



TRANE®

Installation Manual

Rental Services

Vertical Air Conditioning Units





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Warnings and Cautions

Notice that warnings and cautions appear at appropriate intervals throughout this manual. Warnings are provided to alert installing parties of potential hazards that could result in personal injury or death, while cautions are designed to alert personnel to conditions that could result in equipment damage.

Your personal safety and the proper operation of the Trane Rental Services temporary system depend upon the strict observance of these precautions.

NOTICE: Warnings and Cautions appear at appropriate sections throughout this manual. Read these carefully.

 **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

CAUTION: Indicates a situation that may result in equipment or property-damage only accidents.



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Introduction

This installation manual covers the vertical air conditioning units (VTU) available to rent from Trane Rental Services for temporary cooling solutions. This includes VTU technical information, start-up information, and unit maintenance.

The information contained in this bulletin is provided to ensure the safe installation and operation of the equipment and its surroundings and is to be used as a reference for each VTU to aid in determining unit size, power requirements, or lifting requirements. If additional information regarding a particular unit is required, please contact Trane Rental Services.

Contact Trane Rental Services for availability of equipment (including ancillary items: electrical cable, flexible duct, etc.) prior to obtaining a purchase order from the customer. Equipment is available on a first-come, first-serve basis, but can be reserved with a signed rental agreement.

Call Rental Services 24 x 7 at (800) 755-5115 for specific questions.

Units Affected

RSVT0010F0XX - 10-ton vertical air conditioning unit

RSTV0020F0XX - 20-ton vertical air conditioning unit

Note: Where xx represents the unique inventory number.

WARNING

Live Electrical Components!

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

WARNING

Failure to follow state/local codes could result in death or serious injuries!

All vertical air conditioning units should be installed per the National Electric Code (NEC) and/or applicable state/local codes.

All information contained in this document is for reference only.



General Information

The vertical air conditioning units (VTU) can be used in free blow or ducted applications. When used in free blow applications (ex. through the wall of a tent) duct connectors on the top and front of the unit must be removed. Refer to the installation section of this manual for instructions. Each unit includes a clamp on the top and each side for installation in the wall of a tent for a special event application.

Accessories such as flexible duct, electrical cable, supply and return air duct adapters, and condenser discharge duct adapters are available upon request.

Table 1. General Unit Information

Model		10 ton	20 ton
Manufacturer		United CoolAir™	United CoolAir™
Refrigerant	Type	R-22	R-22
	Charge	6.3 lbs	11 lbs
Compressor	Type	Scroll	Scroll
	Quantity	2	2
	Nominal Tons	5	10
	Hot Gas Bypass	No	Yes
Evaporator Airflow	Orientation	Horizontal	Horizontal
	Nominal Airflow	4,000 cfm	8,000 cfm
	Max Static Discharge Pressure	1.0 in. ESP	1.0 in. ESP
Supply Air Connection (s)	Type	Grille or Duct	Grille or Duct
	Quantity	2	2
	Size	12 in	20 in
Return Air Connection (s)	Type	Grille or Duct	Grille or Duct
	Quantity	2	2
	Size	12 in	20 in
Evaporator Coil	Rows	4	4
	Face Area	9 sq ft	13.33 sq ft
	FPI	12	10
Condenser Coil	Rows	4	4
	Face Area	11.25 sq ft	20 sq ft
	FPI	12	12
Filter	Type	Permanent Cleanable	Permanent Cleanable
	Quantity	1	2
	Dimensions	14 in x 55 in x 0.5 in	40 in x 24 in x 0.5 in
Insurance Value		\$20,000	\$25,000

Table 2. Cooling Capacity (MBH)

Model	Entering Air Temp		Temperature °F (air over condenser)	
	DB	WB	95°F	
			Total	Sensible
10 ton	80	67	118	86.3
20 ton	80	67	238	175

Note: Capacities are gross values and are not adjusted for motor heat.



General Information

Table 3. Electric Heat Air Temperature Rise

Model	Heater kW	Total MBH	Temperature Rise (°F)
10 ton	30	102.4	23.6
20 ton	45	153.5	17.7

Note: Note: Air temperature rise = (kW x 3413)/(scfm x 1.085)

Table 4. Weights and Dimensions

Model	Length	Width	Height	Weight
10 ton Vertical Unit	5 ft 2 in	3 ft	6 ft 11 in	1,345 lbs
10 ton Vertical Unit w/ supply and return duct connectors	5 ft 2 in	3 ft 11 in	7 ft 2 in	1,415 lbs
20 ton Vertical Unit	7 ft 7 in	3 ft	8 ft	2,105 lbs
20 ton Vertical Unit w/ supply and return duct connectors	7 ft 7 in	3 ft 11 in	9 ft	2,245 lbs
Fork Pocket Dimensions (10 & 20 ton units)	---	7 in	3 in	---

Note: Add 17 inches to the unit width and 50 lbs to the unit weight for condenser discharge duct connections.

Rigging Guidelines

Each vertical air conditioning unit has forklift pockets on all sides.

WARNING
Heavy Objects!

Use a forklift of suitable capacity to move the unit. Failure to properly lift unit could result in death or serious injury or possible equipment or property only damage.

Figure 1. 20-ton Vertical Air Conditioning Unit



Fork Lift Pockets



Electrical Information

All Vertical air conditioning units are 460V, 3-phase, 60 Hz. Each unit has eight color coded cam-type electrical connections. When connecting one unit to a power source the male cam-type connections on the right side should be used. The left side female cam-type connections located behind the hinged panel are only be used when connecting multiple units to one power source and allows you to connect several units in series. Either 2/0 or 4/0 electrical cable may be supplied as an accessory, if requested.

NOTICE

Do Not Exceed Amp Rating!

When connecting multiple units in series do not exceed amp rating of cable used. Exceeding amp ratings could cause permanent damage to the electrical cables.

Figure 2. Color coded cam-type electrical connections

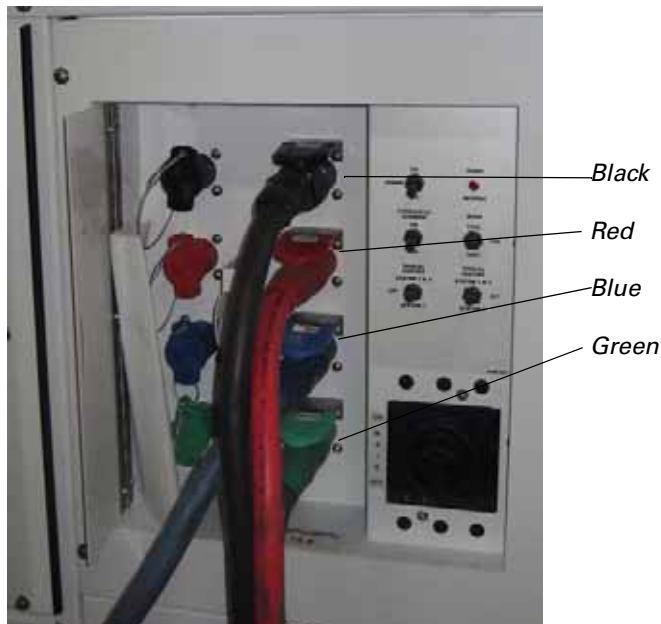


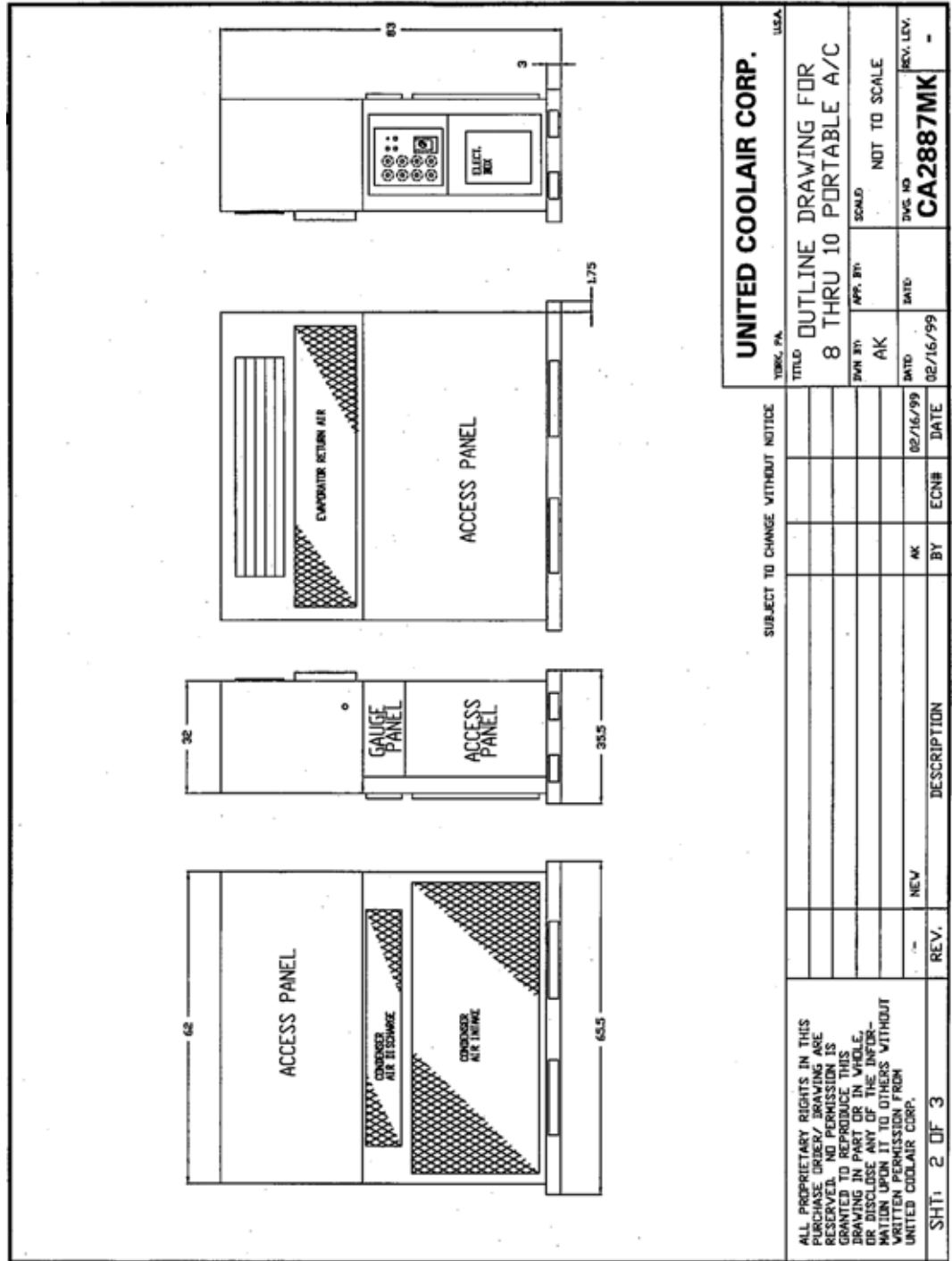
Table 5. Electrical Information

Model	10 ton	20 ton
Circuit Breaker	Yes	Yes
Maximum Overcurrent Protection (MCA) - cooling only	29.8 amps	57.8 amps
Max Fuse Size - cooling only	40 amps	80 amps
Maximum Overcurrent Protection (MCA) - cooling w/heat	51 amps	78.8 amps
Max Fuse Size - cooling w/heat	55 amps	80 amps
Compressor LRA	62 amps	127 amps
Compressor RLA	10 amps	18.8 amps
Evaporator Blower Motor	2 hp	5 hp
Evaporator Blower RLA (each)	3.1 amps	6.5 amps
Condenser Blower Motor	3 hp	5 hp
Condenser Blower R:A (each)	4.2 amps	6.5 amps
Heater kW (total)	30	45
Heater Amperage (total)	37.7 amps	56.5 amps
Heater kW each stage	15W and 15kW	15kW and 30kW
Heater Stages	2	2



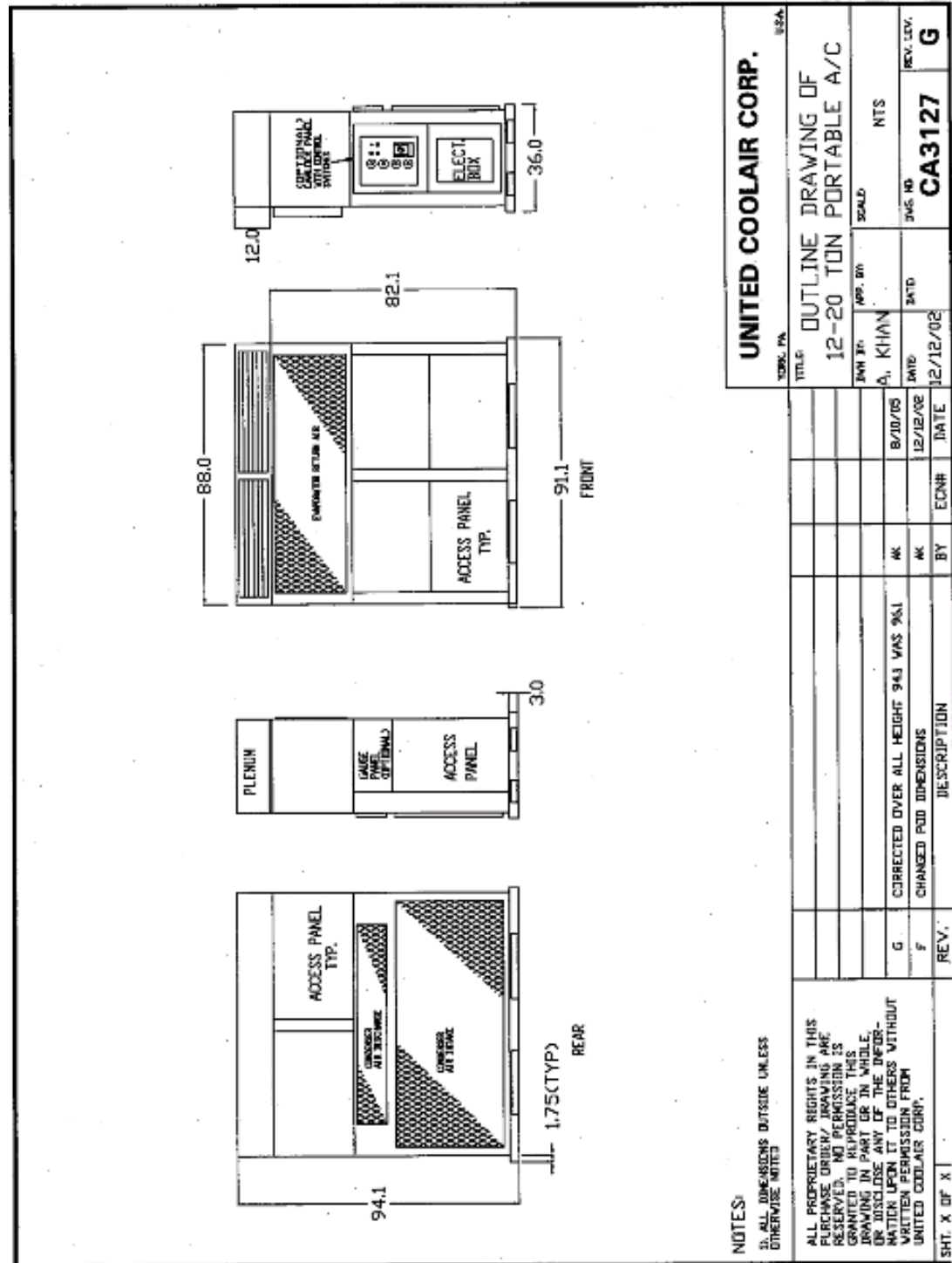
Line Drawings

Figure 3. 10-ton Vertical Air Conditioning Unit Line Drawing (Shown in Free Blow Configuration)



UNITED COOLAIR CORP.		USA	
SUBJECT TO CHANGE WITHOUT NOTICE			
TITLE	OUTLINE DRAWING FOR 8 THRU 10 PORTABLE A/C		
SWN BY	AK	APP. BY	AK
DATE	02/16/99	DATE	02/16/99
SCALE	NOT TO SCALE		
DWG. NO.	CA2887MK		
REV. LEV.	-		
REV.	REV.	DESCRIPTION	BY
-	NEW		AK
<p>ALL PROPRIETARY RIGHTS IN THIS PURCHASE ORDER DRAWING ARE RESERVED. NO PERMISSION IS GRANTED TO REPRODUCE THIS DRAWING IN PART OR IN WHOLE, OR DISCLOSE ANY OF THE INFORMATION UPON IT TO OTHERS WITHOUT WRITTEN PERMISSION FROM UNITED COOLAIR CORP.</p>			
SHT: 2 OF 3			

Figure 4. 20-ton Vertical Air Conditioning Unit Line Drawing (Shown in Free Blow Configuration)



UNITED COOLAIR CORP.		USA	
TITLE: OUTLINE DRAWING OF 12-20 TON PORTABLE A/C		SCALE: NTS	
DATE: 8/10/05	BY: MK	DATE: 12/12/02	REV. NO: CA3127
DATE: 12/12/02	BY: MK	DATE: 12/12/02	REV. NO: G
NOTES:		DESCRIPTION	
1. ALL DIMENSIONS OUTSIDE UNLESS OTHERWISE NOTED		CORRECTED OVER ALL HEIGHT 94.1 WAS 94.1	
ALL PROPRIETARY RIGHTS IN THIS PURCHASE ORDER/ DRAWING ARE RESERVED. NO PERMISSION IS GRANTED TO REPRODUCE THIS DRAWING IN ANY MANNER, EITHER LEGAL OR TO OTHERS WITHOUT WRITTEN PERMISSION FROM UNITED COOLAIR CORP.		CHANGED POID DIMENSIONS	
SHT. X OF X		REV.	



Installation and Start-up Guidelines

Installation

1. Confirm unit is properly leveled.
2. Connect the condensate drain line for the unit (Figure 11). A "kazoo" tube with a $\frac{3}{4}$ in NPT connection is shipped loose with the unit. Run hose from the condensate drain connection to the desired disposal location and attach the "kazoo" tube to the end of the hose.

Notes: The "kazoo" tube acts as a condensate trap and is required.

Notes: To avoid replacement fees, all panels/grills/connectors must be returned with unit when project is completed.

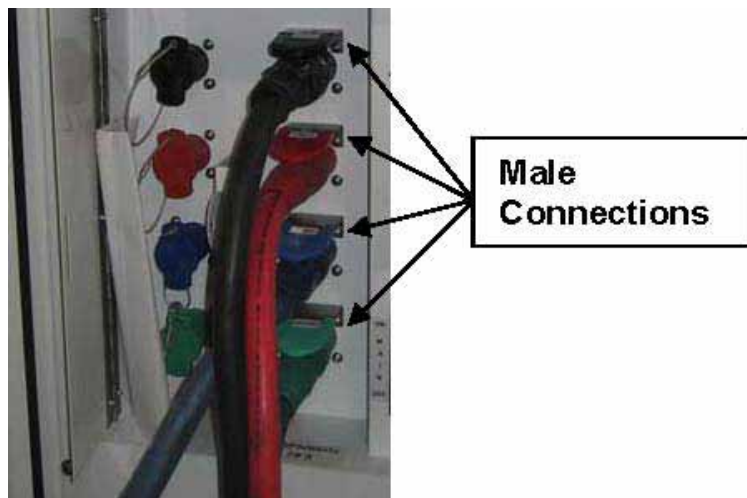


Figure 6. Supply Air Grille

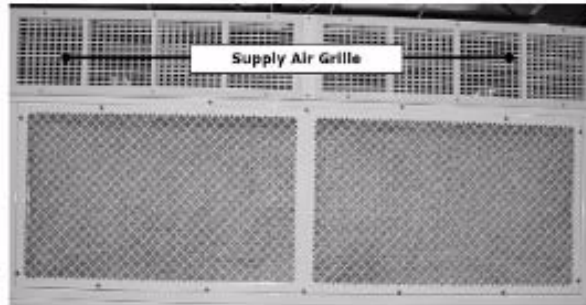


Figure 7. Top of Unit



Figure 8. Supply Air Grille



10 ton:

- Remove the condenser discharge grille mounting hardware and store the discharge grille for future use.
- The existing mounting locations for the discharge grille will be the same for the discharge box. Attach the condenser discharge box using the condenser discharge grill mounting hardware that was just removed.

- Install the optional flexible ducting by sliding the end of the duct section over the end of the duct connector collar. Secure the duct by tightening the hose clamp and the end of the duct section using a Phillips head screwdriver.

20 ton:

- Remove the condenser discharge grille mounting hardware including the top two screws of the condenser coil guard and store the discharge grille for future use.
- The existing mounting locations for the discharge grille will be the same for the discharge box. The bottom flange of the condenser discharge box will be located behind the top tabs of the condenser coil guard. Attach the condenser discharge box using the condenser discharge grill mounting hardware that was just removed.
- Install the optional flexible ducting by sliding the end of the duct section over the end of the duct connector collar. Secure the duct by tightening the hose clamp and the end of the duct section using a Phillips head screwdriver.

5. For free blow applications:

- a. Remove the screws connecting the return air duct connector shown in Figure 9 (if installed) using a Phillips head screwdriver. Store duct adapter and screws for future use.
- b. Remove the screws connecting the patch plate (Figure 9) using a Phillips head screwdriver. Set patch plate aside for installation on the top of the unit once the top supply air duct adapter is removed.
- c. Install the supply air grille shown in Figure 10 using the same Phillips head screws that were used to attach the patch plate shown in Figure 9.
- d. Remove the screws connecting the supply air duct connector to the top of the unit using a Phillips head screwdriver. The supply duct connector front edge is held in place by the tent clamps on the top of the unit. Loosen the tent clamps using a 7/16 in wrench to remove the supply air duct connector completely. Store the duct connector and hardware for future use.
- e. Install the patch plates on the top of the unit that were removed from the front of the unit in the step above using a Phillips head screwdriver.

Figure 9. Top of Unit



Figure 10. Supply Air Grille



6. For installation in the outside of a tent wall:
 - a. Loosen tent clamps (Figure 11) on top and sides of unit.
 - b. Carefully slide the tent material under the tent clamps on each side and top of the unit.
 - c. Tighten down the tent clamps using a 7/16 in wrench.

CAUTION

Do no over torque tent clamp bolts!

This could permanently damage the tent clamps rendering them ineffective. Clamps would need to be replaced at a cost to whoever incorrectly torqued the bolts.

Figure 11. Tent Clamps and Condensate Drain



Start-up Guidelines

1. Ensure that all switches on the unit are in the 'OFF' position prior to switching on the Main Unit Circuit Breaker. Several of the toggle switches have a center 'OFF' position.
2. Switch the unit breaker to the 'ON' position to supply power to the unit. (Figure 12)

Figure 12. Main Unit Circuit Breaker



3. Verify proper sequencing of the input power by looking at the phase indicator light (Figure 13). If the light is lit, change any two of the conductors (excluding the ground wire) **at the power source. Do not change wiring internal to the unit.** The phase indicator light should turn off once the unit is properly phased.
4. When the circuit breaker is in the on position and the POWER toggle switch in the ON position, the evaporator blower will run continuously. The system can be controlled manually or by use of a thermostat.
5. Manual Operation -
 - a. On the control panel there are five toggle switches (Figure 13):
 - Power Switch
 - Thermostat Override Switch
 - Mode Switch
 - Manual Cooling Switch
 - Manual Heating Switch

Unit Toggle Switches and Phase Indicator Light



Set the 'MODE' toggle switch to either 'COOL' or 'HEAT'.

- c. If the 'THERMOSTAT OVERRIDE' toggle switch is set to 'ON', 'SYSTEM 1 & 2 COOLING' mode must be controlled by the 'MANUAL COOLING' or 'MANUAL HEATING' toggle switch. The 'MANUAL COOLING' or 'MANUAL HEATING' toggle switch must then be set to 'SYSTEM 1' or 'SYSTEM 1 & 2' to energize the cooling or heating mode of operation. These 'MANUAL COOLING' and 'MANUAL HEATING' toggle switches have a center off position that will not allow cooling or heating to energize when the 'THERMOSTAT OVERRIDE' toggle switch is set to the 'ON' position.

When setting 'MANUAL COOLING' or 'MANUAL HEATING' mode using the toggle switches, be sure that the opposite mode switch that is not desired is set to the center 'OFF' position so as not to run cooling and heating simultaneously.

A time delay is built into the system to prevent System 1 and System 2 compressors from energizing simultaneously. This time delay is set to five minutes.

6. Thermostat Operation

- a. Place the 'THERMOSTAT OVERRIDE' toggle switch to 'OFF' position.
- b. Set the 'MODE' toggle switch to either 'HEAT' or 'COOL'.
- c. The system is controlled by a two stage cool/two stage heat non-programmable thermostat. This thermostat is mounted on top of the electrical control box (Figure 14).
- d. Set the thermostat settings on the thermostat to the desired setting. System 1 and System 2 compressors will then turn on when there is a call for cooling.
- e. When the space temperature rises approximately 1°F above the setting the system will turn 'ON'. The differential between stages is approximately 2°F. The equipment will not cycle more than six times per hour in the cooling mode.

A time delay is built into the system to prevent System 1 and System 2 compressors from energizing simultaneously. This time delay is set to five minutes.

Figure 14. Unit Thermostat



WARNING
Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

Maintenance Guidelines

The motor and blower bearings are permanently lubricated and should not require maintenance.

The condenser and evaporator fans are belt driven. The drive belts should be routinely examined for wear and correct tension. An incorrectly tensioned belt can cause bearing wear or slippage. The belt can be tensioned by loosening the adjusting nut, sliding the motor until the belt is properly tensioned, and re-tightening the adjusting nut. A properly tensioned belt has approximately 1" to 1-1/2 in of movement when both legs of the belt are pressed in, midway between the pulley and the sheave.

Each unit is provided with cleanable filters that are installed in the evaporator return air section. The return air grille must be removed to gain access to the filters. Check filters periodically to verify that the filters are clean. The filters can be cleaned by rinsing the filters with water. Apply a new coating of adhesive to restore the filter characteristics.



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For more information, contact your local Trane office or e-mail us at comfort@trane.com

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Supersedes	SRV-SVN03A-EN
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Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice. Only qualified technicians should perform the installation and servicing of equipment referred to in this literature.