



**Vogue Ultra Fan Coil
21RD Series**

INSTRUCTION MANUAL

WARNING!

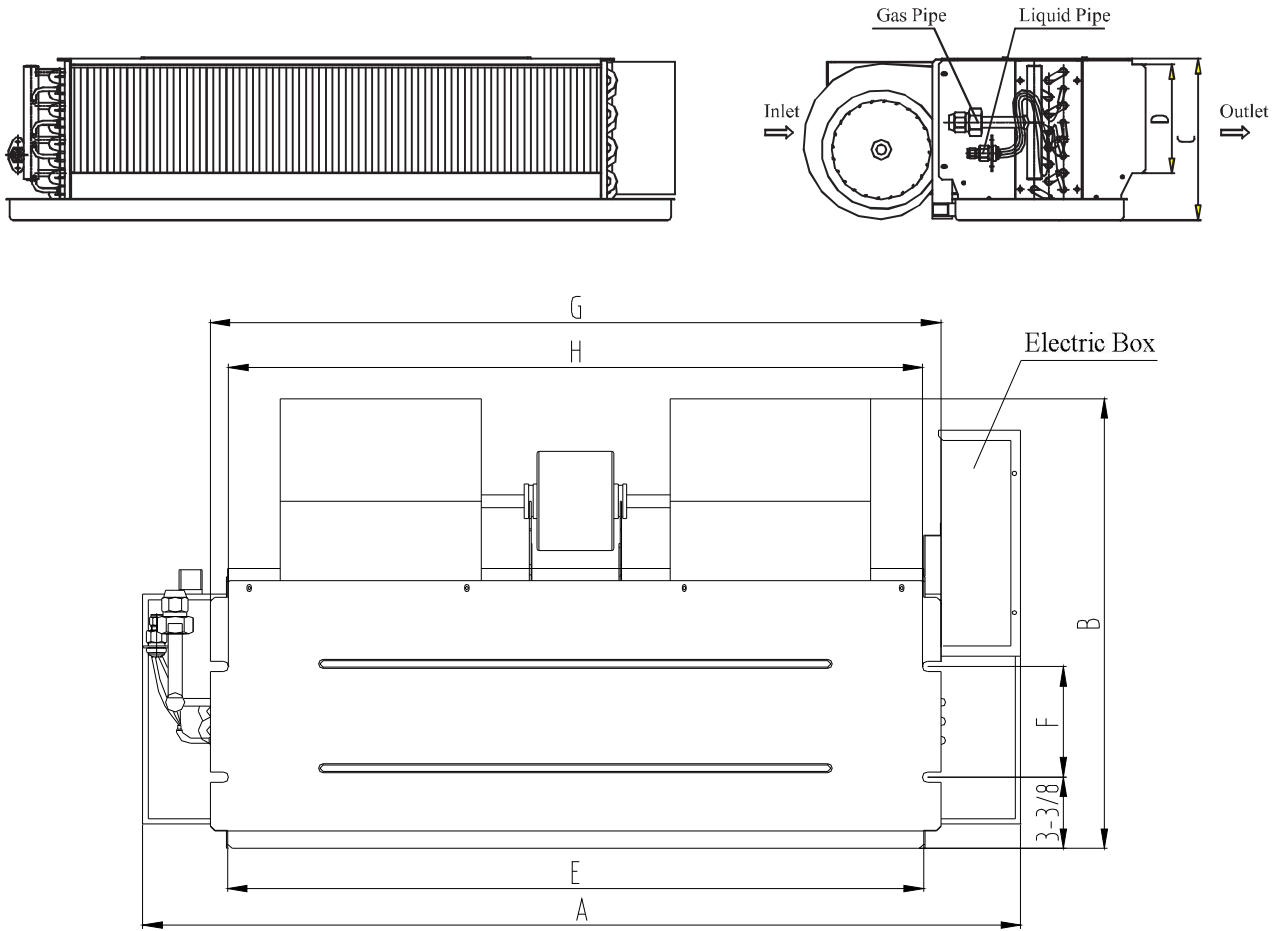
Read and follow all safety precautions in Instruction Manual - improper use can cause serious injury.

Contents

1. Specifications of 21RD Fan Coil.....	3
1.1 Physical Dimensions	3
1.2 General Information	4
1.3 Blower Performance.....	4
2. Import Safety Instructions:	5
3. Pre-Installation Instructions	6
3.1 Before Beginning Installation.....	6
3.2 Code & Regulations	6
3.3 REPLACEMENT PARTS	6
4. Location.....	6
5. Installation Clearances	6
6. Ducting	7
7. Electric Heat.....	7
7.1 “ 29EHRD ” Electric Heat Kits Available.....	8
7.2 “ 29EHRD ” Installation	9
8. Electrical supply wire and MOP	10
8.1 Inspection of the Building Electrical Service	10
8.2 Wire Sizing.....	10
8.3 Maximum Overcurrent Protection (MOP)	11
8.4 Electrical Connections-Supply Voltage.....	11
8.5 Schematic Wiring Diagram.....	12
8.6 Thermostat Wring	14
9. Refrigerant Lines	14
9.1 Tubing Preparation.....	15
9.2 Special Instructions.....	15
10. Condensate Drain Piping	17
11. Start-Up procedure	17
12. Regular Maintenance	17

1. Specifications of 21RD Fan Coil

1.1 Physical Dimensions



Unit:Inch

Model	A	B	C	D	E	F	G	H
21RD018C24	40 ^{1/2}	20 ^{1/2}	9 ^{5/8}	6 ^{1/2}	31 ^{1/2}	4 ^{-3/8}	37 ^{1/4}	34 ^{11/16}
21RD024C24								
21RD030C24	52 ^{1/2}	20 ^{1/2}	9 ^{5/8}	6 ^{1/2}	43 ^{5/16}	4 ^{-3/8}	49 ^{1/4}	46 ^{11/16}
21RD036C24								

1.2 General Information

Model		21RD018C24	21RD024C24	21RD030C24	21RD036C24	
Cooling Capacity	Btu/h	18,000	24,000	30,000	36,000	
Air flow Volume	CFM	647	690	882	1000	
Motor HP-Qty.	HP-Qty.	1/8-1	1/8-1	1/6-1	1/6-1	
FLA	A	0.86	0.86	1.3	1.3	
Supply Voltage	V/Ph/Hz	208/230V-1-60Hz				
Blower Size-Qty	In	6.3×7.95-2	6.3×7.95-2	6.3×7.95-3	6.3×7.95-3	
Coil Type		Aluminum Plate Fin, Grooved Tube				
No.of Rows-FPI		3-14	3-14	3-14	3-14	
Coil Face Area	Ft 2	1.8	1.8	2.5	2.5	
Liquid Line-Sweat	inch	3/8	3/8	3/8	3/8	
Suction Line-Sweat	inch	5/8	5/8	3/4	3/4	
Drain Connection	inch	3/4	3/4	3/4	3/4	
Dimensions	Width	inch	40 ¹ / ₂	40 ¹ / ₂	52 ¹ / ₂	52 ¹ / ₂
	Depth	inch	20 ¹ / ₂	20 ¹ / ₂	20 ¹ / ₂	20 ¹ / ₂
	Height	inch	9 ⁵ / ₈	9 ⁵ / ₈	9 ⁵ / ₈	9 ⁵ / ₈


1.3 Blower Performance


Model	CFM Delivered against External Static Pressure					
	0	0.1"	0.2"	0.3"	0.4"	0.5"
21RD018C24	647	595	540	480	410	350
21RD024C24	690	640	585	525	455	405
21RD030C24	882	820	755	680	610	545
21RD036C24	1000	940	875	800	730	675


Notes: (1) Base upon unit W/nominal tonnage dry coil and filter installed.
 (2) Use 0.96 as approximate SCFM correction factor for wet coil.


2. Import Safety Instructions:


The following symbols and labels are used throughout this manual to indicate immediate or potential safety hazards. It is the owner's and installer's responsibility to read and comply with all safety information and instructions accompanying these symbols. Failure to heed safety information increases the risk of personal injury, property damage, and/or product damage.


 **WARNING**
 Hazards or unsafe practices could result in property damage, product damage, severe personal injury or death.


 **CAUTION**
 Hazards or unsafe practices which may result in property damage, product damage, personal injury or death.


 **WARNING**
ONLY individuals meeting the requirements of an "Entry Level Technician" as specified by the Air Conditioning and Refrigeration Institute (ARI) may use this information. Attempting to install or repair this unit without such background may result in product damage, personal injury, or death.


 **WARNING**
HIGH VOLTAGE!
 Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury or death.



 **WARNING**
 To prevent the risk of property damage, personal injury, or death, do not store combustible materials or use gasoline or other flammable liquids or vapors in the vicinity of this appliance.

 **CAUTION**
 Have your contractor identify all the various cutoff switches and devices that service this unit. Know where the switch is that will cut off energy to the heating system in the event of overheating.

 **DANGER**
PELIGRO



CARBON MONOXIDE POISONING HAZARD

Special Warning for Installation of Furnaces or Air Handling units in Enclosed Areas such as Garages, Utility Rooms or Parking Areas

Carbon monoxide producing devices (such as an automobile, space heater, gas water heater, etc.) should not be operated in enclosed areas such as unventilated garages, utility rooms or parking areas because of the danger of carbon monoxide (CO) poisoning resulting from the exhaust emissions. If a furnace or air handler is installed in an enclosed area such as a garage, utility room or parking area and a carbon monoxide producing device is operated therein, there must be adequate, direct outside ventilation.

This ventilation is necessary to avoid the danger of CO poisoning which can occur if a carbon monoxide producing device continues to operate in the enclosed area. Carbon monoxide emissions can be (re)circulated throughout the structure if the furnace or air handler is operating in any mode.

CO can cause serious illness including permanent brain damage or death.

3. Pre-Installation Instructions

Upon receiving the product, check any damage from transportation. Shipping damage is the responsibility of the carrier. Verify the model number, specifications and accessories are correct prior to installation. The distributor or manufacturer will not accept claims from dealers for transportation damage or installation of incorrectly shipped units.

3.1 Before Beginning Installation

Carefully read all instructions for the installation prior to installing product. Make sure each step or procedure is understood and any special considerations are taken into account before starting installation. Assemble all tools, hardware and supplies needed to complete the installation. Some items may need to be purchased locally. Make sure everything needed to install the product is on hand before starting.

3.2 Code & Regulations

This product is designed and manufactured to comply with national codes. It is installer's responsibilities to install the product in accordance with such codes and/or any prevailing local codes/regulations. The manufacturer assumes no responsibilities for equipment installed in violation of any codes or regulations.

3.3 REPLACEMENT PARTS

When reporting shortages or damages, or ordering repair parts, give the complete product model and serial numbers as stamped on the product. Replacement parts for this product are available through your contractor or local distributor.

4. Location

The unit is designed to be installed in a horizontal position above a dropped ceiling. Do NOT install this unit outside the structure. **These models are designed for INDOOR USE ONLY.**

Before attempting any installation, the following points should be considered:

- Structural strength of supporting members
- Clearances and provision for servicing
- Power supply and wiring
- Air duct connections
- Drain facilities and connections

5. Installation Clearances

Place this unit as close to the space to be air conditioned as possible. These units are U.L. listed for installations with zero clearance to combustible materials. If this unit is installed in a removable ceiling panel, ensure adequate space is available for servicing. Run ducts as direct as possible to supply and return outlets. Use non-flammable weatherproof flexible connectors on both supply and return connections at unit to reduce noise transmission.

6. Ducting

Ductwork should be fabricated by the installing contractor in accordance with local codes. Use industry manuals such as NESCA as a guide when sizing and designing the duct system.



Filters

Filters are not provided with unit, and must be supplied and installed in the return air system by the installer. A field installed filter grille is recommended for easy and convenient access to the filters for periodic inspection and cleaning. Filters must have adequate face area for the rated air quantity of the unit. The minimum filter size is 20" x 20" x 1"

7. Electric Heat

The fan coils listed in this manual do not have factory installed electric heat. Electric heat is available as an accessory. The only heat kits that can be used are 29EHRD series. Please refer to installation instructions provided with heat kit for the correct installation procedure.

The heating mode temperature rise is dependent upon the system airflow ,the supply voltage ,and the heat kit size (KW) selected. Use below tables to determine the temperature rise(°F)

CFM	HEAT KIT NOMINAL KW		
	5	8	10
600	28	41	56
800	21	31	42
1000	17	25	34
1200	14	21	28

230/1/60 Supply Voltage-Temperature Rise Table °F

CFM	HEAT KIT NOMINAL KW		
	5	8	10
600	27	39	52
800	20	30	40
1000	16	24	32
1200	13	20	27

220/1/60 Supply Voltage-Temperature Rise Table °F

CFM	HEAT KIT NOMINAL KW		
	5	8	10
600	25	37	50
800	19	28	38
1000	15	22	30
1200	13	19	25

208/1/60 Supply Voltage-Temperature Rise Table °F

Note: For installations not indicated above the following formula is to be used:

$$TR = (kW * 3412) * (\text{Voltage Correction}) * 1.08 / CFM$$

Where: TR=Temperature Rise

KW=Heater Kit Actual kW

3412=Btu per kW

Voltage Correction= 0.96(230 Supply Volts)

0.92(220 Supply Volts)

0.87(208 Supply Volts)

1.08=Constant

CFM=Measured Airflow

The Temperature Rise Tables can also be used to determine the fan coil airflow delivery. When using these tables for this purpose, set the room thermostat to maximum heat and allow the system to reach steady state conditions. Insert two thermometers, one in the return air and one in the supply air. The temperature rise is the supply air temperature minus the room air temperature

7.1 “29EHRD” Electric Heat Kits Available

Item	Kit	Description	Usage for Fan Coil
1	29EHRD052D(B)1	5kw Heat Strip	21RD018C24, 21RD024C24
2	29EHRD082D(B)1	8kw Heat Strip	21RD018C24, 21RD024C24
3	29EHRD102D(B)1	10kw Heat Strip	21RD018C24, 21RD024C24
4	29EHRD052D(B)2	5kw Heat Strip	21RD030C24, 21RD036C24
5	29EHRD082D(B)2	8kw Heat Strip	21RD030C24, 21RD036C24
6	29EHRD102D(B)2	10kw Heat Strip	21RD030C24, 21RD036C24

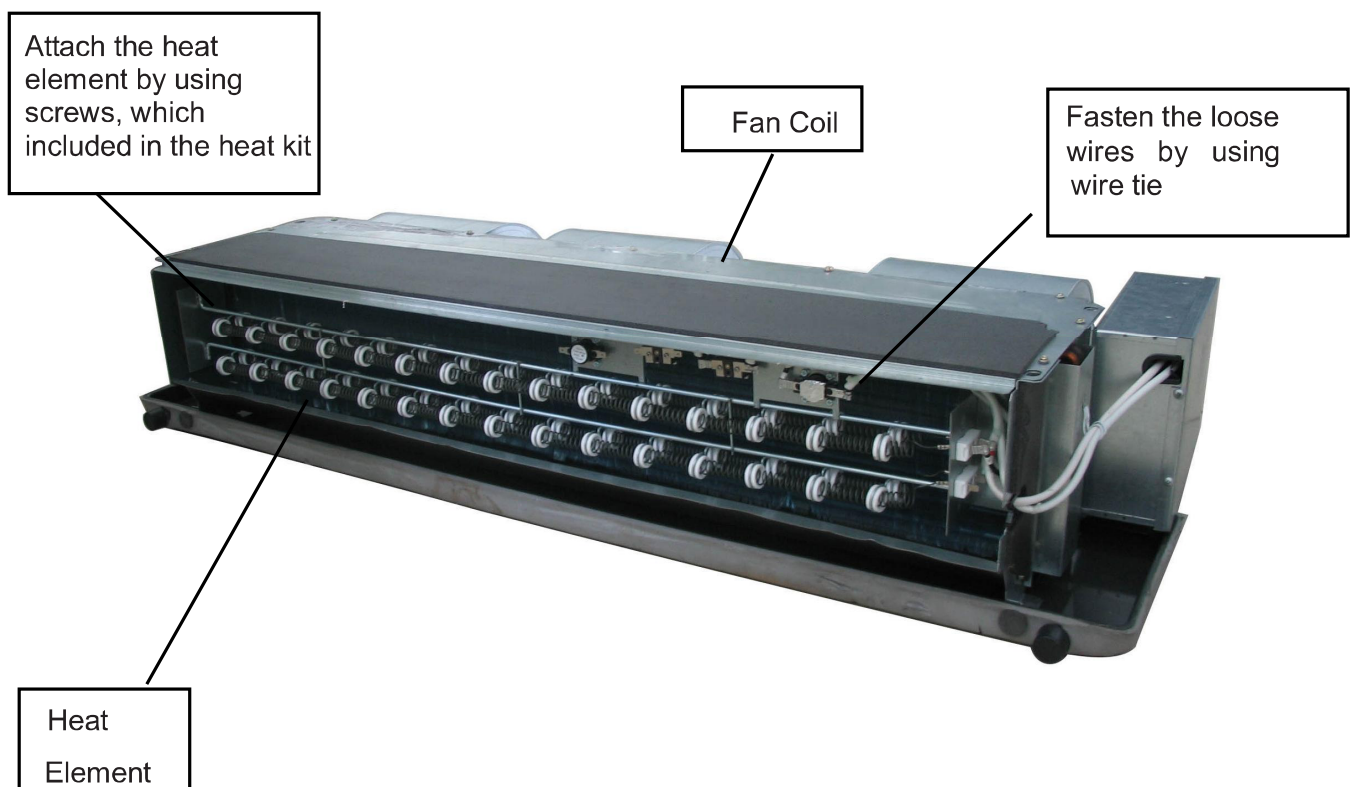
7.2 “29EHRD” Installation

CAUTIONS

- ENSURE THAT ALL POWER IS DISCONNECTED PRIOR TO ATTEMPTING INSTALLATION OF THIS HEATER KIT. THERE MAY BE MORE THAN ONE DISCONNECT SERVICING THE UNIT.
- A MEANS OF STRAIN RELIEF AND CONDUCTOR PROTECTION MUST BE PROVIDED AT THE SUPPLY WIRE ENTRANCE INTO ELECTRICAL BOX.
- USE COPPER CONDUCTORS ONLY
- INSTALLATION MUST FOLLOW NATIONAL ELECTRIC CODE AND OTHER APPLICABLE CODES
- IF THIS APPLIANCE IS INSTALLED IN AN ENCLOSED AREA SUCH AS A GARAGE OR UTILITY ROOM WITH ANY CARBON MONOXIDE PRODUCING APPLIANCE, ENSURE THE AREA IS PROPERLY VENTILATED

It is recommended that the installation of heat kit be performed before placing the fan coil in its final location and in an area that allows for access to all sides.

1. Check any damage from transportation. Do not install any damaged heat kit
2. Attach the heat element onto the air outlet of the fan coil
3. Lead the wires to the electric control box
4. Refer to heat kit installation manual and wiring diagram for wire connection
5. Using wire tie to fasten all loose wires



8. Electrical supply wire and MOP



WARNING

TO AVOID THE RISK OF FIRE OR EQUIPMENT DAMAGE, USE ONLY COPPER CONDUCTORS. BEFORE SERVING OR INSTALLING THIS EQUIPMENT, THE ELECTRICAL POWER TO THIS UNIT MUST BE IN THE "OFF" POSITIONED AND ALL POWER SUPPLIES DISCONNECTED.



WARNING

MORE THAN ONE DISCONNECT MAY EXIST. FAILURE TO OBSERVE THIS WARNING MAY RESULT IN AN ELECTRICAL SHOCK THAT CAN CAUSE PERSONAL INJURY OR DEATH.



WARNING

THE UNIT MUST HAVE AN UNINTERRUPTED, UNBROKEN ELECTRICAL GROUND TO MINIMIZE THE POSSIBILITY OF PERSONAL INJURY IF AN ELECTRICAL FAULT SHOULD OCCUR. THE ELECTRICAL GROUND CIRCUIT MAY CONSIST OF AN APPROPRIATELY SIZED ELECTRICAL WIRE CONNECTING THE GROUND LUG IN THE UNIT AND CONTROL BOX WIRE TO THE BUILDING'S ELECTRICAL SERVICE PANEL. OTHER METHODS OF GROUNDING ARE PERMITTED IF PERFORMED IN ACCORDANCE WITH THE "NATIONAL ELECTRICAL CODE"(NEC)/"AMERICAN NATIONAL STANDARDS INSTITUTE"(ANSI)/"NATIONAL FIRE PROTECTION ASSOCIATION"(NFPA) 70 AND LOCAL/STATE CODES. IN CANADA, ELECTRICAL GROUNDING IS TO BE IN ACCORDANCE WITH THE CANADIAN ELECTRIC CODE CSA C22.1. FAILURE TO OBSERVE THIS WARNING CAN RESULT IN ELECTRICAL SHOCK THAT CAN CAUSE PERSONAL INJURY OR DEATH.

8.1 Inspection of the Building Electrical Service

This product is designed for single-phase electrical supply. DO NOT OPERATE ON A THREE-PHASE POWER SUPPLY. Measure the power supply to the unit. The supply voltage must be in agreement with the unit nameplate power requirements and within the range shown in the below table

Nominal Input	Minimum Voltage	Maximum Voltage
208/230	187	254

8.2 Wire Sizing

Wire size is important to the operation of your equipment. Use the following check list when selecting the appropriate wire size for your unit

Wire size must carry the Minimum Circuit Ampacity (MCA).

Refer to the NEC(USA) or CSA(Canada) for wire sizing. The unit MCA for the fan coil and the optional electric heat kit can be found on the below table.

Model No.	Nominal SCFM	Nominal Capacity BTUH	kW Electric Heat		Min. Circuit Ampacity		Max. Fuse or Break(HACR) Ampacity	
			240V	208V	240V	208V	240V	208V
21RD018C24	647	18000	0	0	0.94	0.81	15	15
			5	3.8	27	23.6	30	25
			8	6	42.6	36.9	45	40
			10	7.5	53	45.9	60	50
21RD024C24	690	24000	0	0	1.12	0.97	15	15
			5	3.8	27.2	23.8	30	25
			8	6	42.8	37	45	40
			10	7.5	53.2	46	60	50

21RD030C24	882	30000	0	0	1.5	1.3	15	15
			5	3.8	27.5	24.1	30	25
			8	6	43.2	37.4	45	40
			10	7.5	53.6	46.4	60	50
21RD036C24	1000	36000	0	0	1.7	1.5	15	15
			5	3.8	27.7	24.3	30	25
			8	6	43.4	37.6	45	40
			10	7.5	53.8	46.6	60	50

Wire size allows for no more than a 2% voltage drop from the building breaker/fuse panel to the unit.

Refer to the latest edition of the National Electric Code or in Canada the Canadian Electric Code when determining the correct wire size. The following table shows the current carrying capabilities for copper conductors rated at 75°C with a 2% voltage drop.

Maximum Allowable Length in Feet to Limit Voltage Drop to 2% *								
Wire Size(AWG)	Minimum Circuit Ampacity(MCA)							
	10	15	20	25	30	35	40	45
14	75	50	37					
12	118	79	59	47				
10	188	125	95	75	63	54		
8	301	201	150	120	100	86	75	68
6	471	314	235	188	157	134	118	110

*Based on NEC 1996

8.3 Maximum Overcurrent Protection (MOP)

Every installation must include an NEC(USA) or CEC(Canada) approved overcurrent protection device. Also, check with local or state codes for any special regional requirements.

This protection can be in the form of fusing or HACR style circuit breakers.

NOTE: Fuses or circuit breakers are to be sized larger than the equipment MCA but not to exceed the MOP.

8.4 Electrical Connections-Supply Voltage

USE COPPER CONDUCTORS ONLY

Fan Coil Only (Non-Heat Kit Models)

The building supply connects to L1 and L2 terminal block contained in the fan coil electrical control box. A ground screw is also contained in this area. Attach the supply wires to the fan coil terminal block as shown in the unit wiring diagram using appropriately sized solderless connectors or other NEC or CEC approved means.

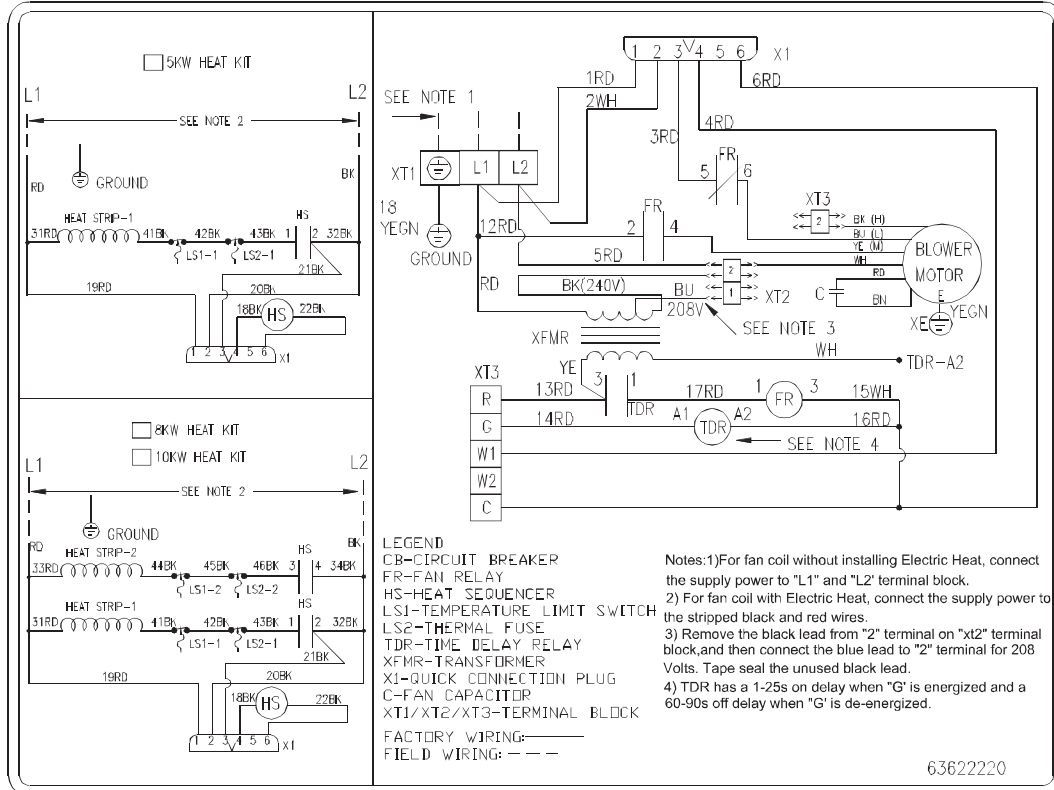
Fan Coil With Heat Kits

Follow the heater Installation Manual and wiring diagram for complete wiring details. The power supply should connect to the stripped black and red wired on the heat kit

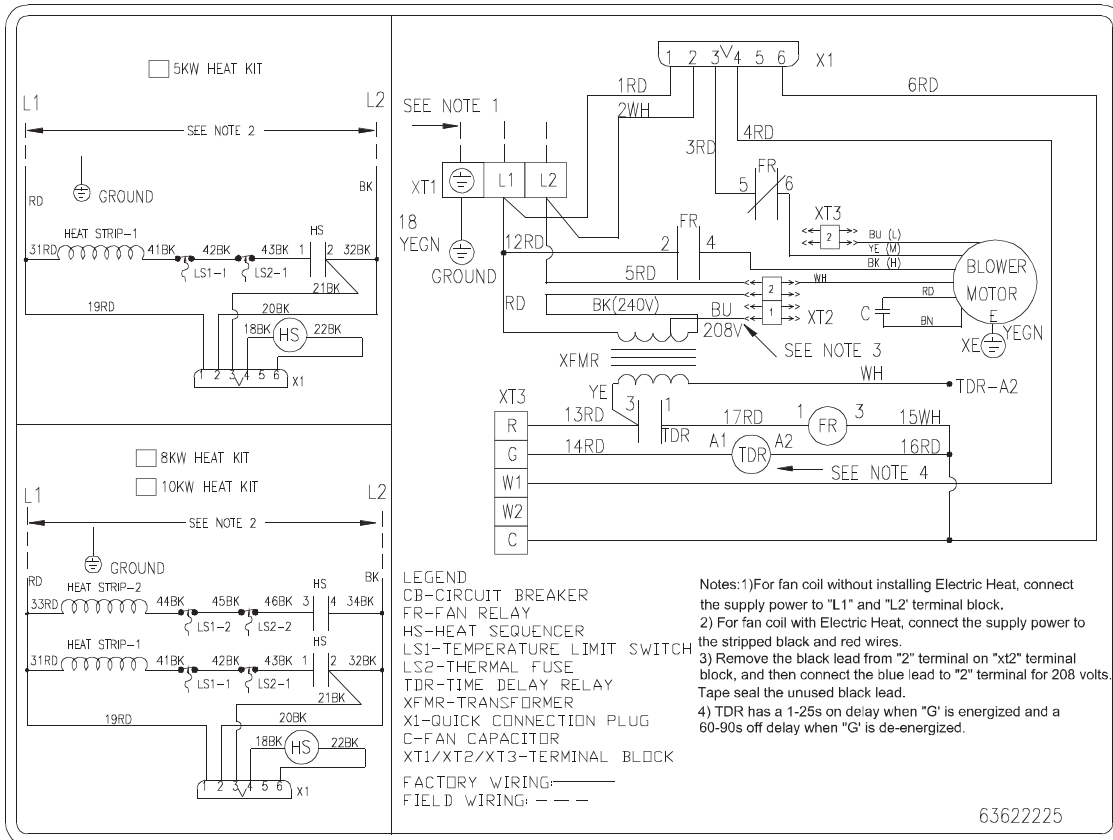
Low Voltage Connections

The low voltage connections are determined by whether the outdoor unit is a cooling only condenser or heat pump. The 24V-control voltage connects the fan coil to the room thermostat and condenser. Low voltage wiring is to be copper conductors. A minimum of 18AWG must be used for installations up to 50' and 16AWG for installations over 50'. See the "Thermostat Wiring" section of this manual for typical low voltage wiring connections

8.5 Schematic Wiring Diagram

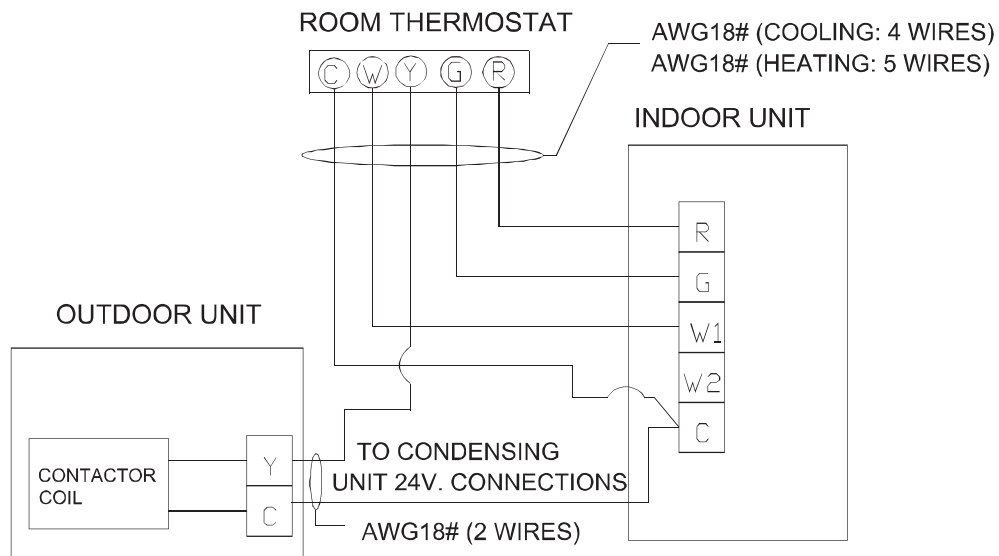


Wiring Diagram for 21RD018C24 and 21RD030C24

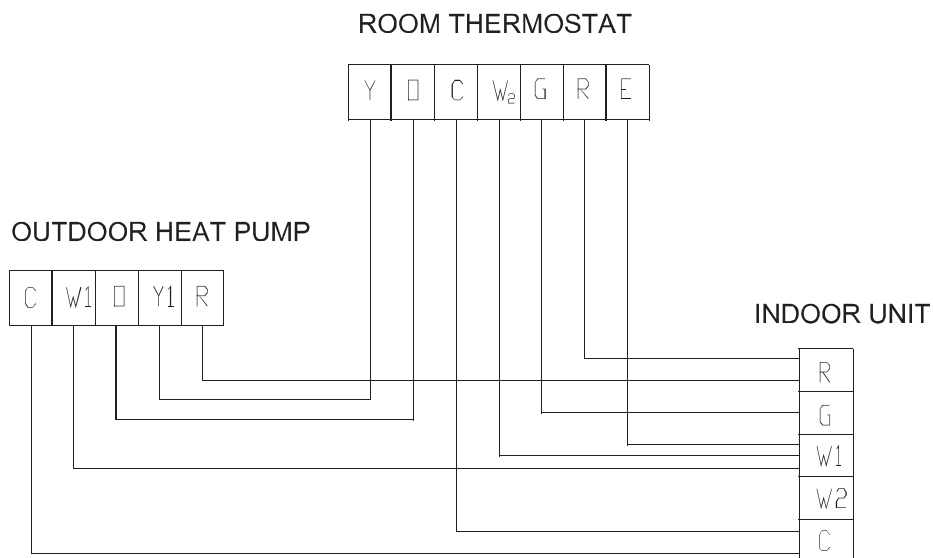


Wiring Diagram for 21RD024C24 and 21RD036C24

8.6 Thermostat Wiring



Low Voltage Wiring Diagram for Cooling Unit with optional heat kit 10kw and below



Low Voltage Wiring Diagram for Heat Pump Unit with optional heat kit 10kw and below

9. Refrigerant Lines



WARNING

TO PROTECT THE UNIT WHEN WELDING CLOSE TO THE PAINTED SURFACES. THE USE OF A QUENCHING CLOTH IS STRONGLY ADVISED TO PREVENT SCORCHING OR MARRING OF THE EQUIPMENT FINISH. SOLDER WITH A MINIMUM OF 5% SILVER IS RECOMMENDED



WARNING

THIS PRODUCT IS FACTORY-SHIPPED UNDER PRESSURE. FOLLOW THESE INSTRUCTIONS TO PREVENT INJURY

9.1 Tubing Preparation

All cut ends are to be round, burr free, and cleaned. Failure to follow this practice increases the chances for refrigerant leaks

Post Brazing

Quench all welded joints with water or a wet rag.

Piping Size

For the correct tubing size, follow the specification for the condenser/heat pump.

9.2 Special Instructions

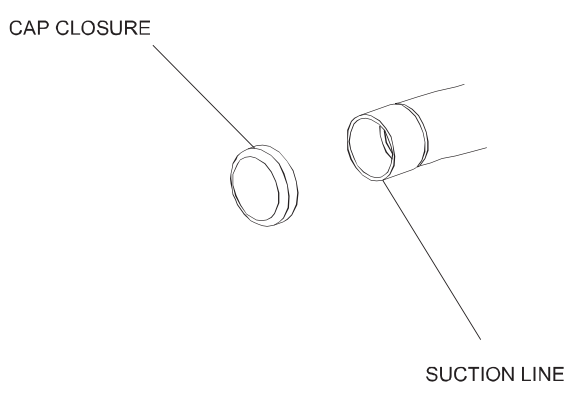
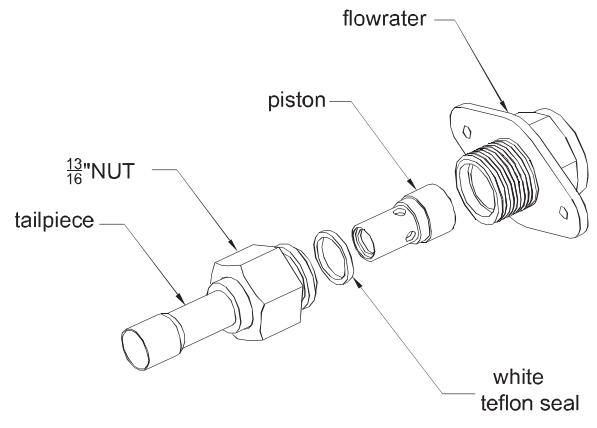
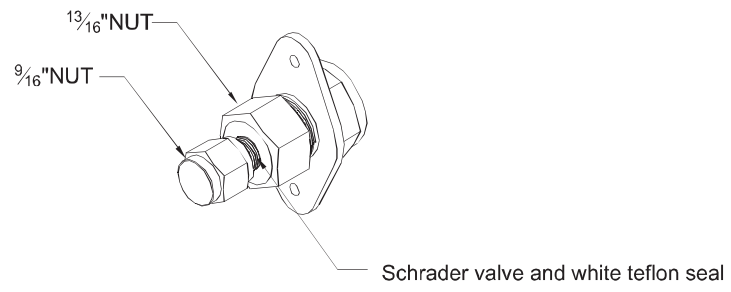
This fan coil comes with a plastic accessory bag which contains: piston, tailpiece and white teflon seal. Please refer to the below Piston Chart to verify the piston size before installation

PISTON KIT CHART

OUTDOOR UNIT	INDOOR UNIT	INDOORS PISTON SIZE(inch)	PISTON KIT PART NO.
31VA018C24	21RD018C24	φ 0.058	058
31VA024C24	21RD024C24	φ 0.064	064
31VA030C24	21RD030C24	φ 0.066	066
31VA036C24	21RD036C24	φ 0.070	070

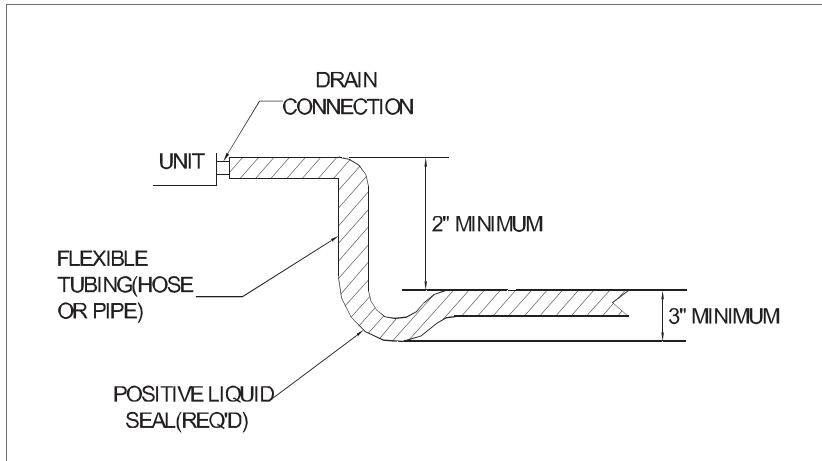
Evaporator Coil Metering Devices

1. Remove 9/16 nut, then press the Schrader valve to release pressure, no gas indicates a possible leak
2. After the gas has released, remove the 13/16 nut, Schrader valve and white teflon seal from the liquid line distributor.
3. Remove cap closure from suction line
4. Take the piston from the plastic accessory bag and then Insert the piston into the liquid line distributor
- 5 Take the tailpiece from the plastic accessory bag and slide the 13/16 nut into place
6. Braze tailpiece to the line set liquid tube
7. Insert the suction line into the connection, braze suction line.
8. After the tailpiece has cooled, confirm position of the white Teflon seal and hand tighten the 13/16 nut
9. Torque the 13/16nut to 20-30 ft-lbs.



10. Condensate Drain Piping

Condensate removal is performed by attaching a 3/4" PVC pipe to the evaporator coil pan and terminated in accordance with local or state Plumbing/HVAC codes. The installation must include a "P" style trap that is located as close as is practical to the evaporator coil. See below Figure for details of a typical condensate line "P" trap. To prevent potential sweating and dripping on to finished space, it may be necessary to insulate the condensate drain line located inside the building.



11. Start-Up procedure

- Prior to start-up, ensure that all electrical connections are properly sized and tightened.
- All panels must be in place and secured. For Air Tight application, neoprene gasket must be positioned at prescribed locations to achieve 2% leakage.
- Tubing must be leak free.
- Unit should be elevated, trapped and pitched to allow for drainage.
- Low voltage wiring is connected.
- Auxiliary drain is installed when necessary and pitched to allow for drainage.
- Drain pan and drain tubing has been leak checked.
- Return and supply ducts are sealed.

12. Regular Maintenance



WARNING

DISCONNECT ALL POWER SUPPLIES BEFORE PERFORMING ANY SERVICE. NOTE THAT THERE MAY BE MORE THAN ONE POWER SUPPLY. FAILURE TO OBSERVE THIS WARNING CAN RESULT IN ELECTRICAL SHOCK THAT CAN CAUSE PERSONAL INJURY OR DEATH

The only item to be maintained on a regular basis by the user is the circulating air filter(s). Filter should be cleaned or replaced regularly. A certified service technician must perform all other services

Thank you for Choosing



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