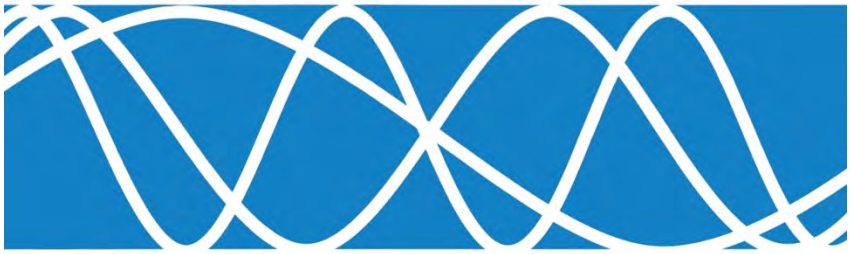
Scoped Noise Assessment

Proposed Residential Development

6-14 Dietz Avenue North

Waterloo, Ontario

June 24, 2025
HGC Project#: 02400738



Prepared for:

Copper Bay Homes
c/o mcCallumSather Architects
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HGC
NOISE | VIBRATION | ACOUSTICS

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Version Control

Ver.	Date	Version Description	Prepared By
1.0	June 24, 2025	Scoped Noise Assessment in support of planning approvals.	I. Basmanov

Prepared by:



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Alex Lorimer, MEng., P.Eng., INCE

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1 INTRODUCTION & SUMMARY

HGC Noise Vibration Acoustics (HGC) was retained by Copper Bay Homes to complete a Scoped Noise Assessment for a proposed residential development to be located at 6-14 Dietz Avenue North, in Waterloo, Ontario. The purpose of this study is to investigate the potential noise impact of the proposed mechanical equipment for the proposed residential development onto itself and onto existing nearby noise-sensitive receptors.

This study is based on “Issued for Permit” architectural and mechanical drawings dated May 30, 2025, prepared by mcCallumSather Architects and Smith + Andersen, respectively, aerial imagery, and the sound data provided for the proposed mechanical equipment.

The results of the analysis indicate that sound emissions from the proposed residential development will be within the limits of the MECP guidelines at the nearest noise-sensitive receptors, as detailed herein. The proposed development is thus acceptable from a noise impact perspective. The reader is referred to the main body of the report for details of the analysis.

2 SITE DESCRIPTION

The subject property is located on the east side of Dietz Avenue North, north of Erb Street West, and east of Westmount Road. The drawings provide for the construction of a 12-storey residential building, with two levels of underground parking. Indoor and outdoor amenity spaces are indicated on the 3rd floor. A key plan is attached as Figure 1, and the mechanical roof plan is attached as Figure 2.

The site is currently occupied by single-detached family residences. Surrounding the site is a mix of residential, retail, and commercial uses. North of the site, across Sunshine Avenue, are 2-storey residences for seniors. Immediately east of the site is a 9-storey residential building for seniors (170 Erb Street West).

South of the site are single-detached family homes. West of the site, across Dietz Avenue North, is a multi-building high-rise residential development (50 Westmount Road North, 9 & 15 Dietz Avenue North, 192-218 Erb Street West) currently under construction. Further west of the site is an existing 5-storey commercial building, attached to a retail plaza. The area is considered to be Class 1 (urban) in terms of its acoustical environment.

3 STATIONARY NOISE ASSESSMENT

3.1 Criteria for Acceptable Sound Levels from Stationary Sources

The applicable sound level limits for the purposes of this assessment were established in accordance with MECP publication NPC-300 [1]. The MECP guidelines draw a distinction between stationary sources (industrial or commercial sounds), and other types of noise sources such as traffic. The guidelines also stipulate that the assessment consider the potential noise impact during a “predictable worst-case hour” of operation, which is defined as a situation when the normally busy activity of the source coincides with an hour of low background sound.

The development is located in an urban acoustical environment which is characterized by ambient noise from road traffic and human activities in all daytime and night-time hours. This is referred to as a “Class 1 area”, under MECP Guidelines. For relatively quiet areas where background sound may fall to low levels during some hours, such as the location of the proposed development, NPC-300 stipulates various minimum limits. In Class 1 areas, these limits are 50 dBA for daytime hours (07:00 to 23:00) and 45 dBA during nighttime hours (23:00 to 07:00).

The MECP guidelines stipulate that the sound level limits for noise produced by emergency equipment (generators) operating in non-emergency situations, such as testing or maintenance of such equipment, are 5 dB greater than the sound level limits otherwise applicable to stationary sources. The sound level limits do not apply to emergency equipment operating in emergency situations.

3.2 Sources of Stationary Sound

The architectural and mechanical drawings show the location of the proposed parking exhaust shaft (facing east near the southeast corner of the site on parking levels P0 to P2) and a mechanical louvre at the south end of the site (parking level P3). The parking garage exhaust fans were assumed to typically operate only when carbon monoxide levels are initially detected, conservatively estimated at 10 minutes out of each hour during the daytime and 5 minutes out of every hour during the nighttime. Emergency evacuation of carbon monoxide, smoke, or other pollutants where the fans may operate continuously are not considered for typical operation.

The mechanical roof plan shows the locations of the air-cooled chiller (ASHP-01), the air source heat pump (ASHP-02), an air handling unit (RTU-01), and a 350 kW emergency generator. This rooftop equipment is partially enclosed by a solid screen. There is also an exhaust fan indicated on the roof of the mechanical penthouse (R-EF-01), for which sound data has been assumed based on a similarly-sized exhaust fan.

For the purposes of this assessment, the rooftop HVAC units were conservatively assumed to operate continuously during daytime and evening hours, and at a 50% duty cycle during nighttime hours. The exhaust fan on top of the mechanical penthouse has been assumed to operate continuously. The emergency generator is assumed to be tested during the daytime for up to an hour.

The locations of these noise sources are shown in Figure 3. The sound data for these sources is summarized below in Table 1 and detailed sound level data is included as Appendix A.

Table 1: Source Sound Power Levels [dB re 10-12 W]

Source	Octave Band Centre Frequency [Hz]								Overall [dBA]
	63	125	250	500	1k	2k	4k	8k	
Parking Garage Exhaust Fans, EF-01 to EF-06 (Parking Levels P0 to P2)	85	86	87	82	80	76	72	67	85
Parking Garage Exhaust Fans, EF-07 and 08 (Parking Level P3)	81	78	70	73	73	70	67	64	77
Air-Cooled Chiller, ASHP-01	87	89	89	87	83	80	77	75	89
Air Source Heat Pump, ASHP-02	96	99	87	85	84	79	75	73	89
Air Handling Unit, RTU-01	78	74	77	83	73	64	57	52	81
Rooftop Exhaust Fan, R-EF-01(Assumed)	87	84	88	79	76	77	77	69	85
350 kW Emergency Generator	90	94	91	93	88	85	80	74	94

3.3 Methodology

To assess the levels of stationary noise that will impact on- and off-site points of reception, an acoustic model of the development was created and predictions were made using a numerical computer modelling package (CadnaA version 2025). The model is based on the methods from ISO Standard 9613-2.2, “Acoustics - Attenuation of Sound During Propagation Outdoors” [2], which accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures. The mechanical equipment screen on the roof of the proposed building has been included in the model as shown on the architectural drawings, with the assumption that the screen is solid without louvers, and the screen height is 3.4 m above the height of the roof. The modelled heights of the mechanical sources have been conservatively assumed to be the top of the provided equipment heights.

3.4 Results

3.4.1 Non-Emergency Sound

The maximum predicted sound levels impacting the facades of the proposed development (conservatively assessed as the cumulative total from all non-emergency sources described above) are shown in Figure 4 and Figure 5. The highest predicted daytime/evening and nighttime sound levels were 48 dBA and 45 dBA, respectively, at the west façade of the proposed development, as well as at the west façade of 170 Erb Street West. These levels are within the exclusionary limits. Thus, no impacts relative to MECP guidelines are expected.

3.4.2 Emergency Sound

The maximum predicted sound levels impacting the facades of the proposed development from the daytime testing of the emergency generator are shown in Figure 6. The highest predicted daytime sound level was 48 dBA, at the east façade of the proposed 11-storey building (“Building A”) located at 15 Dietz Avenue North (part of the 50 Westmount Road North, 9 & 15 Dietz Avenue North, 192-218 Erb Street West development), slightly northwest of the site, across Dietz Avenue North. This level is within the exclusionary limits. Thus, no impacts relative to MECP guidelines are expected.

4 ADDITIONAL DESIGN CONSIDERATIONS

Section 5.8.1.1 of the Ontario Building Code (OBC), released on January 1, 2024, specifies the minimum required sound insulation characteristics for demising partitions of dwelling units, in terms of Sound Transmission Class (STC) or Apparent Sound Transmission Class (ASTC) values. In order to maintain adequate acoustical privacy between separate suites in a multi-tenant building, inter-suite walls must meet or exceed STC-50 or ASTC-47. Suite separation from a refuse chute, or elevator shaft, must meet or exceed STC-55. In addition, it is recommended that the floor/ceiling constructions separating suites from any amenity, commercial or other mechanical spaces also meet or exceed STC-55. Tables 1 and 2 in Section SB-3 of the Supplementary Guideline to the OBC provide a comprehensive list of constructions that will meet the above requirements.

Tarion's Registrar Bulletin 19 (B19) requires the internal design of condominium projects to integrate suitable acoustic features to insulate the suites from noise from each other and amenities in accordance with the OBC and to limit the potential intrusions of mechanical and electrical services of the buildings on its residents. If B19 certification is needed, an acoustical consultant is required to review the mechanical and electrical drawings and details of demising constructions and mechanical/electrical equipment to help ensure that the noise impact of the development on itself is maintained within acceptable levels.

5 CONCLUSIONS

Acoustical modeling of the proposed mechanical equipment for the proposed development located at 6-14 Dietz Avenue North indicates that sound levels will meet MECP exclusionary minimum limits at all on- and off-site points of reception. The proposed development is considered feasible from a noise impact perspective; no additional noise control measures are required.

6 REFERENCES AND CITATIONS

1. *Ontario Ministry of the Environment, Conservation and Parks, Publication NPC-300, Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning, August 2013.*

2. *International Organization for Standardization, Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation, ISO-9613-2, Switzerland, 1996.*

3. *Google Maps Aerial Imagery, Internet application: maps.google.com.*

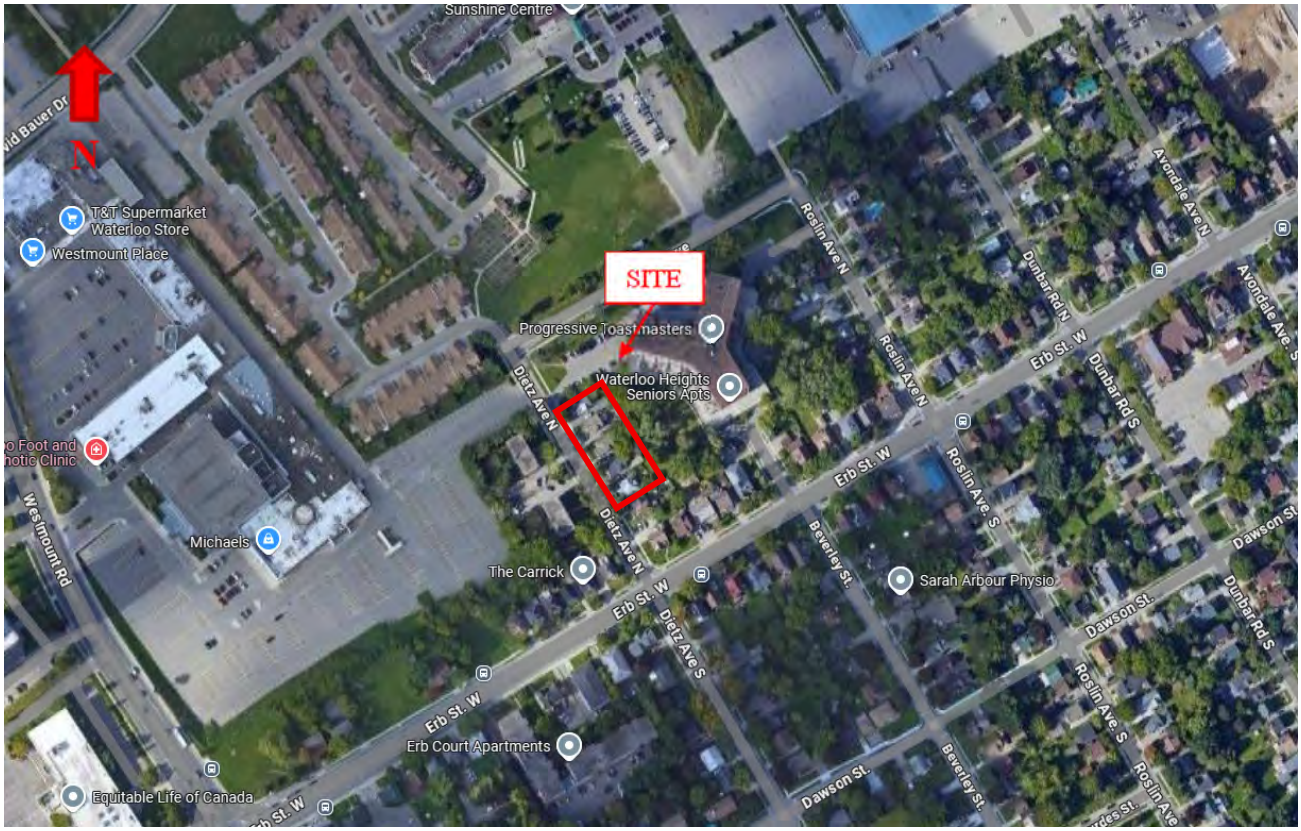


Figure 1: Key Plan

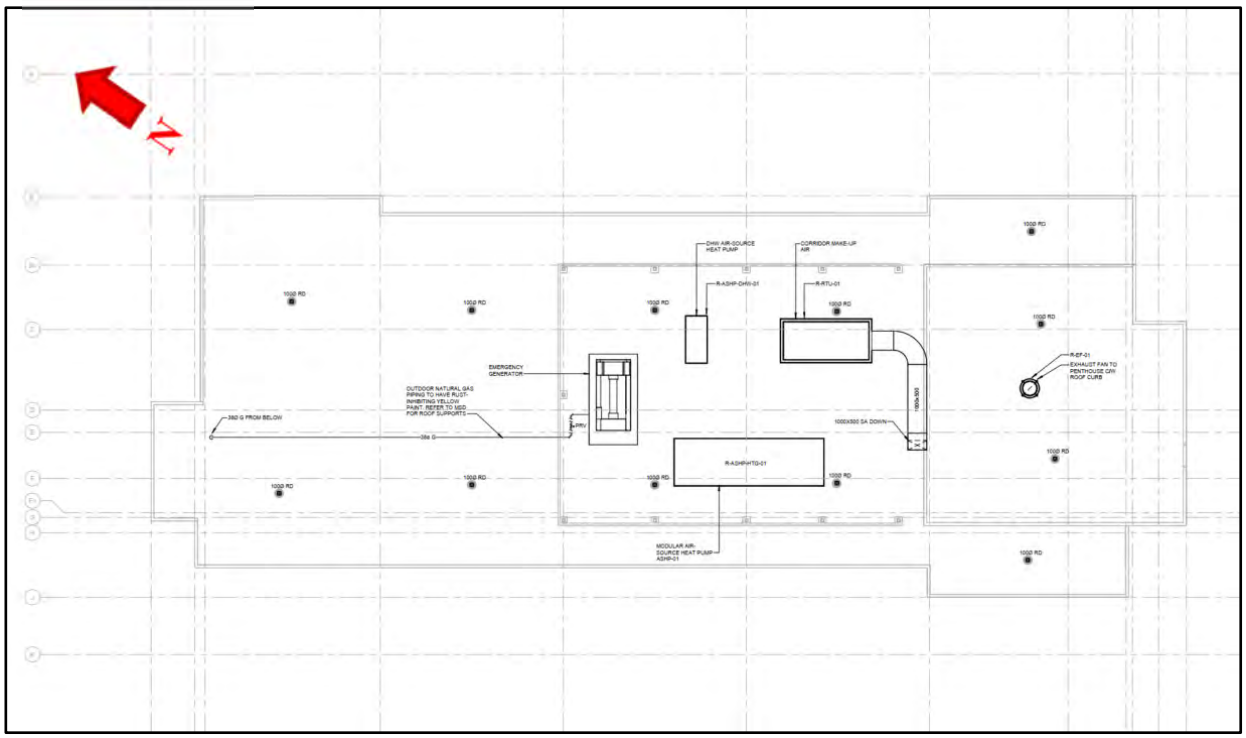


Figure 2: Roof Plan, Mechanical



Figure 3: Stationary Noise Sources

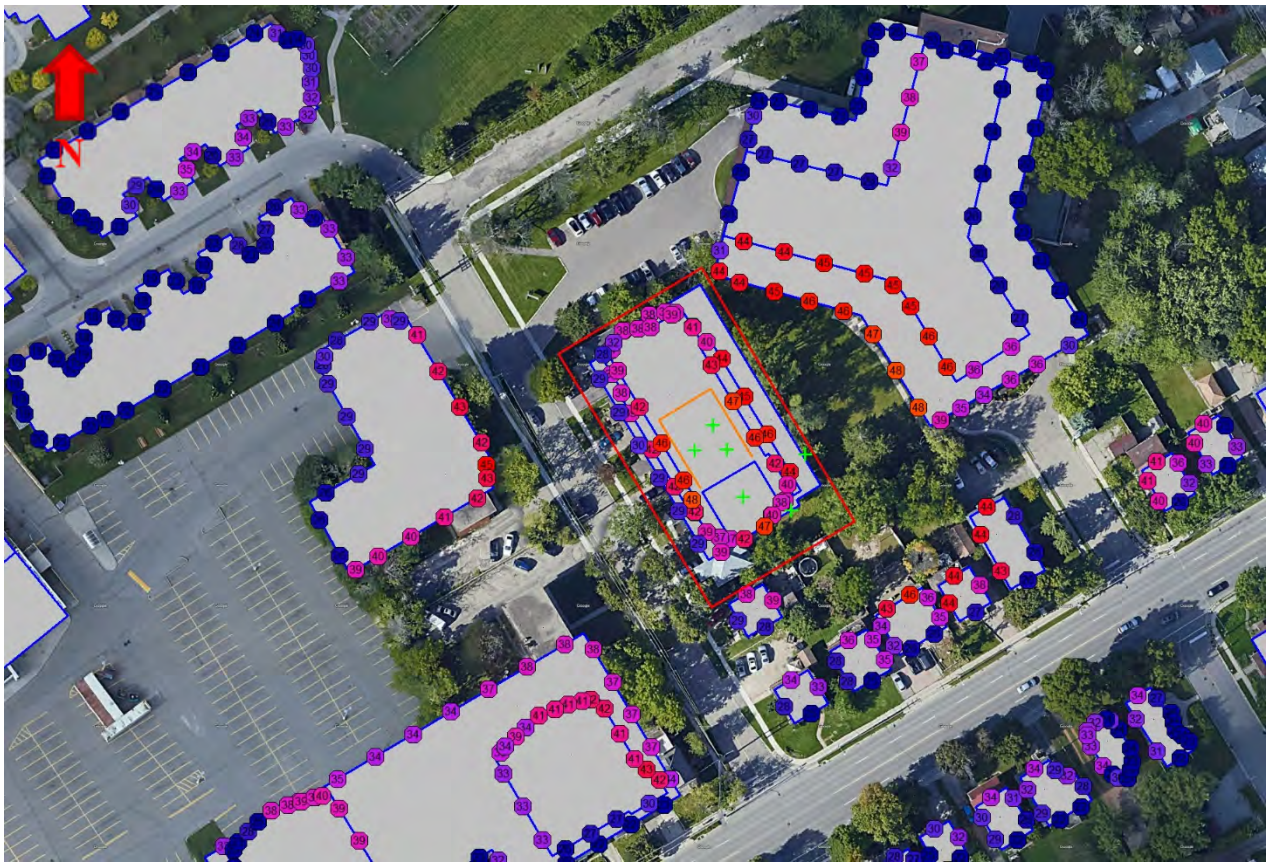


Figure 4: Daytime Non-Emergency Sound Level Predictions

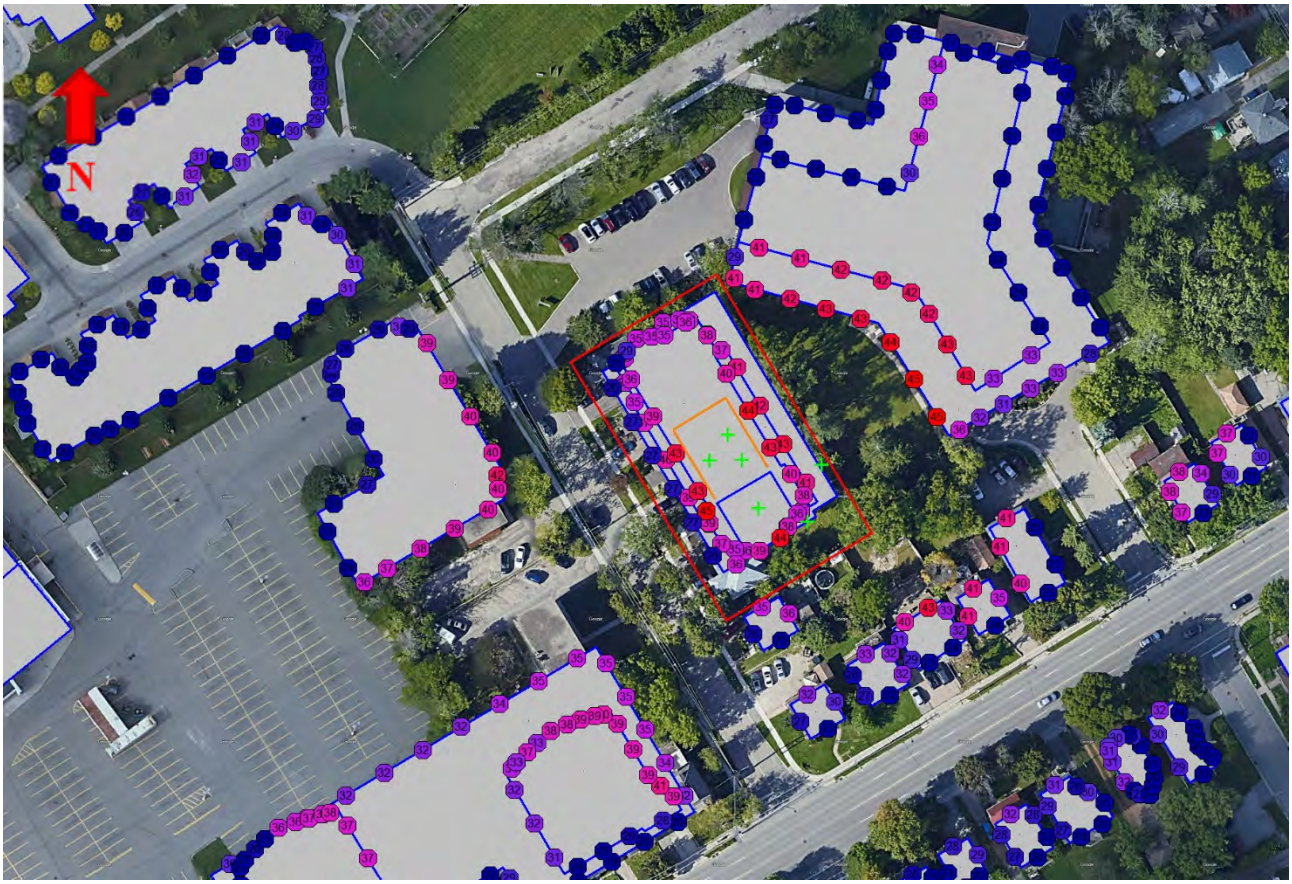


Figure 5: Nighttime Non-Emergency Sound Level Predictions

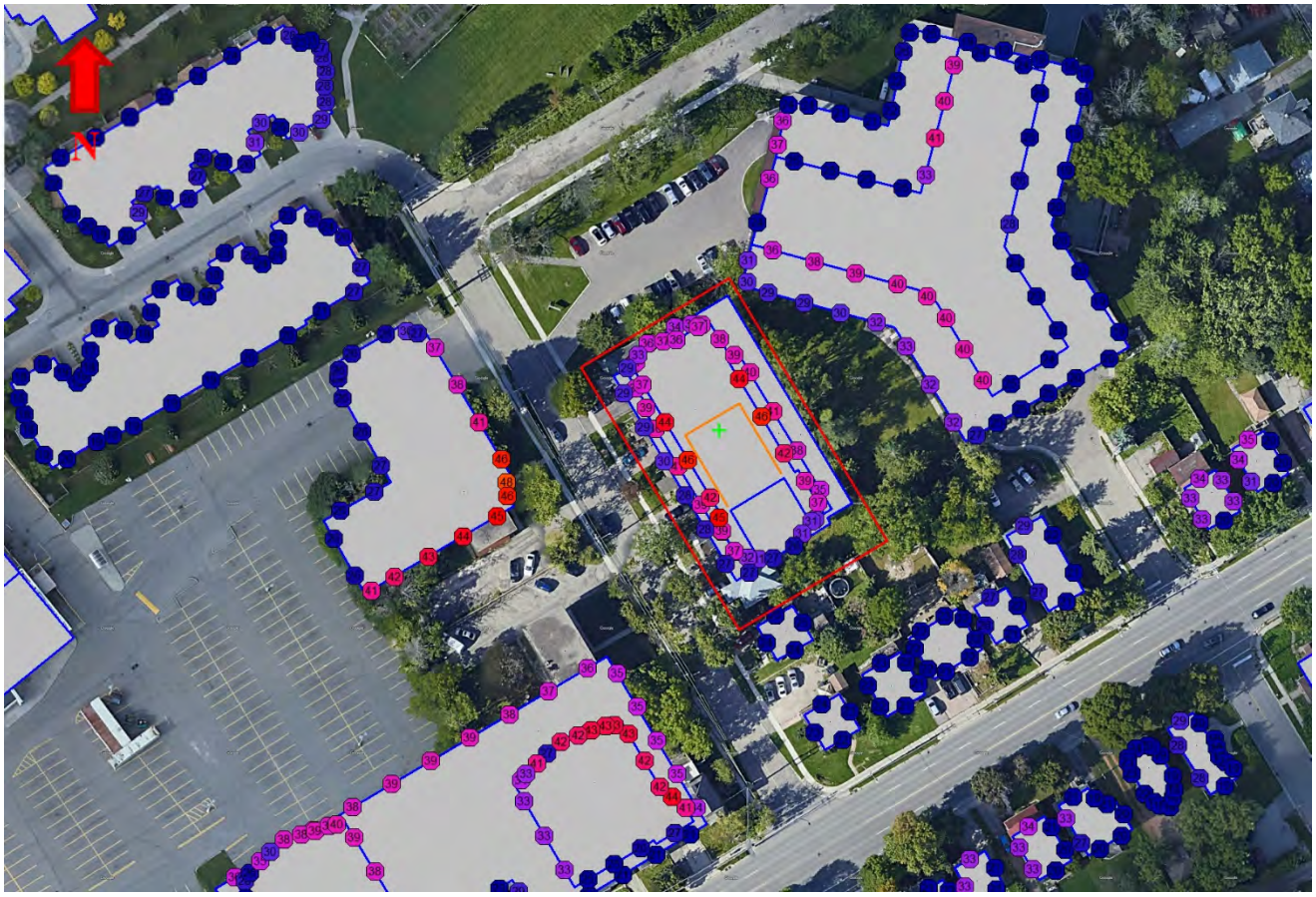


Figure 6: Daytime Emergency Sound Level Predictions

Appendix A:

Mechanical Sound Data

Job Name: AER-20-02-0618 Cut Sheet
Tag: MK-1
Quantity: 1
Printed Date: June 3, 2025

Model: AER-20-02-0618

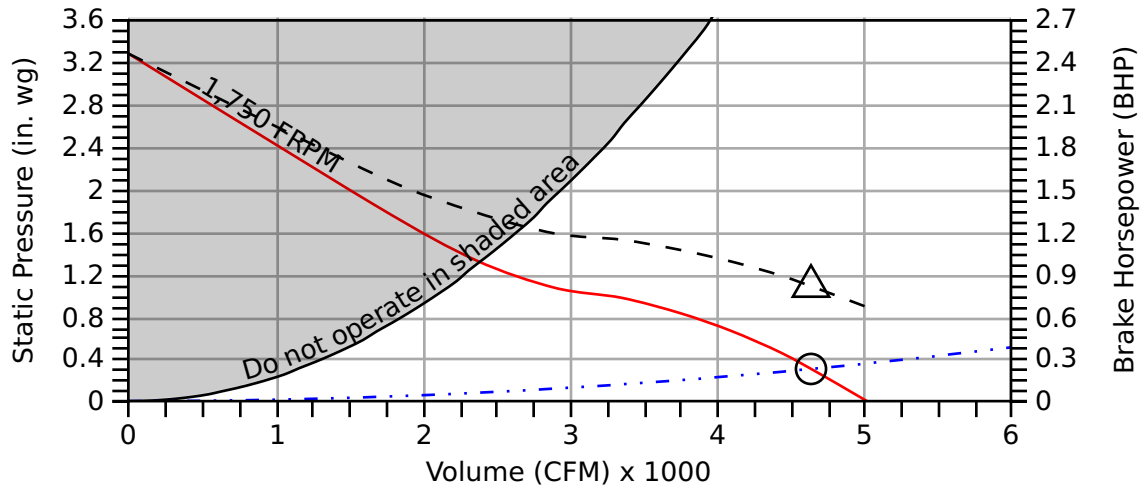
Sidewall Direct Drive Exhaust Fan

Standard Construction Features: Galvanized steel panel with fabricated galvanized steel drive frame (optional wall housing or wall collar). Propeller, fabricated steel (02) or cast aluminum (03). Direct driven motor in the airstream.

Fan Configuration	
Drive type	Direct

Performance	
Requested Volume (CFM)	4,600
Actual Volume (CFM)	4,633
Total External SP (in. wg)	0.3
Fan RPM	1,750
Operating Power (bhp)	0.81
Startup Power (bhp)	0.81
FEI	1.23
FEP Input Power (kw)	0.72
Air Stream Temp (F)	70
Start-up Temp (F)	70
Air Density (lbs/ft^3)	0.072
Elevation (ft)	1053
Static Efficiency (%)	27
Outlet Velocity (ft/min)	2,046

Motor	
Size (hp)	1
V/C/P	575/60/3
NEC FLA (Amps)	1.7
Min Circuit Ampacity (MCA)	2.1
Max Overload Production (MOP)	15



- Fan curve
- Brake horsepower curve
- Operating Point SP
- Operating Bhp point
- Max system curve
- System curve

Static Pressure Calculations	
External SP	0.3 in. wg
Direct Drive RPM Adjustment	0 in. wg
Total External SP	0.3 in. wg

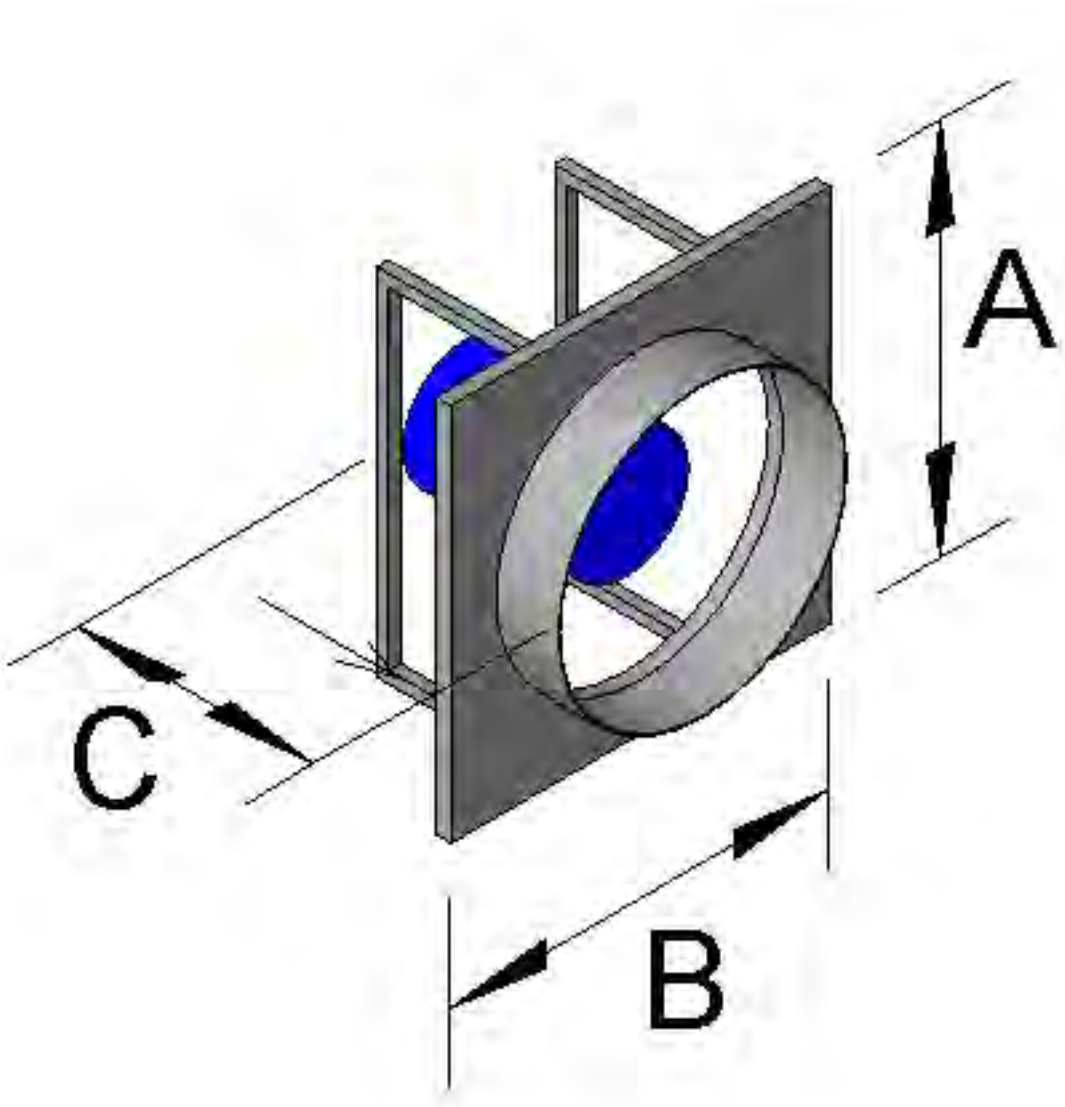
Sound

	Octave Bands (hz)								LwA	dBA	Sones
	62.5	125	250	500	1000	2000	4000	8000			
Inlet	85	86	87	82	80	76	72	67	85	74	23

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.The AMCA certified ratings seal applies to sound and air performance and FEI ratings only.Performance certified is for installation type A: Free inlet, free outlet.Power rating does not include transmission losses.Performance ratings do not include the effects of appurtenances.The sound ratings shown are loudness values in hemispherical sones at 1.5 m (5 ft) in a hemispherical free field calculated per ANSI/AMCA Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301.Values shown are for Installation Type A: free inlet hemispherical sone levels.dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal applies to LwiA and inlet sone ratings only.

FLA - based on tables 150 or 148 of National Electric Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.
MCA and MOP values shown only account for the motor, not accessories (damper actuator, field supplied VFD, etc.).

Dimensions and Weights		
Label	**Value**	**Description**
-	20.125	Impeller Diameter (in)
-	78	Weight w/o accessories (lbs)
A	26	Overall Height (in)
B	26	Overall Width (in)
C	21	Overall Length (in)
-	23.25	Wall Opening Width (in)
-	23.25	Wall Opening Height (in)



*All dimensions are in inches.

Job Name: SQ-18-M2 Cut Sheet
Tag: MK-1
Quantity: 1
Printed Date: June 4, 2025

Model: SQ-18-M2

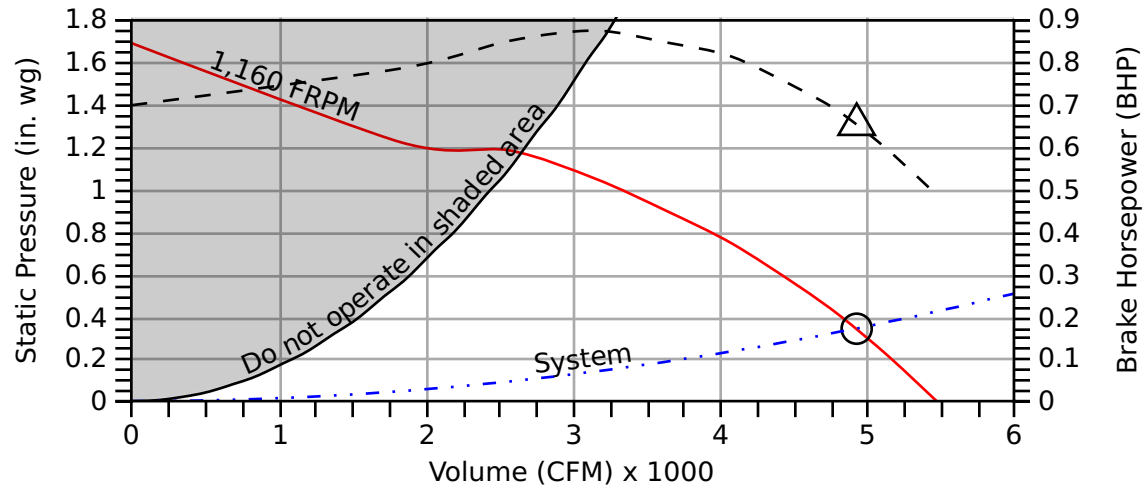
Direct Drive Inline Fan

Standard Construction Features: Galvanized steel housing. Mixed flow wheel. Direct driven motor in the air stream.

Fan Configuration	
Drive type	Direct

Performance	
Requested Volume (CFM)	4,600
Actual Volume (CFM)	4,914
Total External SP (in. wg)	0.34
Fan RPM	1,160
Operating Power (bhp)	0.65
Startup Power (bhp)	0.65
FEI	1.57
FEP Input Power (kw)	0.61
Air Stream Temp (F)	70
Start-up Temp (F)	70
Air Density (lbs/ft^3)	0.072
Elevation (ft)	1053
Static Efficiency (%)	40
Outlet Velocity (ft/min)	1,001

Motor	
Size (hp)	1
V/C/P	575/60/3
NEC FLA (Amps)	1.7
Min Circuit Ampacity (MCA)	2.1
Max Overload Production (MOP)	15



- Fan curve
- Brake horsepower curve
- Operating Point SP
- Operating Bhp point
- Max system curve
- System curve

Static Pressure Calculations	
External SP	0.3 in. wg
Direct Drive RPM Adjustment	0.04 in. wg
Total External SP	0.34 in. wg

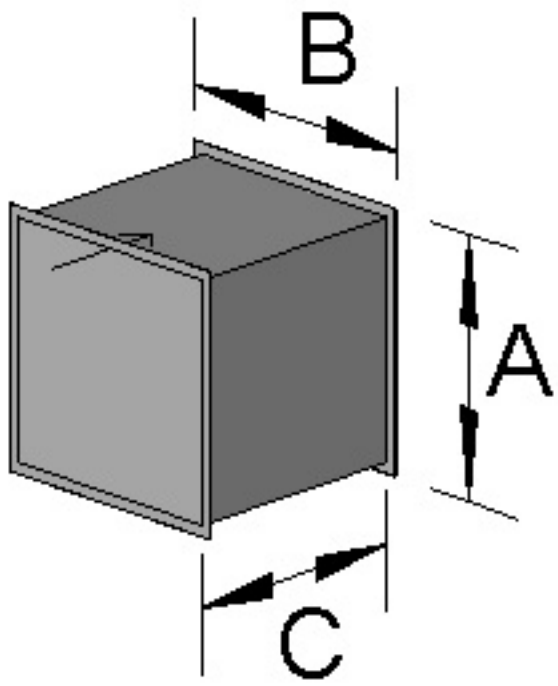
Sound

	Octave Bands (hz)								LwA	dBA	Sones
	62.5	125	250	500	1000	2000	4000	8000			
Inlet	71	80	72	70	69	69	66	62	75	64	13.3
Outlet	81	78	70	73	73	70	67	64	77	66	14.6
Radiated	73	71	63	60	57	53	52	51	64	52	6.8

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.The AMCA certified ratings seal applies to sound and air performance and FEI ratings only.Performance certified is for installation type B: Free inlet, ducted outlet.Power rating does not include transmission losses.Performance ratings do not include the effects of appurtenances.The sound ratings shown are loudness values in hemispherical sones at 1.5 m (5 ft) in a hemispherical free field calculated per ANSI/AMCA Standard 301.Values shown are for Installation Type B: free inlet hemispherical sone levels.dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal for Sound applies to inlet sone ratings only.

FLA - based on tables 150 or 148 of National Electric Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.
MCA and MOP values shown only account for the motor, not accessories (damper actuator, field supplied VFD, etc.).

Dimensions and Weights		
Label	**Value**	**Description**
-	22.25	Impeller Diameter (in)
-	160	Weight w/o accessories (lbs)
A	30	Overall Height (in)
B	30	Overall Width (in)
C	27	Overall Length (in)
-	26.59	Inlet Width (in)
-	26.59	Inlet Height (in)
-	26.59	Outlet Width (in)
-	26.59	Outlet Height (in)



*All dimensions are in inches.

EQUIPMENT SUBMITTAL FOR APPROVAL

PROJECT: **6-14 Dietz Ave**

LOCATION:



Modular Heat Pump

EQUIPMENT	YMAE - Modular Heat Pump
UNIT TAGS	ASHP-0140 (CLG @ 95F)
QUANTITY	1

SOLD TO:

CONSULTING ENGINEER:

PREPARED BY:

DATE:
Tuesday, 29 April 2025

REVISION:
0

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(YMAE - Modular Heat Pump)

BOM Data

Performance Ratings

Unit Drawings

Wiring Diagrams

Unit Specifications Text

Special Requests

Warranties

Submittal Approval Page

BOM Data

Product Type: YMAE - Modular Heat Pump

Unit Tags: ASHP-0140 (CLG @ 95F)

BID DATE: 04/29/2025
PROJECT: **6-14 Dietz Ave**
TO: Interested Bidders

LAST ADDEDNUM: None
NOTE(S)

BILL OF MATERIAL

ITEM	QTY	TAGS	DESCRIPTION
I	1	(1)ASHP-0140 (CLG @ 95F)	DIRECT EXPANSION - MODULAR HEAT PUMP

EQUIPMENT DESCRIPTIONS

EQUIPMENT PROPOSAL

Items Included

- Provide Model YMAE0140 Qty: 1
- Refrigerant Type: R454B
- Brine Application
- Power: 575 / 3 / 60 Application
- Power Connection: SP Circuit Breaker W/ Lockable Handle
- Starter Type: Standard VSD
- High Efficiency Fans with Variable Speed EC motor
- Copper Tube Aluminum Fin Coils (Round Tube And Fin)
- No Selection
- Encl Panels (Standard)
- Acoustic Blanket Required (Standard)
- Refrigerant Warranty: 18 Month (1 Year)
- Entire Unit Parts Only Warranty: 30 Month (2 Year) (Months are from date of shipment/Years are from date of start up, whichever expires first)
- Entire Unit Labor Only Warranty: 30 Month (2 Year) (Months are from date of shipment/Years are from date of start up, whichever expires first)
- Chiller Startup
- SC-Equip Board
- Paddle Flow Switch (Std. Flow Rate)

Items Included but Installed by Others

Items NOT Included

- Hauling or Rigging Equipment Into Place.
- External Disconnect Switches or Circuit Breakers

Performance Ratings

Product Type: YMAE - Modular Heat Pump

Unit Tags: ASHP-0140 (CLG @ 95F)

Project Name: **6-14 Dietz Ave** | Unit Tag: **ASHP-0140 (CLG @ 95F)** | Qty.: **1** | Model: **YMAE0140**

Full Load - Design

PIN								
YMAE0140PJ	S58VBXSAAL	YPAAAAXEA1	3BXSDXXNSS	ATXXXXXXXA				
....5...10	....5...20	....5...30	....5...40	....5...50	....5...60	....5...70	....5...80	....5...90



Unit	
Model No.	YMAE0140
Number of Compressors per Module	8
Compressor Type	Scroll - Inverter
Number of Compressor Circuits	8
Refrigerant	R454B
Turndown Rate	4.7 %
Cooling Mode Operation	
Net Cooling Capacity [tons.R]	134.2
Total Power Input [kW]	162.4
EER [Btu/W.h]	9.915
Part Load Efficiency (IPLV.IP) [Btu/W.h]	19.40
Ambient Air Dry Bulb Temperature* [ºF]	95.0
Entering Liquid Temperature* [ºF]	54.00
Leaving Liquid Temperature* [ºF]	44.00
Entering Flow Rate [USGPM]	353.7
Evap. Pressure Drop [ft H2O]	19.2
Sound Pressure (Hemispherical Method) [dB(A)]	62.0
Sound Pressure Measured at [ft]	30.0
Electrical Data	
Nominal Voltage / Voltage Limits	575-3-60.0 / 520V - 635V
Nominal Voltage	575-3-60.0
Compressor RLA (each circuit) [A]	24.3 / 24.3 / 24.3 / 24.3 / 24.3 / 24.3 / 24.3 / 24.3
Fan QTY	8
Fan MOC [A]	1.9
Min. Circuit Ampacity [A]	269.0
Max. Inverse Time CB Rating [A]	300.0
Max. Dual Element Fuse Size [A]	300.0
Unit Short Circuit Withstand [kA]	65

Performance Impacting Options	
Condenser Coil	Copper Tube Aluminum Fin Coils (Round Tube And Fin)
Fan	High Efficiency Fans with Variable Speed EC motor
Sound Kit	Acoustic Blanket Required (Standard)
Weight & Dimensional Data	
Shipping Weight [lbs]	13946
Operating Weight [lbs]	14343
Refrigerant Charge per Module [lbs]	203
Overall Length [in]	265.7
Overall Width [in]	88.2
Overall Height [in]	99.0
Hydrokit	
Pump Type	Dual VSD Pumps
Evaporator Required External Static Pressure [ft H2O]	80.0
Evaporator Available External Static Pressure [ft H2O]	108
Pump Nominal Current [A]	32.0
Fluid Connection Diameter [in]	DN125
Pump Motor HP	24.8

Heat Exchanger Performance			
Water to Refrigerant Heat Exchanger		**Ambient Coils**	
Evaporator Type	Braze Plate Exchanger	Number of Fans	8
Fluid Volume [USGAL]	12.5	Altitude* [ft]	0.00
Fluid Type* / Concentration* [%]	Propylene Glycol / 40.0	Total Air Flow [cfm]	94175
Fouling Factor* [h ft2 F/Btu]	0.000100	Fan Power [kW]	9.504
Fluid Connection Diameter [in]	2.5		

* Designates user specified input

Combined units or modular chiller array rating is outside of the scope of the AHRI Air-Cooled Water-Chilling Packages Certification Program. Individual unit ratings are subject to the governing documents of the AHRI Certification Program. 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 Multi-Step Unloading w/ User Specified % Load & Ambient Temp)				
Percent Load	**Ambient [°F]**	**Capacity [tons.R]**	**Power Input [kW]**	**Unit Efficiency [Btu/W.h]**
100.0	95.0	134.2	162.4	9.915

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	60.0	62.0	62.0	60.0	56.0	53.0	50.0	48.0	62.0

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]	321.6	**Performance**	
Pressure Drop [ft H2O]	12.7	EER [Btu/W.h]	10.68
Fluid Type	Water	IPLV.IP [Btu/W.h]	19.40
Fouling Factor [h ft2 F/Btu]	0.000100	Net Cooling Capacity [tons.R]	134.4
Fluid Volume [USGAL]	12.5		

Note:Unit rated at design condition capacity.

Part Load Performance (Based on AHRI 550/590 - 2023 (IP))				
Percent Load	**Ambient [°F]**	**Capacity [tons.R]**	**Power Input [kW]**	**Unit Efficiency [Btu/W.h]**
100.0	95.0	134.4	151.0	10.68
75.0	80.0	100.8	78.47	15.41
50.0	65.0	67.39	36.85	21.95
25.0	55.0	33.34	16.30	24.55

Notes:

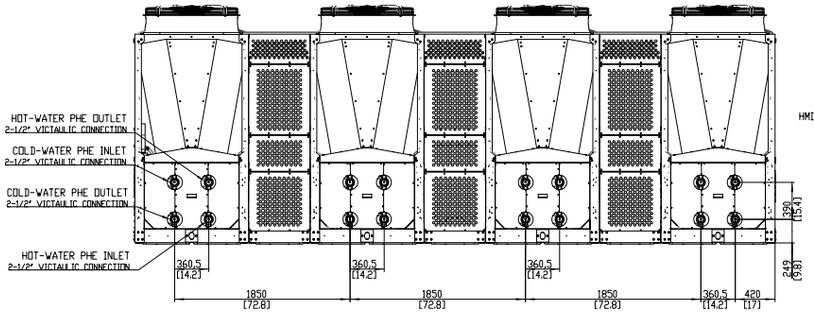
The product image shown is for illustrative purposes only and is not representative of selected options.

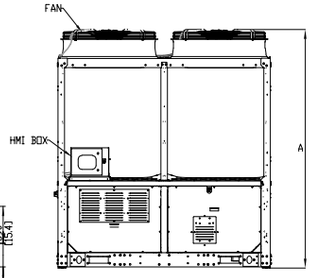
Unit Drawings

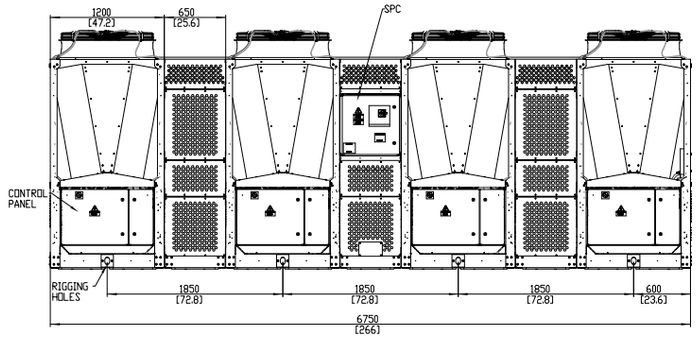
Product Type: YMAE - Modular Heat Pump

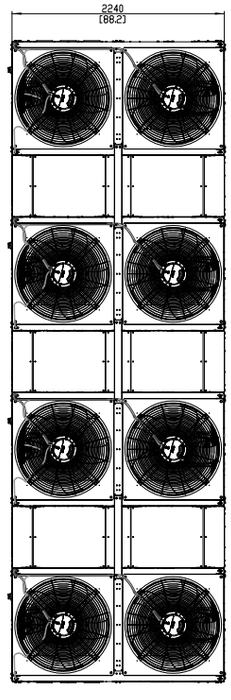
Unit Tags: ASHP-0140 (CLG @ 95F)

MODULAR ARRAY (4 MODULES) - 4 PIPE - WITH SPC









Voltage	A
460V	2515 [99"]
575V	2540 [100"]

NOTES
1. PLACEMENT ON A LEVEL SURFACE FREE OF OBSTRUCTIONS (INCLUDING SNOW, FOR WINTER OPERATION) OR AIR RECIRCULATION ENSURES PERFORMANCE, RELIABLE OPERATION AND EASE OF MAINTENANCE.
2. SITE RESTRICTIONS MAY COMPROMISE MINIMUM CLEARANCES, RESULTING IN UNPREDICTABLE AIR FLOW PATTERNS AND POSSIBLE DIMINISHED PERFORMANCE. UNIT CONTROLS WILL OPTIMIZE OPERATION WITHOUT NUISANCE HIGH PRESSURE SAFETY CUTOUT; HOWEVER, THE SYSTEM DESIGNER MUST CONSIDER POTENTIAL PERFORMANCE DEGRADATION.
3. NO MORE THAN ONE ADJACENT WALL MAY BE HIGHER THAN THE UNIT.
4. INSTALLING CONTRACTOR MUST INCLUDE VENT AND DRAIN ACCOMMODATIONS IN WATER PIPING.

REV.	DATE	EC. NO.	DR.	CHK.	ENG.

REVISION

CONTINUED

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Johnson Controls

JOHNSON CONTROLS - BUILDING EFFICIENCY
507 EAST MICHIGAN STREET, MILWAUKEE, WI, 53202 USA

FIRST ANGLE

DO NOT SCALE

YMAE0140PJS
Modular Array 4 Pipe

MATERIAL
ENG. STD.
PART NO.
CUT SIZE

DRAWN	TAO.ZHOU	20-MAY-2023
MODELER	TAO.ZHOU	20-MAY-2023
CHKD	PANLIU	20-MAY-2023
ENG	KELLY.YUAN	20-MAY-2023

SCALE: 1:1 MASS (Kg) ORIG. NO.

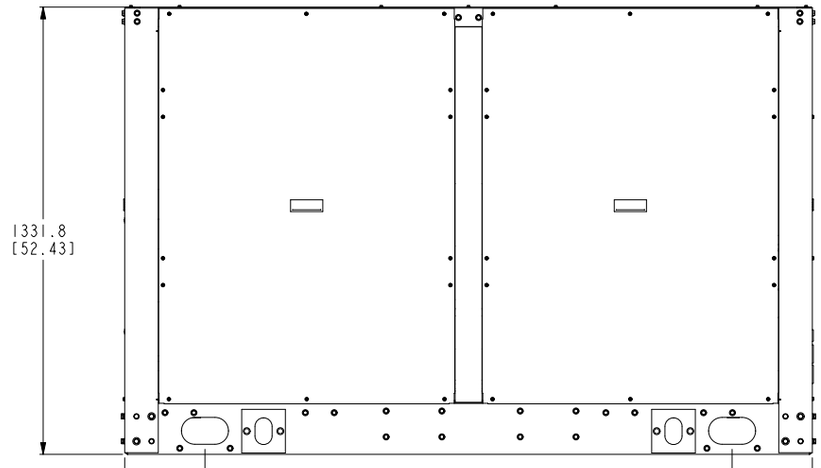
A1

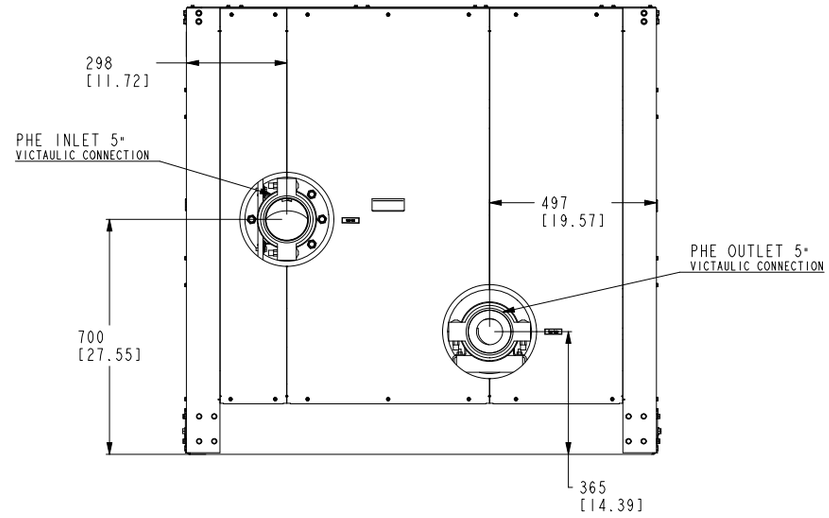
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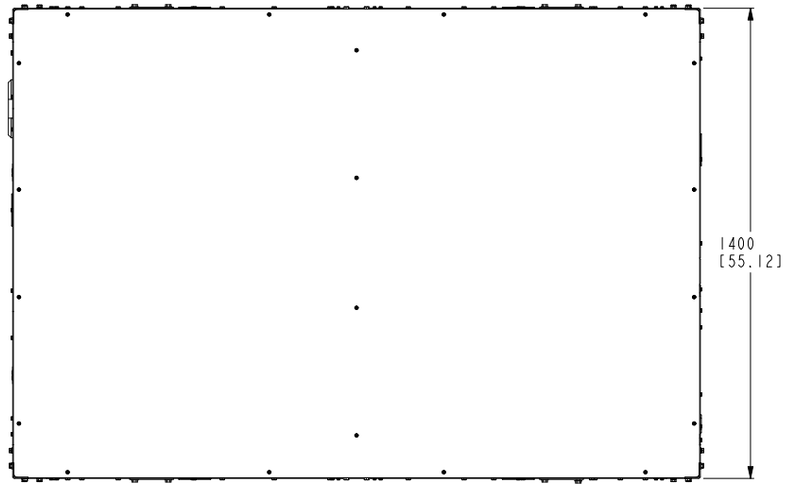
DRAWING NUMBER 093-91218-007

REVISION
VERSION

SHEET 1 OF 1







NOTES:

1. PLACEMENT ON A LEVEL SURFACE FREE OF OBSTRUCTIONS (INCLUDING SNOW, FOR WINTER OPERATION) OR AIR RECIRCULATION ENSURES PERFORMANCE, RELIABLE OPERATION AND EASE OF MAINTENANCE.
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3. NO MORE THAN ONE ADJACENT WALL MAY BE HIGHER THAN THE UNIT.
4. INSTALLING CONNTRACTOR MUST INCLUDE VENT AND DRAIN ACCOMMODATIONS IN WATER PIPING.

FIRST ANGLE

Johnson Controls

JOHNSON CONTROLS - BUILDING EFFICIENCY

507 EAST MICHIGAN STREET, MILWAUKEE, WI, 53202 USA

REVISION	REV.	DATE	EC. NO.	DR.	CHK.	ENG.

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DO NOT SCALE
DIMENSIONS IN MM [DIMENSIONS IN INCH]
TOLERANCES PER ENG STD M-1085

DRAWN	Y.SUN	09-NOV-2023
MODELER	P.LIU	09-NOV-2023
CHKD	P.LIU	09-NOV-2023
ENG	XW.CHEN	09-NOV-2023

SCALE: .100 | MASS (kg):

Pumpkit0105SS46/58
Pumpkit0105DS46/58

MATERIAL
ENG. STD.
PART NO.
CUT SIZE

A2

DRAWING NUMBER 093-91278-GA

REVISION
VERSION Concept

ORIG. NO.: | SHEET 1 OF 1

Contact
E-mail
Phone

Customer

Contact
E-mail
Phone

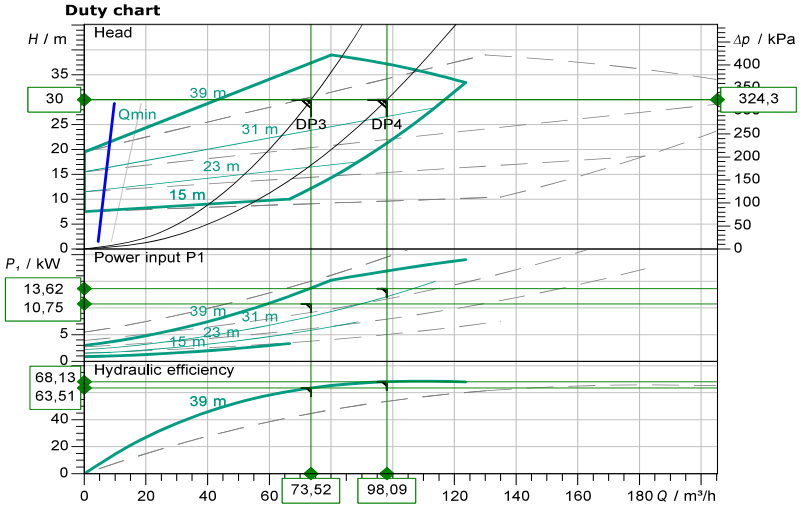
Technical data

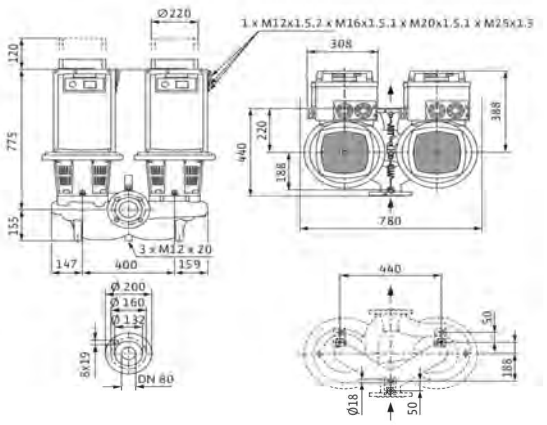
Glanded high-efficiency twin-head pump
Stratos GIGA-D 80/3-40/18,5-N21-S1-YMAE

Installation location
Customer pos.no DP4 -20°C 50%EG

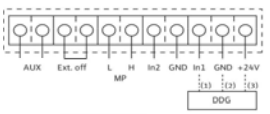
Date 2023-07-07

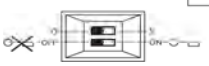
Duty chart











Requested data

Flow	98,09 m³/h
Head	30,00 m
Media	Ethylene glycol 50 %
Fluid temperature	-20,00 °C
Density	1102,00 kg/m³
Kin. viscosity	28,48 mm²/s

Hydraulic data (Duty point)

Flow	98,09 m³/h
Head	30,00 m
Power input P1	13,62 kW
NPSH	5,07 m

Product data

Glanded high-efficiency twin-head pump

Kind of operation	dp-v HR
Max. operating pressure	1600 kPa
Fluid temperature	-20 °C ... + 140 °C
Max. ambient temperature	50 °C
Minimum efficiency index (MEI)	≥ 0.4

Motordata per Motor/Pump

Motor design	EC motor
Efficiency class	IE5
Mains connection	3~ 460 V / 60 Hz
Permitted voltage tolerance	+-10 %
Max. speed	2900 1/min
Rated power P2	19,60 kW
Rated current	32,00 A
Degree of protection	IP55
Insulation class	F
Motor protection	PTC integrated

Fitting dimensions

Pipe connection on the suction side	DN 80, PN 16
Pipe connection on the pressure side	DN 80, PN 16
Port to Port	440 mm

Materials

Pump housing	5.1301, EN-GJL-250 cataphoretic-coat
Impeller	EN-GJL-200
Lantern	5.1301, EN-GJL-250 cataphoretic-coat
Shaft	Stainless steel
Shaft seal	Q1Q1X4GG

Information for order placements

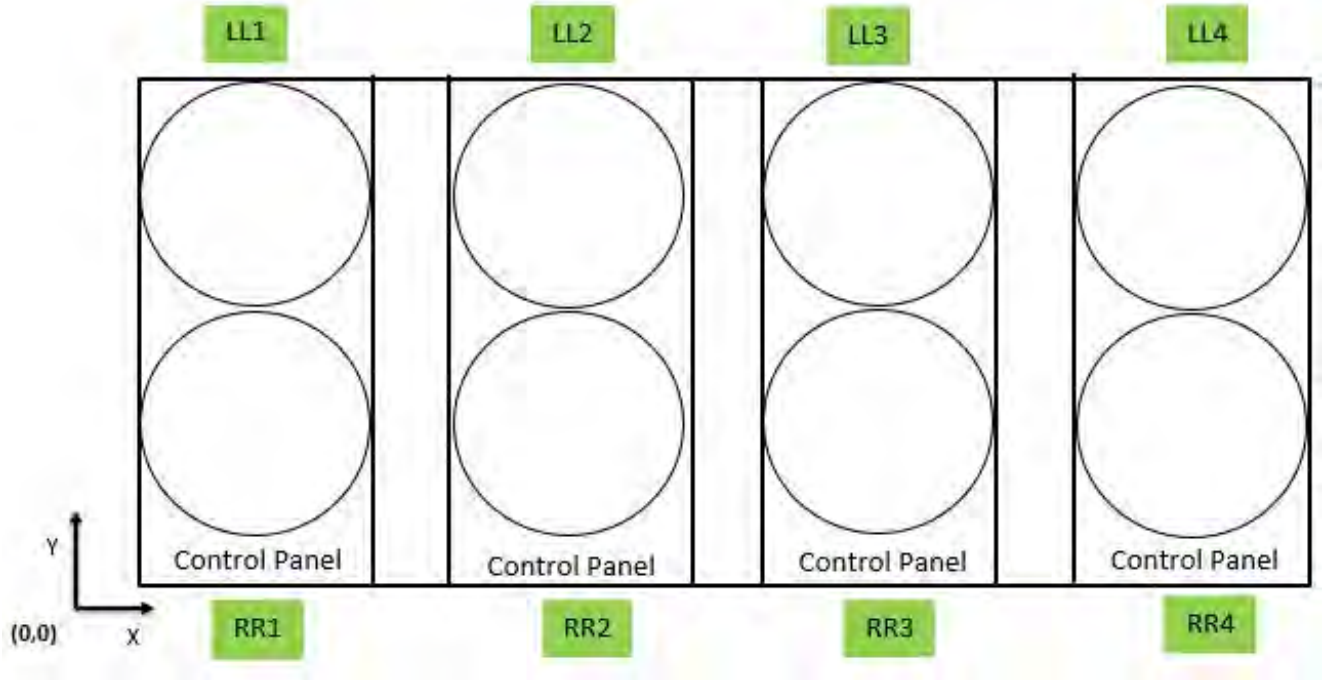
Weight approx.	302 kg
Item number	2230292

Wiring Diagrams

Product Type: YMAE - Modular Heat Pump

Unit Tags: ASHP-0140 (CLG @ 95F)

PIN								
YMAE0140PJ	S58VBXSAAL	YPAAAAXEA1	3BXSDXXNSS	ATXXXXXXXA				
....5...10	....5...20	....5...30	....5...40	....5...50	....5...60	....5...70	....5...80	....5...90



AVM Data					
Location	**X-Distance [in]**	**Y-Distance [in]**	**PartNumber**	**Color**	**Operating Weight [lbs]**
L1	23.6	1.5			1700
R1	23.6	86.7			1887
L2	96.5	1.5			1700
R2	96.5	86.7			1887
L3	169.3	1.5			1700
R3	169.3	86.7			1887
L4	242.1	1.5			1700
R4	242.1	86.7			1887

Weight Data			
Total Weight [lbs]		**Center of gravity [in]**	
Shipping	13946	Xg	132.9
Operating	14343	Yg	46.3

Unit Specifications Text

Product Type: YMAE - Modular Heat Pump

Unit Tags: ASHP-0140 (CLG @ 95F)

MODULAR AIR COOLED CHILLER / AIR SOURCED HEAT PUMP- YORK YMAE 60Hz GUIDE SPECIFICATION

I. GENERAL

a. GENERAL REQUIREMENTS

i. The requirements of the General Conditions, Supplementary Conditions, Division 1, and Drawings apply to all work herein.

b. SCOPE

i. Provide touchscreen HMI controller, scroll compressors, air-cooled chiller of the scheduled capacities as shown and indicated on the Drawings, including but not limited to:

1. Single or modular package
2. Electrical power and control connections
3. Chilled liquid connections
4. Charge of refrigerant and oil

c. QUALITY ASSURANCE

i. Product shall be Designed, Tested, Rated and Certified in accordance with, and Installed in compliance with applicable sections of the following European Standard and Directives:

1. AHRI 550/590 – Performance Rating of Water-chilling and Heat Pump Water-heating Packages Using the Vapor Compression Cycle
2. AHRI 370 – Sound Rating of Large Outdoor Refrigerating and Air-Conditioning Equipment
3. ANSI/ASHRAE 15 – Safety Code for Mechanical Refrigeration
4. ANSI/ASHRAE 34 – Number Designation and Safety Classification of Refrigerants
5. ASHRAE 90.1 – Energy Standard for Buildings Except Low-Rise Residential Buildings
6. ANSI/NFPA 70 – National Electrical Code (N.E.C.)
7. UL 60335-1 – Safety of Household and Similar Electrical Appliances, Part 1: General Requirements
8. UL 60335-2-40 –Household And Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers
9. OSHA – Occupational Safety and Health Act
10. Manufactured in facility registered to ISO 9001.

ii. OHSAS - Occupational Health and Safety Assessment Series

iii. Factory Run Test: Air-cooled chiller shall be pressure-tested, evacuated and fully charged with refrigerant and oil, and shall be factory operational run tested with water flowing through the vessel.

iv. Heat pump manufacturer shall have a factory trained and supported service organization.

v. Warranty: Manufacturer shall warrant all equipment and material of its manufacture against defects in workmanship and material for a period of one year from date of initial start-up or eighteen (18) months from date of shipment, whichever occurs first.

d. DELIVERY AND HANDLING

i. Unit shall be delivered to job site fully assembled and charged with refrigerant and oil by the Manufacturer.

ii. Unit shall be stored and handled per Manufacturer’ s instructions.

iii. Protect the unit and its accessories from the weather and dirt exposure during shipment.

II. PRODUCTS

a. MANUFACTURERS

i. The design shown on the Drawings is based on YORK model YMAE AIR-COOLED MODULAR HEAT PUMPS manufactured by Johnson Controls / YORK. Alternate equipment will be acceptable if the manufacturers equipment meets the scheduled performance and complies with these specifications. If equipment manufactured by a manufacturer other than that scheduled is utilized, then the Mechanical Contractor shall be responsible for coordinating with the General Contractor and all affected Subcontractors to insure proper provisions for installation of the furnished unit. This coordination shall include, but not be limited to, the following:

1. Structural supports for units.

2. Piping size and connection/header locations.

3. Electrical power requirements and wire/conduit and overcurrent protection sizes.

4. Heat pump physical size on plant layout.

5. Site noise considerations.

b. CHILLER MATERIALS AND COMPONENTS

i. Description: Furnish, Install, and Commission factory assembled charged, and operational run tested AIR-COOLED MODULAR HEAT PUMPS as specified herein and shown on the Drawings. Heat pump shall include, but is not limited to: a complete system with multiple independent refrigerant circuits incl. 4-way-valve, DC inverter scroll compressors, brazed plate heat exchanger, air-cooled heat exchanger, R454B refrigerant, interconnecting wiring, safety and operating controls and special features as specified herein or required for safe, automatic operation.

ii. Operation Characteristics

1. Ensure unit is capable of operation in cooling mode from -4°F to 118.4°F ambient temperature.

2. Ensure unit is capable of operation in heating mode from -13°F to 109.4°F ambient temperature.

3. Ensure unit is capable of operation in Simultaneous Heating & Cooling mode from -4°F to 118.4°F ambient temperature.

4. Cabinet: Unit panels, structural elements, control boxes and heavy gauge structural base shall be constructed of painted galvanized steel. All exposed sheet metal shall be coated with baked on power paint to meet 500-hour salt spray in accordance with the ASTM B117 standard.

c. Inverter scroll compressors including:

i. Direct current (DC) inverter scroll compressors: shall be hermetic, including

1. Direct Current inverter providing stepless capacity control

2. Enhanced vapor injection cycle with extended operation envelope

3. Non-contact seal design to diminish friction and improve reliability

4. 15 year design life, self-lubricating bearings

5. Internal check valve to reduce vibration

6. Internal pressure equalization valve to optimize part load efficiency

d. REFRIGERANT CIRCUIT COMPONENTS

i. Compressor crankcase heaters are also included for extra protection against liquid migration. Heat the compressor in the case of the standby when power on.

ii. Each refrigerant circuit shall include: a discharge service ball type isolation valve, dual high side pressure relief valves, liquid line charging port, dual low side pressure relief valves, 4 way valve, solenoid valves, electronic expansion valves, and flexible, closed-cell foam insulated suction line and suction pressure transducer, refrigerant receiver, discharge liquid separator and R454B refrigerant.

iii. Each unit shall be equipped with an oil separator for DC inverter scroll compressor.

e. HEAT EXCHANGERS

i. Water side heat exchanger:

1. Water side heat exchanger shall be brazed-plate stainless steel construction capable of refrigerant working pressure of 638 psig (4400 kPa) and liquid side pressure of 150 psig (1034 kPa).

2. Exterior surfaces shall be covered with 19mm, flexible, closed cell insulation.

3. Water nozzles shall be victaulic connections.

4. Water side heat exchanger shall include vent and drain fittings and thermostatically controlled heaters to protect in off-cycle.

5. A 30-mesh, serviceable wye-strainer and mechanical couplings shall be provided for field installation on

6. Paddle type flow switch shall be factory installed in water side heat exchanger outlet pipe.

7. Paddle type flow switch shall be field installed in water side heat exchanger outlet pipe.

ii. Air side heat exchanger:

1. Four-side air inlet, structured with "U" shaped heat exchanger, exclusively designed for minimum footprint per area

2. Coils shall be internally enhanced 7mm tube and hydrophilic pre-coated aluminum fins type condenser coils. Coils shall be designed for 650 psig (44.8 bar) or higher working pressure.

iii. Fans assembly kits shall be composed of following components with their feature:

iv. Impeller: profiled blade geometry and winglets for maximum efficiency; aerodynamically optimized form for noise reduction; UV and corrosion resistant blades made of durable composite material

1. EC Fan motors: High efficiency, direct drive, 3-phase, insulation class "F", current protected, IP55, permanently-lubricated ball bearings. Brushless commutation and minimum self-heating

2. Fan housing: resistant, corrosion resistant, sendzimir galvanized and coated sheet steel with black plastic (RAL9005); optimized inlet ring and integrated diffuser for maximum efficiency and quiet operation

3. Guard grill: metal double coated with black plastic (RAL9005); protect motor against splash water, contact protection according to standard DIN EN ISO13857

f. INSULATION

i. Material: Closed-cell, flexible, UV protected, thermal insulation for preformed flexible elastomeric cellular thermal insulation in sheet and tubular form.

ii. Thickness: Standard 13 mm.

iii. Factory-applied insulation over cold surfaces of liquid chiller components including brazed plat heat exchanger, water pipe on chiller, and suction line.

iv. Adhesive: As recommended by insulation manufacturer and applied to 100 percent of insulation contact surface including all seams and joints.

g. ACOUSTICAL DATA

i. Provide acoustical sound power or sound pressure level data in decibels (dB) at the scheduled eight (8) octave band center frequencies.

ii. Supplied equipment shall not exceed scheduled sound power or sound pressure level data at any load point. The mechanical Contractor shall be responsible for any additional costs associated with equipment deviation.

iii. Acoustical performance ratings shall be in accordance with ARI 370

h. POWER AND ELECTRICAL REQUIREMENTS

i. Power/Control Panel:

1. Factory installed and wired NEMA 3R rain/dust tight, powder painted steel cabinets with tool lockable, hinged, latched, and gasket sealed outer doors. Provide main power connection(s), compressor starters and fan motor contactors, current overloads, and factory wiring.

ii. Single Point Circuit Breaker: A unit mounted circuit breaker with external, lockable handle (in compliance with NEC Article 440-14), can be supplied to isolate the power voltage for servicing. SCCR Short citcuit current rating can reach 65kA.

iii. Power Factor:

1. Provide standard power factor of 0.9, and some models can be above 0.9 power factor.

2. The installing contractor is responsible for additional cost to furnish and install power factor correction capacitors if they are not factory mounted and wired.

iv. All exposed power wiring shall be routed through liquid-tight, UV-stabilized, non-metallic conduit.

v. Supplied equipment shall not exceed scheduled Minimum Circuit Ampacity (MCA.) The mechanical Contractor shall be responsible for any additional costs associated with equipment deviation.

i. CONTROLS

i. General:

1. Provide automatic control of chiller and waterside economizer operation including compressor start/stop and load/unload, anti-recycle timers, condenser fans, evaporator pump, evaporator heater, waterside economizer bypass value, unit alarm contacts and run signal contacts.

2. Chiller shall automatically reset to normal chiller operation after power failure.

3. Unit operating software shall be stored in non-volatile memory. Field programmed set points shall be retained in memory for minimum 5 years.

4. Unit operating software shall be stored in non-volatile memory. Field programmed set points shall be retained in lithium battery backed regulated time clock (RTC) memory for minimum 5 years.

5. Alarm contacts shall be provided to remote alert for any unit or system safety fault.

ii. Display:

1. Provide full touch screen HMI display that is both viewable in direct sunlight and nighttime viewing.

2. Provide full touch screen HMI display that is both viewable in direct sunlight and has LED backlighting for nighttime viewing. Provide one keypad and display panel per chiller.

3. HMI display shall be accessible through hinged enclosure door. Display shall provide a minimum of unit setpoints, status, electrical data, temperature data, pressures, safety lockouts and diagnostics.

4. Descriptions in English (or available language options)

iii. Programmable Setpoints (within Manufacturer limits): Display language, chilled liquid cooling mode, local/remote control mode, display units mode, system lead/lag control mode, remote temperature reset, remote current limit, remote sound limit, low ambient temperature cutout enable/disable, leaving chilled liquid setpoint and range, maximum remote temperature reset.

iv. Display Data: Return and leaving water temperatures, outdoor air temperature, status of each unit, percent of compressors running, low leaving water temperature cutout setting, water temperature reset via Modbus interface, compressor run status, daily start/stop times, holiday status, modules operating hours (each), water heater and fan operation, water pump status, high and low pressure switch status, water switch status, discharge temperature, air-sources hx inlet temperature, shell-tube hx inlet temperature, accumulator inlet temperature, EXV steps.

v. Single system Safeties:

1. Automatic reset required, includes:

a. Fins temperature

b. Low unit leaving water temperature in cooling mode

c. High unit leaving water temperature in heating mode

2. Manual reset required, includes:

a. Accumulator inlet temperature

b. Discharge temperature

c. Low pressure switch

d. High pressure switch

e. Fan motor protector

f. Power fault

g. Braze Plate Heat Exchanger freeze fault

h. Low leaving water temp in heating mode

3. After the twice trips by automatically reset and third trip by manual reset within 60 minutes:

a. High pressure at high pressure side

b. Low pressure at low pressure side

c. Water flow

d. High discharge temperature

e. Communication fault with fan

f. Communication fault with unit

g. DC driver fault

h. Reverse valve shifting fault

vi. Module Safeties:

1. Automatic reset

a. Ambient temperature

b. Low system leaving water temperature in cooling mode

c. High system leaving water temperature in heating mode

d. Low air inlet temperature in cooling mode

e. High air inlet temperature in heating mode

f. Communication fault with HMI controller

2. Manual reset

a. System return water temperature

b. System leaving water temperature

c. Water flow fault

d. External linkage fault

e. Over limit operation time

vii. BAS Communications: BACnet MS/TP, Modbus and N2 communication capabilities are standard

viii. Advanced defrost logic to reduce defrost cycle time:

1. Defrost shall be based on refrigerant pressure. Thermocouple-based control is not acceptable.

2. Subcooling circuits shall be designed to prevent ice build-up on bottom of coil

3. Maximum of one circuit may enter defrost cycle at any given time, to reduce heating capacity loss

j. ACCESSORIES AND OPTIONS

i. Some accessories and options supersede standard product features. All options are factory-mounted unless otherwise noted.

ii. Vibration Isolation (Field Mounted by Contractor):

1. 2" Deflection Restrained Spring Isolators: Level adjustable, restrained mounts in rugged welded steel housing with vertical and horizontal limit stops. Housings shall be designed to withstand a minimum 1.0g accelerated force in all directions to 2 inches (50 mm)

iii. Each compressor is individually enclosed by an acoustic sound blanket. The sound blankets are made with one layer ofacoustical absorbent textile fiber of 5/8" (15mm) thickness; one layer of heavy duty anti-vibration material thicknessof 1/8" (3mm). Both are closed by two sheets of welded PVC, reinforced for temperature and UV resistance. (Factoryinstalled)

iv. Enclosure Options

v. Steel panels are mounted on the sides and ends of lower section of unit for protection. Steel panel enables unit to comply with whole unit IPx4 class. (Factory-Mounted)

vi. Dual VSD Pumps: Hydro-Kit. External hydrokit is suitable for water glycol systems with open drive air-cooled variable speed motor. Dual pump as standby duty only. The standard external hydrokit option includes one pump, a 20 mesh strainer,drainage valves, stop valves. It also includes a trace heater in the inlet pipe, including pump and strainer.

III. EXECUTION

a. INSTALLATION

i. Permission Power Supply: 575V/60HZ/3Ph

ii. General: Rig and Install in full accordance with manufacturer’ s requirements, project drawings, and contract documents.

iii. Location: Locate unit as indicated on drawings, including cleaning and service maintenance clearance per Manufacturer instructions. Adjust and level unit on support structure. If equipment provided exceeds height of scheduled chiller, installing contractor is responsible for additional costs associated with extending the height of parapet or screening walls/enclosures.

iv. Components: Installing Contractor shall provide and install all auxiliary devices and accessories for fully operational chiller.

v. Electrical: Coordinate electrical requirements and connections for all power feeds.

vi. Controls: Coordinate all control requirements and connections with Controls Contractor.

vii. Finish: Installing Contractor shall paint damaged and abraded factory finish with touch-up paint matching factory finish.

Special Requests

Product Type: YMAE - Modular Heat Pump

Unit Tags: ASHP-0140 (CLG @ 95F)

SR Summary Report

Special Request Summary

Project Name: **6-14 Dietz Ave** | Unit Tag: **ASHP-0140 (CLG @ 95F)** | Qty.: **1** | Model No.: **YMAE0140**

PIN								
YMAE0140PJ	S58VBXSAAL	YPAAAAXEA1	3BXSDXXNSS	ATXXXXXXXA				
....5...10	....5...20	....5...30	....5...40	....5...50	....5...60	....5...70	....5...80	....5...90

SR Drawings			
Unit Drawing	None	Electrical Drawing	None

PIN Location(s)	SR Number	SR Weight [lbs]	Expiration Date	AE Approved
	SR025-00072858-001		07/29/2025	YES

PIN Location(s)	SR Number	SR Description	MLP/Unit
	SR025-00072858-001	Resolution: CRN ON VESSEL(S) NAME PLATE(S) CRN will impact lead time as the Canadian government is the certifying body. YesSR valid ONLY for the following provinces: Alberta, British Columbia, New Brunswick, Nova Scotia, Ontario, Quebec and Yukon	9644

Warranties

Product Type: YMAE - Modular Heat Pump

Unit Tags: ASHP-0140 (CLG @ 95F)

CERTIFICATE OF LIMITED WARRANTY
JOHNSON CONTROLS EQUIPMENT

Contract Number: Model No.: YMAE0140 Serial Number:
Ship Date: Start Date:

POLICY STATEMENT

Johnson Controls (JCI) warrants all equipment and associated factory supplied materials or start-up services performed by Johnson Controls in connection therewith, against defects in workmanship and material. **The warranty period begins at start up, or six (6) months from the ship date, whichever occurs first.** Subject to the exclusions listed below, Johnson Controls, at its option, will repair or replace, FOB point of shipment, such products or components as it finds defective.

Except for reciprocating replacement compressors, which Johnson Controls warrants for a period of twelve (12) months from date of shipment, Johnson Controls warrants Johnson Controls reconditioned or replacement materials, or installation or start-up services performed by Johnson Controls in connection therewith, against defects in workmanship and material for a period of (90) days from date of shipment.

The above represents the minimum warranty policy Johnson Controls will extend to customers. Additional product specific coverage is provided as outlined herein or in separate related warranty policies. No warranty repairs or replacements will be made until payment for all equipment, materials, components, or services has been received by Johnson Controls.

Warranty Type	Warranty Duration	Expiration Date
Standard - Entire Unit - Parts and Labor	1 Year	Not provided
Extended - Entire Unit - Parts and Labor	2 Years	Not provided
Extended - Refrigerant	1 Year	Not provided

EXCLUSIONS:

Unless specifically agreed to in the contract documents, or associated with additional warranty options listed above, this warranty does not include the following costs and expenses:

I. Labor to repair, remove, or reinstall any equipment, materials or components.

II. Special shipping, handling or transportation charges, including cranes, safety walks or other safety requirements specific to jobsites.

III. Cost of refrigerant.

IV. Freight damage.

V. Field applied coatings added to any surface or heat exchanger.

VI. Rental chillers.

VII. Normal wear and tear or corrosion.

ALL WARRANTIES ARE VOID IF:

A. Equipment is used with refrigerants, oil, additives, or antifreeze agents other than those authorized by supplying factory.

B. Equipment is used with any material or any equipment such as evaporators, tubing, other low side equipment or refrigerant controls not approved by supplying factory.

C. Equipment has been damaged by freezing because it was not properly protected during cold weather or damaged by fire or any other conditions not ordinarily encountered.

D. Equipment is not applied, installed, operated, maintained and serviced in accordance with instructions issued by Johnson Controls.

E. Equipment is damaged due to dirt, air, moisture, or other foreign matter entering the refrigerant system.

F. Equipment is not properly stored, protected, or inspected by customer during the period from date of shipment to date of initial start-up.

G. Field coating of coil has occurred.

H. Equipment is damaged due to acts of God, abuse, including shipping damage, neglect, sabotage, or acts of terrorists.

I. Equipment has modifications carried out that have an effect on the original design of the product without such work being authorized by the factory. Any on site design changes or unit modification/replacement shall be authorized in advance by the factory.

J. Equipment is moved from the location where it is originally placed in service, unless performed by certified Johnson Controls employees who have followed Johnson Controls' then-current installation and operations procedures as evidenced by signed start-up documentation.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, EXPRESS OR IMPLIED IN LAW OR IN FACT, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE WARRANTIES CONTAINED HEREIN SET FORTH BUYER' S SOLE AND EXCLUSIVE REMEDY IN THE EVENT OF A DEFECT IN WORKMANSHIP OR MATERIALS. IN NO EVENT SHALL JOHNSON CONTROLS' LIABILITY FOR DIRECT OR COMPENSATORY DAMAGES EXCEED THE PAYMENTS RECEIVED BY JOHNSON CONTROLS FROM BUYER FOR THE MATERIAL OR EQUIPMENT INVOLVED, NOR SHALL JOHNSON CONTROLS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES. THESE LIMITATIONS ON LIABILITY AND DAMAGES SHALL APPLY UNDER ALL THEORIES OF LIABILITY OR CAUSES OF ACTION, INCLUDING BUT NOT LIMITED TO, CONTRACT, WARRANTY, TORT, (INCLUDING NEGLIGENCE) OR STRICT LIABILITY. THE ABOVE LIMITATIONS SHALL INURE TO THE BENEFIT OF JOHNSON CONTROLS SUPPLIERS AND SUBCONTRACTORS.

Products furnished, but not manufactured, by Johnson Controls are not covered by this warranty. Products furnished but not manufactured by Johnson Controls may be covered by the manufacturer of such products and Buyer's sole and exclusive remedy for such products is limited to any warranty given by said manufacturer.

To qualify for warranty consideration under this Johnson Controls warranty, Buyer must immediately notify Johnson Controls at the earlier of the Buyer's discovery of the defect or the time at which the Buyer should have discovered the defect with the exercise of due diligence. Buyer must also promptly thereafter return to Johnson Controls (freight pre-paid by Buyer) all defective parts. Nothing herein is intended to provide warranty coverage to lessees or anyone other than Buyer and no third-parties are intended to be beneficiaries of this Limited Warranty.

If you are interested in adding additional coverage, contact your local JCI branch for more information about extended warranty.

The extended warranty is in accordance with BE Global Intercompany Equipment Warranty Policy 17-16.101.BEQ.

Customer Signature: _____

Johnson Controls Representative: _____

Date: _____

STANDARD LIMITED WARRANTY
ENGINEERED SYSTEMS EQUIPMENT

SERVICE POLICY	Su persed es: 50.05-NM2 (812)	Form 50.05-NM2 (1212)

POLICY STATEMENT

Johnson Controls (JCI) warrants all equipment and associated factory supplied materials or start-up services performed by Johnson Controls in connection therewith, against defects in workmanship and material for a period of eighteen (18) months from date of shipment, or twelve (12) months from date of start up, whichever occurs first. Subject to the exclusions listed below, Johnson Controls, at its option, will repair or replace, FOB point of shipment, such products or components as it finds defective.

Except for reciprocating replacement compressors, which Johnson Controls warrants for a period of twelve (12) months from date of shipment, Johnson Controls warrants Johnson Controls reconditioned or replacement materials, or installation or start-up services performed by Johnson Controls in connection therewith, against defects in workmanship and material for a period of (90) days from date of shipment.

The above represents the minimum warranty policy Johnson Controls will extend to customers. Additional product specific coverage is provided as outlined in related warranty policies. No warranty repairs or replacements will be made until payment for all equipment, materials, or components has been received by Johnson Controls.

EXCLUSIONS:

Unless specifically agreed to in the contract documents, this warranty does not include the following costs and expenses:

1. Labor to remove or reinstall any equipment, materials or components.
2. Shipping, handling or transportation charges, including cranes, safety walks or other safety requirements specific to jobsites.
3. Cost of refrigerant.
4. Freight damage.
5. Field applied coatings added to any surface or heat exchanger
6. Rental Chillers.

ALL WARRANTIES ARE VOID IF:

1. Equipment is used with refrigerants, oil, additives, or antifreeze agents other than those authorized by supplying factory.
2. Equipment is used with any material or any equipment such as evaporators, tubing, other low side equipment or refrigerant controls not approved by supplying factory
3. Equipment has been damaged by freezing because it was not properly protected during cold weather or damaged by fire or any other conditions not ordinarily encountered.
4. Equipment is not installed, operated, maintained and serviced in accordance with instructions issued by Johnson Controls.
5. Equipment is damaged due to dirt, air, moisture, or other foreign matter entering the refrigerant system.
6. Equipment is not properly stored, protected, or inspected by the customer during the period from date of shipment to date of initial start-up.
7. Field coating of coil has occurred.
8. Equipment is damaged due to acts of god, abuse, including shipping damage, neglect, sabotage, or acts of terrorists.
9. Equipment has modifications carried out that have an effect on the original design of the product without such work being authorized by the factory. Any on site design changes or unit modification/replacement shall be authorized in advance by the factory.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES AND LIA BILITIES, EXPRESS OR IMPLIED IN LAW OR IN FACT, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE WARRANTIES CONTAINED HERE IN SET FORTH BUYER" S SOLE AND EXCLUSIVE REMEDY IN THE EVENT OF A DEFECT IN WORKMANSHIP OR MATERIALS. IN NO EVENT SHALL JOHNSON CONTROLS" LIABILITY FOR DIRECT OR COMPENSATORY DAMAGES EXCEED THE PAYMENTS RECEIVED BY JOHNSON CONTROLS FROM BUYER FOR THE MATERIAL OR EQUIPMENT INVOLVED, NOR SHALL JOHNSON CONTROLS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES. THESE LIMITATIONS ON LIABILITY AND DAMAGES HALL APPLY UNDER ALL THEORIES OF LIABILITY OR CAUSES OF ACTION, INCLUDING BUT NOT LIMITED TO, CONTRACT, WARRANTY, TORT, (INCLUDING NEGLIGENCE) OR STRICT LIABILITY.THE ABOVE LIMITATIONS SHALL INURE TO THE BENEFIT OFJOHNSON CONTROLS SUPPLIERS AND SUBCONTRACTORS.

Equipment Release Approval Form

SUBMITTAL NOTES

Product Type: YMAE - Modular Heat Pump

Unit Tags: ASHP-0140 (CLG @ 95F)

The following table must be completed prior to releasing the equipment for fabrication. Please initial the column indicating the information contained in this submittal has been verified, or indicate to refer to a marked-up page.

SUBMITTAL VERIFICATION	
	Purchaser Initials
Electrical voltage and electrical connections are compatible with jobsite requirements.	
Piping / Ductwork connections shown in this submittal are correct .	
Unit tag designations are correct.	
Equipment dimensions (length, width, and height) and weights have been verified to comply with jobsite conditions and rigging requirements. Please indicate approval by your initials on all included drawings.	
Verify “Unit Hand” of any Air Handling Equipment per the definition provided on the **“Equipment Release / Configuration Process”** form.	

SUBMITTAL VERIFICATION	
	Purchaser Initials
Indicate equipment configuration choices on the **Equipment Release /Configuration Process** form (if included on this Submittal package), and sign the form.	

Important Notes:

1) Actual fabrication release cannot commence until this form is signed by the customer and returned to JCI along with a release notification want date and ship to address.

2) Equipment "lead-time" does not start until confirmed release documentation is received, and the order is actually released to the factory.

3) Modifications to equipment configurations after fabrication release may impact cost and lead-time

4) Attached configurations are as shown in the approved equipment submittals or as defined in superseding customer correspondence.

5) AHU "Side" / "Hand" orientation is relative to a person standing inside an AHU with air hitting the back of the head.

6) Note that once this document is confirmed, the equipment configurations defined by this document take precedence over all other documents.

7) "Want date" and/or "ship to address" changes made after this document is confirmed may impact cost and lead-time.

8) Air handler drawings also include shipping split explosions with corresponding weights and dimensions. If additional splits are required, there will be additional costs and the unit length will increase.

Please fill out the following table and refer to the receiving/rigging instructions in this submittal to help ensure a smooth delivery and installation of the equipment.

DELIVERY INFORMATION	
	Please fill out information below
Contact name for coordinating delivery of equipment with transportation company	
Contact phone number	
Advance notice required from transportation company prior to delivering equipment (typically 48 hours)	
Ship to address:	
Other special shipping instructions or requirements	

CUSTOMER APPROVAL:

Customer Name: _____

Signature (*) _____

Date: _____

HPWH System Sizing - Single Pass - Without DHW Circulation Loop

Project: 6-14 Dietz Ave **Date:** 04/29/2025
Designer: S+A Hamilton

DHW Load Parameters

Load Type:	Ecosizer Apartments	
# of Occupants:	277	

HPWH System Inputs

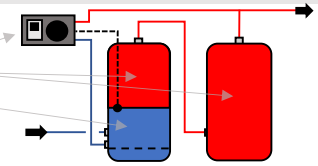
Recommended HPWH Recovery:	344,865	BTU/hr to satisfy load and run 16 hrs/day
Minimum HPWH Recovery:	266,000	BTU/hr at cold design condition
Maximum HPWH Recovery:	700,000	BTU/hr at hot design condition

Water Temperatures

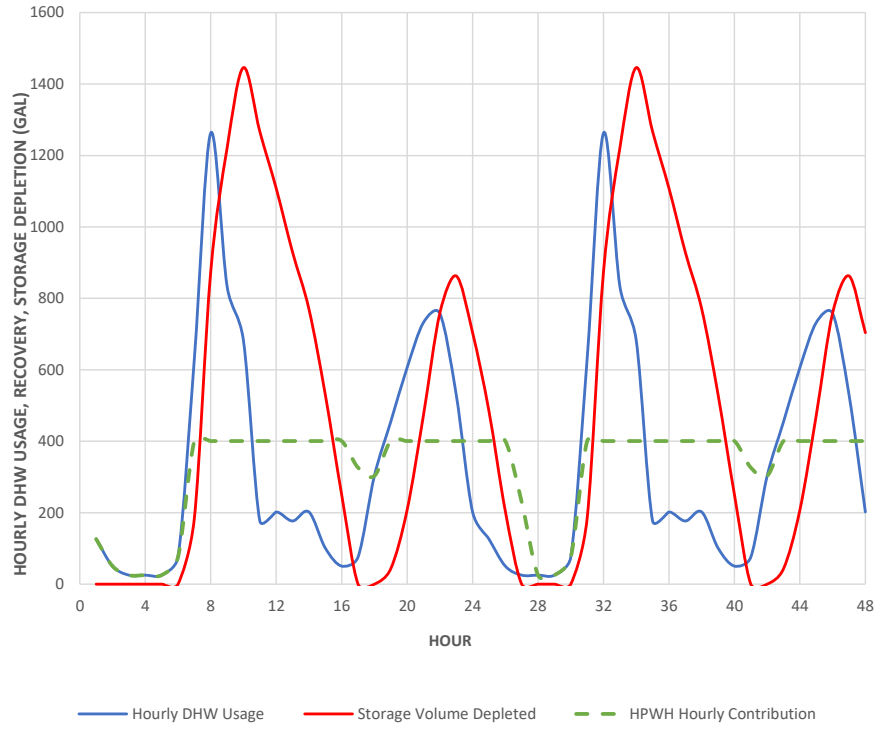
Domestic Cold Water Temp:	40	°F
Storage / HPWH Delivery Temp:	140	°F
Usage Temp:	120	°F (Default for ASHRAE load shapes: 120°F)

Sizing Outputs

HPWH Recovery:	266,000	BTU/hr
Storage Running Volume (Above Aquastat):	1,850	gal
Storage Cycling Volume (Below Aquastat):	270	gal
Total Storage Required:	2,150	gal



HPWH System Simulation - 2 Day Period



Technical Data Sheet

Aegis A
Air Source

Lync by WATTS
Engineered Solutions

Lync's Aegis A is a powerful commercial CO_2 air source heat pump water heater powered by R744, better known as refrigerant grade CO_2. Aegis A produces storage temperatures up to 170°F at air temperatures as low as -4°F with no need for supplemental heat. By simply absorbing and moving heat from the surrounding area instead of needing to generate heat, this heat pump is extremely efficient thus saving energy and lowering operating costs.

Because it uses a natural refrigerant CO_2, Lync's Aegis A is a safe, environmentally friendly heat pump water heater: R744 is non-toxic, non-flammable, has an ODP (Ozone Depletion Potential) of zero and a low GWP (Global Warming Potential) of one. R744 outperforms other refrigerants, like R134a and R410a, by having a much lower GWP (1.0 vs 1430 and 2088 respectively) and a wider range of ambient operating temperatures, making Aegis A a better, longer-lasting option as more states introduce stricter environmental guidelines.



Features

High Performance Operation

- Produces domestic hot water up to 170 °F at air temperatures as low as -4°F **with no need for supplemental heat**
- Wide ambient operating conditions provide high COP (Coefficient of Performance) year-round
- Complete solution with long-lasting duplex stainless tanks, highly accurate digital mixing valves, and more

Environmentally Friendly Technology

- Eco-friendly refrigerant R744 has an ODP of 0 and low GWP of 1
- Non-toxic and non-flammable
- Natural R744 provides long-lasting refrigerant option to increasingly stringent environmental guidelines

Energy Saving

- Energy efficient with lower operating costs – provides heat by absorbing and moving heat from the surrounding area instead of generating supplemental heat
- Lower peak energy demands and peak use and can lead to additional electricity savings

Additional Features

- Cool recovery option provides simultaneous production of cold water along with hot water, further increasing COP
- The heat pump can be remotely controlled through the building automation system (BAS) allowing users to check the status of the unit real time, record operational data, check for faults with alarms and warnings, change set point and operating modes and much more
- Fan coil coating available for coastal areas
- Advanced defrost cycle with electric coil eliminates the need to reverse operation to defrost
- Ideal for new and retrofit, multifamily, gyms, industrial, hospitality, education and healthcare

Technical Data

			250	350	500
Performance	Nominal Heating Capacity** **@ 77°F air**	MBH	210	329	494
	Input Power**	kW	16.1	26.8	41.9
	Nominal Recovery Capacity	GPH	233	365	549
	COP		3.8	3.6	3.5
	Primary Outlet Water Temperature Range		140-180°F (60-82°C)		
	Storage Water Temperature		120-170°F (49-77°C)*		
	Ambient Temperature Range		-4-113°F (-20-45°C)		
	Maximum Return Water Temperature		86°F (30°C)		
	Compressor Size	HP	14	25	35
	Number of Fans		3	2	2
	Refrigerant Charge	lbs	44	55	66
	Sound Pressure	dB(A)	68	73	76
	TER (Total Efficiency Ratio)		6.4	6.1	6.0
	Cool Recovery Water Flow Rate	GPH	1938	3064	4556
	Cool Recovery HX Pressure Drop	PSI	3.5	7.7	7.1
	Source Cooling Capacity	MBH	145	229.0	340
Electric	FLA	A	35.4	48.8	73.8
	MCA	A	55	72	110
	MOP	A	80	110	175
	Power Supply		480 V / 3 ph / 60 Hz		
Dimensions	Width	in	104	138	138
	Depth	in	41	50	50
	Height	in	72	75	75
	Shipping Weight	lbs	1658	2403	2800
	Operating Weight	lbs	1670	2418	2820

*Depending on heat exchanger module selected
**Nominal performance based on: Air temperature 77°F (25°C), 60% RH, primary loop 68°F (20°C) -176°F (80°C)
***Source side inlet/outlet water temperature, 54°F (12°C) - 45°F (7°C)

Lync® by WATTS

Engineered Solutions

Lync product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact your local Lync Representative. Lync reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Lync products previously or subsequently sold.

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Technical Data Sheet

Mark II

Heat Exchanger Module

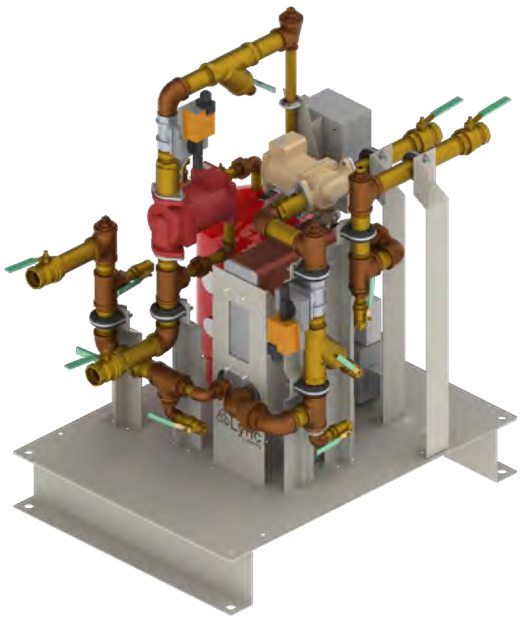
Lync by WATTS

Engineered Solutions

Lync's Heat Exchanger Modules are designed to work with the Aegis heat pump to provide the best performance under the widest operating range while still protecting the heat pump from scale and other possible contaminants. Aegis heat pumps require a closed loop to prevent scale build up within the unit's heat exchanger. The skid also allows for glycol in the primary loop to prevent freezing for outdoor installations.

The Heat Exchanger Module is designed to work specifically with each model Aegis, with all components selected and assembled by Watts. The Module makes it easy to link the Aegis unit with the storage tanks. The double walled heat exchanger with positive leak detection meets heat exchanger codes, while still providing double-wall separation to the domestic hot water.

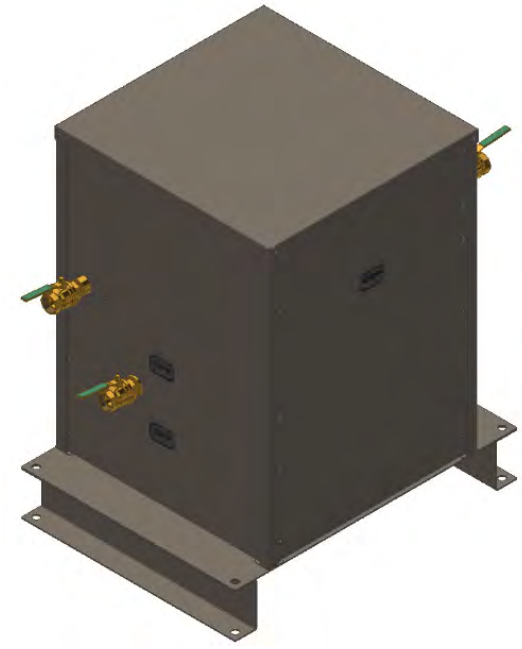
There are two models available; a single exchanger model for use with Aegis 250 models, and a dual exchanger model for use with Aegis 350 and 500 models. Each are available with optional outdoor enclosure for outdoor installations in mild climates.



Mark II Single

Features

- 170°F max potable water temperature
- Operates from -4°F to 113°F
- Optional cover for outdoor installation
- Designed to work with Aegis units
- Built and tested by Watts to ensure proper operation of the Aegis units



Mark II Outdoor Enclosure

Technical Data

Performance	Heat Exchanger Module		Single	Dual
	Aegis Unit Size		250	350 / 500
	Aegis Type		Air/Water	Air/Water
	Maximum Power	BTH (kW)	300,000 (88)	600,000 (176)
	Maximum Primary Loop Temperature (Aegis)	°F (°C)	180 (82)	180 (82)
	Maximum Potable Water Temp.	°F (°C)	170 (77)	170 (77)
	MAWP Primary Loop	PSI (KPa)	100 (690)	100 (690)
	MAWP DHW Side	PSI (KPa)	150 (1034)	150 (1034)
	Outdoor Temperature Range	°F (°C)	-4 to 113 (-20 to 45)	-4 to 113 (-20 to 45)
	Connections		1 ½" NPT	1 ½" NPT
	Number of Heat Exchangers		1	2
	Maximum Glycol Percentage	%	40	40
	Heat Exchanger Type		Double Wall	Double Wall
	Maximum Component Temperature Rating	°F (°C)	210°F (90°C)	210°F (90°C)
Electric	Voltage	VAC	120	120
	FLA	A	7	7
	Current	A	15A dedicated circuit	15A dedicated circuit
Dimensions	Width	Inch (mm)	30 (762)	31 ¾ (806)
	Depth	Inch (mm)	39 ½ (1004)	39 ½ (1003)
	Height	Inch	49 ¼ (1251)	57 ¼ (1454)
	Weight (indoor)	Lbs. (Kg)	548 (249)	633 (287)
	Weight (outdoor)	Lbs. (Kg)	639 (290)	725 (329)

Lync® by WATTS

Engineered Solutions

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Technical Data Sheet

Lync Storage Tank



Lync Storage Tanks are cost-effective, corrosion-resistant and engineered to last. The all-LDX stainless steel construction, does not require anode rods and is ideal for use at higher temperatures with heat pumps, solar thermal water heating, or other energy-efficient solutions. The optional outdoor coating allows these to be installed outdoors for further application flexibility.

Engineered to Last with Rhino

For outdoor installations in temperate climates, the optional 1/8" thick Rhino Lining coating provides a durable monolithic, protective barrier against abrasion, moisture, corrosion, and impact. It is engineered to last, ensuring your storage tank is protected from harsh environments. Outdoor tanks may be utilized to free up limited mechanical room space.

Unmatched Corrosion Resistance with Duplex Stainless Steel

Our revolutionary, engineered design combines duplex stainless-steel alloy with highly specialized and proprietary manufacturing process. The result is a long-lasting, reliable storage tank with superior corrosion-resistance.The pickled and passivated duplex stainless steel design holds up to high storage temperatures better than standard glass-lined tanks.

Save Money, Save Energy, Save the Planet

To minimize heat loss through tank walls in cold outside environments, the Lync storage tanks are wrapped with R-22 fiberglass insulation; 75% higher than the standard ASHRAE 90.1 requirement of R 12.5 for indoor tanks. The insulation further improves energy and acoustic efficiency, while providing high resistance to fire and milddew.

Monolithic Welded Construction

Factory-installed base head ring and clip systems welded directly to the tank body provide sturdy mounting to accommodate installation in areas that require extra restraint, such as high-wind locations on rooftops.

Designed for Complete Systems

The Lync storage tanks are designed with heat pump water heating systems in mind. The tanks include an integral inlet diffuser to encourage stratification and reduce heater cycling.

Warranty

Superior materials of construction and advanced manufacturing methods enable us to provide an industry leading 25-year tank corrosion warranty.

Technical Specification

Maximum operating pressure . . . . . 150 PSI (1034 kPa)

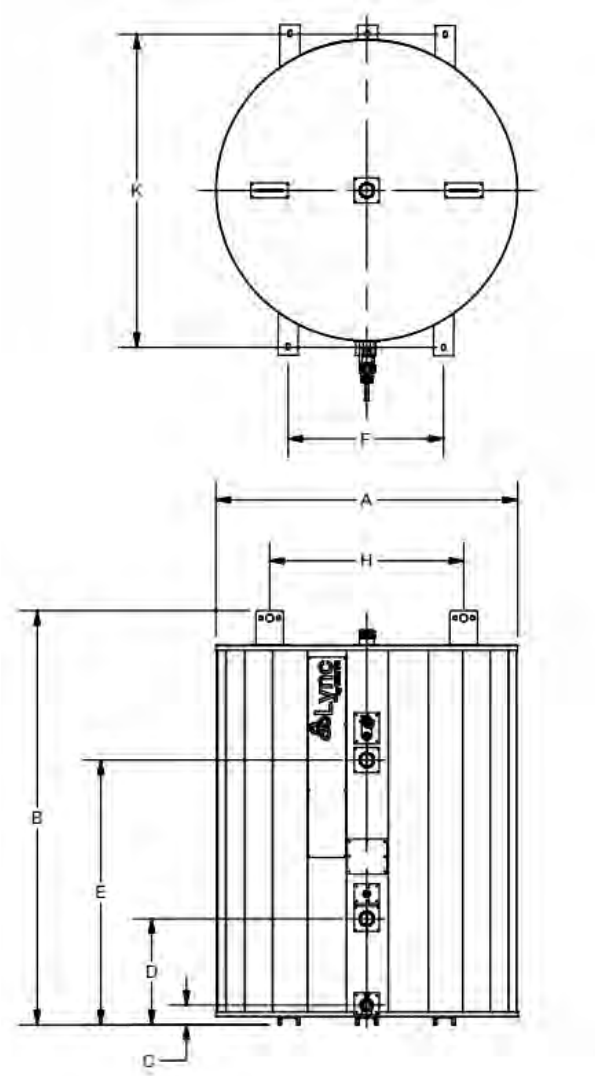
Maximum water temperature . . . . . 210°F (99°C)

Listing/Compliance . . . . . ASME HLW, ASHRAE 90.1, ANSI/NSF 372

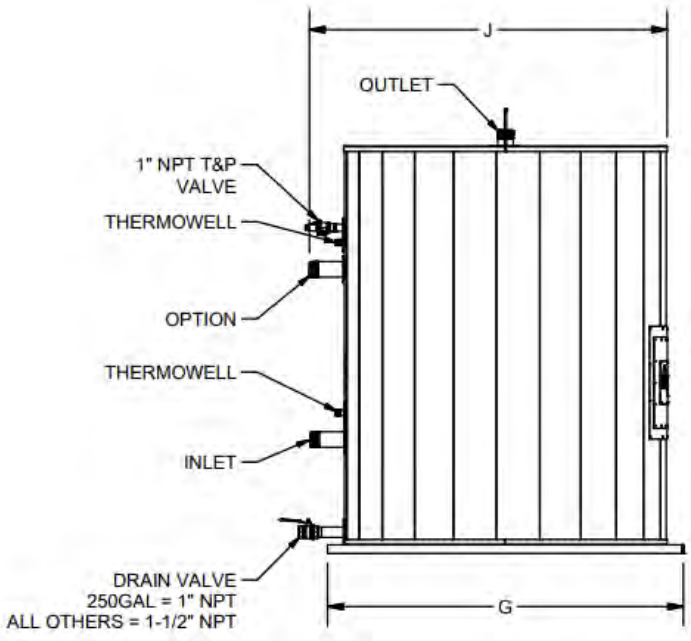
Warranty . . . . . 25 year limited warranty

Dimensions

Model	Storage gal.	Dimensions in inches										Water Inlet, Outlet, Return (NPT)	Approx. Shipping weight (lb)
		A	B	C	D	E	F	G	H	J	K		
LC250S	250	50	69.50	3.56	17.88	40.13	31	56	29.25	56.31	52.50	2-1/2"	1000
LC500S	500	60.19	82.75	3.93	21.25	52.88	31	66	38.75	66.38	62.50	2-1/2"	1600
LC750S	750	71	90.13	4.63	23.25	57.88	40	78	45.38	77.25	74.50	2-1/2"	1875
LC1000S	1000	81.19	89.88	4.19	24.56	55.19	47	88	55	87.31	84.50	2-1/2"	2900



1. Description Model No. LCXXXS (EX 500 gallon would be LC500S) LCXXXSO for outdoor models
2. Additional Dimensions:
   Jacket O.D. = +11 in to tank O.D.
   Base channels: +6 in to jacket (Pan) O.D. = 3 in each side
   Front nipples: stick out ~6.5 in past jacket
   Lifting and seismic lugs: ~+4 in above top pan
   Jacket Penetrations:
   I/O/R, drain, relief, 2 thermowells, ASME data plate (accessible) mounted on the front of the tank
   Back: Manway, process fitting (2 in) (both accessible)
   Thermowell diameter 3/4", allows for a 1/4" probe and two 4mm openings. Connection 3/4" NPT
3. Tank supplied with Watts LF140X9. ASME relief capacity 3,085,000 BTU/hr @ 150 psi CSA relief capacity 670,000 BTU/hr



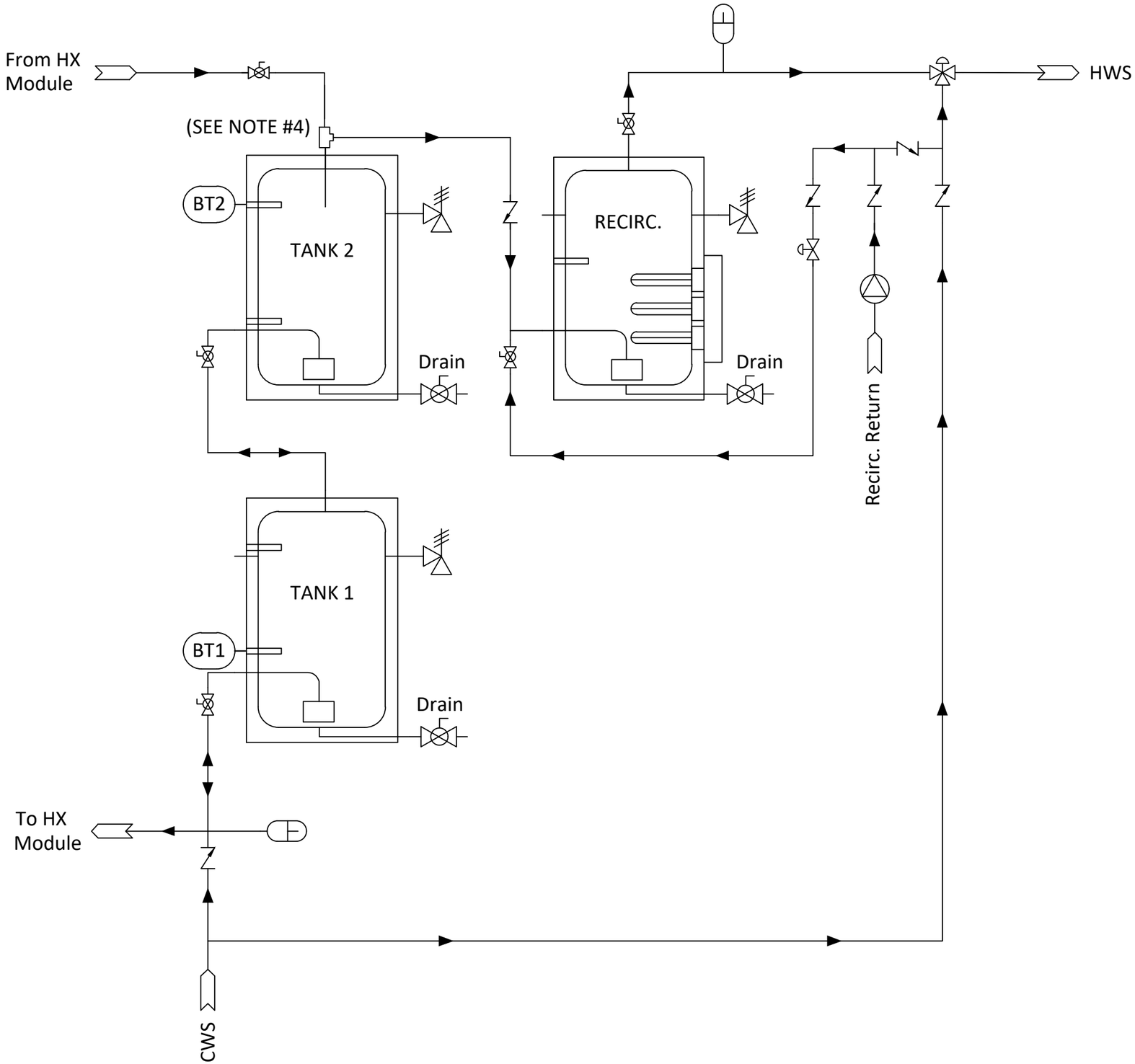
Lync® by WATTS

Engineered Solutions

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Symbols

- Pressure Relief Valve
- Balance Valve
- Pump
- Mixing Valve
- Ball Valve
- Check Valve
- Expansion Vessel
- Injection Tee

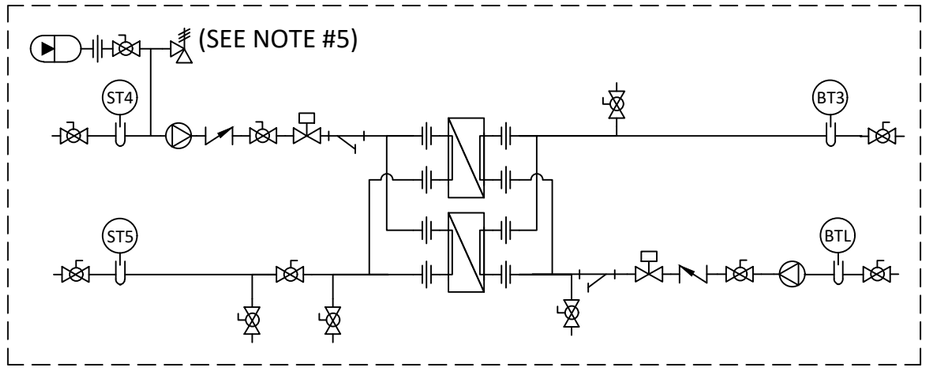
NOTES:
1) NOT FOR CONSTRUCTION.
2) RECIRCULATION LOOP BY OTHERS.
3) EXPANSION TANK MUST BE LOCATED AFTER CHECK VALVE.
4) LOCATE INJECTION TEE IN LAST STORAGE TANK.

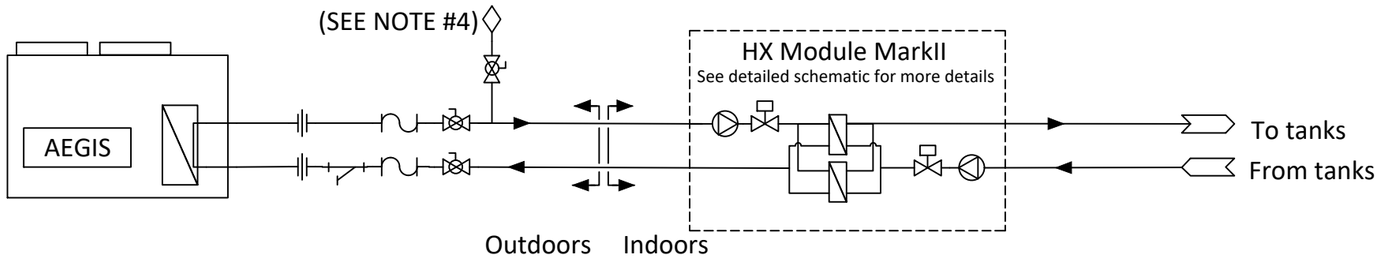
Lync by Watts — *Blauvelt, NY* *Fort Worth, TX*

AEGIS 2 TANKS + RECIRC. INSTALLATION

DWN.BY K.S. DATE 090622 SCALE NTS REV.BY K.S. DATE 022024	SD–L–1262	REV. C

AEGIS HEAT EXCHANGER MODULE MKII





Symbols

- Pressure Relief Valve
- Balance Valve
- Union
- Air Eliminator
- Pump
- Strainer
- Flexible Fitting
- Mixing Valve
- Ball Valve
- Expansion Vessel
- Check Valve
- Motorized Valve

NOTES:

1) NOT FOR CONSTRUCTION.
2) FINAL HEAT EXCHANGER MODULE DESIGN SUBJECT TO CHANGE.
3) PIPE FLOW VELOCITY NOT TO EXCEED 2 ft./sec. USE 1-1/4" COPPER PIPE FOR AEGS 250 AND 350 AND 1-1/2" COPPER PIPE FOR AEGIS 500 BETWEEN HEAT PUMPS AND SKIDS.
4) AIR ELIMINATOR MUST BE INSTALLED AT THE HIGHEST POINT IN PLUMBING. MANUAL SHUT OFF VALVE RECOMMENDED BELOW AIR VENT.
5) PRV MUST BE PIPED WITHIN 18" OF FLOOR OR PER PLUMBING CODE ON EACH HEAT EXCHANGER MODULE.

Lync by WATTS

Blauvelt, NY
Fort Worth, TX

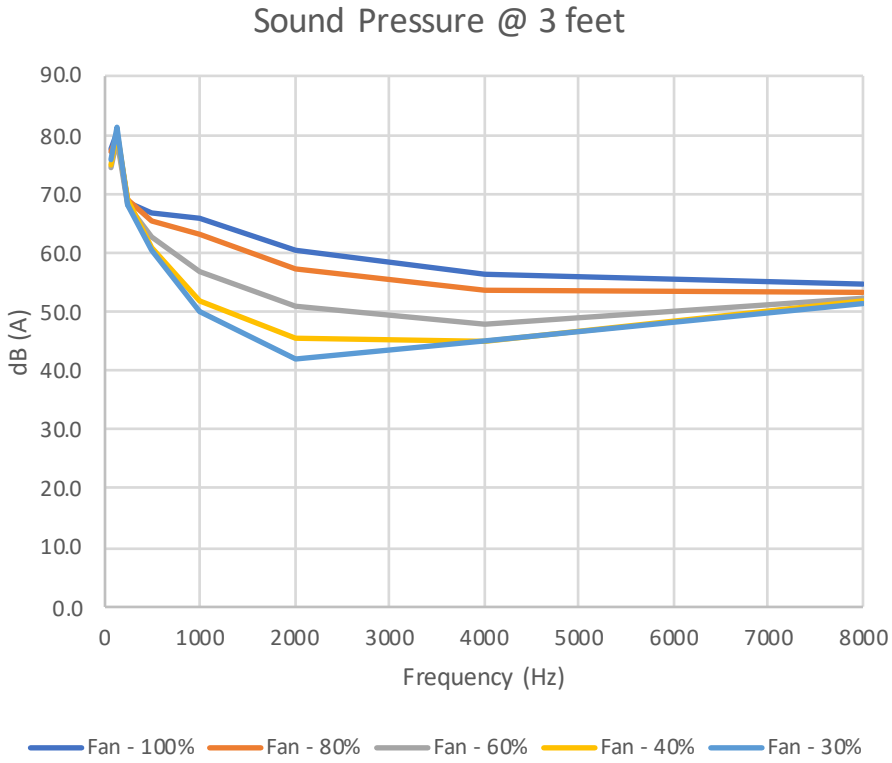
AEGIS MARK II DUAL FOR
1 UNIT INSTALLATION

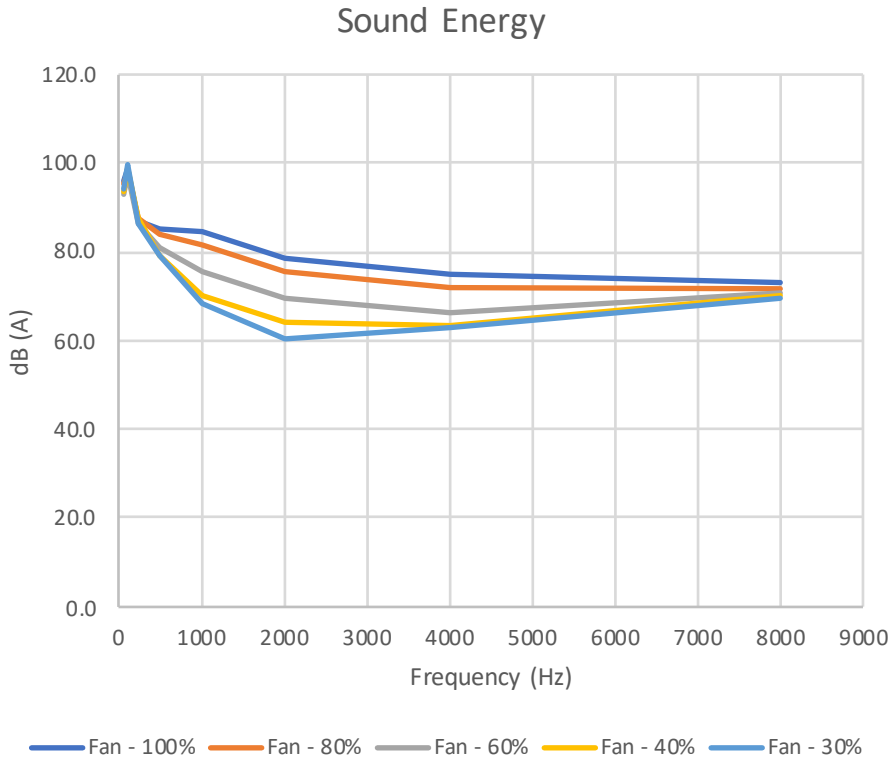
DWN.BY K.S. DATE 040324 SCALE NTS APPD. K.S. DATE 070124	SD-L-1301	REV. A

Lync by WATTS
Aegis A

Sound Data - 500 Air

			Octive Band (Hz)								dB (A)
	Fan Percent	Fan RPM	63	125	250	500	1000	2000	4000	8000	Total
Lp	100%	932	77.6	80.4	68.7	66.6	66.0	60.3	56.4	54.7	70.9
Lw			96.0	98.8	87.1	84.9	84.4	78.7	74.8	73.1	89.3
Lp	80%	832	77.1	79.6	68.9	65.3	63.1	57.2	53.5	53.3	69.2
Lw			95.5	98.0	87.3	83.7	81.5	75.6	71.9	71.7	87.6
Lp	60%	658	74.4	79.2	68.2	62.7	57.0	51.1	47.9	52.1	66.8
Lw			92.8	97.6	86.6	81.1	75.3	69.5	66.3	70.5	85.2
Lp	40%	468	75.0	80.5	68.9	60.9	52.0	45.6	45.0	51.9	66.9
Lw			93.4	98.9	87.3	79.2	70.4	64.0	63.4	70.3	85.3
Lp	30%	344	75.8	81.3	68.2	60.5	50.1	42.0	44.9	51.4	67.1
Lw			94.2	99.7	86.6	78.9	68.5	60.4	63.2	69.8	85.5





Air Handling Unit Performance Report

Job Summary

Project Name:	6-14 Dietz Ave		
Unit Tag(s):	RTU-01		
Quantity:	1	**Environment:**	Outdoor



Unit Overview

Model	Airflow (CFM)	Altitude (ft)	Operating Weight (lbs)
XTO-45x66	6,000	0	3,690

Segment Sequence

(FS CC XA HC RF MB)

Unit Construction

Casing Details

Segment(s)	Thickness (in)	Exterior Paint	Exterior Gauge and Material	Interior Gauge and Material	Insulation Thickness and Material	Mylar Lining	Thermal Break	Bulkhead Material
RF, XA	2"	Champagne Urethane 3,500 Hr	Standard Ga. G-90 Galvanized	Standard Ga. G-90 Galvanized	2" Foam	-	-	None
MB, HC, FS	2"	Champagne Urethane 3,500 Hr	Standard Ga. G-90 Galvanized	Standard Ga. G-90 Galvanized	2" Foam	-	-	Galvanized Steel
CC	2"	Champagne Urethane 3,500 Hr	Standard Ga. G-90 Galvanized	Standard Ga. G-90 Galvanized	2" Foam	-	-	Stainless Steel, 304

Base Details

Segment(s)	Material	Paint
MB, RF, HC, XA, CC, FS	6" Formed Steel	Champagne Urethane 3,500 Hr

Floor Details

Segment(s)	Gauge and Material	Paint	Insulation	Thermal Break	Attachment	Sub-Floor Gauge and Material
MB, RF, HC, XA, CC, FS	Standard Ga. G-90 Galvanized	None	2"	-	Screw Down	None

Notes

A curb rest will be provided with the unit.

Vestibule/Pipe Chase

Casing Details							
Segment(s)	Thickness (in)	Exterior Paint	Exterior Gauge and Material	Interior Gauge and Material	Insulation Thickness and Material	Thermal Break	Depth
PC	2"	Champagne Urethane 3,500 Hr	Standard Ga. G-90 Galvanized	Standard Ga. G-90 Galvanized	2" Foam	No	24"

Floor Details					
Segment(s)	Gauge and Material	Insulation	Thermal Break	Attachment	Sub-Floor Gauge and Material
PC	Standard Ga. G-90 Galvanized	2"	-	Screw Down	None

Notes

Openings in vestibule/pipe chase floor to be field cut by others unless indicated otherwise. Refer to IOM for procedures for cutting openings.

Vestibule/pipe chase floor is designed to support a maximum point load of 300 lbs. Equipment to be installed and attached in the field.

Vestibule/Pipe Chase must be reviewed with the factory prior to release for fabrication to ensure proper structural design of vestibule/pipe chase floor.

Vestibule/pipe chase roof is not designed to be used to support field installed piping, ductwork, exhaust hoods, etc.

Unit Electrical

Circuit Details					
#	Component(s)	V/Ph/Hz	Full Load Amps (FLA)	Minimum Current Ampacity (MCA)	Maximum Overcurrent Protection (MOP)
1	FS VFD-1 (on FS)	575/3/60	10	12.5	20
2	Electrical Outlet and Light Switch (on FS)	120/1/60	-	-	20

Electrical Details			
Minimum Unit SCCR	100 kA rms Symmetrical	ETL Label (UL1995/NEC-2002)	Yes

Unit Light Type	Light Switch Enclosure
LED	Outdoor

Supply Fan(s)

Performance Details												
Fan Manufacturer	Model	# Blades	Class	Size	% Wheel Width	% Wheel Diameter	Quantity	Airflow per Fan (CFM)	Altitude (ft)	TSP (in w.g)	ESP (in w.g)	Fan Speed (RPM)	Fan Power (BHP)
Lau	DDPG2	9	II	182	100	100	1	6,000	0	4.12	1.00	2,473	5.89

Max RPM	Wheel Type	Blade Type	Wheel Material	Base Material	Fan Flow Isolation	AirFlow Monitoring	Inverter Drive Balancing	Isolation Type	Thrust Restraints
2,979	SWSI	Airfoil	Aluminum	Galvanized Steel	None	Yes (K=1688.00)	-	2" Spring	Yes

Drive Type	FEI	FEP (KW)	Inlet Screen	Fan Cage	Fan Stand	Motor Removal Rail	Seismic Snubber
Direct Drive	1.27	5.02	Yes	-	-	-	-

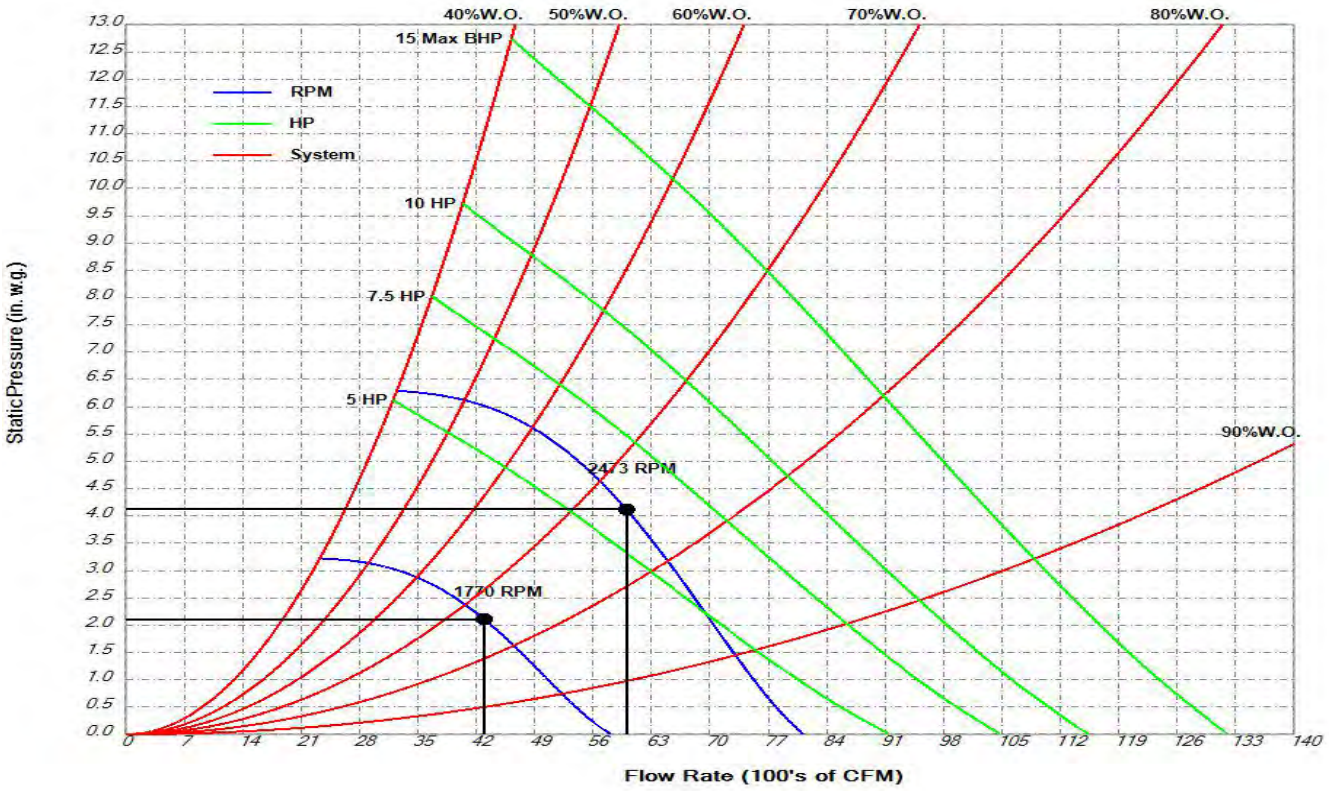
Motor Details										
Type / MFG	Motor Power (HP)	V/Ph/Hz	Quantity	Insulation Class	RPM	Frame Size	FLA (Amps)	Efficiency	Location	SGR
ODP / Baldor	10.0	575/3/60	1	H	1,800	215T	10.00	Premium	Left	Yes

At Motor Synchronous Details			
TSP (in w.g.)	Total Air Flow (CFM)	Fan Speed (RPM)	Fan Power (BHP)
2.11	4,294	1,770	2.16

Notes

Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third-party verified. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Per California Energy Code (C.E.C.), Title 20, the selected fan ratings are only approved for use in equipment outside the state of California. Buyer assumes all liability for non-compliance of the noted regulation.



Water Coil(s)

Coil Information							
Segment[Index]	Coil Tag	Coil Duty	Fluid Type	Airflow (cfm)	Flow Direction	Density	Altitude (ft)
CC[1]	-	Cooling	Water	6000	Horizontal	Standard	0

Coil Bank Configuration										
Segment[Index]	Tube Diameter (in) Fin Type	Total Fin Height (in)	Fin Length per Coil (in)	Face Velocity (fpm)	Stacking Rack Material	Coils High	Coils Wide	Coil Configuration	Coil Stagger (in)	Coil Pull Panel
CC[1]	0.500 Corrugated	35.00	54.00	457	-	1	1	Standard	0	Left Side

Airside Performance							
Segment[Index]	EAT-DB (°F)	EAT-WB (°F)	LAT-DB (°F)	LAT-WB (°F)	TMBH	SMBH	Air Pressure Drop (in w.g.)
CC[1]	84.2	73.4	67.8	66.2	162	111	0.54

Fluidside Performance								
Segment[Index]	EFT (°F)	LFT (°F)	Fluid Velocity (fps)	Fluid Flow (gpm)	Fluid Pressure Drop (ft)	Rows	Tubes Per Circuit	Reynolds Number
CC[1]	45.0	54.9	1.0	32.5	2.8	4	2	2921

Fin and Tube Configuration								
Segment[Index]	Fin Thickness (in) / Material	Fin Spacing (fpi)	Tube Thickness (in)	Turbulators	Return Bend Thickness	Casing Material	Coil Coating	Fouling Factor (hr.ft².°F/BTU)
CC[1]	0.010 Aluminum	12	0.016	No	0.016	Stainless	None	-

Header and Connection Configuration						
Segment[Index]	Header Material	Connection Material	Connection Diameter (in)	Connection Offset (in)	Connection Type	Connection Location/Rotation
CC[1]	Copper	Steel	1.5	0	MPT	Left

Other Performance			
Segment[Index]	Dry Weight (lbs)	Fluid Weight (lbs)	Internal Volume (ft³)
CC[1]	177	45	0.8

Notes

- Performance is shown for the entire coil bank. Performance is not per coil.
- Coil index indicates position in segment. Example: CC-1, index 1; Spacer, index 2; CC-1, index 3
- Ratings are for coils manufactured by Johnson Controls, Inc., 507 E. Michigan St., Milwaukee WI 53202.
- All Coils: Johnson Controls suggests using red brass or copper connectors when the coil is to be attached to a copper or brass piping system.
- CC[1]: AHRI Certified:Yes.All Coils: certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the range of Standard rating conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org.
- All Coils: BDW Tube Spacing: 1.25 x 1.08
- All Coils: Coil Dll Version: 8.11
- CC[1]: Note: When Conditions that produce condensate exist, coil face velocities above 550 fpm may result in condensate carryover.

Glycol Coil(s)

Coil Information								
Segment[Index]	Coil Tag	Coil Duty	Fluid Type	Glycol Percentage	Airflow (cfm)	Flow Direction	Density	Altitude (ft)
HC[1]	-	Heating	Propylene Glycol	40	6000	Horizontal	Standard	0

Coil Bank Configuration

Segment[Index]	Tube Diameter (in) Fin Type	Total Fin Height (in)	Fin Length per Coil (in)	Face Velocity (fpm)	Stacking Rack Material	Coils High	Coils Wide	Coil Configuration	Coil Stagger (in)	Coil Pull Panel
HC[1]	0.500 Corrugated	35.00	54.00	457	-	1	1	Standard	0	Left Side

Airside Performance

Segment[Index]	EAT-DB (°F)	EAT-WB (°F)	LAT-DB (°F)	LAT-WB (°F)	TMBH	SMBH	Air Pressure Drop (in w.g.)
HC[1]	-5.8	-	69.5	-	488	488	0.21

Fluidside Performance

Segment[Index]	EFT (°F)	LFT (°F)	Fluid Velocity (fps)	Fluid Flow (gpm)	Fluid Pressure Drop (ft)	Rows	Tubes Per Circuit	Reynolds Number
HC[1]	115.0	95.0	4.3	52.6	9.1	3	4	8227

Fin and Tube Configuration

Segment[Index]	Fin Thickness (in) / Material	Fin Spacing (fpi)	Tube Thickness (in)	Turbulators	Return Bend Thickness	Casing Material	Coil Coating	Fouling Factor (hr.ft².°F/BTU)
HC[1]	0.010 Aluminum	12	0.016	No	0.016	Galvanized	None	-

Header and Connection Configuration

Segment[Index]	Header Material	Connection Material	Connection Diameter (in)	Connection Offset (in)	Connection Type	Connection Location/Rotation
HC[1]	Copper	Steel	2	0	MPT	Left

Other Performance

Segment[Index]	Dry Weight (lbs)	Fluid Weight (lbs)	Internal Volume (ft³)
HC[1]	146	39	0.7

Notes

- Performance is shown for the entire coil bank. Performance is not per coil.
- Coil index indicates position in segment. Example: CC-1, index 1; Spacer, index 2; CC-1, index 3
- Ratings are for coils manufactured by Johnson Controls, Inc., 507 E. Michigan St., Milwaukee WI 53202.
- HC[1]: AHRI Certified:Yes.All Coils: certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the range of Standard rating conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org.
- All Coils: BDW Tube Spacing: 1.25 x 1.08
- All Coils: Coil Dll Version: 8.11

Drain(s)

Details

Segment	Drain Pan		
	Liner Material	Connection Location	Liner Coating
CC	Stainless Steel, 304	Right	None
MB	Stainless Steel, 304	Left	None

Filter(s)

Details							
Segment	**Type**	**Depth**	**Filter Loading**	**Media/MERV**	**# of Spares**	**Spare Filter Media**	**Frame Material**
RF	Pre Filter	2"	Upstream	Pleated 30% Efficiency (MERV 8)	1	Pleated 30% Efficiency (MERV 8)	Galvanized Steel
RF	Primary Filter	12"	Upstream	Rigid 80% Efficiency (MERV 13)	1	Rigid 80% Efficiency (MERV 13)	

Sizes								Filter Gauge Details		
Segment	**Filter**	**1st Filter Size H x W (in)**	**1st Qty**	**2nd Filter Size H x W (in)**	**2nd Qty**	**3rd Filter Size H x W (in)**	**3rd Qty**	**Location**	**Type**	**Range (in w.g)**
RF	Pre Filter	20x20	2	20x16	1	16x20	2	Door	Combined Magnehelic with Flag	0 - 2.0
RF	Primary Filter	20x20	2	20x16	1	16x20	2			

Damper(s)

Details											
Segment	**Air Path**	**H x W (in)**	**Qty**	**Total Face Velocity (ft/min)**	**Face Area (ft^2)**	**Airflow (CFM)**	**Min Airflow Measurement (CFM)**	**Type**	**Config**	**Model**	**Material**	**Blade Orientation**
MB	Outside Air	15.25 x 47.00	1	1,205	5.0	6,000	-	Insulated Control	100%	TED50	Aluminum	Parallel

Hood(s)

Details								
Segment	**Air Path**	**Quantity**	**H x W x D(in)**	**Face Velocity (ft/min)**	**Airflow (CFM)**	**Moisture Eliminator**	**Bird Screen**	**Weight (lbs)**
MB	Outside Air	1	25.88 x 51.70 x 17.00	983	6,000	-	Yes	64

Notes

Hoods ship loose

Door(s)

Details												
Segment(s)	Location	Swing	Hinge Location	H x W x T (in)	View Port	ViewPort Wire	Test Port	Spare Gasket	Thermal Break	Fastener Type	Safety Latch	Noncontact Safety Interlock
MB	Left	Outward	Front	39 x 24 x 2	Double Pane - 8x8	-	Yes	-	Yes	Plated	-	-
XA	Right	Outward	Front	39 x 24 x 2	Double Pane - 8x8	-	Yes	-	Yes	Plated	-	-
CC	Right	Outward	Rear	39 x 24 x 2	Double Pane - 8x8	-	Yes	-	Yes	Plated	-	-
FS	Left	Outward	Rear	39 x 24 x 2	Double Pane - 8x8	-	Yes	-	Yes	Plated	Yes	-
PC	Left	Outward	Front	40 x 18 x 2	Standard Double Pane	-	Yes	-	Yes	Plated	-	-
PC	Left	Outward	Rear	40 x 18 x 2	Standard Double Pane	-	Yes	-	Yes	Plated	-	-

Motor Control(s)

VFD Details									
Segment	Type	V/Ph/Hz	Input/Output Amps*	Efficiency (%)	Heat Loss (at 100% load)	Enclosure	Bypass	Disconnect Type	RFI/EMI EMC Filter
FS	AYK-580	575/3/60	11/11	98	228	NEMA 3R	-	Fused	Yes

Notes (ABB VFD)
*Drives are rated for use below 3,000 ft and 104°F. Refer to the Air-Mod Engineering Guide Form 100.42-EGI (813) for additional information.
Drives are current rated devices. The HP ratings provided are for reference only and are based on typical 4-pole motors at nominal voltages (NEC Table 430-150). If full motor torque is required, ensure the drive has a continuous current rating equal to, or greater than, the full load amp rating of the motor.
Storage Temperature: -40°F to 158°F (-40°C to 70°C).
Ambient Operating Temperature: LowAndHigh -20°F to 135°F (-29°C to 57°C). De-rating to operate at 122°F (50°C).
Relative Humidity: 5% to 95% non-condensing. Maximum relative humidity is 60% in the presence of corrosive gasses.
Altitude: 100% Load Capacity (No De-rating) up to 3,300 ft. (1,000 m). 1% derating for each 330 ft. above 3,300 ft. Installations above 6,600ft. (2,000 m) require review.
If 8KHZ Switching Frequency is used, de-rate output current to 80%.
Overload Current Rating: 110% for 1 minute every 10 minutes and is capable of 130% short term-overload rating for 2 seconds our of each minute.
If applicable, motor overload protection in the bypass mode is provided by a Class 20 motor overload relay.
The customer is responsible for providing either a platform/catwalk or portable means to access the VFD when the VFD is installed where the center of the handle of the disconnecting means in its uppermost position is greater than 78” above the finished floor.
Input line Impedance: 5% Equivalent Input Impedance with internal reactor(s). Patented swinging choke design for superior harmonic mitigation.
Use Copper Conductors Only. Do not use aluminum wire.

Face Velocity and Static Pressure

Summary						
Segment	Description	Face Area (ft²)	Airflow (CFM)	Face Velocity (ft/min)	Supply Fan Static Pressure (in w.g.)	Exhaust/Return Fan Static Pressure (in w.g.)
MB	TED50 (Insulated Control Damper)	5.0	6,000	1,205	0.10	0.00
MB	Outside Air Opening	5.0	6,000	1,205	0.24	0.00
MB	Standard Hood	6.1	6,000	983	0.03	0.00
MB	Bird Screen	6.1	6,000	983	0.10	0.00
RF	2" Pleated 30% Efficiency (MERV 8)	12.2	6,000	491	0.28	0.00
RF	Dirty Filter Allowance - Pre Filter	0.0		0	0.50	0.00
RF	12" Rigid 80% Efficiency (MERV 13)	12.2	6,000	491	0.37	0.00
RF	Dirty Filter Allowance	0.0		0	0.50	0.00
HC	Heating - 3 Row - 12 Fins Per Inch	13.1	6,000	457	0.21	0.00
CC	Cooling - 4 Row - 12 Fins Per Inch	13.1	6,000	457	0.54	0.00
FS	Supply Air Opening	4.9	6,000	1,227	0.25	0.00
FS	External Static - User Entered	0.0		0	1.00	0.00
				Total	**4.12**	**0.00**

Dimensions and Weight

Details					
Segment	Description	Length[1] (in)	Height (in)	Width[2] (in)	Weight[3] (lbs)
MB	Mixing Box	38	45	66	702
RF	Rigid Filter	18	45	66	270
HC	Heating Coil	10	45	66	328
XA	Access	24	45	66	269
CC	Cooling Coil	36	45	66	664
FS	Fan (Supply)	52	45	66	1,164
Overall		**178**			

Notes

[1]The length includes bottom tier segments only.

[2]The width does not include coil connection extensions or door latches that extend beyond the unit casing. The width does not include the depth of any pipe chases.

[3]See Shipping Summary for notes on weights.

Report and Sound Summary:

Unit Sound Power Levels (dBs re 10^{-12} Watts)									
Opening	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1 kHz**	**2 kHz**	**4 kHz**	**8 kHz**	**dBA**
Outside Air, MB-1	75	73	77	83	71	64	57	51	81
Casing Radiated	75	68	66	70	68	52	46	43	71

Notes

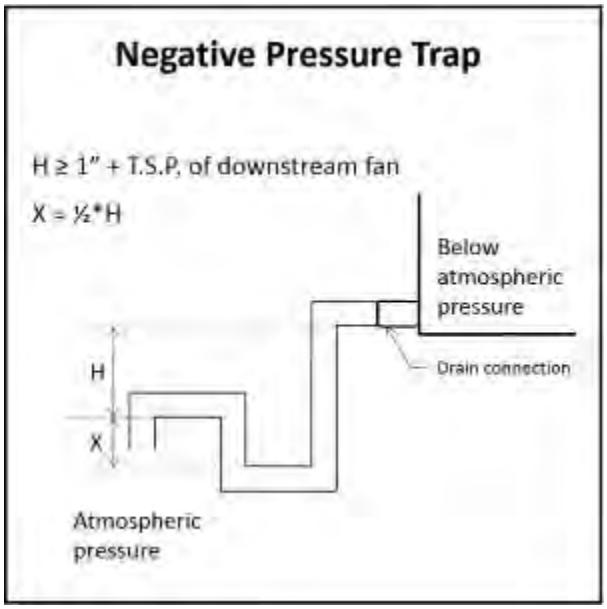
Sound data is determined from interpolation of AHU test data in accordance with the latest version of AHRI Standard 260 Sound Rating of Ducted Air Moving and Conditioning Equipment.. Unit attenuation is calculated based on measured appurtenance insertion loss, and industry accepted acoustic models.

NOTES:

1. AMCA-311 fan sound certification tolerances (+6 dB in the 63 Hz band and +3 dB in all other bands) apply to unit sound power levels.
2. The overall A-weighted sound power level is applicable to non-ducted openings and casing radiated sound only.
3. AHU manufacturer makes no claims regarding NC levels. Acoustic analysis to determine compliance with scheduled or specified NC levels is by others

Recommended Trap Height

Details									
Segment	Applicable Fan	Fan TSP (in w.g.)	Positive or Negative	Calculated Dimensions (in)			Recommended Dimensions (in)		Base Rail Height (in)
				H	X	H + X	H	H + X	
CC	Supply Fan	4.12	Negative	4.87	2.44	7.30	5.00	7.25	6



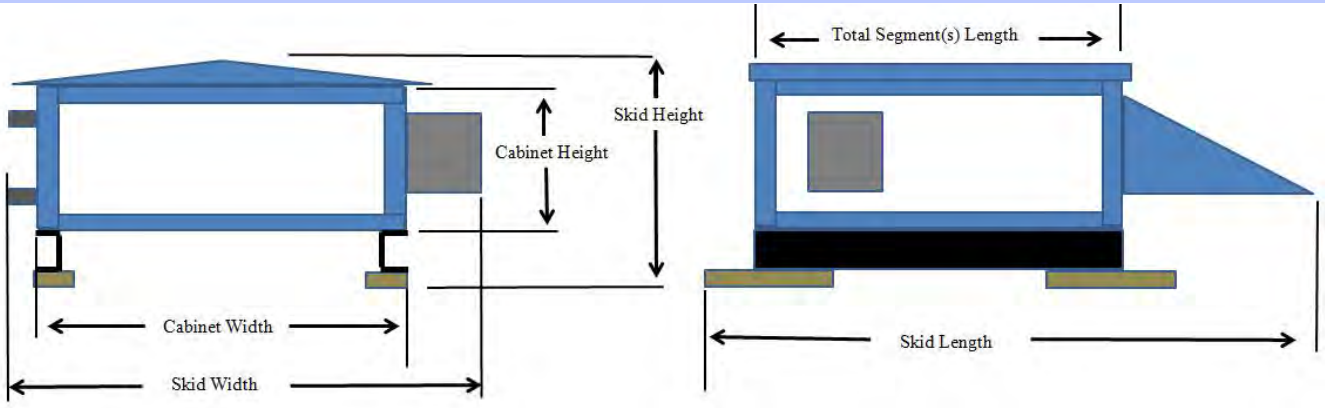
Notes
Formulas and calculations are recommendations only. Contractor shall determine actual dimensions required for each trap based on jobsite conditions, and application requirements.
Refer to the Installation Manual of the IOM for more information.

Statement of Compliance

Details
Air Handling Unit AHU's meet IBC seismic requirements for non-critical equipment (Ip = 1.0) for locations with design spectral response Sds <= 0.43. Units must be rigid mounted.
The anchorage of the unit to the ground or building structure needs to be evaluated by and is the responsibility of the engineer of record.
Specification of seismic requirements is the responsibility of the project design engineer. If formal certification is required, please contact your sales representative and/or application engineer for review. Certain application and site requirements may require additional cost and/or lead time.
Component locations are listed as Segment Hand (Unit Hand): ex. Left (Right). See Submittal Drawing for additional details.
Air handling unit parameters vary depending on conditions. Parameters such as airflows, air pressure drops, and coil capacities are shown for design conditions.

Shipping Summary

Details					
Skid	**Skid Length (in)**	**Skid Height (in)**	**Skid Width (in)**	**Shipping Weight (lbs)**	**Operating Weight (lbs)**
FS CC XA HC RF MB	184	57	85	3,286	3,397
Pipe Chase(s)	N/A	N/A	N/A	339	293
Weather Hood(s)	N/A	N/A	N/A	64	N/A
Overall					**3,690**



Notes

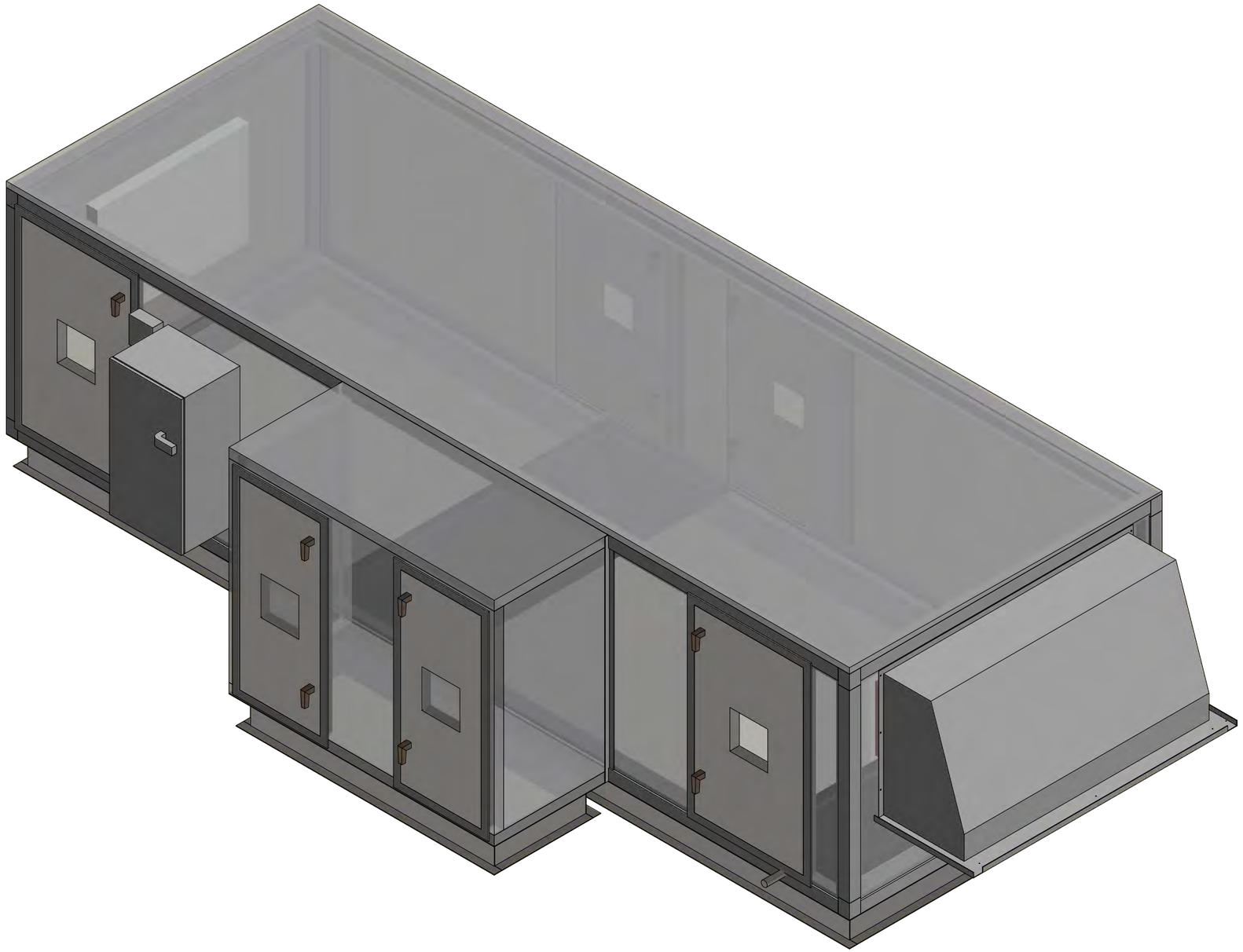
Skid Width: Total width of the shipping skid, including any items that may extend beyond the cabinet (this includes any door handles, coil connections, drain connections, lifting lugs, mounted pipe-chases, electrical/control components, tie-down brackets, side dampers).

Skid Height: Total height of the shipping skid, including any items that may extend beyond the cabinet (this includes any base-rails, shipping wood-blocks, roof peak, discharge flanges, mounted gas-furnace flue pipes).

Skid Length: Total length of the shipping skid, including any items that may extend beyond the cabinet (this includes any mounted rain-hoods, discharge flanges, tie-down brackets, shipping wood-blocks, front dampers, split connectors, electrical/control components, outrigging extensions, isolation dampers, inlet baskets).

Shipping Weight: Represents the estimated shipping weight with a tolerance of +/- 10% for values greater than 5,000 lbs. Values less than 5,000 lbs. may have higher percentage variation but not any consequential shipping impact. Shipping weight does not include ship loose and/or field-installed items but does include estimate for shipping materials and/or opening covers.

Operating Weight: Represents the estimated operational weight with a tolerance of +/- 10% for values greater than 5,000 lbs. Values less than 5,000 lbs. may have higher percentage variation. Operational weight estimate includes unit shell, internal components and structure, and known ship loose and/or field-installed items (weather hoods, pipe chases, factory-provided filter media and estimated fluid weight in coils). Actual operating weight will be heaver due to additional field installed materials including but not limited to field-provided filter media, piping, control devices, and/or inertia base concrete.



REV	DATE	REVISION CHANGE	REV BY

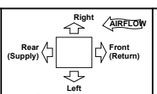
YORK SOLUTION UNIT DRAWING

MODEL: XTO-45x66 05/07/2025 07:14:41 PM UTC
DESIGNATION: RTU-01
PROJECT NAME: 6-14 DIETZ AVE

ISOMETRIC VIEW

SHEET 1 OF 3 CONTRACT#:
UNIT TAG: RTU-01

ALL DIMENSIONS SHOWN IN: INCHES
DRAWING SCALE: NTS
DIMENSION TOLERANCES: UNIT (+/- 1/2"); PIPING (+/- 2")
WEIGHT: 3690 (+/- 10%)
DRAWING NOT TO BE USED FOR CONSTRUCTION



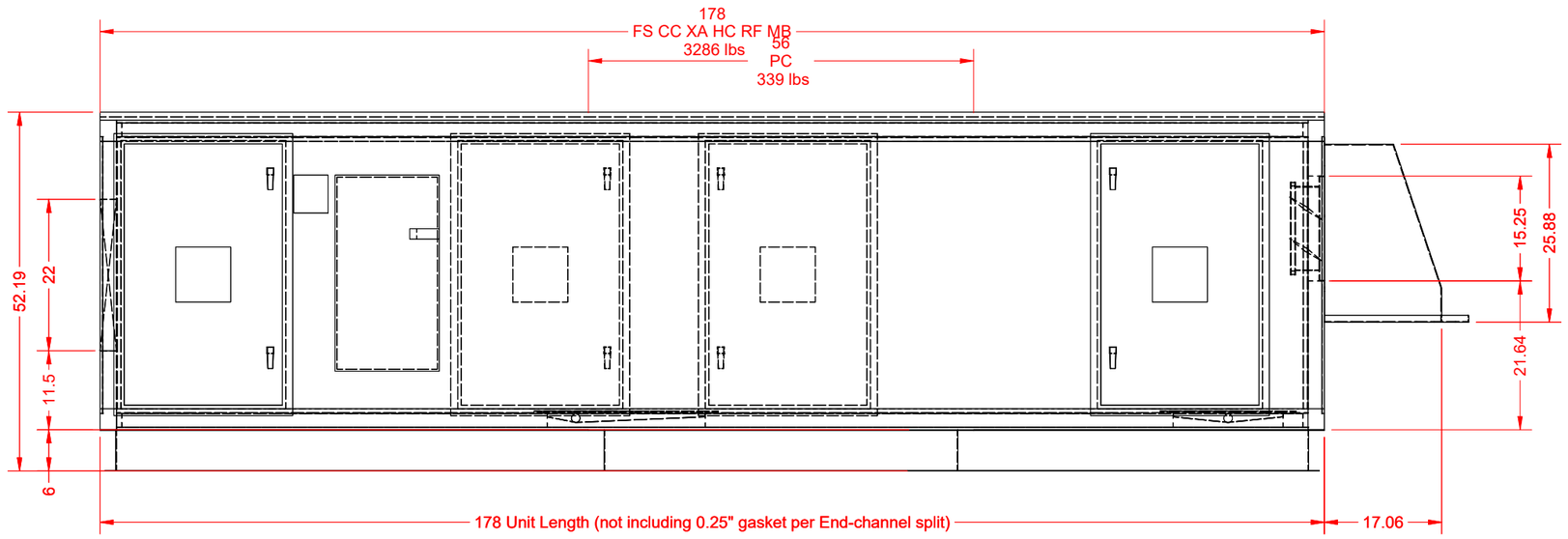
PLAN VIEW

YORK® Solution™

EaS Version: 1.23.6.2

NOTE:

SKID WEIGHTS REPRESENT ESTIMATED SHIPPING WEIGHTS INCLUDING SHIPPING MATERIALS AND/OR OPENING COVERS BUT DO NOT INCLUDE SHIP LOOSE AND/OR FIELD-INSTALLED ITEMS.



REV	DATE	REVISION CHANGE	REV BY

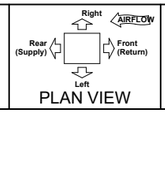
YORK SOLUTION UNIT DRAWING

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DESIGNATION: RTU-01
PROJECT NAME: 6-14 DIETZ AVE

ELEVATION VIEW

SHEET 2 OF 3 CONTRACT#:
UNIT TAG: RTU-01

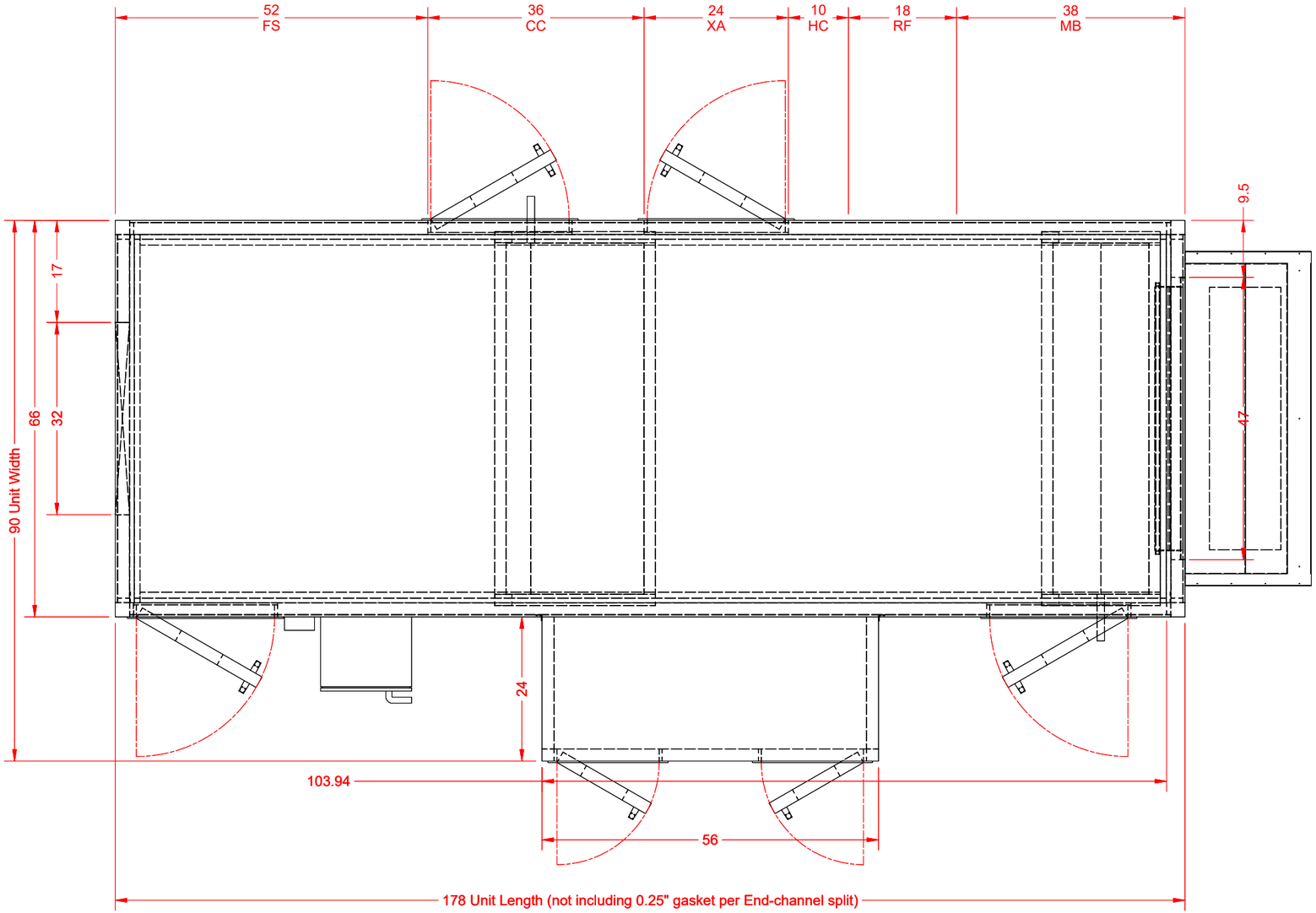
ALL DIMENSIONS SHOWN IN: INCHES
DRAWING SCALE: NTS
DIMENSION TOLERANCES: UNIT (+/- 1/2"); PIPING (+/- 2")
WEIGHT: 3690 (+/- 10%)
DRAWING NOT TO BE USED FOR CONSTRUCTION



PLAN VIEW

YORK® Solution™

EaS Version: 1.23.6.2



REV	DATE	REVISION CHANGE	REV BY

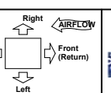
YORK SOLUTION UNIT DRAWING

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PLAN VIEW

SHEET 3 OF 3 CONTRACT#:
UNIT TAG: RTU-01

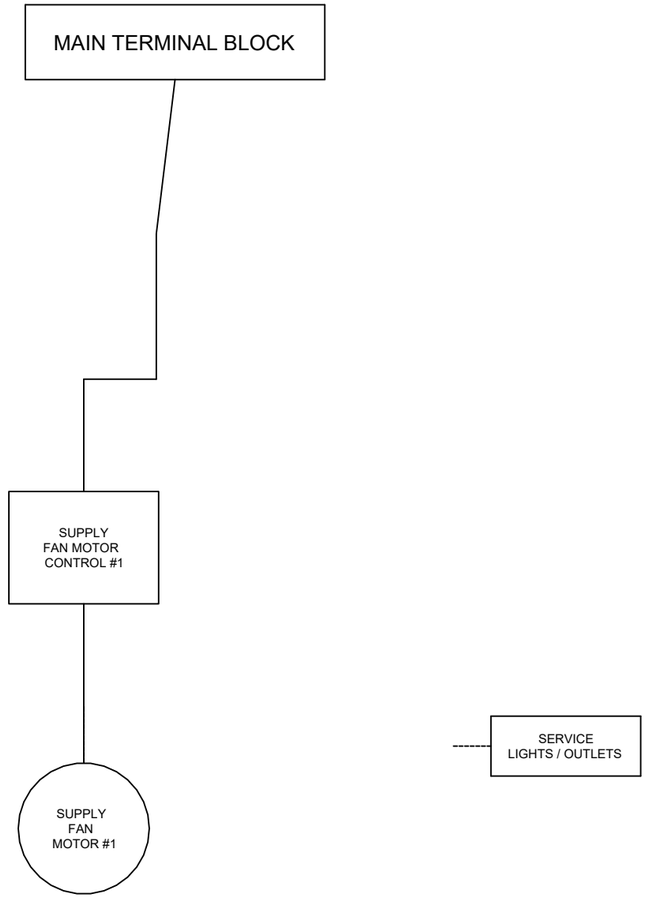
ALL DIMENSIONS SHOWN IN: INCHES
DRAWING SCALE: NTS
DIMENSION TOLERANCES: UNIT (+/- 1/2"); PIPING (+/- 2")
WEIGHT: 3690 (+/- 10%)
DRAWING NOT TO BE USED FOR CONSTRUCTION



PLAN VIEW

YORK® Solution™

EaS Version: 1.23.6.2



PRODUCT DRAWING AHU Field Wiring MODEL: NOT FOR CONSTRUCTION	Project Name: 6-14 Dietz Ave Location: , Engineer: Contractor: For:	Sold To: Cust Purch Order#: Contract#: UNIT TAG: RTU-01 - Sheet 1	Date: 5/7/2025 7:11:15 PM (UTC) Form No.: 100.09-EG1 Dwg. Lev.: 12/03 Dwg. Scale: NTS	Serial Number: SQ Database Number: YORKworks Release: Dwg. Name: Dwg. Location:	YORK® A JOHNSON CONTROLS COMPANY

YORKworks Version: 21 Drawing Generator Version : 01:00:1

EF-1

2021.04.15 - 108 Samuel Sites

Qty: 1

Model: VEBK21V1H1CA20SPC1 Spun Aluminum Downblast Centrifugal Belt Drive Powered Ventilator

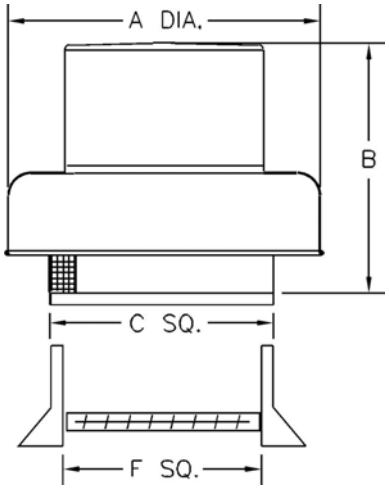
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Air Performance

70 Deg F @ 0 ft	
CFM	6,000
S.P.	0.250 "wg
bHP	1.68
RPM	1,123

Motor Details

H.P.	2
TYPE	ODP
ELEC	575v/3ph



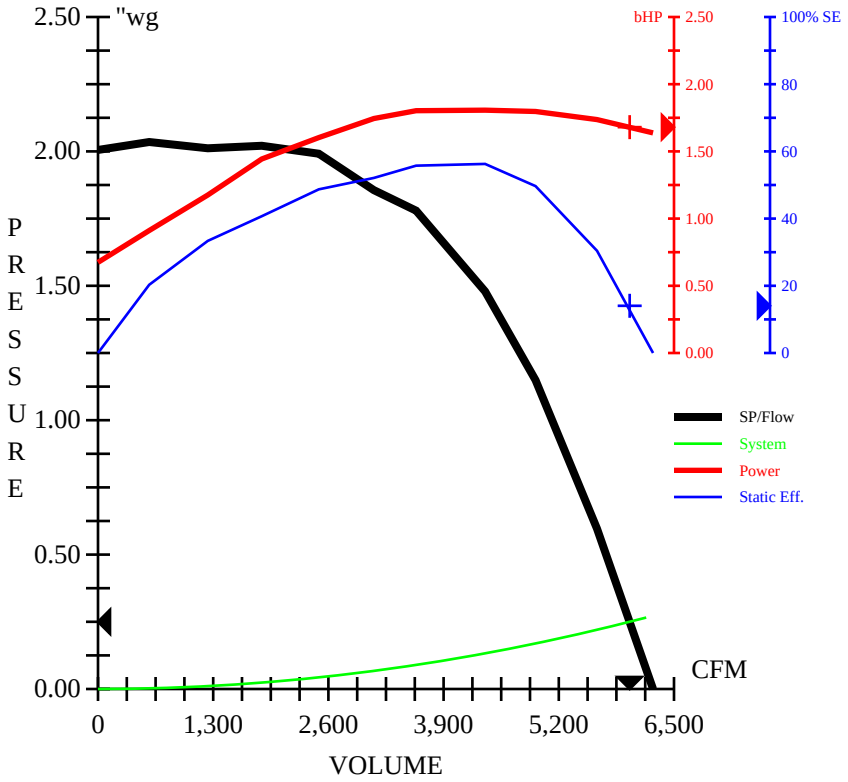
Dimensions

A	42 3/4 "
B STD	34 1/8 "
B EXT	38 1/8 "
C	28 1/8 "
F	23 1/2 "
Curb OD	26 1/2 "
Weight	100 lbs

Sound Data

Octave Band								LwA	Sones
1	2	3	4	5	6	7	8	85	23.7
87	84	88	79	76	77	77	69		

(dB re 10^{-12} watts)



Performance certified is for installation type A - free inlet, free outlet. Speed (RPM) is nominal. Performance is based on actual speed of test.

The sound power level ratings shown are in decibels, referred to 10 -12 watts calculated per AMCA Standard 301. Values shown are for inlet LWi sound power levels for installation Type A free inlet, free outlet. Ratings do not include the effects of duct end correction. The sound ratings shown are loudness values in fan sones at 5 feet (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values shown are for installation Type A, free inlet hemispherical sone levels.

Standard Features

Spun and shaped aluminum housing
Integral motor overload protection on all standard single phase motors
Disconnect switch on motors except explosion proof
Adjustable pitch V-belt drives
Two belts furnished on 5 HP and above
Ventilated motor compartment with motor out of airstream
Non-overloading, backwardly inclined wheel
Isolated, suspended motor wheel-drive assemble
Spark resistant construction through size 24
Polished CRS fan shaft with rust inhibitive coating
Pillow Block Bearing L50 = 200,000 hrs

Options

cULus Listed
Aluminum
Mill finish
Standard construction
Galvanized bird screen
Standard curb cap
Standard disconnect

Accessories

JCFAG02640264G_ - Curb, Standard, Galvanized, 18" high

The Carnes Company certifies that the Models VEDK and VEBK shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

ENGINEER: Smith + Andersen Consulting Engineering

GENERATOR:

Make/Model: Generac / SG350 **Rating:** 350kW/438kVA, Life safety Standby **A/C Voltage:** 347/600-3Φ

Displacement: 21.9 Liter **Fuel**: Natural Gas 11-14" W/C **Enclosure:** L2A - Steel w Motorized Dampers

Approx. Wt. Combined: 11,800lbs. **Approx. Dim. Combined: (L x W x H):** 208" L x71" W x 130"H

Item Number	Description

GENSET REQUIREMENTS:

TPL,	Notes on Installation Recommendations-Outdoor Roof Top Application
TPL,	Generator Standard Commissioning Guidelines – Life Safety
TPL,	Generac Important Generator Warranty Information – Preservation Process
Generac, 10000046207	Gas System Design Guidelines
Generac, 10000002132	Gas Supply Checklist
Generac, A0000641394	Fuel Specification – Natural Gas

GENSET CERTIFICATES:

Generac, 0184520SSD	Certification of Quality
Generac, 0K8347	ISO Certification
Generac, 0K8297	Prototype Test Report

GENSET DATA:

Generac, 10000035546	350kW **Natural Gas** Generator System Specification Sheets
Generac, 0163180SBY	SERIES 2000 Enclosure SPEC
Generac, 0180230SBY	Rhino Coat Spec Sheet
Generac, A0005031828	Exhaust Emissions Data

ALTERNATOR DATA:

Generac, 0197970SSB	600kW Alternator Specification Sheet
Generac, 0187980SBY	GENPROTECT Data Sheets

CONTROL PANEL:

Generac, A0002366454	PZ Pro Controller Spec sheet
Generac, 0604400SSD	Electronic Governor
Generac, A0005536705	Industrial Gateway Spec Sheet

CONTACT INFORMATION

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EDMONTON
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T: 780-429-1611
Email: salesab@totalpower.ca

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Calgary, AB T2E 6Y4
T: 403 730 9800
Email: salesab@totalpower.ca

MAPLE RIDGE
#17 – 20172 113B Avenue
Maple Ridge, BC V2X 0Y9
T: 604 460 7949
Email: salesbc@totalpower.ca

Generac, 0161920SBY	Engine Run Relay
Generac, 10000026036	21-Light Remote Annunciator Datasheet

CIRCUIT BREAKER:

Generac, 0189400SSD	450A, UL 100% LSI CB w/ Trip & Aux contacts, EATON
Generac, 0192390SSD	CB Lug and Wire Data

ACCESSORIES & OPTIONS:

Generac, 0191900SBY	10A Battery Charger
Generac, 0161970SBY	Battery, 1200CCA, Group 8D
Generac, 0197620SSD	Battery Heating Pad
Generac, 0K5958	Block Heater, 2500W, 240V
Generac, 0199320SSD	Oil Heater – 300W, 120VAC
Generac, A0000377366	Motorized Damper kit
Generac, 10000004898	125A, 12 Position Load center
Generac, 0D8896A	Enclosure Heater, 5000W
JMLC	Emergency DC Lighting Kit
VIBRO	Spring Isolators

DRAWINGS:

Generac, 10000037143	Genset Installation Drawing, Open Set
Generac, 0K6048D	Genset Installation Drawing, Enclosed Set
Generac, 10000022859	PZP Wiring Diagram
Generac, 10000022920	PZP Schematic Diagram
Generac, 10000034013	PZ-410 System Interconnections Dwg

WARRANTY:

Generac, 0K3486	Generator Warranty Statement – 2 Year Limited Warranty

AUTOMATIC TRANSFER SWITCH (200A):

Make/Model: Eaton / 4BIH3KDA30200EPC **Max kA Rating:** 42kA **A/C Voltage:** 347/600-3P-4W
Bypass: Single Bypass c/w drip shield **Enclosure:** NEMA 1 **Approx. Dims:** 38" W x 21"D x 80"H

DRAWINGS

Eaton / Cutlet Hammer,	Transfer Switch & controller Data Sheet
Eaton / Cutlet Hammer,	Standard Schematic Diagram & Layout Diagram

AUTOMATIC TRANSFER SWITCH (400A):

Make/Model: Eaton / 4BIH3LDA30400EPC **Max kA Rating:** 42kA **A/C Voltage:** 347/600-3P-4W
Bypass: Single Bypass c/w drip shield **Enclosure:** NEMA 1 **Approx. Dims:** 38" W x 21"D x 80"H

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Email: salesab@totalpower.ca

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Email: salesab@totalpower.ca

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Maple Ridge, BC V2X 0Y9
T: 604 460 7949
Email: salesbc@totalpower.ca

DRAWINGS

Eaton / Cutlet Hammer,	Transfer Switch & controller Data Sheet
Eaton / Cutlet Hammer,	Standard Schematic Diagram & Layout Diagram

WARRANTY:

Eaton / Cutlet Hammer,	1 Year Transfer Switch Warranty Statement

OTHER ITEMS & SERVICES:

- The generator configured in **LIFE-SAFETY** and comes with standard factory testing.
- Start-up inspection c/w 4-hour load test and instruction performed during regular business hours.
- Base frame Rodent Guard, Emergency lighting, Fuel Flex line included, along with Spring Isolators (shipped loose)
- Freight to site included (single shipment, off loading by others)
- 3 Set of Operational and Maintenance Manuals; First Fill of Lube Oil and Coolant.

CONTACT INFORMATION

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Email: salesbc@totalpower.ca

SG350 | 21.9L | 350 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

DEMAND RESPONSE READY

Standby Power Rating
350 kW, 438 kVA, 60 Hz

Demand Response Rating
350 kW, 438 kVA, 60 Hz

Prime Power Rating
315 kW, 394 kVA, 60 Hz

ISO 9001:2008

USA ENGINEERED & BUILT* *Assembled in the USA using domestic and foreign parts

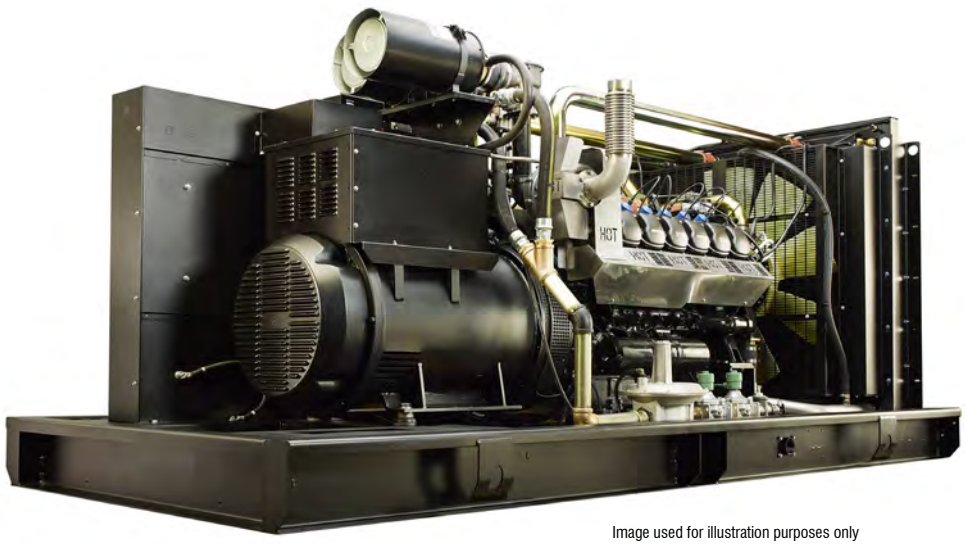


Image used for illustration purposes only

Codes and Standards

Not all codes and standards apply to all configurations. Contact factory for details.

- UL2200, UL6200, UL1236, UL489
- CSA C22.2, B149
- BS5514 and DIN 6271
- SAE J1349
- NFPA 37, 70, 99, 110
- NEC700, 701, 702, 708
- ISO 3046, 7637, 8528, 9001
- NEMA ICS10, MG1, 250, ICS6, AB1
- ANSI C62.41
- IBC 2009, CBC 2010, IBC 2012, ASCE 7-05, ASCE 7-10, ICC-ES AC-156 (2012)

Powering Ahead

Generac ensures superior quality by designing and manufacturing most of its generator components, such as alternators, enclosures, control systems and communications software. Generac also makes its own spark-ignited engines, and you'll find them on every Generac gaseous-fueled generator. We engineer and manufacture them from the block up — all at our facilities throughout Wisconsin. Applying natural gas and LP-fueled engines to generators requires advanced engineering expertise to ensure reliability, durability and necessary performance. By designing specifically for these dry, hotter-burning fuels, the engines last longer and require less maintenance. Building our own engines also means we control every step of the supply chain and delivery process, so you benefit from single-source responsibility.

Plus, Generac Industrial Power's distribution network provides all parts and service so you don't have to deal with third-party suppliers. It all leads to a positive owner experience and higher confidence level. Generac spark-ignited engines give you more options in commercial and industrial generator applications as well as extended run time from utility-supplied natural gas.

SG350 | 21.9L | 350 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC® | INDUSTRIAL POWER

STANDARD FEATURES

DEMAND RESPONSE READY

ENGINE SYSTEM

- Oil Drain Extension
- Air Cleaner
- Engine Coolant Heater
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Radiator Duct Adapter (Open Set Only)
- Critical Silencer

Fuel System

- NPT Fuel Connection on Frame
- Primary and Secondary Fuel Shutoff

Cooling System

- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

Electrical System

- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

ALTERNATOR SYSTEM

- UL2200 GENprotect™
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Permanent Magnet Excitation
- Sealed Bearing
- Amortisseur Winding
- Full Load Capacity Alternator

GENERATOR SET

- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Separation of Circuits - Multiple Breakers
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby and Demand Response Rated Units)
- 1 Year Limited Warranty (Prime Rated Units)
- Silencer Mounted in the Discharge Hood (Enclosed Units Only)
- Ready to Accept Full Load in <10 Seconds

ENCLOSURE (If Selected)

- Rust-Proof Fasteners with Nylon Washers to Protect Finish
- High Performance Sound-Absorbing Material (Sound Attenuated Enclosures)
- Gasketed Doors
- Upward Facing Discharge Hoods (Radiator and Exhaust)
- Stainless Steel Lift Off Door Hinges
- Stainless Steel Lockable Handles
- RhinoCoat™ - Textured Polyester Powder Coat Paint

CONTROL SYSTEM



Power Zone® Pro Sync Controller

Program Functions

- NFPA 110 Level 1 Compliant
- Engine Protective Functions
- Alternator Protective Functions
- Digital Engine Governor Control
- Digital Voltage Regulator
- Multiple Programmable Inputs and Outputs
- Remote Display Capability
- Remote Communication via Modbus® RTU, Modbus TCP/IP, and Ethernet 10/100
- Alarm and Event Logging with Real Time Stamping
- Expandable Analog and Digital Inputs and Outputs
- Remote Wireless Software Update Capable
- Wi-Fi, Bluetooth, BMS and Remote Telemetry
- Built-In Programmable Logic Eliminates the Need for External Controllers Under Most Conditions
- Ethernet Based Communications Between Generators
- Programmable I/O Channel Properties
- Built-In Diagnostics

Protections

- Low Oil Pressure
- Low Coolant Level
- High/Low Coolant Temperature
- Sensor Failure
- Oil Temperature
- Over/Under Speed
- Over/Under Voltage
- Over/Under Frequency
- Over/Under Current
- Over Load
- High/Low Battery Voltage
- Battery Charger Current
- Phase to Phase and Phase to Neutral Short Circuits (I^2T Algorithm)

7 Inch Color Touch Screen Display

- Resistive Color Touch Screen
- Sunlight Readable (1400 NITS)
- Easily Identifiable Icons
- Multi-Lingual
- On Screen Editable Parameters
- Key Function Monitoring
- Three Phase Voltage, Amperage, kW, kVA, and kVAr
- Selectable Line to Line or Line to Neutral Measurements
- Frequency
- Engine Speed
- Engine Coolant Temperature
- Engine Oil Pressure
- Engine Oil Temperature
- Battery Voltage
- Hourmeter
- Warning and Alarm Indication
- Diagnostics
- Maintenance Events/Information

SG350 | 21.9L | 350 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

CONFIGURABLE OPTIONS

DEMAND RESPONSE READY

ENGINE SYSTEM

- ○ Baseframe Cover/Rodent Guard
- ○ Oil Heater
- ○ Air Filter Restriction Indicator
- ○ Radiator Stone Guard (Open Set Only)
- ○ Level 1 Fan and Belt Guards (Enclosed Units Only)

FUEL SYSTEM

- ○ NPT Flexible Fuel Line

ELECTRICAL SYSTEM

- ○ 10A UL Listed Battery Charger
- ○ Battery Warmer

ALTERNATOR SYSTEM

- ○ Alternator Upsizing
- ○ Anti-Condensation Heater
- ○ Tropical Coating

CIRCUIT BREAKER OPTIONS

- ○ Main Line Circuit Breaker
- ○ 2nd Main Line Circuit Breaker
- ○ Shunt Trip and Auxiliary Contact
- ○ Electronic Trip Breakers

GENERATOR SET

- ○ Demand Response Rating
- ○ Extended Factory Testing (3-Phase Only)
- ○ 12 Position Load Center

ENCLOSURE

- ○ Weather Protected Enclosure
- ○ Level 1 Sound Attenuation
- ○ Level 2 Sound Attenuation
- ○ Level 2 Sound Attenuation with Motorized Dampers
- ○ Level 3 Sound Attenuation (Steel Only)
- ○ Steel Enclosure
- ○ Aluminum Enclosure
- ○ Up to 200 MPH Wind Load Rating (Contact Factory for Availability)
- ○ AC/DC Enclosure Lighting Kit
- ○ Enclosure Heaters (Motorized Dampers Only)
- ○ Door Open Alarm Switch

CONTROL SYSTEM

- ○ NFPA 110 Compliant 21-Light Remote Annunciator
- ○ Remote Relay Assembly (8 or 16)
- ○ Oil Temperature Sender with Indication Alarm
- ○ Remote E-Stop (Break Glass-Type, Surface Mount)
- ○ Remote E-Stop (Red Mushroom-Type, Surface Mount)
- ○ Remote E-Stop (Red Mushroom-Type, Flush Mount)
- ○ 10A Engine Run Relay
- ○ Ground Fault Annunciator
- ○ 100 dB Alarm Horn
- ○ 120V GFCI and 240V Outlets
- ○ Damper Alarm (Motorized Dampers Only)

WARRANTY (Standby Gensets Only)

- ○ 2 Year Extended Limited Warranty
- ○ 5 Year Limited Warranty
- ○ 5 Year Extended Limited Warranty
- ○ 7 Year Extended Limited Warranty
- ○ 10 Year Extended Limited Warranty

ENGINEERED OPTIONS

ENGINE SYSTEM

- ○ Coolant Heater Ball Valves
- ○ Fluid Containment Pan

CIRCUIT BREAKER OPTIONS

- ○ 3rd Breaker System

CONTROL SYSTEM

- ○ Battery Disconnect Switch

GENERATOR SET

- ○ Special Testing
- ○ Battery Box

SG350 | 21.9L | 350 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

APPLICATION AND ENGINEERING DATA

DEMAND RESPONSE READY

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	12
Type	V12
Displacement - in^3 (L)	1,336.4 (21.9)
Bore - in (mm)	5.03 (128)
Stroke - in (mm)	5.60 (142)
Compression Ratio	10.0:1
Intake Air Method	Turbocharged/Aftercooled
Number of Main Bearings	7
Connecting Rods	Steel Alloy
Cylinder Head	Cast Iron
Cylinder Liners	Cast Steel Alloy
Ignition	Electronic
Piston Type	Cast Aluminum Alloy
Crankshaft Type	Forged Steel Alloy
Lifter Type	Solid
Intake Valve Material	High Temp Steel Alloy
Exhaust Valve Material	High Temp Steel Alloy
Hardened Valve Seats	Proprietary Alloy

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full-Flow Spin-On Cartridge
Crankcase Capacity - qt (L)	31.7 (30)

Cooling System

Cooling System Type	Pressurized Closed Recovery
Fan Type	Pusher
Fan Speed - RPM	1,404
Fan Diameter - in (mm)	44 (1,118)

Fuel System

Fuel Type	Natural Gas
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure - in H_2O (kPa)	11 - 14 (2.7 - 3.5)
Optional Operating Fuel Pressure - in H_2O (kPa)	7 - 11 (1.7 - 2.7)

Engine Electrical System

System Voltage	24 VDC
Battery Charger Alternator	57 A
Battery Size	See Battery Index 0161970SBY
Battery Voltage	(2) - 12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	K0350124Y21
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5% (3-Phase)
Telephone Interference Factor (TIF)	<52
Standard Excitation	Permanent Magnet
Bearings	Sealed Ball
Coupling	Direct via Flexible Disc
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Regulation Accuracy (Steady State)	±0.25%

SG350 | 21.9L | 350 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

OPERATING DATA

DEMAND RESPONSE READY

POWER RATINGS - NATURAL GAS

	Standby/Demand Response	Prime
Three-Phase 120/208 VAC @0.8pf	350 kW/438 kVA Amps: 1,216	315 kW/394 kVA Amps: 1,094
Three-Phase 120/240 VAC @0.8pf	350 kW/438 kVA Amps: 1,054	315 kW/394 kVA Amps: 948
Three-Phase 277/480 VAC @0.8pf	350 kW/438 kVA Amps: 527	315 kW/394 kVA Amps: 474
Three-Phase 347/600 VAC @0.8pf	350 kW/438 kVA Amps: 421	315 kW/394 kVA Amps: 379

MOTOR STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip

277/480 VAC	30%	208/240 VAC	30%
K0350124Y21	1,001	K0500124Y23	730
K0500124Y23	1,020	K0600124Y23	1,120
K0600124Y23	1,560		

FUEL CONSUMPTION RATES*

Natural Gas – scfh (m^3/hr)

Percent Load	Standby/Demand Response	Prime
25%	1,620 (45.9)	1,560 (44.2)
50%	2,400 (68.0)	2,220 (62.9)
75%	3,240 (91.7)	3,000 (84.9)
100%	4,140 (117.2)	3,780 (107.0)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby/Demand Response	Prime
Air Flow (Fan Air Flow Across Radiator)	scfm (m^3/min)	28,004 (793)	28,004 (793)
Coolant Flow	gpm (Lpm)	211 (798.6)	211 (798.6)
Coolant System Capacity	gal (L)	15.5 (58.7)	15.5 (58.7)
Max. Operating Ambient Temperature	°F (°C)	122 (50)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)		See Bulletin No. 0199270SSD	
Maximum Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby/Demand Response	Prime
Flow at Rated Power - scfm (m^3/min)	657 (18.6)	598 (16.9)

ENGINE

		Standby/Demand Response	Prime
Rated Engine Speed	RPM	1,800	1,800
Horsepower at Rated kW**	hp	516	464
Piston Speed	ft/min (m/min)	1,680 (512)	1,680 (512)
BMEP	psi (kPa)	170 (1,171)	153 (1,054)

EXHAUST

		Standby/Demand Response	Prime
Exhaust Flow (Rated Output)	scfm (m^3/min)	2,113 (59.8)	1,894 (53.6)
Max. Backpressure (Post Silencer)	inHg (kPa)	0.75 (2.54)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,277 (691.7)	1,250 (676.7)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528, and DIN6271 standards.
Standby - See Bulletin 0187500SSB
Demand Response - See Bulletin 10000018250
Prime - See Bulletin 0187510SSB

GENERATOR ENCLOSURES



DESCRIPTION

GENERAC POWER SYSTEMS' generator enclosures provide year-round weather protection for your power equipment. Engineered with functionality and value in mind, the enclosure design benefits are unique in that the enclosures utilize dimensionally matched components for either a weather protective configuration or a sound attenuated/acoustic configuration. With common components used between design, modification and on-site upgrades can be accomplished with ease.

The enclosure design offers several benefits over the "standard enclosures" of other manufacturers. Generac's enclosures have been created with the goal of maximizing the customer's product performance satisfaction while maintaining the functionality of reducing exterior noise levels and discouraging product tampering.

Although others may require a "premium" for a self-enclosed exhaust system, rugged steel panel construction or protective polyethylene washers under all exterior panel fasteners, Generac includes these and several other features on every enclosure configuration. Be sure to compare. Generac Enclosures offer additional design enhancement extras that other "standard enclosures" do not.

Doc No. 0163180SBY
Rev. E 06/10/19

GENERATOR ENCLOSURES

Post-Free Twin Doors
Provide Large, Unobstructed Service Access

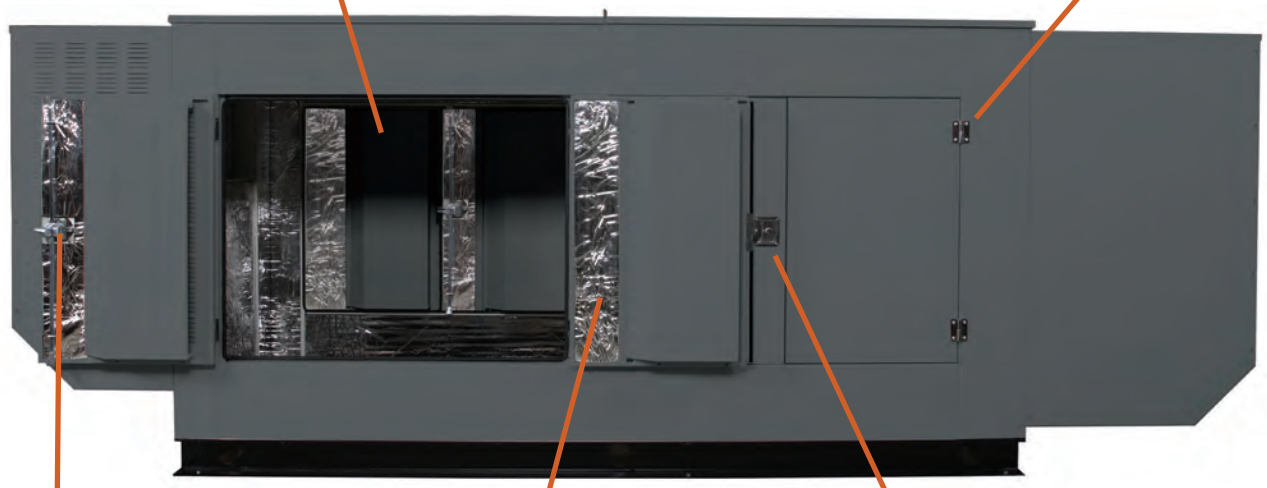




Gasket-Free, Interconnected Roof Panel Joint
Drip-Free, Maintenance-Free

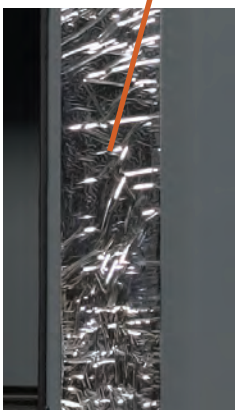
Heavy Gauge, Stainless Steel, Partial Pin Hinges with Nylon Spacers
Durable, Corrosion-Free, Removable Doors





Two-Point Door Latch System
Ensures Proper Seal Preventing Water Ingress and Sound Egress





Dense, Closed-Cell Foam Insulation with Reflective Silver Mylar Layer
Improved Sound Attenuation Without Damaging Effects From Radiant Heat Exposure



Lockable Turn and Tuck Stainless Steel Latch Handle
Corrosion-Free, Non-Protruding and Secure

Doc No. 0163180SBY
Rev. E 06/10/19

GENERATOR ENCLOSURES

FEATURES:	BENEFITS:
Dimensional matching of acoustic and non-acoustic enclosure designs	Reduces variation in fuel tank pricing, inventory; removes need to change out fuel tank or retrofit
Standardized enclosure components *	Ease of retrofit or upgrade to acoustic system; reduced parts inventory, costs
Enclosure mounted directly to unit baseframe	Simplified delivery and installation with enclosure and unit in single component design
Electrostatically painted panels	Maximum protection from weather elements
12 or 14 gauge steel based on kW rating	Maximum sound attenuation, protection and product life
Aluminum Enclosure optional	Prevents corrosion in coastal regions
Stainless steel door latch and hinge hardware	Provides extended component life; maximum protection against rusting
Stainless steel door latch strike plate	Maximum protection against enclosure paint damage from door latch pin
Door hinges utilize slip-pin design	Provides quick door removal for full-unit access
Polyethylene gasketing under door hinges	Additional protection for enclosure paint finish
Keyed door latches	Protection for equipment and personnel
Large removable access doors	Ease of maintenance
Relocation of access doors	Provides improved access to MLCB on all units
Redesigned door gasketing	Improved sealing quality from sound and weather elements
Weather resistant aluminum roof design with drip ledge	Provides optimum moisture/rain runoff from unit
Cabled and gasketed radiator access cover	Provides improved radiator access and additional protection from weather elements
Acoustic roof panels manufactured with mechanical retention pins	Increased acoustic foam retention within unit
Polyethylene washers under all panel fasteners	Additional paint finish protection from stainless steel fastener
Internally fastened enclosure panels (where possible)	Provides streamlined unit appearance
Additional roof panel stiffener	Added overall compartment rigidity and acoustic foam panel retention
Self-enclosed exhaust system	Provides safe unit operation; no enclosure hot spots; streamlined unit appearance
Discharge air duct has been designed with minimal fasteners	Ease of removal and access to exhaust system
Stainless steel exhaust band clamps	Provides extended component life; ensures proper exhaust seal
Drain holes within air ducts	Enables maximum water run-off
Rodent-proof, tamper proof enclosure design	Safety and security for personnel and equipment
Redesigned baseframe lifting lugs	Ease of unit relocation; prevents compartment damage from lifting straps
Up to 200 MPH wind kit options (Contact Factory for Availability)	Meets locally enforced wind requirements

* Consult Generac Power Systems, Inc. for installation drawings for specific configurations and dimensions.

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SH	REV	WINDCHILL VERSION	
1/5	G	G.1	

NOTES:
1. CONTROL PANEL, (OPTIONAL BATTERY CHARGER INSIDE).
2. 120V, 20A GFCI & 250V, 15A OUTLET (OPTIONAL).
3. CONNECTION POINTS FOR CONTROL WIRES PROVIDED IN THE LOW VOLTAGE CONNECTION BOX (USE LOW VOLTAGE STUB-UP AREA).
4. BATTERY (24 VOLT NEGATIVE GROUND SYSTEM).
5. MAIN LINE CIRCUIT BREAKER (MLCB), AC LOAD LEADS. (DIMENSIONS MAY VARY DUE TO UNIT CONFIGURATION)
6. CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.

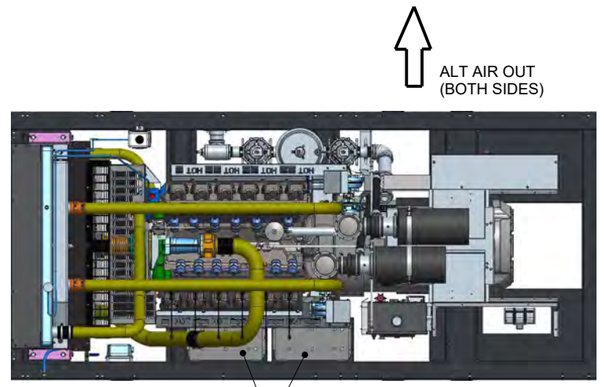
7. ENGINE SERVICE CONNECTIONS:
   INLET NATURAL GAS = 2" NPT FEMALE COUPLING (STANDARD OPT), 3" NPT FEMALE COUPLING (LOW FUEL PRESSURE OPT)
   INLET DIESEL = N/A
   RETURN DIESEL = N/A
   OIL DRAIN = 1/2" NPT FEMALE COUPLING
   RADIATOR DRAIN = 1/2" NPT FEMALE COUPLING
   FOR EXHAUST SYSTEM CONNECTIONS, SEE TABLE 2

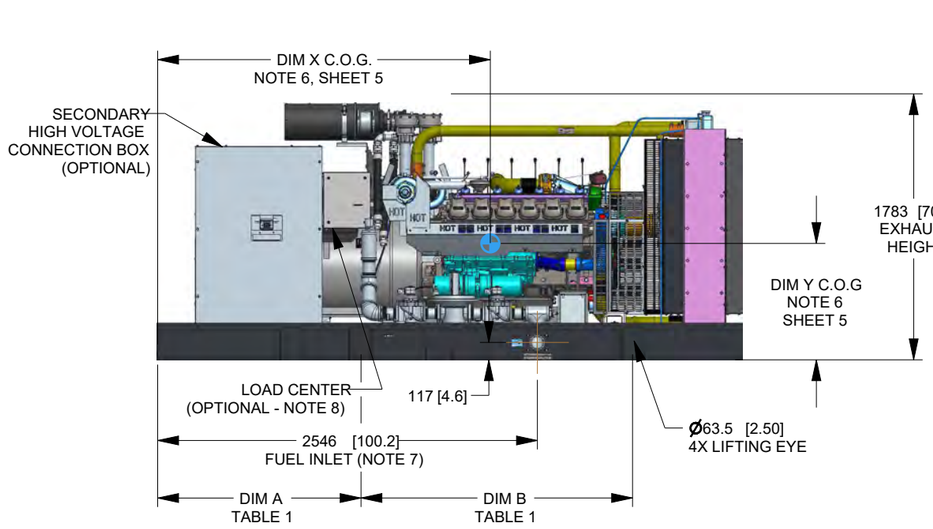
***** SEE GENERATOR SIZING GUIDE FOR FUEL PIPE SIZING TO SUIT APPLICATION *****

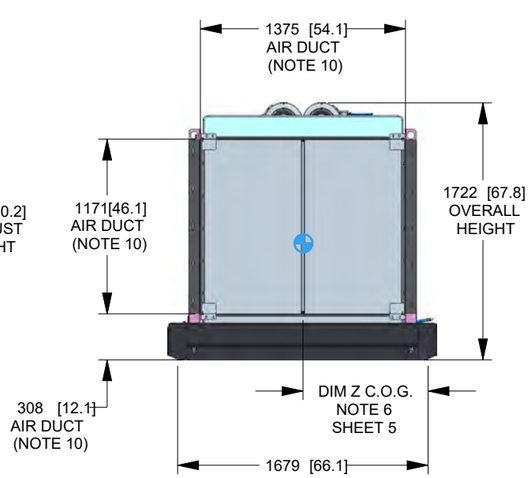
TABLE 1		
DIM	OPEN SET, L1A, L2A ENCLOSED	L3A ENCLOSED
A	1363 [36.7]	731 [28.8]
B	1820 [71.7]	2815 [110.8]

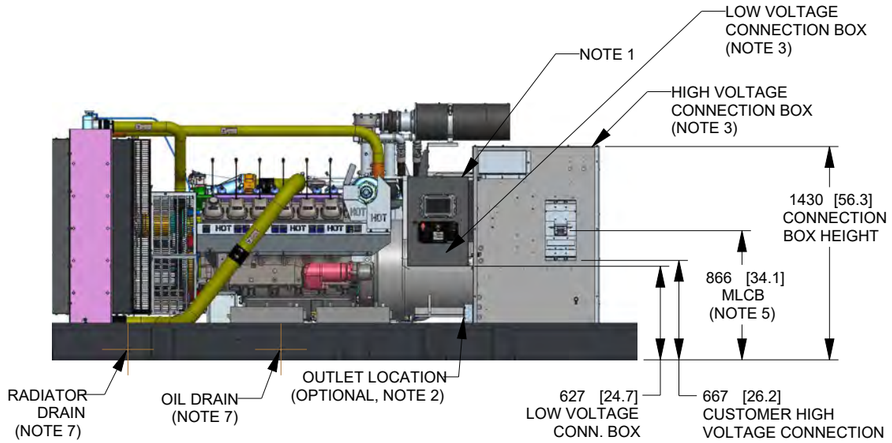
8. AUXILARY AC CONNECTION FOR UNIT OPTIONS ARE LOCATED IN HIGH VOLTAGE CONNECTION BOX, UNLESS AN OPTIONAL LOAD CENTER IS INSTALLED.
9. EXHAUST PIPES MAY BE ROTATED TO ALLOW MUFFLER TO POINT OUT TO THE RIGHT OR LEFT SIDE OF GENERATOR. (MAY NOT APPLY TO ALL UNITS)
10. GENERATOR SET MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND DISCHARGE AIR FROM THE RADIATOR IS NOT RECIRCULATED.
11. BOTTOM OF GENERATOR SET MUST BE ENCLOSED TO PREVENT PEST INTRUSION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
12. IF USED, INSTALL EXHAUST BLANKETS (SUPPLIED BY OTHERS) ALONG THIS LINE. O2 SENSOR TO BE PLACED THIS DISTANCE FROM THE TURBO FLANGE. BLANKETS MUST HAVE MINIMUM CONTINUOUS OPERATING TEMPERATURE OF 1500°F [816°C]. EXHAUST SYSTEM MAXIMUM BACK PRESSURE = 10" H2O POST SILENCER.
13. CONNECT THE OPEN SET EXHAUST PER NFPA 37
14. BLANKETS SHOULD NOT COVER OXYGEN SENSOR. PLACING INSULATION OVER OXYGEN SENSOR WILL CAUSE PREMATURE FAILURE DUE TO EXCESSIVE TEMPERATURE.
15. OXYGEN SENSOR MUST BE MOUNTED BETWEEN ENGINE OUTLET AND CATALYST INLET AS SHOWN. INCLUDING THE TURBO FLANGE ELBOW AND FACTORY PROVIDED EXHAUST KIT ELBOW, NO ADDITIONAL ELBOWS ARE PERMITTED BETWEEN THE TURBO AND THE CATALYST INLET. OXYGEN SENSOR MUST BE LOCATED AT LEAST 508MM [20"] DOWNSTREAM OF ANY ELBOW. PIPES WITH SMALLER DIAMETERS THAN THOSE OF THE PIPES PROVIDED MAY NOT BE USED.
16. CATALIZED SILENCER (FOR EPA UNITS) MUST BE MOUNTED IN DESCRIBED POSITION. FAILING TO FOLLOW THESE INSTRUCTIONS WHEN INSTALLING A CERTIFIED ENGINE IN A PIECE OF STATIONARY EQUIPMENT VIOLATES FEDERAL LAW 40 CFR 1068.105(b), SUBJECT TO FINES OR PENALTIES AS DESCRIBED IN THE CLEAN AIR ACT.
17. BOLTS OR STUDS USED TO MOUNT UNIT TO PAD SHALL BE 5/8 - 11 GRADE 5.

ADDITIONAL NOTES:
FOR WEIGHT AND CENTER OF GRAVITY DATA SEE NOTE 6, AND SHEET 5.









DRAWING CREATED FROM PRO/ENGINEER 3D FILE. ECO MODIFICATION TO BE APPLIED TO SOLID MODEL ONLY.

208V & 240V STANDARD AND UPSIZED ALTERNATOR
400V, 480V & 600V UPSIZED ALTERNATOR

DIMENSIONS ARE IN MILLIMETERS [INCHES]

INSTALLATION DRAWING

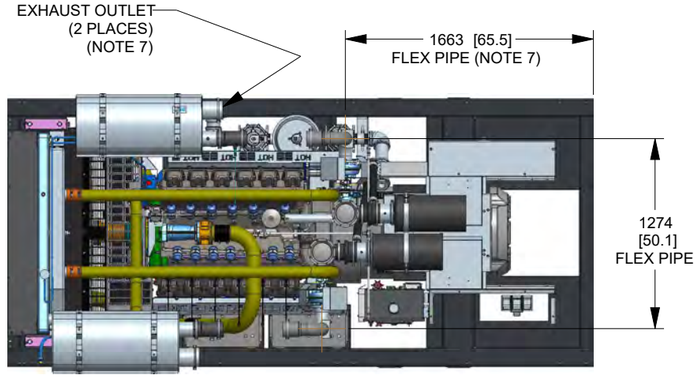
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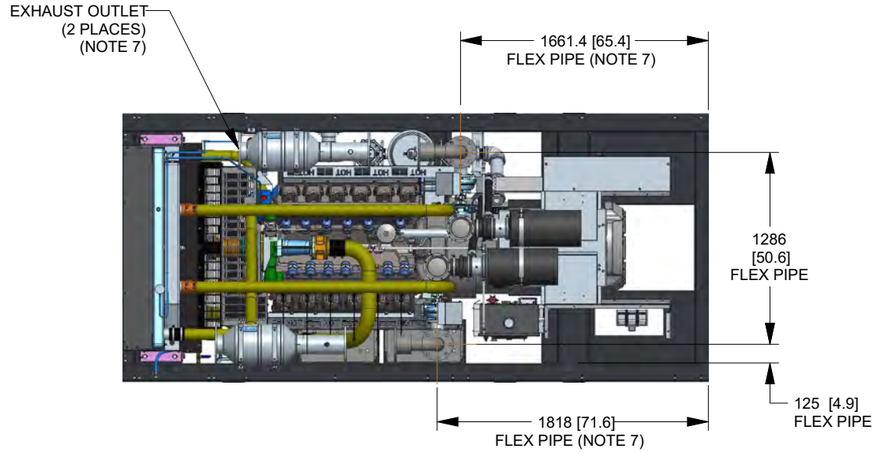
ELECTRONICALLY APPROVED
INSIDE WINDCHILL

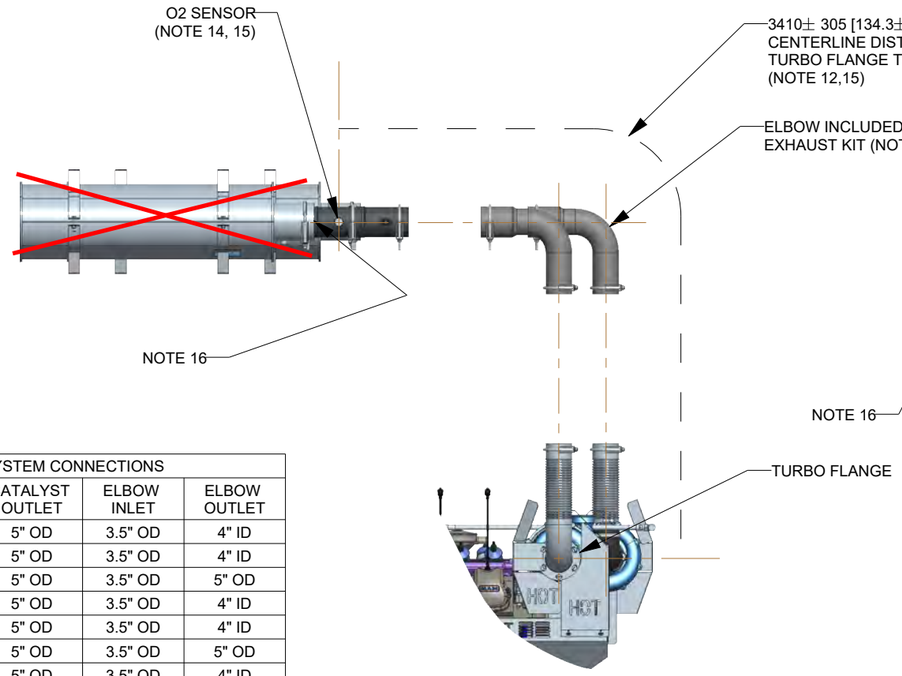
GENERAC

TITLE
OPEN SET G21.9L
60Hz:SG350,SG400,SG450,PG315,PG360,PG405
50Hz:SG280,SG320,SG360,PG252,PG288,PG324

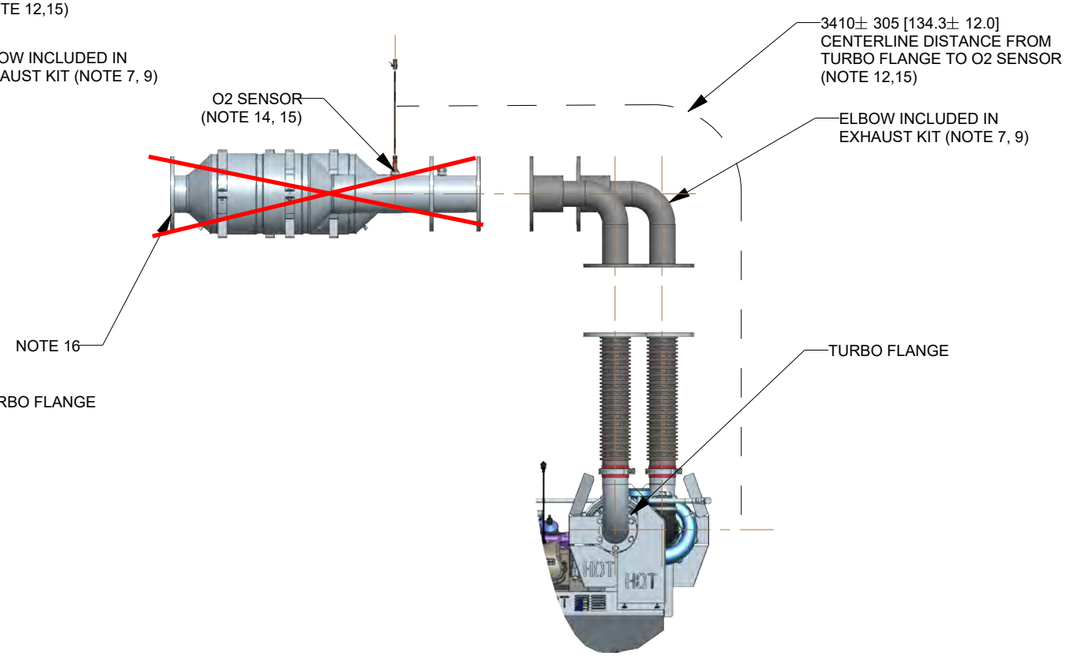
ISSUE DATE:	11/14/18				
SIZE	CAGE NO	DWG NO			REV
B	N/A	10000037143			G
SCALE	1.000	WT-KG	0.000	SHEET	1 of 5







EXHAUST LAYOUT FOR SG350, SG400, PG315, PG360
SG280, SG320, PG252, AND PG288



EXHAUST LAYOUT FOR SG450, PG405, SG320, AND PG324

TABLE 2 - EXHAUST SYSTEM CONNECTIONS					
NODE	FLEX PIPE OUTLET	CATALYST INLET	CATALYST OUTLET	ELBOW INLET	ELBOW OUTLET
SG350	3.5" OD	4" OD	5" OD	3.5" OD	4" ID
SG400	3.5" OD	4" OD	5" OD	3.5" OD	4" ID
SG450	3.5" OD	5" OD	5" OD	3.5" OD	5" OD
PG315	3.5" OD	4" OD	5" OD	3.5" OD	4" ID
PG360	3.5" OD	4" OD	5" OD	3.5" OD	4" ID
PG405	3.5" OD	5" OD	5" OD	3.5" OD	5" OD
SG280	3.5" OD	4" OD	5" OD	3.5" OD	4" ID
SG320	3.5" OD	4" OD	5" OD	3.5" OD	4" ID
SG360	3.5" OD	5" OD	5" OD	3.5" OD	5" OD
PG252	3.5" OD	4" OD	5" OD	3.5" OD	4" ID
PG288	3.5" OD	4" OD	5" OD	3.5" OD	4" ID
PG324	3.5" OD	5" OD	5" OD	3.5" OD	5" OD

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ELECTRONICALLY APPROVED
INSIDE WINDCHILL

GENERAC

TITLE
OPEN SET G21.9
60Hz:SG350,SG400,SG450,PG315,PG360,PG405
50Hz:SG280,SG320,SG360,PG252,PG288,PG324

ISSUE DATE: 11/13/18

SIZE	CAGE NO	DWG NO	REV
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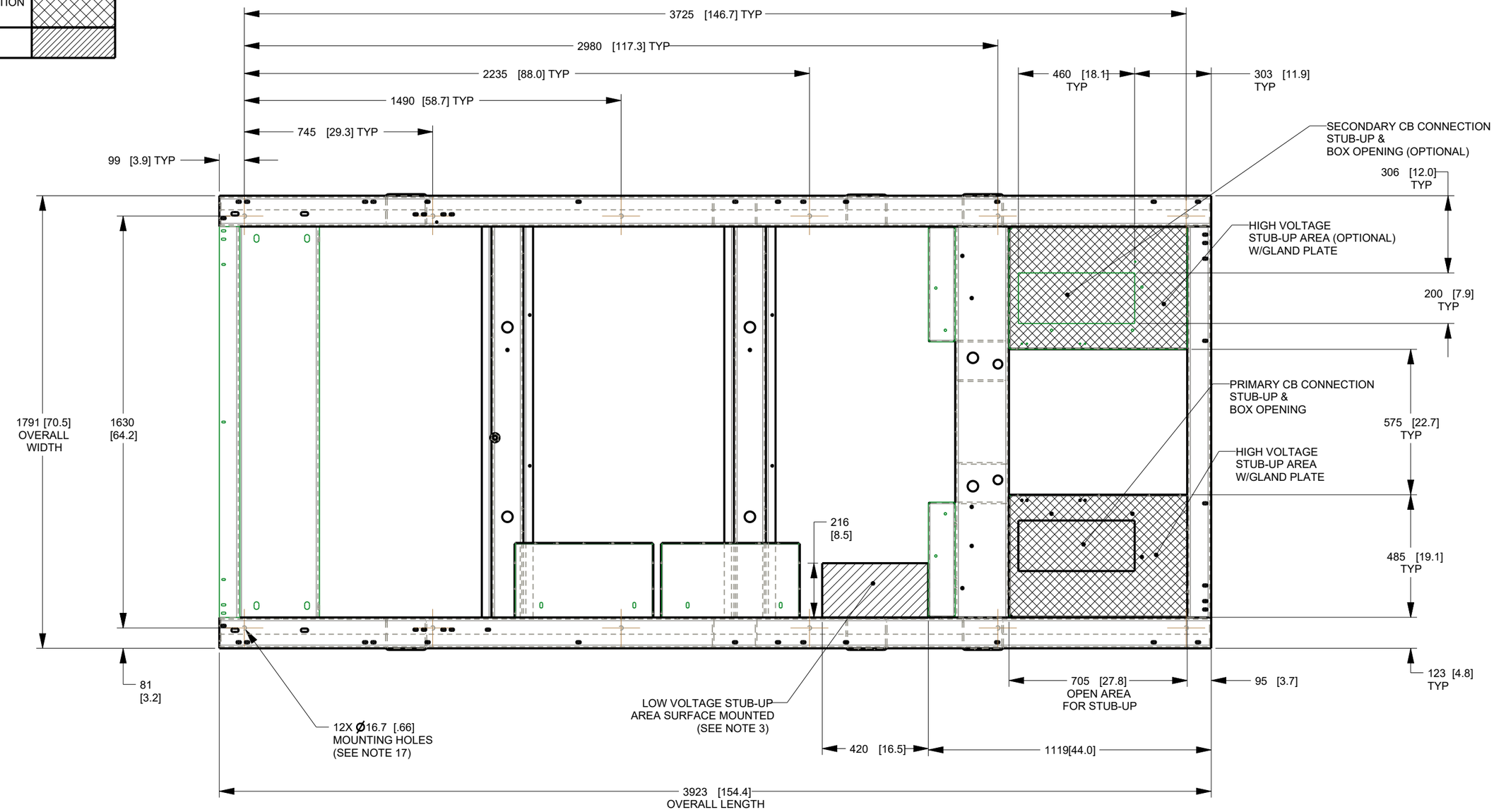
SCALE 0.025 | WT-KG 0.000 | SHEET 2 of 5

SH	REV	WINDCHILL VERSION
3/5	G	G.1

RECOMENDED ELECTRICAL STUB-UP

(HIGH VOLTAGE STUB-UP)
AC LOAD LEAD CONDUIT FOR
PERMANENT MAGNET EXCITATION
CONNECTION BOX

(LOW VOLTAGE STUB-UP)



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DIMENSIONS ARE IN MILLIMETERS [INCHES]

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ELECTRONICALLY APPROVED
INSIDE WINDCHILL

GENERAC

TITLE
L1A & L2A STUB UP VIEW G21.9L
60Hz:SG350,SG400,SG450,PG315,PG360,PG405
50Hz:SG280,SG320,SG360,PG252,PG288, PG324

ISSUE DATE: 11/14/18

SIZE	CAGE NO	DWG NO	REV
B	N/A	10000037143	G

SCALE	WT-KG	SHEET
1.000	0.000	3 of 5

NOTE:
CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.

OPEN SET

MODEL	VOLTAGE	WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
SG 350/400, PG 315/360/405	400V, 480V & 600V	3,312 kg [7,286 lbs]	1988 [78.3]	667 [26.3]	837 [33.0]
SG 280/320, PG 252/288					
SG 350/400, PG 315/360/405	208V & 240V	3,757 kg [8,265 lbs]	1895 [74.6]	660 [26.0]	837 [33.0]
SG 450	480V				
SG 450	208V, 240V	3,917 kg [8,617 lbs]	1861 [73.3]	657 [25.9]	837 [33.0]
SG 350/400	208V, 240V, 480V UPSIZED				
SG 450	600V	3,753 kg [8,257 lbs]	1896 [74.6]	660 [26.0]	837 [33.0]
SG 350/400	600V UPSIZE				
SG400/450	208V	3,923 kg [8,650 lbs]	1860 [73.2]	657 [25.9]	843 [33.2]
SG450	240V				

STD ENCLOSURE, STEEL

MODEL	VOLTAGE	WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
SG 350/400, PG 315/360/405	400V, 480V & 600V	4,305 kg [9,490 lbs]	2243 [88.3]	803 [31.6]	838 [33.0]
SG 280/320, PG 252/288					
SG 350/400, PG 315/360/405	208V & 240V	4,561 kg [10,055 lbs]	2153 [84.8	787 [31.0]	838 [33.0]
SG 450	480V				
SG 450	SG 350/400	4,910 kg [10,802 lbs]	2117 [83.3]	780 [30.7]	838 [33.0]
SG 350/400	208V, 240V, 480V UPSIZED				
SG 450	600V	4,746 kg [10,441 lbs]	2154 [84.8]	788 [31.0]	838 [33.0]
SG 350/400	600V UPSIZE				
SG400/450	208V	4,916 kg [10,840 lbs]	2116 [83.3]	781 [30.8]	843 [33.2]
SG450	240V				

STD ENCLOSURE, ALUMINUM

WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
3,812 kg [8,404 lbs]	2160 [85.0]	746 [29.4]	837 [33.0]
4,257 kg [9,365 lbs]	2064 [81.3]	734 [28.9]	837 [33.0]
4,417 kg [9,717 lbs]	2028 [79.8]	728 [28.7]	837 [33.0]
4,253 kg [9,357 lbs]	2065 [81.3]	734 [28.9]	837 [33.0]
4,423 kg [9,753 lbs]	2027 [79.8]	729 [28.7]	843 [33.2]

L1A ENCLOSURE, STEEL

MODEL	VOLTAGE	WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
SG 350/400, PG 315/360/405	400V, 480V & 600V	4,762 kg [10,498 lbs]	2054 [80.9]	834 [32.8]	841 [33.1]
SG 280/320, PG 252/288					
SG 350/400, PG 315/360/405	208V & 240V	5,207 kg [11,155 lbs]	1986 [78.2]	818 [32.2]	841 [33.1]
SG 450	480V				
SG 450	SG 350/400	5,367 kg [11,807 lbs]	1960 [77.2]	811 [31.9]	841 [33.1]
SG 350/400	208V, 240V, 480V UPSIZED				
SG 450	600V	5,203 kg [11,447 lbs]	1987 [78.2]	818 [32.2]	841 [33.1]
SG 350/400	600V UPSIZE				
SG400/450	208V	5,373 kg [11,847 lbs]	1958 [77.1]	811 [31.9]	845 [33.3]
SG450	240V				

L1A ENCLOSURE, ALUMINUM

WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
4,008 kg [8,818 lbs]	2066 [81.3]	766 [30.2]	839 [33.0]
4,453 kg [9,797 lbs]	1983 [78.1]	752 [78.1]	839 [33.0]
4,613 kg [10,149 lbs]	1952 [76.9]	1952 [76.9]	839 [33.0]
4,449 kg [9,788 lbs]	1984 [78.1]	1984 [78.1]	839 [33.0]
4,619 kg [10,185 lbs]	1950 [76.8]	746 [29.4]	844 [33.2]

L2A ENCLOSURE, STEEL

MODEL	VOLTAGE	WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
SG 350/400, PG 315/360/405	400V, 480V & 600V	4,915 kg [10,836 lbs]	2271 [89.4]	1015 [40.0]	836 [32.9]
SG 280/320, PG 252/288					
SG 350/400, PG 315/360/405	208V & 240V	5,360 kg [11,792 lbs]	2191 [86.3]	987 [38.9]	836 [32.9]
SG 450	480V				
SG 450	SG 350/400	5,520 kg [12,144 lbs]	2159 [85.0]	975 [38.4]	836 [32.9]
SG 350/400	208V, 240V, 480V UPSIZED				
SG 450	600V	5,356 kg [11,783 lbs]	2192 [86.3]	988 [38.9]	836 [32.9]
SG 350/400	600V UPSIZE				
SG400/450	208V	5,526 kg [12,185 lbs]	2157 [84.9]	976 [38.4]	841 [33.1]
SG450	240V				

L2A ENCLOSURE, ALUMINUM

WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
4,074 kg [8,963 lbs]	2181 [85.9]	863 [34.0]	836 [32.9]
4,519 kg [9,942 lbs]	2090 [82.3]	842 [33.1]	836 [32.9]
4,679 kg [10,294 lbs]	2055 [80.9]	832 [32.8]	836 [32.9]
4,515 kg [9,933 lbs]	2091 [82.3]	842 [33.1]	836 [32.9]
4,685 kg [10,330 lbs]	2054 [80.9]	833 [32.8]	841 [33.1]

L3A ENCLOSURE, STEEL

MODEL	VOLTAGE	WEIGHT	CENTER OF GRAVITY DIM X	CENTER OF GRAVITY DIM Y	CENTER OF GRAVITY DIM Z
SG 350/400, PG 315/360/405	400V, 480V & 600V	5,997 kg [13,224 lbs]	2409 [94.8]	995 [39.2]	1005 [39.6]
SG 280/320, PG 252/288					
SG 350/400, PG 315/360/405	208V & 240V	6,312 kg [13,919 lbs]	2342 [92.2]	975 [38.4]	1003 [39.5]
SG 450	480V				
SG 450	SG 350/400	6,472 kg [14,272 lbs]	2314 [91.1]	966 [38.0]	1003 [39.5]
SG 350/400	208V, 240V, 480V UPSIZED				
SG 450	600V	6,308 kg [13,910 lbs]	2342 [92.2]	975 [38.4]	1004 [39.5]
SG 350/400	600V UPSIZE				
SG400/450	208V	6,478 kg [14,285 lbs]	2309 [90.9]	965 [38.0]	1003 [39.5]
SG450	240V				

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INSTALLATION DRAWING

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ELECTRONICALLY APPROVED
INSIDE WINDCHILL

GENERAC

TITLE
WEIGHT AND CENTER OF GRAVITY
60Hz: SG350,SG400,SG450,PG3115,PG360,PG405
50Hz:SG280,SG320,SG360,PG252,PG288,PG324

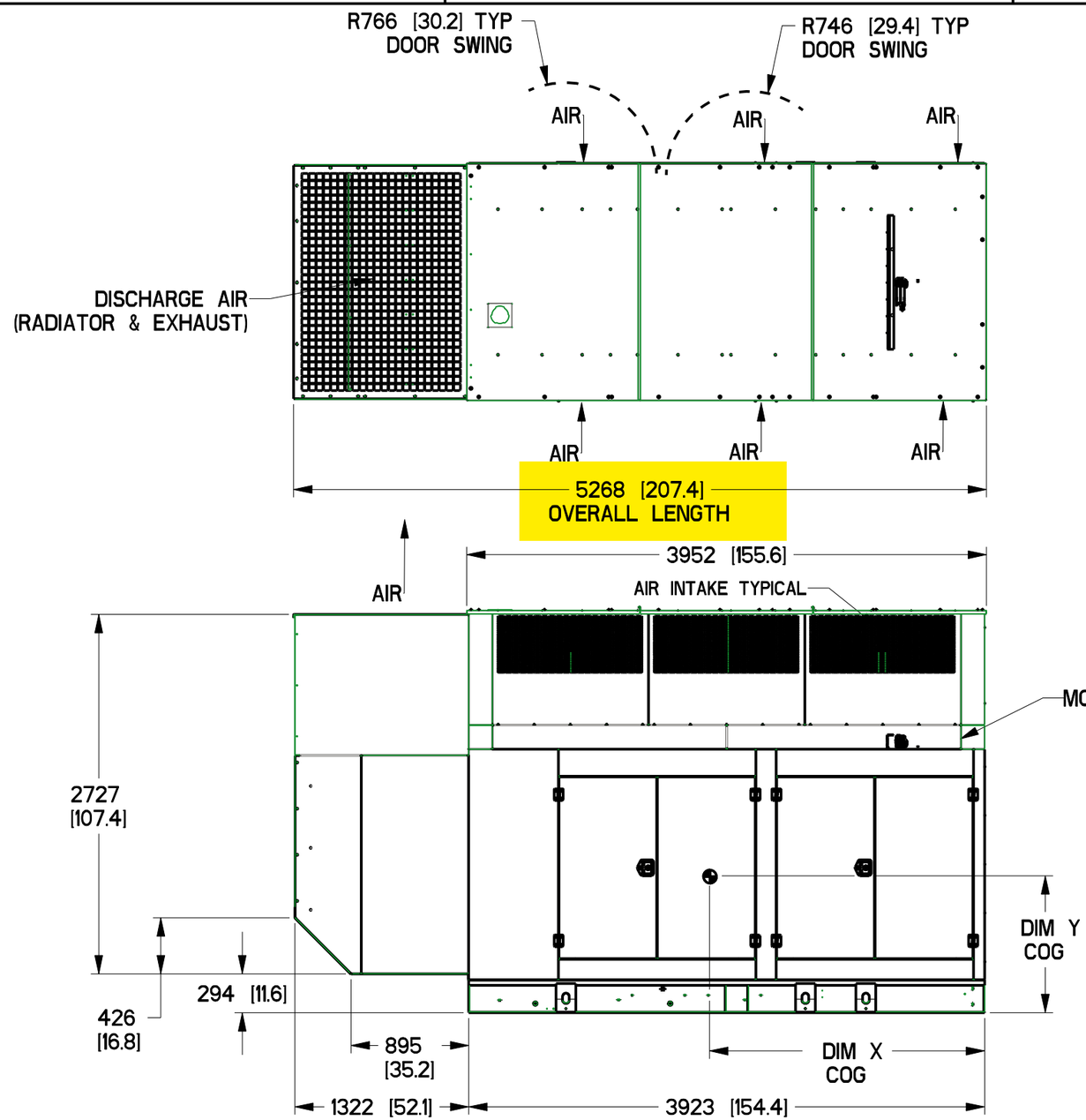
ISSUE DATE: 11/14/18

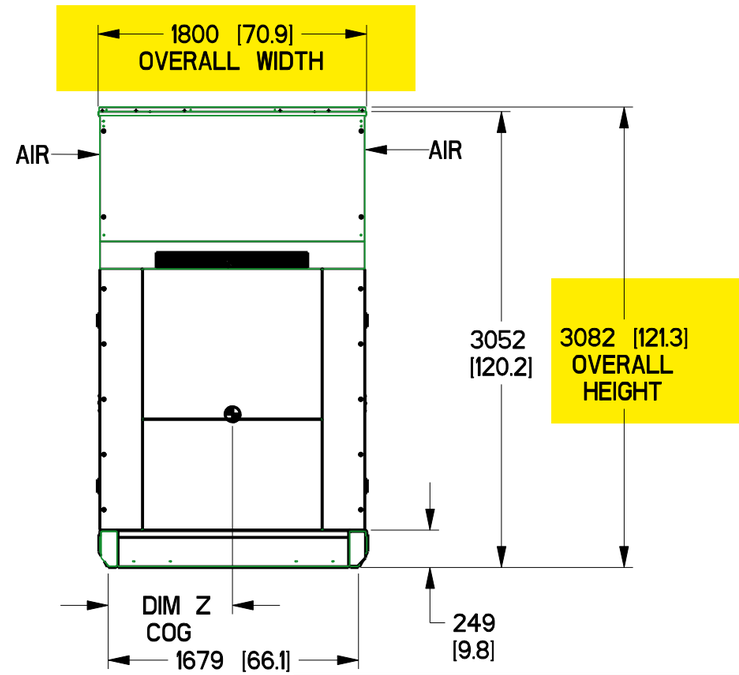
SIZE	CAGE NO	DWG NO	REV
B	N/A	10000037143	G

SCALE 1.000 | WT-KG 0.000 | SHEET 5 of 5

FOR ALL STUB-UP, WEIGHT, AND COG DETAILS, SEE OPEN-SET DRAWING FOR SPECIFIED GENSET.

WEIGHT AND COG VALUES SUBJECT TO CHANGE BASED ON GENSET OPTIONS.





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DIMENSIONS ARE IN MILLIMETERS [INCHES]

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ELECTRONICALLY APPROVED
INSIDE WINDCHILL

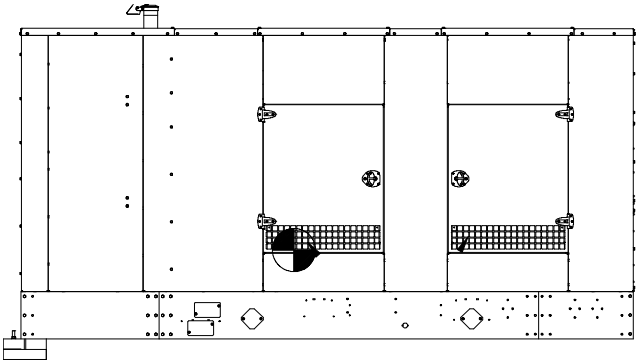
GENERAC

TITLE
INSTALL L2A ENCLOSURE
G21.9L SG/MG350 & SG/MG400
WITH DAMPERS

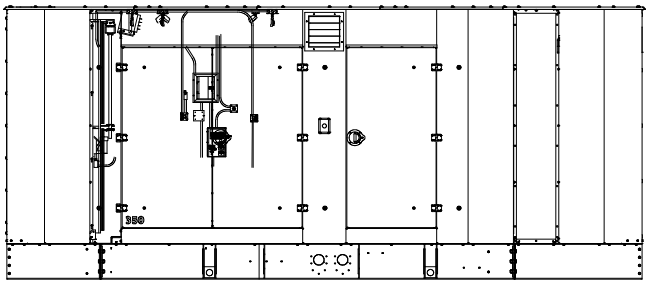
ISSUE DATE: 3/12/14			
SIZE B	CAGE NO N/A	DWG NO 0K6048D	REV B
SCALE 0.025	WT-KG		SHEET 1 of 1

Industrial Generator Set Accessories

Weather and Sound Enclosures



250REZXB and 300REZXC Enclosure



300/350/400REZXD/RZXD and 450-500REZXD Enclosure

Applicable to the following: 250REZXB, 300REZXC, 300-500REZXD and 300-400RZXD

Weather Enclosure Features

- Internal-mounted critical silencer with rain cap and flexible exhaust connector.
- Skid-mounted, steel construction with hinged doors.
- Fade-, scratch-, and corrosion-resistant Power Armor™ automotive-grade textured finish.
- Enclosure has four (250REZXB and 300REZXC) or six (300-500REZXD and 300-400RZXD) large access doors which allow for easy maintenance.
- Lockable, flush-mounted door latches.
- Louvered air inlets (300-500REZXD/300-400RZXD) on alternator end and roof outlet to redirect air and reduce noise.
- Automatic door holders keep doors open during maintenance.
- Steel weather enclosure is designed to 150 mph (241 kph) wind load rating.

Sound Enclosure Features

- Includes all of the weather enclosure features with the addition of sound attenuation material and intake baffles.
- Skid-mounted, steel or aluminum construction with hinged doors. Aluminum enclosures are recommended for high humidity and/or high salt/coastal regions.
- Acoustic insulation that meets UL 94 HF1 flammability classification and repels moisture absorption.
- Steel sound enclosure is analyzed to 150 mph (241 kph) wind load rating.

Available Approvals and Listings

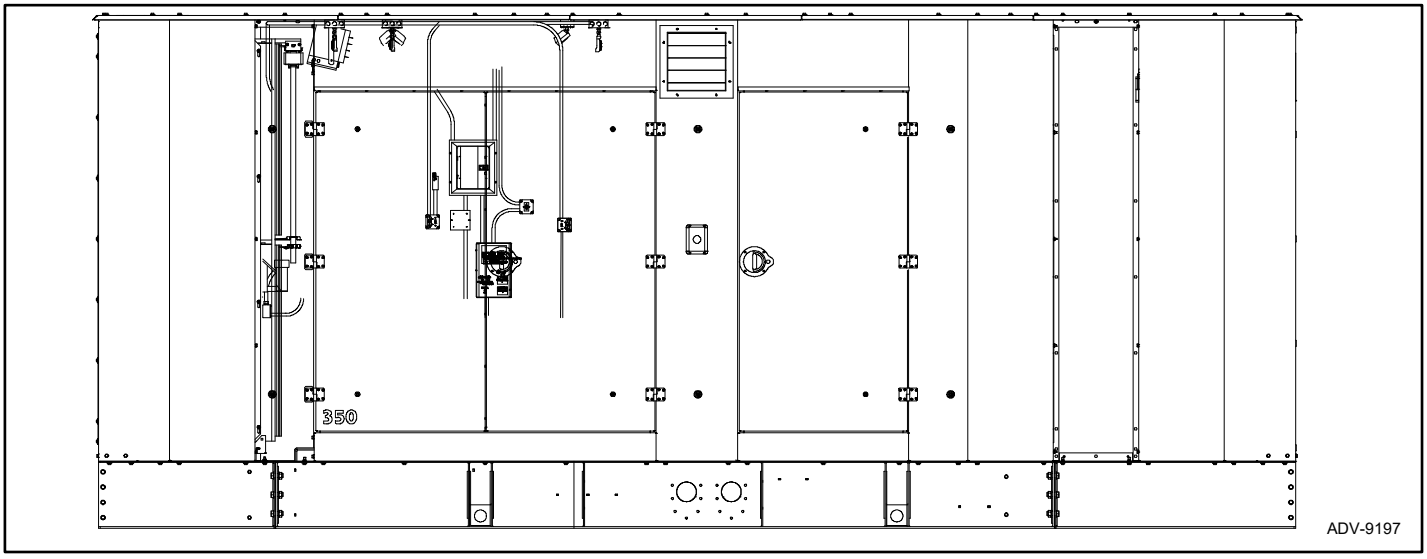
- ❑ UL 2200 Listing
- ❑ CSA Certified
- ❑ cUL Listing
- ❑ IBC Seismic Certification
- ❑ Hurricane Rated Enclosure - Available on sound aluminum, 250REZXB, 300REZXC, and 300-500REZXD (Impact rated for Large Missile Level E and Wind load rated per Florida Building Code tested to TAS201- 94, TAS202- 94 and TAS203- 94 standards).
- ❑ Aluminum sound enclosure is certified to 181 mph (291 kph) wind load rating for 250REZXB and 300REZXC models.
- ❑ Aluminum sound enclosure is certified to 186 mph (299 kph) wind load rating for 300-500REZXD models.

NOTE: Some models may have limited third-party approvals; see your local distributor for details.

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300-500REZXD and 300-400RZXD Enclosure Features



- Available in steel formed panel, solid construction. Preassembled package offering corrosion resistant, dent resilient structure mounting directly to skid.
- Power Armor™ automotive-grade finish resulting in advanced corrosion and abrasion protection as well as enhanced edge coverage and color retention**.**
- Internal critical exhaust silencer offering maximum component life and operator safety.
  Note: Installing an additional length of exhaust tail pipe may increase backpressure levels. Please refer to the generator set spec sheet for the maximum backpressure value.
- Interchangeable modular panel construction. Allows complete serviceability or replacement without compromising enclosure design.
- Cooling/combustion air intake with a horizontal air inlet. Sized for maximum cooling airflow.
- Service access. Multi-personnel doors for easy access to generator set control and servicing of the fuel fill, fuel gauge, oil fill, and battery.
- Cooling air discharge. Weather protective design featuring a vertical air discharge outlet grille. Redirects cooling air up and above enclosures to reduce noise ambient.

Additional Sound Enclosure Features

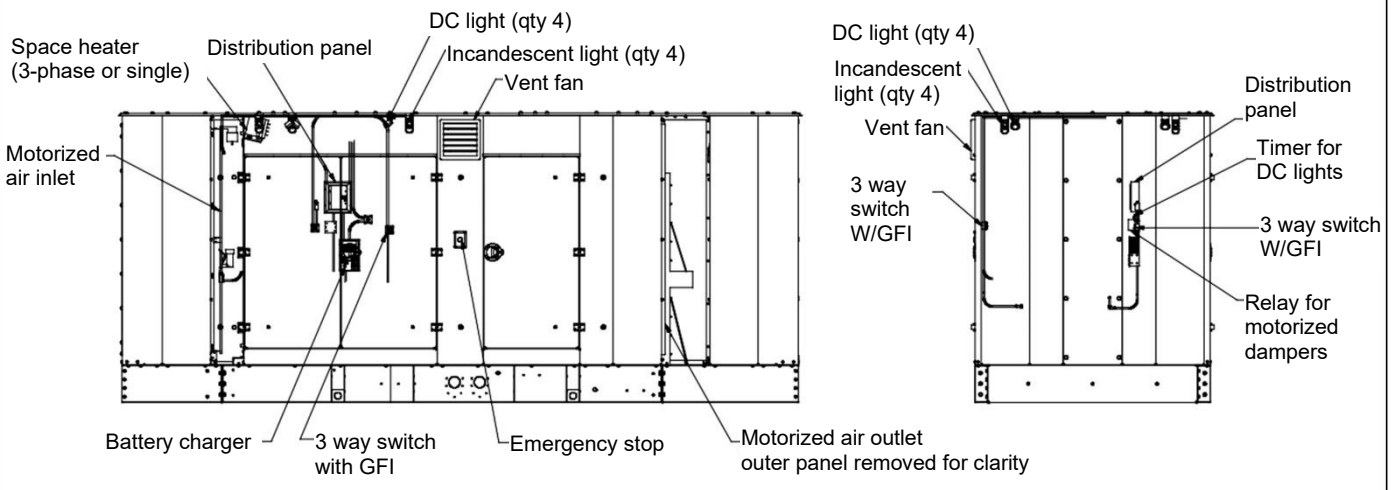
- Available in steel or aluminum formed panel, solid construction.
- Sound-attenuating design. Acoustic insulation UL 94 HF1 listed for flame resistance with up to 51 mm (2 in.) thickness.
- Cooling air discharge. The sound enclosures include acoustic insulation with urethane film.

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300-500REZXD and 300-400RZXD Weather and Sound Enclosure Options



Note: 400-500REZXD shown, other models are similar.

ADV-9200-

Basic Electrical Package (BEP)

Distribution Panel/Load Center. Prewired AC power distribution of all factory-installed features including block heater, two GFCI-protected internal 120-volt service receptacles, internal lighting, and commercial grade wall switch. The load center is powered by building source power and protected by a main circuit breaker, rated for 100 amps with capacity and circuit positions for future expansion. AC power distribution installed in accordance with NEC and all wiring within EMT thin wall conduit. Four LED lights located within UL-listed fixtures designed for wet locations.

- ❑ BEP available with single-phase load center 120/240 VAC.
- ❑ BEP available with 3-phase load center 120/208/ 240 VAC.

Enclosure Heater

Heater, 5 kW Ceiling Mounted. Electrical utility heater prewired to load center inside the enclosure. Rated at 17100 Btu includes adjustable louvers offering down flow and horizontal air tuning, built-in thermostat with automatic fan delay controls.

- ❑ Heater available in single phase at 240 VAC.
- ❑ Heater available in three phase at 208 or 240 VAC.

DC Light Package

- ❑ **DC Light Package (DLP).** Prewired DC light package offering an economical alternative light source within the enclosure, as a complement to the BEP or a source of light when AC power is not available. Battery drain limited with fuse protection and controlled through a 0-60 minute, spring-wound, no-hold timer. Available in LED for generator sets between 300-500 kW.

Miscellaneous Package Options

- ❑ **Battery Charger, Mounted.** Mounting, prewiring of DC output and AC input when optional BEP is selected. Battery charger located inside the enclosure and accessible through an access door.

Block Heater, Junction Box. Factory-supplied block heater prewired to a junction box providing a convenient location for the customer wiring of the block heater.

- ❑ Heater available in single phase at 240 VAC.
- ❑ Heater available in three phase at 208 or 240 VAC.

Enclosure Design Options

- ❑ **Aluminum Enclosure** (available with sound enclosure only)
- ❑ **Steel Enclosure**
- ❑ **Panic Bar** for each latching door. Provides additional safety for individuals working on the generator set while in the enclosure.

Motorized Variable Damper and Ventilation

Motorized Air Inlets

- ❑ Aluminum construction
- ❑ Galvanized steel construction

Motorized Air Outlets

- ❑ Aluminum construction
- ❑ Galvanized steel construction
- ❑ **Ventilation Fan, 22.6 cm/min. (800 cfm) Wall Mount.** Direct drive 3-blade 305 mm (12 in.) aluminum propeller fan with automatic shutters, driven by a totally enclosed air-over motor housed within a corrosion-resistant housing. Remote thermostatically controlled over a temperature range of 27°C to 54°C (80°F to 130°F). All components are prewired and installed.
- ❑ **Gravity Air Outlet Louver**. Louvers closed when unit is not running. After the unit starts, the forced cooling air opens the outlet louvers.

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Weather and Sound Enclosure Specifications

Model	Max. Dimensions, mm (in.)				Weight, kg (lb.) †						Sound Enclosure, Sound Pressure Level at 60Hz with Full Load, dB(A) *
	Length	Width		Height	Steel Weather Enclosure		Steel Sound Enclosure		Aluminum Sound Enclosure		
250REZXB	4526 (178.2)	1786	(70.3)	2460 (96.9	3942	(8691)	3969	(8750)	3647	(8040)	70
300REZXC	4526 (178.2)	1786	(70.3)	2460 (96.9	3942	(8691)	3969	(8750)	3647	(8040)	71
300REZXD	6365(250.6)	2252	(88.7)	2695(106.1)	6643	(14645)	6847	(15095)	6416	(14145)	69
300RZXD	6365(250.6)	2252	(88.7)	2695(106.1)	6643	(14645)	6847	(15095)	6416	(14145)	70
350REZXD	6365(250.6)	2252	(88.7)	2695(106.1)	6863	(15130)	7067	(15580)	6636	(14630)	69
350RZXD	6365(250.6)	2252	(88.7)	2695(106.1)	6863	(15130)	7067	(15580)	6636	(14630)	70
400REZXD	6365(250.6)	2252	(88.7)	2697(106.2)	7144	(15750)	7348	(16200)	6917	(15250)	72
400RZXD	6365(250.6)	2252	(88.7)	2697(106.2)	7144	(15750)	7348	(16200)	6917	(15250)	72
450REZXD	6365(250.6)	2252	(88.7)	2697(106.2)	7244	(15970)	7448	(16420)	7017	(15470)	72
500REZXD	6365(250.6)	2252	(88.7)	2697(106.2)	7262	(16010)	7466	(16460)	7035	(15510)	72

Note: Refer to the respective ADV drawings for details.

* Log average sound pressure level of 8 measured positions around the perimeter of the unit at a distance of 7 m (23 ft). Refer to TIB-114 for details.

† Weight includes the generator set (wet), enclosure, and silencer. The generator set weight represents using the largest alternator option.

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