



# Installation Operation Maintenance

---

## ODYSSEY

Light Commercial  
Split System 5-20 Tons  
TWE Model 50 Hz / 60 Hz



### Air Handling Models

#### R22 Series

TWE 120 CD / TWE 120 C3  
TWE 160 CD / TWE 160 C3  
TWE 180 CD / TWE 180 C3  
TWE 210 CD / TWE 210 C3  
TWE 240 CD / TWE 240 C3

#### R407C Series

TWE 120 ED / TWE 120 E3  
TWE 160 ED / TWE 160 E3  
TWE 180 ED / TWE 180 E3  
TWE 210 ED / TWE 210 E3  
TWE 240 ED / TWE 240 E3

---

February 2013

TWE-IOM01-EN0213



# Model Nomenclature

## Air Handling Unit Model Nomenclature

**TWE 120 C D 0 0 A A**

TWE = Cooling Only and Heat Pump  
Air Handling Unit (Convertible)

Nominal Gross Cooling Capacity (MBH)

- 120 = 120 MBH
  - 160 = 160 MBH
  - 180 = 180 MBH
  - 210 = 210 MBH
  - 240 = 240 MBH
- For TWE model

Major Design Sequence

- C = R22 Refrigerant
- E = R407C Refrigerant

Service Digit

- A = First Parts List

Minor Design Sequence

- A = First Design Sequence
- B = Second Design Sequence
- C = Third Design Sequence

Factory Installed Options # 2

- 0 = No Options
- A = Discharge Plenum (Vertical application)
- B = Return Air Grille
- C = Discharge Plenum and Return Air Grille
- S = Special request to be defined and approved

Factory Installed Options # 1

- 0 = No Options
- A = 1 HP Fan Motor
- B = 2 HP Fan Motor
- C = 3 HP Fan Motor
- D = 5 HP Fan Motor
- E = 7.5 HP Fan Motor

Electrical Characteristics

- D = 380-415/3/50
- 3 = 230/3/60



## Contents

---

<b>Model Nomenclature</b>	<b>2</b>
<b>General Information</b>	<b>4</b>
<b>Unit Installation</b>	<b>5</b>
<b>General Data</b>	<b>10</b>
<b>Electrical Wiring</b>	<b>11</b>
<b>Dimensional Data</b>	<b>12</b>
<b>Operation and Start-up</b>	<b>17</b>
<b>Maintenance</b>	<b>18</b>
<b>Trouble Shooting</b>	<b>19</b>



## General Information

---

### Foreword

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.

### Reception

On arrival, inspect the unit before signing the delivery note. Specify any damage on the delivery note, and send a registered letter of protest to the last carrier of the goods **within 72 hours** of delivery. Notify the local Trane Sales Office at the same time. The unit should be totally inspected within 15 days of delivery. If any concealed damage is discovered, stop unpacking the shipment. Take photos of the damage material if possible. Notify the carrier immediately by phone and registered mail. Notify the local Trane Sales Office. Concealed damage must be reported within 15 days of delivery. Check the unit nameplate to confirm that the proper unit was shipped. Available power supply must be compatible with electrical characteristics specified on component nameplates.

### General Information

This manual covers the Installation Operation, and Maintenance of the TWE120C single circuit air handlers, and the TWE160C, TWE180C, TWE210C and TWE240C dual circuit air handlers. These new air handler models are completely redesigned to incorporate a single slab coil assembly, improved application flexibility, servicing and maintenance accessibility, and an improved accessory line. They are of the fully convertible type (vertical to horizontal) without field removal or re-orientation of the coil assembly. (For TWE model) They are shipped in the vertical position.

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

---

**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 manufacturer assumes no liability for installations or servicing performed by unqualified personnel.**

---

### Handling

The unit will be supplied with a shipping base and protective packaging over the unit casing. The packaging should be kept on the unit during handling or storage on site.

If it is necessary to remove the packaging for inspection prior to completion of on site handling, retain packaging parts and reapply them by tapping in position to prevent damage to the casing. The unit as supplied has a shipping base which is suitable for handling by a fork lift truck. If it is necessary to sling the unit, use spreader bars under the shipping base. Ensure that ropes do not cause abrasion to the surface of the unit.

---

**⚠ WARNING: Open and lock unit disconnect to prevent injury or death from electric shock or contact with moving parts before attempting any installation or maintenance.**

---

### 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 with electrical characteristics specified on component nameplates.

# Unit Installation

**Table 1 - Total unit weight and corner weights (kg)**

Model	Configuration	Shipping Maximum	Net Maximum	Corner Weights			
				#1	#2	#3	#4
TWE120	Vertical	180	154	35	39	40	37
	Horizontal	180	154	84	39	39	84
TWE160	Vertical	297	275	69	69	72	70
	Horizontal	297	275	70	63	77	69
TWE180	Vertical	310	285	72	72	74	72
	Horizontal	310	285	73	66	80	71
TWE210	Vertical	379	355	89	89	92	90
	Horizontal	379	355	91	82	99	89
TWE240	Vertical	385	361	91	91	94	91
	Horizontal	385	361	92	83	101	90

### 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 handler shipped wired for 380 volt applications.
- If external accessories are installed on the unit, additional clearance 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 12-14) 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.

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

When installing these units “free standing” with discharge grills and isolaters, a top support with isolater should be added to prevent tipping. Support and isolater can be attached to a wall or other appropriate structure.

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

### Lifting Recommendations

Before preparing the unit for lifting, the center of gravity should be determined for lifting safety. Because of placement of internal components, the unit weight may be unevenly distributed. Approximate total unit weight and corner weights are given in Table 1.

**WARNING:** On site lifting equipment must be capable of lifting the weight of the unit with an adequate safety factor. The use of under-capacity lifting devices may result in personal injury or death and cause damage to the unit.

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.

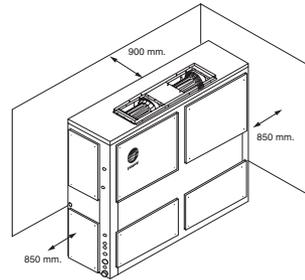
**Caution:** Use spreader bars to prevent straps from damaging the unit. Install the bars between lifting straps, both underneath the unit and above the unit. This will prevent the straps from crushing the unit cabinet or damaging the unit finish.

### Installation Consideration

For proper installation and operation, check each of the following before mounting the units.

#### a. Space Requirement and Clearance

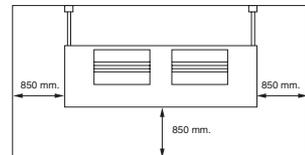
Allow adequate space for the unit and free air or service clearance. See Figure 1a.



**Figure 1a**

Space requirement for TWE model Vertical Type

For servicing and routine maintenance, provide access to the unit through removable panels in the ceiling see Figure 1b.



**Figure 1b**

Space requirement for TWE model Horizontal Type



## Unit Installation

### b. Location, Mounting and Positioning

Before installing any unit make sure proper preparation has been made at each unit locating for piping and electrical connections.

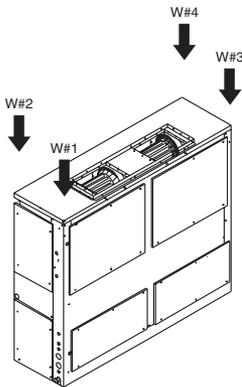


Figure 2a

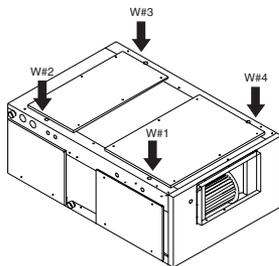


Figure 2b

### 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, using a large washer inside the cabinet. Washer 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 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.

### Installation Preparations

The final position must be dictated by required service access to unit, weight distribution over structural supports, and by the locations of electrical, refrigerant and condensate drainage connections.

### Refrigerant Piping Preparation

The air handler is designed so that refrigerant piping can enter from either the left or right hand side. The air handler is shipped with the intent, that the refrigerant, lines will enter from the right hand side. To convert to left hand entry, unbraid the elbow on the suction line and rotate 180 degrees and rebrase. (See Figures 3 and 4).

**Caution:** Protect adjacent surfaces from heat damage, when brazing in and around the air handler.

These air handlers are shipped with a 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. You will find a cloth bag that contains two (2) brass clamps (straps) and cork<sup>®</sup> impregnated insulation material approximately 9" long by 4" wide, for attaching and insulating the expansion valve bulb to the suction line. On dual circuits air handlers there will be two (2) cloth bags with like parts.

### 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. On air handlers that will have refrigerant lines entering the cabinet from the right side, remove the split rubber grommet from the knockout in the end of the air handler. Uncoil the cap tube 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 hold and position the grommet back into its original position. One bulb and cap tube on single circuit units and 2 bulb (s) approximately 45 degrees off vertical, 10 to 12 inches outside of the air handler. (See Figure 3 and 4.)

# Unit Installation

On air handlers that will have refrigerant lines entering the cabinet from the left 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 left 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 then be insulated.

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

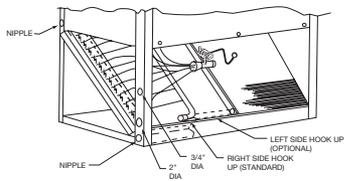


Figure 3

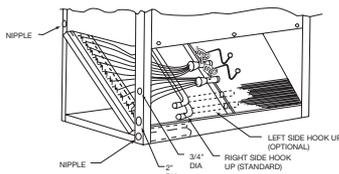


Figure 4

### Condensate Piping

The drain pan condensate connection is a female slip joint type for 1" ABS pipe. Use PVC cement and tubing as required (field supplied) to construct a trap. A union or flexible tubing and clamp may be installed if the drain pan is to be removed periodically for cleaning. If the air handlers have metal drain pans, the nipples will have plugs factory installed. When it has been decided which nipple is to be used, remove the plug from that nipple only.

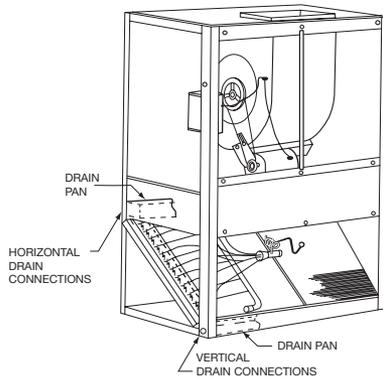


Figure 5

3/4" GALVANIZED PIPE & FITTINGS

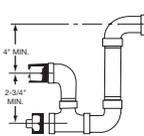


Figure 6a

Materials	
1	Tea
1	Plug
3	Street Ell
1	5-1/2" Nipple

3/4" PVC OR COPPER TUBING & FITTINGS

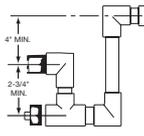


Figure 6b

Materials	
1	Tea
3	90° Ell
1	Plug
1	6" Nipple
2	2" Nipple
1	3/4" NPT to PVC or copper adapter

### Relocating 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 left or right 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 right side (as shown in figure 5). If an alternate position is required, the drain pan should be repositioned before setting the air handler.**

Step1. 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.

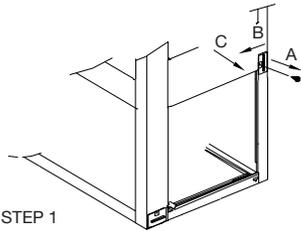
**Important: When air handler is installed in the vertical position and close proximity trapping of condensate is required, use of a subbase accessory to raise the air handler for clearance of the drain trap is recommended. For a typical drain trap assembly, see figure 6a and 6b.**



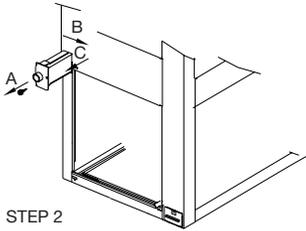
Step 2. (A) Remove the screw securing the drain pan. (B) Lift the pan up. (C) Slide the pan out.

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.

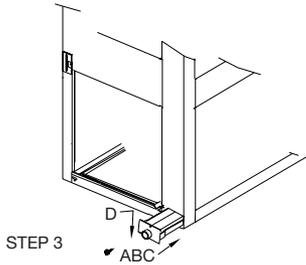
Step 4. Install the access plate on the opposite end of the drain pan. (A) Slide the edge of the access plate under the drain pan. (B) Lift the access plate and drain pan up. (C) Push the access plate in. (D) Drop the access plate down over the lip of the opening. Secure with screw. If the drain pan is being move to the vertical position, install the other access plates over the horizontal position opening.



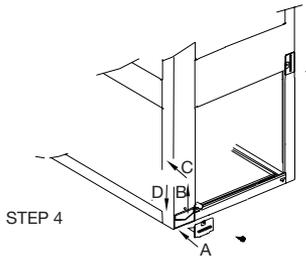
STEP 1



STEP 2



STEP 3



STEP 4

**Filters**

Air handlers are shipped with 1" washable filters installed. To replace filters, remove lower access panel (either end) and slide old filters out and replace with new ones. See Figure 7.

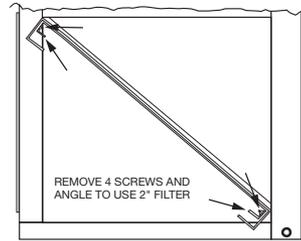
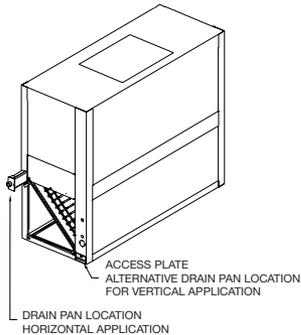


Figure 7



## Unit Installation

To convert from a 1" filter to a 2" filter on units so equipped, remove lower access panels from both ends of the air handler. Remove two (2) screws and the L shaped angles from both the top and bottom of the filter track to increase the width of the filter opening (see figure 7). The screws and L shaped angles can be discarded or saved for possible future use.

### 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.

**⚠ WARNING:** *When installing or servicing this equipment, always exercise basic safety precautions to avoid the possibility of electric shock that could result in severe personal injury or death.*

### Electrical Connections

1. All electrical lines, sizing, protection, and grounding must be in accordance with 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) the electrical connections are made in the fan control box located in the right side of the air handler. 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 unit.

Single point power entry is used, (one power entry for air handler).

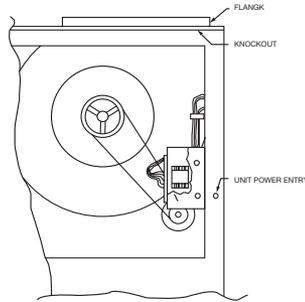


Figure 8

### Thermostat & Control Connection

1. Observe all notes on these diagrams.
2. Mount the thermostat in the desired location.
3. Install color coded cables between outdoor unit, indoor unit and thermostat.
4. Connect control wiring to the terminal board located on the side of the fan control box.

Table 2 - Recommended Thermostat Wire Size

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

### Checkout Procedure

Complete the "Installation Checklist" at the end of this manual once installed all field wiring connections. All operational checks (unit running) must be made after 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 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 secured.
- Inspect owner/operator on proper system operating and maintained procedure.



# General Data

UNIT MODELS	TWE120CDEED	TWE160CDEED	TWE180CDEED	TWE210CDEED	TWE240CDEED
<b>POWER CONNECTION</b>	Viph/Hz	380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50
<b>NCA</b>	A	4.6	6.4	6.4	10.0
<b>SYSTEM DATA</b>					
Refrigerant Type	R22/R407C	R22/R407C	R22/R407C	R22/R407C	R22/R407C
No. Refrigerant Circuits	2	2	2	2	2
Refrigerant Connection Type	BRAZE	BRAZE	BRAZE	BRAZE	BRAZE
Suction Line OD	1 3/8 (34.53)	1 1/8 (28.58)	1 3/8 (34.53)	1 3/8 (34.53)	1 3/8 (34.53)
Liquid Line OD	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)
<b>CASING</b>					
Material	Galvanized & Electro-galvanized Steel				
Color	Light Gray				
Type of Insulation	10mm Fire Retardant Polyethylene Foam				
<b>COIL</b>					
Face Area	sq ft (m <sup>2</sup> )	9.60 (89)	12.7 (1.18)	14 (1.47)	16.3 (1.51)
Tube Size OD	in (mm)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)
Tube Type			INNER GROOVED TUBE		
Rows		3	3	3	3
Fins per inch		14	14	15	15
Refrigerant Flow Control			EXPANSION VALVE		
Drain Connection Size	in (mm)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)
Drain Connection Type			PLASTIC - FEMALE PIPE		
<b>FAN</b>					
Fan Type		DOUBLE INLET CENTRIFUGAL WITH FORWARD CURVED WHEEL			
No. used		1	1	2	2
Diameter	in (mm)	15 (381.0)	18 (457.2)	18 (457.2)	15 (381.0)
Width	in (mm)	15 (381.0)	18 (457.2)	15 (381.0)	15 (381.0)
Drive Type			BELT-ADJUSTABLE DRIVE		
Nominal Airflow <sup>2</sup>	cfm	4000	5300	6000	8000
<b>MOTOR</b>					
Motor Type		TOTALLY ENCLOSED-FAN COOLED, THREE PHASE INDUCTION MOTOR			
No. of Motor		1	1	1	1
Motor hp	hp (kW)	2 (1.5)	2 (1.5)	3 (2.2)	5 (3.7)
No. of Speed		1	1	1	1
Motor Speed	rpm	1405	1425	1425	1440
Viph/Hz		380-415/3/50	380-415/3/50	380-415/3/50	380-415/3/50
RLALRA		3.66 - 21.0	3.66 - 21.0	5.08 - 34.0	5.08 - 34.0
<b>FILTER</b>					
Type		WASHABLE ALUMINUM AIR FILTER			
No. used		4	4	4	4
Size (WxHxD)	mm	355 x 635 x 25	927x400x25	927x400x25	555 x 727 x 25
<b>DIMENSION (WxHxD)</b>					
Crate (Shipping)	mm	1651 x 1499 x 724	1867 x 1702 x 939	1867 x 2299 x 794	1867 x 2299 x 794
Uncrated (Net)	mm	1523 x 1410 x 635	1751 x 1613 x 850	1751 x 1813 x 850	1751 x 2210 x 702
<b>WEIGHT</b>					
Uncrated (Net)	kg	154	276	285	353

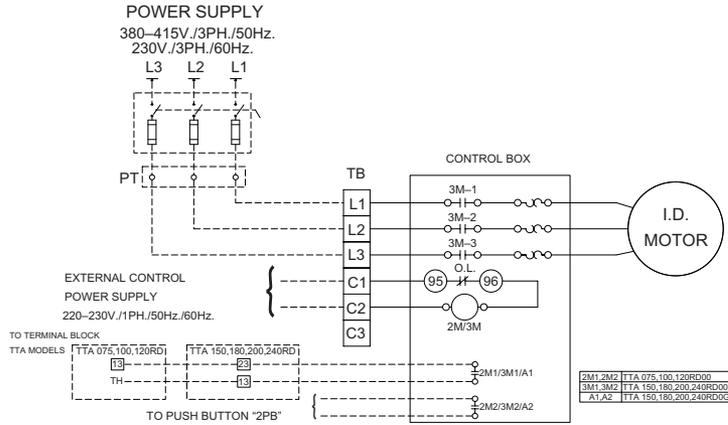
<sup>1</sup> NCA - Minimum Circuit Ampacity  
<sup>2</sup> CFM is rated with standard air-dry coil.

UNIT MODELS	TWE120C3E3	TWE160C3E3	TWE180C3E3	TWE210C3E3	TWE240C3E3
<b>POWER CONNECTION</b>	Viph/Hz	230/3/60	230/3/60	230/3/60	230/3/60
<b>NCA</b>	A	7.3	7.3	10.0	15.6
<b>SYSTEM DATA</b>					
Refrigerant Type	R22	R22	R22	R22	R22
No. Refrigerant Circuits	2	2	2	2	2
Refrigerant Connection Type	BRAZE	BRAZE	BRAZE	BRAZE	BRAZE
Suction Line OD	1 3/8 (34.53)	1 1/8 (28.58)	1 3/8 (34.53)	1 3/8 (34.53)	1 3/8 (34.53)
Liquid Line OD	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)
<b>CASING</b>					
Material	Galvanized & Electro-galvanized Steel				
Color	Light Gray				
Type of Insulation	10mm Fire Retardant Polyethylene Foam				
<b>COIL</b>					
Face Area	sq ft (m <sup>2</sup> )	9.60 (89)	12.7 (1.18)	14 (1.47)	16.3 (1.51)
Tube Size OD	in (mm)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)
Tube Type			INNER GROOVED TUBE		
Rows		3	3	3	3
Fins per inch		14	14	15	15
Refrigerant Flow Control			EXPANSION VALVE		
Drain Connection Size	in (mm)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)
Drain Connection Type			PLASTIC - FEMALE PIPE		
<b>FAN</b>					
Fan Type		DOUBLE INLET CENTRIFUGAL WITH FORWARD CURVED WHEEL			
No. used		1	1	2	2
Diameter	in (mm)	15 (381.0)	18 (457.2)	15 (381.0)	15 (381.0)
Width	in (mm)	15 (381.0)	18 (457.2)	15 (381.0)	15 (381.0)
Drive Type			BELT-ADJUSTABLE DRIVE		
Nominal Airflow <sup>2</sup>	cfm	4000	5300	6000	8000
<b>MOTOR</b>					
Motor Type		TOTALLY ENCLOSED-FAN COOLED, THREE PHASE INDUCTION MOTOR			
No. of Motor		1	1	1	1
Motor hp	hp (kW)	2 (1.5)	2 (1.5)	3 (2.2)	5 (3.7)
No. of Speed		1	1	1	1
Motor Speed	rpm	1705	1705	1715	1730
Viph/Hz		230/3/60	230/3/60	230/3/60	230/3/60
RLALRA		5.85-39	5.85-39	7.97-58	13.3-95
<b>FILTER</b>					
Type		WASHABLE ALUMINUM AIR FILTER			
No. used		4	4	4	4
Size (WxHxD)	mm	355 x 635 x 25	927x400x25	927x400x25	555 x 727 x 25
<b>DIMENSION (WxHxD)</b>					
Crate (Shipping)	mm	1651 x 1499 x 724	1867 x 1702 x 939	1867 x 2299 x 794	1867 x 2299 x 794
Uncrated (Net)	mm	1523 x 1410 x 635	1751 x 1613 x 850	1751 x 1813 x 850	1751 x 2210 x 702
<b>WEIGHT</b>					
Uncrated (Net)	kg	152.5	273.5	283	353

<sup>1</sup> NCA - Minimum Circuit Ampacity  
<sup>2</sup> CFM is rated with standard air-dry coil.

# Electrical Wiring

## TWE120-240 (EXPORT)

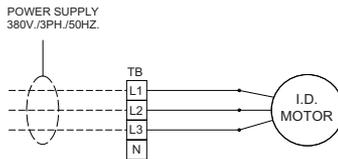


LEGEND	
DEVICE DESIGNATION	DESCRIPTION
TM	CONTACTOR BLOWER MOTOR.
TB	TERMINAL BLOCK.
2M1,2M2,3M1	AUXILIARY N.O. CONTACT
3M2,A1,A2	AUXILIARY N.O. CONTACT
TH	THERMOSTAT
2PB	SWITCH PUSH BUTTON
—	FACTORY WIRING & DEVICE BY MFR.
----	FIELD WIRING
ID. MOTOR	INDUCTION MOTOR
PT	POWER TERMINAL
	FUSE

### NOTES

1. ALL FIELD WIRING TO BE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE (N.E.C.) CANADIAN ELECTRIC CODE AND/OR LOCAL STATE AND CITY CODES. PROVIDE DISCONNECTS FOR ALL POWER SUPPLIES.
2. DRAWING PRACTICES AND SYMBOLS ARE IN ACCORDANCE WITH AIR CONDITIONING & REFRIGERATION INSTITUTE (ARI) GRAPHIC ELECTRICAL STANDARDS.
3. COMPONENT TERMINAL MARKINGS ARE INDICATED BY ENCIRCLED NUMBERS AND/OR LETTERS.
4. NUMBERS ON VERTICAL & HORIZONTAL LINE ARE CIRCUIT IDENTIFICATION.
5. THIS UNIT TO BE USED WITH EVAPORATORS OPERATING WITH IN A TEMPERATURE RANGE OF 32°F TO 53.5°F.

## TWE120-240 (DOMESTIC)



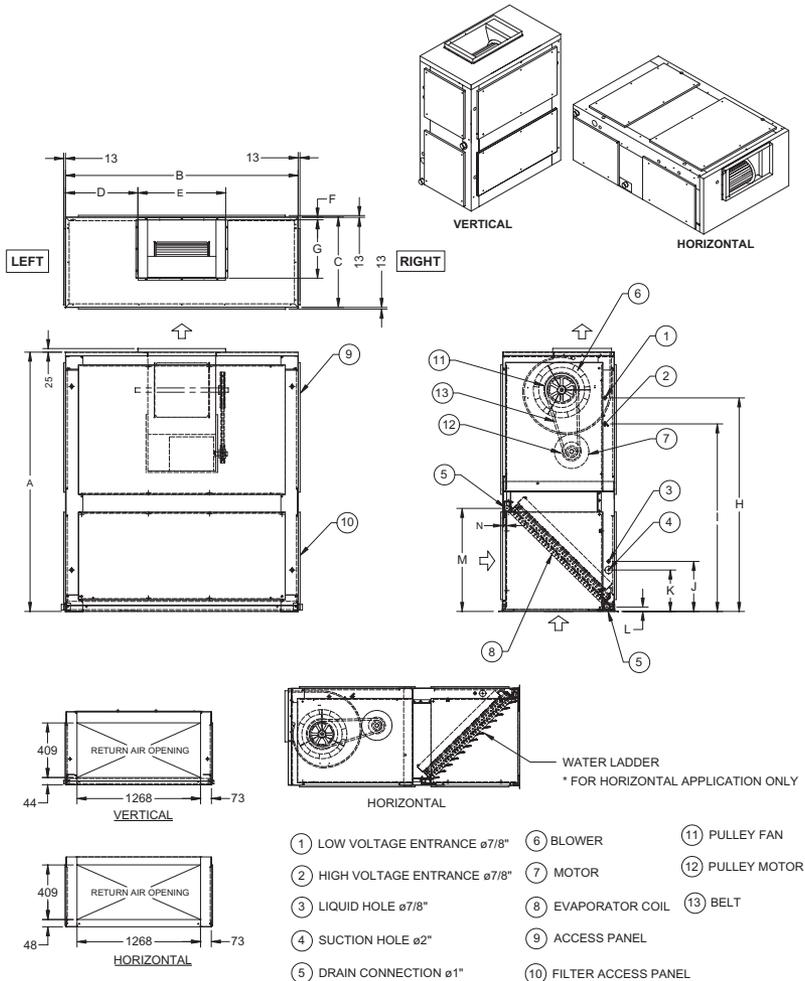
LEGEND	
DEVICE DESIGNATION	DESCRIPTION
TB	TERMINAL BLOCK
—	FACTORY WIRING & DEVICE BY MFR.
----	FIELD WIRING
ID. MOTOR	INDUCTION MOTOR 380V. 3PH. 50HZ.

Caution : Disconnect the power supply before opening the control box or servicing.



# Dimensional Data

TWE 120 CD / C3  
TWE 120 ED / E3

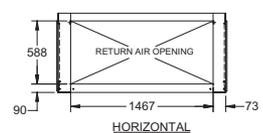
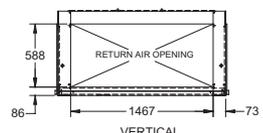
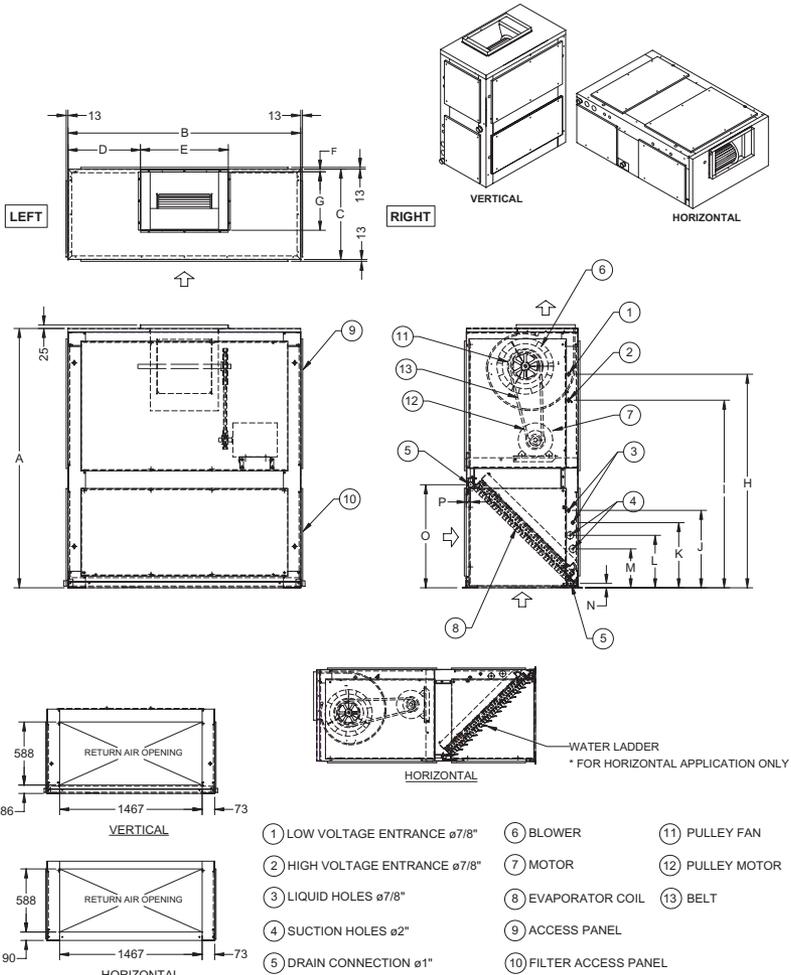


Model No.	Dimensions mm.						
	A	B	C	D	E	F	G
TWE120	1523	1410	635	402	606	20	408

Model No.	Dimensions mm.						
	H	I	J	K	L	M	N
TWE120	1200	1018	465	405	30	578	282

# Dimensional Data

TWE 160-180 CD / C3  
TWE 160-180 ED / E3



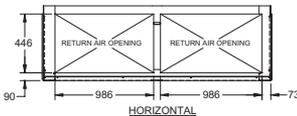
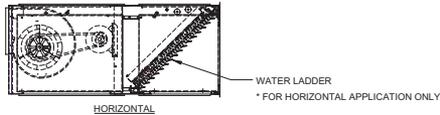
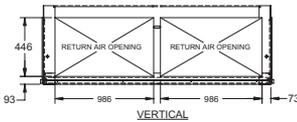
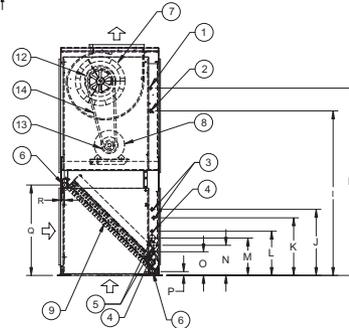
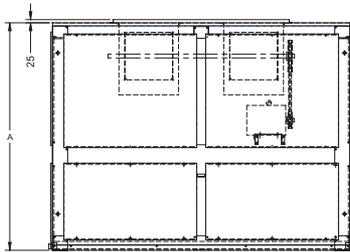
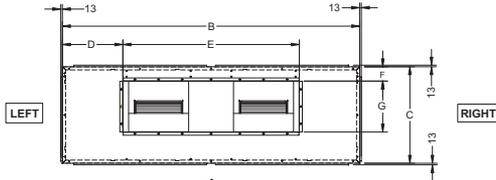
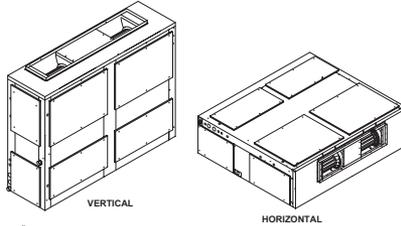
Model No.	Dimensions mm.							
	A	B	C	D	E	F	G	H
TWE160/180	1751	1613	850	463	686	20	530	1429

Model No.	Dimensions mm.							
	I	J	K	L	M	N	O	P
TWE160/180	1248	493	392	298	240	30	774	29



# Dimensional Data

TWE 210-240 CD / C3  
TWE 210-240 ED / E3



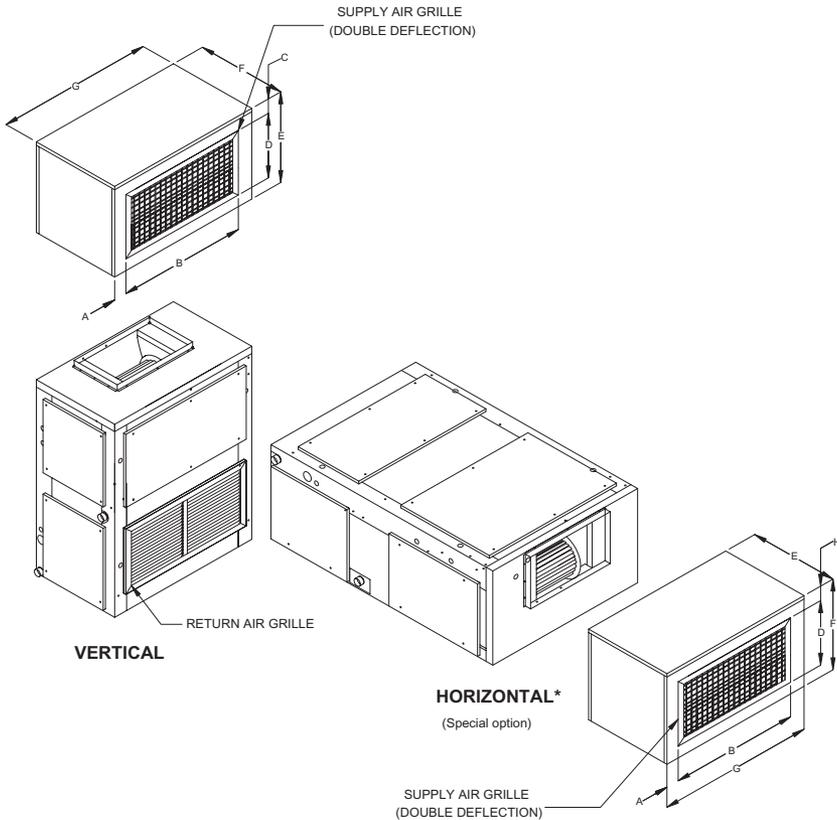
- ① LOW VOLTAGE ENTRANCE ø7/8"      ⑥ DRAIN CONNECTION ø1"
- ② HIGH VOLTAGE ENTRANCE ø7/8"    ⑦ BLOWER
- ③ LIQUID HOLES ø7/8"                ⑧ MOTOR
- ④ HOLE FOR TXV BULB ø7/8"        ⑨ EVAPORATOR COIL
- ⑤ SUCTION HOLES ø2"                 ⑩ ACCESS PANEL
- ⑪ FILTER ACCESS PANEL
- ⑫ PULLEY FAN
- ⑬ PULLEY MOTOR
- ⑭ BELT

Model No.	Dimensions mm.								
	A	B	C	D	E	F	G	H	I
TWE210/240	1751	2210	702	408	1394	44	410	1429	1248

Model No.	Dimensions mm.								
	J	K	L	M	N	O	P	Q	R
TWE210/240	492	335	265	218	152	105	30	652	29

## Dimensional Data

### TWE 120 TWE 160-180 With Plenum (Option)



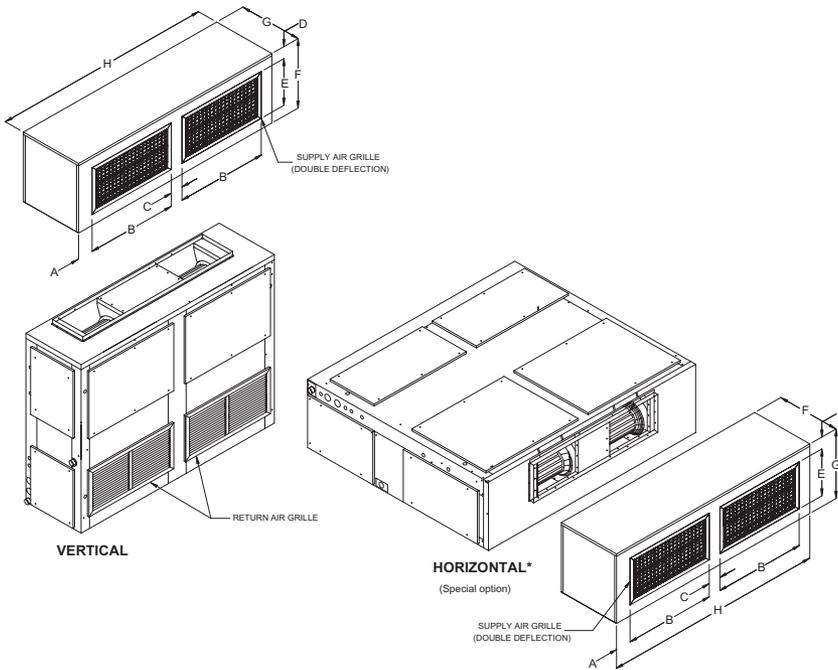
Model No.	Dimensions (mm.)							
	A	B	C	D	E	F	G	H
TWE120	204	1006	48	498	604	646	1416	74
TWE160	216	1184	48	549	654	852	1615	152
TWE180	50	1514	48	549	654	852	1615	152

Note: Horizontal applications with discharge plenum is special option, please contact Trane sales office.



## Dimensional Data

### TWE 210-240 With Plenum (Option)



Model No.	Dimensions (mm.)								
	A	B	C	D	E	F	G	H	I
TWE210	164	905	79	48	498	604	704	2216	103
TWE240	62	1006	79	48	498	604	704	2216	103

Note: Horizontal applications with discharge plenum is special option, please contact Trane sales office.



## Operation and Start-up

---

### Preparation

Perform the following checks and inspections before operating the unit:

#### Inspection Checklist

- Unit is mounted securely to the ceiling support rods (mounting units).
- Ductwork connections are complete.
- Coil connections are complete and tight.
- Condensate drain pan connections are complete and tight.
- Electrical connections are completed. Wiring is correct and in accordance with the wiring diagram.
- Ground connection is completed.
- Check and retighten if necessary set screws on the drive, fan pulley, fan bearings and wheel.
- Rotate fan by hand, to ensure that it runs freely and that there is no interference.
- Check that fan is centrally located in the housing, axially and radially.
- Check and retighten, if necessary, drive and bearing bolts, motor clamp plate bolts and isolator bolts.
- Check to ensure that pulley are correctly aligned and that shafts are parallel.
- Check belt tension as per instruction given in the maintenance section.

### Start-Up Procedures

After completing all times under "Pre-Start-Up", the unit may be started and the following checks and adjustments performed.

- a. Measure the motor voltage and amps on all phases to insure proper operation. Compare these readings with the motor nameplate.
- b. Disconnect load and start motor to check the direction of rotation. If the rotation need to be changed, stop the motor completely and change the direction of rotation.
- c. After connecting the load, the motor should start quickly and run smoothly. If it does not, the power supply should be switched off at once and all connections, as well as the power supply, be re-checked before re-starting.
- d. In the event of excessive vibrations or unusual noises, the motor should be disconnected from the load and checked for poor alignment, loose mounting bolts, etc.
- e. When the motor has been operated under load for a short period of time, check that the operating current totally with the nameplate current.

# Maintenance

### Warning

Disconnect electrical power source and secure in disconnected position before servicing the unit. Failure to do so may result in personal injury or death from electrical shock.

### Monthly Inspection

1. Check condition of air filters and replace them if necessary.
2. Check the drain pan to be sure that it is clean and free to carry the flow of condensate through the drain line.
3. Check the coil surface for cleanliness. Clean if necessary.

### Yearly Inspection

1. Replace filters.
2. Check coil surface. Clean by vacuuming or flushing with cold water. Do not use steam or hot water.
3. Carry out checks as detailed in inspection checklist in the Operation Section.
4. Inspect the condition of the evaporator fan belt and replace if necessary. The belts fitted to TWE units cannot achieve design performance without the correct tensioning.
5. Check condition of vibration isolators, replace if there is any sign of wear, loosening or material deterioration.
6. Check fan bearings for noisy operation and excessive lubricant leakage. Replace if necessary.
7. Inspect the condensate drain pan and condensate piping to make sure they are clear and will carry away all water.
8. Inspect the control panel wiring to make sure connections are tight and insulation is intact.

### Change/Clean Filters

Change or clean air filters at least twice a year. Filters will be required more frequent care under high load condition or dirty air. A clogged air filters reduces airflow, cooling capacity and increases energy usage.

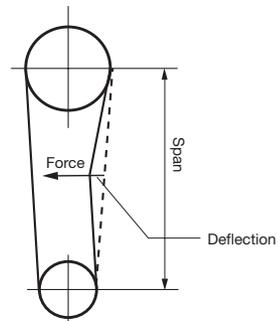
To clean permanent filters, the filter media and wash it in water to remove dust, dirt and lint, allow to dry thoroughly before re-installing in the units. Do not rub or wring.

Permanent filters can also be cleaned by blowing with compressed air in opposite direction of filter airflow.

### Belt Maintenance

Clean fan belts and pulleys with a dry cloth. Oil and grease must be kept off belts. The use of a belt dressing is not recommended. When replacing belts, use a matched set.

Do not force belts onto pulleys, but adjust motor position to allow mounting and then re-tighten.



**Figure 9**

To measure belt tension, use a belt tensioner as shown in Figure 9. Determine actual deflection by depressing one belt with the belt tensioner and then adjust the belt tension to the correct pounds force and tighten all set screws to the proper torques.



# Trouble Shooting

System Faults	Power Supply	High Voltage Wiring	Low Voltage Wiring	Control Transformer	Thermostat	Low Voltage Fuse	Circuit Breaker	Relay (Fan)	Capacitor (Fan)	Thermal Cutout	Low Indoor Airflow	High Indoor Airflow	Refrig. Undercharge	Refrig. Overcharge	Excessive Evap. Load	Check Valve (Leaking)	Restriction LD Coil	Restriction (TXV or CAP)
Refrigerant Circuit																		
Head Pressure Too High												P						
Head Pressure Too Low										P				P				
Suction Pressure Too High										P			P	P	P			
Suction Pressure Too Low									P		P					P	P	
Indoor Coil Frosting								P		P					P	P		
Liquid Floodback (TXV)														P				
Liquid Floodback (Cap. Tube)														P				
Electrical																		
I.D. Motor Won't Start	P	P	P	P	P	P	P	P	P									

P Primary Causes - S Secondary Causes

### Safety recommendations

To avoid accidents and damage, the following recommendations should be observed during maintenance and service visits:

1. The maximum allowable pressures for system leak testing on low and high pressure side are given in the chapter "Installation". Always provide a pressure regulator.
2. Disconnect the main supply before any servicing on the unit.
3. Service work on the refrigeration system and the electrical system should be carried out only by qualified and experienced personnel.

### Maintenance Contract

It is strongly recommended that you sign a maintenance contract with your local Service Agency. This contract provides regular maintenance of your installation by a specialist in our equipment. Regular maintenance ensures that any malfunction is detected and corrected in good time and minimizes the possibility that serious damage will occur. Finally, regular maintenance ensures the maximum operating life of your equipment. We would remind you that failure to respect these installation and maintenance instructions may result in immediate cancellation of the warranty.

### Training

The equipment described in this manual is the result of many years of research and continuous development. To assist you in obtaining the best use of it, and maintaining it in perfect operating condition over a long period of time, the constructor has at your disposal a refrigeration and air conditioning service school. The principal aim of this is to give operators and maintenance technicians a better knowledge of the equipment they are using, or that is under their charge. Emphasis is particularly given to the importance of periodic checks on the unit operating parameters as well as on preventive maintenance, which reduces the cost of owning the unit by avoiding serious and costly breakdown.



Trane Thailand  
30th-31st Floor, Vanit Building II  
1126/2 New Petchburi Road  
Makkasan, Ratchthevee Bangkok 10400  
Thailand



005



---

Literature Order Number: TWE-IOM01-EN 0213

---

Supersedes: TWE-IOM01-EN 0907

---

Stocking Location: Bangkok, Thailand

---

**บริษัท แอมแอร์ จำกัด** ๑๑๑/1 หมู่ที่ ๑ ถนนบางนา-ตราด กม.19 ตำบลบางโจลง อำเภอบางพลี  
จังหวัดสมุทรปราการ 10540

Trane has a policy of continuous product and product data implement and reserves the right to change design and specifications without notice.