Performance Report

Performance Specification

Project Name: **YVAA Stock R-513 for Submittals** Unit Tag: **YVAA0153XXX46R** Qty.: **1** Model: **YVAA0153**

Full Load - Design

PIN								
YVAA0153BN	V46CHVBXXX	SAXLXXXX60	44X0VXXV21	0W1SXGA2BM	XV3XNXXXXX	XXXSXX		
....5...10	....5...20	....5...30	....5...40	....5...50	....5...60	....5...70	....5...80	....5...90

Unit	
Model No.	YVAA0153
Number of Compressors	2
Compressor Type	VSD Screw - Semi Hermetic
Number of Compressor Circuits	2
Capacity Control	10% - 100%
Refrigerant	R-513A
Performance Data	
Net Cooling Capacity [tons.R]	157.3
Total Power Input [kW]	194.5
EER [Btu/W.h]	9.703
IPLV.IP [Btu/W.h]	17.46
A-Weighted Sound Power [dB(A)]	101.0
Sound Pressure (Hemispherical Method) [dB(A)]	71.0
Sound Pressure Measured at [ft]	30.0
Electrical Data	
Nominal Voltage / Voltage Limits	460-3-60.0 / 414V - 508V
Compressor kW (each circuit)	90.47 / 90.11
Compressor RLA (each circuit) [A]	119.7 / 119.2
Fan QTY (each circuit)	4 / 4
Fan FLA (each circuit) [A]	2.4 / 2.4
Min. Circuit Ampacity [A]	291.8
Max. Fuse / CB Rating [A]	400.0
Unit Short Circuit Withstand [kA]	65 kA
Wires Per Phase	2
Wire Range (Lug Size)	2/0 - 500 kcmil
Displacement Power Factor	0.95
Control kVA	2.000

Performance Impacting Options	
End User Application	Comfort Cooling
Compressor Style	Optimized Part Load Efficiency
Condenser Coil	Microchannel Coils
Fan	Low Sound Fans With Variable Speed Control
Sound Attenuation	Standard Factory Sound Kit (Level 0 Reduction)
Weight & Dimensional Data	
Shipping Weight [lbs]	12617
Operating Weight [lbs]	13078
Refrigerant Charge [lbs]	176 / 176
Length [in]	203.3
Width [in]	88.3
Height [in]	94.6

Heat Exchanger Performance			
Evaporator		**Condenser (Air Cooled)**	
Heat Exchanger Type	Hybrid Falling Film	Ambient Air Temperature* [ºF]	95.0
Entering Fluid Temperature* [ºF]	54.00	Altitude* [ft]	0.00
Leaving Fluid Temperature* [ºF]	44.00	Condensing Temperature [ºF]	125.79 / 125.59
Flow Rate [USGPM]	376.4	Number of Fans (Circuit 1 / Circuit 2)	4 / 4
Fouling Factor* [h ft2 F/Btu]	0.000100	Total Air Flow [cfm]	100000
Fluid Type*	Water	Total Fan Power [kW]	13.91
Passes*	2		
Pressure Drop [ft H2O]	7.33		
Fluid Volume [USGAL]	58.1		
Evaporating Temperature [ºF]	39.64		
Minimum Flow Rate [USGPM]	250.0		
Maximum Flow Rate [USGPM]	980.0		

* Designates user specified input

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). Certified units may be found in the AHRI Directory at www.ahridirectory.org. Auxiliary components included in total KW - Oil heaters, Chiller controls. Auxiliary power is already included in the compressor and fan power

Part Load Performance (Based on Standard AHRI Unloading)				
Percent Load	**Ambient [ºF]**	**Capacity [tons.R]**	**Power Input [kW]**	**Unit Efficiency [Btu/W.h]**
100.0	95.0	157.3	194.5	9.703
75.0	80.0	117.9	101.2	13.98
50.0	65.0	78.63	48.48	19.46
25.0	55.0	39.32	20.74	22.74

Sound Power Levels (In Accordance with AHRI 370)										
Percent Load	Ambient [°F]	Octave Band Center Frequency [Hz]								LWA
		63	125	250	500	1000	2000	4000	8000	
100.0	95.0	95.0	95.0	96.0	100.0	96.0	91.0	86.0	83.0	101.0
75.0	80.0	94.0	95.0	95.0	94.0	92.0	85.0	81.0	77.0	96.0
50.0	65.0	90.0	90.0	90.0	91.0	88.0	82.0	78.0	74.0	92.0
25.0	55.0	86.0	86.0	86.0	87.0	84.0	79.0	75.0	71.0	88.0

Note:Unit is equipped with Low Sound Fans With Variable Speed Control.

Measurement of sound pressure used to obtain the sound power data presented is based on AHRI-370.

Air-cooled chillers are rated in terms of sound power not sound pressure. Johnson Controls provides estimates of sound pressure, but this is not the rating metric.

For an air-cooled chiller, sound pressure calculated from sound power varies depending on how the chiller is assumed to behave, i.e. the radiation model. In other words, determining sound pressure from sound power requires making assumptions that result in different answers at a given distance from the chiller. The environment also influences sound pressure in the field installation. Sound pressure estimation radiation models pertaining to air-cooled chillers include the ‘traditional’ hemispherical model, parallelepiped model and equivalent hemispherical model.

Regarding sound power, Johnson Controls references tolerance limits based on ASHRAE guidelines. These are +/- 6dB in the 63Hz octave band, +/- 4dB in all other octave bands and +/- 3dB for the overall dBA.

Tolerance limits are based on uncertainties associated with:

1. Measurement Test Procedure

2. Repeatability

3. Production / Manufacturing Variability

Standard deviation associated with air-cooled chiller sound data is a measure of spread i.e. it indicates the range of probability of sound levels. Note that for operating conditions other than AHRI’s Standard Rating Condition, higher levels of uncertainty can be expected.

Lead times for factory performance testing depend on test laboratory availability. Please confirm with Johnson Controls Customer Service.

Estimated Sound Pressure Levels at 30.0 ft (Derived from AHRI 370 Sound Power using Hemispherical Method)										
Percent Load	Ambient [°F]	Octave Band Center Frequency [Hz]								LpA
		63	125	250	500	1000	2000	4000	8000	
100.0	95.0	65.0	66.0	66.0	71.0	67.0	62.0	57.0	53.0	71.0
75.0	80.0	64.0	65.0	65.0	65.0	62.0	56.0	52.0	47.0	66.0
50.0	65.0	60.0	60.0	60.0	62.0	58.0	52.0	48.0	44.0	63.0
25.0	55.0	56.0	57.0	57.0	58.0	54.0	49.0	45.0	41.0	59.0

Performance at AHRI Conditions			
Evaporator		**Condenser**	
EFT [°F]	54.00	Ambient Temp. [°F]	95.0
LFT [°F]	44.00	Altitude [ft]	0.00
Flow Rate [USGPM]	376.4	**Performance**	
Pressure Drop [ft H2O]	7.33	EER [Btu/W.h]	9.703
Fluid Type	Water	IPLV.IP [Btu/W.h]	17.46
Fouling Factor [h ft2 F/Btu]	0.000100	Net Cooling Capacity [tons.R]	157.3
Fluid Volume [USGAL]	58.1		

Note:Unit rated at maximum compressor frequency.

Part Load Performance (Based on AHRI 550/590 - 2018 (IP))				
Percent Load	**Ambient [°F]**	**Capacity [tons.R]**	**Power Input [kW]**	**Unit Efficiency [Btu/W.h]**
100.0	95.0	157.3	194.5	9.703
75.0	80.0	117.9	101.2	13.98
50.0	65.0	78.63	48.48	19.46
25.0	55.0	39.32	20.74	22.74

Notes:

Country of Origin:Mexico

Min DSD (Factory Purpose/Use Only):80.0 psig

Displacement Power Factor refers to compressor only. Unit Power Factor depends on fan option selected. Calculated value is available by request.

Use Copper Conductors only

The unit does not have a coil coating selected.

Actuated suction service valves ARE selected

Exclusion of actuated suction service valves will require incorporation of additional freeze protection including use of glycol, pump control or draining the evaporator.

Minimum and maximum evaporator flow information are for full load ratings with Water.

Evaporator Passes:2, Condenser Type:M, Fan Type:V

Compliant with ASHRAE 90.1 - 2010,2013,2016.

Compliant with IECC - 2012,2015,2018.

Field Provided Wiring for Water Box Heaters (one connection per chiller):120-1-60, 6A.

The product image shown is for illustrative purposes only and is not representative of selected options.

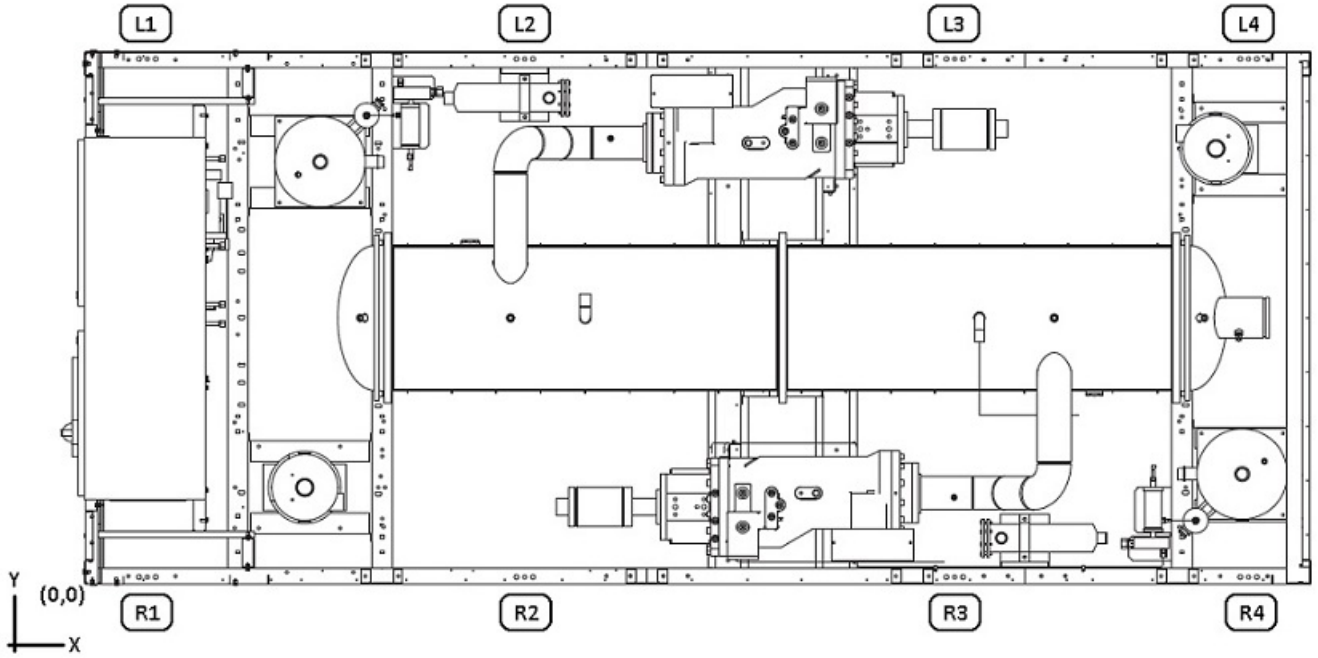
Equipment Description
Base Unit (3900)
Base Unit - YVAA0153
Voltage Code - 460-3-60.0
R-513A (Fully Charged)
Standard VSD
SP Circuit Breaker W/ Lockable Handle
Connected Services Ready - BACnet/Modbus/N2
English
UL/ETL North American Safety Code
Comfort Cooling
Actuated Suction Service Valves with Filter Dryer Service Valves
Optimized Part Load Efficiency
Water Box Heaters
150 Psig DWP Waterside
One Thermal Dispersion Switch
ASME Pressure Vessel Codes
2-Pass Evaporator
Back Fluid Inlet Connection (Opposite Control Panel End)
Microchannel Coils
Low Sound Fans With Variable Speed Control
Wire/Louvered Encl Panels (Factory)
Standard Factory Sound Kit (Level 0 Reduction)
Neoprene Isolators
No Containerization Required With Shipping Bag

YVAA Air-Cooled VSD Screw Chiller

AVM Report

Project Name: **YVAA Stock R-513 for Submittals** Unit Tag: **YVAA0153XXX46R** Qty.: **1** Model No.: **YVAA0153**

PIN								
YVAA0153BN	V46CHVBXXX	SAXLXXXX60	44XOVXXV21	0W1SXGA2BM	XV3XNXXXXX	XXXSXX		
....5...10	....5...20	....5...30	....5...40	....5...50	....5...60	....5...70	....5...80	....5...90



LOCATION	X Distance (in)	Y Distance (in)	JCI PART NUMBER	SAP NUMBER	COLOUR	Operating Weights (lb)
R1	10.4	1.2	029-25335-002	434004	Brick Red	957
R2	72.9	1.2	029-25335-004	434005	Charcoal	2506
R3	144.2	1.2	029-25335-004	434005	Charcoal	2506
R4	192.9	1.2	029-25335-001	434002	Charcoal	568
L1	10.4	87.0	029-25335-002	434004	Brick Red	919
L2	72.9	87.0	029-25335-004	434005	Charcoal	2494
L3	144.2	87.0	029-25335-004	434005	Charcoal	2494
L4	192.9	87.0	029-25335-001	434002	Charcoal	634

Total Weight (lb)		Centre of Gravity (in)	
Operating Weights (lb)	13079	Xg [in]	105.7
Shipping Weight [lb]	12617	Yg [in]	45.8

All values are de-rated by 15% apart from those which have part number. (029-25334-013 and 029-25336-014: 0% de-rated), (029-25335-004: 10% de-rated), (029-25335-001 and 029-25335-003: 25% de-rated)

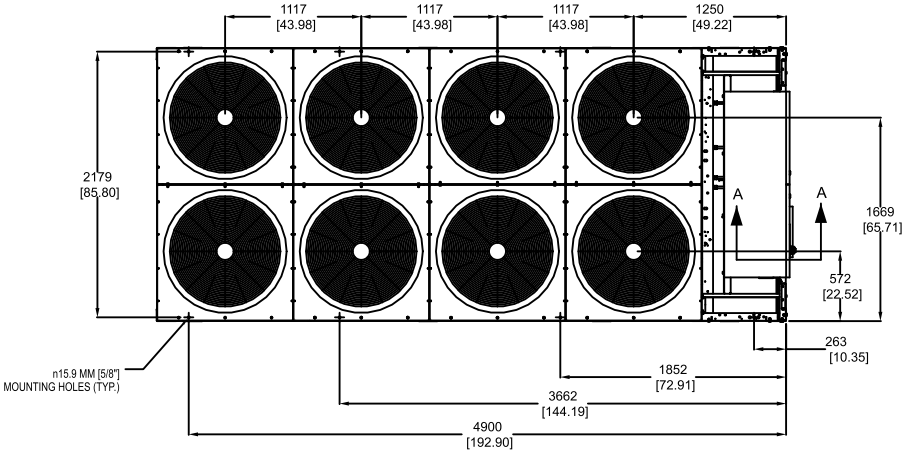
NOTES:

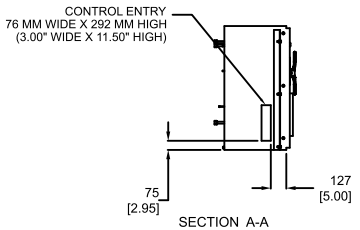
1. PLACEMENT ON A LEVEL SURFACE FREE OF OBSTRUCTIONS (INCLUDING SNOW, FOR WINTER OPERATION) OR AIR RECIRCULATION ENSURES RATED PERFORMANCE, RELIABLE OPERATION AND EASE OF MAINTENANCE. SITE RESTRICTIONS MAY COMPROMISE MINIMUM CLEARANCES INDICATED BELOW, RESULTING IN UNPREDICTABLE AIR FLOW PATTERNS AND POSSIBLE DIMINISHED PERFORMANCE. YORK'S UNIT CONTROLS WILL OPTIMIZE OPERATION WITHOUT NUISANCE HIGH PRESSURE SAFETY CUTOUT; HOWEVER, THE SYSTEM DESIGNER MUST CONSIDER POTENTIAL PERFORMANCE DEGRADATION. ACCESS TO THE UNIT CONTROL CENTER ASSUMES THE UNIT IS NO HIGHER THAN ON SPRING ISOLATORS. RECOMMENDED MINIMUM CLEARANCES: SIDE TO WALL - 6'; REAR TO WALL - 6'; CONTROL PANEL TO WALL - 4'; TOP - NO OBSTRUCTIONS ALLOWED; DISTANCE BETWEEN ADJACENT UNITS - 10'; NO MORE THAN ONE ADJACENT WALL MAY BE HIGHER THAN THE UNIT.
2. WEIGHT AND CENTER OF GRAVITY - REFER TO AVM REPORT.
3. WATER CONNECTIONS ARE GROOVED FOR VICTAULIC CONNECTION.
4. DIMENSIONS IN mm [INCHES].
5. POWER WIRING MUST BE ROUTED TO AVOID INTERFERENCE WITH THE AUTOTRANSFORMER ENCLOSURE LOCATED UNDERNEATH THE CONTROL PANEL

NOZZLE LEGEND

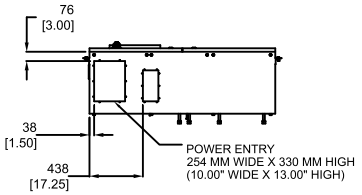
EVAPORATOR INLET LEFT END 2 PASS 6 DIA. (150Psig DWP)
EVAPORATOR OUTLET LEFT END 2 PASS 6 DIA. (150Psig DWP)

Victaulic Grooved Nozzles (per ANSI / AWWA C-606)

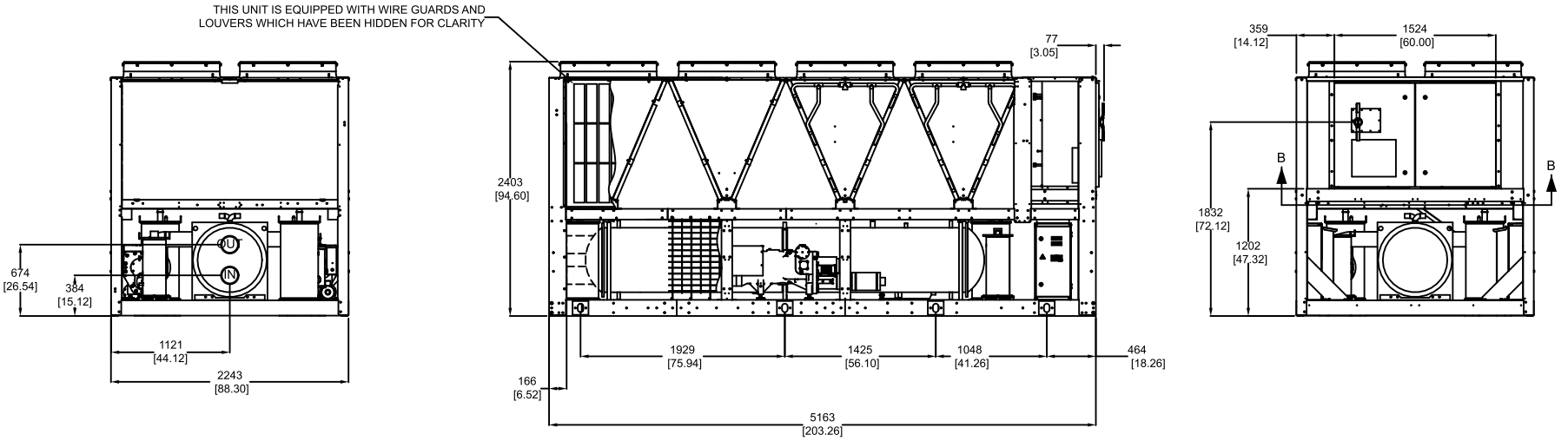




SECTION A-A



SECTION B-B



PRODUCT DRAWING

YORK YVAA Air Cooled Screw Chiller
MODEL: YVAA 0153
NOT FOR CONSTRUCTION

Project Name:
Location: San Antonio
Engineer:
Contractor:
For:

Sold To:
Cust Purch Order#: 6
Contract#:

UNIT TAG: YVAA0153XXX46R

Date: May 26, 2020
Rev. Date: May 12, 2023
Form No.: 201.28-EG1
Dwg. Lev.: 0817
Dwg. Scale: NTS

YORK
A JOHNSON CONTROLS COMPANY

YORKworks Version: