



DELTA

**Vogue Ultra Flex
21DN Series**

INSTRUCTION MANUAL

WARNING!


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

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1. Safety Precautions

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory--authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing. Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements. Recognize safety information. This is the safety--alert symbol .

When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words; **DANGER**, **WARNING**, and **CAUTION**. These words are used with the safety--alert symbol. **DANGER** identifies the most serious hazards which will result in severe personal injury or death. **WARNING** signifies hazards which could result in personal injury or death. **CAUTION** is used to identify unsafe practices which may result in minor personal injury or product and property damage. **NOTE** is used to highlight suggestions which will result in enhanced installation, reliability, or operation.

WARNING

Electrical shock hazard

Failure to follow this warning could result in personal injury or death.

Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.

2. Product Introduction

2.1 Product Description

The DELTA 31VA Condensing Unit and 21DN Multi-Position Air Handler offer the perfect combination of superior product quality, operating efficiency, operating sound levels and value for money. The Condensing Unit uses the environmentally friendly refrigerant R410A, which is chlorine-free to help prevent damage to the ozone layer.

2.2 Physical Dimension

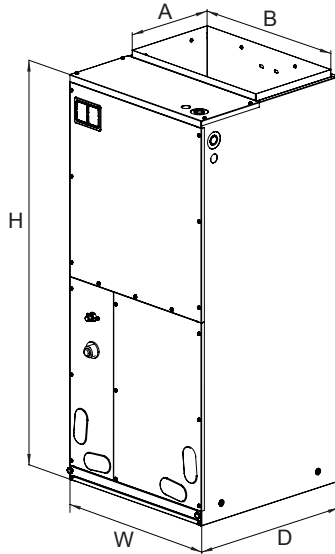


Fig.1

Table 1 Dimension of Indoor Unit

Unit:Inch (mm)

MODEL	DIMENSION				
	W	D	H	A	B
21DN024C24	18-1/8"(460)	21-1/4"(540)	43-1/2"(1105)	11-5/8"(295)	16-3/4"(426)
21DN036C24	18-1/8"(460)	21-1/4"(540)	43-1/2"(1105)	11-5/8"(295)	16-3/4"(426)
21DN048C24	21-1/4"(540)	21-1/4"(540)	48-1/4"(1224)	11-5/8"(295)	20"(508)
21DN060C24	21-1/4"(540)	21-1/4"(540)	48-1/4"(1224)	11-5/8"(295)	20"(508)

2.3 Names of Main Parts

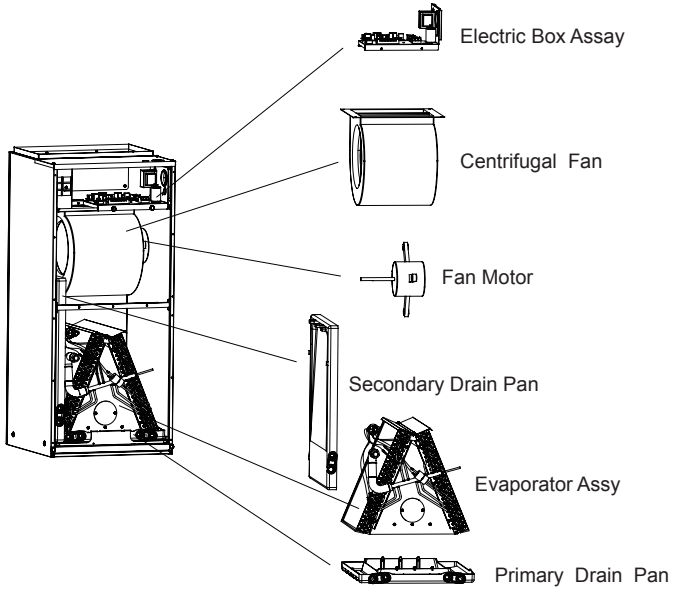


Fig. 2

2.4 General Information

Table 2

Model No.	Cooling Capacity	SCFM	Electric Heater (kw)
21DN024C24	2.0 Ton	706	0-10
21DN0366C24	3.0 Ton	1059	0-15
21DN048C24	4.0 Ton	1383	0-20
21DN060C24	5.0 Ton	1383	0-20

Table 3

Filters	
Model No.	Filter size (inch / mm)
21DN024C24	16"×20"×5/8"/406×508×15
21DN0366C24	16"×20"×5/8"/406×508 ×15
21DN048C24	19-5/16"×20-5/16"× 5/8"/490×516×15
21DN060C24	19-5/16"×20-5/16"×5/8"/490×516×15

Table 4

Model No.	Net Wt / Gross Wt(kg)	Net Wt / Gross Wt (lb)
21DN024C24	49 / 53	108.0 / 116.9
21DN036C24	53 / 57	116.9 / 125.7
21DN048C24	61 / 66.5	134.5 / 146.6
21DN060C24	64 / 68.5	141.1 / 151.0

Table 5

Model	Airflow Tonnage Range	Motor @ 230V 1Ph 60Hz		DD Blower Wheel (inch) Diameter-Width	SCFM vs.ESP(1)(2)				
		HP	FLA		0.1	0.2	0.3	0.4	0.5
21DN024C24	2.0	1/16	0.62	10-8	706	645	590	510	430
21DN036C24	3.0	1/4	1.25	10-8	1080	1000	950	820	730
21DN048C24	4.0	1/3	2.0	10-10	1430	1383	1285	1225	1165
21DN060C24	5.0	1/3	2.0	10-10	1430	1383	1285	1225	1165

Notes:

- ① Based upon W/nominal tonnage, dry coil and filter should be installed.
- ② Use 0.96 as approximate SCFM correction factor for wet coil.

3. Preparative for Installation

3.1 Pre-Installation Instruction

3.1.1 Checking Product Received

After receiving the product, please check if there is any damage caused by 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.

3.1.2 Before 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.

3.1.3 Codes & 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.

3.1.4 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.

3.2 Important Safety Instructions

Recognize Safety Symbols, Words, and Labels

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

⚠DANGER: Immediate hazards which will result in property damage, product damage, severe personal injury or death.

⚠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, severe personal injury or death.

⚠WARNING: Before serving or installing this equipment. The electrical power to this unit must be in the "off" position. Caution, 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 united states environmental protection agency ("epa") has issued various regulations regarding the introduction and disposal of refrigerants introduced into this unit. Failure to follow these regulations may harm the environment and can lead to the imposition of substantial fines. These regulations may vary due to the passage of laws. A certified technician must perform the installation and service of this product. Should questions arise, contact your local epa office.

⚠WARNING: Due to high system pressure and electrical shock in potential, installation and service work can be dangerous. Only trained and qualified personnel are permitted to install or service this equipment. Observe all warnings contained in this manual and labels/tags attached to the equipment.

⚠WARNING: This product is factory shipped for use with a 208-230/1/60 electrical power supply. This air handler must not be reconfigured to operate with any other power supply.

⚠WARNING: The unit must have an uninterrupted, unbroken electric grounding to minimize the possibility of personal injury if an electric fault occurs. The electric grounding circuit may consist of an appropriate sized power cord which connected with the grounding piece located in the unit control box and also connecting to the building electric service panel. Other methods of grounding are permitted if performed in accordance with the "national electric code" (nec)/ "american national standards institute" (ansi)/ "national fire protection association" (nfpa) 70 and local/state codes. In canada, electric grounding conforms to the canadian electric code csa c22.1. failure to observe this warning can result in electrical shock that can cause personal injury.



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 ventilation directly to outside.

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 emission can be (re)circulated throughout the building if the furnace or air handler is operating in any mode.

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

4. Installation

4.1 Unit Inspection

Upon delivery, inspect the unit for damage. Any damage must be reported immediately to the carrier. Do not install such an equipment damaged by freight which determines the integrity and safety of the unit.

Please check the equipment model number to ensure the unit is appropriately sized for the condensing unit.

If an incorrect unit is supplied, it must not be installed and it is to be returned to the supplier. The manufacturer assumes no responsibility for the installation of incorrectly delivered units. The evaporator coil contains high-pressure inert gas for holding charge.

4.2 Location

⚠WARNING: This air handler is designed for indoor installation only. Do not install it outdoors.

When installing the air handler, take consideration to minimize the length of refrigerant tubing as much as possible. Do not install the air handler in a location either above or below the condenser that violates the instructions provided with the condenser. Service clearance is to take precedence. Allow a minimum of 24" in front of the unit for service clearance. When installing in an

area directly over a finished ceiling (such as an attic), an emergency drain pan is required directly under the unit. See local and state codes for requirements. When installing this unit in an area that may become wet, elevate the unit with a sturdy, non-porous material. In installations that may lead to physical damage (i.e. a garage) it is advised to install a protective barrier to prevent such damage.

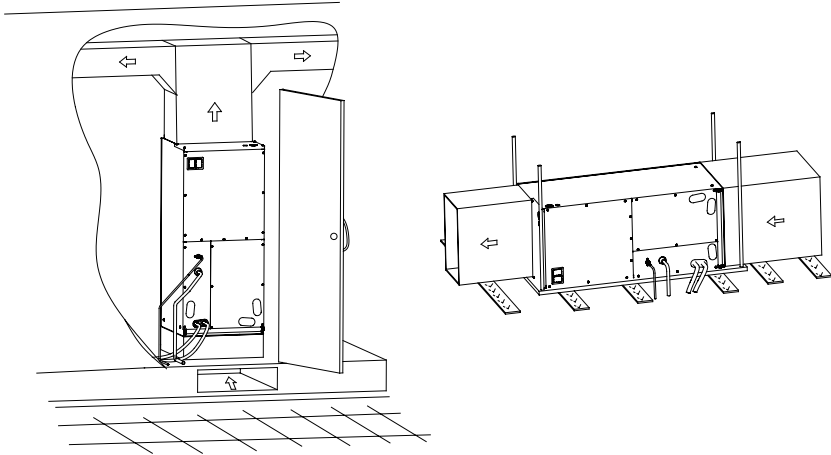


Fig. 3

4.3 Piping Work

4.3.1 Specification of Connection Pipe

Table 6

Model	External Diameter (inch)	
	Gas Pipe(in)	Liquid Pipe(in)
21DN024C24	5/8	3/8
21DN036C24	3/4	3/8
21DN048C24	7/8	3/8
21DN060C24	7/8	1/2

4.3.2 Piping Preparation

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

Piping Size

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

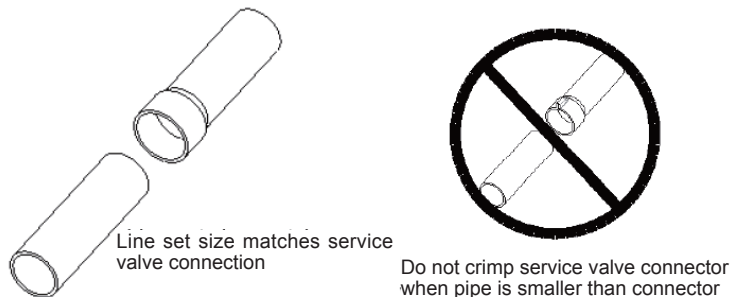


Fig. 4

4.3.3 Pipe Connection

This air handler comes with a plastic accessory bag which contains: Piston(Orifice), tailpiece and white teflon seal. Please refer to table7 to verify the piston size before installation.

Table 7 PISTON KIT CHART

OUTDOOR UNIT	INDOOR UNIT	INDOORS PISTON SIZE(inch)	PISTON KIT PART NO.
31VA024C24	21DN024C24	∅ 0.057	057
31VA036C24	21DN036C24	∅ 0.076	076
31VA048C24	21DN048C24	∅ 0.092	092
31VA060C24	21DN060C24	∅ 0.097	097

4.4 Special Instructions

This air handler comes with a plastic accessory bag which contains: tailpiece and white teflon seal.

⚠WARNING: The coil is shipped under pressure. Release the pressure before installation.
Evaporator Coil Metering Devices

- (1) Remove 9/16 nut, then press the Schneider valve to release pressure, no gas indicates a possible leak.
- (2) After the gas has released, remove the 13/16 nut, Schneider valve and white teflon seal from the liquid line distributor.
- (3) Take the Piston(Orifice) from the plastic accessory bag and then Insert the piston into the liquid line distributor.
- (4) Take the tailpiece from the plastic accessory bag and slide the 13/16 nut into place.
- (5) Braze tailpiece to the line set liquid tube.
- (6) Braze suction line. Remove cap closure from suction line .
- (7) Insert the suction line into the connection, slide the rubber grommet at least 18" away from the braze joint.
- (8) After the tailpiece has been cooled, confirm the position of white teflon seal and tighten the 13/16 nut manually.
- (9) Torque the 13/16nut to 20-30 ft-lbs.

(10) Replace suction line grommet.

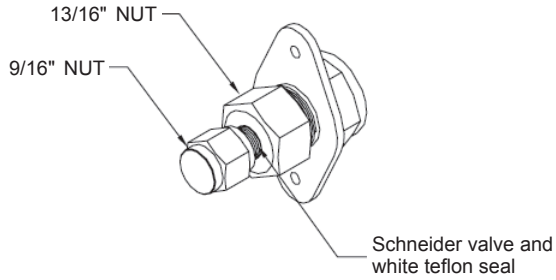


Fig. 5

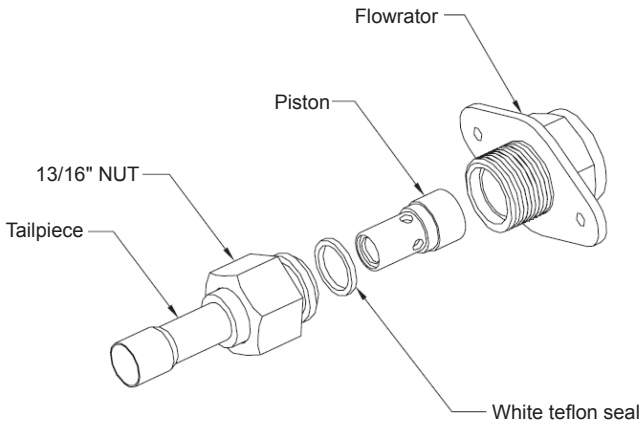


Fig. 6

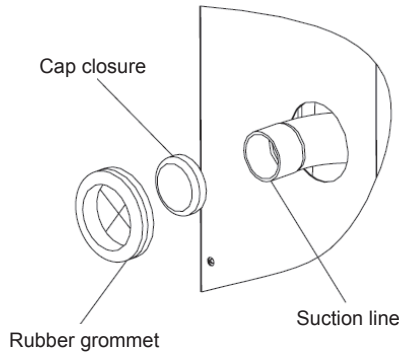


Fig. 7

Note: The tightening torque of the 13/16 screw nut shall not be more than 30N·m.

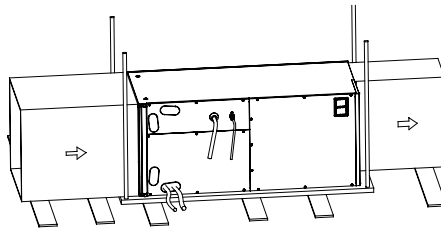
4.5 Drain Pan Relocation

Based upon the actual conditions, if the unit is installed as per Fig.3, there is no need to adjust the drain pan; otherwise, the auxiliary drain pan is required to be relocated on the opposite side.

The following instruction shows how to relocate the auxiliary drain pan from left to right side of the unit. As the auxiliary drain pan is universally used on both sides, only change the position of plastic drain pan cap for replacement.

As shown in Figure 8, it is recommended that the drain pan should be relocate before installation and locate the air handler in an area that allows for access to all sides.

- (1) Disassemble the front panel.
- (2) Remove the mounting plate used to fix the drain pan from chassis. And dismantle the enhanced frame, if applicable.
- (3) Pull out the evaporator coil and the drain pan in horizontal.
- (4) Reset the drain pan in vertical at the right side of the evaporator coil. Note: Push the evaporator coil backwards and make sure that there is no gap between the drain pan and the fixed bracket.
- (5) Fix the evaporator by enhanced frame (if applicable) and reset the mounting plate by tightening the screws.
- (6) Reassemble the front panel as per the reverse disassembly order mentioned above.



A) Factory configuration:
Auxiliary drain pan on the left

B) Converted configuration:
Auxiliary drain pan on the right

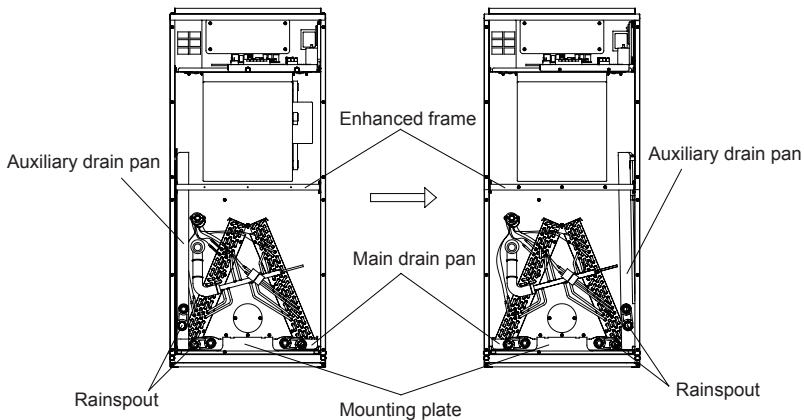


Fig. 8

4.6 Condensate Removal

The drain pan has primary and secondary drain connection (Figure 8). 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 closely to the evaporator coil. Do not over-tighten the drain connection(s) in order to prevent possible damage to the evaporator drain pan.

See Figure 9 for details of a typical condensate line "P" trap.

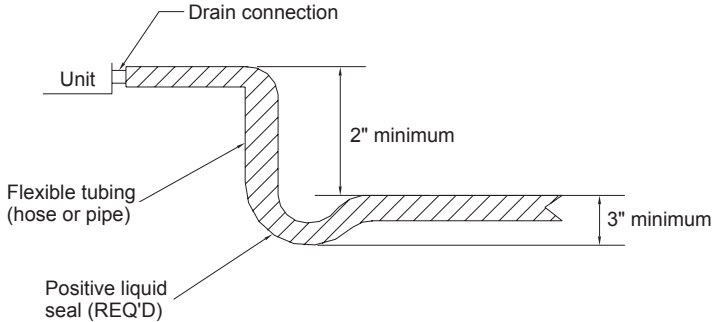


Fig. 9

4.7 Ductwork

This air handler is designed for a complete supply and return ductwork system.

⚠WARNING: Do not operate the unit without all ductwork completed.

To ensure correct system performance, the ductwork is to be sized to accommodate Table 5. Inadequate ductwork that restricts airflow may result in improper performance and compressor or heater failure. Ductwork is designed with less restrictions of airflow and maintains suitable airflow speed. And keep the ductwork sealed with good hermeticity.

Return Ductwork. Do not place the duct inlet at a place where is filled with toxic gas or harmful fume/odor. For upflow configuration, duct terminal connects to the bottom of the air handler.

Return Air Filters. Each installation must include a return air filter. This filtering may be performed at the air handler or externally such as a return air filter grille.

4.8 Electric Heater

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

⚠WARNING: Refer to the "installing electric heater" section of this manual and the instructions provided with the heater kit for the correct installation procedure.

⚠WARNING: The electrical characteristics of the air handler, the electric heater kit, and the supply power should be identical. This air handler does not have factory installed electric heater. Electric heater is available as an accessory. If installing this option, the only heater kits that can be used are the 29EH series as indicated below.

The heating mode temperature rise is dependent upon the system airflow, the supply voltage, and the heater kit size (KW) selected. Use Tables 8-10 to determine the temperature rise(°F).

N/Table 8

CFM	HEATER KIT NOMINAL KW			
	5	10	15	20
600	28	56	N/A	N/A
800	21	42	N/A	N/A
1000	17	34	50	N/A
1200	14	28	42	56
1400	12	24	36	48
1600	10	21	31	42
1800	9	19	28	37

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

Table 9

CFM	HEATER KIT NOMINAL KW			
	5	10	15	20
600	27	52	N/A	N/A
800	20	40	N/A	N/A
1000	16	32	48	N/A
1200	13	27	40	53
1400	11	23	34	46
1600	10	20	30	40
1800	9	18	27	36

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

Table 10

CFM	HEATER KIT NOMINAL KW			
	5	10	15	20
600	25	50	N/A	N/A
800	19	38	N/A	N/A
1000	15	30	46	N/A
1200	13	25	38	56
1400	11	22	33	48
1600	9	19	28	42
1800	8	17	25	37

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

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

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

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

Note: The Temperature Rise Tables can also be used to determine the air handler 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. Set two thermometers, one in the return air inlet and the other one in the supply air outlet.

4.8.1 “29EH” Electric Heater Kits Available

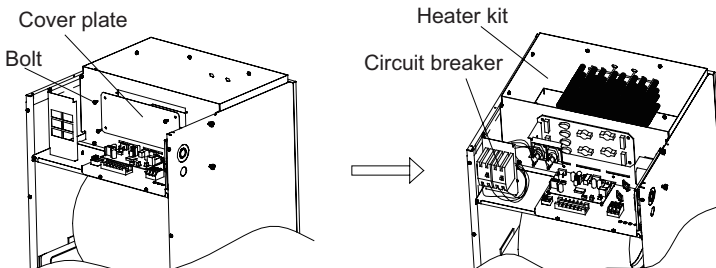
Table 11

SN.	Kit#	Description	Ref. Air Handler use
1	29EHDN052DB	Circuit Breaker, 5kw Heat Strip	24,36, 48,60
2	29EHDN102DB	Circuit Breaker, 10kw Heat Strip	24,36,48,60
3	29EHDN152DB	Circuit Breaker, 15kw Heat Strip	36,48,60
4	29EHDN202DB	Circuit Breaker, 20kw Heat Strip	48,60

4.8.2 “29EH” Heater Kits Installation

CAUTIONS:

- (1) Ensure that all power supply is disconnected prior to installing the heater kit.
 - (2) A means of strain relief and conductor protection must be provided at the supply wire entrance into cabinet.
 - (3) Use copper conductors only.
 - (4) Installation must follow national electric code and other applicable codes.
 - (5) 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.
- 1) Refer to Table 11 for appropriate 29EH heater kit.
 - 2) Check any physical damage, do not install damaged heater kit.
 - 3) Remove the upper access panel from air handler.
 - 4) Remove cover plate from air handler.
 - 5) Slide the heater kit in to the slot and secure element plate with previously removed screws.
 - 6) Insert power leads into the circuit breaker lugs or stripped red and black wires (For heater kit without circuit breaker) and tighten.
 - 7) Connect ground wire to ground lug.
 - 8) Break out appropriate area of the plastic circuit breaker cover on the access panel of the air handler.
 - 9) Replace access panel and check operation.



4.9 Electrical Supply Wire and MOP

⚠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: To avoid the risk of the fire or equipment damage, only use copper conductors. Before servicing or installing this equipment, the electrical power to this unit must be in “off” position and all power supplies should be disconnected.

⚠WARNING: The unit must have an uninterrupted, unbroken electric grounding to minimize the possibility of personal injury if an electric fault occurs. The electric grounding circuit may consist of an appropriate sized power cord which connected with the grounding piece located in the unit control box and also connecting to the building electric service panel. Other methods of grounding are permitted if performed in accordance with the “national electric code” (nec)/ “american national standards institute” (ansi)/ “national fire protection association” (nfpa) 70 and local/state codes. In canada, electric grounding conforms to the canadian electric code csa c22.1. failure to observe this warning can result in electrical shock that can cause personal injury.

4.9.1 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 Table 12.

Table 12

Nominal Input	Minimum Voltage	Maximum Voltage
220/230	198	254

4.9.2 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).

Table 13

Model	Nominal CFM	Blower Motor Full Load Amps	Electric Heat (kw)		Min. Circuit Ampacity*		Max. Fuse or Breaker(HACR) Ampacity	
			240V	208V	240V	208V	240V	208V
21DN024C24	706	0.62	0	0	0.65	0.65	15	15
			5	3.8	26.8	23.3	30	25
			10	7.5	52.9	45.9	60	50
21DN036C24	1059	1.25	0	0	1.7	1.7	15	15
			5	3.8	27.6	24.1	30	25
			10	7.5	53.6	46.7	60	50
21DN048C24	1383	2	0	0	2.5	2.5	15	15
			5	3.8	28.1	24.6	30	25
			10	7.5	54.2	47.1	60	50
			15	11.3	54.2/26	47.1/22.5	60/30	50/25
21DN060C24	1383	2	0	0	2.5	2.5	15	15
			5	3.8	28.1	24.6	30	25
			10	7.5	54.2	47.1	60	50
			15	11.3	54.2/26	47.1/22.5	60/30	50/25
			20	15	54.2/52.1	47.1/45.1	60/60	50/50

Note:

- ① Minimum Circuit Ampacity includes the Blower Motor Full Load Amps
- ② 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 (NEC) in USA or the Canadian Electric Code (CSA) in Canada 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. Use the Table 14 to determine the voltage drop per foot of various conductors.

Table 14

Wire Size(AWG)	Maximum Allowable Length in Feet to Limit Voltage Drop to 2% *							
	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 2008

4.9.3 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.

4.9.4 Electric Connections-Supply Voltage

Use Copper Conductors Only

a knockout is provided on the air handler top panel or side to allow for the entry of the supply voltage conductors. If the knockouts on the cabinet side are used for electrical conduit, an adapter ring must be used in order to meet UL 1995 safety requirements. An NEC or CEC approved strain relief is to be used at this entry point. The wire needs to be sized in accordance with the "Wire Sizing and MOP" section of this manual.

Air Handler Only (Non-Heater Kit Models)

The power cord connects to L1 and L2 terminal located on the electrical box in the air handler. Note to grounding well. The power cord adopts appropriately sized solderless connector or other NEC or CEC approved means. Check the unit wiring diagram attached for reference.

Air Handler with Heater Kits (Non-Circuit Breaker)

The power supply should be connected to the stripped black and red wires on the heater kit.

Air Handler with Heater Kits Containing Circuit Breaker

29EH models with a "B" suffix contain a circuit breaker(s). The air handler has a plastic cover on the access panel that will require either one or both sections to be removed to allow the heater kit circuit breaker(s) to be installed. See the 29EH Installation Instruction for further detail. The air handler wires and supply wires are installed directly onto the 29EH circuit breaker(s) as shown in the 29EH Installation Manual and wiring diagram.

Low Voltage Connections

Several combinations of low voltage schemes are available, depending on the presence of a heater kit and whether the heater kit is single-stage or multi-stage. The low voltage connections are determined by whether the outdoor unit is a condenser or heat pump. The 24V-control voltage connects the air handler 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'. Low voltage wiring can be made through the top of the cabinet or through either side. See the "Thermostat Wiring" section of this manual for the 21DN models for typical low voltage wiring connections.

4.9.5 Schematic Wiring Diagram

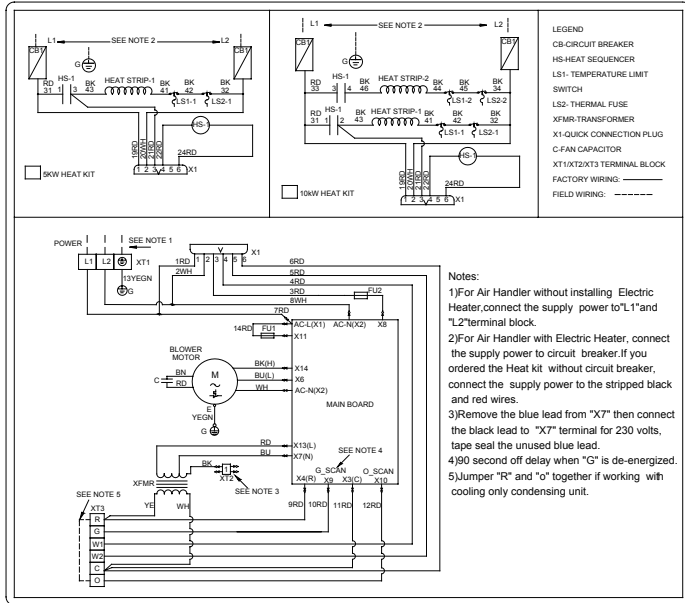


Fig. 10 Wiring Diagram(21DN024C24;21DN036C24)

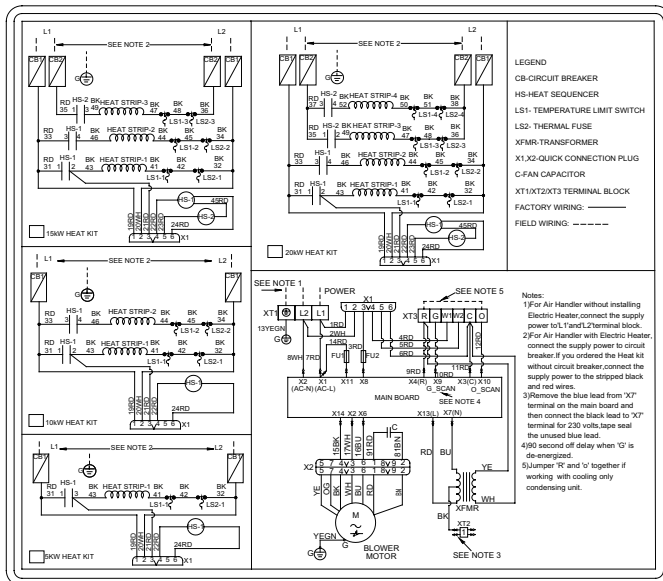


Fig. 11 Wiring Diagram(21DN048C24;21DN060C24)

4.9.6 Thermostat Wiring

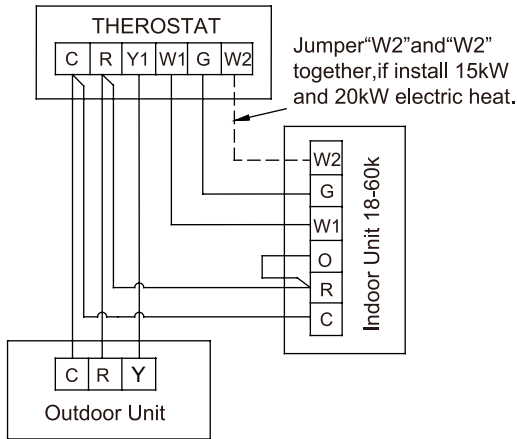


Fig. 12

Note: The signal line of the wired controller must be separated from the power line and the connecting line between the indoor unit and the outdoor unit.

5. Installation Check and Trial Run

5.1 Checking Items after Installation

Table 15

Items to be checked	Problems might happen due to improper installation	Check
Check if each parts of the unit have been installed reliably.	The unit might fall off, vibrate or emit noise.	
Check if the unit has passed through leakage test.	It may cause deficiency of cooling (heating) capacity.	
Check if the unit has been insulated properly.	It may cause condensation and water drop.	
Check if the water can be drained fluently.	It may cause condensation and water drop.	
Check if the power voltage accords with that on the nameplate.	Malfunction might happen and parts might be burned.	
Check if the wiring and pipe line has been installed correctly.	Malfunction might happen and parts might be burned.	
Check if the unit has been earthed soundly.	Hazard of electricity leakage	
Check if the wiring conforms to the wire gage.	Malfunction might happen and parts might be burned.	
Check if there is obstruction blocking the air inlet/outlet.	It may cause deficiency of cooling (heating) capacity.	

Check if the piping length and refrigeration charging volume has been recorded	Uncertain about the refrigerant charging volume.	
Check if the piping connection and valves have been set properly.	It may cause unit abnormality and damage the unit.	
Make sure there is no crack among air return and supply pipe.	It may cause air leak, vibration and noise.	
Check if the panel is mounted firmly.	It may cause air leak, vibration and condensation.	

5.2 Trial Run

5.2.1 Preparative for Trial Run

- (1) Never power on the unit until all the installation work has been done.
- (2) All the control circuit and wiring has been connected correctly and soundly. Valves on the vapor and liquid line should be completely open.
- (3) All the scattered objects should be removed, especially metal filing, thrum and clip.
- (4) Check if the unit appearance and piping system has been damaged during transportation or handling.
- (5) Check if the terminals are loose and the phases are correct.

5.2.2 Trial Run

- (1) Trial run can be operated by professional personnel only after above items have been checked (items to be checked as per actual condition).
- (2) Power on the unit and press ON/OFF button to activate.
- (3) After compressor startup, please immediately stop the unit when abnormal sound emits.
- (4) Trial run under several modes and check if the unit operates normally.

6. Common Malfunction and Remedies

If the unit doesn't run normally, please check the following items before ask for service.

Table 16

Phenomenon	Reason	Treatment
The unit can not be activated.	The unit doesn't connect with power supply.	Connect with power supply.
	Low voltage.	Check if circuit voltage is within rated scope.
	Fuse broken or breaker trips off.	Replace fuse or connect breaker.
The unit operates but stops immediately.	Air inlet/outlet of indoor or outdoor unit is blocked.	Remove obstacles.

Abnormal cooling or heating.	Air inlet/outlet of indoor or outdoor unit is blocked.	Remove obstacles
	Inappropriate temperature setting.	Adjust setting at wired controller.
	Doors or windows are opened.	Close the door or windows.
	Direct sunshine.	Draw curtain or louver.
	Too much heat source in the room.	Reduce heat source.
	Filter screen is blocked by dirt.	Clean the filter.

Note: If reasons are still unclear after checking above items, please contact DELTA service center and show phenomena and models.

Following circumstances are not malfunction

Table 17

“Malfunction”		Reason
Unit doesn't run	When unit is started immediately after it is just turned off.	Overload protection switch makes it run after 3 minutes delay.
	When power is turned on.	Standby operating for about 1minute
Mist comes from the unit	Under cooling	Indoor high humidity air is cooled rapidly
The unit emits noise.	Slight cracking sound is heard when just turned on.	It is noise when electronic expansion valve initialization.
	There is consecutive sound when cooling.	That's sound for gas refrigerant flowing in the unit.
	There is sound when unit starts or stops.	That's sound for gas refrigerant stops flowing.
	There is slight and consecutive sound when unit is running or after running.	That's sound for operation of drainage system.
The unit blows out dust.	When unit runs after no operation for a long period.	Dust in indoor unit is blew out.
The unit emits odor.	Operating	The room odor absorbed by the unit is blew out again.
Indoor unit still runs after switch off.	After every indoor unit receive "stop" signal, fan will keep running.	Indoor fan can be set as "FAN" or "AUTO" mode. Under "FAN" mode, indoor fan will keep running after switch off the unit.

7. Maintenance and Care

Regular check, maintenance and care should be performed by professional personnel, which will prolong the unit life span.

7.1 Outdoor Heat Exchanger

Outdoor heat exchanger is required to be cleaned once every two or three months. Use vacuum cleaner with nylon brush to clean up dust and sundries on the surface of heat exchanger. Blow away dust by compressed air if it is available. Never use water to wash the heat exchanger.

7.2 Drain Pipe

Regularly check if the drain pipe is clogged in order to drain condensate smoothly.

7.3 Notice before Seasonal Use

- (1) Check if the inlet/outlet of the indoor/outdoor unit is clogged.
- (2) Check if the ground wire is earthed reliably.
- (3) Check if the filter screen has been set soundly.
- (4) Check if the outdoor unit is installed firmly. If there is something abnormal, please contact the local appointed service center.

7.4 Maintenance after Seasonal Use

- (1) Cut off main power supply of the unit.
- (2) Clean filter screen and indoor and outdoor units.
- (3) Clean the dust of sundries on the indoor and outdoor units.
- (4) In the event of rusting, use the anti-rust paint to stop spreading of rust.

7.5 Parts Replacement

Purchase parts from local appointed service center or dealer if necessary.

8. After-Sales Service

In case the air-conditioning unit you bought has any quality problem or you have any inquiry, please contact the local after-sales service agency designated by factory.

Warranty should meet the following requirements:

- (1) First run of the unit should be operated by professional personnel from factory appointed service center.
- (2) Only factory manufactured accessories can be used on the machine.
- (3) All the instructions listed in this manual should be followed.
- (4) Warranty will be automatically void if fails to comply with any items mentioned above.

Thank you for Choosing



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