



Product Catalog

Performance Climate Changer™ Air Handlers

Model UCCA

Sizes 3 to 30

Indoor and Outdoor Applications

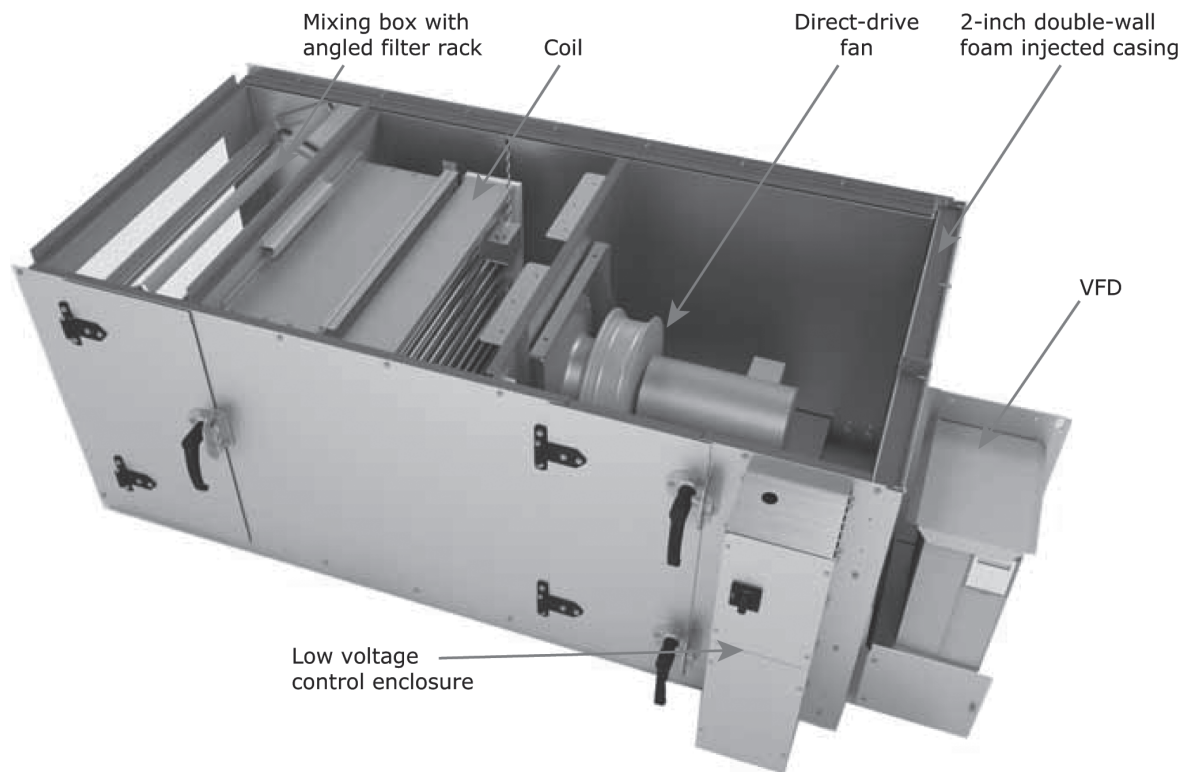




Trane Performance Climate Changer™ Air Handlers

Trane has a Performance Climate Changer air handler adaptable to almost every environment. The Performance model UCCA is designed for budget-conscious applications, but does not sacrifice on construction, quality, or performance.

- 2-inch R-13 foam insulated panels and doors
- Less than 0.005 inches at +/-6 inches w.g. panel and door deflection
- All airfoil bladed dampers meet ASHRAE 90.1 lowest specified leakage
- Quick-connect wiring minimizes installation costs and provides wiring integrity between sections
- Factory engineered and mounted control packages
- Hinged and handled access doors
- UL/CUL listed
- AHRI Standard 430-certified air-handling unit
- AHRI Standard 410-certified coils
- 2-inch/4-inch combination filter, or 2-inch/4-inch combination filter in a mixing box
- Supply fan options include forward curved (FC), direct-drive plenum (DDP) fans, and motorized impeller fans
- Electric heat including full modulating control
- Building Information Modeling (BIM) drawing to minimize jobsite ductwork, electrical, piping, and structural interference
- Leak detection sensor all R-454B or R-32 coils



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Revision History

Add R-32 refrigerant option.



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Model Number Description

Digit 1, 2, 3, 4 — Product Group

UCCA = Performance Climate Changer

Digit 5 — Configuration

A = Horizontal/front top with housed fan
B = Horizontal/top front with housed fan
C = Vertical/front top with housed fan
D = Vertical/top front with housed fan
E = Vertical/back top with housed fan
F = Vertical/top back with housed fan
G = Horizontal/front top with DDP fan
H = Horizontal/top front with DDP fan
J = Horizontal/bottom front with housed fan
K = Horizontal/bottom front with DDP fan
L = Vertical/front top with MI fan
M = Vertical/top front with MI fan
N = Vertical/back top with MI fan
P = Vertical/front top with high static MI fan
R = Vertical/top front with high static MI fan
T = Vertical/back top with high static MI fan
S = Special

Digit 6, 7 — Unit Size

03 = Unit size 3
06 = Unit size 6
08 = Unit size 8
10 = Unit size 10
12 = Unit size 12
14 = Unit size 14
17 = Unit size 17
21 = Unit size 21
25 = Unit size 25
30 = Unit size 30

Digit 8 — Unit Voltage

0 = No motor, controls, or electric heat
A = 200-208 volt/60 Hz/3 phase
B = 230 volt/60 Hz/3 phase
C = 460 volt/60 Hz/3 phase
D = 575 volt/60 Hz/3 phase
S = Special

Digit 9 — Unit Type

0 = Indoor unit
1 = Outdoor unit

Digit 10, 11 — Design Sequence

** = Factory Assigned

Digit 12 — Coil, Drain Pan and Motor

R = Polymer drain pan, RH coil/RH motor
L = Polymer drain pan, LH coil/LH motor
C = Polymer drain pan, RH coil/LH motor
D = Polymer drain pan, LH coil/RH motor
E = Stainless steel drain pan, RH coil/RH motor
F = Stainless steel drain pan, LH coil/LH motor
G = Stainless steel drain pan, RH coil/LH motor
H = Stainless steel drain pan, LH coil/RH motor
S = Special

Digit 13 — Unit Coil #1 First in Airstream

0 = No unit coil #1
A = 1 row preheat hydronic coil/9 fpi
B = 1 row preheat hydronic coil/12 fpi
C = 1 row preheat hydronic coil/14 fpi
D = 2 row preheat hydronic coil /9 fpi
E = 2 row preheat hydronic coil/12 fpi
F = 2 row preheat hydronic coil/14 fpi
G = 1 row preheat steam coil/6 fpi
H = 4 row hydronic coil/9 fpi
J = 4 row hydronic coil/12 fpi
K = 4 row hydronic coil/14 fpi
L = 6 row hydronic coil/9 fpi
M = 6 row hydronic coil/12 fpi
N = 6 row hydronic coil/14 fpi
P = 8 row hydronic coil/9 fpi
R = 8 row hydronic coil/12 fpi
T = 8 row hydronic coil/14 fpi
U = 4 row DX coil/9 fpi
V = 4 row DX coil/12 fpi
W = 4 row DX coil/14 fpi
Y = 6 row DX coil/9 fpi
Z = 6 row DX coil/12 fpi
1 = 6 row DX coil/14 fpi
S = Special

Digit 14 — Unit Coil #2 Second in Airstream

0 = No unit coil #2
A = 1 row reheat hydronic coil/9 fpi
B = 1 row reheat hydronic coil/12 fpi
C = 1 row reheat hydronic coil/14 fpi
D = 2 row reheat hydronic coil /9 fpi
E = 2 row reheat hydronic coil/12 fpi
F = 2 row reheat hydronic coil/14 fpi
G = 1 row reheat steam coil/6 fpi
H = 4 row hydronic coil/9 fpi
J = 4 row hydronic coil/12 fpi
K = 4 row hydronic coil/9 fpi
L = 6 row hydronic coil/9 fpi
M = 6 row hydronic coil/12 fpi
N = 6 row hydronic coil/14 fpi
P = 8 row hydronic coil/9 fpi
R = 8 row hydronic coil/12 fpi
T = 8 row hydronic coil/14 fpi
U = 4 row DX coil/9 fpi
V = 4 row DX coil/12 fpi
W = 4 row DX coil/14 fpi
Y = 6 row DX coil/9 fpi
Z = 6 row DX coil/12 fpi
1 = 6 row DX coil/14 fpi
S = Special

Digit 15 — Coil Options

0 = No coil option
1 = Aluminum fin with galvanized casing, 1/2-inch coil
2 = Aluminum fin with stainless steel coil casing, 1/2-inch coil
3 = Aluminum fin with galvanized casing, 3/8-inch coil
4 = Aluminum fin with stainless steel casing, 3/8-inch coil
5 = Aluminum fin with galvanized casing, 1/2-inch coil with extended drain and vent
6 = Aluminum fin with stainless steel casing, 1/2-inch coil with extended drain and vent
7 = Aluminum fin with galvanized casing, 1/2-inch coil, turb, without extended drain and vent
8 = Aluminum fin with stainless steel casing, 1/2-inch coil, turb, without extended drain and vent
9 = Aluminum fin with galvanized casing, 3/8-inch coil, with extended drain and vent
A = Aluminum fin with stainless steel casing, 3/8-inch coil, with extended drain and vent
S = Special

Digit 16 — Controller Options

0 = No control type
1 = Unwired end devices
2 = Control Interface
4 = Tracer® Symbio™ 500 unit controller
S = Special

Digit 17 — Electric Heat/Factory Mounted Only

0 = No electric heat
 1 = Electric heat with 1 stage
 2 = Electric heat with 2 stages
 4 = Electric heat with 4 stages
 5 = Electric heat with SCR Control
 S = Special

Digit 18, 19, 20 — Electric Heat KW

000 = No electric heat
 006 = 6.0 kW
 007 = 7.0 kW
 008 = 8.0 kW
 009 = 9.0 kW
 010 = 10.0 kW
 011 = 11.0 kW
 012 = 12.0 kW
 013 = 13.0 kW
 014 = 14.0 kW
 015 = 15.0 kW
 016 = 16.0 kW
 017 = 17.0 kW
 018 = 18.0 kW
 019 = 19.0 kW
 020 = 20.0 kW
 022 = 22.0 kW
 024 = 24.0 kW
 026 = 26.0 kW
 028 = 28.0 kW
 030 = 30.0 kW
 032 = 32.0 kW
 034 = 34.0 kW
 036 = 36.0 kW
 038 = 38.0 kW
 041 = 41.0 kW
 044 = 44.0 kW
 047 = 47.0 kW
 050 = 50.0 kW
 053 = 53.0 kW
 056 = 56.0 kW
 059 = 59.0 kW
 063 = 63.0 kW
 067 = 67.0 kW
 071 = 71.0 kW
 075 = 75.0 kW
 079 = 79.0 kW
 083 = 83.0 kW
 087 = 87.0 kW
 091 = 91.0 kW
 095 = 95.0 kW
 100 = 100 kW
 105 = 105 kW
 110 = 110 kW
 115 = 115 kW
 120 = 120 kW
 SSS = Special

Digit 21 — Electric Heat Options

0 = No electric heat
 A = Line fuse, door interlocking disconnect switch and airflow switch
 B = Line fuse and airflow switch
 S = Special

Digit 22 — Refrigerant Circuit Options

0 = No refrigerant options
 1 = Single circuit with 1 stage DX, 1/4-inch distributor
 2 = Face split circuit with 2 stage DX, 1/4-inch distributor
 3 = Intertwined circuit with 2 stage DX, 1/4-inch distributor
 4 = Single circuit with 2 stage DX, 1/4-inch distributor
 5 = Face split circuit with 4 stage DX, 1/4-inch distributor
 6 = Intertwined circuit with 4 stage DX, 1/4-inch distributor
 A = Single circuit with 1 stage DX, 3/16-inch distributor
 B = Face split circuit with 2 stage DX 3/16-inch distributor
 C = Intertwined circuit with 2 stage DX 3/16-inch distributor
 D = Single circuit with 2 stage DX, 3/16-inch distributor
 E = Face split circuit with 4 stage DX, 3/16-inch distributor
 F = Intertwined circuit with 4 stage DX, 3/16-inch distributor
 S = Special

Digit 23 — Supply Motor Horsepower

0 = No motor
 A = 1 hp (0.746 kW)
 B = 1 1/2 hp (1.119 kW)
 C = 2 hp (1.492 kW)
 D = 3 hp (2.238 kW)
 E = 5 hp (3.730 kW)
 F = 7 1/2 hp (5.595 kW)
 G = 10 hp (7.460 kW)
 H = 15 hp (11.190 kW)
 J = Motorized impeller fan
 S = Special

Digit 24 — Supply Fan Volume Control

0 = No volume control
 A = FC fan constant volume with variable pitch sheaves
 B = FC fan constant volume with fixed pitch sheaves
 C = Variable frequency drive with fixed pitch sheaves or DDP fan
 D = FC fan with fixed pitch sheaves or DDP fan and variable frequency drive and shaft grounding
 E = FC fan constant volume with fixed pitch sheaves or DDP fan and shaft grounding
 F = ECM motor
 S = Special

Digit 25 — Supply Fan Drives

0 = No drive
 A = 650 rpm fixed/600-700 variable
 B = 700 rpm fixed/650-750 variable
 C = 750 rpm fixed/700-800 variable
 D = 800 rpm fixed/750-850 variable
 E = 850 rpm fixed/800-900 variable
 F = 900 rpm fixed/850-950 variable
 G = 950 rpm fixed/900-1000 variable
 H = 1000 rpm fixed/950-1050 variable
 J = 1050 rpm fixed/1000-1100 variable
 K = 1100 rpm fixed/1050-1150 variable
 L = 1150 rpm fixed/1100-1200 variable
 M = 1200 rpm fixed/1150-1250 variable
 N = 1250 rpm fixed/1200-1300 variable
 P = 1300 rpm fixed/1250-1350 variable
 R = 1350 rpm fixed/1300-1400 variable
 T = 1400 rpm fixed/1350-1450 variable
 U = 1450 rpm fixed/1400-1500 variable
 V = 1500 rpm fixed/1450-1550 variable
 W = 1550 rpm fixed/1500-1600 variable
 Y = 1600 rpm fixed/1550-1650 variable
 Z = 1650 rpm fixed/1600-1700 variable
 1 = 1700 rpm fixed/1650-1750 variable
 2 = 1750 rpm fixed/1700-1800 variable
 3 = 1800 rpm fixed/1750-1850 variable
 4 = 1850 rpm fixed/1800-1900 variable
 5 = 1900 rpm fixed/1850-1950 variable
 6 = 1950 rpm fixed/1900-2000 variable
 7 = 2000 rpm fixed/1950-2050 variable
 8 = Direct-drive plenum/MI fan
 S = Special

Digit 26, 27 — VFD setting/DDP Fan Speed

00 = Housed/MI fans
 00 = Housed/MI fans
 54 = 54 Hz/1604 rpm
 55 = 55 Hz/1634 rpm
 56 = 56 Hz/1663 rpm
 57 = 57 Hz/1693 rpm
 58 = 58 Hz/1723 rpm
 59 = 59 Hz/1752 rpm
 60 = 60 Hz/1782 rpm
 61 = 61 Hz/1872 rpm
 62 = 62 Hz/1841 rpm
 62 = 63 Hz/1871 rpm
 64 = 64 Hz/1901 rpm
 65 = 65 Hz/1931 rpm
 66 = 66 Hz/1960 rpm
 67 = 67 Hz/1990 rpm
 68 = 68 Hz/2020 rpm
 69 = 69 Hz/2049 rpm
 70 = 70 Hz/2079 rpm
 71 = 71 Hz/2109 rpm
 72 = 72 Hz/2138 rpm
 73 = 73 Hz/2168 rpm
 74 = 74 Hz/2198 rpm
 75 = 75 Hz/2228 rpm
 76 = 76 Hz/2257 rpm
 77 = 77 Hz/2287 rpm
 78 = 78 Hz/2317 rpm
 79 = 79 Hz/2346 rpm
 80 = 80 Hz/2376 rpm



Model Number Description

Digit 26, 27 — VFD setting/DDP Fan Speed (continued)

81 = 81 Hz/2406 rpm
82 = 82 Hz/2435 rpm
83 = 83 Hz/2465 rpm
84 = 84 Hz/2495 rpm
85 = 85 Hz/2525 rpm
86 = 86 Hz/2554 rpm
87 = 87 Hz/2584 rpm
88 = 88 Hz/2614 rpm
89 = 89 Hz/2643 rpm
90 = 90 Hz/2673 rpm
92 = 92 Hz/2732 rpm
93 = 93 Hz/2762 rpm
94 = 94 Hz/2792 rpm
95 = 95 Hz/2822 rpm
96 = 96 Hz/2851 rpm
97 = 97 Hz/2881 rpm
91 = 91 Hz/2703 rpm
98 = 98 Hz/2911 rpm
99 = 99 Hz/2941 rpm
A0 = 100 Hz/2970 rpm
A1 = 101 Hz/3000 rpm
A2 = 102 Hz/3030 rpm
A3 = 103 Hz/3060 rpm
A4 = 104 Hz/3089 rpm
A5 = 105 Hz/3119 rpm
A6 = 106 Hz/3149 rpm
A7 = 107 Hz/3178 rpm
A8 = 108 Hz/3208 rpm
A9 = 109 Hz/3238 rpm
B0 = 110 Hz/3267 rpm
B1 = 111 Hz/3297 rpm
B2 = 112 Hz/3327 rpm
B3 = 113 Hz/3357 rpm
B4 = 114 Hz/3386 rpm
B5 = 115 Hz/3416 rpm
B6 = 116 Hz/3446 rpm
B7 = 117 Hz/3475 rpm
B7 = 117 Hz/3475 rpm
B9 = 119 Hz/3535 rpm
C0 = 120 Hz/3564 rpm
C1 = 60 Hz/3450 rpm
C2 = 61 Hz/3508 rpm
C3 = 62 Hz/3565 rpm
C4 = 63 Hz/3623 rpm
C5 = 64 Hz/3680 rpm
C6 = 65 Hz/3738 rpm
C7 = 66 Hz/3795 rpm
C8 = 67 Hz/3853 rpm
C9 = 68 Hz/3910 rpm
D0 = 69 Hz/3968 rpm
D1 = 70 Hz/4025 rpm
D2 = 71 Hz/4083 rpm
D3 = 72 Hz/4140 rpm
D4 = 73 Hz/4198 rpm
D5 = 74 Hz/4255 rpm
D6 = 75 Hz/4313 rpm
D7 = 76 Hz/4370 rpm
D8 = 77 Hz/4428 rpm
D9 = 78 Hz/4485 rpm
E0 = 79 Hz/4543 rpm
E1 = 80 Hz/4600 rpm
SS = Special

Digit 28 — Filter/Mixing/Return Section

0 = None
A = 2-inch flat filter rack
B = 2-inch flat filter/mixing
C = 2-inch angle filter
D = 2-inch, angle filter/mixing
E = 2-inch/4-inch combination filter rack
F = 2-inch/4-inch combination filter/ mixing
G = Mixing only
S = Special

Digit 29 — Filter Type

0 = Customer supplied/no filters
A = 2-inch MERV 8
B = 2-inch MERV 13
C = 2-inch MERV 8/4-inch MERV 11
D = 2-inch MERV 8/4-inch MERV 13
E = 2-inch MERV 13/4-inch MERV 13
S = Special

Digit 30 — Controls Options 1

0 = No controls - 1 option
1 = Low limit switch, condensate overflow switch, dirty filter switch and fan status switch

Digit 31 — Controls Options 2

0 = No controls - 2 options
A = Discharge Air Sensor (DAS)
B = Discharge air sensor and Mixed Air Sensor (MAS)
C = Discharge air sensor, mixed air sensor, factory-mounted N.O. mixing box actuator
D = Discharge air sensor, mixed air sensor, factory-mounted N.C. mixing box actuator
S = Special

Digit 32 — Controls Options 3

0 = No controls - 3 options
A = Outdoor air temperature sensor field wired
B = Duct static pressure sensor field wired
C = Outdoor air temperature sensor and duct static pressure sensor, field wired
S = Special

Digit 33 — Special Option

0 = Standard order
S = Special order

Digit 34 — Unit Options

0 = Indoor unit
A = Factory-provided curb, pipe cabinet, standard paint
B = Field-provided curb, pipe cabinet, standard paint
C = Pier-mounted unit, pipe cabinet, standard paint
D = Factory-provided curb, no pipe cabinet, standard paint
E = Field-provided curb, no pipe cabinet, standard paint
F = Pier-mounted unit, no pipe cabinet, standard paint
S = Special

Digit 35 — Access Section with Optional Coil

0 = No access section
1 = Access section without coil
2 = Access section with coil
S = Special

Digit 36 — Door Section

0 = Standard - door on motor side
1 = Doors on both sides
S = Special

Digit 37 — Mix Boxing Return - Top

0 = No opening/damper
A = Opening only
B = Damper
S = Special

Digit 38 — Mix Boxing Return - Bottom

0 = No opening/damper
A = Opening only
B = Damper
S = Special

Digit 39 — Mix Boxing Return - Back

0 = No opening/damper
A = Opening only
B = Damper
C = Opening with hood
D = Damper with hood
S = Special

Digit 40 — Optional Indoor Baserail

0 = None
1 = 6-inch Baserail
S = Special



Features and Benefits

The Performance Climate Changer UCCA air handler provides a cost-effective solution to meet cataloged air handling needs. As a customizable, cataloged air handler, components are available to meet a wide range of commercial and institutional applications for the HVAC market. Pre-engineered options expand that flexibility while ensuring proven, tested performance and dependability. These features add flexibility and are engineered to provide good indoor air quality, including:

- Single point power.
- Factory mounted, wired and tested controls.
- Two-inch double-wall injected foam casing.
- Direct-drive plenum fans.
- Filter options including MERV 11 and MERV 13 filters, which help achieve points toward LEED certification.
- Variety of coil options that include hydronic, DX, steam, and electric heat.
- Weatherization features for outdoor applications.

Construction and Integrity

Panels and doors are designed to provide extraordinary insulating capabilities for efficient and cost-effective performance. Standard double-wall panels and doors include two-inch closed cell foam insulation providing a minimum R-value of 13, in addition to premium panel strength and 0.005 inch deflection at +/- 6 inches w.g.

Heavy-duty door handles and hinges are surface-mounted and a removable hinge pin allows for easy door removal.

Engineered for Good IAQ

The building industry is continuously evolving and the rate of change is accelerating. The Performance air handler is engineered to address today's multifaceted design issues required to provide good indoor air quality (IAQ). Building owners must give particular attention to maintaining and documenting IAQ to ensure occupant comfort and to meet industry and government regulatory standards.

ASHRAE Standard 62.1 provides guidance regarding suitable outside air volume to be brought into the building, recommended air filtration, and design recommendations and procedures to control microbial growth. Performance air handlers enable you to configure an IAQ-ready air-handling system that addresses these concerns.

Sloped Drain Pan

The drain pan is positively sloped in every plane to assure proper drainage and help maximize protection from microbial growth.

Drain pans are made from a noncorrosive polymer material, double-wall construction, and foamed in place to help eliminate condensation beneath the drain pan. An optional stainless steel drain pan is also available.

Serviceability/Cleanability

- Full-size access doors are provided for easy cleaning of internal components.
- Removable coil panels.
- Smooth, cleanable interior double-wall surfaces help improve indoor air quality.
- Coils are raised up out of the drain pan to make all coils removable from the side and provide easier access to the drain pan for cleaning.



Features and Benefits

Filtration

Performance air handlers are available with a wide variety of filtration options, including:

- Two-inch MERV 8 or MERV 13 flat or angled filters
- Combination filter racks including two-inch MERV 8 or MERV 13 and four-inch MERV 11 or MERV 13

A factory-mounted dirty filter switch can be used to indicate when the filter needs replacement.

Ventilation

A mixing box with ultra low-leak dampers is available for delivering ventilation air directly to the unit.

Dehumidification

The Performance UCCA air handler can be configured for either a constant-volume or VAV application. VAV systems generally provide effective, coincidental dehumidification over a wide range of indoor load conditions. As long as any space needs cooling, the VAV air handler supplies dry (low dew point) air to all of the VAV terminal units.

For direct control of space humidity in a constant-volume application, the Performance air handler can be configured with a hydronic or steam heating coil in the reheat position. This would allow the cooling and heating coils to modulate independently to directly control both temperature and humidity in the space. A unit-mounted electric heater, with a single-point connection, is also available in the reheat position.

Control Solutions

Performance air handlers are available with an optional control interface. This package can be used as part of a stand-alone operation, or it can be fully integrated into a comprehensive control system. The Trane EarthWise™ system incorporates the benefits of factory-installed controls and links the air handler to the Tracer® SC system controls building management system. This option is designed to lower installation costs and risk while dramatically improving the quality of the application and the performance of the air handler. The entire air handler control system is engineered, mounted, wired, and tested before leaving the factory. As a result of strict quality manufacturing methods, these control options bring consistency and reliability to the control-system package and provide single-source responsibility.

The following control devices are available as standard:

- Trane Symbio™ 500 controller
- Variable-frequency drives (VFDs)
- Controls interface package
 - Fan motor disconnect switch (indoor units only)
 - Transformer(s)
 - Fan contactor
 - Customer terminal strip for field-provided controls
- Various end device options, including:
 - Low limit protection
 - Condensate overflow switch
 - Fan status switch
 - Filter status switch
 - Discharge air sensor
 - Mixed air sensor
 - Return air sensor
 - Damper actuator

Single Source Responsibility

Equipment and interoperable controls, engineered and provided by a single manufacturer, provide faster construction cycles and simplify job-site coordination efforts. This simplification reduces installation time, expense, and risk. Trane equipment and controls package provides the optimal performance when integrated in a Trane Earthwise™ system. This is a powerful system architecture that unifies Trane HVAC equipment, direct digital control, and building management into a cohesive whole with an assured source of support. This system is managed with the Tracer® building management system.

Proven Performance

AHRI Standards

Trane combines comprehensive performance certification by AHRI with thorough laboratory testing and advanced manufacturing methods. Together, these elements help assure that each Trane air handler operates predictably and reliably throughout the life of the unit.

Unlike other rating methods that check fan performance alone, Trane units are performance-tested in accordance with AHRI Standard 430. This certification process evaluates the air handler on the basis of airflow, static pressure, fan speed, and brake horsepower.

Heating and cooling coils are rigorously tested and certified with AHRI Standard 410 to assure that they, too, deliver published performance.

AHRI Standard 260 is the first ducted-air-handler sound rating procedure. It is intended to provide engineers with better, more accurate, ducted sound power levels so that they can design quieter and more cost-effective comfort systems. Sound ratings for Trane air handlers have been developed from extensive AHRI Standard 260 testing and laboratory data.

UL Listing

Trane air handlers are UL-listed to U.S. and Canadian safety standards.

Canadian Registration Number (CRN)

The Canadian Registration Number (CRN) is given to companies that comply with Canada's Technical Safety Standards Act concerning pressure vessel safety. In Trane air-handling systems, the CRN applies to coils classified as Category H fittings. Most government and industrial customers require the HVAC supplier to have a CRN. Trane has earned a CRN for all steam and water coils used in Performance Climate Changer air handlers.

ISO Certification

Certification by the International Standardization Organization (ISO) ensures that an organization can consistently deliver a product or service that meets the customer's contractual requirements by following documented processes. The ISO 9001 quality assurance model establishes the requirements for an organization whose business processes range from design and development to production. Having the quality management system of our manufacturing plants ISO 9001-certified directly benefits Trane customers because our continuous process improvements can reduce business costs, improve product quality, and enable faster ship cycles.

Leak Detection System

The Leak Detection System (LDS) consists of one or more refrigerant detection sensors and is required in ducted HVAC systems that have more than 3.91 lbs of A2L refrigerant charge, per safety standard UL 60335-2-40. For any units with more than 3.91 lbs of charge in a circuit, an LDS will be factory-installed.

Features	Benefits
Leak Detection Sensor per safety standard UL 60335-2-40	<ul style="list-style-type: none"> Monitors for leaks and activates mitigation when necessary. Reduces the risk of improper installation in the field. Bypasses the added cost of field installation.

1. If factory-installed Symbio™ 500 BACnet® controller is selected, leak detection system sequence of operation must be programmed in the field upon unit installation.
2. If factory-installed controls are not selected, the leak detection sequence of operation must be programmed by controls contractor.



Application Considerations

The Performance Climate Changer UCCA air handler offers a wide range of application flexibility while maintaining a simple, easy to install unit design. These units are a great choice when a compact, reliable air handler is needed when budget is a critical factor.

Typical applications include many different types of buildings such as: schools, office buildings, hospitals and retail. Applications can be either constant volume or variable-air-volume. Some applications include:

- Two-pipe hydronic system for cooling and/or heating.
- Two-pipe hydronic cooling system with electric heat.
- Four-pipe system with dedicated heating and cooling coils.
- Direct expansion (DX) split systems with hydronic heat.

Standard AHU Arrangements

To complete the air-handling system, the sections must be physically arranged in a way that fits the available space. Conventional descriptions of air handler arrangements, *draw-thru* and *blow-thru*, reflect the means of establishing airflow through the coil based on the position of the coil relative to the fan: the fan either draws air through a coil located upstream or blows air through a downstream coil.

Horizontal Draw-Thru

Trane air handlers in a horizontal draw-thru arrangement provide the system components that are required in a single-level unit. An optional blow-thru electric heater is also available. Accepted system design practices are generally the only restrictions in a horizontal draw-thru application.

Figure 1. DPP fan with front discharge — horz draw-thru

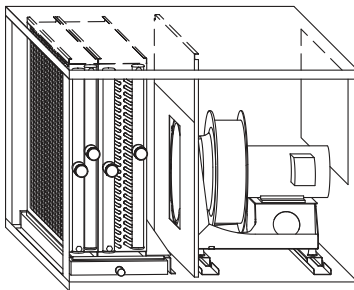


Figure 2. Direct-drive fan/mixing box with bottom discharge — horz draw-thru

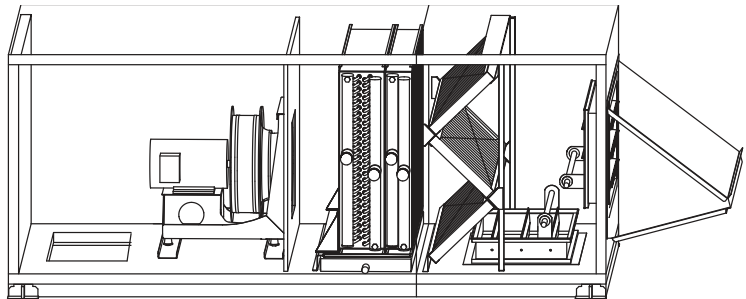


Figure 3. FC fan with front top discharge — horz draw-thru

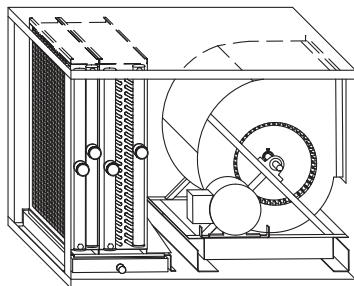
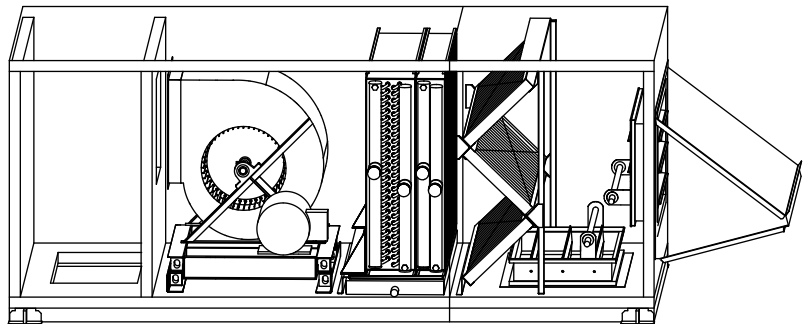


Figure 4. FC fan/mixing box with bottom discharge — horizontal draw-thru



Vertical Draw-Thru

Trane air handlers in a vertical draw-thru arrangement result in a shorter footprint than horizontal draw-thru units. This arrangement stacks a fan on top of the coil section. When designing an air handler in this configuration, a vertical draw-thru fan

performance curve should be used to account for the airflow impingement by a coil as the air flows through the coil and turns up into the fan. Fan discharge location is available in the front, back, and top panels.

Figure 5. FC fan with front top discharge

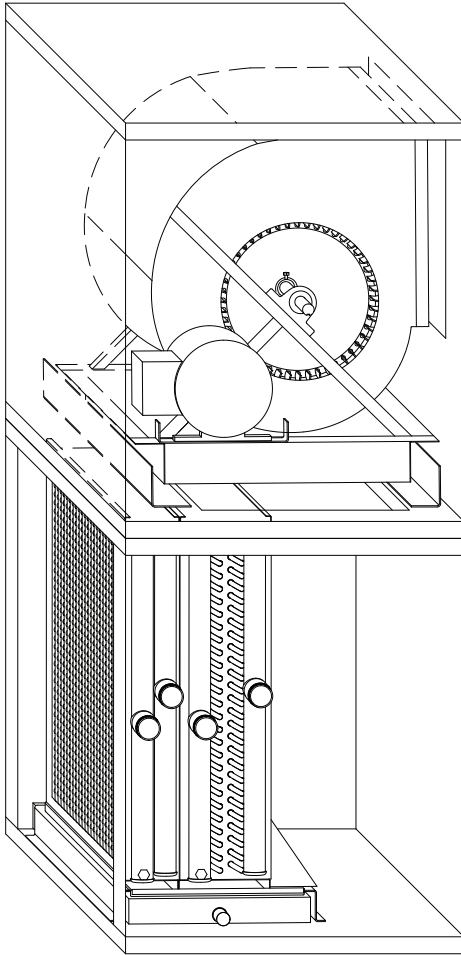
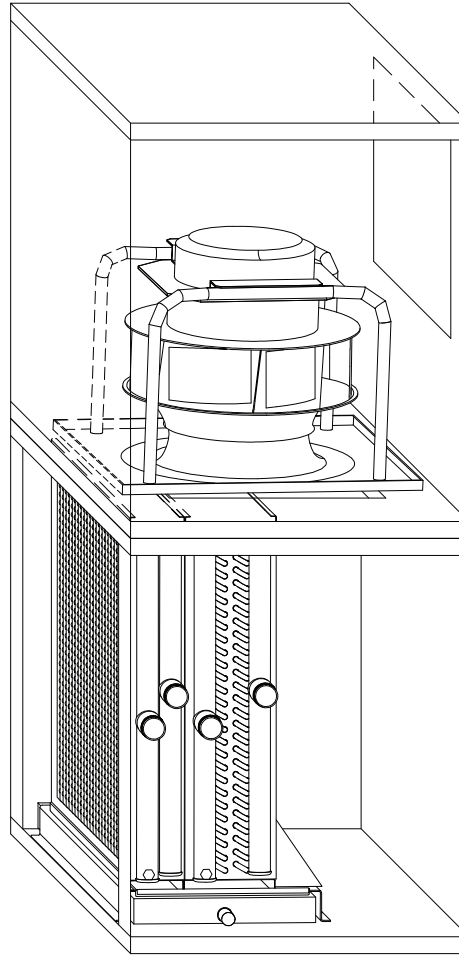


Figure 6. VMI fan with front discharge



Installation

Indoor horizontal units can be floor-mounted on a house-keeping pad or suspended from the ceiling. Vertical units are floor-mounted on a house-keeping pad. Outdoor units can be pier-mounted or mounted on a factory-provided or field-provided roof curb. See the *Roof Curbs For Performance Climate Changer™ Air Handlers Model UCCA for Outdoor Applications Sizes 3 to 30 — Installation Instructions* (CLCH-SVN006*-EN).

All units are shipped with the isolation system tied down for shipment purposes. To utilize standard internal isolation, remove shipping tie-downs. See the *Performance Climate Changer™ Air Handler Model UCCA for Indoor and Outdoor Applications — Installation, Operation, and Maintenance* (CLCH-SVX009*-EN). If external isolation is being utilized, install units with external vibration isolation on all connection points, including the ductwork connections and piping connections.

It is important to consider proper condensate management before installation. You must mount the unit high enough so that the condensate drain pan can be properly trapped. See the *Performance Climate Changer™ Air Handler Model UCCA for Indoor and Outdoor Applications — Installation, Operation, and Maintenance* (CLCH-SVX009*-EN) for specific trapping instructions.

Install units in accordance to all applicable ASHRAE standards, SMACNA, and local code requirements.

Operating Limitations

Do not operate unit above maximum fan speed or unit airflow as shown in the unit fan curves. Unit operation at greater than maximum fan speed can drastically reduce bearing life and result in a catastrophic failure. Operating at greater than the



Application Considerations

maximum allowable airflow in the cooling mode may result in unsatisfactory operation due to moisture carryover from the coil. In addition, it is often not economical to operate a unit at its maximum fan speed due to the greater motor power requirements.

Do not operate units with electric heat below the minimum airflow listed in *Performance Climate Changer™ Air Handler Model UCCA for Indoor and Outdoor Applications Installation, Operation, and Maintenance* manual (CLCH-SVX009*-EN). This is to prevent excessive leaving air temperatures and electric heat limit trips.

Do not operate a hydronic (or steam) coil and electric heat simultaneously. This is to prevent excessive leaving air temperatures and limit trips. Electric heat units are equipped with a lockout switch to disable the electric heater if the temperature of the hydronic (or steam) coil is greater than 95°F (35°C).

Do not operate coils above the fluid flow limits listed in the installation manual. This is to prevent noise and erosion within the coil. A minimum or **self venting** fluid flow rate is also listed in the installation manual. If coils operate below this flow rate, you should periodically vent them by flushing at a higher flow rate. These low fluid flow rates may also be too low to be included in the AHRI certification.

DX Cooling Units

Performance air handlers with a DX cooling coil will often be connected to an air-cooled condensing unit. Some condensing units have two, independent refrigeration circuits, while the DX coil in size 3 through 10 units can be configured with a single circuit. Do not manifold two, independent refrigeration circuits into a single-circuited DX (evaporator) coil. If the condensing unit does have two, independent refrigeration circuits, configure the DX coil to have either two or four distributors.

DX coils, equipped with either two or four distributors, can be configured with either intertwined or horizontal-split circuiting. Intertwined circuiting is preferred in VAV applications. At low loads, refrigerant is fed to alternating tubes, and the coil performs as though its fin surface area is substantially greater. Therefore, the coil surface can be warmer at part load, which reduces the risk of frost and still provides a constant leaving-air temperature.

Variable Refrigerant Flow (VRF) Systems

Variable Refrigerant Flow (VRF) systems provided by Mitsubishi Electric Trane HVAC connected to Trane air-handling equipment provide flexible energy efficient designs while maintaining comfort utilizing the variable speed capabilities of VRF systems. Linear expansion valve (LEV) kits allow for coils to be connected to both heat recovery systems via a branch controller or heat pump outdoor units. Trane air handlers can be used as split systems providing solutions for dedicated outdoor air systems (DOAS), mixed air, or recirculating systems applied in variable air volume (VAV) and constant volume (CV) arrangements extending beyond the static pressure, system capacity, and product features commonly found in VRF installations.

Available Trane Pre-Packaged Solutions (PPS) easily connect Trane unit controllers and VRF system controls for full system integration with a Tracer® building automated system (BAS).

Application considerations:

- Maximum refrigerant pressure
- Minimum refrigerant volume to ensure oil return
- Coil volume to LEV-kit requirements
- Allowable LEV-kit to coil distributor connected capacity and configuration
- Coil tube diameter and minimum tube wall thickness for heat pump or heat recovery applications
- Fan motor temperature limits for VRF zone temperature control

A2L Application Considerations

This product is listed to UL standard 60335-2-40, Household and Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers, which defines safe design and use strategies for equipment using A2L refrigerants. This standard limits the refrigerant concentration in a space in the event of a refrigerant leak. To meet the requirements, the UL standard defines minimum room area, refrigerant charge limit, minimum circulation airflow and/or ventilation airflow requirements, and limits the use of ignition sources in spaces. The standard may require a unit refrigerant leak detection system.

For equipment with either:

- R-454B and charge amounts less than or equal to 3.91 lbs per circuit
- R-32 and charge amounts less than or equal to 4.04 lbs per circuit

this UL standard does not prescribe a room area limit and does not require a refrigerant leak detection system or any circulation airflow or ventilation airflow mitigation strategies. However, ignition sources in ductwork must be evaluated.

Depending on the application, a specific requirement of ANSI/ASHRAE Standard 15, Safety Standard for Refrigeration Systems, could be more stringent than UL 60335-2-40 requirements. See *Refrigeration Systems and Machinery Rooms Application Considerations for Compliance with ASHRAE® Standard 15-2022 Application Engineering Manual* (APP-APM001*-EN) for more information.

Leak Detection System (R-454B charge greater than 3.91 lb per circuit or R-32 charge greater than 4.04 lb per circuit)

The leak detection system consists of one or more refrigerant detection sensors. When the system detects a leak, the following mitigation actions will be initiated until refrigerant has not been detected for at least 5 minutes:

- Energize the supply fan(s) to deliver a required minimum amount of circulation airflow.
- Disable compressor operation.
- Provide an output signal that can be used to fully open zone dampers and/or VAV boxes and disable electric heat in VAV boxes.
- Provide an output signal that can be used to energize additional mechanical ventilation (if needed).
- Units without airflow proving will disable electric heat sources.

Building fire and smoke systems may override this function.

If the refrigerant sensor has a fault, is at the end of its life, or is disconnected, the unit will initiate the mitigation actions. Mitigation actions may be verified by disconnecting the sensor.

The refrigerant sensors do not need service. Use only manufacturer-approved sensors when replacement is required.

Notes:

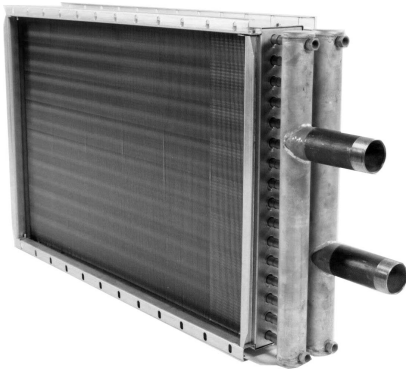
1. *Factory-installed Symbio™ 500 unit controller requires field programming of the leak detection sequence of operations by the controls contractor.*
2. *Field-installed unit controllers require field programming of the leak detection sequence of operations by the controls contractor.*
3. *See UL 60335-2-40 for more information.*



Components and Options

Performance Climate Changer air handler model UCCA provides a standard configuration with coil(s) and fan, and then allows customization with various optional accessory sections.

Coils

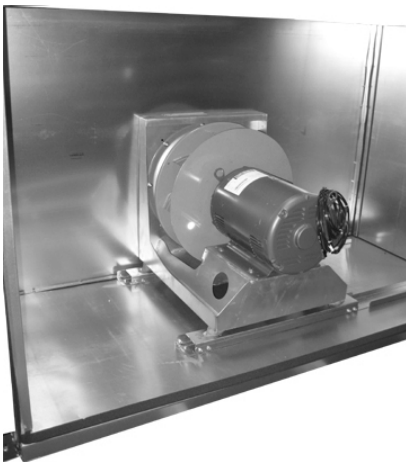


The variety of Trane coil types, sizes, arrangements, and materials allows selection of a coil optimized for pressure drop and capacity requirements. Published coil performance is certified in accordance with AHRI Standard 410 and meets CRN standards.

Trane is at the leading edge of coil technology. Through extensive laboratory testing and numerous job-site installations, Trane has developed an enhanced fin surface with superior heat transfer characteristics and allows greater velocities of air to move through the cooling coil without causing moisture carryover.

The industry is familiar with the 500 fpm limit through a cooling coil as a “rule of thumb” to safeguard against moisture carryover. However, some applications have tight dimensional constraints that require high coil face velocities. Trane’s fin design extends this limit in excess of 625 fpm, depending upon air conditions, coil size, and spacing. Tested data for moisture carryover is incorporated in the Trane Official Product Selection System (TOPSS™). In cases where moisture carryover is possible, the TOPSS program alerts you to this fact with a moisture carryover warning.

Fans



Trane offers flexible fan types and options, including variable-frequency drives (VFDs) for modulation in variable-air-volume (VAV) systems.

Supply fan types include:

- Single-width/single-inlet (SWSI) direct-drive plenum fans with front or top discharge for indoor units; front or bottom discharge for outdoor applications.
- Single-width/single-inlet (SWSI) vertical motorized impeller fans with front, back or top discharge for indoor units.
- Double-width/double-inlet (DWDI) centrifugal forward-curved (FC) fans with front or top discharge for indoor units; front or bottom discharge for outdoor applications.

Each fan is rated in accordance with Standard 430 of the Air Conditioning Heating and Refrigeration Institute (AHRI) and all DWDI fans are AHRI Standard 430-certified to assure published performance.

To verify that fan performance will satisfy design requirements, use the TOPSS™ selection program. The AHRI Standard 430-certified fan curves include the fan section casing effect. TOPSS also takes into account air density, fan and motor heat, drive losses, and use of high-performance filters that affect fan performance.

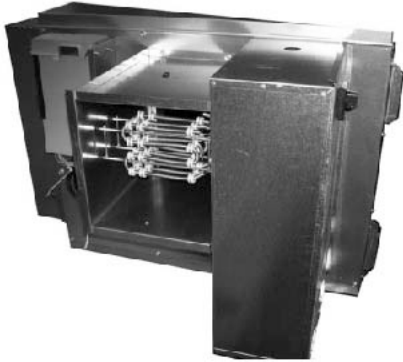
Mixing Box/Filter Section



A mixing box is available for those applications where both return air and fresh air are delivered directly to the unit. The mixing box also has the flexibility to provide a wide variety of filtration options, including 2-inch flat or angled filters and 2-inch/4-inch combination flat filters.

Effectively controlling particulates by removing them from the air stream is key to good IAQ. That necessitates proper filter selection. In addition to mixing box/filter sections, filter sections are also available with angled or flat filters.

Electric Heat

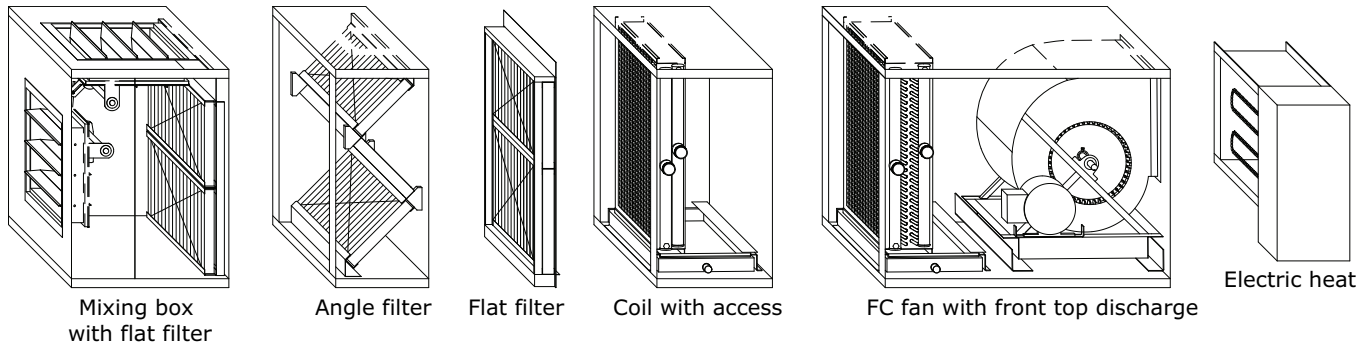


In addition to hydronic and steam coil options, the unit is also available with a unit mounted electric heater in the reheat position. The unit will have single-point power connection to the electric heater. The heater is available with SSR full modulating control.

General Data

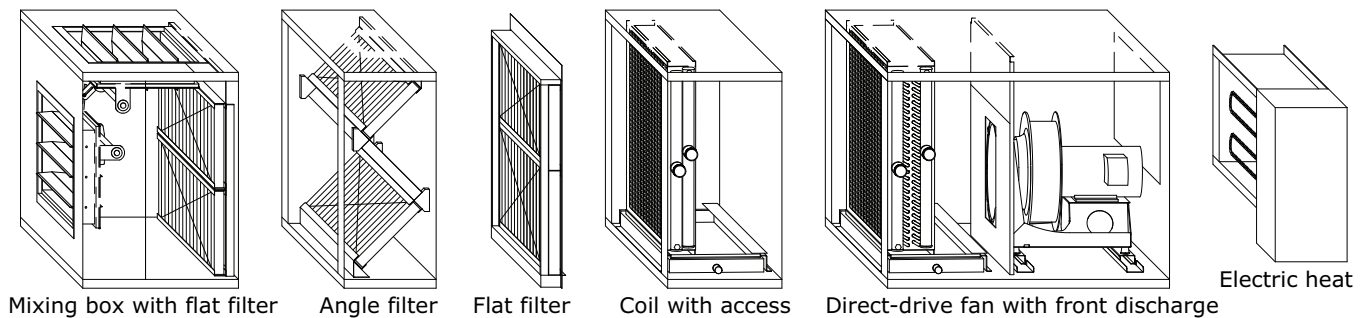
Unit Configurations and Components

Figure 7. Indoor horizontal FC fan configuration



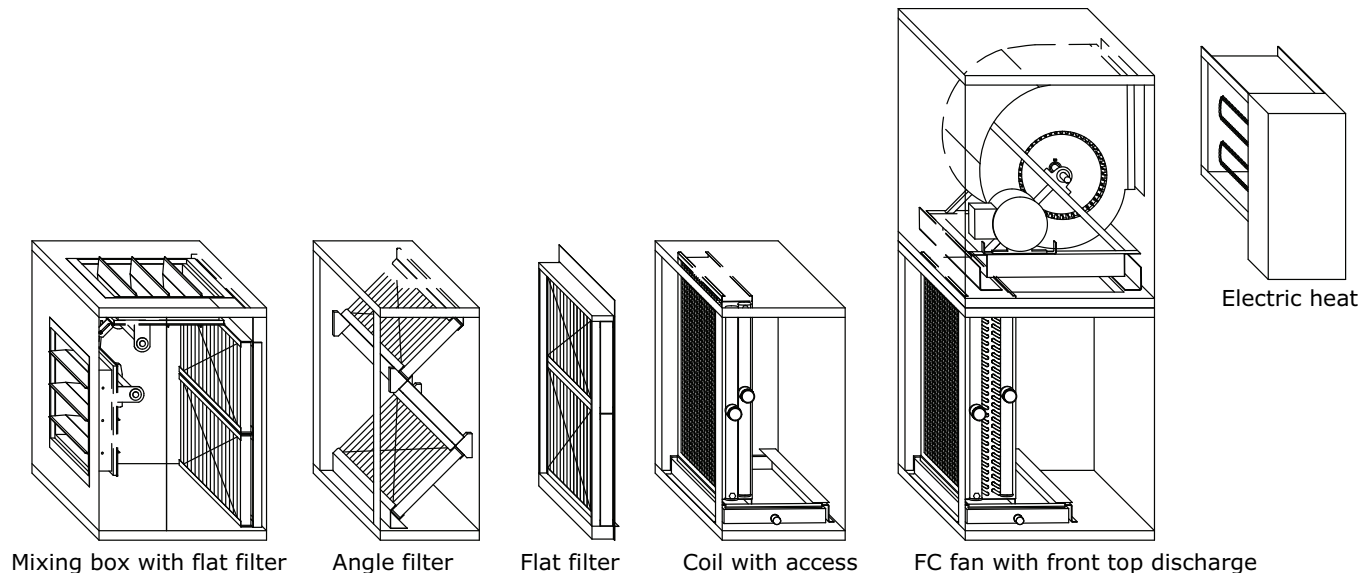
Note: Not all available configurations are shown. Discharges available include front and top. Main unit ships fully assembled. Accessory sections ship separately.

Figure 8. Indoor horizontal unit with DDP fan configuration



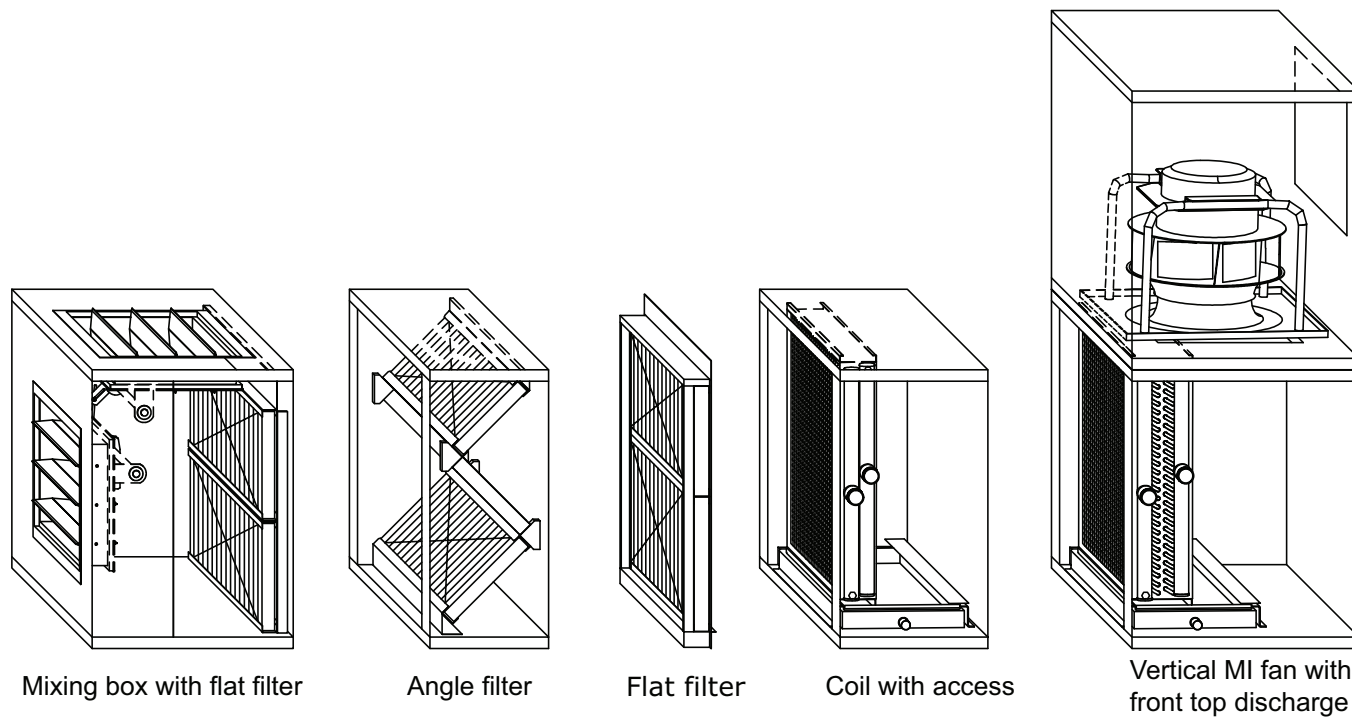
Note: Not all available configurations are shown. Discharges available include front and top. Main unit ships fully assembled. Accessory sections ship separately.

Figure 9. Indoor vertical unit with FC fan configuration



Note: Not all available configurations are shown. Discharges available include front, top and back. Main unit ships fully assembled. Accessory sections ship separately.

Figure 10. Indoor vertical unit with motorized impeller (MI) fan configuration



Note: Not all available configurations are shown. Discharges available include front, top and back. Main unit ships fully assembled. Accessory sections ship separately.

Figure 11. Outdoor unit with DDP fan configuration

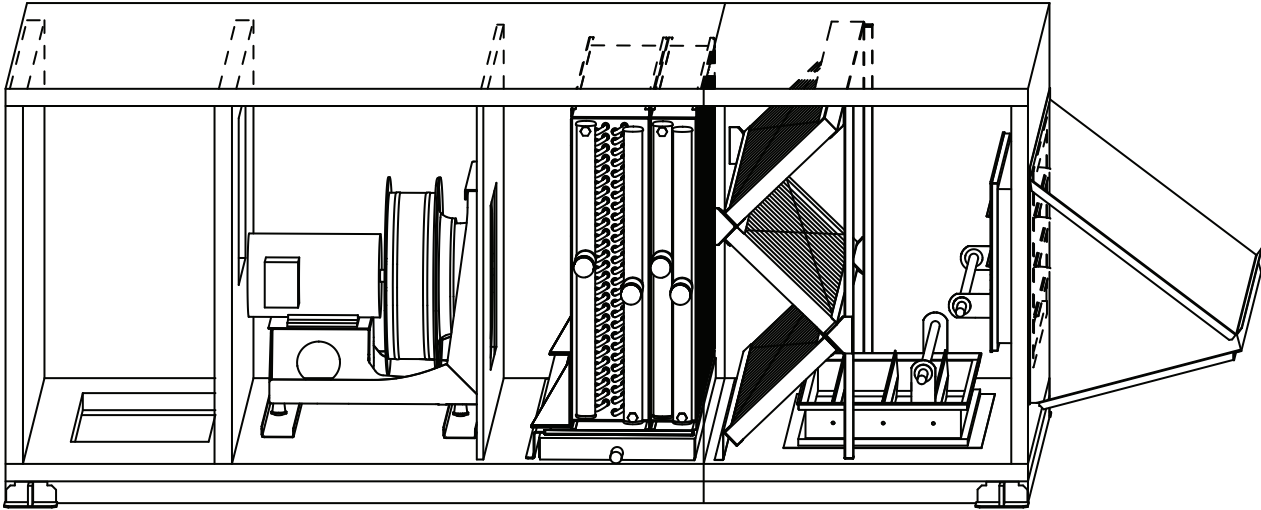
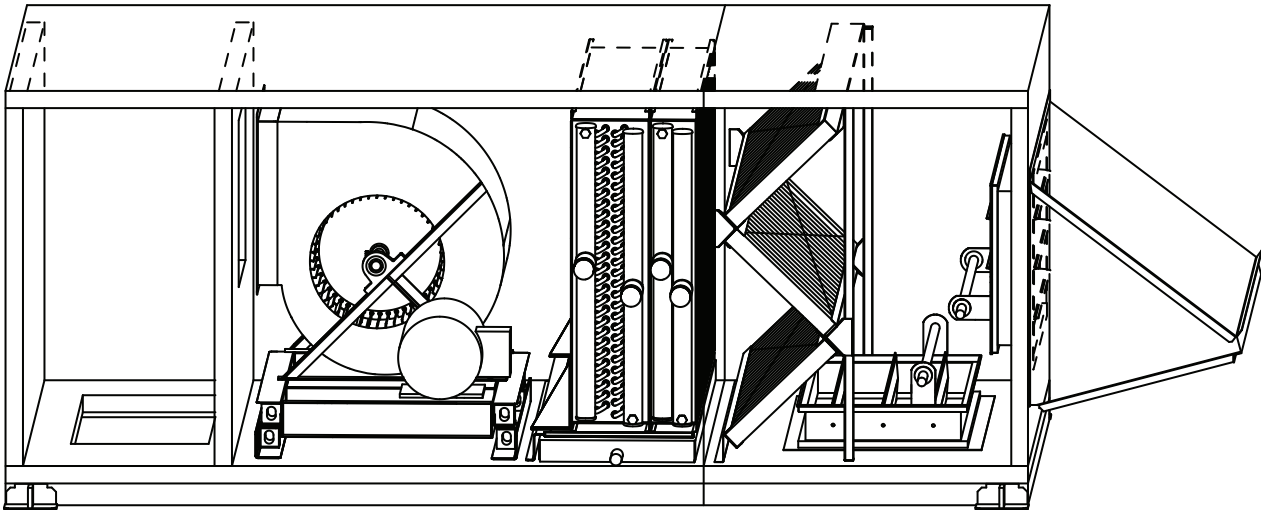
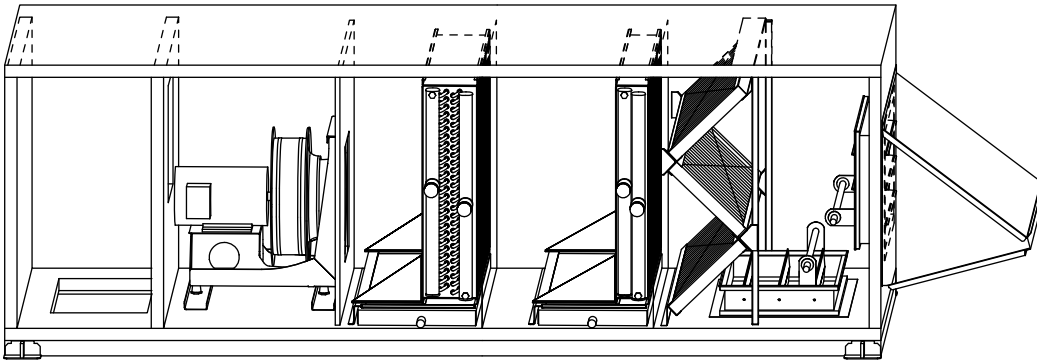


Figure 12. Outdoor unit with FC fan configuration



Note: Not all available configurations are shown. Discharges available include front and bottom. Main unit ships fully assembled. Pipe cabinet and hoods ship separately.

Figure 13. Outdoor unit with DDP fan configuration and coil with access



Unit Data

Table 1. Performance air handler model UCCA data

Nom airflow (CFM)	1500	3000	4000	5000	6000	7000	8500	10500	12500	15000
Unit size	3	6	8	10	12	14	17	21	25	30
Indoor units (dimensions in inches)										
Horizontal unit height ^(a)	27.50	32.50	38.00	38.00	41.75	45.57	48.07	54.32	60.57	60.57
Horizontal unit width	34.00	47.00	51.00	63.00	71.00	71.00	79.00	79.00	81.00	94.00
Horizontal unit length	51.94	54.94	52.31	54.66	54.66	56.16	60.16	60.24	62.94	69.56
Vertical unit height with FC fan	51.40	61.30	65.10	69.90	80.10	83.80	92.90	99.20	n/a	n/a
Vertical unit height with MI fan	48.60	56.00	62.80	68.50	72.20	76.00	78.50	83.60	89.80	89.80
Vertical unit width	34.00	47.00	51.00	63.00	71.00	71.00	79.00	79.00	81.00 ^(b)	94.00 ^(b)
Vertical unit length	34.30	37.30	34.00	35.60	39.30	39.30	42.30	42.30	47.10 ^(b)	47.10 ^(b)
¹ Size 25 and 30 not available with FC fan.										
Outdoor units (dimensions in inches)										
Horizontal unit height	31.80	36.80	42.30	42.30	46.10	49.90	52.40	58.60	64.90	64.90
Horizontal unit width	41.25	54.25	58.25	70.25	78.25	78.25	86.25	86.25	88.25	101.25
Horizontal unit length	76.00	79.00	76.40	78.70	78.70	80.20	84.30	84.30	87.00	93.60
Coils										
Hydronic/DX coils (galvanized and stainless steel casing)										
Area (ft ²)	2.80	5.60	7.60	9.90	12.30	14.30	16.30	20.400	24.00	28.50
Width (in.)	17.50	22.50	27.50	27.50	30.00	35.00	35.00	43.75	50.00	50.00
Length (in.)	23.00	36.00	40.00	52.00	59.00	59.00	67.00	67.00	69.00	82.00
Velocity (fpm)	537	533	524	504	488	488	522	516	522	527
Dry Weight (lb.)										
- 1-row hydronic	23	34	42	51	63	72	78	92	110	122
- 2-row hydronic	29	46	57	71	87	101	110	133	155	176
- 4-row hydronic	46	75	96	122	149	171	189	239	271	310
- 4-row DX	39	67	90	115	137	157	177	213	247	292
- 6-row hydronic	58	98	127	161	197	228	253	320	366	423
- 6-row DX	52	92	121	153	185	213	238	297	341	405
- 8-row hydronic	73	125	162	207	254	293	327	410	472	547
Wet Weight (lb.)										
- 1-row	29	43	52	64	81	93	101	119	142	158
- 2-row	37	58	74	91	115	132	145	179	209	237
- 4-row	59	97	125	158	196	226	250	318	364	417
- 6-row	76	129	168	213	264	306	340	431	497	575
- 8-row	97	165	217	275	340	394	439	554	641	745
Steam coils										
Area (ft ²)	1.80	4.40	6.50	8.50	9.80	13.30	15.10	16.80	21.30	25.30



General Data

Table 1. Performance air handler model UCCA data (continued)

Nom airflow (CFM)	1500	3000	4000	5000	6000	7000	8500	10500	12500	15000
Unit size	3	6	8	10	12	14	17	21	25	30
Width (in.)	12.00	18.00	24.00	24.00	24.00	33.00	33.00	18.00 18.00	12.00 33.00	12.00 33.00
Length (in.)	22.00	35.00	39.00	51.00	58.00	58.00	66.00	67.00	68.00	81.00
Velocity (fpm)	818	686	615	588	610	527	562	627	588	593
Weight (lb.)	31	54	75	86	93	122	132	156	239	266
Supply Fan/Motor data										
FC fans										
Wheel size (in.)	9 x 7	12 x 9	12 x 12	15 x 15	18 x 15	18 x 18	20 x 15	20 x 20	20 x 18	22 x 20
Maximum rpm	2000	1500	1700	1400	1200	1200	1100	1000	1300	1150
Motor hp	1-2	1-3	1-5	1 - 5	1 - 7 1/2	1 - 7 1/2	1 - 10	2 - 15	3 - 15	1 1/2 - 15
Minimum design cfm	1050	2100	2800	3500	4200	4900	5950	7350	8750	10,500
DDP fans										
Wheel size (in.)	11	14	16	18	18	20	20	2 x 18	2 x 20	2 x 20
Maximum rpm	4600	3600	3400	3025	3025	2720	2720	3025	2720	2720
Motor hp	1-3	1 1/2 - 7 1/2	2 - 7 1/2	3 - 7 1/2	3 - 10	3 - 10	3 - 15	3- 10	3- 10	5 - 15
MI fans (Standard)										
Wheel size (mm)	310	310	450	450	560	560	2 x 450	2 x 450	2 x 560	2 x 560
Maximum rpm	3985	3985	2398	2398	1685	1685	2398	2398	1685	1685
Motor hp (kW)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
MI fans (Premium)										
Wheel size (mm)	310	355	355	500	500	500	500	2 x 500	2 x 500	2 x 500
Maximum rpm	3985	3600	3600	2450	2450	2450	2450	2450	2450	2450
Motor hp (kW)	4.5	4.5	4.5	8	8	8	8	8	8	8
Filters (height x width — inches) with quantity per size										
2 in. and 2 1/4 in. combination flat filter										
- 16 x 20			4		2	2	4	2		
- 16 x 25				4	1	1		2	2	6
- 20 x 20					2	2	4	2		
- 20 x 25	1	2			1	1		2	6	4
Area (ft ²)	3.50	6.90	8.90	11.10	16.30	16.30	20.00	22.50	26.40	30.60
Nominal Velocity (fpm)	432	432	450	450	369	431	425	467	474	491
2-in. Angle Filter										
- 16 x 20				2	6	6	6	4		12
- 16 x 25	2				3	3		8		
- 20 x 20		4	2	4			6			8
- 20 x 25			2						12	
Area (ft ²)	5.60	11.10	12.50	15.60	21.70	21.70	30.00	31.10	41.70	48.90

Table 1. Performance air handler model UCCA data (continued)

Nom airflow (CFM)	1500	3000	4000	5000	6000	7000	8500	10500	12500	15000
Unit size	3	6	8	10	12	14	17	21	25	30
Nominal Velocity (fpm)	270	270	320	321	277	323	283	338	300	307
Mixing Box										
Damper Area (ft ²)	1.30	2.40	3.10	4.10	5.10	5.60	7.00	8.20	10.30	12.00
Nominal Velocity (fpm)	1167	1225	1289	1206	1178	1239	1217	1278	1208	1247

(a) Add 6 inches for units with optional baserail.

(b) Hydronic coil weight based on 14 fins per inch. Steam coil weight based on 6 fins per inch. Coil width = length in direction of coil header, typically vertical. Coil length = length of coil in direction of the coil tubes, typically horizontal and perpendicular to airflow. Unit sizes 21-30 have two stacked steam coils. Fan wheel size is diameter x length of blade (width). Minimum airflow limit is for units with hot water, steam, or electric heat. There is no minimum airflow for cooling-only units.

Coil Data

Table 2. Number of circuits and distributors for 1/2 inch coils

Unit Size	Single				Horizontal Face Split				Intertwined			
	Dist	Circuits	Fin Width	Fin Length	Dist	Circuits	Fin Width	Fin Length	Dist	Circuits	Fin Width	Fin Length
3	1	3	17.50	23.00	-	-	-	-	-	-	-	-
6	1	5	22.50	36.00	-	-	-	-	-	-	-	-
8	1	7	27.50	40.00	2	7	27.50	40.00	2	7	27.50	40.00
10	1	10	27.50	52.00	2	10	27.50	52.00	2	10	27.50	52.00
12	-	-	-	-	2	11	30.00	59.00	2	11	30.00	59.00
14	-	-	-	-	2	13	35.00	59.00	2	13	35.00	59.00
17	-	-	-	-	2	13	35.00	67.00	2	13	35.00	67.00
21	-	-	-	-	2	17	43.75	67.00	4	17	43.75	67.00
25	-	-	-	-	2	19	50.00	69.00	4	19	50.00	69.00
30	-	-	-	-	4	39	50.00	82.00	4	39	50.00	82.00

Table 3. 1/2 inch coil data

Size	1/2 in. Hydronic/DX coil			Size	1/2 in. Steam coil		
	Width (in)	Length (in)	Coil Area (ft ²)		Width (in)	Length (in)	Coil Area (ft ²)
3	17.50	23.00	2.80	3	12.00	22.00	1.80
6	22.50	36.00	5.60	6	18.00	35.00	4.40
8	27.50	40.00	7.60	8	24.00	39.00	6.50
10	27.50	52.00	9.90	10	24.00	51.00	8.50
12	30.00	59.00	12.30	12	24.00	59.00	9.80
14	35.00	59.00	14.30	14	33.00	58.00	13.30
17	35.00	67.00	16.30	17	33.00	66.00	15.10
21	43.75	67.00	20.40	21	18.00	67.00	16.80
25	50.00	69.00	24.00	25	12.00	68.00	
30	50.00	82.00	28.50	30	33.00	68.00	21.30
					12.00	81.00	
					33.00	81.00	25.30



Performance Data

Coil Data

Table 4. Hydronic/DX coil performance data

Size	Width (in)	Length (in)	Coil Area (ft ²)
3	17.50	23.00	2.80
6	22.50	36.00	5.60
8	27.50	40.00	7.60
10	27.50	52.0	9.90
12	30.00	59.00	12.30
14	35.00	59.00	14.30
17	35.00	67.00	16.30
21	43.75	67.00	20.40
25	50.00	69.00	24.00
30	50.00	82.00	28.50

Table 5. Steam coil performance data

Size	Width (in)	Length (in)	Coil Area (ft ²)
3	12.00	22.00	1.80
6	18.00	35.00	4.40
8	24.00	39.00	6.50
10	24.00	51.00	8.50
12	24.00	59.00	9.80
14	33.00	58.00	13.30
17	33.00	66.00	15.10
21	18.00	67.00	16.80
	18.00	67.00	
25	12.00	68.00	21.30
	33.00	68.00	
30	12.00	81.00	25.30

Fan/Motor Data

Table 6. Supply fan motor data

Unit Size	3	6	8	10	12	14	17	21	25	30
Nominal Airflow (cfm)	1500	3000	4000	5000	6000	7000	8500	10,500	12,500	15,000
Minimum Design CFM	1050	2100	2800	3500	4200	4900	5950	7350	8750	10,500
Maximum Design CFM	1800	3600	4800	6000	7200	8400	10,200	12,600	15,000	18,000
FC fans										
Wheel size (in)	9x7	12x9	12x12	15x15	18x15	18x18	20x15	20x20	20x18	22x20
Maximum RPM	2000	1500	1700	1400	1200	1200	1100	1000	1300	1150
Motor HP	1–2	1–3	1–5	1–5	1–7 1/2	1–7 1/2	1–10	2–15	3–15	1 1/2–15
DDP fans										
DDP Fan Wheel Size (in)	11	14	16	18	18	20	20	2 x 18	2 x 20	2 x 20
Maximum RPM	4600	3600	3400	3025	3025	2720	2720	3025	2720	2720
Motor HP	1–3	1 1/2–7 1/2	2–7 1/2	3–7 1/2	3–10	3–10	3–15	3–10	3–10	3–15
MI fans (Standard)										
Wheel size (in)	12.2	12.2	17.7	17.7	22.0	22.0	2 x 17.7	2 x 17.7	2 x 22.0	2 x 22.0
Maximum RPM	3985	3985	2398	2398	1685	1685	2398	2398	1685	1685
Motor HP (Kw)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
MI fans (Premium)										
Wheel size (in)	12.2	14.0	14.0	19.7	19.7	19.7	19.7	2 x 19.7	2 x 19.7	2 x 19.7
Maximum RPM	3985	3600	3600	2450	2450	2450	2450	2450	2450	2450
Motor HP (Kw)	4.5	4.5	4.5	8	8	8	8	8	8	8



Performance Data

Filter Pressure Drop

Table 7. Filter pressure drop

Description	Filter Status	Face Velocity (fpm)										
		150	200	250	300	350	400	450	500	550	600	650
4 inch MERV 13	Clean	0.06	0.10	0.13	0.17	0.21	0.25	0.30	0.35	0.40	0.45	0.50
	Mid-life	0.53	0.55	0.57	0.58	0.60	0.63	0.65	0.67	0.70	0.72	0.75
	Dirty	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4-inch MERV 11	Clean	0.05	0.08	0.11	0.15	0.19	0.23	0.28	0.32	0.37	0.42	0.48
	Mid-life	0.53	0.54	0.56	0.57	0.59	0.62	0.64	0.66	0.69	0.71	0.74
	Dirty	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2-inch MERV 13	Clean	0.08	0.12	0.16	0.21	0.26	0.31	0.36	0.42	0.48	0.54	0.61
	Mid-life	0.54	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.74	0.77	0.80
	Dirty	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2-inch MERV 8	Clean	0.05	0.08	0.11	0.14	0.18	0.22	0.26	0.30	0.34	0.39	0.43
	Mid-life	0.53	0.54	0.56	0.57	0.59	0.61	0.63	0.65	0.67	0.69	0.72
	Dirty	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Controls

All Performance Climate Changer air handlers are available with a number of control options, from factory-mounted end devices to fully integrated building automation systems.

Figure 14. Symbio 500 Controller

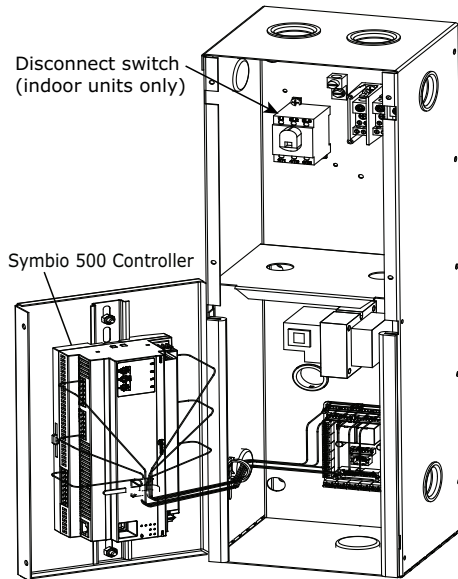


Figure 15. Control panel components for indoor UCCA units

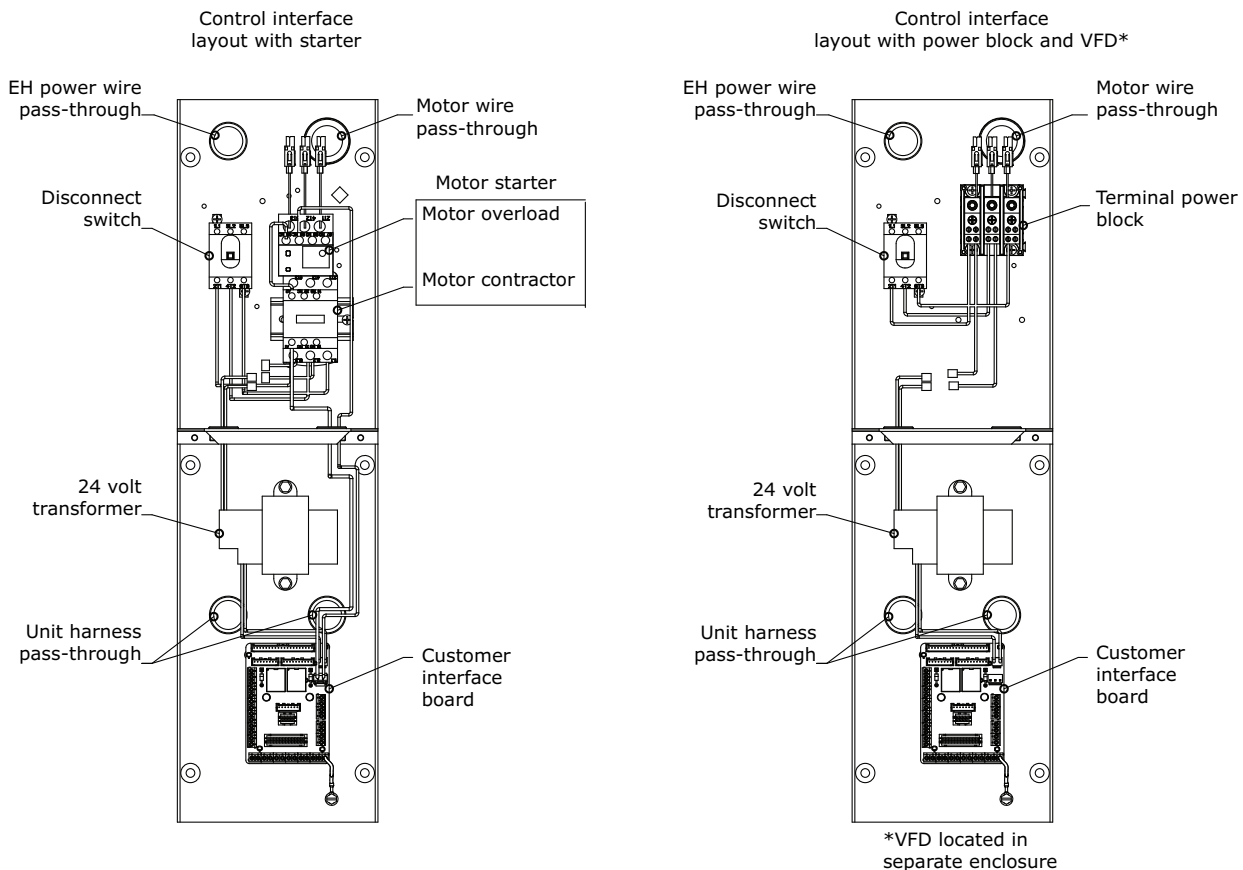
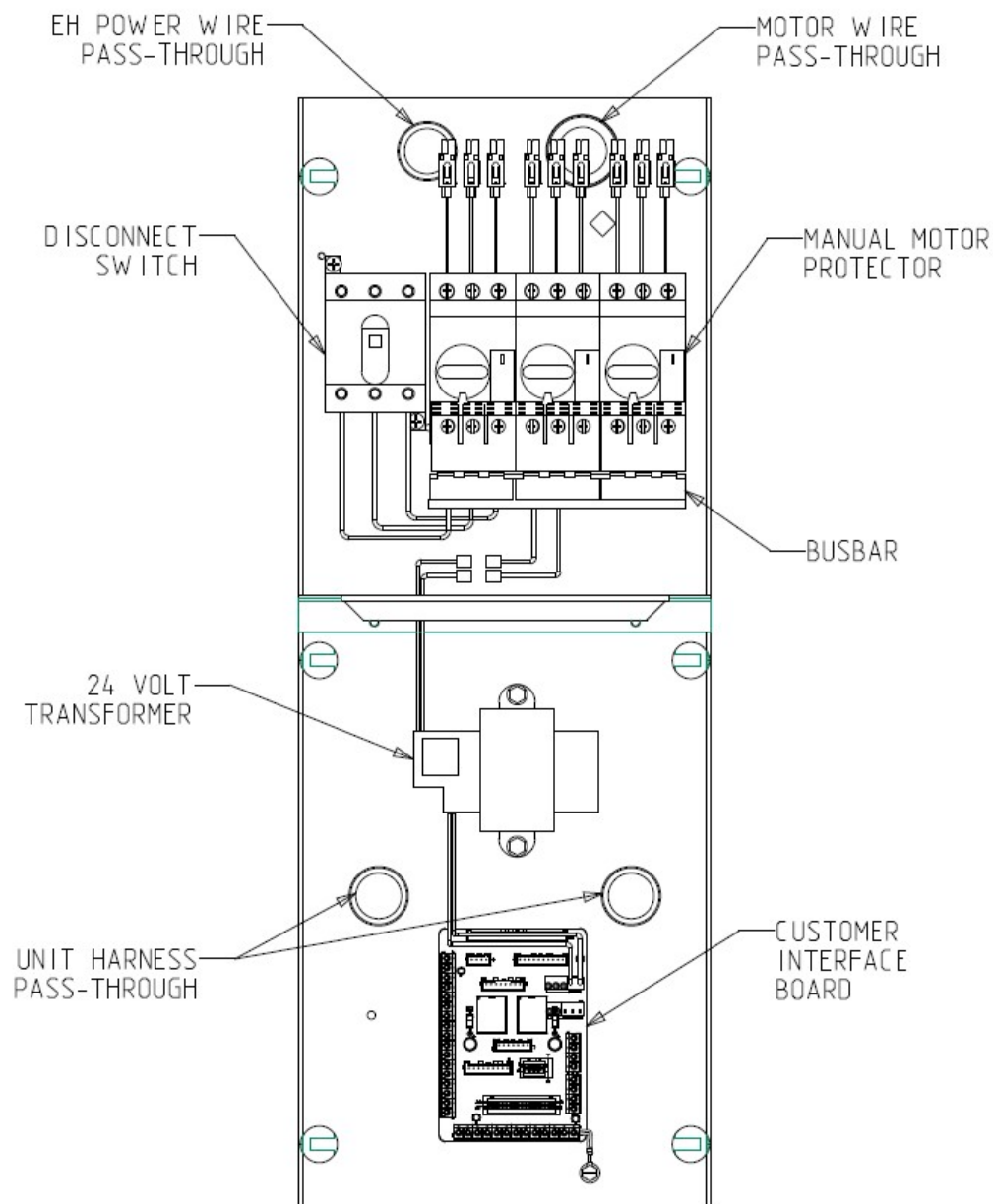
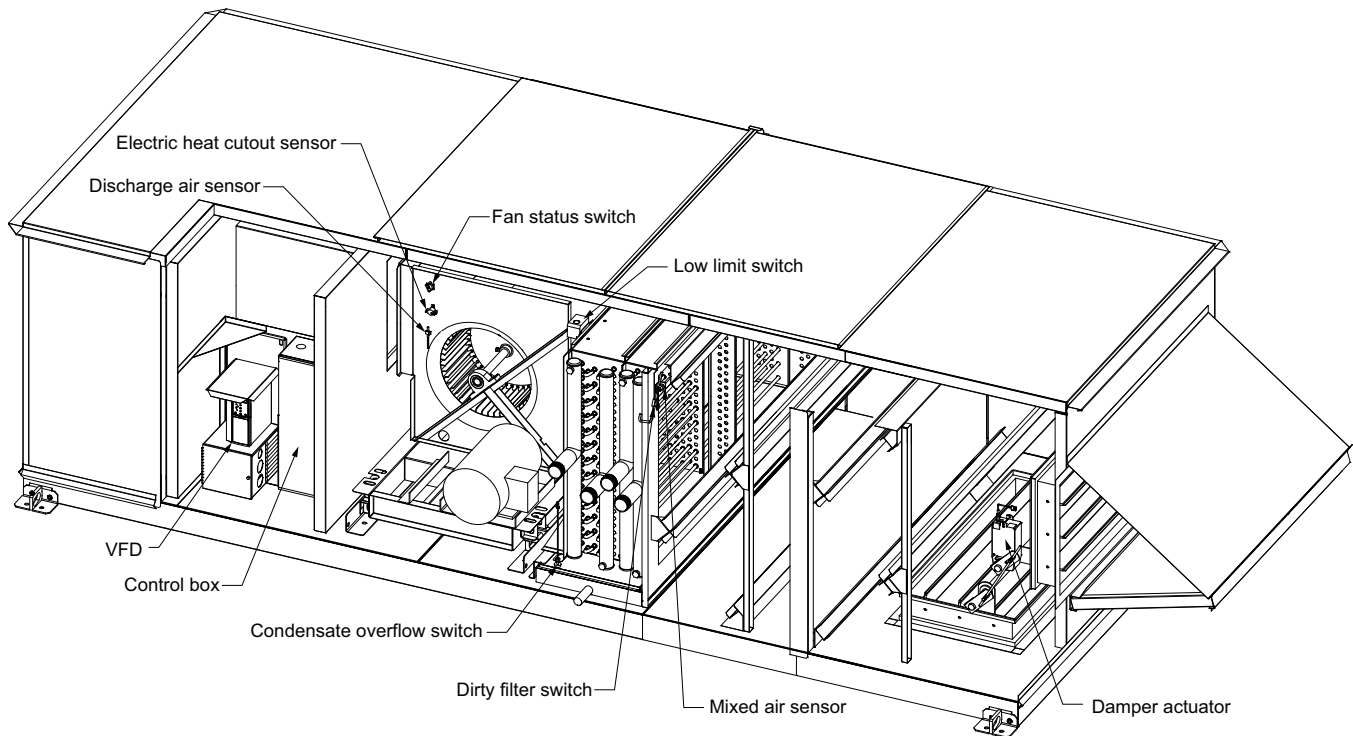


Figure 16. Control panel components for UCCA indoor units with MI fans



Factory-Mounted and Wired End Devices

Figure 17. Factory-mounted and wired end devices for mixing box unit



Note: Outdoor air temperature sensor, discharge air sensors with electric heat, and duct static pressure sensors are available, but are not factory-mounted. They are shipped directly.

Low Voltage Devices

Low Limit Switch



When the low temperature detection device senses an entering air temperature of 36°F to the hydronic coil, the normally-closed switch opens a corresponding set of binary input terminals. The fan disables, control valves open, and the fresh air damper closes.

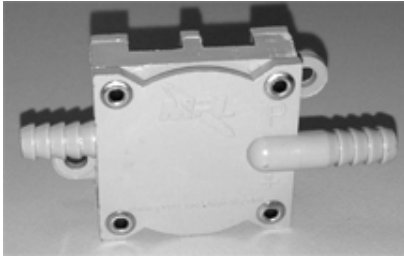
The low temperature detection device is an averaging type capillary tube and will reset when it detects an entering air temperature of at least 44°F. Part number X13540648.

Condensate Overflow Switch



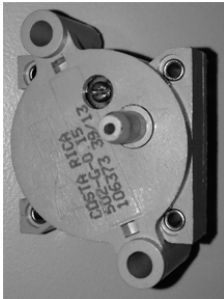
A float switch conforming to UL 508 is factory-installed in the drain pan that will detect a high condensate water level and used to shut off the air handler in the event that the primary drain is blocked to comply with IMC 2006. The float switch is located at a point higher than the primary drain line connection and below the overflow rim of the drain pan. When the float switch rises, the normally closed input opens a corresponding set of binary input terminals. Part number X13470527.

Dirty Filter Switch



Differential pressure sensing switch, with diaphragm-operated contacts. Contacts have screw adjustment for accuracy. Pressure setting of 0.15 in. w.g. Part number X13240267.

Fan Status Switch



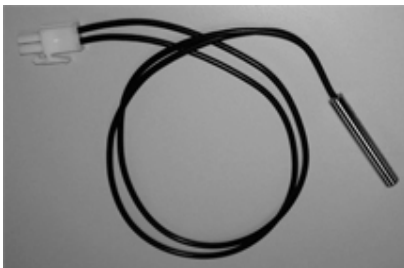
Differential pressure sensing switch, with diaphragm-operated contacts. Contacts have screw adjustment for accuracy. Pressure setting of 0.05 in. w.g. Part number X13240269.

Discharge Air Sensor with Electric Heat



Electronic duct temperature sensor with a sensing element type thermistor at 10k ohms at 77°F. Operating ambient limits of 40°F to 140°F. Probe dimensions of 3.40 inches long x 5/16 inch diameter. With a 24-inch 18 gauge harness attached. Factory-provided, ships loose for field mounting and wiring. Part number X13790068.

Discharge Air Sensor



Ventilation duct temperature sensor with a sensing element type thermistor at 10k ohms at 77°F. Probe dimensions of 1.75 inches long x 1/4-inch diameter. Probe is moisture resistant and hermetically sealed with an operating limit of -22°F to 185°F. Part number X13790374.

Mixed Air Sensor



Averaging temp sensor with aluminum probe casing. RTD material type 1,000 ohm Platinum 385 curve. Operating temperature range of -40°F to 158°F and a humidity range of five percent to 95 percent non-condensing. Part number X13790364.

Mixing Box Actuator



This damper actuator uses a 0 to 10 Vdc signal and is factory-wired and mounted to the damper assembly. It allows zero to 100 percent fresh air. The damper will drive open to an adjustable minimum stop-position whenever the fan is running during occupied mode and will spring-return closed when the fan turns off. Trane recommends using the low temperature detection option with fresh air dampers to detect possible freeze conditions N.O./N.C. refers to the back damper position. Part number X13611002.

Outdoor Air Temperature Sensor



Thermistor-type sensors are provided by Trane as required for field-wiring. Factory-provided, ships loose for field mounting and wiring. Part number X13790861.

Duct Static Pressure Sensor

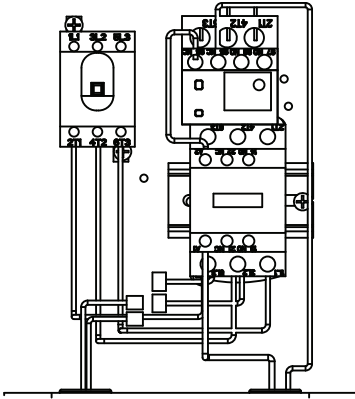


Differential pressure transducer that is powered with five VDC. Uses a HI and LO air port to convert air pressure to a variable DC output signal. Has three wire leads, Red-Power, Black-Output, Green-Ground. Operating temperature range of -40°F to 158°F and a humidity range of five percent to 95 percent non-condensing. Part number X13790831.



High Voltage Devices

Starter



An IEC combination starter is provided for each housed fan motor. Each starter is properly sized, factory mounted in a metal enclosure, and wired to the fan motor to facilitate temporary heating, cooling, ventilation, and/or timely completion of the project. Starter includes one N.C. and one N.O. auxiliary contact, and manual reset overload.

Variable Frequency Drive (VFD)



A variable frequency drive (VFD) is used when variable air volume control is required for fan operation. Whether for single fan or dual fan applications, a single VFD is used to ensure proper operation and to optimize operating life. Each VFD is properly sized, factory mounted, wired to the fan motor, and commissioned to facilitate temporary heating, cooling, ventilation, and/or timely completion of the project. The VFD package also includes:

- Electronic manual speed control
- Inlet fuses to provide maximum protection against inlet short circuit
- Current limited stall prevention
- Auto restart after momentary power loss
- Speed search for starting into rotating motor
- Anti-windmill with DC injection before start
- Phase-to-phase short circuit protection
- Ground fault protection

Units with factory-mounted controls include power wiring from the VFD panel to the control system, binary output on/off wiring, analog output-speed-signal wiring, binary fault signal wiring and all interfacing wiring between the VFD and the direct control interface. The VFD is covered by UL1995 Standards.

Controller

Tracer® Symbio™ 500 Controller



The Tracer® Symbio™ 500 is a programmable BACnet® unit controller that is designed to work with the Tracer SC and third-party BACnet MS/TP systems. The Symbio 500 controller has the I/O and size to meet the controls needs for air handlers, central plants, and other high-point count applications.



Electrical Data

Table 8. Electric heat kW limits (min/max)

Unit Size	Min Airflow (CFM)	200/3/60 Volt				230/3/60			
		1 Stage	2 Stages	4 Stages	SSR	1 Stage	2 Stages	4 Stages	SSR
3	1050	6/13	6/13	n/a	6/13	6/13	6/13	n/a	6/13
6	2100	6/26	6/26	n/a	6/26	6/26	6/26	n/a	6/26
8	2800	7/28	7/28	n/a	7/32	7/32	7/32	n/a	7/34
10	3500	8/38	8/41	n/a	8/32	8/38	8/41	n/a	8/36
12	4200	10/50	10/50	18/50	10/32	10/53	10/53	20/53	10/36
14	4900	12/50	12/50	18/50	12/32	12/59	12/59	20/59	12/36
17	5950	14/50	14/50	18/50	14/32	14/59	14/59	20/59	14/36
21	7350	17/50	17/50	18/50	17/32	17/59	17/59	20/59	17/36
25	8750	20/47	20/47	20/47	20/32	20/56	20/56	20/56	20/36
30	10,500	20/41	20/41	20/41	20/32	20/50	20/50	20/50	20/36
Unit Size	Min Airflow (CFM)	460/3/60				575/3/60			
		1 Stage	2 Stages	4 Stages	SSR	1 Stage	2 Stages	4 Stages	SSR
3	1050	6/13	6/13	n/a	6/13	6/13	6/13	n/a	6/13
6	2100	6/24	6/24	n/a	6/26	6/26	6/26	n/a	n/a
8	2800	7/32	7/32	n/a	7/34	7/34	7/34	n/a	n/a
10	3500	8/44	8/44	n/a	8/44	8/44	8/44	n/a	n/a
12	4200	10/53	10/53	41/50	10/53	10/53	10/53	50/53	n/a
14	4900	12/63	12/63	41/63	12/63	12/63	12/63	50/63	n/a
17	5950	14/75	14/75	41/75	14/71	14/75	14/75	50/75	n/a
21	7350	17/95	17/95	41/95	17/71	17/95	17/95	50/95	n/a
25	8750	20/95	20/95	41/95	20/71	20/95	20/95	50/95	n/a
30	10,500	20/120	20/120	41/120	20/71	20/120	20/120	50/120	n/a

Note: Units drawing less than 100 amps are available with or without door interlocking disconnect. Units drawing more than 100 amps are not available with door interlocking disconnect. Units drawing less than 48 amps are available with or without line fusing. Units drawing greater than 48 amps have line fusing as standard. Units with electric heat must not be run below the minimum cfm listed above. Most heaters available in the following kW increments: 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 44, 47, 50, 53, 56, 59, 63, 67, 71, 75, 79, 83, 87, 91, 95, 100, 110, 115, 120.

Table 9. Electric heat voltage ratings

Unit Voltage	Heater Voltage
200	200
230	230
460	460
575	575



Electrical Data

Useful formulas:

$$kW = (\text{Airflow} \times \Delta T) / K$$

$$\Delta T = (kW \times K) / \text{Airflow}$$

$$K = 3145 \text{ (English)}$$

$$K = 824.7 \text{ (SI)}$$

$$\text{Heater input current} = (kW \times 1000) / (\text{Voltage} \times 1.73)$$

MCA = Minimum Circuit Ampacity

MOP = Maximum Overcurrent Protection rating or Maximum fuse size

Fuse Sizes

The standard ampere ratings for fuses and inverse time circuit breakers are listed in the table below. The use of fuse and inverse time circuit breakers with non-standard ampere ratings shall be permitted provided the rating does not exceed the maximum fuse size defined on the unit nameplate.

Table 10. Standard fuse sizes (amperes)

15	20	25	30	35	40	45	50	60	70
80	90	100	110	125	150	175	200	225	250
300	350	400	450	500	600	700	800	1000	
1200	1600	2000	2500	3000	4000	5000	6000		

Transformers

Table 11. Transformer full load current

Description	Primary Voltage	Secondary Voltage	Volt Amps (VA)	Full Load Current
1T1 Transformer (Control) ^(a)	200	24	75	0.50
	230	24	75	0.43
	460	24	75	0.22
	575	24	75	0.17
Electric Heater Transformer (SSR)	200	24	75	0.48
	230	24	75	0.42
	460	24	75	0.21
	575	24	75	0.17

^(a) 1T1 transformer present when control interface or Symbio™ 500 is selected.

Table 12. Control/end device power rating

Devices	Volt Amps (VA)
35 in/lb Actuator	8
180 in/lb Actuator	10
Motor Controller	7.5
EH Stage 1 - 1 Coil	8
EH Stage 1 - 2 Coil	16
EH Stage 1 - 4 Coil	32
EH Stage 2 - 1 Coil	8
EH Stage 2 - 2 Coil	16
EH Stage 4 - 1 Coil	8

Table 12. Control/end device power rating (continued)

Devices	Volt Amps (VA)
K1 Relay	0.1
K2 Relay	0.1
Valve 1 Field-supplied	10
Valve 2 Field-supplied	10

Motor Data

Table 13. Supply fan motor amps (housed and direct-drive fans)

HP	200 V	230 V	460 V	575 V
1	3.50	3.00	1.50	1.20
1.5	5.10	4.40	2.20	1.80
2	6.50	5.80	2.90	2.40
3	9.70	8.60	4.20	3.30
3 (3600 RPM size 3)	8.50	7.60	3.80	2.80
5	15.70	13.60	6.70	5.30
7.5	22.40	19.40	9.40	7.60
10	29.50	25.20	12.50	10.00
15	43.40	37.80	18.50	14.80

Note: This table used except when VFD is selected.

Table 14. Vertical motorized impeller supply fan amps

Unit Size	Standard Fan				Premium Fan		
	200V	230V	460V	575V	200V	230V	460V
3	9.3	8.4	4.25	4.07	9.3	8.4	4.25
6	9.3	8.4	4.25	4.07	13.7	11.9	6.8
8	11	9.94	6.14	4.9	13.7	11.9	6.8
10	11	9.94	6.14	4.9	—	—	10.23
12	11.4	10.3	5.87	4.8	—	—	10.23
14	11.4	10.3	5.87	4.8	—	—	10.23
17	22	19.88	12.28	9.8	—	—	10.23
21	22	19.88	12.28	9.8	—	—	20.46
25	22.8	20.6	11.74	9.6	—	—	20.46
30	22.8	20.6	11.74	9.6	—	—	20.46



Electrical Data

Table 15. Trane TR150 3-phase VFD inverter input current (amps)

HP	200 V	230 V	460 V	575 V
1	4.20	4.20	2.10	3.90
1.5	6.80	6.80	3.40	3.90
2	6.80	6.80	3.40	3.90
3	15.20	15.20	4.80	3.90
5	22.00	22.00	8.20	6.10
7.5	28.00	28.00	11.00	9.00
10	42.00	42.00	14.00	11.00
15	59.40	59.40	21.00	18.00

Table 16. Trane TR 150 dual fan VFD inverter input current (amps)

HP	200 V	230 V	460 V	575 V
2	n/a	n/a	n/a	n/a
3	22.00	22.00	9.66	9.00
5	36.80	36.80	14.00	11.00
7.5	55.20	55.20	21.00	17.48
10	59.40	59.40	27.00	22.00
15	88.00	88.00	40.00	34.00

Notes:

1. A single VFD will power both fans. Individual motor overload protection will be factory-provided.
2. Two-fan array units available for unit sizes 21, 25, 30.

Equations

Table 17. Equations for electrical load calculations

Fan motor only units (a)	FLA =	Fan Motor FLA
	MCA =	$1.25 * \text{Fan Motor FLA}$
	MOP/Maximum fuse size =	$2.25 * \text{Fan Motor FLA}^{(b)}$
	Fan Motor FLA =	See Table 13, p. 35
Dual fan motor only units (a)	FLA =	$(2 * \text{Fan Motor FLA})$
	MCA =	$1.25 * \text{Fan Motor FLA} + \text{Fan Motor FLA}$
	MOP/Maximum fuse size =	$2.25 * \text{Fan Motor FLA} + \text{Fan Motor FLA}^{(b)}$
	Fan Motor FLA =	See Table 13, p. 35
Starter units	FLA =	Fan Motor FLA + 1T1 Transformer
	MCA =	$1.25 * \text{Fan Motor FLA} + 1\text{T1 Transformer}$
	MOP/Maximum fuse size =	$2.25 * \text{Fan Motor FLA} + 1\text{T1 Transformer}^{(b)}$
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34
VFD units	FLA =	Inverter input current + 1T1 Transformer
	MCA =	$1.25 * \text{Inverter input current} + 1\text{T1 Transformer}$
	MOP/Maximum fuse size =	$2.25 * \text{Inverter input current} + 1\text{T1 Transformer}^{(b)}$
	Inverter input current =	See Table 15, p. 36
	1T1 Transformer =	See Table 11, p. 34
VFD dual motor units	FLA =	Inverter input current + 1T1 Transformer
	MCA =	$1.25 * \text{Inverter input current} + 1\text{T1 Transformer}$
	MOP/Maximum fuse size =	$2.25 * \text{Inverter input current} + 1\text{T1 Transformer}^{(b)}$
	Inverter input current =	See Table 16, p. 36
	1T1 Transformer =	See Table 11, p. 34
Electric heat staged units with starter	Electric heat FLA (200 V) =	$1000 * \text{kW} / (\sqrt{3} * 200)^{(c)}$
	Electric heat FLA (230 V) =	$1000 * \text{kW} / (\sqrt{3} * 230)^{(c)}$
	Electric heat FLA (460 V) =	$1000 * \text{kW} / (\sqrt{3} * 460)^{(c)}$
	Electric heat FLA (575 V) =	$1000 * \text{kW} / (\sqrt{3} * 575)^{(c)}$
	FLA =	Electric heat FLA + Fan Motor FLA + 1T1 Transformer
	MCA if electric heat rating is less than 50 kW =	$(1.25 * \text{Electric heat FLA}) + (1.25 * \text{Fan Motor FLA}) + 1\text{T1 Transformer}$
	MCA if electric heat rating is 50 kW or greater =	Electric heat FLA + $(1.25 * \text{Fan Motor FLA}) + 1\text{T1 Transformer}$
	MOP/Maximum fuse size =	$(2.25 * \text{Fan Motor FLA}) + \text{Electric heat FLA} + 1\text{T1 Transformer}^{(b)}$
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34

Table 17. Equations for electrical load calculations (continued)

Electric heat SSR units with starter	Electric heat FLA (200 V) =	$1000 * kW / (\sqrt{3} * 200)^{(c)}$
	Electric heat FLA (230 V) =	$1000 * kW / (\sqrt{3} * 230)^{(c)}$
	Electric heat FLA (460 V) =	$1000 * kW / (\sqrt{3} * 460)^{(c)}$
	Electric heat FLA (575 V) =	$1000 * kW / (\sqrt{3} * 575)^{(c)}$
	FLA =	Electric heat FLA + Electric Heat Transformer + Fan Motor FLA + 1T1 Transformer
	MCA if electric heat rating is less than 50 kW =	$(1.25 * \text{Electric heat FLA}) + \text{Electric Heat Transformer} + (1.25 * \text{Fan Motor FLA}) + 1T1 \text{ Transformer}$
	MCA if electric heat rating is 50 kW or greater =	Electric heat FLA + Electric Heat Transformer + $(1.25 * \text{Fan Motor FLA}) + 1T1 \text{ Transformer}$
	MOP/Maximum fuse size =	$(2.25 * \text{Fan Motor FLA}) + \text{Electric Heat Transformer} + \text{Electric heat FLA} + 1T1 \text{ Transformer.}$ See ^(b)
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34
	Electric Heat Transformer =	See
Electric heat staged units with VFD	Electric heat FLA (200 V) =	$1000 * kW / (\sqrt{3} * 200)^{(c)}$
	Electric heat FLA (230 V) =	$1000 * kW / (\sqrt{3} * 230)^{(c)}$
	Electric heat FLA (460 V) =	$1000 * kW / (\sqrt{3} * 460)^{(c)}$
	Electric heat FLA (575 V) =	$1000 * kW / (\sqrt{3} * 575)^{(c)}$
	FLA =	Electric heat FLA + Inverter input current + 1T1 Transformer
	MCA if electric heat rating is less than 50 kW =	$(1.25 * \text{Electric heat FLA}) + (1.25 * \text{Inverter input current}) + 1T1 \text{ Transformer}$
	MCA if electric heat rating is 50 kW or greater =	Electric heat FLA + $(1.25 * \text{Inverter input current}) + 1T1 \text{ Transformer}$
	MOP/Maximum fuse size =	$(2.25 * \text{Inverter input current}) + \text{Electric heat FLA} + 1T1 \text{ Transformer}^{(b)}$
	Inverter input current =	See Table 15, p. 36 and Table 16, p. 36
	1T1 Transformer =	See Table 11, p. 34

Table 17. Equations for electrical load calculations (continued)

Electric heat SSR units with VFD	Electric heat FLA (200 V) =	$1000 * kW / (\sqrt{3} * 200)^{(e)}$
	Electric heat FLA (230 V) =	$1000 * kW / (\sqrt{3} * 230)^{(e)}$
	Electric heat FLA (460 V) =	$1000 * kW / (\sqrt{3} * 460)^{(e)}$
	Electric heat FLA (575 V) =	$1000 * kW / (\sqrt{3} * 575)^{(e)}$
	FLA =	Electric heat FLA + Electric Heat Transformer + Inverter input current + 1T1 Transformer
	MCA if electric heat rating is less than 50 kW =	$(1.25 * \text{Electric heat FLA}) + \text{Electric Heat Transformer} + (1.25 * \text{Inverter input current}) + 1T1 \text{ Transformer}$
	MCA if electric heat rating is 50 kW or greater =	Electric heat FLA + Electric Heat Transformer + $(1.25 * \text{Inverter input current}) + 1T1 \text{ Transformer}$
	MOP/Maximum fuse size =	$(2.25 * \text{Inverter input current}) + \text{Electric heat FLA} + \text{Electric Heat Transformer} + 1T1 \text{ Transformer}$ See Note 2
	Inverter input current =	See Table 15, p. 36 and Table 16, p. 36 .
	1T1 Transformer =	See Table 11, p. 34
	Electric Heat Transformer =	See Table 11, p. 34
VMI 1-fan unit w/ controls	FLA =	Fan Motor FLA + 1T1 Transformer
	MCA =	$(1.25 * \text{FAN Motor FLA}) + 1T1 \text{ Transformer}$
	MOP =	$(2.25 * \text{Fan Motor FLA}) + 1T1 \text{ Transformer}$
	Fuse size =	MOP (***** ROUNDED DOWN *****)
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34
VMI 2-fan unit w/ controls	FLA =	Fan Motor FLA per each fan (x2)
	MCA =	$(1.25 * \text{Fan Motor FLA}) + \text{Fan Motor FLA} + 1T1 \text{ Transformer}$
	MOP =	$(2.25 * \text{Fan Motor FLA}) + \text{Fan Motor FLA} + 1T1 \text{ Transformer}$
	Fuse size =	MOP (***** ROUNDED DOWN *****)
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34
VMI 3-fan unit w/ controls	FLA =	Fan Motor FLA per each fan (x3)
	MCA =	$(1.25 * \text{Fan Motor FLA}) + \text{Fan Motor FLA} + \text{Fan Motor FLA} + 1T1 \text{ Transformer}$
	MOP =	$(2.25 * \text{Fan Motor FLA}) + \text{Fan Motor FLA} + \text{Fan Motor FLA} + 1T1 \text{ Transformer}$
	Fuse size =	MOP (***** ROUNDED DOWN *****)
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34

Table 17. Equations for electrical load calculations (continued)

Electric heat SSR Indeeco w/VMI 1-fan	Electric heat (208 V) =	$1000 * kW / (\sqrt{3} * 200)$
	Electric heat (240 V) =	$1000 * kW / (\sqrt{3} * 230)$
	Electric heat (480 V) =	$1000 * kW / (\sqrt{3} * 460)$
	Electric heat (600 V) =	$1000 * kW / (\sqrt{3} * 575)$
	FLA =	Electric heat + Fan Motor FLA + 1T1 Transformer + Electric Heat Transformer (Indeeco)
	MCA (If heat rating is less than 50 kW) =	$(1.25 * \text{Electric heat}) + (1.25 * \text{Fan Motor FLA}) + 1T1 \text{ Transformer} + \text{Electric Heat Transformer (Indeeco)}$
	MCA (If heat rating is ≥ 50 kW) =	Electric heat + $(1.25 * \text{Fan Motor FLA}) + 1T1 \text{ Transformer} + \text{Electric Heat Transformer (Indeeco)}$
	MOP =	$(2.25 * \text{Fan Motor FLA}) + \text{Electric Heat} + 1T1 \text{ Transformer} + \text{Electric Heat Transformer (Indeeco)}$
	Fuse size =	MOP when MOP is greater than MCA (***** ROUNDED DOWN *****)
	Fuse size =	MCA when MOP is \leq MCA (***** ROUNDED UP *****)
	Fan Motor FLA =	See Table 13, p. 35
Electric heat SSR Indeeco w/VMI 2-fan	Electric heat (208 V) =	$1000 * kW / (\sqrt{3} * 200)$
	Electric heat (240 V) =	$1000 * kW / (\sqrt{3} * 230)$
	Electric heat (480 V) =	$1000 * kW / (\sqrt{3} * 460)$
	Electric heat (600 V) =	$1000 * kW / (\sqrt{3} * 575)$
	FLA =	Electric heat + Fan Motor FLA + Fan Motor FLA + 1T1 Transformer + Electric Heat Transformer (Indeeco)
	MCA (If heat rating is less than 50 kW) =	$(1.25 * \text{Electric heat}) + (1.25 * (\text{Fan Motor FLA} + \text{Fan Motor FLA})) + 1T1 \text{ Transformer} + \text{Electric Heat Transformer (Indeeco)}$
	MCA (If heat rating is ≥ 50 kW) =	Electric heat + $(1.25 * (\text{Fan Motor FLA} + \text{Fan Motor FLA})) + 1T1 \text{ Transformer} + \text{Electric Heat Transformer (Indeeco)}$
	MOP =	$(2.25 * \text{Fan Motor FLA}) + \text{Fan Motor FLA} + \text{Electric heat} + 1T1 \text{ Transformer} + \text{Electric Heat Transformer (Indeeco)}$
	Fuse size =	MOP when MOP is greater than MCA (***** ROUNDED DOWN *****)
	Fuse size =	MCA when MOP is \leq MCA (***** ROUNDED UP *****)
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34

Table 17. Equations for electrical load calculations (continued)

Electric heat SSR Indeeco w/VMI 3-fan	Electric heat (208 V) =	$1000 * kW / (\sqrt{3} * 200)$
	Electric heat (240 V) =	$1000 * kW / (\sqrt{3} * 230)$
	Electric heat (480 V) =	$1000 * kW / (\sqrt{3} * 460)$
	Electric heat (600 V) =	$1000 * kW / (\sqrt{3} * 575)$
	FLA =	Electric heat + Fan Motor FLA + Fan Motor FLA + Fan Motor FLA + 1T1 Transformer + Electric Heat Transformer (Indeeco)
	MCA (If heat rating is less than 50 kW) =	$(1.25 * \text{Electric heat}) + (1.25 * (\text{Fan Motor FLA} + \text{Fan Motor FLA} + \text{Fan Motor FLA})) + 1T1 \text{ Transformer} + \text{Electric Heat Transformer (Indeeco)}$
	MCA (If heat rating is \geq 50 kW) =	Electric heat + $(1.25 * (\text{Fan Motor FLA} + \text{Fan Motor FLA} + \text{Fan Motor FLA})) + 1T1 \text{ Transformer} + \text{Electric Heat Transformer (Indeeco)}$
	MOP =	$(2.25 * \text{Fan Motor FLA}) + \text{Fan Motor FLA} + \text{Fan Motor FLA} + \text{Electric heat} + 1T1 \text{ Transformer} + \text{Electric Heat Transformer (Indeeco)}$
	Fuse size =	MOP when MOP is greater than MCA (***** ROUNDED DOWN *****)
	Fuse size =	MCA when MOP is \leq MCA (***** ROUNDED UP *****)
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34
Electric heat staged Indeeco w/ VMI 1-fan	Electric heat (208 V) =	$1000 * kW / (\sqrt{3} * 200)$
	Electric heat (240 V) =	$1000 * kW / (\sqrt{3} * 230)$
	Electric heat (480 V) =	$1000 * kW / (\sqrt{3} * 460)$
	Electric heat (600 V) =	$1000 * kW / (\sqrt{3} * 575)$
	FLA =	Electric heat + Fan Motor FLA + 1T1 Transformer
	MCA (If heat rating is less than 50 kW) =	$(1.25 * \text{Electric heat}) + (1.25 * \text{Fan Motor FLA}) + 1T1 \text{ Transformer}$
	MCA (If heat rating is \geq 50 kW) =	Electric heat + $(1.25 * \text{Fan Motor FLA}) + 1T1 \text{ Transformer}$
	MOP =	$(2.25 * \text{Fan Motor FLA}) + \text{Electric heat} + 1T1 \text{ Transformer}$
	Fuse size =	MOP when MOP is greater than MCA (***** ROUNDED DOWN *****)
	Fuse size =	MCA when MOP is \leq MCA (***** ROUNDED UP *****)
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34

Table 17. Equations for electrical load calculations (continued)

Electric heat staged Indeeco w/ VMI 2-fan	Electric heat (208 V) =	$1000 * kW / (\sqrt{3} * 200)$
	Electric heat (240 V) =	$1000 * kW / (\sqrt{3} * 230)$
	Electric heat (480 V) =	$1000 * kW / (\sqrt{3} * 460)$
	Electric heat (600 V) =	$1000 * kW / (\sqrt{3} * 575)$
	FLA =	Electric heat + Fan Motor FLA + Fan Motor FLA + 1T1 Transformer
	MCA (If heat rating is less than 50 kW) =	$(1.25 * \text{Electric heat}) + (1.25 * (\text{Fan Motor FLA} + \text{Fan Motor FLA})) + 1\text{T1 Transformer}$
	MCA (If heat rating is \geq 50 kW) =	Electric heat + $(1.25 * (\text{Fan Motor FLA} + \text{Fan Motor FLA})) + 1\text{T1 Transformer}$
	MOP =	$(2.25 * \text{Fan Motor FLA}) + \text{Fan Motor FLA} + \text{Electric heat} + 1\text{T1 Transformer}$
	Fuse size =	MOP when MOP is greater than MCA (***** ROUNDED DOWN *****)
	Fuse size =	MCA when MOP is \leq MCA (***** ROUNDED UP *****)
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34
Electric heat staged Indeeco w/ VMI 3-fan	Electric heat (208 V) =	$1000 * kW / (\sqrt{3} * 200)$
	Electric heat (240 V) =	$1000 * kW / (\sqrt{3} * 230)$
	Electric heat (480 V) =	$1000 * kW / (\sqrt{3} * 460)$
	Electric heat (600 V) =	$1000 * kW / (\sqrt{3} * 575)$
	FLA =	Electric heat + Fan Motor FLA + Fan Motor FLA + Fan Motor FLA + 1T1 Transformer
	MCA (If heat rating is less than 50 kW) =	$(1.25 * \text{Electric heat}) + (1.25 * (\text{Fan Motor FLA} + \text{Fan Motor FLA} + \text{Fan Motor FLA})) + 1\text{T1 Transformer}$
	MCA (If heat rating is \geq 50 kW) =	Electric heat + $(1.25 * (\text{Fan Motor FLA} + \text{Fan Motor FLA} + \text{Fan Motor FLA})) + 1\text{T1 Transformer}$
	MOP =	$(2.25 * \text{Fan Motor FLA}) + \text{Fan Motor FLA} + \text{Fan Motor FLA} + \text{Electric heat} + 1\text{T1 Transformer}$
	Fuse size =	MOP when MOP is greater than MCA (***** ROUNDED DOWN *****)
	Fuse size =	MCA when MOP is \leq MCA (***** ROUNDED UP *****)
	Fan Motor FLA =	See Table 13, p. 35
	1T1 Transformer =	See Table 11, p. 34

(a) Individual motor overload protection must be field-provided.

(b) Round down to next smaller fuse size unless rounded value is below MCA, or 1.25* electric heat FLA, in which case round up to next largest fuse size above MCA.

(c) $\sqrt{3}$ is approximately 1.732.

Dimensions and Weights

Service Clearances

Figure 18. Service clearances for indoor units

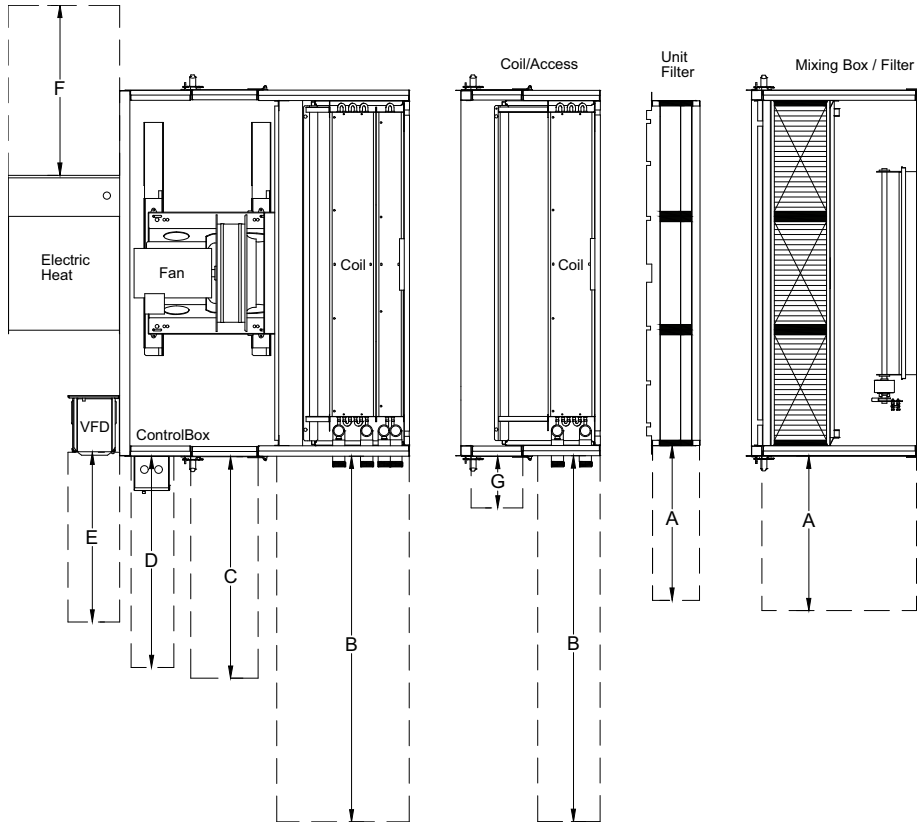


Table 18. Service clearance dimensions (inches) for indoor units

	Component	Unit Sizes									
		3	6	8	10	12	14	17	21	25	30
A	Filter	40.0	44.0	42.0	42.0	40.0	45.0	45.0	45.0	51.0	51.0
B	Coil Pull	49.0	62.0	66.0	78.0	86.0	86.0	94.0	94.0	96.0	109.0
C	Fan Access, horizontal unit (motor side)	48.0	48.0	48.0	51.0	54.0	58.0	61.0	61.0	66.0	66.0
C	Fan Access, vertical unit (motor side)	48.0	48.0	48.0	51.0	54.0	58.0	61.0	61.0	n/a	n/a
C	Fan Access, vert unit with MI fan (motor side)	48.0	48.0	48.0	51.0	54.0	58.0	61.0	61.0	66.0	66.0
D	Control Box	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0
E	VFD	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
F	EH	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
G	Access Door - Access Section	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0

Notes:

1. At a minimum, the above clearance dimensions are recommended on one side of the unit for regular service and maintenance. Clearance on *both* sides is recommended. Refer to as-built submittal for locations of items such as filter access doors, coil, piping connections, motor locations, etc. Sufficient clearance must be provided on all sides of unit for removal of access panels, plug panels, or section-to-section attachment brackets.
2. Clearance for starters, VFDs, or other high-voltage devices must be provided per NEC requirements.

Dimensions and Weights

Figure 19. Service clearances for outdoor units

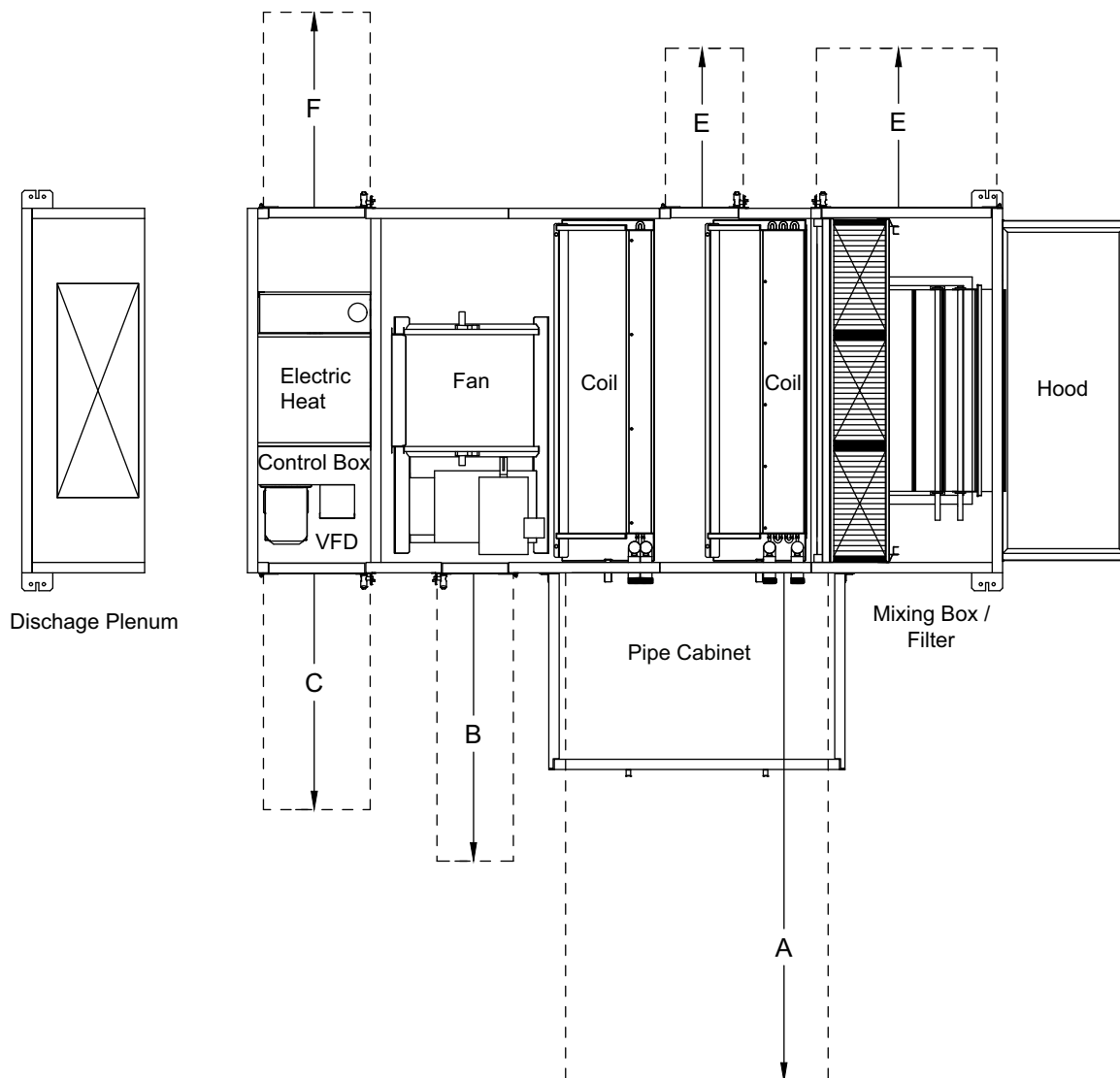


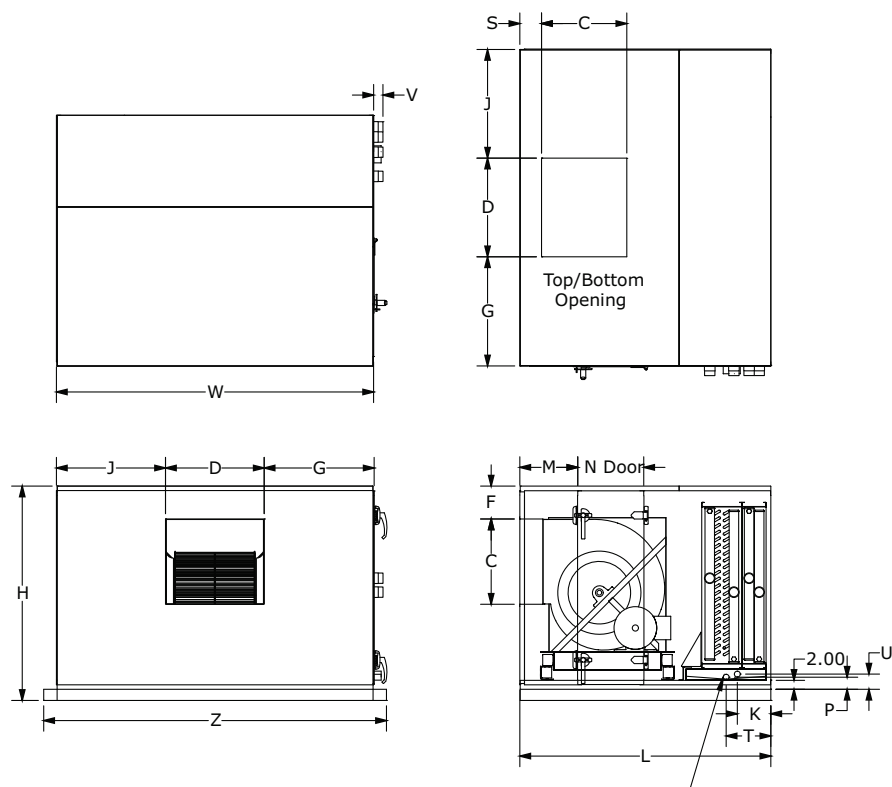
Table 19. Service clearance dimensions (inches) for outdoor units

	Component	Unit Sizes									
		3	6	8	10	12	14	17	21	25	30
A	Coil Pull	49.00	62.00	66.00	78.00	86.00	86.00	94.00	94.00	96.00	109.00
B	Fan Access, horizontal unit (motor side)	48.00	48.00	48.00	51.00	54.00	58.00	61.00	61.00	66.00	66.00
C	Controls Access	56.00	56.00	56.00	56.00	56.00	56.00	56.00	56.00	56.00	56.00
E	Filter (mixing box, opposite coil connection side)	30.00	34.00	32.00	32.00	30.00	35.00	35.00	35.00	41.00	41.00
F	Electric Heat	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00

Note: At a minimum, the above clearance dimensions are recommended for regular service and maintenance. Refer to as-built submittal for locations of items such as filter access doors, coil, piping connections, motor locations, etc. Sufficient clearance must be provided on all sides of unit for removal of access panels, plug panels, or section-to-section attachment brackets. Clearance for starters, VFDs, or other high-voltage devices must be provided per NEC requirements.

Horizontal Units

Figure 20. Performance UCCA air handler — horizontal arrangement



R Nominal schedule 40 PVC main and auxiliary drain connection on PVC drain pan. SS drain connection on SS drain pan option.

Table 20. Indoor unit - horizontal arrangement – dimensions (inches) and weight (pounds)

Size	Height ^(a)	Width	Length	Total Weight with FC Fan ^(b)	Total Weight with DDP Fan ^(b)
3	27.50	34.00	51.90	236	266
6	32.50	47.00	54.90	328	377
8	38.00	51.00	52.30	373	414
10	38.00	63.00	54.70	447	513
12	41.80	71.00	54.70	505	565
14	45.60	71.00	56.20	541	595
17	48.10	79.00	60.20	633	672
21	54.30	79.00	60.20	684	818
25	60.60	81.00	62.90	800	935
30	60.60	94.00	69.60	959	1068

^(a) Add 6 inches to height of units with optional baserail.

^(b) Weights include cabinet, fan and average drive. Optional baserail not included.



Dimensions and Weights

Table 21. Outdoor unit - horizontal arrangement - dimensions (inches) and weight (pounds)

Size	Height	Width	Length	Total Weight with FC Fan ^(a)	Total Weight with DDP Fan ^(a)
3	31.80	41.25	76.00	383	413
6	36.80	54.25	79.00	510	559
8	42.30	58.25	76.40	568	609
10	42.30	70.25	78.70	667	733
12	46.10	78.25	78.70	750	810
14	49.90	78.25	80.20	789	843
17	52.40	86.25	84.30	904	944
21	58.60	86.25	84.30	964	1099
25	64.90	88.25	87.00	1096	1232
30	64.90	101.25	93.60	1291	1399

^(a) Weights include cabinet, supply fan/coil and average drive.

Table 22. Horizontal arrangement (FC or DDP w/ EH) - dimensions (inches)

Size	C	D	F	G	J	K (LH)	K (RH)	Indoor M
3	10.60	9.40	3.60	12.30	12.30	7.50	12.50	13.80
6	13.80	12.50	3.80	17.30	17.30	7.50	12.50	13.80
8	13.80	15.90	11.00	20.30	14.80	n/a	n/a	13.80
10	16.20	18.90	6.10	22.10	22.10	n/a	n/a	16.10
12	19.20	19.20	3.50	25.90	25.90	n/a	n/a	13.80
14	19.20	22.20	7.30	24.40	24.40	n/a	n/a	13.80
17	25.10	20.10	3.20	29.50	29.50	n/a	n/a	13.80
21	25.10	25.10	9.40	27.00	27.00	n/a	n/a	13.80
25	25.50	23.50	16.30	28.80	28.80	n/a	n/a	13.80
30	28.50	26.50	11.90	33.80	33.80	n/a	n/a	20.40
Size	Outdoor M	N	P	S	T	U	R	Outdoor/ Indoor with Optional Baseraill Z
3	32.84	10.20	2.70	6.30	10.00	3.40	0.75	41.25
6	32.84	13.20	2.70	4.90	10.00	3.40	0.75	54.25
8	32.84	10.60	2.80	4.00	10.00	n/a	1.00	58.25
10	35.14	10.60	2.80	3.35	10.00	n/a	1.00	70.25
12	32.84	12.60	2.80	2.81	10.00	n/a	1.00	78.25
14	32.84	13.10	2.80	2.88	10.00	n/a	1.00	78.25
17	32.84	17.10	2.80	2.63	10.00	n/a	1.00	86.25
21	32.84	18.10	2.80	2.63	10.00	n/a	1.00	86.25
25	32.84	19.20	2.80	3.43	10.00	n/a	1.25	88.25
30	39.44	19.20	2.80	4.54	10.00	n/a	1.25	101.25

Table 23. Horizontal units (DDP w/o EH)

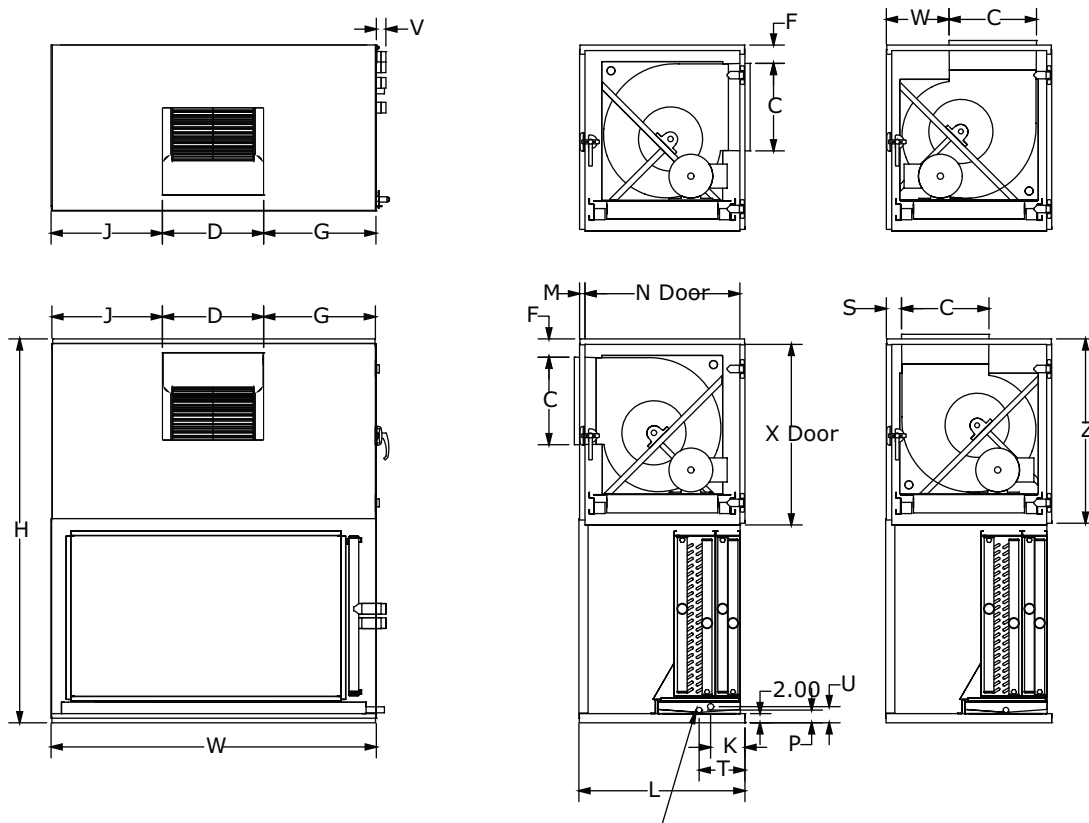
Size	C	D	F	G	J	K (LH)	K (RH)	Indoor M
3	19.60	7.30	3.95	13.35	13.35	7.50	12.50	13.80
6	23.80	11.60	3.85	17.70	17.70	7.50	12.50	13.80
8	22.80	15.50	6.60	17.75	17.75	n/a	n/a	13.80
10	20.20	23.80	8.90	19.60	19.60	n/a	n/a	16.10
12	23.20	24.80	9.28	23.10	23.10	n/a	n/a	13.80
14	23.20	29.00	11.18	21.00	21.00	n/a	n/a	13.80
17	27.10	28.00	9.48	25.50	25.50	n/a	n/a	13.80
21	29.10	34.60	12.61	22.20	22.20	n/a	n/a	13.80
25	29.50	40.70	15.00	20.15	20.15	n/a	n/a	13.80
30	32.5	44.30	12.00	24.85	24.85	n/a	n/a	20.40
Size	Outdoor M	N	P	S	T	U	R	Outdoor/ Indoor with Optional Baseraill Z
3	32.84	10.20	2.70	2.63	10.00	3.40	0.75	41.25
6	32.84	13.20	2.70	2.63	10.00	3.40	0.75	54.25
8	32.84	10.60	2.80	2.63	10.00	n/a	1.00	58.25
10	35.14	10.60	2.80	3.35	10.00	n/a	1.00	70.25
12	32.84	12.60	2.80	2.81	10.00	n/a	1.00	78.25
14	32.84	13.10	2.80	2.88	10.00	n/a	1.00	78.25
17	32.84	17.10	2.80	2.63	10.00	n/a	1.00	86.25
21	32.84	18.10	2.80	2.63	10.00	n/a	1.00	86.25
25	32.84	19.20	2.80	3.43	10.00	n/a	1.25	86.25
30	39.44	19.20	2.80	4.54	10.00	n/a	1.25	101.25

Table 24. Horizontal arrangement - dimension V (inches)

Size	Hyd 1 row	Hyd 2 row	Hyd 4 row	Hyd 6 row	Hyd 8 row	DX F LH/RH 4/6 ROW		DX Face split LH/RH 4 row		DX Face split LH/RH 6 row		DX Intertwined LH/RH 4 row	
						Header	Dist	Header	Dist	Header	Dist	Header	Dist
3	3.10	2.80	2.90	2.80	2.90	2.70	7.10	n/a	n/a	n/a	n/a	n/a	n/a
6	3.10	2.80	2.90	2.80	2.90	2.70	6.40	n/a	n/a	n/a	n/a	n/a	n/a
8	3.10	2.80	2.90	2.80	2.90	2.70	6.40	2.70	7.10	2.70	6.40	2.90	7.10
10	3.10	2.80	2.90	2.90	2.90	2.90	6.80	2.70	6.40	2.70	6.40	2.90	6.40
12	2.50	2.10	2.10	2.10	2.10	n/a	n/a	1.70	5.40	1.70	5.40	1.90	5.40
14	2.50	2.10	2.10	2.10	2.10	n/a	n/a	1.70	5.40	1.70	5.40	1.90	5.40
17	2.50	2.10	2.40	2.40	2.40	n/a	n/a	1.70	5.40	1.70	5.40	1.90	5.40
21	2.50	2.10	2.40	2.40	2.40	n/a	n/a	1.90	5.80	1.90	5.80	1.90	6.10
25	2.50	2.40	2.40	2.40	2.40	n/a	n/a	1.90	5.80	1.90	6.40	1.90	6.10
30	2.50	2.40	2.40	2.40	2.40	n/a	n/a	1.90	5.80	1.90	6.40	1.90	5.40

Vertical FC Units

Figure 21. Performance UCCA air handler - vertical arrangement



R Nominal schedule 40 PVC main and auxiliary drain connection on PVC drain pan. SS drain connection on SS drain pan option.

Table 25. Performance UCCA air handler - vertical arrangement - dimensions (inches) and weight (pounds)

Size	Height ^(a)	Width	Length	Total Weight ^(b)
3	51.40	34.00	34.10	233
6	61.30	47.00	37.10	330
8	65.10	51.00	29.40	338
10	69.90	63.00	32.10	411
12	80.10	71.00	36.10	503
14	83.80	71.00	36.10	529
17	92.90	79.00	42.10	651
21	99.20	79.00	42.10	709

^(a) Add 6 in to height of units with optional baserail.

^(b) Weights include cabinet, fan and average drive. Optional baserail not included.

Table 26. Performance UCCA air handler - vertical arrangement - dimensions (inches)

Size	C	D	F	G	J	K (LH)	K (RH)	M	N
3	10.60	9.40	3.00	12.30	12.30	7.50	12.50	4.00	28.07
6	13.80	12.50	3.00	17.25	17.25	7.50	12.50	4.00	31.07
8	13.80	15.90	3.00	21.32	13.80	n/a	n/a	4.00	23.44

Table 26. Performance UCCA air handler - vertical arrangement - dimensions (inches) (continued)

Size	C	D	F	G	J	K (LH)	K (RH)	M	N
10	16.20	18.90	3.00	22.05	22.05	n/a	n/a	4.00	26.07
12	19.20	19.20	3.00	25.90	25.90	n/a	n/a	4.00	30.07
14	19.20	22.20	3.00	24.40	24.40	n/a	n/a	4.00	30.07
17	25.10	20.10	3.00	29.45	29.45	n/a	n/a	4.00	36.07
21	25.10	25.10	3.00	26.95	26.95	n/a	n/a	4.00	36.07
Size	P	S	T	U	R	W	X	Z 2nd height level	
3	2.72	6.30	10.00	3.37	0.75	17.17	23.59	26.94	
6	2.72	4.90	10.00	3.37	0.75	18.37	28.49	31.81	
8	2.83	4.00	10.00	n/a	1.00	11.64	26.79	30.06	
10	2.83	3.35	10.00	n/a	1.00	12.52	31.59	34.94	
12	2.83	2.81	10.00	n/a	1.00	14.06	38.04	41.31	
14	2.83	2.88	10.00	n/a	1.00	13.99	38.04	41.24	
17	2.83	2.63	10.00	n/a	1.00	14.34	44.59	47.87	
21	2.83	2.63	10.00	n/a	1.00	14.34	44.59	47.87	

Table 27. Performance UCCA air handler — vertical arrangement — dimension V (inches)

Size	Hydronic 1—row		Hydronic 2—row		Hydronic 4—row		Hydronic 6—row		Hydronic 8—row	
3	3.10		2.80		2.90		2.80		2.90	
6	3.10		2.80		2.90		2.80		2.90	
8	3.10		2.80		2.90		2.80		2.90	
10	3.10		2.80		2.90		2.90		2.90	
12	2.50		2.10		2.10		2.10		2.10	
14	2.50		2.10		2.10		2.10		2.10	
17	2.50		2.10		2.40		2.40		2.40	
21	2.50		2.10		2.40		2.40		2.40	
25	2.50		2.40		2.40		2.40		2.40	
30	2.50		2.40		2.40		2.40		2.40	
Size	DX F LH/RH 4/6—row		DX Face split LH/RH 4—row		DX Face split LH/RH 6—row		DX Intertwined LH/RH 4—row		DX Intertwined LH/RH 6—row	
	Header	Dist	Header	Dist	Header	Dist	Header	Dist	Header	Dist
3	2.70	7.10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
6	2.70	6.40	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
8	2.70	6.40	2.70	7.10	2.70	6.40	2.90	7.10	2.90	6.40
10	2.90	6.80	2.70	6.40	2.70	6.40	2.90	6.40	2.90	6.40
12	n/a	n/a	1.70	5.40	1.70	5.40	1.90	5.40	1.90	5.40
14	n/a	n/a	1.70	5.40	1.70	5.40	1.90	5.40	1.90	5.80
17	n/a	n/a	1.70	5.40	1.70	5.40	1.90	5.40	1.90	5.80
21	n/a	n/a	1.90	5.80	1.90	5.80	1.90	6.10	1.90	5.40
25	n/a	n/a	1.90	5.80	1.90	6.40	1.90	6.10	1.90	5.40
30	n/a	n/a	1.90	5.80	1.90	6.40	1.90	5.40	1.90	6.40



Dimensions and Weights

Vertical Motorized Impeller Units

Figure 22. Performance UCCA air handler with vertical motorized impeller

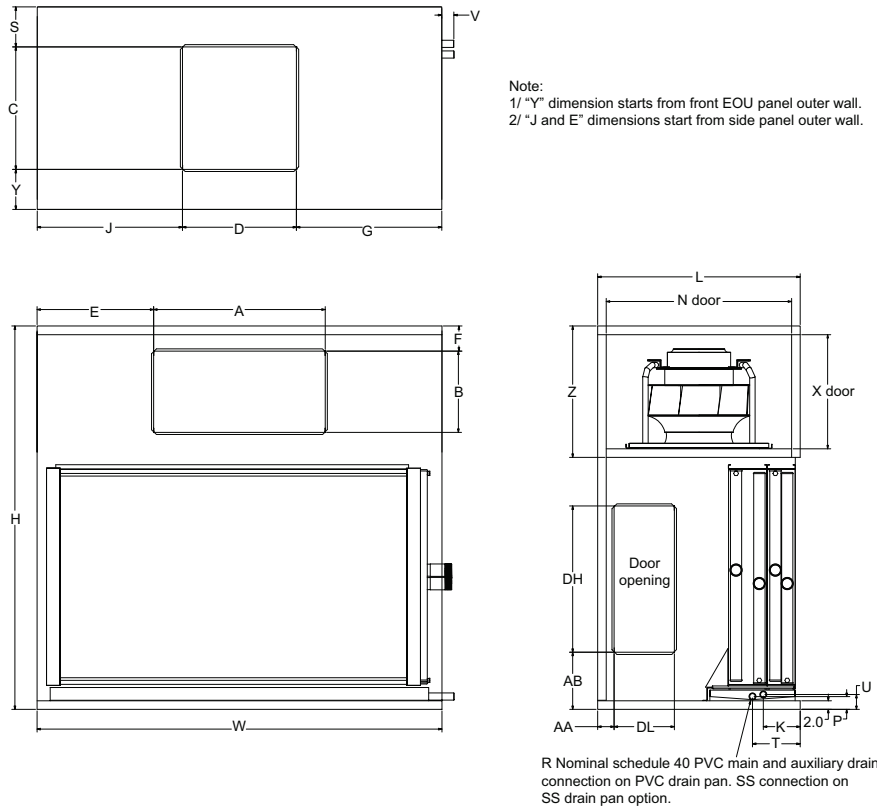


Table 28. Performance UCCA air handler with vertical motorized impeller dimensions (inches)

Unit size	H ^(a)	W	L	Roof discharge opening without electric heat				Roof discharge opening with electric heat			
				C	D	Y and S	J and G	C	D	Y	S
3	48.60	34.00	34.30	13.50	13.50	10.40	10.25	10.60	9.40	2.80	21.00
6	56.00	47.00	37.30	17.00	21.00	10.20	13.00	13.80	12.50	2.80	20.80
8	62.80	51.00	34.00	17.00	29.00	8.50	11.00	13.80	15.90	2.60	17.60
10	68.50	63.00	35.60	19.00	34.00	8.30	14.50	16.20	18.90	2.70	16.70
12	72.20	71.00	39.30	19.00	38.00	10.20	16.50	19.20	19.20	2.70	17.50
14	76.00	71.00	39.30	22.00	40.00	8.70	15.50	19.20	22.20	2.70	17.50
17	78.50	79.00	42.30	23.00	44.00	9.70	17.50	25.10	20.10	2.60	14.60
21	83.60	79.00	42.30	26.00	49.00	8.20	15.00	25.10	25.10	2.60	14.60
25	89.80	81.00	47.10	30.00	51.00	8.60	15.00	25.50	23.50	2.60	19.00
30	89.80	94.00	47.10	30.00	60.00	8.60	17.00	28.50	26.50	2.60	16.00

^(a) Add 6 inches to height of units with optional baserail.

Table 29. Performance UCCA air handler with vertical motorized impeller weights (pounds)

Unit size	3	6	8	10	12	14	17	21	25	30
Standard Fan	281	365	412	496	601	613	763	778	912	993
Premium Fan (208V/230V)	281	391	405	—	—	—	—	—	—	—

Table 29. Performance UCCA air handler with vertical motorized impeller weights (pounds) (continued)

Unit size	3	6	8	10	12	14	17	21	25	30
Premium Fan (460V)	281	409	423	534	611	622	697	873	947	1016

Note: Filter, coil, drain pan and electric heater not included.

Table 30. Performance UCCA air handler with vertical motorized impeller dimensions (inches)

Unit size	Standard Fan	With electric heat				Premium Fan	With electric heat			
		Standard Fan LH motor (drive) side		Standard Fan RH motor (drive) side			Premium Fan LH motor (drive) side		Premium Fan RH motor (drive) side	
	Fan Qty	J	G (motor side)	J	G (motor side)	Fan Qty	J	G (motor side)	J	G (motor side)
3	1	8.709	15.893	15.893	8.709	1	8.709	15.893	15.893	8.709
6	1	8.655	25.847	25.847	8.655	1	8.655	25.847	25.847	8.655
8	1	8.27	26.832	26.832	8.27	1	8.27	26.832	26.832	8.27
10	1	8.27	35.832	35.832	8.27	1	8.27	35.832	35.832	8.27
12	1	8.245	43.557	43.557	8.245	1	8.245	43.557	43.557	8.245
14	1	8.245	40.557	40.557	8.245	1	8.245	40.557	40.557	8.245
17	2	29.451	29.451	29.451	29.451	1	8.451	50.451	50.451	8.451
21	2	26.951	26.951	26.951	26.951	2	26.951	26.951	26.951	26.951
25	2	28.751	28.751	28.751	28.751	2	28.751	28.751	28.751	28.751
30	2	33.751	33.751	33.751	33.751	2	33.751	33.751	33.751	33.751

Table 31. Performance UCCA air handler with vertical motorized impeller dimensions (inches)

Unit size	A	B	E	F	K (LH)	K (RH)	P	T	U
3	19.6	7.3	7.2	7.735	7.5	12.5	2.7	10	3.37
6	25.4	11.6	10.8	6.8845	7.5	12.5	2.7	10	3.37
8	25.4	15.5	12.8	5.555	n/a	n/a	2.8	10	n/a
10	29	17	17	7.6765	n/a	n/a	2.8	10	n/a
12	34.6	17	18.2	7.6765	n/a	n/a	2.8	10	n/a
14	40.1	17.2	15.45	7.5765	n/a	n/a	2.8	10	n/a
17	48.7	17.4	13.85	7.4765	n/a	n/a	2.8	10	n/a
21	56.2	18	11.4	6.6115	n/a	n/a	2.8	10	n/a
25	60.4	18.8	10.3	6.212	n/a	n/a	3	11	n/a
30	64.8	21.5	14.6	4.8615	n/a	n/a	3	11	n/a
Unit size	R	N	X	DH	DL	AA	AB ^(a)	Z 2nd level height	
3	0.75	30.33	18.95	18.25	9.405	3.83	4.767	22.95	
6	0.75	33.33	21.369	18.25	9.405	3.83	7.267	25.369	
8	1	29.98	22.608	18.25	7.3	3.83	10.017	26.608	
10	1	31.58	28.353	24	10	3.83	7.017	32.353	
12	1	35.33	28.353	24	12	3.83	8.892	32.353	
14	1	35.33	28.353	24	12	3.83	10.767	32.353	
17	1	38.33	28.353	34	14	3.83	7.017	32.353	

Dimensions and Weights

Table 31. Performance UCCA air handler with vertical motorized impeller dimensions (inches) (continued)

21	1	38.33	27.223	34	14	3.83	10.142	31.223
25	1.25	43.084	27.223	34	14	3.83	13.267	31.223
30	1.25	43.084	27.223	34	14	3.83	13.267	31.223

(a) Add 6 inches on units with optional baserail.

Electric Heat

Figure 23. Electric heat

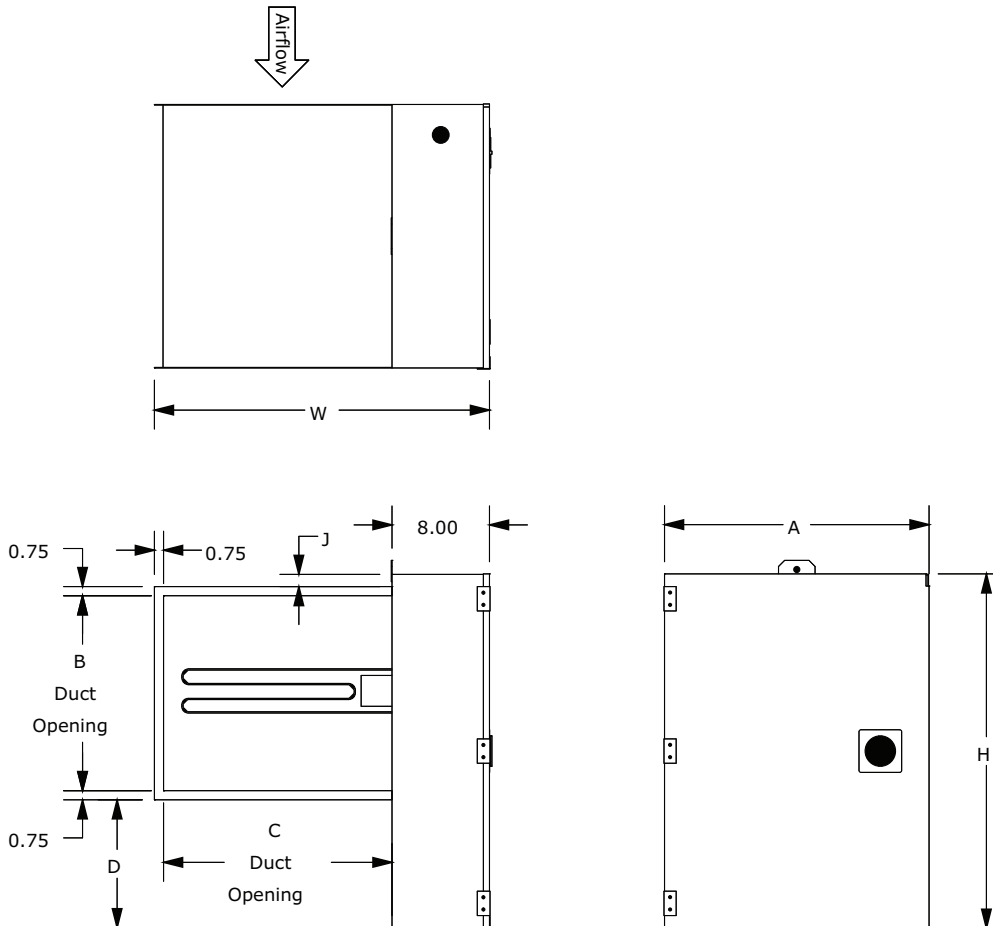


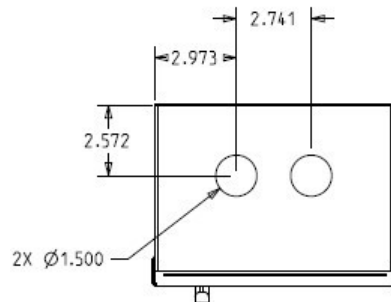
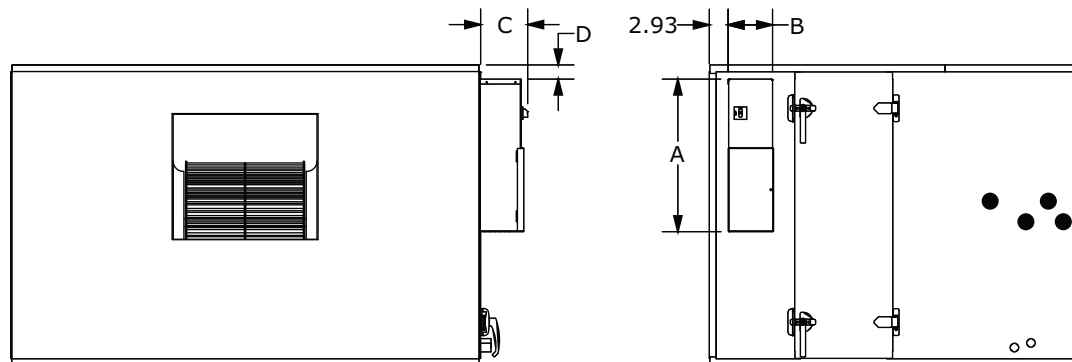
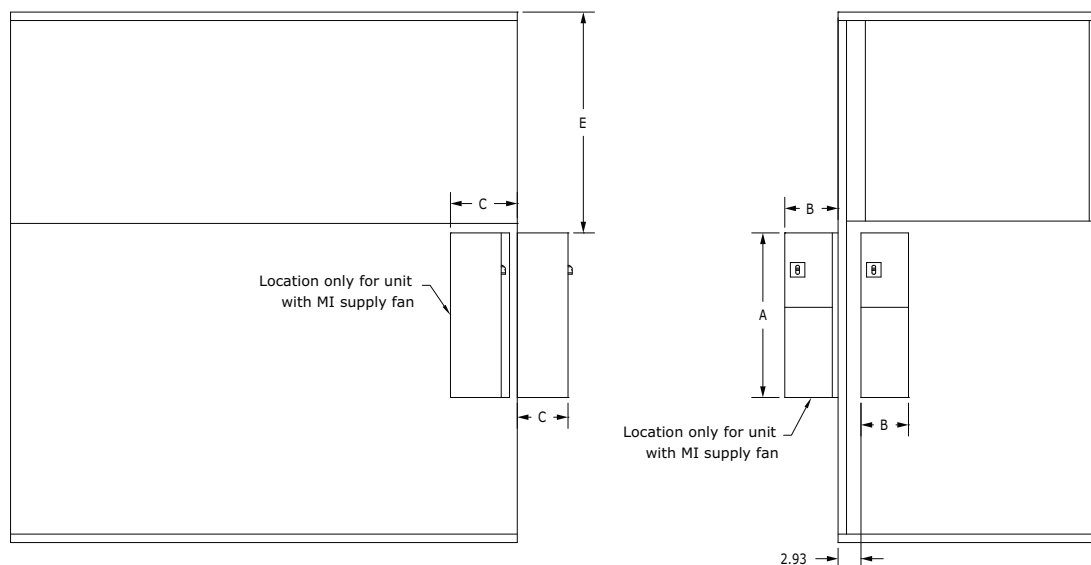
Table 32. Electric heat dimensions (inches) and weight (pounds)

Unit size	H	W	A	B	C	D	J	Weight
3	24.00	18.80	13.60	10.60	10.10	10.40	1.50	34
6	24.00	21.80	17.60	13.80	13.10	8.70	n/a	38
8	24.70	24.50	17.60	13.60	15.80	8.00	1.60	44
10	29.00	27.50	21.60	16.00	18.80	10.50	1.00	62
12	34.00	27.80	21.60	19.00	19.00	13.50	n/a	66
14	34.00	30.80	21.60	19.00	22.00	13.50	n/a	69
17	34.00	28.60	21.60	24.90	19.90	7.60	n/a	73
21	34.00	33.60	21.60	24.90	24.90	7.60	n/a	77

Table 32. Electric heat dimensions (inches) and weight (pounds) (continued)

Unit size	H	W	A	B	C	D	J	Weight
25	34.00	32.00	21.60	25.30	23.30	7.20	n/a	79
30	34.00	35.10	21.60	28.30	26.40	4.20	n/a	82

Control Box

Figure 24. Control box

Figure 25. Control box locations - horizontal unit

Figure 26. Control box locations for vertical motorized impeller fans


Dimensions and Weights

Table 33. Control box location dimensions (inches) and weight (pounds)

Unit size	A	B	MI FAN B	C	MI FAN C	D	E	MI FAN E	Weight	MI FAN Weight
3	23.60	6.80	9.90	7.10	7.70	1.90	27.10	21.20	15	19.20
6	23.60	6.80	9.90	7.10	7.70	1.90	34.20	23.70	15	19.20
8	23.60	6.80	9.90	7.10	7.70	1.90	32.50	26.80	15	19.20
10	23.60	6.80	9.90	7.10	7.70	1.90	37.30	28.40	15	19.20
12	23.60	6.80	9.90	7.10	7.70	1.90	43.70	28.40	15	19.20
14	23.60	6.80	9.90	7.10	7.70	1.90	43.70	31.00	15	19.20
17	23.60	6.80	9.90	7.10	7.70	1.90	50.30	26.80	15	19.20
21	23.60	6.80	9.90	7.10	7.70	1.90	50.40	28.40	15	19.20
25	23.60	6.80	9.90	7.10	7.70	1.90	n/a	28.40	15	19.20
30	23.60	6.80	9.90	7.10	7.70	1.90	n/a	31.00	15	19.20

VFD

Figure 27. VFD location

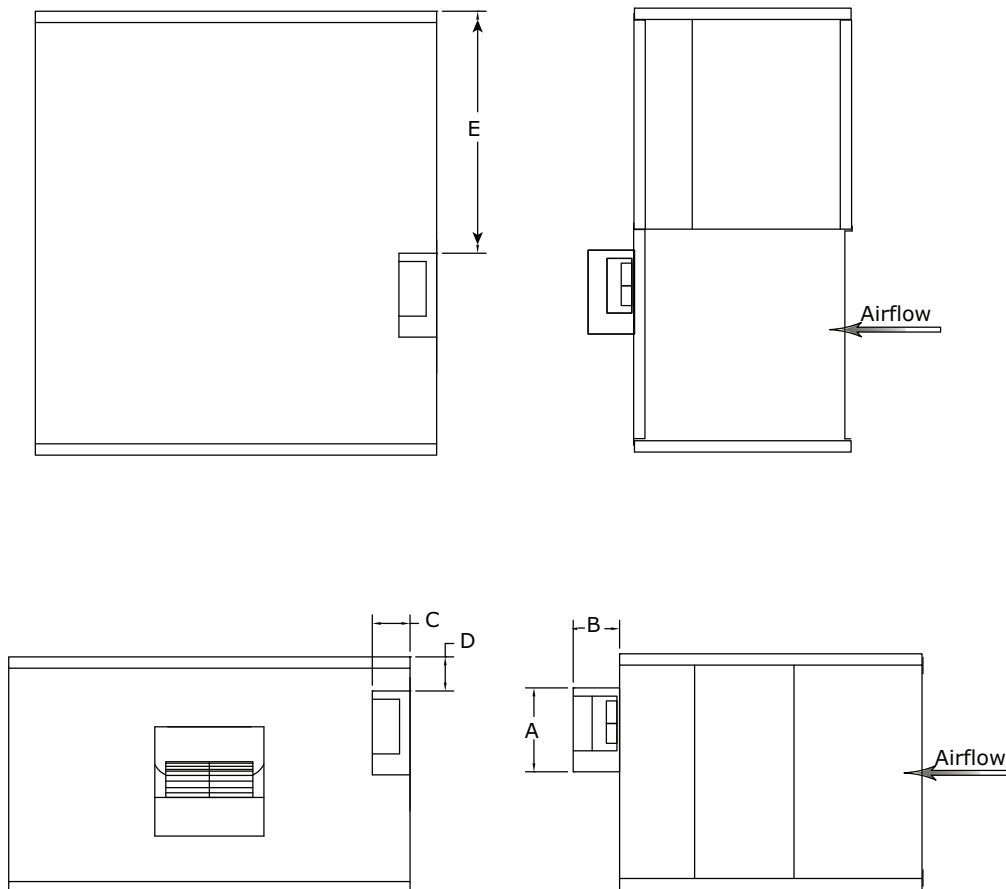


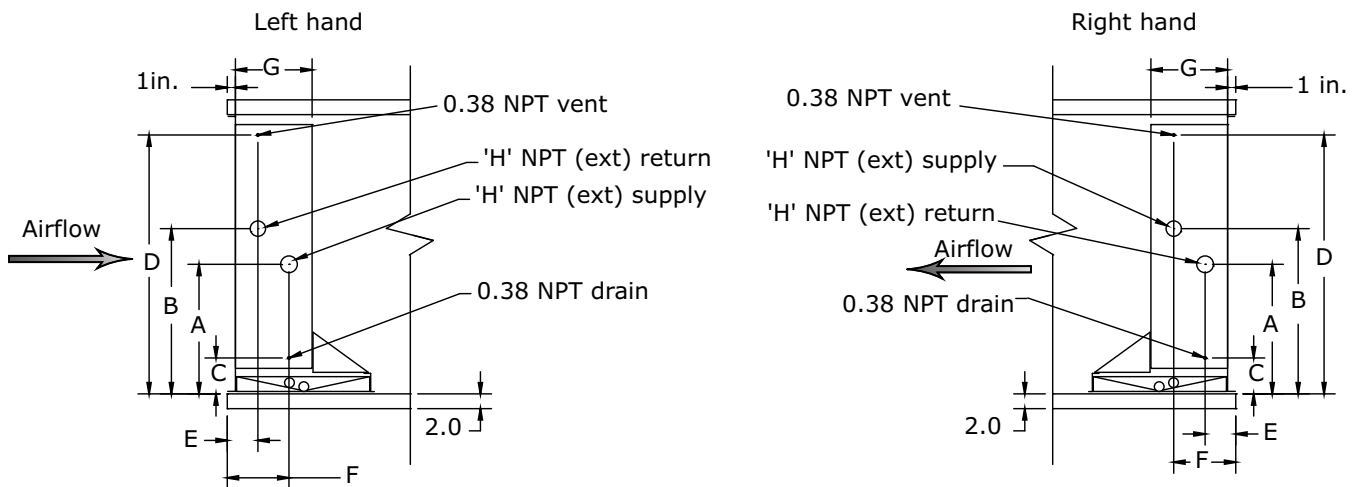
Table 34. VFD dimensions (inches)

Size	A	B	C	D	E
3	23.00	10.00	11.60	2.10	25.94
6	23.00	10.00	11.60	2.10	30.81
8	23.00	10.00	11.60	2.10	29.06
10	23.00	10.00	11.60	2.10	33.94
12	23.00	10.00	11.60	2.10	40.31
14	23.00	10.00	11.60	2.10	40.31
17	23.00	10.00	11.60	2.10	46.94
21	43.00	15.00	11.60	2.10	46.94
25	43.00	15.00	11.60	2.10	n/a
30	43.00	15.00	11.60	2.10	n/a

Note: See VFD weights in Table 54, p. 76.

Coils

Hydronic Coils

Figure 28. 3/8-inch Hydronic (water) coils




Dimensions and Weights

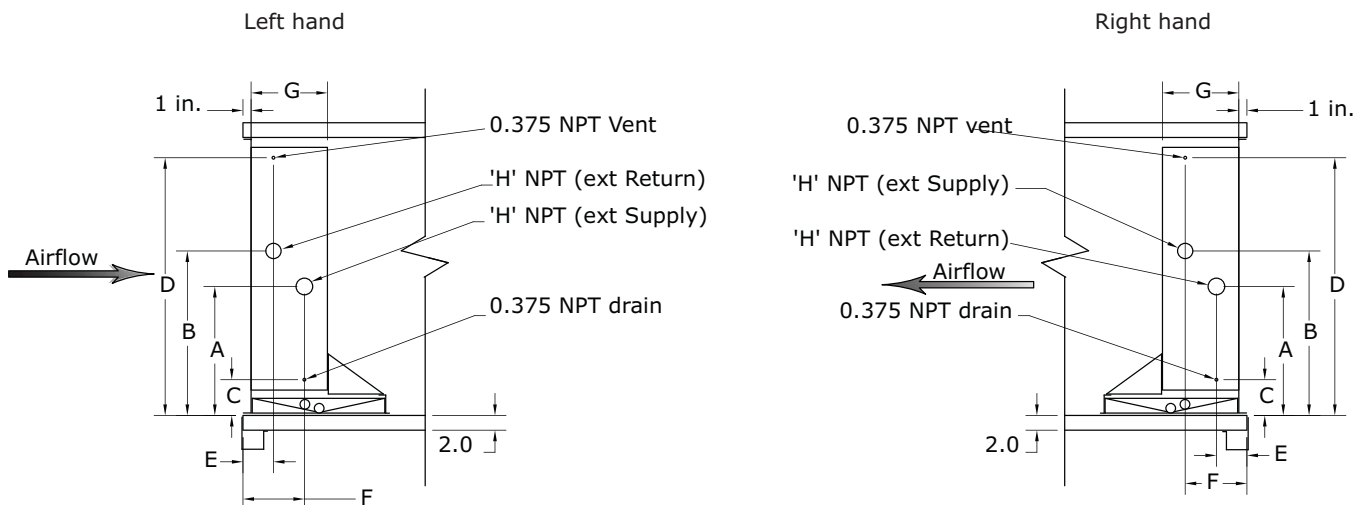
Table 35. 3/8-inch Hydronic (water) coil dimensions

	Size	LH				RH				Return E	Supply F	Width G	NPT Dia H
		Supply A	Return B	Drain C	Vent D	Return A	Supply B	Drain C	VentD				
1 Row	3	10.62	12.50	4.06	19.07	11.12	13.00	4.56	19.57	2.76	4.71	5.35	1.50
	6	13.12	16.00	4.06	25.07	12.62	15.50	3.56	24.57	2.76	4.71	5.35	1.50
	8	16.12	18.00	4.56	29.57	16.62	18.50	5.06	30.07	2.76	4.71	5.35	1.50
	10	16.12	18.00	4.56	29.57	16.62	18.50	5.06	30.07	2.76	4.71	5.35	1.50
	12	17.38	20.75	4.56	33.57	16.88	20.25	4.06	33.07	3.34	5.28	6.50	1.50
	14	19.88	22.25	4.56	37.57	20.38	22.75	5.06	38.07	3.34	5.28	6.50	1.50
	17	19.88	22.25	4.56	37.57	20.38	22.75	5.06	38.07	3.34	5.28	6.50	1.50
	21	23.62	26.50	4.56	45.57	24.12	27.00	5.06	46.07	3.34	5.28	6.50	1.50
	25	27.38	30.75	4.56	53.57	26.88	30.25	4.06	53.07	3.34	5.28	6.50	1.50
	30	27.38	30.75	4.56	53.57	26.88	30.25	4.06	53.07	3.34	5.28	6.50	1.50
2 Row	3	9.95	13.67	3.56	20.06	9.95	13.67	3.56	20.06	2.76	4.71	5.35	1.50
	6	12.45	16.17	3.56	25.06	12.45	16.17	3.56	25.06	2.76	4.71	5.35	1.50
	8	15.45	19.17	4.06	30.56	15.45	19.17	4.06	30.56	2.51	4.96	5.35	2.00
	10	15.45	19.17	4.06	30.56	15.45	19.17	4.06	30.56	2.51	4.96	5.35	2.00
	12	16.95	20.67	4.06	33.56	16.95	20.67	4.06	33.56	3.09	4.96	6.50	2.00
	14	19.45	23.17	4.06	38.56	19.45	23.17	4.06	38.56	3.09	4.96	6.50	2.00
	17	19.45	23.17	4.06	38.56	19.45	23.17	4.06	38.56	3.09	4.96	6.50	2.00
	21	23.45	27.17	4.06	46.56	23.45	27.17	4.06	46.56	3.09	4.96	6.50	2.00
	25	26.95	30.67	4.06	53.56	26.95	30.67	4.06	53.56	2.84	5.78	6.50	2.50
	30	26.95	30.67	4.06	53.56	26.95	30.67	4.06	53.56	2.84	5.78	6.50	2.50
4 Row	3	9.95	13.67	3.56	20.06	9.95	13.67	3.56	20.06	5.13	7.73	9.00	1.50
	6	12.45	16.17	3.56	25.06	12.45	16.17	3.56	25.06	5.13	7.73	9.00	1.50
	8	14.95	19.67	4.06	30.56	14.95	19.67	4.06	30.56	5.21	7.65	9.00	2.00
	10	14.95	19.67	4.06	30.56	14.95	19.67	4.06	30.56	5.21	7.65	9.00	2.00
	12	16.45	21.17	4.06	33.56	16.45	21.17	4.06	33.56	4.96	7.90	9.00	2.50
	14	18.95	23.67	4.06	38.56	18.95	23.67	4.06	38.56	4.96	7.90	9.00	2.50
	17	18.95	23.67	4.06	38.56	18.95	23.67	4.06	38.56	4.96	7.90	9.00	2.50
	21	22.95	27.67	4.06	46.56	22.95	27.67	4.06	46.56	4.96	7.90	9.00	2.50
	25	26.45	31.17	4.06	53.56	26.45	31.17	4.06	53.56	4.96	7.90	9.00	2.50
	30	26.45	31.17	4.06	53.56	26.45	31.17	4.06	53.56	4.96	7.90	9.00	2.50

Table 35. 3/8-inch Hydronic (water) coil dimensions (continued)

	Size	LH				RH				Return E	Supply F	Width G	NPT Dia H
		Supply A	Return B	Drain C	Vent D	Return A	Supply B	Drain C	VentD				
6 Row	3	9.95	13.67	3.56	20.06	9.95	13.67	3.56	20.06	3.39	7.73	9.00	1.50
	6	12.45	16.17	3.56	25.06	12.45	16.17	3.56	25.06	3.39	7.73	9.00	1.50
	8	14.95	19.67	4.56	30.06	14.95	19.67	4.56	30.06	3.83	7.29	9.00	2.00
	10	14.95	19.67	4.56	30.06	14.95	19.67	4.56	30.06	3.83	7.29	9.00	2.00
	12	16.95	20.67	4.06	33.56	16.95	20.67	4.06	33.56	3.83	7.29	9.00	2.00
	14	18.95	23.67	4.56	38.06	18.95	23.67	4.56	38.06	3.83	7.29	9.00	2.00
	17	18.95	23.67	4.56	38.06	18.95	23.67	4.56	38.06	3.83	7.29	9.00	2.00
	21	22.95	27.67	4.56	46.06	22.95	27.67	4.56	46.06	3.83	7.29	9.00	2.50
	25	26.95	30.67	4.06	53.56	26.95	30.67	4.06	53.56	3.83	7.29	9.00	2.50
	30	26.95	30.67	4.06	53.56	26.95	30.67	4.06	53.56	3.83	7.29	9.00	2.50
8 Row	3	9.95	13.67	3.56	20.06	9.95	13.67	3.56	20.06	3.61	9.68	11.17	1.50
	6	12.45	16.17	3.56	25.06	12.45	16.17	3.56	25.06	3.61	9.68	11.17	1.50
	8	15.45	19.17	4.06	30.56	15.45	19.17	4.06	30.56	4.04	9.24	11.17	2.00
	10	15.45	19.17	4.06	30.56	15.45	19.17	4.06	30.56	4.04	9.24	11.17	2.00
	12	16.95	20.67	4.06	33.56	16.95	20.67	4.06	33.56	4.04	9.24	11.17	2.50
	14	19.45	23.17	4.06	38.56	19.45	23.17	4.06	38.56	4.04	9.24	11.17	2.50
	17	19.45	23.17	4.06	38.56	19.45	23.17	4.06	38.56	4.04	9.24	11.17	2.50
	21	23.45	27.17	4.06	46.56	23.45	27.17	4.06	46.56	4.04	9.24	11.17	2.50
	25	26.95	30.67	4.06	53.56	26.95	30.67	4.06	53.56	4.04	9.24	11.17	2.50
	30	26.95	30.67	4.06	53.56	26.95	30.67	4.06	53.56	4.04	9.24	11.17	2.50

Figure 29. 1/2-inch hydronic (water) coils



Dimensions and Weights

Table 36. 1/2-inch hydronic (water) coils dimensions

	Size	Coil Height	Left hand Connections				Right Hand Connections				E	F	G	H
			A	B	C	D	A	B	C	D				
1-row coils	3	19.63	10.81	13.94	4.25	20.503	10.19	13.32	3.627	19.88	2.70	4.65	5.35	1.50
	6	24.63	13.31	16.44	4.25	25.503	12.69	15.82	3.627	24.88	2.70	4.65	5.35	1.50
	8,10	29.63	16.31	19.44	4.75	31.003	15.69	18.82	4.127	30.38	2.70	4.65	5.35	1.50
	12	32.13	17.56	20.69	4.75	33.503	16.94	20.07	4.127	32.88	2.45	4.90	5.35	2.00
	14,17	37.13	20.06	23.19	4.75	38.503	19.44	22.57	4.127	37.88	2.45	4.90	5.35	2.00
	21	45.80	23.81	26.94	4.75	46.003	24.44	27.57	5.377	46.63	2.45	4.90	5.35	2.00
	25,30	52.13	27.56	30.69	4.75	53.503	26.94	30.07	4.127	53.50	3.03	5.47	6.50	2.00
2-row coils	3	19.63	9.88	13.00	3.63	19.250	11.13	14.25	4.880	20.50	2.79	4.56	5.35	1.50
	6	24.63	13.00	16.13	4.25	24.880	13.00	16.13	4.250	24.88	2.79	4.56	5.35	1.50
	8,10	29.63	16.00	19.12	4.75	30.372	16.01	19.13	4.758	30.38	2.79	4.56	5.35	1.50
	12	32.13	17.25	20.37	4.75	32.870	17.26	20.38	4.760	32.88	2.54	4.81	5.35	2.00
	14,17	37.13	19.75	22.87	4.75	37.872	19.76	22.88	4.758	37.88	2.54	4.81	5.35	2.00
	21	45.80	24.13	27.25	4.75	46.625	24.13	27.25	4.755	46.63	2.54	4.81	5.35	2.00
	25,30	52.13	27.25	30.38	4.75	52.880	27.25	30.38	4.750	52.88	2.87	5.63	6.50	2.50
4-row coils	3	19.63	9.88	13.00	3.625	19.250	11.13	14.25	4.880	20.50	4.96	8.20	9.00	1.50
	6	24.63	13.00	16.13	4.25	24.880	13.00	16.13	4.250	24.88	4.96	8.20	9.00	1.50
	8,10	29.63	16.00	19.12	4.75	30.372	16.01	19.13	4.758	30.38	4.96	8.20	9.00	1.50
	12	32.13	17.25	20.37	4.75	32.870	17.26	20.38	4.760	32.88	4.96	8.21	9.00	2.00
	14,17	37.13	19.75	22.87	4.75	37.872	19.76	22.88	4.758	37.88	4.96	8.21	9.00	2.00
	21	45.80	24.13	27.25	4.75	46.625	24.13	27.25	4.755	46.63	4.96	8.21	9.00	2.50
	25,30	52.13	27.25	30.38	4.75	52.880	27.25	30.38	4.750	52.88	4.96	8.21	9.00	2.50
6-row coils	3	19.63	9.88	13.00	3.63	19.250	11.13	14.25	4.880	20.50	2.79	8.21	9.00	1.50
	6	24.63	13.00	16.13	4.25	24.880	13.00	16.13	4.250	24.88	2.79	8.21	9.00	1.50
	8,10	29.63	16.00	19.12	4.75	30.372	16.01	19.13	4.758	30.38	2.79	8.21	9.00	1.50
	12	32.13	17.25	20.38	4.75	32.870	17.26	20.38	4.760	32.88	2.79	8.21	9.00	2.00
	14,17	37.13	19.75	22.87	4.75	37.872	19.76	22.88	4.758	37.88	2.79	8.21	9.00	2.00
	21	45.80	24.13	27.25	4.75	46.625	24.13	27.25	4.755	46.63	2.79	8.21	9.00	2.50
	25,30	52.13	27.25	30.38	4.75	52.880	27.25	30.38	4.750	52.88	2.79	8.21	9.00	2.50
8-row coils	3	19.63	9.88	13.00	3.63	19.250	11.13	14.25	4.880	20.50	2.79	10.37	11.20	1.50
	6	24.63	13.00	16.13	4.25	24.880	13.00	16.13	4.250	24.88	2.79	10.37	11.20	1.50
	8,10	29.63	16.00	19.12	4.75	30.380	16.01	19.13	4.758	30.38	2.79	10.37	11.20	1.50
	12	32.13	17.25	20.37	4.75	32.880	17.26	20.38	4.760	32.88	2.79	10.37	11.20	2.00
	14,17	37.13	19.75	22.87	4.75	37.880	19.76	22.88	4.758	37.88	2.79	10.37	11.20	2.00
	21	45.80	24.13	27.25	4.75	46.630	24.13	27.25	4.755	46.63	2.79	10.37	11.20	2.50
	25,30	52.13	27.25	30.38	4.75	52.880	27.25	30.38	4.750	52.88	2.79	10.37	11.20	2.50

Steam Coils

Figure 30. Steam coils

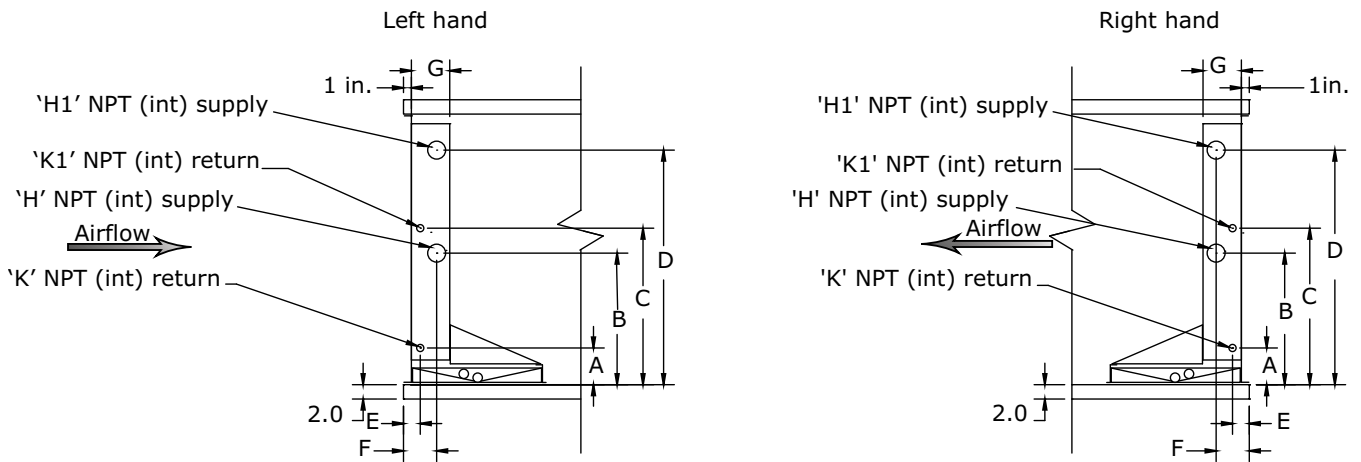


Table 37. Steam coil dimensions

Size	Coil height	A	B (LH)	B (RH)	C	D (LH)	D (RH)	E	F	G	K	K1	H	H1
3	13.50	6.94	13.38	10.38				2.38	3.81	5.25	1.00		1.50	
6	19.50	6.38	15.81	12.81				2.38	3.56	5.25	1.00		2.00	
8	25.50	6.06	18.81	15.81				2.31	3.56	5.25	1.25		2.50	
10	25.50	6.00	18.75	15.75				2.31	3.56	5.25	1.25		2.50	
12	25.50	7.19	19.94	16.94				2.31	3.56	5.25	1.25		2.50	
14	34.50	5.19	20.94	20.94				2.31	3.56	5.25	1.25		3.00	
17	34.50	5.19	20.94	20.94				2.31	3.56	5.25	1.25		3.00	
21	19.50 19.50	7.63	17.06	14.06	27.13	36.56	33.56	2.38	3.56	5.25	1.00	1.00	2.00	2.00
25	13.50 34.50	5.88	21.63	21.63	40.69	47.13	44.13	2.31	3.56	5.25	1.25	1.00	3.00	1.50
30	13.50 34.50	5.81	21.56	21.56	40.63	47.06	44.06	2.31	3.56	5.25	1.25	1.00	3.00	1.50

DX Coils

Figure 31. 3/8-inch DX single circuit coils size 3–10

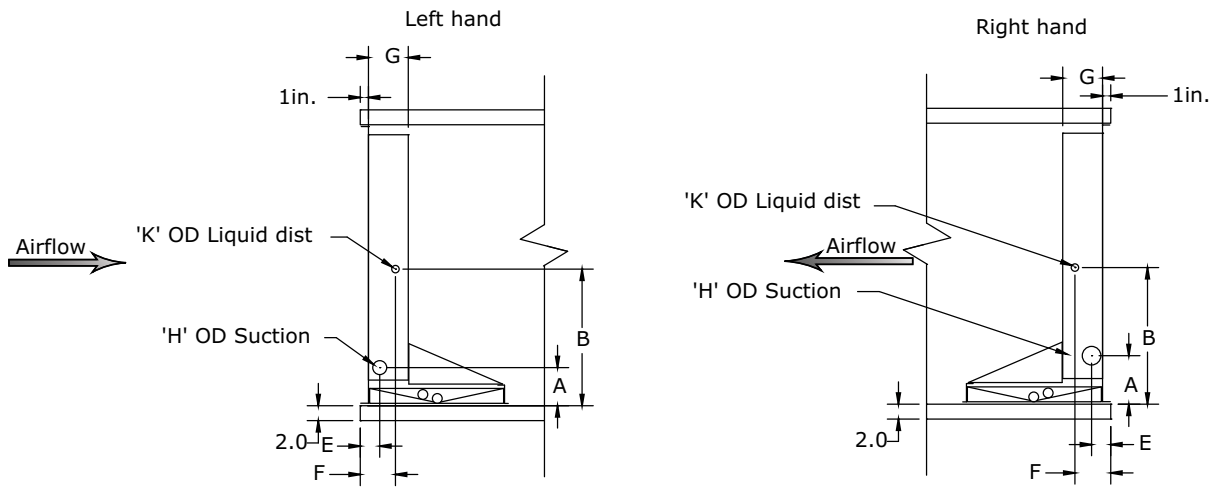


Table 38. 3/8-inch DX single circuit coil dimensions 3–10

	Size	Coil Height	A	B	E	F	H	K	G
4 Row	3	19.63	5.18	13.90	5.13	7.73	1.13	0.88	9.00
	6	24.63	4.47	18.51	5.13	7.73	1.38	1.13	9.00
	8	29.63	5.09	25.28	5.13	7.73	1.63	1.13	9.00
	10	29.63	5.09	25.28	5.13	7.73	1.63	1.13	9.00
6 Row	3	19.63	4.34	13.90	3.39	5.99	1.13	0.88	9.00
	6	24.63	4.47	18.51	3.39	5.99	1.38	1.13	9.00
	8	29.63	5.09	25.28	3.39	5.99	1.63	1.13	9.00
	10	29.63	5.09	25.28	3.39	5.99	1.63	1.13	9.00

Figure 32. 1/2-inch DX single circuit coils size 3-10

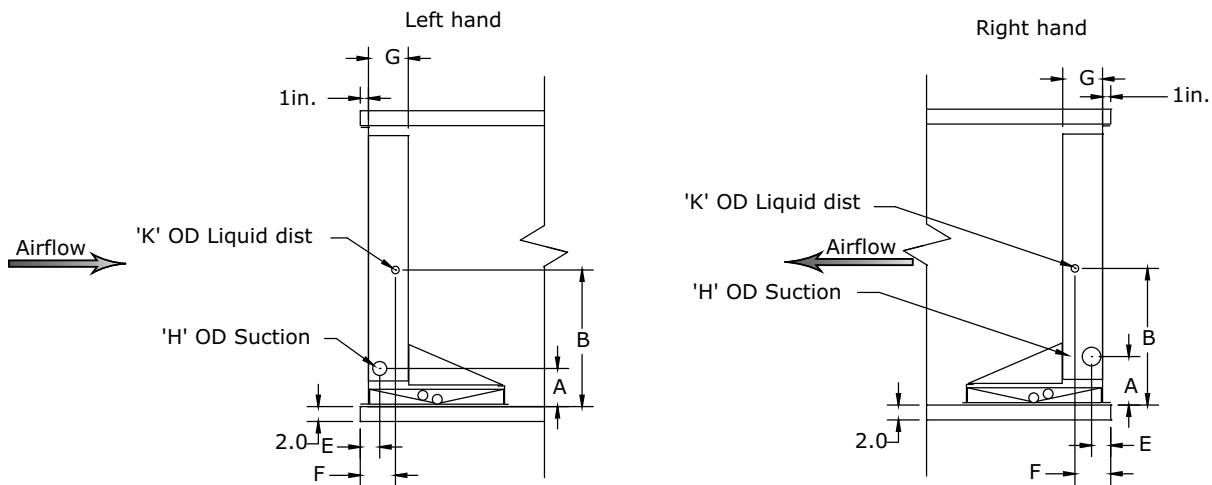


Table 39. 1/2-inch DX single circuit coil dimensions

Coil Rows	Size	Coil Height	A	B	E	F	H	K	G
4-row coils	3	19.63	4.69	12.44	4.94	8.13	1.38	0.63	9.00
	6	24.63	4.69	19.75	4.94	8.13	1.38	0.88	9.00
	8	29.63	5.19	21.44	4.94	8.13	1.38	0.88	9.00
	10	29.63	5.25	20.94	4.94	8.13	1.63	1.13	9.00
6-row coils	3	19.63	4.69	12.44	2.81	6.00	1.38	0.63	9.00
	6	24.63	4.69	19.75	2.81	6.00	1.38	0.88	9.00
	8	29.63	5.19	21.44	2.81	6.00	1.38	0.88	9.00
	10	29.63	5.25	20.94	2.81	6.00	1.63	1.13	9.00

Figure 33. 3/8-inch DX horizontal face split coils

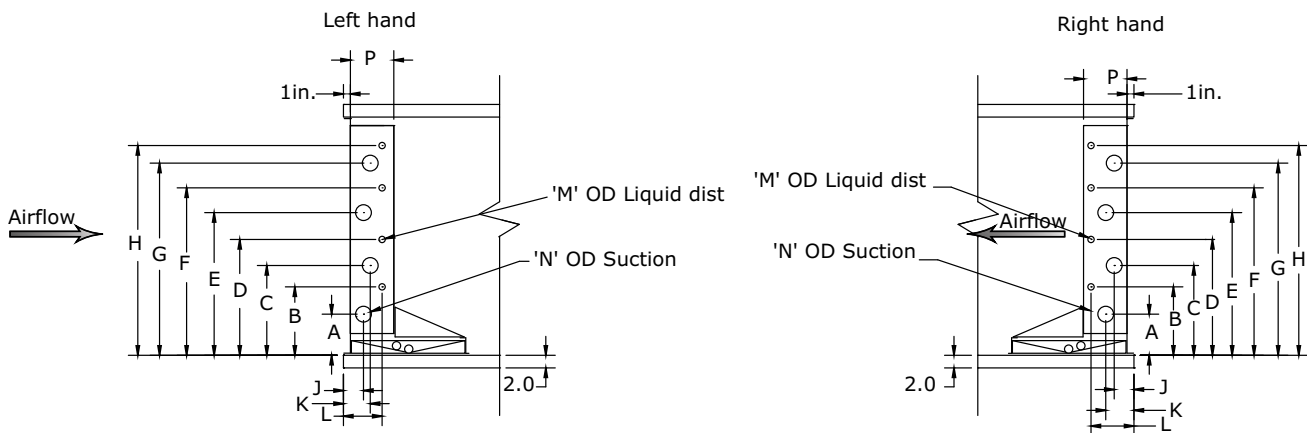


Table 40. 3/8-inch DX horizontal face split coil dimensions

Rows	Size	Coil Height				Suction				Distributors			
			J	K	L	A	C	E	G	B	D	F	H
4	8	29.63	5.13	5.13	7.73	4.84	18.84			14.56	28.40		
	10	29.63	5.13	5.13	7.73	4.84	18.84			14.56	28.40		
	12	32.13	5.13	5.13	7.73	4.97	19.97			16.26	31.26		
	14	37.13	5.13	5.13	7.73	4.97	21.97			20.01	37.01		
	17	37.13	5.13	5.13	7.73	4.47	21.47			19.51	36.51		
	21	45.88	4.35	5.91	7.73	4.34	14.34	25.34	35.34	15.06	25.06	36.06	46.06
	25	52.13	4.28	5.91	7.73	5.09	17.97	29.97	41.97	16.03	28.26	40.26	52.26
	30	52.13	4.28	5.91	7.73	5.09	17.97	29.97	41.97	16.03	28.26	40.26	52.26
6	8	29.63	3.39	3.39	5.99	4.84	18.84			14.56	28.40		
	10	29.63	2.61	4.17	5.99	4.84	18.84			15.20	28.56		
	12	32.13	2.61	4.17	5.99	4.97	19.97			16.20	31.20		
	14	37.13	2.61	4.17	7.73	4.97	13.97	22.97	31.84	14.70	23.70	32.70	38.70
	17	37.13	2.61	4.17	7.73	4.97	13.97	22.97	31.84	14.70	23.70	32.70	40.70
	21	45.88	2.61	4.17	5.99	4.97	15.97	26.97	37.97	14.76	25.76	36.76	46.76
	25	52.13	2.54	4.17	7.73	5.09	17.97	30.09	42.97	15.53	27.76	40.53	52.76
	30	52.13	2.54	4.17	7.73	5.09	17.97	30.09	42.97	15.53	27.76	40.53	52.76

Dimensions and Weights

Table 41. 3/8-inch DX horizontal face split coil dimensions

Rows	Size	Coil Height	N	N1	N2	Connection Diameters			M2	M3	P
						N3	M	M1			
4	8	29.63	1.13	1.13			0.88	0.88			9.00
	10	29.63	1.13	1.13			0.88	0.88			9.00
	12	32.13	1.38	1.38			1.13	1.13			9.00
	14	37.13	1.38	1.38			1.13	1.13			9.00
	17	37.13	1.38	1.38			1.13	1.13			9.00
	21	45.88	1.13	1.13	1.13	1.13	0.88	0.88	0.88	0.88	9.00
	25	52.13	1.63	1.38	1.38	1.38	1.13	1.13	1.13	1.13	9.00
	30	52.13	1.63	1.38	1.38	1.38	1.13	1.13	1.13	1.13	9.00
6	8	29.63	1.13	1.13			0.88	0.88			9.00
	10	29.63	1.13	1.13			1.13	0.88			9.00
	12	32.13	1.38	1.38			1.13	1.13			9.00
	14	37.13	1.38	1.38	1.38	1.13	1.13	1.13	1.13	1.13	9.00
	17	37.13	1.38	1.38	1.38	1.13	1.13	1.13	1.13	1.13	9.00
	21	45.88	1.38	1.38	1.38	1.38	1.13	1.13	1.13	1.13	9.00
	25	52.13	1.63	1.38	1.63	1.38	1.13	1.13	1.13	1.13	9.00
	30	52.13	1.63	1.38	1.63	1.38	1.13	1.13	1.13	1.13	9.00

Figure 34. 1/2-inch DX horizontal face split coils

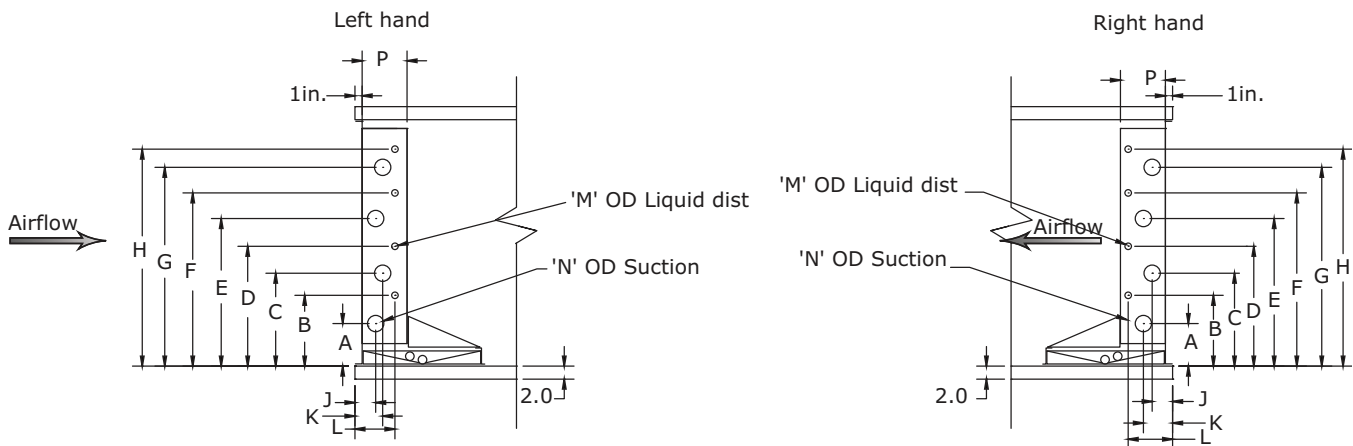


Table 42. 1/2-inch DX horizontal face split coil dimensions

Coil Rows	Size	Coil Height	Left hand			Right Hand			A	C	E	G	
			J	K	L	J	K	L					
4-row	8	29.63	4.94		6.13	4.94		8.13	5.19		20.19		
	10	29.63	4.94		6.13	4.94		8.13	5.19		17.69		
	12	32.13	4.94		8.13	4.94		8.13	5.13		17.63		
	14	37.13	4.94		8.13	4.94		8.13	5.19		22.69		
	17	37.13	4.94		8.13	4.94		8.13	5.19		22.69		
	21	45.88	4.94		8.13	5.00		8.13	5.25		27.75		
	25	52.13	4.94		6.25	4.94		8.19	5.25		27.75		
	30	52.13	4.13	5.81	7.38	5.81	4.13	9.06	5.25	16.50	29.00	41.50	
6-row	8	29.63	2.81		3.88	2.81		6.00	5.19		20.19		
	10	29.63	2.81		3.88	2.81		6.00	5.19		17.69		
	12	32.13	2.81		6.00	2.81		6.00	5.13		17.63		
	14	37.13	2.81		6.00	2.81		6.00	5.19		22.69		
	17	37.13	2.81		6.00	2.81		6.00	5.19		22.69		
	21	45.88	2.81		6.00	2.81		6.00	5.25		27.75		
	25	52.13	2.81		4.13	2.81		6.00	5.25		27.75		
	30	52.13	1.94	3.63	7.38	3.63	1.94	9.00	5.25	16.50	29.00	41.50	
Coil Rows	Size	Coil Height	Left hand			Right Hand				H	N	M	P
			B	D	F	H	B	D	F				
4-row	8	29.63	10.75		25.44		10.75		25.44		1.38	0.63	9.00
	10	29.63	11.44		25.06		11.44		25.06		1.38	0.88	9.00
	12	32.13	12.63		28.88		12.63		28.88		1.38	0.88	9.00
	14	37.13	15.63		34.13		15.63		34.13		1.38	0.88	9.00
	17	37.13	15.63		34.13		15.63		34.13		1.38	0.88	9.00
	21	45.88	20.88		43.31		20.81		43.31		1.63	1.13	9.00
	25	52.13	18.75		45.00		19.13		45.38		1.63	0.88	9.00
	30	52.13	12.81	25.31	37.81	50.31	13.19	25.69	38.19	50.69	1.63	0.88	9.00
6-row	8	29.63	10.75		25.44		10.88		25.56		1.38	0.88	9.00
	10	29.63	11.44		25.06		11.44		25.06		1.38	0.88	9.00
	12	32.13	12.63		28.88		12.63		28.88		1.38	0.88	9.00
	14	37.13	15.38		33.88		15.38		33.88		1.38	0.88	9.00
	17	37.13	15.38		33.88		15.38		33.88		1.38	0.88	9.00
	21	45.88	20.88		43.38		20.88		43.38		1.63	1.13	9.00
	25	52.13	19.13		45.38		19.13		45.38		1.63	1.38	9.00
	30	52.13	13.19	25.69	38.19	50.69	13.19	25.69	38.19	50.69	1.63	1.38	9.00

Figure 35. 3/8-inch DX intertwined coils size 8–30

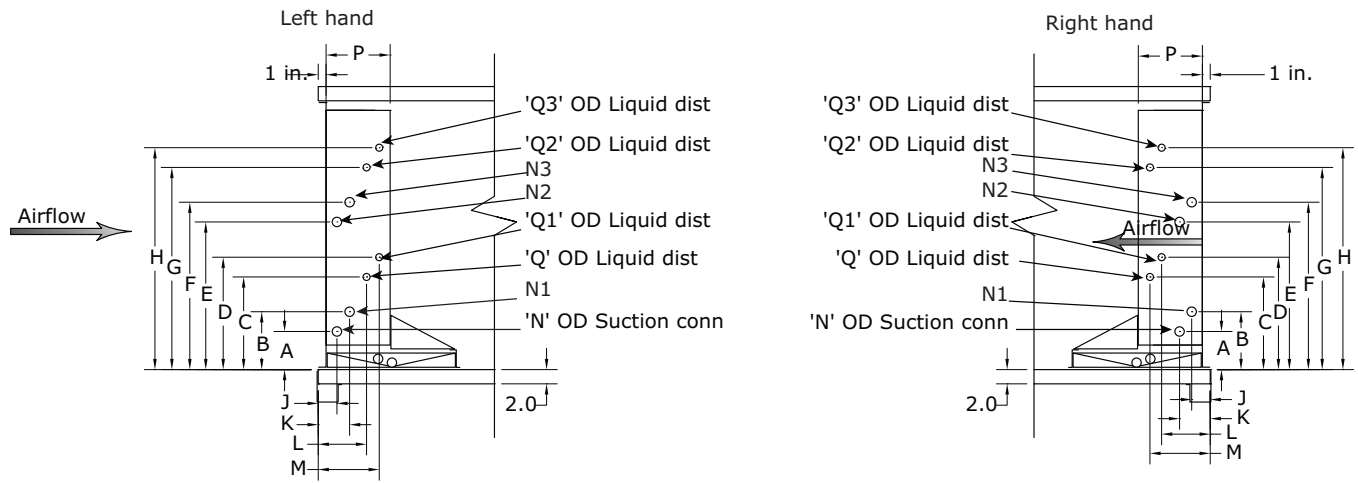


Table 43. 3/8-inch DX intertwined coils size 8–30 dimensions for both left hand and right hand

Rows	Size	Coil Height	J	K	L	M	A	B	C	D	E	F
4	8	29.63	4.35	5.91	5.73	7.73	4.84	6.84	23.81	25.65		
	10	29.63	4.35	5.91	5.73	7.73	4.84	6.84	23.81	25.65		
	12	32.13	4.35	5.91	5.73	7.73	4.97	5.97	25.51	26.51		
	14	37.13	4.35	5.91	5.73	7.73	5.97	4.97	25.51	26.51		
	17	37.13	4.35	5.91	5.73	7.73	5.47	4.47	25.01	26.01		
	21	45.88	4.35	5.91	5.73	7.73	4.34	5.34	18.81	19.81	25.34	26.34
	25	52.13	4.35	5.91	6.50	8.50	5.09	5.97	25.51	25.28	30.97	29.97
	30	52.13	4.35	5.91	6.50	8.50	5.09	5.97	25.51	25.28	30.97	29.97
Rows	Size	Coil Height	G	H	N	N1	N2	N3	Q	Q1	Q2	Q3
4	8	29.63			1.13	1.13			0.88	0.88		
	10	29.63			1.38	1.38			0.88	0.88		
	12	32.13			1.38	1.38			1.13	1.13		
	14	37.13			1.38	1.38			1.13	1.13		
	17	37.13			1.38	1.38			1.13	1.13		
	21	45.88	39.81	40.81	1.13	1.13	1.13	1.13	0.88	0.88	0.88	0.88
	25	52.13	50.51	49.51	1.63	1.38	1.38	1.38	1.13	1.13	1.13	1.13
	30	52.13	50.51	49.51	1.63	1.38	1.38	1.38	1.13	1.13	1.13	1.13
6	8	29.63			1.13	1.13			0.88	0.88		
	10	29.63			1.13	1.13			1.13	0.88		
	12	32.13			1.38	1.38			1.13	1.13		
	14	37.13	36.45	37.45	1.38	1.38	1.13	1.38	1.13	1.13	1.13	1.13
	17	37.13	36.45	37.45	1.38	1.38	1.13	1.38	1.13	1.13	1.13	1.13
	21	45.88	40.51	41.51	1.38	1.38	1.38	1.38	1.13	1.13	1.13	1.13
	25	52.13	49.78	50.01	1.63	1.38	1.38	1.63	1.13	1.13	1.13	1.13
	30	52.13	49.78	50.01	1.63	1.38	1.38	1.63	1.13	1.13	1.13	1.13
6	8	29.63	2.61	4.17	3.99	5.99	4.84	6.84	23.81	25.65		
	10	29.63	2.61	4.17	3.99	5.99	4.84	6.84	24.45	25.81		
	12	32.13	2.61	4.17	3.99	5.99	4.97	6.97	25.45	26.45		
	14	37.13	2.61	4.17	6.73	8.73	5.97	4.97	18.45	19.45	23.84	22.97
	17	37.13	2.61	4.17	6.73	8.73	5.97	4.97	18.45	19.45	23.84	22.97
	21	45.88	2.61	4.17	6.73	8.73	4.97	5.97	18.51	19.51	26.97	27.97
	25	52.13	2.61	4.17	6.73	8.73	5.09	5.97	24.78	25.01	30.97	30.09
	30	52.13	2.61	4.17	6.73	8.73	5.09	5.97	24.78	25.01	30.97	30.09

Dimensions and Weights

Figure 36. 1/2-inch DX intertwined coils size 8–30

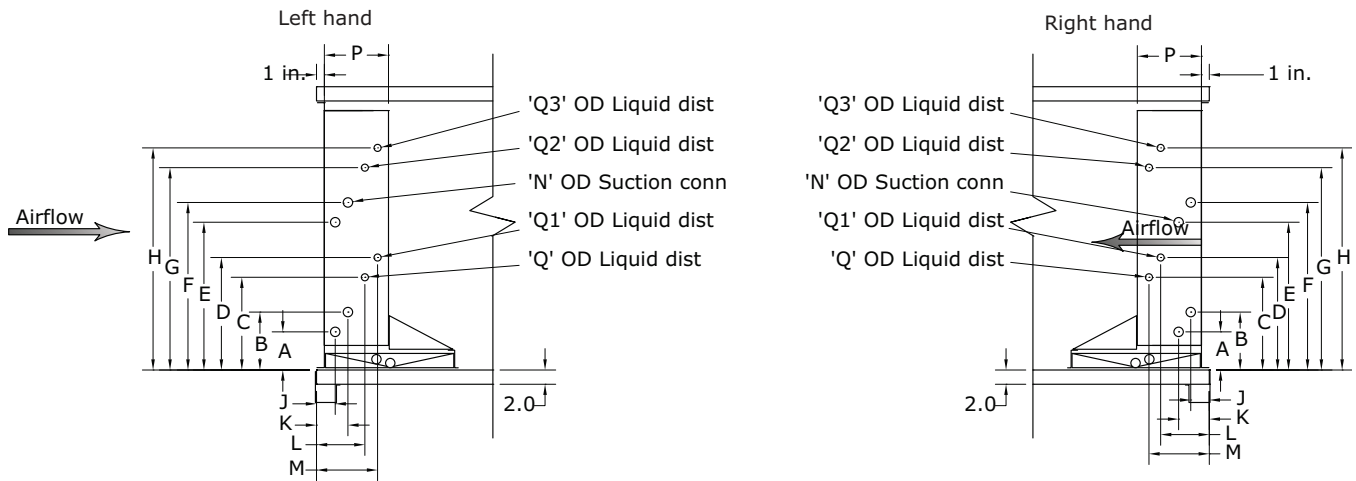


Table 44. 1/2-inch DX intertwined coil dimensions sizes (left hand) 8–30

Coil Rows	Size	Coil Height	J	K	L	M	Left Hand							
							A	B	C	D	E	F	G	H
4-row	8	29.63	4.19	5.75	4.31	6.31	5.19	8.94	16.88	21.00				
	10	29.63	4.19	5.75	4.31	6.31	5.19	7.69	25.38	22.88				
	12	32.13	4.19	5.75	4.31	6.31	7.63	5.13	20.31	25.38				
	14,17	37.13	4.19	5.75	4.31	6.31	5.19	7.69	25.50	22.88				
	21	45.88	4.19	5.75	4.31	6.31	5.19	7.69	19.88	17.63	27.69	30.19	37.63	40.13
	25	52.13	4.19	5.75	4.31	6.31	5.19	7.69	17.75	20.25	30.19	27.69	44.00	46.50
	30	52.13	4.13	5.81	5.19	7.19	6.50	5.25	21.00	22.25	29.00	30.25	46.00	47.25
6-row	8	29.63	2.00	3.56	2.13	4.13	5.19	8.94	21.00	16.88				
	10	29.63	2.00	3.56	2.13	4.13	5.19	7.69	22.88	25.38				
	12	32.13	2.00	3.56	2.13	4.13	7.63	5.13	25.38	20.31				
	14,17	37.13	2.00	3.56	2.13	4.13	5.19	7.69	25.50	22.88				
	21	45.88	2.00	3.56	2.13	4.13	5.19	7.69	19.88	17.63	27.63	30.19	37.63	40.13
	25	52.13	2.00	3.56	2.13	4.13	5.13	7.63	17.75	20.25	30.19	27.63	44.00	46.50
	30	52.13	1.94	3.63	5.19	7.19	6.50	5.25	21.00	22.25	29.00	30.25	46.00	47.25

Table 45. 1/2-inch DX intertwined coil dimensions sizes (right hand) 8–30

Coil Rows	Size	Coil Height	Right Hand								
			A	B	C	D	E	F	G	H	P
4- row	8	29.63	5.19	8.94	21.00	16.88					9.00
	10	29.63	5.19	7.69	22.88	25.38					9.00
	12	32.13	7.69	5.19	25.38	20.31					9.00
	14.17	37.13	5.19	7.69	25.50	22.88					9.00
	21	45.88	5.19	7.69	19.88	17.63	27.69	30.19	37.63	40.13	9.00
	25	52.13	5.19	7.69	17.75	20.25	30.19	27.69	44.00	46.50	9.00
	30	52.13	6.50	5.25	21.00	22.25	29.00	30.25	46.00	47.25	9.00
6- row	8	29.63	5.19	8.94	21.00	16.88					9.00
	10	29.63	5.19	7.69	22.88	25.38					9.00
	12	32.13	7.69	5.19	25.38	20.31					9.00
	14,17	37.13	5.19	7.69	25.50	22.88					9.00
	21	45.88	5.19	7.69	19.88	17.63	27.63	30.13	37.63	40.13	9.00
	25	52.13	5.19	7.69	17.75	20.25	30.19	27.69	44.00	46.50	9.00
	30	52.13	6.44	5.19	21.00	22.25	29.00	30.25	46.00	47.25	9.00
Coil Rows	Size	Coil Height	N	Q	Q1	Q2	Q3				
4- row	8	29.63	1.38	0.63	0.63						
	10	29.63	1.38	0.88	0.88						
	12	32.13	1.38	0.88	0.88						
	14.17	37.13	1.38	0.88	0.88						
	21	45.88	1.38	0.88	0.63	0.63	0.63				
	25	52.13	1.38	0.63	0.88	0.88	0.88				
	30	52.13	1.63	0.88	0.88	0.88	0.88				
6- row	8	29.63	1.38	0.88	0.88						
	10	29.63	1.38	0.88	0.88						
	12	32.13	1.38	0.88	0.88						
	14,17	37.13	1.38	1.13	0.88						
	21	45.88	1.38	0.88	0.88	0.88	0.88				
	25	52.13	1.38	0.88	0.88	0.88	0.88				
	30	52.13	1.63	1.38	1.38	1.38	1.38				

Access Section with Optional Coil (Indoor Units)

Figure 37. Access section with optional coil

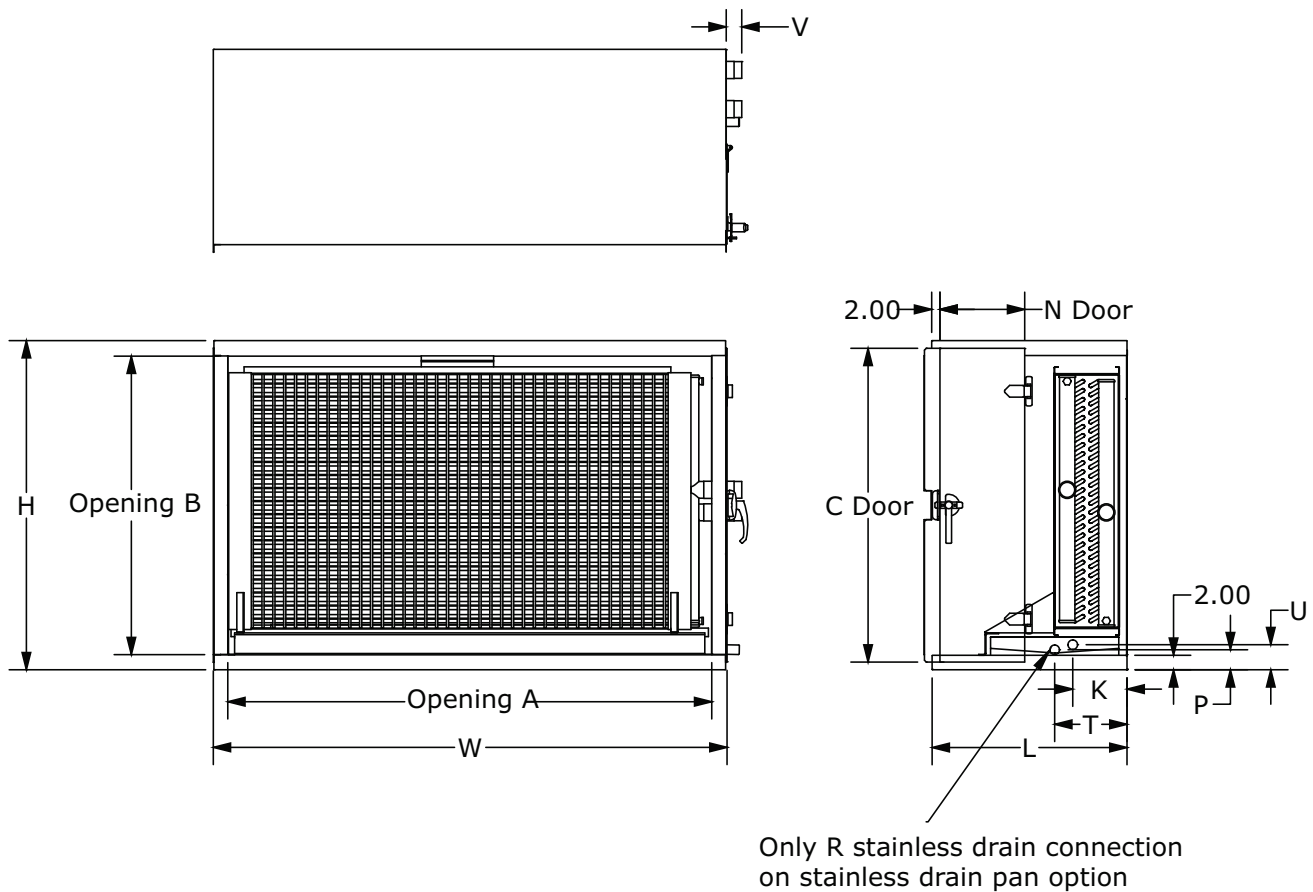


Table 46. Access section with optional coil dimensions (inches)

Size	A	B	H ^(a)	W	L	K (LH)	K (RH)	C	N	P	T	U	R	Weight ^(b) (lbs)
3	30.00	23.50	27.50	34.00	27.00	7.5	12.5	23.50	10.00	2.70	10.00	3.40	0.75	121
6	43.00	28.50	32.50	47.00	27.00	7.5	12.5	28.50	10.00	2.70	10.00	3.40	0.75	159
8	47.00	34.00	38.00	51.00	27.00	n/a	n/a	34.00	10.00	2.80	10.00	n/a	1.00	180
10	59.00	34.00	38.00	63.00	27.00	n/a	n/a	34.00	10.00	2.80	10.00	n/a	1.00	208
12	67.00	37.75	41.80	71.00	27.00	n/a	n/a	37.80	10.00	2.80	10.00	n/a	1.00	236
14	67.00	41.50	45.50	71.00	27.00	n/a	n/a	41.50	10.00	2.80	10.00	n/a	1.00	242
17	75.00	44.00	48.00	79.00	27.00	n/a	n/a	44.00	10.00	2.80	10.00	n/a	1.00	267
21	75.00	50.25	54.30	79.00	27.00	n/a	n/a	50.30	10.00	2.80	10.00	n/a	1.00	287
25	77.00	56.50	60.50	81.00	27.00	n/a	n/a	56.50	10.00	2.80	10.00	n/a	1.25	339
30	90.00	56.50	60.50	94.00	27.00	n/a	n/a	56.50	10.00	2.80	10.00	n/a	1.25	375

^(a) Add 6 inches for units with optional baserail.

^(b) Weight does not include coil or optional baserail.

Mixing Box/Filter Section

Figure 38. Unit filter rack

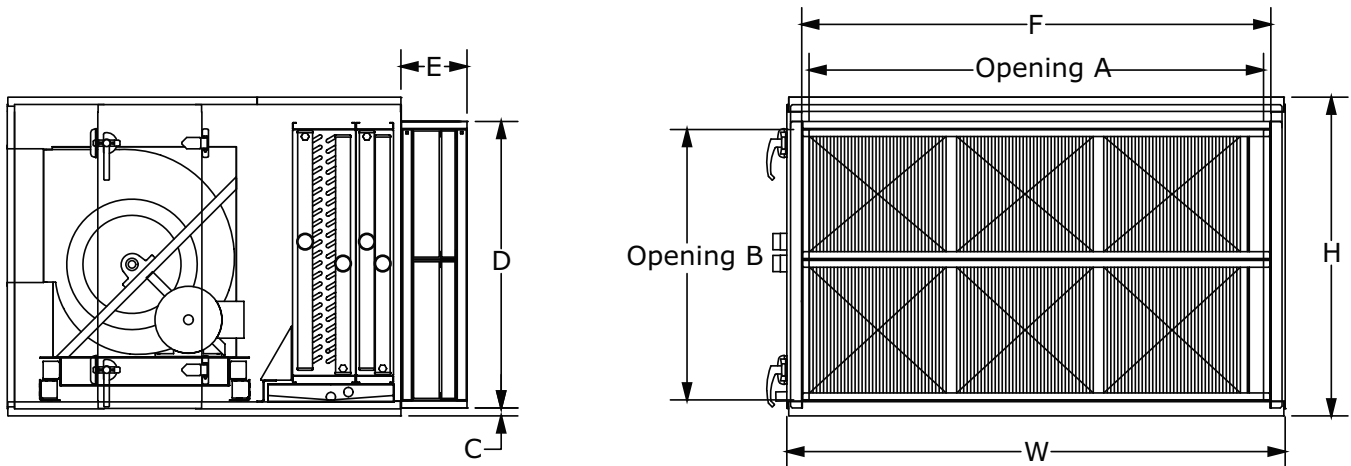


Table 47. Unit filter dimensions (inches) and weight (pounds)

Size	E - 2-in. flat	E - 2-in./4-in. Combination	B	A	D	F	Weight ^(a)
3	4.00	9.50	20.35	28.00	22.35	30.00	26
6	4.00	9.50	25.35	41.00	27.35	43.00	35
8	4.00	9.50	32.64	45.00	34.64	47.00	48
10	4.00	9.50	32.64	57.00	34.64	59.00	61
12	4.00	9.50	36.64	65.00	38.64	67.00	64
14	4.00	9.50	36.64	65.00	38.64	67.00	68
17	4.00	9.50	40.64	73.00	42.64	75.00	74
21	4.00	9.50	45.64	73.00	47.64	75.00	78
25	4.00	9.50	50.64	75.00	52.64	77.00	68
30	4.00	9.50	50.64	88.00	52.64	90.00	78

^(a) Weight includes heaviest filter.

Dimensions and Weights

Figure 39. Standard offering for indoor mixing box/filter section

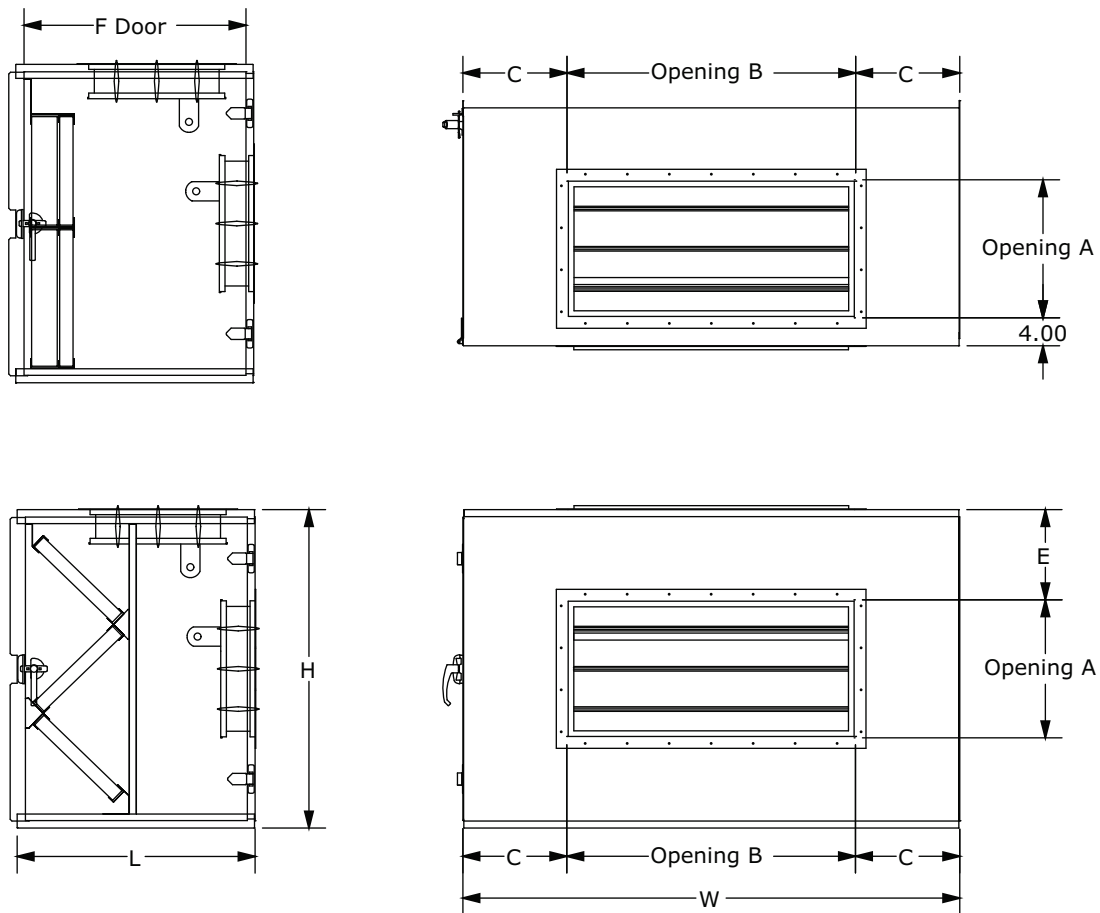


Table 48. Standard offering for indoor mixing box section with filter weight (lbs) and dimensions (inches)

Size	H ^(a)	W	L	A	B	C	E	F	Weight ^(b)
3	27.50	34.00	29.00	13.97	13.25	10.38	6.77	25.00	157
6	32.50	47.00	33.00	13.97	25.25	10.88	9.27	29.00	227
8	38.00	51.00	31.00	13.97	32.00	9.50	12.02	27.00	256
10	38.00	63.00	31.00	13.97	42.75	10.13	12.02	27.00	302
12	41.80	71.00	29.00	13.97	52.50	9.25	13.89	25.00	324
14	45.50	71.00	34.00	19.72	41.25	14.88	12.89	30.00	368
17	48.00	79.00	34.00	19.72	51.00	14.00	14.14	30.00	406
21	54.30	79.00	34.00	19.72	60.00	9.50	17.27	30.00	432
25	60.50	81.00	40.00	25.47	58.50	11.25	17.52	36.00	506
30	60.50	94.00	40.00	25.47	68.00	13.00	17.52	36.00	563

^(a) Add 6 inches for units with optional baserail.

^(b) Weight includes heaviest filter. Optional baserail not included.

Figure 40. Standard offering for outdoor mixing box/filter section

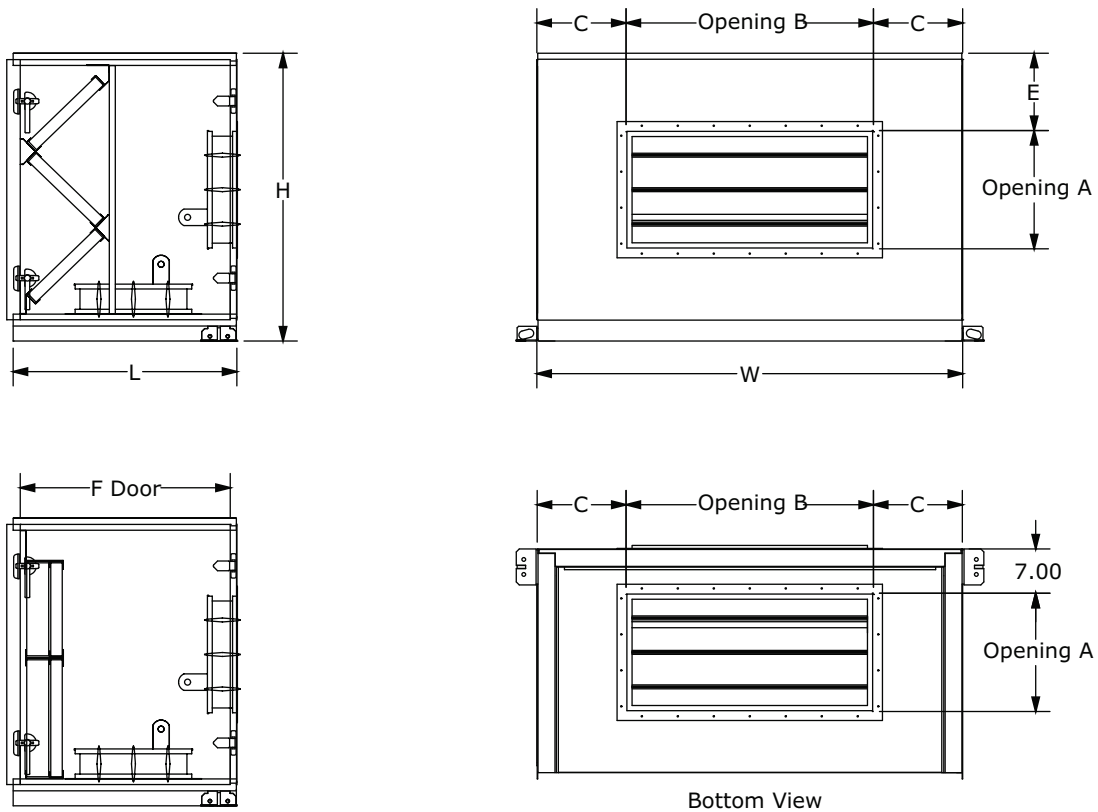


Table 49. Standard offering for outdoor mixing box section with filter weight (lbs) and dimensions (inches)

Size	H	W	L	A	B	C	E	F	Weight ^(a)
3	31.80	34	32.30	13.97	13.25	10.38	5.52	28.30	229
6	36.80	47	36.30	13.97	25.25	10.88	9.27	32.30	326
8	42.30	51	34.30	13.97	32.00	9.50	12.02	30.30	359
10	42.30	63	34.30	13.97	42.75	10.13	12.02	30.30	420
12	46.10	71	32.30	13.97	52.50	9.25	13.89	28.30	457
14	49.90	71	37.30	19.72	41.25	14.88	12.89	33.30	508
17	52.40	79	37.30	19.72	51.00	14.00	14.14	33.30	576
21	58.60	79	37.30	19.72	60.00	9.50	17.27	33.30	604
25	64.90	81	43.30	25.47	58.50	11.25	17.52	39.30	702
30	64.90	94	43.30	25.47	68.00	13.00	17.52	39.30	782

^(a) Weight includes heaviest filter.

Dimensions and Weights

Figure 41. Hoods for outdoor mixing box

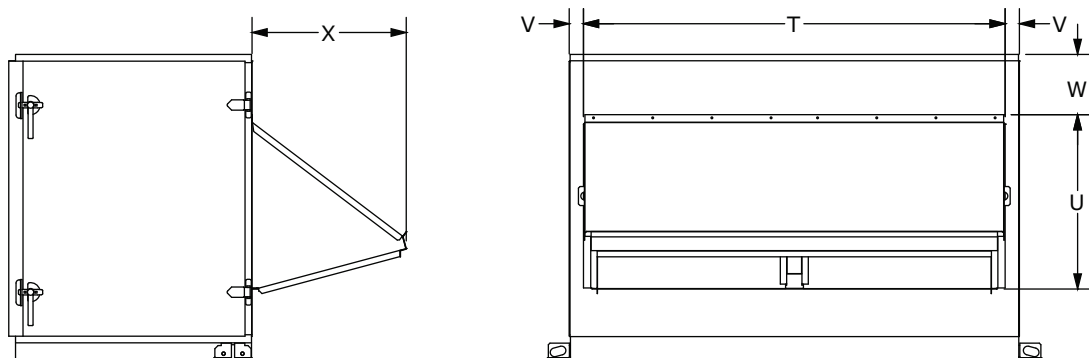
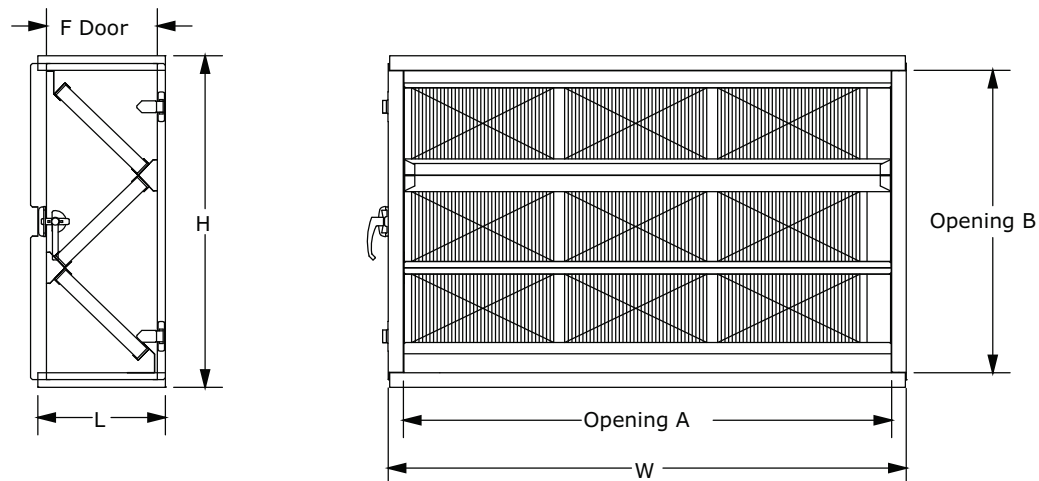


Table 50. Hood dimensions (inches) for outdoor mixing box

Size	T	U	V	W	X	# of Hood Openings
3	29.75	22.47	2.13	2.25	18.52	1
6	42.50	25.16	2.25	4.00	20.94	1
8	46.50	25.16	2.25	7.00	20.94	1
10	58.50	24.29	2.25	8.00	19.97	1
12	66.50	28.21	2.25	8.00	24.32	1
14	66.50	28.21	2.25	9.50	24.32	1
17	74.64	31.03	2.18	9.00	33.02	1
21	74.64	31.03	2.18	12.00	33.02	1
25	76.50	35.83	2.25	13.00	38.33	1
30	88.50	36.48	2.75	13.00	39.02	1

Figure 42. Angle filter section

Table 51. Angle filter section dimensions (inches) and weight (pounds)

Size	H ^(a)	W	L	A	B	F	Weight ^(b)
3	27.50	34.00	19.25	30.00	23.50	15.25	70
6	32.50	47.00	22.75	43.00	28.50	18.75	100
8	38.00	51.00	20.50	47.00	34.00	16.50	103
10	38.00	63.00	20.50	59.00	34.00	16.50	117
12	41.80	71.00	18.75	67.00	37.75	14.75	123
14	45.50	71.00	17.50	67.00	41.50	13.50	128
17	48.00	79.00	22.00	75.00	44.00	18.00	161
21	54.30	79.00	18.75	75.00	50.25	14.75	154
25	60.50	81.00	22.00	77.00	56.50	18.00	177
30	60.50	94.00	22.00	90.00	56.50	18.00	208

^(a) Add 6 in to height of units with optional baserail.

^(b) Weight includes heaviest filter. Optional baserail not included.

Filter Placement

Figure 43. Flat filter arrangement dimensions (inches)

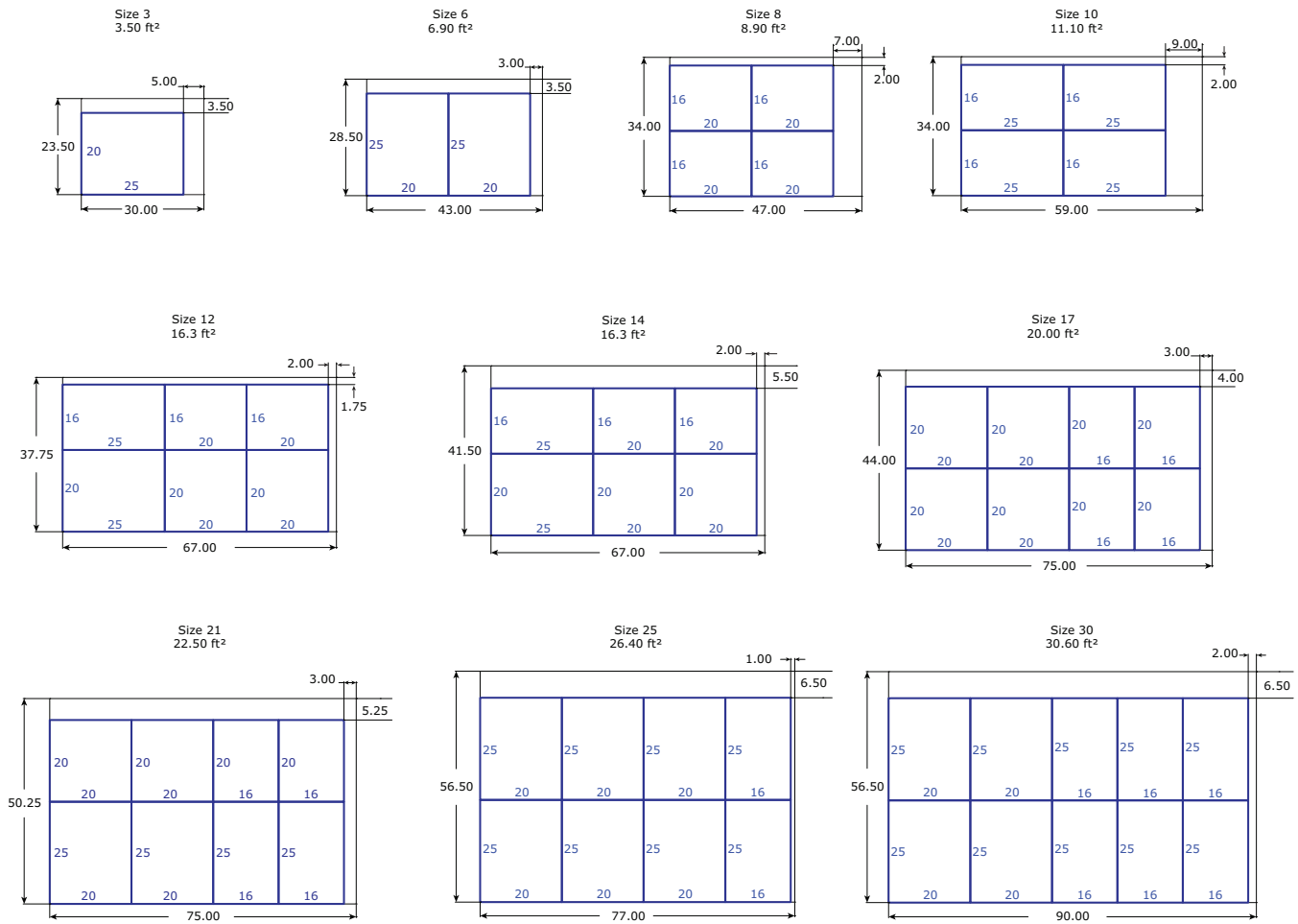
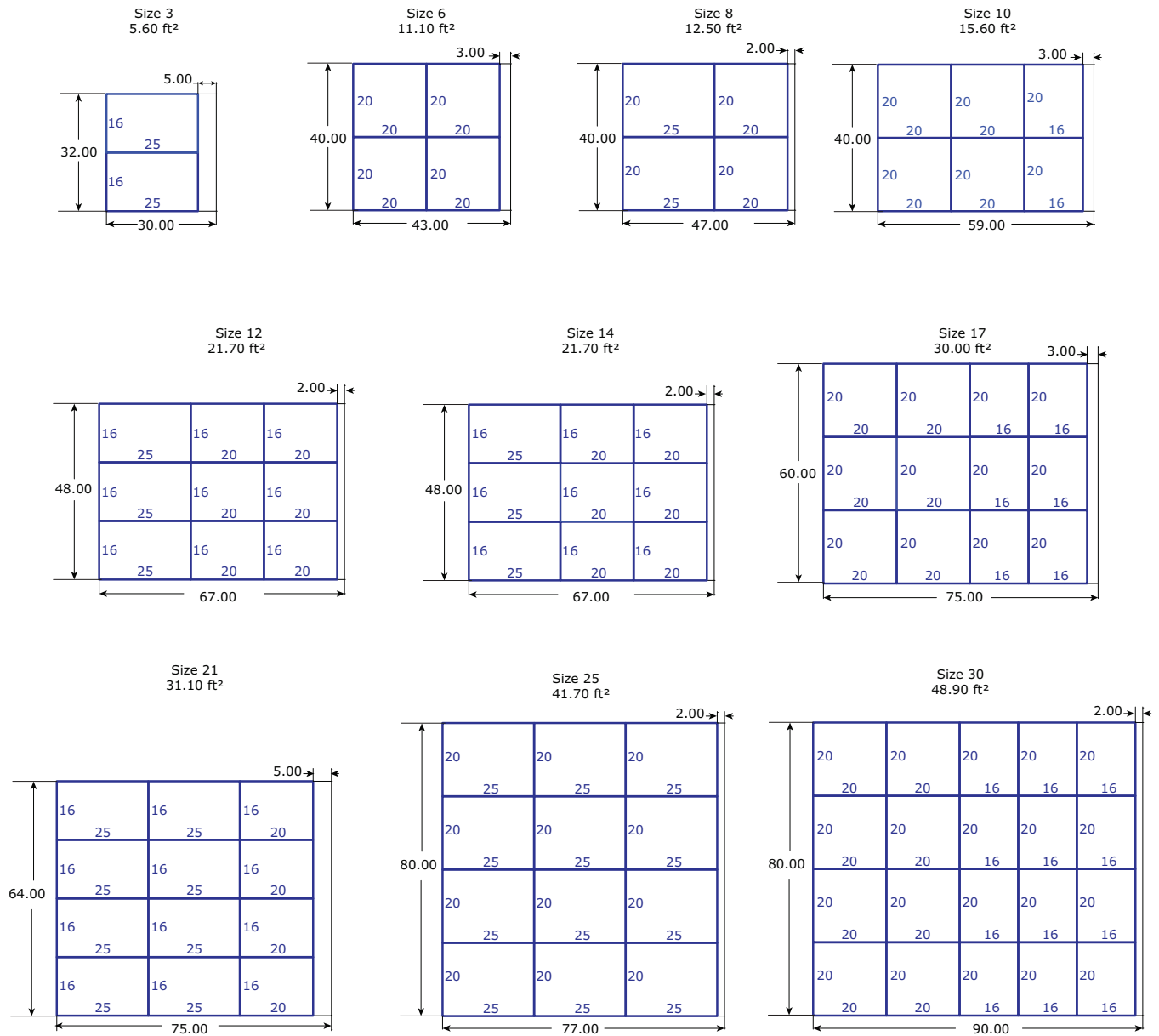


Figure 44. Angle filter arrangement dimensions (inches)





Dimensions and Weights

Fans, Motors, and VFDs

Table 52. Supply fan weights (pounds)

Unit Size	Supply fan FC Fan ^(a)	Supply fan DDP Fan ^(a)	Standard supply MI fan	Premium supply MI Fan (208/230V)	Premium supply MI Fan (460V)
3	30.71	60.63	46.2	46.2	46.2
6	47.09	96.03	46.2	90	72
8	69.21	110.09	81.2	90	72
10	83.02	149.12	81.2	—	132.28
12	97.9	158.25	114	—	132.28
14	110.46	164.44	114	—	132.28
17	133.09	12.89	162.4	—	132.28
21	155.81	290.14	162.4	—	264.55
25	168.83	304.07	228	—	264.55
30	208.34	317	228	—	264.55

^(a) Add motor weight to get total weight of the supply fan.

Table 53. Motor weights (pounds)

Motor HP	Voltage	Motor Weight	Frame Size
1	200 – 208, 230/460, 575	38	143
1.5	200 – 208, 230/460, 575	37	145
2	200 – 208, 230/460, 575	43	145
3	200 – 208, 230/460, 575	71	182
3 (3600 RPM size 3)	200 – 208, 230/460, 575	89	182
5	200 – 208, 230/460, 575	82	184
7.5	200 – 208, 230/460, 575	91	213
10	200 – 208, 230/460, 575	127	215
15	200 – 208, 230/460, 575	217	254

Table 54. VFD weights (pounds) and line input

HP	Type	FLA	RPM	VFD (single Fan)		VFD (dual Fan)	
				Line Input	Weight	Line Input	Weight
1	200 V / 60 Hz / 3 PH	3.50	1800	4.20	10		
	230 V / 60 Hz / 3 PH	3.00	1800	4.20	10		
	460 V / 60 Hz / 3 PH	1.50	1800	2.10	10		
	575 V / 60 Hz / 3 PH	1.20	1800	3.90	20		
1.5	200 V / 60 Hz / 3 PH	5.10	1800	6.80	10		
	230 V / 60 Hz / 3 PH	4.40	1800	6.80	10		
	460 V / 60 Hz / 3 PH	2.20	1800	3.40	10		
	575 V / 60 Hz / 3 PH	1.80	1800	3.90	20		

Table 54. VFD weights (pounds) and line input (continued)

HP	Type	FLA	RPM	VFD (single Fan)		VFD (dual Fan)	
				Line Input	Weight	Line Input	Weight
2	200 V / 60 Hz / 3 PH	6.50	1800	6.80	10		
	230 V / 60 Hz / 3 PH	5.80	1800	6.80	10		
	460 V / 60 Hz / 3 PH	2.90	1800	3.40	10		
	575 V / 60 Hz / 3 PH	2.40	1800	3.90	20		
3	200 V / 60 Hz / 3 PH	9.70	1800	15.20	15	22.00	27
	230 V / 60 Hz / 3 PH	8.60	1800	15.20	15	22.00	27
	460 V / 60 Hz / 3 PH	4.20	1800	4.80	12	11.00	20
	575 V / 60 Hz / 3 PH	3.30	1800	3.90	20	9.00	25
5	200 V / 60 Hz / 3 PH	15.70	1800	22.00	22	42.00	31
	230 V / 60 Hz / 3 PH	13.60	1800	22.00	22	42.00	31
	460 V / 60 Hz / 3 PH	6.70	1800	8.20	12	14.00	20
	575 V / 60 Hz / 3 PH	5.30	1800	6.10	20	11.00	25
7.5	200 V / 60 Hz / 3 PH	22.40	1800	28.00	22	59.40	64
	230 V / 60 Hz / 3 PH	19.40	1800	28.00	22	59.40	64
	460 V / 60 Hz / 3 PH	9.40	1800	11.00	15	21.00	27
	575 V / 60 Hz / 3 PH	7.60	1800	9.00	20	18.00	37
10	200 V / 60 Hz / 3 PH	29.50	1800	42.00	26	59.40	64
	230 V / 60 Hz / 3 PH	25.20	1800	42.00	26	59.40	64
	460 V / 60 Hz / 3 PH	12.50	1800	14.00	15	27.00	27
	575 V / 60 Hz / 3 PH	10.00	1800	11.00	20	22.00	37
15	200 V / 60 Hz / 3 PH	43.40	1800	59.40	59		
	230 V / 60 Hz / 3 PH	37.80	1800	59.40	59		
	460 V / 60 Hz / 3 PH	18.50	1800	21.00	22	40.00	31
	575 V / 60 Hz / 3 PH	14.80	1800	18.00	20	34.00	64



Mechanical Specifications

General

Performance Climate Changer air handlers must be rigged, lifted, and installed in strict accordance with the *Performance Climate Changer™ Air Handler Model UCCA for Indoor and Outdoor Applications — Installation, Operation, and Maintenance* (CLCH-SVX009*-EN) for UCCA air handlers. The units are also to be installed in strict accordance with the specifications.

Per ASHRAE 62.1 recommendation, units will be shipped wrapped or shipped inside an enclosed truck to protect unit from in-transit rain and debris. Installing contractor is responsible for long-term storage in accordance with the *Performance Climate Changer™ Air Handler Model UCCA for Indoor and Outdoor Applications — Installation, Operation, and Maintenance* (CLCH-SVX009*-EN).

UL and C-UL Listed

Air-handling performance data shall be certified in accordance with AHRI Standard 430. Coil performance shall be certified in accordance with AHRI Standard 410.

Unit Construction

Casing Construction

All unit panels shall be 2-inch solid, double-wall construction to facilitate cleaning of unit interior. All exterior and interior AHU panels will be made of galvanized steel. Motor and drive locations can be on the same side as the unit coil connections or on the opposite side. The casing shall be able to withstand up to 6 inches w.g. positive or negative static pressure. The unit panels shall not exceed 0.005 inch deflection per inch of panel span at 6 inches w.g. positive or negative static pressure.

Unit Flooring

The unit floor shall be of sufficient strength to support a 300-lb. load during maintenance activities and shall deflect no more than 0.005 inch per inch of panel span when sitting on a support structure.

Insulation

Panel insulation shall provide a minimum thermal resistance (R-value) of 13 ft²*h*F/Btu throughout the entire unit, except for narrow jambs. Insulation shall completely fill the panel cavities in all directions so that no voids exist and settling of insulation is prevented. Panel assembly shall comply with NFPA 90A.

Unit Roof

UCCA Unit Room

Trane engineered roofs incorporate a standard two-inch R13 foam-insulated inner roof. Inner roof panel designed to prevent air bypass between internal components. Roof shall incorporate a standing seam on the exterior to ensure a rigid roof construction and prevent water infiltration. Roof seams designed to prevent water intrusion. Outer roof assembly will overhang all side panels of units by a two and one-half inch minimum.

Unit Paint

External surface of unit casing shall be prepared and coated with a minimum of 1.5 mil enamel finish or equal. Units supplied with casing exterior factory-painted shall be able to withstand a salt spray test in accordance with ASTM B117 for a minimum of 500 consecutive hours. Unit casing exterior will be provided with manufacturer's standard color.

Weather Hoods

Outside and exhaust air weather hoods shall be fabricated from the same material as the unit exterior. Hoods shall extend past the perimeter of the unit casing opening to ensure the hood does not obstruct the airflow path. Hoods shall be painted with the same paint requirements identified for the external casing herein. Inlet hoods for outside dampers shall be provided with a high-performance moisture eliminator to prevent entrainment of water in the unit from outside air. Exhaust hoods shall be provided on exhaust air openings. All hoods shall be sized for 100 percent of nominal damper capacities.

Drain Pans

All units shall be provided with an insulated assembly of polymer material or stainless steel. To address indoor air quality (IAQ), the drain pan shall be designed in accordance with ASHRAE 62.1 being of sufficient size to collect all condensation produced from the coil and sloped in two planes promoting positive drainage to eliminate stagnant water conditions. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition. All drain pan threaded connections shall be visible external to the unit.

Access Doors

Access doors shall be 2-inch double-wall construction. Interior and exterior door panels shall be of the same construction as the interior and exterior wall panels, respectively. Surface-mounted handles shall be provided to allow quick access to the interior of the unit. Handle hardware shall be designed to prevent unintended closure. Access doors shall be hinged and removable for quick, easy access. Door handle hardware shall be adjustable and visually indicate locking position of door latch external to the section.

Fans

FC Fan

The fan shall be a double-width, double-inlet, multi-blade-type, forward-curved (FC) fan. The fan shall be equipped with permanently lubricated, anti-friction bearings with an L-50 life of 200,000 hours as calculated per ANSI/AFBMA Standard 9. All fan wheels are dynamically balanced by the fan vendor or unit manufacturer.

Direct-Drive Plenum Fan

The fan shall be a single-width, single-inlet, 10-bladed plenum fan. The fan shall consist of a backward-curved, welded steel wheel. Plenum fan shall be direct-driven.

Units containing multiple fans shall be controlled using a common control signal, such as the duct static control signal, to modulate the fan speed.

Motorized Impeller Fan

The fan assembly shall be a single inlet, direct-drive plenum fan with high efficiency welded-aluminum impeller that is dynamically balanced as an assembly. Fan shall be maintenance free throughout its operating life. Fans shall be balanced to G6.3 per AMCA 204. No vibration isolation is necessary. Access to motor and fan assembly through hinged access door. Access door shall be sized for removal of entire motor and fan assembly. Motor contains integrated PID controller and accepts 0 to 10 Vdc input for variable speed control.

Fan Isolation

FC and direct-drive plenum fans shall be internally isolated to inhibit noise and vibration through the ductwork and building structure. A flexible connection shall be installed between fan and unit casing to ensure complete isolation. Flexible connection shall comply with NFPA 90A and UL 181 requirements. If fans and motors are not internally isolated, then the entire unit shall be externally isolated from the building, including supply and return duct work, piping, and electrical connections. External isolation shall be furnished by the installing contractor in order to avoid transmission of noise and vibration through the ductwork and building structure.

Fan Drives

Drives are available either fixed or variable pitch, with V-belt sheaves.

An optional factory mounted and wired variable frequency drive (VFD) is available for fan speed modulation in a VAV application.

Fan Motors

Motors are open drip-proof (ODP) with permanently sealed ball bearings. Motor options include:

- 200 – 208 volt, 3-phase, 60 Hz
- 230 volt, 3-phase, 60 Hz
- 460 volt, 3-phase, 60 Hz



Mechanical Specifications

- 575 volt, 3-phase, 60 Hz

The motor shall meet or exceed all NEMA Standards Publication MG1 requirements and comply with NEMA premium efficiency levels when applicable. For VAV applications, an optional maintenance free, circumferential conductive micro fiber shaft grounding ring installed on the fan motor to discharge shaft currents to ground is available.

Coils

Hydronic Coils

Hydronic coils have ½-inch OD x 0.016 inch thick round seamless copper tubes mechanically bonded to coil fins. Coil fins are aluminum with full fin collars that provide maximum fin-tube contact and accurate spacing. Coils are available with 9, 12, and 14 fins per inch. Manufacturer shall not allow selections where moisture carryover could occur at design conditions. For hydronic coils used in a two-pipe system, the unit manufacturer shall provide performance data in both the cooling and heating mode.

Hydronic coils used as heating only will be available in one-row or two-row configurations. Hydronic coils used as cooling only will be available in four-row, six-row, or eight-row configurations. Multi-row hydronic coils have continuous tube circuits arranged for counterflow (water flow counter to the direction of unit airflow). The coil casing may be galvanized or stainless steel. Coils have round seamless copper pipe headers with NPT external thread steel pipe connections. Coils have one vent and one drain connection consisting of 3/8-inch NPT internal thread copper adapter with steel square head pipe plug. Hydronic coils may be supplied with factory installed drain and vent piping to unit casing exterior. Supply and return connections are located outside the unit casing (on the same side of the unit) and are clearly labeled to facilitate field piping. Coils are proof-tested to 450 psig and leak-tested under water to 300 psig. Maximum standard operating conditions are 300 psig and 200°F. Coil performance data and coils containing water or ethylene glycol shall be certified in accordance with AHRI Standard 410. Propylene glycol and calcium chloride, or mixtures thereof, are outside the scope of AHRI Standard 410 and, therefore, do not require AHRI 410 rating or certification.

Refrigerant Cooling Coils

Direct expansion (DX) coils use refrigerant R-454B or R-32 and have ½-inch OD x 0.016-inch thick round seamless copper tubes expanded into full fin collars for permanent fin-tube bond. Coil fins are continuous with full fin collars that provide maximum fin-tube contact and accurate spacing. Coils are available with 9, 12, and 14 fins per inch, in four-row and six-row configurations. Manufacturer shall not allow selections where moisture carryover could occur at design conditions.

The coil casing may be galvanized or stainless steel. Coils have round, seamless, copper pipe liquid lines and suction headers with sweat connections. Suction headers have bottom connections to aid drainage of any oil that may collect in the coil. Liquid line and suction connections are outside the unit casing (on the same side of the unit) to facilitate field piping. Connections are clearly labeled to ensure coils are piped correctly. Coils have Venturi-type distributor assemblies designed with a vertical downflow feed for low pressure drops.

Four-row coils have 3/16-inch distributor(s) and OD x 0.016-inch thick round seamless copper tube. Six-row coils have ¼-inch distributor(s) and OD x 0.025-inch thick round seamless copper tubes.

Each refrigeration circuit has one distributor. Coil circuiting options are:

- Single refrigeration circuit for unit sizes 3 through 10
- Horizontal face split circuiting (two distributors) for unit sizes 8 through 25
- Horizontal face split circuiting (four distributors) for unit size 30
- Intertwined circuiting (two distributors) for unit sizes 8 through 14
- Intertwined circuiting (four distributors) for unit sizes 17 through 30

Coils are proof-tested to 450 psig and leak tested to 300 psig air pressure under water. After testing, the inside of the coils shall be dried, all connections shall be sealed, and the coils shall be shipped with a charge of dry nitrogen. Maximum standard operating conditions at 127°F is 480 psig with R-454B or R-32. Coil performance data shall be certified in accordance with AHRI Standard 410.

Steam Heating Coils

A one-row steam distributing coil is available in the pre-heat or reheat position. Steam coils are non-freezing and are pitched to ensure adequate condensate drainage. Coils have one-inch OD x 0.031-inch W round seamless copper condensing tubes expanded into full fin collars for permanent fin-tube bond. Coil headers are cast iron for permanent leak tight joints. Coils have continuous Sigma-Flo® aluminum fins with full fin collars for maximum fin-tube contact and accurate spacing at six fins per inch. The coil casing is heavy-duty galvanized steel. Coil header are gray cast iron with NPT internal thread connections. Supply, return, and vacuum breaker connections are located at the same end of the unit and clearly labeled to ensure coils are piped

correctly. Distributor tubes are 11/16-inch OD copper. Also, they have die-formed, accurately spaced directional kinetic orifices that discharge steam in the direction of condensate flow (toward the return connection) to ensure even steam distribution across the coil face area and push out condensate. Distributor tubes are located concentrically within condensing tubes using corrosion resistant support clips. Supply header steam deflectors prevent impingement of steam into tubes in supply connection area. Coils are proof-tested to 300 psig and leak-tested to 200 psig air pressure under water. Maximum standard operating conditions are 100 psig at 400°F. Coil performance data shall be certified in accordance with AHRI Standard 410.

Electric Heat

A UL-recognized electric heater shall be factory-installed in the air handler. The electric heat is an open-wire resistance heater and installed in the reheat position. The heater has primary and secondary protection circuits. The contactors for energizing the electric heater shall be magnetic contactors. Electric heaters above 48 amps shall be fused into circuits not to exceed 48 amps as required by UL and NEC.

Control Options

- SSR-full modulating control (0 to 10 Vdc)
 - The electric heater shall be factory-wired to accommodate SSR-full modulating control. The SSR control can receive a 0 to 10 Vdc signal from a standalone thermostat or building automation system providing full modulating control of the heater.

Filters

All filters are standard sizes. The unit is available with:

- Two-inch, MERV 8 or MERV 13 flat or angled filters
- Two-inch, MERV 8/4-inch MERV 11 combination filter
- Two-inch, MERV 8/4-inch MERV 13 combination filter
- Two-inch, MERV 13/4-inch MERV 13 combination filter

An optional mixing box section is available with:

- Two-inch, MERV 8 or MERV 13 flat filters
- Two-inch, MERV 8 or MERV 13 angled filters
- Two-inch, MERV 8/4r-inch MERV 11 combination filter
- Two-inch, MERV 8/4-inch MERV 13 combination filter
- Two-inch, MERV 13/4-inch MERV 13 combination filter.

Mixing Box

The mixing box has two ultra-low-leak, parallel blade dampers with edge and jamb seals. Dampers are tested and certified in accordance with AMCA 511 for air performance and air leakage. Leakage rate shall not exceed 3 cfm/ft² at one-inch w.g. and 8 cfm/ft² at four-inch w.g. Dampers are double-skin airfoil design or equivalent. Damper blades and frames are galvanized steel. On unit sizes 3 to 8, the damper has a ½-inch drive for use with an optional factory-mounted actuator. On unit sizes 10 to 30, there is a one inch shaft. Optional filters are available that include two-inch, MERV 8 or 13 flat or angled, or two-inch/four-inch combination filters including MERV 8, MERV 11 or MERV 13. The mixing box can have an access door on the drive side or both sides as standard. Optional to have door on both sides.

Coil with Access

Unit(s) shall include a separate section housing a coil section and access section as one assembly. Refer to drawings to determine which unit(s) include the additional section. Section shall include a stainless steel drain pan and an access door of sufficient size to allow for visual inspection of the leaving face of the first coil in the airstream and entering face of the second coil in the airstream shall be included as standard in this section. Access door shall be of the same construction as all other doors on the unit.

Control Interface

A control interface is available that includes:



Mechanical Specifications

- Fan motor disconnect switch (indoor units only)
- Transformer(s)
- Customer terminal strip for field-provided controls
- For a control interface without a VFD, it will also include a starter with a motor overload and a motor contactor.
- For a control interface with a VFD, it will not include a starter.

Also, various end device options are available with the control interface wired to a terminal strip. Binary end device options include:

- Low limit protection
- Condensate overflow switch
- Fan status switch
- Filter status switch

Analog end device options are:

- Discharge air sensor
- Mixed air sensor
- Damper actuator

Symbio™ 500 Controller

An optional factory installed Tracer® Symbio™ 500 controller is available. It is a programmable BACnet® unit controller that is designed to work with the Tracer SC and third-party BACnet MS/TP systems. The Symbio 500 controller has the I/O and size to meet the controls needs for air handler applications.

Motor Starter

An IEC combination starter shall be provided for each housed fan motor. Each starter shall be properly sized, factory mounted in a metal enclosure, and wired to the fan motor to facilitate temporary heating, cooling, ventilation, and/or timely completion of the project. Starter shall include one N.C. and one N.O. auxiliary contact, and manual reset overload.

VFD

A variable frequency drive (VFD) shall be provided when variable air volume control is required for fan operation. Whether for single fan, or dual fan applications, a single VFD shall be provide to ensure proper operation and to optimize operating life. Each VFD shall be properly sized, factory mounted, wired to the fan motor, and commissioned to facilitate temporary heating, cooling, ventilation, and/or timely completion of the project. The VFD package shall also include:

- Electronic manual speed control
- Inlet fuses to provide maximum protection against inlet short circuit
- Current limited stall prevention
- Auto restart after momentary power loss
- Speed search for starting into rotating motor
- Anti-windmill with DC injection before start
- Phase-to-phase short circuit protection
- Ground fault protection

Units with factory-mounted controls shall include power wiring from the VFD panel to the control system, binary output on/off wiring, analog output-speed-signal wiring, binary fault signal wiring and all interfacing wiring between the VFD and the direct control interface.

The VFD shall be covered by UL1995 Standards.

Leak Detection Sensors

Unit shall be furnished with a leak detection system from the factory when a circuit refrigerant charge exceeds 3.91 lbs. The leak detection system shall consist of one or more refrigerant detection sensors. When the system detects a leak, the unit controller shall initiate mitigation actions.

Notes:

1. *Factory-installed Symbio™ 500 unit controller requires field programming of the leak detection sequence of operations by the controls contractor.*
2. *Field-installed unit controllers require field programming of the leak detection sequence of operations by the controls contractor.*
3. *See UL 60335–2–40 for more information.*



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