BRIGGS EQUIPMENT SALES, INC.

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Gray, ME 04039
207-657-7123 www.briggsac.com

Immucell 236426 Page 6 - 2.1
Print MP -800 - C
Air Cooled Chiller schedule

SUBMITTAL DATA

Project:	**Immucell**
Mechanical Engineer:	**Stantec**
Mechanical Contractor:	**AAA Energy Services**
Date:	**December 19, 2016**
Product:	**Water Chillers**
Specification Section:	**236426**
Revision:	**0**
Lead Time as of 12/19/16:	**10-12 weeks**

Tag	Qty	Model / Description	Manufacturer
CH-1, 2	2	AGZ240E / Scroll Chillers	Daikin Applied

Prepared by:
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207-657-7123 ext. 202

DAIKIN APPLIED
An Authorized Representative for Northern New England

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Technical Data Sheet for CH-1

Job Information	*Technical Data Sheet*
Job Name	ImmuCell Portland
Date	12/19/2016
Submitted By	Briggs Equipment Sales, Inc.
Software Version	07.00
Unit Tag	CH-1

Unit Overview

Model Number	Capacity ton	IPLV.IP* EER	Voltage	Unit Starter Type	ASHRAE 90.1	LEED EA Credit 4
AGZ240E	211.3	16.00	460 / 60.0 / 3	Across the Line	'07, '10, '13	Pass

** IPLV reflects AHRI standard rating conditions and does not change with user defined conditions.*

Unit

Unit Type	Platform	Unit Revision
Air-Cooled Scroll Compressor Chiller	Packaged	00

Head Pressure	Tubing
VFD w/Control Box Heaters [Low Ambient]	Replaceable Filter Dryer with Discharge & Liquid Valves, with HGBP

Unit Controls	Display
Electronic Expansion Valve	On Controller only

Refrigerant Type	Refrigerant Weight
R410A	228 lb (per unit)

Pump Controls
Dual Evaporator Pumps - Dual Control Output

Approval
ETL/cETL, AHRI & ASHRAE 90.1

Evaporator

Water Volume:	54.9 gal
Connection Hand:	Left Hand Connections
Connection Size:	8.0 in
Insulation:	Double Layer Insulation on Evaporator & Single on Suction Piping (1.5”)

Entering Fluid Temperature	Leaving Fluid Temperature	Fluid Type	Glycol Concentration	Fluid Flow	Fluid Flow (with glycol) Min / Max	Pressure Drop	Fouling Factor
50.00 °F	39.00°F	Water & Propylene	30.0 %	487.0 gpm	357.4 / 834.0 gpm	11.3 ft H_2O	0.000100 °F.ft².h/Btu

Condenser

Coil Fins:	MicroChannel (Electro Fin Coating)
Guards:	Condenser Coil Louvers & Base Frame Wire Grilles (Pending RFI)

Design Ambient Air Temperature	Altitude	Fan Diameter	Fan Motor Horsepower	Minimum Design Ambient Temperature
92.0 °F	0 ft	30.0 in	2.0 hp	0.0 °F

Technical Data Sheet for CH-1

Unit Performance

Design

Capacity	Input Power	Efficiency	IPLV.IP*
211.3 ton	249.3 kW	10.20 EER	16.00 EER

Performance Points rated at AHRI Ambient Relief

Unit					Evaporator				Condenser	
Point #	% Load	Capacity ton	Input Power kW	Efficiency EER	Fluid Flow gpm	Pressure Drop ft H_2O	Entering Fluid Temperature °F	Leaving Fluid Temperature °F	Ambient Air Temperature °F	Altitude ft
1	100.0	211.3	249.3	10.20	487.0	11.3	50.00	39.00	90.0	0
2	75.0	158.4	141.5	13.40	487.0	11.3	47.20	39.00	76.9	0
3	50.0	105.6	79.50	15.90	487.0	11.3	44.50	39.00	63.8	0
4	25.0	52.80	35.20	18.00	487.0	11.3	41.70	39.00	55.0	0

** IPLV reflects AHRI standard rating conditions and does not change with user defined conditions*

Sound

Sound Pressure (*at 30 feet*)

63 Hz dB	125 Hz dB	250 Hz dB	500 Hz dB	1 kHz dB	2 kHz dB	4 kHz dB	8 kHz dB	Overall dBA
70	71	70	68	68	62	62	59	**72**

Sound Power

63 Hz dB	125 Hz dB	250 Hz dB	500 Hz dB	1 kHz dB	2 kHz dB	4 kHz dB	8 kHz dB	Overall dBA
98	98	98	95	96	90	90	86	**100**

Octave band is non 'A' weighted and overall readings are 'A' weighted. Sound data rated in accordance with AHRI Standard-370.

Physical

Unit

Length*	Height	Width*	Shipping Weight*	Operating Weight*
328 in	99 in	88 in	10219 lb	10918 lb

**Shipping and Operating Weights include the below Option weights only and do not include the weights of any Accessories. Contact Chiller Applications for additional information.*

Option Weights

Louvers:	630 lb
Total:	630 lb

Electrical

Unit Electrical Data

Voltage	Starter Type	Fan Motor Quantity	LRA Fan Motor (each)	FLA Fan Motors (each)
460 / 60.0 / 3	Across the Line	14	18A	3.6A

Power Connection Type:	Single Point Disconnect Switch with Circuit Protection
Short Circuit Current Rating:	5 kA
Phase Voltage:	Phase & Under/Over Voltage Protection with LED

Single Point Power Connection

MCA:	525.5 A
Fuse Size (*recommended*):	600 A
Fuse Size (*maximum*):	600 A
Connector Wire Range:	(2) 3/0-500MCM

Technical Data Sheet for CH-1

Compressor Electrical Data						
Compressor Type		**Compressor Quantity**		**Starter Type**		
Scroll		6		Across the Line		
Circuit #:	**1**			**2**		
Compressor #:	**1**	**3**	**5**	**2**	**4**	**6**
RLA:	76 A	76 A	76 A	76 A	76 A	76 A
Inrush Current:	408 A	408 A	408 A	408 A	408 A	408 A

Note: Power wiring connections to the chiller may be done with either copper or aluminum wiring. Wire should be sized per NEC and/or local codes. Wire sizing and wire count must fit in the power connection lug sizing listed in latest installation manual. Please contact your local sales office for more information.

Options

Basic Unit	
Control Box Ambient:	High Ambient with Exhaust Fans (125ºF maximum)
Suction Shut-off Valve:	Included
Control	
Communication:	BACnet IP
Electrical	
Ground Fault:	Unit Ground Fault Protection
Unit Options:	115V Convenience Outlet

Warranty

Unit Startup	By Briggs Equipment Sales, Inc.
Standard Warranty:	1st Year Entire Unit Parts and Labor
First Year Labor Warranty:	By Briggs Equipment Sales, Inc.
Extended Unit Warranty:	Entire Unit; Extended 4 years

AHRI Certification

Certified in accordance with the AHRI Air-Cooled Water-Chilling Packages Using Vapor Compression Cycle Certification Program, which is based on AHRI Standard 550/590 (I-P) and AHRI Standard 551/591 (SI). Unit containing freeze protection fluids in the condenser or in the evaporator with a leaving chilled fluid temperature above 32°F [0°C] is certified when rated per the Standard with water. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

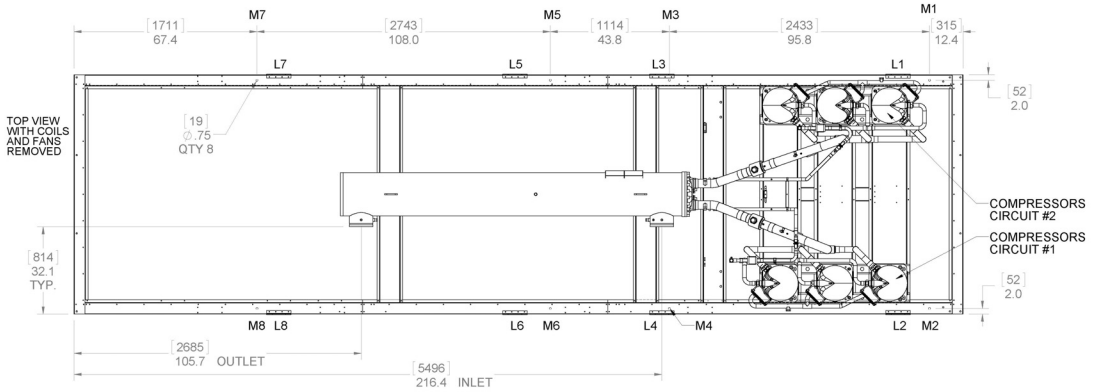
Accessories

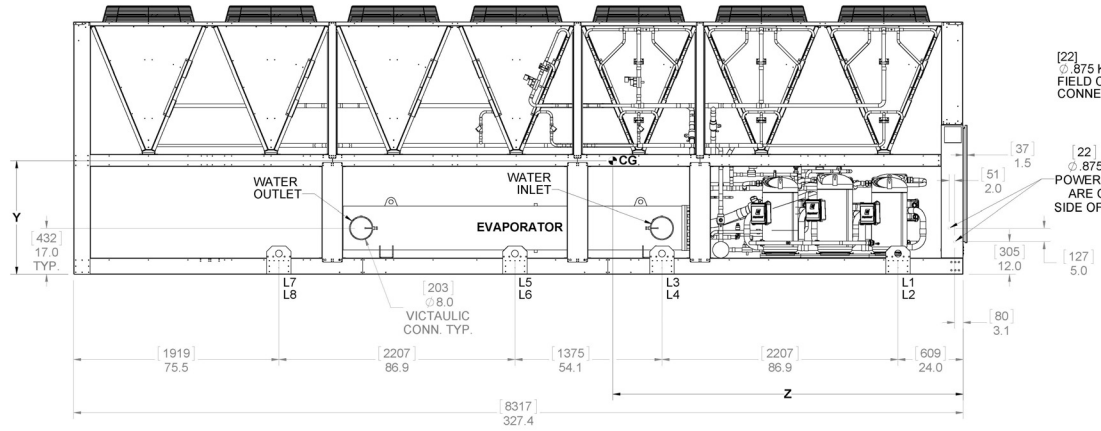
Optional	
Part Number	**Description**
017503301	Flow Switch, Paddle, 3-8" Dia, 150PSI, Qty 1 (Not WDC)

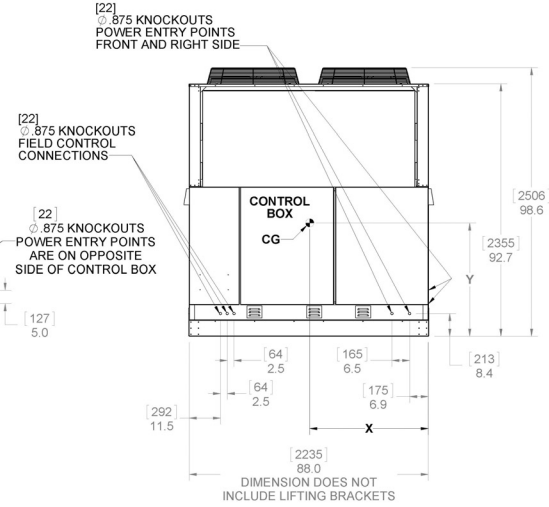
AGZ240E Packaged (Micr

Unit Dimensions

Unit Weight Data																		
Units	Weight		Lifting Weight								Mounting Weight							
	Shipping	Operating	L1	L2	L3	L4	L5	L6	L7	L8	M1	M2	M3	M4	M5	M6	M7	M8
lb	9589	10288	1443	1433	1260	1251	1146	1138	963	956	1433	1422	1320	1310	1269	1259	1141	1133
kg	4349	4667	655	650	572	567	520	516	437	434	650	645	599	594	576	571	518	514







NOTE:
LIFTING WEIGHTS ARE BASED ON UNIT SHIPPING WEIGHTS. MOUNTING WEIGHTS ARE BASED ON UNIT OPERATING WEIGHT WITH EVAPORATOR WATER INCLUDED. SHIPPING AND OPERATING WEIGHTS DO NOT INCLUDE THE WEIGHTS OF ANY OPTIONS OR ACCESSORIES.

NOTES:
1. LEFT HAND EVAPORATOR VIEWS SHOWN. SEE SHEET 2 FOR VIEWS WITH RIGHT HAND EVAP.

Unit and Center of Gravity Dimensions				
Units	Connection Size (Victaulic)	Center of Gravity		
		X	Y	Z
in	8.0	43.8	40.8	125.9
mm	203	1113	1036	3196

PART NUMBER 334547141
REVISION 0A

NOTE

A water strainer must be installed at the inlet of the evaporator to protect it from damage. Please refer to the IOM for additional details.
IT IS RECOMMENDED THAT THE SIDE LOCATIONS BE USED FOR POWER ENTRY WIRE SIZES LARGER THAN 350 MCM.

Product Drawing	Unit Tag: CH-1			Sales Office: Briggs Equipment Sales		
Product: Air-Cooled Scroll Chiller	Project Name: ImmuCell Portland			Sales Engineer: Ann Marie Juliano		
Model: AGZ240E	Dec. 19, 2016	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/- 1.0"	Dwg Units: in [mm]

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www.DaikinApplied.com Software Version: 07.00

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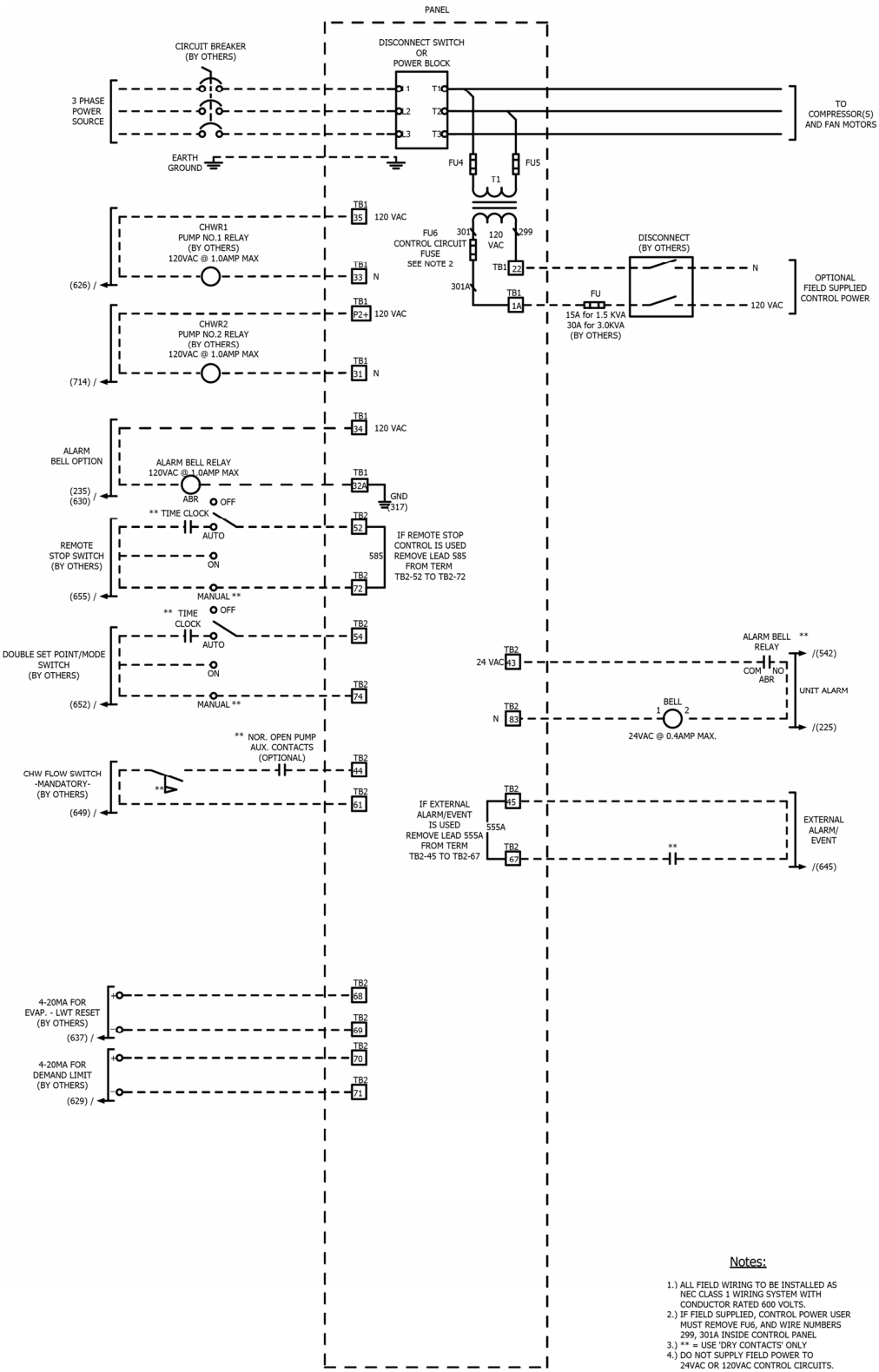
AGZ030-240E Single-Point Connection Field Wiring Diagram



Notes:

1.) ALL FIELD WIRING TO BE INSTALLED AS NEC CLASS 1 WIRING SYSTEM WITH CONDUCTOR RATED 600 VOLTS.
2.) IF FIELD SUPPLIED, CONTROL POWER USER MUST REMOVE FU6, AND WIRE NUMBERS 299, 301A INSIDE CONTROL PANEL
3.) ** = USE 'DRY CONTACTS' ONLY
4.) DO NOT SUPPLY FIELD POWER TO 24VAC OR 120VAC CONTROL CIRCUITS.

Field Wiring Diagram	Unit Tag: CH-1			DAIKIN		
Product: Air-Cooled Scroll	Project Name: ImmuCell Portland			13600 Industrial Park Blvd. Minneapolis, MN 55441		
Model: AGZ030-240E Single-Point	Sales Office: Briggs Equipment Sales			www.DaikinApplied.com		Software Version: 07.00
Sales Engineer: Ann Marie Juliano	Dec. 19, 2016	Ver/Rev:	Sheet 1 of 1	Scale: N/A	Tolerance: N/A	Dwg Units: N/A

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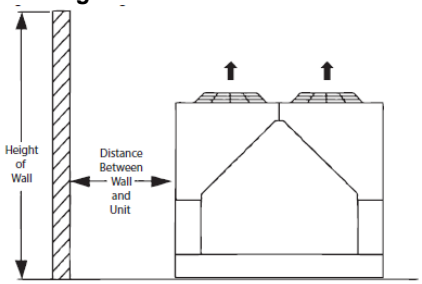
AGZ-E Close Spacing Performance

Case 1: Building or Wall on One Side of Unit

Assumes a solid height wall taller than unit. Refer to Case 4 for partial wall openings.

Building or Wall on One Side of Unit



For models AGZ030-100E, maintain a 4 feet minimum from a wall of any height.

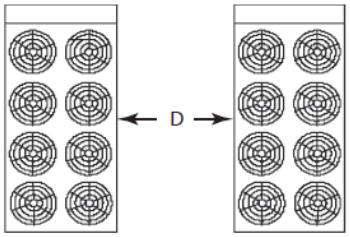
For models AGZ110-130E, maintain a 6 feet minimum from a wall of any height.

For models AGZ140-240E, maintain an 8 feet minimum from a wall of any height.

Case 2: Two Units, Side-by-Side

For models 030-180, there must be a minimum of 4 feet between two units placed side-by-side; however, performance may be affected at this distance. For models 190-210, the minimum is 6 feet as closing spacing may cause air recirculation and elevated condenser pressure. Assuming the requirement of one side having at least 8 feet of service clearance is met, Case 2 figures show performance adjustments as the distance between two units increases.

Two Units, Side-by-Side



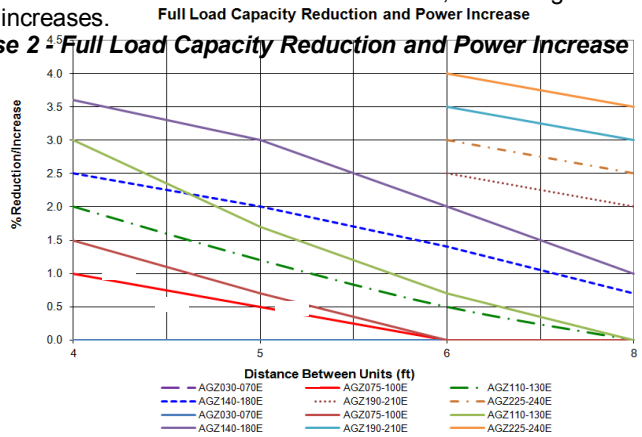
KEY:

- - - - - - - - - -

Power Increase

Capacity Reduction

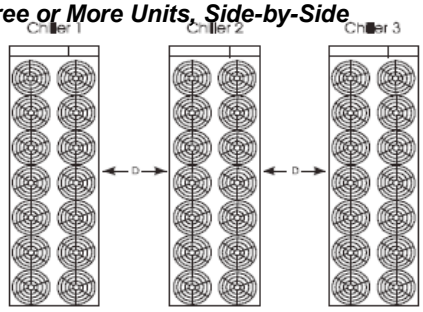
Case 2 - Full Load Capacity Reduction and Power Increase



Case 3: Three or More Units, Side-by-Side

For all models, there must be a minimum distance between any units placed side-by-side; however, performance may be affected at this distance. Minimum distances are: models 030 to 070 - 4 feet, models 075 to 100 - 5 feet, models 110 to 240 - 6 feet. The Case 3 charts below depict Case 3 performance adjustments as the distance between units increases. Data shown is for the middle unit with a unit on each side. See Case 2 adjustment factors for the two outside units.

Three or More Units, Side-by-Side



KEY:

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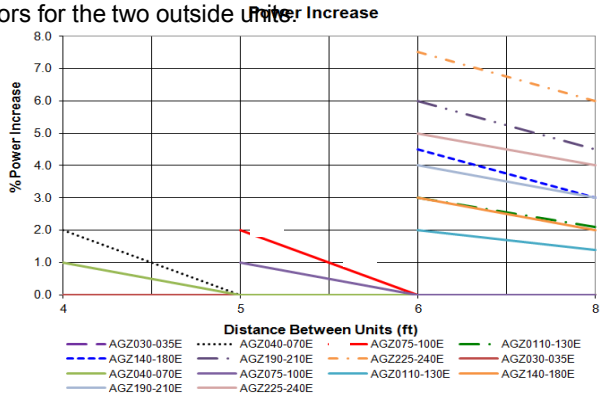
Power Increase

Capacity Reduction

Case 3 - Full Load Capacity Reduction and Power Increase



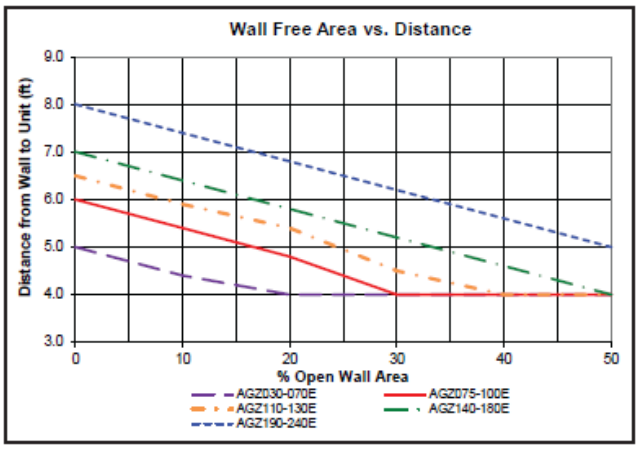
Product Drawing	Unit Tag: CH-1			DAIKIN		
Product: Air-Cooled Scroll Chiller	Project Name: ImmuCell Portland			13600 Industrial Park Blvd. Minneapolis, MN 55441		
Model: AGZ-E	Sales Office: Briggs Equipment Sales			www.DaikinApplied.com	Software Version: 07.00	
Sales Engineer: Ann Marie Juliano	Dec. 19, 2016	Ver/Rev:	Sheet 1 of 1	Scale: NTS	Tolerance: +/-1.0"	Dwg Units: in [mm]

AGZ-E Close Spacing_Drawing for CH-1

Case 4: Open Screening Walls

Decorative screening walls are often used to help conceal a unit either on grade or on a rooftop. When possible, design these walls such that the combination of their open area and distance from the unit (see chart below) do not require performance adjustment. If the wall opening percentage is less than recommended for the distance to the unit, it should be considered as a solid wall. It is assumed that the wall height is equal to or less than the unit height when mounted on its base support. If the wall height is greater than the unit height, see Case 5: Pit Installation for performance adjustment factors. The distance from the sides of the unit to the side walls must be sufficient for service, such as opening control panel doors. For uneven wall spacing, the distance from the unit to each wall can be averaged providing no distance is less than 4 feet. Values are based on walls on all four sides.

Case 4 - Allowable Wall Open Area



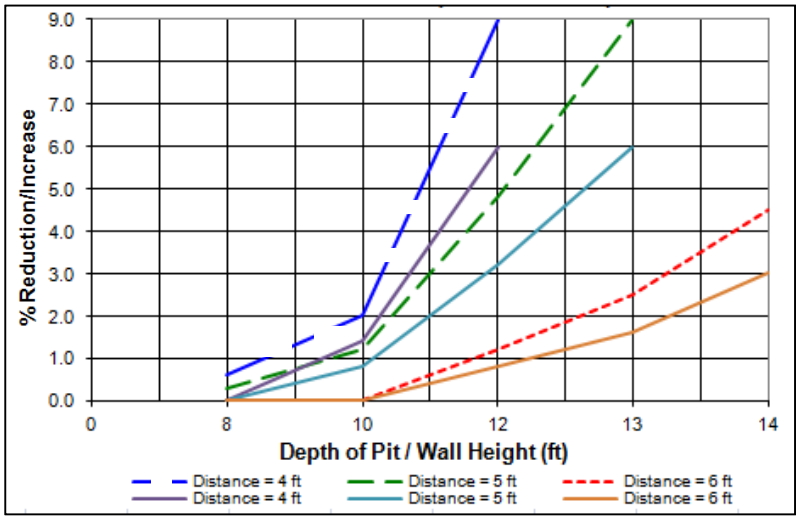
ecirculation and restriction and require care that sufficient air clearance is ided. A solid wall surrounding a unit is substantially a pit and this data should be used.

Steel grating is sometimes used to cover a pit to prevent accidental falls or trips into the pit. The grating material and installation design must be strong enough to prevent such accidents, yet provide abundant open area to avoid recirculation problems. Have any pit installation reviewed by the Daikin Applied sales representative prior to installation to ensure it has sufficient air-flow characteristics and approved by the installation design engineer to avoid risk of accident.

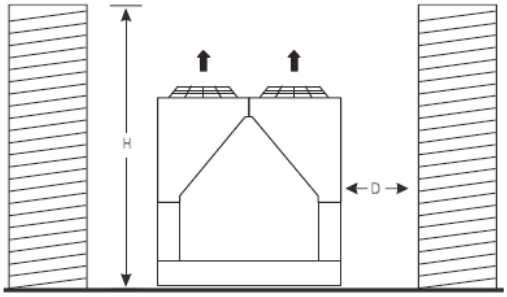
Models AGZ030-070E:

The Case 5 figures for models AGZ030-070E show adjustment factors for pit/wall heights of 4 feet, 5 feet, and 6 feet.

Case 5 - Full Load Capacity Reduction and Power Increase (AGZ030E-070E)



Case 5- Pit Installation



KEY:

- - - - - - - - - - : ***Power Increase***

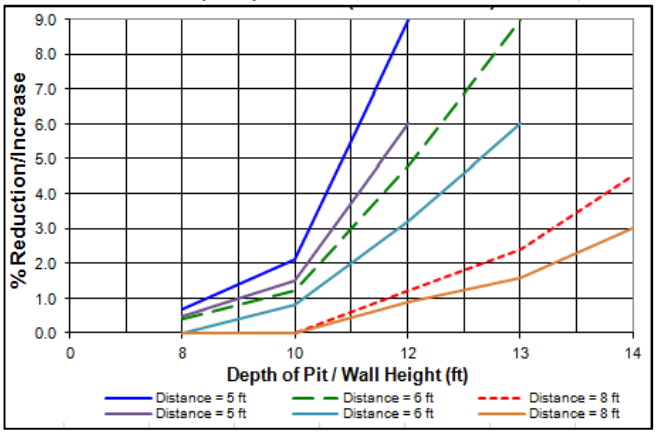
_____***: Capacity Reduction***

AGZ-E Close Spacing_Drawing for CH-1

Models AGZ075-130E:

The Case 5 figures for models AGZ075-130E show adjustment factors for pit/wall heights of 5 feet, 6 feet, and 8 feet.

Case 5 - Full Load Capacity Reduction and Power Increase (AGZ075-130E)



KEY:

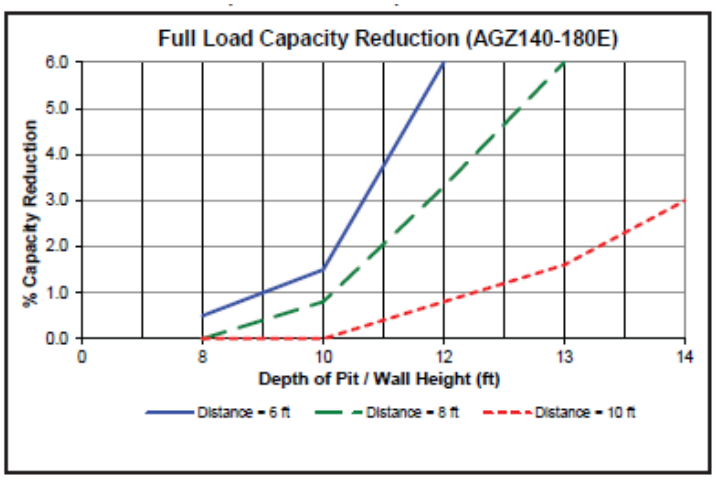
- - - - - - - - - - : ***Power Increase***

_____: ***Capacity Reduction***

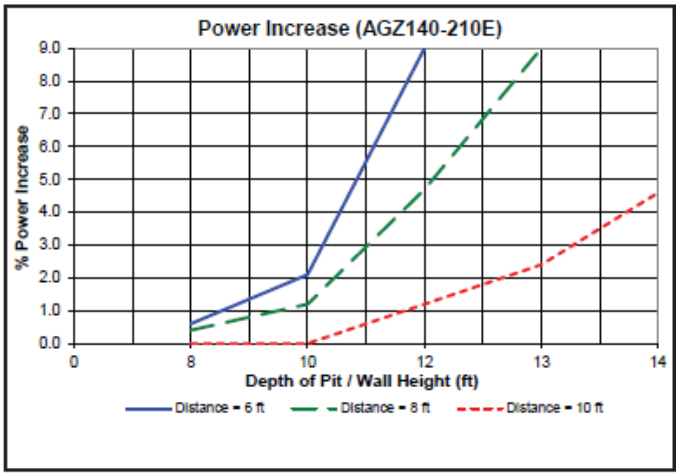
Models AGZ140-240E:

The Case 5 figures for models AGZ140-240E show adjustment factors for pit/wall heights of 6 feet, 8 feet, and 10 feet.

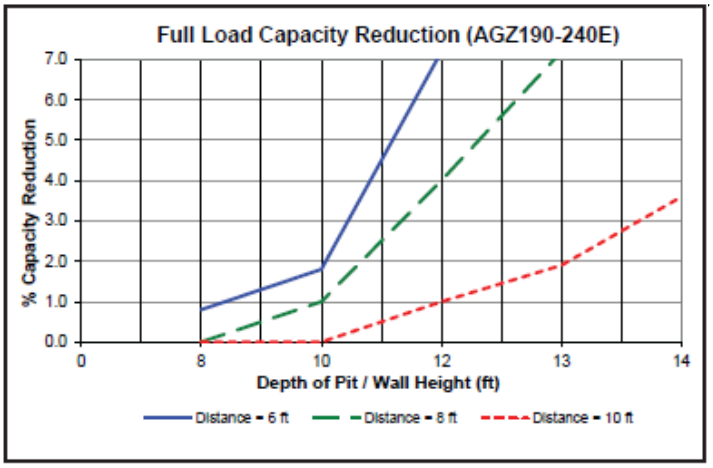
Case 5 - Full Load Capacity Reduction (AGZ140-180E)



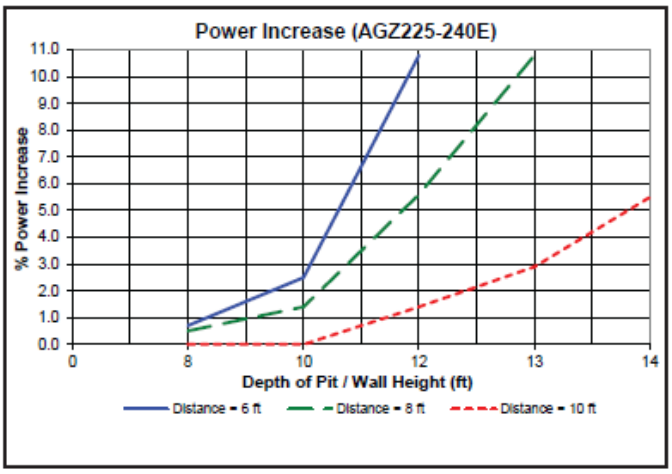
Case 5 - Power Increase (AGZ140-210E)



Case 5 - Full Load Capacity Reduction (AGZ190-240E)



Case 5 - Power Increase (AGZ225-240E)



AGZ-E Guards: Condenser Coil Louvers, Base Wire Grilles, Painted Base

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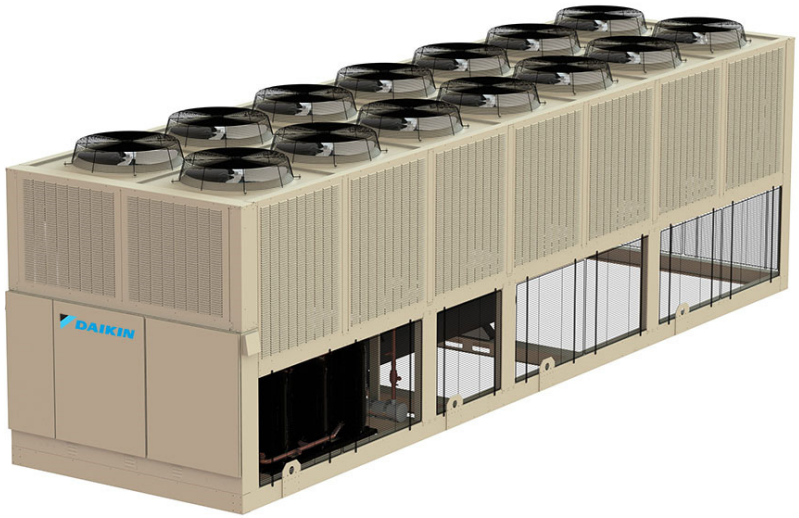

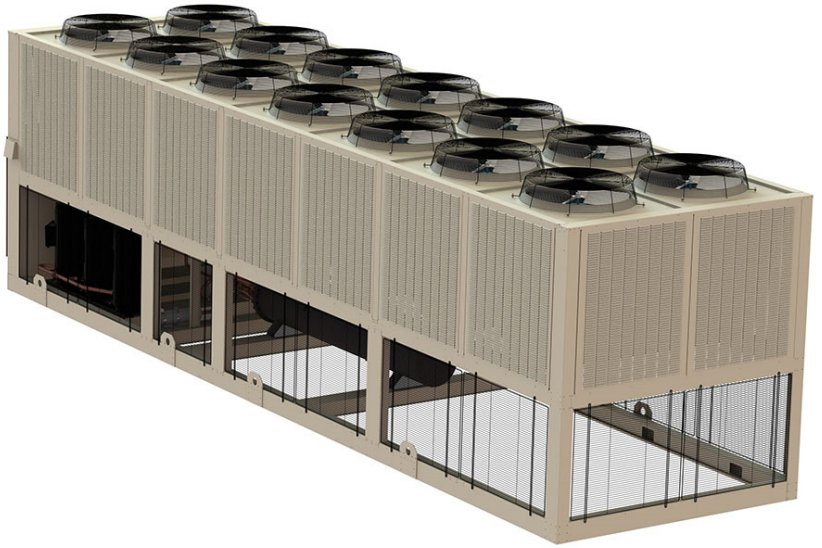

Diagram Notes
Diagram simulates wrap, grille and louver options as selected only. Refrigeration components may vary depending on selected options.

Product Drawing	Unit Tag: CH-1			Sales Office: Briggs Equipment Sales			DAIKIN
Product: Air-Cooled Scroll Chiller	Project Name: ImmuCell Portland			Sales Engineer: Ann Marie Juliano			13600 Industrial Park Blvd. Minneapolis, MN 55441
Model: AGZ225-240E	Dec. 19, 2016	Ver/Rev:	Sheet: 1 of 1	Scale: N/A	Tolerance: N/A	Dwg Units: N/A	www.DaikinApplied.com Software Version: 07.00

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