabilize about 2-3 degrees C higher than the temperature seen in step 13.

The heat exchanger is successfully installed. The machine can now be returned to service.

1.4 Maintenance

Refer to the Lytron documentation for complete information about maintenance procedures. The heat exchanger requires the air filter to be replaced every month.

To replace the air filter:

1. Remove the old air filter from the rear of the heat exchanger by sliding it out.

2. Slide the new air filter into place.



The air flow arrows point toward the heat exchanger.

Figure 4: Air flow arrows on the air filter