

INSTRUCTION MANUAL

For the
Installation, Start-up,
Operation and Maintenance
of your Haskris System.

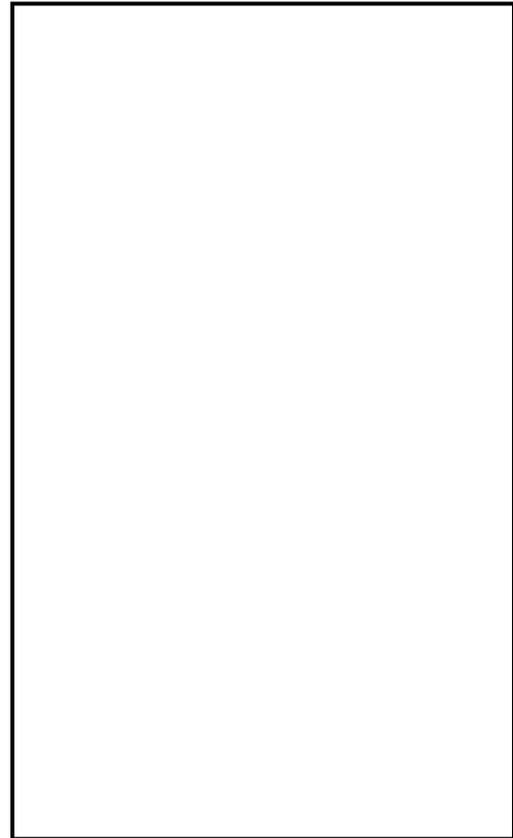


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Section 1: General Information



1.1 Registration

We have included an Owner's Registration Card on the back cover of this Instruction Manual. Please fill in the requested information and return this card to our office at your earliest convenience. This will be used to verify the start-up date and shipment condition of your Haskris system. All warranty claims are contingent upon the shipping and/or start-up date of your system. Please refer to the Section 6 of this manual for the Official Warranty Policy.

1.2 After Sale Support

If at any time you have questions, encounter problems or need spare parts for your Haskris system, please contact us by any of the following means:

- Phone: 001-847-956-6420
- Fax: 001-847-956-6595
- Email: service@haskris.com
- Website: www.haskris.com (contains information addressing frequently-asked questions, trouble-shooting guides, and technical documentation)

PLEASE NOTE: When contacting us, we ask that you have the **Serial Number** (located on the front cover of this manual, or on your Haskris system) available when you call. This serial number allows us to access pertinent information about your system so we can address problems quickly and effectively.

Section 2: Installation Instructions



2.1 Unpacking Your Haskris System

Upon delivery, visually inspect your Haskris system for any obvious damage. If damage is found, and there is reason to believe the system was mishandled, note the damage in detail on the delivery receipt. We recommend taking photographs if possible. Contact the delivering carrier immediately to file a claim. All shipping containers and packaging materials should be retained to help substantiate the claim.

We also ask that you call Haskris if the system has been damaged in shipment. We will assist in rectifying the situation.

2.2 Proper System Location

This Haskris system is designed for use in a clean, indoor environment, unless a custom design for other environmental conditions was specified.

Position the system so that there is clear access to the front panel where all controls, indicators and readouts are located. Access to the top and side panels is required to fill the reservoir or to perform maintenance and repair procedures.

Water-Cooled Systems: For water-cooled systems, systems with water-cooled condensers, or systems with water-cooled heat exchangers:

- These water to water (WW) systems are designed to circulate clean, temperature-controlled water through your equipment, while making use of an existing source of *cooling water** as a means of dissipating heat. As a result, no heat will be introduced into the room.

** Cooling water may be any source of cold water, including city/ tap water or in-house chilled water.*

Air-Cooled Systems: For systems with air-cooled condensers:

- Acceptable ambient air temperatures are shown in the Table 1 of this Section 2.2. Provide sufficient clearance, front and back, to allow for free movement of air across the condenser. A lack of cool/fresh air to the condenser will result in reduced cooling capacity, and possibly the complete shutdown of the refrigeration compressor. Avoid dusty

Section 2: Installation Instructions



areas, and periodically check to make sure that the condenser is clean (refer to Section 5.2 for cleaning instructions).

TABLE 1: Acceptable Ambient Air Temperatures For Haskris Systems With Air-Cooled Condensers.

PLATFORM	ACCEPTABLE AMBIENT TEMPERATURE RANGE*	
	Fahrenheit (°F)	Celsius (°C)
R025 – R175	55 – 90	13 - 32
R250 – R1000	40 - 100	4 - 38

** Note: Table 1 does not apply to systems equipped with Options I (for high-ambient air conditions), and/or Option J (for low-ambient air conditions).*

2.3 Leveling Legs

If your Haskris system does not come with lockable casters, the system will need to be leveled according to the following procedure. First, remove the four 3/8" hex-head bolts that secure your system to the wooden shipping base. Then attach the factory supplied 3/8" leveling-legs into each corner of the metal base by screwing them in a clockwise direction; adjust the length for leveling as required. Finally, re-attach the 3/8" hex nuts (supplied with the leveling-legs) to lock the legs into place.

2.4 Electrical Power

Please refer to the nameplate label on the front cover of this manual for electrical requirements; a copy of the nameplate can be also found on the Haskris system. The wiring diagram for your Haskris system is attached to the inside of the system (usually on the water tank).



PLEASE NOTE: You should consult your local electrical codes for specific requirements that apply to your area. Furthermore, we recommend that you always have the electrical installation performed by a licensed electrician.

Section 2: Installation Instructions



We recommend a service disconnect switch and time delay fusing be installed, per the wiring diagram included inside of your system. Your system will either use single-phase power with a power cord, single-phase power without a power cord, or three-phase power. Single-phase power will include a power cord unless the recommended fuse size is in excess of 20 Amps.

For Systems WITH a Power Cord: Plug the system in as you would any electrical appliance, making sure to follow the Proper System Location guidelines as outlined in Section 2.2.

For Systems WITHOUT a Power Cord: (Applies to both single-phase and three-phase systems.) If your system is not supplied with a power cord, check the nameplate label on the cover of the manual (or on the rear panel of the system) to determine if the Haskris system is single-phase or three-phase. Run main power to the top of the compressor contactor (we have attached a “Main Power” label to this contactor for easy identification.) Have your electrician ensure that the proper wiring is installed in the room/area in which your Haskris system will be located.

NOTE: For systems with three-phase pumps, an arrow on the pump designates the proper direction of rotation. If the proper rotation does not exist, your electrician should interchange any two wires of the three-phase power source at the disconnect switch.

2.5 Circulating Water Connections (Supply and Return to your Instrumentation)

All interconnecting hose and piping should be run at the same size as the connections to minimize external pressure drop. We suggest the use of high-pressure hose for the entire installation, or the use of copper piping for long runs. If copper piping is used, a short segment of hose should be used at each connection point to absorb vibration. Copper piping/tubing

Section 2: Installation Instructions



(and hose in some instances) should be insulated to prevent condensation.

Haskris recommends that an opaque hose be used between the Haskris system and the equipment being cooled, so that no light is introduced, thus minimizing biological growth.

2.6 Cooling Water Connections (Water-Cooled Systems Only)

Haskris recommends that water lines be the same size as the connection sizes on the rear of the Haskris system. Attach cooling water lines to the connections labeled "BUILDING WATER IN" and "BUILDING WATER OUT" at the rear base of the Haskris system.

Haskris recommends a minimum pressure differential of 25 psi (1.7 bar) from the cooling water inlet to outlet (CAUTION: unless otherwise specified, the maximum inlet pressure is 100 psi / 6.9 bar for standard Haskris systems). Be sure to check back-pressure on the outlet side. A high inlet pressure alone will not ensure adequate flow.

To help facilitate service, install a hand valve in an accessible location in both the cooling water inlet and outlet lines. A plumbing "Y" strainer with an 80 mesh screen is also advisable at the inlet to prevent large particles of dirt from entering the temperature control valve and heat exchanger.

Section 3: Start-Up Instructions



3.1 Prime the Pump

For systems with a nylon suction strainer within the tank: Lift the strainer out of the tank and remove it from the hose by loosening the hose clamp. Pour water through the hose into the pump. Replace the strainer and tighten the clamp securely.

For systems without a suction strainer: Locate the hose between the pump and the tank and detach it by loosening the hose clamp near the tank. Pour water through the hose into the pump, reattach the hose and tighten the clamp securely.

3.2 Fill Tank With Water

Carefully remove the packing paper from the inside of the tank and fill the tank with clean, potable distilled water. The water level should remain below the lines (bulkhead fittings) at the top of the tank.

Check the system after one week of operation. If algae starts to form, the system will need to be cleaned, and an additive may be needed to prevent future growth. Please keep in mind that you need the instrument manufacturer's approval before using any additive in the equipment being cooled. Consult Section 5 of this manual (or the Haskris website) for maintenance recommendations for flushing instructions and/or for recommendations on approved additives for use in Haskris systems.

3.3 Remove Liquid Refrigerant (Refrigerated Systems Only)

During start-up, it is important to remove liquid refrigerant from the compressor to prevent damage to the compressor valves. This can be accomplished by using the ON-OFF switch (for systems using a timer as the ON-OFF mechanism, cycle between the HOLD and OFF positions.)

Section 3: Start-Up Instructions



Turn the system ON and OFF rapidly 3 or 4 times, before switching the system ON permanently.

To keep liquid refrigerant out of the compressor when the system is shut down for an extended period of time (overnight and during the weekend), Platforms R075 through R1000 include a crankcase heater that will evaporate any liquid refrigerant in the compressor. As long as main power is supplied to the Haskris system, the crankcase heater will be energized, even if the ON-OFF switch is in the OFF position. Platforms R025 through R050 do not require crankcase heaters.

3.4 Final Inspection

Once the system is ON, the water pump will fill the closed loop with water and remove all the air in the process. As the interconnecting hose and pipe fill with water, the level in the storage tank will drop. You should have an extra supply of water on hand to replenish the storage tank level as necessary.

Check to make sure all external piping is leak-tight and that the system is operating satisfactorily. During initial operation the circulating water will flush debris from the closed loop and deposit it into the storage tank. If necessary, drain the tank and refill with clean water. A convenient gravity drain has been provided on the under-side of the tank for this purpose.

Section 4: Operating Features & Functions



4.1 Temperature Control

4.1.1 How to Adjust Your Supply Water Temperature

- **STEP 1:** Match the appropriate control mechanism for your Haskris system with the pictures in Section 4.1.2, Table 2 on Page 9.
- **STEP 2:** Note the section and page numbers for adjustment instructions for the controls that match your system.
- **STEP 3:** Turn to the appropriate section and page and follow the designated instructions.

NOTES:

1. **Temperature is Pre-Set:** Haskris has pre-set the supply water temperature per your specifications. On initial start-up, apply the actual heat load and wait 15-30 minutes for the temperature to stabilize.
2. **Allowable Adjustments:** The following procedures are intended for supply water temperature adjustments only. All other control parameters are factory set for optimum performance and should not be adjusted. If it appears that “tuning” is required, please contact Haskris for further information.
3. **Adjust While System is Running:** Make all water temperature adjustments while the system is running with the actual heat load.
4. **Permissible Temperature Settings:** Permissible supply water temperature range is 55 to 70°F (13 to 21°C.) If a temperature setting outside of this range is required, please contact Haskris, and we will advise you of precautions and the proper procedures to follow.
5. **Response Time for Adjustments:** While each Haskris system varies and individual design specifications may call for a rapid response in temperature adjustment, owners of systems with common configurations should allow up to 15 minutes for any temperature adjustments to take effect; this is due to the thermal mass of the system design and the nature of the cooling system.
6. **Condensation Reminder:** If the temperature setting is below the ambient dew point in the room, the water lines should be insulated to prevent condensation. Setting temperature below the room dew point could also cause condensation on the surfaces of the equipment being cooled, with resultant damage. To calculate the dew point in your environment, consult the Technical Documents on the Haskris website (www.haskris.com).

4.1.2 Controller Selection

Select the controller that matches your system and follow the instructions in the designated section.

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TABLE 2: Selection Guide – Common Temperature Control Options		
Controller Type	Instruction Section	Identifying Photograph(s)
<u>Electronic Temperature Control</u> <i>(Accessible A419 Thermostat)</i>	Section 4.1.3, Page 10	
<u>Electronic ON-OFF Controller</u>	Section 4.1.9, Page 14	
<u>Electronic (PID) Controller (small)</u>	Section 4.1.8, Page 13	
<u>Electronic (PID) Controller (large)</u>	Section 4.1.4, Page 11	
<u>Manual Temperature Control</u> (for Non-Refrigerated Systems)	Section 4.1.5, Page 11	 
<u>Manual Close-Temperature Control</u> (for Refrigerated Systems)	Section 4.1.6, Page 12	 
<u>Electronic PID Controller</u> (for Non-Refrigerated, Water-to-Water Systems)	Section 4.1.7, Page 12	 

Section 4: Operating Features & Functions



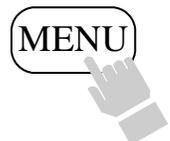
4.1.3: Electronic Temperature Control (Accessible A419 Thermostat)

Water temperature is controlled by an adjustable thermostat. This stat senses tank water temperature and is preset to turn the refrigeration compressor OFF at your requested set-point. The ON temperature has been preset 4°F (2°C) higher, fixing the temperature cycling differential at plus/minus 2.0°F (plus/minus 1.1°C).



To view and adjust the temperature set-point follow these steps:

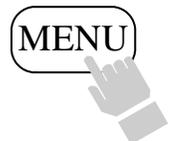
1. Press and hold the MENU button until the display changes to flashing “S P” (set-point). This will take about 2 seconds.



MENU

Note: If no entries are made for 30 seconds, the control reverts back to the temperature display.

2. Press the MENU button again. The current set-point is displayed.

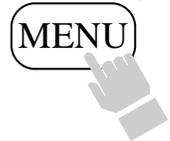


MENU

3. Press the UP or DOWN arrow buttons to adjust the temperature set-point.



4. Press the MENU button to save the new set-point. The display then returns to indicating the actual reservoir temperature.



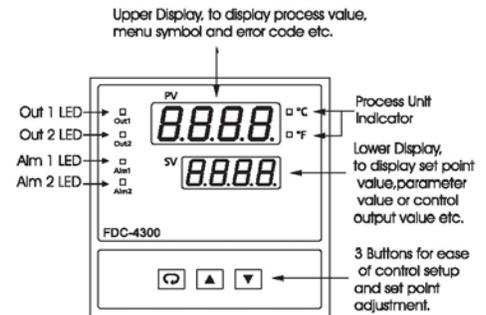
MENU

Notes: If the MENU button is not pressed after changing the set-point (as per the final instruction, #4, above), the control reverts back to the set-point value that was previously programmed.

Section 4: Operating Features & Functions

4.1.4: Electronic (PID) Controller

Press the UP or DOWN arrow button to adjust the temperature set-point. Set-point (SV) will be displayed on the lower display. See Main Display.



4.1.5: Manual Temperature Control (for Non-Refrigerated Systems) (with Modulating Valve and Inaccessible A419 Thermostat)



Water temperature is controlled by a modulating valve installed in the cooling water circuit. This valve varies the flow of cooling water to maintain a constant supply water temperature to the equipment being cooled. When the heat load is removed, it will modulate toward a closed position.

Adjustment Procedure:

1. Locate the adjustment screw of the valve which is visible through the system lid and labeled "Modulating Water Temperature Control Valve."
2. To lower the supply water temperature, use a screwdriver to turn the adjustment screw in a clockwise direction. To raise the supply water temperature, turn the adjustment screw in a counter-clockwise direction.



Section 4: Operating Features & Functions



4.1.6: Manual Close-Temperature Control (Option (G) for Refrigerated Systems) *(with Hot-Gas Bypass Valve and Inaccessible A419 Thermostat)*



In the case of a malfunction of the bypass system, or a sharp reduction in the heat load, the system thermostat serves as a back-up control that will cycle the compressor approximately 10°F (6°C) below the design temperature of the supply water,

If the actual heat load is less than the heat load used by Haskris to set the supply water temperature, the resultant supply water temperature will be lower; conversely, if the heat load is greater, the supply water temperature will be higher.



Adjustment Procedure: Loosen the lock-nut at the base of the adjusting stem of the hot gas bypass valve. Turn the stem clockwise to raise, or counter-clockwise to lower, the supply water temperature. We suggest one-quarter turn for each 2.0°F (1.1°C) adjustment. Then, wait at least 15 minutes to see if the desired temperature has been reached.

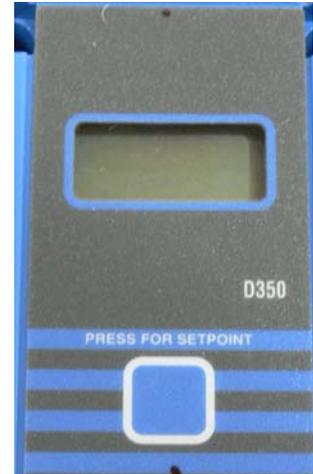
4.1.7: Electronic PID Controller (for Non-Refrigerated, Water-to-Water Systems)

Adjust the electronic temperature control knob on the front of the control panel to desired set-point.



Section 4: Operating Features & Functions

Once stabilized, the supply water temperature will display on the device depicted in the picture to the right.



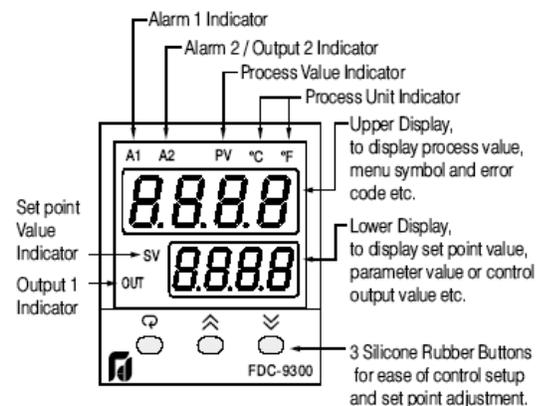
4.1.8: Electronic (PID) Controller (small)

Adjustment Procedure: The upper display of the control is the actual measured temperature of the supply water. This is referred to as the PV (or Process Value.) The lower display is the desired supply water temperature that the Haskris system will try to maintain. This is referred to as the SV or (Set-point Value.) To adjust the SV press either the up  or down  key until the lower display indicates your desired supply water temperature.



Notes:

1. Where applicable, this controller may be equipped with both a high-temperature and low-temperature alarm. If an out of tolerance condition is reached, the controller will indicate A1 for a low-temperature fault or A2 for a high-temperature fault. The controller will



Section 4: Operating Features & Functions

disable cooling until the PV is within the acceptable range, at which point the alarm indicator will extinguish and normal control will resume.

2. This controller is equipped with an output indicator, "OUT." This indicator is lit when the control is outputting a signal for cooling. This indicator is for reference only and may at times extinguish as part of normal control.

4.1.9: Electronic ON-OFF Controller

Water temperature is controlled by an adjustable thermostat. This stat senses tank water temperature and is preset to turn the refrigeration compressor OFF at the appropriate point for your application. The ON temperature has been preset 4°F (2°C) higher, fixing the temperature cycling differential at plus/minus 2.0°F (plus/minus 1.1°C).



Adjustment Procedure:

1. Press and release the "SET" button. SP (Set-Point) text appears on the display.
2. Press the "SET" button again. Temperature set point value is shown on the display.
3. Modify the temperature set-point value using UP and DOWN keys.
4. Press the "SET" and "DOWN" buttons simultaneously to quit programming, or wait one (1) minute for the TIMEOUT.



Section 4: Operating Features & Functions



4.2 Water Pressure Bypass/Relief Valve

Your system will come with one of the four (4) bypass valves shown to the right, depending on the flow rate requirements of your system. These valves are modulating bypass valves and do not snap open and closed.

The valve serves two basic functions:

1. Its primary function is to divert the water pump discharge flow whenever the pump pressure reaches the bypass pressure setting. The water is diverted through the bypass line, through the cooling coil and into the storage tank. This reaction occurs when the closed-loop becomes restricted, such as when a solenoid valve on your equipment closes, or some other flow restriction develops. The bypass would also open if the pressure relief setting was not set above the required pressure to overcome the resistance to flow (pressure drop) in the closed loop.
2. As a secondary function, the valve can be used for partial-flow diversion. If the flow characteristics of the pump cause excessive pressure drop through the heat exchanger on the equipment being cooled, this valve can be adjusted to bypass some of the excess water. This reduces the flow through the equipment, thereby reducing the pressure required to complete the circuit.

Relief Valve Adjustment Procedure:

The valve has been preset for a maximum pressure in order to limit the pressure of the cooling water flowing to your equipment. An adjustment screw is located under the brass-knurled cap or on top of the valve.



Section 4: Operating Features & Functions



1. First loosen the locking nut,
2. Then turn the screw inward (clockwise) to increase the pressure required to bypass water, or
3. Turn the screw outward (counterclockwise) to reduce bypass pressure. When reducing pressure, make sure that you do not completely remove the screw; this prevents the valve from leaking.

NOTE: To find the pressure setting of the bypass valve, restrict the flow of supply water from the Haskris system (completely pinch the hose or close the supply hand valve if supplied). The pressure gauge will then indicate the valve set-point. As noted above, the valve does not snap open and shut. It will crack open approximately 10-15 psi (0.7-1.0 Bar) below its set-point, depending on the valve. The valve continues to open gradually, increasing the amount of bypass, as pressure approaches the valve set-point. When the set-point is reached, all of the flow from the pump is being bypassed. For this reason, the valve should be set a minimum 15 psi (1.0 Bar) above the normal operating pressure to ensure full flow of the pump through the closed loop.

4.3 Refrigerant Sight Glass/Moisture Indicator (Refrigerated Systems Only)

A liquid-line sight glass/moisture indicator has been installed to help you identify when the system is low on refrigerant, and to assist the refrigeration mechanic when recharging the system.

The sight glass/moisture indicator is located near the bottom of the system and is visible when the service panel is removed, as pictured in the photograph to the right. Bubbles flowing through the sight glass when the compressor is running indicate that the Haskris system is low on refrigerant.



Note: It is normal to see bubbles immediately after the compressor turns on, and immediately after it turns off. The sight glass should be clear when the system is continuously running.

Section 4: Operating Features & Functions



4.4 High and Low Refrigerant Pressure Controls (Refrigerated Systems Only)

The refrigerant pressure control (pictured to the right) is located at the base of the Haskris system, and it prevents the compressor from operating at unsafe pressures. The control should only be adjusted by a qualified refrigeration technician; this technician should install refrigerant pressure gauges on the high and low-side of the refrigeration system in order to make adjustments.



Low-Pressure Cut-Out. All platforms have a low-refrigerant pressure safety cutout. This control provides an added level of freeze-protection and serves as a low-pressure cutout of the refrigeration compressor in case of a refrigerant leak, or a restriction in the refrigeration circuit. Low-pressure cutouts will automatically reset when the refrigerant pressure increases back to normal.

High-Pressure Cut-Out. All systems with water-cooled condensers, air-cooled R175 systems, and all remote condenser systems include a high-refrigerant pressure safety cutout with **manual** reset (all remaining systems include an automatic reset.) The high-pressure cutout will shut down the compressor when there is insufficient water flow from the building water circuit.



Trouble-Shooting Tip (Pressure Control Regulates the Performance of the Refrigeration Compressor): If the compressor is short-cycling (turning ON and OFF rapidly), or if the compressor will not come on at all when cooling is required, it is likely that the refrigeration compressor is being controlled by the low (or high, if applicable) pressure safety cutout. To restart the compressor, confirm that there is water circulation and then reset the system by pressing the black reset button on the pressure control. If Option B or Option N

Section 4: Operating Features & Functions



is installed on your Haskris system, you may need to re-set the high-water temperature safety to a temperature above that of the water in the reservoir to re-start the pump motor. Contact Haskris if you have any questions about these features or require assistance.

4.5 Water Level “Full” Pilot Light

For your convenience, a pilot light has been installed on the control panel as seen in the photograph to the right.

PLEASE NOTE: THE STORAGE TANK IS SUFFICIENTLY FILLED, WHEN THE PILOT LIGHT IS **ON**. When the light is out, the storage tank water is below the recommended operating level; refill according to the instructions in Section 3.2 of this manual.



Systems with 5, 6 or 9 gallon (19, 23 or 34 liter, respectively) tanks also have a liquid-level interlock relay. If the water level drops, the liquid level switch opens and the relay will shut the system down (refer to the wiring diagram located inside your Haskris system, on the tank).

Section 5: Maintenance Recommendations



5.1 Water Storage Tank

5.1.1 Tank Inspection

Periodically inspect the tank to make sure that the water is clear, that it has a neutral pH level, and that there has been no accumulation of debris.

5.1.2 Frequency of Water Changes

The frequency of required water changes varies according to the condition of the water at your individual environment; however, **Haskris recommends that the water in the tank be changed once or twice per year at a minimum.**

5.1.3 Biological Growth

Haskris recommends that an opaque hose be used between the Haskris system and the equipment being cooled, so that the no light is introduced into the system, thus minimizing biological growth.

If you experience biological growth in your system, we offer the following recommendations.

***NOTE:** It is EXTREMELY important that you check with the manufacturer of the equipment being cooled to ensure that the use of any chemicals or additives is compatible with their equipment.*

- **System Flushing.**

Flush the system out by using one of the following 3 methods:

Method 1 (OEM does NOT allow the use of chemicals in the system): Run a short hose directly from the supply to the return line in a closed loop in order to flush the Haskris system out.

Method 2 (OEM allows use of chlorine bleach): Add one (1) cup (0.25 liters) of chlorine bleach per 15 gallons (57 liters) of water.

Section 5: Maintenance Recommendations



Circulate the water for 20-30 minutes. Drain the system and refill with clean, potable distilled water.

Method 3 (OEM allows the use of hydrogen peroxide): Add one (1) pint (0.5 liters) of hydrogen peroxide per 15 gallons (57 liters) of water. Circulate the water for 20-30 minutes. Drain the system and refill with clean, potable distilled water.

- **Chemical Additives.**

Haskris recommends that additives are only used as a means of last resort. Various concentrations of a variety of chemicals can be used to minimize (or eliminate) biological growth on an ongoing basis.

Please consult the Technical Documents on the Haskris website (www.haskris.com) for a list of approved additives together with instructions on how to use them.

- **Water Filtration.**

A 5-micron filter is very helpful in keeping the water recirculation system clean. Section 5.4 further describes this mechanism.

5.2 Air-Cooled Condenser

Haskris systems with air-cooled condensers draw a substantial amount of air across the condenser fins and coils. As dust and debris collect, heat transfer becomes less efficient, resulting in the loss of cooling capacity. To remove the accumulation of debris, vacuum the condenser fins thoroughly on a regular basis. A brush may be used to loosen compacted debris.

5.3 Pump Motor Lubrication

Some motors used in conjunction with Positive Displacement Pumps (PDP pump models 102L060, 102L100, 104L215) require lubrication once per year. The motor nameplate will indicate if lubrication is necessary. To

Section 5: Maintenance Recommendations



lubricate, remove the plastic plug at the end of the motor and add 3-4 drops of SAE #10 motor oil.

NOTE: Turbine pumps do not require lubrication. Refer to the label on the cover of this manual for your pump model number.

5.4 Strainers and Filters

5.4.1 Nylon Suction Strainer.

Positive Displacement Pumps (PDP pump models 102L060, 102L100, 104L215) and certain T-Series Turbine



Pumps use a nylon strainer (pictured to the right). This strainer is located inside the water storage tank of your system in order to prevent debris from entering the pump housing thus causing damage to the pump impeller.

When to Clean the Strainer.

It is recommended that you clean the strainer whenever there is significant accumulation of debris in the strainer, or when you note a pressure differential due to clogging of the strainer. The pressure can be read by accessing the pressure gauge (pictured to the right) inside the system.



Please record the system pressure at the start-up of your Haskris system. Whenever the pressure increases 5-6 psi (0.3 - 0.4 Bar) above the initial start-up pressure, you should clean the strainer.

How to Clean the Strainer.

To clean the strainer, lift it out of the storage tank and remove it from the hose by loosening the hose clamp. Remove debris from the strainer using a cleaning agent and water. A soft-bristled brush may be used to help loosen the build-up. Be careful not to tear the nylon material. Re-attach the strainer to the hose in the tank and tighten the clamp securely so that air does not enter the pump.

Section 5: Maintenance Recommendations



Replacing your Strainer.

If debris accumulates on the inside of the strainer, or if your strainer should be damaged in some way, it should be replaced. Haskris recommends periodic replacement of the strainer in order to ensure uninterrupted flow. To replace the strainer, lift it out of the storage tank and remove it from the hose by loosening the hose clamp.

Ordering Replacement Strainers.

Replacement strainers can be purchased from Haskris. Please refer to Haskris part number #1040 when ordering a single replacement strainer, or part number #9040 when ordering a 3-pack of strainers.

5.4.2 Supply Line Filters.

A supply-line filter (as pictured to the right) is similar to a strainer, but it is located in the supply water line (either external or internal to the system frame.) This filter will help prevent debris from entering the system and can also provide significant protection against algae growth in the tank.



Replacing a Supply-Line Filter.

It is recommended that you replace your supply-line filter when you note a pressure differential as this is typically due to clogging of the filter with debris.

The pressure can be read by accessing the pressure gauge (pictured to the right) inside the system. Please record the system pressure at the start-up of your Haskris system. Whenever the pressure increases 5-6 psi (0.3 - 0.4 Bar) above the initial start-up pressure, you should clean the strainer.



Replacement supply-line filtration elements can be ordered by contacting Haskris.

Section 6: Warranty Policy



6.1 Standard Product Warranty

NOTE: Please complete and return the Owner's Registration Card on the back cover of this manual in order to register the Start-Up date for your Haskris system.

Limited Warranty: Haskris' warranty is limited to the following provisions, and does not apply to claims where the product has been mishandled or used in a manner inconsistent with this instruction manual. Haskris makes no other warranty, express or implied, including all implied warranties of merchantability and fitness for a particular purpose.

Term & Conditions Provisions: Warranty extends for one (1) year from date of start-up or shipment (from Haskris), in no event longer than 18-months from the date of shipment. Start-up date must be confirmed through the completion and return of the Owner's Registration Card, located on the back cover of this manual, within six months of the original shipment date from Haskris. The warranty includes parts and labor. NOTE: Labor must be authorized by Haskris in writing prior to proceeding with repairs.

Parts Provisions: Parts warranty does not include consumable items such as filtration elements. Replacement parts furnished during the system warranty are covered until the system warranty expires. Parts purchased after the system warranty expires will be covered for a period of 90-days from the date of shipment. Defective parts must be returned, transportation prepaid, to Haskris Company. Normal outgoing surface transportation charges will be paid by Haskris.

6.2 Extended Warranty Options (including Haskris On-Site Service)

Haskris provides the option of extending the standard product warranty to a three (3), four (4), or five (5) year term, from date of shipment, for both parts and labor.

Extended warranties can be purchased within 30 days of the date of system shipment. Contact Haskris for pricing.