



AG5000-ULT BHO EXTRACTION

120 lbs/hr (2 lbs/min) 70/30 Solvent Condensed and Subcooled to -54°C (-65°F)

CALCULATIONS

From 122°F (50°C) Condensed and Chilled to -65°F (-54°C):

Flowing System	Yes	
Material being cooled flowing through chiller?	No	
Fluid	70/30 (Butane/Propane)	
Inlet Temperature	122	°F
Desired Outlet Temperature	-65	°F
Ambient		90°F
Required dT	-18	°F
Flow Rate:	2.00	lb/min

Condensing Temperature 8.06F (-13.3C)

Calculations

Inlet Temperature	50.00	°C
Outlet Temperature	-53.89	°C
Flow Rate	0.00000	m ³ /min
Specific Heat (Liquid)	2.3500	kJ/kg °K
Specific Heat (Gas)	1.7150	kJ/kg °K
Density	588.1	kg/m ³
Mass flow rate	0.0151197	kg/sec
Volume	1.1	m ³
Mass	667.9	kg
Static System Power	0.0	kW
Heat of Vaporization	397.6	kJ/kg
Condensing Temperature	-13.3	°C
Start Phase	Gas	
End Phase	Liquid	
Phase Change Energy	6.0116113	kW
Flowing System Power (Gas)	1.6413921	kW
Flowing System Power (Liquid)	1.4421802	kW
Flowing System Power	9.0951836	kW
Required dT	-9.9	°C

Absolute minimum capacity	31040	BTU/hr
	9.10	kW

WARNING PHASE CHANGE!!! - Assumes phase change happens at -13.3°C

Chiller Options at -83°F fluid outlet and 90°F Ambient			
Chiller Model	Capacity (BTU/hr)	Capacity (Watts)	% Oversized
AG5000-ULT	37,600	11,010	21%

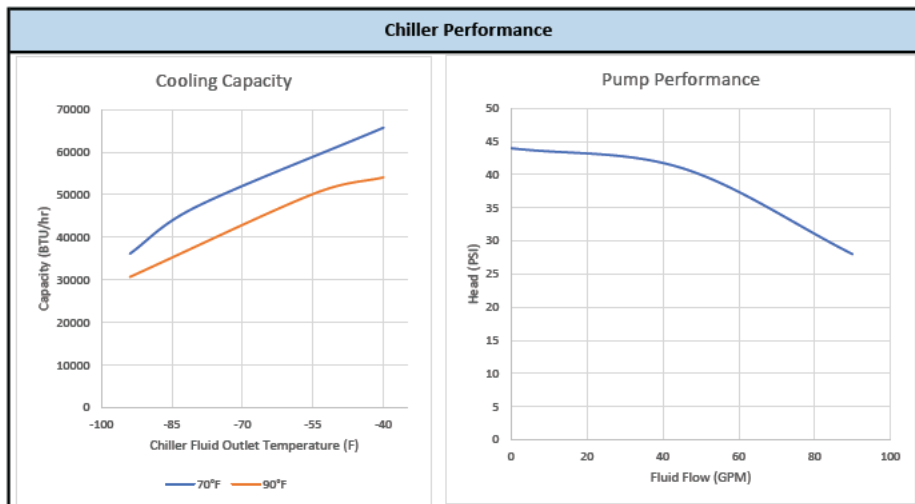
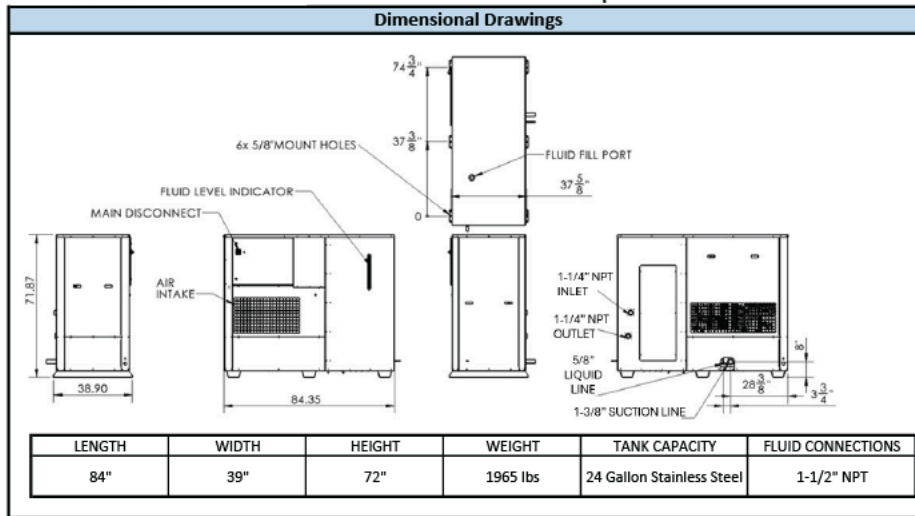
Specifications Next Page – This Model Utilizes the AG5000-ECU External Condensing Unit

Chiller Technical Data Sheets



AG5000-ULT

Five Ton Air Cooled Ultra Low Temp Chiller



AG-Optimists, LLC
 3130 South 1030 West, Suite 1
 Salt Lake City, UT 84119
 (801) 244-9769
www.ag-optimists.com

All Information Is For Reference Only



Chiller Technical Data Sheets



AG5000-ULT

Standard Features and Benefits			
Performance	Working Temperature Range	-112°F(-80°C) to 70°F(21°C)	
	Temperature Stability	±2	
	Cooling Capacity at 70F	-94°F (-70°C) - 36,200 BTU/hr (10,610 Watts) -80°F (-62.2°C) - 47,100 BTU/hr (13,800 Watts) -40°F (-40°C) - 65,800 BTU/hr (19,280 Watts)	
	Ambient Temperature (Standard)	40°F - 100°F	
	Pump Performance	0 GPM @ 44 PSI 45 GPM @ 41 PSI 90 GPM @ 28 PSI	
User Interface	Controls	Electronic Programmed Temperature Controller (PLC) with Constant (Setpoint & Process) Temperature Readout	
	Additional Features	Fluid Level Indicator, Touch Screen Controls, IO Remote Chiller Control System	
Refrigeration Circuit	Compressor	Copeland Discus	
	Heat Exchanger	Brazed Plate Heat Exchanger	
	Refrigerant	R508B	
	Additional Features	Access Ports, Service Valves, Filter Drier, Sight Glass, Liquid Receiver, Thermostatic Expansion Valve (TXV), Oil Separator	
	Max Heat Rejection	40,000 BTU/hr (11.7 kW)	
Process Fluid Circuit	Pump	Continuous Duty, 5 HP Centrifugal Pump	
	Inlet/Outlet	1-1/2" NPT	
	Reservoir	24 Gallon Stainless Steel	
	Additional Features	Inline Strainer, Inlet and Outlet Temperature Sensors, Pump Discharge Pressure Transducer	
Construction	Frame	Galvanized Steel	
	Enclosure	Powder Coated Steel Enclosure with Easy Access Panels	
Quality	Warranty	1 Year Standard Warranty	
	UL/CSA Certified (Full Assembly)	Certified for Outdoor Use ETL 3170655, UL STD 61010-2-011, CAN/CSA STD, C22.2 No. 61010-2-011	
	Manufacturing	Manufactured in the U.S.A. Certified ISO 9001:2015 Company	
Power	Available Voltages	Max Amps (FLA)	Recommended Breaker/Service (MCA)
	480VAC / 3P / 60Hz (STANDARD)	26.7 Amps (std)	31.4 Amps (std)

Optional Upgrades		
UPGRADES	Process Heating UL/CSA Outdoor Certified Extended Ambient (-15°F)	External Temperature Monitoring Alternate Pumps Crating
More Options and Customization Available - Contact Factory for More Information		

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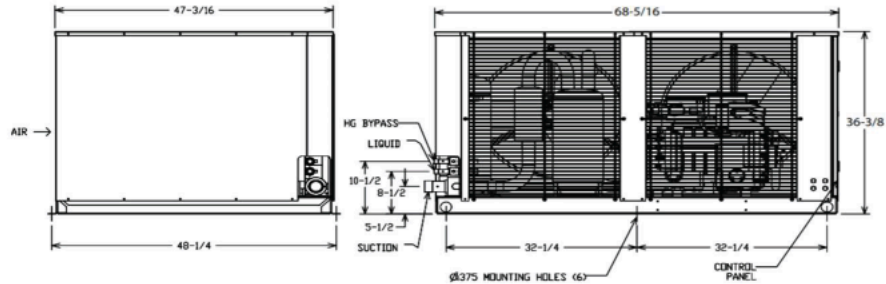
Chiller Technical Data Sheets



AG5000-ECU

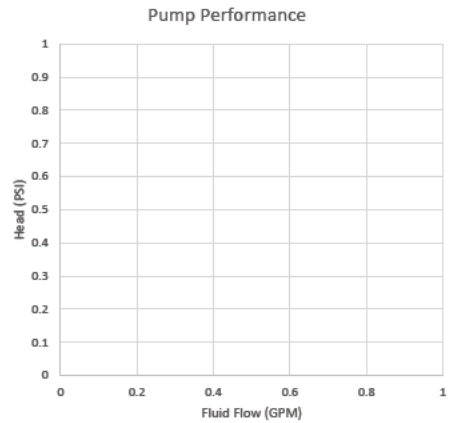
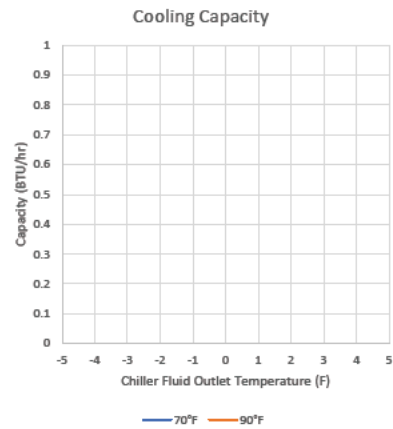
Five Ton External Condensing Unit

Dimensional Drawings



LENGTH	WIDTH	HEIGHT	WEIGHT	TANK CAPACITY	FLUID CONNECTIONS
48 1/4"	68 5/16"	36 3/8"	1080 lbs	N/A	5/8" AND 1-3/8" (OD)

Chiller Performance



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Chiller Technical Data Sheets



AG5000-ECU

Standard Features and Benefits			
Performance	Working Temperature Range	N/A	
	Temperature Stability	N/A	
	Cooling Capacity at 70F		
	Ambient Temperature (Standard)	20°F - 100°F	
	Pump Performance		
User Interface	Controls	High and Low Pressure Switch	
	Additional Features	N/A	
Refrigeration Circuit	Compressor	Copeland Discus	
	Heat Exchanger	N/A	
	Refrigerant	R404A	
	Additional Features	Access Ports, Service Valves, Liquid Receiver, Sight Glass, Oil Separator	
	Max Heat Rejection	195,000 BTU/hr (57.1 kW)	
Process Fluid Circuit	Pump		
	Inlet/Outlet	5/8" AND 1-3/8" (OD)	
	Reservoir	N/A	
	Additional Features	N/A	
Construction	Frame	Galvanized Steel	
	Enclosure	Painted Steel Enclosure with Easy Access Panels	
Quality	Warranty	1 Year Standard Warranty	
	UL/CSA Certified (Full Assembly)	Certified for Outdoor Use cULus	
	Manufacturing	Manufactured in the U.S.A.	
Power	Available Voltages	Max Amps (FLA)	Recommended Breaker/Service (MCA)
	480VAC / 3P / 60Hz (STANDARD)	27.3 Amps (std)	34.2 Amps (std)

Optional Upgrades	
UPGRADES	Extended Ambient (-15°F)
More Options and Customization Available - Contact Factory for More Information	

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