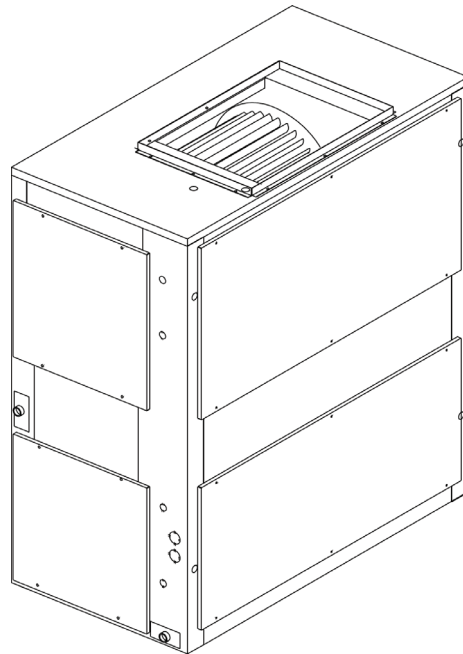


# Installation Operation Maintenance

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## Split System Cooling or Heat Pump Air Handler 7½ - 20 Tons

*Model TWE*



### **Models (60 Hz)**

TWE060A\*\*\*E  
TWE060B\*\*\*E  
TWE090A\*\*\*E  
TWE090B\*\*\*E  
TWE120A\*\*\*F  
TWE120B\*\*\*E  
TWE180B\*\*\*E  
TWE240B\*\*\*F

### **Models (50 Hz)**

TWE050AD\*\*E  
TWE075AD\*\*E  
TWE100AD\*\*E  
TWE100BD\*\*E  
TWE155BD\*\*E  
TWE200BD\*\*F

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**October 2006**

**TWE-SVX03C-EN**

# Preface and Warnings and Cautions

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## Literature Change History

TWE-SVX03A-EN (June 2003)  
Implemented Global Graphics format to IOM.

TWE-SVX03B-EN (April 2005)  
Added capacitor discharge warning.

TWE-SVX03C-EN (September 2006)  
Model number for 200 and 240 went to an "F".

TWE-SVX03C-EN (October 2006)  
Updated 200 and 240 unit dimensions.

**Note:** *One copy of this document ships inside the control panel of each unit and is customer property. It must be retained by the unit's maintenance personnel.*

This booklet describes proper installation, operation, and maintenance procedures for air cooled systems. By carefully reviewing the information within this manual and following the instructions, the risk of improper operation and/or component damage will be minimized.

It is important that periodic maintenance be performed to help assure trouble free operation. A maintenance schedule is provided at the end of this manual. Should equipment failure occur, contact a qualified service organization with qualified, experienced HVAC technicians to properly diagnose and repair this equipment.

**Note:** *All phases of this installation must comply with the NATIONAL, STATE & LOCAL CODES. In addition to local codes, the installation must conform with National Electric Code -ANSI/NFPA NO. 70 LATEST REVISION.*

**Note:** **Do Not release refrigerant to the atmosphere! If adding or removing refrigerant is required, the service technician must comply with all federal, state, and local laws.**

## Warnings and Cautions

Notice that warnings and cautions appear at appropriate intervals throughout this manual. Warnings are provided to alert installing contractors to 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 this machine 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 situations 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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# Model Number Description

---

<b>TWE</b>	<b>090</b>	<b>A</b>	<b>1</b>	<b>00</b>	<b>E</b>	<b>A</b>
<b>123</b>	<b>456</b>	<b>7</b>	<b>8</b>	<b>9 10</b>	<b>11</b>	<b>12</b>

## Model Number Description

All products are identified by a multiple-character model number that precisely identifies a particular type of unit. An explanation of the alphanumeric identification code is provided. Its use will enable the owner/operator, installing contractors, and service engineers to define the operation, specific components, and other options for any specific unit.

When ordering replacement parts or requesting service, be sure to refer to the specific model number, serial number, and DL number (if applicable) stamped on the unit nameplate.

## DIGITS 1-3: PRODUCT TYPE

TWE = Split System Heat Pump/  
Cooling Air Handler

## DIGITS 4-6: NOMINAL GROSS COOLING CAPACITY (MBh)

060 = 5 Tons  
090 = 7½ Tons  
120 = 10 Tons  
150 = 12½ Tons  
180 = 15 Tons  
240 = 20 Tons

## DIGIT 7: MAJOR DEVELOPMENT SEQUENCE

A = Single  
B = Dual

## DIGIT 8: ELECTRICAL CHARACTERISTICS

1 = 208-230/60/1  
3 = 208-230/60/3  
4 = 460/60/3  
W = 575/60/3  
D = 380-415/50/3  
K = 380/60/3

## DIGITS 9, 10: FACTORY INSTALLED OPTIONS

00 = Packed Stock

## DIGITS 11: MINOR DESIGN SEQUENCE

Current Design Sequence

## DIGITS 12: SERVICE DIGIT

A = First

# General Information

## General

This manual covers installation of the TWE050, 060, 075, 090, 100 and 120A single circuit air handlers and TWE060, 075, 090, 100, 120, 155, 180, 200 and 240B dual circuit air handlers. These air handler models incorporate a single slab coil assembly, improved application flexibility, servicing, maintenance accessibility and an improved accessory line. They are fully convertible, (vertical to horizontal discharge) without field removal or reorientation of the coil assembly. They are shipped ready for horizontal installation.

The TWE090A300C, TWE090B300C, TWE120A300D, TWE120B300D models are shipped from the factory wired for 208-230V/3ph/60 Hz, but may be field converted for 460V/3ph/60 Hz applications by changing voltage plug on the motor. For voltage change plug instructions, refer to [Figure 9](#).

All units (both single and dual circuit), have one drain pan that can be installed in any one of four positions. This allows for vertical or horizontal applications and right or left exit.

**Note:** *The TWE060B, TWE090B, TWE100B, and TWE120B dual circuit air handlers have a split face coil. When they are installed in either position, the lower half of the coil is designated as "Circuit A" and should always wet first.*

The TWE155B, TWE180B, TWE200B dual circuit units have a mixed face coil.

**Note:** *Note: The TWE050, 060, 075, 090, 100 and 120 air handlers have structural provisions to allow 180 degree rotation of discharge panel/blower assembly at installation. A reversible discharge wiring kit, BAYWRKT001A is available with instructions.*

Installation procedures should be performed in the sequence that they appear in this manual. Do not destroy or remove the manual from the unit.

The manual should remain weather-protected with the unit until all installation procedures are complete.

**Note:** *It is not the intention of this manual to cover all possible variations in systems that may occur or to provide comprehensive information concerning every possible contingency that may be encountered during an installation. If additional information is required or if specific problems arise that are not fully discussed in this manual, contact your local sales office.*

**Note:** *"Warnings" and "Cautions" appear at appropriate places in this manual. Your personal safety and the proper operation of this machine require that you follow them carefully. The Company assumes no liability for installations or servicing performed by unqualified personnel.*

## Installation Checklist

An "Installation Checklist" is provided at the end of the installation section of this manual. Use the checklist to verify that all necessary installation procedures have been completed. Do not use the checklist as a substitute for reading the information contained in the manual. Read the entire manual before beginning installation procedures.

## Unit Inspection

Inspect material carefully for any shipping damage. If damaged, it must be reported to, and claims made against the transportation company. Compare the information that appears on the unit nameplate with ordering and submittal data to insure the proper unit was shipped. Available power supply must be compatible with electrical characteristics specified on component nameplates. Replace damaged parts with authorized parts only.

## Inspection Checklist

To protect against loss due to damage incurred in transit, complete the following checklist upon receipt of the unit.

- Inspect individual pieces of the shipment before accepting the unit. Check for obvious damage to the unit or packing material.
- Inspect the unit for concealed damage before it is stored and as soon as possible after delivery. Concealed damage must be reported within 15 days. If concealed damage is discovered, stop unpacking the shipment. Do not remove damaged material from the receiving location. Take photos of the damage if possible. The owner must provide reasonable evidence that the damage did not occur after delivery.
- Notify the carrier's terminal of damage immediately by phone and by mail. Request an immediate joint inspection of the damage by the carrier and the consignee.
- Notify the sales representative and arrange for repair. Do not repair the unit until the damage is inspected by the carrier's representative.

# Unit Dimensions

MODEL	APPROXIMATE CORNER WEIGHTS								UNIT TOTAL	SHIPPING TOTAL
	VERTICAL				HORIZONTAL					
	#1	#2	#3	#4	#1	#2	#3	#4		
TWE050-060A/B	58 lb 26.3 kg	58 lb 26.3 kg	58 lb 26.3 kg	58 lb 26.3 kg	54 lb 24.5 kg	59 lb 26.8 kg	63 lb 28.6 kg	56 lb 25.4 kg	232 lb 105.2 kg	262 lb 118.8 kg
TWE075-090A/B	79 lb 35.8 kg	79 lb 35.8 kg	79 lb 35.8 kg	79 lb 35.8 kg	72 lb 32.7 kg	80 lb 36.2 kg	88 lb 39.9 kg	77 lb 34.9 kg	317 lb 143.8 kg	365 lb 165.5 kg
TWE100-120A/B	98 lb 44.5 kg	98 lb 44.5 kg	98 lb 44.5 kg	98 lb 44.5 kg	95 lb 43.1 kg	101 lb 45.8 kg	101 lb 45.8 kg	95 lb 43.1 kg	392 lb 177.8 kg	439 lb 199.1 kg

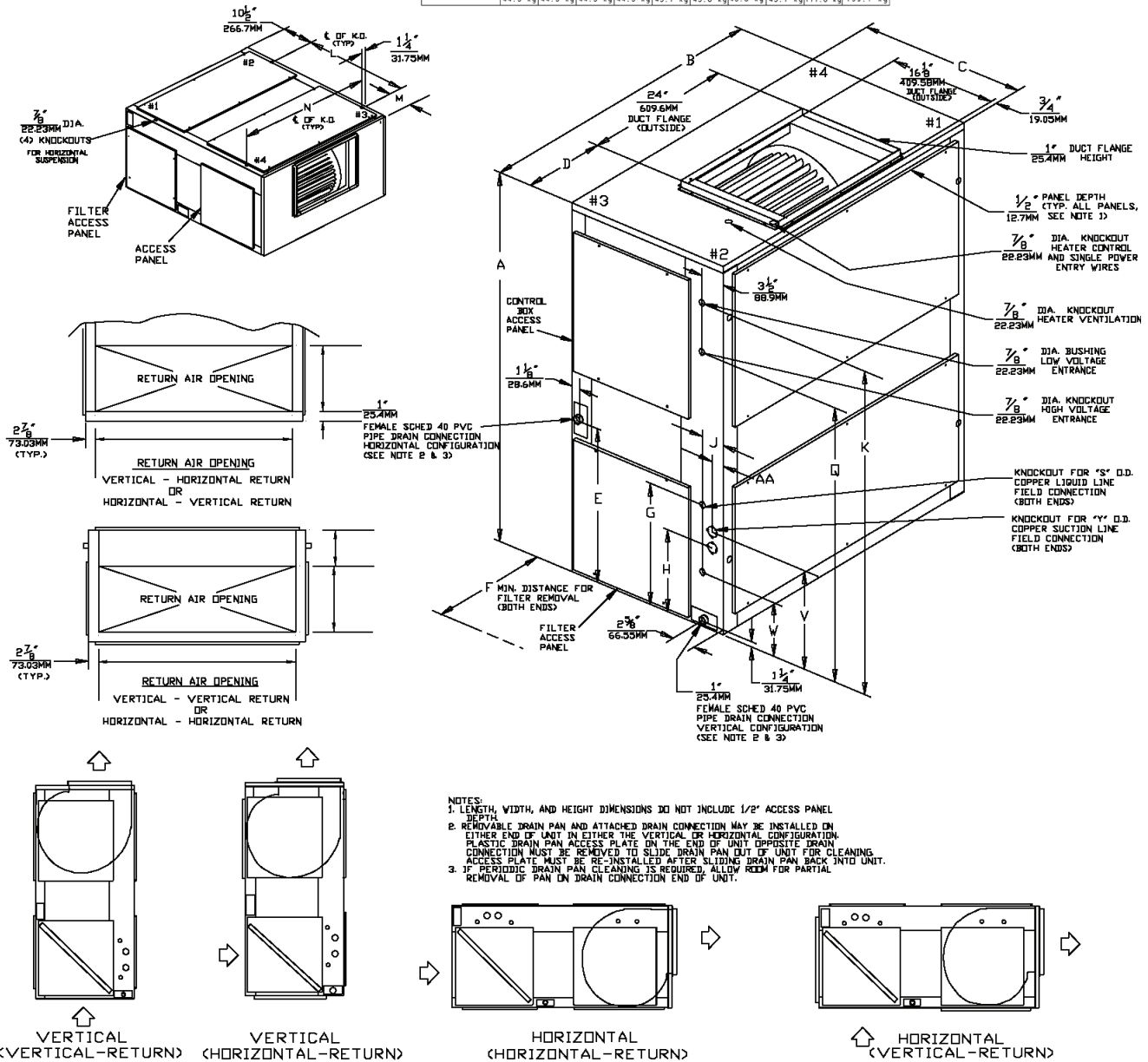


Figure 1.

## Unit Dimensions

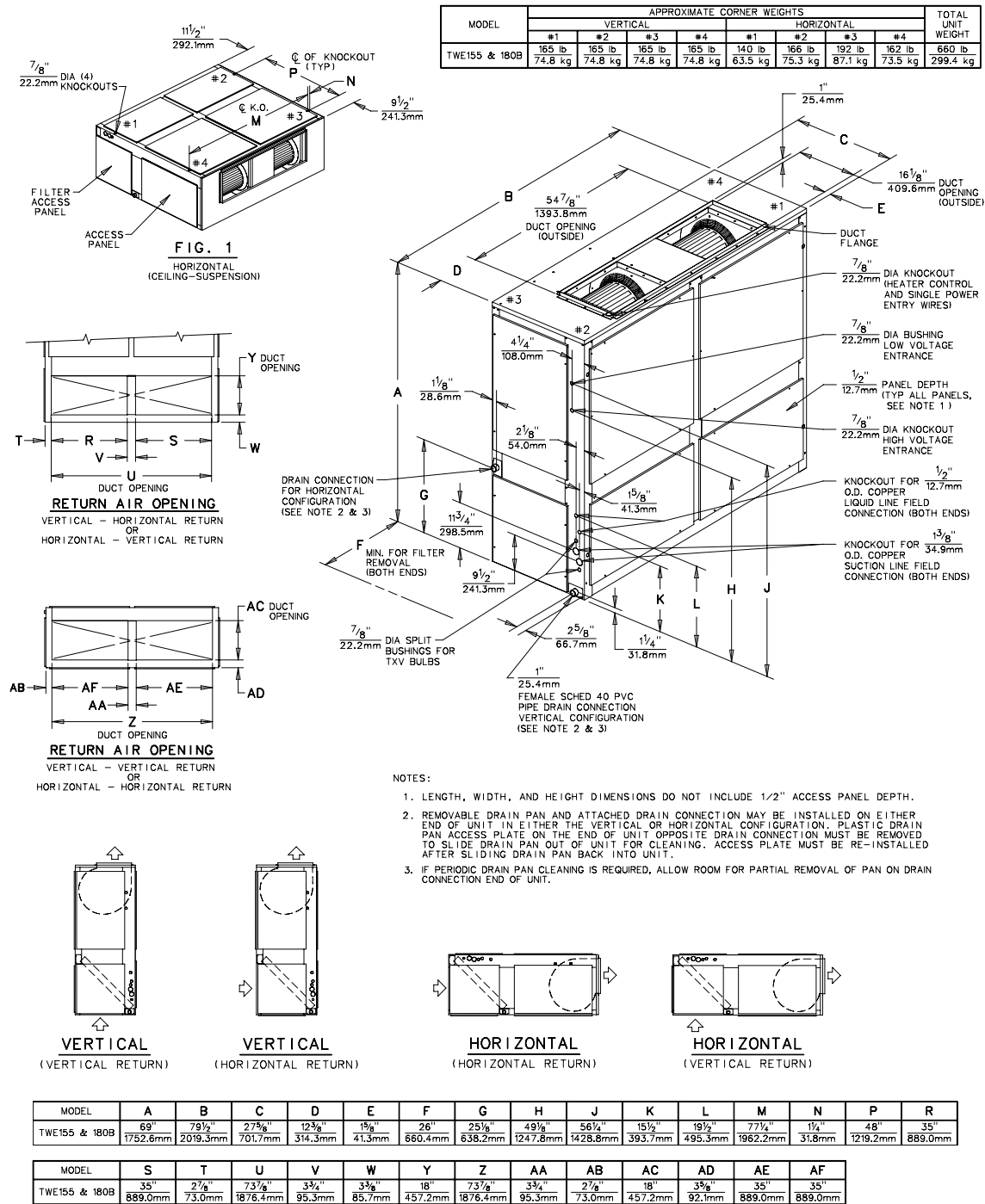
MODEL	A	B	C	D	E	F	G	H	J	K	L	M
TWE050 & 060A	48" 1219.2mm	38" 965.2mm	22" 558.8mm	8" 203.2mm	19 1/2" 495.3mm	26" 660.4mm	15 7/8" 403.2mm	14 1/8" 358.8mm	1 7/8" 47.63mm	42 1/8" 1070mm	34 5/8" 879.5mm	2 7/8" 73.03mm
TWE050 & 060B	48" 1219.2mm	38" 965.2mm	22" 558.8mm	8" 203.2mm	19 1/2" 495.3mm	26" 660.4mm	16 1/4" 412.8mm	13 1/4" 336.6mm	1 1/8" 28.58mm	42 1/8" 1070mm	34 5/8" 879.5mm	2 7/8" 73.03mm
TWE075 & 090A	54" 1371.6mm	47 1/2" 1206.5mm	25" 635mm	11 3/4" 298.5mm	22 3/8" 568.3mm	22" 558.8mm	X	17 3/4" 450.6mm	4" 101.9mm	45 1/4" 1149mm	36 7/8" 936.6mm	6 5/8" 168.3mm
TWE090B	54" 1371.6mm	47 1/2" 1206.5mm	25" 635mm	11 3/4" 298.5mm	22 3/8" 568.3mm	22" 558.8mm	20 9/16" 521.9mm	16" 407.6mm	2 1/8" 54.10mm	45 1/4" 1149mm	36 7/8" 936.6mm	6 5/8" 168.3mm
TWE100 & 120A	54" 1371.6mm	63 1/2" 1612.9mm	25" 635mm	19 3/4" 501.7mm	22 3/8" 568.3mm	22" 558.8mm	X	17 3/4" 450.6mm	4" 101.9mm	45 1/4" 1149mm	36 7/8" 936.6mm	6 5/8" 168.3mm
TWE100 & 120B	54" 1371.6mm	63 1/2" 1612.9mm	25" 635mm	19 3/4" 501.7mm	22 3/8" 568.3mm	22" 558.8mm	20 9/16" 521.9mm	16" 407.6mm	2 1/8" 54.10mm	45 1/4" 1149mm	36 7/8" 936.6mm	6 5/8" 168.3mm

MODEL	N	P	Q	R	S	T	V	W	X	Y	Z	AA
TWE050 & 060A	35 5/8" 904.9mm	12 1/4" 311.15mm	34 7/8" 885.8mm	32 1/4" 819.2mm	3/8" 9.525mm	12 1/2" 317.5mm	X	X	7 5/8" 193.7mm	1 1/8" 28.58mm	2" 50.8mm	1 7/8" 47.63mm
TWE050 & 060B	35 5/8" 904.9mm	12 1/4" 311.15mm	34 7/8" 885.8mm	32 1/4" 819.2mm	5/16" 7.938mm	12 1/2" 317.5mm	14 3/4" 374.7mm	11 1/8" 282.6mm	7 5/8" 193.7mm	3/4" 19.05mm	2" 50.8mm	2" 50.8mm
TWE075 & 090A	45 1/8" 1146.2mm	16 1/8" 409.6mm	38 1/8" 968.4mm	41 3/4" 1060mm	1/2" 12.7mm	16 1/4" 412.8mm	X	15" 382.2mm	6 7/8" 174.6mm	1 3/8" 34.93mm	1 3/4" 44.45mm	2" 51.05mm
TWE090B	45 1/8" 1146.2mm	16 1/8" 409.6mm	38 1/8" 968.4mm	41 3/4" 1060mm	3/8" 9.525mm	16 1/4" 412.8mm	18 3/4" 477.5mm	14" 356.8mm	6 7/8" 174.6mm	1 1/8" 28.58mm	1 3/4" 44.45mm	2 1/8" 54.10mm
TWE100 & 120A	61 1/8" 1552.6mm	16 1/8" 409.6mm	38 1/8" 968.4mm	57 3/4" 1467mm	1/2" 12.7mm	16 1/4" 412.8mm	X	15" 382.2mm	6 7/8" 174.6mm	1 3/8" 34.93mm	1 3/4" 44.45mm	2" 51.05mm
TWE100 & 120B	61 1/8" 1552.6mm	16 1/8" 409.6mm	38 1/8" 968.4mm	57 3/4" 1467mm	3/8" 9.525mm	16 1/4" 412.8mm	18 3/4" 477.5mm	14" 356.8mm	6 7/8" 174.6mm	1 1/8" 28.58mm	1 3/4" 44.45mm	2 1/8" 54.10mm

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Figure 1. (continued from previous page)

# Unit Dimensions



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Figure 2.



# Unit Dimensions

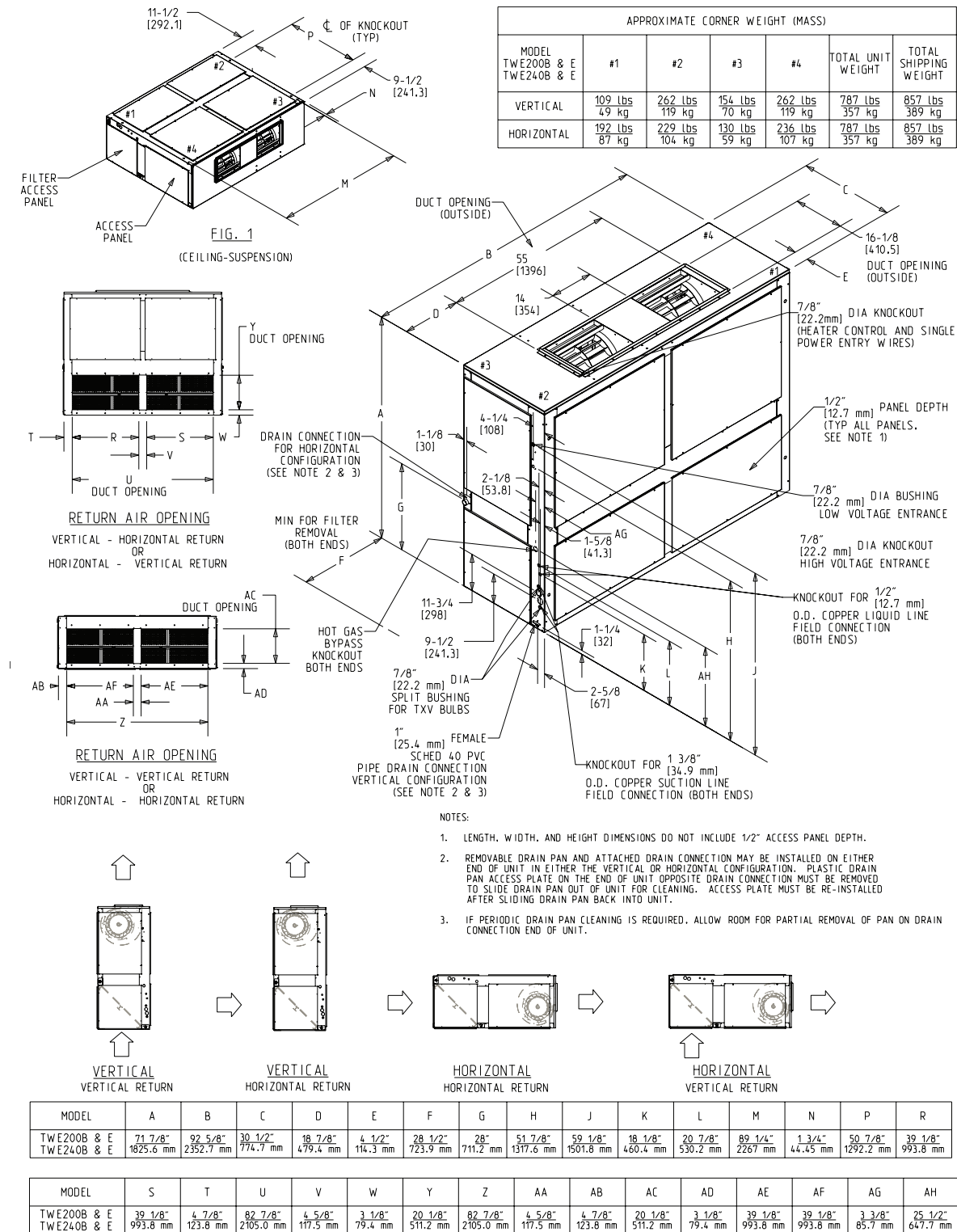


Figure 3.

# Installation

## Installation Preparations

The final position for the air handler must be dictated by required service access to it, weight distribution over structural supports, and by the locations of electrical, refrigerant and condensate drainage connections. After this is determined, the following preparations should be made.

## Repositioning Drain Pan

These air handlers come with one drain pan that can be installed in any one of four positions; this allows for vertical or horizontal application and right or left condensate line connection. The drain pan can also be easily removed for periodic cleaning.

**Note:** *Important! All air handlers are shipped with the drain pan installed in the horizontal position and the connection on the left side (as shown in Figure 4). If an alternate position is required, the drain pan should be repositioned before setting the air handler.*

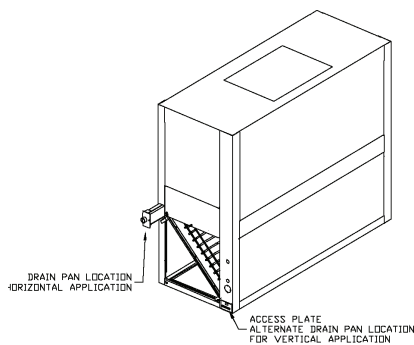


Figure 4.

## Process for Drain Pan Relocation

1. Remove the access plate at the opposite end of the drain connection. This plate secures and lifts the back end of the drain pan for sloping. It must be removed before the drain pan can be removed. This is done as follows:
  - a. Remove the screw
  - b. Lift the access plate up
  - c. Pull the plate out. If the drain pan is to be moved to the vertical position also remove the other two access plates.
2. Remove the screw securing the drain pan.
  - a. Lift the pan up
  - b. Slide the pan out
3. Install the drain pan into the new position.
  - a. Slide the drain pan into the opening
  - b. Lift the drain pan up
  - c. Push it in all the way
  - d. Drop it down over the lip of the opening, secure with screw
4. Install the access plate on the opposite end of the drain pan.
  - a. Slide the edge of the access plate under the drain pan
  - b. Lift the access plate and drain pan up
  - c. Push the access plate in
  - d. Drop the access plate down over the lip of the opening, secure with screw. If the drain pan is being moved to the vertical position, install the other access plates over the horizontal position opening.

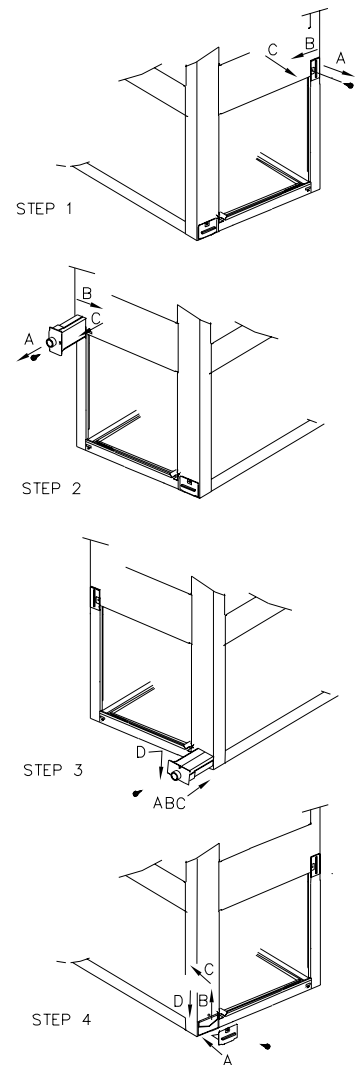


Figure 5.

## Installation

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### Refrigerant Piping Preparation

The air handler is designed so that refrigerant piping can enter from either the right or left hand side. It is shipped with the intent that the refrigerant lines will enter from the left hand side. To convert to right hand entry, unbrazed the elbow on the suction line and rotate 180° and rebraze.

**Note:** *Important! Access to refrigerant lines is limited in all horizontal and some vertical applications. Therefore, refrigerant lines should be stubbed out and temporarily capped prior to setting the air handler. Protect adjacent surfaces from heat damage when brazing in and around the air handler.*

### Caution System Component Damage!

**These air handlers are shipped with a dry nitrogen holding charge in the coil. Cut the process tube or puncture the cap to bleed off the nitrogen prior to any brazing. Temporarily cap off tubes if the refrigerant line connections are to be made later.**

### Installations, Limitations and Recommendations

The general location of the air handler is normally selected by the architect, contractor and/or buyer. For proper installation the following items must be considered.

- Available power supply must agree with electrical data on component nameplate.
- Air Handlers shipped wired for 208-230 volt applications can be converted for 460 volt by rewiring the blower motor (See [Figure 9](#)).
- If external accessories are installed on the unit, additional clearances must be provided.
- All duct work should be properly insulated to prevent condensation and heat loss.
- Refrigerant gas piping must be insulated.

### Caution System Component Damage!

**Properly insulate all refrigerant gas piping to prevent possible water damage due to condensation and to prevent capacity loss and possible compressor damage.**

It is recommended that the outline drawings (pages 3 and 4) be studied and dimensions properly noted and checked against the selected installation site. By noting in advance which knockouts are to be used, proper clearance allowances can be made for installation and possible future service.

**Note:** *Important! When installing these units "free standing" with discharge grills and isolators, a top support with isolator should be added to prevent tipping. Support and isolator can be attached to a wall or other appropriate structure.*

**Note:** *Important! If adding external accessories to the unit, additional clearances must be considered for the overall space needed.*

For installation of accessories available for this air handler, follow the instructions packed with each accessory.

### Lifting Recommendations

#### **WARNING** **Improper Unit Lift!**

**Test lift unit approximately 24 inches to verify proper center of gravity lift point. To avoid dropping of unit, reposition lifting point if unit is not level. Failure to properly lift unit could result in death or serious injury or possible equipment or property-only damage.**

Before preparing the unit for lifting, the center of gravity should be determined for lifting safety. Because of the placement of external components, the unit weight may be unevenly distributed. Approximate total unit weight and corner weights are given in [Figure 1- Figure 3](#).

The crated unit can be moved using a forklift of suitable capacity. For lifting the unit into an elevated mounting position, run lifting straps or slings under the unit and attach securely to the lifting device. Use spreader bars to protect the unit casing from damage. Test lift the unit to determine proper balance and stability.

### Caution Equipment Damage!

**Use spreader bars to prevent straps from damaging the unit. Install the bars between lifting straps, both underneath the unit and above the unit. This will prevent the straps from crushing the unit cabinet or damaging the unit finish.**

### Horizontal Suspension

If the air handler will be suspended, use a suspension mounting kit to isolate the unit from the structure. This is usually accomplished through the use of spring or rubber isolators, which are offered as an accessory. Mounting rods must be field supplied. Isolator selection is dependent upon total unit weight including accessories. Approximate unit weights are provided in [Table 1](#).

## Installation

---

### Caution

#### Equipment Damage!

**Before hanging the unit on suspension rods, reinforce the cabinet around the knockouts by using a large washer inside the cabinet. Washers should be between the skin of the air handler and the nut on the suspension rod.**

Align holes (knockouts) in the cabinet with structural supports and secure suspension rods to the structure, then to the air handler cabinet. If knockout locations do not permit proper alignment with existing structure, it may be necessary to field fabricate cross members on existing structural beams.

**Note:** *When other than bottom return is to be used, side panel removed for return duct installation must be secured over the bottom opening.*

### Leveling

This air handler has a double sloped drain pan. In order to assure proper drainage along the length of the drain pan, it is important to have the unit properly leveled. Be sure the air handler is level or slightly sloped in the direction of the condensate connection.

### Auxiliary Drain Pan

*A field fabricated, auxiliary drain pan* should be installed under the unit for all horizontal applications and when air handlers are installed above ceilings or in other locations where condensate overflow may cause damage. This drain pan will eliminate any excess condensation that may be due to extreme humidity or an obstructed drain in the primary drain pan. Drain lines from this pan must

be installed, but should not be connected to the primary drain line from the unit. Isolate the auxiliary drain pan from both the air handler and the structure.

### **WARNING** **Fiberglass Wool!**

**Product contains fiberglass wool. Disturbing the insulation in this product during installation, maintenance or repair will expose you to airborne particles of glass wool fibers and ceramic fibers known to the state of California to cause cancer through inhalation. Glass wool fibers may also cause respiratory, skin or eye irritation.**

### Precautionary Measures

- Avoid breathing fiberglass dust.
- Use a NIOSH approved dust/mist respirator.
- Avoid contact with the skin or eyes. Wear long-sleeved, loose-fitting clothing, gloves, and eye protection.
- Wash clothes separately from other clothing: rinse washer thoroughly.
- Operations such as sawing, blowing, tear-out, and spraying may generate fiber concentrations requiring additional respiratory protection. Use the appropriate NIOSH approved respirator in these situations.

### First Aid Measures

**Eye Contact** - Flush eyes with water to remove dust. If symptoms persist, seek medical attention.

**Skin Contact** - Wash affected areas gently with soap and warm water after handling.

### Refrigerant Piping

Installation, brazing, leak testing and evacuation of refrigerant lines are covered in the installation instructions packaged with the outdoor unit. Read the instructions before beginning installation of refrigerant lines.

Locate cloth bag(s) attached to the refrigerant tube of the coil that

contains two (2) brass clamps (straps) and cork impregnated insulation material approximately 9" long by 4" wide. This is for attaching and insulating the expansion valve bulb(s) to the suction line(s).

On air handlers that will have refrigerant lines entering the cabinet from the left side, remove the split rubber grommet from the knockout in the end of the air handler. Uncoil the cap tub with the bulb attached at the expansion valve and place the grommet on the cap tube. With the grommet around the tube, push the bulb through the hole and position the grommet back into its original position (one bulb and cap tube on single circuit units and two bulbs and cap tubes on dual circuit units).

Attach the bulb(s) approximately 45° off vertical, 10 to 12 inches outside of the air handler.

On air handlers that will have refrigerant lines entering the cabinet from the right side, the bulb(s) should be attached to the suction tube(s) inside the cabinet in the same manner as above, approximately 10" from the right end of the unit.

After attaching to the suction line(s), either inside or outside of the cabinet, wrap the cork impregnated insulation around the bulb(s) and suction tube(s). Refrigerant piping should be insulated.

**Note:** *Important! Ensure that the refrigerant lines passing through the cabinet are not resting on sharp sheet metal edges.*

### Condensate Piping

The drain pan condensate connection is a female slip joint type for 1" Schedule 40 PVC pipe. Use PVC cement and tubing as required (field supplied) to construct a trap. A union or flexible tubing and clamps may be installed if the drain pan is to be removed periodically for cleaning.

## Installation

**Note:** *Important! When air handler is installed in the vertical position and close proximity trapping of condensate is required, use of a subbase accessory to raise the air handler for clearance of the drain trap is recommended. See Figure 6 for a typical drain trap assembly*

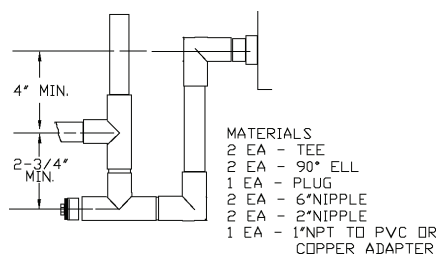


Figure 6.

### Filters

Air handlers are shipped with throwaway filters installed. For replacement filters consult the air handler service facts for correct size and number. To replace filters from the end of the unit, remove lower access panel (either end) and slide old filters out and replace with new ones. To replace from the front of the unit, remove one "L" shaped angle. Remove and replace filters and reinstall "L" shaped angle. See Figure 7.

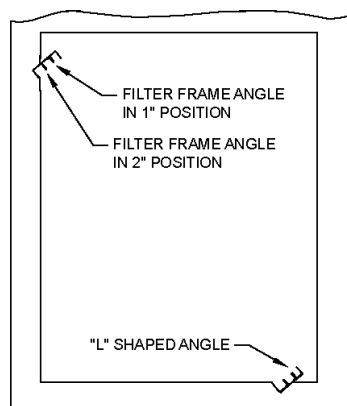


Figure 7.

To convert from 1" filter to a 2" filter on units so equipped, remove lower access panels from both ends of the air handler. Remove screws and reposition the "L" shaped angles from both the top and bottom of the

filter track to increase the width of the filter opening.

### Duct Connections

The supply and return ducts should be connected to the unit with flame retardant duct connectors to reduce vibration transmission. The return duct should be sized to the same dimensions as the return inlet of the unit.

**Note:** *Important! Duct flanges are provided for attachment of the duct work. On TWE060, 090, and 120 the flanges are not installed but are shipped inside the air handler. While facing the air handler with the control box to your left, remove the upper access panel. The duct flanges will be attached to the belly band of the air handler nearest you. Remove the screws securing flanges in place. Position the four flanges around the supply opening. Secure with field supplied screws, using the predrilled holes. On TWE180 and 240, the duct flanges are packaged on the outside of the cabinet.*

### Air Flow Settings

Unit is shipped for nominal airflow with nominal static pressure. Please refer to fan performance table in either the product catalog or unit service facts and select the proper drive package for each application. Failure to do so could result in improper airflow causing coil frosting or condensate management problems. Condensate management problems such as water drip off or water blow off could be the result of too great of air face velocity across the coil.

## **⚠ WARNING** Hazardous Voltage w/Capacitors!

**Disconnect all electric power, including remote disconnects and discharge all motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Verify with an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.**

**Note:** *For additional information regarding the safe discharge of capacitors, see PROD-SVB06A-EN or PROD-SVB06A-FR.*

# Installation

## **⚠️ WARNING** Hazardous Voltage!

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

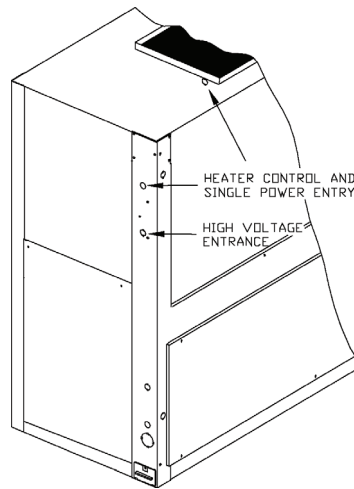
### Electrical Connections

1. All electrical lines, sizing, protection, and grounding must be in accordance with the National Electric Code and local codes.
2. If conduit is used, isolate whenever vibration transmission may cause a noise problem within the building structure.
3. Ensure all connections are tight and no wires exposed.
4. All accessories must be installed and wired according to the instructions packaged with that accessory.

For air handler power entry only, or for dual power entry (power entry for air handler and power entry for electric heats), the electrical connections are made in the fan control box located in the left side of the air handler and electric heater respectively. Wiring entrance is through holes provided in the end of the air handler cabinet, see [Figure 8](#). Breaker or fuse size can be selected using the nameplates attached to the unit and electric heater. See pages 13 through 22 for typical interconnecting wiring diagrams.

**Table 1. Recommended t'stat wire size**

Wire Size (Gauge)	Maximum Wire Length Physical distance between Unit & T'stat
22	30 Feet
20	50 Feet
18	75 Feet
16	125 Feet
14	200 Feet



**Figure 8.**

### Checkout Procedure

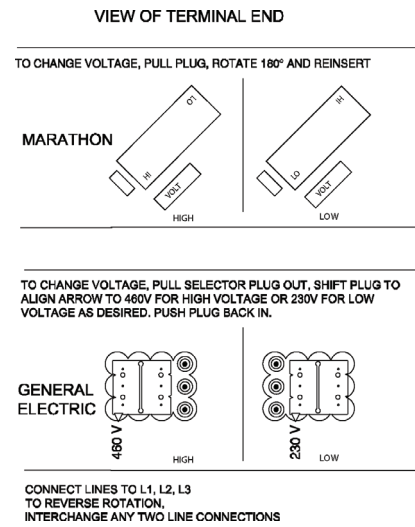
Complete the following "installation checklist" once installation of field wiring connections is complete. All operational checks (unit running) must be made after the outdoor unit is installed and system interconnection is complete.

### Installation Checklist

Complete this checklist once the unit is installed to verify that all recommended procedures have been accomplished before the system is started. Operational checks cannot be performed until the outdoor unit is installed and system interconnection is complete.

- Verify that the unit electrical power is disconnected.
- Inspect all field wiring connections. All connections should be clean and tight.
- Inspect unit ground connection(s). Ground must comply with all applicable codes.
- Inspect unit suspension arrangement (if used). Unit position must be secure. Remove any tools or debris found in or near the unit.

- Inspect duct outlets. Outlets must be open and unrestricted.
- Inspect unit drain lines. Pipe connections must be tight and drain line unrestricted.
- Inspect fan assembly to insure all moving parts move freely.
- If unit is horizontally mounted, make sure secondary drain pan has been installed.
- Inspect unit for proper filters, securely installed. All cabinet panels must be secure.
- Instruct owner/operator on proper system operating and maintenance procedure.



**Figure 9.**

# Field Wiring

## Thermostat and Control Connections

1. Observe all notes on the diagrams.
2. Mount the thermostat in the desired location.
3. Install color coded low voltage cables between outdoor unit, indoor unit and thermostat.
4. Connect low voltage control wiring to the low voltage terminal board located on the side of the fan control box per the typical interconnecting wiring diagrams on pages 13 through 22.

### TTA090A/TWE090A TTA120A/TWE120A

#### Field Wiring:

- a. 3 power wires. Line voltage.
- b. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- c. Cooling only thermostat: 3 wires, 24 volts.
  - i. One stage Electric heat: add 1 additional wire, 24 volts.
  - ii. Two Stage Electric heat: add 2 additional wires, 24 volts.
- d. 4 wires, 24 volts.

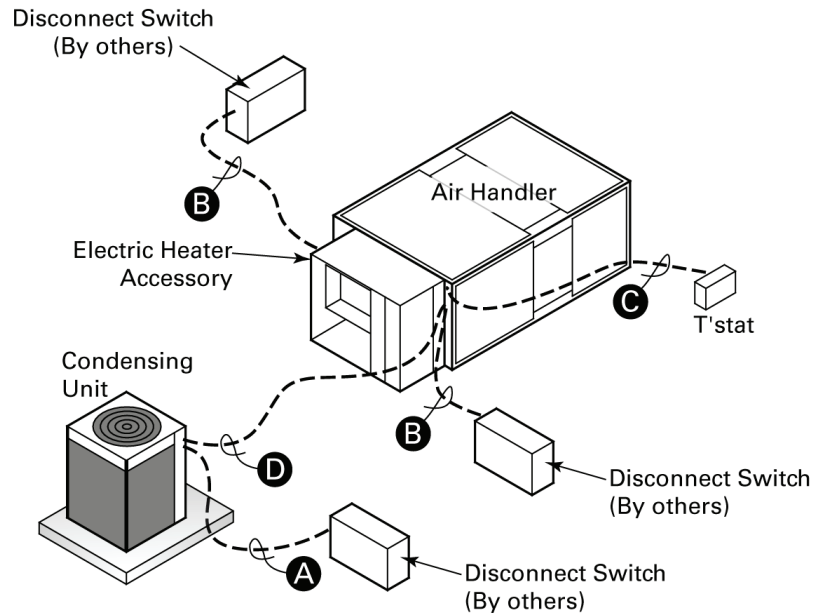


Figure 10. Field Wiring

### TWA090A/TWE090A TWA120A/TWE120A

#### Field Wiring:

- a. 3 power wires. Line voltage.
- b. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- c. Heat pump thermostat: 6 wires, 24 volts.
  - i. Electric heat: add 2 additional wire, 24 volts.
- d. 6 wires, 24 volts.
  - i. Outdoor thermostat; add 1 additional wire, 24 volts.
  - ii. Electric heat: add 1 additional wires, 24 volts.

### TTA120B/TTE120B TTA120C/TWE120C TTA120B/TWE120B

#### Field Wiring:

- a. 3 power wires. Line voltage.
- b. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- c. Cooling only thermostat: 4 wires, 24 volts.

- i. One Stage Electric heat: add 1 additional wire, 24 volts.
  - ii. Two Stage Electric heat: add 2 additional wires, 24 volts.
- d. 5 wires, 24 volts.

### TT\_060/TWE060A

#### Field Wiring:

- a. 3 power wires. Line voltage.
- b. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- c. Cooling only thermostat: 3 wires, 24 volts.
  - i. One Stage Electric heat: add 1 additional wire, 24 volts.
  - ii. Two Stage Electric heat: add 2 additional wires, 24 volts.
- d. 2 wires, 24 volts.

### TW\_060A/TWE060A

#### Field Wiring:

- a. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.

## Field Wiring

---

- b. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- c. Heat pump thermostat: 6 wires, 24 volts.
  - i. Electric heat: add 2 additional wire, 24 volts.
- d. 2 wires, 24 volts.
  - i. Outdoor thermostat; add 1 additional wire, 24 volts.
  - ii. Electric heat: add 1 additional wire, 24 volts.

### **(2) TT\_060/TTE120B**

### **(2) TT\_060/TWE120B**

### **(2) TT\_030/TWE060B**

#### Field Wiring:

- a. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- b. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- c. Cooling only thermostat: 4 wires, 24 volts.
  - i. One Stage Electric heat: add 1 additional wire, 24 volts.
  - ii. Two Stage Electric heat: add 2 additional wires, 24 volts.
- d. 2 wires, 24 volts to outdoor section A.
  - i. 2 wires, 24 volts to outdoor section B.

### **(2) TW\_030/TWE060B**

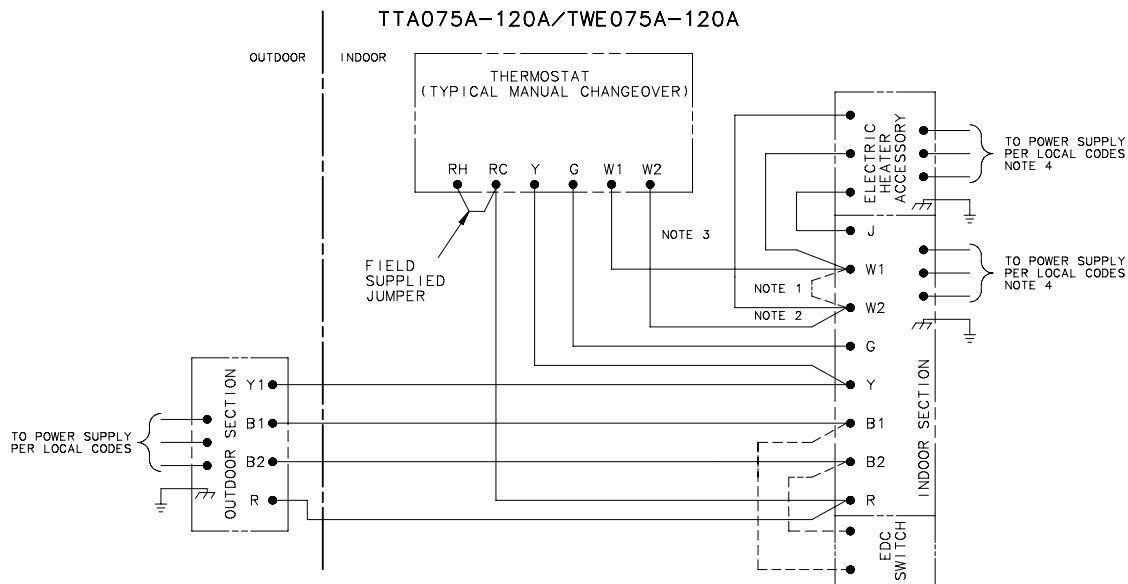
### **(2) TW\_060/TWE120B**

#### Field Wiring:

- a. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- b. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- c. Heat pump thermostat: 7 wires, 24 volts.
  - i. Electric heat: add 2 additional wire, 24 volts.
- d. 5 wires, 24 volts to outdoor section A.
  - i. 2 wires, 24 volts to outdoor section B.
  - ii. 2 wires, 24 volts between outdoor sections A and B.
  - iii. Outdoor thermostat; add 1 additional wire, 24 volts.
  - iv. Electric heat: add 1 additional wires, 24 volts.



# Field Wiring

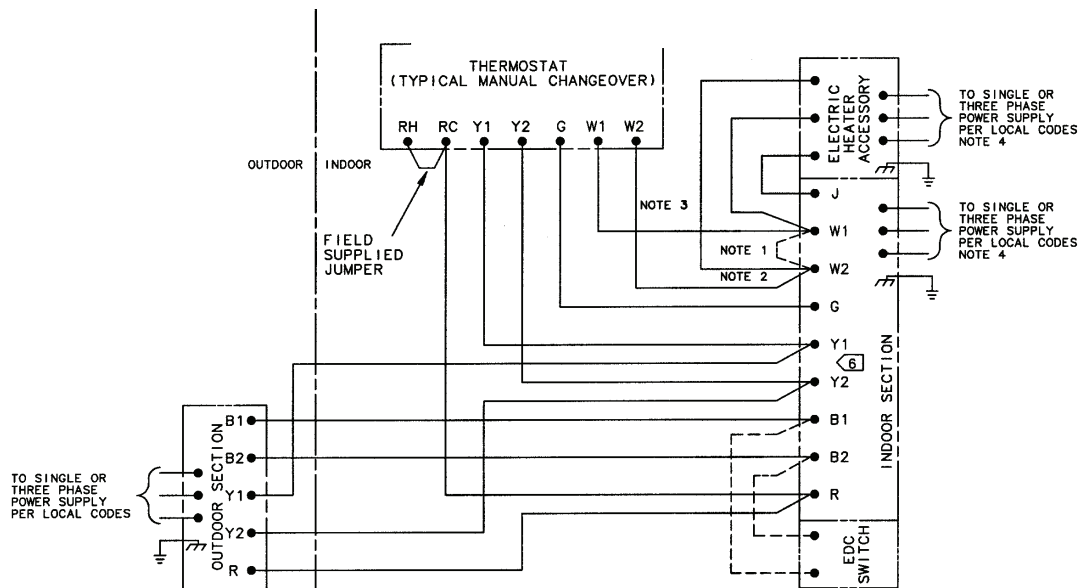


NOTES:

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1. IF TWO STAGE ELECTRIC HEATERS AND THERMOSTAT ARE USED, REMOVE THE JUMPER BETWEEN W1 AND W2.
2. FOR SINGLE STAGE ELECTRIC HEATER OMIT WIRE BETWEEN W2 AND THERMOSTAT AND W2 AND ELECTRIC HEATER.
3. FOR COOLING ONLY OMIT WIRES BETWEEN W1, W2 AND THERMOSTAT AND OMIT ELECTRIC HEATER.
4. WHEN ELECTRIC HEATER ACCESSORY IS USED SINGLE POINT POWER ENTRY OR DUAL POINT POWER ENTRY IS FIELD OPTIONAL. SINGLE POINT POWER ENTRY OPTION IS THROUGH ELECTRIC HEATER ONLY.

**Figure 11. TTA090A, 120A/TWE090A, 120A; TTA075A, 100A/TWE075A, 100A**



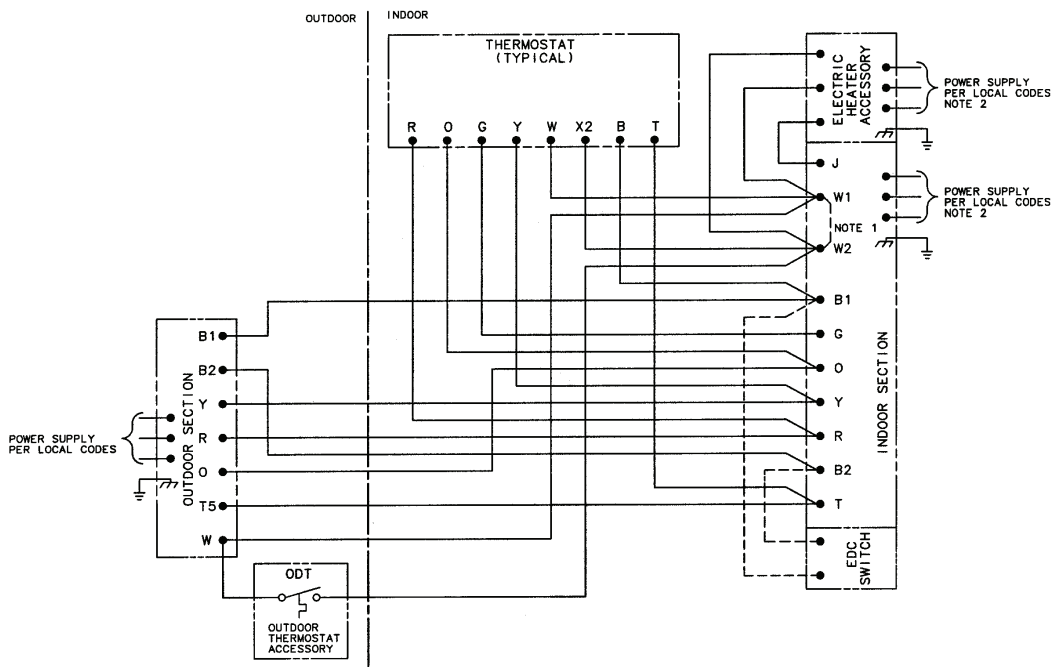
NOTES:

21C756882P02

1. IF TWO STAGE ELECTRIC HEATERS AND THERMOSTAT ARE USED, REMOVE THE JUMPER BETWEEN W1 AND W2. FOR SINGLE STAGE ELECTRIC HEATER OMIT WIRE BETWEEN W2 AND THERMOSTAT AND W2 AND ELECTRIC HEATER.
2. FOR COOLING ONLY OMIT WIRES BETWEEN W1, W2 AND THERMOSTAT AND OMIT ELECTRIC HEATER.
3. WHEN ELECTRIC HEATER ACCESSORY IS USED SINGLE POINT POWER ENTRY OR DUAL POINT POWER ENTRY IS FIELD OPTIONAL. SINGLE POINT POWER ENTRY OPTION IS THROUGH ELECTRIC HEATER ONLY.
4. THESE CONNECTIONS ARE FOR 3 PHASE UNITS ONLY.
5. THE TWE120A UNIT DOES NOT HAVE A "Y2" TERMINAL.

**Figure 12. TTA120B/TWE120B; TTA120C/TWE120A; TTA100B/TWE100B; TTA100C/TWE100A**

# Field Wiring

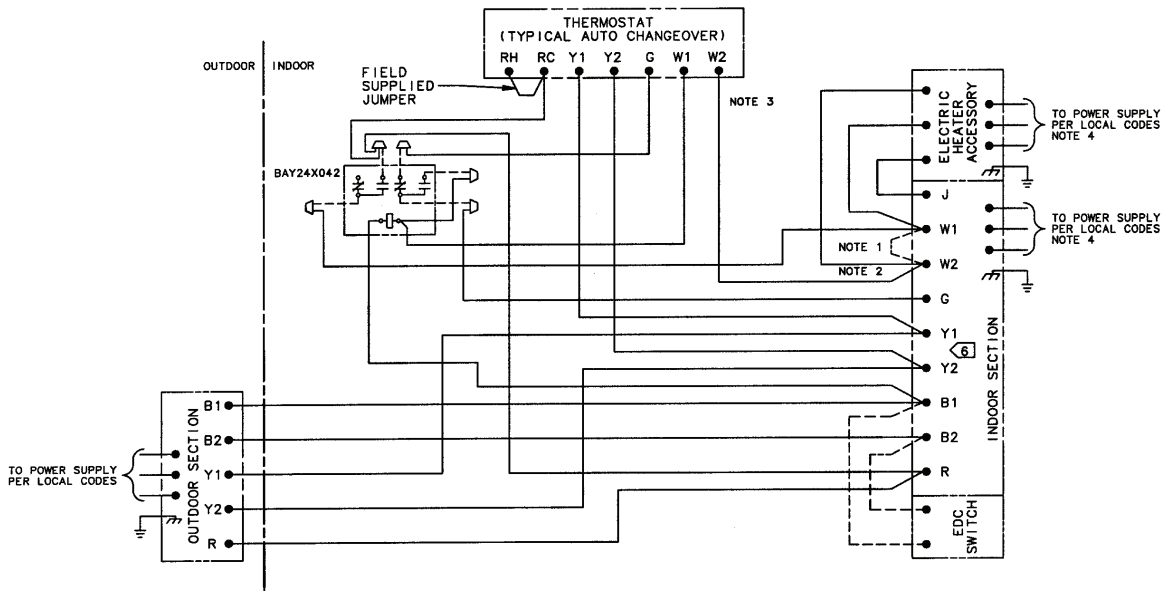


NOTES:

1. REMOVE JUMPER BETWEEN W1 AND W2 IF ODT ACCESSORY IS USED.
2. WHEN ELECTRIC HEATER ACCESSORY IS USED SINGLE POINT POWER ENTRY OR DUAL POINT POWER ENTRY IS FIELD OPTIONAL. SINGLE POINT POWER ENTRY OPTION IS THROUGH ELECTRIC HEATER ONLY.

21C756884P02

Figure 13. TWA090A, 120A/TWE090A, 120A; TWA075A, 100A/TWE075A, 100A



NOTES:

1. IF TWO STAGE ELECTRIC HEATERS AND THERMOSTAT ARE USED, REMOVE THE JUMPER BETWEEN W1 AND W2.
2. FOR SINGLE STAGE ELECTRIC HEATER OMIT WIRE BETWEEN W2 AND THERMOSTAT AND W2 AND ELECTRIC HEATER.
3. FOR COOLING ONLY OMIT WIRES BETWEEN W1, W2 AND THERMOSTAT AND OMIT ELECTRIC HEATER.
4. WHEN ELECTRIC HEATER ACCESSORY IS USED SINGLE POINT POWER ENTRY OR DUAL POINT POWER ENTRY IS FIELD OPTIONAL. SINGLE POINT POWER ENTRY OPTION IS THROUGH ELECTRIC HEATER ONLY.
5. THESE CONNECTIONS ARE FOR 3 PHASE UNITS ONLY.
6. THE TWE120A UNIT DOES NOT HAVE A "Y2" TERMINAL.

21C756886P02

Figure 14. TTA120B/TWE120B; TTA120C/TWE120A; TTA100B/TWE100B; TTA100C/TWE100A

# Field Wiring

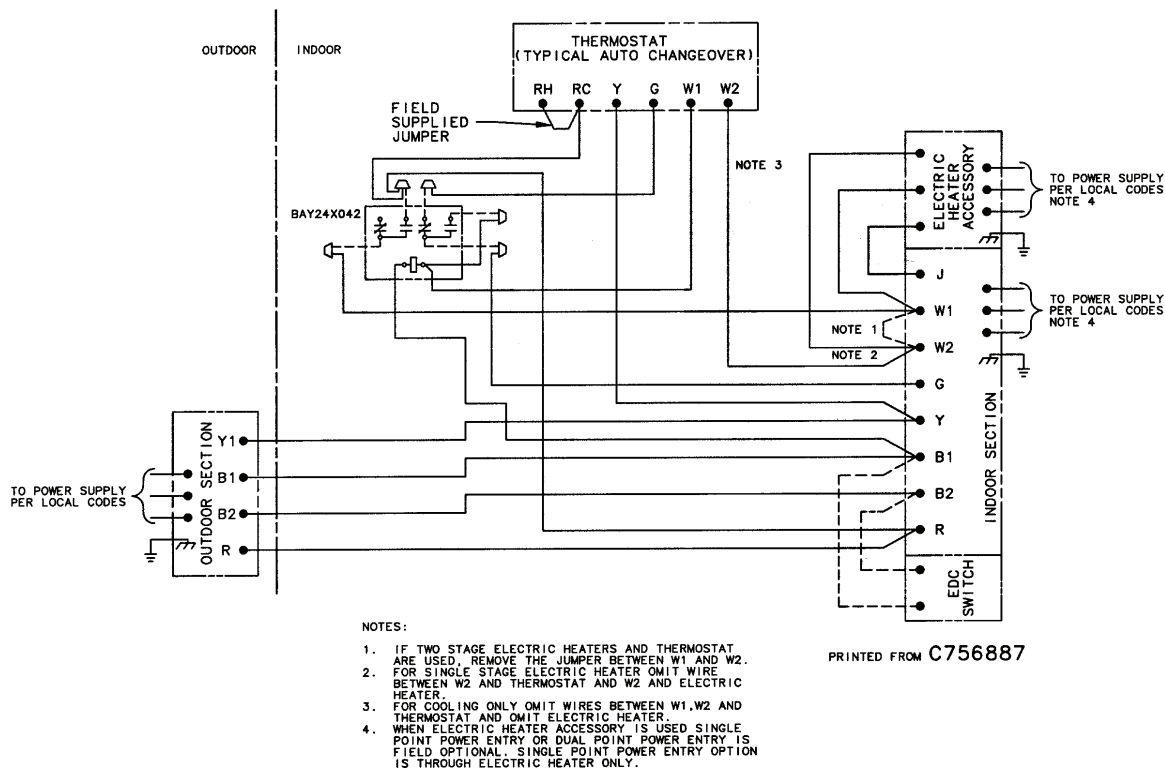


Figure 15. TTA090A, 120A/TWE090A, 120A; TTA075A, 100A/TWE075A, 100A

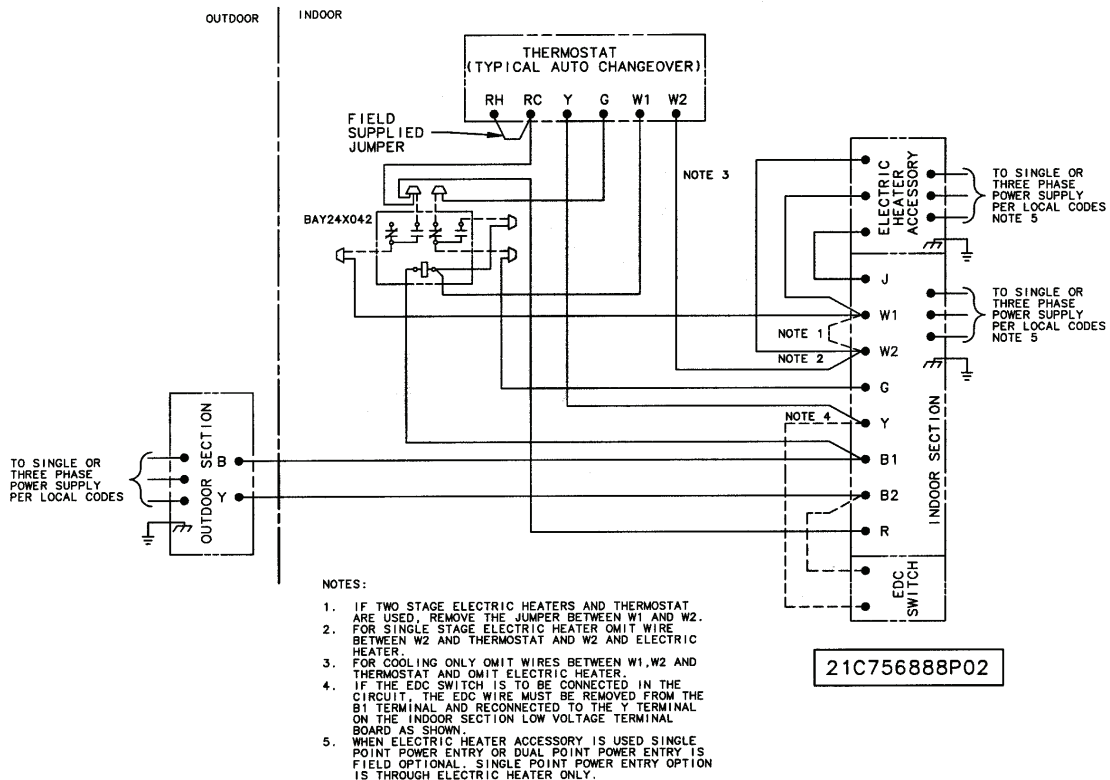


Figure 16. TW\_060/TWE060; TW\_050/TWE050

# Field Wiring

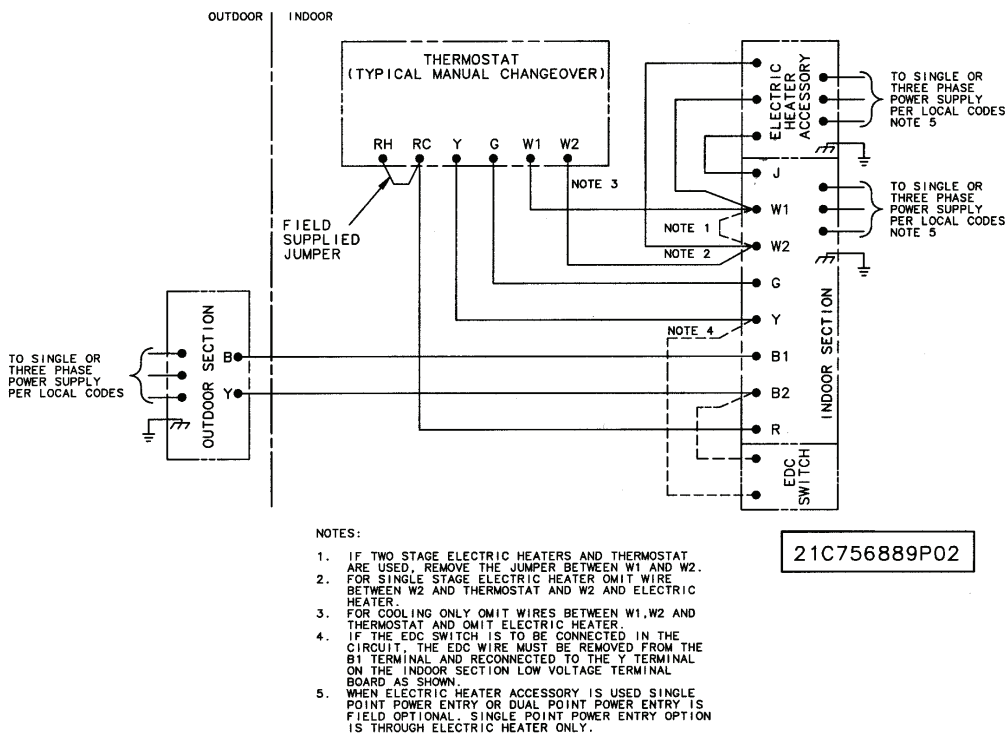


Figure 17. TW\_060/TWE060; TW\_050/TWE050

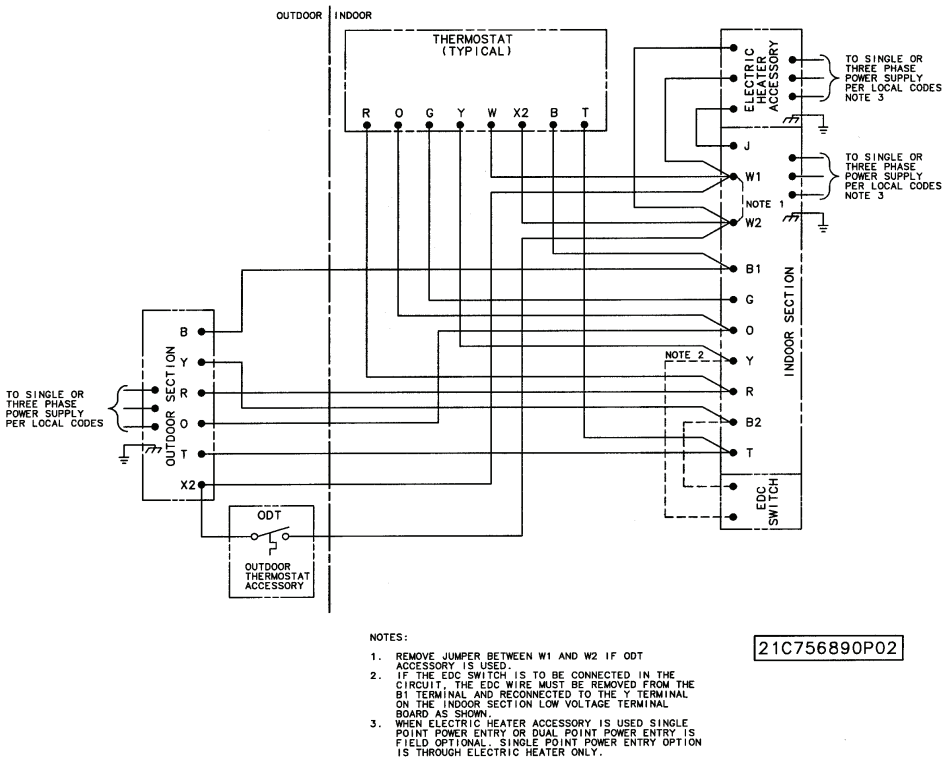


Figure 18. TW\_060/TWE060; TW\_050/TWE050

# Field Wiring

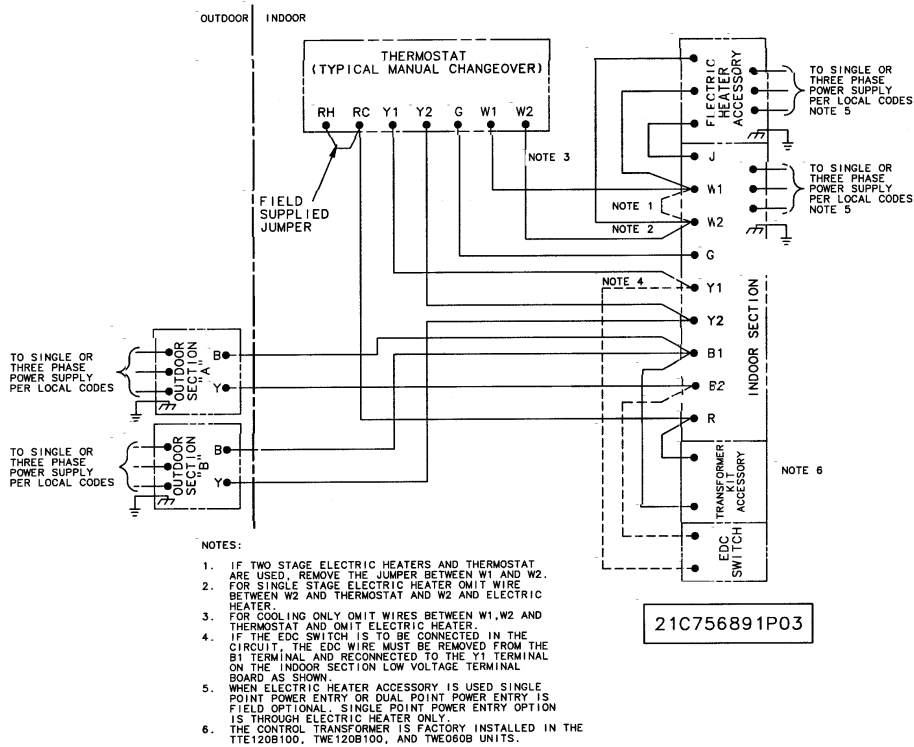


Figure 19. TW\_030/TWE060B; TW\_\_\_/TWE090B; TW\_060/TWE120B; TW\_050/TWE100B

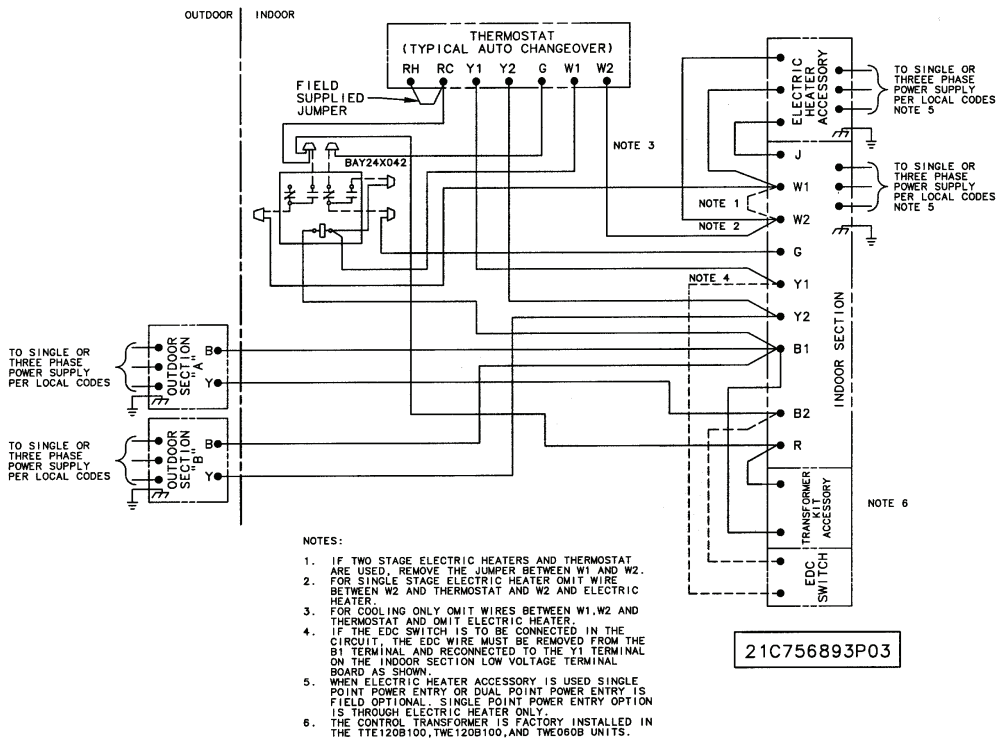
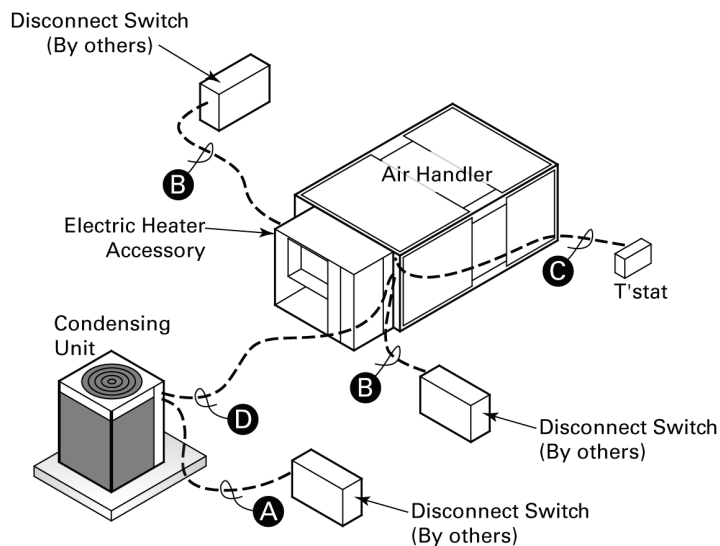


Figure 20. TW\_030/TWE060B; TW\_\_\_/TWE090B; TW\_060/TWE120B; TW\_050/TWE100B

## Field Wiring



**Figure 21. Field Wiring Outdoor/Indoor**

**Note:** Wiring shown with dashed lines is to be furnished and installed by the customer. All customer-supplied wiring must be copper only and must conform to NEC and local electrical codes. Codes may require line of sight between the disconnect switch and the unit.

**Note:** When electric heater accessory is used, single point power entry or dual point power entry is field optional. Single point power entry option is through the electric heater only.

### TTA150B/TWE150B TTA180B/TWE180B TTA240B/TWE240B TTA180C/TWE180B

#### Field Wiring:

- a. 3 power wires. Line voltage.
- b. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- c. Cooling only thermostat: 4 wires, 24 volts.
  - i. One Stage Electric heat: add 1 additional wire, 24 volts.
  - ii. Two Stage Electric heat: add 2 additional wires, 24 volts.
- d. 5 wires, 24 volts.

### TWA180B/TWE180B TWA240B/TWE240B

#### Field Wiring:

- a. 3 power wires. Line voltage.
- b. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- c. Heat pump thermostat: 7 wires, 24 volts.
  - i. Electric heat: add 2 additional wire, 24 volts.
- d. 7 wires, 24 volts.
  - i. Outdoor thermostat; add 1 additional wire, 24 volts.
  - ii. Electric heat: add 4 additional wires, 24 volts.

### TTA090A/TWE180B TTA120A/TWE240B

#### Field Wiring:

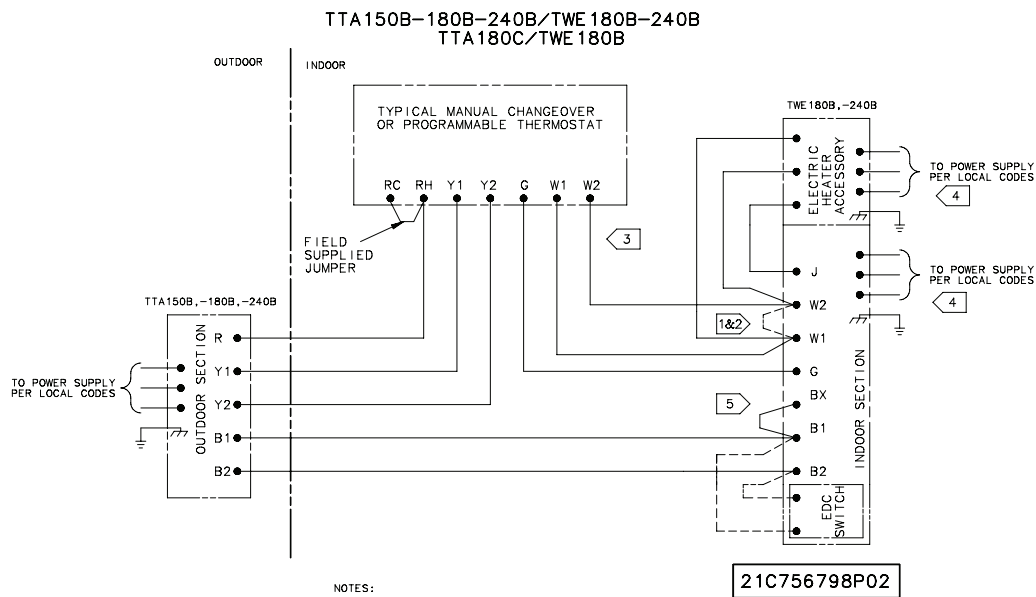
- a. 3 power wires. Line voltage.
- b. 3 power wires. Line voltage for 3 phase; 2 wires for single phase.
- c. Cooling only thermostat: 4 wires, 24 volts.
  - i. One Stage Electric heat: add 1 additional wire, 24 volts.
  - ii. Two Stage Electric heat: add 2 additional wires, 24 volts.
- d. 6 wires, 24 volts.

### (2) TWA090A/TWE180B (2) TWA120A/TWE240B

#### Field Wiring:

- a. 3 power wires. Line voltage.
- b. 3 power wires. Line voltage.
- c. Heat pump thermostat: 7 wires, 24 volts.
  - i. Electric heat: add 2 additional wire, 24 volts.
- d. 9 wires, 24 volts.
  - i. Outdoor thermostat; add 3 additional wire, 24 volts.
  - ii. Electric heat: add 2 additional wires, 24 volts.

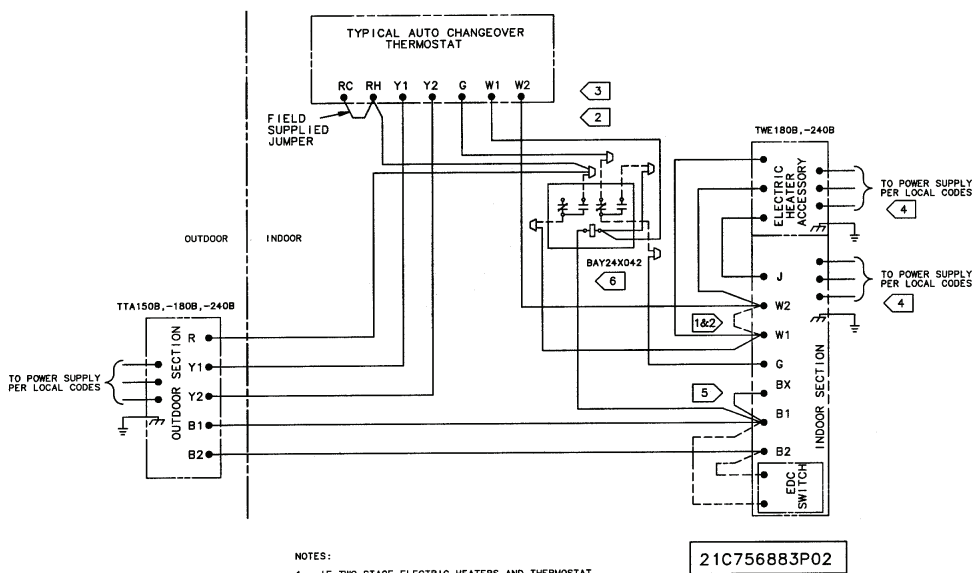
# Field Wiring



**NOTES:**

1. IF TWO STAGE ELECTRIC HEATERS AND THERMOSTAT ARE USED, REMOVE THE JUMPER BETWEEN W1 AND W2.
2. FOR SINGLE STAGE ELECTRIC HEATER OMIT WIRE BETWEEN W2 AND THERMOSTAT AND W2 AND ELECTRIC HEATER.
3. FOR COOLING ONLY OMIT WIRES BETWEEN W1, W2 AND THERMOSTAT AND OMIT ELECTRIC HEATER.
4. WHEN ELECTRIC HEATER ACCESSORY IS USED SINGLE POINT POWER ENTRY OR DUAL POINT POWER ENTRY IS FIELD OPTIONAL. SINGLE POINT POWER ENTRY OPTION IS THROUGH ELECTRIC HEATER ONLY.
5. WHEN ELECTRIC HEATER ACCESSORY IS USED A FIELD SUPPLIED JUMPER MUST BE PLACED BETWEEN "B1" AND "BX" ON THE INDOOR SECTION LOW VOLTAGE TERMINAL BOARD.

**Figure 22. TTA150B, 180B, 240B/TWE180B, 240B; TTA125B, 155B, 200B/TWE155B, 200B; TTA155C/TWE155B; TTA180C/TWE180B**



**NOTES:**

1. IF TWO STAGE ELECTRIC HEATERS AND THERMOSTAT ARE USED, REMOVE THE JUMPER BETWEEN W1 AND W2.
2. FOR SINGLE STAGE ELECTRIC HEATER OMIT WIRE BETWEEN W2 AND THERMOSTAT AND W2 AND ELECTRIC HEATER.
3. FOR COOLING ONLY OMIT WIRES BETWEEN W1, W2 AND THERMOSTAT AND OMIT ELECTRIC HEATER.
4. WHEN ELECTRIC HEATER ACCESSORY IS USED SINGLE POINT POWER ENTRY OR DUAL POINT POWER ENTRY IS FIELD OPTIONAL. SINGLE POINT POWER ENTRY OPTION IS THROUGH ELECTRIC HEATER ONLY.
5. WHEN ELECTRIC HEATER ACCESSORY IS USED A FIELD SUPPLIED JUMPER MUST BE PLACED BETWEEN "B1" AND "BX" ON THE INDOOR SECTION LOW VOLTAGE TERMINAL BOARD.
6. BAY24X042 RELAY IS AN ACCESSORY AND MUST BE ORDERED SEPARATELY.

**Figure 23. TTA150B, 180B, 240B/TWE 180B, 240B; TTA125B, 155B, 200B/TWE155B, 200B; TTA155C/TWE155B; TTA180C/TWE180B**

# Field Wiring

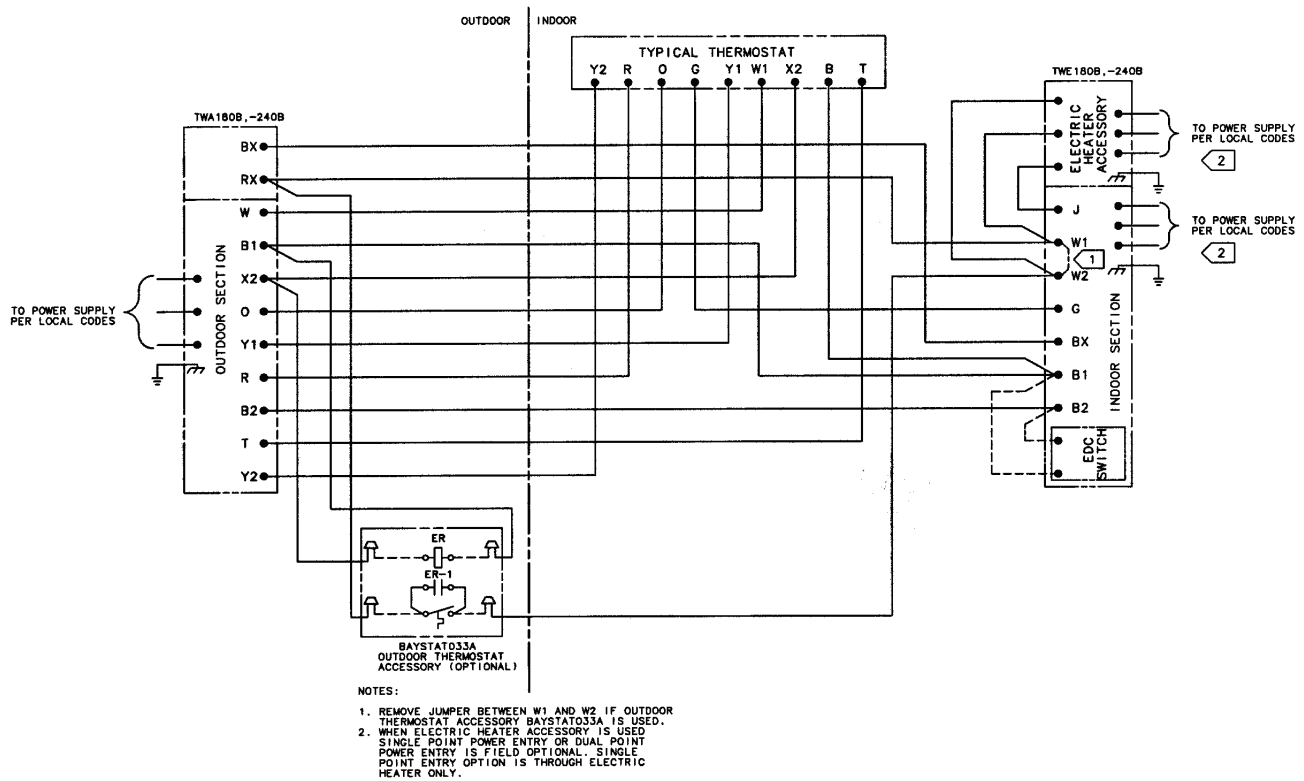


Figure 24. TWA180B, 240B/TWE 180B, 240B; TWA155B, 200B/TWE 155B, 200B

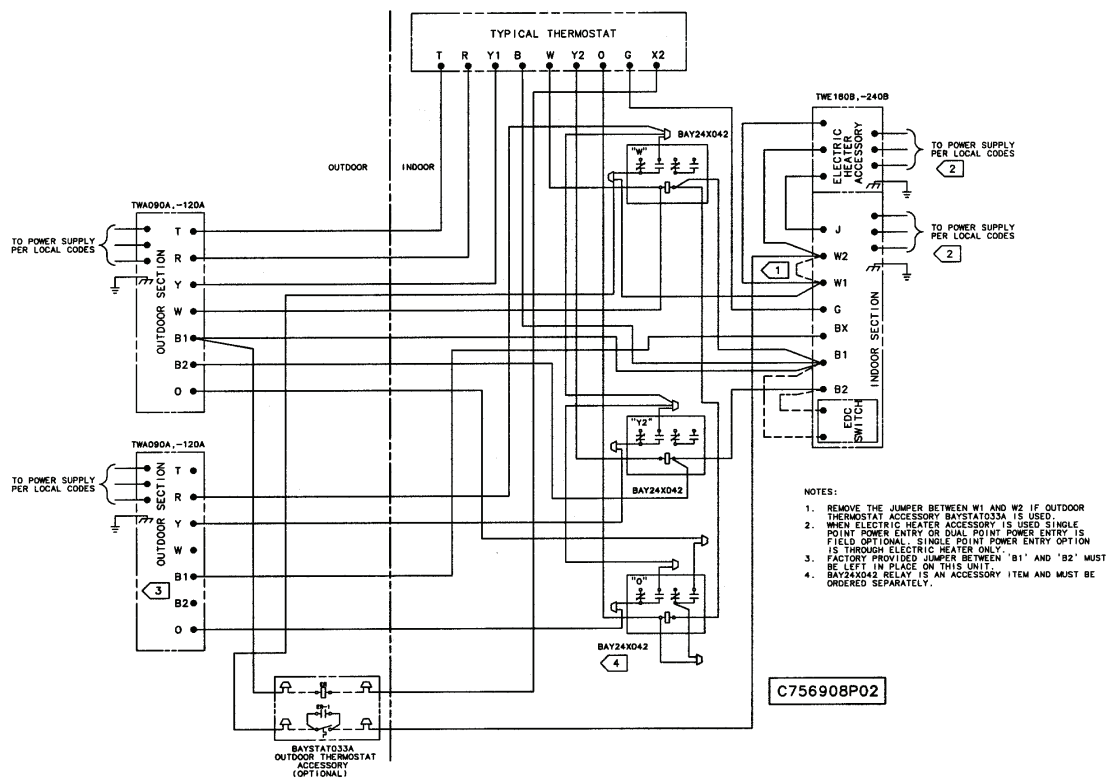


Figure 25. TWA 090A, 120A/TWE 180B, 240B; TWA075A, 100A/TWE 155B, 200B



# Field Wiring

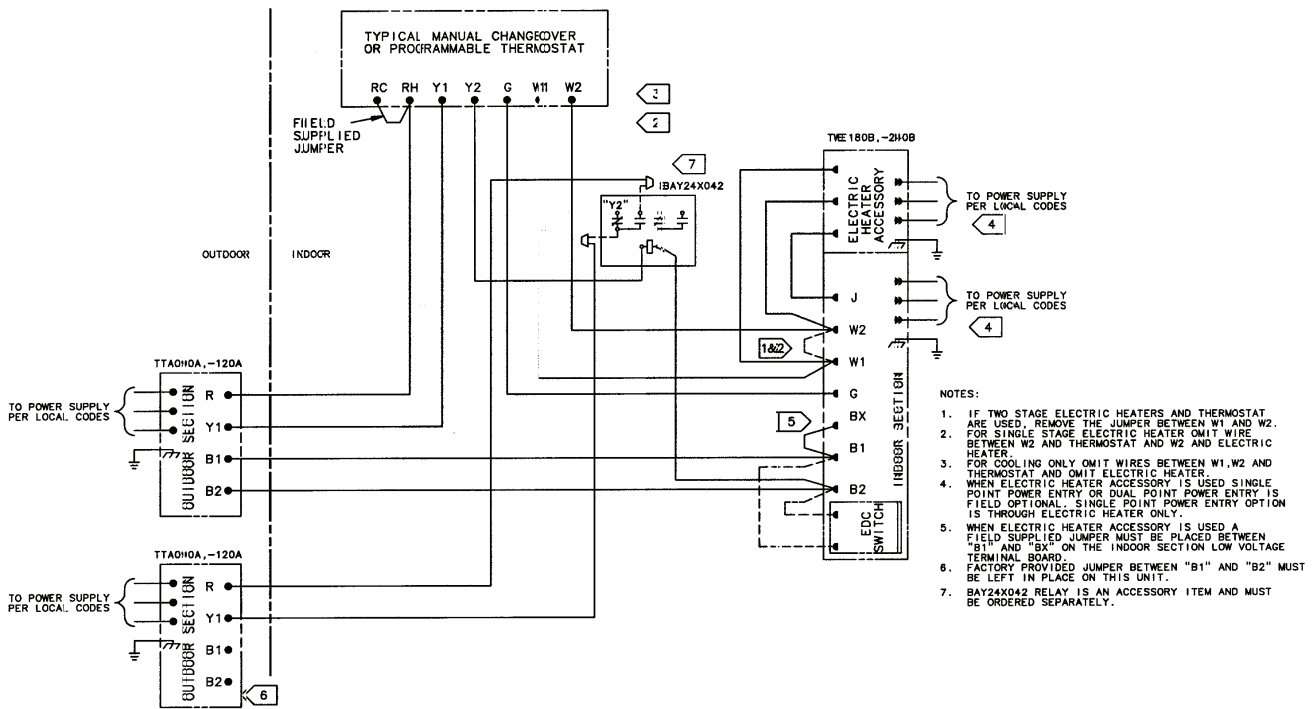


Figure 26. TTA090A, 120A/TWE 180B, 240B; TTA075A, 100A/TWE155B, 240B

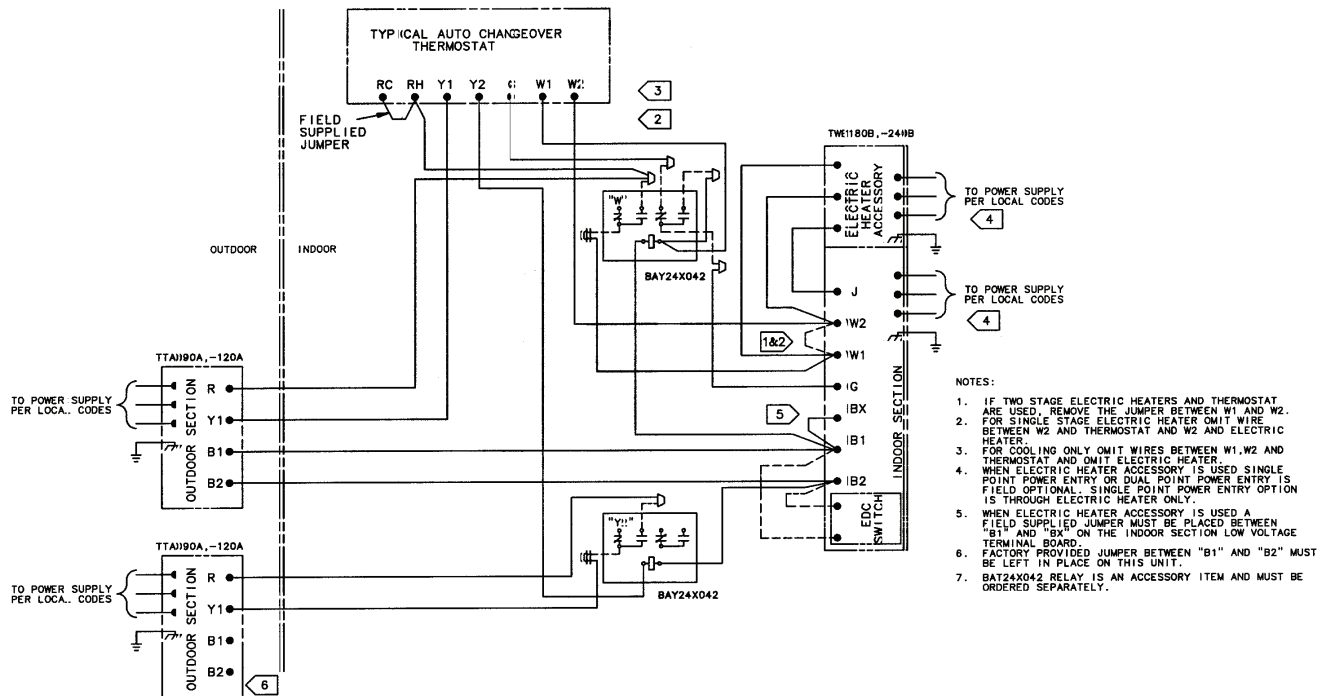


Figure 27. TTA090A, 120A/TWE 180B, 240B; TTA075A, 100A/TWE155B, 200B

# Field Wiring

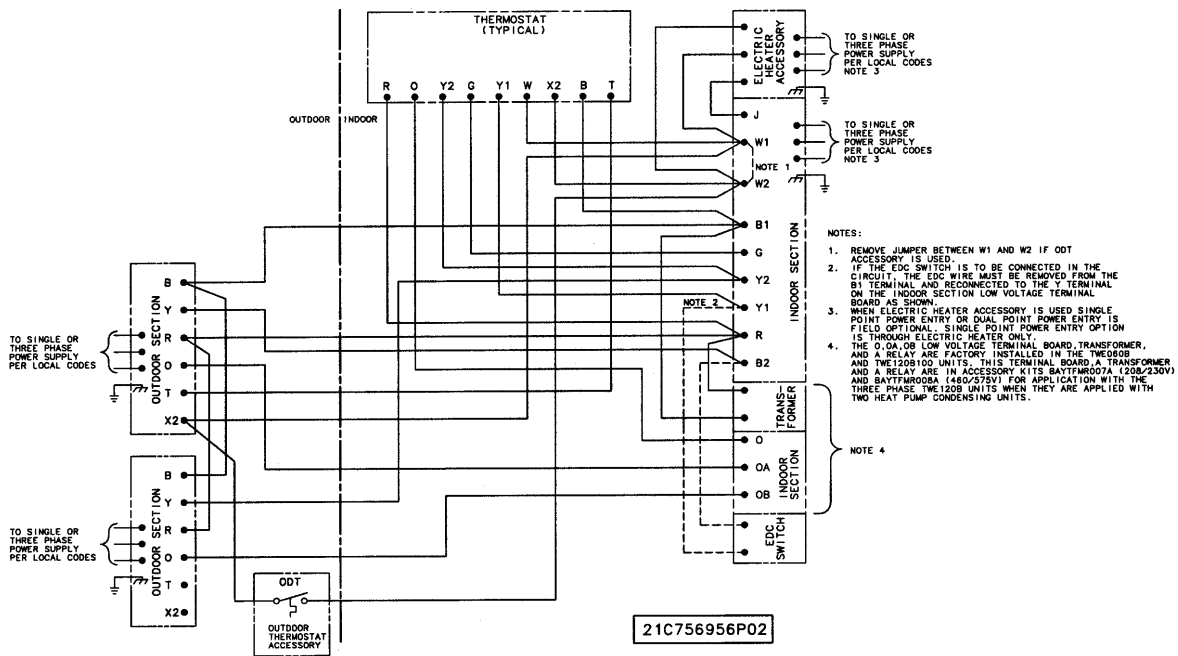


Figure 28. TW\_030A/TWE060B; TW\_060/TWE120B; TW\_050/TWE100B

# Warranty

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## **TTA, TTN, TTP, TTR, TTB, TTX, TTY and TTZ (parts only)**

This warranty is extended by American Standard to the original purchaser and to any succeeding owner of the real property to which the Air Conditioner is originally affixed, and applies to products purchased and retained for use within the U.S.A. and Canada. There is no warranty against corrosion, erosion or deterioration.

If any part of your Air Conditioner fails because of a manufacturing defect within one year from the date of original purchase, Warrantor will furnish without charge the required replacement part.

In addition, if the sealed motor-compressor(s) fail(s) because of a manufacturing defect within the second through fifth year from the date of original purchase, Warrantor will furnish without charge a replacement compressor(s). Warrantor's obligations and liabilities under this warranty are limited to furnishing F.O.B. Warrantor factory or warehouse replacement parts for Warrantor's products covered under this warranty. Warrantor shall not be obligated to pay for the cost of lost refrigerant. No liability shall attach to Warrantor until products have been paid for and then liability shall be limited solely to the purchase price of the equipment under warranty shown to be defective.

**THE WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESS OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR USE, AND IN NO EVENT SHALL WARRANTOR BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

Some states do not allow limitations on how long an implied warranty lasts or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

American Standard Inc.  
2701 Wilma Rudolph Blvd.  
Clarksville, TN 37040-1008  
Attention: Manager, Product Service  
TW-338-0597

\* This warranty is for commercial usage of said equipment and not applicable when the equipment is used for a residential application. Commercial use is any application where the end purchaser uses the product for other than personal, family or household purposes.

## **Commercial Equipment Rated 20 Tons and Larger and Related Accessories (Parts Only)**

**PRODUCTS COVERED** — This warranty is extended by American Standard Inc., and applies only to commercial equipment rated 20 tons and larger and related accessories purchased and retained for use within the U.S.A. and Canada.

Warrantor warrants for a period of 12 months from initial start-up or 18 months from date of shipment, whichever is less, that the products covered by this warranty (1) are free from defects in material and manufacture, and (2) have the capacities and ratings set forth in catalogs and bulletins; provided, that no warranty is made against corrosion, erosion or deterioration. Warrantor's obligations and liabilities under this warranty are limited to furnishing, F.O.B. factory replacement parts (or equipment at the option of Warrantor) for all Warrantor's products not conforming to this warranty.

Warrantor shall not be obligated to pay for the cost of lost refrigerant. No liability whatever shall attach to Warrantor until said products have been paid for and then said liability shall be limited to the purchase price of the equipment shown to be defective.

The Warranty and Liability set forth herein are in lieu of all other warranties and liabilities, whether in contract or in negligence, express or implied, in law or in fact, including implied warranties of merchantability and fitness for particular use, and in no event shall warrantor be liable for any incidental or consequential damages.

Some states do not allow limitations on how long an implied warranty lasts or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

American Standard Inc.—Warrantor  
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GW-598-4799

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Literature Order Number	TWE-SVX03C-EN
Date	October 2006
Supersedes	TWE-SVX03C-0906
Stocking Location	WebbMason

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