# INSTALLER'S GUIDE

ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES

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Model:	TWE018C14,0B,FB	TWE042C14,0C,FC
	TWE024C14,0B,FB	TWE048C14,0C,FC
	TWE030C14,0B,FB	TWE060D150B
	TWE036C14,0B,FB	TWE060C15FD

# Convertible 1 <sup>1</sup>/<sub>2</sub> - 5 Ton Air Handlers

 $\label{eq:intermation} \textbf{IMPORTANT} \\ - \textbf{This Document is customer property and is to remain with this unit. Please return to service information pack upon completion of work.$ 

## **WARNING:** HAZARDOUS VOLTAGE - DISCONNECT POWER BEFORE SERVICING

### A. GENERAL INFORMATION

# A WARNING

THIS INFORMATION IS FOR USE BY INDIVIDUALS HAVING ADEQUATE BACKGROUNDS OF ELECTRICAL AND MECHANI-CAL EXPERIENCE. ANY ATTEMPT TO REPAIR A CENTRAL AIR CONDITIONING PRODUCT MAY RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE. THE MANUFACTURER OR SELLER CANNOT BE RESPONSIBLE FOR THE INTERPRE-TATION OF THIS INFORMATION, NOR CAN IT ASSUME ANY LIABILITY IN CONNECTION WITH ITS USE.

These instructions do not cover all variations in systems or provide for every possible contingency. Should further information be desired or particular problems arise which are not covered sufficiently by this manual, contact your local distributor or the manufacturer as listed on the air handler nameplate. These Air Handlers are shipped from the factory fully convertible as shipped, with a time delay relay installed.

#### INSPECTION

Check carefully for any shipping damage. This must be reported to and claims made against the transportation company immediately. Check to be sure all major components are in the unit. Any missing parts should be reported to your supplier at once, and replaced with authorized parts only.

# INSTALLATION LIMITATIONS & RECOMMENDATIONS

The general location of the air handler is normally selected by the architect, contractor and/or home owner for the most effective application and satisfaction. For proper installation the following items must be considered:

This equipment has been evaluated in accordance with the Code of Federal Regulations, Chapter XX, Part 3280 or the equivalent. "SUITABLE FOR MOBILE HOME USE."

1. If adequate power is available and correct according to nameplate specifications.

2. Insulate all ducts, particularly if unit is located outside of the conditioned space.

3. It is recommended that the outline drawing be studied and dimensions properly noted and checked against 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.

# Refer to the Convertibility Summary Chart on Page 6 to maximize efficiency.

4. If supplementary heat is to be added, power supply must be sufficient to carry the load.

NOTE: If air handler is used WITHOUT a supplementary electric heater, a plate is required to cover the open hole in the airflow system. See Figure 6. Also, seal the cabinet where the wire enters.

5. If the unit is installed without a return air duct, applicable local codes may limit this air handler to installation only in a single story residence.

6. If the outdoor unit is to be installed later, or by others, then installation of the air handler must be made to allow access for refrigerant lines, or attach refrigerant lines to air handler when installing. Make sure there are provisions for installing condensate drain lines.

Since the manufacturer has a policy of continuous product improvement, it reserves the right to change specifications and design without notice. 7. If side, front or rear return is required, air handler must be elevated.

8. Route refrigerant lines away from air handler so they do not interfere with access panels and filters.

#### NOTE: When external accessories are used the additional height and width requirements must be considered in the overall space needed.

9. These units are not approved for outdoor installation.

 $10. \ These units are approved for draw-through application only.$ 

### **B. UNIT INSTALLATION**

#### Refer to Convertible Summary on page 6 for maximum efficiency.

**Horizontal left, vertical and downflow only.** For maximum efficiency, remove the two factory installed baffle assemblies from the apex of the coil by removing the 5/16" hex head screws. Discard the larger baffle and reinstall with the factory supplied narrow coil baffle using the screws removed previously (See Figure 1). (Benefit estimated at +.01 SEER.)



**Vertical and downflow only.** For maximum efficiency, the horizontal drip tray should be removed. Tray removal requires that the coil be removed by sliding out on the coil channel supports. The tray is detached by removing two screws at the drain pan and two screws holding the two brackets at the top of the coil. (Benefit estimated at +0.1 SEER.)

### CLOSET, ALCOVE OR UTILITY ROOM INSTALLA-

**TION -** These air handlers are suitable for installation in a closet, alcove or utility room with free, non-ducted, air return, using the area space as a return air plenum. With ducted supply air, if the minimum clearances to combustible materials and service access are observed, the above installations are suitable. This area may also be used for other purposes, including an electric hot water heater - **but in no case shall a fossil fuel device be installed and/or operated in the same closet, alcove or utility room.** 

### HORIZONTAL INSTALLATIONS

For maximum unit efficiency and ease of filter maintenance it is recommended that a properly sized **remote filter** grille be installed for horizontal applications. The **factory installed filter should then be removed from the unit.** 

#### 1. HORIZONTAL RIGHT

a. Unit is shipped from the factory in the horizontal right airflow position. *See TWE Convertibility summary chart on page 6.* 

b. If air handler is to be suspended, it must be isolated. Use 1/4" - 20 threaded rods for suspending the air handler. Use suspension rods with vibration isolators installed on each rod. **All cage nuts must be used to insure proper support.** (See Figure 9.)

c. If the unit is not suspended it must be isolated carefully to prevent sound transmission. Vibration isolators (purchased locally) must be placed under the unit.

d. It is always recommended that an auxiliary drain pan be installed under a horizontal air handler (See Condensate Piping).

e. Isolate the auxiliary drain pan from the unit or from the structure.

f. Connect the auxiliary drain pan to a **separate drain line** (no trap is needed in this line).

g. If a return duct is connected to the Air Handler, it must be the same dimensions as the return opening shown in the outline drawings.

#### 2. HORIZONTAL LEFT

a. To convert to horizontal left, slide out coil on the channel supports and rotate the cabinet 180 degrees.

### See Convertible Chart on page 7.

FOR TWE048 & 060 ONLY: For maximum efficiency, remove the factory installed baffle assembly from the apex of the coil by removing the 5/16" hex head screws. Replace this baffle with the factory supplied narrow coil baffle using the screws removed previously (See Figure 1).

The coil is then inserted back into the cabinet on the opposite side coil channel supports. The unit is now horizontal left with front access.

b. Power and low voltage wiring enter the cabinet through knockouts on the discharge end of the unit when in this position. **Opening around wiring must be sealed completely.** Location of power entry is shown on the Outline Drawing.

c. Unit must be suspended from both ends as well as the middle. Cage nuts are not provided for horizontal left suspension.

d. For additional installation instructions see #1 "Horizontal Right."

#### VERTICAL INSTALLATIONS

#### 3. VERTICAL UPFLOW

a. Position unit on Pedestal or other suitable foundation. If Pedestal is not used, a frame strong enough to support the total weight must be provided. Provide a minimum height of 14 inches for proper unrestricted airflow. *See Convertible Summary chart on page 6.* 

b. If a return air duct is connected to the air handler, it must be the same dimensions as the return opening, shown in the outline drawing.

c. Pedestal and unit should be isolated from the foundation using a suitable isolating material.

#### 4. VERTICAL DOWNFLOW

# **REQUIRES INSTALLATION OF WATER DIVERTER BAFFLE KIT INCLUDED WITH UNIT.**



Conversion to vertical downflow from "as shipped," requires the removal of the coil by sliding it out on the coil channel supports. *See Convertibility chart on page 7.* 

Downflow Kit hardware and gasket installation requires the installer to:

a. Remove and discard the coil drip tray and mounting brackets. These parts are not required for downflow application.

b. Detach the coil from the drain pan by removing 4 screws Figure 2.

c. Remove the front triangular baffle from the coil and install the 1/2" wide gasket provided per Figure 2. Trim the gasket length to fit the baffle. Reinstall the baffle to coil, with gasket material compressed against the coil.

d. Install the water blow-off baffles provided on each side of the coil with the flange at the top as shown in Figure 2. The bottom of the baffle is to be as close to the bottom of the coil as possible.

e. Install the 7/8" wide gasket in each side of the drain pan as shown in Figure 2 (sect. X-X).

f. The 5 ton model requires 2 water diverter baffles to be placed underneath the coil on the inside edge of the drain pan, Figure 2. Fill the bend in the baffle which fits the inner edge of the drain pan with RTV type adhesive/sealant before installing the baffle.

g. The unit is then placed with the blower side down and the coil is replaced on the coil channel supports with the drain connections at the bottom. The unit is now in vertical downflow position with front access.

When air handler with supplementary heater is to be installed in the downflow position on combustible flooring an accessory subbase (TAYBASE101 for TWE018-36, TAYBASE100 for TWE042-60) must be used.

#### C. DUCT CONNECTIONS

The supply and return air ducts should be connected to the unit with flame retardant duct connectors.

Convertible duct flanges are provided on the discharge opening to provide a "flush fit" for 3/4" or 1-1/2" duct board applications, see the Outline drawing on page 6 for sizes of the duct connections. After the duct is secured, seal around the supply duct to prevent air leakage.

#### NOTE: If the convertible duct flanges are not used, they must be removed and discarded for proper airflow.

#### D. ACCUTRON<sup>TM</sup> FLOW CONTROL VALVE

If the indoor unit System Refrigerant Flow control is an Accutron<sup>TM</sup> orifice and check valve assembly, an orifice change may be necessary.

The outdoor unit determines the required orifice size. Check the orifice size stamped on nameplate of selected outdoor model. If the indoor unit is shipped with a different orifice size, the orifice must be changed to obtain system rated performance.

<u>IMPORTANT</u>: The outdoor unit will be shipped with the proper size orifice and a stick-on orifice size label in an envelope attached to the outdoor unit. Outdoor unit nameplate will have correct orifice size specified as BAYFCCV---A for rated performance.

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#### FIELD CHANGING OF ORIFICE

NOTE: Do not connect refrigerant line set yet!

1. Disassemble Accutron<sup>TM</sup> assembly by turning adapter hex nut counterclockwise. (See Fig. 3).

2. Existing orifice should be removed, using a pin, wire or paper clip if necessary.

3. Insert properly sized orifice into the Accutron<sup>™</sup> body with rounded "bullet" nose toward the indoor unit. (See Fig. 3). Ensure the orifice remains inserted in body when reconnecting mating adapter removed in item 1.

4. Reconnect adapter by hand to ensure proper mating of threads and tighten until bodies "bottom" or a definite resistance is felt.

5. Mark a line lengthwise from the union nut to the bulkhead. Then tighten an additional 1/6 turn (or 1 hex flat). The misalignment of the line will show the amount the assembly has been tightened. This final 1/6 turn is necessary to ensure the formation of a leakproof joint.

IMPORTANT: Correct tightening of the coupling is very important. Under tightening or over tightening may result in a coupling leak.

#### E. BRAZING TO EVAPORATOR SECTION

NOTE: A brazing shield is provided in the information pack accompanying this unit. This shield fits over the refrigerant fittings while brazing. Wet the shield before brazing. See Fig. 4.

#### IMPORTANT: Do not unseal refrigerant tubing until ready to cut and fit refrigerant lines.

1. Remove both sealing plugs from indoor coil.

2. Field supplied tubing should be cut square, round and free of burrs at the connecting end. Clean the tubing to prevent contaminants from entering the system.

3. Run refrigerant tubing into the stub sockets of indoor unit coil.



#### PAINTED AREAS OF UNIT MUST BE SHIELDED DURING BRAZING

4. Braze and evacuate according to indoor and outdoor installation instructions.

### F. CONDENSATE DRAIN PIPING

NOTE: Make certain that the unit has been installed in a level position to insure proper draining. Prove proper draining by pouring water into the drain pan.

The condensate drain connections in front of the indoor coil are 3/4" NPT. The primary drain (lower) drain line must be trapped with provision for drainage to prevent winter freeze-up. See Figure 5. Do not use reducing fittings in the condensate drain lines. **Be sure to pitch the drain line down.** The installation of a clean-out tee for future maintenance is recommended. The condensate drain line must not be connected to a closed drain system. Do not trap the auxiliary drain pan pipe. **Insulating the drain pipes to prevent sweating is recommended**.

# NOTE: DO NOT use a torch or flame near the plastic drain pan coupling.

Use Teflon tape or RTV silicone sealant only! <u>Do Not</u> Use pipe joint compound or PVC/CPVC cement!

#### NOTE: DO NOT tighten the drain pipe excessively. Support the condensate piping and traps outside the unit to prevent strain on the drain coupling.

Two secondary drains are provided for the different orientations, the lower should be connected as a secondary drain to prevent condensate overflow by a blocked primary drain.



# G. ELECTRICAL CONNECTIONS — Power Wiring

**AWARNING:** TO PREVENT INJURY OR DEATH DUE TO ELECTRICAL SHOCK OR CONTACT WITH MOVING PARTS, LOCK UNIT DISCONNECT SWITCH IN OPEN POSITION BEFORE SERVICING UNIT.

1. These Air Handlers are shipped from the factory wired for 230 volts. The units may be wired for 200 volts. Follow instructions on unit wiring diagram located on blower housing and in the Service Facts document included with the unit.

2. The selection of wire and fuse sizes should be made according to the ampacity of the unit.

3. Field wiring diagrams for unit accessories are shipped with the accessory.

4. Wiring must conform to National and Local codes.

Ground unit per Local codes with good safety procedure. Electrical connections are made in the junction box located above the blower housing when heaters are not installed.

NOTE: If air handler is used *without* electric heaters, the 7/8" electrical entry hole <u>must be sealed air tight after</u> <u>making connections.</u>

If heaters are installed the connections are made in the Heater Control box. <u>Seal the electrical entry hole air</u> <u>tight after making connections.</u>

### **H. CONTROL WIRING**

1. Connect wiring between indoor unit, outdoor unit and thermostat. The use of color-coded 18 gauge low-voltage wire is recommended. Seal the opening where the control wiring enters the unit.

2. Field wiring diagrams are provided which show the low voltage wiring hookup for a single speed cooling only system (with supplementary heaters) and a heat pump system (with supplementary heaters). Plug in type electrical connectors are provided for use with supplementary heaters.

IMPORTANT: When supplementary heaters are installed, inspect to insure that all packaging material has been removed.

### I. CHECKOUT PROCEDURE

1. Check the Air Handler installation in accordance with this instruction.

2. "Operational Procedure" for the system installation can be found in the outdoor unit installer guide and will be compatible with this Air Handler.

The following warning complies with State of California law, Proposition 65.

### **AWARNING:** This product contains fiberglass wool insulation! Fiberglass dust and ceramic

fiberglass wool insulation! Fiberglass dust and ceramic fibers are believed by the State of California to cause cancer through inhalation. Glasswool 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 longsleeved, 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.



	narrow baffle (TWE048 + 060C/D only).
Vertical Upflow	<ul> <li>Remove the drip tray</li> </ul>
	<ul> <li>Remove the factory installed baffle assembly on the apex of the coil and replace it with the factory supplied narrow baffle (TWE048 + 060C/D only).</li> </ul>
Vertical Downflow	<ul> <li>Remove the drip tray</li> </ul>
	<ul> <li>Remove the factory installed baffle assembly on the apex of the coil and replace it with the factory supplied narrow baffle (TWE048 + 060C/D only).</li> </ul>
	Install the factory supplied kit to prevent water blow-off.



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### **CHECKOUT PROCEDURES**

After installation has been completed, it is recommended that the Air Handler be checked against the following checklist.

1.	Make sure power is "OFF" at power disconnect switch	
	Check all field wiring for tight connections. See that grounding of unit	
	is in accord with code	
3.	Make sure unit suspension (if used) is secure and that there are no tools or loose	
	debris in, around or on top of the unit	
4.	Check all duct outlets; they must be open and unrestricted	
5.	Check drain lines and be sure all joints are tight	
6.	Make sure secondary drain pan is installed	
7.	Check power supply for correct requirements per unit nameplate	
8.	Check filters for proper size. Inform owner of proper procedure for removal and	
	reinstallation	
9.	Energize the system and carefully observe its operation; make any necessary	
	adjustment	
1(	). Instruct owner, engineer (if possible) on proper operating procedure and leave	
	Use and Care Manual with owner	
	SUPPLEMENTARY HEATERS CHECKOUT PROCEDURES, IF USED DOES HEATER	

REQUIRE A SPECIAL CIRCUIT? SEE "LIMITATIONS AND RECOMMENDATIONS".

1. Be sure the disconnect switch is "OFF", and safety label (if any) is attached a	
2. Check on field wiring for tight connections and grounding according to codes	
3. Check circuit protection for proper size per nameplate specifications	
4. Check control box panel - in place and secured	

# NOTE: OPERATION OF HEATERS MUST BE CHECKED DURING THE OPERATION CHECK OF THE TOTAL SYSTEM.

Since the manufacturer has a policy of continuous product improvement, it reserves the right to change specifications and design without notice.

#### The Trane Company

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