SHOP DRAWING REVIEW

- [ ] NOT REVIEWED
- [ ] REVIEWED
- [x] REVIEWED AS NOTED
- [ ] REVISE AND RESUBMIT

This review by Hilditch Architect Inc. is for the sole purpose of ascertaining conformance with the general design concept features only, and does not in any way constitute review of the design of engineering elements which form part of the Contract Documents prepared by others. This review shall not mean that Hilditch Architect Inc. approves the design detail inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all trades.

***Hilditch** Architect Inc.*

By: Sasha Stairs

Project No: 1809

Date Rec'd:

Date Rev'd: 2024.12.16

GC/CM: 2024.12.11

Consultant: 2024.12.16

HAI; reviewed for architectural only; 34 pages total:

1. Refer to comments by SustainGlobe Ltd.
2. A PCO and SI will be issued to reflect changes as indicated by SustainGlobe.
3. As confirmed by Mechanical Consultant, there is no change to the unit weight - no effect to structure.
4. GC to coordinate to ensure required clearances around RTU and roof drain location.
5. Provide roof curbs and crickets as indicated.
6. Penetrations through roof to be weather tight.

Submittal No. 32

Roof Top Unit - Shop Drawing

Project Name:
Neshama Hospice

Owner:
Neshama

Prime Consultant:
Hilditch Architect Inc

General Contractor: Renokrew

SHOP DRAWING SUBMITTAL REVIEW	JOB NAME: Neshama Hospice JOB #: 24-130 DATE: Dec 11, 2024
REVIEWED REJECTED REVIEW & RESUBMIT REVIEW AS NOTED	This review is for general conformance of plans and specifications only. Approvals are subject to subcontractors performance within the confines of the contract documents. Review of dimensions will not serve to relieve the subcontractor of contractual responsibility for any deviation from the contract requirements. SPECIFICATION 23 08 10 ✓ SHOP DRAWING PRODUCT DATA DOCUMENTATION LETTER RENOKREW TORONTO | OTTAWA CHECKED BY: REVIEWED BY: TOTAL PAGES: 34

SustainGlobe Ltd.

THIS DRAWING REVIEWED SOLELY FOR GENERAL CONFORMITY WITH DESIGN CONCEPTS. QUANTITIES, DETAILS, DIMENSIONS AND DESIGNS INHERENT IN THE SHOP DRAWINGS ARE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY DATA WITH FIELD DIMENSIONS. CONTRACTOR IS SOLELY RESPONSIBLE FOR DESIGN OF MANUFACTURED ITEMS, FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION AND INSTALLATION OF EQUIPMENT.

DATE RECEIVED: December 11, 2024	✓ MECHANICAL ❑ ELECTRICAL ❑ OTHERS
THIS DRAWING IS: ❑ REVIEWED ✓ REVIEWED AS NOTED ❑ REVIEWED AND TO BE RESUBMIT	BY: TL DATE: December 16, 2024 PROJ. NO.: 18031

RENOKREW
TORONTO | OTTAWA

54 Audia Court, Unit 2
Concord, ON L4K 3N5
(905)-738-1400

Submittal 24-256-016

PROJECT NAME	PROJECT ADDRESS	DATE SUBMITTED
NESHAMA HOSPICE 24-256	3 Cadillac Avenue North York, ON M3H 1R9	Dec 11, 2024

TO	FROM
Taranjeet Singh	PAUL LEDDY
COMPANY	COMPANY
1568796 ONTARIO INC. C/A RENOKREW	Consult Mechanical Inc.
EMAIL	EMAIL
taranjeet@renokrew.com	paul.l@consultmechanical.com
ADDRESS	ADDRESS
43 LEPAGE COURT TORONTO, ON M3J 1Z9	54 Audia Court, Unit 2 Concord, ON L4K 3N5

Title

RTU's

Description

Tag RTU-1 12.5 Ton Roof Top Unit Model # KJ15N24G2DBBCD3A1

Package Items

SPEC	SUBSECTION	ITEM	TYPE
M15 Schedule of Equipment	M15	Schedule of Equipment	Shop Drawings

EQUIPMENT SUBMITTAL FOR APPROVAL

PROJECT: **Neshama Hospice**

LOCATION: **65 Dundas St. E**

EQUIPMENT	Single Packaged R-454B Air Conditioners
UNIT TAGS	RTU-1
QUANTITY	1

SOLD TO:

Consult Mechanical Inc

CONSULTING ENGINEER:

PREPARED BY:
Johnson Controls, Inc.
Bintao Li
Mobile: 416-797-8649
Email : bintao.li@jci.com

DATE:
Dec. 12th, 2024

REVISION:
0

Date
12/09/2024
Project Name
Neshama Hospice 3 cadillac
Project Number
Client / Purchaser

Submittal Summary Page

Qty	Tag #	Model # / Material #	Description
1	RT-1	KJ150N24G2DBBCD3A1	12.5 Ton, Single Packaged R-454B Air Conditioner, High Efficiency, Two Stage Cooling, 12.0 EER, 240 MBH Input Aluminized Steel, Two Stage Gas Heat, 208/230-3-60 • Refrigerant Detection System • VAV Controller with VFD • Dry Bulb Low Leak Economizer w/Barometric Relief and Power Exhaust and Hoods (Bottom or Horizontal End Return Only) with Economizer Fault Detection & Diagnostic (Meets ASHRAE 90.1-2013, IECC 2015, California Title 24, AMCA 511). • 5 HP High Static Belt Drive Blower • 2" Pleated Filters (MERV 13) • Smart Equipment Controller including Discharge Air, Return Air, and Outdoor Air Temperature Sensors. BACNet MS/TP, Modbus and N2 Communication Card. • HACR Circuit Breaker/Disconnect • Phase Monitor • Micro-Channel "all-aluminum" condenser coil, Copper tube/aluminum fin evaporator coil • Composite Drain Pan - Front Connection • Tool-free maintenance with features like hinged doors for all-access panels, slide-out blower and blower motor tray • Hot Gas Bypass
1	RT-1	1RC0471	Roof Curb - 14" High, Flat, Uninsulated, Full Perimeter (Shipped Knocked Down)

Warranty
• One (1) Year Limited Warranty on the Complete Unit
• Five (5) Year Warranty - Compressors and Electric Heater Elements
• Ten (10) Year Limited Warranty - Aluminized Steel Heat Exchanger

Equipment start-up and commissioning by a factory trained technician is recommended.
Contact your supplying distributor or sales representative for additional information & guidance.

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

3-12.5 Pro

Project Name: **Neshama Hospice 3 cadillac** Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1** System: **KJ150N24G2DBBCD3A1**

Cooling Performance		
Total gross capacity	172.7	MBH
Sensible gross capacity	117.3	MBH
Total net capacity	158.5	MBH
Sensible net capacity	103.1	MBH
Efficiency (at ARI)	12.00	EER
Integrated eff. (at ARI)	15.20	IEER
Ambient DB temp.	89.1	°F
Entering DB temp.	80.0	°F
Entering WB temp.	67.0	°F
Evap Coil Leaving DB temp.	58.3	°F
Evap Coil Leaving WB temp.	55.9	°F
Unit Leaving DB temp.	60.9	°F
Unit Leaving WB temp.	56.9	°F
Leaving air temp dew point	54.30	°F
Power input (w/o blower)	10.37	kW
Sound power	82	dB(a)

Refrigerant		
Refrigerant type	R-454B	
Sys1	9 lb	6 oz
Sys2	8 lb	10 oz

Gas Heating Performance		
Entering DB temp.	60	°F
Heating output capacity (Max)	194.0	MBH
Supply air	5000	cfm
Heating input capacity (Max)	240	MBH
Leaving DB temp.	95.9	°F
Air temp. rise	35.9	°F
SSE	81.0	%
Stages	2	

Supply Air Blower Performance		
Supply air	5000	cfm
Ext. static pressure	0.97	IWG
Addl. Unit Losses (Options/Accessories)	1.03	IWG
Blower speed	1313	rpm
Max BHP of Motor (including service factor)	5.75	HP
Duct location	Side	
Motor rating	5.00	HP
Actual required BHP	4.45	HP
Power input	4.15	kW
Elevation	650	ft
Drive type	BELT	
Requires field-supplied drive	true	

Electrical Data				
Power supply	208-3-60		230-3-60	
Unit min circuit ampacity	82.9	A	82.9	A
Unit max over-current protection	100	A	100	A

Dimensions & Weight			
Hgt 51 in	Len 120 in	Wth 59 in	
Weight with factory installed options		1545	lb

Clearances							
Right	12	in	Front	48	in	Rear	36 in
Top	72	in	Bottom	0	in	Left	36 in

Note: Please refer to the tech guide for listed maximum static pressures

Unit Features

- Refrigerant Detection System (RDS) is Factory Installed
- Two Stage Cooling
- 240 MBH Input Aluminized Steel, Two Stage Gas Heat
- Full perimeter base rails with built in rigging capabilities
- Unit Cabinet Constructed of Powder Painted Steel, Certified At 750 Hours Salt Spray Test (ASTM B-117 Standards)
- Scroll Compressor[s]
- Dry Bulb Low Leak Economizer w/Barometric Relief and Power Exhaust and Hoods (Bottom or Horizontal End Return Only) with Economizer Fault Detection & Diagnostic (Meets ASHRAE 90.1-2013, IECC 2015, California Title 24, AMCA 511).
- Slide-Out Blower/5 HP Belt Drive Motor Assembly
- Solid Core Liquid Line Filter Driers
- Unit Ships with 2" Pleated Filters (MERV 13)
- Replacement Filters: 4 - (24" x 20").
- HACR Circuit Breaker/Disconnect
- Single Point Power Connection
- Through-the-Curb and Through-the-Base Utility Connections
- Short Circuit Current: 5kA RMS Symmetrical
- Micro-Channel "all-aluminum" condenser coil, Copper tube/aluminum fin evaporator coil
- Composite Drain Pan - Front Connection
- Tool-free maintenance with features like hinged doors for all-access panels, slide-out blower and blower motor tray
- Hot Gas Bypass

12.5 Ton

- JCI Pro units are manufactured at an ISO 9001 registered facility and each rooftop is completely computer-run tested prior to shipment.

Product Features

- All units are manufactured at an ISO 9001 registered facility and each rooftop is completely computer-run tested prior to shipment.

BAS Controller

- VAV Controller with VFD

Standard Unit Controller: Smart Equipment Control Board

- Safety Monitoring - Monitors the High and Low-Pressure Switches, the Freezestats, the Gas Valve, if Applicable, and the Temperature Limit Switch on Gas and Electric Heat Units. The Unit Control Board will Alarm on Ignition Failures, Safety Lockouts and Repeated Limit Switch Trips.

Warranty

- One (1) Year Limited Warranty on the Complete Unit
- Five (5) Year Warranty - Compressors and Electric Heater Elements
- Ten (10) Year Limited Warranty - Aluminized Steel Heat Exchanger

Project Name: **Neshama Hospice 3 cadillac** Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1** System: **KJ150N24G2DBBCD3A1**

Additional Electrical Data		
Power supply	208-3-60	
Unit min circuit ampacity	82.9	A
Unit max over-current protection	100	A
Min Voltage	187	V
Max Voltage	252	V
Comp #1 RLA	22.4	
Comp #1 LRA	166.2	
Comp #2 RLA	22.4	
Comp #2 LRA	166.2	
Indoor Mtr Voltage	208-3-60	
Indoor Mtr FLA	20.4	
Outdoor Mtr Qty	4	
Outdoor Fan Voltage	208-1-60	
OD Fan Mtr FLA (ea.)	1.65	
Power Ex Mtr Qty (if applicable)	1	
Powered Ex Voltage(if applicable)	208-1-60	
Power Ex Mtr FLA (ea) (if applicable)	5.5	
Combustion Mtr Qty	1	
Combustion Motor Voltage	208/230-1-60	
Combustion Mtr FLA (ea)	0.5	

SustainGlobe:

1. The changes of the power requirement and the dimensions of rooftop unit from the original specification (due to changes of refrigerant regulation effective 2025) are noted. Structural engineer and architect to review the changes according to the mechanical Site Instruction SI-M1.
2. Field mounted power exhauster and economizer is required. Provide approximate 2M long power and control cables (with plugs) to feed the power exhauster from the main unit.

Project Name: **Neshama Hospice 3 cadillac** Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1** System: **KJ150N24G2DBBCD3A1**

RDS SUMMARY (Lowest Elevation Floor Being Served)

Refrigerant Detection System (RDS) Not Required.

Room with the Lowest Discharge Height	0	ft
Smallest RDS Required Room Area on the Lowest Floor	N/A	ft²
Min. Allowed Smallest Room Area without an RDS	N/A	ft²
Total Applied Area	0	ft²
Min. Allowed Total Applied Area	N/A	ft²
Min. CFM when RDS is enabled	N/A	cfm
Min. System Exhaust (External to Unit)	N/A	cfm
Total Largest Circuit Refrigerant Charge	0	lb

JOBSITE INPUTS

R454B is a mildly flammable refrigerant. Unit installation must be in compliance with UL 60335-2-40 and installation and operations manual available on Solution Navigator, DS Solutions app and shipped with the unit.

Project Name: **Neshama Hospice 3 cadillac** Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1** System: **KJ150N24G2DBBCD3A1**

Factory Installed Options

KJ150N24G2DBBCD3A1

Equipment Options		Option(s) Selected
Product Category:	**KJ**	Single Packaged R-454B Air Conditioner, High Efficiency 12.0 EER
Nominal Cooling Capacity:	**150**	12.5 Ton Two Stage Cooling
Heat Type and Nominal Heat Capacity:	**N24**	240 MBH Input Aluminized Steel, Two Stage Gas Heat
Blower Option:	**G**	VAV Controller with VFD 5 HP High Static Belt Drive Blower
Voltage:	**2**	208/230-3-60
Outside Air Option:	**D**	Dry Bulb Low Leak Economizer w/Barometric Relief and Power Exhaust and Hoods (Bottom or Horizontal End Return Only) with Economizer Fault Detection & Diagnostic (Meets ASHRAE 90.1-2013, IECC 2015, California Title 24, AMCA 511).
Service Options:	**B**	Refrigerant Detection System HACR Circuit Breaker/Disconnect
Sensor Options:	**B**	
Controls:	**C**	Smart Equipment Controller including Discharge Air, Return Air, and Outdoor Air Temperature Sensors. BACNet MS/TP, Modbus and N2 Communication Card.
Refrigeration:	**D**	Micro-Channel "all-aluminum" condenser coil, Copper tube/aluminum fin evaporator coil
Additional Options:	**3**	2" Pleated Filters (MERV 13) Phase Monitor Hot Gas Bypass
Cabinet Options:	**A**	Composite Drain Pan - Front Connection Tool-free maintenance with features like hinged doors for all-access panels, slide-out blower and blower motor tray
Product Generation:	**1**	

Field Installed Accessories

- ○ 1CV0404 - Concentric Diffuser,Flush Mount,18X28
- ○ 1CV0405 - Concentric Diffuser,Flush Mount,18X32
- ○ 1CV0406 - Concentric Diffuser,Flush Mount,18X36
- ○ 1CV0413 - Concentric Diffuser,Side Discharge,18X28
- ○ 1CV0414 - Concentric Diffuser,Side Discharge,18X32
- ○ 1CV0415 - Concentric Diffuser,Side Discharge,18X36

Project Name: **Neshama Hospice 3 cadillac** Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1** System: **KJ150N24G2DBBCD3A1**

- ○ 1CV0420 - Concentric Diffuser,Specialty,24X24
- ○ 1CV0421 - Concentric Diffuser,Specialty,28X28
- ○ 1CV0426 - Concentric Diffuser,Specialty,24X24
- ○ 1FE0412 - Flue Exhaust Extension Kit (14.0 lbs)
- ○ 1FF0414 - 2" Only Metal Filter Frame Kit (16.0 lbs)
- ○ 1HA0425 - High Altitude Kit with Propane Conversion - For applications between 2000 and 6000 feet altitude (1.0 lbs)
- ○ 1HA0448 - High Altitude Kit for Natural Gas - For applications between 2000 and 6000 feet altitude (1.0 lbs)
- ○ 1HG0434 - Hail Guard Kit-Provent Style (30.0 lbs)
- ○ 1HG0441 - Hail Guard Kit-Diamond Pattern (44.0 lbs)
- ○ 1NP0463 - Natural Gas to Propane Conversion Kit (2-Stage) (1.0 lbs)
- ○ 1RC0470 - Roof Curb - 8" High, Flat, Uninsulated, Full Perimeter (Shipped Knocked Down) (135.0 lbs)
- ● 1RC0471 - Roof Curb - 14" High, Flat, Uninsulated, Full Perimeter (Shipped Knocked Down) (135.0 lbs)
- ○ 1RC0472 - Roof Curb, Transition-Sunline 7.5T thru 12.5T to Pro 3.0T thru 12.5T (Shipped Assembled) (200.0 lbs)
- ○ 1RC0476 - Roof Curb - 24" High, Flat, Uninsulated, Full Perimeter (Shipped Knocked Down) (135.0 lbs)
- ○ 2AP0402 - Air Proving Switch (1.0 lbs)
- ○ 2AQ04700524 - CO^2 Space Sensor - Wall Mount Accessory (5.0 lbs)
- ○ 2AQ04700624 - CO^2 Unit Mount Accessory (4.6 lbs)
- ○ 2EC0401 - Kit, Single Enthalpy Field Installed (1.0 lbs)
- ○ 2EC0402 - Kit, Dual Enthalpy Field Installed (Includes two humidity sensors) (1.0 lbs)
- ○ 2LA04702424 - Low Ambient Kit (3.2 lbs)
- ○ 2SD04700824 - Smoke Detector Kit w/ Mounting Hardware for Supply Air (Horizontal/Downflow) Only (9.4 lbs)
- ○ S1-02812364700 - Blower Sheave for 12.5 Ton High Static Field Installed Drive (3.0 lbs)
- ○ S1-03102529100 - Non-Networking Wall Sensor – Allows remote sensing and control from single or multiple zones. (0.0 lbs)
- ○ S1-03102529104 - Non-Networking Wall Sensor with Over-ride button – Allows remote sensing and control from single or multiple zones. Override allows setpoint to be overridden for 2 hour time period. (0.2 lbs)
- ○ S1-03102529106 - Non-Networking Wall Sensor with Setpoint Adjustment and Over-ride Button – Allows remote sensing and control from single or multiple zones. Allows setpoint to be adjusted ± 5º F. Override allows setpoint to be overridden for 2 hour time period. (0.2 lbs)
- ○ S1-ADDWIRE - Add-a-Wire allows 5-wire thermostats to use only 4 wires. (0.3 lbs)
- ○ S1-CTSDTS - CTS Wired Temperature Sensor for thermostat | Duct *Also works for LX Series (0.3 lbs)
- ○ S1-CTSHTS - CTS Hardwired Temperature Sensor for CTS Thermostats *Works with LX series as well (0.2 lbs)
- ○ S1-CTSPLATE - Wall Plate for CTS Thermostats *Also works for new platform LX series models below (0.0 lbs)
- ○ S1-CTSWFTS - CTS Temperature Sensor with WiFi for CTS Thermostats *Also works with LX Series (0.1 lbs)
- ○ S1-LC-TMR100-0 - Transparent Wireless MS/TP Router, Coordinator, or Repeater. Wireless mesh network up 1,000 ft. line-of-sight (250 ft. recommended) (55.1 lbs)
- ○ S1-LC-TMRKIT-0 - NEMA 3R panel with liquid-tight conduit for mounting TMR outdoors. TMR sold separately. (0.3 lbs)
- ○ S1-LXLOCK - Locking Ring For LX-Series Thermostats (0.4 lbs)
- ○ S1-LXPLATE - Wall Plate For LX-Series Thermostats (0.0 lbs)
- ○ S1-LXWFM - For LX Series Thermostats - WiFi Communication (0.1 lbs)
- ○ S1-NSB8BHN041-0 - Wall Temperature and 3% Relative Humidity Combined Sensor, No Display, WHITE, NO JCI LOGO, NS8000 Series (0.4 lbs)
- ○ S1-NSB8BHN043-0 - Wall Temperature and 3% Relative Humidity Combined Sensor, No Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)
- ○ S1-NSB8BHN141-0 - Wall Temperature and 3% Relative Humidity Combined Sensor, Warmer/Cooler Display, WHITE, NO JCI LOGO, NS8000 Series (0.4 lbs)
- ○ S1-NSB8BHN143-0 - Wall Temperature and 3% Relative Humidity Combined Sensor, Warmer/Cooler Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)
- ○ S1-NSB8BHN240-0 - Zone Temperature Sensor. +3% RH, LCD DISPLAY, LOCAL SETPOINT CONTROL , WHITE, WITH JCI LOGO (0.4 lbs)
- ○ S1-NSB8BHN241-0 - Zone Temperature Sensor. +3% RH, LCD DISPLAY, LOCAL SETPOINT CONTROL , WHITE, NO LOGO (0.4 lbs)
- ○ S1-NSB8BHN243-0 - Wall Temperature and 3% Relative Humidity Combined Sensor, Full Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)
- ○ S1-NSB8BPN240-0 - Wall Temperature and 2% Relative Humidity Combined Sensor, Full Display, WHITE, JCI LOGO, NS8000 Series (0.4 lbs)
- ○ S1-NSB8BPN241-0 - Wall Temperature and 2% Relative Humidity Combined Sensor, Full Display, WHITE, NO JCI LOGO, NS8000 Series (0.4 lbs)
- ○ S1-NSB8BPN243-0 - Wall Temperature and 2% Relative Humidity Combined Sensor, Full Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)

Project Name: **Neshama Hospice 3 cadillac** Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1** System: **KJ150N24G2DBBCD3A1**

- ○ S1-NSB8BTN041-0 - Zone Temerature Sensor Only, NO DISPLAY, NO SETPOINT CONTROL , WHITE, NO LOGO (0.4 lbs)
- ○ S1-NSB8BTN141-0 - Zone Temerature Sensor Only, NO DISPLAY, WARMER/COOLER TEMP. ADJUSTMENT , WHITE, NO LOGO (0.4 lbs)
- ○ S1-NSB8BTN143-0 - Wall Temperature Sensor, Warmer/Cooler Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)
- ○ S1-NSB8BTN240-0 - Zone Temerature Sensor Only, LCD DISPLAY, LOCAL SETPOINT CONTROL , WHITE, WITH JCI LOGO (0.4 lbs)
- ○ S1-NSB8BTN241-0 - Zone Temerature Sensor Only, LCD DISPLAY, LOCAL SETPOINT CONTROL , WHITE, NO LOGO (0.4 lbs)
- ○ S1-NSB8BTN243-0 - Wall Temperature Sensor, Full Display, BLACK, NO JCI LOGO, NS8000 Series (0.4 lbs)
- ○ S1-TEC3030-16-000 - 7 DAY PROGRAMMABLE THERMOSTAT, ZIGBEE PRO WIRELESS COMMUNICATION, RTU/HEAT PUMP WITH ECON, AND FULL COLOR, WHITE, NO LOGO (0.8 lbs)
- ○ S1-TEC3031-14-000 - 7 DAY PROGRAMMABLE THERMOSTAT, ZIGBEE PRO WIRELESS COMMUNICATION, RTU/HEAT PUMP WITH ECON, OCC SENSOR, FULL COLOR, WHITE, JCI LOGO (0.8 lbs)
- ○ S1-TEC3130-14-000 - 7 DAY PROGRAMMABLE THERMOSTAT, ZIGBEE PRO WIRELESS COMMUNICATION, RTU/HEAT PUMP WITH ECON,FULL COLOR, WHITE, JCI LOGO (0.8 lbs)
- ○ S1-TEC3630-14-000 - 7 DAY PROGRAMMABLE THERMOSTAT, OPTIONAL MSTP OR N2 COMMUNICATION, RTU/HEAT PUMP WITH ECON,FULL COLOR, WHITE, JCI LOGO (0.8 lbs)
- ○ S1-TEC3631-14-000 - 7 DAY PROGRAMMABLE THERMOSTAT, OPTIONAL MSTP OR N2 COMMUNICATION, RTU/HEAT PUMP WITH ECON, OCC SENSOR, FULL COLOR, WHITE, JCI LOGO (0.8 lbs)
- ○ S1-TL-CWCVT-0 - CWCVT (Connected Workflow Converter) (1.0 lbs)
- ○ S1-YK-MAP1810-0P - MAP (Multiple Access Portal) Gateway- For use with SimplicitySE Control. (0.2 lbs)
- ○ S1-YK-MAP1810-0S - Stationary MAP Gateway (Includes MAP Gateway, Field Bus Adapter, Mounting Bracket and 100 to 240 VAC Power Supply). US-compatible counties. (1.9 lbs)
- ○ S1-ZFR-CBLEXT-1 - 10 FT Network Cable w/male RJ12 connections. Use to connect TMR to SSE 5.0 or SBH (1.0 lbs)
- ○ YCCP125PK012LO - One Year Labor Only AC/HP PKG 12.5T
- ○ YCCP125PK012PL - One Year Renewable Parts & Labor AC/HP PKG 12.5T
- ○ YCCP125PK060PL - 5 Year Parts and Labor AC/HP PKG 12.5T
- ○ YCCP125PK060PO - 5 Year Parts Only (No Compressor Coverage) AC/HP PKG 12.5T

3-12.5 Pro

Project Name: **Neshama Hospice 3 cadillac** Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1**

Submittal

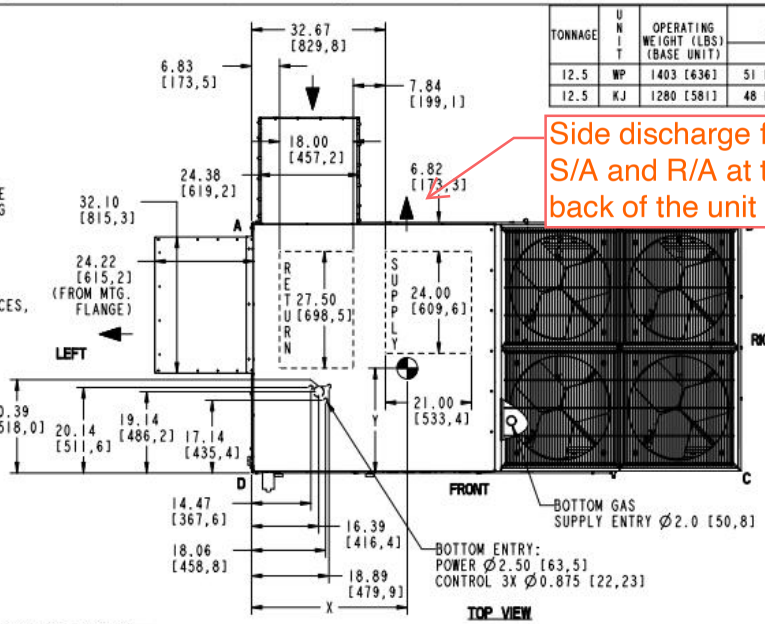
NOTES:
1. FOR OUTDOOR USE ONLY.
2. WEIGHTS SHOWN ARE FOR COOLING ONLY UNITS.
3. MIN. CLEARANCES TO BE:
   RIGHT SIDE: 12 [305]
   LEFT SIDE: 36 [915]
   FRONT: 48 [1220]
   REAR: 36 [915]
   TOP: 72 [1830]
   BOTTOM: 0 [0]
4. TO REMOVE THE SLIDE-OUT DRAIN PAIN, A REAR CLEARANCE OF 60 in (1525 mm) IS REQUIRED. IF SPACE IS UNAVAILABLE, THE DRAIN PAN CAN BE REMOVED THROUGH THE FRONT BY SEPARATING THE CORNER WALL.
5. FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES CONTACT YOUR APPLICATION ENGINEERING DEPARTMENT.
6. DOWNFLOW DUCTS DESIGNED TO BE ATTACHED TO ACCESSORY ROOF CURB ONLY. IF UNIT IS MOUNTED SIDE SUPPLY, IT IS RECOMMENDED THAT THE DUCTS ARE SUPPORTED BY CROSS BRACES, AS DONE ON ACCESSORY ROOF CURBS.
7. SIDE DUCT FLANGES ARE 0.75" HIGH. BOTTOM DUCTS DO NOT HAVE FLANGES.
8. MINIMUM CONDENSATION TRAP HEIGHT SHALL BE 1.5 TIMES THE LOWEST NEGATIVE STATIC.
9. DIMENSIONS IN [ ] ARE IN MILLIMETERS OR KILOGRAMS.
10. OPTIONAL COIL GUARDS, POWER EXHAUST, GAS HEAT, ECONOMIZER, DISCONNECT SWITCH, CONVENIENCE OUTLET, AND BAROMETRIC RELIEF & FRESH AIR HOODS SHOWN.

⚠ EXCEPT WP (HEAT PUMP) UNITS.

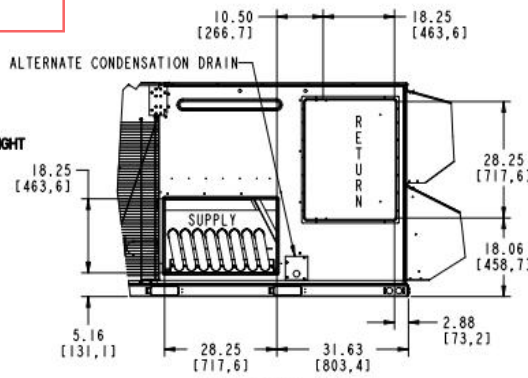
DIRECTION OF AIRFLOW

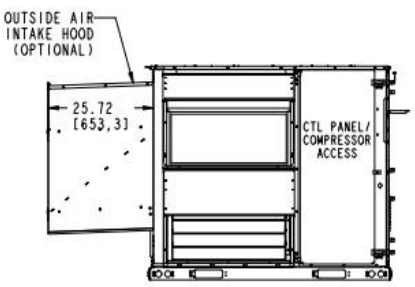
CENTER OF GRAVITY

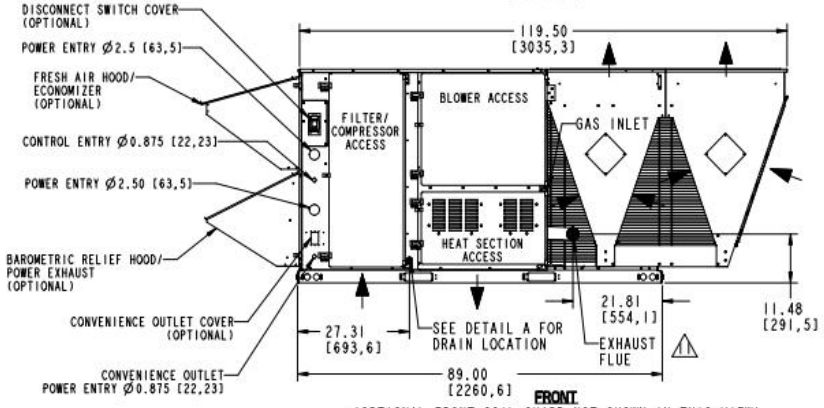
TONNAGE	UNIT	OPERATING WEIGHT (LBS) (BASE UNIT)	CENTER OF GRAVITY LOCATION (BASE UNIT)		4 POINT CORNER LOADS (LBS) (BASE UNIT)			
			X	Y	A	B	C	D
12.5	WP	1403 [636]	51 [1295,4]	25.5 [647,7]	259 [118]	347 [157]	456 [207]	340 [154]
12.5	KJ	1280 [581]	48 [1219,2]	24 [609,6]	240 [109]	281 [128]	410 [186]	350 [159]

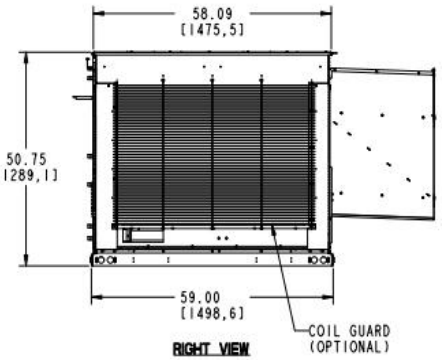


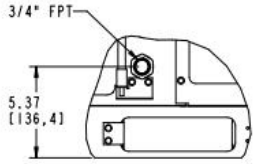
Side discharge for S/A and R/A at the back of the unit











REV LEV	DATE	REVISION RECORD	EC NO	DR	CK	ENG
A	10-31-23	NEW DRAWING	100724	LOP	RCH	BV

THIRD ANGLE PROJECTION

	NAME	DATE
DRN	L. PACKARD	10-31-23
CHK	R. HARDAD	10-31-23
ENG	D. VARVA	02-11-20
MFG		

SCALE 0.075

DRAWING PER ASME Y14.5-2009
TOLERANCES UNLESS OTHERWISE SPECIFIED:
ONE PLACE DECIMAL = ± .1
TWO PLACE DECIMAL = ± .03
THREE PLACE DECIMAL = ± .010
ANGLES = ± 2°
DIMENSIONS ARE IN INCHES
DO NOT SCALE PRINT

SUBMITTAL DATA DWG, PRO W COIL,50" CAB

JOHNSON CONTROLS
UNITARY PRODUCTS GROUP
NORMAN, OK 73069

SAFETY AND KEY CHARACTERISTICS PER BE-PDP-STD-01

MATERIAL
TYPE NOT APPLICABLE
ENG SPEC NOT APPLICABLE
SIZE

DWG NO. 6454073 REV A
PART NO.
SHT NO 1 OF 1

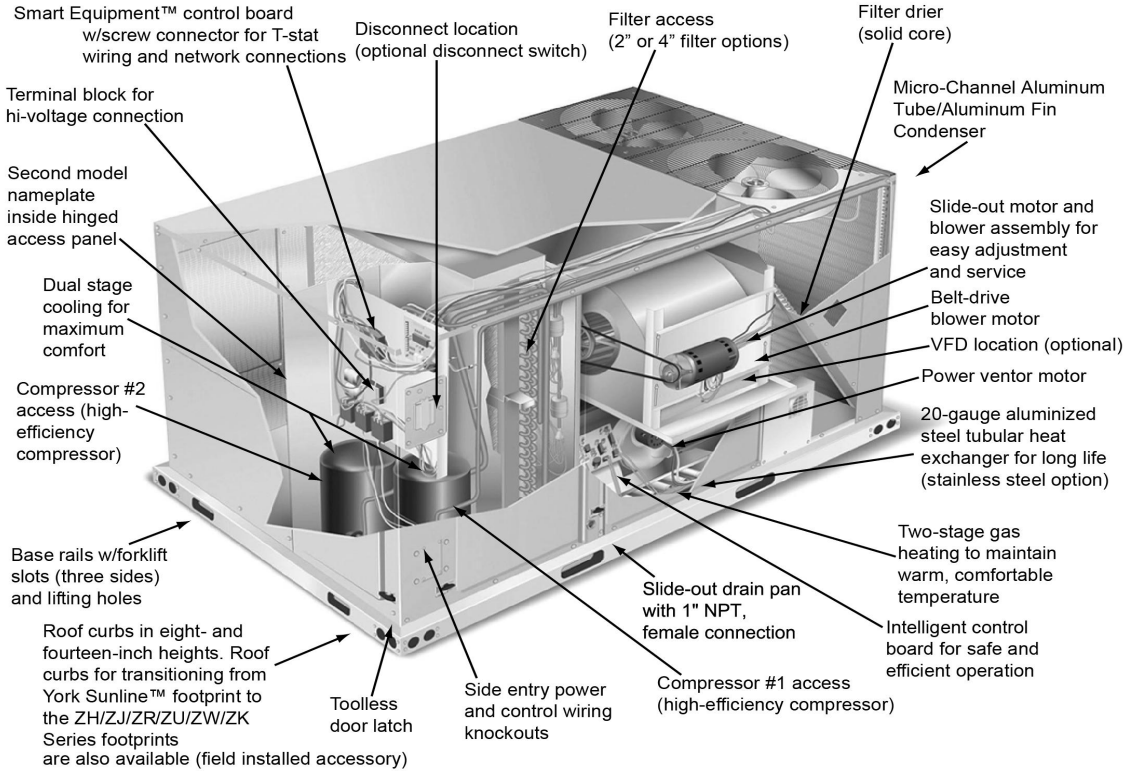
Project Name: **Neshama Hospice 3 cadillac**

Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1**

Component Locations

Cooling With Gas Heat (6.5 Through 10 Tons)



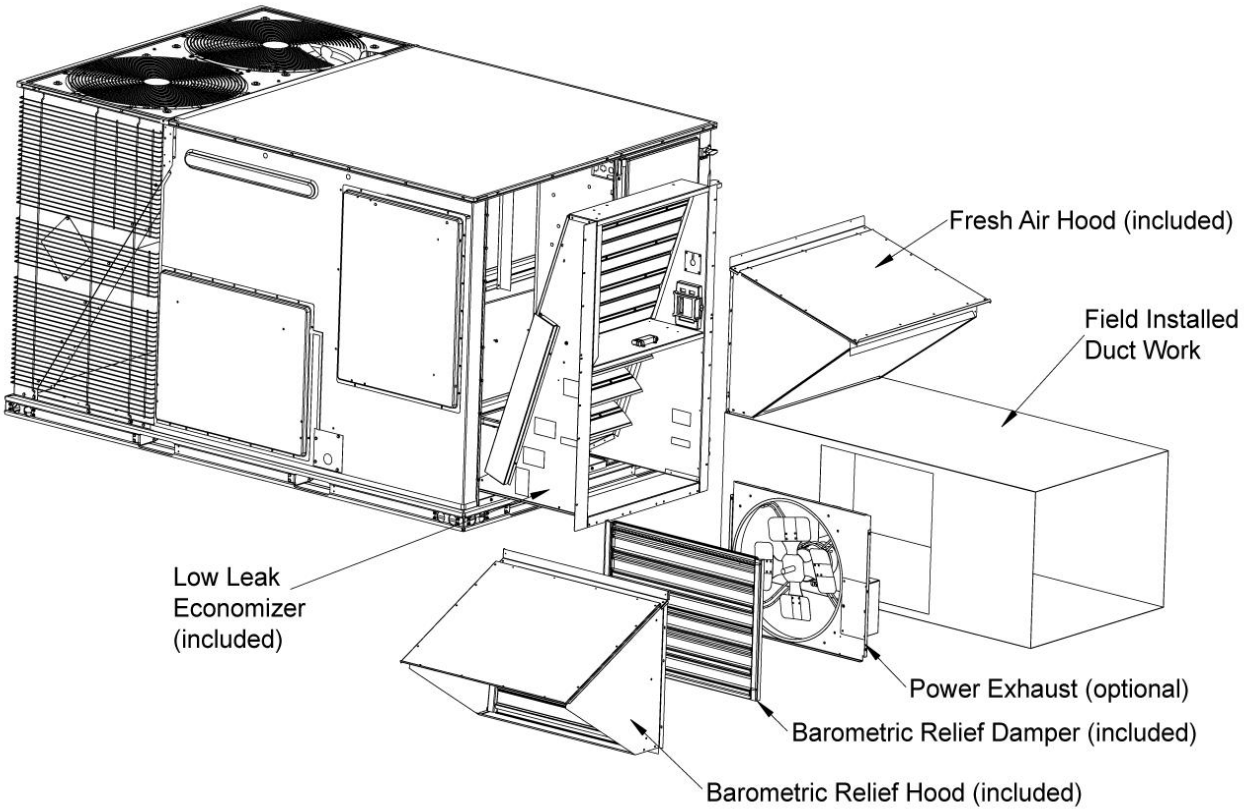
Project Name: **Neshama Hospice 3 cadillac**

Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1**

Low Leak Economizer End Return

Low Leak Economizer End Return (shown with optional Power Exhaust)



Low leak economizers are capable achieving low leakage rates of 3 cfm/sq. ft at 1" of static pressure, meeting or exceeding the following standards:

ASHRAE 90.1-2010
ASHRAE 62
AMCA 511 (licensed as Class 1A damper)
International Energy Conservation Code (IECC)
California Title 24

The outdoor intake opening shall be covered with a rain hood that matches the exterior of the unit. Water eliminator/filters shall be provided.

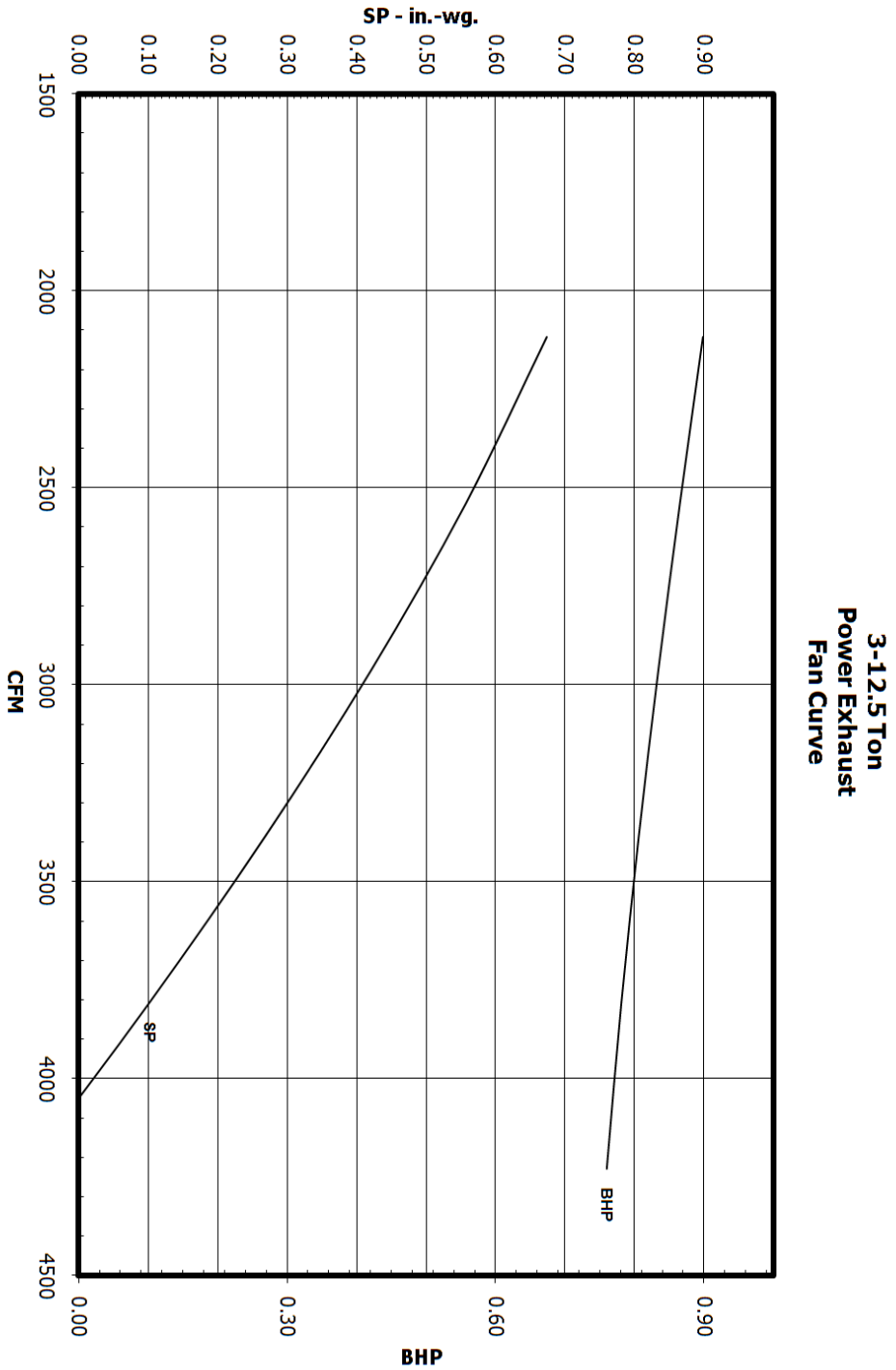
Simultaneous economizer/compressor operation is also possible. Dampers shall fully close on power loss.

Project Name: **Neshama Hospice 3 cadillac**

Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1**

Factory Installed Power Exhaust

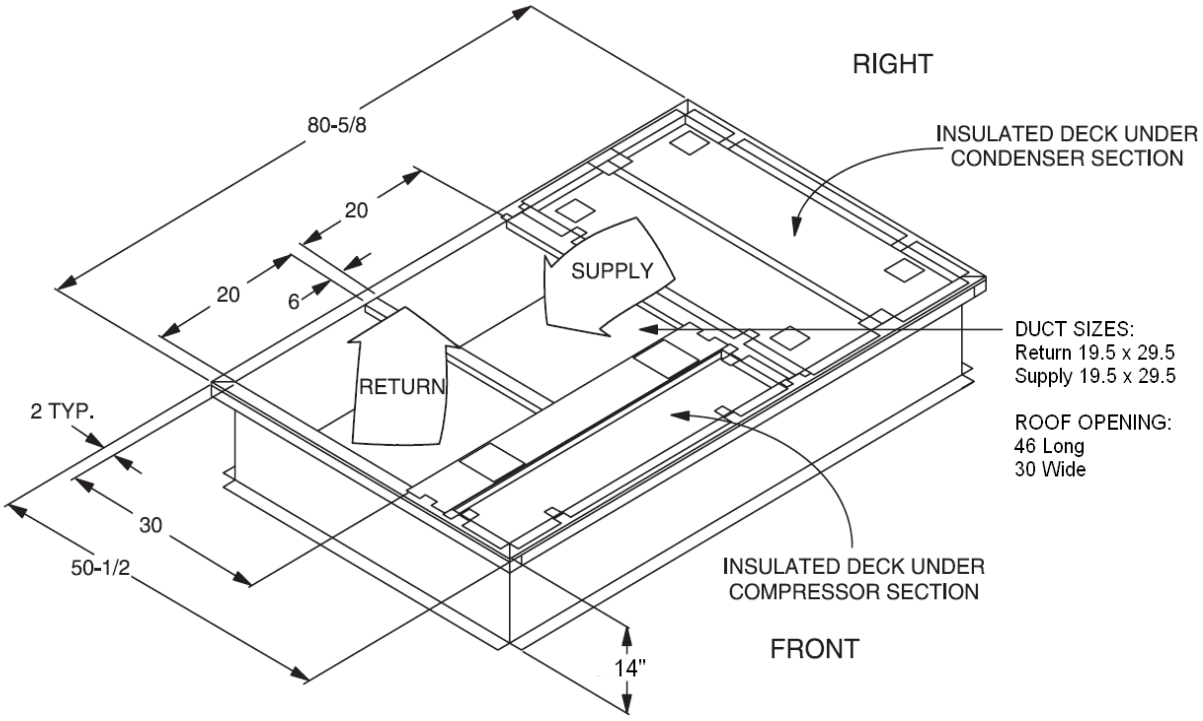


Project Name: **Neshama Hospice 3 cadillac**

Unit Model #: **KJ150N24G2DBBCD3A1**

Quantity: **1** Tag #: **RT-1**

1RC0471 Roof Curb



* Supply and Return Air (Including duct support rails) as shown, are typical for bottom duct applications.

For location of horizontal duct applications (On rear of unit), refer to Unit Dimensions details.

1RC0471 Roof Curb Dimensions

Date
12/09/2024
Project Name
Neshama Hospice 3 cadillac
Project Number
Client / Purchaser

Guide Specification Summary Page

Product Series	Models and Unit Tags	
3-12.5 Pro	KJ150N24G2DBBCD3A1	RT-1

GENERAL

Johnson-Controls® Pro units are convertible single packages with a common footprint cabinet and common roof curb for all 6-1/2 through 12-1/2 ton models. All have two compressors with independent refrigeration circuits to provide 2 stages of cooling. The units were designed for light commercial applications and can be easily installed on a roof curb, slab, or frame. All units are self contained and assembled on rigid full perimeter base rails allowing for 3-way forklift access and overhead rigging. Every unit is completely charged with refrigerant, wired, piped, and tested at the factory to provide a quick and easy field installation. All units are convertible between side and down airflow. Independent economizer designs are used on side and down discharge applications, as well as all tonnage sizes. Predator® units are available in the following configurations: cooling only, cooling with electric heat, cooling with gas heat, reheat only, reheat with electric heat and reheat with gas heat. Electric heaters are available as factory-installed options or field-installed accessories.

DESCRIPTION

Units shall be factory assembled, single package, (Elec/Elec, Gas/ Elec), designed for outdoor installation. They shall have built in field convertible duct connections for down discharge supply/return or horizontal discharge supply/return and be available with factory installed options or field installed accessories. The units shall be factory wired, piped and charged with refrigerant and factory tested prior to shipment. All unit wiring shall be both numbered and color coded. The cooling performance shall be rated in accordance with DOE and AHRI test procedures. Units shall be CSA certified to ANSI Z21.47 and UL 1995/CAN/CSA No. 236-M90 standards.

UNIT CABINET

Unit cabinet shall be constructed of galvanized steel with exterior surfaces coated with a non-chalking, powder paint finish, certified at a 750-hour salt spray test per ASTM-B117 standards. Indoor blower sections shall be insulated with up to 1” thick insulation coated on the airside. Either aluminum foil faced or elastometric rubber insulation shall be used in the unit’s compartments and be fastened to prevent insulation from entering the air stream. Cabinet doors shall be hinged with toolless access for easy servicing and maintenance. Full perimeter base rails shall be provided to assure reliable transit of equipment, overhead rigging, fork truck access and proper sealing on roof curb applications. Disposable 2” filters shall be furnished as standard and be accessible through hinged access door. Fan performance measuring ports shall be provided on the outside of the cabinet to allow accurate air measurements of evaporator fan performance without removing panels or creating bypass of the coils. Condensate pan shall be slide out design, constructed of a non corrosive material, internally sloped and conforming to ASHRAE 62-B9 standards. Condensate connection shall be a minimum of ¾” I.D. female and be rigid mount connection.

INDOOR (EVAPORATOR) FAN ASSEMBLY

Fan shall be a belt drive assembly and include an adjustable pitch motor pulley. Job site selected brake horsepower shall not exceed the motors nameplate horsepower rating plus the service factor. Units shall be designed to operate within the service factor. Fan wheel shall be double inlet type with forward curve blades, dynamically balanced to operate smoothly throughout the entire range of operation. Airflow design shall be constant volume. Bearings shall be sealed and permanently lubricated for longer life and no maintenance. Entire blower assembly and motor shall be slide out design.

OUTDOOR (CONDENSER) FAN ASSEMBLY

The outdoor fans shall be of the direct drive type, discharge air vertically, have aluminum blades riveted to corrosion resistant steel spider brackets and shall be dynamically balanced for smooth operation. The outdoor fan motors shall have permanently lubricated bearings internally protected against overload conditions and staged independently. A cleaning window shall be provided on two sides of the units for coil cleaning.

REFRIGERANT COMPONENTS

Compressors:

a. Shall be fully hermetic type, direct drive, internally protected with internal high-pressure relief and over temperature protection. The hermetic motor shall be suction gas cooled and have a voltage range of + or – 10% of the unit nameplate voltage.

b. Shall have internal spring isolation and sound muffling to minimize vibration and noise, and be externally isolated on a dedicated, independent mounting.

Coils:

a. Evaporator coils shall have aluminum plate fins mechanically bonded to seamless internally enhanced copper tubes with all joints brazed. Special Phenolic coating shall be available as a factory option.
b. Evaporator coils shall be of the direct expansion, draw-thru design.
c. Condenser coils shall have aluminum plate fins mechanically bonded to seamless internally enhanced copper tubes with all joints brazed or Micro-Channel aluminum tube, aluminum fins.
d. Condenser coils shall be of the draw-thru design.

Refrigerant Circuit and Refrigerant Safety Components shall include:

a. Independent fixed-orifice or thermally operated expansion devices.
b. Solid core filter drier/strainer to eliminate any moisture or foreign matter.
c. Accessible service gage connections on both suction and discharge lines to charge, evacuate, and measure refrigerant pressure during any necessary servicing or troubleshooting, without losing charge.
d. The unit shall have two independent refrigerant circuits, equally split in 50% capacity increments.

Unit Controls:

a. Unit shall be complete with self-contained low-voltage control circuit protected by a resettable circuit breaker on the 24-volt transformer side.
b. Unit shall incorporate a lockout circuit which provides reset capability at the space thermostat or base unit should any of the following standard safety devices trip and shut off compressor:
   - Loss-of-charge/Low-pressure switch.
   - High-pressure switch.
   - Freeze condition sensor on evaporator coil. If any of these safety devices trip, the LCD screen will display the alarm message.
c. Unit shall incorporate “AUTO RESET” compressor over temperature, over current protection.
d. Unit shall operate with conventional thermostat designs and have a low voltage terminal strip for easy hook-up.
e. Unit control board shall have on-board diagnostics and fault message display.
f. Standard controls shall include anti-short cycle and low voltage protection, and permit cooling operation down to a selectable value as low as 0 ºF.
g. Control board shall monitor each refrigerant safety switch independently.

GAS HEATING SECTION

Heat exchanger and exhaust system shall be constructed of aluminized steel, and be designed with induced draft combustion with post purge logic, energy saving direct spark ignition, and redundant main gas valve. The heat exchanger shall be of the tubular type, constructed of T1-40 aluminized steel for corrosion resistance and allowing minimum mixed air entering temperature of 40 ºF. Burners shall be of the in-shot type, constructed of aluminum-coated steel. All gas piping shall enter the unit cabinet at a single location, through either the side or bottom, without any field modifications. An integrated control board shall provide timed control of evaporator fan functioning and burner ignition. Heating section shall be provided with the following minimum protection:

a. Primary and auxiliary high-temperature limit switches.
b. Induced draft pressure sensor.
c. Flame roll out switch (manual reset).
d. Flame proving controls.
e. All two stage gas units shall have two independent stages of capacity (70% or 75% 1st stage, 100% 2nd stage) 3 through 5 ton and (60% 1st stage, 100% 2nd stage) 6-1/2 through 12-1/2 ton.

UNIT OPERATING CHARACTERISTICS

Unit shall be capable of starting and running at 125 ºF outdoor temperature, exceeding maximum load criteria of AHRI Standard 340/360. The compressor, with standard controls, shall be capable of operation down to 0 ºF outdoor temperature. Unit shall be provided with fan time delay to prevent cold air delivery before heat exchanger warms up. (Gas heat only)

ELECTRICAL REQUIREMENTS - All unit power wiring shall enter unit cabinet at a single factory provided location and be capable of side or bottom entry to minimize roof penetrations and avoid unit field modifications. Separate side and bottom openings shall be provided for the control wiring.

STANDARD LIMITED WARRANTIES - Compressor – 5 Years, Heat Exchanger – 10 Years, Elect. Heat Elem. – 5 Years, Parts – 1 Year.

FACTORY INSTALLED OPTIONAL OUTDOOR AIR (Shall be made available by either/or):

ADDITIONAL FACTORY INSTALLED OPTIONS

- **Alternate Indoor Blower Motor** – For applications with high restrictions, units are available with optional indoor blower motors that provide higher static output and/or higher airflow.

- **Variable Air Volume (VAV)** – The VAV option using a variable frequency drive (VFD) shall be available on 6-1/2 through 12-1/2 ton models for applications requiring a constant supply-duct static pressure. Units equipped for VAV shall be controlled by a duct pressure transducer with a 0 - 5" WC pressure range. The pressure transducer shall provide a 0 - 5 VDC output signal to a VAV control board which, in turn shall provide a 2 - 10 VDC speed reference signal to the VFD. The VAV control board shall operate using factory-installed Supply Air, Return Air and Outside Air Temperature Sensors with a nominal resistance of 10,000 Ohms. Units equipped with VFD's shall have factory-installed manual bypass as an option.
- **BAS Controls** – Include supply air sensor, return air sensor, dirty filter indicator and air proving switch.

FIELD INSTALLED OPTIONS

- **Roof Curb** – 14” high, full perimeter knockdown curb, with hinged design for quick assembly.

Date
12/09/2024
Project Name
Neshama Hospice 3 cadillac
Project Number
Client / Purchaser

Control Summary Page

Control	Models and Unit Tags	
BACnet MSTP,Mdbs,N2 COM Card	KJ150N24G2DBBCD3A1	RT-1

23 09 23 Direct- digital Control system for HVAC

23 09 23. 13 Decentralized, Rooftop Units:

23 09 23. 13.A. Unit Control Board

1. ASHRAE 62- 2001compliant. BTL certified.
2. Shall accept 20-30 VAC input power, 50/60Hz. 24 VAC nominal.
3. Operating temperature range from -40F to 158F; 10-90% RH (non-condensing UI), and -4F to 158F; 10-90% Rh (non-condensing), with a storage temperature range from -40F to 194F; 5-95% RH (non-condensing).
4. Shall include an option of and Economizer microprocessor controller which communicates directly with the Unit Control Board and has 8 Analog outputs, 2 Analog inputs, 2 Binary outputs, 3 Binary outputs.
5. Controller shall accept the followinginputs: space temperature, return air temperature sensor, setpointadjustment, outdoor air temperature, indoor air quality, outdoor air quality, indoor relative humidity, compressor lock- out, fire/smoke shutdown, single and dual enthalpy,fan status, remote time clock, SA Bus communicated temperature/humidity/CO2 values from Network sensors, FC Bus Network Overrides for space temperature, outdoor air temperature, space humidity, outdoor air quality, Indoor air quality, System purge.
6. Shall accept a single CO_2 sensor or multiple CO_2 sensors networked together via communication bus in the conditioned space, and be Demand Control Ventilation (DCV) ready.
7. Shall provide the following outputs: economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, heat stage 3/ exhaust/ reversing valve/ dehumidify/occupied.
8. Unit shall provide surge protection for the controller through a circuit breaker.
9. Shall be Internet capable, and communicate at a Baud rate of 38.4K or faster.
10. Shall have an LED display independently showingthe status of activity on the communication bus, and processor operation.
11. Unit shall incorporate a lockout circuit which provides reset capability at the space thermostat or base unit should any of the following standard safety devices trip and shut off compressor. If any of these safety devices trip, the LCD screen will display alarm message indicating the specific safety device that caused the lockout.
    a. Loss of charge/Low-pressure switch.
    b. High-pressure switch.
    c. Freeze condition sensor on evaporator coil.
12. Unit control board must support each usage case:
    a. Conventional thermostat with low voltage input terminals for easy installation
    b. Communicating network sensors in the occupied space to provide feedback on space conditions for unit control board to compare with associated setpoints
    c. Communication via BACnet MS/TP, Modbus RTU, N2 protocols for integration into a building automation/management system
13. Anti-short cycle and low voltage protection features included.
14. Internal occupied/unoccupied scheduling
15. Unit control board shall permit cooling operation down to a selectable value as low as 0 degrees F.
16. Shall allow for start-up, commissioning, troubleshooting, parameter adjustment, setpoint adjustment via onboard display and navigable menu with no additional interface tool or controls technician required.
17. The unit control board shall run a self-test diagnostics algorithm at startup that operated the cooling cycle, heating cycle, fan operation. A status report shall be provided upon completion of the diagnostic self-test.
18. Utilize any wi-fi enabled smart device to access the HVAC or multiple HVAC units if communication wiring between them is present (FC Bus or SA Bus). Remote access shall allow complete ability to perform start-up, commissioning, troubleshooting, parameter adjustment, setpoint adjustment.
19. Local embedded trending and scheduling. Trending data and occupancy scheduling predefined from the factory. Occupancy schedule to be modified via control board joystick menu navigation and remotely using a smart device (cellular phone, laptop, tablet)
20. A menu on the onboard screen shall display the unit status and allow changing parameters where applicable. These include but are not limited to:
    a. Demand Ventilation Mode – enable or disable
    b. Operational Setpoint – display current value
    c. Supply Air Temperature (SAT) – display current value
    d. Return Air Temperature (RAT) – display current value

e. Operational Supply Humidity (OprSH) – display current value as provided by a 0-10VDS input, SA Bus Network Sensor, or FC Bus communicated value
f. Return Air Humidity (RAH) – display current value
g. Operational outdoor Air Temperature (OprOAT) – enthalpy calculated from OAH 0-10VDC input to Economizer board and OprOAT only if economizer is present
h. Operational Outdoor Air Humidity (OprOAH) – the buffered outdoor air humidity. May be from economizer boards OAH 0-10VDC input or FC Bus communicated value
i. Operational outdoor Air Quality (OprOAQ) – the buffered outdoor air quality in use. May be from economizer boards OAQ 0-10VDC input or FC Bus communicated value
j Operational Indoor Air Quality (OprIAQ) – the buffered indoor air quality in use. May be from economizer board IAQ 0-10VDC input, SA Bus Network Sensor, or FC Bus communicated value

21. A menu shall display and allow modification to the following operations and settings:
    a. HVAC Zone Fan
    b. Cooling
    c. Heating
    d. Economizer
    e. Demand Ventilation
    f. Power Exhaust
    g. Sensors
    h. Network
22. A menu shall display and allow modification to the following operations and settings:
    a. HVAC Zone – Occupied status
    b. Indoor Fan status
    c. Cooling status
    d. Heating status
    e. Economizer indication whether free-cooling is available or not
    f. Enabling or disabling of Demand Ventilation
    g. Power Exhaust
        1) Enable/disable hot-gas reheat if available
        2) Warmup/Cooldown
        3) Title 24 Load Shed
        4) Defrost
23. A menu shall display and allow modification to the following operations and settings:
    a. Firmware version (of UCB, Economizer, other peripheral boards)
    b. Setting time zone
    c. Network information
        1) Device name that will appear on the FC Bus
        2) Selection of communication protocol
        3) Operational Baud Rate
        4) Device ID
24. A menu shall display and allow modification to the following operations and settings:
    a. Version of firmware
    b. Ability to Load new firmware
    c. Create a backup file of the firmware and parameter setting via USB port
    d. Restore factory default parameter values and setup
    e. Full and Partial Cloning of parameter setpoints from or to other units
    f. Data trend exporting
25. A menu shall display and allow modification to the following operations and settings:

a. Unit serial number, model number and name
b. Ability to reset Lockouts
c. Controller name
d. Displays the current values of all setpoints in use
e. Displays all current values for the indoor and outdoor zones
f. Displays current values related to:
    1) Indoor Fan
    2) Cooling
    3) Heating
    4) Heat Pump operation
    5) Economizer operation
    6) Power Exhaust
    7) Demand Ventilation
    8) Air monitoring station
    9) Hot Gas Reheat
    10) Smoke Control
g. Current information for inputs; including
    1) Sensors
    2) Coil Sensors
    3) Thermostat
    4) Binary Inputs
    5) Unit Protection
    6) Network Inputs
    7) All outputs (relay and binary)
h. Self-Test
    1) A patented self-test system that runs through a series of algorithms to provide a report of all functioning characteristics of the system at time of startup and commissioning.

23 09 23. 13.B. Auxiliary Control Boards

1. ASHRAE 62- 2001 compliant. BTL certified.
2. Economizer controller CEC Title 24 Compliant
    a. Display alarms if the following occur
        1) Economizer is economizing when conditions do not support
        2) Economizer is not economizing when conditions do support
        3) Damper Stuck
        4) Excess Outdoor Air
        5) Failed Sensor
3. Refrigeration Fault Detection & Diagnostics
    a. There is insufficient refrigerant in any circuit
    b. There is excessive refrigerant in any circuit
    c. There is excessive refrigerant flow
    d. There is insufficient refrigerant flow (restriction)
    e. Inefficient compressor
    f. Insufficient High-side heat transfer
    g. Excessive High-side heat transfer (low ambient control problem, low ΔP)
    h. Insufficient Low-side heat transfer
    i. Excessive Low-side heat transfer

j. Sensor fault- The liquid temperature is greater than the condenser temperature (Could also be triggered if refrigerant level is very low in the system)
k. Sensor fault- Sensor data is not available
l. The unit is off
m. The ambient temperature is too low
n. The ambient temperature is too high
o. The return air wet-bulb temperature is too low
p. The return air wet-bulb temperature is too high
q. Sensor fault- The condensing temperature is lower than the ambient temperature (Could also be triggered when the condenser is wet)
r. The suction line temperature is less than the evaporator temperature
s. The evaporator temperature is greater than the ambient temperature
t. The liquid temperature is lower than the ambient temperature
u. Sensor fault- Suction temperature or ambient temperature is invalid
v. Sensor fault- The return air dry-bulb or wet-bulb temperature is invalid
w. Sensor fault- The liquid pressure or suction pressure is invalid
x. Sensor fault- The suction line temperature is invalid
y. The return air dry-bulb temperature is too low
z. The return air dry-bulb temperature is too high
aa. The Efficiency Index is below 75% of ideal
bb. The Capacity Index is below 75% of ideal

23 09 23. 13.C Remote Accessibility:

1. ASHRAE 62- 2001 compliant. BTL certified.
2. Provide the ability to adjust parameter values, setpoints, limits remotely
3. Connectivity to an Ethernet network via static IP address or Dynamic Name Server (DNS)
4. Allow a maximum of 100 devices on the same FC bus trunk and accessed by one remote device

Start-up sheet

START-UP & SERVICE DATA INSTRUCTION

COMMERCIAL PACKAGE UNITS

3.0 To 50.0 TONS

START-UP CHECKLIST

Date: _____

Job Name: _____

Customer Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Model Number: _____ Serial Number: _____

Qualified Start-up Technician: _____ Signature: _____

HVAC Contractor: _____ Phone: _____

Address: _____

Contractor's E-mail Address: _____

Electrical Contractor: _____ Phone: _____

Distributor Name: _____ Phone: _____

WARRANTY STATEMENT

Johnson Controls/Ducted Systems is confident that this equipment will operate to the owner's satisfaction if the proper procedures are followed and checks are made at initial start-up. This confidence is supported by the 30 day dealer protection coverage portion of our standard warranty policy which states that Johnson Controls/ Ducted Systems will cover parts and labor on new equipment start-up failures that are caused by a defect in factory workmanship or material, for a period of 30 days from installation. Refer to the current standard warranty policy and warranty manual for details.

In the event that communication with Johnson Controls/Ducted Systems is required regarding technical and/or warranty concerns, all parties to the discussion should have a copy of the equipment start-up sheet for reference. A copy of the original start-up sheet should be filed with the Technical Services Department.

The packaged unit is available in constant or variable air volume versions with a large variety of custom options and accessories available. Therefore, some variation in the startup procedure will exist depending upon the products capacity, control system, options and accessories installed.

This start-up sheet covers all startup check points common to all package equipment. In addition it covers essential startup check points for a number of common installation options. Depending upon the particular unit being started not all sections of this startup sheet will apply. Complete those sections applicable and use the notes section to record any additional information pertinent to your particular installation.

Warranty claims are to be made through the distributor from whom the equipment was purchased.

EQUIPMENT STARTUP

Use the local LCD or Mobile Access Portal (MAP) Gateway to complete the start-up.

A copy of the completed start-up sheet should be kept on file by the distributor providing the equipment and a copy sent to:

Johnson Controls/Ducted Systems
Technical Services Department
5005 York Drive
Norman, OK 73069

SAFETY WARNINGS

The inspections and recording of data outlined in this procedure are required for start-up of Johnson Controls/Ducted Systems' packaged products. Industry recognized safety standards and practices must be observed at all times. General industry knowledge and experience are required to assure technician safety. It is the responsibility of the technician to assess all potential dangers and take all steps warranted to perform the work in a safe manner. By addressing those potential dangers, prior to beginning any work, the technician can perform the work in a safe manner with minimal risk of injury.

⚠WARNING

Lethal voltages are present during some start-up checks. Extreme caution must be used at all times.

⚠WARNING

Moving parts may be exposed during some startup checks. Extreme caution must be used at all times.

NOTE: Read and review this entire document before beginning any of the startup procedures.

DESIGN APPLICATION INFORMATION

This information will be available from the specifying engineer who selected the equipment. If the system is a VAV system the CFM will be the airflow when the remote VAV boxes are in the full open position and the frequency drive is operating at 60 HZ. **Do not proceed with the equipment start-up without the design CFM information.**

Design Supply Air CFM: _____ Design Return Air CFM:_____

Design Outdoor Air CFM At Minimum Position: _____

Total External Static Pressure: _____

Supply Static Pressure: _____

Return Static Pressure: _____

Design Building Static Pressure: _____

Outside Air Dilution: Economizer Position Percentage: _____ CFM: _____

Supply Gas Pressure After Regulator W/o Heat Active _____ Inches_____

ADDITIONAL APPLICATION NOTES FROM SPECIFYING ENGINEER:

REFERENCE

General Inspection	Completed	See Notes
Unit inspected for shipping, storage, or rigging damage	☐	☐
Unit installed with proper clearances	☐	☐
Unit installed within slope limitations	☐	☐
Refrigeration system checked for gross leaks (presence of oil)	☐	☐
Terminal screws and wiring connections checked for tightness	☐	☐
Filters installed correctly and clean	☐	☐
Economizer hoods installed in operating position	☐	☐
Condensate drain trapped properly, refer to Installation Manual	☐	☐
Economizer damper linkage tight	☐	☐
Gas Heat vent hood installed	☐	☐
All field wiring (power and control) complete	☐	☐

Air Moving Inspection	Completed	See Notes
Alignment of drive components	☐	☐
Belt tension adjusted properly	☐	☐
Blower pulleys tight on shaft, bearing set screws tight, wheel tight to shaft	☐	☐
Pressure switch or transducer tubing installed properly	☐	☐

Exhaust Inspection Powered ☐ Barometric Relief ☐	Completed	See Notes
Check hub for tightness	☐	☐
Check fan blade for clearance	☐	☐
Check for proper rotation	☐	☐
Check for proper mounting (screen faces towards unit)	☐	☐
Prove operation by increasing minimum setting on economizer	☐	☐

Economizer Inspection Standard ☐ BAS ☐	Completed	See Notes
CO_2 sensor installed Yes ☐ No ☐	☐	☐
Check economizer setting (Reference Smart Equipment™ Control Board LCD menu location)	☐	☐
Prove economizer open/close through Smart Equipment™ Board Setting	☐	☐

Reheat Mode Normal ☐ or Alternate ☐ Not Applicable ☐
Humidity Sensor (2SH0401) _____

Operating Measurements - Air Flow

Fan operates with proper rotation (All VFD equipped units with the optional Manual Bypass must be phased for correct blower rotation with the Bypass switch set in the LINE position) ID Fans ☐ Exh. Fans ☐ Cond. Fans ☐	
Pressure drop across dry evaporator coil (At maximum design CFM) [1]	IWC
External Static Pressure	IWC
Return Static Pressure	IWC
Supply Static Pressure	IWC
Supply Air CFM Using Dry Coil Chart	CFM
Final Adjusted Supply Air CFM[2]	CFM

1. Consult the proper airflow to pressure drop table to obtain the actual airflow at the measured pressure differential.
2. Was a motor pulley adjustment or change required to obtain the correct airflow?
   Was it necessary to increase of decrease the airflow to meet the design conditions?
   If the motor pulley size was changed, measure the outside diameters of the motor and blower pulleys and record those diameters here;

Blower Motor HP _____FLA_____RPM_____

Pulley Pitch Diameter _____Turns Out_____ Final Turns Out_____

Blower Pulley Pitch Diameter _____ Fixed Sheave_____

ELECTRICAL DATA

T1 - T2 _____ Volts T2 - T3 _____ Volts

Control Voltage _____ Volts T1 - T3 _____ Volts

Device	Nameplate	Measured List All Three Amperages
Supply Fan Motor[1, 2]	AMPS	AMPS
Exhaust Motor (Dampers 100%)	AMPS	AMPS
Condenser Fan #1	AMPS	AMPS
Condenser Fan #2 (if equipped)	AMPS	AMPS
Condenser Fan #3 (if equipped)	AMPS	AMPS
Condenser Fan #4 (if equipped)	AMPS	AMPS
Compressor #1	AMPS	AMPS
Compressor #2 (if equipped)	AMPS	AMPS
Compressor #3 (if equipped)	AMPS	AMPS
Compressor #4 (if equipped)	AMPS	AMPS

1. VAV units with heat section - simulate heat call to drive VAV boxes and VFD/IGV to maximum design airflow position.
2. VAV units without heat section - VAV boxes must be set to maximum design airflow position.

OPERATING MEASUREMENTS - COOLING

Stage	Discharge Pressure	Discharge Temp.	Liquid Line Temp.[1]	Subcooling[2]	Suction Pressure	Suction Temp.	Superheat
First	#	°	°	°	#	°	°
Second (if equipped)	#	°	°	°	#	°	°
Third (if equipped)	#	°	°	°	#	°	°
Fourth (if equipped)	#	°	°	°	#	°	°
Reheat 1st Stage	#	°	°	°	#	°	°

1. Liquid temperature should be taken before filter/drier.
2. Subtract 10 psi from discharge pressure for estimated liquid line pressure

Outside air temperature	_____	°F db	_____	°F wb	_____ %RH
Return Air Temperature	_____	°F db	_____	°F wb	_____ %RH
Mixed Air Temperature	_____	°F db	_____	°F wb	_____ %RH
Supply Air Temperature	_____	°F db	_____	°F wb	_____ %RH

REFRIGERANT SAFETIES

Action	Completed	See Notes
Prove Compressor Rotation (3 phase only) by gauge pressure	☐	☐
Prove High Pressure Safety, All Systems	☐	☐
Prove Low Pressure Safety, All Systems	☐	☐

OPERATING MEASUREMENTS - GAS HEATING

Fuel Type: ☐ Natural Gas ☐ LP Gas

Action		Completed	See Notes
Check for gas leaks		☐	☐
Prove Ventor Motor Operation		☐	☐
Prove Primary Safety Operation		☐	☐
Prove Auxiliary Safety Operation		☐	☐
Prove Rollout Switch Operation		☐	☐
Prove Smoke Detector Operation		☐	☐
Manifold Pressure	Stage 1	IWC	☐
	Stage 2 (If Equipped)	IWC	☐
	Stage 3 (If Equipped)	IWC	☐
Supply gas pressure at full fire		IWC	☐
Check temperature rise[1]	☐ measured at full fire	°F	☐

1. Input X Eff. (BTU output)
   1.08 X Temp. Rise

OPERATIONAL MEASUREMENTS - STAGING CONTROLS

Verify Proper Operation of Heating/Cooling Staging Controls	
Create a cooling demand at the Thermostat, BAS System or Smart Equipment™ Verify that cooling/economizer stages are energized.	☐
Create a heating demand at the Thermostat, BAS System or Smart Equipment™ Verify that heating stages are energized.	☐
Verify Proper Operation of the Variable Frequency Drive (If Required)	
Verify that motor speed modulates with duct pressure change.	☐

FINAL - INSPECTION

Verify that all operational control set points have been set to desired value Scroll through all setpoints and change as may be necessary to suit the occupant requirements.	☐
Verify that all option parameters are correct Scroll through all option parameters and ensure that all installed options are enabled in the software and all others are disabled in the software. (Factory software settings should match the installed options)	☐
Verify that all access panels have been closed and secured	☐
Save a backup file from the unit control board onto a USB flash drive.	☐

OBSERVED PRODUCT DEFICIENCIES & CONCERNS:

Equipment Release Approval Form

SUBMITTAL NOTES

Product Type: Single Packaged R-454B Air Conditioners
Unit Tags: RTU-1

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: _____