

# Installation Operation Maintenance

# **ODYSSEY**

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



# Air Handling Models

R22 Series	R407C Series
TWE 120 CD / TWE 120 C3	TWE 120 ED / TWE 120 E3
TWE 160 CD / TWE 160 C3	TWE 160 ED / TWE 160 E3
TWE 180 CD / TWE 180 C3	TWE 180 ED / TWE 180 E3
TWE 210 CD / TWE 210 C3	TWE 210 ED / TWE 210 E3
TWE 240 CD / TWE 240 C3	TWE 240 ED / TWE 240 E3

February 2013



# **Model Nomenclature**





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# **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.



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

Marial Oraformation		Shipping	Net	Corner Weights						
woder	Configuration	Maximum	Maximum	#1	#2	#3	#4			
TWE120	Vertical Horizontal	180 180	154 154	35 84	39 39	40 39	37 84			
TWE160	Vertical Horizontal	297 297	275 275	69 70	69 63	72 77	70 69			
TWE180	Vertical	310	285	72	72	74	72			
TWE210	Vertical	379	355	89	89	92	90			
TWE240	Vertical Horizontal	385 385	361 361	91 92	91 83	99 94 101	91 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.
- b. Air handler shipped wired for 380 volt applications.
- c. 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.

# **AWARNING:** On site lifting equipment must be

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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



## 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 suspensions 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, unbraze the elbow on the suction line and rotate 180 degrees and rebraze. (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" 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 it's 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.)



DRAIN

PAN

HORIZONTAL

CONNECTIONS

DRAIN

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



### **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. 3/4" GALVANIZED PIPE & FITTINGS







# Figure 6b

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.

Figure 5

DRAIN CONNECTIONS

VERTICAL

# **Repositioning Drain Pan**

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.



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 pain. (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 and drain pan up. (C) Push 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.





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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.

# AWARNING: 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**

- All electrical lines, sizing, protection, and grounding must be in accordance with local codes.
- 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.
- 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.
- Install color coded cables between outdoor unit, indoor unit and thermostat.
- 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 maintenanced procedure.



# **General Data**

UNIT MO	DDELS		TWE120CD/ED	TWE160CD/ED	TWE180CD/ED	TWE210CD/ED	TWE240CD/ED
MCA1	CONNECTION	V/ph/Hz A	380-415/3/50 4.6	380-415/3/50 6.4	380-415/3/50 6.4	380-415/3/50 10.0	380-415/3/50
SYSTEM	DATA						
	Retrigerant Type No. Refrigerant Circuits		R22/R407C	R22/R407C	R22/R407C	R22/R407C	R22/R407C
	Refrigerant Connection Type		BRAZE	BRAZE	BRAZE	BRAZE	BRAZE
	Suction Line OD Liquid line OD	in (mm) in (mm)	1 3/8 (34.93) 1/2 (12.7)	1 1/8 (28.58) 1/2 (12.7)	1 3/8 (34.93) 1/2 (12.7)	1 3/8 (34.93) 1/2 (12.7)	1 3/8 (34.93) 1/2 (12.7)
CASING							
	Color				Galvanized & Electro-galvanized Steel Light Grav		
	Type of Insulation				10mm Fire Retardant Polyethylene Foam		
COIL	Face Area	sa ft (m <sup>2</sup> )	9.6(0.89)	12.7 (1.18)	14 (1.47)	16.3 (1.51)	18(1.67)
	Tube Size OD	in (mm)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)
	Tube Type Rowr		1	3	INNER GROOVED TUBE	3	3
	Fins per inch		14	14	12	15	15
	Refrigerant Flow Control Drain Connection Size	in (mm)	1 (25.4)	1(25.4)	EXPANSION VALVE	1(25.4)	1 (25.4)
	Drain Connection Type	()	. (	- ()	PLASTIC - FEMALE PIPE	. (22)	. (==)
FAN	Fan Type			DOUBLE IN	ET CENTRIFUGAL WITH FORWARD CURV	ED WHEEI	
	No. used		1	1	1	2	2
	Diameter Width	in (mm) in (mm)	15 (381.0) 15 (381.0)	18 (457.2) 18 (457.2)	18 (457.2) 18 (457.2)	15 (381.0) 15 (381.0)	15 (381.0) 15 (381.0)
	Drive Type				BELT-ADJUSTABLE DRIVE	()	(
MOTOR	Nominal Airflow <sup>2</sup>	cfm	4000	5300	6000	7000	8000
moron	Motor Type			TOTALLY ENCL	OSED-FAN COOLED, THREE PHASE INDU	ICTION MOTOR	
	No. of Motor Motor hp	ho (kW)	2 (15)	1 2 (1 5)	1 3 (2 2)	1 3 (2 2)	1
	No. of Speed	np (x11)	1	1	1	1	1
	Motor Speed	rpm	1405	1405	1425	1425	1440
	RLA/LRA		3.66 - 21.0	3.66 - 21.0	5.08 - 34.0	5.08 - 34.0	8.03 - 63
FILTER	Tune				WASHARI E ALLIMINI IM AIR EILTER		
	No. used		4	4	4	4	4
DIMENS	Size (WxLxD)	mm	355 x 635 x 25	927x400x25	927x400x25	555 x 727 x 25	555 x 727 x 25
	Crated (Shipping)	mm	1651 x 1499 x 724	1867 x 1702 x 939	1867 x 1702 x 939	1867 x 2299 x 794	1867 x 2299 x 794
WEIGHT	Uncrated (Net)	mm	1523 x 1410 x 635	1751 x 1613 x 850	1751 x 1613 x 850	1751 x 2210 x 702	1751 x 2210 x 702
_	Uncrated (Net)	kg	154	275	285	355	361
<sup>2</sup> CEM is	rated with standard air-dry coil						
	DDELS		TWE120C3/E3	TWE160C3/E3	TWE180C3/E3	TWE210C3/E3	TWE240C3/E3
	DELS	V/ph/Hz	TWE120C3/E3 230/3/60	TWE160C3/E3 230/3/60	TWE180C3/E3 230/3/60	TWE210C3/E3 230/3/60	TWE240C3/E3 230/3/60
UNIT MO POWER MCA <sup>1</sup> SYSTEM	DDELS CONNECTION	V/ph/Hz A	TWE120C3/E3 230/3/60 7.3	TWE160C3/E3 230/3/60 7.3	TWE180C3/E3 230/3/60 10.0	TWE210C3/E3 230/3/60 10.0	TWE240C3/E3 230/3/60 16.6
UNIT MO POWER MCA <sup>1</sup> SYSTEM	DDELS CONNECTION IDATA Refrigerant Type	V/ph/Hz A	TWE120C3/E3 230/3/60 7.3 R22	TWE160C3/E3 230/380 7.3 R22	TWE180C3/E3 230/3/60 10.0 R22	TWE210C3/E3 230/3/60 10.0 R22	TWE240C3/E3 230/3/60 16.6 R22 2
UNIT MO POWER MCA <sup>1</sup> SYSTEN	DDELS CONNECTION IDATA Refrigerant Type No. Refrigerant Circuits Refrigerant Circuits	V/ph/Hz A	TWE120C3/E3 230/3/60 7.3 R22 1 BRAZE	TWE160C3/E3 230/3/60 7.3 R22 2 BRAZE BRAZE	TWE180C3/E3 230/3/80 10.0 R22 2 BRAZE	TWE210CME3 230/360 10.0 R22 2 BRAZE	TWE240C3/E3 230/3/80 16.6 R22 2 BRAZE
UNIT MO POWER MCA <sup>1</sup> SYSTEM	DDELS CONNECTION IDATA Refrigerant Type No. Refrigerant Circuits Refrigerant Connection Type Sustein Line OD	V/ph/Hz A in (mm)	TWE120C3/E3 230/3/60 7.3 R22 1 BRAZE 1.3/8 (34.93) 1.3/8 (34.93)	TWE160C3/E3 2003/00 7.3 R22 2 BRAZE 1.16 (28.56)	TWE180C3/E3 2303/60 10.0 R22 2 BR/ZE 1.36 (34.93) 1.36 (34.93)	TWE210C3/E3 2303/80 10.0 R22 BR-ZE 38/RZE 1.38 (34.93) 1.38 (34.93)	TWE240C3/E3 230/3/60 16.6 R22 2 BRAZE 138 (34 93) 129 (49 3)
UNIT MO POWER MCA <sup>1</sup> SYSTEM	DDELS CONNECTION IDATA Refrigerant Type No. Refrigerant Circuits Refrigerant Connection Type Suction Line OD Liquid line OD	V/ph/Hz A in (mm) in (mm)	TWE120C3/E3 2303/60 7.3 R22 1 BRAZE 1 3/8 (34.93) 1/2 (12.7)	TWE160C3AE3 2503560 7.3 R22 2 822Z 116(2456) 116(2456) 12(12.7)	TWE180C3/E3 2303/80 10.0 R22 2 BRAZE 1 38 (34.95) 1/2 (12.7)	TWE210C3/E3 2303/80 10.0 R22 2 BRAZE 1 38 (24.93) 1/2 (12.7)	TWE240C3/E3 230/3/60 16.6 R22 2 BRAZE 1.3/8 (34.93) 1/2 (12.7)
UNIT MO POWER MCA <sup>1</sup> SYSTEM	DDELS CONNECTION DATA Refrigrant Type No. Refrigrant Circuits Refrigrant Connection Type Suction Line OD Liquid line OD Liquid line OD Material Color	V/ph/Hz A in (mm) in (mm)	TWE120C3/E3 2303/60 7.3 R22 1 BRAZE 1 3/8 (34.93) 1/2 (12.7)	TWE160CJR3 230360 7.3 R22 2 BRAZE 1.16 (28.56) 1.12 (12.7)	TWE160C3/E3 2303/80 10.0 R22 2 BRAZE 1 3/8 (34.35) 13/8 (	TWE210C3/E3 2303/80 10.0 R22 2 8R4ZE 13/8 (34:35) 1/2 (12.7)	TWE240C3/E3 2303/80 16.6 R22 2 BRAZE 138 (24.93) 1/2 (12.7)
UNIT MO POWER MCA <sup>1</sup> SYSTEM	DDELS CONNECTION IDATA Refrigerant Type No. Refrigerant Circuits Refrigerant Connection Type Liquid line OD Material Color Type of Insulation	V/phiHz A in (mm) in (mm)	TWE120C3/E3 2303/60 7.3 R22 BRAZE 1.3/6 (34.93) 1/2 (12.7)	TWEHARS83 20008 73 182 2 8842E 118 (28.56) 112 (12.7)	TWE INFCASES           2003/00           100           R22           BRAZE           138 (04.93)           12 (12.7)           Gehvatica R Extor-galvanized Steel           Light Gray           100mm Fire Reatant Polythylene Fean	TWE216C5/E3 2303/80 100 R22 2 BRAZE 13/8 (24.93) 1/2 (12.7)	TWE240C3/E3 2303/60 16.6 822 2 BRAZE 1.38 (34.93) 1/2 (12.7)
UNIT MO POWER MCA <sup>1</sup> SYSTEM	DDELS CONNECTION DATA Refrigerant Type No. Refrigerant Circuits Refrigerant Connection Type Suction Line OD Liquid line OD Material Color Type of Insulation Type of Insulation	V/ph/Hz A in (mm) in (mm)	TWE120CXE3 2303/80 7.3 R22 1 BRAZE 1 3/8 (43.43) 1/2 (12.7)	1021490 200300 7.3 822 2.2 8402.50 1.12(12.7) 1.2(12.7)	WE INCIVES           200380         100           102         2           2         8PA2E           3.8 (54.30)         102           101         3.8 (54.30)           102         102           103         104.00           104         104.00           105         104.00	10000000000000000000000000000000000000	TWE240C3/E3 2203/80 16.6 R22 2 BRAZE 13.8 (34.53) 1/2 (12.7) 18/1.675
UNIT MO POWER MCA <sup>1</sup> SYSTEN CASING	DDELS CONNECTION HOAT Reforment Type Reforment Connections Reference Connections Suction Line OD Liquid line OD Liquid line OD Liquid line OD Face Area Tube Size OD	V/ph/Hz A in (mm) in (mm) sq ft (m <sup>2</sup> ) in (mm)	TWE120C3/E3 2300/60 7.3 H22 1 BRAZE 1.3/8 (34.93) 1/2 (12.7) 9.6(0.89) 3/8 (9.53)	TWE14045383 200000 7.3 7.3 2 2 BRAZE 1 16 (2.5.5) 1/2 (12.7) 1/2 (1.10) 3.0 (6.53)	TWE188CVE3           200300           10.0           R222           BRAZE           13.8 (0.4 S)           12.1 (2.1 C)           Galaxied & Electro op/avrized Steet           Light Gray           (Ionn Fire Restanding Polychylone Esam           14 (1.47)           3.8 (0.5)	TWE210CVE3 200000 100 8022 1 388 (0453) 102 (12.7) 16.3 (1.51) 388 (0.53)	TWE240C3/E3 2003/80 16.6 R22 2 BRAZE 1.38 (4.4.53) 102 (12.7) 10(1.67) 38 (6.53)
UNIT MO POWER MCA' SYSTEM	DOILS CONNECTION IDATA Refigerant Crouis Refigerant Concuis Refigerant Concuis Refigerant Concuis Liquid line CO Used Intervention Type of Instation Type of Liquid Line Rece Area Tube Size CO Tube Type	V/ph/Hz A in (mm) in (mm) sq ft (m <sup>2</sup> ) in (mm)	TWE 13063/83           23053/60           7.3           R22           1           1.20 (4.50)           1/2 (12.7)           5.6(0.89)           3/6 (0.53)	100 100 200 200 200 200 200 200 200 200	TWE159CVE3           200390           100           R22           80.68           138 (64.50)           10 (127)           Galarated & Elocin-galwined Statel Upth Gray           timm Fine Retatisted Psychiphere Team           38 (6.55)           NEECR ROOVED TUIE	7002/05/ 2003/00 10.0 R22 9 06 06 13/0 (64.50) 12(1/27) 16.3 (1.51) 3/0 (6.53) 3/0 (6.53)	11462.4462.4651 2353.460 16.8 822 1 38 (24.33) 1/2 (12.7) 18 (14.53) 1/2 (12.7) 18 (1.67) 3/8 (6.53)
UNIT MO POWER MCA <sup>1</sup> SYSTEM	DOELS CONNECTION DOTA Respective Respective Respective Respective Sector Line OC Linkel line CO Material Color Type of Invalation Face Area Tube Size CO Tube Size CO	V/ph/Hz A in (mm) in (mm) sq ft (m <sup>2</sup> ) in (mm)	WE120C3/E3           2303/80           7.3           R22           1           BRAZE           102 (24.53)           112 (12.7)           36 (9.53)           3           14	TWE1405383 200300 7.3 R52 2 BRAZE 1 (B (23.6) 1 (2 (7) 1 (2 (7) 1 (2 (7)) 1 (2 (7)) 1 (2 (7)) 1 (2 (16)) 3 (6.5)) 3 (4	TWE189CVE3           200/00           200/00           100/00           R22           BRAZE           BRAZE           10/00           Colspan="2">Colspan="2"           Colspan="2">Colspan="2"           Colspan="2"	704221623453 2303000 10.0 822 1 38 (454 1 38 (4543) 1 12 (12.7) 143 (1.51) 38 (6.53) 3 15	TWE240CVE3           230390           16.6           R22           BRAZE           138 (343)           15
UNIT MG POWER MCA <sup>1</sup> SYSTEM	Odel as CONNECTION CONNECTION Reformant Type Reformant Type Reformant Type Suction Live GO Lagad Ine GO Lagad Ine GO Hannal Face Area Face Area Face Area Reformant Topic Control Reformed Topic Control Reformed Topic Control Reformed Topic Control	V/phHz A in (mm) in (mm) sq ft (m <sup>2</sup> ) in (mm)	Wite 13063.003           2305360           7.3           7.3           R22           904.25           1.36 (0.453)           1.22 (12.7)           9.6(0.89)           3.6 (0.23)           3.14           1.75 A)	1025402363 202300 7.3 RZ 2 8 225 1 16 (2.5.0) 12 (12.7) 12 (12.7) 3 (2.5.3) 3 (2.5.3) 3 (2.5.3) 3 (2.5.3) 3 (2.5.3) 3 (2.5.4) 105.6)	TWE SECVE3           200350           10.0           R22           B0-02           138 (04.33)           10 (127)           Column 2016           Before galaxies           Utom Fine Relativistic Polythylows Fram           14 (1-07)           38 (0.53)           10 (1-07)           12 EXANSION VL/VE	TWE210CVE3           2003/00           10.0           R22           0.0           10.0	TWE240CVE1           2003490           16.6           R22           80-025           136 (4433)           12 (127)           18(1.67)           36 (6.53)           3           15           125.6
UNIT MC POWER MCA <sup>1</sup> SYSTEM	DOELS CONNECTION DATA BOATA Refregrent Connection Type Suction Line OD Linear line OD Material Color Linear line OD Material Color Color Color Color Color Linear Connection Size Data Connection Size	V/ph%tz A in (mm) in (mm) sq ft (m <sup>2</sup> ) in (mm) in (mm)	TWE 130C3/85           2323:500           7.3           1           BRAZE           1.30 (64.95)           1.20 (12.7)           9.6(0.89)           36 (0.53)           3           14           1 (25.4)	TWE1405385 200300 7.3 R52 2 BRAZE 1 (la (23.48) 1 U2 (12.7) 12.7 (1.18) 3.4 (12.5) 3.4 (12.5) 3.4 (12.5.4)	TWE186CVE3           200/00           10.0           R22           BRAZE           BRAZE           BRAZE           BRAZE           Stantistal Electro-sphanizad Steel           Light Gar           10m Far Restand Florethylene Fcam           14 (1.47)           NNER GRAZENTOTUE           2000 Stantistal Electro-sphanizad Steel           1000 Far Restand Florethylene Fcam           11(1.27)           NNER GRAZENTOTUE           200 Stantistal Electrometer Steel           1(1.67)           NNER GRAZENTOTUE           1(2.64)           PLASEC, FCAMLE PPE	706216CV63 200306 10.0 862.2 860.25 1.3.8 (0.4.8) 102 (0.2.7) 102 (0.2.7) 103 (0.6.5) 3.6 (0.5.5) 3.5 15 1 (25.4)	Imm22002 VE3           239390           16.6           R22           BRAZE           13.8 (0.45.0)           12 (12.7)           16 (0.45.0)           13.8 (0.45.0)           15           1 (25.4)
UNIT MG POWER MCA <sup>1</sup> SYSTEN CASING COIL	DOELS     CONNECTION     ONAT     CONNECTION     ONAT     Refigerent Counts     Refigerent Counts     Refigerent Counts     Control     Contro     Control     Contro     Control	ViphHz A in (mm) in (mm) sq ft (m <sup>2</sup> ) in (mm) in (mm)	WE120C3/83           22023/90           7:3           R22           1.06 (24.93)           1.26 (24.93)           1/2 (12.7)           9.6(0.89)           3/6 (9.23)           14           1 (25.4)	INE (402.46.3)           200.300           7.3           R2           8           16 (22.56)           12 (12.7)           12 (12.7)           3           14           12.56)           3           14           12.56)           3           14           12.56)	TWE ISRC/VE3           300350           10.0           R22           B0-02           138 (04.33)           10 (1247)           Galwarded & Elscin-gelwinder Steef Light Gerly           100 (14.47)           348 (0.53)           100 (14.47)           349 (0.53)           101 (14.71)           349 (0.53)           102 (14.47)           349 (0.53)           102 (14.47)           349 (0.53)           102 (14.47)           103 (14.47)           104 (14.71)           105 (14.47)           105	TWE210CVE3           300540           10.0           R22           p.p.0.25           1.20 (24.30)           1.22 (2.7)           16.3 (1.51)           3.00 (5.5)           1.5           1.5           1 (2.5.4)	TWE240CXE3           230340           16.8           R22           B0-82           B0-82           136 (44.33)           126 (45.3)           3           15           1 (25.4)
UNIT MG POWER MCA <sup>1</sup> SYSTEN CASING COIL	OBE 8 CONSECTION DATA IDATA No. Refrigerant Consider No. Refrigerant Consider Material Material Material New Orientation Pass Anna Pass Anna Anna Anna Anna Anna Anna Anna Anna	Viphitz A in (mm) in (mm) in (mm) in (mm)	TWE130CL/E3           2203400           7.3           R22           138 (04.50)           122 (12.7)           86 (0.80)           36 (0.20)           3           14           1 (25.4)	TWE HAGGAES 200400 7.3 F22 BRAZE 1.16 (23.50) 1.12 (12.7) 1.27 (1.16) 3.6 (25.5) 3 1.4 1 (25.4) DOUBLE IN DOUBLE IN	TWE166CVE3           200/00         10.0           10.0         10.0           R22         BPAZE 50           10.0         10.0           Calvanced & Edwo quantum Gibed         10.0           Galvanced & Edwo quantum Gibed         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0         10.0         10.0           10.0	7WE210CVE3 200300 10.0 R22 BRAZE BRAZE 13.8 (20) 13.8 (20) 14.6 (15.1) 3.8 (4.50) 3.5 1 (25.4) 1 (25.4) 2.5 1 (25.4) 3.5 1 (25.4) 3.5 1 (25.4) 2.5 1 (2	YWE246C VE3           200390           16.6           R22           BPACE           13 (257)           12 (127)           13 (6.53)           15           1 (25.4)           1 (25.4)
UNIT MO POWER MCA' SYSTEN CASING COIL	CONNECTION CONNECTION CONNECTION CONNECTION CONNECTION CONNECTION Refigurant System Connection Type Connection Color Tube Size CO Tube	Vipb94z           A           in (mm)           in (mm)           in (mm)           in (mm)           in (mm)	Second         Second<	INE HOLIES           200300           7.3           R2           8           10 (25.86)           12 (12.7)           12 (12.7)           3           14           1(25.4)           000000           12	TWE ISRC/VE3           200349           10.0           R22           IP0-02           1.00 (4.30)           1.02 (4.30)           1.02 (4.30)           1.02 (4.30)           1.02 (4.30)           1.03 (4.30)           1.04 (4.7)           3.08 (4.52)           1.04 (4.7)           3.08 (4.52)           1.04 (4.7)           3.08 (4.52)           1.04 (4.7)           2.05 (2.64)           PLANCE, FEMALE PRE           LET CENTREFLOCK WINT FORWARD CLERC           1.04 (4.7)           1.04 (4.7)           1.04 (4.7)	TWE210CVE3           399349         10.0           10.0         10.0           R22         0.0-25           0.0-25         1.26 (24.30)           1.26 (24.30)         1.26 (25.3)           1.6.3 (1.5.1)         3.6 (6.53)           1.6.3 (1.5.1)         3.6 (6.53)           1.12 (25.4)         1.25 (4.5.1)           1.12 (25.4)         1.12 (25.4)           TED WHEEL         2.6 (6.5)           1.5 (38.1.6)         0.58 (6)	TWE240CVE3           230340           16.8           R22           B0-XE           B0-XE           130 (44.33)           120 (45.3)           15           1(25.4)           1(25.4)           1(25.4)           1(25.4)           1(26.6)           1(26.6)           1(26.6)
UNIT MCA <sup>1</sup> POWER MCA <sup>1</sup> SYSTEN CASING COIL	OBE 5 CONSECTION CONSE	ViphHz A in (mm) in (mm) in (mm) in (mm) in (mm)	TWE130CL/E3           2203400           7.3           R22           138 (04.50)           122 (127)           36 (0.50)           36 (0.50)           314           1 (25.4)           15 (381.0)           15 (381.0)	TWE HORSES           200.000         7.3           R22         BRAZE           1 (R (20.50))         116 (12.7)           116 (12.7)         3           122 (11.8)         3           138 (2.53)         3           14         1 (22.4)           19 (457.2)         DOUBLE IN	TWE166CVE3           2303760           10.0           R22           80-62           10.0<	7WE210CVE3 2303/00 10.0 R222 88/4/25 113 (201) 12 (127) 12 (127) 12 (127) 13 (151) 34 (153) 3 (153) 3 (153) 1 (25.4) 1 (25.4) 1 (25.4) 1 (26.4) 15 (261.6)	1982/46C161           200360           16.6           822           826           13 (46.6)           142 (12.7)           12 (12.7)           15           16           15           1 (25.4)           1 (25.4)           1 (26.4)           1 (26.4)           1 (26.4)           1 (26.4)           1 (26.4)           1 (26.4)
UNIT MO POWERS SYSTEM CASING COL FAN	CONTROL TO A CONTROL AND A CO	V/ph%z           A           in (mm)           cfm	TWE 1305.383           2303.60           2303.60           7.3           7.3           1           BRAZE           1.3 (6.4.53)           1.2 (12.7)           5.6(0.89)           3/8 (9.53)           3           1.4           1 (25.4)           1           4000	TWE1405383           200300           2           2           BRAZE         116 (25.8)           112 (12.7)           127 (1.16)           38 (8.53)           3           12 (12.7)           12 (12.7)           12 (12.7)           12 (12.7)           12 (12.7)           12 (12.7)           12 (12.7)           12 (12.7)           12 (12.7)           12 (12.7)           12 (12.7)           12 (12.7)           12 (12.7)           14           1 (18 (45.2))           18 (452.2)           5300	TWE ISRC/VE3           200349           10.0           R22           IB-0-XE           1.38 (04.33)           10 (127)           Obarter Gamma           1.98 (04.33)           10 (127)           Damark All Exercic gamma           10 (14.7)           3.8 (04.33)           11 (14.7)           3.8 (04.32)           11 (14.7)           12 (26.1)           PARTIC - FEMALE PRE           ETCENTREFLOGK_WINF HORMARD CURN           11 (16.72)           12 (16.72)           12 (16.72)           13 (16.72)           14 (16.72)           15 (16.72)           16 (16.72)           10 (16.72)           10 (16.72)	TWE210CVE3           399349           10.0           R22           B0-XE           138 (04.33)           12 (15.1)           34 (0.53)           12 (25.4)           1 (25.4)           15 (08.10)           15 (08.10)           7000	TWE240CXE3           230340           16.8           R22           B0-25           B0-25           136 (44.33)           12 (12.7)           16 (1.67)           36 (6.53)           12 (25.4)           15 (361.6)           15 (361.6)           5000
UNIT MCA' POWER MCA' SYSTEM	OBLES CONSECTION CONSE	ViphHz           A           in (mm)	TWE 130 CL/E3           2202400           7,3           822           1           980,26           1,2           12           12           14           1,2           14           1,2           14           1,25,40           15           15           15           15           10,000	TWE HOCKES 200300 7.3 F22 BRAZE 1 (P (2050) 12 (12.7) 12 (1	TWE169CVE1           2003760           10.0           R22           2           10.6           10.6           10.7           22           2           10.7           2.8           10.7           10.7           2.8           10.7           Galvanied & Eustrophonismol Suet           2.9           2.8           2.9	TWE210CVE1           20000           100           R22           2           2           10(4:0)           12(127)           12(127)           12(127)           12(127)           12(127)           12(127)           12(127)           12(127)           12(127)           12(127)           12(127)           15(12)           15           15(24)           15(240)           15(2410)           15(2410)           7000	106246CXE1           200360           16.6           R22           8           136(c4.63)           12(c2.7)           12(c2.7)           15           15           12(c3.4)           15           16(a1.0)           16(a1.0)
UNIT MO POWER SYSTEM	Cost as a contract of the cost of the cos	V/ph#z           A           in (mm)           in (mm)	TWE 1305.383           2303.60           7.3           7.3           7.3           1           BRAZE           1.3 (6.4.53)           1.2 (12.7)           5.6 (0.89)           3.6 (0.53)           3           1.4           1 (25.4)           1.5 (281.0)           4000           2 (15.0)	TWE1405383 200303 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.	TWE INFOCUES           200349           10.0           R22           ID0.0           128 (04.33)           12 (127)           Dataseted & Electro-galvenices State           100           Tum File Readwalt / Everthwee Frant           14 (147)           38 (04.33)           12 (127)           Den File Readwalt / Everthwee Frant           14 (147)           38 (04.32)           PARTIC - FRAME PPE           EET CENTREFLOGK WHYTE           12 (26.4)           PARTIC - FRAME PPE           11 (407.2)           12 (26.7)           BELT-ADJUSTRALE DEVIC           13 (26.7)           BELT-ADJUSTRALE REVE           05ED FANC COLED. THREE PHASE INDU           10 - 27	TWE210CVE3           200300         100           100         822           000/25         00/25           120 (443)         12 (127)           120 (453)         12 (127)           120 (453)         12 (127)           120 (453)         12 (127)           120 (453)         12 (127)           120 (453)         12 (127)           120 (453)         12 (127)           120 (453)         12 (127)           120 (453)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)           120 (127)         12 (127)	TWE240CXE3           230340           16.8           R22           B0-26           136 (44.53)           12 (45.3)           12 (12.7)           16 (1.67)           3 (6.53)           12 (25.4)           15 (68.7)           5 (37.7)           5 (37.7)           5 (37.7)           5 (37.7)
UNIT MC POWER SYSTEM CASING COIL FAN	OBLE S CONNECTON MARCENTON BARA Refregerent Connection Type No. Refrigerent Connection Type Material M	V/ph/Hz           A           in (mm)           in (mm)           in (mm)           in (mm)           in (mm)           in (mm)           ofm	WE130CL/E3           2203400           7,3           1           9.62,5           1.36,10,5           1.36,10,5           3           14           1,5,68,0)           15,081,0)           15,081,0)           15,081,0)           15,10,0           15,10,0           15,10,0           15,10,0           15,10,0           15,10,1           16,10,1           17,10	TWE HOCKES 200300 7.3 F22 BRAZE 1 BRAZE 1 C (12.7) 1 C (	TWE169CVE3           2003760           10.0           R22           2           3           1.26 (4:63)           1.27 (2:7)           Galvented & Elistro-golvenide Steel           1.28 (4:43)           1.28 (4:43)           1.28 (4:45)           1.28 (4:47)           Step (5:5)           NINER RACOVED TUBE           2           2.20 EXMISSION VALVE           1 (2:54)           PLASIC: FORME PPE           1.26 (4:72)           1.6 (4:72)           1.6 (4:72)           1.6 (4:72)           1.6 (2:72)           1.6 (2:72)           1.7           3.0 (2:72)           1.6 (2:72)           1.7	TWE210CVE1           200300           100           R22           2           2           3           138 (24.50)           12 (27)           12 (27)           12 (27)           12 (27)           12 (25.1)           15 (25.4)           15 (25.4)           15 (25.4)           15 (25.4)           7000           CITION MOTOR           1           1	1 WE246CXE1           200340           16.6           R22           8           138 (A430)           142 (227)           12 (227)           15           15           12 (25.4)           15           15           15           12 (25.4)           15           15           16 (351.0)           15 (351.0)           15 (351.0)           15 (351.0)           15 (351.0)           15 (37.1)           1 (25.7)
UNIT MC POWER SYSTEM CASING COIL FAN	OBL 5 CONTROL CONTON CONTROL CONTON CONTROL CONTON CONTROL CONTON CONTROL CONTON CONTROL CONT	Vijphitz A in (mm) in (mm) in (mm) in (mm) in (mm) dm hp (kW) rpm	1WE 130C3/85           2302460           2302460           7.3           7.3           1           BRAZE           1.36 (04.95)           1.22 (12.7)           9.6 (0.89)           3.6 (0.89)           3.6 (0.89)           3.6 (0.89)           3.14           1 (25.4)           15 (881.0)           4000           1           2 (1.5)           105           2 (1.5)           105           2 (1.5)           105	TWE1805385 200300 7.3 7.2 862 2 862,2 1.16 (2.3.6) 1.16 (2.3.6) 1.16 (2.3.6) 1.16 (2.3.7) 3.16 (2.5.7) 1.16 (45.7.2) 1.16 (45.7.2) 1.16 (45.7.2) 5300 TOTALLY ENCL 2 (1.5) 1.75 200420 (3.5.7) 1.75 200420 (3.5.7) 1.75 200420 (3.5.7) 1.75 2.7	TWE HECKED           2003/60           10.0           R22           BRAZE           BELTARE           BELTARE           BELTARE           122:41           12:52           BELTARE           12:22           13:5           20000	2003/00           2003/00           10.0           R22           BRAZE           13.0 (0.453)           15.0 (0.453)           15.0 (0.453)           15.0 (0.453)           15.0 (0.453)           16.0 (0.453)           17.0 (0.453)           17.0 (0.453)           18.0 (0.453)           19.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           11.0 (0.453)           11.0 (0.453)           12.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453)           10.0 (0.453) <td< th=""><th>YWE246C VE3           239390           16.6           R22           BRAZE           BRAZE           13.8 (0.45.0)           102 (0.27)           13.8 (0.45.0)           15           16 (0.45.0)           15 (0.41.0)           15 (0.41.0)           15 (0.41.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           20000</th></td<>	YWE246C VE3           239390           16.6           R22           BRAZE           BRAZE           13.8 (0.45.0)           102 (0.27)           13.8 (0.45.0)           15           16 (0.45.0)           15 (0.41.0)           15 (0.41.0)           15 (0.41.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           15 (0.21.0)           20000
UNIT MCA' POWER SYSTEM CASING COIL FAN MOTOR	OBLE S CONSECTON GOLD S CONSECTON GASA Rangement Connection Type Light Int Connection Type Light Int CO Light Int	V/ph/Hz           A           in (mm)           p (kW)           rpm	TWE 130 CL/E3           2203400           7:3           1           9.622           1.3842530           1.2(127)           1/2(127)           1/2(127)           1/2(127)           1/2(127)           1           1 (25.4)           1           1 (25.4)           1           1 (25.4)           1           1 (25.4)           1 (25.4)           1 (21.2)           1 (25.4)           1 (25.4)           1 (25.4)           1 (25.3)           1 (25.4)           1 (25.4)           1 (25.5)           2300400           1 (25.5)           1 (25.6)           1 (25.6)           1 (25.6)           1 (25.7)           1 (25.8)           1 (25.8)           1 (25.8)           1 (25.8)           1 (25.8)           1 (25.8)           1 (25.8)           1 (25.8)           1 (25.8)           1 (25.8)           1 (25.8)           1 (25.8)	TWE HOCKES 200300 7.3 F22 1.80,25 1.80,25 1.80,25 1.80,25 1.80,25 1.80,25 1.80,25 1.80,25 1.27 (1.18) 3.8 (9.53) 3.14 1.(25.4) 1.12 (12.7) 1.8 (45.2) 1.8 (4	TWE1596CVE3           200390           100           R22           2           138 (64.53)           142 (42.7)           Generated Electro-galaximide Statel Light Gray           109           109           2000 (41.67)           348 (6.53)           100 (41.67)           2000 (2010)           12           2010 (41.67)           2010 (41.67)           100 (41.67)           100 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.67)           110 (41.72)           110 (41.73)           110 (41.73)           110 (41.73)           110 (41.73)           110 (41.73)           110 (41.73)           110 (41.73)           110 (41.73)           110 (41.73)           110 (21.74)	YWE210CVE3           200300           100           R22           2           3           138 (4450)           122 (127)           122 (127)           122 (127)           122 (127)           122 (127)           123 (151)           348 (633)           3           15           1 (25.4)           7000           CTION MOTOR           1 (22)           175           2002/80           7/75.8	YNE246CXE1           2003490           16.6           R22           B0-02           138 (A433)           142 (A433)           15           15           126 (A81.0)           15 (A81.0)           16 (A81.0)           15 (A81.0)           15 (A81.0)           15 (A81.0)           15 (A81.0)           200000
UNIT MCA' POWER SYSTEM CASING COIL FAN MOTOR	OBL 8 CONNECTION CONTACT STATE CONNECTION CONTACT CON	Vijphët <u>r</u> A in (mm) in (mm) in (mm) in (mm) in (mm) <i>elm</i> kp (kW) rpm	1WE 136C.ME3           230.360           7.3           R22           1           BRAZE           1.38 (0.4.90)           1.2 (12.7)           3           1.4           1.6 (0.8.0)           1.5 (0.8.0)           3.14           1.2 (25.4)           1.5 (0.81.0)           4000           1.2 (1.5, 1)           1.705           2200.960           6.85.39	TWE1805383 200300 7.3 R22 2 BRAZE 1.16 (23.86) 1.6 (23.86) 1.6 (23.7) 1.16 (23.86) 1.16 (23.7) 1.27 (1.16) 3.6 (9.33) 3 1.4 1.(25.4) DOUBLE IN 1.16 (45.2) 1.16 (45.2) 5.000 TOTALLY ENCL 2 (1.5) 1.705 2.00360 6.85-39	TWE HECKED           2003/00           10.0           R22           BRAZE           BRA	2020/00           2020/00           10.0           R52.2           B5A2.5           B5A2.5           13.8 (0.45.0)           13.6 (0.5.0)           15.6 (0.5.0)           15.6 (0.5.0)           16.8 (0.5.0)           15.6 (0.5.0)           16.8 (0.5.0)           16.8 (0.5.0)           16.8 (0.5.0)           16.8 (0.5.0)           16.8 (0.5.0)           16.2 (0.5.0)           17.6 (0.5.0)           16.2 (0.5.0)           17.5 (0.5.0)           20.2 (0.5.0)           7.97-88	YWE246C VE3           239390           16.6           R22           BRAZE           138 (AZD)           14 (LE7)           15           16 (LE7)           15           1 (25.4)           1 (25.4)           1 (25.4)           1 (25.4)           1 (25.4)           1 (25.4)           1 (25.4)           20000           1 (25.4)           1 (25.4)           200,000           1 (25.4)           1 (25.4)           200,000           1 (25.3)
UNIT MICA POWER MCA' SYSTEN CASING COIL FAN FILTER	Oble 3     CONNECTON     GONA     CONNECTON     GAN     Raingarent Curunes     Raingarent Curunes     Raingarent Curunes     Raingarent Curunes     Connection Type     Legal Insc O     Color     Type Inscrete     Connection Stre     Pace Area     Type Inscrete     Connection Stre     Deals     Connection Stre     Note     Type     No. used     No. used     Note     Type	ViphHz           A           in (mm)           dr           in (mm)           dr           m	TWE130CL/E3           2203400           7:3           R22           1.36 (A2.50)           1.36 (A2.50)           1.36 (A2.50)           3.16 (A3.50)           3.14           1.(2.5.4)           1.15 (A3.0)           15 (A3.0)           15 (A3.0)           15 (A3.0)           15 (A3.0)           15 (A3.0)           15 (A3.5)           200.000           1           2.1, 1, 1           2.1, 2.5, 39           3.3           4.3           4.3, 2.5, 39	IWE HOCKES           200300         200300           7.3         72           9.022         1102.50           1.12 (127)         12 (127)           1.22 (127)         12 (127)           1.23 (633)         3           1.4         1 (254.6)           1.16 (457.2)         18 (457.2)           1.8 (457.2)         3000           70761         200300           2.55.59         000000	TWEISHOCKE3           2003/00           100           R22           B0.02           138 (64.53)           10 (127)           Galvariett & Elicitor galvinued Start Upt Gray           100 (127)           Start & Destribution Formation Upt Gray           100 (127)           Start & Destribution Formation Upt Gray           12           EXAMISION VALVE PLASTIC - FEMALE PPE           12           ECT CENTRUGAL WITH FORMAND CUR- 13 (27.2)           12 (27.2)           0000           OSED FAN COOLED, THREE PMAGE INDU 3 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           2003/00           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           13 (2.2)           14 (2.2)           14 (2.2)           13 (2.2)           14 (2.2)           14 (2.	YWE210CVE3           290390           100           R22           80.02           138 (0453)           138 (0453)           128 (0453)           138 (0453)           15           128 (0453)           15           128 (0453)           15           128 (0453)           15           128 (0453)           15           128 (0410)           15 (0410)           15 (0410)           15 (0410)           15 (0410)           15 (0410)           15 (0410)           15 (0410)           15 (0410)           15 (0410)           15 (0410)           15 (0410)           16 (0410)           17 (0700)           CTION MOTOR           17 (07-08)           15 (0410)           15 (0410)           16 (0410)           17 (07-08)           18 (0410)           19 (0410)           10 (0410)           10 (0410)           10 (0410)           10 (0410)           10 (0410)	TWE246CVE3           2003490           16.6           R22           B0-02           136 (4433)           12 (127)           12 (127)           136 (453)           3           15           1 (254)           2           2 (31.0)           15 (31.0)           15 (31.0)           15 (31.0)           15 (31.3)           20000           0000           13.3 45
UNIT M POWER MCA <sup>1</sup> SYSTEM CASING COIL FAN FILTER	OBLE A CONSECTION CODE A CONSECTION CODE A CONSECTION CODE A COD	ViphVis           in (mm)           dm           dm           hp (kW)           rpm	TWE 130CL/E3           2203400           7.3           R22           138 (0.450)           122 (127)           36 (0.20)           36 (0.20)           314           1 (25.4)           15 (0.61.6)           4000           1           1,0,0)           15 (281.6)           4000           1           220,000           5.5.59           255 × 635 × 25	TWE 18052853 200300 7.3 F22 8842E 1.16 (23.50) 152 (12.7) 38 (2.53) 38 (2.53) 31 (22.4) TOTALLY ENCL 11 (25.4) DOUBLE IN 18 (457.2) 5000 11 (25.7) 5000 10 (27.2) 18 (457.2) 5000 10 (27.2) 18 (457.2) 5000 19 (27.2) 5000 19 (27.2) 5000 10 (27.2) 10 (27.2) 5000 10 (27.2) 5000 10 (27.2) 10 (27.2) 5000 10 (27.2) 10 (27.2) 5000 5	TWE166CVED           2303/80           10.0           R22           82/80           10/80	TWE210CVE1           2303/00           10.0           R222           BRAZE 30           138 (422)           15 (422)           16.0 (422)           16.0 (422)           170.0 (422)           18.0 (453)           38 (453)           15           122.4)           15 (481.0)           15 (481.0)           15 (481.0)           17.5           2000400           7.97-65           555 x727 x 25	1 WE246C VE1           220390           16.6           R22           BPAE           BPAE<
UNIT MI POWER POWER CASING CASING COIL FAN FILTER DIMENS	Oble 3:     CONNECTOON     Oble 3:     CONNECTOON     OtaYA     Tacingreent Syse     No. Refrigerent Cruuis     Refrigerant Connection Type     Legal Ine CO     Color     Type Of Installent     Tools Type     Face Area     Tools     To	ViphHz           A           in (mm)           is (mm)           is (mm)           in (mm)           in (mm)           in (mm)           cfm           kp (kW)           rpm           mm	1000 LMB3           2200.460           7.3           R22           1.36 (A4.50)           1.36 (A4.50)           1.2 (12.7)           1.2 (12.7)           1.2 (12.7)           1.2 (12.7)           1.3 (4.50)           1.4 (1.55.4)           1           1.5 (28.0) </td <td>IME HOCKES           200300         200300           7.3         72           8022         10022           10022         10022           1100250         10022           12012         10022           12012         10022           12012         1000000           12012         10000000           12012         10000000           1100000000000         1000000000000           1100000000000000000000000000000000000</td> <td>TWEISHOCKEJ           200300         100           R22         80.42           138 (64.33)         10 (127)           Galarated &amp; Electro-galvenical Steel Upt Gray         100           138 (64.33)         10 (127)           Galarated &amp; Electro-galvenical Steel Upt Gray         100           148 (64.37)         100           159 (127)         100           160 (127)         100           170 (127)         100           171 (127)         100           172 (127)         100           173 (127)         100           174 (127)         100           175 (127)         100           175 (120)         100           175 (120)         100           175 (120)         100           175 (120)         100           175 (120)         100           175 (120)         100           175 (120)         100           188         100           188         100           188         100           188         100           190         100           190         100           190         100</td> <td>TWE210CVE3           200300           10.0           R22           80-02           138 (04.53)           128 (04.53)           128 (04.53)           138 (04.53)           15           12 (12.7)           12 (12.7)           15           12 (12.7)           12 (12.7)           15           12 (12.7)           15           12 (24.1)           15 (24.10)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.2)           13 (2.2)           14 (2.1)           15 (2.2)           15 (2.2)           16 (2.2)           17 (2.2)           17 (2.2)           10 (2.2)</td> <td>YWE246CVE3           2003490           16.6           R22           B20           186           187           188 (44:33)           128 (44:33)           138 (44:33)           138 (45:33)           15           127,1           15           126,24)           2           2           15           12,24)           2           2           16,2410)           15,3410)           15,9000           1           1,1,254)           2,20340           2,30340           13,356           555 x 727 x 25           1867 x 2200 x 744</td>	IME HOCKES           200300         200300           7.3         72           8022         10022           10022         10022           1100250         10022           12012         10022           12012         10022           12012         1000000           12012         10000000           12012         10000000           1100000000000         1000000000000           1100000000000000000000000000000000000	TWEISHOCKEJ           200300         100           R22         80.42           138 (64.33)         10 (127)           Galarated & Electro-galvenical Steel Upt Gray         100           138 (64.33)         10 (127)           Galarated & Electro-galvenical Steel Upt Gray         100           148 (64.37)         100           159 (127)         100           160 (127)         100           170 (127)         100           171 (127)         100           172 (127)         100           173 (127)         100           174 (127)         100           175 (127)         100           175 (120)         100           175 (120)         100           175 (120)         100           175 (120)         100           175 (120)         100           175 (120)         100           175 (120)         100           188         100           188         100           188         100           188         100           190         100           190         100           190         100	TWE210CVE3           200300           10.0           R22           80-02           138 (04.53)           128 (04.53)           128 (04.53)           138 (04.53)           15           12 (12.7)           12 (12.7)           15           12 (12.7)           12 (12.7)           15           12 (12.7)           15           12 (24.1)           15 (24.10)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.1)           13 (2.2)           13 (2.2)           14 (2.1)           15 (2.2)           15 (2.2)           16 (2.2)           17 (2.2)           17 (2.2)           10 (2.2)	YWE246CVE3           2003490           16.6           R22           B20           186           187           188 (44:33)           128 (44:33)           138 (44:33)           138 (45:33)           15           127,1           15           126,24)           2           2           15           12,24)           2           2           16,2410)           15,3410)           15,9000           1           1,1,254)           2,20340           2,30340           13,356           555 x 727 x 25           1867 x 2200 x 744
UNIT M POWER POWER CASING CASING COIL FAN FILTER DIMENS	OBLE 4 CONSECTION CON	VightVis A a (mm) in (mm) in (mm) in (mm) in (mm) dm in (mm) dm kp (kW) rpm rpm	TWE 136CJ/83           2203400           7.3           R22           138 (44.50)           121 (127)           36 (9.53)           3           1 (25.4)           15 (381.0)           15 (381.0)           15 (381.0)           15 (381.0)           15 (381.0)           15 (381.0)           15 (381.0)           15 (381.0)           15 (381.0)           15 (381.0)           15 (381.0)           4000           1           4000           1           200,080           4           35 x 635 x 25           4           35 x 100 x 65	TWE HOCKES  200300  7.3  F22 BRAZE 1 (R (263)) 16 (253)  3 (253)	TWE HARCYED           2303760           10.0           R22           2023760           2024           2024           2025           2024           2025           2021           Galvanted & Eutra cyshenold Steff           2021           Galvanted & Eutra cyshenold Steff           2021           Steff Park           2021           Steff Park           2021	TWE210CVE3           2303/00           10.0           R222           BA2E           BA2E           13 (3:0)           142 (127)           12 (127)           12 (127)           13 (3:51)           38 (6:53)           3           1 (2:4)           760           7000           7000           757:49           107:2206,754           107:2206,754           107:2206,754           107:2206,754	1 WE246C VE1           200360           16.6           R22           2           2           18 (4.63)           13 (4.77)           348 (6.53)           13           12 (2.7)           14 (1.67)           348 (6.53)           3           15           16 (2.47)           15 (281.0)           15 (281.0)           15 (281.0)           15 (2.7)           1730           2200.040           13.549           4           45           107 + 2208 - 704           107 + 2208 - 704

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



# **Electrical Wiring**

### TWE120-240 (EXPORT)



	LEGEND
DEVICE DESIGNATION	DESCRIPTION
1M TB 2M1,2M2,3M1	CONTACTOR BLOWER MOTOR. TERMINAL BLOCK AUXILIARY N.O. CONTACT
3M2,A1,A2 TH 2PB	AUXILIARY N.O. CONTACT THERMOSTAT SWITCH PUSH BUTTON FACTORY WIRING & DEVICE BY MFR.
ID. MOTOR PT -CCC-	FIELD WIRING INDUCTION MOTOR POWER TERMINAL FUSE

NOTES

- NOTES 1. ALL FIEL WIRING TO BE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE (NE.C.) CANADIM ELECTRIC CODE AND/OR LOCAL STATE AND CITY CODES. PROVIDE DISCOMECTS FOR ALL POWER SUPPLIES. 2. DRAWING PRACTACES AND SYMBOLS ARE IN ACCORDANCE WITH AIR CONDITIONAL STANDARDS. ELECTRICAL STANDARDS. ELECTRICAL STANDARDS. MUMBERS AND/OR LETTERS. 4. NUMBERS AND/DRIFTERS. 4. NUMBERS AN VERTICAL & HORIZONTAL LINE ARE CIRCUIT DENTIFICATION. 5. THIS UNIT TO BE USED WITH EVAPORATORS OPERATING WITH IN A TEMPERATURE RANGE OF 32°F TO 53.5°F.

### TWE120-240 (DOMESTIC)





TWE 120 CD / C3 TWE 120 ED / E3















Madal No.	Dimensions (mm.)								
woder No.	A	В	B C D E		E	F	G	н	
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.



TWE 210-240 With Plenum (Option)



Model No	Dimensions (mm.)									
Woder No.	A	В	С	D	E	F	G	н	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.

- 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.
- 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.

- Check coil surface. Clean by vacuuming or flushing with cold water. Do not use steam or hot water.
- Carry out checks as detailed in inspection checklist in the Operation Section.
- 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.
- Check condition of vibration isolators, replace if there is any sign of wear, loosening or material deterioration.
- Check fan bearings for noisy operation and excessive lubricant leakage. Replace if necessary.
- Inspect the condensate drain pan and condensate piping to make sure they are clear and will carry away all water.
- Inspect the control panel wiring to make sure connections are tight and insulation is intacted.

## 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												Ρ						
Head Pressure Too Low											Ρ			Ρ				
Suction Pressure Too High											Ρ		Ρ	Ρ	Ρ			
Suction Pressure Too Low										Ρ		Ρ				Ρ	Ρ	
Indoor Coil Frosting									Ρ		Ρ				Ρ	Ρ		
Liquid Floodback (TXV)														Ρ				
Liquid Floodback (Cap. Tube)															Ρ			
Electrical																		
I.D. Motor Won't Start	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Р	Р	Ρ									

P Primary Causes - S Secondary Causes

#### Safety recommendations

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

- 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.
- 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.





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