



Installation, Operation, and Maintenance

Vertical Cooling Data Center

Unit sizes 60 to 340 kW



⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

August 2026

CLCH-SVX023A-EN

TRANE
TECHNOLOGIES™



Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE

Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians **MUST** put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). **ALWAYS** refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians **MUST** put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit. **NEVER** PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.

⚠ WARNING**Follow EHS Policies!**

Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

⚠ WARNING**Cancer and Reproductive Harm!**

This product can expose you to chemicals including lead and bisphenol A (BPA), which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

⚠ WARNING**Safety Hazard!**

Failure to follow instructions below could result in death and/or serious injury.

Choose a safe site to install a unit. Do not install the unit where it is accessible to the general public.

⚠ WARNING**Electrical Shock Hazard!**

Failure to follow instructions below could result in death or serious injury.

Properly connect the system's oversized protective earthing (grounding) terminal(s).

⚠ WARNING**Electrical Shock Hazard!**

Failure to follow instructions below could result in death or serious injury.

System contains oversized grounding terminal. All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

Product Safety Information

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by person responsible for their safety. Children should be supervised to confirm that they do not play with the appliance.

Maximum altitude of use 3000 meters.

Copyright

This document and the information in it are the property of Trane, and may not be used or reproduced in whole or in part without written permission. Trane reserves the right to revise this publication at any time, and to make changes to its content without obligation to notify any person of such revision or change.

Trademarks

All trademarks referenced in this document are the trademarks of their respective owners.



Table of Contents

Model Number Description	6	Field Installation Requirements for	
General Information	7	Components	34
Nameplate	7	Condensate Pump with Waterless Air	
Operating Environment	7	Trapping	34
Unit Description	7	Damper / Duct Collar Removal and	
Integrated Advanced Controls	7	Reinstallation to Facilitate Unit	
Component Location	8	Placement	36
Dimensions and Weights	11	Unit Leveling	37
Unit Dimensions	11	Piping Requirements	39
Shipping Dimensions	13	Installation – Electrical	41
Shipping Weights	15	Supply Power Wiring	41
Unit Service Clearance Dimensions	15	Field Connections Between Build	
Actuator Access Panel Dimensions	17	Groups	41
Filter Placement and Dimensions	18	Rope Leak Sensor Connections	42
Water Piping and Connectors Access		Damper Actuator Connections	43
Dimension	19	Controller Ports	43
Installation – Mechanical	21	RJ45 Cat 6	43
Inspect and Report Damage	21	USB Type B	43
Inspection of Delivered Equipment	21	Unit Wiring Diagrams	44
Warranty Issues	21	Start-Up	45
Short Term Storage Requirements	21	Pre-Startup Checklist	45
Customer Responsibilities	21	General Checks	45
Storage Requirement Checklist	22	Fan-Related Checks	45
Electrical Component Protection	22	Coil-Related Checks	45
Storage Environment	22	Fan Inlet Airflow Measuring System	45
Storage Limitation and Warranty		Wiring	46
Disclaimer	22	Transmitter Sizing	46
Handling	22	Transmitter Calibration	46
Packaging and Shipping	22	Maintenance	46
Positioning and Handling	22	Constant K Factor	46
Lifting and Rigging	22	Routine Maintenance	48
General Lifting Considerations	22	Maintenance Checklist	48
Removing the Unit from the Pallet	23	Water Coils	48
Shipping Configuration	25	Cleaning Non-Porous Surfaces	49
Clearance	25	Drain Pans	49
Assembly Procedure	25	Fans	50
Single Build Group	26	Inspecting and Cleaning Fans	50
2-Build Group	26	Filters	50
3-Build Group	28	Throwaway Filters	50
		Filter	50
		Filter Replacement Procedure	51
		2 or 3 Build Group Units	51

Fan Placement Procedure	51	Troubleshooting	56
Single Build Group	51		
2 or 3 Build Group Units	53		



Model Number Description

Digit 1, 2, 3, 4 — Product Group

VCDC = Vertical Cooling Data Center

Digit 5, 6, 7 — Unit Size

060 = VCDC-060
080 = VCDC-080
115 = VCDC-115
170 = VCDC-170
215 = VCDC-215
240 = VCDC-240
340 = VCDC-340

Digit 8 — Configuration

D = Downflow
U = Upflow
S = Special

Digit 9,10 — Design Sequence

AA = Firstship

Digit 11 — Discharge Location

1 = Front
2 = Front and sides
3 = Back
4 = All (front, sides, back)
5 = Bottom
S = Special

Digit 12 — Insulation Type

W = Insulated single wall
D = Insulated double wall
S = Special

Digit 13 — Paint

B = Factory painted – Black
S = Factory painted – Special

Digit 14 — Unit Handling

R = Right
L = Left
S = Special

Digit 15 — Voltage

A = 415
B = 460
C = 480
D = 575
S = Special

Digit 16 — Harmonic Filtration

0 = No Harmonic Filtration
1 = Active Power Factor Correction

Digit 17 — Control Type

S = Symbio
T = Terminal strip

Digit 18 — Fan Flow Meter

0 = None
A = 1 Transducer per fan
B = 1 Transducer per unit

Digit 19 — Automatic Transfer Switch

0 = No
1 = Yes

Digit 20 — Condensate Pump

0 = No
1 = Yes

Digit 21 — Rope Leak detector

0 = No
1 = Yes

Digit 22 — Filter Media

A = None – Field supplied – (Need filter PD input)
B = 2-in. Pleated media MERV 8
C = 2-in. Pleated media MERV 11
D = 4-in. Pleated media MERV 8
S = Special

Digit 23 — Return Damper with Actuator

0 = No
1 = Yes

Digit 24 — Smoke Sensor

0 = No
1 = Yes

Digit 25 — Humidity Sensor

0 = No
1 = Yes

Digit 26 — Controller Capacitor Backup

0 = No
1 = Yes

Digit 27 — Coil Type

1 = VL
2 = VH
3 = VE
4 = VS
S = Special

Digit 28 — Coil Row

4 = 4 Row
6 = 6 Row
8 = 8 Row
S = Special

Digit 29 — Turbulator

0 = No
1 = Yes

Digit 30 — Fin Spacing

A = 120
B = 144
C = 168
S = Special

Digit 31 — Fan Sizes

1 = 450
2 = 560
S = Special

Digit 32 — Fan Quantity

2 = 2 Fans
3 = 3 Fans
4 = 4 Fans
6 = 6 Fans
8 = 8 Fans
S = Special

Digit 33 — Inlet Configuration

A = Unducted inlet
B = Ducted Inlet



General Information

Nameplate

Unit nameplates include each section's model number, serial number, and Tag ID.

- Single-build group units: One nameplate is provided and is located on piping exit side of the unit.
- Multi-section units (two- or three-build groups): Each section includes its unique nameplate on the side of the unit.

Operating Environment

VCDC units are designed for indoor applications only. Operating environment must be considered when determining installation location.

- Acceptable ambient temperature range for unit operation:
 - Units without UL approval: -20°F to 140°F (-29°C to 60°C)
 - UL-approved units: -20°F to 104°F (-29°C to 40°C)
- Provide adequate freeze protection for the coils. See ["Routine Maintenance," p. 48](#) for more information.

Unit Description

The VCDC unit provides close control cooling for data center applications. Each unit includes a fan section, coil section, and filters. See the unit submittals for detailed component descriptions.

Units may be shipped as a single section or in multiple sections, depending on size. The unit must be piped to a cooling water or glycol mix for proper operation.

Integrated Advanced Controls

VCDC units are available with factory installed Trane Symbio™ 500 unit controls and TD-7 displays. These controls offer full programmability and expandability, allowing site-specific sequences of operation and I/O. Symbio controls integrate directly with building management systems using native Modbus® or BACnet® protocols. Optional team control provides enhanced system resiliency and efficiency. The embedded, web based user interface supports installation, integration, and service tasks.

Depending on the configuration, units may include return damper actuator, dirty filter switches, circuit breaker, controller capacitor/UPS, rope leak detector, flow pressure differential transducer, smoke sensor, humidity /discharge temperature sensor, airflow switch, and automatic transfer switch.

Items that cannot be factory-mounted, such as a rope leak detector, ship inside coil section.

For more information on controls, see to the following manuals:

- *Symbio™ 500 Programmable Controller – Installation, Operation, and Maintenance* (BAS-SVX090*-EN).
- *Tracer® TD-7 Display For the Tracer UC600 Programmable Controller, Tracer UC800 Controller, Symbio 500 Programmable Controller, and Symbio 800 Programmable Controller – Installation Instructions* (BAS-SVN112*-EN).

Component Location

Figure 1. 60 to 115 kW layout (single build group)

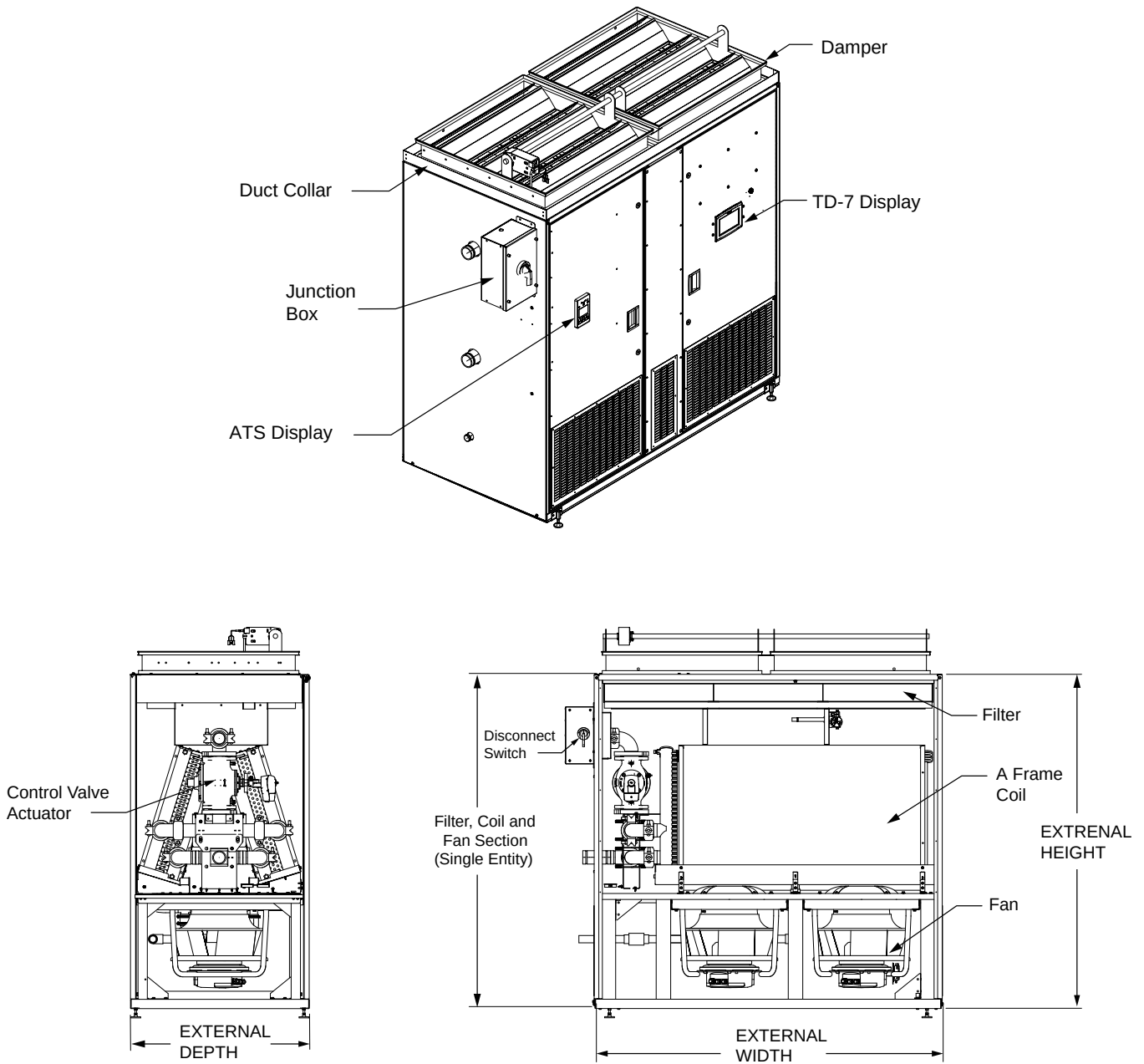


Figure 2. 170 kW layout (2- build group)

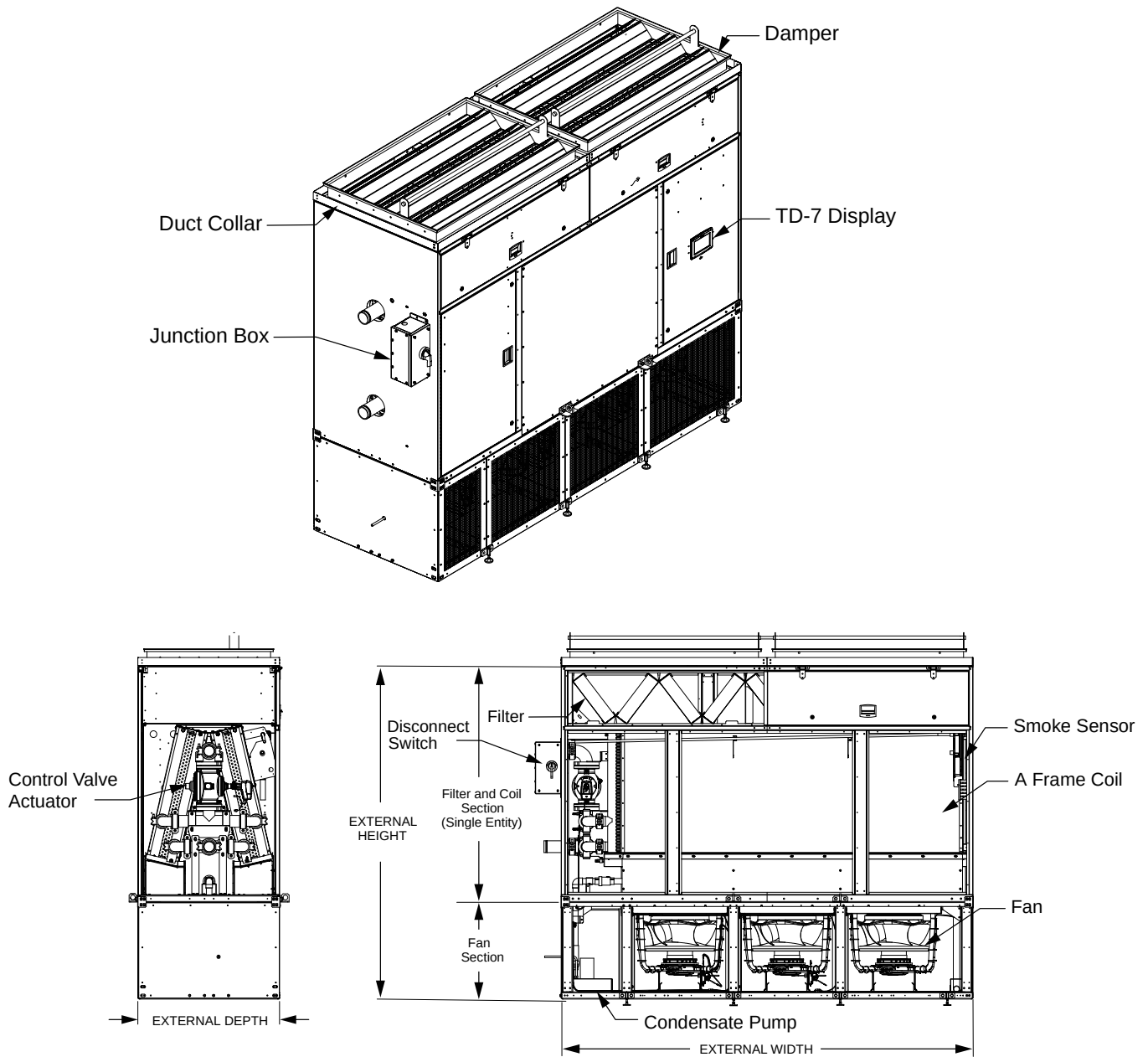
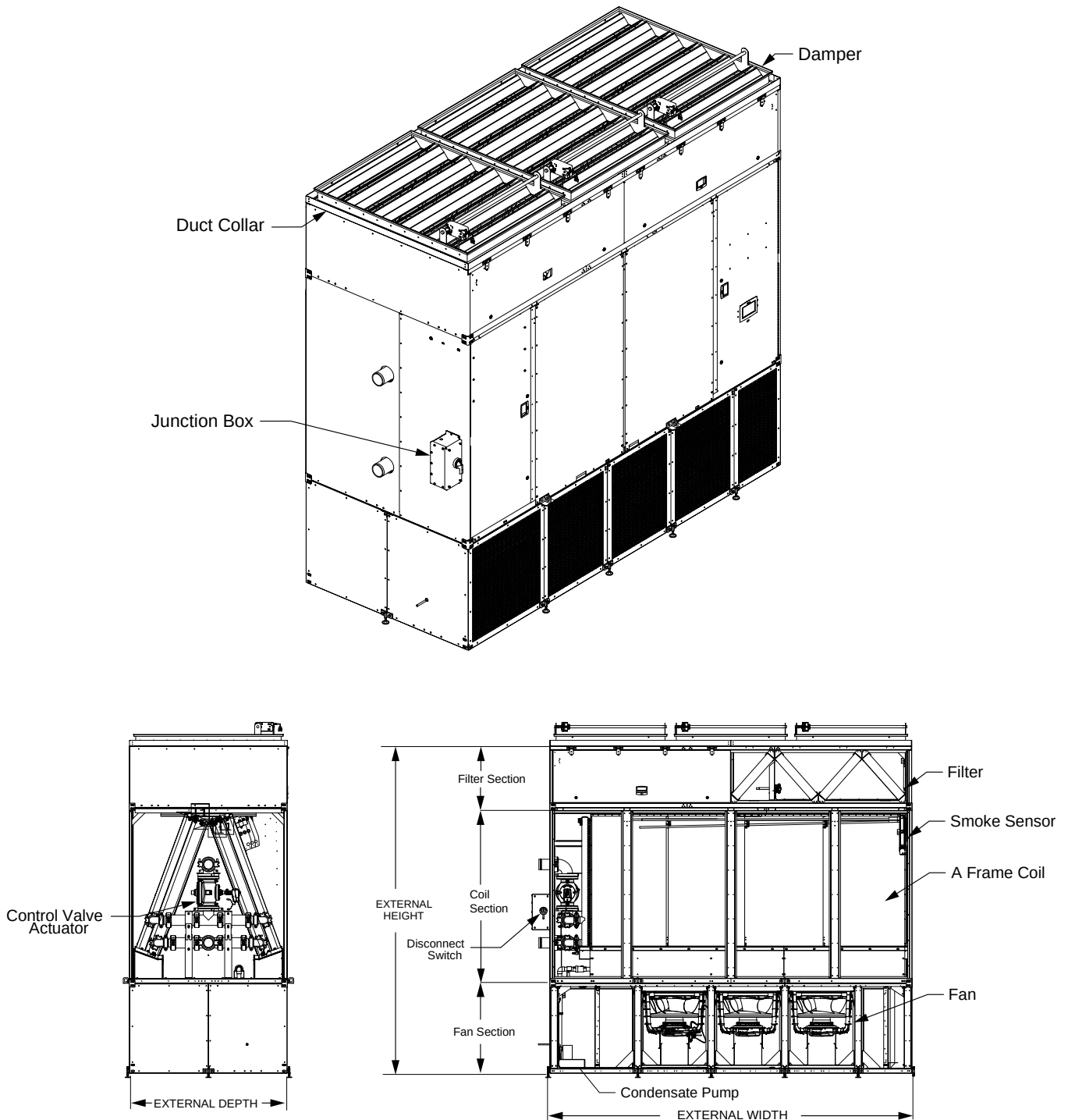


Figure 3. 215 to 340 kW layout (3-build group)



Note: Components may vary depending on the configuration.



Dimensions and Weights

Unit Dimensions

VCDC unit configurations:

- Capacity range 60 to 115 kW: Factory assembled module.

- Capacity range 170 to 340 kW: Multiple factory-built sections are provided and will be assembled during field installation.

Table 1. Unit dimensions

Description	Model Number						
	VCDC060	VCDC080	VCDC115	VCDC170	VCDC215	VCDC240	VCDC340
Unit Width (in.) - W	75.00	99.00	123.00	122.00	144.00	144.00	156.00
Unit depth (in.) - L	38.75	38.75	38.75	42.00	47.00	68.00	68.00
Unit Height (in.) - H	72.00	72.00	72.00	98.60	127.35	135.85	140.85
Unit Height if damper included (in.) - Hd	83.50	83.50	83.50	110.10	138.85	147.35	152.35
Unit Height if Duct Collar only (in.) - Hdc	74.50	74.50	74.50	101.10	129.85	138.35	143.35
Fan Section Height (in.) - HFN	—	—	—	28.73	34.73	34.73	38.73
Coil Section Height (inch) - HC	—	—	—	—	67.13	75.63	75.63
Filter Section Height (in.) - HF	—	—	—	—	25.50	25.50	26.50
Coil and Filter Section Height (in.) - HCF	—	—	—	69.88	—	—	—
Fan Section Weight (lbs)	—	—	—	821.60	1069.61	1351.48	1620.73
Coil Section Weight (lbs)	—	—	—	2922.30	3754.52	4376.55	4702.83
Filter Section Weight (lbs)	—	—	—		465.86	577.38	640.01
Unit Weight without Damper - dry weight (lbs)	1797.18	2236.93	2735.77	3743.90	5289.99	6305.41	6963.57
Damper Weight (lbs)	125	160	200	220	285	420	465
Coil Water Weight (lbs)	104	145.5	184.00	265.00	416.00	489.00	533.00
Nominal Filter size (inch) / (quantity)	24 x 24 (3)12 x 24 (3)	24 x 24 (4)12 x 24 (4)	24 x 24 (5)12 x 24 (5)	20 x 16 (18)	24 x 24 (7)20 x 24 (7)	24 x 24 (7)20 x 24 (14)	24 x 24 (8)20 x 24 (16)
Fan type / Quantity/ Sizes (inch)	EC/2/17.72	EC/2/17.72	EC/3/17.72	EC/3/22.05	EC/4/22.05	EC/6/17.72	EC/6/22.05

Figure 4. Dimensions – sizes 60 to 115 kW

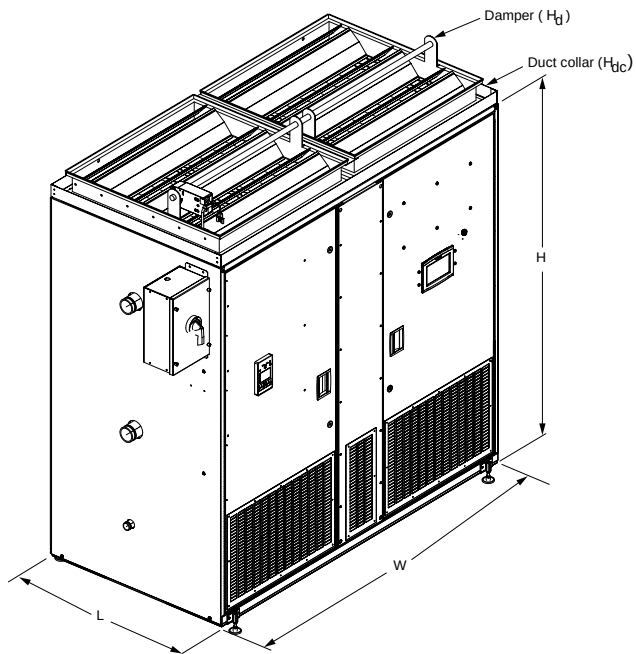


Figure 5. Dimensions – sizes 170 to 340 kW

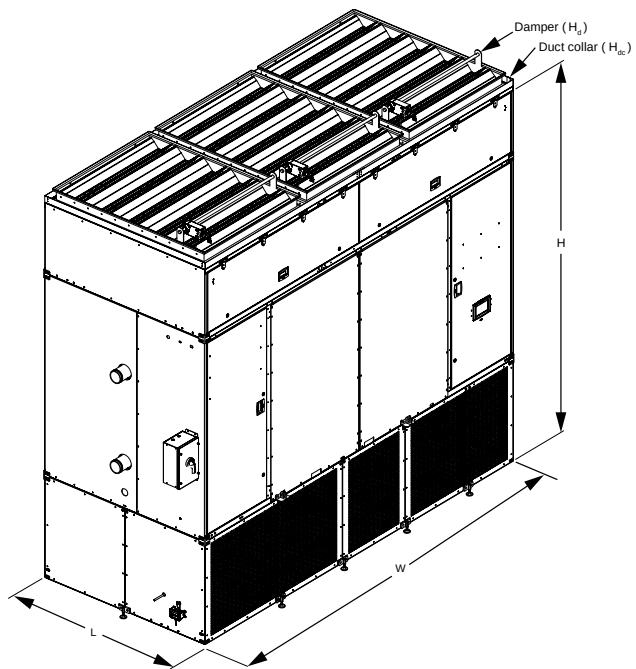


Figure 6. Coil and filter section dimensions - size 170 kW

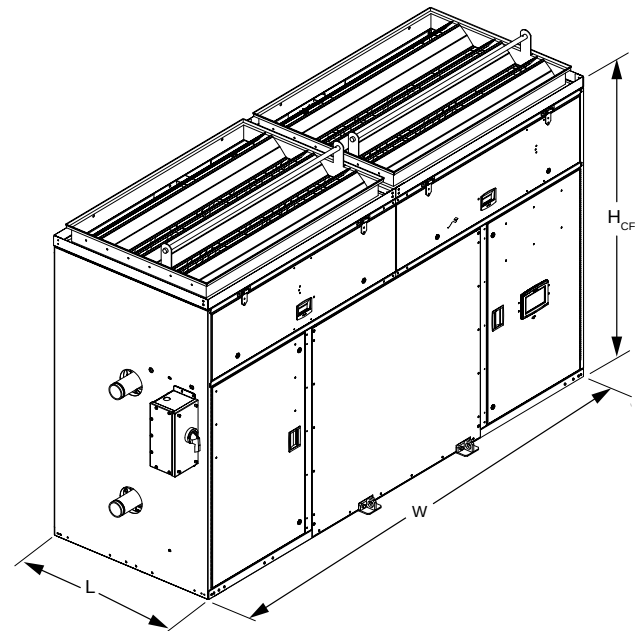


Figure 7. Fan section dimensions - sizes 170 to 340 kW

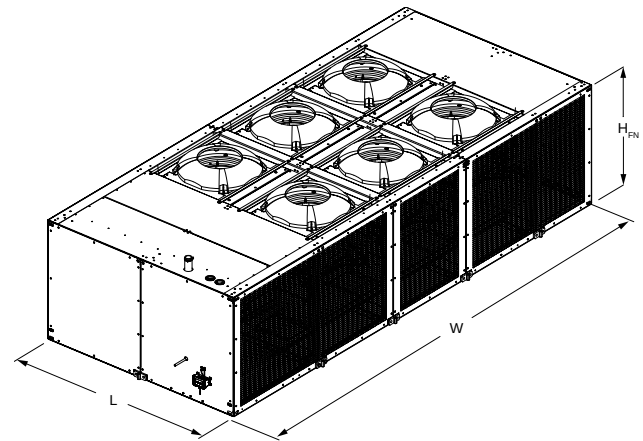
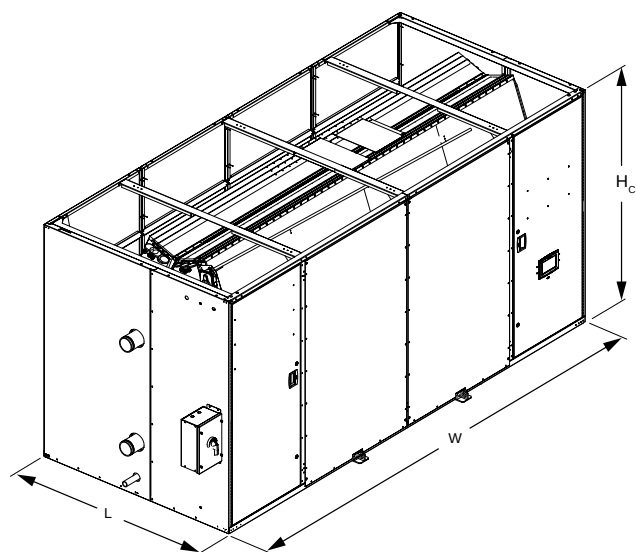


Figure 8. Coil section dimensions – sizes 215 to 340 kW



Notes:

- Pipe connections may be located on either the left-hand or right-hand side, but not both.
- Unit dimensions do not include leveling feet, duct collar, or duct collar with damper.
- For options list below, height dimension is increased as follows:
 - Duct collar: 2.5-inches
 - Duct collar and damper: 11.5-inches

Shipping Dimensions

Units are shipped on wooden pallets, fully enclosed with protective covering.

Figure 9. Filter section dimensions – sizes 215 to 340 kW

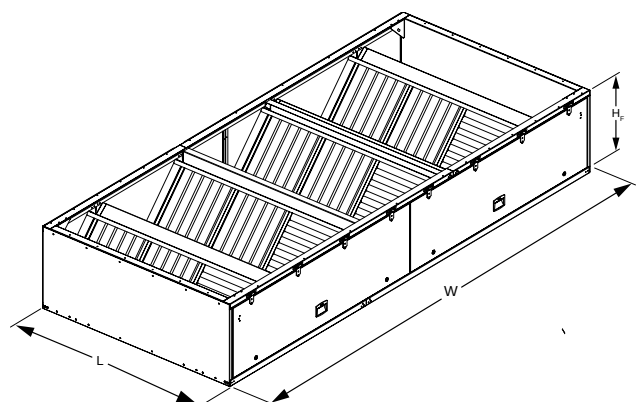


Table 2. Shipping dimensions

Description	Model Number						
	VCDC060	VCDC080	VCDC115	VCDC170	VCDC215	VCDC240	VCDC340
Pallet Width - P_W (in.)	94.5	118.50	142.5	141.00	163.5	163.5	175.5
Pallet Depth - P_L (in.)	48.75	48.75	48.75	52.00	57.00	78.00	78.00
Pallet Height - P_H (in.)	9.50	9.50	9.50	9.50	11.50	11.50	11.50
Unit Height with Pallet - H_P (in.)	81.50	81.50	81.50	—	—	—	—
Unit Height with Pallet and Damper (Max) (in.)	93.00	93.00	93.00	—	—	—	—
Fan Section with Pallet Height - P_{FN} (in.)	—	—	—	38.23	—	—	—
Coil and Filter Section with Pallet Height P_{CF} (in.)	—	—	—	79.38	—	—	—
Coil and Filter Section with Pallet Height and Damper (Max) (in.)	—	—	—	90.88	—	—	—

Dimensions and Weights

Table 2. Shipping dimensions (continued)

Description	Model Number						
	VCDC060	VCDC080	VCDC115	VCDC170	VCDC215	VCDC240	VCDC340
Fan and Filter Section with Pallet Height - P_{FF} (in.)	—	—	—	—	71.73	71.73	76.73
Fan and Filter Section with Pallet Height and Damper (Max) (in.)	—	—	—	—	83.23	83.23	88.23
Coil Section with Pallet Height - P_C (in.)	—	—	—	—	78.63	87.13	87.13
Pallet weight - (lbs) each	470	484	497	518	629	771	781

Figure 10. Shipping – sizes 60 to 115 kW

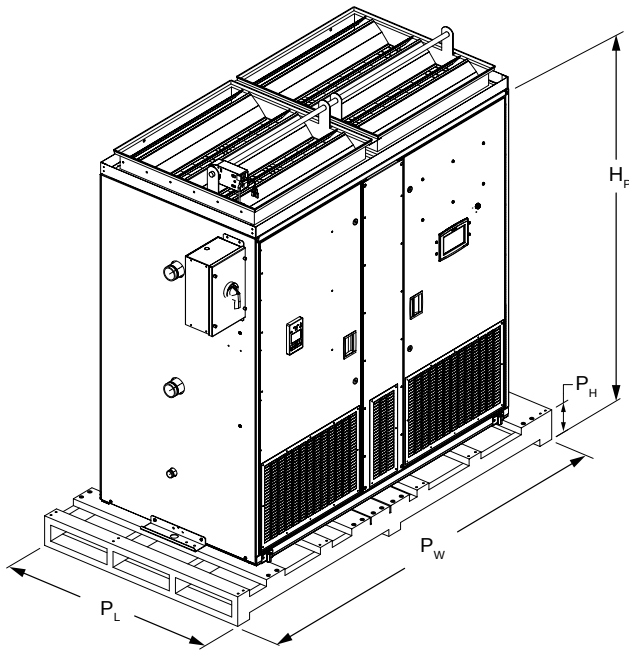


Figure 11. Coil section shipping – sizes 215 to 340 kW

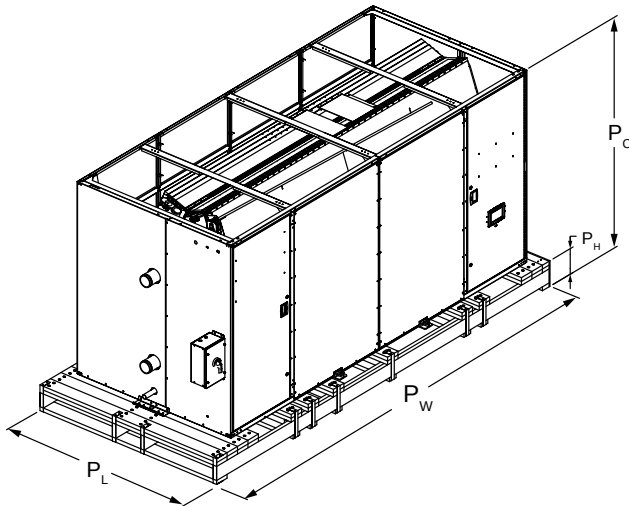


Figure 12. Fan section shipping size – 170 kW

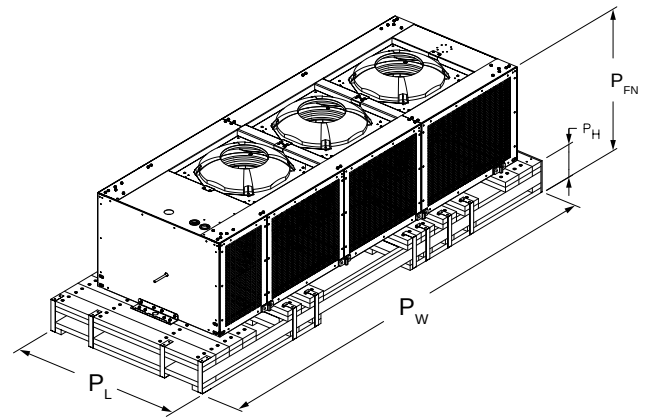


Figure 13. Coil and filter section (single entity) shipping – size 170 kW

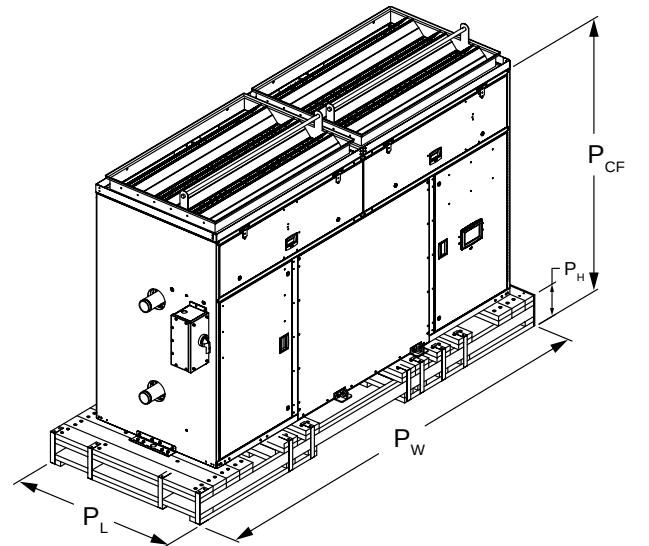
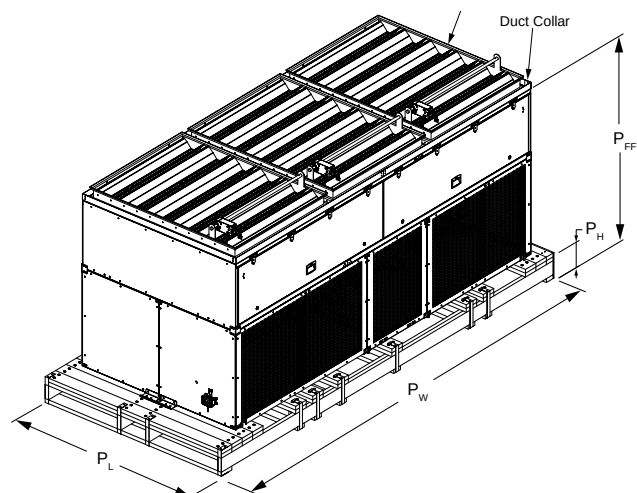


Figure 14. Fan and filter section shipping – sizes 215 to 340 kW



Shipping Weights

Table 3. Shipping weight with pallet (lb)

Description	Model Number						
	VCDC060	VCDC080	VCDC115	VCDC170	VCDC215	VCDC240	VCDC340
Shipping Build Group	Single Build Group	Single Build Group	Single Build Group	Two Build Group	Three Build Group	Three Build Group	Three Build Group
Unit Weight with Damper (Max Possible) (lbs)	2267.18	2720.93	3232.77	—	—	—	—
Fan Section Weight (lbs)	—	—	—	1339.60	—	—	—
Coil and Filter Section Weight (lbs)	—	—	—	3440.30	—	—	—
Fan and Filter Section Weight (lbs)	—	—	—	—	2164.47	2699.86	3041.74
Coil Section Weight (lbs)	—	—	—	—	4383.52	5147.55	5483.83

Unit Service Clearance Dimensions

For sufficient routine maintenance access, verify the unit installation meets minimum service clearances requirements outlined below. Follow the clearances that match the selected left- or right-side connection configuration.

Note: Figures show the left-hand field connection. Units can be configured for right-hand field connection.

Dimensions and Weights

Figure 15. Service clearances – sizes 60 to 115 kW

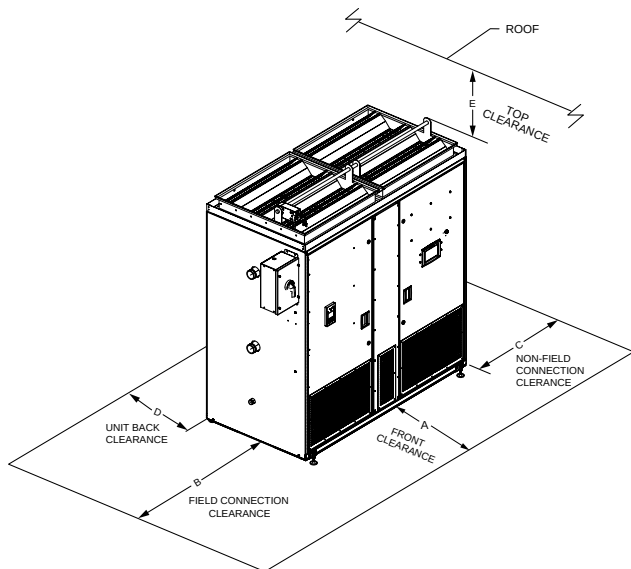


Figure 16. Service clearances - 170 to 340 kW

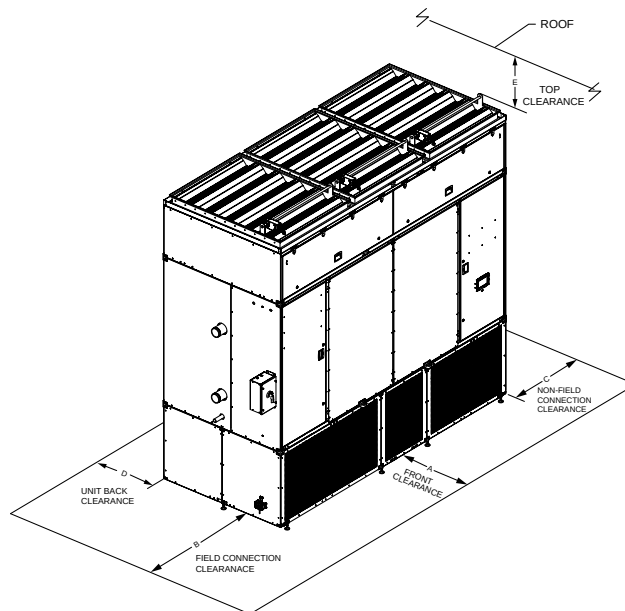


Table 4. Service clearance – front discharge

Description	Dimension	Model Number				
		VCDC 060 to 115	VCDC170	VCDC215	VCDC240	VCDC340
Component Clearance (in.)	A	36	36	36	36	36
Field Connection Access (in.)	B	36	36	36	36	36
Non-Field Connection Clearance (in.)	C	6	6	6	6	6
Unit Back Clearance (in.)	D	6	6	6	6	6
Top Clearance (with duct) (in.)	E	24	24	24	24	24
Top Clearance (without duct) (in.)	E	29	32	35	51	51

Table 5. Service clearance – front and side discharge

Description	Dimension	Model Number				
		VCDC 060 to 115	VCDC170	VCDC215	VCDC240	VCDC340
Component Clearance (in.)	A	36	36	36	36	36
Field Connection Access (in.)	B	36	36	36	36	36
Non-Field Connection Clearance (in.)	C	36	36	36	36	36
Unit Back Clearance (in.)	D	6	6	6	6	6
Top Clearance (with duct) (in.)	E	24	24	24	24	24
Top Clearance (without duct) (in.)	E	29	32	35	51	51

Table 6. Service clearance – back discharge

Description	Dimension	Model Number				
		VCDC 060 to 115	VCDC170	VCDC215	VCDC240	VCDC340
Component Clearance (in.)	A	36	36	36	36	36
Field Connection Access (in.)	B	36	36	36	36	36
Non-Field Connection Clearance (in.)	C	6	6	6	6	6
Unit Back Clearance (Back Discharge Through Wall) (in.)	D	6	6	6	6	6
Unit Back Clearance (Back discharge Open Area) (in.)	D	36	36	36	36	36
Top Clearance (with duct) (in.)	E	24	24	24	24	24
Top Clearance (without duct) (in.)	E	29	32	35	51	51

Table 7. Service clearance – all side discharge

Description	Dimension	Model Number				
		VCDC 060 to 115	VCDC170	VCDC215	VCDC240	VCDC340
Component Clearance (in.)	A	36	36	36	36	36
Field Connection Access (in.)	B	36	36	36	36	36
Non-Field Connection Clearance (in.)	C	36	36	36	36	36
Unit Back Clearance (in.)	D	36	36	36	36	36
Top Clearance (with duct) (in.)	E	24	24	24	24	24
Top Clearance (without duct) (in.)	E	29	32	35	51	51

Actuator Access Panel Dimensions

the damper actuator. Actuator access opening dimensions vary by unit size and are listed in the following table.

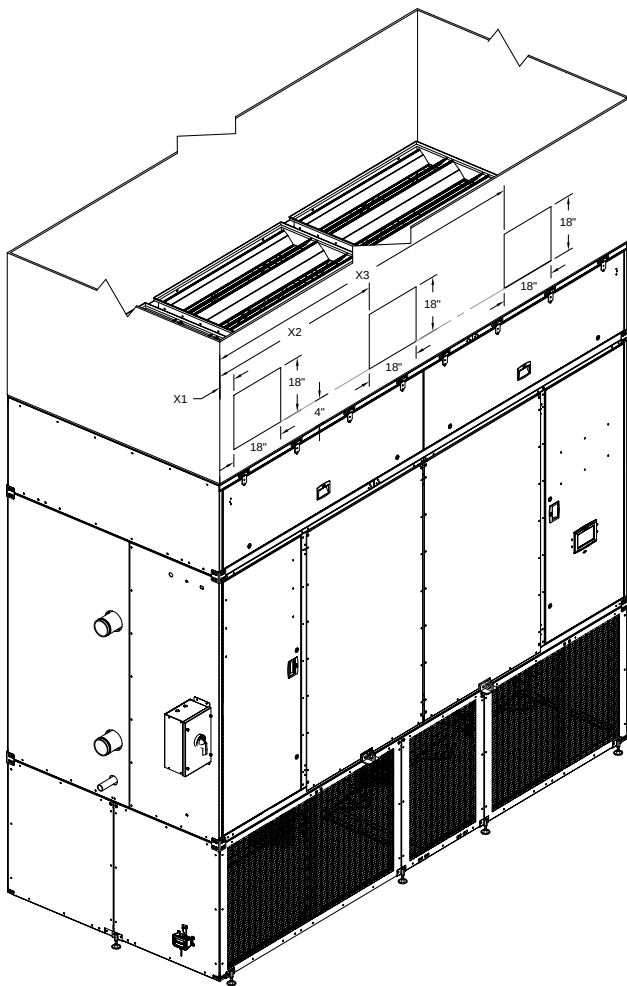
When the unit is connected to ductwork, a field supplied access panel must be installed to provide service access to

Table 8. Actuator service clearance

Description	Dimension	Model Number				
		VCDC 060 to 115	VCDC170	VCDC215	VCDC240	VCDC340
Actuator Access Clearance (in.)	X1	0.5	0.5	0.5	0.5	0.5
Actuator Access Clearance (in.)	X2	—	—	46.5	46.5	50.5
Actuator Access Clearance (in.)	X3	—	—	—	94.5	102.5

Note: Figures shown are based on large size units, but apply to all unit sizes with regard to damper configuration. See [Table 8, p. 17](#) for dimensions.

Figure 17. Actuator access panel – all sizes



Filter Placement and Dimensions

A filter frame shall be provided for each unit to support the 2-inch and 4-inch Filters. The frame shall be designed for front loading and configured to accommodate air entering from the top of the unit.

Figure 18. Filter placement – 60 kW unit

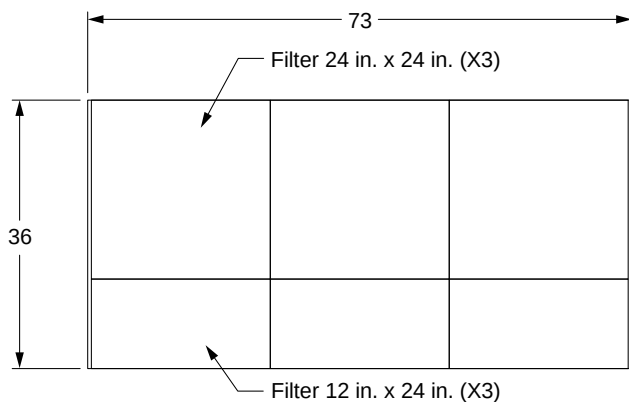


Figure 19. Filter placement – 80 kW unit

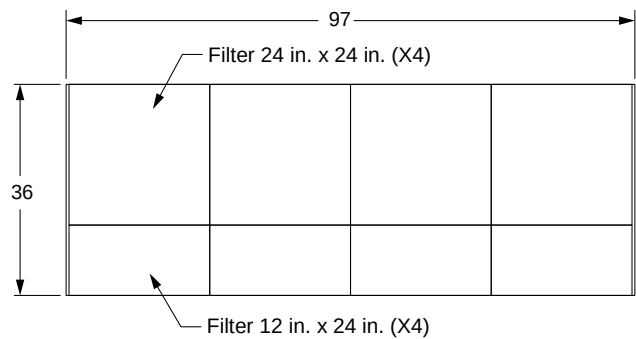


Figure 20. Filter placement – 115 kW unit

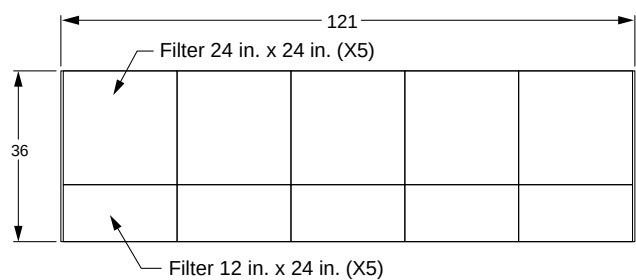


Figure 21. Filter placement – 170 kW unit

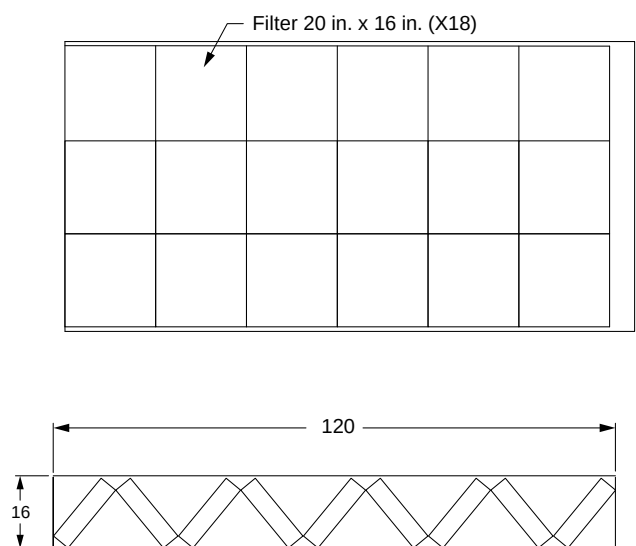
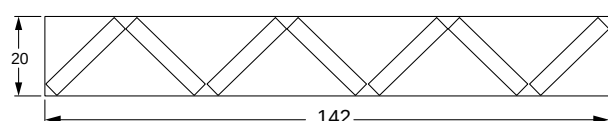
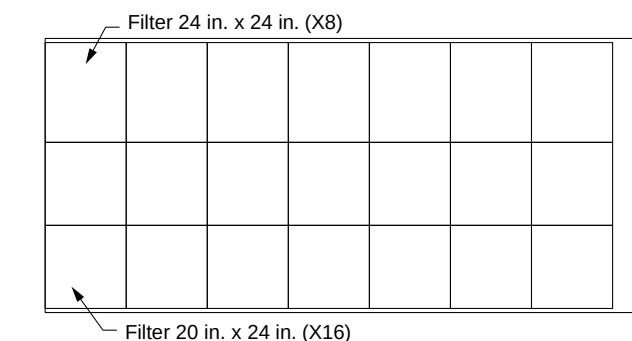
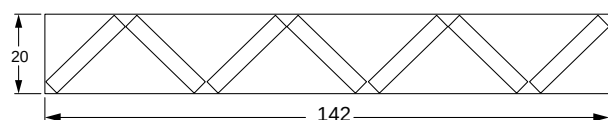
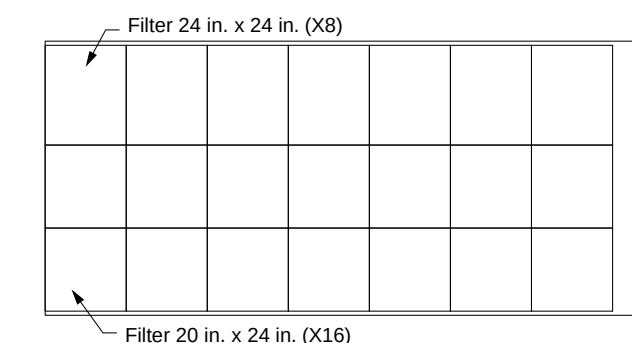


Figure 22. Filter placement – 215 and 240 kW unit

Figure 23. Filter placement – 340 kW unit

Table 9. Piping and connector access dimensions

Description	Model Number						
	VCDC060	VCDC080	VCDC115	VCDC170	VCDC215	VCDC240	VCDC340
Return - Vertical Dim (R) (in.)	60.18	60.18	60.18	73.58	80.65	84.25	90.15
Supply - Vertical Dim (S) (in.)	32.59	32.59	32.59	45.25	52.38	52.46	56.40
Return / Supply - Horizontal Dim (L/2) (in.)	19.38	19.38	19.38	21.00	23.50	34.00	34.00
Drain W/O Pump - Vertical Dim (J) (in.)	15.36	15.36	15.36	35.04	41.00	41.00	44.94
Drain W/O Pump - Horizontal Dim (X) (in.)	19.38	19.38	19.38	21.00	23.50	34.00	34.00
Drain W/O Pump - Pipe Nominal Dia (N) (in.)	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Drain W Pump - Vertical Dim (J) - (in.)	12.41	12.41	12.41	12.53	12.53	12.53	12.53

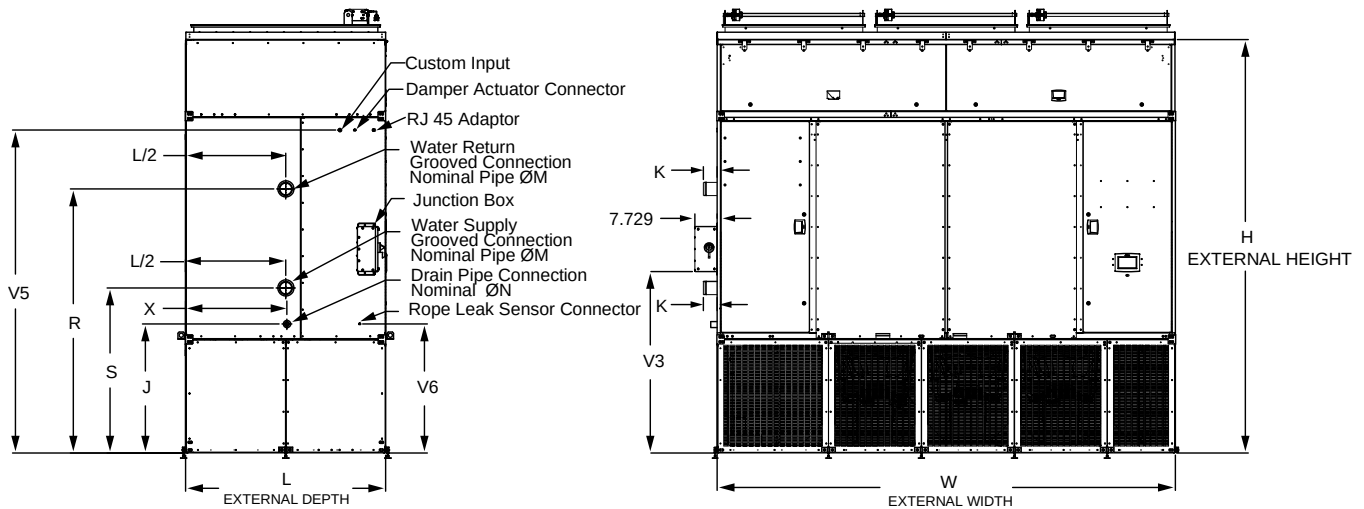
Water Piping and Connectors Access Dimension

Dimensions and Weights

Table 9. Piping and connector access dimensions (continued)

Description	Model Number						
	VCDC060	VCDC080	VCDC115	VCDC170	VCDC215	VCDC240	VCDC340
Drain W Pump - Horizontal Dim (X) (in.)	22.18 (LH) 16.57 (RH)	22.18 (LH) 16.57 (RH)	22.18 (LH) 16.57 (RH)	23.80 (LH) 18.20 (RH)	26.31 (LH) 20.69 (RH)	50.66	50.66
Drain W Pump - Pipe OD (N) (in.)	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Return/Supply /Drain - Pipe Extended (K) (in.)	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Return/Supply - Pipe Nominal Dia (M) (in.)	2.50	2.50	2.50	3.00	3.00	4.00	4.00
Controls - J Box Height Location (V3) (in.)	46.00	46.00	46.00	60.90	62.00	62.00	61.83
Custom Input/Damper Connector/RJ45 Connector - Vertical Dim (V5) (in.)	64.00	64.00	64.00	78.59	97.50	106.00	110.06
Rope Leak Sensor Connector - Vertical Dim (V6) (in.)	30.00	30.00	30.00	36.73	40.00	40.00	43.58

Figure 24. Water piping and connector access dimensions





Installation – Mechanical

Inspect and Report Damage

1. Upon receipt, verify all units and components listed on the Trane bill of lading have been delivered. Verify the correct model numbers have been provided.
2. Inspect each package for visible damage. Report any damage to the motor carrier and Trane within five days of shipment receipt.
3. Inspect all exterior components for concealed damage as soon as possible. Do not proceed with the installation of damaged equipment without prior approval of Trane.
4. Do not refuse delivery of damaged goods without prior authorization. Unauthorized refusal of the shipment will result in a restocking charge to the customer.
5. The ownership of the equipment is transferred to the consignee at point of shipment. Refusal of delivery may impede recovery of damages.
6. It is the consignee's responsibility to accept delivery of damaged goods unless permission to refuse delivery has been granted by Trane.

Inspection of Delivered Equipment

To report damage incurred in transit:

1. Inspect each piece of equipment for visible damage before accepting delivery. Check for torn pallets cartons, broken skids, bent metal and torn shrink wrap.
2. Verify the delivery driver records any damage on the bill of lading and completes a Carrier Inspection Report. Failure to comply may result in difficulties processing claims.
3. Inspect each piece of equipment for concealed damage before storage or as soon as possible after delivery.
4. For suspected concealed damage, ask the driver to wait until equipment inspection is completed. Concealed damage must be reported within five days of receipt of equipment.
5. If concealed damage is found, stop unpacking the shipment. Do not remove damaged material from the receiving location. Take photos of the damage. The owner must provide reasonable evidence that the damage did not occur after delivery.
6. Notify the carrier of the damage as soon as possible. Request an immediate joint inspection by the carrier and consignee. A determination of responsibility will be made, and the carrier will authorize repairs in the event of admission of fault.
7. Notify your local Trane sales office immediately. Trane will coordinate repairs with the owner and carrier. Do not attempt to make repairs locally without permission.

Warranty Issues

Trane is not responsible for damage or for filing damage claims. It is the customers responsibility to verify necessary short-term storage procedures have been completed and deviations are reported to Trane immediately.

Short Term Storage Requirements

For shorter storage periods (180 days or less), allow proper unit clearance to perform periodic inspections and maintenance. While the unit is in storage:

- Appropriate preparation and storage during extended periods of dormancy is essential to prevent the unit from sustaining damage or degradation due to inactivity and for efficient operation after installation.
- The unit must be covered with shrink wrap while in short-term storage.
- Units must be placed directly on level ground to prevent dirt and debris from entering under the unit.
- Avoid exposure to standing water.
- Every two weeks, rotate the fan and motor shaft 30 revolutions by hand. Check for free rotation.

Customer Responsibilities

- Customer must inspect the unit upon receipt. Visible damage to shrink wrap requires its removal for further inspection. Cover unit with a shrink wrap after inspection.
- Any damage identified during the initial inspection must be reported to Trane within 72 hours of discovery. Failure to do so may result in denial of the claim by Trane.
- Visible damage must be noted on the signed and dated bill of lading. The customer may request a carrier inspection by telephone or in person, but any such request must be confirmed in writing. It is recommended that the customer requests that the carrier inspect the damage within 72 hours of notification.
- If shrink wrap is damaged while in storage, shrink wrap must be replaced/repared before further transport.
- Failure to meet storage requirements will void the Trane warranty. Any component that is damaged or inoperable due to improper storage will void its warranty.

Storage Requirement Checklist

Table 10. Storage requirement checklist

Section	Inspection Item
On Arrival	☐ Inspect shrink wrap for visible damage (if applicable). ☐ Remove shrink wrap for internal inspection, if damaged. ☐ Note the visible damage on the signed and dated billing of lading. ☐ Report damage to Trane within 72 hours of discovery.
Storage Location	☐ Confirm solid, level foundation (gravel or asphalt preferred). ☐ Confirm the ground where the unit is placed is dry and free from vibration. ☐ Confirm temperature range: –20°F to 140°F (–29°C to 60°C) ☐ Inspect the unit for rust, corrosion, or moisture accumulation. ☐ Confirm the area is free of standing water.
Storage Environment and Pest Management	☐ Check for pest intrusion, nesting, or damage. ☐ Remove surrounding vegetation and sheltering materials. ☐ Inspect for rodent activity: droppings, nesting, or gnaw marks. ☐ Maintain cleanliness by cleaning debris and clutter. ☐ Apply deterrents: traps, repellents, or professional pest control services.
Component Readiness – Fans and Electronics	☐ Inspect power electronics for oxidation or condensation. ☐ Verify cables and cover glands are properly secured. ☐ Seal gaps around mains power conduit at input plate.
After Inspection	☐ Cover unit with shrink wrap (if removal was necessary).
Pre-Start-Up	☐ See Table 8, p. 17 .

Electrical Component Protection

Keep all electrical panels fully closed and latched. Electrical components should not be stored near strong electromagnetic fields or potential sources of contamination. The unit should not be energized while it is in storage.

Storage Environment

The unit and field installed accessories must be protected from the elements. A controlled indoor environment is recommended for proper storage.

It is the customers' responsibility to verify the storage environment for the unit is maintained in good standing. This includes, but is not limited to:

- Confirming the area is free from pests such as rodents and insects that may cause damage.
- Confirming the storage location is free from damaging vegetation, excessive moisture, and any other environmental factors that could negatively impact the condition and functionality of the unit.

Note: *The customer is liable for any damage or deterioration resulting from inadequate storage conditions.*

Storage Limitation and Warranty Disclaimer

Storage for more than 180 days from the date of manufacture is not recommended or supported. Any storage period exceeding this limit will automatically void all warranties associated with the VCDC. Follow all storage requirements to maintain the unit's integrity and performance. Failure to comply with these requirements will void any and all warranties, expressed or implied, and Trane will not be responsible for defects, damage, or malfunctions resulting from extended storage.

For optimal performance and to maintain warranty coverage, the unit must be installed and fully operational within the specified 180 day period.

Handling

Packaging and Shipping

As standard, the unit is shipped either as a complete unit or as individual sections for field assembly. All sections are stretch wrapped or shrink wrapped before shipment, and all factory applied protective materials should remain in place until the equipment reaches its final destination. Any intermediate transport from a warehouse to the job site must be carried out in an enclosed truck.

Smaller components and hardware may be shipped separately or placed inside the unit. This hardware is typically packaged in a plastic envelope or cardboard box and is usually located inside the coil section.

Positioning and Handling

Place the unit on a level and stable surface capable of supporting its weight. Do not stack the equipment or place heavy objects on top of the unit or its packaging. When moving the unit, use approved lifting methods such as the forklift slots or lifting lugs, if provided.

Lifting and Rigging

General Lifting Considerations

Trane does not provide lifting or rigging arrangements. The unit must be handled and moved to its designated location

by qualified, experienced personnel using proper rigging methods and equipment.

A forklift or a crane with slings and a spreader bar may be used to lift or transport individual sections or the complete unit, provided the method is suitable for the weight of the unit or section. Multiple skates may also be used to move the unit or individual sections.

⚠ WARNING

Risk of Unit Dropping!

Failure to follow instructions below could result in death or serious injury, and equipment damage. Inspect the suspension and/or support system to ensure all fasteners are tight and the unit is secure before working underneath the unit.

⚠ WARNING

Improper Unit Lift!

Failure to properly lift unit in a **LEVEL** position could result in unit dropping and possibly crushing operator/technician which could result in death or serious injury, and equipment or property-only damage.

Test lift unit approximately 24 inches (61 cm) to verify proper center of gravity lift point. To avoid dropping of unit, reposition lifting point if unit is not level.

NOTICE

Equipment Damage!

Premature skid removal could result in equipment damage.

Keep skid in place until unit is ready to set. Do not move the unit or subassembly without the skid in place as shipped from the factory.

1. Before lifting the unit, identify center of gravity indicator to verify safe handling. Internal component placement may create uneven weight distribution, with heavier loads near the coil and fan sections. See the unit submittals for section weights. Test the unit for proper balance before lifting.
2. See the unit submittal drawings to confirm proper section placement. Rig each full unit or individual section in its shipped configuration, and avoid bolting sections together prior to rigging.
3. Lift each section individually, using all provided lifting lugs.
 - a. Use proper rigging — straps, slings, spreader bars, or lifting lugs — when hoisting the unit to verify safety.
 - b. Make the loop of the sling parallel to the direction of airflow whenever possible.
 - c. Every cable used for lifting must be able to carry the unit or sectional weight.

Important: Avoid lifting in windy conditions. Verify personnel are stationed on the ground to guide the operator.

4. Clear all shipping supports and crating from section or unit faces for proper fit up and sealing, and dispose of them properly.

⚠ WARNING

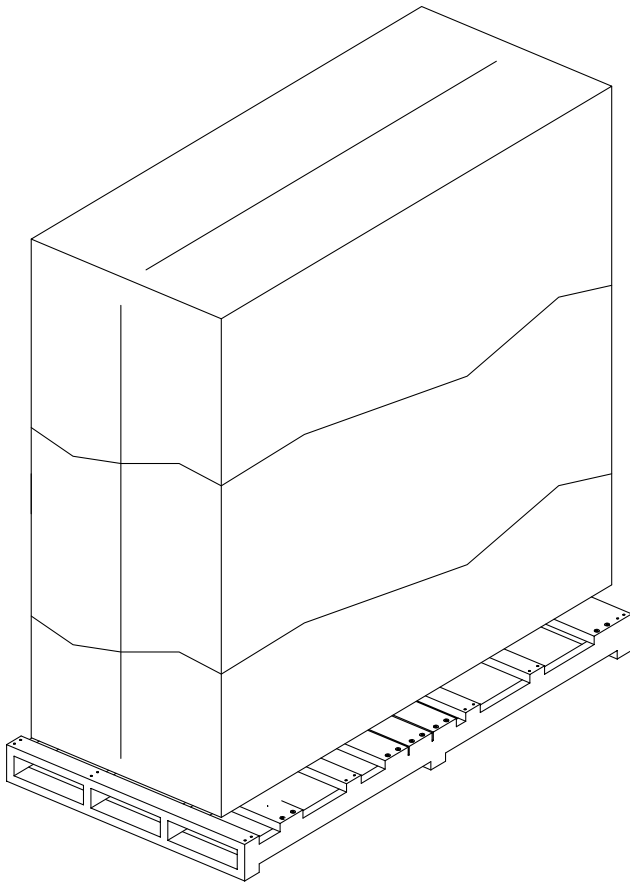
Heavy Objects!

Failure to follow instructions below or properly lift unit could result in unit dropping and possibly crushing operator/technician which could result in death or serious injury, and equipment or property-only damage.

- Equipment is top heavy. Use caution when lifting/ moving equipment to prevent unit from tipping.
- Ensure that all the lifting equipment used is properly rated for the weight of the unit being lifted. Each of the cables (chains or slings), hooks, and shackles used to lift the unit must be capable of supporting the entire weight of the unit. Lifting cables (chains or slings) may not be of the same length. Adjust as necessary for even unit lift.
- The high center of gravity on this unit requires the use of an anti-rolling cable (chain or sling). To prevent unit from rolling, attach cable (chain or sling) with no tension and minimal slack around compressor suction pipe as shown.
- Do not use forklift to move or lift unit unless unit has lifting base with base rail forklifting option.

Removing the Unit from the Pallet

1. Place the unit on a level surface with adequate clearance for safe access and handling.
2. Remove all exterior stretch wrap, shipping straps, and protective packaging from the unit.

Figure 25. Unit on pallet


3. Remove any shipping supports and brackets that secure the unit to the pallet.

Note: See the appropriate build group assembly procedure for instructions on removing the shipping support brackets and stacked brackets.

4. Verify all loose components, accessories, and panels are secured before lifting or moving the unit.
5. Use an appropriate lifting method, such as a forklift or crane with straps and spreader bar, based on the unit weight and handling requirements. Use caution to avoid damaging the unit when lifting it with straps or chains.
6. Lift the unit carefully from the pallet, ensuring the unit remains stable and does not shift during handling.

Forklift Move

1. Position the forklift at either the front or rear side of the unit.
2. Verify the forklift tines extend beyond the opposite side of the unit.
3. Use the center-of-gravity indicator on the unit panels to locate the forklift entry points.
4. Position the tines equally on either side of the center-of-gravity indicator.

Figure 26. Forklift placement


Rigging

1. Attach the straps or slings to the lifting bracket lugs provided on the coil section of the unit.
2. Use the appropriate hook, shackle, and strap for lifting the unit.

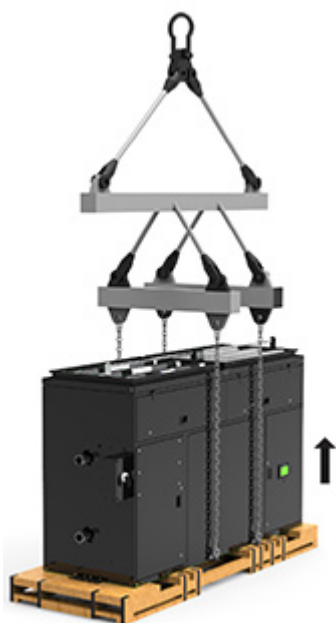
Note: Use all lifting lugs provided. See submittal documentation for unit lifting lug size.

3. Use spreader bar option to for unit protection.

4. If the lifting lugs are not used, locate the strap or sling positions using the center-of-gravity indicator on the unit panels. Position the straps equally on either side of the center of gravity.

Note: See the appropriate build group assembly procedure for shipping support and stacked bracket removal instructions.

Figure 27. Rigging



5. The following image shows the filter section removal and assembly over the coil section. Use caution when lifting the unit with straps or chains to avoid damage.

Figure 28. Filter section removal and assembly over coil



6. Move the unit to the designated installation location and place it on a level surface.
7. Inspect the unit after pallet removal to confirm that no damage occurred during handling.
8. Dispose of the pallet, stacking components, tie-down brackets, and shipping hardware in accordance with site requirements.

Shipping Configuration

Units are shipped as follows:

- Single-build-group: Fan, coil, and filter sections are shipped as a single entity on one pallet.
- 2-build group:
 - Coil and filter sections are shipped as a single entity on one pallet.
 - Fan section is shipped on a separate pallet.
- 3-build group:
 - Filter Section and Fan Section are shipped together on one pallet.
 - Coil Section is shipped on a separate pallet.

Clearance

1. Before moving the unit or any individual section, verify that the width and height of the unit/section do not exceed the available mechanical room entrance and passage clearance.
2. The customer or assembly technician is responsible for verifying mechanical room dimensions and selecting the most suitable installation method in the field.

Two methods of field assembly are possible depending on the mechanical room clearance:

- Assemble all sections outside the mechanical room and move the fully assembled unit to the designated location.
- Move each section to the designated location individually and assemble the unit inside the mechanical room. In this case, the technician must verify proper rigging arrangements are available inside the mechanical room to safely lift and stack all sections.

For either method, follow the steps in [“Assembly Procedure,” p. 25.](#)

Assembly Procedure

Important:

- *For all build groups, the technician or customer must determine whether the pallets will be removed outside the mechanical room or after all sections have been moved to the designated location, based on the available clearance along the mechanical room access passage. See [“Removing the Unit from the Pallet,” p. 23.](#)*
- *Perform Factory and field component assembly in the designated installation area or outside the mechanical room based on the available room access through passage. See [“Field Installation Requirements for Components,” p. 34.](#)*

Single Build Group

For a **Single-build-group unit**, follow the assembly and installation instructions for pallet removal and the components required for field installation, based on the unit configuration, whether the work shall be performed inside or outside the mechanical room.

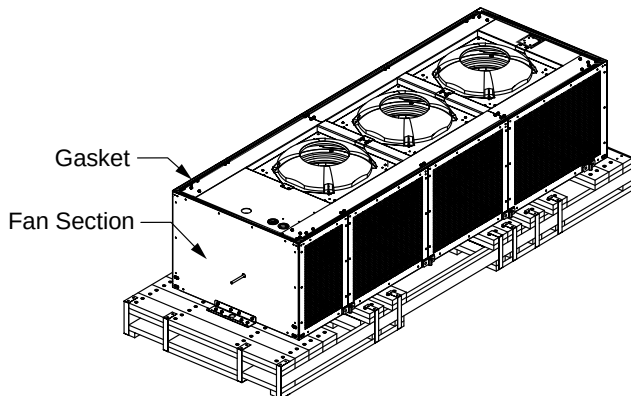
See “[Removing the Unit from the Pallet,](#)” p. 23 and “[Field Installation Requirements for Components,](#)” p. 34.

2-Build Group

The coil and filter sections are shipped **as a single entity** on one pallet. The **fan section** is shipped on a separate pallet.

1. Remove the exterior stretch-wrap packaging from the unit, as shown in the “[Removing the Unit from the Pallet,](#)” p. 23.

Figure 29. 2-build group on pallet



2. Verify the gasket (0.188T x 0.625W) is in place on the fan section mating surface to provide an airtight seal between sections.

Note: The gasket is installed at the factory.

3. Remove the tie-down bracket from the coil section.
4. Reinstall the 5/16-inch fasteners in the original coil section locations.

Figure 30. 2-build coil and filter section on pallet

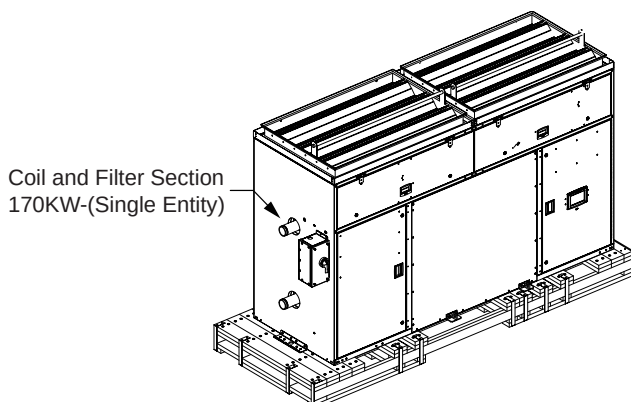


Figure 31. Coil and filter section tie-down bracket location

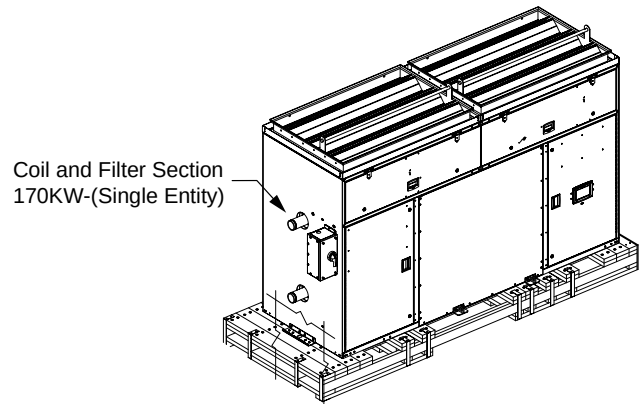


Figure 32. Tie-down bracket

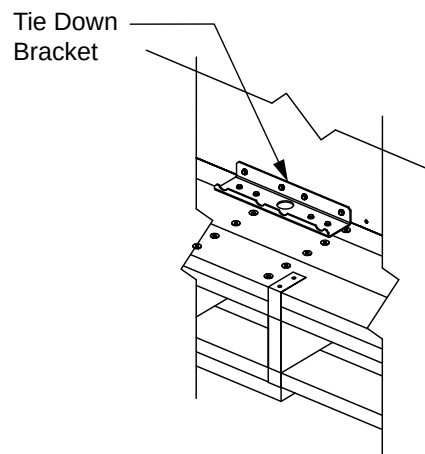


Figure 33. Coil and filter section fasteners location

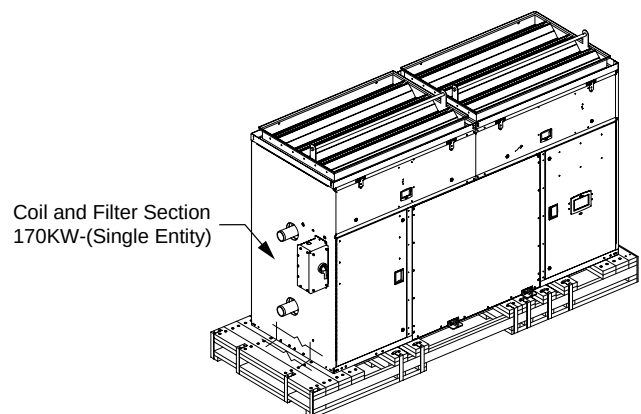
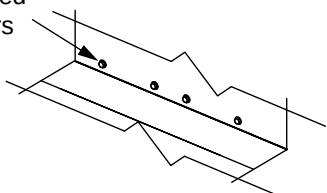
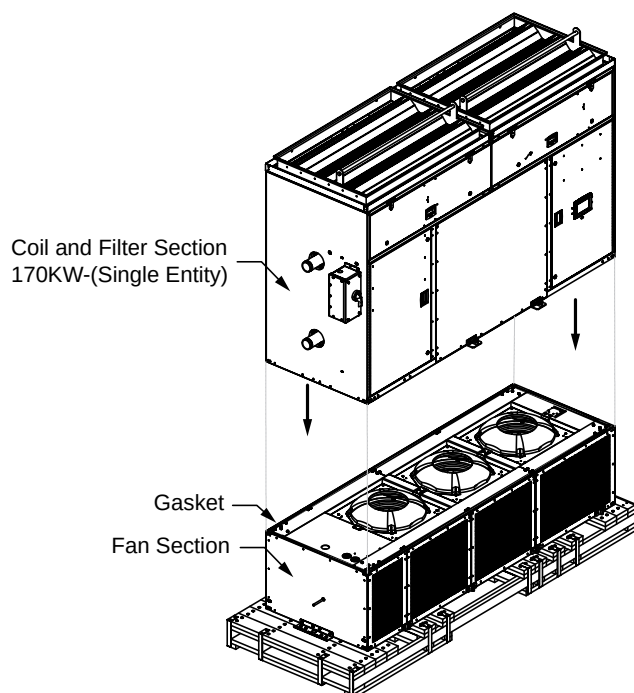


Figure 34. Reinstalled fasteners

Reinstalled
Fasteners

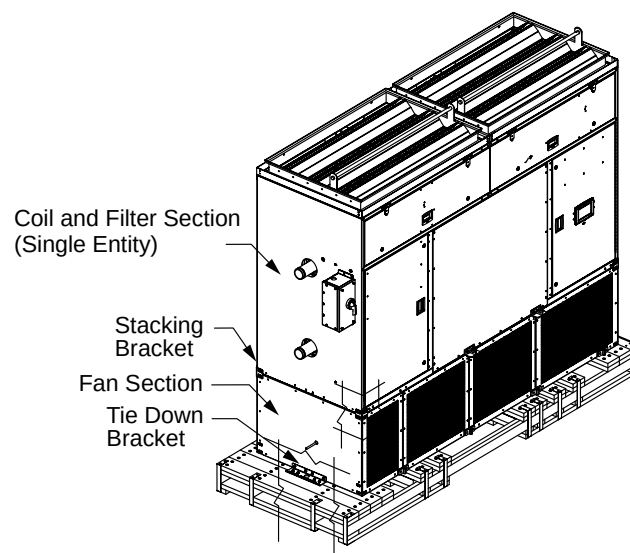


5. The coil and filter sections may be lifted as a single entity using a forklift or a crane with straps and spreader bar. Use the factory-provided lifting lugs on the coil section as shown in the applicable figure. See [“Removing the Unit from the Pallet,” p. 23.](#)
6. Verify the nameplate tag details on the coil and filter sections match those on the fan section nameplate tag details.
7. Assemble and orient the sections so the nameplates on both sections are on the same side.
8. Verify wiring harnesses are not pinched or damaged during placement of the coil and filter section with the fan section.
9. Lift and carefully lower the assembled coil and filter sections onto the fan section and align properly.

Figure 35. Stacking coil and filter sections onto fan section


10. Install the stacking brackets at all section corners and secure them using the provided 1/4-inch painted screws as shown in the following figure. Remove the Filter section tie-down bracket from the unit if required.

Note: Stacking brackets and painted screws are provided in the ship-with kit located in the coil section. Use the 1/4-inch longer painted screws on front and rear faces of the unit. Use the shorter 1/4-inch painted screws on the side face of the unit.

Figure 36. Stacking bracket installation


11. Remove the tie-down bracket from the fan section to prepare for unit move.
12. Reinstall the 5/16-inch fasteners in the original fan section locations.

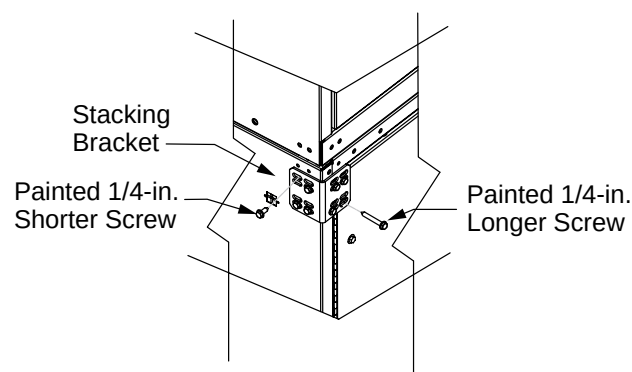
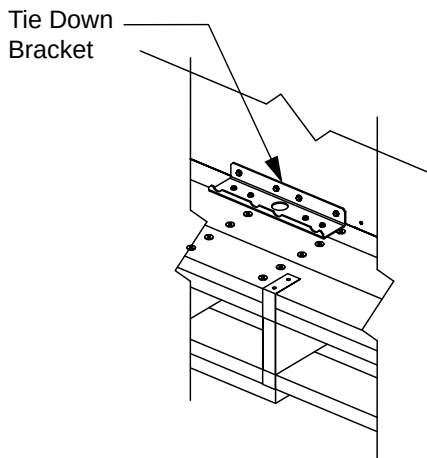
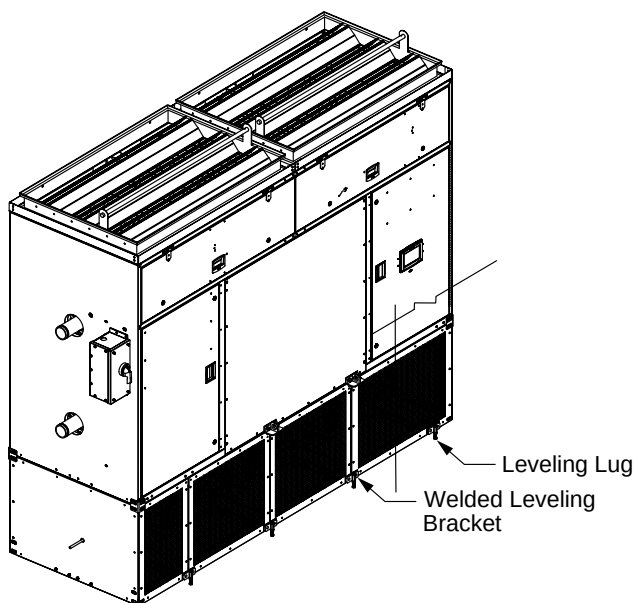
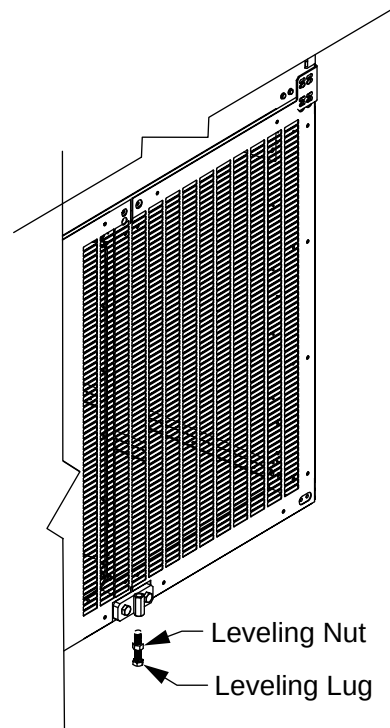
Figure 37. Stacking bracket and painted screw installation


Figure 38. Tie-down bracket


13. Verify all brackets and fasteners are properly installed and tightened.
14. Move the unit to the designated location. Implement the lifting lug installation procedure before conducting the concrete slab inspection to verify the unit is level.

Figure 39. Leveling lugs

Figure 40. Leveling nut and lug


Note: Figure shows the 170kW unit with left-hand connection. It is also applicable to other unit sizes with right-hand connection for the same build group.

3-Build Group

The filter and fan sections are shipped together on one pallet, while the coil section is shipped on a separate pallet.

1. Remove the exterior stretch-wrap packaging from the unit, as shown in ["Removing the Unit from the Pallet," p. 23.](#)

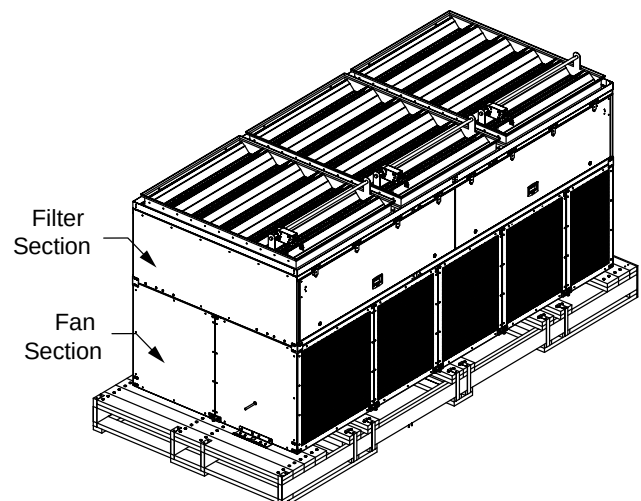
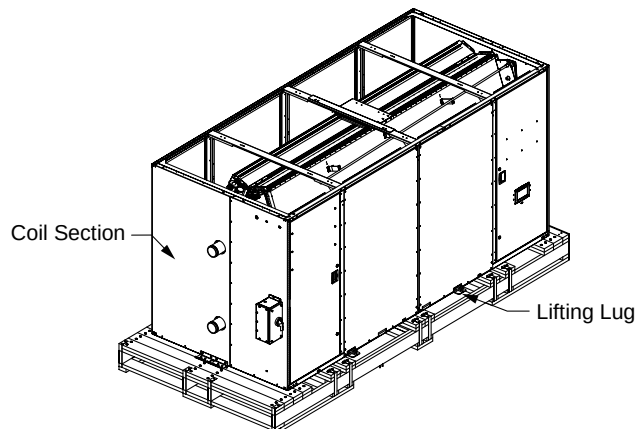
Figure 41. 3-build group filter and fan sections


Figure 42. 3-build group coil section


2. Remove and reattach tie-down bracket to filter section
 - a. Remove the four tie-down brackets from the fan section.
 - b. Reinstall the 5/16-inch fasteners in their original locations on the fan section.
 - c. Remove the fasteners from the tie-down locations on the filter section.
 - d. Attach the tie-down brackets at the lifting locations using the same fasteners, as shown in the figure. See the following figure for tie-down bracket orientation.

Note: No separate tie-down brackets or fasteners are provided for the filter section.

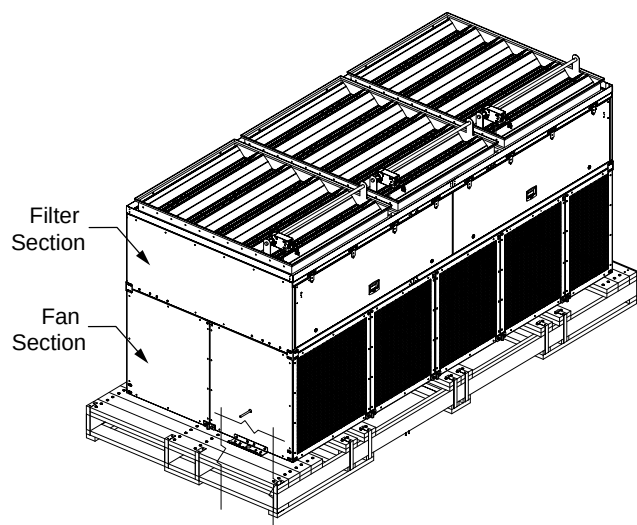
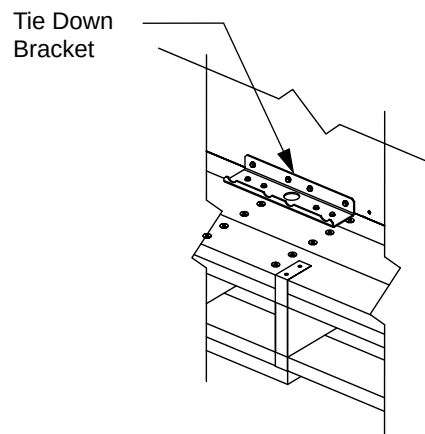
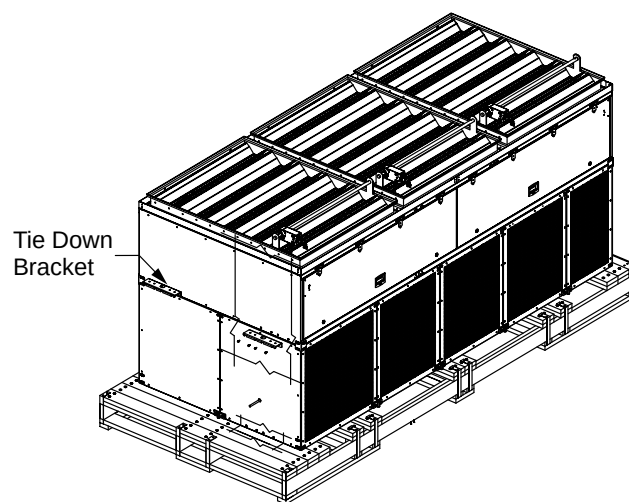
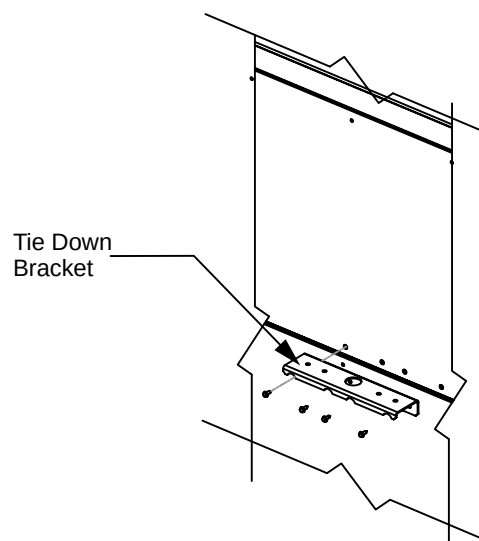
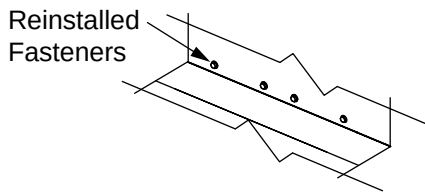
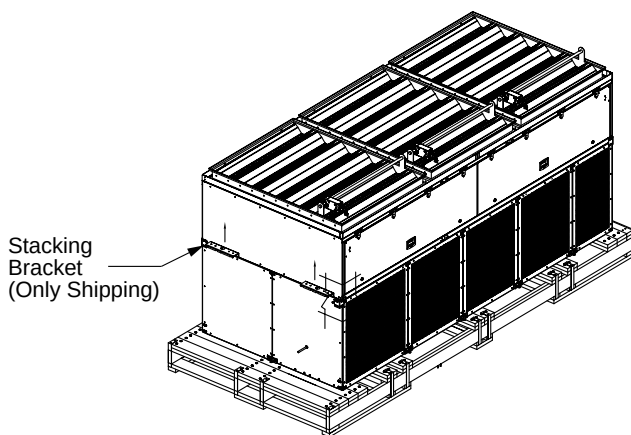
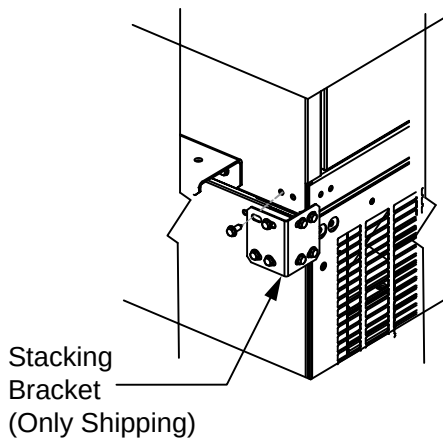
Figure 43. Fan section tie-down brackets location

Figure 44. Tie-down bracket

Figure 45. Tie-down bracket filter location

Figure 46. Tie-down bracket reinstallation


Figure 47. Reinstalled fasteners


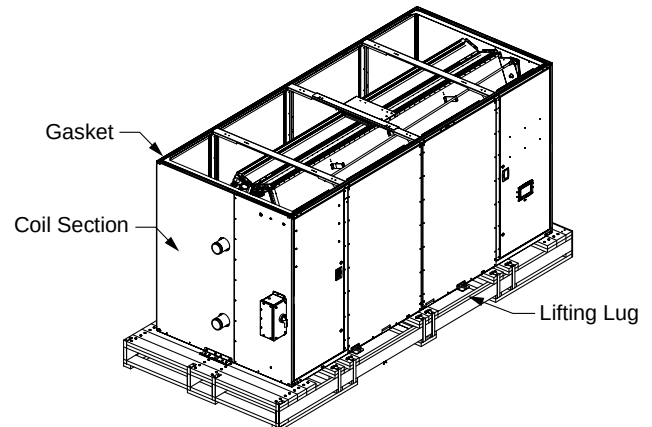
3. Remove the stacking brackets from all four sides of the unit.

Note: The stacking brackets are provided for shipping purposes only and are not required after delivery.

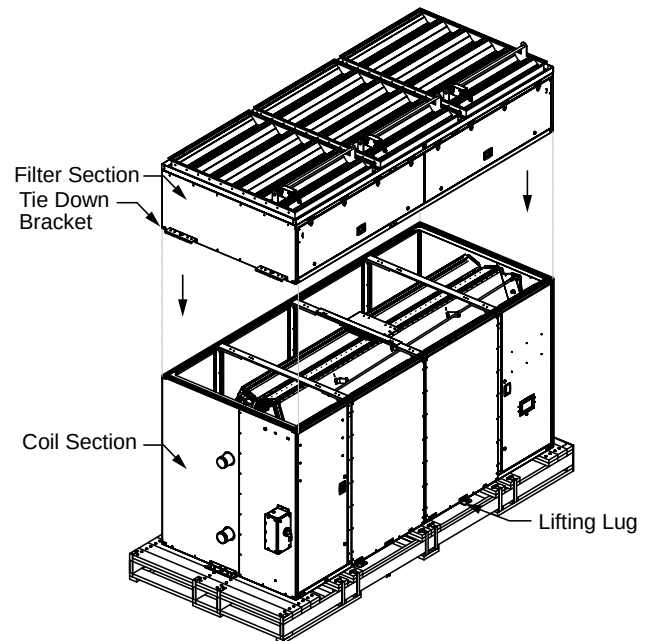
Figure 48. Stacking bracket location (shipping only)

Figure 49. Stacking bracket


4. Verify the gasket (0.188 T x 0.625 W) is in place on the coil section mating surface to provide an airtight seal between sections.

Note: The gasket is installed at the factory.

Figure 50. Coil section gasket


5. Verify the nameplate tag details on the filter sections match those on the coil section nameplate tag details.
6. Assemble and orient the sections so the nameplates on each section are on the same side.
7. Verify that filter section installation on coil section does not interfere with or damage wire harnesses.

Figure 51. Filter section installation onto coil section


8. Lift the filter section using the tie-down brackets attached to its left and right sides.

Note: When lifting the filter section, use a crane with straps and spreader bar to prevent damage to the unit. See [“Removing the Unit from the Pallet,” p. 23.](#)

9. Lift and lower the filter section onto the coil section and align the sections properly.

10. Install the stacking brackets at all section corners and secure them using the provided in 1/4-inch painted screws as shown in Figure 59, p. 33.

11. Remove the filter section tie-down bracket from the unit, if required.

Notes:

- Locate the stacking brackets with painted screws in the coil section ship-with kit.
- Use the 1/4-inch longer painted screws from front and back face of the unit.
- Use 1/4 shorter painted screws from the side face of the unit while assembling stacking bracket at all four corners.

Figure 52. Stacking bracket locations

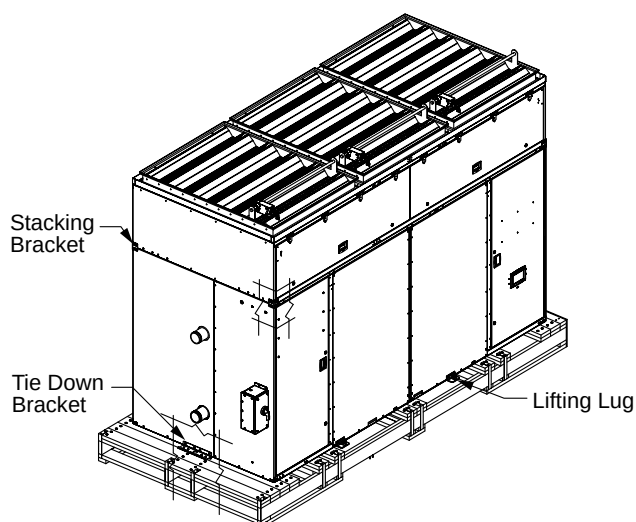


Figure 53. Tie-down bracket

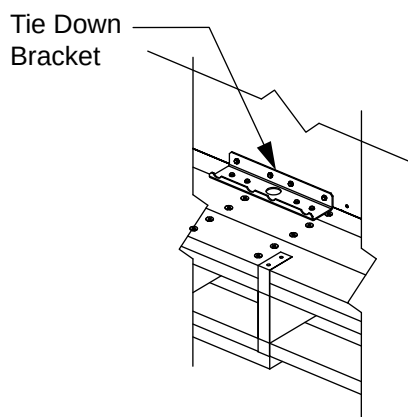
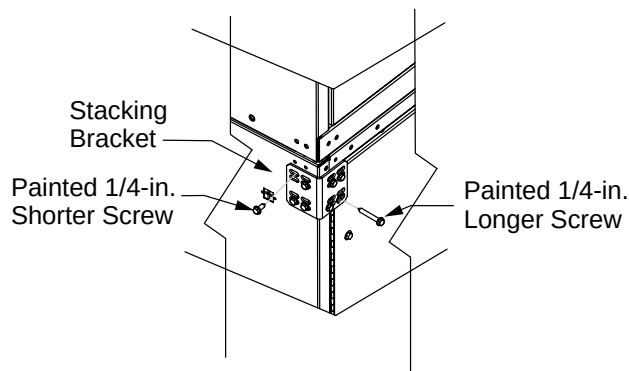


Figure 54. Stacking bracket and painted screw installation



12. Verify all brackets and fasteners are properly installed and tightened.

13. Remove the tie-down bracket from the coil section.

14. Reinstall the 5/16-inch fasteners in the original coil section locations.

15. Verify the gasket is in place on the fan section surface.

Note: The gasket is installed at the factory.

Figure 55. Fan section gasket

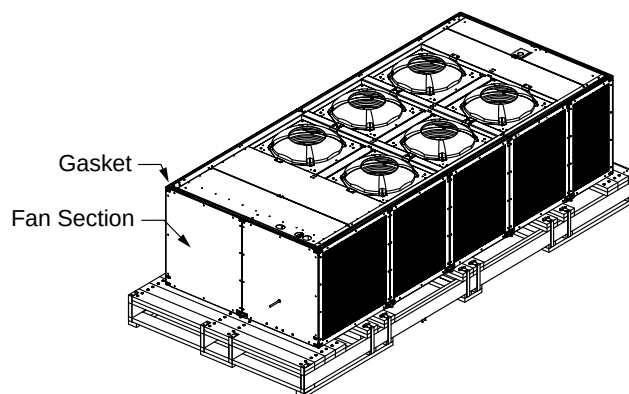
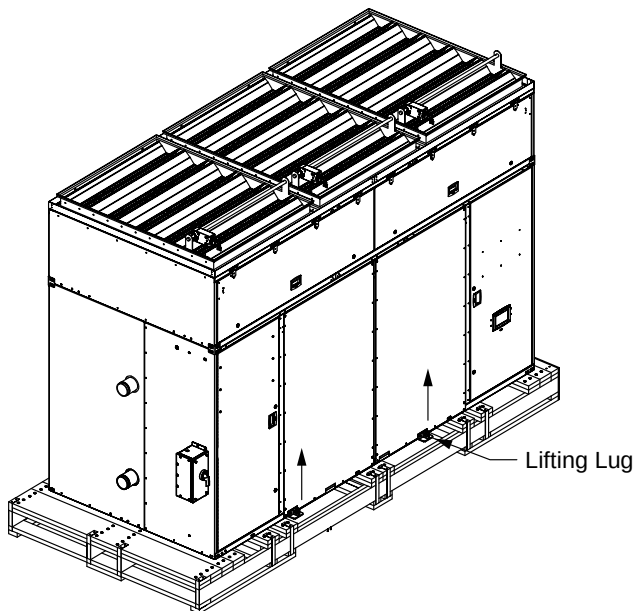
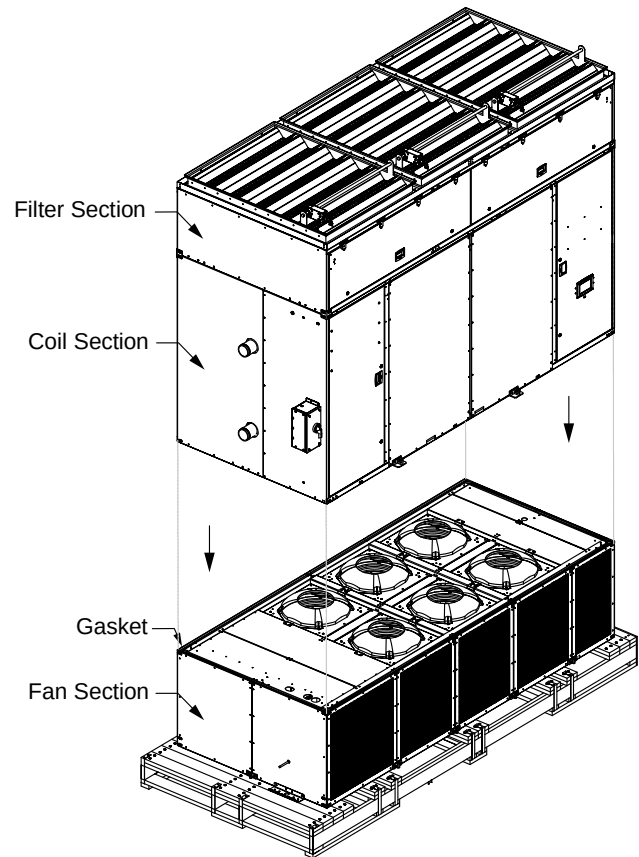


Figure 56. Lifting lugs


16. The coil section may be lifted using a forklift or a crane with straps and a spreader bar using the factory-provided lifting lugs on the coil section as shown in the following figure.
17. Remove the pallet from the unit. See [“Removing the Unit from the Pallet,”](#) p. 23.
18. Verify the nameplate tag details match the fan section and that both are positioned on the same side.
19. Verify that stacking operation does not interfere with or damage wire harnesses.
20. Lift and carefully lower the assembled coil and filter sections onto the fan section and align the sections properly.

Figure 57. Filter and coil section installation onto fan section


21. Install the stacking brackets at all section corners and secure them using the provided 1/4-inch painted screws as shown in [Figure 59, p. 33](#).
22. Remove the filter section tie-down bracket from the unit, if required.

Note: Locate the stacking brackets with painted screws in the coil section ship-with kit. Use the 1/4-inch longer painted screws on front and back face of the unit. Use 1/4 shorter on the sides.

23. Remove the tie-down bracket from the fan section.
24. Reinstall the 5/16-inch fasteners in the original fan section locations.

Figure 58. Assembled unit

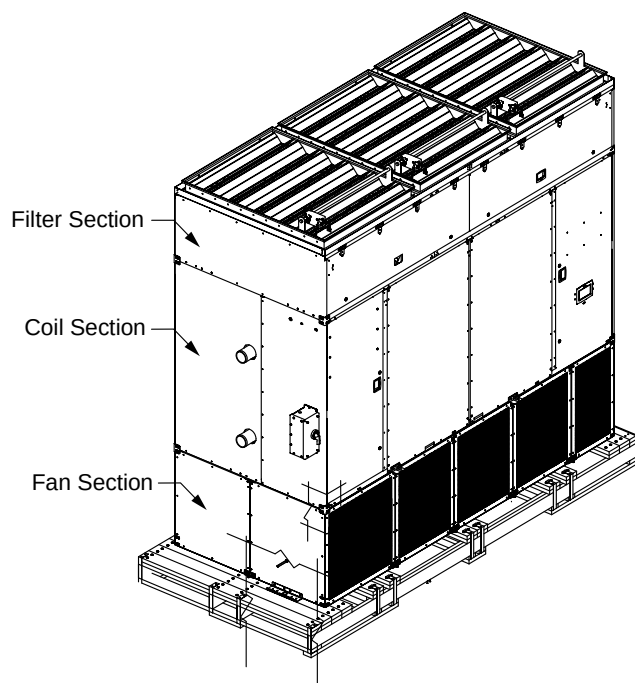


Figure 59. Stacking bracket and painted screw installation

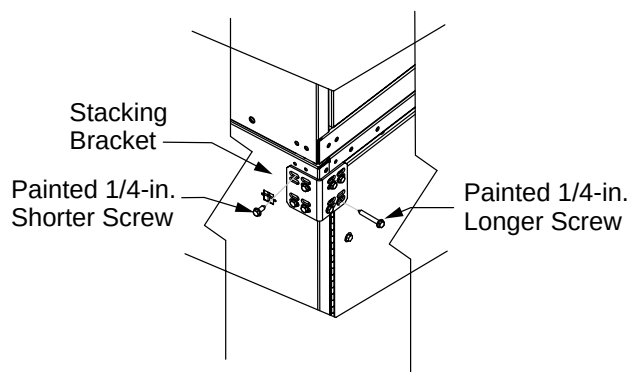
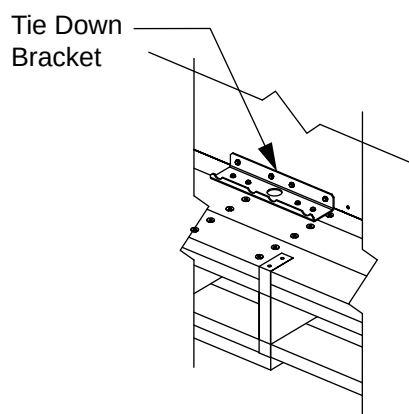


Figure 60. Tie-down bracket



25. Verify all brackets and fasteners are properly installed and tightened.

26. Move the unit to the designated location. Implement the lifting lug installation procedure before conducting the concrete slab inspection to verify the unit is level.

Figure 61. Leveling lugs

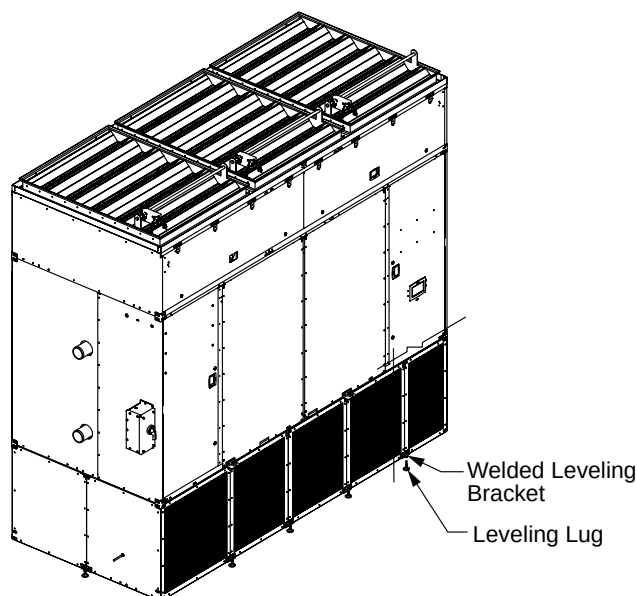
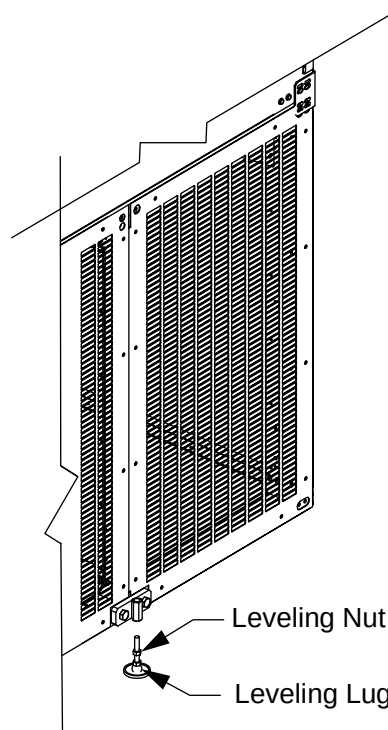


Figure 62. Leveling nut and lug



Note: Figure shows the 340 kW unit with left-hand connection. It is also applicable to other unit sizes with right-hand connection for the same build group.

Field Installation Requirements for Components

Condensate Pump with Waterless Air Trapping

When the unit is equipped with a condensate pump, field installation of the hose and external drain line connection is required.

This field installation is required only when the unit is shipped in 2 or 3 build Group, with the fan and coil sections shipped separately. If the unit is shipped fully assembled with a condensate pump, no field installation is required.

After all unit sections have been stacked and assembled, connect the flexible hose between the condensate pump PVC pipe and the coil trap pipe. Secure the hose with the hose clip as shown in the figure.

At the factory, the drain trap extension pipe attached to the flexible elbow is raised inside the coil section by lifting the channel and securing it with screws to provide bottom clearance for shipping.

Figure 63. Condensate pump

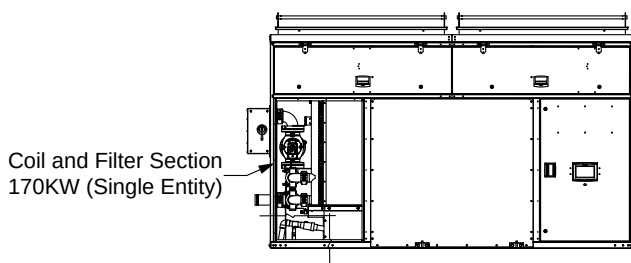
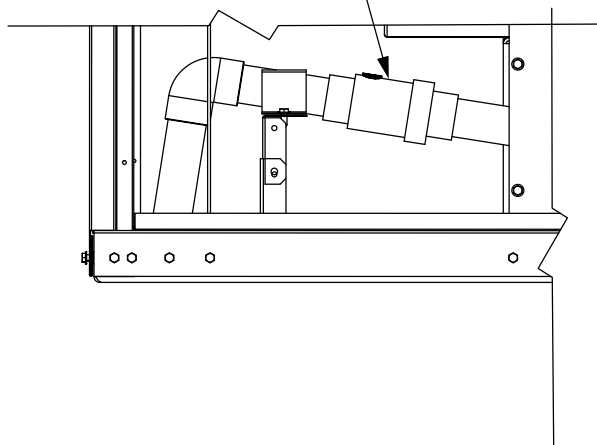


Figure 64. Drain trap extended pipe

Drain Trap Extended
Pipe Positions (Shipping)



Once the section arrives at the job site and is ready to be stacked with the fan section.

1. Remove the screws securing the channel that supports the extension pipe.

2. Lower the pipe toward the fan section.
3. Reinstall the channel using the same fasteners, as shown.

Figure 65. Coil and filter section

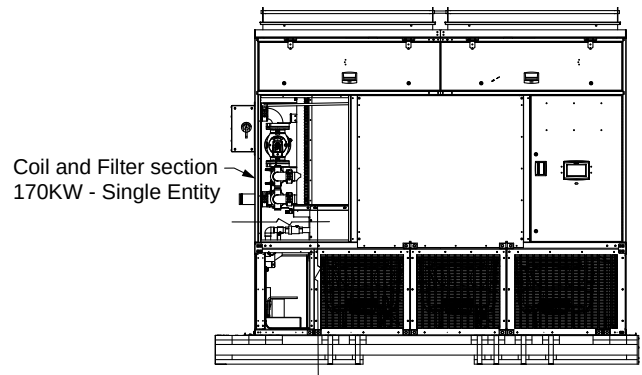


Figure 66. Drain trap pipe position

Screws for Sliding the Channel

Drain Trap Extended
Pipe Position at Job site

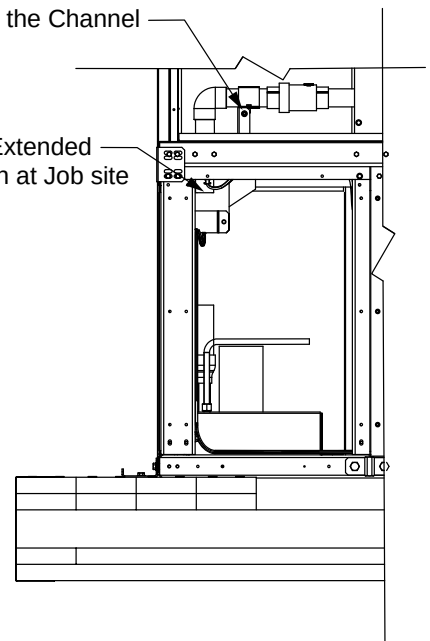
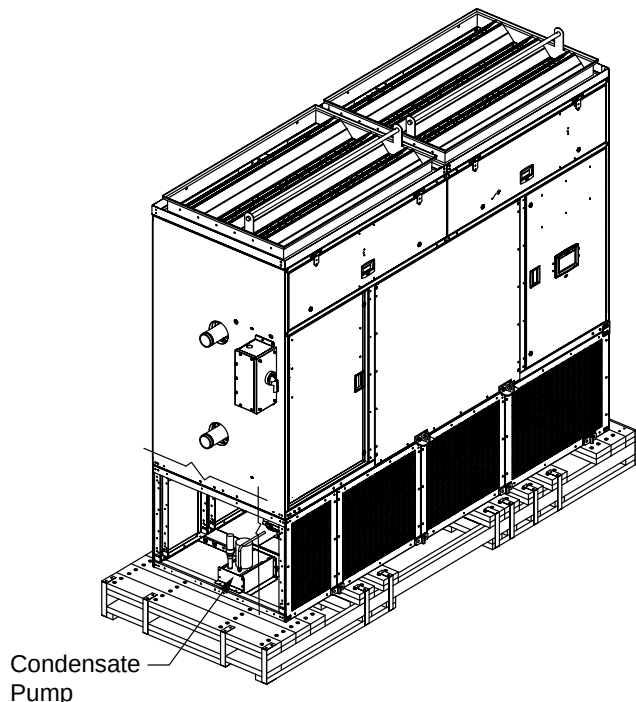
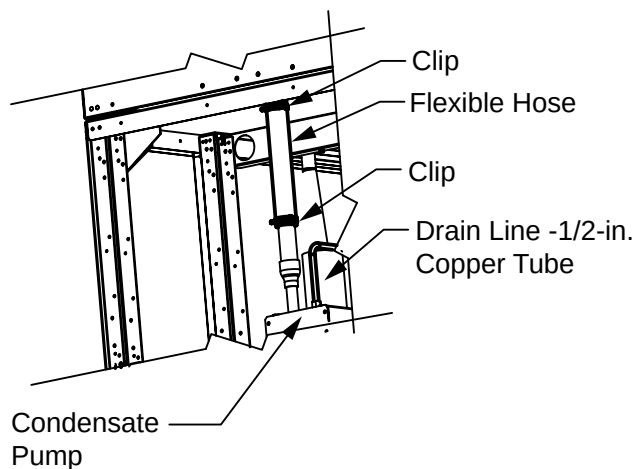
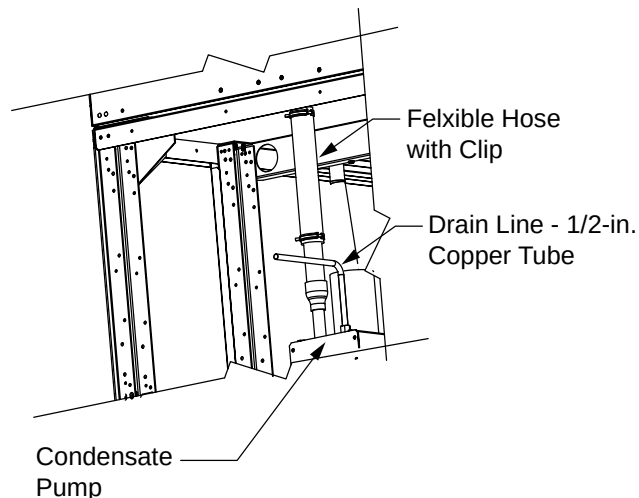
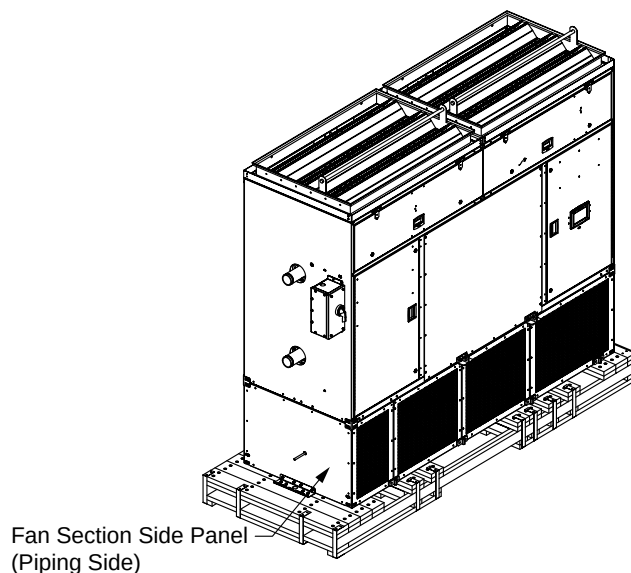


Figure 67. Condensate pump location


4. Remove the fan section side panel and connect the flexible hose.
5. Rotate the condensate pump copper pipe as shown in the figure.

Figure 68. Condensate pump

Figure 69. Condensate pump drain line


For shipment, the condensate pump 1/2-inch copper tube is rotated inward and positioned inside the fan section. In the field, rotate the copper tube outward toward the piping connection location and secure it in the required position as shown in the figure.

Figure 70. Shipping configuration fan section

Notes:

- The flexible hose and clips are attached to the PVC piping, which is part of the condensate pump.
- The figure shows the 170 kW unit with a left-hand connection and also applies to other unit sizes with a right-hand connection.

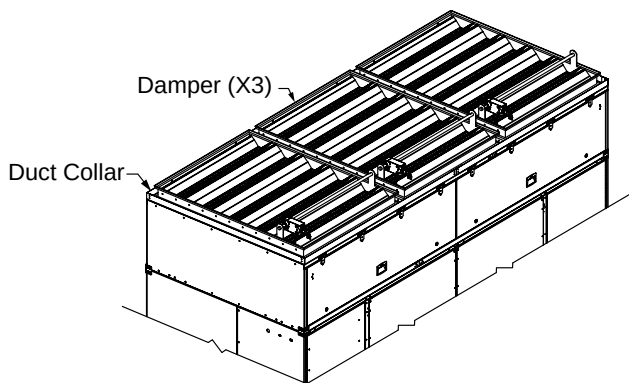
Damper / Duct Collar Removal and Reinstallation to Facilitate Unit Placement

The damper and duct collar are factory-installed. If either component interferes with moving the unit into the installation location, follow the procedure below.

Note: The duct collar is located between the damper and the unit.

1. Prior to moving the unit, verify mechanical room entrance height can accommodate and verify adequate clearance for the unit with the damper/duct collar installed.
2. If the entrance opening is sufficient for the unit with the damper and duct collar installed, move the unit to its operating location with both components in place.
3. If the entrance opening is not sufficient for the unit with the damper and duct collar installed, remove the components as follows:
 - a. Disconnect and unplug the actuator harness from the damper assembly.
 - b. Remove the damper/duct collar attachment screws.
 - c. Retain all screws for reinstallation.
 - d. Move the unit to the final installation location.
 - e. After the unit is in position, reinstall the duct collar, then assemble the damper using the retained screws.

Figure 71. Damper and duct collar locations



Note: Figure 71, p. 36 shows the 340 KW size. The same procedure applies to other layout sizes and right-hand side units.

Figure 72. Damper removal

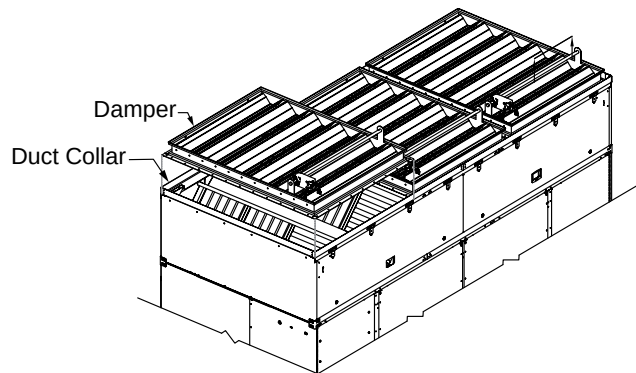


Figure 73. Duct collar cross section

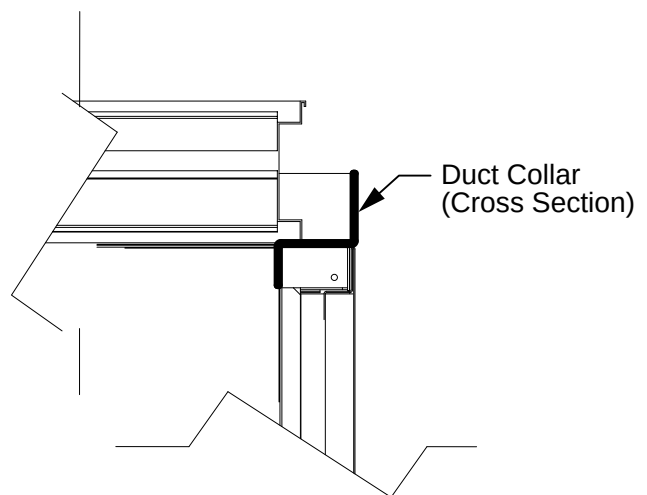
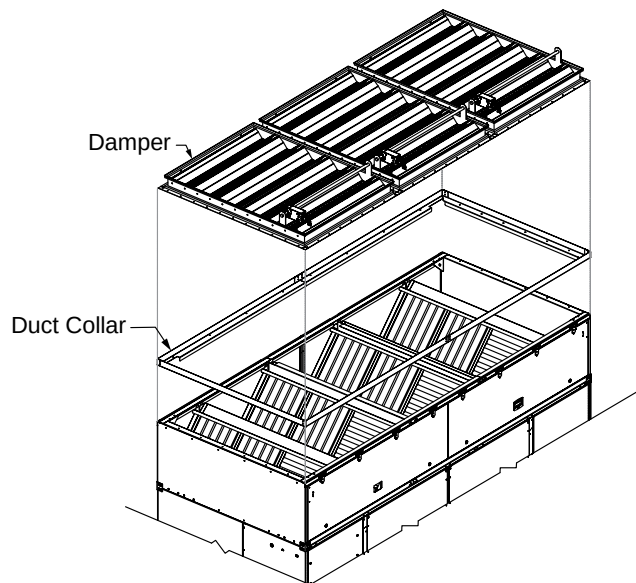


Figure 74. Duct collar removal



Unit Leveling

A factory-installed welded leveling bracket assembly is provided on the unit. Field installation is limited to the leveling legs, which are used to adjust unit height up to a maximum of 2-inches.

Leveling Lug Installation

1. Inspect the concrete floor at the installation location and verify that the surface is level.
2. If necessary, make minor adjustments to the leveling feet to compensate for significant floor variation.
3. Before placing the unit, tighten the leveling bolts securely.

Figure 75. Level lug and bracket

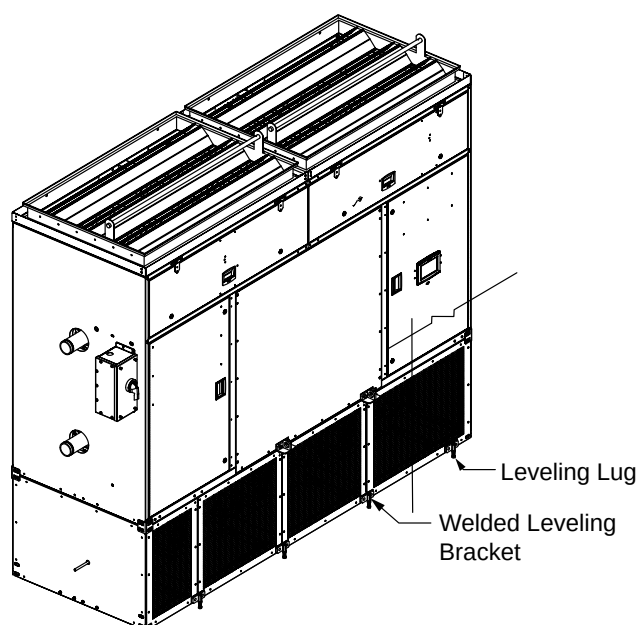
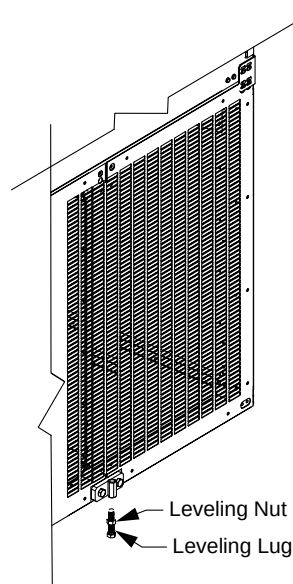


Figure 76. Level lug and nut



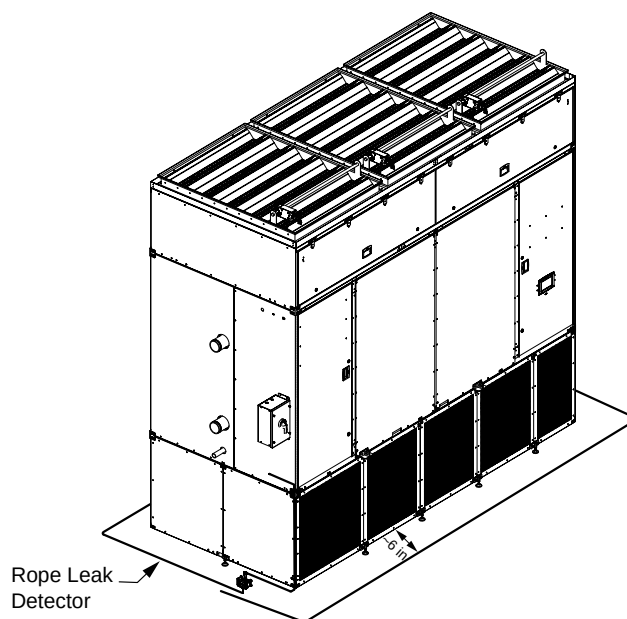
Note: *Figure 76, p. 37 shows the 340 kW layout. The same procedure applies to all other layout sizes.*

Rope Leak Detector

Place the rope leak detector on the floor around the unit, approximately six inches from the unit edge. Verify the cable does not catch on the ladder during service and maintenance.

Note: *Figure 77, p. 37 shows the 340 kW layout. The same procedure applies to all other layout sizes.*

Figure 77. Rope leak detector



Lifting Lug Removal and Reinstallation

Factory-installed lifting lug brackets are located on the unit coil section. If the unit or coil section width (X) interferes with mechanical room entrance clearance or along the access path:

1. Remove the lifting lug brackets and fasteners.
2. Move the section or unit to the designated assembly area.
3. Reinstall the lifting lug brackets and fasteners.

Figure 78. Unit or coil section width

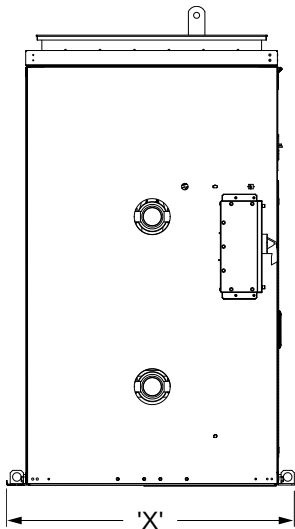


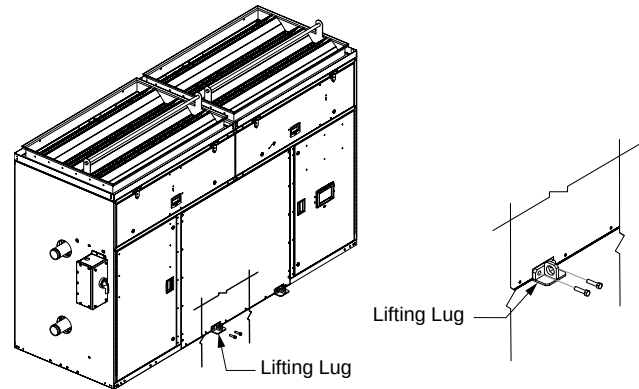
Table 11. Unit width

Model Number	Width X (inch)
VCDC060	44.75
VCDC080	44.75
VCDC115	44.75
VCDC170	48.00
VCDC215	53.00

Table 11. Unit width (continued)

Model Number	Width X (inch)
VCDC240	74.00
VCDC340	74.00

Figure 79. Lifting lug



Note: *Figure 79, p. 38 show the 340KW size. The same procedure applies to other layout sizes and right-hand side units.*

Unit with Field-Installed Ducts

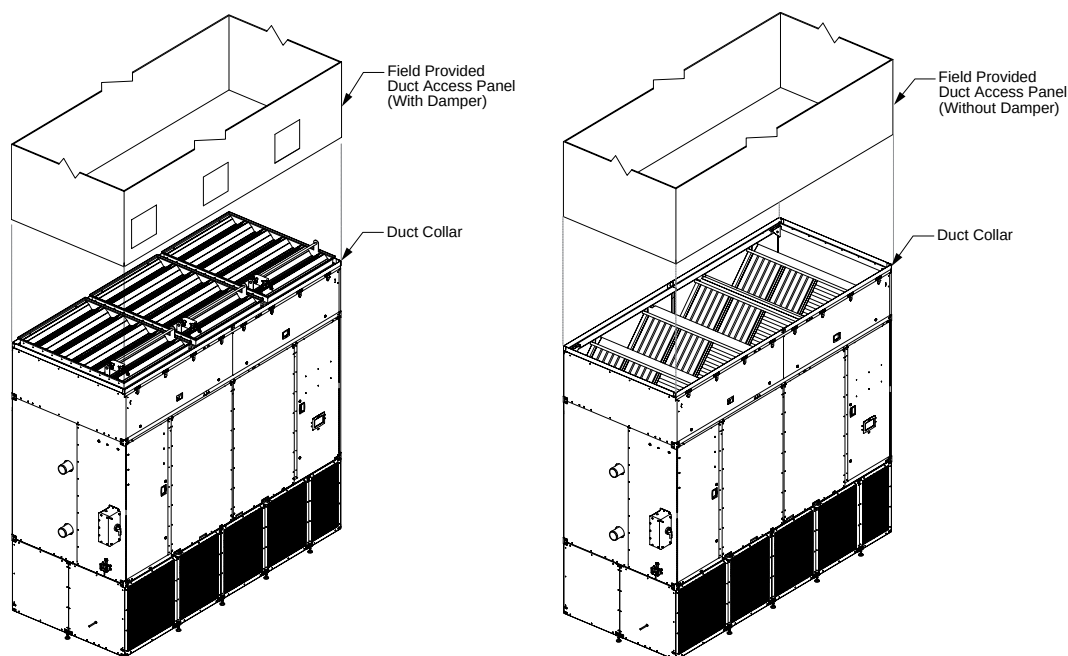
A field-supplied duct access panel is required when the unit is connected to ductwork. If a return damper is provided, include an additional access panel in the ductwork to allow access to the actuator.

See “[Actuator Access Panel Dimensions](#),” p. 17 for cutout details for various unit sizes.

The damper and duct collar are factory-installed. If the damper or duct collar is removed to provide door-access clearance:

1. Follow the procedure in “[Damper / Duct Collar Removal and Reinstallation to Facilitate Unit Placement](#),” p. 36
2. After the damper or duct collar is reinstalled, follow the duct connection procedure.

Figure 80. Field-installed ducts



Note: *Figure 80, p. 39 shows the 340KW size. The same procedure applies to other layout sizes.*

Piping Requirements

NOTICE

Connection Leaks!

Failure to follow instructions below could result in damage to the coil header and cause connection leaks.

Use a backup wrench when attaching piping to coils with copper headers. Do not use brass connectors because they distort easily.

NOTICE

Overtightening!

Failure to follow instructions below could result in damage to the coil header.

Do not use teflon-based products for any field connections because their high lubricity could allow connections to be overtightened.

NOTICE

Leakage!

Failure to follow instructions below could result in equipment damage.

Properly seal all penetrations in unit casing from inner to outer panel in order to prevent unconditioned air from entering the module, as well as prevent water from infiltrating the insulation.

Field installed piping must be assembled, supported, and installed in accordance with local codes.

See “Water Piping and Connectors Access Dimension,” p. 19.

General Recommendations

- Install water supply and return lines in accordance with industry standard best practices and all local codes.
- Support all piping independently of the unit, as required.
- Install grooved connections and clamps in accordance with the manufacturer’s guidelines. Use grooved connections and clamps compatible with Victaulic connections and clamps.

Condensate Drain Line Requirements

- Install condensate drain line in accordance with all applicable local codes.
- The drain line must slope continuously away from the unit (non-condensate pump).
- Use drain line piping rigid enough to prevent sagging between supports to prevent unintended traps.
- For units with a condensate pump, use 1/2-inch copper drain line.
- For units without a condensate pump, use 1 1/4-inch PVC drain line.
- Provide drain piping based on the unit configuration.

Figure 81. Drain trap pipe – without condensate pump

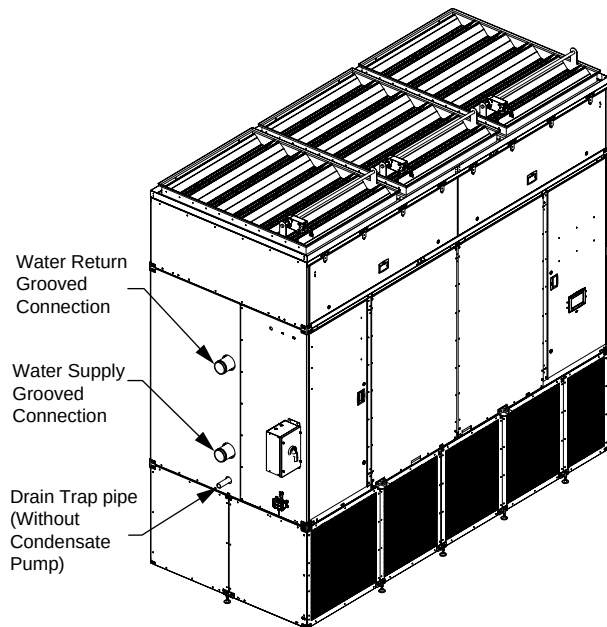
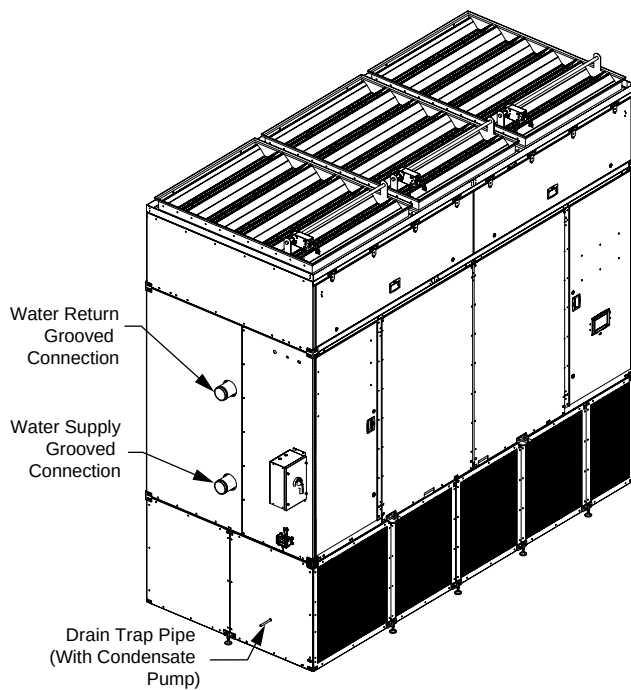


Figure 82. Drain trap pipe – with condensate pump



Note: *Figure 82, p. 40 shows the 340KW size. The same procedure applies to other layout sizes.*

Installation – Electrical

Supply Power Wiring

⚠ WARNING

Hazardous Voltage w/Capacitors!

Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects and discharge all motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. For variable frequency drives or other energy storing components provided by Trane or others, refer to the appropriate manufacturer's literature for allowable waiting periods for discharge of capacitors. Verify with a CAT III or IV voltmeter rated per NFPA 70E that all capacitors have discharged.

NOTICE

Use Copper Conductors Only!

Failure to use copper conductors could result in equipment damage as the equipment was not designed or qualified to accept other types of conductors.

NOTICE

Leakage!

Failure to follow instructions below could result in equipment damage.

Properly seal all penetrations in unit casing from inner to outer panel in order to prevent unconditioned air from entering the module, as well as prevent water from infiltrating the insulation.

- See unit-specific wiring diagrams located inside the high-voltage panel door for wiring connections.
- See the unit nameplate for electrical data, including voltage, minimum circuit ampacity (MCA), and maximum fuse size (MFS).
- The installer is responsible for providing power supply wiring to the unit.
- Wiring must comply with the NEC and all applicable codes.
- Install power wiring in conduit and route it to the disconnect switch in the disconnect box mounted outside the unit adjacent to the piping.
- Terminate incoming power conductors at L1, L2, and L3.
- Terminate the grounding conductor at the unit ground lug as shown in [Figure 84, p. 41](#).

- Install all field power wiring in accordance with applicable codes, contract documents, and the manufacturer's installation requirements.

Figure 83. Unit supply wire connections

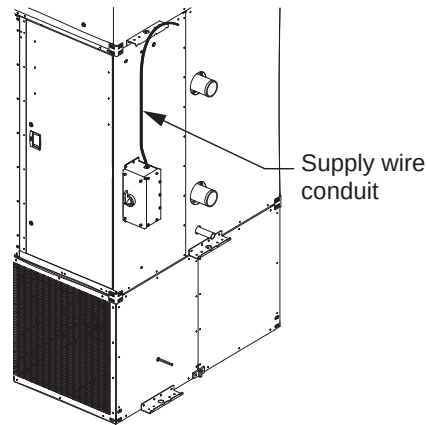
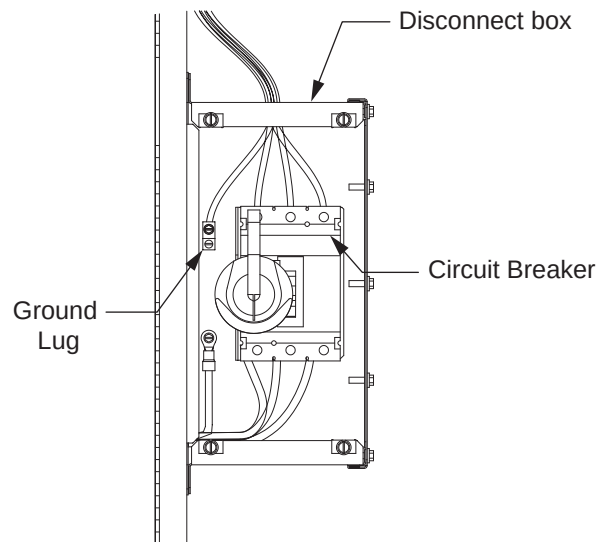


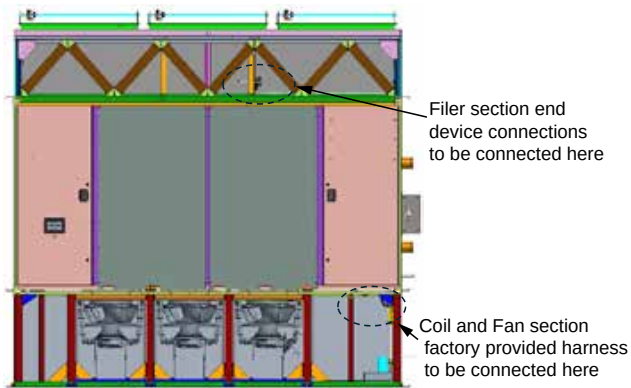
Figure 84. Circuit breaker connections inside disconnect box



Field Connections Between Build Groups

When fan, coil, and filter sections are shipped separately for field assembly, section-to-section electrical connections must be made using the factory-provided wiring harnesses and connectors.

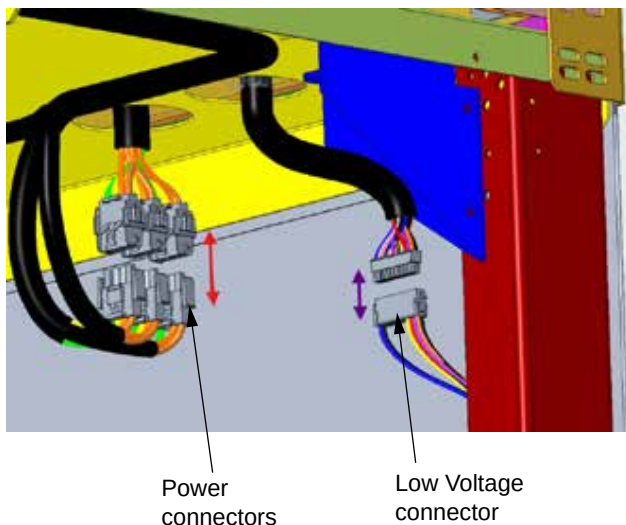
Figure 85. Field connections between build groups



The fan section includes two motor circuit connectors, one condensate pump connector, and one low-voltage harness connector. To access connectors:

1. Remove the first fan section grill panel on the piping side while facing the front of the unit.
2. Identify the harnesses terminated behind the grill.
3. Make the required connections as shown in the wiring diagram and corresponding figure.

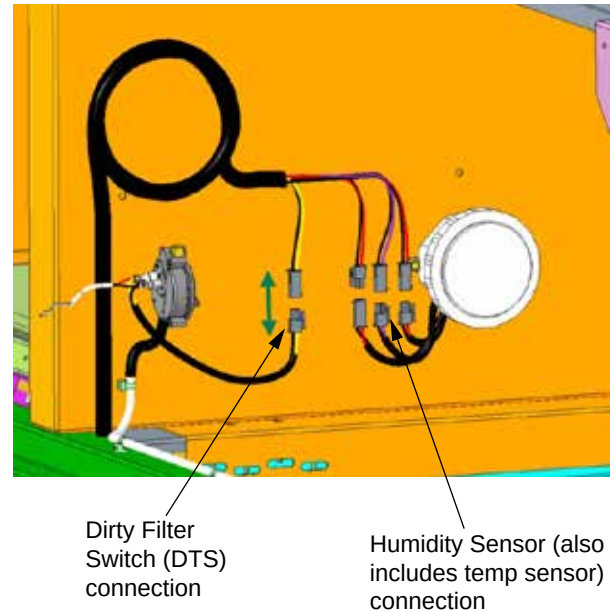
Figure 86. Fan section connections



The coil section includes connectors for the fan section and additional harness connections for the filter section. To access these connections:

1. Remove the coil section front panel.
2. The filter section includes connections for the humidity sensor, temperature sensor, and dirty filter switch, where applicable, as shown in the [Figure 87, p. 42](#).
3. Before energizing the unit, verify all connectors are matched by designation, fully inserted, and securely fastened. See the unit wiring diagram for complete field connection details.

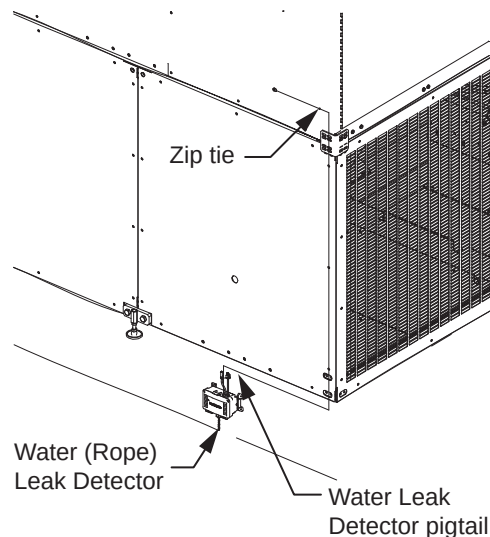
Figure 87. Filter section connections



Rope Leak Sensor Connections

1. Install the sensor module near the unit on a stable surface or mounting bracket.
2. Verify the module is protected from mechanical damage and accessible for inspection and replacement.
3. Route the pigtail cable along the outer side surface of the unit and connect it to the panel-mount connector as shown in the following figure.

Figure 88. Rope leak sensor connections

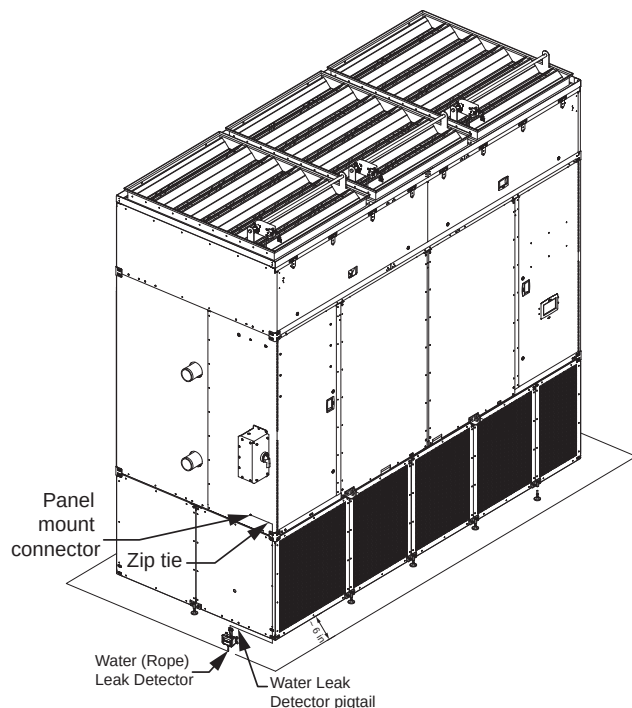


Note: Verify connections are properly made and secure.

4. Route the conductivity sensing cable (rope) around the base perimeter of the unit near floor level where water

accumulation is expected, as shown in the following figure.

Figure 89. Rope leak sensor conductivity cable routing



5. Install as follows:

- a. Starting from sensor module, lay the cable 6-inches away along the unit base perimeter.
- b. Cover all critical leak-prone areas:
 - Pipe connections
 - Drain points
 - Valve areas
- c. Secure rope with provided clips / cable ties / adhesive mounts.

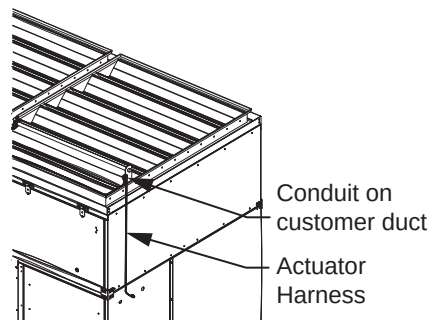
Note: Do not overlap or cross the sensing cable. Avoid sharp bends and mechanical stress.

Damper Actuator Connections

Damper actuator(s) require electrical/control wiring.

1. Connect one end of the provided harness to the panel-mount connector as shown in [Figure 90, p. 43](#).
2. Route the harness through the designated hole in the return duct and into the top of the damper assembly.
3. Connect harness to the damper actuator pigtail harness as shown in the wiring diagram.
4. Seal the duct hole after routing, and maintain adequate service access.

Figure 90. Damper actuator control harness connection



Controller Ports

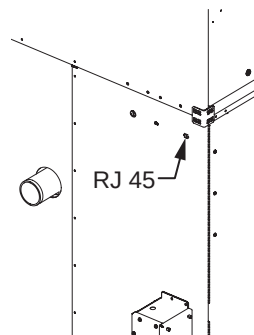
RJ45 Cat 6

Provide an RJ45 Cat 6 port for AHU controller Ethernet communication, BMS integration, and service access.

Use this connection for network communication only.

Locate the RJ45 port on the piping side of the unit as shown in the following figure.

Figure 91. RJ45 port

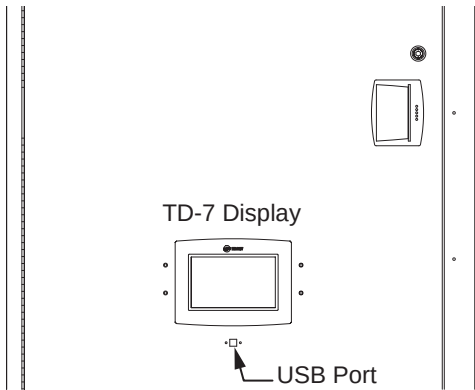


USB Type B

Provide an accessible USB Type-B service port on the AHU controller for authorized customer and service personnel during commissioning, diagnostics, configuration, and maintenance.

Locate the USB port directly below the TD-7 display as shown in the following figure.

Figure 92. USB port



Unit Wiring Diagrams

For unit-specific wiring, see the schematics located in the envelope inside the high-voltage door.

Note: *Wiring Diagrams can be accessed via e - library by entering the diagram number in the literature order number search field or by calling technical support.*

Table 12. Unit wiring

Schematic No	Schematic Type	Description
49516069	Power Schematic	SCHEMATIC, POWER, 3 FAN, 115-170 KW
49516071		SCHEMATIC, POWER, 6 FAN, 240-340 KW
49516073	Control Schematic	SCHEMATIC, CONTROLS, 1 PIEZO, 60-360 KW



Start-Up

Pre-Startup Checklist

After assembling and installing the computer room air handler, individual components must be inspected for proper operation. Before operating the unit, complete the pre-startup checklist.

⚠ WARNING

Hazardous Voltage w/Capacitors!

Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects and discharge all motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Verify with a CAT III or IV voltmeter rated per NFPA 70E that all capacitors have discharged.

General Checks

- Verify the unit installation is level. Use leveling feet if necessary.
- Check that air filters are in place and positioned properly.
- Remove any debris from the unit interior.
- Remove all foreign material from the drain pan and check drain pan opening and condensate line for obstructions.
- Close and secure all unit access doors.
- If differential pressure switch is provided on filter rack, adjust per system requirements.
- Inspect electrical connections to the unit and unit controllers.
 - Connections should be clean and secure.
 - Compare the actual wiring with the unit diagrams.
 - Reference the appropriate controller manual for more details about starting units with factory-mounted controls.
- Check piping and valves for leaks. Open or close the valves to check for proper operation. Drain lines should be open.
- Leave this manual with the unit.

Fan-Related Checks

Rotate all fan wheels manually to confirm they turn freely in the proper direction.

Coil-Related Checks

NOTICE

Proper Water Treatment Required!

The use of untreated or improperly treated water could result in scaling, erosion, corrosion, algae or slime.

Use the services of a qualified water treatment specialist to determine what water treatment, if any, is required. Trane assumes no responsibility for equipment failures which result from untreated or improperly treated water, or saline or brackish water.

- Verify coil and condensate drain piping connections are complete.
- Check the piping and valves for leaks.
 - Open or close the valves to check operation.
 - The drain lines should be open.
- Remove all foreign material from the drain pan and check the pan opening and condensate line for obstructions.

Fan Inlet Airflow Measuring System

A fan inlet airflow measuring system (piezometer) is available on plenum fans. Trane's system determines airflow using a static pressure differential.

Note: *This type of system is different than a total pressure or thermal dispersion system. As such, the calculations will be different.*

Each system comes with a differential pressure transmitter. The tubing connected at the throat of the fan is connected to the LO port of the transmitter and the tubing connected at the fan inlet wall is connected to the HI port of the transmitter.

⚠ WARNING

Pressurized Coil and Piping!

Failure to follow instructions below could result in death or serious injury or equipment damage.

Coil is pressurized with 15 psig of dry air. Do not stand directly in front of the coil connections when sealing plugs are removed. If no pressure is released, check for leaks.

Figure 93. Fan inlet airflow measuring system



Wiring

The transmitter requires 24 Vdc/24 Vac power on terminals 1 (+) and 2 (ground) of the transmitter. When the airflow measurement system is ordered with a factory-mounted Symbio™ controller, the 24 Vdc power will be supplied.

In the absence of a factory-mounted Symbio controller, the installing contractor must confirm the transmitter has 24 Vdc/24 Vac power.

Transmitter Sizing

The Trane specification requires that the flow meter option have a total accuracy of 5 percent. The total accuracy is a combination of:

- How accurately the flow meter itself is in sensing airflow.
- How accurately the transmitter senses the differential pressure.
- How accurately the controller translates the signal from the transmitter to a differential pressure.

Selecting the proper transmitter is critical in order to get accurate airflow measurements. How accurately the transmitter senses the differential pressure is dependent on:

- The pressure range selected
- The accuracy of the selected transmitter

Trane air handlers use a 0 to 5-inch, 0 to 10-inch, or 0 to 25-inch w.g. range transmitter as standard. To sufficiently cover VAV turndown on the smallest fans with the above range, a transmitter with an accuracy of 0.25 percent (full scale) is used as standard. If a field-provided transmitter with a lower accuracy is selected, the range should be chosen closer to the actual, maximum pressure differential expected for the application.

The transmitter outputs a signal that represents the differential pressure which is used to calculate airflow. To adequately calculate and display the airflow for the smaller

fans, verify the analog input is programmed with enough decimal places to sufficiently represent the pressure differential being measured.

Note: *The transmitter is factory-calibrated to the range selected and cannot be significantly adjusted to tighten the range closer to the pressure being read for the given application.*

Transmitter Calibration

The transmitter is factory-calibrated to a specific pressure range with a 0 to 5-inch, 0 to 10-inch, or 0 to 25-inch w.g. range being used in most cases. To check calibration and to adjust if necessary, consult the transmitter manufacturer or the factory for specific procedures.

The transmitter outputs a linear, 2 to 10 Vdc signal representing a differential pressure measurement. With this measurement, the airflow through the fan can be calculated using the following equation:

$$CFM = K * \text{SQRT}(DP)$$

Where:

CFM = Airflow (ft³/min.) assuming a standard air density of 0.075 lbm/ft³.

K = A constant factor that is unique for each fan. See "Constant K Factor," p. 46 for more information.

DP = Differential pressure (inches w.g.) being measured by the transmitter.

Significant differences in elevation and/or temperature will affect the density of air. For air at a constant, non-standard density, a field-obtained K factor can be used. Alternatively, the following equation can be used to continuously correct the equation above:

$$ACFM = CFM * \text{SQRT}(0.075/\rho)$$

Where:

ACFM = Actual airflow (ft³/min.) corrected for non-standard air density.

ρ = Density (lbm/ft³) of the air at the inlet to the fan.

Note: *Alternative units, including SI, can be used in place of the IP units above although the K-factor must be converted appropriately.*

Maintenance

For a typical HVAC environment - especially with upstream filtration - there should be little to no required maintenance. In the unlikely case that the flow meter gets clogged, it is easily cleanable. Simply disconnect each side of the transmitter and blast air in a reverse direction through the system.

Constant K Factor

The constant K factor is unique for each fan and is primarily a function of the area and other geometric properties of the fan inlet. Pre-engineered factors are available from the

factory for fan types where the airflow measurement system is available.

Table 13. Constant K factor

Unit Model	FLOM	Fan Size (inches)/Type	Fan Name	Fan K-Factor
VCDC060	FAN	17.70 Full-Width Impeller Fan	450	2229
	UNIT			2229
VCDC080	FAN			2229
	UNIT			2229
VCDC115	FAN			2229
	UNIT			2229
VCDC170	FAN	22.00 Full-Width Impeller Fan	560	3536
	UNIT			3536
VCDC215	FAN			3536
	UNIT			3536
VCDC240	FAN	17.70 Full-Width Impeller Fan	450	2229
	UNIT			-
VCDC340	FAN	22.00 Full-Width Impeller Fan	560	3536
	UNIT			2900

When a single transmitter is supplied in a multiple fan system, one or more fans will be brought back to the transmitter as a manifold and the airflow will represent the total airflow for the system. In this case, the factor should be adjusted as follows:

$K = N * K\text{-Factor from .}$

Where:

K = The final factor to be used for controller programming.

N = The number of active* fans in the system.

$K = \text{ACFM} / \text{SQRT (DP)}$

Where:

K = Field-provided constant factor.

ACFM = Actual airflow (ft³/min.) being measured at the air density being measured.

DP = Differential pressure (inches w.g.) being measured by the transmitter.

*If a fan fails in a multiple fan system where only one transmitter is being supplied, and if the remaining fans will continue to run, the factor should be reduced accordingly. Additionally, if the inactive fan was included in the manifold back to the transmitter, the tubes from the inactive fan should be temporarily removed and replaced with tubes from an active fan (or simply plugged).

When a transmitter is supplied for each fan, the factor does not need to be adjusted. The resulting airflow will represent single-fan airflow. At the controller level, the individual airflows should be summed to get the total airflow. If a field-provided K-factor is to be used (see below), the measured airflow for the system should be divided by the number of active fans to get a single-fan K-factor.

Field-obtained factors can provide maximum accuracy. To obtain the factor in the field, measure the differential pressure output from the transmitter while measuring the airflow through the system. Once these two values have been measured, simply solve for K using the following equation:

Routine Maintenance

⚠ WARNING

Hazardous Service Procedures!

Failure to follow all precautions in this manual and on the tags, stickers, and labels could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the following instructions: Unless specified otherwise, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components perform these tasks.

⚠ WARNING

Rotating Components!

Failure to disconnect power before servicing could result in rotating components cutting and slashing technician which could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized.

Maintenance Checklist

Frequency	Maintenance
Every week	Observe unit weekly for any change in running condition and unusual noise.
Every month	Clean or replace air filters if clogged or dirty; See "Filter Replacement Procedure," p. 51 for more information.
Every three to six months	- Inspect and clean drain pans. See "Drain Pans," p. 49 for more information. - Tighten electrical connections. - Inspect coils for dirt build-up. See "Water Coils," p. 48 for more information.
Every year	- Inspect the unit casing for corrosion. If damage is found, clean and repaint. - Inspect and clean drain pans. - Check damper linkages, set screws, and blade adjustment. Clean, but do not lubricate, the nylon damper rod bushings. - Clean damper operators. - Inspect electrical components and insulation. - Inspect wiring for damage. - Rotate the fan wheel and check for obstructions. The wheel should not rub. - Check condition of gasketing and insulation around unit, door, and dampers.

Water Coils

All coils should be kept clean to maintain maximum performance.

⚠ WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

⚠ WARNING

Hazardous Chemicals!

Failure to follow this safety precaution could result in death or serious injury. Coil cleaning agents can be either acidic or highly alkaline and can burn severely if contact with skin or eyes occurs.

Handle chemical carefully and avoid contact with skin. **ALWAYS** wear Personal Protective Equipment (PPE) including goggles or face shield, chemical resistant gloves, boots, apron or suit as required. For personal safety refer to the cleaning agent manufacturer's Materials Safety Data Sheet and follow all recommended safe handling practices.

To clean the water coils:

1. Disconnect all electrical power to the unit.
2. Wearing the appropriate personal protective equipment, use a soft brush to remove loose debris from both sides of the coil.
3. Install a block-off to prevent spray from going through the coil and into a dry section of the unit and/or system ductwork.
4. Mix a high-quality coil cleaning detergent with water according to the manufacturer's instructions.

Note: *If the detergent is strongly alkaline after mixing (PH 8.5 or higher), it must contain an inhibitor. Follow the cleaning solution manufacturer's instructions regarding the use of the product.*

5. Place the mixed solution in a garden pump-up sprayer or high-pressure sprayer. If a high pressure sprayer is to be used:
 - Maintain minimum nozzle spray angle of 15 degrees.
 - Spray perpendicular to the coil face.
 - Keep the nozzle at least 6-inches from the coil.
 - Do not exceed 600 psi.
6. Spray the leaving air side of the coil first, then the entering air side.
7. Thoroughly rinse both sides of the coil and the drain pan with cool, clean water.
8. Repeat [step 6](#) and [step 7](#) as necessary.
9. Straighten any coil fins that may have been damaged during the cleaning process.
10. Confirm the drain line is open following the cleaning process.
11. Allow the unit to dry thoroughly before putting it back into service.
12. Replace all panels and parts and restore electrical power to the unit.
13. Be careful any contaminated material does not contact other areas of the unit or building. Properly dispose of all contaminated materials.
2. Wearing the appropriate personal protective equipment, use a brush for sheet metal surfaces or a soft sponge on a foil face or closed cell foam surface to mechanically remove the microbial growth.

Note: *Be careful not to damage the non-porous surface of the insulation.*

3. Install a block-off to prevent spray from going into a dry section of the unit and/or system ductwork.
4. Thoroughly clean the contaminated area(s) with an EPA-approved sanitizer specifically designed for HVAC use.
5. Rinse the affected surfaces thoroughly with fresh water and a fresh sponge to prevent potential corrosion of the drain pan and drain line.
6. Repeat [Step 4](#) and [Step 5](#) as necessary.
7. Confirm the drain line is open following the cleaning process.
8. Allow the unit to dry thoroughly before putting it back into service.
9. Replace all panels and parts and restore electrical power to the unit.
10. Be careful any contaminated material does not contact other areas of the unit or building. Properly dispose of all contaminated materials and cleaning solution.

Drain Pans

WARNING

Hazardous Chemicals!

Failure to follow this safety precaution could result in death or serious injury. Coil cleaning agents can be either acidic or highly alkaline and can burn severely if contact with skin or eyes occurs.

Handle chemical carefully and avoid contact with skin. **ALWAYS** wear Personal Protective Equipment (PPE) including goggles or face shield, chemical resistant gloves, boots, apron or suit as required. For personal safety refer to the cleaning agent manufacturer's Materials Safety Data Sheet and follow all recommended safe handling practices.

Cleaning Non-Porous Surfaces

WARNING

Hazardous Voltage!

Failure to disconnect power before servicing could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

If microbial growth on a non-porous insulating surface (closed cell insulation or sheet metal surface) is observed:

1. Disconnect all electrical power to the unit.

WARNING

No Step Surface!

Failure to follow instruction below could result in death or serious injury.

Do not walk on the sheet metal drain pan. Walking on the drain pan could cause the supporting metal to collapse and result in the operator/technician falling.

The condensate drain pan and drain line must be checked to assure the condensate drains as designed. This inspection should occur a minimum of every six months or more often as dictated by operating experience.



Routine Maintenance

If evidence of standing water or condensate overflow exists, identify and remedy the cause immediately. See ["Troubleshooting," p. 56](#) for possible causes and solutions.

To clean the drain pans:

1. Disconnect all electrical power to the unit.
 2. Wearing the appropriate personal protective equipment, remove any standing water.
 3. Scrape solid matter off of the drain pan.
 4. Vacuum the drain pan with a vacuum device that uses high efficiency particulate arrestance (HEPA) filters with a minimum efficiency of 99.97 percent at 0.3 micron particle size.
 5. Thoroughly clean any contaminated area(s) with a mild bleach and water solution or an EPA-approved sanitizer specifically designed for HVAC use.
 6. Immediately rinse the affected surfaces thoroughly with fresh water and a fresh sponge to prevent potential corrosion of metal surfaces.
 7. Allow the unit to dry completely before putting it back into service.
 8. Be careful any contaminated material does not contact other areas of the unit or building. Properly dispose of all contaminated materials and cleaning solution.
 9. Check filters. Dirty filters will raise static pressure drop and may affect the operation of the drain pan p-trap.
4. Thoroughly clean any contaminated area(s) with a mild bleach and water solution or an EPA-approved sanitizer specifically designed for HVAC use.
 5. Immediately rinse the affected surfaces thoroughly with fresh water and a fresh sponge to prevent potential corrosion of metal surfaces.
 6. Allow the unit to dry completely before putting it back into service.
 7. Be careful any contaminated material does not contact other areas of the unit or building. Properly dispose of all contaminated materials and cleaning solution.

Fans

⚠ WARNING

Rotating Components!

Failure to disconnect power before servicing could result in rotating components cutting and slashing technician which could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized.

Inspecting and Cleaning Fans

Fan sections of air handlers should be inspected every six months at a minimum or more frequently if operating experience dictates. If evidence of microbial growth (mold) is found, identify and remedy the cause immediately. See ["Troubleshooting," p. 56](#) for possible causes and solutions.

To clean the fan section:

1. Disconnect all electrical power to the unit.
2. Wearing the appropriate personal protective equipment, remove any contamination.
3. Vacuum the section with a vacuum device that uses high-efficiency particulate arrestance (HEPA) filters with a minimum efficiency of 99.97 percent at 0.3 micron particle size.

Filters

⚠ WARNING

Rotating Components!

Failure to disconnect power before servicing could result in rotating components cutting and slashing technician which could result in death or serious injury.

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized.

Note: Dirty filters will increase static pressure drop and may effect operation of p-trap drain lines.

Throwaway Filters

To replace throwaway filters, install new filters with the directional arrows pointing in the direction of airflow.

If using other than Trane-supplied filters, apply foam gasketing to the vertical edges of the filter.

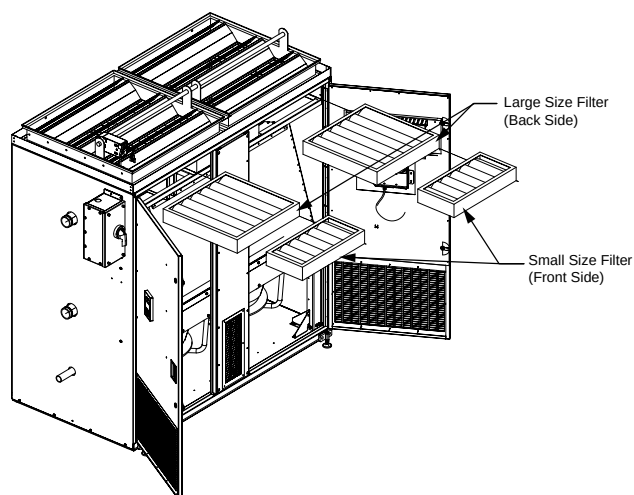
Filter

- Perform routine inspections of the filter and replace it as required, depending on the environmental conditions.
- The unit includes a dirty filter switch and communicates filter status to the building management system (BMS).
- Always disconnect the power to the unit prior to opening any door before replacing the filter.
- The filter is accessible from the front of the unit and can be replaced by following the instructions in ["Filter Replacement Procedure," p. 51](#).
- Once the filter has been replaced, verify the dirty filter switch probe on the side panel is clear and unobstructed.

Filter Replacement Procedure

Single Build Group

Figure 94. Filter replacement - single build group



1. Slide the middle filters towards either the right or left side, then remove them from the unit.
2. Open access doors as shown in [Figure 94, p. 51](#) and remove the left and right-side filters directly from the unit.
3. See ["Filter Placement and Dimensions," p. 18](#) based on unit size and configuration and position the filters as follows:
 - Large filters at the back of the unit
 - Small filters in the front of the unit

2 or 3 Build Group Units

These build group units have a separate filter access door. When filter replacement is required:

1. Open the door and slide the filter out from the front side of the unit, as shown in the figure.
2. See Filter Position details in ["Filter Placement and Dimensions," p. 18](#).
3. Insert the new filter through the front side of the unit. If the unit uses different filter sizes, position the filters as follows:
 - Large filters at the back of the unit
 - Small filters at the front of the unit

Figure 95. Filter section location

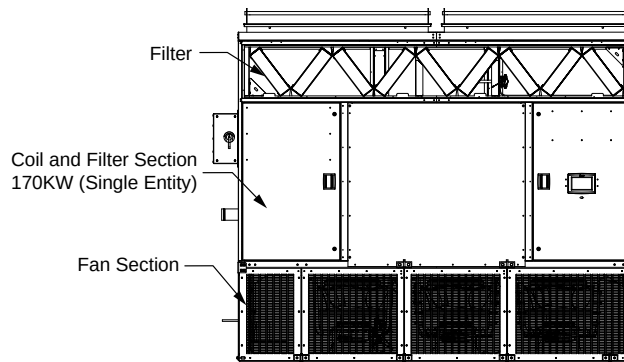
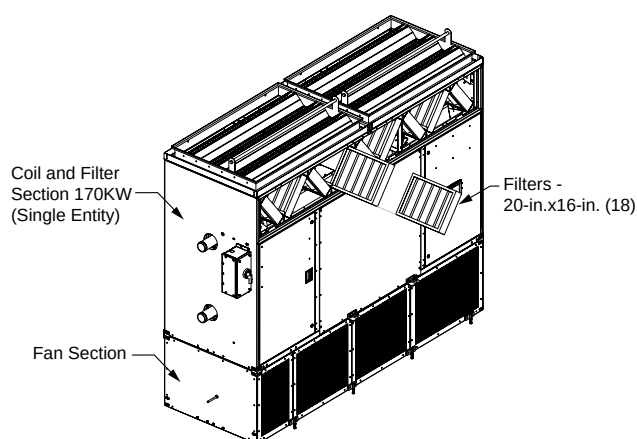


Figure 96. Filter removal

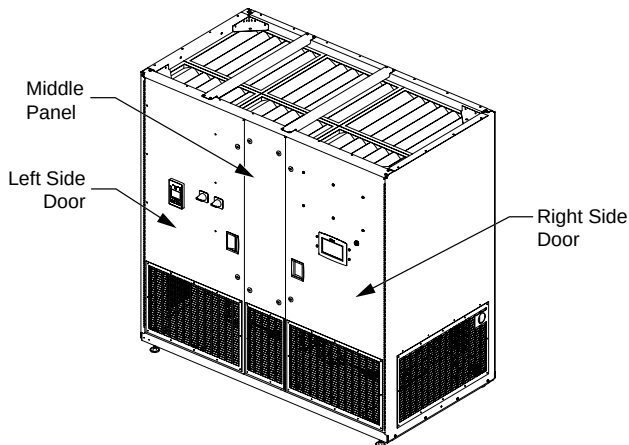


Fan Placement Procedure

Single Build Group

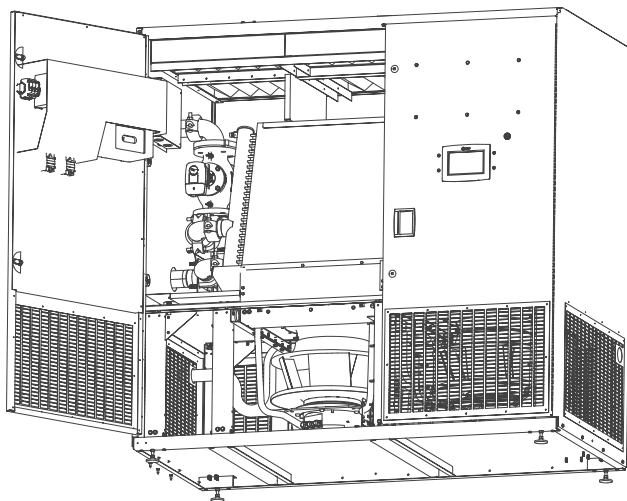
- Disconnect power to the unit before accessing the fan assembly.
 - Follow all safety codes and procedures when servicing the unit.
 - Live voltage may exist between the junction box and high voltage terminals, even if the disconnect switch is off.
1. Open both access doors to provide easy entry and servicing space for the fan module if required.
 - For the right-side fan assembly, open the right-side access door and the middle panel.
 - For the left side fan assembly, open the left side access door.

Figure 97. Fan assembly



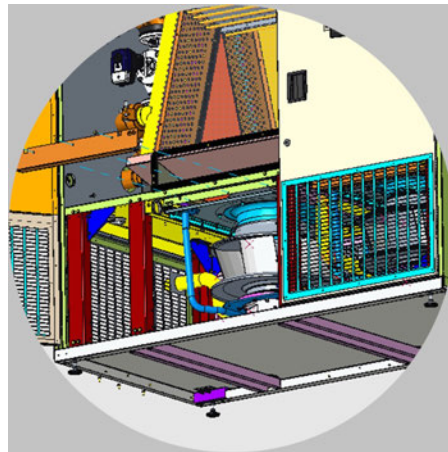
2. Locate both the high voltage and the low voltage connectors for the fan to be removed. Disconnect the fan and reposition it to the side.

Figure 98. Disconnect switch



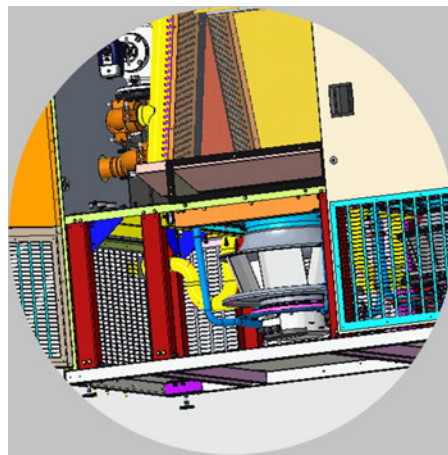
3. Remove the screw securing the front block-off panel, then carefully detach the panel as illustrated.

Figure 99. Fan assembly bracket gasket



4. Remove the fasteners located on both sides of the fan unit.

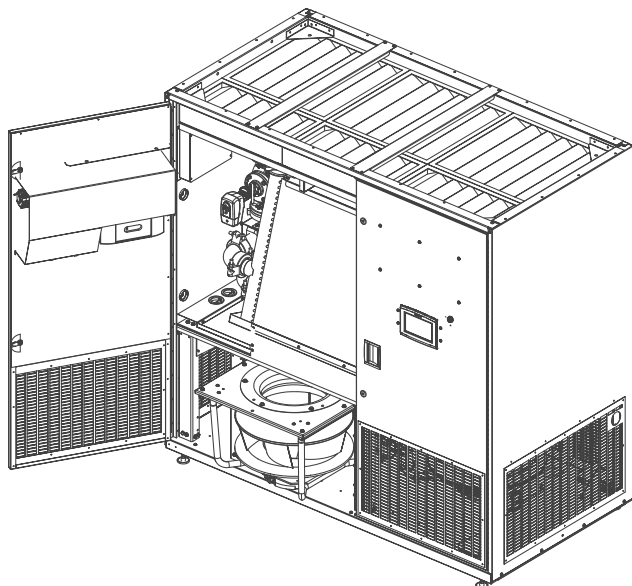
Figure 100. Fan assembly fasteners



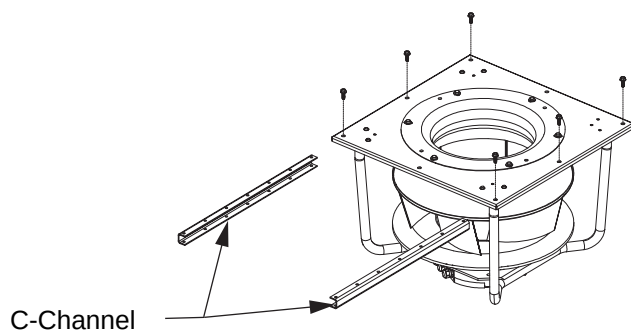
5. Slide the fan assembly from the Fan Tracks. Keep at least half of the fan supported by the sliding rails and use appropriate lifting or supporting devices to handle the fan assembly.

Notes:

- Confirm the wire harness is clear of the fan assembly sliding path.
- Fan weighs approximately 150 pounds.

Figure 101. Fan assembly removal


6. Replace the fan and wiring assembly according to the specified part numbers.
7. Install a gasket around the fan before placing the new assembly into the unit.
8. Secure the screws from the top of the fan.

Figure 102. Fan assembly C-channel


9. When sliding the new fan assembly into the unit, use suitable lifting or support equipment to safely handle the fan assembly.
10. Reconnect all wiring, verifying cables are not pinched and connectors are properly seated. Use cable ties as

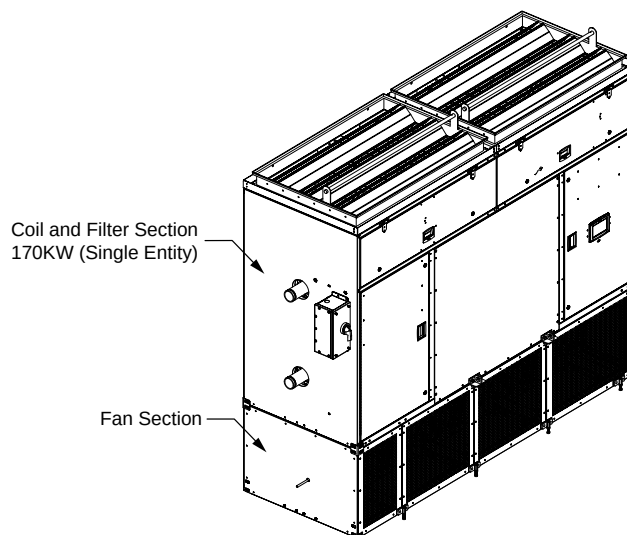
needed to secure harnesses to the unit structure. Confirm harnesses are not in the path of moving parts.

11. Reattach the front block-off panel to the new fan assembly.
12. Inspect all wiring, fan rotation, and device mounting before restoring power to the unit.
13. Repeat these steps for servicing the right-side fan assembly.

2 or 3 Build Group Units

Important:

- *Disconnect power to the unit before accessing the fan assembly.*
- *Follow all safety codes and procedures when servicing the unit.*
- *Live voltage may exist between the junction box and high voltage terminals, even if the disconnect switch is off.*

Figure 103. Fan section location


1. Remove the fasteners by securing the grill to the base rail frame structure. Retain the screws for reinstallation.
2. Locate the high-voltage and low-voltage connectors for the fan being removed. Disconnect the fan wiring and reposition the harness to the side.

Figure 104. Fan grill

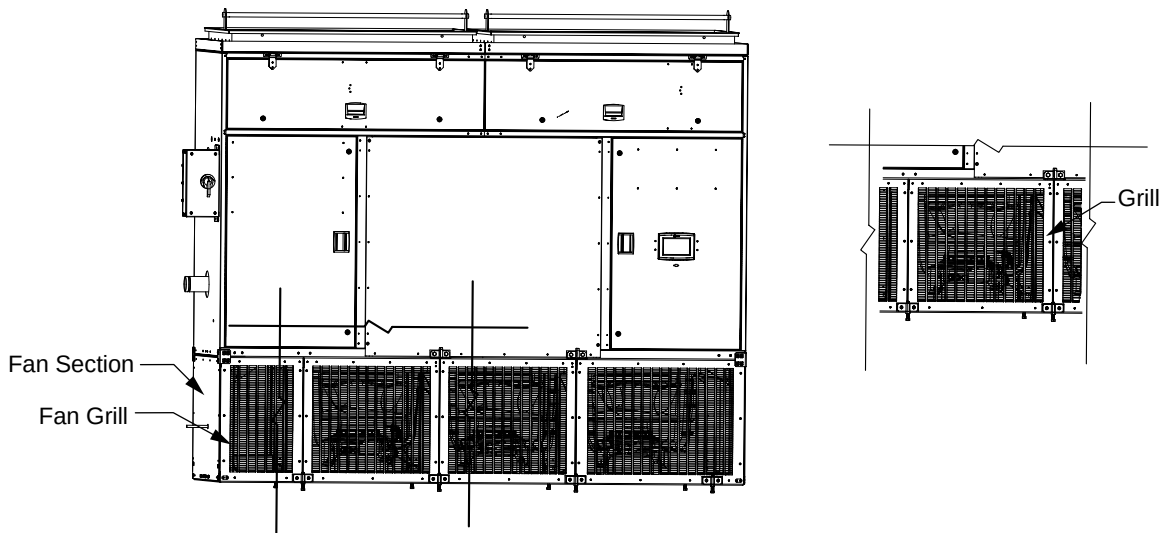


Figure 105. Fan support brackets

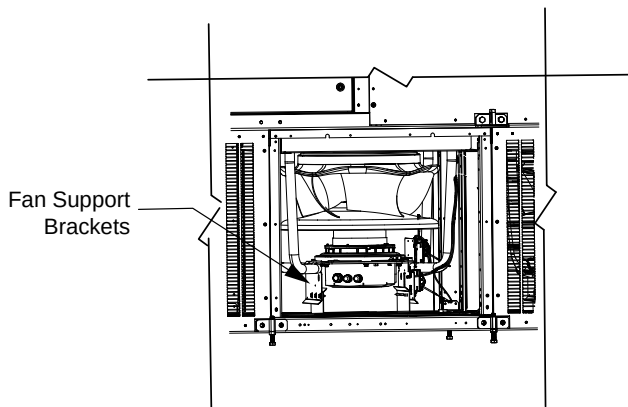
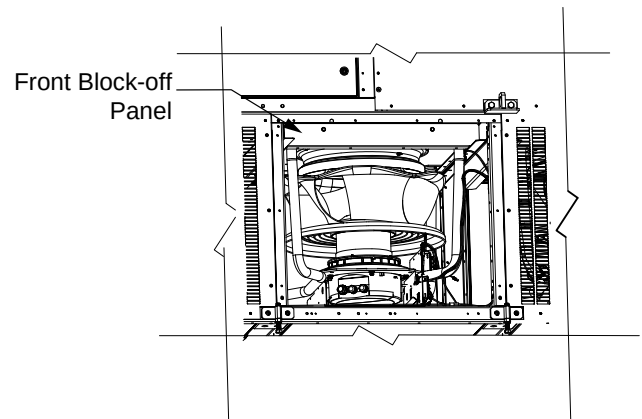


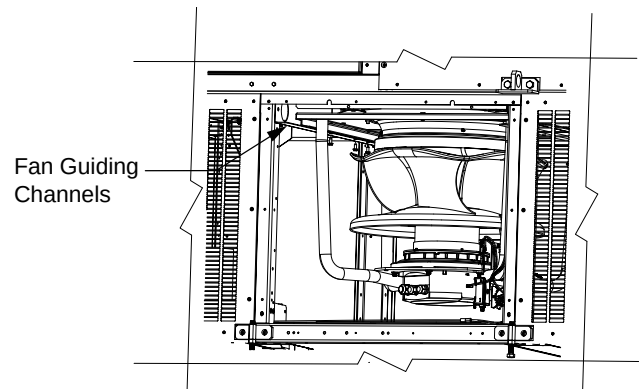
Figure 106. Fan block-off panel



3. Remove fan support brackets located at the bottom of the fan assembly. Retain all brackets and fasteners for reinstallation.
4. Remove the screw securing the front block-off panel, and carefully remove the panel as shown in the following figure.

5. Remove the fasteners located on both sides of the fan assembly.

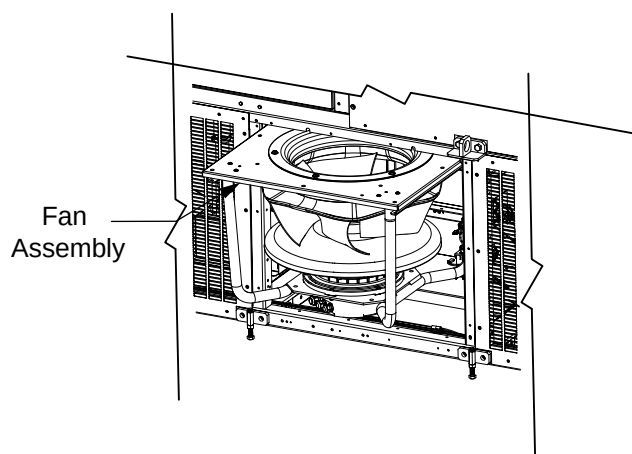
Figure 107. Fan guiding channels



6. Slide the fan assembly out along the fan tracks. Keep at least half of the fan assembly supported by the

sliding rails, and use appropriate lifting or support devices to handle the assembly safely.

Figure 108. Fan assembly removal

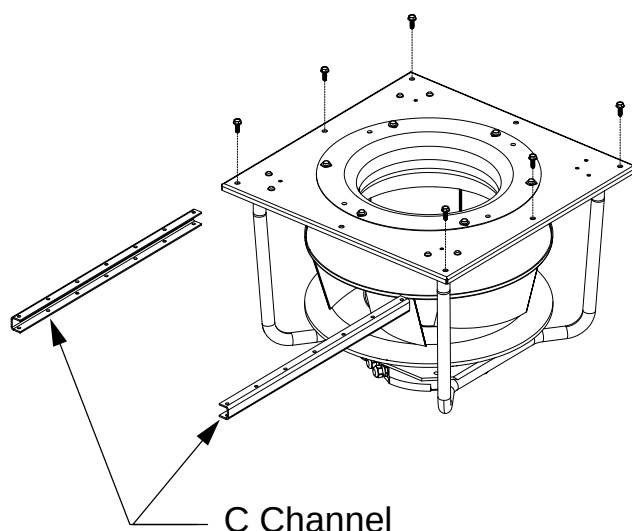


Notes:

- Confirm the wire harness is clear of the fan assembly sliding path.
- Each fan assembly weight is approximately 150 lbs.

7. Replace the fan by removing C-channel at both sides as shown in the following figure.

Figure 109. C-channel



8. Replace harness with the specified replacement parts, if required.
9. Install a gasket around the fan before placing the new assembly into the unit.
10. Slide the new fan assembly into the unit, using suitable lifting or support equipment to safely handle the assembly.
11. Secure the fan assembly with the screws from bottom to top of the fan.
12. Reconnect all wiring. Verify that cables are not pinched and that all connectors are fully seated. Use cable ties as needed to secure the harnesses to the unit structure. Make sure the harnesses are clear of all moving parts.
13. Reattach the front block-off panel to the new fan assembly.
14. Inspect all wiring, verify proper fan rotation, and confirm all devices are securely mounted before restoring power to the unit.
15. Reinstall the fan support brackets using the retained fasteners.
16. Reinstall the grille to the base rail frame structure using the retained screws.
17. Repeat this procedure for the other fan assembly, if required.

Troubleshooting

This section is intended to be used as a diagnostic aid only. For detailed repair procedures, contact your local Trane service representative.

- To safely service and remove the bottom section coil from the stacked unit, the top section must be fully removed from the stacked orientation. The coil assembly is critical to the overall structural integrity of the unit and must be present in the stacked assembly.
- In order to safely service the coil on the bottom section, the stacked unit must be fully unstacked.

⚠ WARNING

Hazardous Service Procedures!

Failure to follow all precautions in this manual and on the tags, stickers, and labels could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the following instructions: Unless specified otherwise, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components perform these tasks.

Table 14. Computer room air handler troubleshooting recommendations

Symptom	Probable Cause	Recommended Action
Motor fails to start	No voltage at the motor	Check for voltage at the motor.
	No speed signal at the motor	Check for speed signal at the motor.
	Incorrect control configuration (modbus or analog communication)	Verify motor is in correct control configuration (modbus or analog communication) using manufacturer software (EC control).
	Fan status or alarms indicated by manufacturer software (EC control)	Use manufacturer software (EC control) to verify fan status and any alarms.
Motor stalls	Open phase	Check line for an open phase.
	Overloaded motor	Reduce load or replace with larger motor.
	Low line voltage	Check across AC line. Correct voltage if possible.
Motor runs and then dies down	Partial loss of line voltage	Check for loose connections. Determine adequacy of main power supply.
Motor does not come up to speed	Insufficient supply voltage	Confirm proper supply voltage.
	Speed or power limits programmed in the motor	Check and adjust speed or power limits programmed in the motor.
	High amperage compared to Full Load Amps (FLA)	Check amperage with clamp on hand held and compare to FLA.
Motor overheats/shuts down	Overloaded motor	Reduce the load.
	Motor fan is clogged with dirt preventing proper ventilation	Remove the fan cover, clean the fan, and replace the cover.
	Ambient condition exceeds rated ambient condition	Check ambient condition compared to the rated ambient condition.
	Obstructions preventing airflow over the motor driver	Remove any obstructions preventing airflow over the motor driver.

Table 14. Computer room air handler troubleshooting recommendations (continued)

Symptom	Probable Cause	Recommended Action
Excessive motor noise	Rubbing of wheel on inlet funnel	Check for rubbing of wheel on inlet funnel.
	Obstructions or sharp air turns around the inlet of the fan	Remove any obstructions or sharp air turns around the inlet of the fan.
	Excessive play in the rotor due to damaged bearings	With the motor de-energized and locked out, check for excessive play in the rotor. If there is play, it is likely due to damaged bearings; replace fan/motor assembly.
Rapid motor bearing wear	Operation in stall condition	Adjust the operating point out of stall condition.
	Operation in structural resonance	Adjust the operating point to a different speed.
Bearing noise	Failed bearing	Replace the fan/motor assembly.
Low water coil capacity	Incorrect airflow	Check fan operating condition.
	Incorrect water flow	Inspect the water pumps and valves for proper operation and check the lines for obstructions.
	Incorrect water temperature	Adjust the chiller or boiler to provide the proper water temperature.
	Coil is piped incorrectly	Verify coil piping (see "Water Piping and Connectors Access Dimension," p. 19).
	Dirty fin surface	Clean the fin surface (see "Water Coils," p. 48).
	Incorrect glycol mixture	Verify glycol mixture and adjust if necessary.
Drain pan is overflowing	Plugged Drain Line	Clean drain line.
	Unit not level	Level the unit.
	Improper trap design	Design trap per unit installation instructions.
Standing water in drain pan	Improper trap design	Design trap per unit installation instructions.
	Unit not level	Level the unit.
	Plugged drain line	Clean the drain line.
Excess dirt in unit	Missing filters	Replace the filters.
	Filter bypass	Reduce filter bypass by confirming all block-offs are in place.
Smoke sensor	Dust or debris on sensor	Clean sensor
	Sensor aging/failure	Replace sensor if needed
	Poor placement	Verify correct installation location
	Wiring issues	Inspect wiring
	Environmental contaminants	Check for contamination sources
Dirty Filter	Filter not changed	Adjust maintenance schedule
	Wrong filter type/size	Replace filter with correct MERV/size
	High particulate load	Check for dust sources/duct leaks
	Blocked return airflow	Inspect return ducts/grilles

Troubleshooting

Table 14. Computer room air handler troubleshooting recommendations (continued)

Symptom	Probable Cause	Recommended Action
Condensate Pump	Blocked drain line	Clear drain line
	Failed pump motor/impeller	Level or replace pump as needed
	Faulty float switch	Test float switch
	Power issues	Verify power
	Improper installation	Check discharge tubing
Humidity Sensor	Contamination	Clean sensor
	Sensor drift	Compare with calibrated meter
	Improper placement	Verify placement
	Wiring issues	Inspect wiring
	Sensor failure	Recalibrate or replace sensor

Trane - by Trane Technologies (NYSE: TT), a global innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

Trane has a policy of continuous product and product data improvements and reserves the right to change design and specifications without notice. We are committed to using environmentally conscious print practices.