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Chiller Replacement Procedure

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Contents

Neslab CFT 33D Chiller……pages 2-5
PolyScience 6305P Chiller……pages 6-10
Coolant Information……..…….page 11

Introduction

This document explains the procedure for an operator to replace a water-cooled Thermal Head Chiller unit.

Creo uses chillers from two manufacturers: Neslab and PolyScience. These chillers are completely interchangeable and have identical plumbing, electrical, and signal cable connections. The replacement chiller may or may not be the same as the one originally installed. Identify your replacement chiller below and follow the directions given to install that model.



Neslab CFT 33D



PolyScience Model 6305P

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Neslab CFT 33D Chiller

Disconnecting a Neslab chiller

1. Turn off the recorder. Disconnect the signal cable from the back of the chiller unit.
2. Disconnect the hose from the Inlet/Return fitting on the back of the chiller.
3. Connect the drain hose (ty-wrapped to the hose assembly) to the disconnected hose.
4. Place the open end of the drain hose in an empty 4-liter container (see Figure 1).
5. Disconnect the white connector on the signal cable simulator (see Figure 2) to prevent the refrigeration compressor from starting.
6. While holding the drain hose in the container, connect the signal cable simulator to the back of the chiller to start the water-circulating pump.
7. Pump out the system until the flow of coolant stops.
8. Disconnect the signal cable simulator or turn off the power switch to stop the pump.
9. Disconnect the remaining water hose from the chiller.
10. Unplug the power cord.
11. Move the chiller to the side.

Note: Dispose of any waste coolant in accordance with local hazardous materials disposal requirements.

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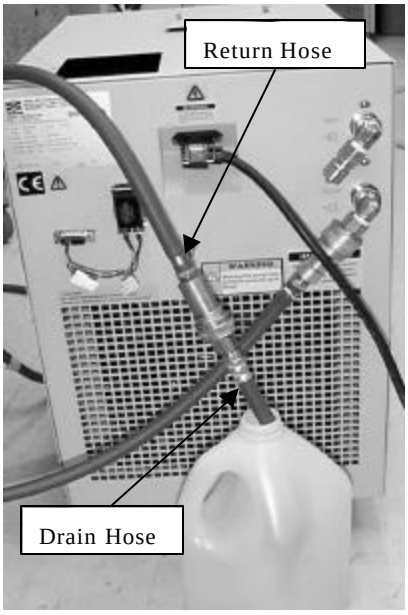


Figure 1: Neslab Chiller Rear View

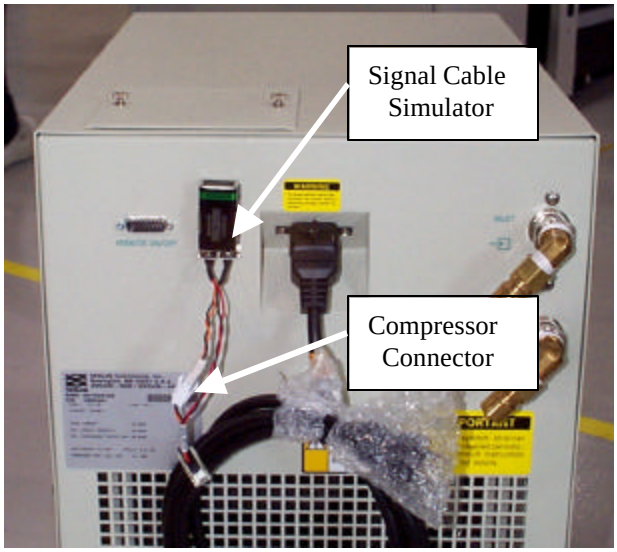


Figure 2: Neslab Chiller Signal Cable Simulator Assembly

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Installing a Replacement Neslab Chiller

1. Place the replacement chiller unit in position and plug in the power cord.
2. Connect the water hoses to the fittings on the back of the chiller. Hoses can be connected to either fitting.
3. Check that the quick-disconnect hose fittings at the chiller are completely engaged and locked.



Caution: Never operate the chiller when the water hoses are disconnected.

4. Remove the cover plate from the top of the chiller.
5. Remove the reservoir plug.
6. Using a funnel, fill the reservoir with Creo pre-mixed coolant (part number 82-1032A) to the bottom of the threads in the filler neck.

   Note: See Coolant Information for handling procedures.

7. Set the power switch on the front panel of the chiller to the On (1) position.

   Note: The Power switch must be left in the ON position at all times except during an emergency shutdown.

8. Disconnect the white connector on the signal cable simulator (see Figure 2) to disable the refrigeration system compressor.
9. Plug the signal cable simulator into the signal cable socket on the back of the chiller.

   The water-circulating pump should start, and the system pressure gauge on the front of the chiller should indicate approximately 20–25 psi. If the pressure is higher than 40 psi, the system is not circulating. Check that all disconnect fittings are fully engaged and that the hoses are not pinched. Check all connections for coolant leaks.

10. Top up the chiller reservoir if needed.
11. Disconnect the signal cable simulator and connect the signal cable from the recorder.
12. Turn the recorder on.

    After a short delay, the chiller circulating pump will start. The temperature controller display will flash *8888* and then display the current temperature of the chiller's reservoir.

13. The temperature controller's default setpoint is 30°C**.** To check the setpoint setting, press the Next/Enter button (see Figure 3). The controller display will alternate between SP and the current setpoint temperature.

    If the setpoint setting is not 30°C, change it by using the Yes ▲ and No ▼ keys while the display is alternating between SP and setpoint temperature.

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14. Once the desired setpoint (30°C) is displayed, press the Next/Enter button.

    Note: The new setpoint will not be active until the Next/Enter button is pressed and the display stops flashing.

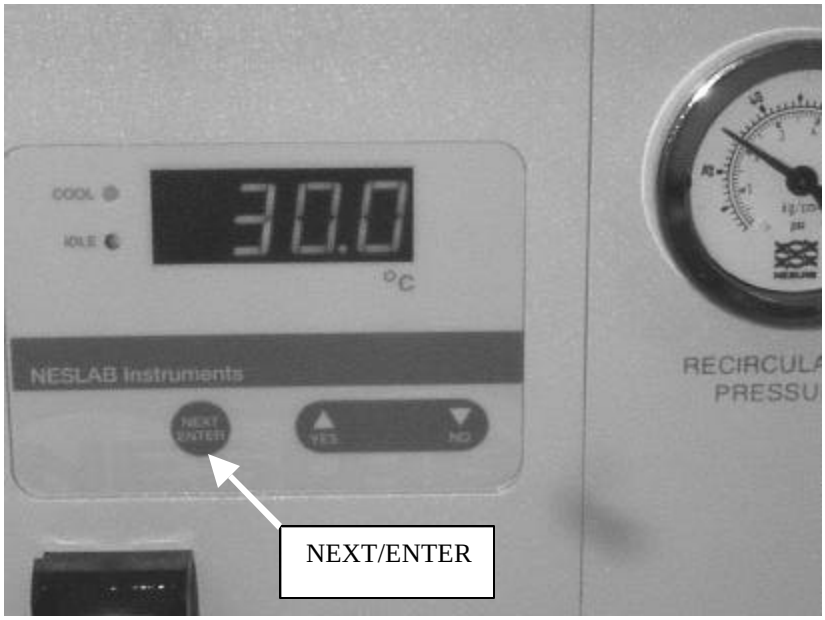


Figure 3: Neslab Chiller Next/Enter Button

PolyScience Model 6305P Chiller

Disconnecting a PolyScience chiller

1. Turn off the recorder. Disconnect the signal cable from the back of the chiller unit.
2. Disconnect the hose from the Inlet fitting on the back of the chiller.
3. Connect the drain hose (ty-wrapped to the hose assembly) to the disconnected hose.
4. Place the open end of the drain hose in an empty 4-liter container (see Figure 4)
5. Press and hold the Manual Pump Override button on the back of the chiller until the flow of coolant stops.
6. Disconnect the remaining water hose from the chiller.
7. Turn off the circuit breaker.
8. Unplug the power cord.

Note: Dispose of any waste coolant in accordance with local hazardous materials disposal requirements.

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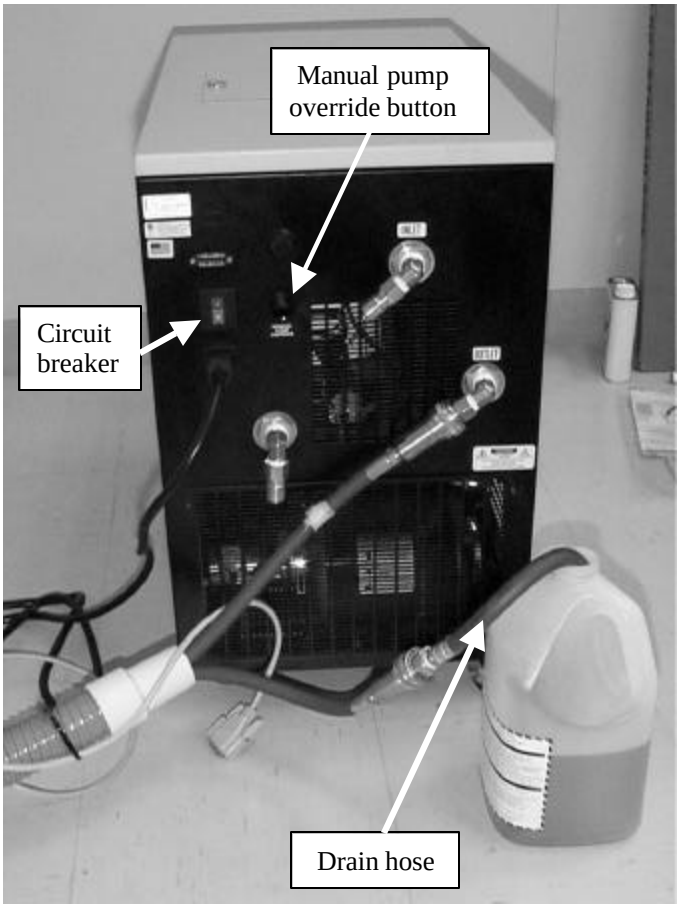


Figure 4: PolyScience Chiller Rear View

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Installing a Replacement PolyScience Chiller

1. Place the replacement chiller in position and plug in the power cord.
2. Connect the water hose to the fittings at the back of chiller. The hoses can be connected to either fitting.
3. Check that the quick-disconnect hose fittings at the Chiller are completely engaged and locked.



Caution: Never operate the chiller when the water hoses are disconnected.

4. Turn on the red circuit breaker (**1**) on the back of the chiller (see Figure 4).
5. Check that the orange "Low Fluid Level" light on the front panel is illuminated (see Figure 5).
6. Remove the cover plate from the top of the chiller and remove the reservoir cap.
7. Fill the reservoir with Creo pre-mixed coolant (part number 82-1032A) to the bottom of the filler neck. The reservoir can take up to 8 liters of coolant.

   Note: See *Coolant Information* for handling precautions.

8. Check that the "Low Fluid Level" light on the front panel has gone out.
9. Press the Manual Pump Override button on the back of the chiller (see Figure 4) to activate the coolant-circulating pump and to fill the cooling system for the head.
10. Check the flow indicator on the side of the chiller (see Figure 6) to ensure that the coolant is flowing.

    If there is no coolant flow, check that all the hose connectors are fully connected and that the water hoses are not kinked or obstructed.
11. Top up the coolant in the reservoir if needed.
12. Connect the signal cable from the recorder.
13. Turn the recorder on.

    The water-circulating pump should start, and the system pressure gauge on the front of the chiller should indicate approximately 20–25 psi. If the pressure is higher than 40 psi, the system is not circulating. Check that all disconnect fittings are fully engaged and that the hoses are not pinched. Check all connections for coolant leaks
14. Press the Power On button on the front panel (see Figure 7). The temperature controller display will flash *8888* and then display the current setpoint temperature.

    When the °C light stops flashing, the display indicates the current temperature in the chiller reservoir.

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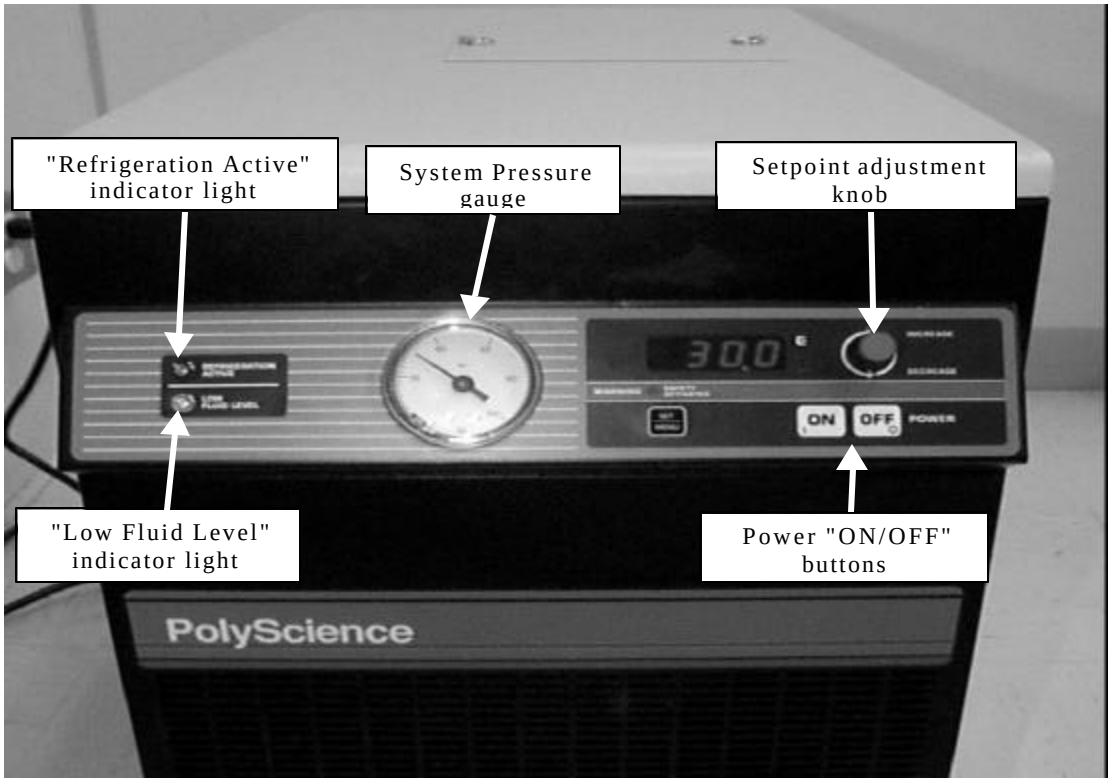


Figure 5: PolyScience Chiller Front View

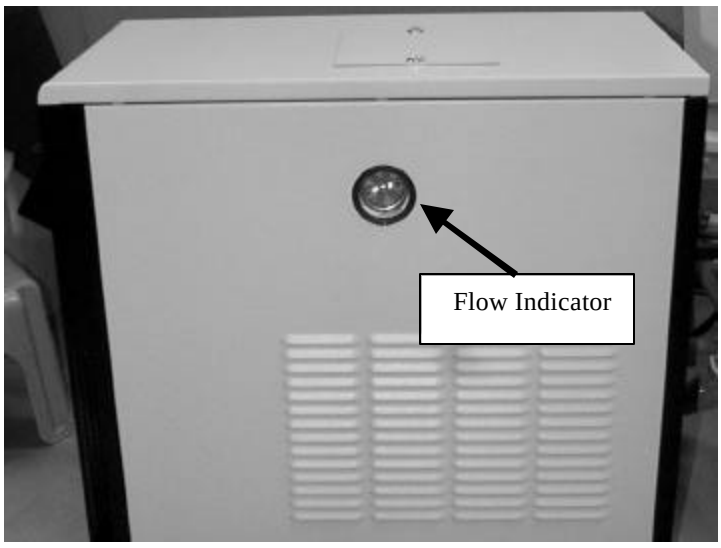


Figure 6: PolyScience Chiller Flow Indicator

15. The temperature controller's default setpoint is 30°C. If the setpoint requires adjusting:

    a. Press the Set/Menu button. The green °C light will start flashing.

    b. Turn the Increase/Decrease knob until the desired setting (30 °C) is displayed.

    c. Press the Set/Menu button.

    The green °C light will stop flashing and the current reservoir water temperature will be displayed.



Figure 7: PolyScience Chiller Front Panel

Coolant Information

The pre-mixed coolant provided by Creo (part number 82-1032A) is 40% by volume ethylene glycol (Dowtherm SR-1) and 60% by volume distilled water. If the pre-mixed coolant is not available, use distilled water only.



Caution: Do not use automotive antifreeze. It will damage the pump and void the warranty.

Warning

Do not drink solution. Accidental poisoning can cause central nervous system, cardiopulmonary, and kidney effects.

Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling. Avoid breathing vapor. Keep container closed. Use with adequate ventilation.

DO NOT STORE IN OPEN OR UNLABELED CONTAINERS. DO NOT USE WITH GALVANIZED STEEL.

First Aid

Ingestion
If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Note to Physician
Early administration of ethanol may counter the toxic effects of ethylene glycol (cardiopulmonary effects attributed to metabolic acidosis and renal damage). Hem dialysis or peritoneal dialyses have been of benefit.

For additional information, consult the MATERIAL SAFETY DATA SHEET for this product.

Disposal

Dispose of any waste coolant in accordance with local hazardous materials disposal requirements.