

NORTH SLOPE CHILLERS





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Applications

This owner's manual is to be used for the following North Slope Chillers:

TYPE	MODEL NUMBER	COOLING CAPACITY (BTU/HR)
Freeze	NSC0500	6,000 (1/2 ton)
Freeze	NSC1000	12,000 (1 ton)
Freeze	NSC2000	24,000 (2 ton)
Freeze	NSC5000	60,000 (5 ton)
Freeze	NSC10000	120,000 (10 ton)
Deep Freeze	NSC0500-LT	6,000 (1/2 ton)
Deep Freeze	NSC1000-LT	12,000 (1 ton)
Deep Freeze	NSC2000-LT	24,000 (2 ton)
Deep Freeze	NSC5000-LT	60,000 (5 ton)
Deep Freeze	NSC10000-LT	120,000 (10 ton)

Cautions/Warnings

- Power** (ALWAYS check the Chiller Parameter tag and verify operational voltage before plugging in chiller)
 - Only connect North Slope Chillers to a properly grounded circuit
 - Never connect your North Slope Chiller to voltage that is outside the acceptable voltage range. Connecting your chiller to any voltage outside of these ranges will damage the compressor.
 - 110V model will operate on voltages between 100 ~ 130V
 - 230V model will operate on voltages between 200 ~ 250V
 - 460V model will operate on voltages between 440 ~ 480V
 - Only use power sources that are 60Hz, running the chiller at 50Hz will void the warranty and will damage the compressor
- Never run the pump dry**, only turn on chiller after the fluid reservoir has been filled. Running the chiller without fluid will permanently damage the pump and void the warranty
- This chiller is air cooled and must have good ventilation.** For proper function there must be a minimum of 1 foot clearance on both sides and 2 foot clearance at the back of the chiller
- Flush chiller prior to use.** North Slope Chillers tests every chiller on site prior to shipping. During testing North Slope Chillers uses a water/glycol mix to test their chillers. There will always be a small amount of water/glycol remaining in the system. Since not all glycols are compatible with each other and vary by manufacture each chiller should be flushed with water for 10 minutes prior to use.

Specification sheet

Model	NSC0500-110/1	NSC0500-LT-110/1	NSC1000-230/1	NSC1000-LT-230/1	NSC2000-230/1	NSC2000-LT-230/1
Voltage	110 VAC, SINGLE PHASE, 60 Hz	110 VAC, SINGLE PHASE, 60 Hz	230VAC, SINGLE PHASE, 60 Hz			
Compressor Power	½ HP	½ HP	1 HP		2 HP	
Cooling Capacity (BTU/hr)	6,000 BTU/hr 90F ambient 65F Fluid Temp	6,000 BTU/hr 90F ambient 65F Fluid Temp	12,000 BTU/hr 90F Ambient 65F Fluid Temp	12,000 BTU/hr 90F Ambient 40F Fluid Temp	24,000 BTU/hr 90F Ambient 65F Fluid Temp	24,000 BTU/hr 90F Ambient 40F Fluid Temp
Fluid Temp Range	40F – 80F	10F – 60F	40F – 80F	10F – 60F	40F – 80F	10F – 60F
Refrigerant	R-134a	R404a	R-134a	R-404a	R-134a	R-404a
Metering Device	TXV					
Pump Power	1/3 HP				3/4 HP	
Pump Specs	4 GPM up to 50 PSI, Fixed Displacement				10GPM @ 28 PSI (Centrifugal)	
Glycol %	70/30 (Water/Glycol)	50/50 (Water/Glycol)	70/30 (Water/Glycol)	50/50 (Water/Glycol)	70/30 (Water/Glycol)	50/50 (Water/Glycol)
Acceptable Fluids	Ethylene Glycol or Propylene Glycol* North Slope Chillers recommends using distilled water to maximize life and performance of chiller Consult North Slope Chillers prior to using other fluids in the chiller					
Tank Capacity	3.5 Gallons		15 Gallons			
Inlet and Outlet	1/2" NPT				3/4" NPT	
Dry Weight (lbs)	220 lbs		360 lbs		550 lbs	
Dimensions	28¼"L x 22½"W x 32½"H		34½"L x 28¼"W x 39"H		34¾"L x 43¾"W x 40"H	

Model	NSC5000-460/3		NSC5000-LT-460/3	NSC10000-460/3	NSC1000-LT-460/3
Voltage	460 3 Phase				
Compressor Power	5 HP			10 HP	
Cooling Capacity (BTU/hr)	60,000 BTU/hr 90F ambient 65F Fluid Temp	60,000 BTU/hr 90F ambient 40F Fluid Temp	120,000 BTU/hr 90F Ambient 65F Fluid Temp	120,000 BTU/hr 90F Ambient 40F Fluid Temp	
Fluid Temp Range	40F – 65F	10F – 45F	40F – 65F	10F – 45F	
Refrigerant	R404a				
Metering Device	TXV				
Pump Power	2 HP				
Pump Specs	15 GPM @ 39 PSI 30 GPM @ 35 PSI 45 GPM @ 28 PSI 60 GPM Max				
Glycol %	70/30 (Water/Glycol)	50/50 (Water/Glycol)	70/30 (Water/Glycol)	50/50 (Water/Glycol)	
Acceptable Fluids	Ethylene Glycol or Propylene Glycol*			North Slope Chillers recommends using distilled water to maximize life and performance of chiller	
Tank Capacity	55 Gallons			55 Gallons	
Inlet and Outlet	1-1/4" NPT				
Dry Weight (lbs)	1000 lbs			1150 lbs	
Dimensions	34"L x 65"W x 62"H				

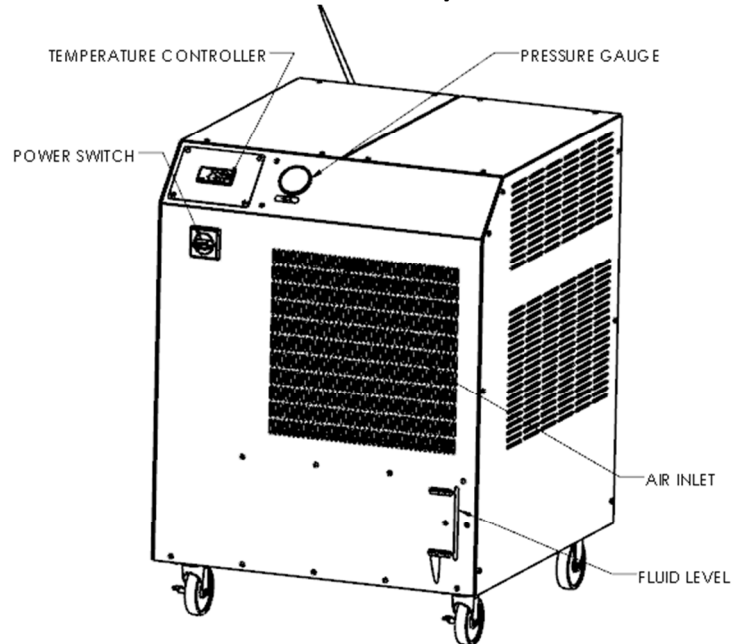
North Slope Chillers tests every chiller on site prior to shipping. During testing North Slope Chillers uses a water/glycol mix to test their chillers. Since not all glycols are compatible with each other and vary by manufacture each chiller should be flushed with water for 10 minutes prior to use.

*The mix of Glycol to Water should be proportional to the desired freeze point. Always select a Glycol/Water mix that will prevent freezing at 25F below your set point. This will prevent freezing from occurring in the heat exchanger and prevent damaging the system. For example if your setpoint is 10F you should select a glycol percentage that would prevent freezing at -15F.

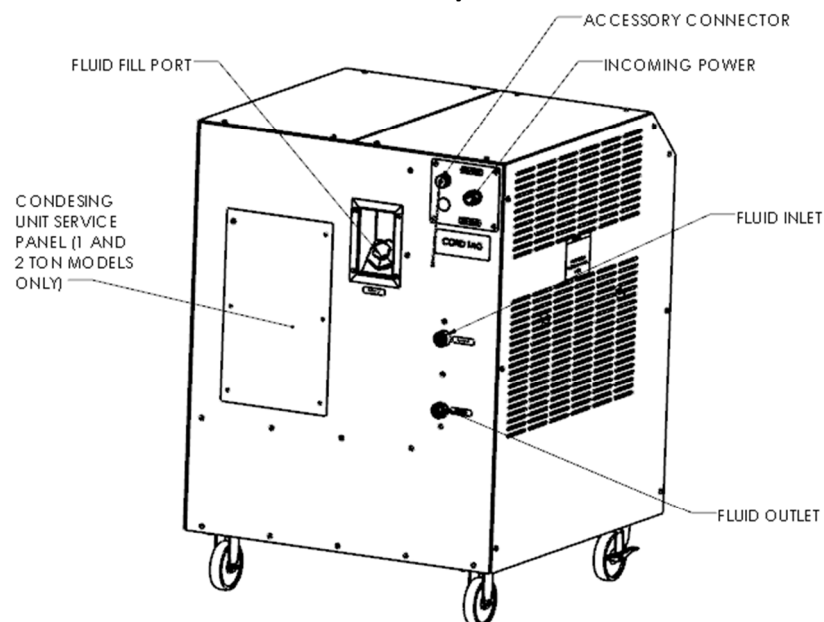
Chiller Component Overview

NSC0500, NSC1000 and NSC2000 Models

FRONT (NSC0500, NSC1000 and NSC2000 models)

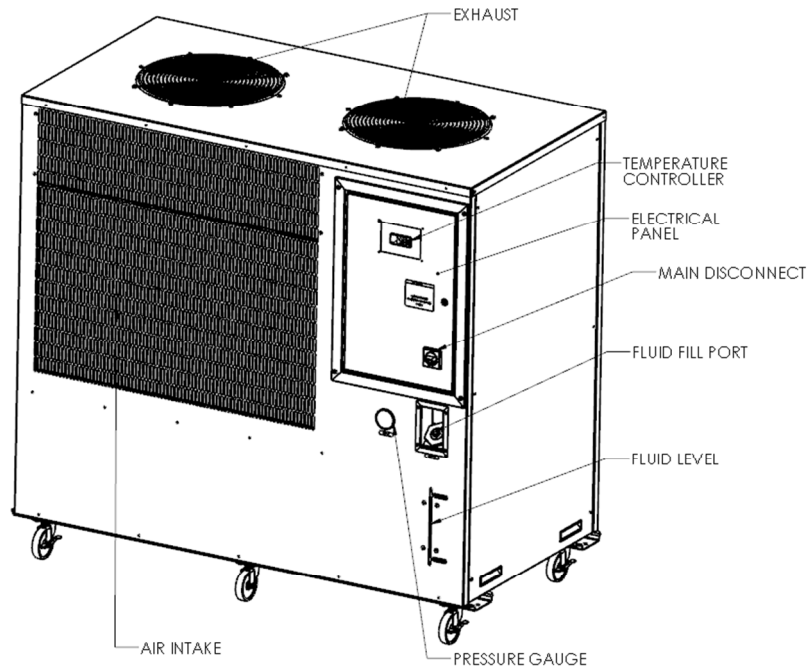


BACK (NSC0500, NSC1000 and NSC2000 models)

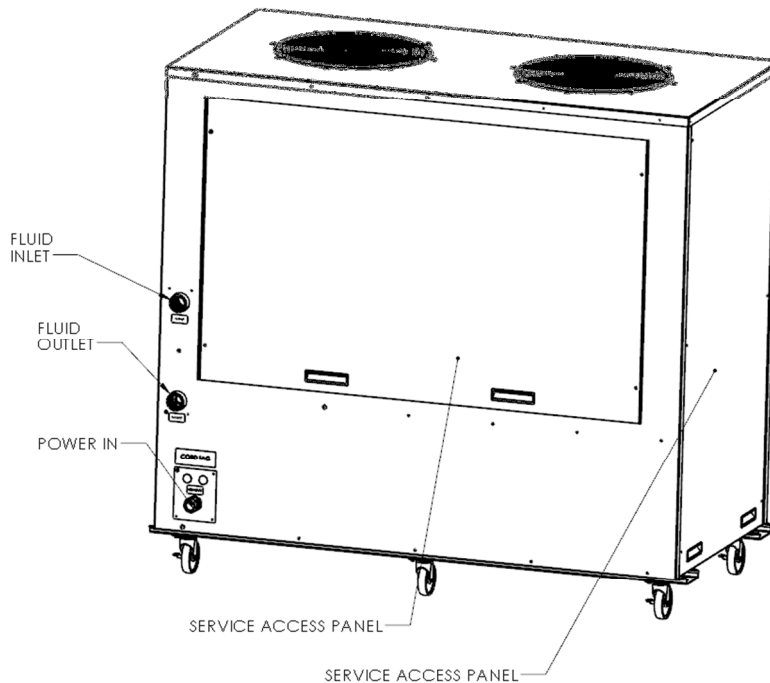


NSC5000 and NSC10000 Models

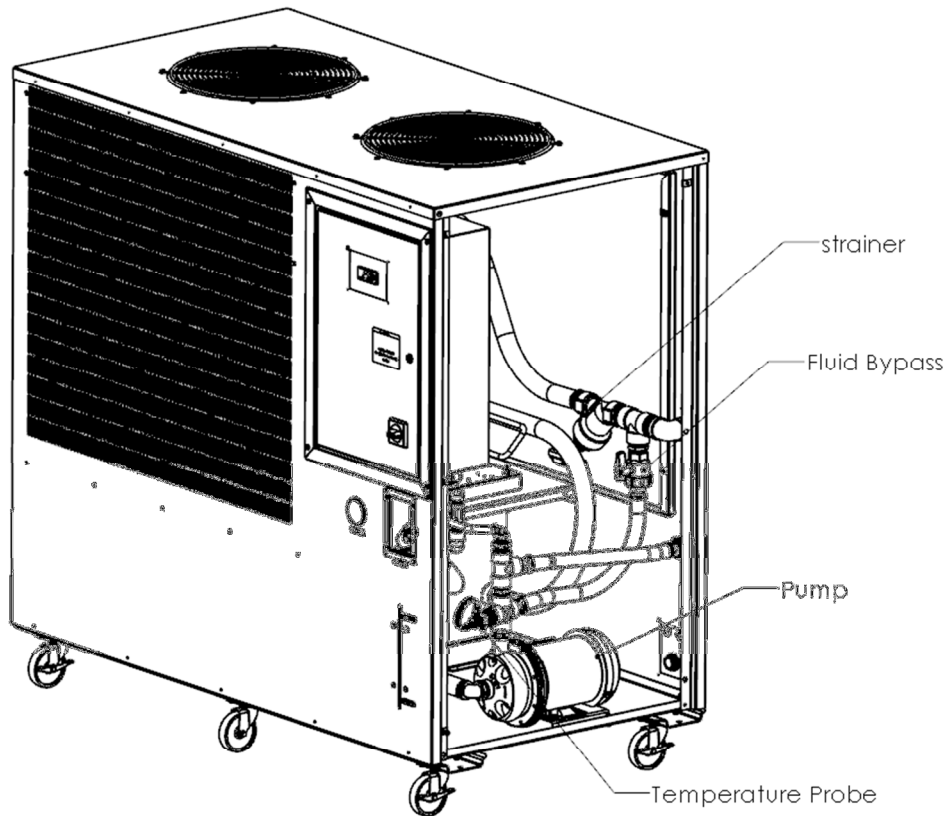
FRONT (NSC5000 and NSC10000 models)



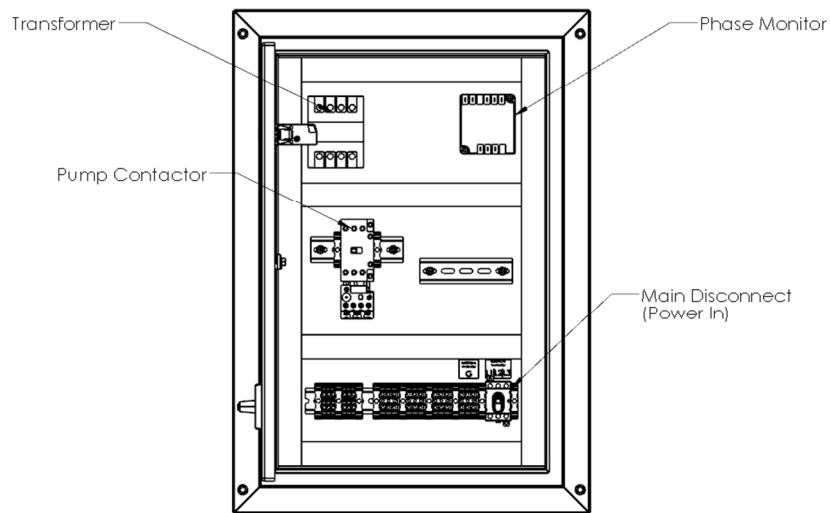
BACK (NSC5000 and NSC10000 models)



Fluid Circuit (NSC5000 and NSC10000 models)



Electrical (NSC5000 and NSC10000 models)



Installation

1. Position chiller for use

- Place unit on a flat level surface in a well-ventilated area

2. Connect inlet and outlet fluid hoses

- Confirm hoses are connected to proper inlet and outlet ports

3. Fill the reservoir

4. Connect to power

- Ensure you have the correct power supply before plugging in chiller

5. Turn on chiller and adjust temperature controller

- See page 8 for instructions on how to adjust temperature controller

User Interface



Set the Setpoint

1		The display shows the current temperature
2	▲ ▼	Press "up/down" to access setpoint.
3	▲ ▼	Press "up/down" to adjust setpoint. After 30 seconds, the display automatically reverts to showing the current temperature. Or Press 2 x "Back"

Modifying Parameters

Display Unit

Default Unit: Fahrenheit (°F). Adjust display unit first before changing other parameters.

1	▲ ▼	Press "up/down" and hold 5 seconds to access the menu.
2	▲ ▼	Press "up/down" to find dis
3	💡	Press "OK"
4	▲ ▼	Press "up/down" to find "CFu"
5	💡	Press "OK"
6	▲ ▼	Press "up/down" to change parameter
7	💡	Press "OK"

Thermostat Differential

Default differential: 3°F

1	▲ ▼	Press "up/down" and hold 5 seconds to access the menu.
2	▲ ▼	Press "up/down" to find the

3		Press "OK"
4		Press "up/down" to find "diF"
5		Press "OK"
6		Press "up/down" to change parameter
7		Press "OK"

Upper and Lower limit of Thermostat Set Point

Default Limits: Upper = 65°F, Lower = 25°F

1		Press "up and down" and hold 5 seconds to access the menu.
2		Press "up/down" to find "tHE"
3		Press "OK"
4		Press "up/down" to find "HSE" (Upper limit of thermostat set point)
5		Press "OK"
6		Press "up/down" to change parameter
7		Press "OK"
8		Press "up/down" to find "LSE" (Lower limit of thermostat set point)
9		Press "OK"
10		Press "up/down" to change parameter
11		Press "OK"

Troubleshooting

Symptoms	Possible Cause(s)
Compressor does not start. The temperature rises but the pump runs fine.	1. Compressor is not being powered 2. Flow switch is not activated
Compressor hums but doesn't start	1. Low line voltage 2. Incorrect wiring 3. Internal compressor damage
Compressor does not run or try to start (doesn't hum)	1. Open circuit due to blown fuse or open disconnects 2. Shorted motor windings 3. Compressor motor protector open 4. Open thermostat 5. Loss of refrigerant 6. Refrigerant solenoid valve not working
Compressor starts but trips on overload protector	1. Suction or discharge pressure is too high 2. Low line voltage 3. Broken overload protector 4. Mechanical damage to compressor 5. Shorted motor windings
Chiller short cycles	1. Insufficient refrigerant 2. Leaking refrigerant solenoid valve 3. Leaking discharge valve 4. Malfunctioning expansion valve
High refrigerant pressure fault	1. Excessive refrigerant 2. Clogged condenser 3. Condenser fan malfunction 4. Air entering condenser is too hot
Low refrigerant pressure fault	1. Refrigerant leak 2. Coolant not flowing through heat exchanger 3. Liquid line solenoid valve stuck closed 4. Stuck expansion valve or bulb well not charged 5. Low ambient air temperatures
Lube protector fault	1. Low compressor oil level due to: ● Oil trapped in system ● Compressor short cycling ● Not enough oil in system

	• Suction pressure too low 2. Excessive refrigerant 3. Broke oil pump
Fluid temperature too cold	1. Set point temperature is too low 2. Malfunctioning temperature controller 3. Malfunctioning temperature sensor 4. Leaking refrigerant solenoid valve
Fluid flow fault	1. Fluid pump not working 2. Insufficient refrigerant 3. Air trapped inside system 4. Malfunctioning flow switch

STANDARD PRODUCT WARRANTY

1. LIMITED WARRANTY

Manufacturer warrants North Slope Chillers Products sold as “new” to be free from defects in material and workmanship for a period of one (1) year from the date of purchase by a retail customer when used, stored, inspected and serviced as specified in any operating instructions provided with the North Slope Chillers Product. Exclusions from warranty consideration include, but are not limited to: normal wear and tear; abuse, misuse, or non-standard application; act of nature; lack of proper maintenance; improper care or storage (blankets should be folded and not rolled up); unauthorized repair; unauthorized modification; or attachment to another product, use with any attachment or as integrated into another product. Neither Manufacturer, nor its representatives, assumes any responsibility for any other products used with the North Slope Chillers Product or for results of or damages caused to persons or property by the use of the North Slope Chillers Product. Only the Manufacturer is authorized to make any warranty or representation and the customer may not rely on any other warranty or representation. All implied warranties are hereby disclaimed.

MANUFACTURER MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND, EXPRESSED OR IMPLIED, IN FACT OR IN LAW, INCLUDING WITHOUT LIMITATION ANY

WARRANTY OF MERCHANTABILITY, NONINFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE OR USE OTHER THAN THE LIMITED WARRANTY SET FORTH ABOVE.

2. LIMITATION OF LIABILITY

MANUFACTURER'S SOLE LIABILITY SHALL BE AS SET FORTH HEREIN, AND SHALL EXTEND ONLY TO INSPECTION, REPLACEMENT OR REPAIR OF THE NORTH SLOPE CHILLERS PRODUCT, AT THE DISCRETION OF MANUFACTURER, WITHIN THE TIME PERIOD AND ON THE TERMS SET FORTH HEREIN. MANUFACTURER HAS NO LIABILITY FOR ANY OTHER PRODUCTS USED WITH, ATTACHED TO OR WITH WHICH THE NORTH SLOPE CHILLERS PRODUCT MAY BE INTEGRATED INTO, OR FROM THE RESULTS OF SUCH USE, ATTACHMENT OR INTEGRATION. IN NO EVENT WILL MANUFACTURER BE LIABLE FOR SPECIAL, INCIDENTAL, INDIRECT, PUNITIVE OR CONSEQUENTIAL DAMAGES. IN NO EVENT SHALL MANUFACTURER'S LIABILITY EXCEED THE PAYMENTS RECEIVED BY MANUFACTURER FOR THE NORTH SLOPE CHILLERS PRODUCT.

3. RETURNS

a. When any North Slope Chillers Product has been authorized to return for any inspection, or replacement, it must be returned as specified in the Return Merchandise Authorization Form.

b. A Manufacturer-issued Returned Material Authorization (RMA) number authorizing a product return must be acquired prior to sending any return. In addition, documentation of model, product serial number, dealer invoice number, dated proof of resale, and description of failure shall accompany all returns.

c. All returns must come freight prepaid and in their original containers, or in a manner conducive to proper shipping and handling procedures. Product(s) replaced, or shipped in accordance with the Return Merchandise Authorization Form will be returned freight prepaid.

d. Manufacturer reserves the right to postpone, delay, or refuse warranty claim consideration for either unauthorized returns or returns made by dealers or distributors whose open and active accounts are past due

or delinquent. The dealer or distributor agrees that no warranties or other guarantees on any products shall be made in excess of those made by Manufacturer. This agreement excludes Manufacturer or its representatives from all liability not covered in this Warranty.

4. INDEMNIFICATION

Customer acknowledges that North Slope Chillers has no control over, and is not responsible for the manner in which the Customer uses the Product(s). The Customer hereby agrees to indemnify, defend and hold harmless (collectively, "indemnify" or "indemnification") Customer, its affiliates, and their respective officers, directors, employees, agents, representatives, successors and assigns from and against any and all suits, proceedings, demands, judgments (including applicable pre-judgment and post-judgment interest, if any), awards, losses, damages, costs, penalties, expenses, claims and liabilities, including reasonable attorneys' fees, witness fees and court costs, and any other losses and liabilities of any kind or nature whatsoever ("Damages") of, or awarded to or settled with third parties in third party claims or actions, and the reasonable costs of North Slope Chillers in successfully enforcing this indemnification obligation, in each case arising out of one or more of the following: (a) the use, operation or modification of any Product, provided however, that Customer shall have no indemnification obligation to the extent that the claim arises solely out of any negligent acts or omissions by North Slope Chillers; (b) negligent acts or omissions or willful or intentional misconduct of Customer (including its employees, agents, representatives, successors and assigns); and (c) failure to comply with any relevant federal, state or local laws, regulations, rules or ordinances (including but not limited to those related to hazardous waste and materials).