

RVE-80-58P-30H

CONSTRUCTION FEATURES AND ACCESSORIES

Unit Overview

Model	Supply (CFM)	Outside Air (CFM)	Recirc (CFM)	Exhaust (CFM)	Heating	Cooling	Electrical V/C/P
RVE-80-58P-30H-20	7,200	7,200	0	6,700	Indirect Gas	Packaged DX	208/60/3

Features

- Exterior housing constructed of galvanized steel
- Energy recovery cassette with a desiccant wheel
- Direct-drive backward inclined plenum blowers with factory mounted VFDs
- Ball bearing motors
- Corrosion resistant fasteners
- Internally lined with galvanized steel metal creating a double wall
- Insulated with 2 in. 1.5# R8 density insulation
- Internally mounted control center with motor starters, 24 VAC control transformer(s), control circuit fusing
- Energy Wheel Motor: 1/3 HP

Options and Accessories

- UL\cUL1995
- Frost Control: Modulating Wheel
- Weatherhood: Downturned Hood
- ElectroFin Coil Coating: All Coils
- Outdoor Air Filters - MERV 8, 7-16x20x2
- Exhaust Air Filters - MERV 8, 7-16x20x2
- Supply Filters - 2" Pleated MERV 8, 6-20x25x2
- Outdoor Air Dampers - Motorized Low Leakage
- Return Dampers - Motorized Low Leakage
- Painted Exterior - Permatector Concrete Gray (RAL 7023)
- Microprocessor Controls
- Supply Fan Controls - Constant Volume (on/off)
- Exhaust Fan Controls - Constant Volume
- Economizer Mode - Temp./Dew Point Control
- Wheel Control - Modulating Wheel
- Room Sensing - Temp. And Dehumid.
- Network Protocol: BACNetMSTP
- Microprocessor Remote Interface w/150' Cord
- Dirty Filter Sensor: Outdoor, Exhaust and Final
- Rotation Sensor
- Phase and Brown Out Protection
- Branch Circuit Fusing
- Vapor Tight Lights
- Unit Disconnect - Mounted By Factory
- * Short-circuit current - 5kA
- * Exhaust Discharge Gravity Backdraft Damper



Note: Weight does NOT include skid/crating and may vary by 15% based on selected options.

Note: Unit is provided with factory mounted and wired disconnect switch.

Note: Electrofin coil coating requires monthly and quarterly coil maintenance to maintain the coil coating. See unit IOM for detailed cleaning procedure and required documentation to maintain the coatings warranty. Failure to follow cleaning recommendations will void the coatings warranty.

Note: Verify that the correct Protocol has been selected before ordering.

RVE-80-58P-30H

PERFORMANCE AND SPECIFICATIONS

Description/Arrangement

Model	Qty	Unit Weight (lb)	Outdoor Air Discharge	Outdoor Air Intake	Exhaust Air Discharge	Return Air Intake
RVE-80-58P-30H-20	1	4,695	Side	End	Side	Bottom

Design Conditions

Elevation (ft)	Summer DB (F)	Summer WB (F)	Winter DB (F)
62	87	74	-10

Air Performance

Type	Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor Qty/Size (hp)	Size (in.)/Type
Supply	7,200	1.75	3.571	1636	5.75	Qty 1 (7-1/2)	22/Plenum
ExhaustNormal	6,700	1.75	3.311	1906	5.16	Qty 1 (7-1/2)	20/Plenum

Electrical/Motor Specifications

V/C/P	Unit MCA (amps)	Unit MOP (amps)	Enclosure	Supply Motor RPM	Supply Efficiency	Exhaust Motor RPM	Exhaust Efficiency
208/60/3	141.4	150	ODP	1750	PE	1750	PE

Heating/Cooling Specifications

Heating Type	Gas Type	Input (MBH)	Output (MBH)	LAT (F)	Temp. Rise (F)	Furnace Size	Furnace Control
Indirect Gas	Natural	500.0	400.0	91.0	51.4	500	4:1 Modulating

Cooling Type	Total Capacity (MBH)	Sensible Capacity (MBH)	Compressor Quantity	Compressor Type	Condensing Unit By
Packaged DX	226.5	150.1	2	Digital Scroll	Greenheck

Sound Performance in Accordance with AMCA

Fan	Sound Power by Octave Band								Lwa	dBA	Sones
	62.5	125	250	500	1000	2000	4000	8000			
Supply	85	86	91	87	85	82	77	73	90	79	28
Exhaust Normal	81	79	87	83	77	77	72	68	85	73	21

Unit Pressure Drop (in. wg)

Air Stream	Weatherhood	Damper Section	Filter Section	Cooling Section	Heating Section
Supply	0.104	0.104	0.207	0.195	0.052
Exhaust	0.082	0.072	0.09	N/A	N/A

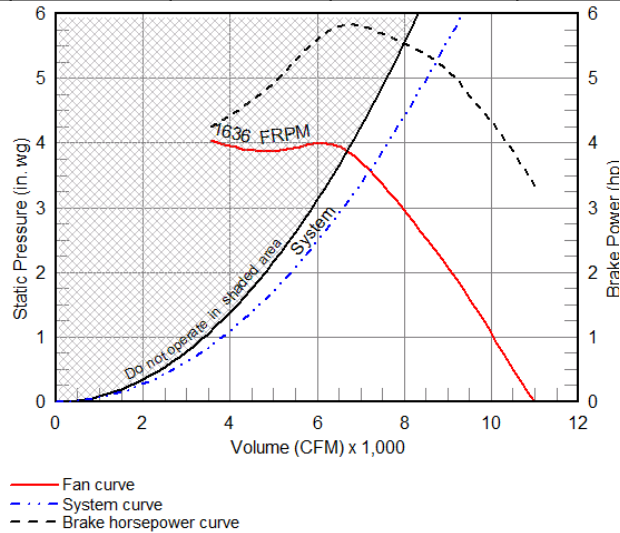
Note: The unit base line performance incorporates the pressure drop of the energy wheel.

Note: Filter pressure drop is based off of clean filters.

RVE-80-58P-30H FAN CURVES

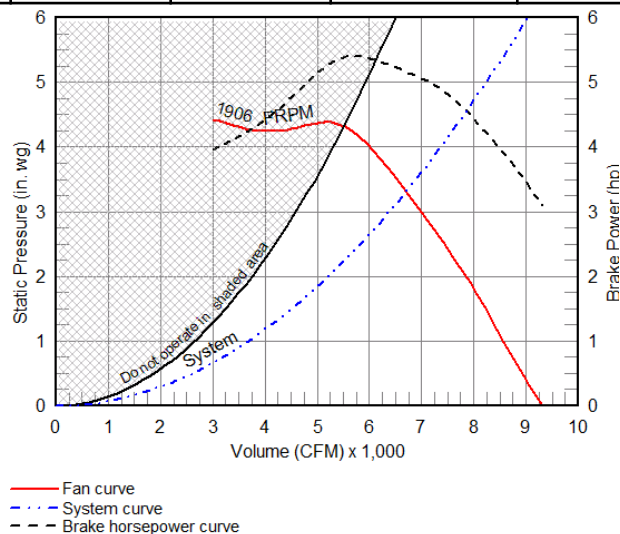
Supply Fan Performance

Volume (CFM)	Supply SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor Size (hp)	Size (in.)/ Type	Fan Quantity
7,200	1.75	3.571	1636	5.753	7-1/2	22/Plenum	1

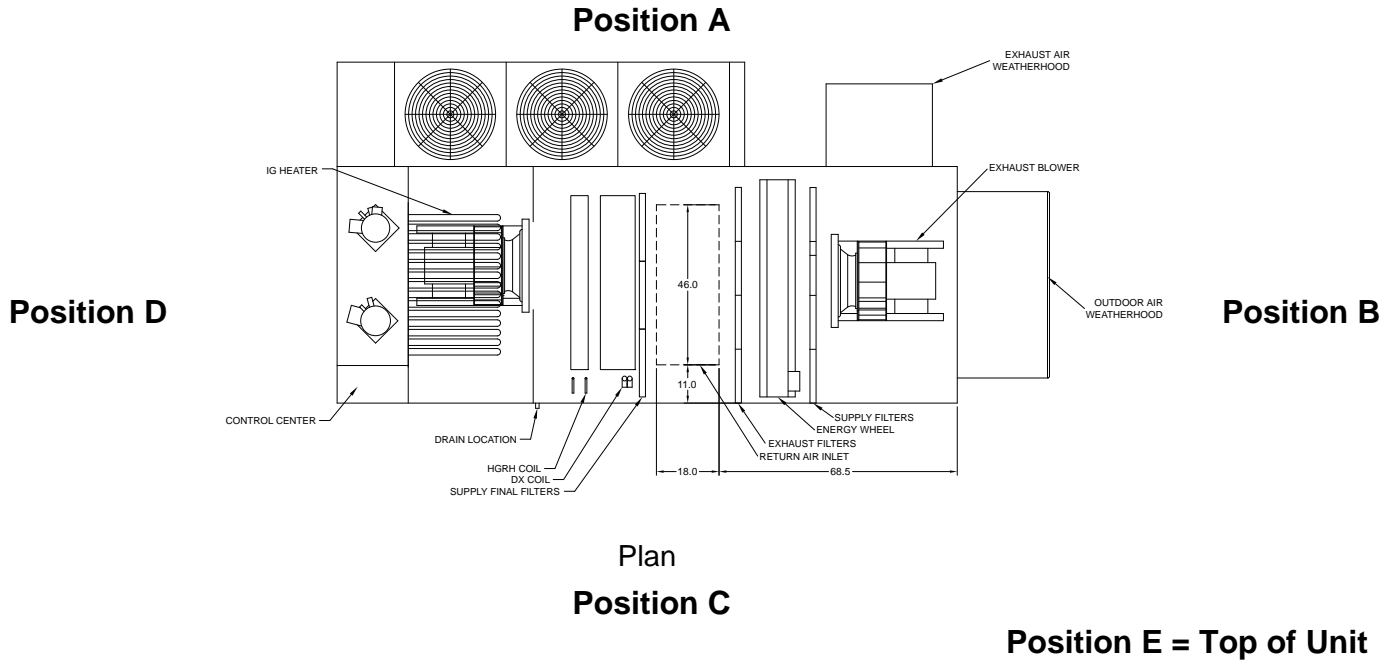


Exhaust Fan Performance - Normal Operation

Volume (CFM)	Exhaust SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor Size (hp)	Size (in.)/ Type	Fan Quantity
6,700	1.75	3.311	1906	5.159	7-1/2	20/Plenum	1



RVE-80-58P-30H
RADIATED SOUND



RVE-80: Supply Air Flow Nominal, Largest Tonnage Condensing Section Available, PDX units only

Free Field Plane	Octave Band (Sound Power Lw)								Lw	LwA
	1	2	3	4	5	6	7	8		
A	99	92	94	92	89	84	74	68	102	94
B	89	85	87	84	81	75	67	59	93	86
C	91	87	87	83	80	75	66	56	94	85
D	87	88	87	83	82	78	68	59	93	86
E	104	94	84	91	88	83	76	69	105	92

AMCA 320-07 - Laboratory Methods of Sound Testing of Fans Using Sound Intensity

Tests conducted in accordance with this standard.

Free field measurement plane created 1 foot from unit on all sides and top.

Sound Intensity measured in Watts/m².

Sound data converted to Sound Power (Lw) for the chart above.

A-Weighted Sound Power was determined using AMCA Standard 301-90 Clause 9.1.

RVE-80-58P-30H

COOLING PERFORMANCE

Packaged DX Cooling

Nominal Tonnage	Total Capacity (MBH)	Sensible Capacity (MBH)	Refrigerant Type	Compressor Type	Compressor Quantity	Condensing Unit
20.0	226.5	150.1	R-410a	Digital Scroll	2	By Greenheck

Hot Gas Reheat

Type	Capacity (MBH)	LAT (F)
Modulating	97.2	73.0

Condensing Unit Details

The RVE will come equipped with the following components:

- Hermetic scroll type compressors
- Compressors mounted in a compartment to be serviceable without affecting airflow and on neoprene vibration isolation to minimize vibration transmission and noise
- Crankcase heater on compressor
- Thermal expansion valve for refrigerant flow control
- Variable capacity scroll compressor
- Multiple condensing fans to allow fan cycling for head pressure control
- Liquid-Line filter drier
- High pressure manual reset cutout
- Low-pressure auto-reset cutout
- Time delay relays for compressor protection
- Service/charging valves
- Moisture-indicating sight glass
- Direct drive, statically and dynamically balanced condensing fans, AMCA Licensed for Air Performance
- Condensing coils with 3/8" copper tubes mechanically bonded to aluminum fins

Packaged DX Coil Details

Face Area (ft ²):	15.6
Rows Deep (Evap Coil):	3
Fins Per Inch:	10
Face Velocity (ft/min):	461
Entering Dry Bulb (F):	79.7
Entering Wet Bulb (F):	67.4
Leaving Dry Bulb (F):	60.5
Leaving Wet Bulb (F):	57.7
Cool Coil SP (in. wg):	0.195
Refrigerant Velocity (ft/min):	18
Suction Temp. (F):	41.8
Refrigerant:	R-410a
Evaporator Cap. (MBH):	226.5
Cond. Section EER:	12.3
Ambient Condenser Temp. (F):	87.0

Compressor and Condenser Details

Compressor 1 RLA (amps):	30.1
Compressor 1 LRA (amps):	225
Compressor 2 RLA (amps):	30.1
Compressor 2 LRA (amps):	225
Condenser Fan QTY:	3
Condenser Motor Size (hp):	1.5
Condenser Motor FLA:	6.6

Note: Digital Scroll is on lead circuit only.

RVE-80-58P-30H

HEATING PERFORMANCE

Indirect Gas Heating

Heating Type	Gas Type	Input (MBH)	Output (MBH)	LAT (F)	Temp. Rise (F)	Furnace Control
Indirect Gas	Natural	500.0	400.0	91.0	51.4	4:1 Modulating

Indirect Gas Unit Details

The RVE will come equipped with the following:

- Power venting
- ETL listed to ANSI standard Z83.8 and CGA 2.6
- High Thermal efficiency
- Direct spark ignition
- Tubular heat exchanger
- 409 Stainless Steel heat exchange tubes
- 3/4" Gas Connection
- At least 6 in. wg of natural gas pressure (14 in. wg for LP) is required at the units gas connection in order to achieve maximum performance

Note: Discharge temperature assumes proper energy wheel operation and maintenance.

RVE-80-58P-30H SUMMER PERFORMANCE

OUTDOOR AIR		EXHAUST AIR	
Entering Air		Leaving Air	
Dry Bulb (F)	87.0	Dry Bulb (F)	79.7
Wet Bulb (F)	74.0	Wet Bulb (F)	67.4
Specific Humidity (gr/lb)	106	Specific Humidity (gr/lb)	82
Enthalpy (BTU/lb)	37.6	Enthalpy (BTU/lb)	31.9
Leaving Air		Entering Air	
Dry Bulb (F)	82.8	Dry Bulb (F)	75.0
Wet Bulb (F)	70.5	Rel. Humidity (%)	50
Specific Humidity (gr/lb)	92	Specific Humidity (gr/lb)	65
Enthalpy (BTU/lb)	34.3	Enthalpy (BTU/lb)	28.2

Design Air Flow Conditions

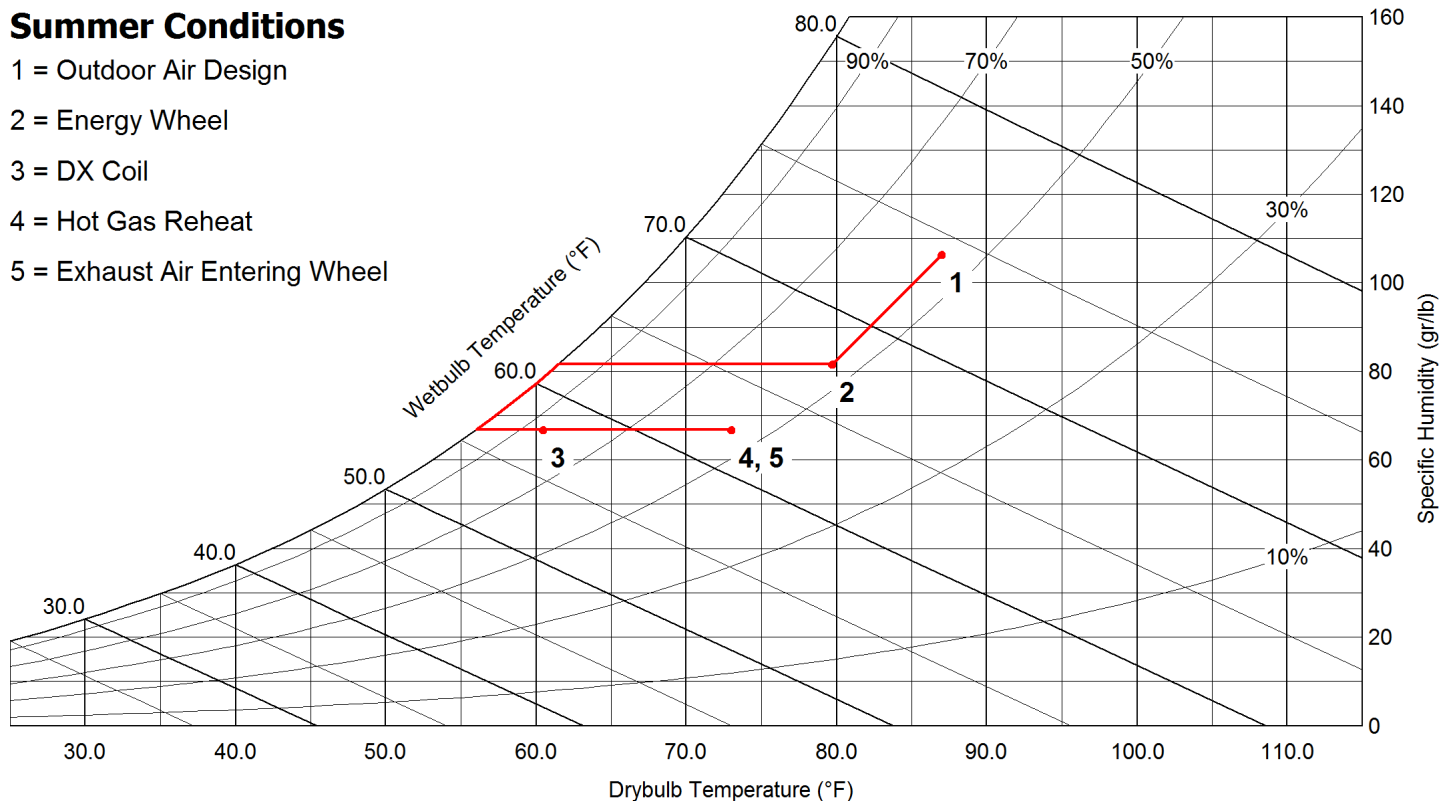
Model	Outdoor Air Volume (CFM)	Outdoor Air Wheel Effectiveness	Exhaust Air Volume (CFM)	Exhaust Air Wheel Effectiveness
RVE-80-58P-30H	7,200	60.5	6,700	65

Outdoor Air Cooling Reduction

	(BTU/h)	(tons)
OA Load w/o Energy Recovery	466,560.0	38.88
OA Load with Energy Recovery	281,880.0	23.49
Equipment Reduction tons		15.39

Summer Conditions

- 1 = Outdoor Air Design
- 2 = Energy Wheel
- 3 = DX Coil
- 4 = Hot Gas Reheat
- 5 = Exhaust Air Entering Wheel



RVE-80-58P-30H WINTER PERFORMANCE

OUTDOOR AIR		LEAVING AIR	
Entering Air		Leaving Air	
Dry Bulb (F)	-10.0	Dry Bulb (F)	39.6
Wet Bulb (F)	-10.9	Wet Bulb (F)	36.2
Specific Humidity (gr/lb)	2	Specific Humidity (gr/lb)	26
Enthalpy (BTU/lb)	-2.2	Enthalpy (BTU/lb)	13.5
LEAVING AIR		ENTERING AIR	
Dry Bulb (F)	18.7	Dry Bulb (F)	72.0
Wet Bulb (F)	18.7	Rel. Humidity (%)	35
Specific Humidity (gr/lb)	14	Specific Humidity (gr/lb)	41
Enthalpy (BTU/lb)	6.9	Enthalpy (BTU/lb)	23.7

Design Air Flow Conditions

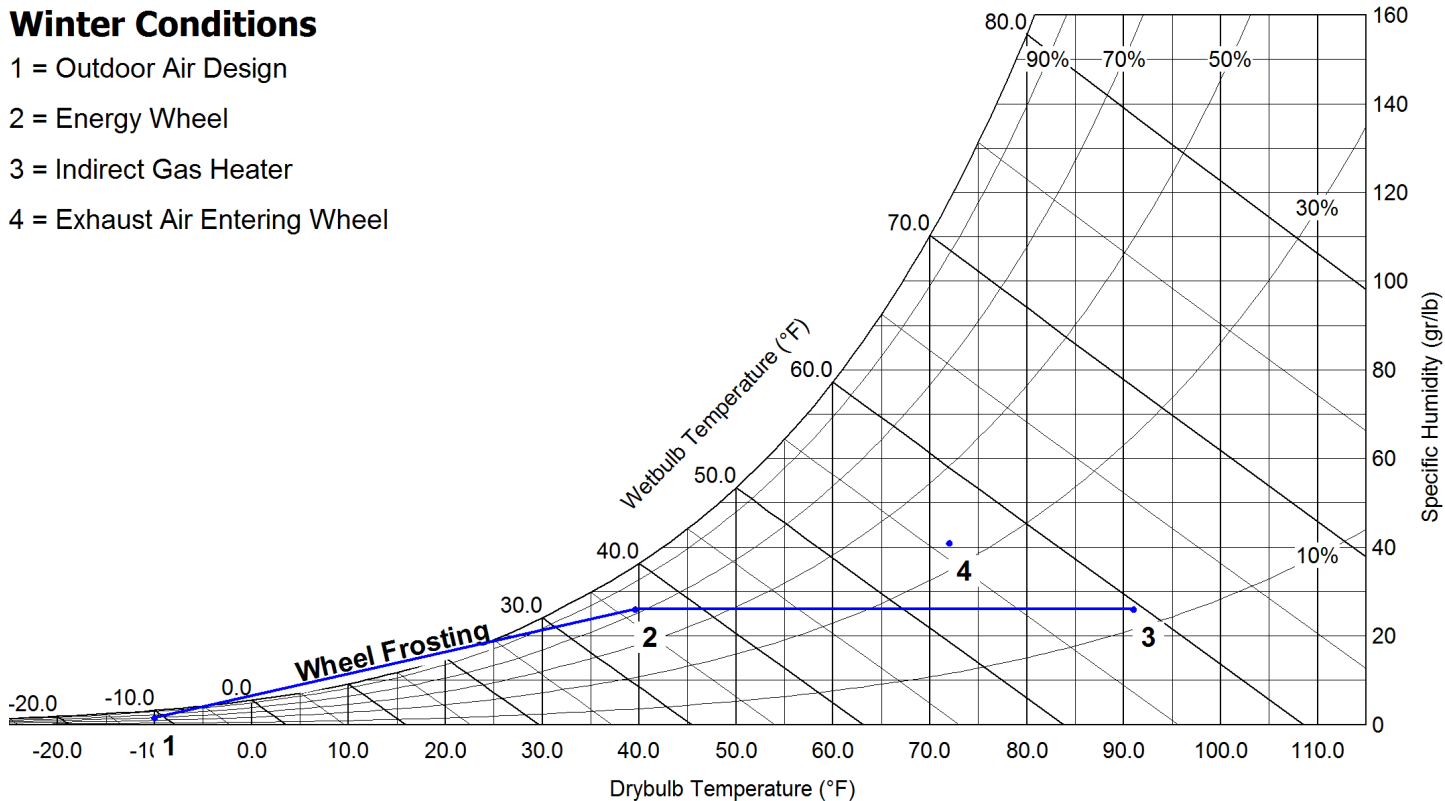
Model	Outdoor Air Volume (CFM)	Outdoor Air Wheel Effectiveness	Exhaust Air Volume (CFM)	Exhaust Air Wheel Effectiveness
RVE-80-58P-30H	7,200	60.5	6,700	65

Outdoor Air Heating Reduction

	(BTU/h)
OA Load w/o Energy Recovery	637,632.0
OA Load with Energy Recovery	251,942.0
BTU/h Reduction	385,690.0

Winter Conditions

- 1 = Outdoor Air Design
- 2 = Energy Wheel
- 3 = Indirect Gas Heater
- 4 = Exhaust Air Entering Wheel



RVE-80-58P-30H

AHRI PERFORMANCE DATA

Type	Tilt Angle (Heating/ Cooling):	Pressure Drop: (in. wg)	Nominal Airflow: (CFM)
WHEEL	N / A Deg	0.85	6,700



Wheel Leakage Ratings

	Pressure Differential	Exhaust Air Transfer Ratio	Outdoor Air Correction Factor	Purge Angle/ Setting
Test #1	0.0	2.8	1.02	0
Test #2	0.5	0.9	1.05	2
Test #3	1.0	0.9	1.05	1
Optional Additional Test(s):				

Thermal Effectiveness Ratings at 0.0 in. Differential Pressure

	Sensible	Latent	Total
100% Airflow Heating Condition:	65	61	64
75% Airflow Heating Condition:	72	66	70
100% Airflow Cooling Condition:	65	61	63
75% Airflow Cooling Condition:	72	66	69

Net Thermal Effectiveness Ratings at 0.0 in. Differential Pressure

	Net Sensible	Net Latent	Net Total
100% Airflow Heating Condition:	65	61	64
75% Airflow Heating Condition:	72	66	70
100% Airflow Cooling Condition:	65	61	63
75% Airflow Cooling Condition:	72	66	69

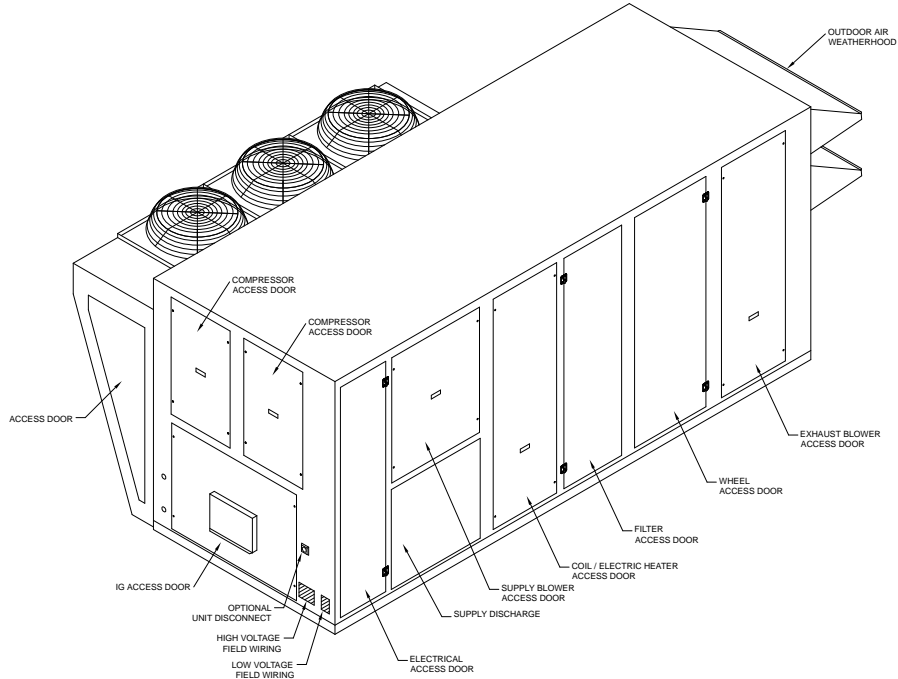
Trademark: Greenheck

Model Number: RVE-80-58P-30H

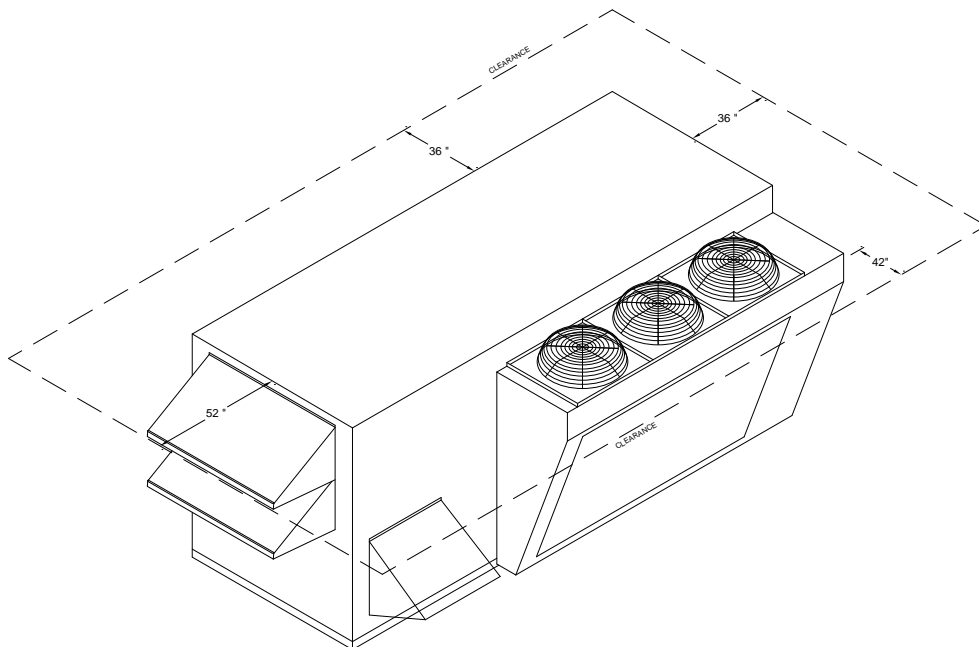
Energy Recovery component certified in accordance with ARI Standard 1060-2001. Actual performance in packaged equipment may vary.

RVE-80-58P-30H

ISOMETRIC DRAWINGS



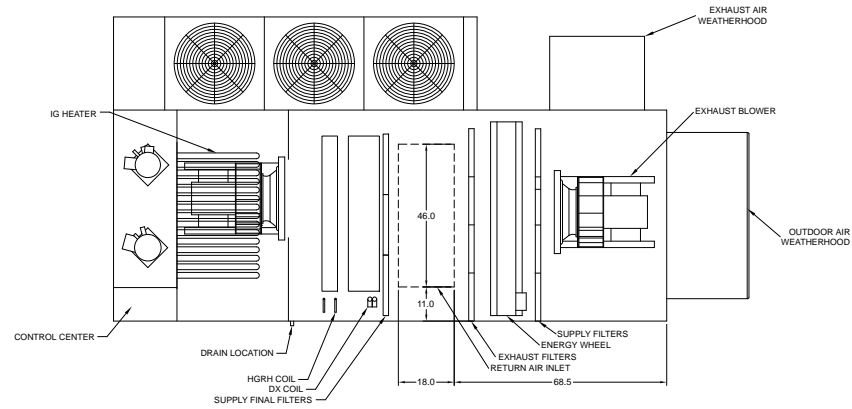
Back Right Isometric



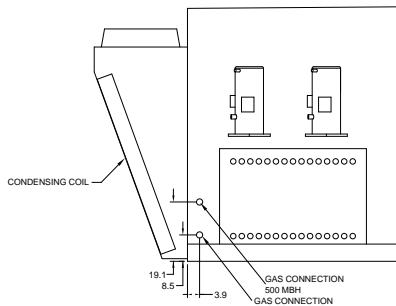
Front Left Isometric

RVE-80-58P-30H

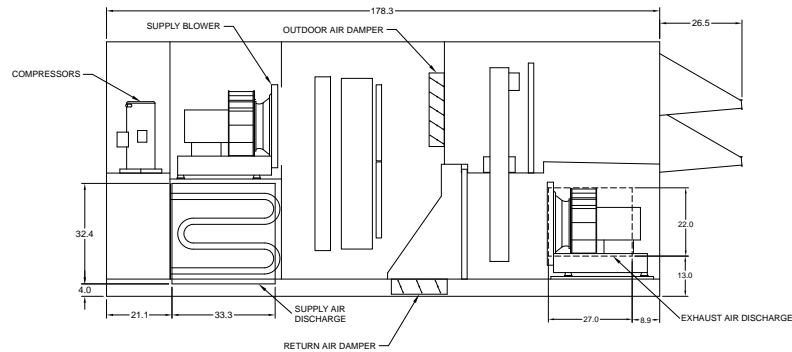
OVERVIEW DRAWINGS



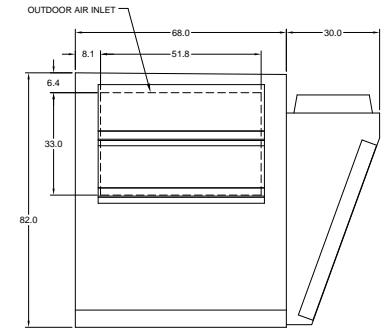
Plan



Left End



Elevation



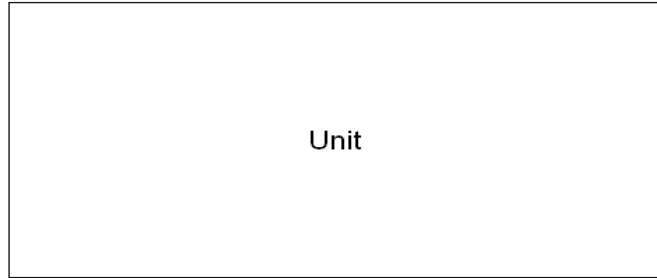
Right End

RVE-80-58P-30H

Corner Weights

1,515 lb

1,238 lb



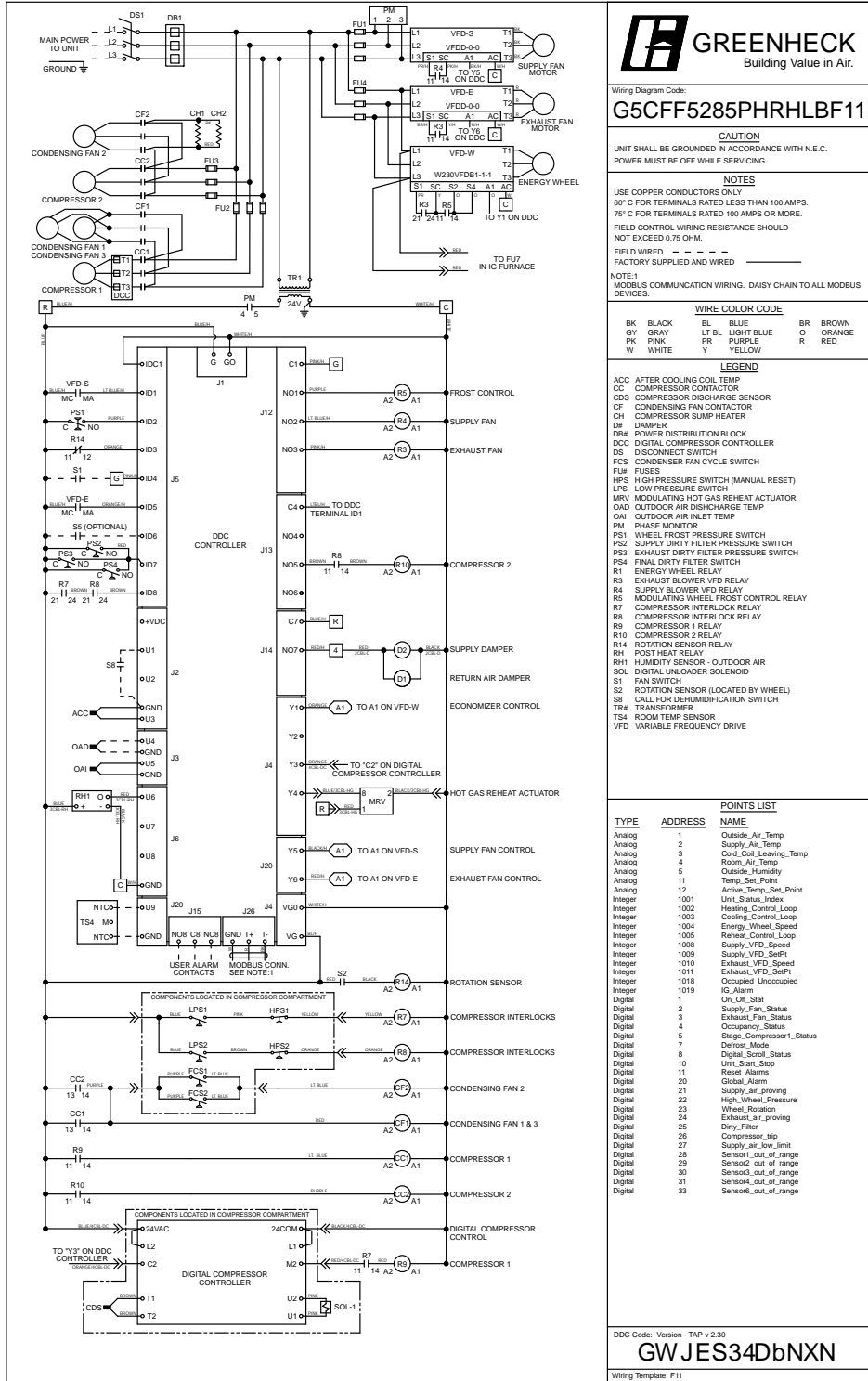
1,069 lb

873 lb

Note: Estimated corner weights are shown looking down on unit and the outside air intake will be on the right. Weights are applied at the base of the unit. Images not drawn to scale.

RVE-80-58P-30H

WIRING DIAGRAM



Wiring Diagram Code:
G5CFF5285PHRHLBF11

CAUTION
UNIT SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C.
POWER MUST BE OFF WHILE SERVICING.

NOTES
USE COPPER CONDUCTORS ONLY.
60°C FOR TERMINALS RATED LESS THAN 100 AMPS.
75°C FOR TERMINALS RATED 100 AMPS OR MORE.
FIELD CONTROL WIRING RESISTANCE SHOULD NOT EXCEED 0.75 OHM.
FIELD WIRED - - - - -
FACTORY SUPPLIED AND WIRED _____
NOTE-1: MODBUS COMMUNICATION WIRING. DAISY CHAIN TO ALL MODBUS DEVICES.

WIRE COLOR CODE

BK	BLACK	BL	BLUE	BR	BROWN
GY	GRAY	LT BL	LIGHT BLUE	O	ORANGE
PK	PAINK	PR	PURPLE	R	RED
W	WHITE	Y	YELLOW		

LEGEND

ACC AFTER COOLING COIL TEMP
CC COMPRESSOR CONTACTOR
CDS COMPRESSOR DISCHARGE SENSOR
CF CONDENSING FAN CONTACTOR
CH COMPRESSOR SLUMP HEATER
DH DAMPER
DB# POWER DISTRIBUTION BLOCK
DDC DIGITAL COMPRESSOR CONTROLLER
DS DISCONNECT SWITCH
FCS CONDENSER FAN CYCLE SWITCH
FU# FUSES
HPS HIGH PRESSURE SWITCH (MANUAL RESET)
LPS LOW PRESSURE SWITCH
MRV MODULATING HOT GAS REHEAT ACTUATOR
OAO OUTDOOR AIR DISCHARGE TEMP
OAI OUTDOOR AIR INLET TEMP
PM PHASE MONITOR
PS1 WHEEL FROST PRESSURE SWITCH
PS2 SUPPLY DIRTY FILTER PRESSURE SWITCH
PS3 EXHAUST DIRTY FILTER PRESSURE SWITCH
PS4 FINAL DIRTY FILTER SWITCH
R1 ENERGY WHEEL RELAY
R3 EXHAUST BLOWER VFD RELAY
R4 SUPPLY BLOWER VFD RELAY
R5 MODULATING WHEEL FROST CONTROL RELAY
R7 COMPRESSOR INTERLOCK RELAY
R8 COMPRESSOR INTERLOCK RELAY
R9 COMPRESSOR 1 RELAY
R10 COMPRESSOR 2 RELAY
R14 ROTATION SENSOR RELAY
RH POST HEAT RELAY
RH1 HUMIDITY SENSOR - OUTDOOR AIR
SOL DIGITAL UNLOADER SOLENOID
S1 FAN SWITCH
S2 ROTATION SENSOR (LOCATED BY WHEEL)
SB CALL FOR DEHUMIDIFICATION SWITCH
TS4 ROOM TEMP SENSOR
VFD VARIABLE FREQUENCY DRIVE

POINTS LIST

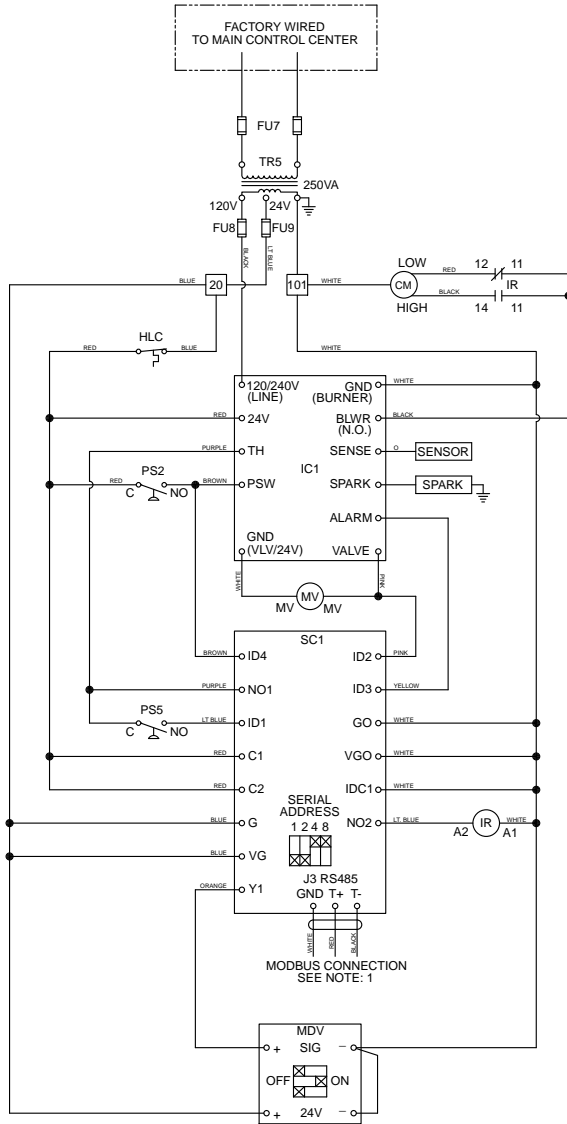
TYPE	ADDRESS	NAME
Analog	1	Outside_Air_Temp
Analog	2	Supply_Air_Temp
Analog	3	Cold_Coil_Leaving_Temp
Analog	4	Room_Air_Temp
Analog	5	Outside_Humidity
Analog	11	Temp_Set_Point
Analog	12	Active_Temp_Set_Point
Integer	1001	Unit_Status_Index
Integer	1002	Heating_Control_Loop
Integer	1003	Cooling_Control_Loop
Integer	1004	Energy_Wheel_Speed
Integer	1005	Reheat_Control_Loop
Integer	1008	Supply_VFD_Speed
Integer	1009	Supply_VFD_SetPt
Integer	1010	Exhaust_VFD_Speed
Integer	1011	Exhaust_VFD_SetPt
Integer	1018	Occupied_Unoccupied
Integer	1019	IG_Alarm
Digital	1	On_Off_Stat
Digital	2	Supply_Fan_Status
Digital	3	Exhaust_Fan_Status
Digital	4	Occupancy_Status
Digital	5	Stage_Compressor1_Status
Digital	7	Defrost_Mode
Digital	8	Digital_Scroll_Status
Digital	10	Unit_Start_Stop
Digital	11	Reset_Alarms
Digital	20	Global_Alarm
Digital	21	Supply_air_proving
Digital	22	High_Wheel_Pressure
Digital	23	Wheel_Rotation
Digital	24	Exhaust_air_proving
Digital	25	Dirty_Filter
Digital	26	Compressor_tip
Digital	27	Supply_air_low_limit
Digital	28	Sensor1_out_of_range
Digital	29	Sensor2_out_of_range
Digital	30	Sensor3_out_of_range
Digital	31	Sensor4_out_of_range
Digital	33	Sensor6_out_of_range

DDC Code: Version - TAP v 2.30
GWJES34DbNXN

Wiring Template: F11

RVE-80-58P-30H

INDIRECT GAS WIRING DIAGRAM FURNACE 1 - 4:1 MODULATING



Wiring Diagram Code:
G4K52P1RX0000S05

CAUTION
UNIT SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C.
POWER MUST BE OFF WHILE SERVICING.

NOTES
USE COPPER CONDUCTORS ONLY
60° C FOR TERMINALS RATED LESS THAN 100 AMPS.
75° C FOR TERMINALS RATED 100 AMPS OR MORE.
FIELD CONTROL WIRING RESISTANCE SHOULD
NOT EXCEED 0.75 OHM.
FIELD WIRED - - - - -
FACTORY SUPPLIED AND WIRED _____

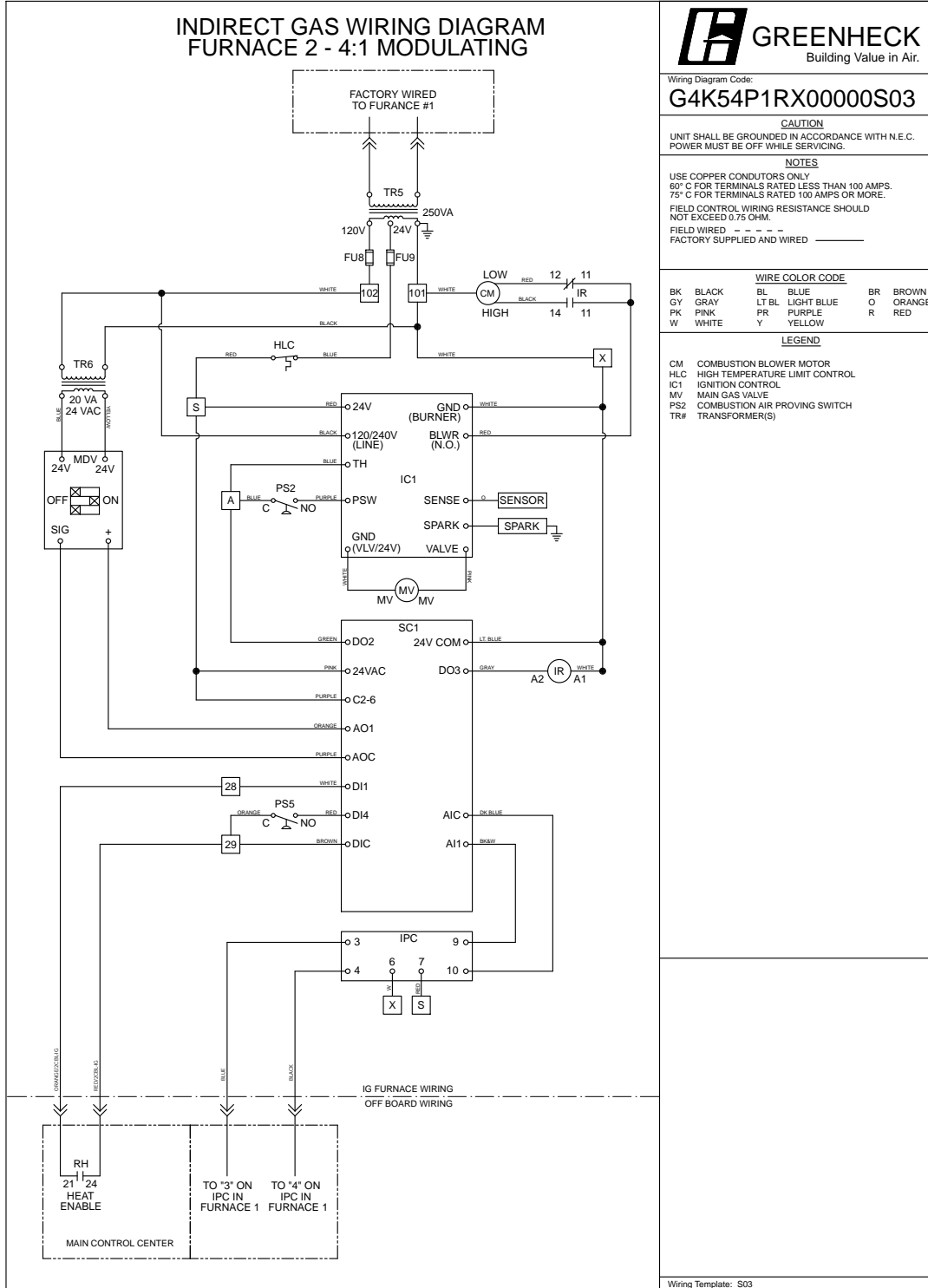
NOTE: 1
MODBUS COMMUNICATION WIRING. DAISY CHAIN TO
ALL MODBUS DEVICES.

WIRE COLOR CODE			
BK	BLACK	BL	BLUE
GY	GRAY	LT BL	LIGHT BLUE
PK	PINK	PR	PURPLE
W	WHITE	Y	YELLOW
BR	BROWN	O	ORANGE
		R	RED

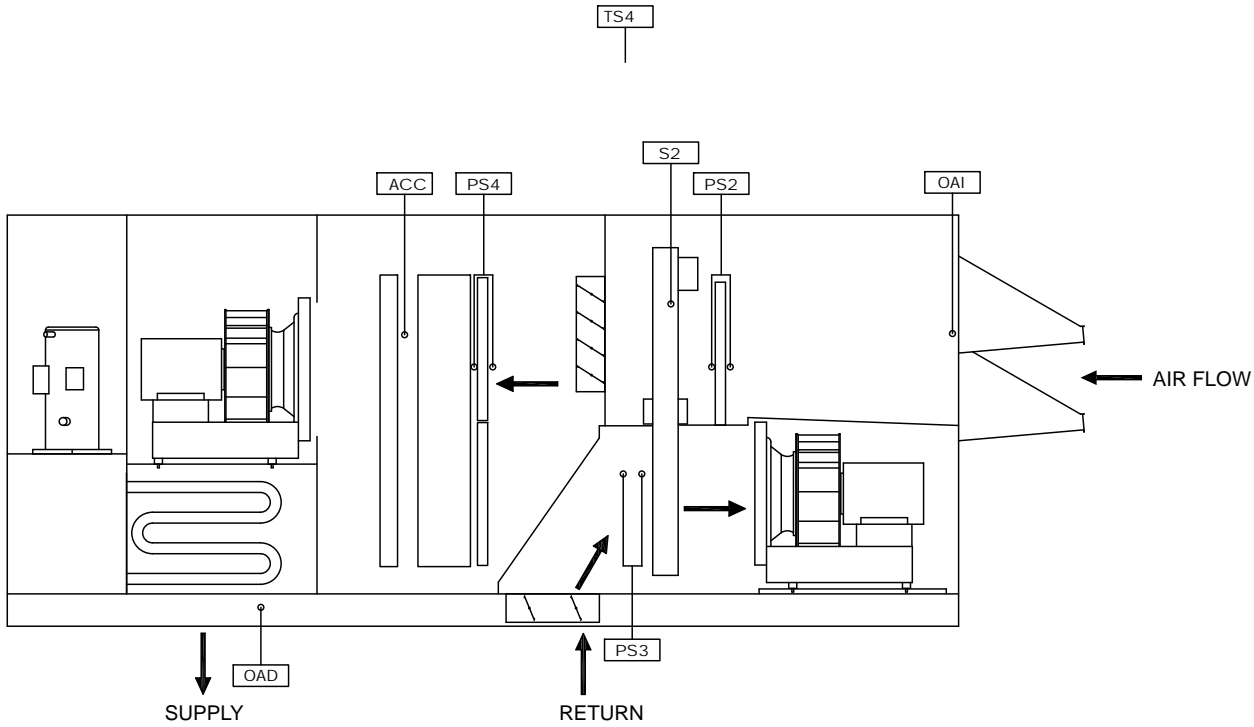
LEGEND	
CM	COMBUSTION BLOWER MOTOR
FU#	FUSE(S)
HLC	HIGH TEMPERATURE LIMIT CONTROL
IC1	IGNITION CONTROL
IPC	INPUT CONVERTER
IR	INDUCTION RELAY
MDV	MODULATING VALVE
MV	MAIN GAS VALVE
PS2	COMBUSTION AIR PROVING SWITCH
PS5	HIGH SPEED PRESSURE SWITCH
SC1	STAGE CONTROLLER
TR#	TRANSFORMER(S)

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RVE-80-58P-30H



RVE-80-58P-30H MONITORING POINTS



Item	Description	Type
OAI	Outdoor Air Intake Temperature Sensor	10K Ohm NTC (Carel)
OAD	Outdoor Air Discharge Temperature Sensor	10K Ohm NTC (Carel)
ACC	After Cooling Coil Temperature Sensor	10K Ohm NTC (Carel)
PS3	Exhaust Dirty Filter Pressure Switch	Contact
PS4	Supply Dirty Filter Pressure Switch	Contact
TS4	*Room Temp Sensor	10K Ohm NTC (Carel)

*Shipped loose sensor.

Greenheck Network Interface v2.3 Modbus/BACnet Points List

Type	BACnet Device Instance: 77000 (default) Analog = AV, Integer = AV, Digital = BV			Modbus-RTU/TCP/IP Network Address: 1	Read (R) Write (W)	Description	Included	
	Instance	Name	Units	Register				
Analog	1	Outside_Air_Temp	degree F	40002	R/W	Outdoor Air Temp (###.# F)	X	
Analog	2	Supply_Air_Temp	degree F	40003	R	Supply Air Temp (###.# F)	X	
Analog	3	Cold_Coil_Leaving_Temp	degree F	40004	R	Cold Coil Temp (###.# F)	X	
Analog	4	Room_Air_Temp	degree F	40005	R/W	Room Air Temp (if installed) (###.# F)	X	
Analog	5	Outside_Humidity	percent	40006	R/W	Outdoor Relative Humidity (###.##%)	X	
Analog	6	Room_Humidity	percent	40007	R/W	Room Relative Humidity (###.##%)	X	
Analog	11	Temp_Set_Point	degree F	40012	R/W	Temperature SetPt (read/write) (###.# F) (See Controller IOM)	X	
Analog	12	Active_Temp_Set_Point	degree F	40013	R	Active Temperature Set Point (###.# F)	X	
Analog	13	Dehumid_Set_Point	percent	40014	R/W	Dehumidification SetPt (read/write) (##.# F, ##.##%) (See Controller IOM)	X	
Integer	1001	Unit_Status_Index	no-units	45003	R	Note 1 (See below)	X	
Integer	1002	Heating_Control_Loop	percent	45004	R	Heater output (0-100%)	X	
Integer	1003	Cooling_Control_Loop	percent	45005	R	Coolingr output (0-100%)	X	
Integer	1004	Energy_Wheel_Speed	percent	45006	R	Energy recovery wheel speed (0-100%)	X	
Integer	1005	Reheat_Control_Loop	percent	45007	R	Hot gas reheat output (0-100%)	X	
Integer	1006	CO2_Level	ppm	45008	R	CO2 Levels (ppm)	X	
Integer	1007	CO2_Set_Point	ppm	45009	R/W	CO2 Set Point (ppm)	X	
Integer	1008	Supply_VFD_Speed	percent	45010	R	Supply Fan VFD Speed (0-100%)	X	
Integer	1009	Supply_VFD_SetPt	percent	45011	R/W	Supply Fan VFD Set Point (0-100%)	X	
Integer	1010	Exhaust_VFD_Speed	percent	45012	R	Exhaust Fan VFD Speed (0-100%)	X	
Integer	1011	Exhaust_VFD_SetPt	percent	45013	R/W	Exhaust Fan VFD Set Point (0-100%)	X	
Integer	1012	OA_Damper_Position	percent	45014	R	Outdoor Damper Position (0-100%)	X	
Integer	1013	OA_Damper_SetPt	percent	45015	R/W	Minimum OA Damper Position (0-100%)	X	
Integer	1014	Duct_Pressure	no-units	45016	R	Supply Duct Pressure (#.##"WC)	X	
Integer	1015	Duct_Pressure_SetPt	no-units	45017	R/W	Supply Duct Pressure Set Point (value/100=#.##"WC)	X	
Integer	1016	Building_Pressure	no-units	45018	R	Building Pressure (value/1000 = 0.###"WC)	X	
Integer	1017	Building_Pressure_SetPt	no-units	45019	R/W	Building Pressure Set Point (value/1000 = 0.###"WC)	X	
Integer	1018	Occupied_Unoccupied	no-units	45020	R/W	Occupied/unoccupied command (0=occupied, 1=unoccupied, 2=MMU)	X	
Integer	1019	IG_Alarm	no-units	45021	R	IG Alarm - For alarm detail	X	
			Inactive_Text	Active_Text				
Digital	1	On_Off_Stat	Off	On	10002	R	Unit ON/OFF Status	X
Digital	2	Supply_Fan_Status	Off	On	10003	R	Supply fan status	X
Digital	3	Exhaust_Fan_Status	Off	On	10004	R	Exhaust fan status	X
Digital	4	Occupancy_Status	Unoccupied	Unoccupied	10005	R	Occupancy Status (0=Unoccupied 1=Occupied)	X
Digital	5	Stage_Compressor1_Status	Off	On	10006	R	Stage Compressor #1 status	X
Digital	6	Stage_Compressor2_Status	Off	On	10007	R	Stage Compressor #2 status	X
Digital	7	Defrost_Mode	Off	On	10008	R	Defrost mode status	X
Digital	8	Digital_Scroll_Status	Off	On	10009	R	Digital Scroll status	X
Digital	10	Unit_Start_Stop	Stop	Start	10011	R/W	Unit start/stop command	X
Digital	11	Reset_Alarm	Don't Reset	Reset Alarms	10012	R/W	Reset alarms command	X
Digital	13	Stage_Compressor3_Status	Off	On	10014	R	Stage Compressor #3 status	X
Digital	14	Stage_Compressor4_Status	Off	On	10015	R	Stage Compressor #4 status	X
Digital	20	Global_Alarm	Off	Alarm	10021	R	Global alarm indication (active when there is at least one alarm)	X
Digital	21	Supply_air_proving	Off	Alarm	10022	R	Supply airflow proving alarm	X
Digital	22	High_Wheel_Pressure	Off	Alarm	10023	R	High wheel pressure (high airflow or dirty wheel)	X
Digital	23	Wheel_Rotation	Off	Alarm	10024	R	Wheel rotation alarm	X
Digital	24	Exhaust_air_proving	Off	Alarm	10025	R	Exhaust airflow proving alarm	X
Digital	25	Dirty_filter	Off	Alarm	10026	R	Dirty filter alarm	X
Digital	26	Compressor_trip	Off	Alarm	10027	R	Compressor trip alarm	X
Digital	27	Supply_air_low_limit	Off	Alarm	10028	R	Supply air temperature low limit alarm	X
Digital	28	Sensor1_out_of_range	Off	Alarm	10029	R	Sensor#1 out of range (outside air temperature)	X
Digital	29	Sensor2_out_of_range	Off	Alarm	10030	R	Sensor#2 out of range (supply air temperature)	X
Digital	30	Sensor3_out_of_range	Off	Alarm	10031	R	Sensor#3 out of range (cold coil leaving air temperature)	X
Digital	31	Sensor4_out_of_range	Off	Alarm	10032	R	Sensor#4 out of range (room temperature)	X
Digital	32	Sensor5_out_of_range	Off	Alarm	10033	R	Sensor#5 out of range (room humidity)	X
Digital	33	Sensor6_out_of_range	Off	Alarm	10034	R	Sensor#6 out of range (outdoor humidity)	X
Digital	34	Sensor7_out_of_range	Off	Alarm	10035	R	Sensor#7 out of range (building pressure sensor)	X
Digital	35	Sensor8_out_of_range	Off	Alarm	10036	R	Sensor#8 out of range (duct pressure sensor)	X
Digital	36	Sensor9_out_of_range	Off	Alarm	10037	R	Sensor#9 out of range (CO2 sensor)	X
Digital	37	Sensor10_out_of_range	Off	Alarm	10038	R	Sensor#10 out of range (auxiliary temp)	X

Note: Unit status index: 0=system off; 1=initial delay; 2=opening dampers; 3=exhaust fan starting; 4=supply fan starting; 5=system on; 6=defrost mode active; 7=sys on-economizer; 8=sys on-heating; 9=sys on-cooling; 10=sys on-econ & cooling; 11=sys on-dehumidifying; 12=sys on-dehumidifying & reheat; 13=unocc-unit off; 14=unocc-unit on; 15=unocc-heating; 16=unocc-cooling; 17=unocc-dehumid; 18=unocc-dehumid & reheat; 19=Manual override; 20=remote off; 21=Alarm

Microprocessor Controller Sequence of Operation

MICROPROCESSOR CONTROLLER: Controller shall be provided with required sensors and programming for rooftop unit. Controller shall be factory programmed, mounted and tested. Controller shall have a LCD readout for changing set points and monitoring unit operation.

UNIT START COMMAND:

- Factory mounted and wired outdoor air and recirculated air damper actuators are powered.
- Optional return air damper actuator is powered.
- Exhaust fan starts after a 10 second (adjustable) delay.
- Supply fan starts 5 seconds (adjustable) after exhaust fan.
- Tempering options and energy wheel option to function as described below.

UNIT STOP COMMAND (OR DE-ENERGIZED):

- Supply fan, exhaust fan, energy wheel and tempering options de-energized.
- Outdoor air damper actuator is spring return close, and the recirculated air damper actuator is spring open.
- Optional return air damper is spring return close.

OCCUPIED/UNOCCUPIED MODES: Shall be based on a 7-day time clock internal to the controller. The schedule shall be set by the end user. When a user initiates an override input, the DDC would switch from unoccupied to occupied mode. The DDC will return to the scheduled occupied/unoccupied mode after the override time has expired (60 min, adjustable). If internal time clock is disabled, a remote contact or a BMS can control the occupied/unoccupied mode.

Occupied Mode:

1. Supply fan ON.
2. Exhaust fan ON.
3. Energy wheel control per below.
4. Heating per below.
5. Cooling per below.
6. Damper control per below.

Unoccupied Mode (Unit Off): Default setting when there is no recirculation damper or room temperature sensor.

1. Supply fan OFF
2. Exhaust fan OFF
3. Tempering OFF
4. Outdoor air damper closed
5. Return damper closed
6. Recirculation damper open

SUPPLY BLOWER SEQUENCE: The supply blower is provided with a factory mounted variable frequency drive. The supply blower speed can be controlled with the following sequences.

Constant Volume (on/off): The supply blower is provided with a factory mounted VFD, and is intended to operate at a constant speed (adjustable set point in controller) during operation. This speed needs to be set during test and balance of the unit.

EXHAUST BLOWER SEQUENCE: The exhaust blower is provided with a factory mounted variable frequency drive. The exhaust blower speed can be controlled with the following sequences.

- **Constant Volume (on/off):** The exhaust blower is provided with a factory mounted VFD, and is intended to operate at a constant speed (adjustable set point in controller) during operation. This speed needs to be set during test and balance of the unit.

COOLING SEQUENCE: The cooling is controlled to maintain the supply temperature set point. The mechanical cooling will be locked out when the outside air is $< 55^{\circ}\text{F} - 2^{\circ}\text{F}$ hysteresis, adjustable.

Packaged DX Cooling (Digital Scroll): DDC will provide a modulating signal for cooling. From 10-50%, the digital scroll will be controlled to maintain the discharge temperature. From 50-100%, the second stage will be on in combination with the digital scroll compressor to maintain the discharge temperature.

DEHUMIDIFICATION SEQUENCE: The cooling is controlled to maintain the cooling-coil set point. The dehumidification sequence will be locked out when the OA is $< 10^{\circ}\text{F}$ above the cold-coil set point. The mechanical cooling will be locked out when the outside air is $< 55^{\circ}\text{F} - 2^{\circ}\text{F}$ hysteresis, adjustable.

Packaged DX Cooling (Digital Scroll): DDC will provide a modulating signal for dehumidification. From 10-50%, the digital scroll will be controlled to maintain the after-coil temperature. From 50-100%, the second stage will be on in combination with the digital scroll compressor to maintain the after-coil temperature.

REHEAT SEQUENCE: While the unit is in dehumidification mode, the outdoor air can be reheated via Primary Heating Source, On/Off Hot Gas Reheat or Modulating Hot Gas Reheat for Space Neutral Applications.

Primary Heating Source: The main heating source is enabled to reheat the air to meet the supply temperature set point (adj.).

Modulating Hot Gas Reheat: The controller will modulate the hot gas reheat valve with a 0-10 V signal to maintain the supply temperature set point (adj.).

HEATING SEQUENCE: The heating is controlled to maintain the supply temperature set point. The heating will be locked out when the outside air is $> 70^{\circ}\text{F} + 2^{\circ}\text{F}$ hysteresis, adjustable.

Indirect Gas Furnace: DDC will operate the indirect gas furnace to maintain the supply temperature set point (adj.).

SUPPLY SET POINT RESET FUNCTION. Either a room temperature sensor or the outdoor air reset function (if no room temperature sensor wired to controller) will determine the supply temperature of the unit.

BUILDING FREEZE PROTECTION: If the supply air temperature drops below 35°F (adjustable), the DDC will de-energize the unit and activate the alarm output after a preset time delay.

OPTIONAL FROST CONTROL: The DDC controller will output a signal when frosting is occurring which is determined by a temperature set point ($\text{OA} < 5\text{F} - 2\text{F}$ hysteresis, adjustable) and a pressure setpoint.

Modulate Wheel: When frosting is occurring, the VFD modulates the wheel down to a slow rotational speed to defrost wheel. Once the pressure drop decreases below the set point, frost mode is de-energized and the wheel returns to full speed.

ECONOMIZER SEQUENCE: When the application requires cooling, and the outdoor air conditions are suitable for free cooling, the microprocessor can modulate the outdoor air and recirculated air dampers to maintain the discharge temperature set point. If the outdoor air damper modulates to full open and the discharge temperature is not being met, the controller will start to increase the call for cooling to meet the discharge temperature and this could engage the mechanical cooling.

Dew Point/Dry Bulb: The economizer will be locked out when: the outside air is $< 40^{\circ}\text{F}$ DB ($- 2^{\circ}\text{F}$ hysteresis, adjustable) or $> 75^{\circ}\text{F}$ DB ($- 2^{\circ}\text{F}$ hysteresis, adjustable) or $> 55^{\circ}\text{F}$ dew point ($- 2^{\circ}\text{F}$ hysteresis, adjustable); the unit is operating in dehumidification mode; or there is a call for heating.

ENERGY WHEEL SEQUENCE

Modulate Wheel (100% OA only): When economizer mode is enabled and there is a signal for cooling, the wheel VFD modulates wheel speed to maintain the discharge temperature set point.

By Factory: The unit will be provided with energy wheel bypass dampers for both the outdoor air and return airstreams. During normal operation, the dampers shall remain closed to allow full operation of the energy wheel. During economizer sequences, the bypass dampers will be open to alleviate pressure drop through the wheel, while allowing more outdoor air to be used for economizer cooling.

ALARMS INDICATION: DDC shall have one digital output for remote indication of an alarm condition. Possible alarms include:

Dirty Filter Alarm: If the outside air or return air filter differential pressure rises above the switch set point (adj.), the differential pressure switch shall signal the DDC to activate an alarm.

Dirty Wheel Alarm: DDC monitors pressure across the wheel and sends an alarm in the case of an increased pressure drop.

Wheel Rotation Alarm: Monitors wheel rotation, and sends a signal to controller (after a 15 second time delay with no rotation) that signals the DDC to activate an alarm.

Supply and Exhaust Air Alarm: DDC monitors proving switch on each blower and displays an alarm in case of blower failure.

DX Alarm: DDC monitors the refrigerant pressure and shuts off refrigeration circuit in the case of high or low refrigerant pressure.

Temperature Sensor Alarm: DDC will send an alarm in the case of a failed air temperature sensor.

Pressure Sensor Alarm: DDC will send an alarm in the case of a failed pressure sensor.

Humidity Sensor Alarm: DDC will send an alarm in the case of a failed humidity sensor.

Optional Accessories: The following accessories can be ordered with the unit to expand the functionality or usability of the controller.

Room Temperature and Dehumidistat: Factory provided, field mounted that is intended to monitor both the temperature and humidity level in the space. Instead of adjusting the supply discharge temperature based on what the outside temperature is (standard operation), the controller will adjust the discharge temperature to try and meet a desired room temperature. If the humidity gets too high the after-cooling coil set point will be lowered to the minimum set point to further "dry" the supply air entering the space. Once the room dehumidistat is satisfied, the cold coil set point will return to the maximum setting.

BMS Interfacing: A BMS serial card is provided with the controller for field interfacing with a building management system. Each card is sent out with the default parameters, and the controls contractor must change the appropriate addresses to match the BMS settings.

DDC Remote Interface: An interface panel that can be wired to the main controller for remote adjustments of set points.

Phase and Brown Out Protection: Factory mounted and wired component which monitors the main power coming into the unit. If a phase drops out or exceeds the limitations, or if the incoming voltage exceeds the acceptable range, the component will turn off the unit to help protect the electrical systems.

Unit Warranty

Limited Warranty

Greenheck warrants this equipment to be free from defects in material and workmanship for a period of 1 year(s) from the purchase date. The energy recovery wheel is warranted to be free from defects in material and workmanship for a period of five years from the purchase date. Any component which proves defective during the warranty period will be repaired, or replaced, at Greenheck's sole option when returned to our factory, transportation prepaid.

The warranty does not include labor costs associated with troubleshooting, removal, or installation. Greenheck will not be liable for any consequential, punitive, or incidental damages resulting from use, repair, or operation of any Greenheck product.

This warranty is exclusive, and is in lieu of all other warranties, whether written, oral or implied, including the warranty of merchantability and the warranty of fitness for a particular purpose.

Heat Exchanger Extended Warranty

Limited Warranty

Greenheck warrants the stainless steel heat exchanger to be free from defects in material and workmanship for a period of 10 years from the purchase date. Any stainless steel heat exchanger which proves defective during the warranty period will be repaired, or replaced, at Greenheck's sole option when returned to our factory, transportation prepaid.

The warranty does not include labor costs associated with troubleshooting, removal, or installation. Greenheck will not be liable for any consequential, punitive, or incidental damages resulting from use, repair, or operation of any Greenheck product.

This warranty is exclusive, and is in lieu of all other warranties, whether written, oral or implied, including the warranty of merchantability and the warranty of fitness for a particular purpose.

Compressor Extended Warranty

Limited Warranty

Greenheck warrants the refrigerant compressor/compressors to be free from defects in material and workmanship for a period of 5 years from the purchase date. Any compressor which proves defective during the warranty period will be repaired, or replaced, at Greenheck's sole option when returned to our factory, transportation prepaid.

The warranty does not include labor costs associated with troubleshooting, removal, or installation. Greenheck will not be liable for any consequential, punitive, or incidental damages resulting from use, repair, or operation of any Greenheck product.

This warranty is exclusive, and is in lieu of all other warranties, whether written, oral or implied, including the warranty of merchantability and the warranty of fitness for a particular purpose.

Electrofin Coil Coating

Electrofin coil coating carries a standard 1 year warranty and is excluded from any extended unit warranty.

RVE-35-36P-30H

CONSTRUCTION FEATURES AND ACCESSORIES

Unit Overview

Model	Supply (CFM)	Outside Air (CFM)	Recirc (CFM)	Exhaust (CFM)	Heating	Cooling	Electrical V/C/P
RVE-35-36P-30H-7.5	3,200	3,200	0	2,600	Indirect Gas	Packaged DX	208/60/3

Features

- Exterior housing constructed of galvanized steel
- Energy recovery cassette with a desiccant wheel
- Direct-drive backward inclined plenum blowers with factory mounted VFDs
- Ball bearing motors
- Corrosion resistant fasteners
- Internally lined with galvanized steel metal creating a double wall
- Insulated with 2 in. 1.5# R8 density insulation
- Internally mounted control center with motor starters, 24 VAC control transformer(s), control circuit fusing
- Energy Wheel Motor: 1/3 HP

Options and Accessories

- UL\cUL1995
- Frost Control: Modulating Wheel
- Weatherhood: Downturned Hood
- ElectroFin Coil Coating: All Coils
- Outdoor Air Filters - MERV 8, 2-20x25x2
- Exhaust Air Filters - MERV 8, 2-20x25x2
- Supply Filters - 2" Pleated MERV 8, 4-20x20x2
- Roof Curbs - GKD-47.19/142.19-G36"
- Outdoor Air Dampers - Motorized Low Leakage
- Return Dampers - Motorized Low Leakage
- Painted Exterior - Permatector Concrete Gray (RAL 7023)
- Microprocessor Controls
- Supply Fan Controls - Constant Volume (on/off)
- Exhaust Fan Controls - Constant Volume
- Economizer Mode - Temp./Dew Point Control
- Wheel Control - Modulating Wheel
- Room Sensing - Temp. And Dehumid.
- Network Protocol: BACNetMSTP
- Microprocessor Remote Interface w/150' Cord
- Dirty Filter Sensor: Outdoor, Exhaust and Final
- Rotation Sensor
- Phase and Brown Out Protection
- Branch Circuit Fusing
- Vapor Tight Lights
- Unit Disconnect - Mounted By Factory
- * Short-circuit current - 5kA
- * Exhaust Discharge Gravity Backdraft Damper



Note: Weight does NOT include skid/crating and may vary by 15% based on selected options.

Note: Unit is provided with factory mounted and wired disconnect switch.

Note: Electrofin coil coating requires monthly and quarterly coil maintenance to maintain the coil coating. See unit IOM for detailed cleaning procedure and required documentation to maintain the coatings warranty. Failure to follow cleaning recommendations will void the coatings warranty.

Note: Verify that the correct Protocol has been selected before ordering.

SPECIAL DESIGN

- 30" TALL CURB

RVE-35-36P-30H

PERFORMANCE AND SPECIFICATIONS

Description/Arrangement

Model	Qty	Unit Weight (lb)	Outdoor Air Discharge	Outdoor Air Intake	Exhaust Air Discharge	Return Air Intake
RVE-35-36P-30H-7.5	1	2,536	Bottom	End	Side	Bottom

Design Conditions

Elevation (ft)	Summer DB (F)	Summer WB (F)	Winter DB (F)
62	87	74	-10

Air Performance

Type	Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor Qty/Size (hp)	Size (in.)/Type
Supply	3,200	1.5	3.611	2981	2.72	Qty 1 (5)	14/Plenum
ExhaustNormal	2,600	1.5	2.978	2559	1.8	Qty 1 (2)	14/Plenum

Electrical/Motor Specifications

V/C/P	Unit MCA (amps)	Unit MOP (amps)	Enclosure	Supply Motor RPM	Supply Efficiency	Exhaust Motor RPM	Exhaust Efficiency
208/60/3	62.2	80	ODP	3500	PE	1750	PE

Heating/Cooling Specifications

Heating Type	Gas Type	Input (MBH)	Output (MBH)	LAT (F)	Temp. Rise (F)	Furnace Size	Furnace Control
Indirect Gas	Natural	200.0	160.0	80.9	46.3	200	4:1 Modulating

Cooling Type	Total Capacity (MBH)	Sensible Capacity (MBH)	Compressor Quantity	Compressor Type	Condensing Unit By
Packaged DX	92.2	62.4	1	Digital Scroll	Greenheck

Sound Performance in Accordance with AMCA

Fan	Sound Power by Octave Band								Lwa	dBA	Sones
	62.5	125	250	500	1000	2000	4000	8000			
Supply	46	52	70	74	73	74	71	66	79	68	14.0
Exhaust Normal	47	56	72	75	80	77	73	68	83	72	17.0

Unit Pressure Drop (in. wg)

Air Stream	Weatherhood	Damper Section	Filter Section	Cooling Section	Heating Section
Supply	0.089	0.086	0.15	0.331	0.123
Exhaust	0.093	0.105	0.049	N/A	N/A

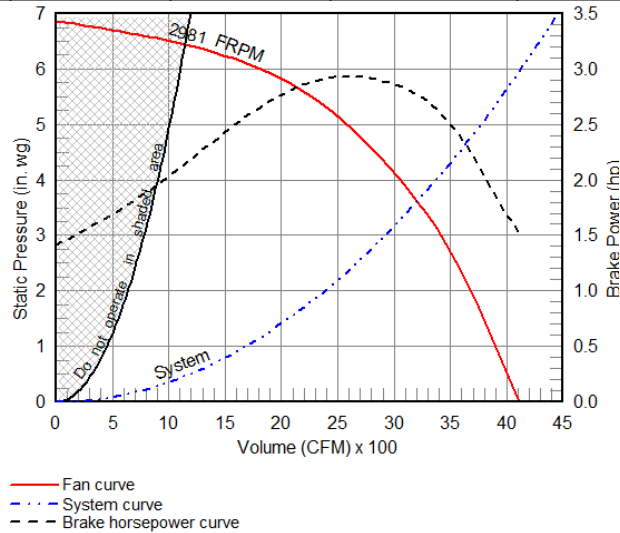
Note: The unit base line performance incorporates the pressure drop of the energy wheel.

Note: Filter pressure drop is based off of clean filters.

RVE-35-36P-30H FAN CURVES

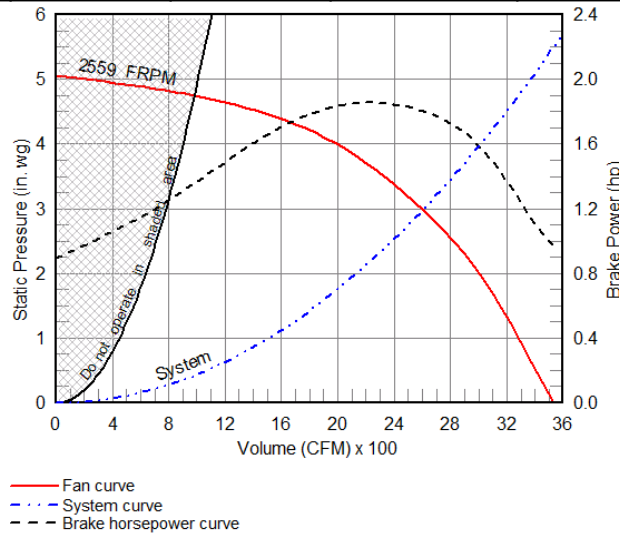
Supply Fan Performance

Volume (CFM)	Supply SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor Size (hp)	Size (in.)/ Type	Fan Quantity
3,200	1.5	3.611	2981	2.718	5	14/Plenum	1

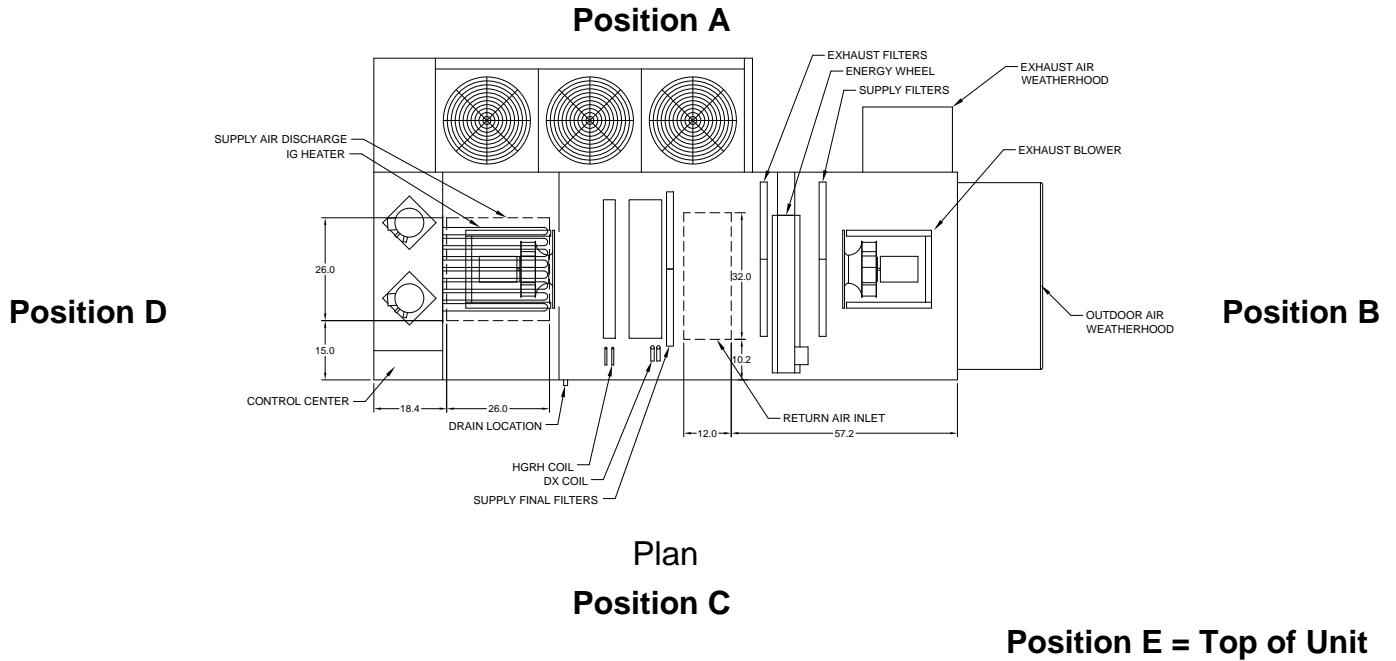


Exhaust Fan Performance - Normal Operation

Volume (CFM)	Exhaust SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor Size (hp)	Size (in.)/ Type	Fan Quantity
2,600	1.5	2.978	2559	1.804	2	14/Plenum	1



RVE-35-36P-30H RADIATED SOUND



RVE-35: Supply Air Flow Nominal, Largest Tonnage Condensing Section Available, PDX units only

Free Field Plane	Octave Band (Sound Power Lw)								Lw	LwA
	1	2	3	4	5	6	7	8		
A	81	82	85	82	80	75	72	64	89	85
B	75	74	75	73	70	64	60	55	81	75
C	70	73	72	72	68	65	60	55	79	74
D	73	74	77	76	72	68	66	59	82	77
E	98	90	85	81	79	76	71	63	99	85

AMCA 320-07 - Laboratory Methods of Sound Testing of Fans Using Sound Intensity

Tests conducted in accordance with this standard.

Free field measurement plane created 1 foot from unit on all sides and top.

Sound Intensity measured in Watts/m².

Sound data converted to Sound Power (Lw) for the chart above.

A-Weighted Sound Power was determined using AMCA Standard 301-90 Clause 9.1.

RVE-35-36P-30H

COOLING PERFORMANCE

Packaged DX Cooling

Nominal Tonnage	Total Capacity (MBH)	Sensible Capacity (MBH)	Refrigerant Type	Compressor Type	Compressor Quantity	Condensing Unit
7.5	92.2	62.4	R-410a	Digital Scroll	1	By Greenheck

Hot Gas Reheat

Type	Capacity (MBH)	LAT (F)
Modulating	46.9	76.1

Condensing Unit Details

The RVE will come equipped with the following components:

- Hermetic scroll type compressors
- Compressors mounted in a compartment to be serviceable without affecting airflow and on neoprene vibration isolation to minimize vibration transmission and noise
- Crankcase heater on compressor
- Thermal expansion valve for refrigerant flow control
- Variable capacity scroll compressor
- Multiple condensing fans to allow fan cycling for head pressure control
- Liquid-Line filter drier
- High pressure manual reset cutout
- Low-pressure auto-reset cutout
- Time delay relays for compressor protection
- Service/charging valves
- Moisture-indicating sight glass
- Direct drive, statically and dynamically balanced condensing fans, AMCA Licensed for Air Performance
- Condensing coils with 5/16" copper tubes mechanically bonded to aluminum fins

Packaged DX Coil Details

Face Area (ft ²):	6.8
Rows Deep (Evap Coil):	3
Fins Per Inch:	10
Face Velocity (ft/min):	470
Entering Dry Bulb (F):	80.5
Entering Wet Bulb (F):	68.2
Leaving Dry Bulb (F):	62.5
Leaving Wet Bulb (F):	59.6
Cool Coil SP (in. wg):	0.331
Refrigerant Velocity (ft/min):	16
Suction Temp. (F):	43.0
Refrigerant:	R-410a
Evaporator Cap. (MBH):	92.2
Cond. Section EER:	13.1
Ambient Condenser Temp. (F):	87.0

Compressor and Condenser Details

Compressor 1 RLA (amps):	24
Compressor 1 LRA (amps):	187
Compressor 2 RLA (amps):	0
Compressor 2 LRA (amps):	0
Condenser Fan QTY:	2
Condenser Motor Size (hp):	0.5
Condenser Motor FLA:	2.7

Note: Digital Scroll is on lead circuit only.

RVE-35-36P-30H

HEATING PERFORMANCE

Indirect Gas Heating

Heating Type	Gas Type	Input (MBH)	Output (MBH)	LAT (F)	Temp. Rise (F)	Furnace Control
Indirect Gas	Natural	200.0	160.0	80.9	46.3	4:1 Modulating

Indirect Gas Unit Details

The RVE will come equipped with the following:

- Power venting
- ETL listed to ANSI standard Z83.8 and CGA 2.6
- High Thermal efficiency
- Direct spark ignition
- Tubular heat exchanger
- 409 Stainless Steel heat exchange tubes
- 3/4" Gas Connection
- At least 6 in. wg of natural gas pressure (14 in. wg for LP) is required at the units gas connection in order to achieve maximum performance

Note: Discharge temperature assumes proper energy wheel operation and maintenance.

RVE-35-36P-30H SUMMER PERFORMANCE

OUTDOOR AIR		EXHAUST AIR	
Entering Air		Leaving Air	
Dry Bulb (F)	87.0	Dry Bulb (F)	80.5
Wet Bulb (F)	74.0	Wet Bulb (F)	68.2
Specific Humidity (gr/lb)	106	Specific Humidity (gr/lb)	84
Enthalpy (BTU/lb)	37.6	Enthalpy (BTU/lb)	32.5
Leaving Air		Entering Air	
Dry Bulb (F)	83.0	Dry Bulb (F)	75.0
Wet Bulb (F)	70.7	Rel. Humidity (%)	50
Specific Humidity (gr/lb)	93	Specific Humidity (gr/lb)	65
Enthalpy (BTU/lb)	34.5	Enthalpy (BTU/lb)	28.2

Design Air Flow Conditions

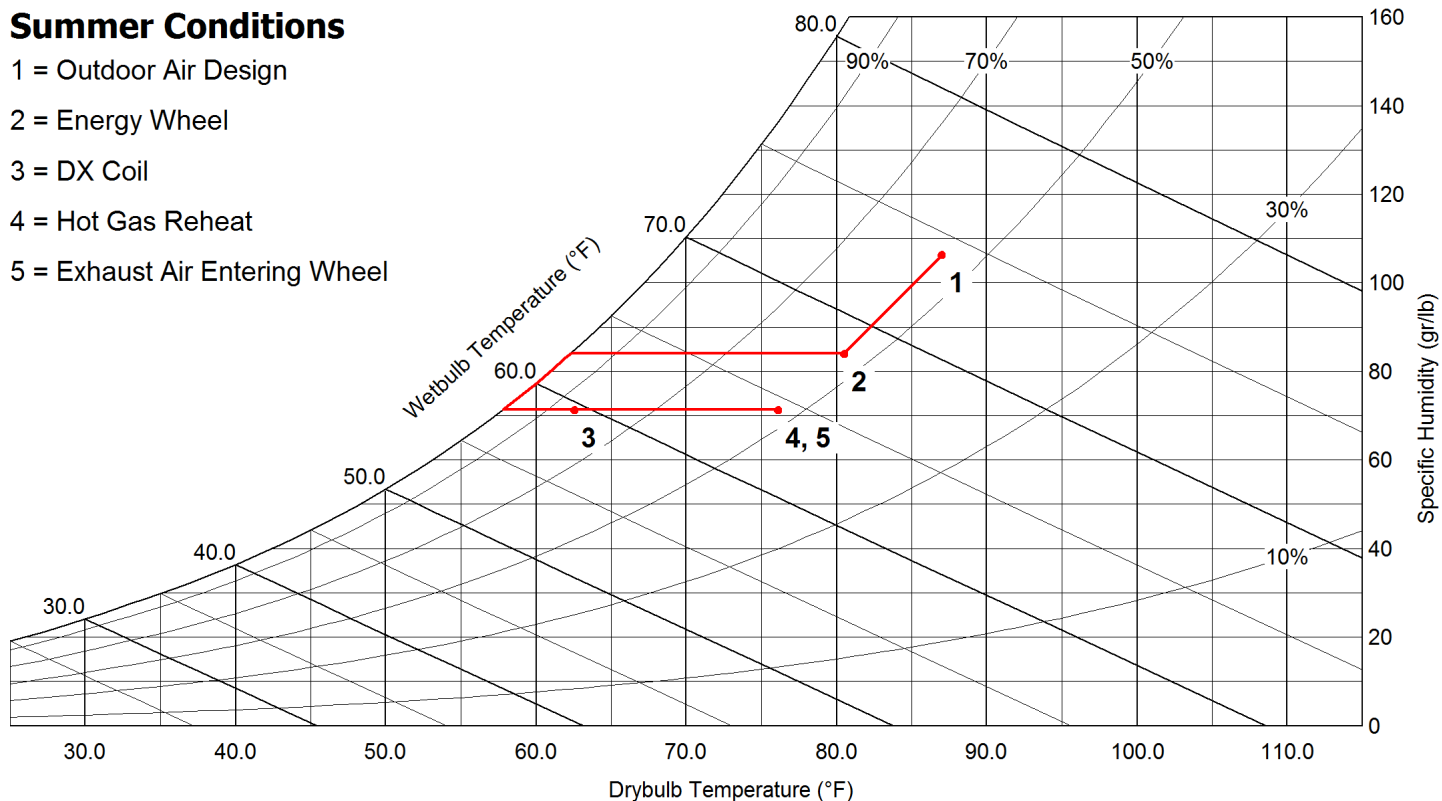
Model	Outdoor Air Volume (CFM)	Outdoor Air Wheel Effectiveness	Exhaust Air Volume (CFM)	Exhaust Air Wheel Effectiveness
RVE-35-36P-30H	3,200	54.4	2,600	67

Outdoor Air Cooling Reduction

	(BTU/h)	(tons)
OA Load w/o Energy Recovery	190,080.0	15.84
OA Load with Energy Recovery	116,640.0	9.72
Equipment Reduction tons		6.12

Summer Conditions

- 1 = Outdoor Air Design
- 2 = Energy Wheel
- 3 = DX Coil
- 4 = Hot Gas Reheat
- 5 = Exhaust Air Entering Wheel



RVE-35-36P-30H WINTER PERFORMANCE

OUTDOOR AIR		EXHAUST AIR	
Entering Air		Leaving Air	
Dry Bulb (F)	-10.0	Dry Bulb (F)	34.6
Wet Bulb (F)	-10.9	Wet Bulb (F)	32.4
Specific Humidity (gr/lb)	2	Specific Humidity (gr/lb)	23
Enthalpy (BTU/lb)	-2.2	Enthalpy (BTU/lb)	11.9
Leaving Air		Entering Air	
Dry Bulb (F)	17.1	Dry Bulb (F)	72.0
Wet Bulb (F)	17.1	Rel. Humidity (%)	35
Specific Humidity (gr/lb)	13	Specific Humidity (gr/lb)	41
Enthalpy (BTU/lb)	6.3	Enthalpy (BTU/lb)	23.7

Design Air Flow Conditions

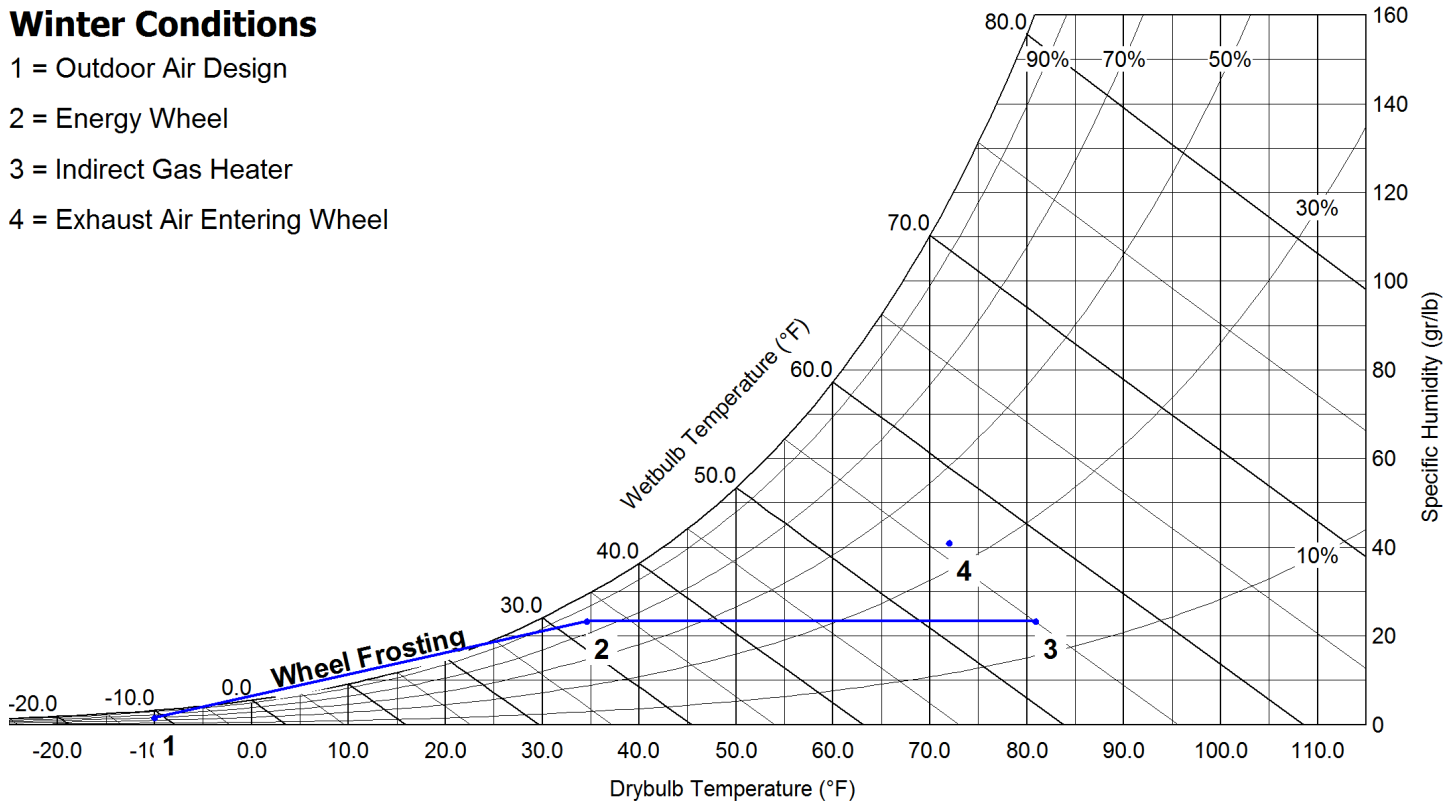
Model	Outdoor Air Volume (CFM)	Outdoor Air Wheel Effectiveness	Exhaust Air Volume (CFM)	Exhaust Air Wheel Effectiveness
RVE-35-36P-30H	3,200	54.4	2,600	67

Outdoor Air Heating Reduction

	(BTU/h)
OA Load w/o Energy Recovery	283,392.0
OA Load with Energy Recovery	129,254.0
BTU/h Reduction	154,138.0

Winter Conditions

- 1 = Outdoor Air Design
- 2 = Energy Wheel
- 3 = Indirect Gas Heater
- 4 = Exhaust Air Entering Wheel



RVE-35-36P-30H

AHRI PERFORMANCE DATA

Type	Tilt Angle (Heating/ Cooling):	Pressure Drop: (in. wg)	Nominal Airflow: (CFM)
WHEEL	N / A Deg	0.85	2,600



Wheel Leakage Ratings

	Pressure Differential	Exhaust Air Transfer Ratio	Outdoor Air Correction Factor	Purge Angle/ Setting
Test #1	0.0	2.1	1.03	0
Test #2	0.5	0.9	1.05	1
Test #3	1.0	0.6	1.07	1
Optional Additional Test(s):				

Thermal Effectiveness Ratings at 0.0 in. Differential Pressure

	Sensible	Latent	Total
100% Airflow Heating Condition:	65	61	64
75% Airflow Heating Condition:	72	66	70
100% Airflow Cooling Condition:	65	61	63
75% Airflow Cooling Condition:	72	66	69

Net Thermal Effectiveness Ratings at 0.0 in. Differential Pressure

	Net Sensible	Net Latent	Net Total
100% Airflow Heating Condition:	65	61	64
75% Airflow Heating Condition:	72	66	70
100% Airflow Cooling Condition:	65	61	63
75% Airflow Cooling Condition:	72	66	69

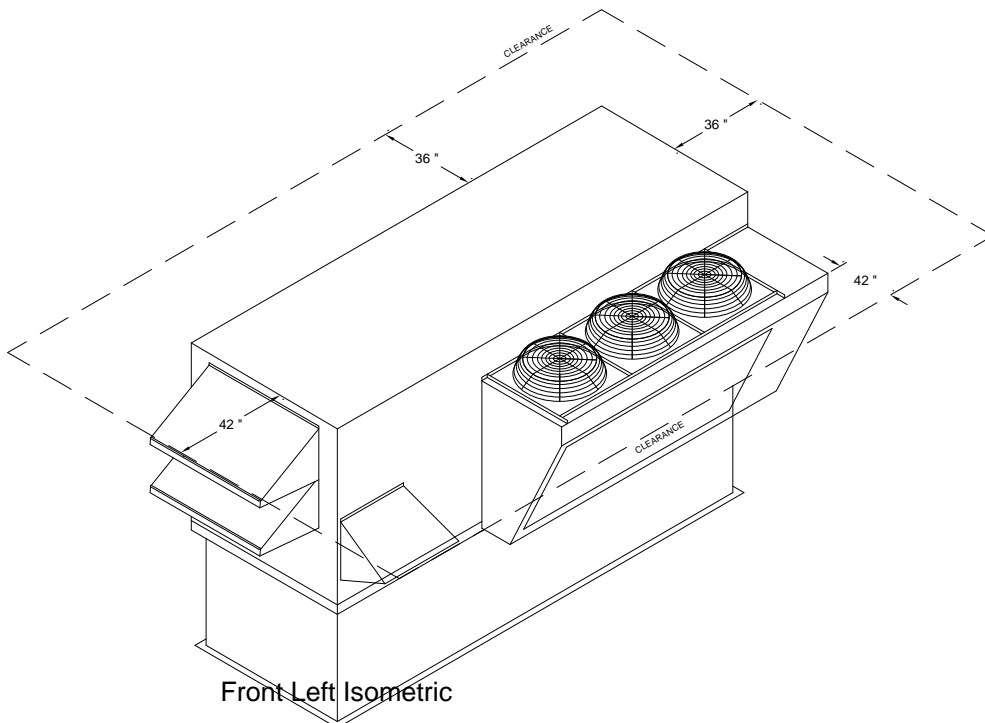
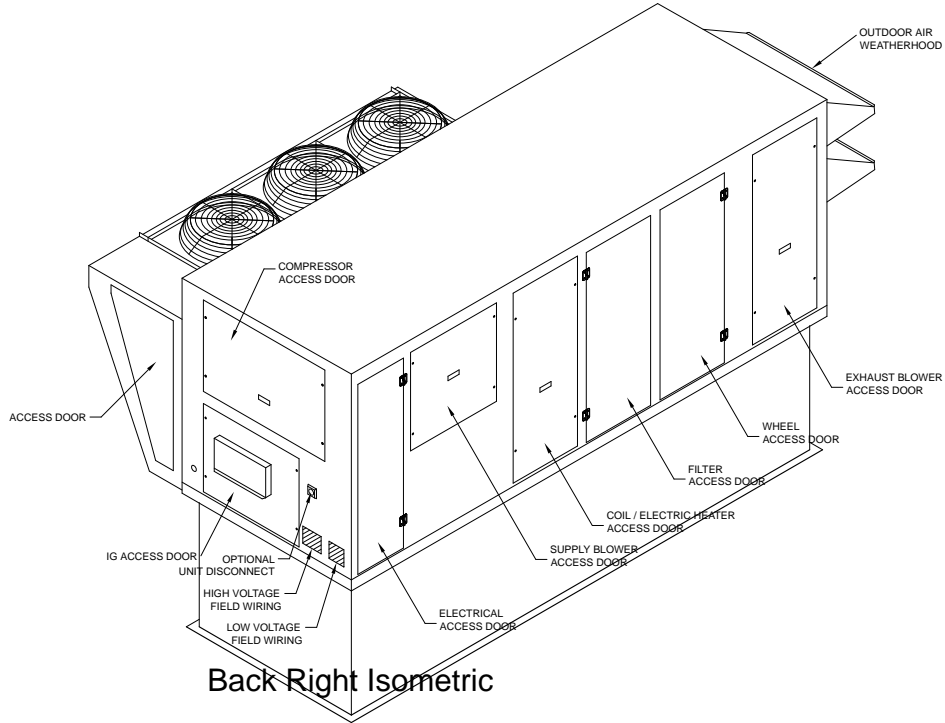
Trademark: Greenheck

Model Number: RVE-35-36P-30H

<p>Energy Recovery component certified in accordance with ARI Standard 1060-2001. Actual performance in packaged equipment may vary.</p>
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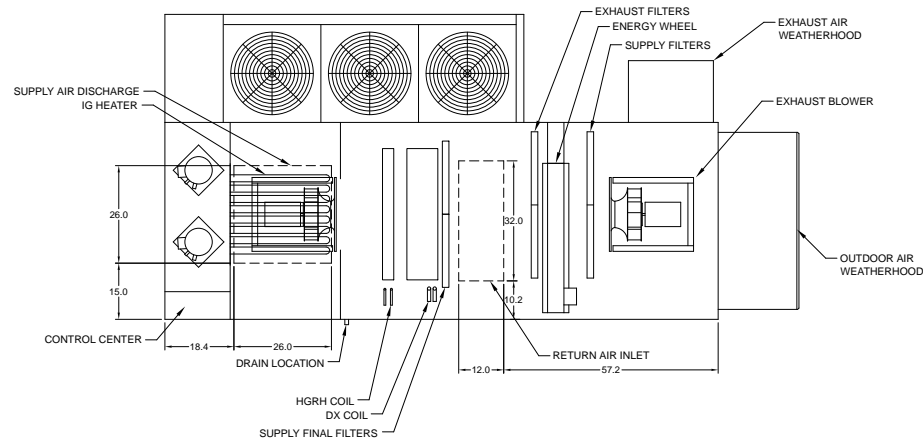
RVE-35-36P-30H

ISOMETRIC DRAWINGS

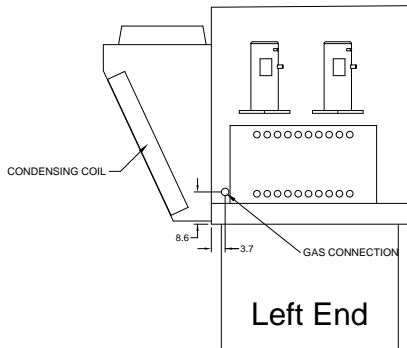


RVE-35-36P-30H

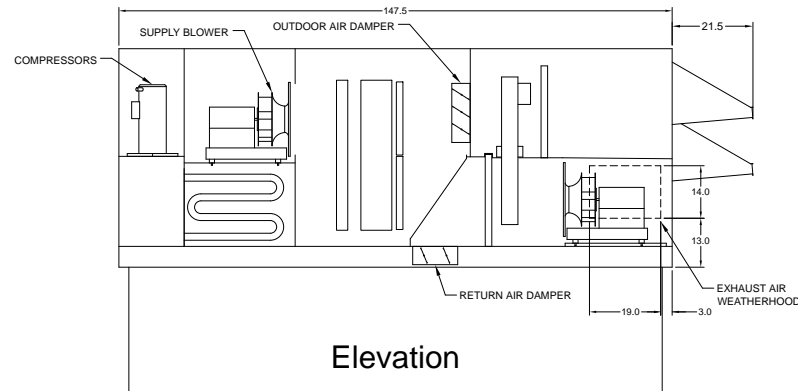
OVERVIEW DRAWINGS



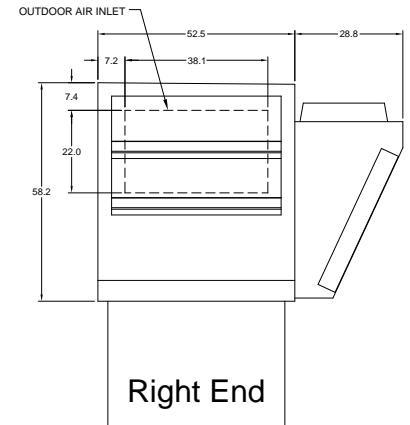
Plan



Left End



Elevation

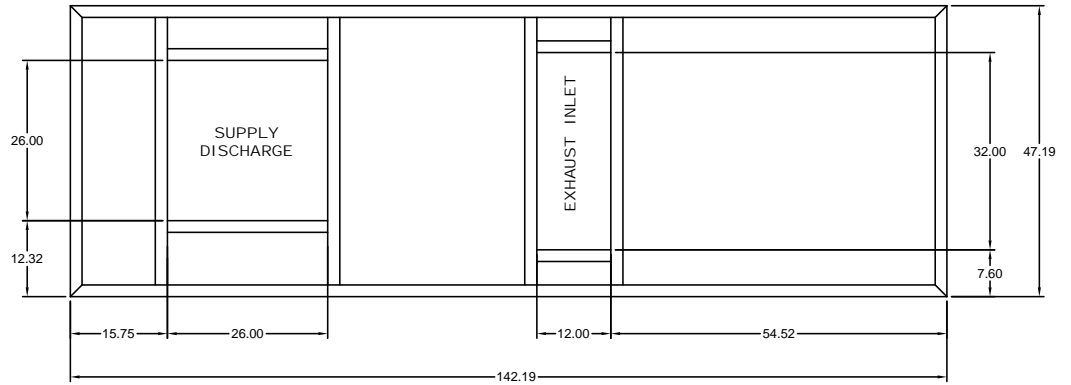


Right End

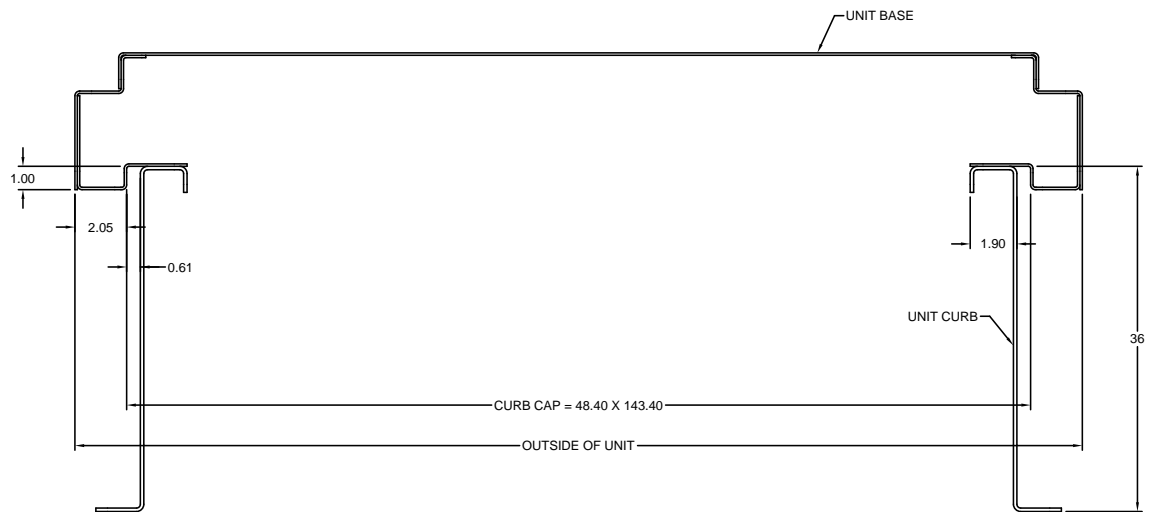
RVE-35-36P-30H

FOOTPRINT DRAWINGS

**Top View
of Curb**



**Cross-Section
View of Unit
on Curb**



NOTES: All dimensions shown are in units of inches
If unit is selected with side or end discharge/return, there will not be bottom connections supplied with the curb.

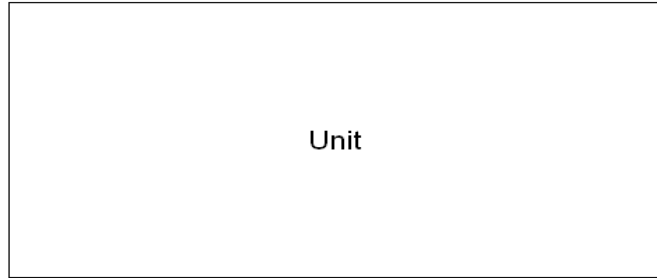
Curb Weight: 474 lb

RVE-35-36P-30H

Corner Weights

855 lb

666 lb



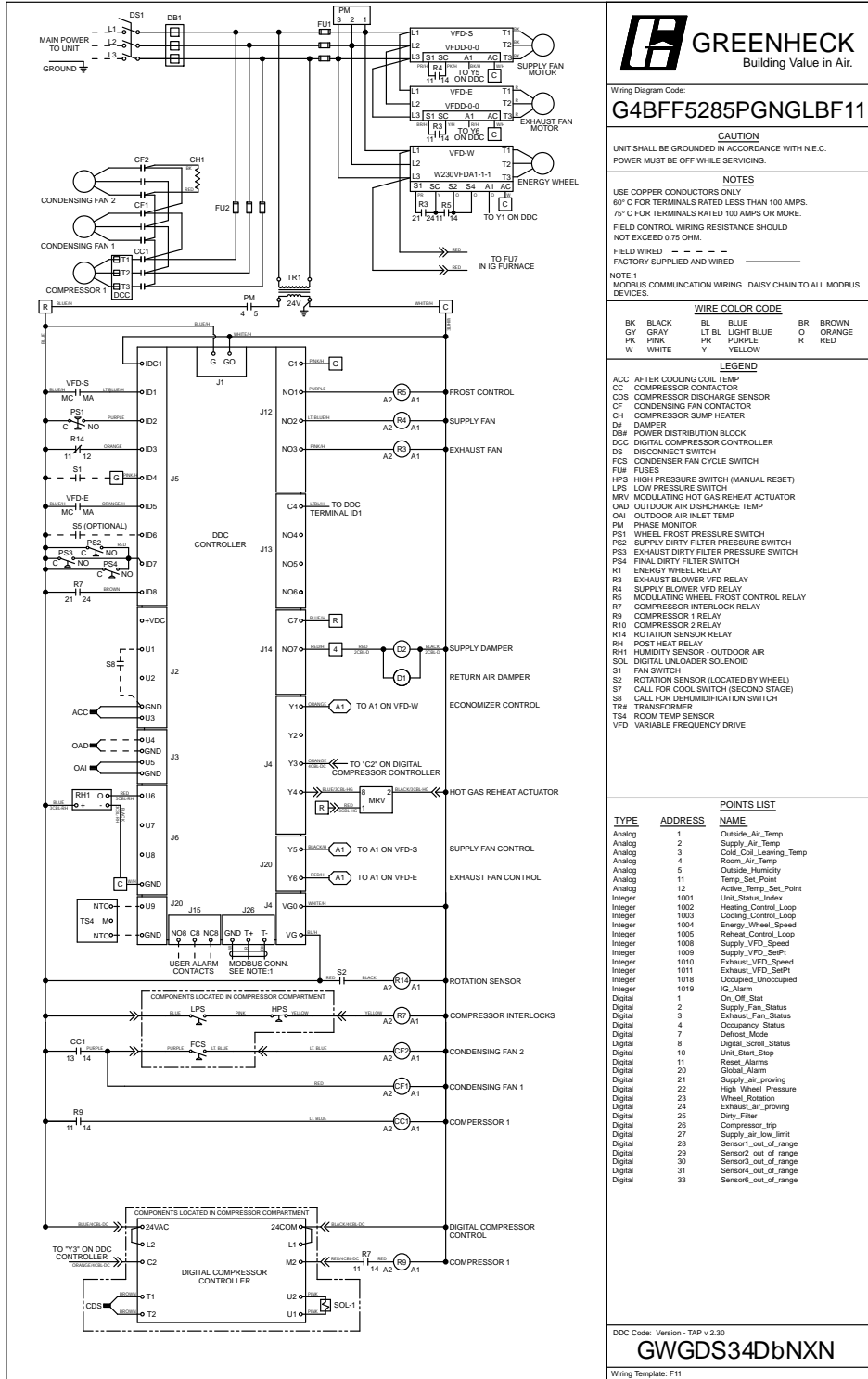
571 lb

445 lb

Note: Estimated corner weights are shown looking down on unit and the outside air intake will be on the right. Weights are applied at the base of the unit. Images not drawn to scale.

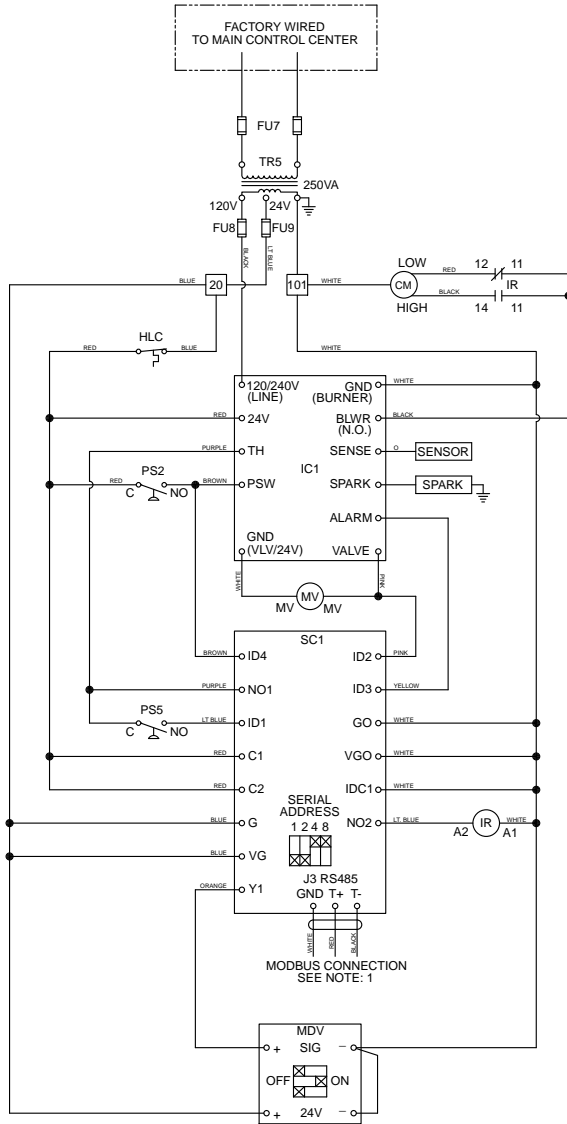
RVE-35-36P-30H

WIRING DIAGRAM



RVE-35-36P-30H

INDIRECT GAS WIRING DIAGRAM FURNACE 1 - 4:1 MODULATING



Wiring Diagram Code:
G4K51P1RX0000S05

CAUTION
UNIT SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C.
POWER MUST BE OFF WHILE SERVICING.

NOTES
USE COPPER CONDUCTORS ONLY
60° C FOR TERMINALS RATED LESS THAN 100 AMPS.
75° C FOR TERMINALS RATED 100 AMPS OR MORE.
FIELD CONTROL WIRING RESISTANCE SHOULD
NOT EXCEED 0.75 OHM.
FIELD WIRED - - - - -
FACTORY SUPPLIED AND WIRED _____

NOTE: 1
MODBUS COMMUNICATION WIRING. DAISY CHAIN TO
ALL MODBUS DEVICES.

WIRE COLOR CODE

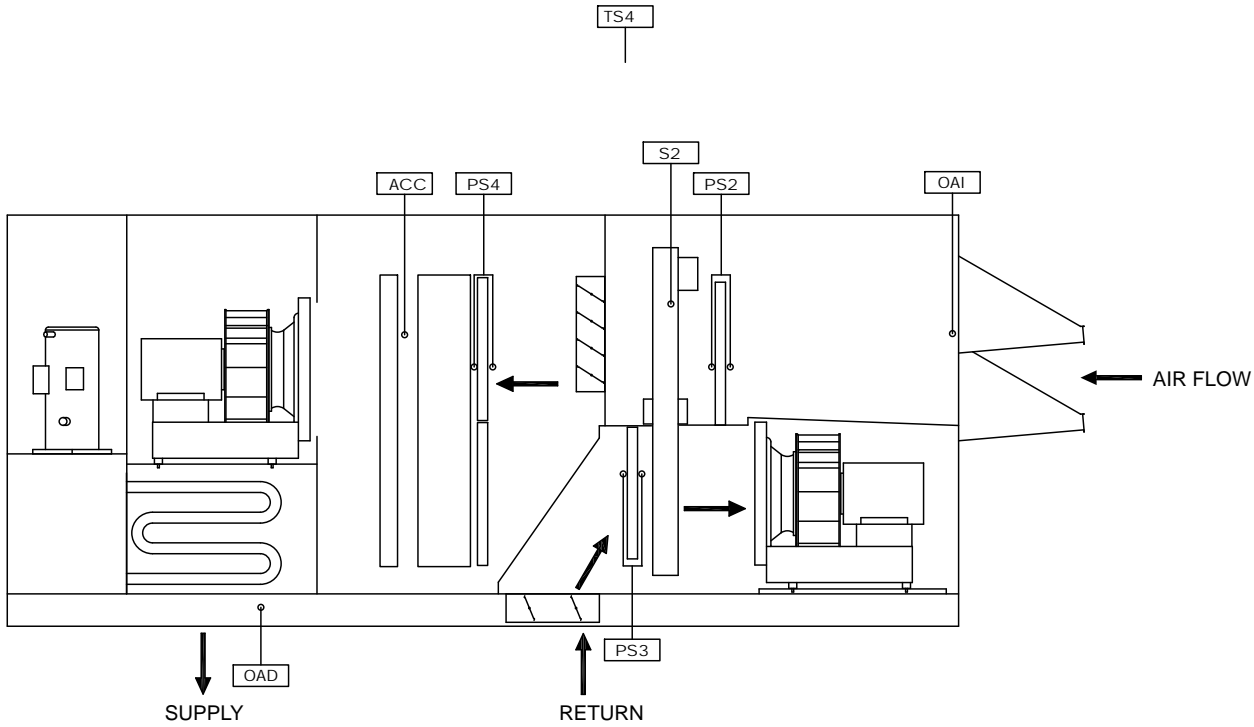
BK	BLACK	BL	BLUE	BR	BROWN
GY	GRAY	LT BL	LIGHT BLUE	O	ORANGE
PK	PINK	PR	PURPLE	R	RED
W	WHITE	Y	YELLOW		

LEGEND

CM	COMBUSTION BLOWER MOTOR
FU#	FUSE(S)
HLC	HIGH TEMPERATURE LIMIT CONTROL
IC1	IGNITION CONTROL
IPC	INPUT CONVERTER
IR	INDUCTION RELAY
MDV	MODULATING VALVE
MV	MAIN GAS VALVE
PS2	COMBUSTION AIR PROVING SWITCH
PS5	HIGH SPEED PRESSURE SWITCH
SC1	STAGE CONTROLLER
TR#	TRANSFORMER(S)

20 101

RVE-35-36P-30H MONITORING POINTS



Item	Description	Type
OAI	Outdoor Air Intake Temperature Sensor	10K Ohm NTC (Carel)
OAD	Outdoor Air Discharge Temperature Sensor	10K Ohm NTC (Carel)
ACC	After Cooling Coil Temperature Sensor	10K Ohm NTC (Carel)
PS3	Exhaust Dirty Filter Pressure Switch	Contact
PS4	Supply Dirty Filter Pressure Switch	Contact
TS4	*Room Temp Sensor	10K Ohm NTC (Carel)

*Shipped loose sensor.

Greenheck Network Interface v2.3 Modbus/BACnet Points List

Type	BACnet Device Instance: 77000 (default) Analog = AV, Integer = AV, Digital = BV			Modbus-RTU/TCP/IP Network Address: 1	Read (R) Write (W)	Description	Included	
	Instance	Name	Units	Register				
Analog	1	Outside_Air_Temp	degree F	40002	R/W	Outdoor Air Temp (###.# F)	X	
Analog	2	Supply_Air_Temp	degree F	40003	R	Supply Air Temp (###.# F)	X	
Analog	3	Cold_Coil_Leaving_Temp	degree F	40004	R	Cold Coil Temp (###.# F)	X	
Analog	4	Room_Air_Temp	degree F	40005	R/W	Room Air Temp (if installed) (###.# F)	X	
Analog	5	Outside_Humidity	percent	40006	R/W	Outdoor Relative Humidity (###.##%)	X	
Analog	6	Room_Humidity	percent	40007	R/W	Room Relative Humidity (###.##%)	X	
Analog	11	Temp_Set_Point	degree F	40012	R/W	Temperature SetPt (read/write) (###.# F) (See Controller IOM)	X	
Analog	12	Active_Temp_Set_Point	degree F	40013	R	Active Temperature Set Point (###.# F)	X	
Analog	13	Dehumid_Set_Point	percent	40014	R/W	Dehumidification SetPt (read/write) (##.# F, ##.##%) (See Controller IOM)	X	
Integer	1001	Unit_Status_Index	no-units	45003	R	Note 1 (See below)	X	
Integer	1002	Heating_Control_Loop	percent	45004	R	Heater output (0-100%)	X	
Integer	1003	Cooling_Control_Loop	percent	45005	R	Coolingr output (0-100%)	X	
Integer	1004	Energy_Wheel_Speed	percent	45006	R/W	Energy recovery wheel speed (0-100%)	X	
Integer	1005	Reheat_Control_Loop	percent	45007	R	Hot gas reheat output (0-100%)	X	
Integer	1006	CO2_Level	ppm	45008	R	CO2 Levels (ppm)	X	
Integer	1007	CO2_Set_Point	ppm	45009	R/W	CO2 Set Point (ppm)	X	
Integer	1008	Supply_VFD_Speed	percent	45010	R	Supply Fan VFD Speed (0-100%)	X	
Integer	1009	Supply_VFD_SetPt	percent	45011	R/W	Supply Fan VFD Set Point (0-100%)	X	
Integer	1010	Exhaust_VFD_Speed	percent	45012	R	Exhaust Fan VFD Speed (0-100%)	X	
Integer	1011	Exhaust_VFD_SetPt	percent	45013	R/W	Exhaust Fan VFD Set Point (0-100%)	X	
Integer	1012	OA_Damper_Position	percent	45014	R	Outdoor Damper Position (0-100%)	X	
Integer	1013	OA_Damper_SetPt	percent	45015	R/W	Minimum OA Damper Position (0-100%)	X	
Integer	1014	Duct_Pressure	no-units	45016	R	Supply Duct Pressure (#.##"WC)	X	
Integer	1015	Duct_Pressure_SetPt	no-units	45017	R/W	Supply Duct Pressure Set Point (value/100=#.##"WC)	X	
Integer	1016	Building_Pressure	no-units	45018	R	Building Pressure (value/1000 = 0.###"WC)	X	
Integer	1017	Building_Pressure_SetPt	no-units	45019	R/W	Building Pressure Set Point (value/1000 = 0.###"WC)	X	
Integer	1018	Occupied_Unoccupied	no-units	45020	R/W	Occupied/unoccupied command (0=occupied, 1=unoccupied, 2=MMU)	X	
Integer	1019	IG_Alarm	no-units	45021	R	IG Alarm - For alarm detail	X	
			Inactive_Text	Active_Text				
Digital	1	On_Off_Stat	Off	On	10002	R	Unit ON/OFF Status	X
Digital	2	Supply_Fan_Status	Off	On	10003	R	Supply fan status	X
Digital	3	Exhaust_Fan_Status	Off	On	10004	R	Exhaust fan status	X
Digital	4	Occupancy_Status	Unoccupied	Unoccupied	10005	R	Occupancy Status (0=Unoccupied 1=Occupied)	X
Digital	5	Stage_Compressor1_Status	Off	On	10006	R	Stage Compressor #1 status	X
Digital	6	Stage_Compressor2_Status	Off	On	10007	R	Stage Compressor #2 status	X
Digital	7	Defrost_Mode	Off	On	10008	R	Defrost mode status	X
Digital	8	Digital_Scroll_Status	Off	On	10009	R	Digital Scroll status	X
Digital	10	Unit_Start_Stop	Stop	Start	10011	R/W	Unit start/stop command	X
Digital	11	Reset_Alarm	Don't Reset	Reset Alarms	10012	R/W	Reset alarms command	X
Digital	13	Stage_Compressor3_Status	Off	On	10014	R	Stage Compressor #3 status	X
Digital	14	Stage_Compressor4_Status	Off	On	10015	R	Stage Compressor #4 status	X
Digital	20	Global_Alarm	Off	Alarm	10021	R	Global alarm indication (active when there is at least one alarm)	X
Digital	21	Supply_air_proving	Off	Alarm	10022	R	Supply airflow proving alarm	X
Digital	22	High_Wheel_Pressure	Off	Alarm	10023	R	High wheel pressure (high airflow or dirty wheel)	X
Digital	23	Wheel_Rotation	Off	Alarm	10024	R	Wheel rotation alarm	X
Digital	24	Exhaust_air_proving	Off	Alarm	10025	R	Exhaust airflow proving alarm	X
Digital	25	Dirty_filter	Off	Alarm	10026	R	Dirty filter alarm	X
Digital	26	Compressor_trip	Off	Alarm	10027	R	Compressor trip alarm	X
Digital	27	Supply_air_low_limit	Off	Alarm	10028	R	Supply air temperature low limit alarm	X
Digital	28	Sensor1_out_of_range	Off	Alarm	10029	R	Sensor#1 out of range (outside air temperature)	X
Digital	29	Sensor2_out_of_range	Off	Alarm	10030	R	Sensor#2 out of range (supply air temperature)	X
Digital	30	Sensor3_out_of_range	Off	Alarm	10031	R	Sensor#3 out of range (cold coil leaving air temperature)	X
Digital	31	Sensor4_out_of_range	Off	Alarm	10032	R	Sensor#4 out of range (room temperature)	X
Digital	32	Sensor5_out_of_range	Off	Alarm	10033	R	Sensor#5 out of range (room humidity)	X
Digital	33	Sensor6_out_of_range	Off	Alarm	10034	R	Sensor#6 out of range (outdoor humidity)	X
Digital	34	Sensor7_out_of_range	Off	Alarm	10035	R	Sensor#7 out of range (building pressure sensor)	X
Digital	35	Sensor8_out_of_range	Off	Alarm	10036	R	Sensor#8 out of range (duct pressure sensor)	X
Digital	36	Sensor9_out_of_range	Off	Alarm	10037	R	Sensor#9 out of range (CO2 sensor)	X
Digital	37	Sensor10_out_of_range	Off	Alarm	10038	R	Sensor#10 out of range (auxiliary temp)	X

Note: Unit status index: 0=system off; 1=initial delay; 2=opening dampers; 3=exhaust fan starting; 4=supply fan starting; 5=system on; 6=defrost mode active; 7=sys on-economizer; 8=sys on-heating; 9=sys on-cooling; 10=sys on-econ & cooling; 11=sys on-dehumidifying; 12=sys on-dehumidifying & reheat; 13=unocc-unit off; 14=unocc-unit on; 15=unocc-heating; 16=unocc-cooling; 17=unocc-dehumid; 18=unocc-dehumid & reheat; 19=Manual override; 20=remote off; 21=Alarm

Microprocessor Controller Sequence of Operation

MICROPROCESSOR CONTROLLER: Controller shall be provided with required sensors and programming for rooftop unit. Controller shall be factory programmed, mounted and tested. Controller shall have a LCD readout for changing set points and monitoring unit operation.

UNIT START COMMAND:

- Factory mounted and wired outdoor air and recirculated air damper actuators are powered.
- Optional return air damper actuator is powered.
- Exhaust fan starts after a 10 second (adjustable) delay.
- Supply fan starts 5 seconds (adjustable) after exhaust fan.
- Tempering options and energy wheel option to function as described below.

UNIT STOP COMMAND (OR DE-ENERGIZED):

- Supply fan, exhaust fan, energy wheel and tempering options de-energized.
- Outdoor air damper actuator is spring return close, and the recirculated air damper actuator is spring open.
- Optional return air damper is spring return close.

OCCUPIED/UNOCCUPIED MODES: Shall be based on a 7-day time clock internal to the controller. The schedule shall be set by the end user. When a user initiates an override input, the DDC would switch from unoccupied to occupied mode. The DDC will return to the scheduled occupied/unoccupied mode after the override time has expired (60 min, adjustable). If internal time clock is disabled, a remote contact or a BMS can control the occupied/unoccupied mode.

Occupied Mode:

1. Supply fan ON.
2. Exhaust fan ON.
3. Energy wheel control per below.
4. Heating per below.
5. Cooling per below.
6. Damper control per below.

Unoccupied Mode (Unit Off): Default setting when there is no recirculation damper or room temperature sensor.

1. Supply fan OFF
2. Exhaust fan OFF
3. Tempering OFF
4. Outdoor air damper closed
5. Return damper closed
6. Recirculation damper open

SUPPLY BLOWER SEQUENCE: The supply blower is provided with a factory mounted variable frequency drive. The supply blower speed can be controlled with the following sequences.

Constant Volume (on/off): The supply blower is provided with a factory mounted VFD, and is intended to operate at a constant speed (adjustable set point in controller) during operation. This speed needs to be set during test and balance of the unit.

EXHAUST BLOWER SEQUENCE: The exhaust blower is provided with a factory mounted variable frequency drive. The exhaust blower speed can be controlled with the following sequences.

- **Constant Volume (on/off):** The exhaust blower is provided with a factory mounted VFD, and is intended to operate at a constant speed (adjustable set point in controller) during operation. This speed needs to be set during test and balance of the unit.

COOLING SEQUENCE: The cooling is controlled to maintain the supply temperature set point. The mechanical cooling will be locked out when the outside air is $< 55^{\circ}\text{F} - 2^{\circ}\text{F}$ hysteresis, adjustable.

Packaged DX Cooling (Digital Scroll): DDC will provide a modulating signal for cooling. From 10-50%, the digital scroll will be controlled to maintain the discharge temperature. From 50-100%, the second stage will be on in combination with the digital scroll compressor to maintain the discharge temperature.

DEHUMIDIFICATION SEQUENCE: The cooling is controlled to maintain the cooling-coil set point. The dehumidification sequence will be locked out when the OA is $< 10^{\circ}\text{F}$ above the cold-coil set point. The mechanical cooling will be locked out when the outside air is $< 55^{\circ}\text{F} - 2^{\circ}\text{F}$ hysteresis, adjustable.

Packaged DX Cooling (Digital Scroll): DDC will provide a modulating signal for dehumidification. From 10-50%, the digital scroll will be controlled to maintain the after-coil temperature. From 50-100%, the second stage will be on in combination with the digital scroll compressor to maintain the after-coil temperature.

REHEAT SEQUENCE: While the unit is in dehumidification mode, the outdoor air can be reheated via Primary Heating Source, On/Off Hot Gas Reheat or Modulating Hot Gas Reheat for Space Neutral Applications.

Primary Heating Source: The main heating source is enabled to reheat the air to meet the supply temperature set point (adj.).

Modulating Hot Gas Reheat: The controller will modulate the hot gas reheat valve with a 0-10 V signal to maintain the supply temperature set point (adj.).

HEATING SEQUENCE: The heating is controlled to maintain the supply temperature set point. The heating will be locked out when the outside air is $> 70^{\circ}\text{F} + 2^{\circ}\text{F}$ hysteresis, adjustable.

Indirect Gas Furnace: DDC will operate the indirect gas furnace to maintain the supply temperature set point (adj.).

SUPPLY SET POINT RESET FUNCTION. Either a room temperature sensor or the outdoor air reset function (if no room temperature sensor wired to controller) will determine the supply temperature of the unit.

BUILDING FREEZE PROTECTION: If the supply air temperature drops below 35°F (adjustable), the DDC will de-energize the unit and activate the alarm output after a preset time delay.

OPTIONAL FROST CONTROL: The DDC controller will output a signal when frosting is occurring which is determined by a temperature set point ($\text{OA} < 5\text{F} - 2\text{F}$ hysteresis, adjustable) and a pressure setpoint.

Modulate Wheel: When frosting is occurring, the VFD modulates the wheel down to a slow rotational speed to defrost wheel. Once the pressure drop decreases below the set point, frost mode is de-energized and the wheel returns to full speed.

ECONOMIZER SEQUENCE: When the application requires cooling, and the outdoor air conditions are suitable for free cooling, the microprocessor can modulate the outdoor air and recirculated air dampers to maintain the discharge temperature set point. If the outdoor air damper modulates to full open and the discharge temperature is not being met, the controller will start to increase the call for cooling to meet the discharge temperature and this could engage the mechanical cooling.

Dew Point/Dry Bulb: The economizer will be locked out when: the outside air is $< 40^{\circ}\text{F}$ DB ($- 2^{\circ}\text{F}$ hysteresis, adjustable) or $> 75^{\circ}\text{F}$ DB ($- 2^{\circ}\text{F}$ hysteresis, adjustable) or $> 55^{\circ}\text{F}$ dew point ($- 2^{\circ}\text{F}$ hysteresis, adjustable); the unit is operating in dehumidification mode; or there is a call for heating.

ENERGY WHEEL SEQUENCE

Modulate Wheel (100% OA only): When economizer mode is enabled and there is a signal for cooling, the wheel VFD modulates wheel speed to maintain the discharge temperature set point.

By Factory: The unit will be provided with energy wheel bypass dampers for both the outdoor air and return airstreams. During normal operation, the dampers shall remain closed to allow full operation of the energy wheel. During economizer sequences, the bypass dampers will be open to alleviate pressure drop through the wheel, while allowing more outdoor air to be used for economizer cooling.

ALARMS INDICATION: DDC shall have one digital output for remote indication of an alarm condition. Possible alarms include:

Dirty Filter Alarm: If the outside air or return air filter differential pressure rises above the switch set point (adj.), the differential pressure switch shall signal the DDC to activate an alarm.

Dirty Wheel Alarm: DDC monitors pressure across the wheel and sends an alarm in the case of an increased pressure drop.

Wheel Rotation Alarm: Monitors wheel rotation, and sends a signal to controller (after a 15 second time delay with no rotation) that signals the DDC to activate an alarm.

Supply and Exhaust Air Alarm: DDC monitors proving switch on each blower and displays an alarm in case of blower failure.

DX Alarm: DDC monitors the refrigerant pressure and shuts off refrigeration circuit in the case of high or low refrigerant pressure.

Temperature Sensor Alarm: DDC will send an alarm in the case of a failed air temperature sensor.

Pressure Sensor Alarm: DDC will send an alarm in the case of a failed pressure sensor.

Humidity Sensor Alarm: DDC will send an alarm in the case of a failed humidity sensor.

Optional Accessories: The following accessories can be ordered with the unit to expand the functionality or usability of the controller.

Room Temperature and Dehumidistat: Factory provided, field mounted that is intended to monitor both the temperature and humidity level in the space. Instead of adjusting the supply discharge temperature based on what the outside temperature is (standard operation), the controller will adjust the discharge temperature to try and meet a desired room temperature. If the humidity gets too high the after-cooling coil set point will be lowered to the minimum set point to further "dry" the supply air entering the space. Once the room dehumidistat is satisfied, the cold coil set point will return to the maximum setting.

BMS Interfacing: A BMS serial card is provided with the controller for field interfacing with a building management system. Each card is sent out with the default parameters, and the controls contractor must change the appropriate addresses to match the BMS settings.

DDC Remote Interface: An interface panel that can be wired to the main controller for remote adjustments of set points.

Phase and Brown Out Protection: Factory mounted and wired component which monitors the main power coming into the unit. If a phase drops out or exceeds the limitations, or if the incoming voltage exceeds the acceptable range, the component will turn off the unit to help protect the electrical systems.

Unit Warranty

Limited Warranty

Greenheck warrants this equipment to be free from defects in material and workmanship for a period of 1 year(s) from the purchase date. The energy recovery wheel is warranted to be free from defects in material and workmanship for a period of five years from the purchase date. Any component which proves defective during the warranty period will be repaired, or replaced, at Greenheck's sole option when returned to our factory, transportation prepaid.

The warranty does not include labor costs associated with troubleshooting, removal, or installation. Greenheck will not be liable for any consequential, punitive, or incidental damages resulting from use, repair, or operation of any Greenheck product.

This warranty is exclusive, and is in lieu of all other warranties, whether written, oral or implied, including the warranty of merchantability and the warranty of fitness for a particular purpose.

Compressor Extended Warranty

Limited Warranty

Greenheck warrants the refrigerant compressor/compressors to be free from defects in material and workmanship for a period of 5 years from the purchase date. Any compressor which proves defective during the warranty period will be repaired, or replaced, at Greenheck's sole option when returned to our factory, transportation prepaid.

The warranty does not include labor costs associated with troubleshooting, removal, or installation. Greenheck will not be liable for any consequential, punitive, or incidental damages resulting from use, repair, or operation of any Greenheck product.

This warranty is exclusive, and is in lieu of all other warranties, whether written, oral or implied, including the warranty of merchantability and the warranty of fitness for a particular purpose.

Electrofin Coil Coating

Electrofin coil coating carries a standard 1 year warranty and is excluded from any extended unit warranty.