



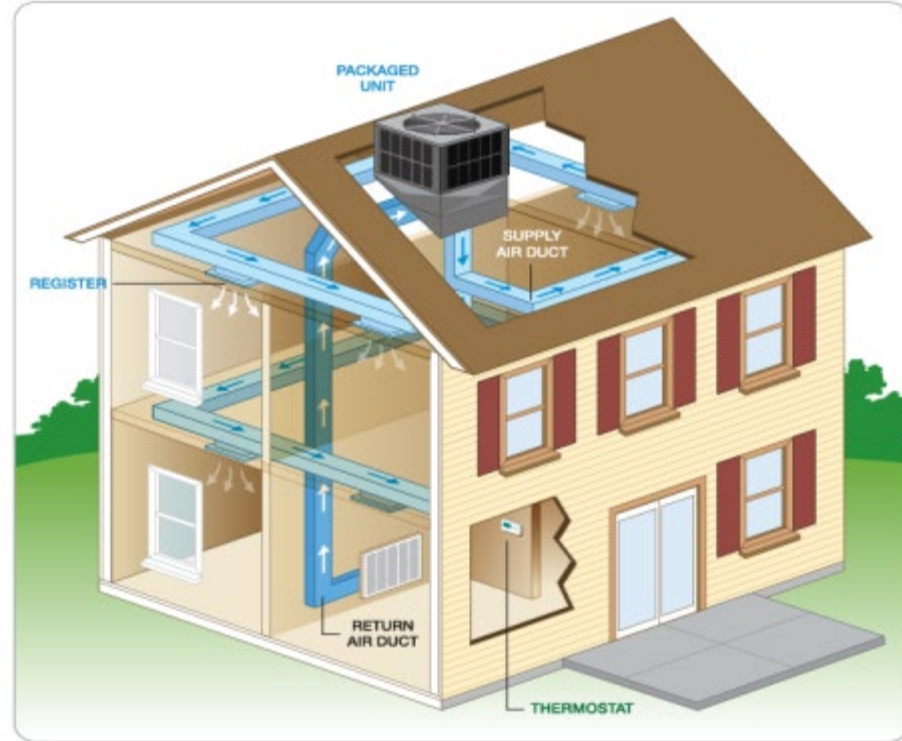
18SEER2
3 and 5 ton Inverter Rooftop

Rooftop Application

ComfortStar®



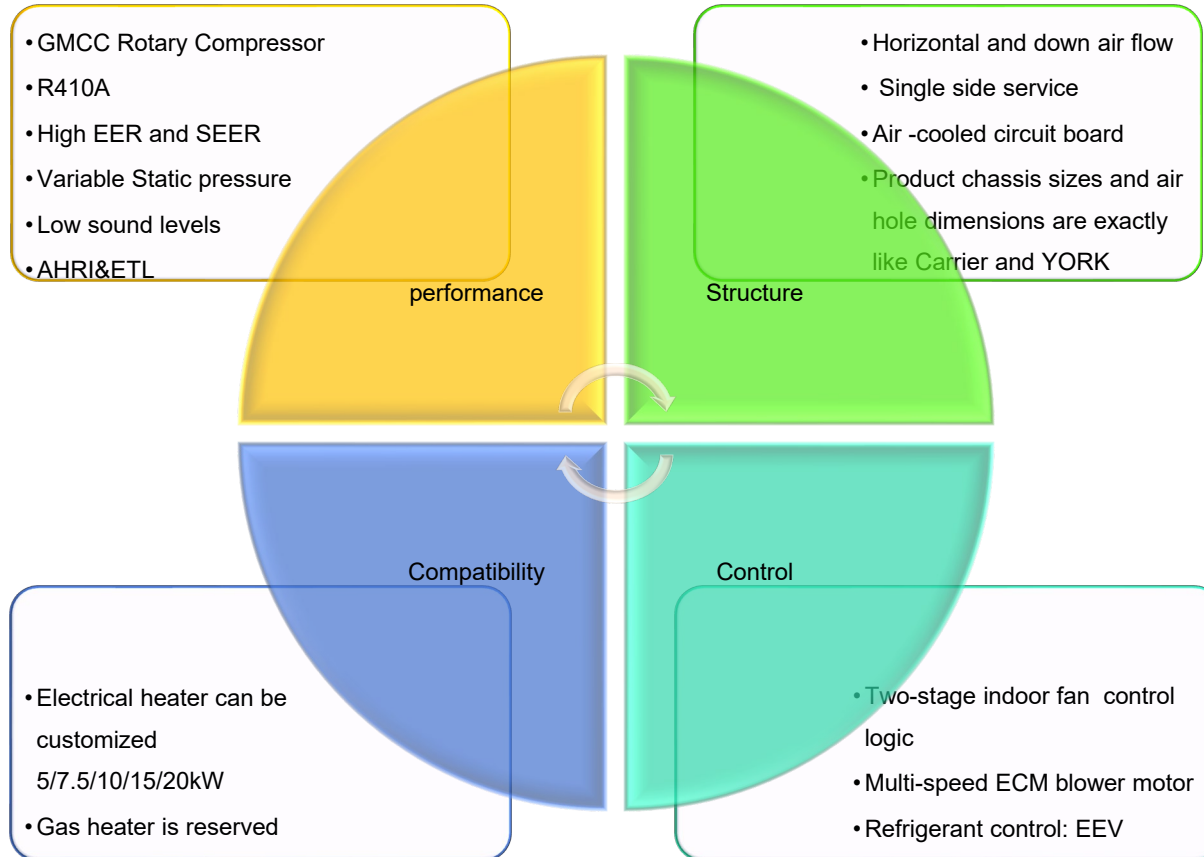
Horizontal Application



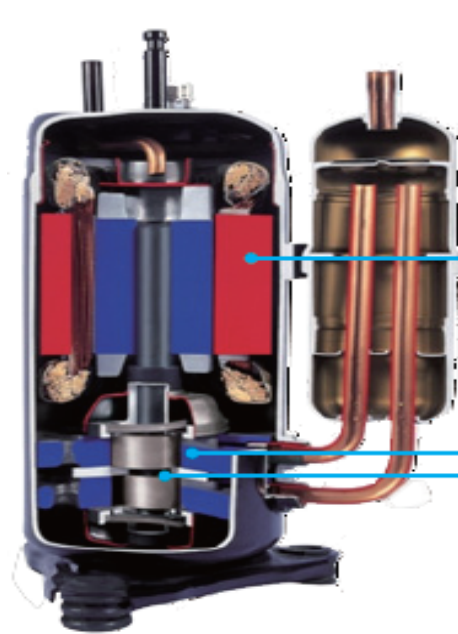
Down flow Application

Features overview

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GMCC High Efficiency Rotary Compressor



Compressor
(Twin Rotary) structure

Highly Efficient DC Motor:

- Creative motor core design
- High density neodymium magnet
- Concentrated type stator
- Wider operating frequency range

Better balance and Extremely Low Vibration:

- Twin eccentric cams
- 2 balance weights

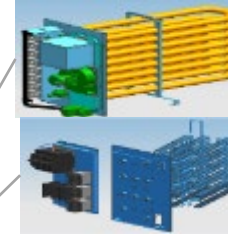
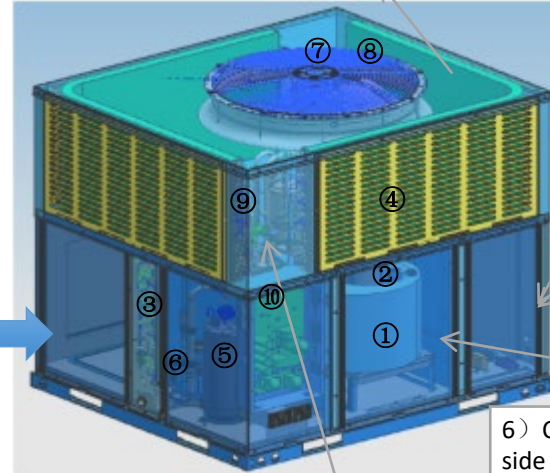
Highly Stable Moving Parts:

- Optimal material matching rollers and vanes
- Optimize compressor drive technology
- Highly robust bearings
- Compact structure

Detailed Features

ComfortStar®

5) Large outdoor fin with diameter of 650mm, 1.5dB decrease compared with main competitors in same rotate speed.



4) Modularization design, Gas module and EH can be installed in field

6) Comp, PCB, blower ,EH, Gas module are designed in one side , all can be reached in one side. Very easy service

1) Capacity: 57000Btu/h SEER ≥19, EER ≥12.5; HSPF ≥8.5; Beyond the standard of Energy star (best level in USA:SEER=16,EER=12.5)

2) Two speed blower, switch automatically(none communication between indoor and outdoor, newest tech among competitors)

3) All DC inverted, whole new air-cool tech for boards, 26% performance improvement on cooling in high temp, and increase of reliability at the same time

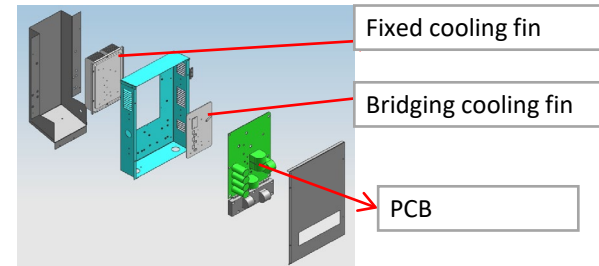
8) Sheet metal Self compression of Glass fiber cotton in inner duct. Simple operate for producing and impossible for cotton to drop



9) Comp and EXV—self learning , control more precisely, more comfort ,more efficiency

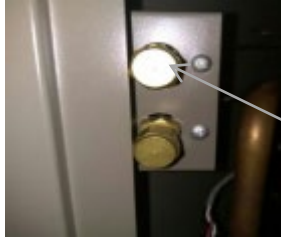
①	Indoor blower	⑥	EXV
②	Indoor motor	⑦	Outdoor motor
③	EVP	⑧	Outdoor Fin
④	COD	⑨	RV
⑤	Comp	⑩	PCB

7) Bridging tech for cooling fin of PCB boards, much more convenient for boards replacing

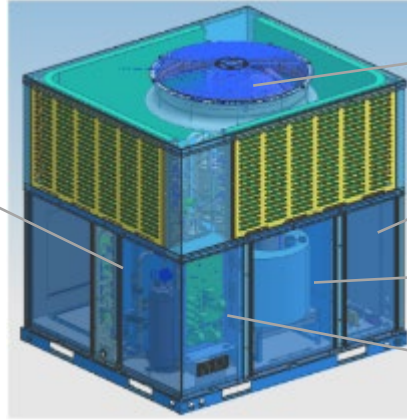


Detailed Features

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Convenient pressure measure access.

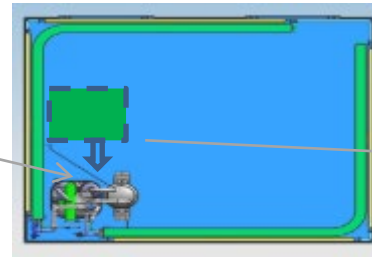
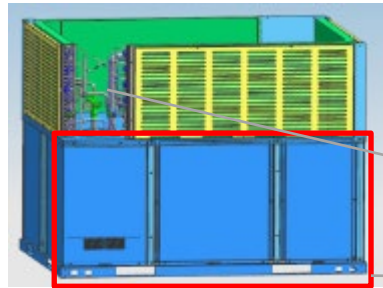
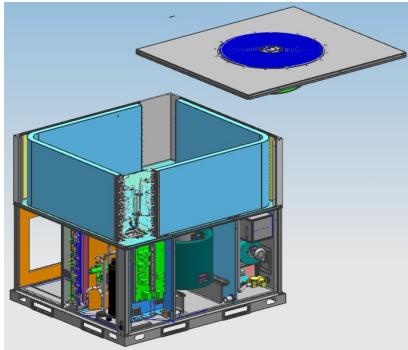


DC fan motor with 10 speed

EH and Gas module can be switched by your will

Pathway design for indoor blower, easy tear down

Hinge design for boards, can be rotate out for reaching compressor



RV is moved to side from center, we can reach to RV without moving tectum

One side service access for all major parts

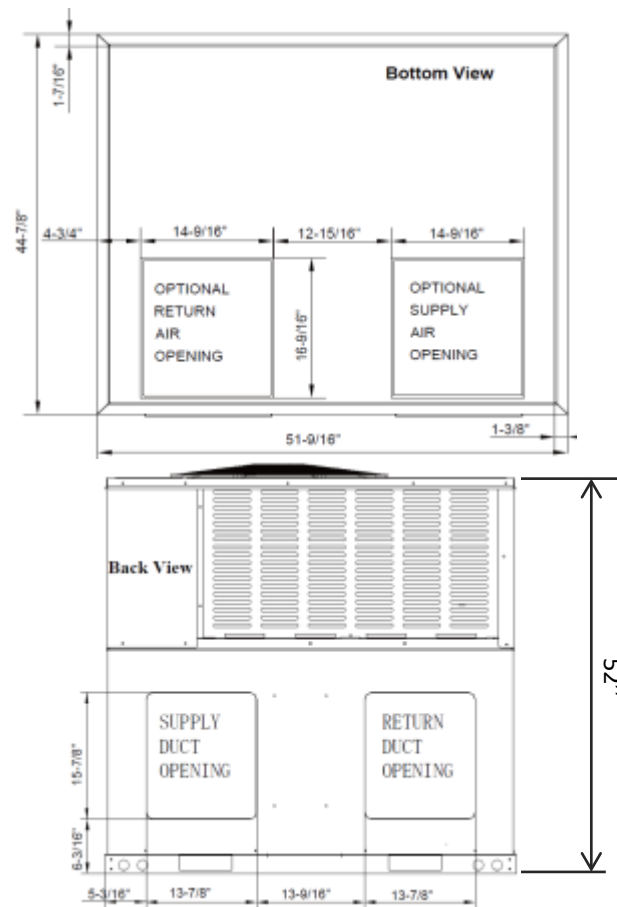
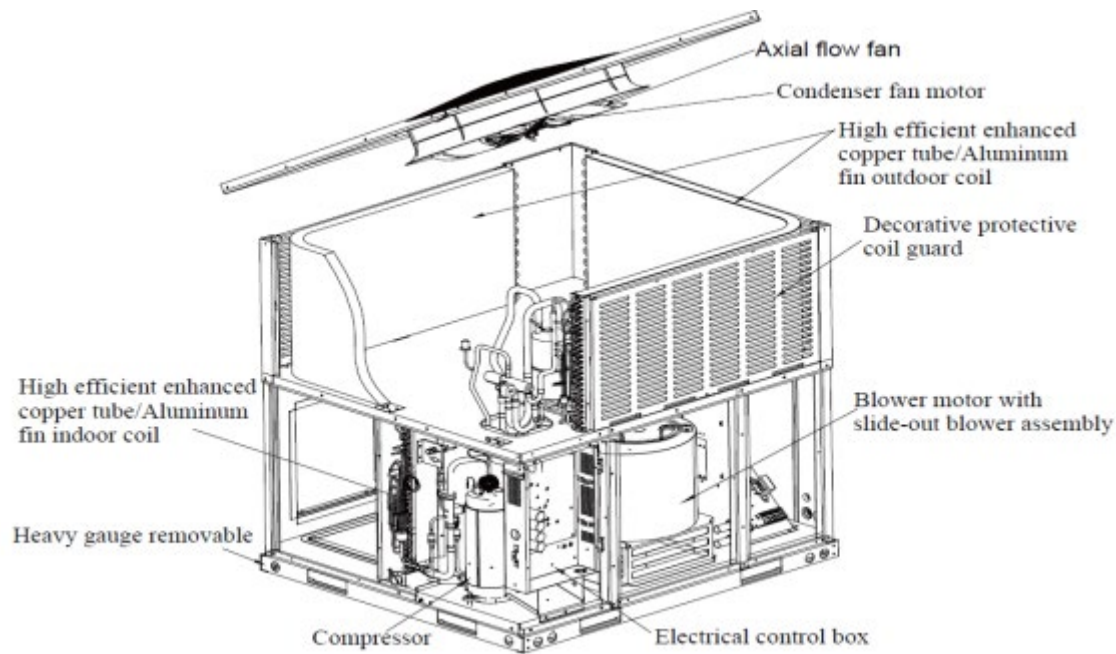
Size comparison

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Brand	Tons	W	D	H	Model No.#	EER	SEER	Comments
Carrier	2	48-3/16"	32-5/8"	51-3/4	50VR-C24	12	15	2 Chassis with 4 heights
	2.5	48-3/16"	32-5/8"	51-3/4	50VR-C30	12	15	
	3	48-1/4	44-3/16	44-3/4	50VG-A36	12	15	
	3.5	48-1/4	44-3/16	50-3/4	50VG-A42	12	15	
	4	48-1/4	44-3/16	48-3/4	50VG-A48	12.5	15.5	
	5	48-1/4	44-3/16	54-3/4	50VG-A60	12	15	
YORK	2	51-1/4	35-3/4	47	PHE6A2421	12.5	16	2 Chassis with 4 heights
	2.5	51-1/4	35-3/4	47	PHE6A3021	12.5	16	
	3	51-1/4	45-3/4	49	PHE6B3621	12.5	16	
	3.5	51-1/4	45-3/4	49	PHE6B4221	12.5	16	
	4	51-1/4	45-3/4	53	PHE6B4821	12.5	16	
	5	51-1/4	45-3/4	55	PHE6B6021	12.5	16	
Trane-16 SEER	2	45	52	48	4WCZ6024*	12	16	3 Chassis with 2 heights With fork hole will be increased 120mm
	3	51	43	38	4WCZ6036*	12.2	16	
	4	61	46	42	4WCZ6048*	12	16	
	5	61	46	42	4WCZ6060*	11.5	15	
Trane-15SEER	2	50-3/4"	47	36	4WCY5024*	13	15	2 Chassis with 4 heights With fork hole will be increased 120mm
	2.5	50-3/4"	47	37-1/4"	4WCY5030*	12	15	
	3	50-3/4"	47	37-1/4"	4WCY5036*	12	15	
	3.5	50-3/4"	46	41-1/4"	4WCY5042*	12	15	
	4	60-1/4"	46	41-1/4"	4WCY5048*	12	15	
	5	60-1/4"	46	41-1/4"	4WCY5060*	11.5	15	
Goodman	2	47	51	34-3/4	GPH1624M41A*	12.5	16	1 Chassis with 2 heights
	2.5	47	51	34-3/4	GPH1630M41A*	12	15.5	
	3	47	51	34-3/4	GPH1636M41A*	12	16	
	3.5	47	51	34-3/4	GPH1642M41A*	12	16	
	4	47	51	42-1/4	GPH1648M41A*	12	16	
	5	47	51	42-1/4	GPH1660M41A*	12	16	
ComfortStar	2-3Ton	51-9/16	35-3/4"	48-5/8"	N/A			2 Chassis with 2 heights
	4-5Ton	51-9/16	44-7/8	52	N/A			
Rheem	2	59	33	29 1/8	RQRMA024JK	13	16	Horizontal Only
	2.5	59	33	37 1/8"	RQRMA030JK	13	16	
	3	59	33	37 1/8"	RQRMA036JK	13	16	
	3.5	59	33	37 1/8"	RQRMA042JK	13	16	
	4	59	33	37 1/8"	RQRMA048JK	13	16	
	5	59	33	37 1/8"	RQRMA060JK	12	15	

Structure and Dimension

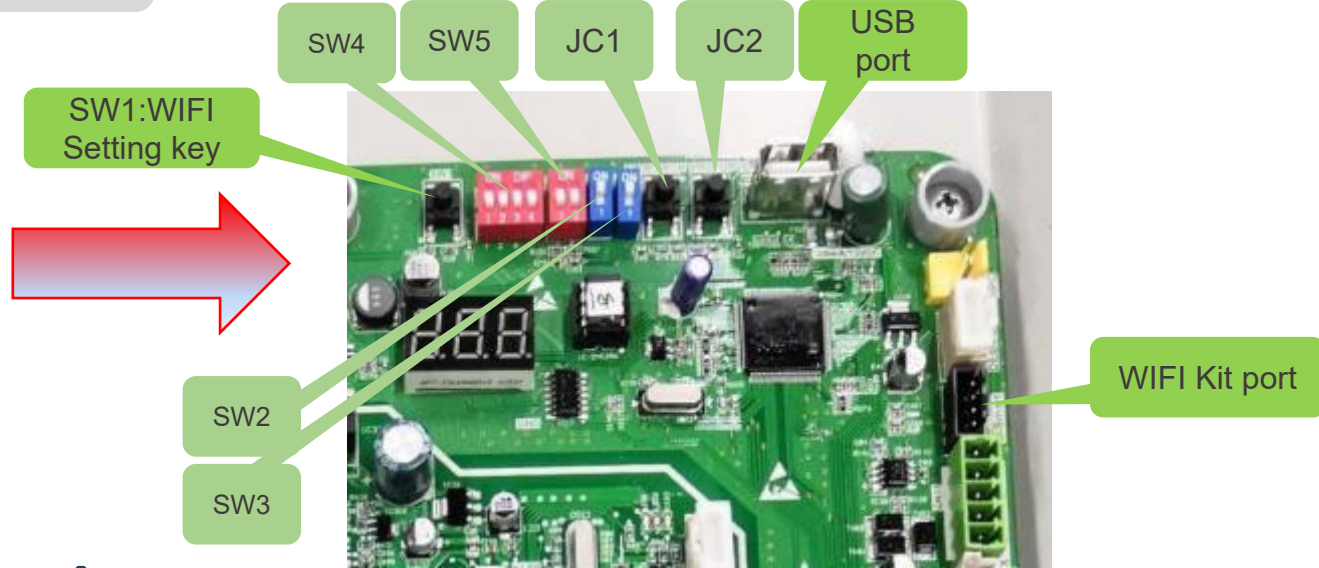
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5Ton UNIT	SUPPLY AIR Duct		RETURN AIR Duct	
	LENGTH (IN)	WIDTH (IN)	LENGTH (IN)	WIDTH (IN)
HORIZONTAL	15-15/16"	13-15/16"	15-15/16"	13-15/16"
DOWN FLOW	16-9/16"	14-9/16"	16-9/16"	14-9/16"

Electrical Parts

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- SW1 + port for WIFI kit connect and setting
- SW2+SW3 button for check data/force mode/testing mode/manual defrost.
- SW4-1 + JC1 + JC2 for model setting
- SW4-2/3/4 for capacity requirement setting
- SW5 for defrost setting

Switch	Position	Function
SW1	For wifi settings	
SW2&3	For check data/force mode/testing mode/manual defrost	
SW4-1	ON	Program For rooftop package
	OFF	Program For IDS
SW4-2	Not used	
SW4-3	ON	Adaptive capacity output disabled
	OFF	Adaptive capacity output enabled
SW4-4	ON	Accelerated cooling/heating
	OFF	Normally cooling/heating
SW5-1	ON	Operating time is reduced by 10%
	OFF	Normal
SW5-2	ON	Defrosting extended for 60 seconds
	OFF	Normal
JC1	ON	Heat pump
	OFF	Cooling only
JC2	ON	For 3/5ton Capacity(default setting)
	OFF	For 2/4ton Capacity

Defrost Control Logic

- ▶ The Demand Defrost Control (DDC) monitors the ODU coil temperature using thermistor (T3). A second thermistor (T4) monitors outdoor ambient temperature. Based on these parameters, as well as accumulative run time and high pressure, the DDC calculates proper initiation of defrost.
- ▶ Any one of the three conditions is required to enter defrost:
 1. The calculated temperature difference between the outdoor temperature (T4) and the coil temperature (T3) is called Delta T. After Delta T is achieved and continues for 3 minutes.
 - $T4 \geq 39^{\circ}\text{F}$, Delta T = 18°F
 - $T4 \geq 30^{\circ}\text{F}$, Delta T = 16°F
 - $T4 \geq 19^{\circ}\text{F}$, Delta T = 14°F
 - When $T4 < 19^{\circ}\text{F}$, $T3 < 9^{\circ}\text{F}$, accumulative compressor run time ≥ 80 minutes.
 2. After “Minimum Run Time” (MRT) is achieved. MRT is based on outdoor ambient temperature (T4), for example:
 - MRT is 4 hours when: $T4 < 23^{\circ}\text{F}$
 - MRT is 2 hours when: $23^{\circ}\text{F} \leq T4 < 42^{\circ}\text{F}$
 3. After the high pressure saturation temperature drops below 82°F for 20 minutes.

- ▶ Defrost will terminate once outdoor coil temperature (T3) reaches 64°F for a period of 1 minute or defrost time has exceeded 8 minutes.
- ▶ Defrost Termination Settings (SW5) offers different defrost termination options for enhanced defrost for different geographical and outdoor conditions.

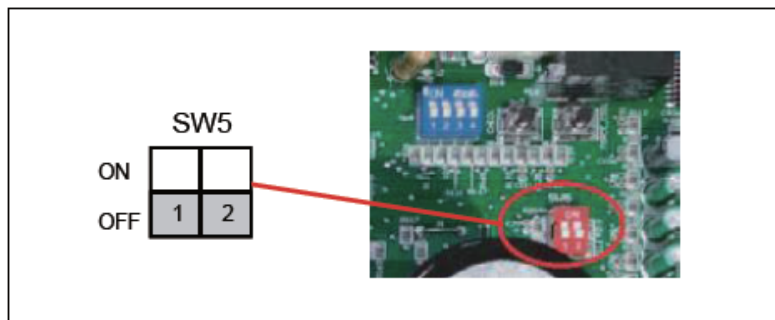
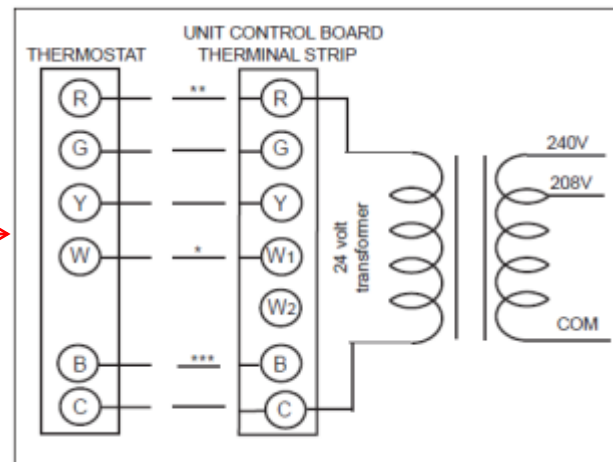
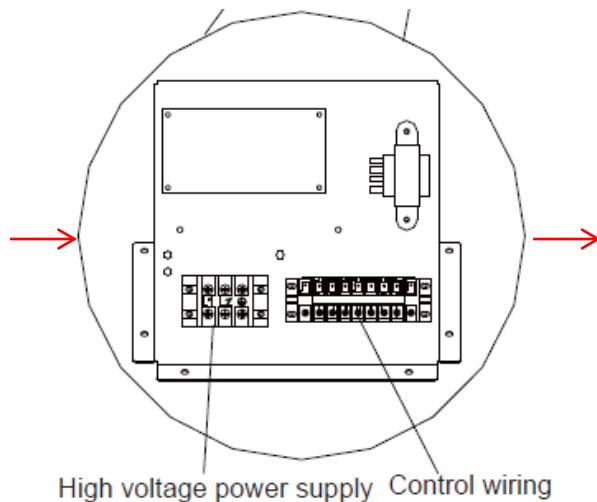
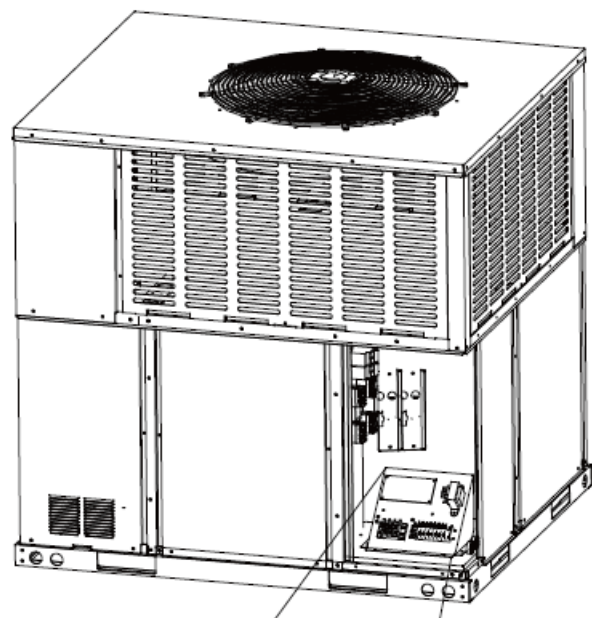


Figure 9-2

Defrosting Choice	SW5-1	SW5-2	Remarks
ON	Operating time is reduced by 10%	Defrosting extended for 60 seconds	
OFF	Normal	Normal	Default
Remarks	Enter defrost	Quit defrost	

24V Control Wiring

ComfortStar®



Two Speed Indoor Blower Control

ComfortStar®

1	2	3	4

DIP Switch:
1&2 select model, 3, Select anti-cold wind,
4, reservation

Introduction

	A	ON OFF	<table><tr><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table>					1	2	3	4	Non Factory setting (For A type) : 1=OFF, 2=OFF (00) Fan speed: Y2/Y1 corresponding to 2/1 level speed.	
	1	2	3	4									
	B	ON OFF	<table><tr><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table>					1	2	3	4	Factory setting (For B type) : 1=OFF, 2=ON (01) Fan speed: Y2/Y1 corresponding to 3/1 level speed.	
1	2	3	4										
C	ON OFF	<table><tr><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table>					1	2	3	4	Factory setting (For C type) : 1=ON, 2=OFF (10) Fan speed: Y2/Y1 corresponding to 4/2 level speed.	2T/3T/5T	
1	2	3	4										
D	ON OFF	<table><tr><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr></table>					1	2	3	4	Non Factory setting (For D type) : 1=ON, 2=ON (11) Fan speed: Y2/Y1 corresponding to 5/3 level speed.		
1	2	3	4										

防冷风设置介绍

ON
OFF

3

3=ON, Anti-cold wind Valid/
3=OFF, Anti-cold wind invalid /。

ECM-Airflow Performance

Model Number	Motor Speed		SCFM(Watts)								
			External Static Pressure-Inches W.C.[kPa]								
			0[0]	0.1[.02]	0.2[.05]	0.3[.07]	0.4[.10]	0.5[.12]	0.6[.15]	0.7[.17]	0.8[.20]
60	Tap (5)	SCFM	2181	2120	2057	1969	1899	1833	1759	1672	1561
		Watts	586	601	614	628	641	656	669	673	650
	Tap (4) - Factory	SCFM	1955	1885	1805	1724	1655	1578	1506	1440	1337
		Watts	422	436	450	465	479	493	508	522	537
	Tap (3)	SCFM	1676	1599	1506	1422	1337	1263	1195	1136	1070
		Watts	277	290	302	306	326	345	357	373	397
	Tap (2)	SCFM	1500	1407	1307	1216	1131	1061	---	---	---
		Watts	205	217	227	237	253	273	---	---	---
	Tap (1)	SCFM	1263	1054	---	---	---	---	---	---	---
		Watts	136	118	---	---	---	---	---	---	---

Specification Table

Capacity	ARI net capacity (Btu)	57000
	EER	12.5
	SEER	19
	Nominal CFM	1750
	System power (kW)	4.56
	Refrigerant type	R410a
	Refrigerant charge (lb-oz)	12-9
	ARI HEATING PERFORMANCE	
	47°F Capacity rating (Btu)	57000
	System power (kW)	4.5
	17°F Capacity rating (Btu)	41500
	System power (kW)	
	HSPF (BTU/Watts-hr.)	9
DIMENSIONS (Inches)	Length	51-9/16
	Width	44-13/16
	Height	52
Weight	OPERATING WT. (lbs)	562
COMPRESSORS	Type	Rotary
	Quantity	1
CONDENSER COIL DATA	Face area (Sq. Ft)	20.17
	Rows	3
	Fins per inch	17
	Tube diameter(inch)	9/32
	Circuitry type	interlaced

EVAPORATOR COIL DATA	Face area (Sq. Ft)	6.1
	Rows	4
	Fins per inch	17
	Tube diameter(inch)	9/32
Refrigerant control	Circuitry type	interlaced
		EEV
CONDENSER FAN DATA	Fan diameter (inch)	25-3/5
	Type	Prop
	Drive type	Direct
	No. speeds	10
	Number of motors	1
	Motor HP each	1/3
	RPM	200~880
	Nominal total CFM	4100
DIRECT DRIVE EVAP FAN DATA	Quantity	1
	Fan Size (Inch)	11×10-5/8
	Type	Centrifugal
	No. speeds	5
	Motor HP each	3/4
	RPM	1075
	Motor frame size	48
Electrical Data	Voltage-Phase-Hz	208/230-1-60
	Minimum Circuit Amp	41.9
	Max. Overcurrent Protection	60
	Min / Max Volts	173 / 269
Operating Range	Cooling	23°F-125.6°F
	Heating	-4°F-86°F

Thank You