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Section 1: Temperature Control

- Your Haskris will have one of three different types of controller. Use table 1-1 to identify the relevant controller.
- The controller may appear different than examples. Contact Haskris if you are not sure what type you have.
- Adjust supply temperature while under heat load.
- Allow 15-30 minutes for the supply temperature to stabilize after an adjustment.
- Consult a dew point chart to select a supply fluid temperature that will minimize condensation.
- If no heat load is applied, the unit may “over-cool”.

Electronic Temperature Controllers	
ON/OFF Cycling Control Section 1.1	  
Parametric Control Section 1.2	 
Programmable Logic Control Section 1.3	 

Table 1-1

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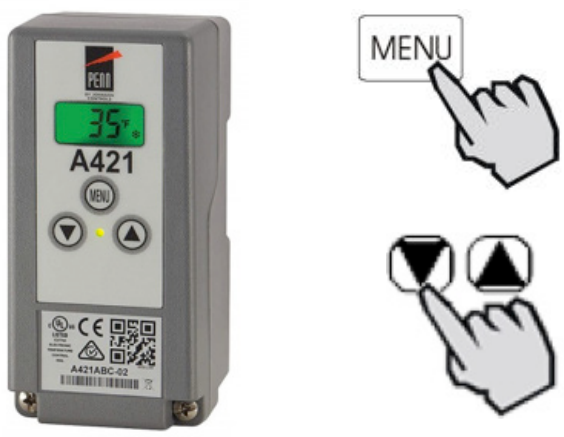
Section 1.1: ON/OFF Cycling Control

- The controller maintains temperature by cycling refrigeration ON/OFF using a set point and a differential.
- Supply fluid temperature will oscillate between a set point and +4°F (+2.2°C) above the set point.

Set Point Adjustment

1. Press the MENU button. Display shows “OFF”.
2. Press the MENU button again. Display shows the current set point.
3. Adjust the set point using the UP and DOWN arrow buttons.
4. Press MENU to save the new set point.

   Display shows “OFF”.
5. Press the UP and DOWN arrow buttons simultaneously to return to the current supply temperature reading.



Set Point Adjustment

1. Press and hold the SET button for 1 second. Display shows the current set point.
2. Adjust the set point using the UP and DOWN arrow buttons.
3. Press the SET button again to save the new set point and return to the current supply temperature reading.

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Section 1.2: Parametric Control

- Refrigeration runs continuously to maintain steady supply fluid temperature under a steady heat load and steady ambient conditions.
- Non-refrigerated units use a facility water regulating valve to maintain steady supply fluid temperature under a steady heat load.
- The LEDs labeled PV display the present value of the fluid temperature.
- The LEDs labeled SV display the set point value.

Set Point Adjustment

1. Press the UP and DOWN arrows to adjust set point value.

High/Low Temperature Alarm Adjustment

Alarm set points depend on the application specifications and unit design. Contact Haskris to confirm factory settings.

1. Press the  button once. PV displays A1.SP. SV displays an alarm set point.
2. Before adjusting the alarm set point, record the original setting. Press the UP and DOWN arrows to adjust the alarm set point.
3. Press the  button again. PV may display A2.SP. If the setting is not used or not adjustable, A2.SP will not appear. Adjust if necessary.
4. Press the  button to return to the normal temperature display.

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Section 1.3: PLC Control

- Refrigeration runs continuously to maintain steady supply fluid temperature under a steady heat load and steady ambient conditions.
- Non-refrigerated units use a facility water regulating valve to maintain steady supply fluid temperature under a steady heat load.
- The Main Screen lists present value of the fluid temperature, set point, and other operating conditions.
- Alarm conditions, including date and time information, are reported and logged on the controller.

Set Point Adjustment

1. Press ↵ to move the blinking cursor after SV
2. Press ↓ and ↑ to adjust set point value

Main Screen

Alarm Condition

If alarm condition occurs, the ⚠ button will flash red:

1. Press ⚠ to view the most recent current alarm
2. Press ↓ and ↑ to scroll through current alarms

To view log of past alarms:

1. Press ◎
2. Press ↓ until Alarm Log is highlighted
3. Press ↵
4. Press ↓ and ↑ to scroll through past alarms

Alarm Screen

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Section 2: Indicator Lights

Section 2.1: ON/OFF or Power

- Some units have a green light indicating the unit's ON/OFF status.
- Some units indicate that they are ON by lighting the temperature controller.

Section 2.2: Liquid Level

- Some units with a tank have a light to indicate whether the liquid level in the tank is sufficient.
- Some units have a "FULL" light. This must be lit for the unit to function.
- Some units have a "Liquid Level Low" indicator. This must not be lit for the unit to function.

Section 2.3: Liquid Temperature Fault

- Some units have a "Liquid Temperature Fault" indicator. This means that the liquid temperature is above or below the alarm set points.

Section 2.4: Refrigerant Pressure High or Building Water Fault

- Some units with a high refrigerant pressure safety switch include either a "High Pressure Indicator" or a "Building Water Fault" indicator.
- Units require either fresh air or a source of cooling water to discharge heat. If flow of fresh air or cooling water through the condenser is insufficient, refrigerant pressure increases. When the pressure is too high, a safety switch will stop the unit and light this indicator.
- The high pressure switch can be manually reset after the refrigerant pressure decreases to a safe level. The switch may be located on the base of the chiller or near the condenser. The switch has a button that can be pressed to reset the switch.

Section 2.5: Refrigerant Pressure Low

- In refrigerated units, a low refrigerant pressure switch stops the unit if the compressor suction line pressure is too low.
- This can indicate a refrigerant leak. Contact a local refrigeration technician to repair the leak and recharge the system with refrigerant.
- This indicator may appear on startup. This is normal.

  - Turn the system power ON, and wait until the compressor starts.
  - Cycle the system OFF and ON 3 to 4 times before permanently switching the system ON.

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Section 3: Strainers

- Some units have a nylon suction strainer in the tank to prevent debris from damaging the pump. In LX-Series units, the strainer is threaded into a fitting on the inside of the tank at the bottom.
- Check the strainer regularly for debris or biological growth.
- If the mesh feels slippery or “slimy”, this indicates biological growth. Flush the system according to the provided instructions.
- Replace the strainer whenever there is a significant accumulation of debris or biological growth.
- Replacement strainers are available from Haskris online at **shop.haskris.com** or over the phone +1-847-956-6420.
- A dirty strainer can cause pump cavitation indicated by rapid pressure fluctuations. Failures due to cavitation are not covered under warranty.
- Some systems have brass wye strainers in the piping. These have a removable screen that can be cleaned.

Section 4: Filters

- Some units include a supply line particle filter to capture debris.
- Record the running fluid pressure at the completion of startup when the filter is clean.
- The running pressure can be read by viewing the fluid pressure gauge near the pump or by reading the controller display.
- Replace the filter when the pressure increases 5 psi to 6 psi (0.3 bar to 0.4 bar) above the startup running fluid pressure.
- Replacement filters are available from Haskris online at **shop.haskris.com** or over the phone +1-847-956-6420.

Section 5: Drain Line

- Units include a drain hose connected to the bottom of the tank.
- Some units also include a plastic valve and hose barb connection.

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Section 6: Water Quality and Treatment – Indoor Units

Section 6.1: Maintaining Water Quality

- Periodically inspect the tank to make sure that the water is clear and that there has been no accumulation of debris.
- Water should be drained and replaced regularly, once or twice per year at a minimum, in order to maintain water quality.

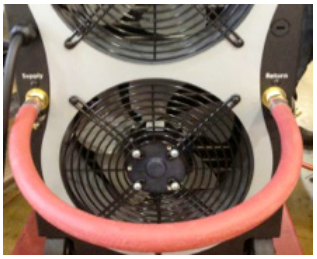

Fig. 1

Fig. 2

Section 6.2: Flushing the System

- Flush the system when biological growth, significant pH change, or significant debris accumulation is apparent.

  Leaving the unit connected to the application will flush the entire system. Check with the original equipment manufacturer (OEM) to confirm that hydrogen peroxide is approved for the application. **If hydrogen peroxide is not approved, disconnect the application, and flush only the unit.**

- In order to flush only the unit, connect a short hose directly from the Supply Connection to the Return Connection. See Figure 1 and 2.

  Flushing Procedure

  1. Add 1 pint (0.5 L) of 3% hydrogen peroxide per every 15 gallons (57 L) of water to the tank.
  2. Circulate the solution for 20-30 minutes.
  3. Use the drain hose to drain the system.
  4. Refill the system with clean, potable, distilled water.
  5. Repeat as necessary to fully flush the system.

Section 6.3: Additives

- Water absorbs CO2 from the atmosphere. This reduces pH over time. Add sodium bicarbonate to raise pH if needed.
- If biological growth persists even after regularly changing the water and flushing the system, use laboratory/food grade (99% pure) propylene glycol to create a 10% solution.
- Haskris recommends that additives be used only as a means of last resort.

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Section 7: Water Quality and Treatment – Outdoor Units

Section 7.1: Additives

- For outdoor operation, a mixture of potable distilled water and laboratory/food grade propylene or ethylene glycol is required to resist freezing in the winter.

Section 7.2: Maintaining Water Quality

- Glycol solution should be changed periodically to maintain fluid quality.
- The frequency at which the glycol solution should be changed depends on environmental conditions.
- Periodically use a pH test strip to check pH. If pH level is outside the range of 7 to 10, change the glycol solution. If pH is below 7, a line flush should also be performed.
- Periodically use a refractometer to check the glycol percentage.
- If glycol percentage needs to be increased, add pure glycol of the same kind used when the unit was originally filled.
- If glycol percentage needs to be decreased, add potable distilled water.

Section 7.3: Wye Strainer

- Some units have a wye strainer on the return fluid connection.
- Clean the wye strainer every time the glycol solution is changed or the return pressure has increased 10psi or more.

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Section 8: Bypass Pressure Relief Valve




- Units with a positive displacement or turbine pump include one of the four types of modulating bypass pressure relief valves shown at left.
- The valve has been preset from the factory for a maximum pressure in order to limit the supply pressure to the application.
- The valve diverts flow whenever the running pressure of the system approaches the bypass pressure setting.
- The bypass pressure setting must be above the pressure drop of the application and closed loop piping.
- The running pressure of the system will increase if a restriction develops. This could occur due to a closed valve or particle accumulation.

Section 8.1: Valve Setting Procedure

1. To find the current pressure setting of the bypass valve, restrict the supply line by closing a hand valve or kinking the hose. The pressure gauge indicates the current setting.
2. Remove the brass cap on the top of the adjustment screw, and loosen the locknut at the base.
3. Adjust the screw inward (clockwise) to increase the pressure setting. Adjust the screw outward (counterclockwise) to decrease the pressure setting. Do not completely remove the screw. This will cause a metal disc to fall off of the spring, requiring reassembling.
4. When the adjustment is complete, tighten the locknut and replace the cap.

Section 9: Refrigerant Sight Glass and Moisture Indicator

- Some refrigerated units include a liquid line sight glass and moisture indicator.
- This helps identify if the unit is low on refrigerant or if the refrigerant is contaminated.
- The sight glass should be clear and indicate “DRY” when the compressor is running.
- Constant bubbles flowing indicate that the system is low on refrigerant.
- “WET” indicates that the refrigerant is contaminated.
- Turbulence and bubbles are normal immediately after the compressor turns ON, and immediately after it turns OFF.

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Section 10: Cleaning an Air-Cooled Condenser

Fig. 3

- Air-cooled units collect dust and debris in the condenser during normal operation.
- Accumulated debris restricts air flow and reduces heat transfer which reduces the capacity of the unit.

To remove debris, turn the unit OFF and use a vacuum to collect the debris.

See Figure 3 and 4.

- Use a brush to loosen compacted debris.

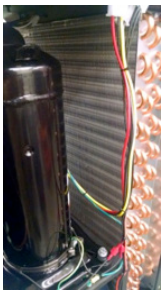

Fig. 4

Section 11: Maintenance Checks

- Inspect the water (if applicable) in the tank. Make sure it is clean and the level is proper. (see Section 6 or Section 7)
- Perform a system flush or line flush if you observe significant accumulation of debris or biological growth. (see Section 6.2)
- Inspect and clean or replace strainers and filters. (see Section 3, Section 4, Section 7.3)
- Clean air-cooled condenser coils and fins if necessary. (see Section 10)

Section 11.1: Schedule for Maintenance Checks

- After a new installation, perform these checks at least every 2 weeks for 3 months
- Beyond 3 months, perform checks at least 1 or 2 times per year.

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Section 12: Support

- If you have questions, encounter problems, or require technical support of your Haskris system, please contact Haskris support:

  Phone: **001 847 956 6420**

  Email: **service@haskris.com**

  Web: **www.haskris.com**

- Have the product serial number available when you call. This can be found on a panel near the unit's supply and return connections or on the main electrical enclosure.

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