



AG4000-SLT w/AG1000-ULT BHO EXTRACTION

90 lbs/hr (1.5 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 (-20°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:	1.50	lb/min

Condensing Temperature 8.06F (-13.3C)

Calculations

Inlet Temperature	50.00	°C
Outlet Temperature	-20.00	°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	0.0113398	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	4.5087085	kW
Flowing System Power (Gas)	1.2310441	kW
Flowing System Power (Liquid)	0.1785453	kW
Flowing System Power	5.9182979	kW
Required dT	-9.9	°C

Absolute minimum capacity	20200	BTU/hr
	5.92	kW

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

Chiller Options at -22°F fluid outlet and 90°F Ambient

Chiller Model	Capacity (BTU/hr)	Capacity (Watts)	% Oversized
AG4000-SLT	23,700	6,940	18%

From -4°F (-20°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:	1.50	lb/min

Condensing Temperature 8.06F (-13.3C)

Calculations

Inlet Temperature	-20.00	°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	0.0113398	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)	0.9030899	kW
Flowing System Power	0.9030899	kW
Required dT	-9.9	°C

Absolute minimum capacity	3090	BTU/hr
	0.91	kW

Chiller Options at -83°F fluid outlet and 90°F Ambient

Chiller Model	Capacity (BTU/hr)	Capacity (Watts)	% Oversized
AG1000-ULT	3,900	1,142	26%

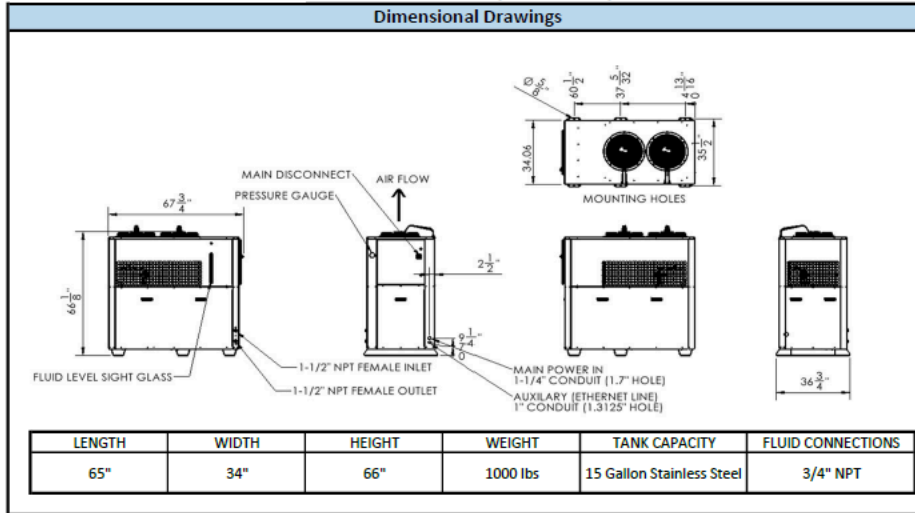
Chiller Technical Data Sheets



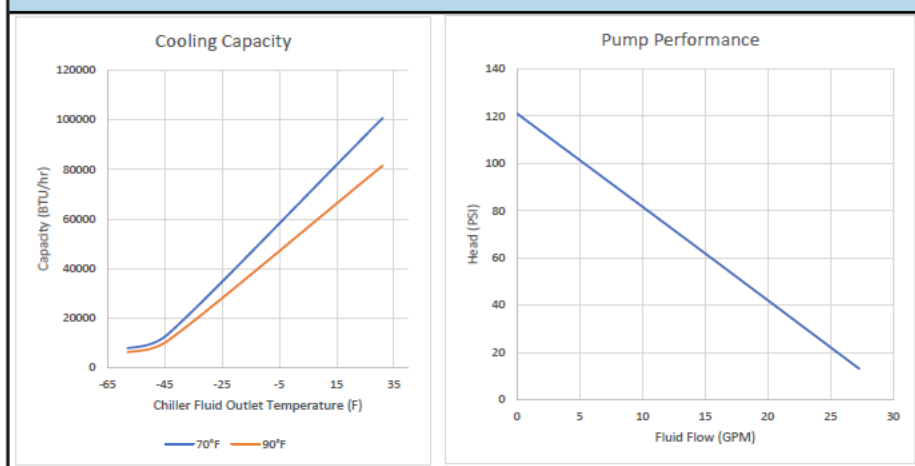
AG4000-SLT

Four Ton Air Cooled Super Low Temp Chiller

Dimensional Drawings



Chiller Performance



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



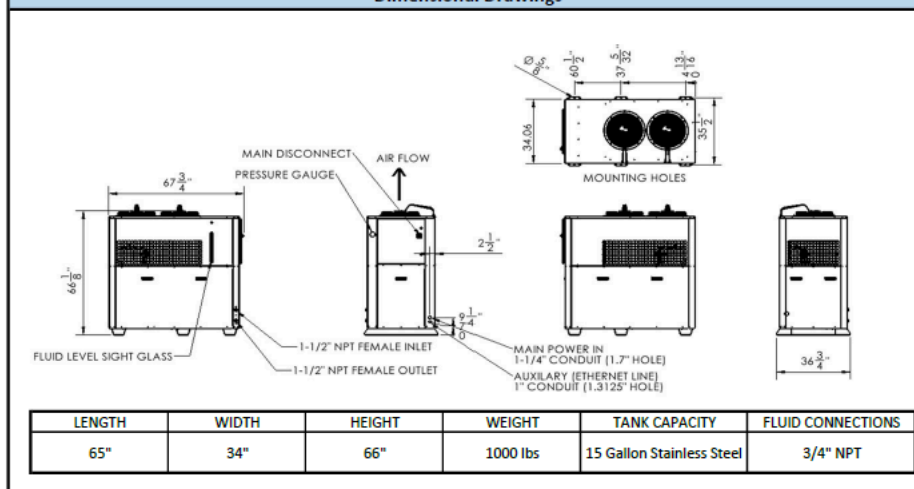
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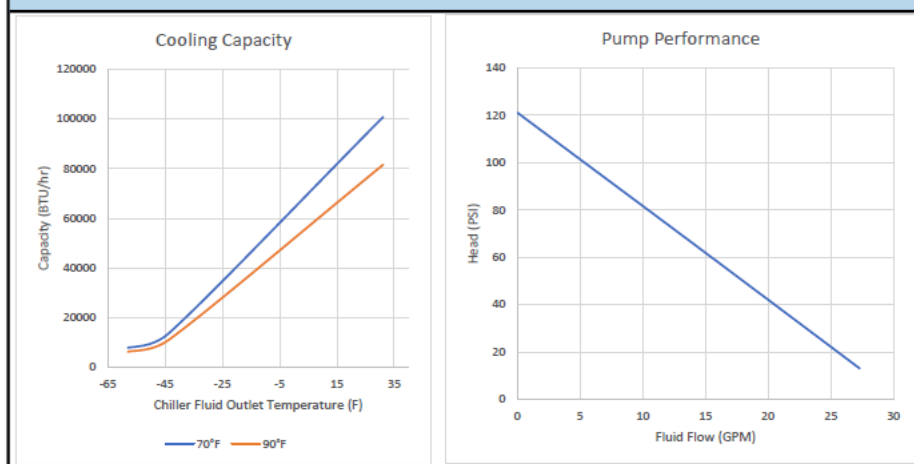
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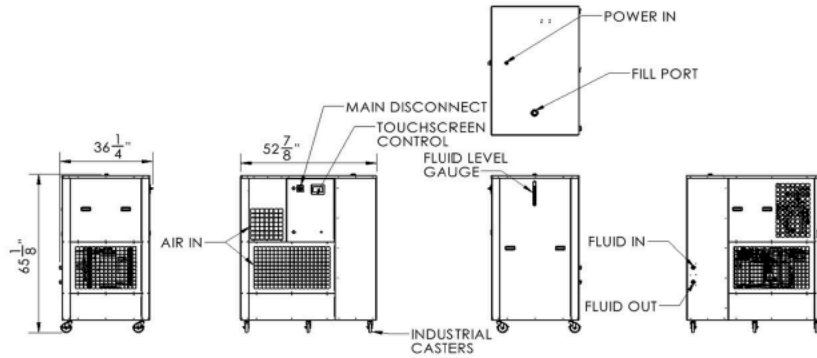
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AG1000-ULT

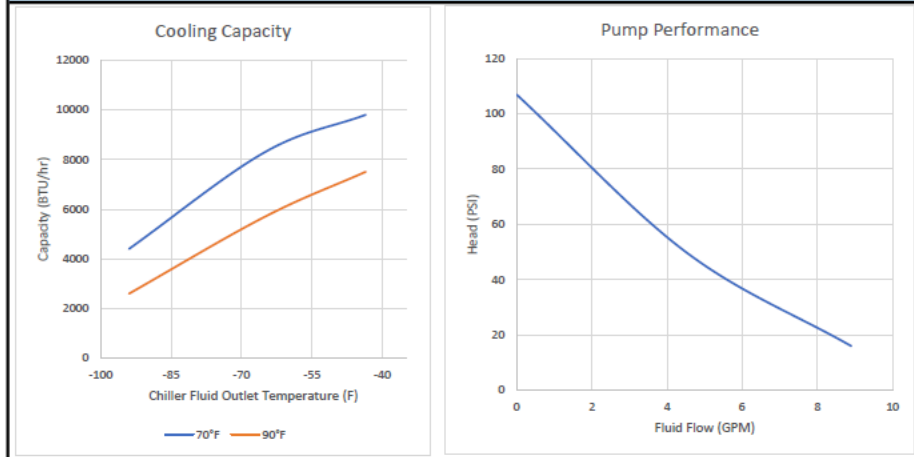
One Ton Air Cooled Ultra Low Temp Chiller

Dimensional Drawings



LENGTH	WIDTH	HEIGHT	WEIGHT	TANK CAPACITY	FLUID CONNECTIONS
36 1/4"	52 7/8"	65 1/8"	1150 lbs	5 Gallon Stainless Steel	1/2" NPT

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Chiller Technical Data Sheets



AG1000-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) - 4,400 BTU/hr (1,290 Watts) -65°F (-53.9°C) - 8,300 BTU/hr (2,430 Watts) -43.6°F (-42°C) - 9,800 BTU/hr (2,870 Watts)
	Ambient Temperature (Standard)	40°F - 100°F
	Pump Performance	0 GPM @ 107 PSI 4.5 GPM @ 50 PSI 8.9 GPM @ 16 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	31,450 BTU/hr (9.2 kW)
Process Fluid Circuit	Pump	Continuous Duty, 0.75kW Vortex Pump
	Inlet/Outlet	1/2" NPT
	Reservoir	5 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
Power	Available Voltages	Max Amps (FLA) Recommended Breaker/Service (MCA)
	208-240VAC / 3P / 60Hz (STANDARD) 480VAC / 3P / 60Hz	25 Amps (std) 30 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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