



AG15000-SLT w/AG5000-ULT BHO EXTRACTION

600 lbs/hr (10 lbs/min) 70/30 Solvent Condensed and Subcooled to -54°C (-65°F)

CALCULATIONS

From 122°F (50°C) Condensed and Chilled to 0°F (-18°C):

Flowing System	Yes	
Material being cooled flowing through chiller?	No	
Fluid	70/30 (Butane/Propane)	
Inlet Temperature	122	°F
Desired Outlet Temperature	0	°F
Ambient		90°F
Required dT	-18	°F
Flow Rate:	10.00	lb/min

Condensing Temperature 8.06F (-13.3C)

Calculations

Inlet Temperature	50.00	°C
Outlet Temperature	-17.78	°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	0.0755987	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	30.058056	kW
Flowing System Power (Gas)	8.2069607	kW
Flowing System Power (Liquid)	0.7955087	kW
Flowing System Power	39.060526	kW
Required dT	-9.9	°C

Absolute minimum capacity	133280	BTU/hr
	39.06	kW

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

Chiller Options at -18°F fluid outlet and 90°F Ambient

Chiller Model	Capacity (BTU/hr)	Capacity (Watts)	% Oversized
AG15000-SLT	154,200	45,151	16%

From 0°F (-18°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	0	°F
Desired Outlet Temperature	-65	°F
Ambient		90°F
Required dT	-18	°F
Flow Rate:	10.00	lb/min

Condensing Temperature 8.06F (-13.3C)

Calculations

Inlet Temperature	-17.78	°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	0.0755987	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	Liquid	
End Phase	Liquid	
Phase Change Energy	0	kW
Flowing System Power (Gas)	0	kW
Flowing System Power (Liquid)	6.4153925	kW
Flowing System Power	6.4153925	kW
Required dT	-9.9	°C

Absolute minimum capacity	21900	BTU/hr
	6.42	kW

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	72%

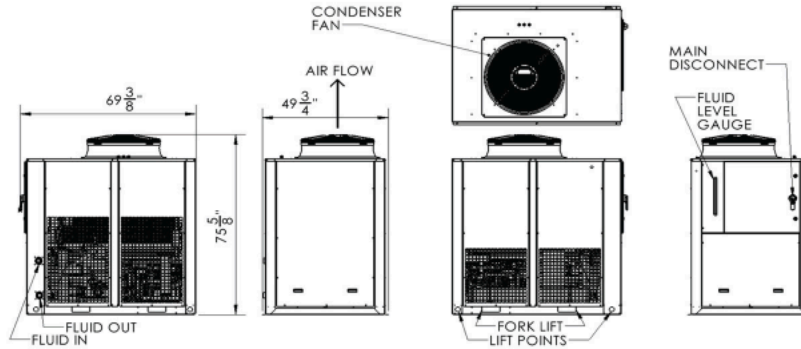
Chiller Technical Data Sheets



AG15000-SLT

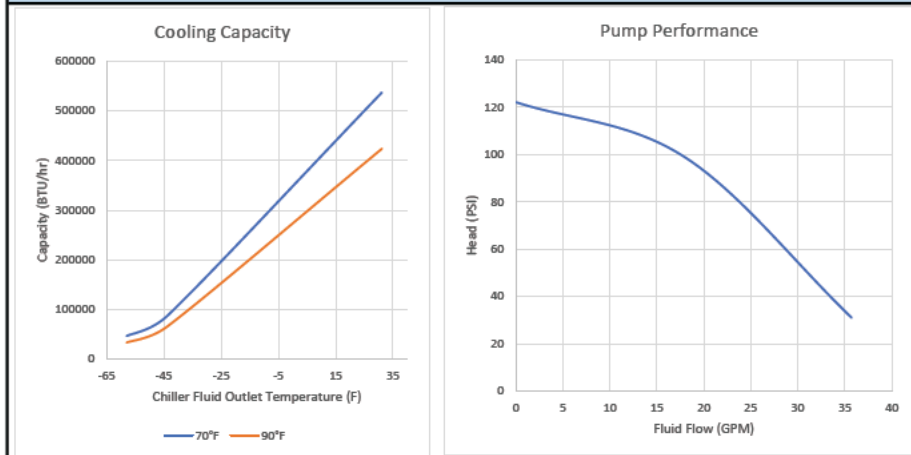
15 Ton Air Cooled Super Low Temp Chiller (Qty 3 AG5000-SLT)

Dimensional Drawings



LENGTH	WIDTH	HEIGHT	WEIGHT	TANK CAPACITY	FLUID CONNECTIONS
76 3/4"	84 3/8"	92 5/8"	2450 lbs	50 Gallon Stainless Steel	2" NPT

Chiller Performance



AG-Optimists, LLC
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 Salt Lake City, UT 84119
 (801) 244-9769
www.ag-optimists.com

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Chiller Technical Data Sheets



AG15000-SLT

Standard Features and Benefits			
Performance	Working Temperature Range	-58°F(-50°C) to 10°F(-12°C)	
	Temperature Stability	±2	
	Cooling Capacity at 70F	-58°F (-50°C) - 46,600 BTU/hr (13,660 Watts) -43.6°F (-42°C) - 88,400 BTU/hr (25,910 Watts) 31.1°F (-0.5°C) - 536,900 BTU/hr (157,350 Watts)	
	Ambient Temperature (Standard)	20°F - 100°F	
	Pump Performance	0 GPM @ 122 PSI 17.9 GPM @ 99 PSI 35.7 GPM @ 31 PSI	
User Interface	Controls	Electronic Programmed Temperature Controller (PLC) with Constant (Setpoint & Process) Temperature Readout	
	Additional Features	Fluid Level Indicator, Touch Screen Controls	
Refrigeration Circuit	Compressor	Bitzer 2 Stage Reciprocating	
	Heat Exchanger	Braze Plate Heat Exchanger	
	Refrigerant	R404a	
	Additional Features	Access Ports, Service Valves, Filter Drier, Sight Glass, Liquid Receiver, Suction Accumulator, Thermostatic Expansion Valve (TXV)	
Process Fluid Circuit	Max Heat Rejection	460,300 BTU/hr (134.8 kW)	
	Pump	Continuous Duty, 3.75kW Vortex Pump	
	Inlet/Outlet	2" NPT	
	Reservoir	50 Gallon Stainless Steel	
Construction	Additional Features	Inline Strainer, Inlet and Outlet Temperature Sensors, Pump Discharge Pressure Transducer	
	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)	138 Amps (std)	159.3 Amps (std)

Optional Upgrades			
UPGRADES	Extended Ambient (-15°F)	External Temperature Monitoring	Controller
	Crating	Alternate Pumps	Auto Start Remote Start
More Options and Customization Available - Contact Factory for More Information			

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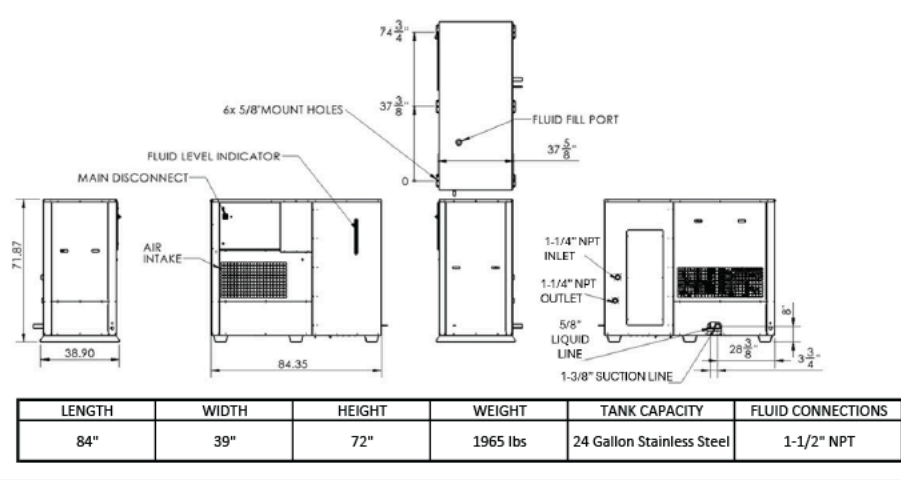
Chiller Technical Data Sheets



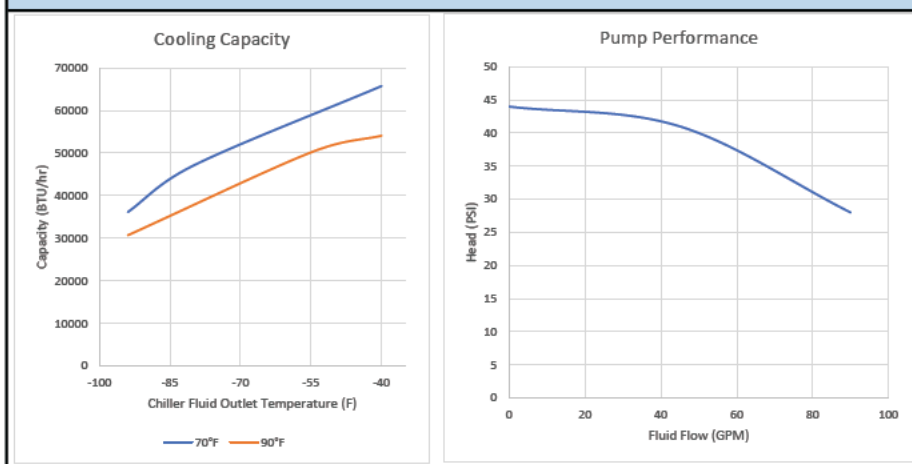
AG5000-ULT

Five Ton Air Cooled Ultra Low Temp Chiller

Dimensional Drawings



Chiller Performance



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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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This Model Utilizes the AG5000-ECU External Condensing Unit

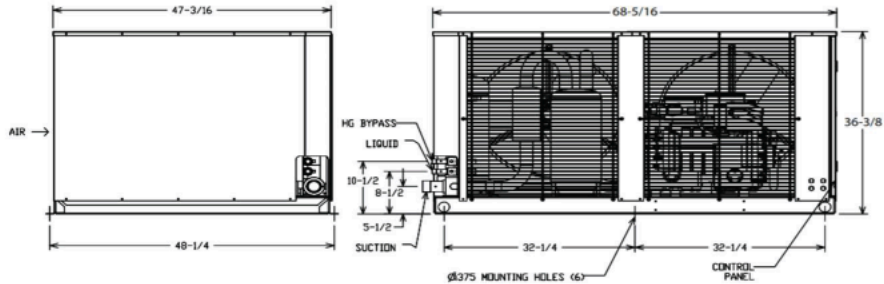
Chiller Technical Data Sheets



AG5000-ECU

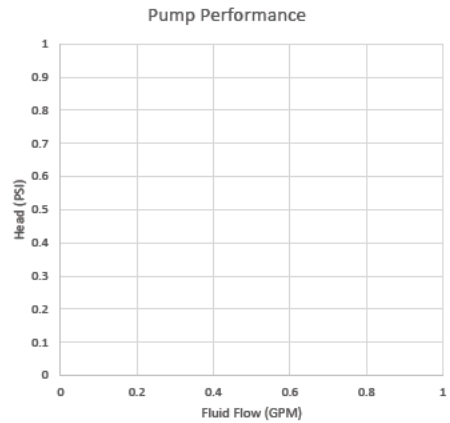
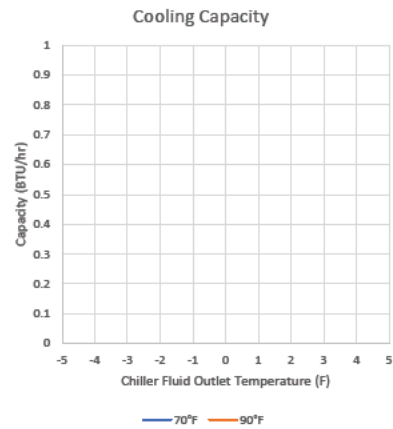
Five Ton External Condensing Unit

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)

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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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