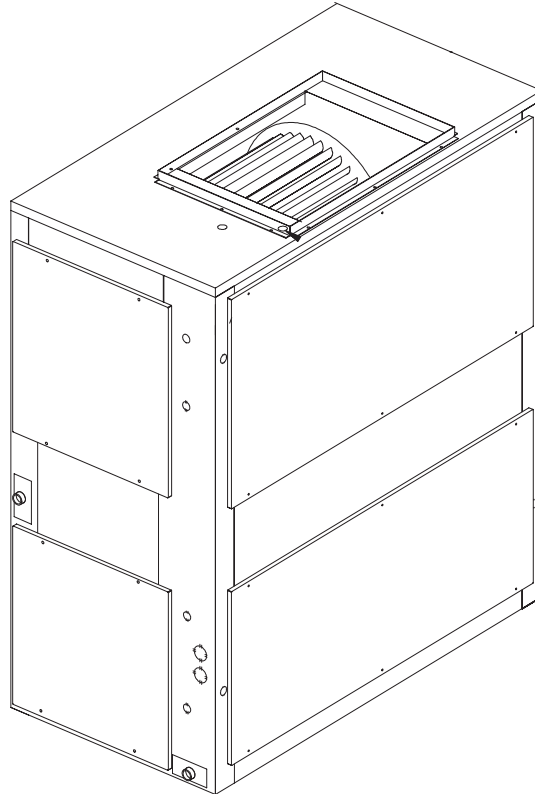


Installation Operation Maintenance

**Split System Cooling or Heat Pump
Air Handler - 7 1/2 - 20 Tons**



Models:

(60 Hz)

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

(50 Hz)

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

Introduction

Literature Change History

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

Overview of Manual

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.

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.

IMPORTANT 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.*

IMPORTANT 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.*



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.

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Model Number Description

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 below. 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.

Air Handler Unit Model Nomenclature

TWE	060	A	1	00	C	A
1 2 3	4 5 6	7	8	9 10	11	12

Digits 1, 2, 3 - Product Type

TWE = Split System Heat Pump/Cooling Air Handler

Digits 4, 5, 6 - Nominal Gross Cooling Capacity (MBh)

060 = 5 Tons
090 = 7 1/2 Tons
120 = 10 Tons
150 = 12 1/2 Tons
180 = 15 Tons
240 = 20 Tons

Digit 7- Refrigerant Circuit

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

Digit 9, 10 - Factory - Installed Options

00 = Packed Stock

Digit 11- Minor Design Sequence

C = Third

Digit 12- Service Digit

A = First

General Information

These instructions do not attempt to cover all variations in systems, nor to provide for every possible contingency to be met in connection with installation. Should further information be desired or should particular problems arise which are not sufficiently covered for the purchaser's purpose, the matter should be referred to the manufacturer.

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 8.

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.

Important 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.

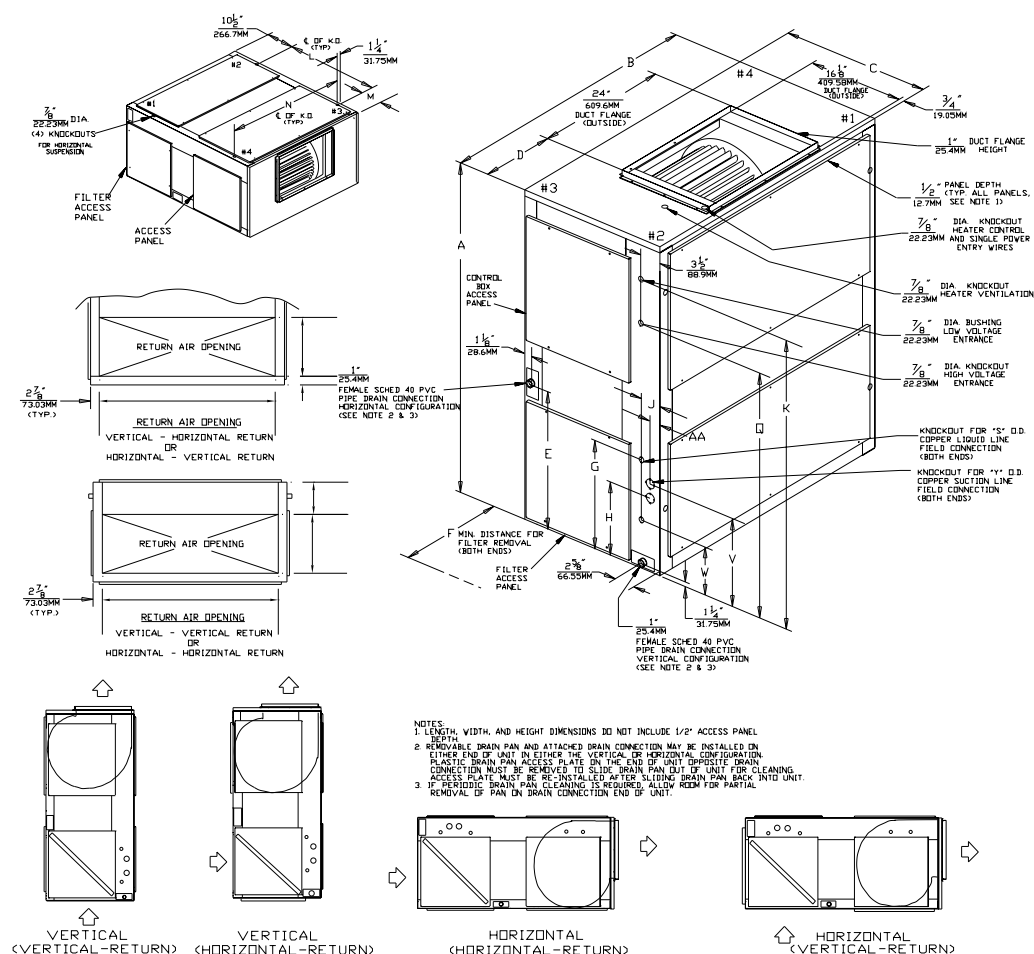
Note: *The TWE050, 060, 075, 090, 100 and 120 air handlers have structural provisions to allow 180 degree rotation of discharge panel/blower assembly at installation. A reversible discharge wiring kit, BAYWRKT001A is available with instructions.*

Inspection

Inspect material carefully for any shipping damage. If damaged, it must be reported to, and claims made against the transportation company. Replace damaged parts with authorized parts only. Check the unit nameplate to confirm that the proper unit was shipped. Available power supply must be compatible with electrical characteristics on component nameplate.

Unit Dimensions

Figure 1



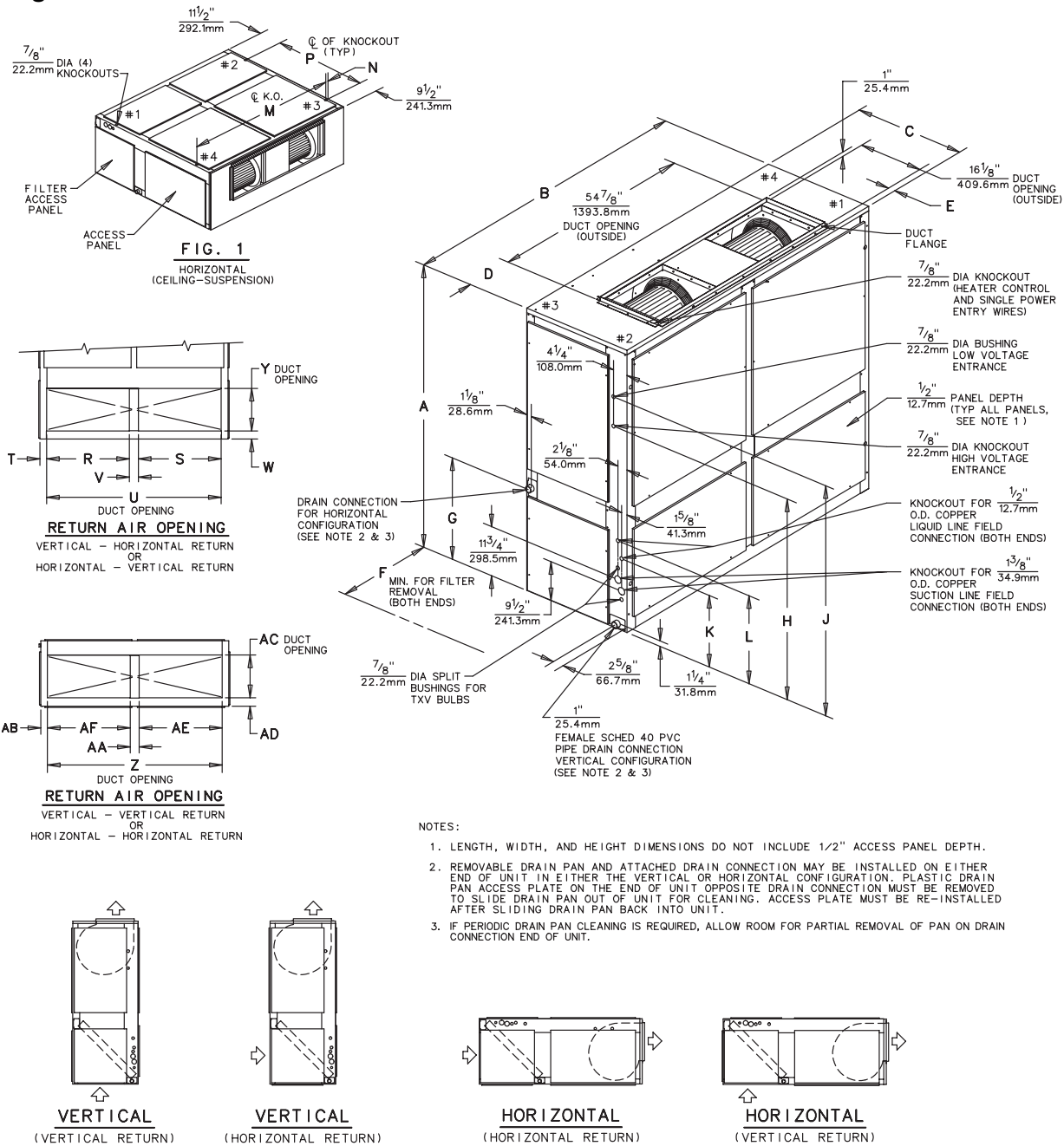
MODEL	A	B	C	D	E	F	G	H	J	K	L	M
TWE050 & 060A	48"	38"	22"	8"	19 1/2"	26"	15 7/8"	14 1/8"	1 7/8"	42 1/8"	34 5/8"	2 7/8"
	1219.2mm	965.2mm	558.8mm	203.2mm	495.3mm	660.4mm	403.2mm	358.8mm	47.63mm	1070mm	879.5mm	73.03mm
TWE050 & 060B	48"	38"	22"	8"	19 1/2"	26"	16 1/4"	13 1/4"	1 1/8"	42 1/8"	34 5/8"	2 7/8"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

MODEL	N	P	Q	R	S	T	V	W	X	Y	Z	AA
TWE050 & 060A	35 5/8"	12 1/4"	34 7/8"	32 1/4"	3/8"	12 1/2"			7 5/8"	1 1/8"	2"	1 7/8"
	904.9mm	311.5mm	885.8mm	819.2mm	9.525mm	317.5mm			193.7mm	28.58mm	50.8mm	47.63mm
TWE050 & 060B	35 5/8"	12 1/4"	34 7/8"	32 1/4"	5/16"	12 1/2"	14 3/4"	11 1/8"	7 5/8"	3/4"	2"	2"
	904.9mm	311.5mm	885.8mm	819.2mm	7.938mm	317.5mm	374.7mm	282.6mm	193.7mm	19.05mm	50.8mm	50.8mm
TWE075 & 090A	45 1/8"	16 1/8"	38 1/8"	41 3/4"	1/2"	16 1/4"		15"	6 7/8"	1 3/8"	1 3/4"	2"
	1146.2mm	409.6mm	968.4mm	1060mm	12.7mm	412.8mm		382.2mm	174.6mm	34.93mm	44.45mm	51.05mm
TWE090B	45 1/8"	16 1/8"	38 1/8"	41 3/4"	3/8"	16 1/4"	18 3/4"	14"	6 7/8"	1 1/8"	1 3/4"	2 1/8"
	1146.2mm	409.6mm	968.4mm	1060mm	9.525mm	412.8mm	477.5mm	356.8mm	174.6mm	28.58mm	44.45mm	54.10mm
TWE100 & 120A	61 1/8"	16 1/8"	38 1/8"	57 3/4"	1/2"	16 1/4"		15"	6 7/8"	1 3/8"	1 3/4"	2"
	1552.6mm	409.6mm	968.4mm	1467mm	12.7mm	412.8mm		382.2mm	174.6mm	34.93mm	44.45mm	51.05mm
TWE100 & 120B	61 1/8"	16 1/8"	38 1/8"	57 3/4"	3/8"	16 1/4"	18 3/4"	14"	6 7/8"	1 1/8"	1 3/4"	2 1/8"
	1552.6mm	409.6mm	968.4mm	1467mm	9.525mm	412.8mm	477.5mm	356.8mm	174.6mm	28.58mm	44.45mm	54.10mm

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Unit Dimensions

Figure 2



MODEL	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R
TWE155 & 180B	69"	79 1/2"	27 5/8"	12 3/8"	1 5/8"	26"	25 1/8"	49 1/8"	56 1/4"	15 1/2"	19 1/2"	77 1/4"	1 1/4"	48"	35"
	1752.6mm	2019.3mm	701.7mm	314.3mm	41.3mm	660.4mm	638.2mm	1247.8mm	1428.8mm	393.7mm	495.3mm	1962.2mm	31.8mm	1219.2mm	889.0mm
TWE200 & 240B	71 1/8"	92 1/2"	30 1/2"	18 1/8"	4 1/2"	31"	28"	51 1/8"	59 1/8"	18 1/8"	20 1/8"	89 1/4"	1 3/4"	50 1/8"	39 1/8"
	1825.6mm	2349.5mm	774.7mm	479.4mm	114.3mm	787.4mm	711.2mm	1317.6mm	1501.8mm	460.4mm	530.2mm	2267.0mm	44.5mm	1292.2mm	993.8mm

MODEL	S	T	U	V	W	Y	Z	AA	AB	AC	AD	AE	AF
TWE155 & 180B	35"	27 1/8"	73 1/8"	3 3/8"	3 3/8"	18"	73 1/8"	33 1/2"	2 1/4"	18"	3 3/8"	35"	35"
	889.0mm	73.0mm	1876.4mm	95.3mm	85.7mm	457.2mm	1876.4mm	95.3mm	73.0mm	457.2mm	92.1mm	889.0mm	889.0mm
TWE200 & 240B	39 1/8"	47 1/8"	82 1/8"	4 1/8"	3 1/8"	20 1/8"	82 1/8"	4 1/8"	4 1/8"	20 1/8"	3"	39 1/8"	39 1/8"
	993.8mm	123.8mm	2105.0mm	117.5mm	79.4mm	511.2mm	2105.0mm	117.5mm	123.8mm	511.2mm	76.2mm	993.8mm	993.8mm

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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.

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 3). If an alternate position is required, the drain pan should be repositioned before setting the air handler.

Step 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.

Step 2. (A) Remove the screw securing the drain pan. (B) Lift the pan up. (C) Slide the pan out.

Step 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.

Step 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 3

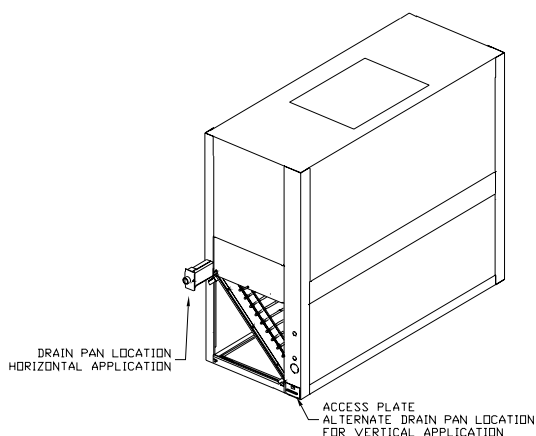
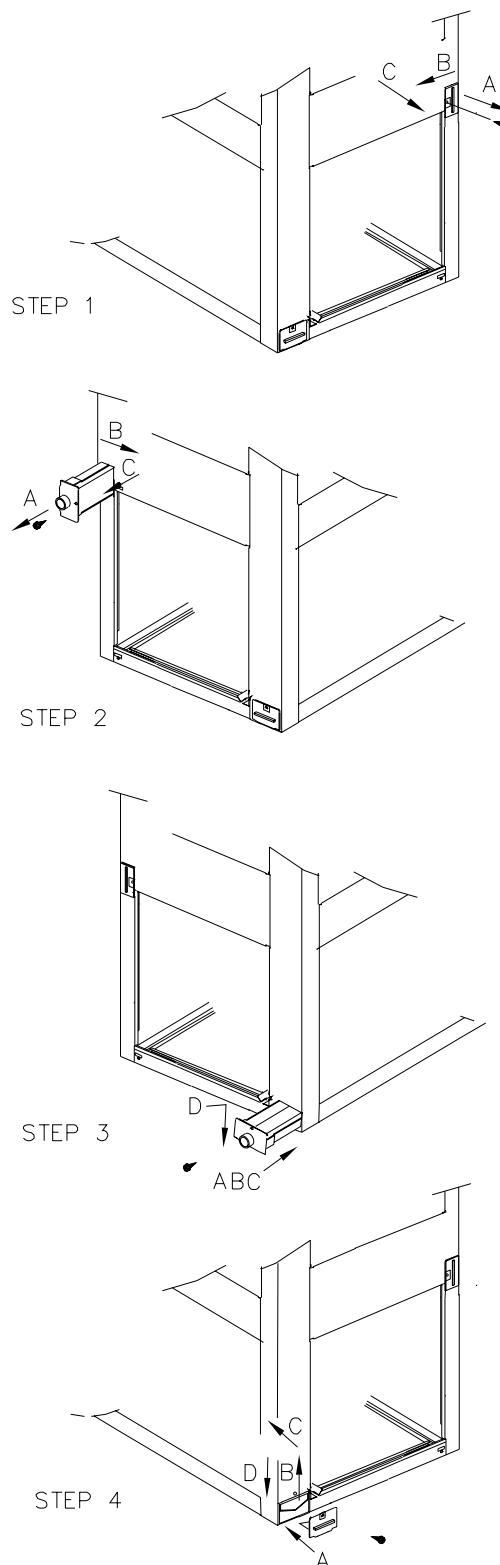


Figure 4



Installation

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 degrees and rebraze.

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: 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 8)
- 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: 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.

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.

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 Table 1.

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: 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.

Caution: 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.

Installation

Table 1.

Model	Configuration	Shipping Maximum	Net Maximum	Corner Weights			
				#1	#2	#3	#4
TWE060A & B	VERTICAL	262	232	58	58	58	58
TWE050A & B	HORIZONTAL	262	232	54	59	63	56
TWE090A & B	VERTICAL	365	317	79	79	79	79
TWE075A & B	HORIZONTAL	365	317	72	80	88	77
TWE120A & B	VERTICAL	439	392	98	98	98	98
TWE100A & B	HORIZONTAL	439	392	95	101	101	95
TWE180A & B	VERTICAL	754	692	173	173	173	173
TWE155A & B	HORIZONTAL	754	692	156	174	190	170
TWE240A & B	VERTICAL	886	816	204	204	204	204
TWE200A & B	HORIZONTAL	886	816	179	221	228	185

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 this the installation instructions packaged with the outdoor unit. Read the instructions before beginning installation of refrigerant lines.

You will find a 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 it's original position (one bulb and cap tube on single circuit units and two bulbs and cap tubes on dual circuit units).

Installation

Attach the bulb(s) approximately 45 degrees 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.

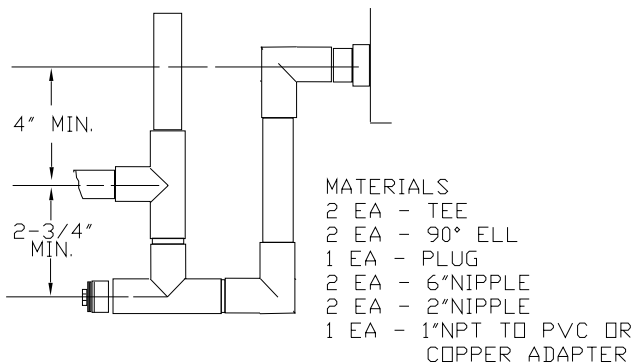
Important: Ensure that the refrigerant lines passing through the cabinet are not resting on sharp sheet metal edges.

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.

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 5 for a typical drain trap assembly.

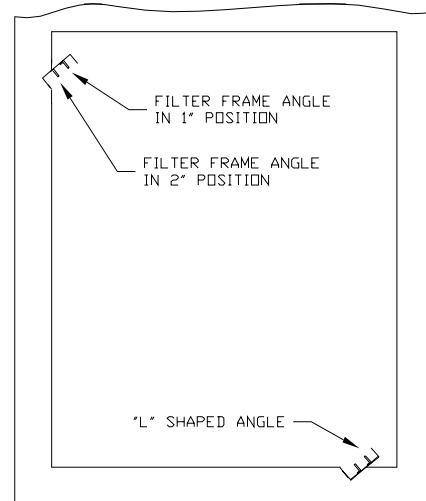
Figure 5



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 6.

Figure 6



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.

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.

Installation

Electrical Connections

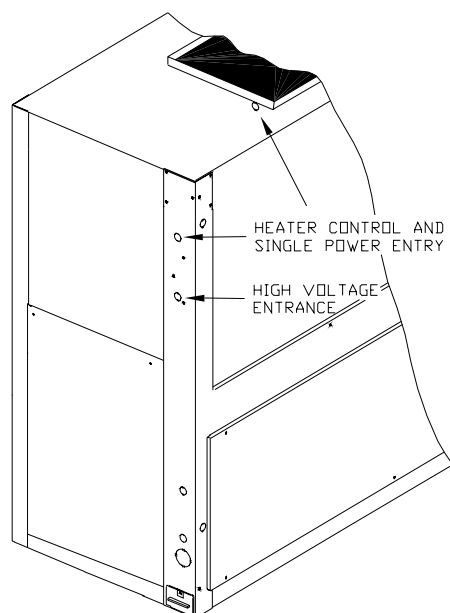
1. All electrical lines, sizing, protection, and grounding must be in accordance with the National Electric Code and local codes.
2. If conduit is used, isolate whenever vibration transmission may cause a noise problem within the building structure.
3. Ensure all connections are tight and no wires exposed.
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 7). 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 2

Recommended Thermostat Wire Size	
Maximum Wire Length	
Wire Size	(Physical distance between Unit and T-state)
22 gauge	30 feet
20 gauge	50 feet
18 gauge	75 feet
16 gauge	125 feet
14 gauge	200 feet

Figure 7



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.

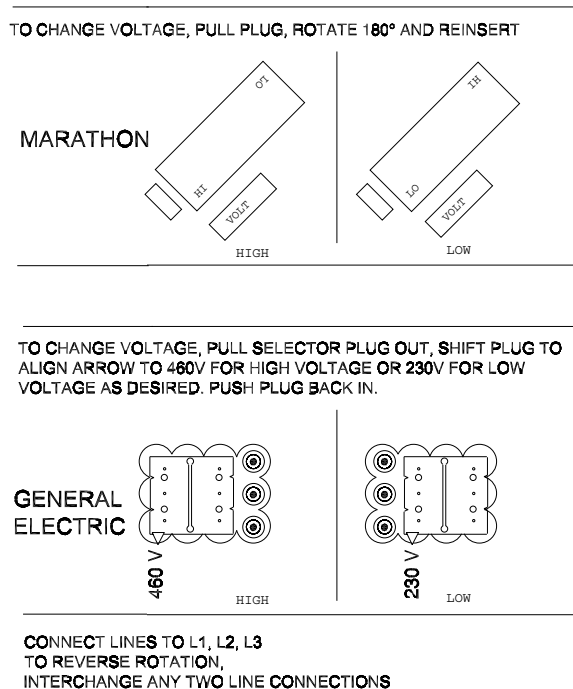
Installation Checklist

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 8

VIEW OF TERMINAL END

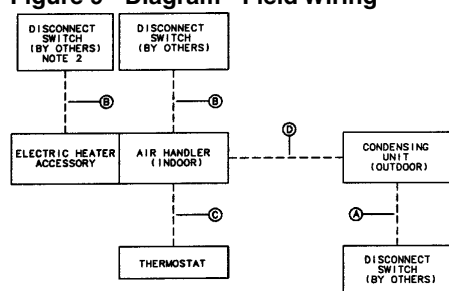


Field Wiring

Thermostat & Control Connections

1. Observe all notes on these 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 low voltage terminal board located on the side of the fan control box per the typical interconnecting wiring diagrams on pages 12 thru 22.

Figure 9 - Diagram - Field Wiring



NOTES:

1. 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 DISCONNECT SWITCH AND UNIT.
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.

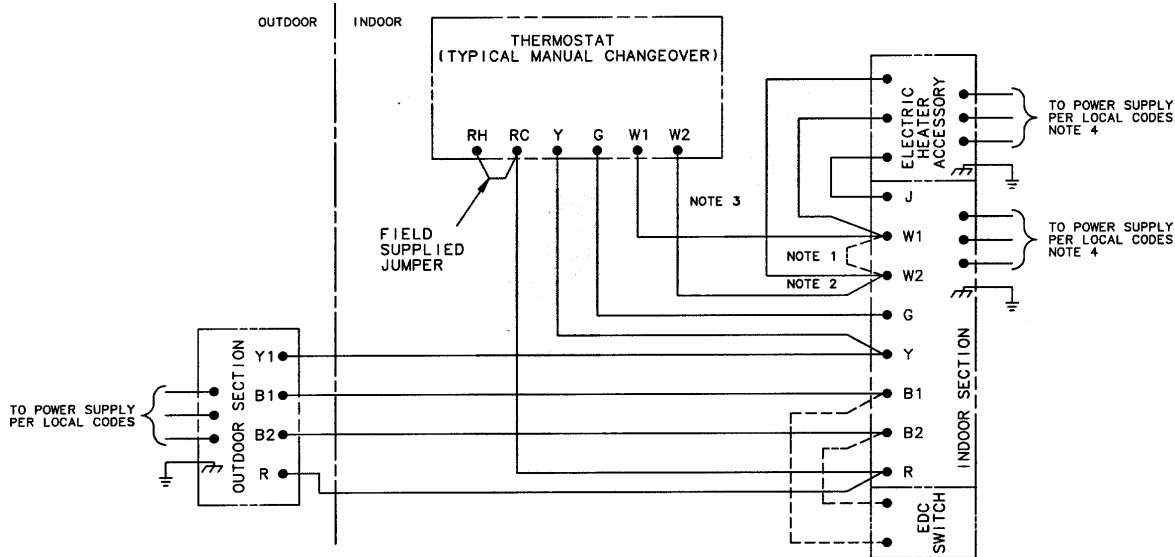
TTA090A/TWE090A TTA120A/TWE120A
FIELD WIRING: A-3 POWER WIRES, LINE VOLTAGE B-3 POWER WIRES, LINE VOLTAGE FOR 3 PHASE; 2 WIRES FOR SINGLE PHASE C-COOLING ONLY THERMOSTAT: 3 WIRES, 24 VOLTS - ONE-STAGE ELECTRIC HEAT: ADD 1 ADDITIONAL WIRE, 24 VOLTS - TWO-STAGE ELECTRIC HEAT: ADD 2 ADDITIONAL WIRES, 24 VOLTS D-4 WIRES, 24 VOLTS
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 - ELECTRIC HEAT: ADD 2 ADDITIONAL WIRES, 24 VOLTS D-6 WIRES, 24 VOLTS - OUTDOOR THERMOSTAT: ADD 1 ADDITIONAL WIRE, 24 VOLTS - ELECTRIC HEAT: ADD 1 ADDITIONAL WIRE, 24 VOLTS

TTA120B/TTE120B TTA120C/TWE120A	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 - ONE-STAGE ELECTRIC HEAT: ADD 1 ADDITIONAL WIRE, 24 VOLTS - TWO-STAGE ELECTRIC HEAT: ADD 2 ADDITIONAL WIRES, 24 VOLTS D-5 WIRES, 24 VOLTS	
TT-080/TWE080A	
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: 3 WIRES, 24 VOLTS - ONE-STAGE ELECTRIC HEAT: ADD 1 ADDITIONAL WIRE, 24 VOLTS - TWO-STAGE ELECTRIC HEAT: ADD 2 ADDITIONAL WIRES, 24 VOLTS D-2 WIRES, 24 VOLTS	
TW-080/TWE080A	
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: 6 WIRES, 24 VOLTS - ELECTRIC HEAT: ADD 2 ADDITIONAL WIRES, 24 VOLTS D-2 WIRES, 24 VOLTS - OUTDOOR THERMOSTAT: ADD 1 ADDITIONAL WIRE PER ODT, 24 VOLTS - ELECTRIC HEAT: ADD 1 ADDITIONAL WIRE, 24 VOLTS	
(2) TT-080/TTE120B (2) TT-080/TWE120B	(2) TT-030/TWE080B
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 - ONE-STAGE ELECTRIC HEAT: ADD 1 ADDITIONAL WIRE, 24 VOLTS - TWO-STAGE ELECTRIC HEAT: ADD 2 ADDITIONAL WIRES, 24 VOLTS D-2 WIRES, 24 VOLTS TO OUTDOOR SECTION "A" - 2 WIRES, 24 VOLTS TO OUTDOOR SECTION "B"	
(2) TW-030/TWE080B (2) TW-080/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 - ELECTRIC HEAT: ADD 2 ADDITIONAL WIRE, 24 VOLTS D-5 WIRES, 24 VOLTS TO OUTDOOR SECTION "A" - 2 WIRES, 24 VOLTS TO OUTDOOR SECTION "B" - 2 WIRES, 24 VOLTS BETWEEN OUTDOOR SECTIONS "A" AND "B" - ELECTRIC HEAT: ADD 1 ADDITIONAL WIRES, 24 VOLTS - OUTDOOR THERMOSTAT: ADD 1 ADDITIONAL WIRE, 24 VOLT	

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Field Wiring

**Figure 10 - TTA090A & 120A/TWE090 & 120A
TTA075A & 100A/TWE075 & 100A**

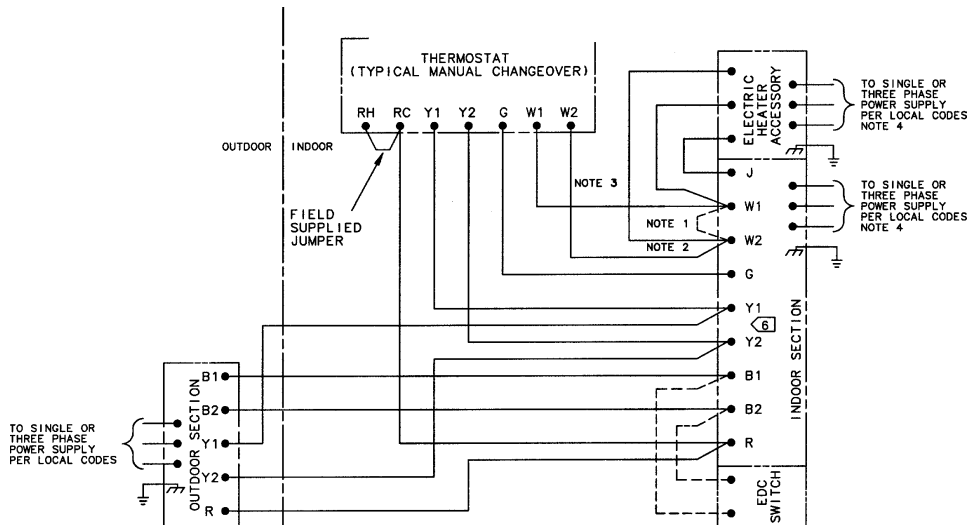


NOTES:

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.

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**Figure 11 - TTA120B/TWE120B
TTA120C/TWE120A
TTA100B/TWE100B
TTA100C/TWE100A**



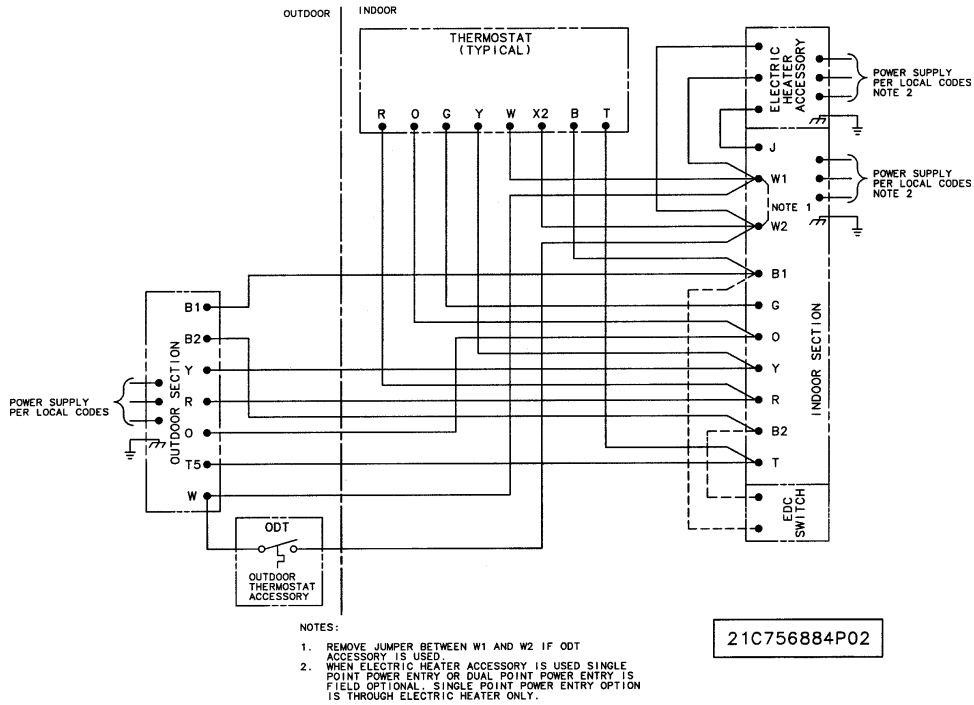
NOTES:

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.

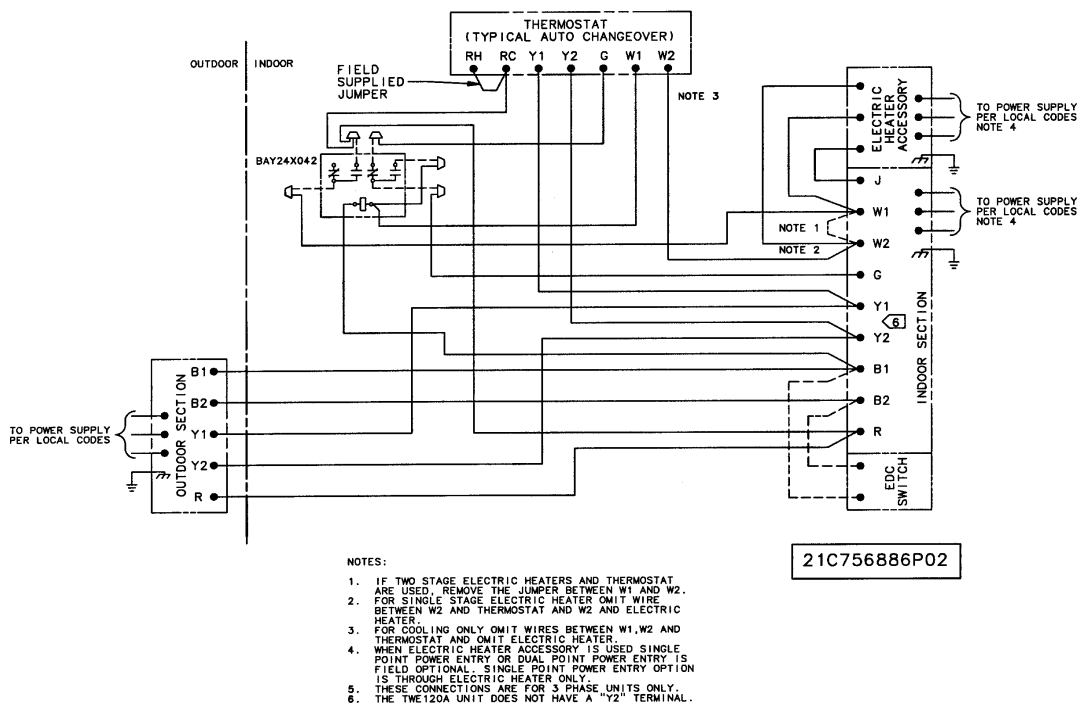
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Field Wiring

**Figure 12 - TWA090A & 120A/TWE090 & 120A
TWA075A & 100A/TWE075 & 100A**

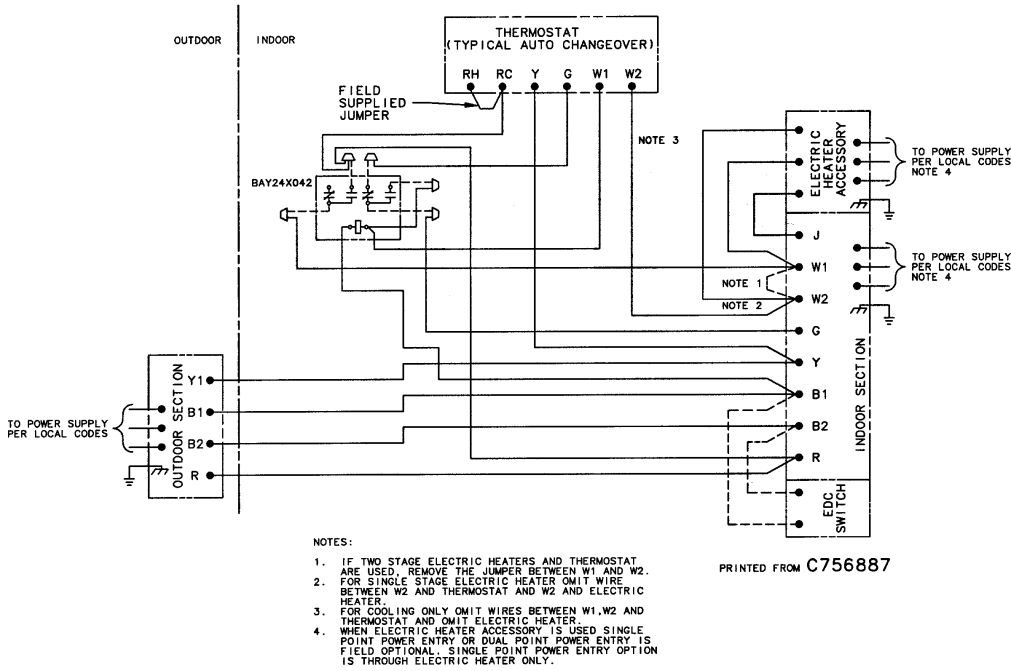


**Figure 13 - TTA120B/TWE120B
TTA120C/TWE120A
TTA100B/TWE100B
TTA100C/TWE100A**

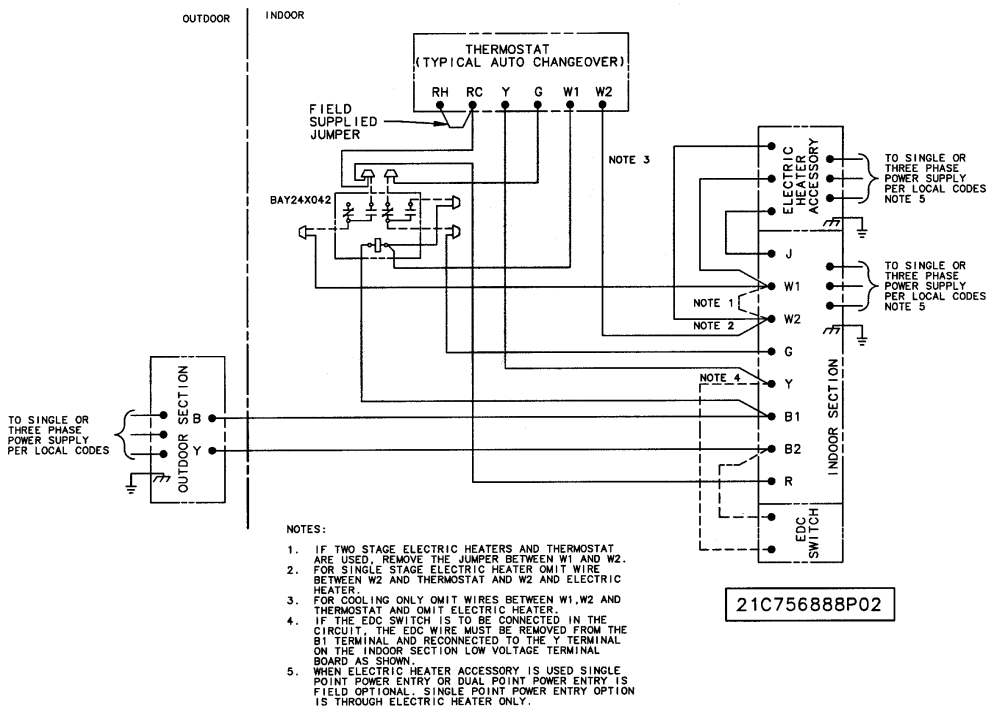


Field Wiring

**Figure 14 - TTA090A & 120A/TWE090 & 120A
TTA075A & 100A/TWE075 & 100A**



**Figure 15 - TT_060/TWE060
TT_050/TWE050**



Field Wiring

Figure 16 - TT_060/TWE060
TT_050/TWE050

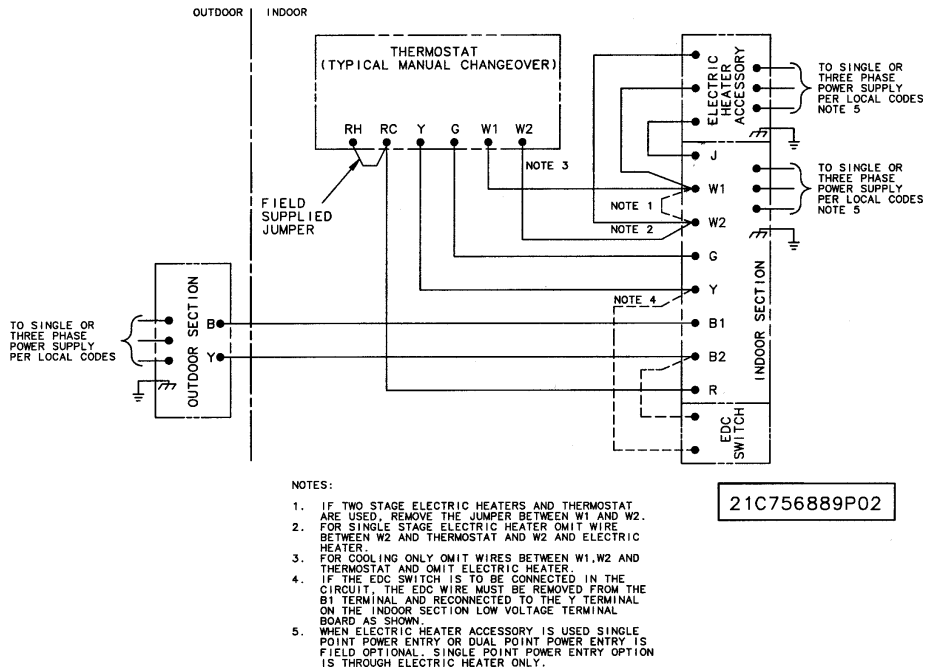
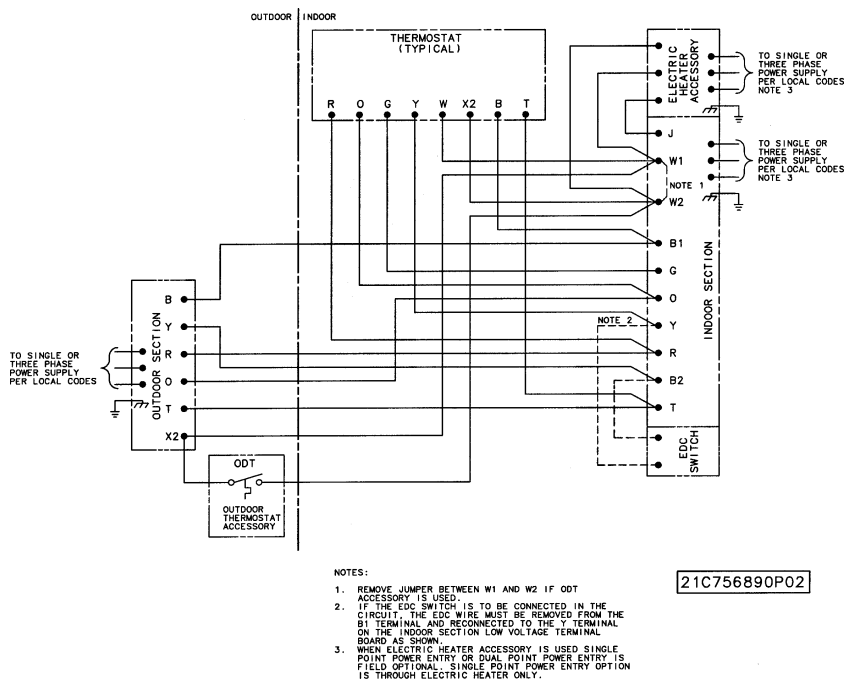
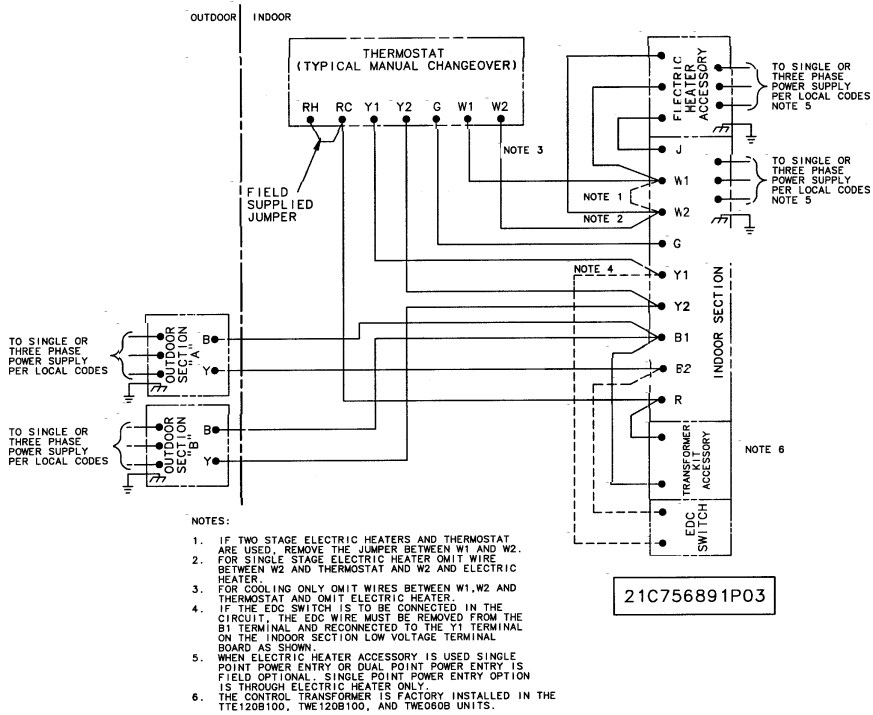


Figure 17 - TW_060/TWE060
TW_050/TWE050

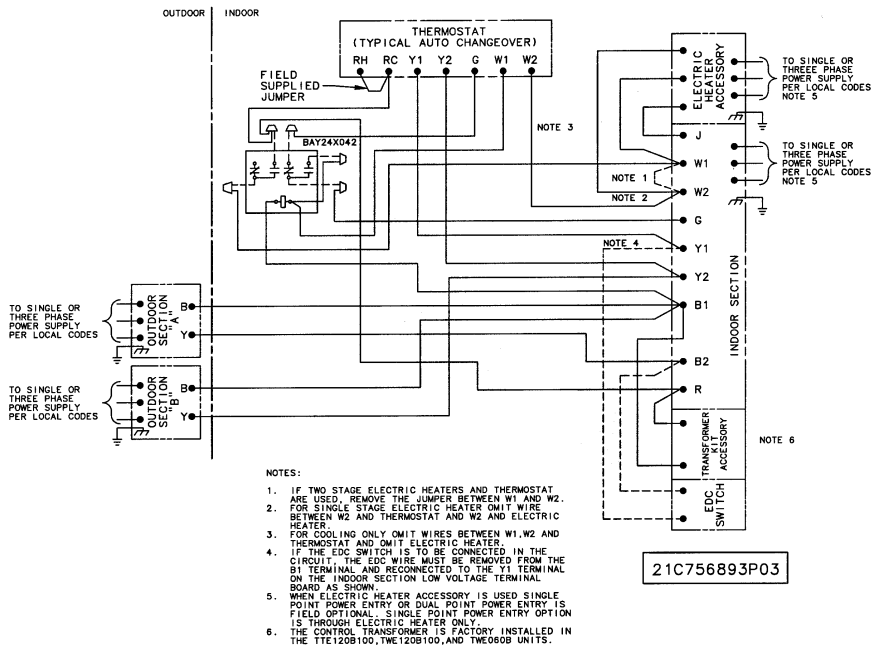


Field Wiring

**Figure 18 - TW_030/TWE060B
TW____/TWE090B
TW_060/TWE120B
TW_050/TWE100B**

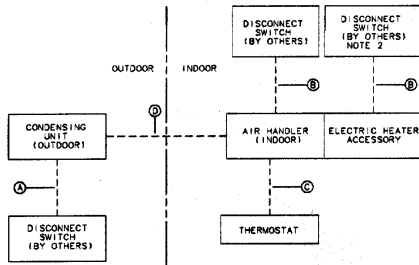


**Figure 19 - TW_030/TWE060B
TW____/TWE090B
TW_060/TWE120B
TW_050/TWE100B**



Field Wiring

Figure 20 - Diagram - Field Wiring



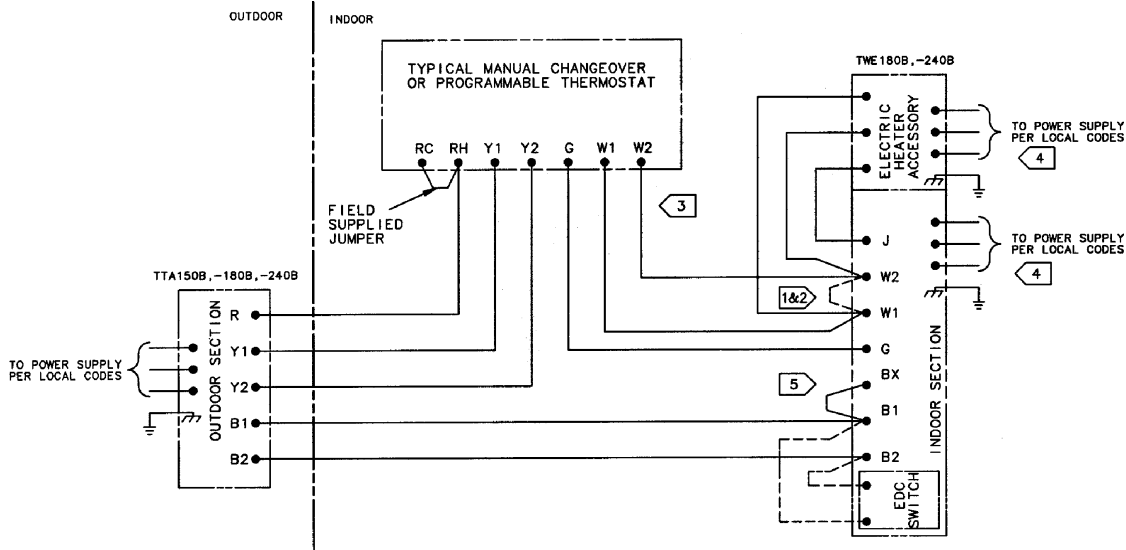
- NOTES:
1. WIRING SHOWN WITH DASHED LINES IS TO BE FURNISHED AND INSTALLED BY THE CUSTOMER. ALL CUSTOMER-SUPPLIED WIRING MUST BE COPPER ONLY AND MUST CONFORM TO NEC AND LOCAL ELECTRICAL CODES. CODES MAY REQUIRE LINE OF SIGHT BETWEEN DISCONNECT SWITCH AND UNIT.
 2. WHEN ELECTRIC HEATER ACCESSORY IS USED SINGLE POINT POWER ENTRY OR DUAL POINT POWER ENTRY IS FIELD OPTIONAL. SINGLE POINT POWER ENTRY OPTION IS THROUGH ELECTRIC HEATER ONLY.

TTA150B/TWE150B TTA180B/TWE180B	TTA240B/TWE240B TTA180C/TWE180B
FIELD WIRING: A-3 POWER WIRES, LINE VOLTAGE B-3 POWER WIRES, LINE VOLTAGE C-COOLING ONLY THERMOSTAT: 4 WIRES, 24 VOLTS - ONE-STAGE ELECTRIC HEAT: ADD 1 ADDITIONAL WIRE, 24 VOLTS - 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 C-HEAT PUMP THERMOSTAT: 7 WIRES, 24 VOLTS - ELECTRIC HEAT: ADD 2 ADDITIONAL WIRES, 24 VOLTS D-7 WIRES, 24 VOLTS - ELECTRIC HEAT: ADD 2 ADDITIONAL WIRES, 24 VOLTS - OUTDOOR THERMOSTAT: ADD 1 ADDITIONAL WIRE, 24 VOLTS	

TTA090A/TWE180B TTA120A/TWE240B	
FIELD WIRING: A-3 POWER WIRES, LINE VOLTAGE B-3 POWER WIRES, LINE VOLTAGE C-COOLING ONLY THERMOSTAT: 4 WIRES, 24 VOLTS - ONE-STAGE ELECTRIC HEAT: ADD 1 ADDITIONAL WIRE, 24 VOLTS - 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 - ELECTRIC HEAT: ADD 2 ADDITIONAL WIRES, 24 VOLTS D-9 WIRES, 24 VOLTS - ELECTRIC HEAT: ADD 2 ADDITIONAL WIRES, 24 VOLTS - OUTDOOR THERMOSTAT: ADD 3 ADDITIONAL WIRES, 24 VOLTS	

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Figure 21 - TTA150B, 180B, 240B/TWE180B, 240B
TTA125B, 155B, 200B/TWE155B, 200B
TTA155C/TWE155B
TTA180C/TWE180B



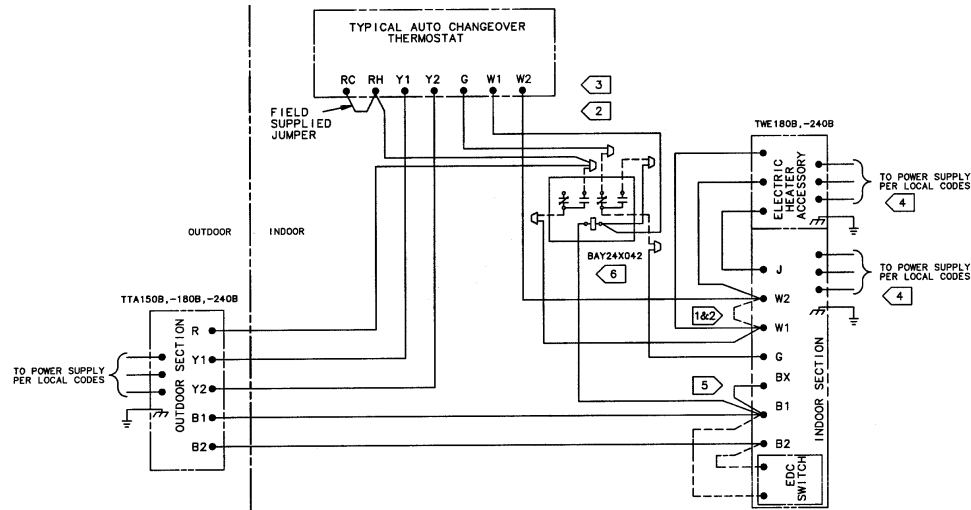
NOTES:

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.

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Field Wiring

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

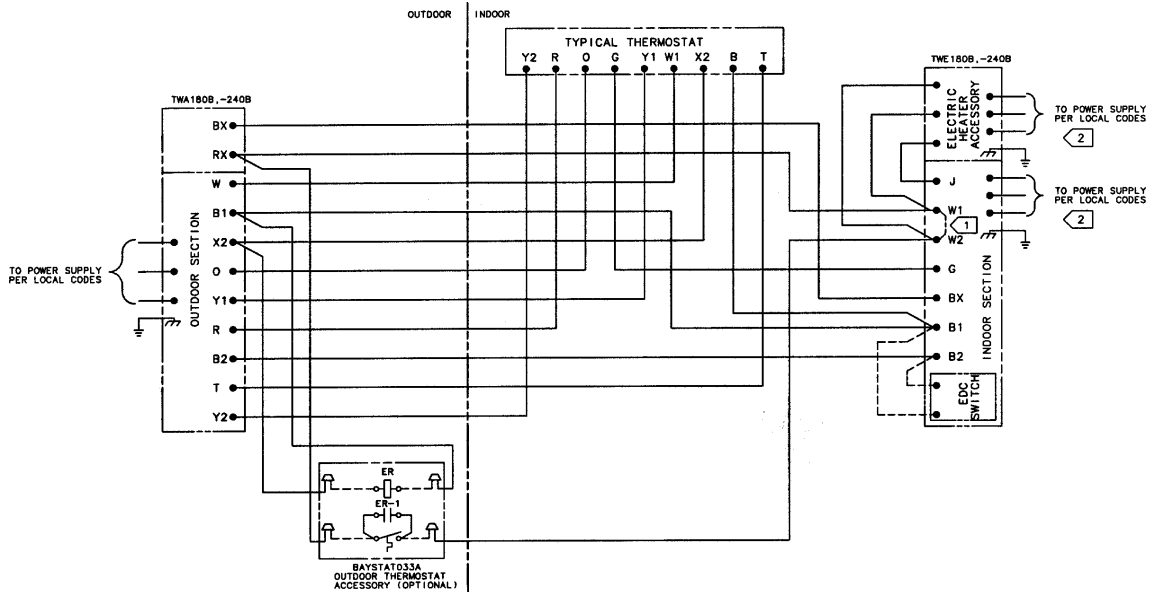


NOTES:

1. IF TWO STAGE ELECTRIC HEATERS AND THERMOSTAT ARE USED, REMOVE THE JUMPER BETWEEN W1 AND W2. 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. 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.
5. BAY24X042 RELAY IS AN ACCESSORY AND MUST BE ORDERED SEPARATELY.

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**Figure 23 - TWA180B, 240B/TWE180B, 240B
TWA155B, 200B/TWE155B, 200B**

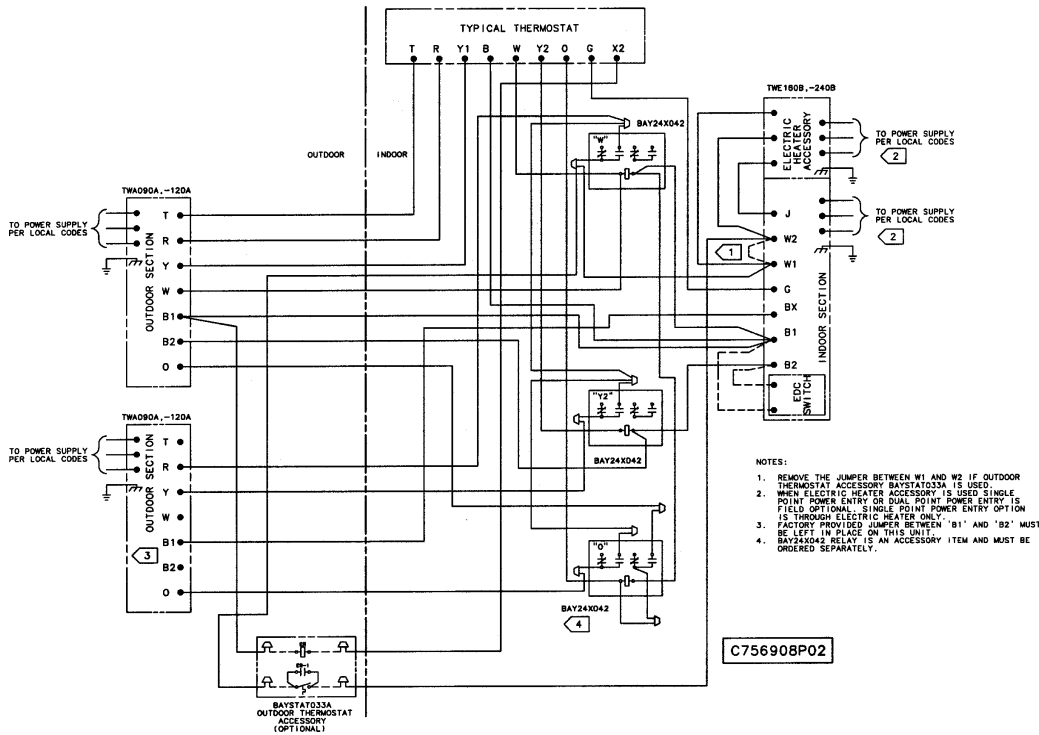


NOTES:

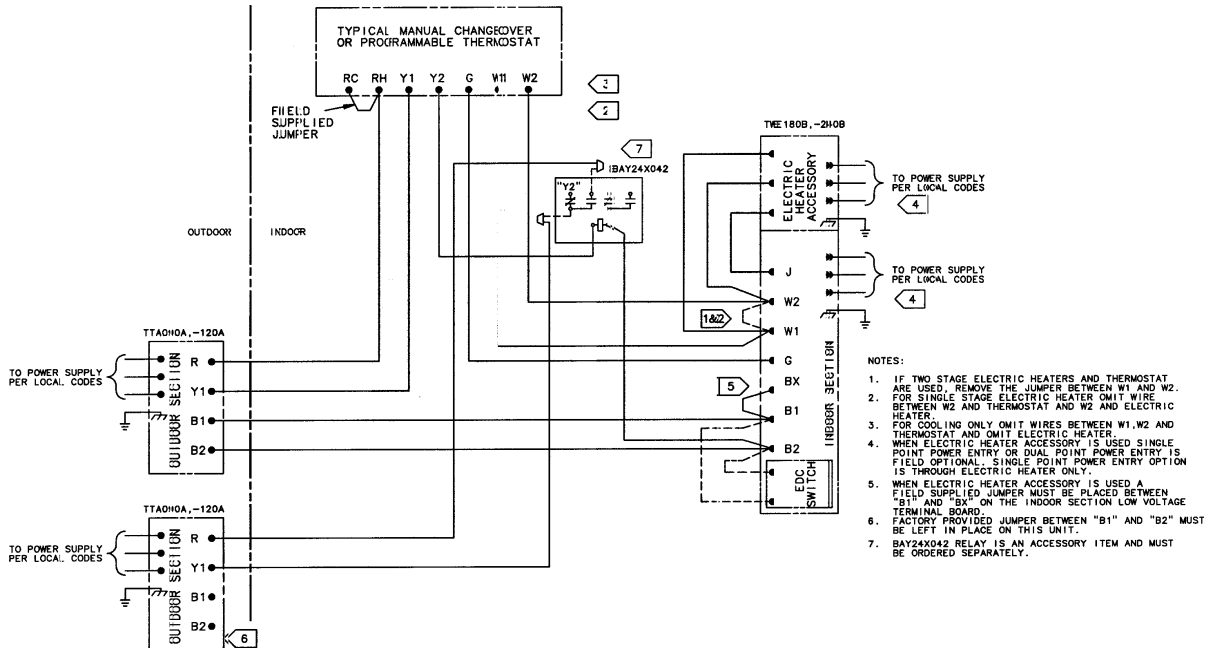
1. REMOVE JUMPER BETWEEN W1 AND W2 IF OUTDOOR THERMOSTAT ACCESSORY BAYSTAT033A IS USED.
2. WHEN ELECTRIC HEATER ACCESSORY IS USED SINGLE POINT POWER ENTRY OR DUAL POINT POWER ENTRY IS FIELD OPTIONAL. SINGLE POINT ENTRY OPTION IS THROUGH ELECTRIC HEATER ONLY.

Field Wiring

**Figure 24 - TWA090A, 120A/TWE180B, 240B
TWA075A, 100A/TWE155B, 200B**

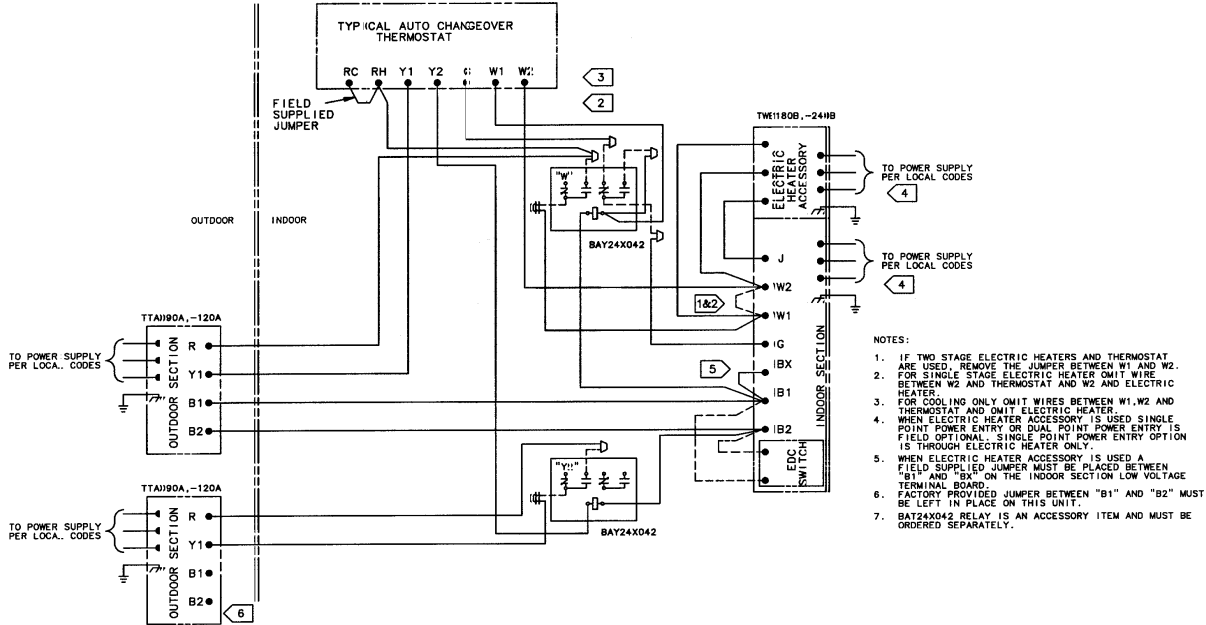


**Figure 25 - TTA090A, 120A/TWE180B, 240B
TTA075A, 100A/TWE155B, 200B**

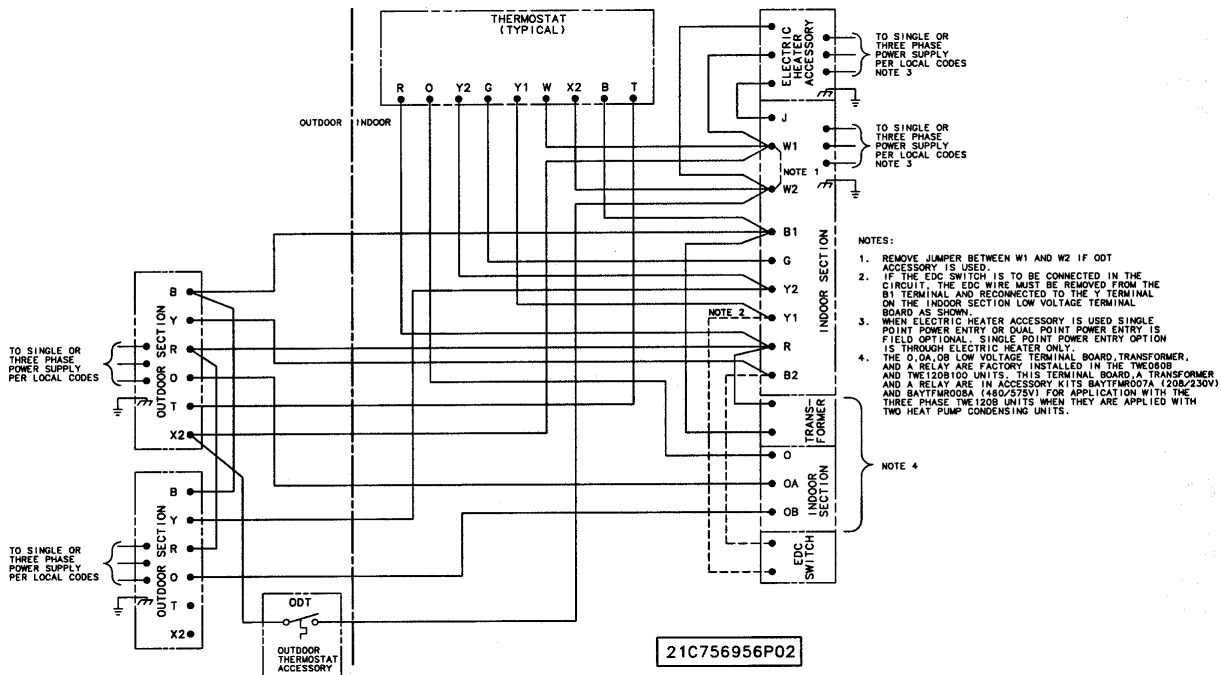


Field Wiring

**Figure 26 - TTA090A, 120A/TWE180B, 240B
TTA075A, 100A/TWE155B, 200B**



**Figure 27 - TW_030A/TWE060B
TW_060/TWE090B
TW_060/TWE120B
TW_050/TWE100B**



Warranty

Central Air Conditioner

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.

Warranty

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
2701 Wilma Rudolph Blvd.
Clarksville, TN 37040
GW-598-4799



Literature Order Number	TWE-SVX03A--EN
File Number	SV-UN-TWE-SVX03A-EN 6/03
Supersedes	New
Stocking Location	Webb Mason

The manufacturer has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice.