Secondary Glycol Start-Up Guide

- Prior to startup of the equipment, please review the Walmart Support page for all relevant installation documentation and verify that the equipment was properly installed.

- The bullet points below reference supplementary documents required for Starting the Secondary Glycol Skids. The exact documents will vary depending on the skid size (outlined in the specific document name) and voltage (outlined in the specific document name) being started but the base nomenclature will be as follows:
    - Installation, Operation and Maintenance Manual
    - Lifting and Rigging Document
    - Expansion Tank Charge/Static Loop Charge Matrix
    - Parameter List
    - Flow Setting Guideline
    - Sequence of Operation

- Make sure that each document matches the name plate and voltage required for startup of each piece of equipment being started as more than one equipment size may exist on a single site.

- Pre-Startup Checklist:
    - Check over equipment for damage that may have occurred during installation.
        - Immediately report any damage to the project manager and provide photo documentation.
        - Record any damage in the Startup Report.
    - Verify that the Glycol Test, Flush and Fill Procedure has been completed.
        - Record any issues with this procedure in the Startup Report.
        - Identify manufacturer: Intercool P-323 OR Dowfrost HD.
        - Do not mix glycol mixtures from different manufacturers.

    - **BEFORE ENERGIZING THE DISCONNECT** Confirm incoming power and verify voltage and balance between L1, L2 & L3 – Voltage imbalance MUST be No Greater than +/- 10% of name plate rating and balance MUST be Less Than 2% of differential, Line to Line.
        - Ensure that the unit nameplate voltage matches the measured incoming voltage before powering up the equipment. Record Voltage Readings in the Startup Report.

STOP! IF NAMEPLATE VOLTAGE AND MEASURED VOLTAGE DO NOT MATCH OR ARE NOT IN RANGE, DO NOT SUPPLY POWER TO THE UNIT! DO NOT TURN ON THE DISCONNECT!

- Confirm transformer secondary voltage
    - Record Secondary Transformer Voltage in the Startup Report.

- Check all electrical terminals for secure wiring
    - Record any loose connections on the Startup Report.

- Review the User Guide reference
    - Go through Unit Configuration in Carel Controller to set up refrigerant type and store information.

- Verify all I/O reads correctly in the Carel Controller
    - Pump Differential Pressure (dp) at the controller should agree with field measured dp within reason.
    - Supply and Return Temperatures should reflect field measured temperatures within reason.
    - Pump Suction and Discharge Pressures should reflect field measured pressures within reason.
    - Record all readings and any discrepancies on the Startup Report

- Verify valve drivers are communicating with Carel Controller
    - Superheat and Suction Pressure both come from the Valve Driver. Record all readings and any discrepancies on the Startup Report

The above supplementary documentation should be thoroughly reviewed to verify startup readiness. Failure to properly verify each of these steps could result in system damage.

Once all the above items have been verified, turn on the system to verify pump rotation.

If pump rotation is incorrect, immediately shut the pump off and swap phases at the VFD or Pump and notate it in the Startup Report.

Once pump rotation has been corrected, briefly run the pump to bleed any additional air that may be in the system. While the pump is running, it is recommended to listen for air at the air separator to determine how much air may still be in the system.

There may be several cycles of filling to the required static pressure, running the pump, bleeding air, and refilling to get all the air out of the system.

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Troubleshooting of Pump Skid		
Problem	Possible Causes	Suggested Solutions
Low Heat Transfer	1. Water inlet temperature too low OR Water Flow Rate Too High 2. Heat Exchanger Fouled 3. Heat Exchanger has Frozen	Correct temperatures or flow rates to design conditions. Open the GPHE and clean the plates or clean the plates (without opening) by circulating a suitable cleaning agent or reverse flush to dislodge debris.
Visible Leakage	1. Operating pressure exceeds the rating of the heat exchanger. 2. Sealing surfaces of plates or gaskets may be damaged or dirty.	Reduce the operating pressure. If the equipment continues to leak after the pressure is reduced, the flanges or gaskets might be damaged, or gaskets aged and may require replacement.
Cross Contamination of Refrigerant and Glycol	Damage to the Heat Exchanger may have occurred due to freezing or over pressurization of the system.	Replace the damaged Heat Exchanger in accordance with industry standard practices for cleanup.

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RAE CORP. STARTUP REPORT

WARNING !	
Unit Startup should be performed only by a qualified heating installer/service technician. Refer to the Installation and Operation Manual for your reference.	Have this unit serviced/inspected by a qualified service technician, at least annually. Failure to comply could result in severe personal injury, death, or substantial property damage.

Start-Up Performed By:		Start-Up Date:	
Company:	Name:		
Phone:	Job Name:		
Address:	City:	State:	Zip:
Contact Name:	Contact Phone:	Email:	

EQUIPMENT READINESS CHECKLIST AND START-UP DOCUMENTATION

Send completed form to: Email: napcommission@rae-corp.com Mail: RAE Corp./Service Dept. 4492 Hunt St. Pryor, OK 74361

Unit Damage Report (additional space in notes):				
Glycol Flush Complete: Y / N	System filled with Propylene Glycol?:			
Glycol Premix or Field Mix?:	Glycol Manufacturer:			
Mixture % of Glycol Used:	Fill Procedure Complete: Y / N	Reading from Refractometer:		
Record any loose wiring connections (additional space in notes):				
Nameplate Voltage:	Supply Voltage – L1 to L2:	L1 to L3:	L2 to L3:	
If all of the above are within specification, the unit can be powered for the next checks.				
Secondary Transformer Voltage:	Pump Amp Draw – L1:	L2:	L3:	
Verify Unit Configuration in Controller: Y / N	Check I/O for Discrepancies: Y / N			
Enable Unit and Run for a minimum of 15 minutes to stabilize the system before moving on. Ensure an acceptable refrigeration pressure/temperature range is maintained during the stabilization period. Additionally, ensure that Glycol flow is consistent and not full of air.				
Inlet Temp:	Outlet Temp:	Delta T:		
Refrigerant Type:	Superheat:	Suction Pressure:		
Number of Units at the jobsite:	Retrofit / New Construction:			
Each Piece of Equipment Must Have Its Own Startup Sheet Completed Separately				
Unit _____of _____ Model No: Serial Number:				
Internal Use Only – Date Startup Report Received:	**Received By:**			

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ADDITIONAL NOTES

NOTES:

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