



## AG5000-SLT w/AG2000-ULT BHO EXTRACTION

210 lbs/hr (3.5 lbs/min) 70/30 Solvent Condensed and Subcooled to -54°C (-65°F)

### CALCULATIONS

From 122°F (50°C) Condensed and Chilled to 4°F (-16°C):

Flowing System	Yes	
Material being cooled flowing through chiller?	No	
Fluid	70/30 (Butane/Propane)	
Inlet Temperature	122	°F
Desired Outlet Temperature	4	°F
Ambient		90°F
Required dT	-18	°F
Flow Rate:	3.50	lb/min

Condensing Temperature 8.06F (-13.3C)

#### Calculations

Inlet Temperature	50.00	°C
Outlet Temperature	-15.56	°C
Flow Rate	0.00000	m <sup>3</sup> /min
Specific Heat (Liquid)	2.3500	kJ/kg °K
Specific Heat (Gas)	1.7150	kJ/kg °K
Density	588.1	kg/m <sup>3</sup>
Mass flow rate	0.0264596	kg/sec
Volume	1.1	m <sup>3</sup>
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	10.52032	kW
Flowing System Power (Gas)	2.8724362	kW
Flowing System Power (Liquid)	0.1402504	kW
Flowing System Power	13.533006	kW
Required dT	-9.9	°C

<b>Absolute minimum capacity</b>	<b>46180</b>	<b>BTU/hr</b>
	<b>13.53</b>	<b>kW</b>

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

Chiller Options at -14°F fluid outlet and 90°F Ambient			
Chiller Model	Capacity (BTU/hr)	Capacity (Watts)	% Oversized
AG5000-SLT	57,000	16,690	23%

From 4°F (-16°C) Subcooled to -65°F (-54°C):

Flowing System	Yes	
Material being cooled flowing through chiller?	No	
Fluid	70/30 (Butane/Propane)	
Inlet Temperature	4	°F
Desired Outlet Temperature	-65	°F
Ambient		90°F
Required dT	-18	°F
Flow Rate:	2.50	lb/min

Condensing Temperature 8.06F (-13.3C)

#### Calculations

Inlet Temperature	-15.56	°C
Outlet Temperature	-53.89	°C
Flow Rate	0.00000	m <sup>3</sup> /min
Specific Heat (Liquid)	2.3500	kJ/kg °K
Specific Heat (Gas)	1.7150	kJ/kg °K
Density	588.1	kg/m <sup>3</sup>
Mass flow rate	0.0188997	kg/sec
Volume	1.1	m <sup>3</sup>
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)	1.7025465	kW
Flowing System Power	1.7025465	kW
Required dT	-9.9	°C

<b>Absolute minimum capacity</b>	<b>5810</b>	<b>BTU/hr</b>
	<b>1.70</b>	<b>kW</b>

Chiller Options at -83°F fluid outlet and 90°F Ambient			
Chiller Model	Capacity (BTU/hr)	Capacity (Watts)	% Oversized
AG2000-ULT	13,700	4,012	136%

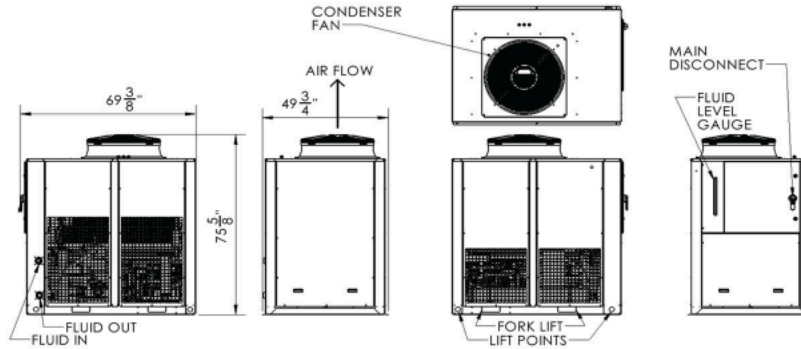
# Chiller Technical Data Sheets



## AG5000-SLT

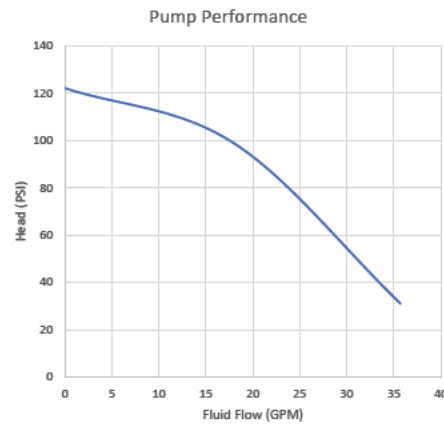
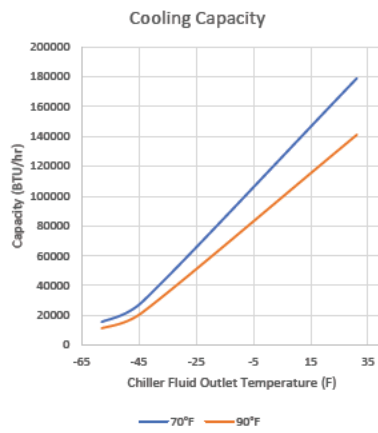
Five Ton Air Cooled Super Low Temp Chiller

### Dimensional Drawings



LENGTH	WIDTH	HEIGHT	WEIGHT	TANK CAPACITY	FLUID CONNECTIONS
49 3/4"	69 3/8"	75 5/8"	1250 lbs	15 Gallon Stainless Steel	1-1/2" NPT

### Chiller Performance



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# Chiller Technical Data Sheets



## AG5000-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) - 15,500 BTU/hr (4,540 Watts) -43.6°F (-42°C) - 29,500 BTU/hr (8,650 Watts) 31.1°F (-0.5°C) - 179,000 BTU/hr (52,460 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	Brazed Plate Heat Exchanger	
	Refrigerant	R404a	
	Additional Features	Access Ports, Service Valves, Filter Drier, Sight Glass, Liquid Receiver, Suction Accumulator, Thermostatic Expansion Valve (TXV)	
	Max Heat Rejection	165,100 BTU/hr (48.3 kW)	
Process Fluid Circuit	Pump	Continuous Duty, 3.75kW Vortex Pump	
	Inlet/Outlet	1-1/2" NPT	
	Reservoir	15 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)	46 Amps (std)	53.1 Amps (std)

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

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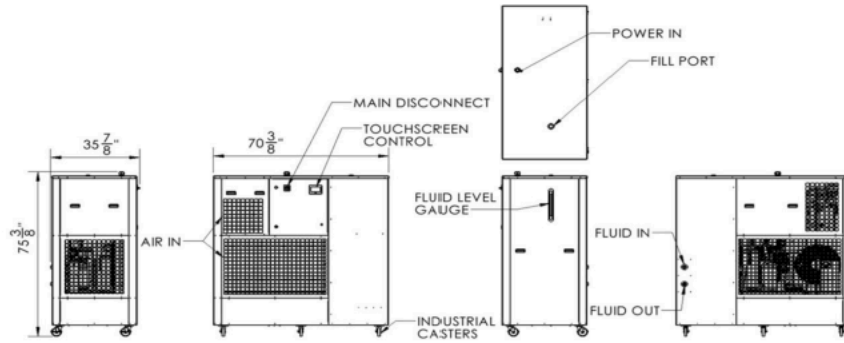
# Chiller Technical Data Sheets



## AG2000-ULT

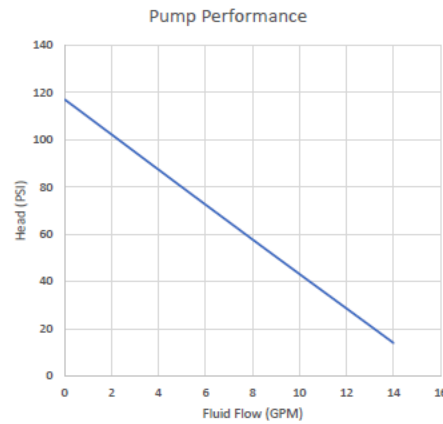
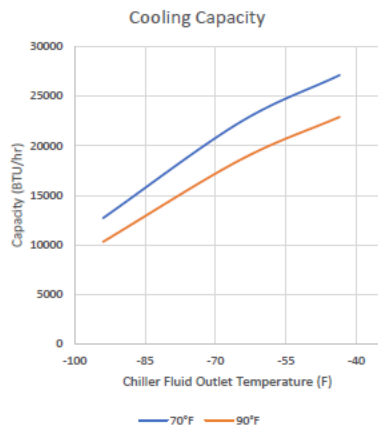
Two Ton Air Cooled Ultra Low Temp Chiller

### Dimensional Drawings



LENGTH	WIDTH	HEIGHT	WEIGHT	TANK CAPACITY	FLUID CONNECTIONS
70 3/8"	35 7/8"	75 3/8"	1350 lbs	10 Gallon Stainless Steel	3/4" NPT

### Chiller Performance



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# Chiller Technical Data Sheets



## AG2000-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) - 12,700 BTU/hr (3,720 Watts) -65°F (-53.9°C) - 22,300 BTU/hr (6,540 Watts) -43.6°F (-42°C) - 27,100 BTU/hr (7,940 Watts)	
	Ambient Temperature (Standard)	40°F - 100°F	
	Pump Performance	0 GPM @ 117 PSI 7 GPM @ 65 PSI 14 GPM @ 14 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 Scroll	
	Heat Exchanger	Brazed Plate Heat Exchanger	
	Refrigerant	R404a/R508b	
	Additional Features	Access Ports, Service Valves, Filter Drier, Sight Glass, Liquid Receiver, Thermostatic Expansion Valve (TXV), Fan Cycling, Oil Separator	
	Max Heat Rejection	38,550 BTU/hr (11.3 kW)	
Process Fluid Circuit	Pump	Continuous Duty, 2.2kW Vortex Pump	
	Inlet/Outlet	3/4" NPT	
	Reservoir	10 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)	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	
	Available Voltages	Max Amps (FLA)	Recommended Breaker/Service (MCA)
Power	480VAC / 3P / 60Hz (STANDARD) 208-240VAC / 3P / 60Hz	20 Amps (std) 55 Amps	30 Amps (std) 65 Amps

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

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