



# Product Catalog

## Performance Climate Changer Air Handler Model UCCA Sizes 3-30 for Outdoor Installations

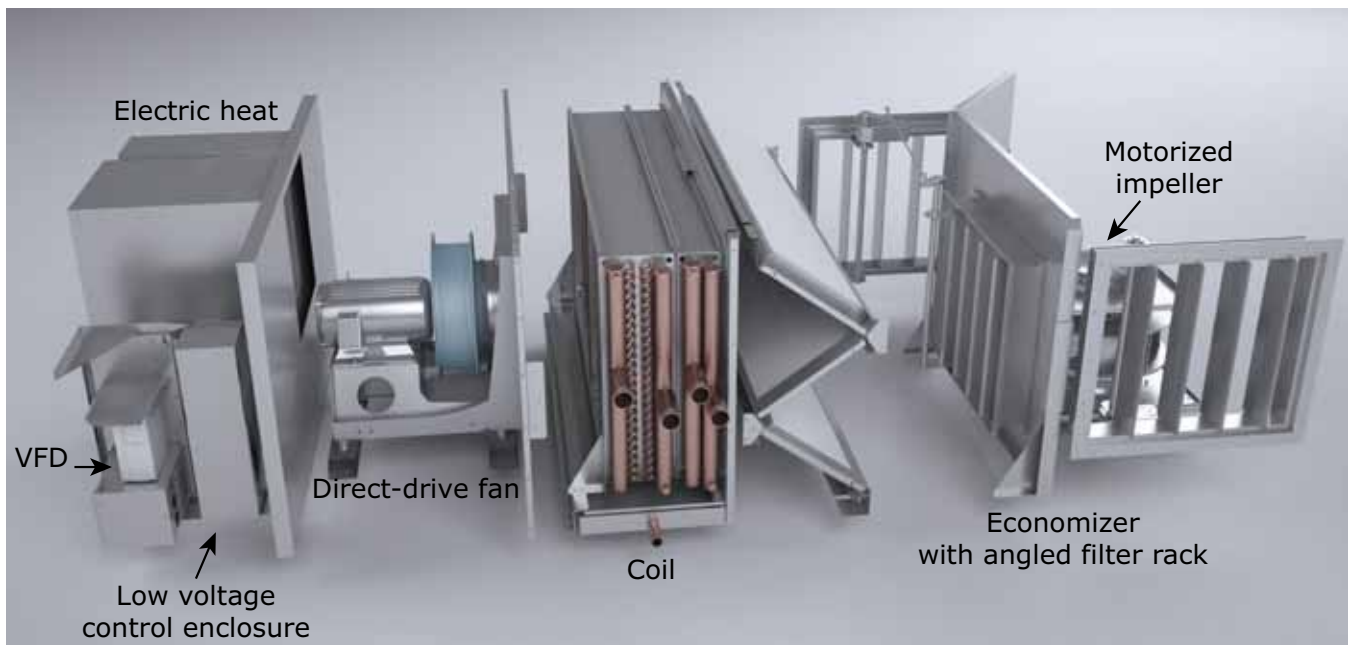




## Trane Performance Climate Changer Air Handlers

Trane has a Performance Climate Changer™ air handler adaptable to almost every environment. This document contains information about the Performance air handler model UCCA for outdoor applications. It is designed for the budget-conscience, but does not sacrifice on construction, quality, or performance.

- 2-inch R13 foam insulated panels and doors
- Less than 0.005 inches at +/-4 inches w.g. panel and door deflection
- All airfoil bladed dampers meet ASHRAE 90.1 lowest specified leakage
- 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
- Shortened economizer offering incorporating vertical direct-drive plenum fans with EC motors
- 2-inch flat filters, 2-inch angled filters, and 2-inch/4-inch combination flat filters are available for the mixing box/filter section or the economizer/filter section
- Supply fan options include forward curved (FC) and direct-drive plenum (DDP) fans
- Electric heat including full modulating control
- Building Information Modeling (BIM) drawing to minimize jobsite ductwork, electrical, piping, and structural interference



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## Revision History

This is a new document for the Performance Climate Changer™ air handler model UCCA for outdoor applications.



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# Model Number Descriptions

## Digit 1, 2, 3, 4— Unit Model

UCCA = Performance Climate Changer Air Handler

## 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
- 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 = 208 volt/60 hertz/3 phase ODP
- B = 230 volt/60 hertz/3 phase ODP
- C = 460 volt/60 hertz/3 phase ODP
- D = 575 volt/60 hertz/3 phase ODP
- S = Special

## Digit 9 - Unit type

- 1 = Outdoor unit

## Digit 10, 11 - Design sequence

- A0 = A0

## Digit 12 - Coil, Drain Pan and Motor Side

- 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 - Coil #1 first in airstream

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

## Digit 14 - Coil #2 second in airstream

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

## Digit 15 - Coil options

- 0 = None
- 1 = Aluminum fin, galvanized coil casing, 1/2 in. coils
- 2 = Aluminum fin, stainless steel coil casing, 1/2 in. coils
- 3 = Aluminum fin, galvanized coil casing, 3/8 in. coils
- 4 = Aluminum fin, stainless steel coil casing, 3/8 in. coils
- 5 = Aluminum fin, galvanized coil casing, 1/2-inch coils with extended drain and vent

- 6 = Aluminum fin, stainless steel coil casing, 1/2-inch coils with extended drain and vent

- S = Special

## Digit 16 - Controls options

- 0 = No starter, disconnect, or end devices
- 1 = Unwired end devices - no starter or disconnect
- 2 = Terminal block plus starter or disconnect
- 3 = Tracer™ UC600 controller plus starter or disconnect
- S = Special

*Important: See Digit 24 for VFD information. If VFD is selected, starter option is not available.*

## Digit 17 - Electric heat/factory mounted

- 0 = No electric heat
- 1 = Electric heat with 1 stage
- 2 = Electric heat with 2 stages
- 4 = Electric heat with 4 stages
- 5 = SSR control
- S = Special

## Digit 18, 19, 20 - Electric heater kW

- 000 = None
- 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
- 020 = 20.0 kW
- 022 = 22.0 kW
- 024 = 24.0 kW
- 026 = 26.0 kW
- 027 = 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



## Model Number Descriptions

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 = None  
A = Line fuse, door interlocking disconnect switch and airflow switch  
B = Line fuse and airflow switch  
S = Special

### Digit 22 - Refrigerant circuit options

0 = None  
1 = Single refrigerant circuit arr with 1 stage DX 1/4-in. distributor  
2 = Face split refrigerant circuit arr with 2 stage DX 1/4-in. distributor  
3 = Intertwined refrigerant circuit arr with 2 stage DX 1/4-in. distributor  
4 = Single refrigerant circuit arr with 2 stage DX 1/4-in. distributor  
5 = Face split refrigerant circuit arr with 4 stage DX 1/4-in. distributor  
6 = Intertwined refrigerant circuit arr with 4 stage DX 1/4-in. distributor  
A = Single refrigerant circuit arr with 1 stage DX 3/16-in. distributor  
B = Face split refrigerant circuit arr with 2 stage DX 3/16-in. distributor  
C = Intertwined refrigerant circuit arr with 2 stage DX 3/16-in. distributor  
D = Single refrigerant circuit arr with 2 stage DX 3/16-in. distributor  
E = Face split refrigerant circuit arr with 4 stage DX 3/16-in. distributor  
F = Intertwined refrigerant circuit arr with 4 stage DX 3/16-in. distributor  
S = Special

### Digit 23 - Supply motor horsepower - per fan

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)  
S = Special

### Digit 24 - Supply fan volume control

0 = None  
A = FC fan constant volume with variable pitch sheaves  
B = FC fan constant volume with fixed pitch sheaves or DDP fan  
C = FC fan with fixed pitch sheaves or DDP fan and variable frequency drive  
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 and shaft grounding  
S = Special

### Digit 25 - Supply fan drives

0 = None  
A = 650 rpm fixed/600-700 rpm variable  
B = 700 rpm fixed/650-750 rpm variable  
C = 750 rpm fixed/700-800 rpm variable  
D = 800 rpm fixed/750-850 rpm variable  
E = 850 rpm fixed/800-900 rpm variable  
F = 900 rpm fixed/850-950 rpm variable  
G = 950 rpm fixed/900-1000 rpm variable  
H = 1000 rpm fixed/950-1050 rpm variable  
J = 1050 rpm fixed/1000-1100 rpm variable  
K = 1100 rpm fixed/1050-1150 rpm variable  
L = 1150 rpm fixed/1100-1200 rpm variable  
M = 1200 rpm fixed/1150-1250 rpm variable  
N = 1250 rpm fixed/1200-1300 rpm variable  
P = 1300 rpm fixed/1250-1350 rpm variable  
R = 1350 rpm fixed/1300-1400 rpm variable  
T = 1400 rpm fixed/1350-1450 rpm variable  
U = 1450 rpm fixed/1400-1500 rpm variable  
V = 1500 rpm fixed/1450-1550 rpm variable  
W = 1550 rpm fixed/1500-1600 rpm variable  
Y = 1600 rpm fixed/1550-1650 rpm variable  
Z = 1650 rpm fixed/1600-1700 rpm variable  
1 = 1700 rpm fixed/1650-1750 rpm variable  
2 = 1750 rpm fixed/1700-1800 rpm variable  
3 = 1800 rpm fixed/1750-1850 rpm variable

4 = 1850 rpm fixed/1800-1900 rpm variable  
5 = 1900 rpm fixed/1850-1950 rpm variable  
6 = 1950 rpm fixed/1900-2000 rpm variable  
7 = 2000 rpm fixed/1950-2050 rpm variable  
8 = Direct-drive plenum fan  
S = Special

### Digit 26, 27 - Supply fan VFD setting/DDP fan speed

00 = Housed fan  
54 = 54 hertz/1604 rpm  
55 = 55 hertz/1634 rpm  
56 = 56 hertz/1663 rpm  
57 = 57 hertz/1693 rpm  
58 = 58 hertz/1723 rpm  
59 = 59 hertz/1752 rpm  
60 = 60 hertz/1782 rpm  
61 = 61 hertz/1812 rpm  
62 = 62 hertz/1841 rpm  
62 = 63 hertz/1871 rpm  
64 = 64 hertz/1901 rpm  
65 = 65 hertz/1931 rpm  
66 = 66 hertz/1960 rpm  
67 = 67 hertz/1990 rpm  
68 = 68 hertz/2020 rpm  
69 = 69 hertz/2049 rpm  
70 = 70 hertz/2079 rpm  
71 = 71 hertz/2109 rpm  
72 = 72 hertz/2138 rpm  
73 = 73 hertz/2168 rpm  
74 = 74 hertz/2198 rpm  
75 = 75 hertz/2228 rpm  
76 = 76 hertz/2257 rpm  
77 = 77 hertz/2287 rpm  
78 = 78 hertz/2317 rpm  
79 = 79 hertz/2346 rpm  
80 = 80 hertz/2376 rpm  
81 = 81 hertz/2406 rpm  
82 = 82 hertz/2435 rpm  
83 = 83 hertz/2465 rpm  
84 = 84 hertz/2495 rpm  
85 = 85 hertz/2525 rpm  
86 = 86 hertz/2554 rpm  
87 = 87 hertz/2584 rpm  
88 = 88 hertz/2614 rpm  
89 = 89 hertz/2643 rpm  
90 = 90 hertz/2673 rpm  
91 = 91 hertz/2703 rpm  
92 = 92 hertz/2732 rpm  
93 = 93 hertz/2762 rpm  
94 = 94 hertz/2792 rpm  
95 = 95 hertz/2822 rpm  
96 = 96 hertz/2851 rpm  
97 = 97 hertz/2881 rpm  
98 = 98 hertz/2911 rpm  
99 = 99 hertz/2941 rpm  
A0 = 100 hertz/2970 rpm  
A1 = 101 hertz/3000 rpm  
A2 = 102 hertz/3030 rpm  
A3 = 103 hertz/3060 rpm  
A4 = 104 hertz/3089 rpm  
A5 = 105 hertz/3119 rpm  
A6 = 106 hertz/3149 rpm  
A7 = 107 hertz/3178 rpm

## Model Number Descriptions

- A8 = 108 hertz/3208 rpm
- A9 = 109 hertz/3238 rpm
- B0 = 110 hertz/3267 rpm
- B1 = 111 hertz/3297 rpm
- B2 = 112 hertz/3327 rpm
- B3 = 113 hertz/3357 rpm
- B4 = 114 hertz/3386 rpm
- B5 = 115 hertz/3416 rpm
- B6 = 116 hertz/3446 rpm
- B7 = 117 hertz/3475 rpm
- B8 = 118 hertz/3505 rpm
- B9 = 119 hertz/3535 rpm
- C0 = 120 hertz/3564 rpm
- SS = Special

### Digit 28 - Filter/Mixing Box/ Economizer Section

- B = 2-in. flat filter/mixing box
- D = 2-in. angle filter/mixing box
- F = 2-in./4-in. combination filter/  
mixing box
- G = Mixing section only
- H = 2-in. flat filter and powered return  
economizer with bottom return
- J = 2-in. angle filter and powered  
return economizer with  
bottom return
- K = 2-in./4-in. combination filter and  
powered return economizer with  
bottom return
- L = 2-in. flat filter and powered return  
economizer with bottom return  
with single-point power
- M = 2-in. angle filter and powered  
return economizer with bottom  
return with single-point power
- N = 2-in./4-in. combination filter and  
powered return economizer with  
bottom return with single-point  
power
- P = 2-in. flat filter and powered return  
economizer with back return
- R = 2-in. angle filter and powered  
return economizer with  
back return
- T = 2-in./4-in. combination filter and  
powered return economizer with  
back return
- U = 2-in. flat filter and powered return  
economizer with back return with  
single-point power
- V = 2-in. angle filter powered return  
economizer with back return with  
single-point power
- W = 2-in./4-in. combination filter  
powered return economizer with  
back return with single-point  
power
- S = Special

### Digit 29 - Filter type

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

### Digit 30 - Controls options 1

- 0 = None
- 1 = Low limit switch, condensate  
overflow switch, dirty filter switch  
and fan status switch
- S = Special

### Digit 31 - Controls options 2

- 0 = None
- A = Discharge air sensor
- B = Discharge air sensor and mixed  
air sensor
- C = Discharge air sensor, mixed air  
sensor, factory-mounted mixing  
box actuator n.o.
- D = Discharge air sensor, mixed air  
sensor, factory-mounted mixing  
box/economizer actuator n.c.
- S = Special

### Digit 32 - Controls options 3

- 0 = None
- A = Outdoor air temperature sensor,  
factory-provided, ships loose for  
field installation and wiring
- B = Duct static pressure sensor,  
factory-provided, ships loose for  
field installation and wiring
- C = Outdoor air temperature sensor  
and duct static pressure sensor,  
factory-provided, ships loose for  
field installation and wiring
- S = Special

### Digit 33 - Special

- 0 = Standard order
- S = Special order

### Digit 34 - Curb/Pipe Cabinet/ Paint

- 0 = None
- 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 order

### Digit 35 - Access section with optional coil

- 0 = No access section
- 1 = Access section without coil
- 2 = Access section with coil (first coil  
in the airstream)

### Digit 36 - Door Section

- 0 = Standard - door(s) on motor side
- 1 = Doors on both sides



## Features and Benefits

The Performance Climate Changer air handler, model UCCA, 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 air handler 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
- Economizer offering incorporating vertical direct-drive plenum fans with EC motors
- 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 +/- 4 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 procedures to control microbial growth. The Performance air handler is an IAQ-ready air-handling system that addresses these concerns.

### Ventilation

A mixing box or economizer with ultra low-leak dampers is available for delivering ventilation air directly to the unit. The economizer section will function as a zero-to-100 percent economizer to improve energy efficiency.

### 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.

## Dehumidification

Performance air handlers 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.

## Sloped Drain Pan

The drain pan is positively sloped in every plane to assure proper drainage and help maximize protection from microbial growth above the two-inch floor. Drain pans are made from a noncorrosive polymer material and are installed on a two-inch double-wall foam floor to help eliminate condensation beneath the drain pan. An optional stainless steel drain pan is also available.

## Serviceability/Cleanability

Performance air handlers are designed for ease of cleaning.

- Full-size access doors are provided for 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



### 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 mounted on fan sections:

- Trane UC600 controller
- Variable-frequency drives (VFDs)
- Control interface package
  - Fan motor disconnect switch
  - Fused 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

#### AHRI Standard 430



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.

#### AHRI Standard 410



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, or 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 the Performance air handler.

### 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



## Application Considerations

Performance Climate Changer air handlers offer 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 (CV) or variable-air-volume (VAV). 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.

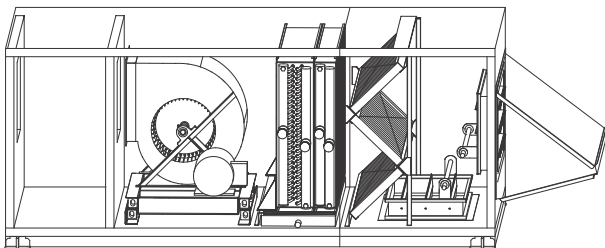
### Draw-Thru Arrangements

A draw-thru AHU arrangement places the coils and filters upstream of a ducted supply fan. Horizontal draw-thru arrangements 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. However, certain application rules must be followed to promote proper airflow through filters and coils.

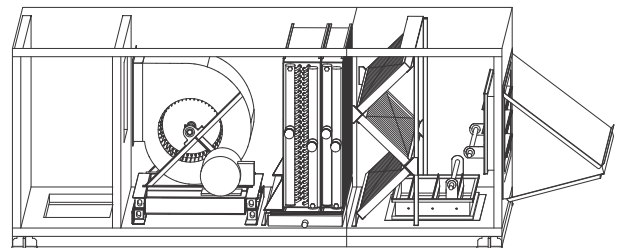
Figure 1 shows the draw-thru arrangement in the mixing box/filter section.

Figure 1. Mixing box/filter units

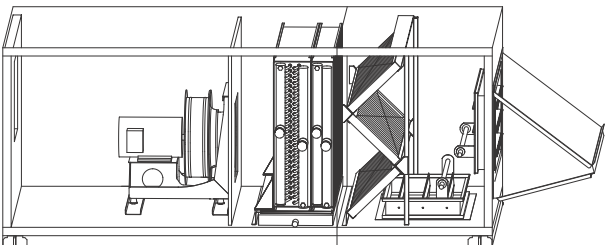
FC fan with front discharge



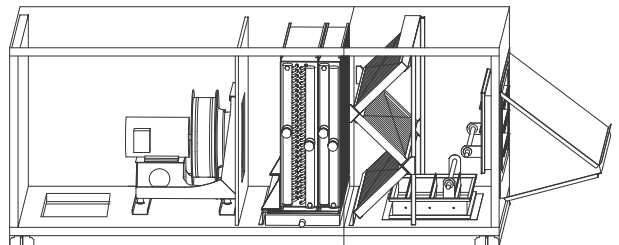
FC fan with bottom discharge



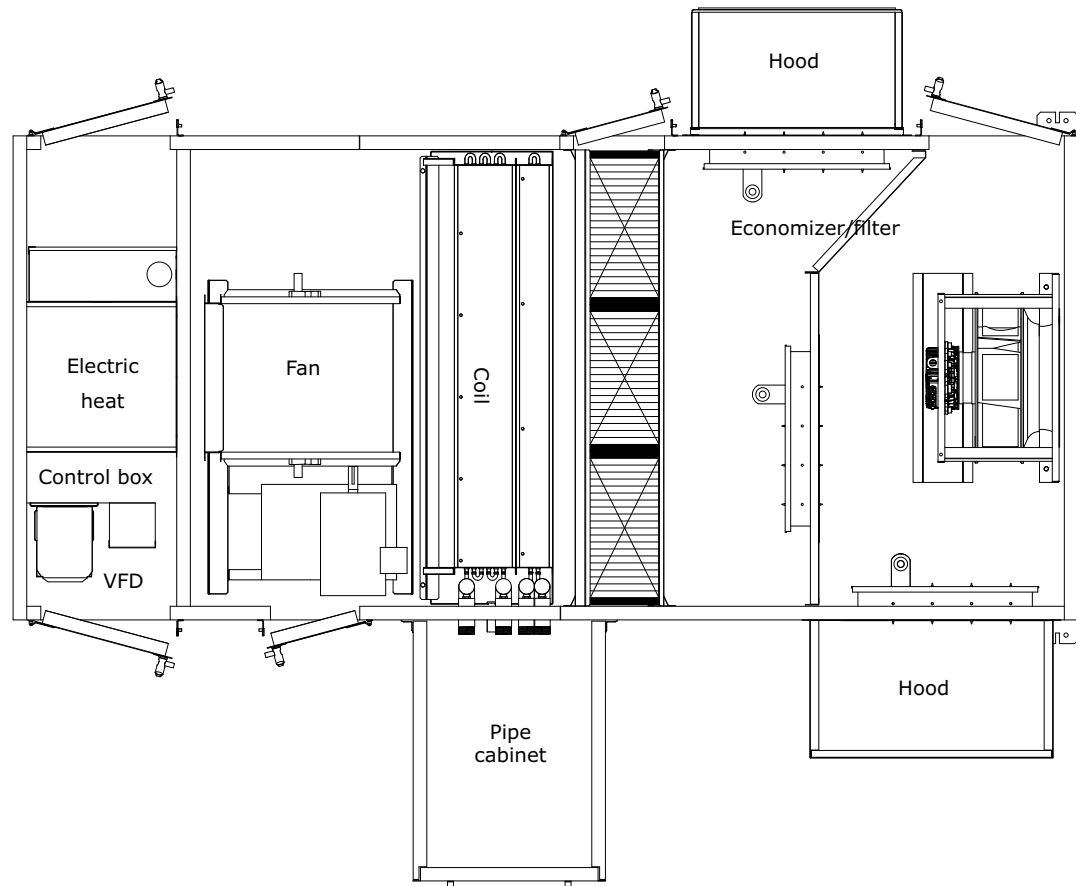
Direct-drive fan with front discharge



Direct-drive fan with bottom discharge



### Building Pressurization with Return Fan and Economizer



The Performance air handler model UCCA is also available with a return fan and an economizer for outdoor air. The return fan typically runs continuously to balance the amount of air supplied to and removed from the occupied space. Although this approach makes precise space pressurization control more difficult, it is better suited to applications with high return static pressures than the exhaust-fan alternative. If the supply fan is unable to handle system static pressure, the return fan is sized to overcome the external static pressure of the return duct. Of course, the larger size and constant operation of the return fan also means higher first and operating costs.

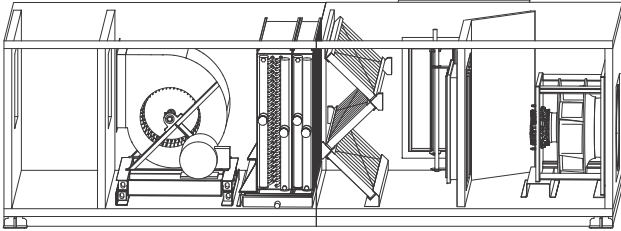
- Size the *supply fan* to handle the static pressure requirements of a 100-percent *economizer* operation, including outdoor-air ductwork, dampers, filters, coils, other accessories in the outdoor air stream, and supply-duct static pressure.
- Size the *return fan* to handle the static pressure requirements of a 100-percent *return air* operation, including return duct, exhaust duct, and exhaust damper.
- Control the return fan to keep the outdoor/indoor static-pressure differential within design limits.
- Control the mixing box dampers to prevent all of them from closing simultaneously; otherwise, serious equipment damage could result.

## Application Considerations

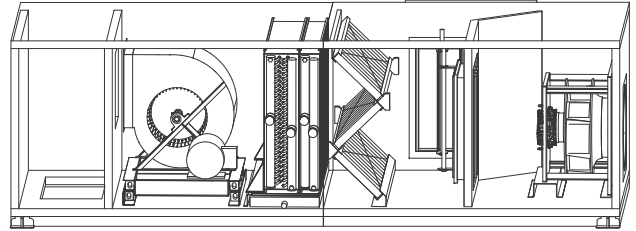
Figure 2 and Figure 3 show return fan economizer arrangements.

**Figure 2. Economizer with back return units**

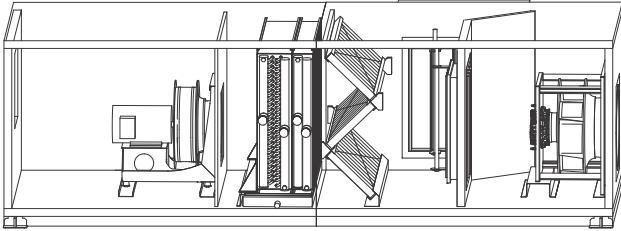
FC fan with front discharge



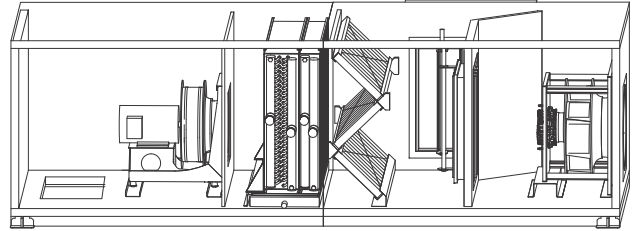
FC fan with bottom discharge



Direct-drive fan with front discharge

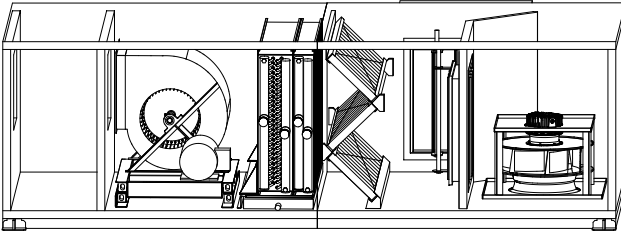


Direct-drive fan with bottom discharge

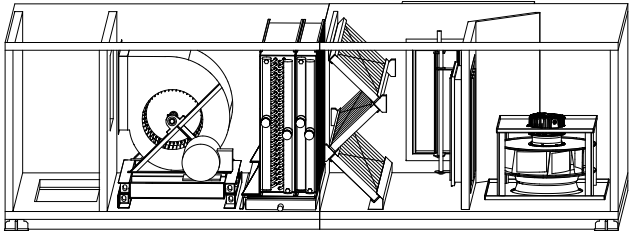


**Figure 3. Economizer with bottom return units**

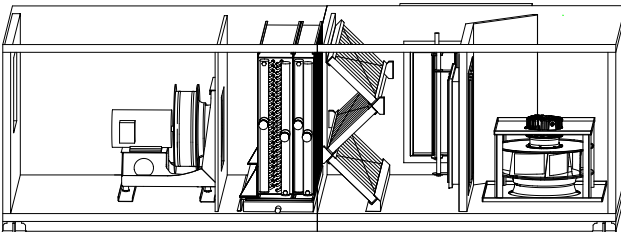
FC fan with front discharge



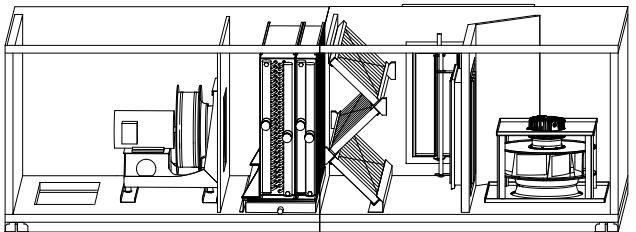
FC fan with bottom discharge



Direct-drive fan with front discharge



Direct-drive fan with bottom discharge



## Installation

Outdoor units can be pier mounted or mounted on a roof curb. The curb can be factory-provided or field-provided. Refer to CLCH-SVN006\*-EN Roof Curb Installation manual for installation instructions for factory-provided roof curbs.

All units are shipped with isolation system tied down for shipment purposes. To utilize standard internal isolation, remove shipping tie-downs per instructions found in CLCH-SVX009\*-EN Performance Climate Changer Air Handler UCCA Installation, Operation, Maintenance manual. 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. Refer to CLCH-SVX009\*-EN IOM 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 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 CLCH-SVX009\*-EN IOM. 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 90°F (32 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 unit sizes 3 through 10 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.

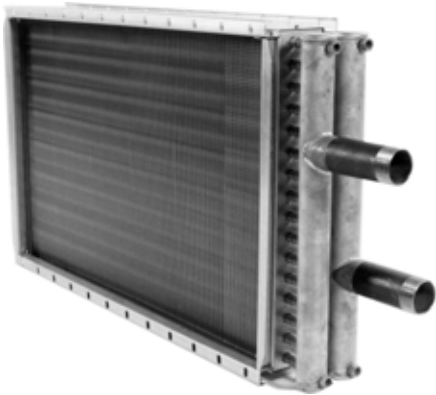
DX coils, equipped with either two or four distributors, can be configured with either intertwined or horizontal split circuiting. Intertwined circuiting is preferred in VAV applications. At low loads, refrigerant is fed to alternating tubes, and the coil performs as though its fin surface area is substantially 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.



# 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 you to select a coil that is 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 that has 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.

Coil options include the following:

- Four- to eight-row, ½-inch OD (outside diameter) chilled water coils
- Four-to six-row, ½-inch OD refrigerant coils
- One- or two-row ½-inch OD hot water coils
- One-row, 1-inch OD distributing-type steam coils

## Fans



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

Supply fan types include:

- Single-width/single-inlet (SWSI) direct-drive plenum fans with front or bottom discharge for outdoor applications.
- Double-width/double-inlet (DWDI) centrifugal forward-curved (FC) fans with front or bottom discharge for outdoor applications.

Return fan types include:

- Single-width/single-inlet (SWSI) direct-drive plenum fans with electronically commuted (EC) motors that include integral speed control. These fans can be vertically arranged for bottom inlet or horizontally arranged for back inlet.

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 or as part of an economizer control strategy.

Effectively controlling particulates by removing them from the air stream is key to good IAQ. That necessitates proper filter selection. The mixing box section has the flexibility to provide a wide variety of filtration options, including:

- 2-inch flat filter
- 2-inch angled filter
- 2-inch/4-inch combination flat filter

### Economizer/Filter Section



Outdoor units are available with an economizer section. The economizer section, along with the return fan, provides an exhaust path for return air, allowing the system to provide natural, non-mechanical cooling when outdoor air conditions are suitable. It also allows for building pressure control.

Single-point power is standard for this unit. If a return fan economizer is chosen, there is the option of having dual-point power.

The economizer section has the flexibility to provide a wide variety of filtration options, including:

- 2-inch flat filter
- 2-inch angled filter
- 2-inch/4-inch combination flat filter

### Electric Heat Section

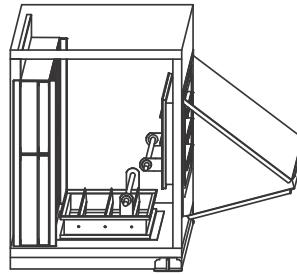


In addition to hydronic and steam coil options, the unit is also available with a unit-mounted electric heater in the reheat position. The unit will have a single point power connection to the electric heater. The heater is available with step control or SSR-full modulating control.

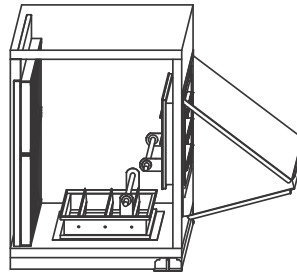
# General Data

Figure 4. Mixing box configuration with FC fans

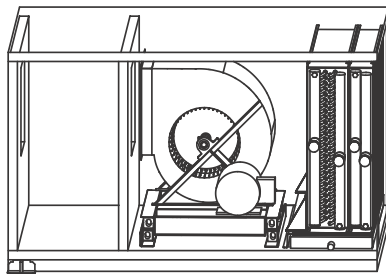
Mixing box with combo filter



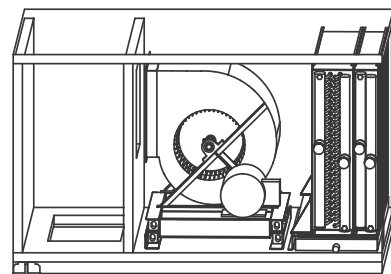
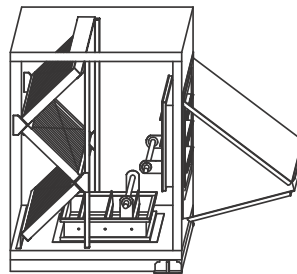
Mixing box with flat filter



FC fan with front discharge



Mixing box with angled filter



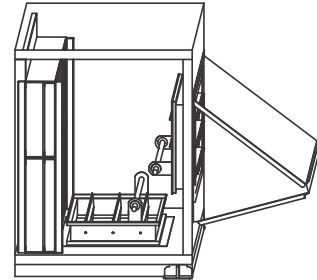
FC fan with bottom discharge

**Note:** All available configurations shown. Main unit ships fully assembled. Pipe cabinet and hoods ship separately.

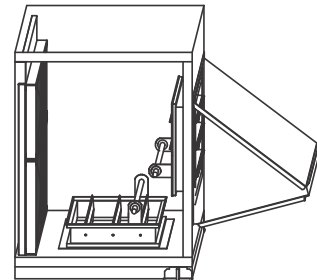


Figure 5. Mixing box configuration with electric heat and FC fans

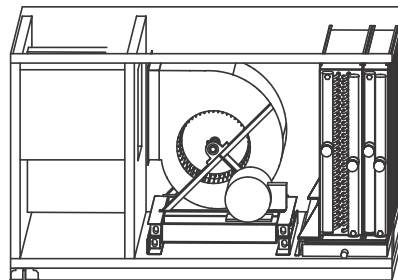
Mixing box with combo filter



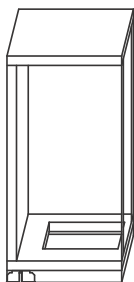
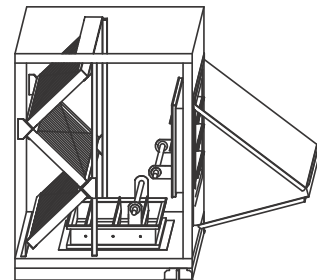
Mixing box with flat filter



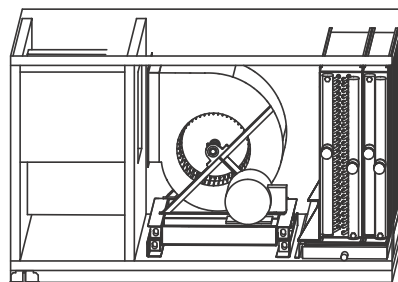
FC fan and electric heat with front discharge



Mixing box with angled filter



Discharge plenum

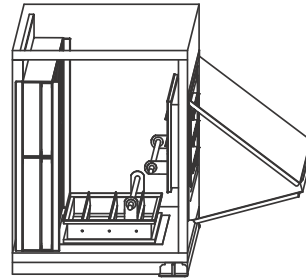


FC fan and electric heat

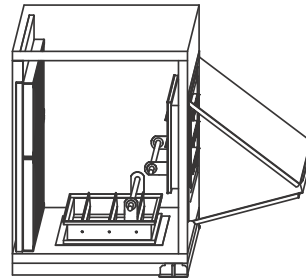
**Note:** All available configurations shown. Main unit ships fully assembled. Pipe cabinet and hoods ship separately.

**Figure 6. Mixing box configuration with direct-drive fans**

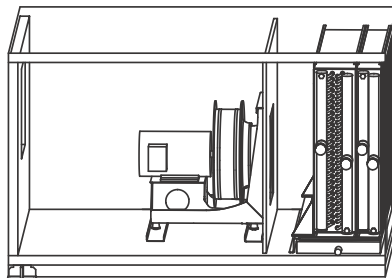
Mixing box with combo filter



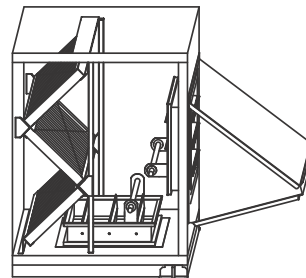
Mixing box with flat filter



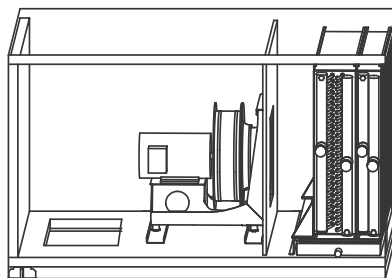
Direct-drive fan with front discharge



Mixing box with angled filter



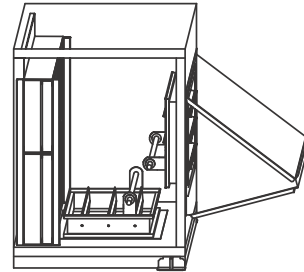
Direct-drive fan with bottom discharge



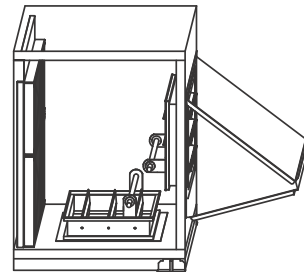
**Note:** All available configurations shown. Main unit ships fully assembled. Pipe cabinet and hoods ship separately.

Figure 7. Mixing box configuration with electric heat and direct-drive fans

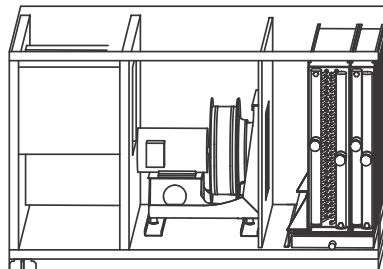
Mixing box with combo filter



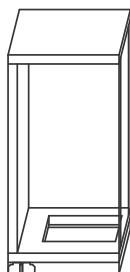
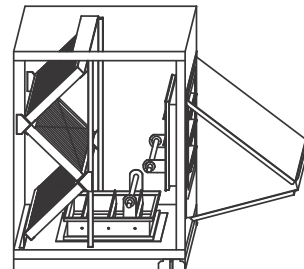
Mixing box with flat filter



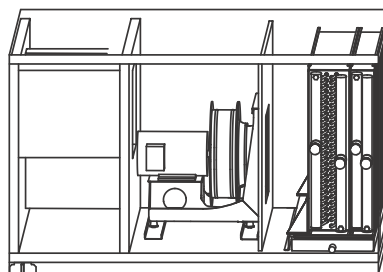
Direct-drive fan and electric heat with front discharge



Mixing box with angled filter

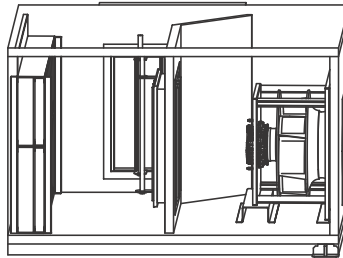
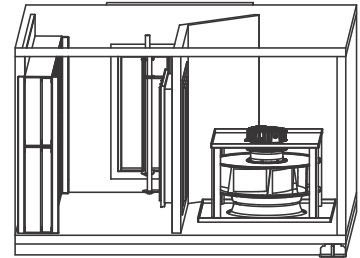
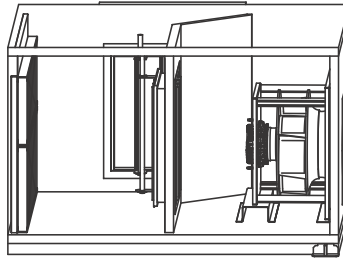
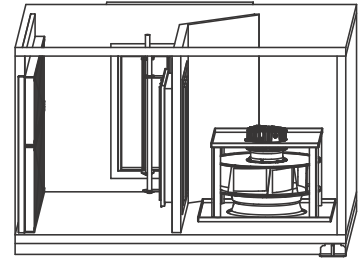
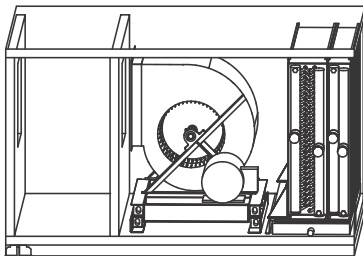


Discharge plenum with bottom discharge

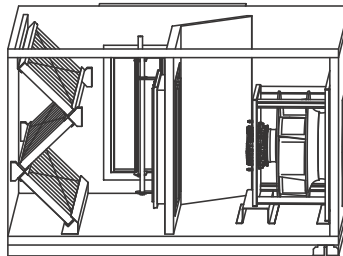
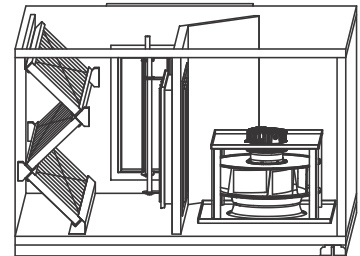
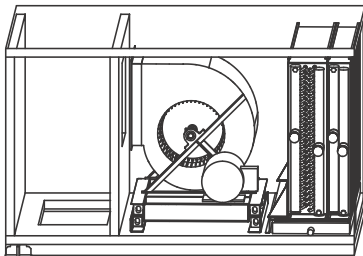


Direct-drive fan and electric heat

**Note:** All available configurations shown. Main unit ships fully assembled. Pipe cabinet and hoods ship separately.

**Figure 8. Economizer configuration with FC fans**

 Back return economizer  
with combo filter

 Bottom return economizer  
with combo filter

 Back return economizer  
with flat filter

 Bottom return economizer  
with flat filter


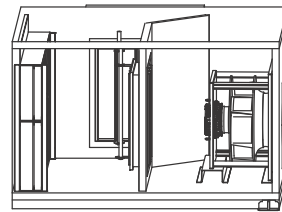
FC fan with front discharge


 Back return economizer  
with angled filter

 Bottom return economizer  
with angled filter


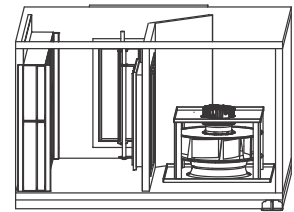
FC fan with bottom discharge

**Note:** All available configurations shown. Main unit ships fully assembled. Pipe cabinet and hoods ship separately.

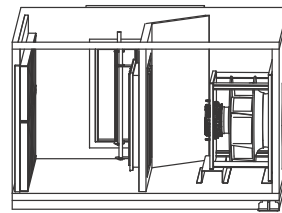
Figure 9. Economizer configuration with electric heat and FC fans



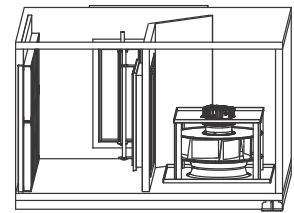
Back return economizer with combo filter



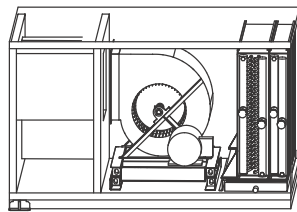
Bottom return economizer with combo filter



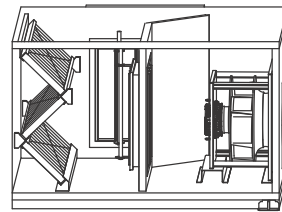
Back return economizer with flat filter



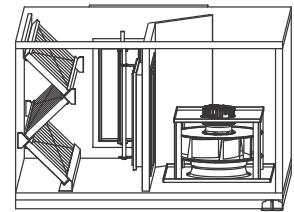
Bottom return economizer with flat filter



FC fan and electric heat with front discharge



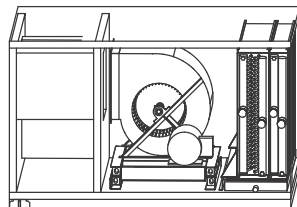
Back return economizer with angled filter



Bottom return economizer with angled filter



Discharge plenum with bottom discharge



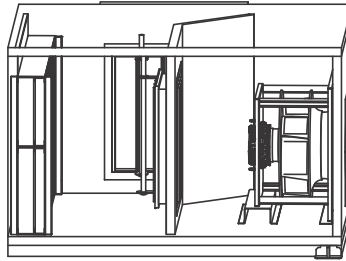
FC fan and electric heat

**Note:** All available configurations shown. Main unit ships fully assembled. Pipe cabinet and hoods ship separately.

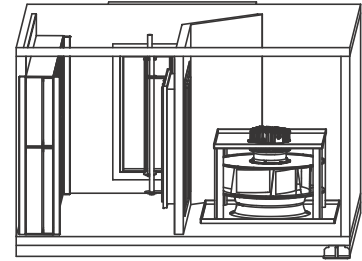
## General Data

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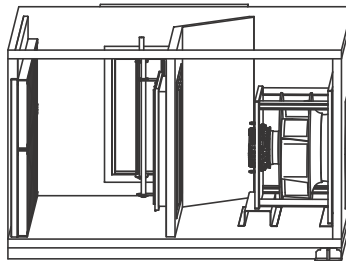
Figure 10. Economizer configuration with direct-drive fans



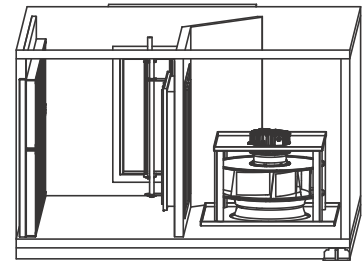
Back return economizer  
with combo filter



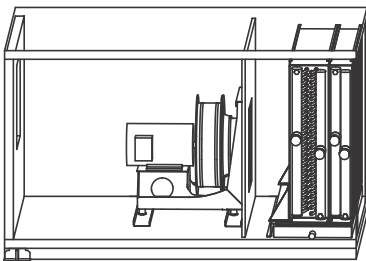
Bottom return economizer  
with combo filter



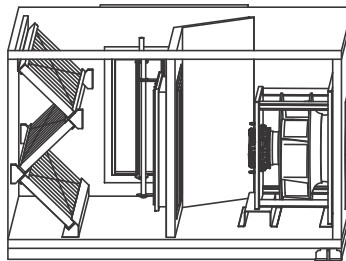
Back return economizer  
with flat filter



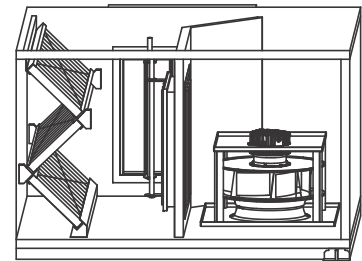
Bottom return economizer  
with flat filter



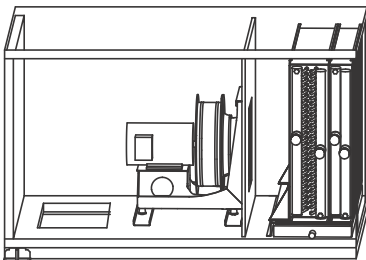
Direct-drive fan with front discharge



Back return economizer  
with angled filter



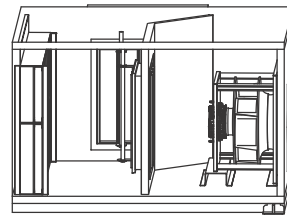
Bottom return economizer  
with angled filter



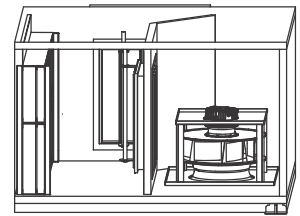
Direct-drive fan with bottom discharge

**Note:** All available configurations shown. Unit ships fully assembled in one piece.

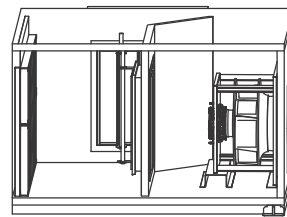
Figure 11. Economizer configuration with electric heat and direct-drive fans



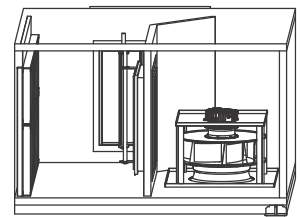
Back return economizer with combo filter



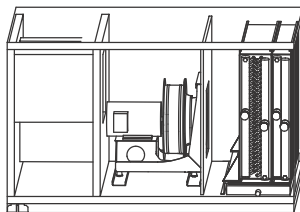
Bottom return economizer with combo filter



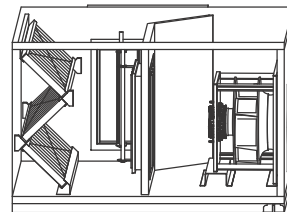
Back return economizer with flat filter



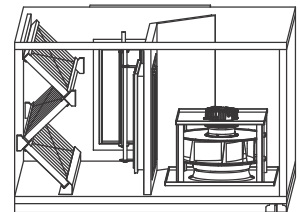
Bottom return economizer with flat filter



Direct-drive fan and electric heat with front discharge



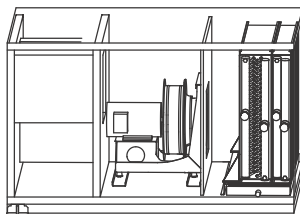
Back return economizer with angled filter



Bottom return economizer with angled filter



Discharge plenum with bottom discharge



Direct-drive fan and electric heat

**Note:** All available configurations shown. Main unit ships fully assembled. Pipe cabinet and hoods ship separately.



## General 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
Horz unit height (in.)	31.80	36.80	42.30	42.30	46.10	49.90	52.40	58.60	64.90	64.90
Horz unit width (in.)	41.25	54.25	58.25	70.25	78.25	78.25	86.25	86.25	88.25	101.25
<b>Coils</b>										
<b>1/2 inch Hydronic/DX coils</b>										
Area (ft <sup>2</sup> )	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)	536.60	533.30	523.60	503.50	488.10	488.1	522.00	515.80	521.70	526.80
<b>Dry Weight (lb.)</b>										
- 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
<b>Wet Weight (lb.)</b>										
- 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
<b>Steam coils</b>										
Area (ft <sup>2</sup> )	1.80	4.40	6.50	8.50	9.80	13.30	15.10	16.80	21.30	25.30
Width (in.)	12	18	24	24	24	33	33	18.00 18.00	12.00 33.00	12.00 33.00
Length (in.)	22	35	39	51	58	58	66	66	68	81
Velocity (FPM)	818	686	615	588	610	527	562	627	588	593
Weight (lb.)	31	54	75	86	93	122	132	156	239	266



**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
<b>Fan/Motor data</b>										
<b>FC fans</b>										
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
Minimum design CFM	1050	2100	2800	3500	4200	4900	5950	7350	8750	10500
<b>DDP fans</b>										
Wheel size (in.)	11	14	16	18	18	20	20	2 x 18	2 x 20	2 x 20
Maximum RPM	3600	3600	3400	3025	3025	2720	2720	3025	2720	2720
Motor HP	1-2	1 1/2 - 5	2- 7 1/2	3 - 7 1/2	3 - 10	3 - 10	3 - 15	3- 10	3- 10	5 - 15
<b>Filters (height x width) with quantity per size</b>										
2 in. and 2/4 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 <sup>2</sup> )	3.50	6.90	8.90	11.10	16.30	16.30	20.00	22.50	26.40	30.60
Nominal Velocity (fpm)	432.00	432.00	450.00	450.00	369.20	430.80	425.00	466.70	473.70	490.90
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 <sup>2</sup> )	5.60	11.10	12.50	15.60	21.70	21.70	30.00	31.10	41.70	48.90
Nominal Velocity (fpm)	270.00	270.00	320.00	321.40	276.90	323.10	283.30	337.50	300.00	306.80
<b>Mixing Box</b>										
Damper Area (ft <sup>2</sup> )	1.30	2.40	3.10	4.10	5.10	5.60	7.00	8.20	10.30	12.00
Nominal Velocity (fpm)	1166.90	1224.70	1288.50	1205.60	1178.00	1239.20	1217.00	1277.90	1208.10	1247.10
<b>Economizer</b>										
Damper Area (ft <sup>2</sup> )	1.14	2.30	3.13	3.96	4.63	5.39	6.67	8.54	9.98	11.70
Nominal Velocity (fpm)	1310.68	1304.23	1278.04	1263.15	1297.010	1298.92	1274.98	1230.13	1252.81	1281.56

**Notes:** 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.



## General Data

### Coil Data

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

Unit Size	Single Coil Fin				Horizontal Face Split Coil Fin				Intertwined Coil Fin			
	Dist	Circuits	Width	Length	Dist	Circuits	Width	Length	Dist	Circuits	Width	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

1/2 in. Hydronic/DX coil				1/2 in. Steam coil			
Size	Width (in)	Length (in)	Coil Area (ft <sup>2</sup> )	Size	Width (in)	Length (in)	Coil Area (ft <sup>2</sup> )
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	52.0	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	18.00	67.00	16.80
30	50.00	82.00	28.50	25	12.00	68.00	21.30
				30	33.00	68.00	21.30
				30	12.00	81.00	25.30
				30	33.00	81.00	25.30



# Performance Data

## Filter Pressure Drop

Table 4. Filter pressure drop

Description	Face Velocity	150	200	250	300	350	400	450	500	550	600	650
	(FPM)											
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

## Supply Fan Motor Data and Fan Curves

Table 5. Supply fan motor data

Unit Size Nominal Airflow (cfm)	3	6	8	10	12	14	17	21	25	30
	1500	3000	4000	5000	6000	7000	8500	10,500	12,500	15,000
FC Fan Wheel size (in)	9x7	12x9	12x12	15x15	18x15	18x18	20x15	20x20	20x18	22x20
Maximum RPM (FC)	2000	1500	1700	1400	1200	1200	1100	1000	1300	1150
Motor HP (FC)	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 Fan Wheel Size (in)	11	14	16	18	18	20	20	2 x 18	2 x 20	2 x 20
Maximum RPM (DDP)	3600	3600	3400	3025	3025	2720	2720	3025	2720	2720
Motor HP (DDP)	1-2	1 1/2 - 5	2 - 7 1/2	3 - 7 1/2	3 - 10	3 - 10	3 - 15	3- 10	3- 10	5 - 15
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

Supply Fans - Direct-Drive Plenum Fans

Figure 12. Size 3 horizontal 11-inch DDP single fan

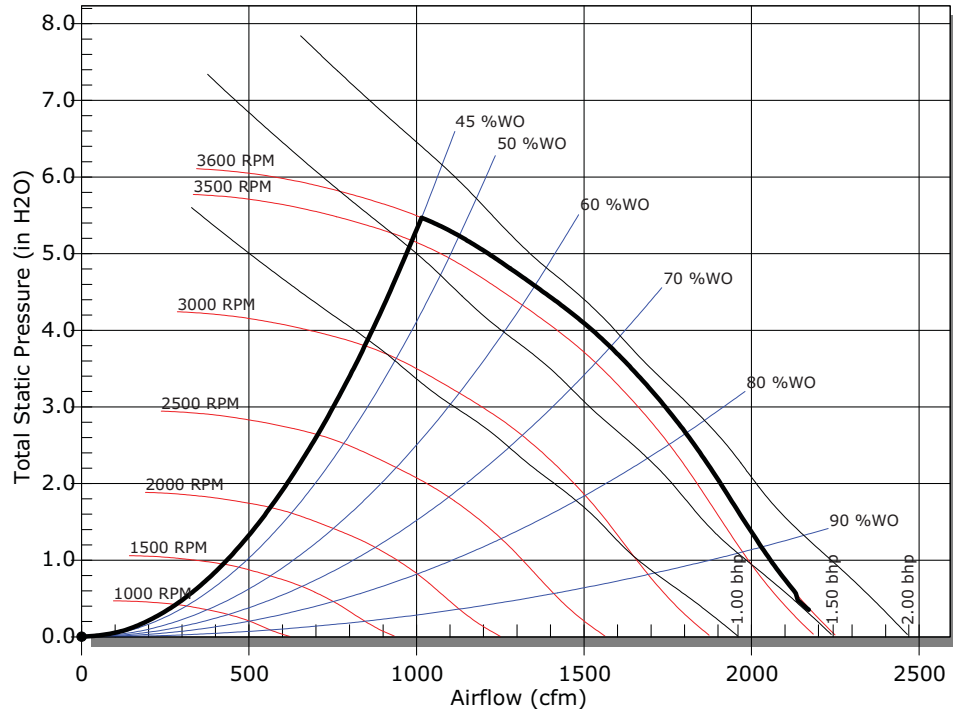


Figure 13. Size 6 horizontal 14-inch DDP single fan

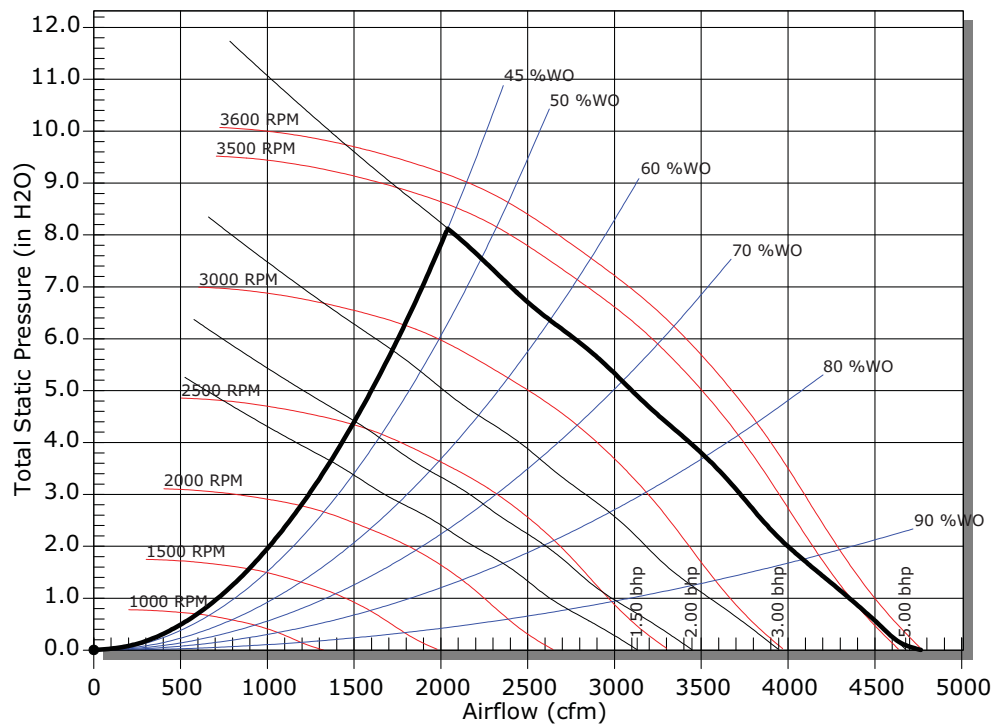


Figure 14. Size 8 horizontal 16-inch DDP single fan

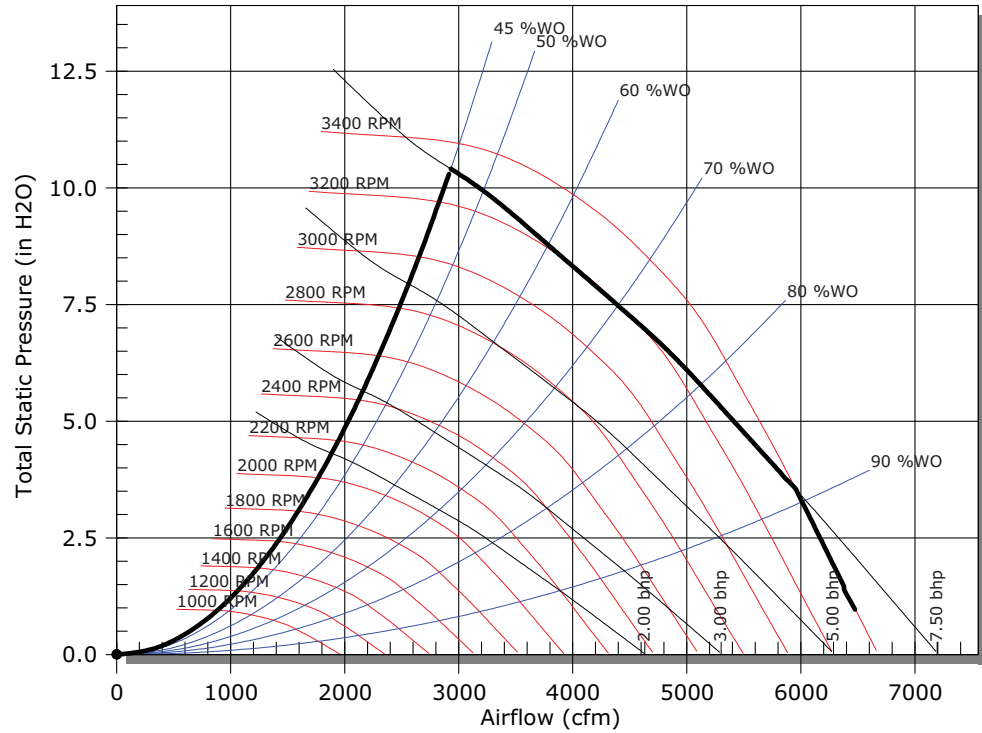


Figure 15. Size 10 horizontal 18-inch DDP single fan

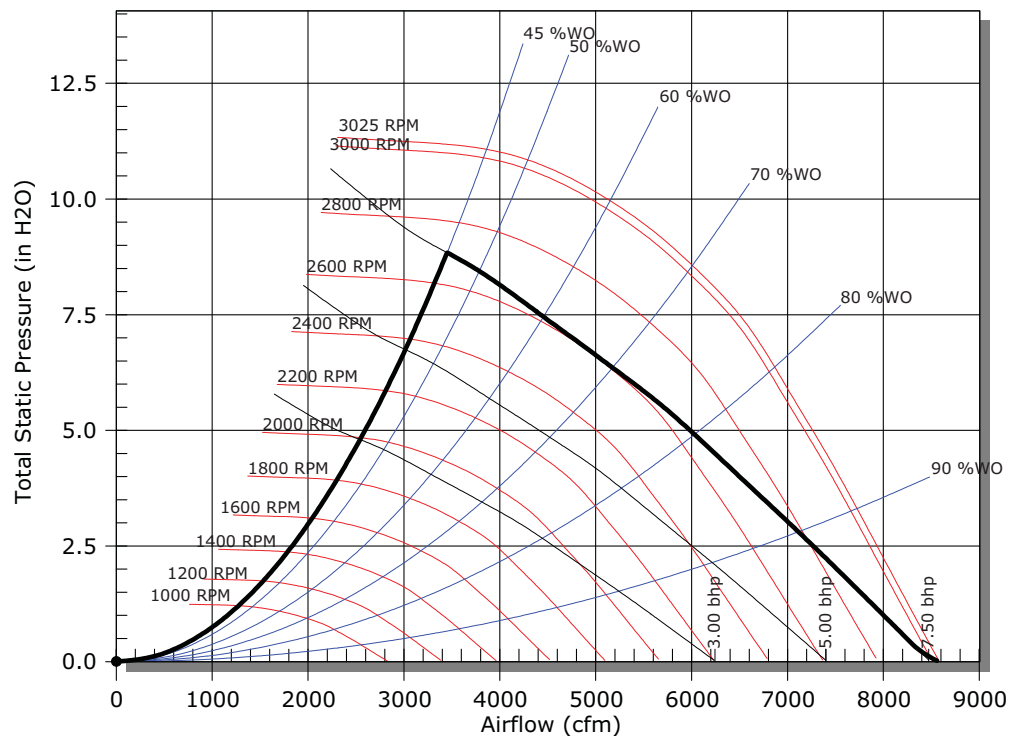


Figure 16. Size 12 horizontal 18-inch DDP single fan

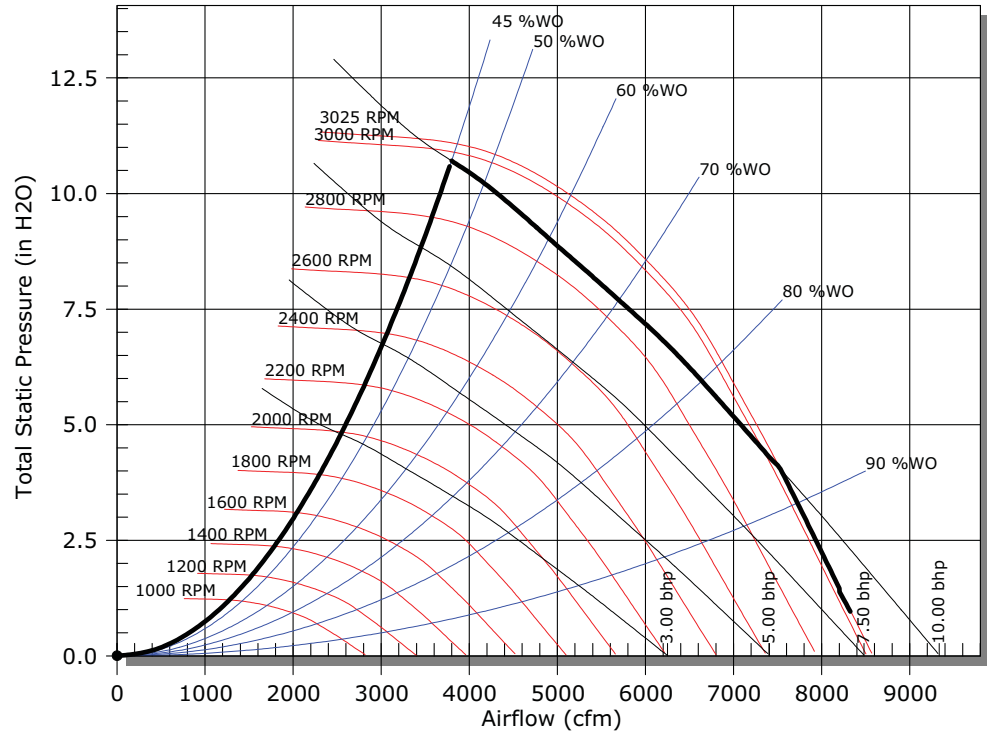


Figure 17. Size 14 horizontal 20-inch DDP single fan

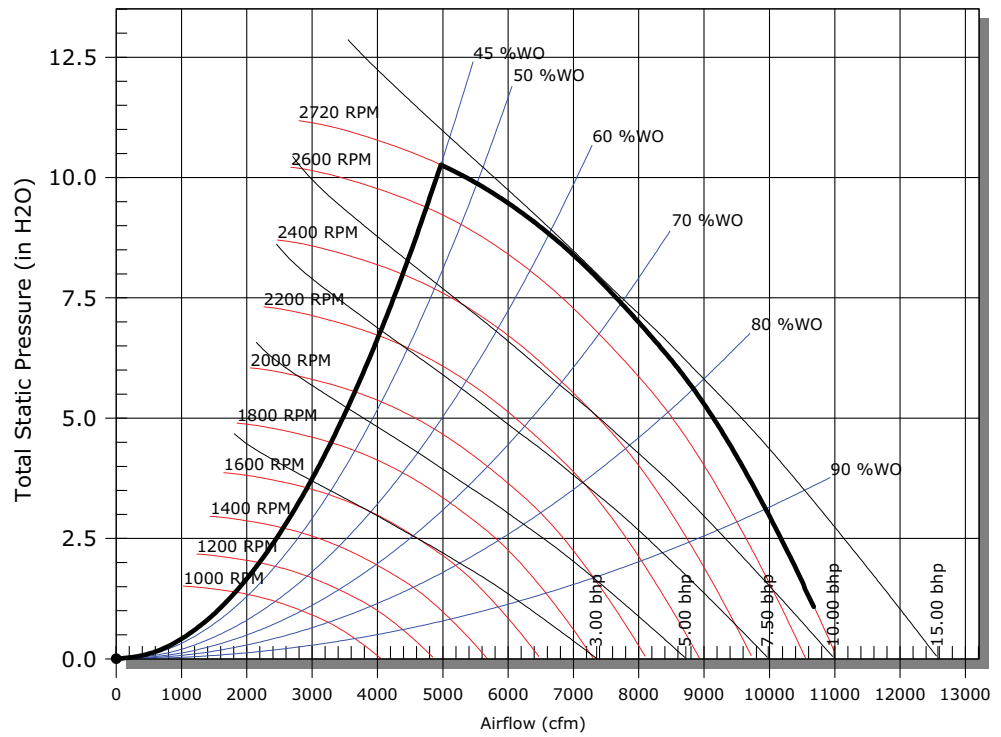


Figure 18. Size 17 horizontal 20-inch DDP single fan

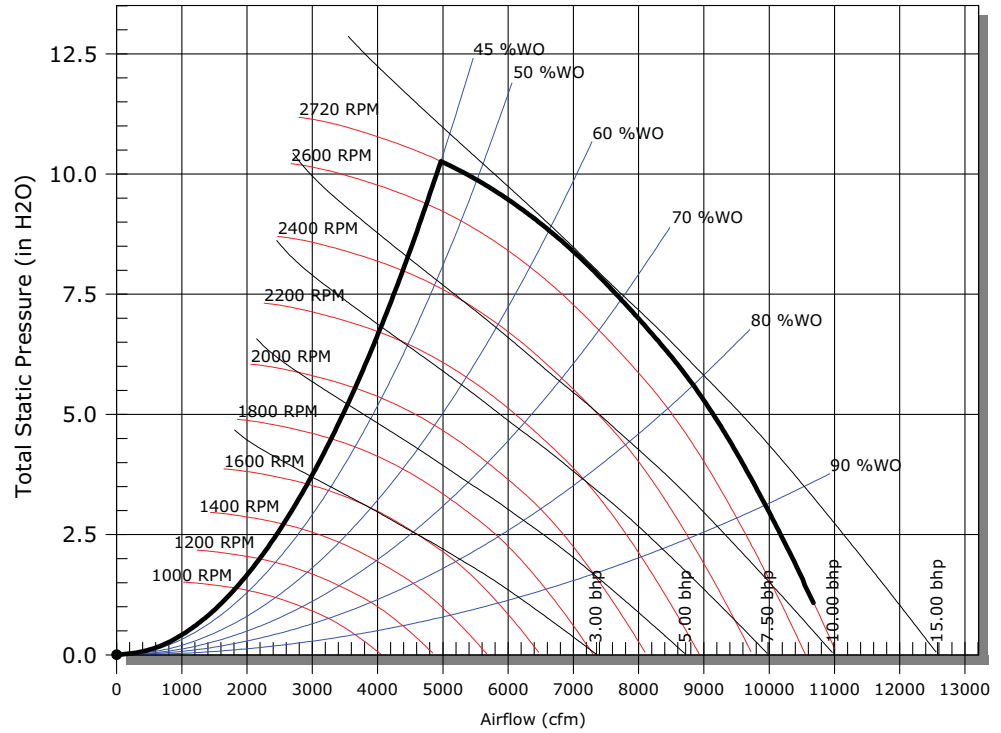


Figure 19. Size 21 horizontal 18-inch DDP dual fan

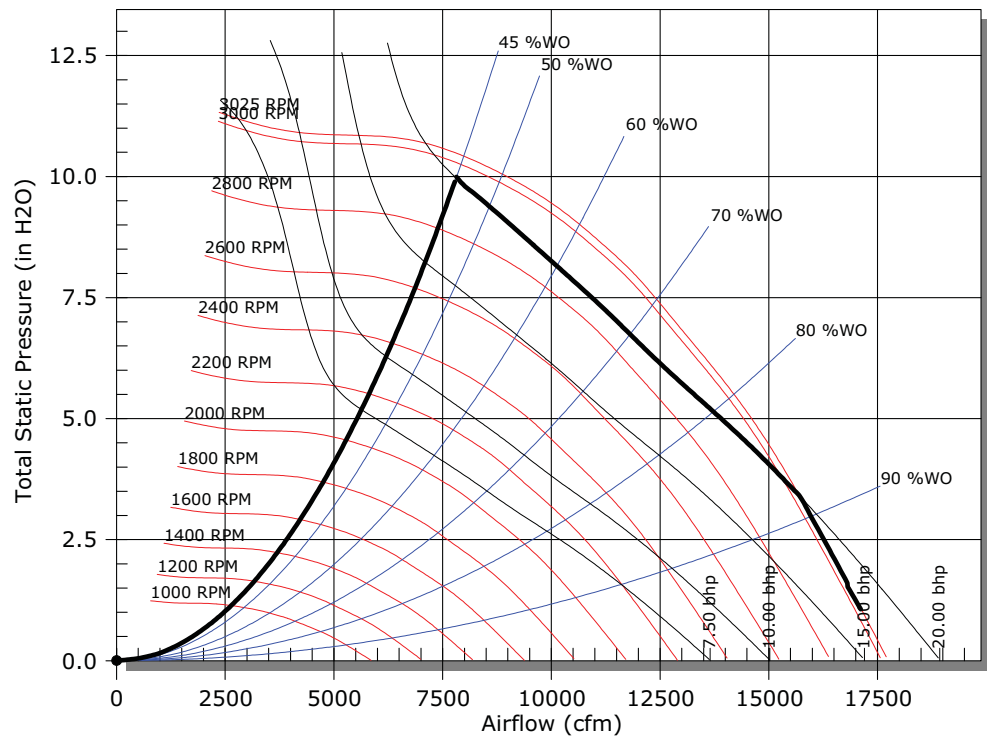


Figure 20. Size 25 horizontal 20-inch DDP dual fan

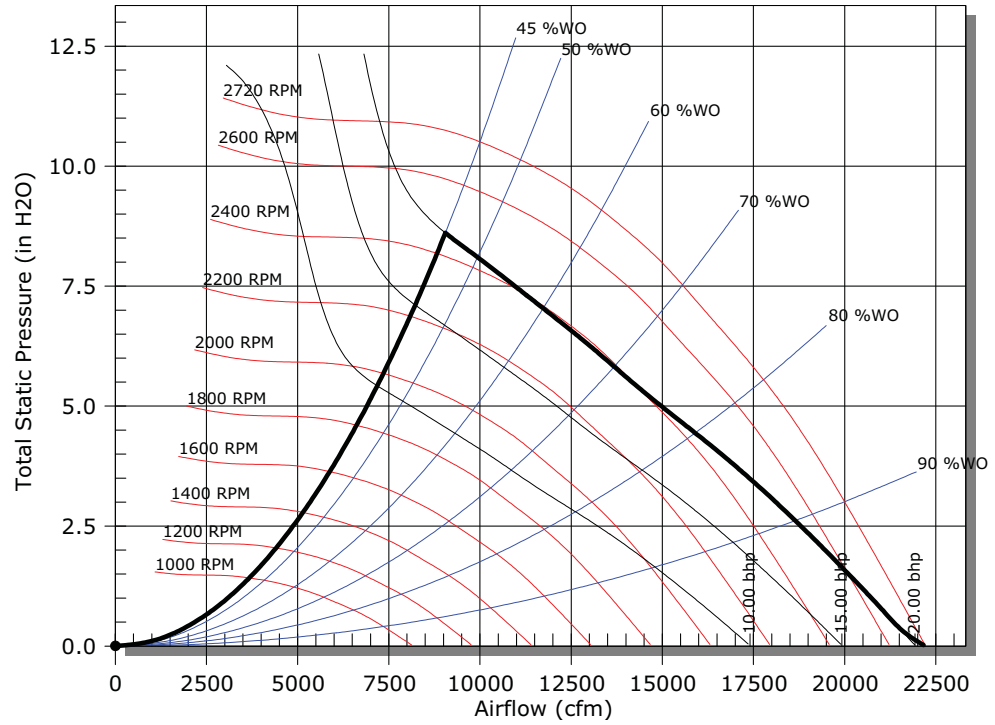
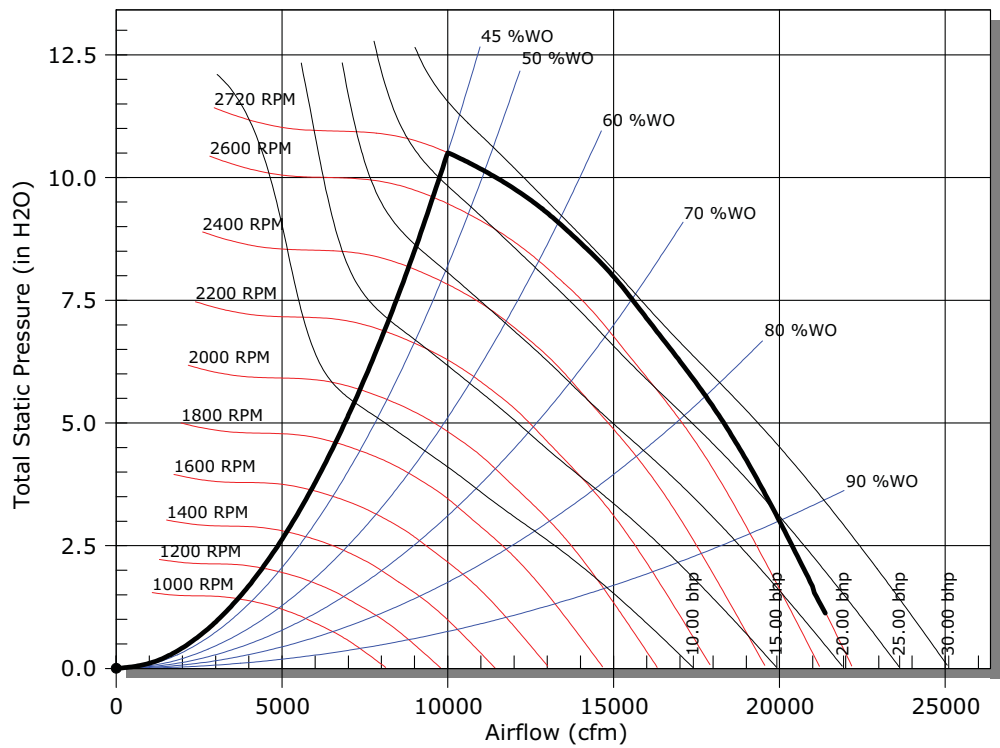


Figure 21. Size 30 horizontal 20-inch DDP dual fan





## Supply Fans - FC Fans

Figure 22. Size 3 horizontal 9 x 7 FC fan

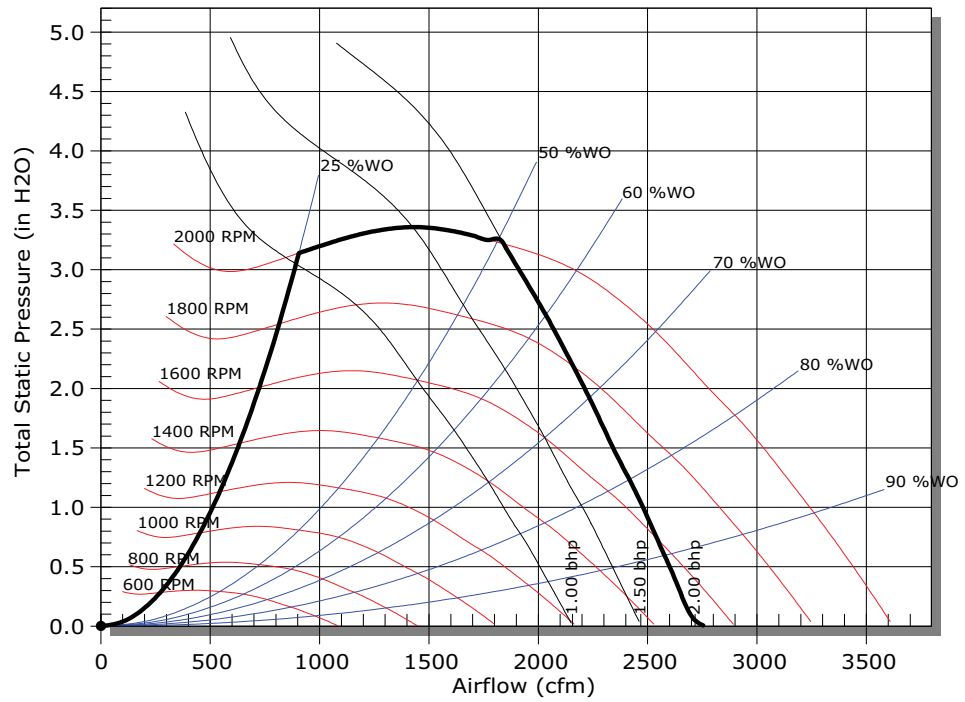


Figure 23. Size 6 horizontal 12 x 9 FC fan

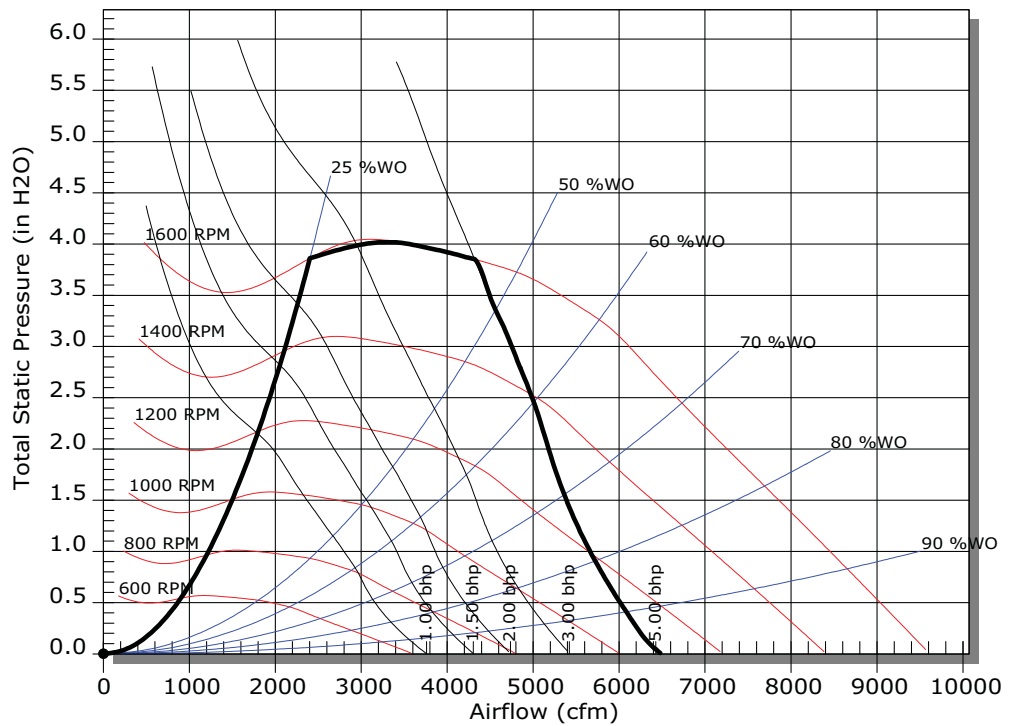


Figure 24. Size 8 horizontal 12 x 12 FC fan

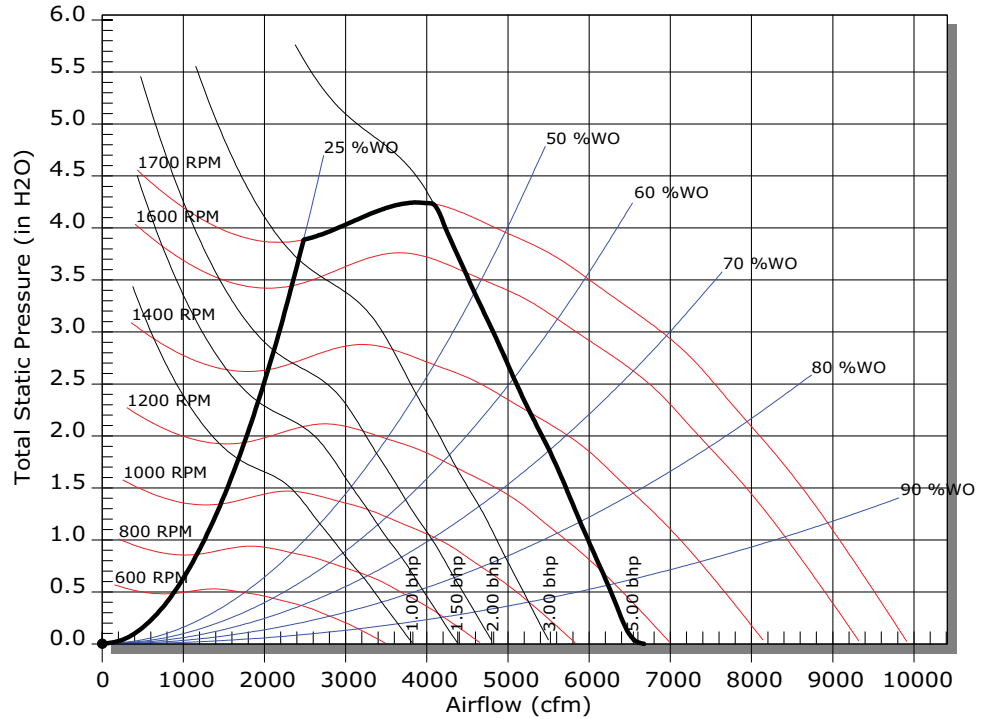


Figure 25. Size 10 horizontal 15 x 15 FC fan

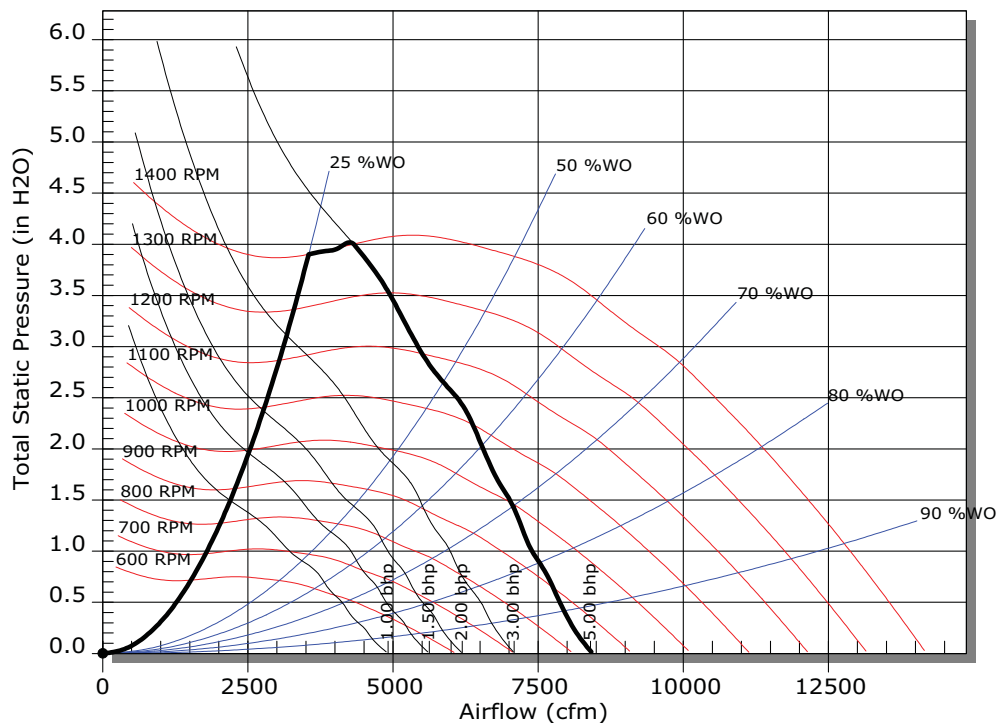


Figure 26. Size 12 horizontal 18 x 15 FC fan

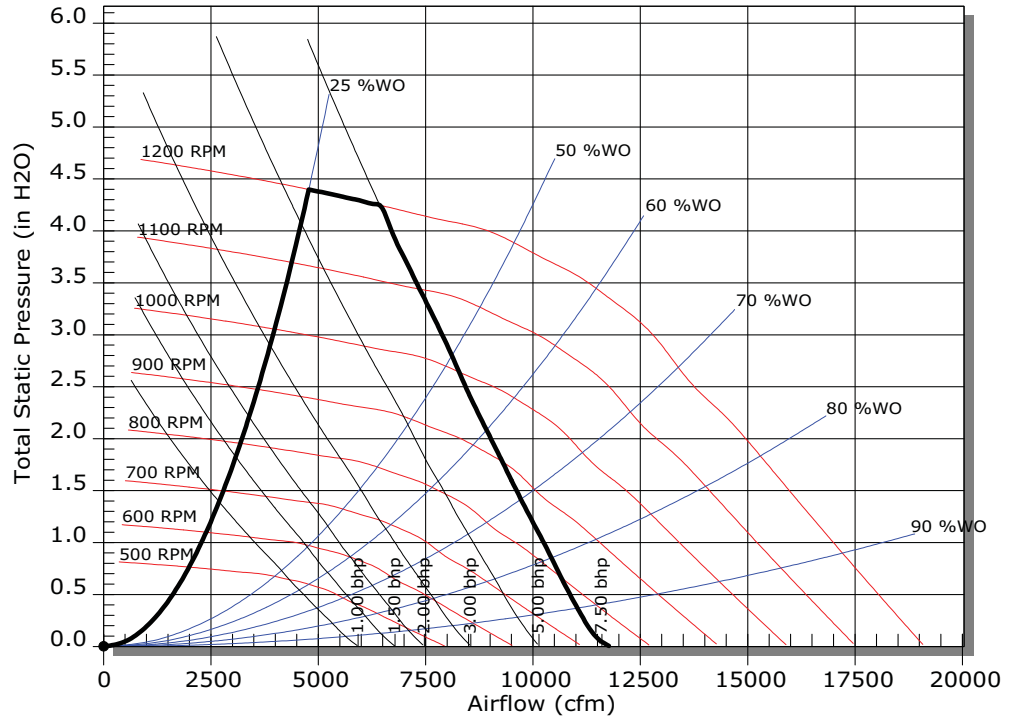


Figure 27. Size 14 horizontal 18 x 18 FC fan

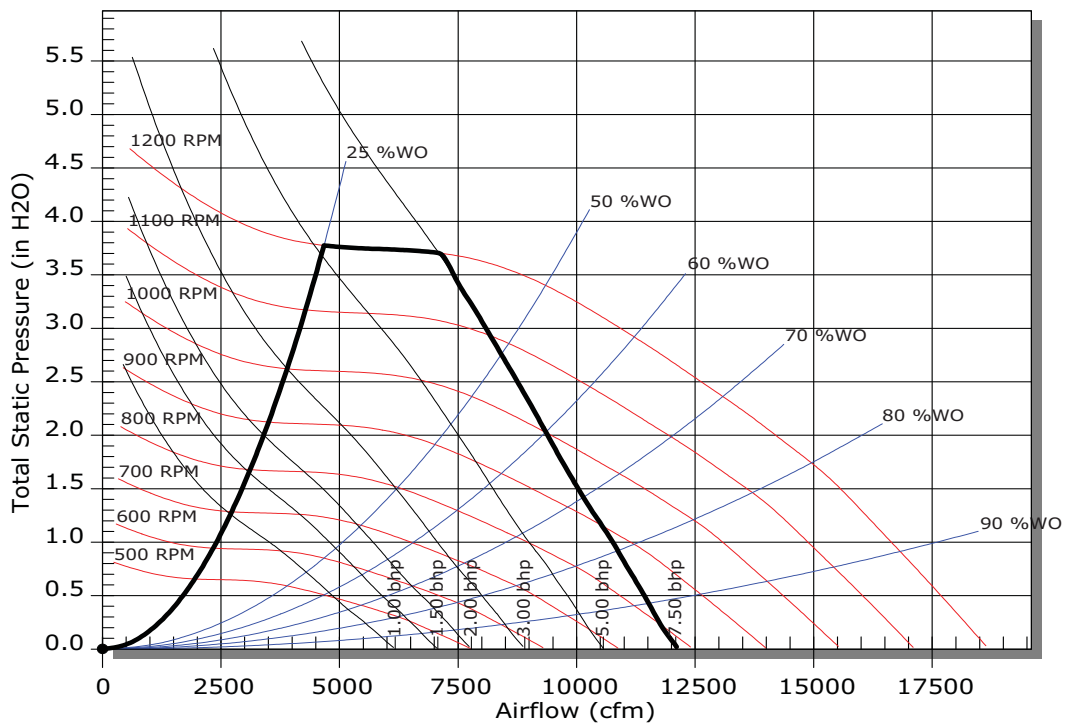


Figure 28. Size 17 horizontal 20 x 15 FC fan

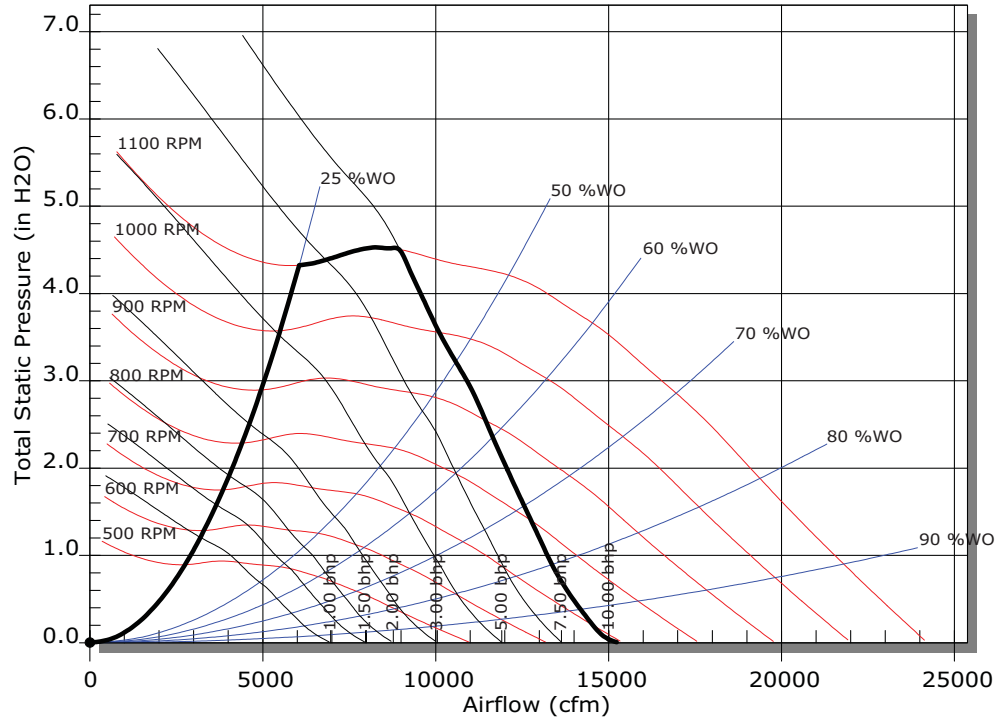


Figure 29. Size 21 horizontal 20 x 20 FC fan

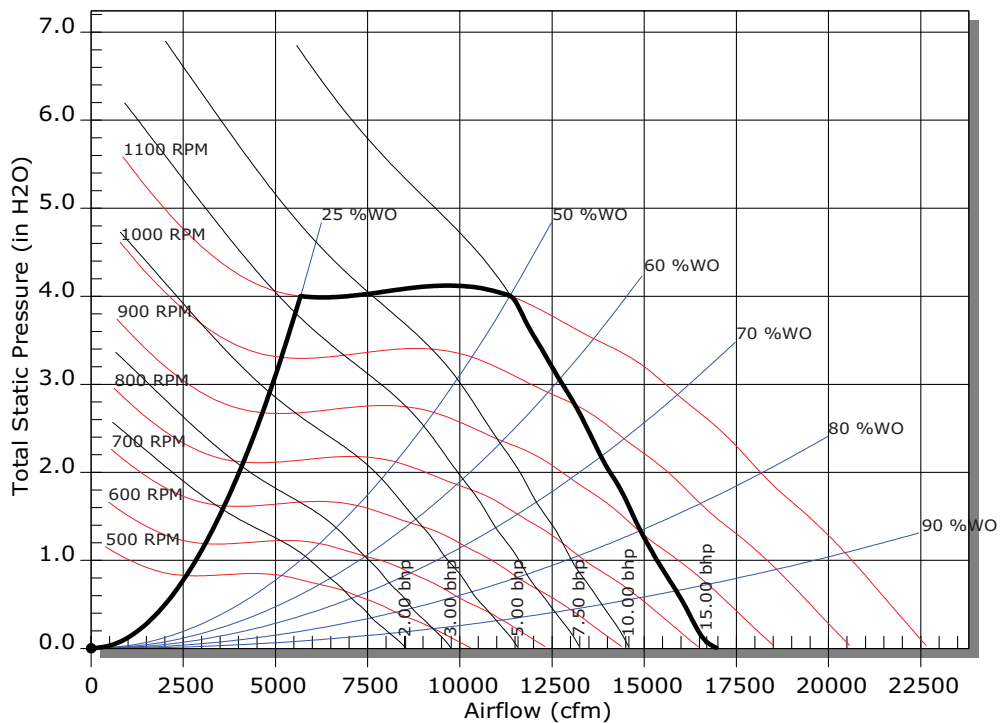


Figure 30. Size 25 horizontal 20 x 18 FC fan

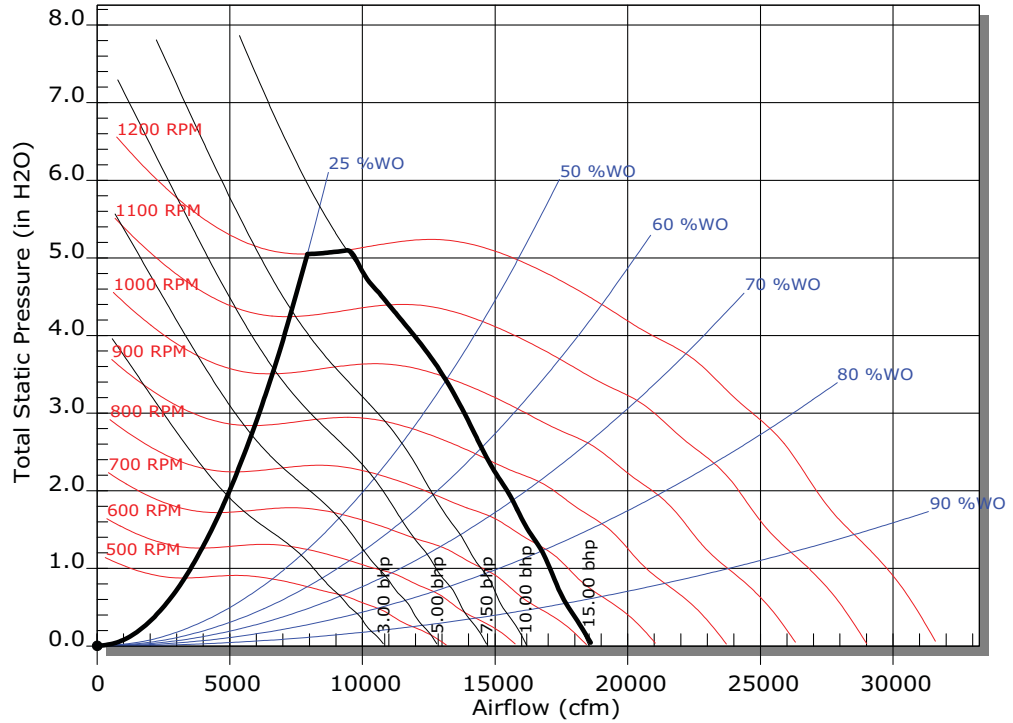
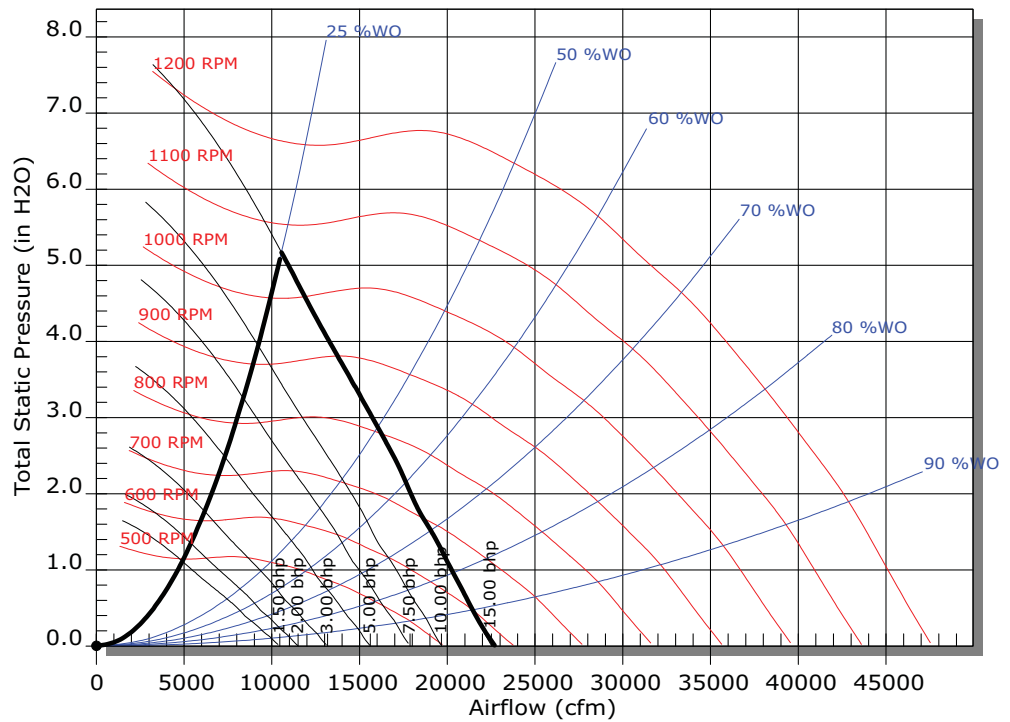


Figure 31. Size 30 horizontal 22 x 20 FC fan





## Performance Data

### Return Fan Motor Data and Fan Curves

Table 6. Return fan motor data

Unit Size Nominal Airflow (cfm)	3	6	8	10	12	14	17	21	25	30
DDP Fan Wheel Size (in)	16.50	16.50	20.60	20.60	20.60	23.00	23.00	2 x 20.60	2 x 20.60	2 x 23.00
Maximum RPM	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200
Motor Kilowatts	2	2	3	3	3	3	6	3	3	3
Motor HP	2.7	2.7	4.0	4.0	4.0	4.0	8.0	4.0	4.0	4.0

Note: Return fan nominal airflow is 90 percent of supply fan nominal airflow. Only one motor and fan size available per unit size.

Figure 32. Size 3 208/230 volt DDP fan

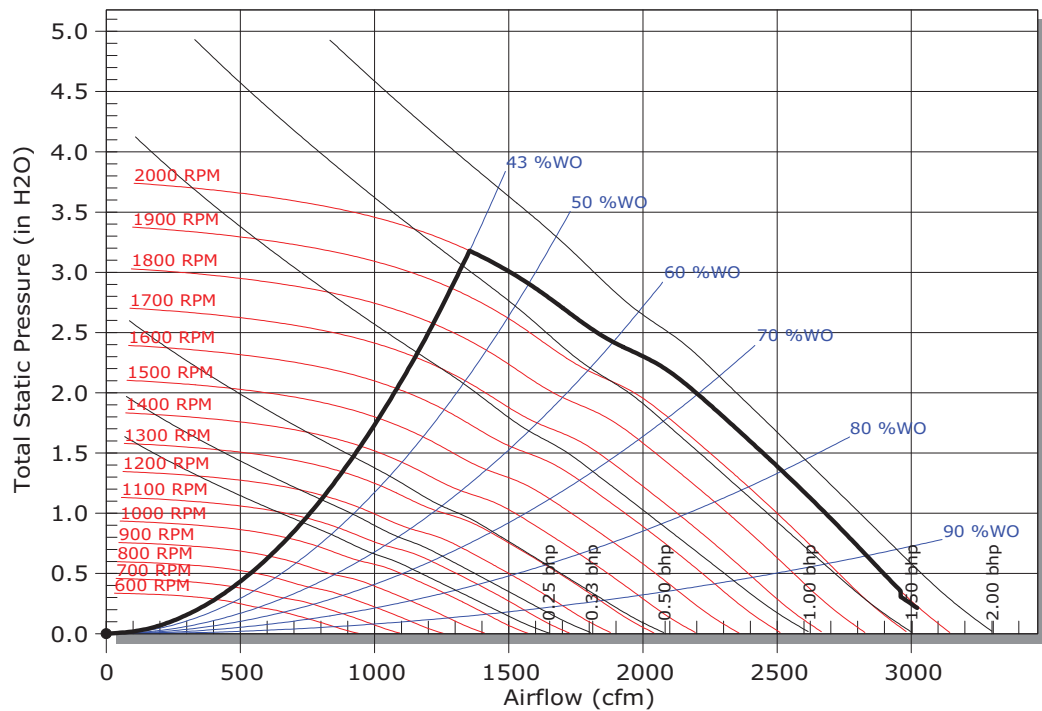


Figure 33. Size 3 460 volt DDP fan

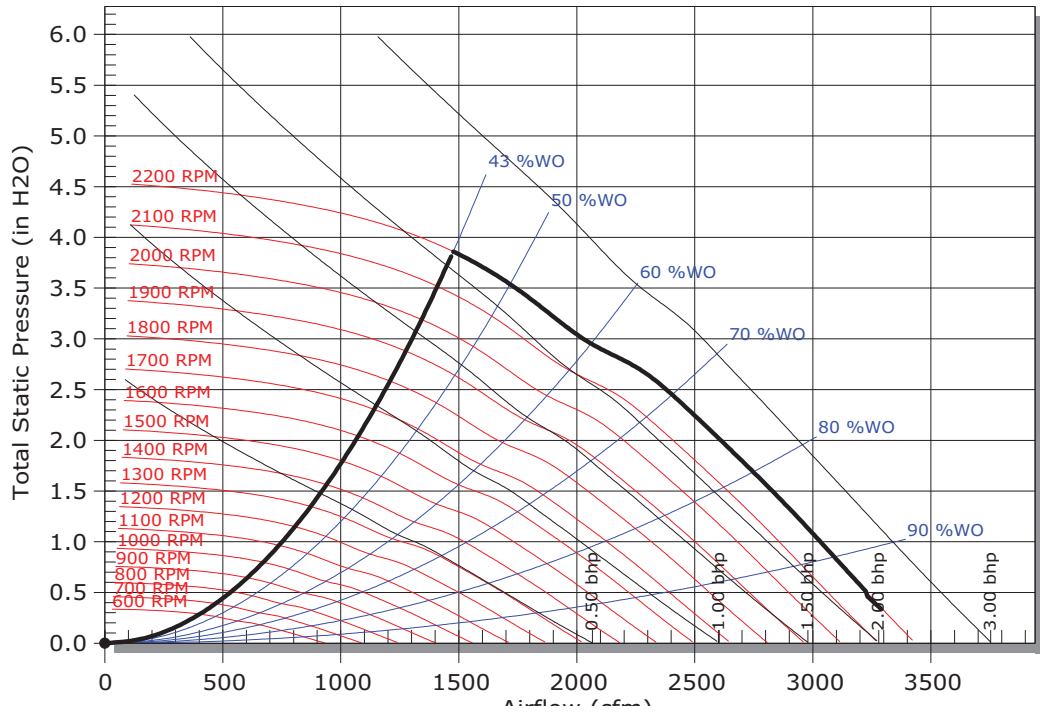


Figure 34. Size 6 208/230 volt DDP fan

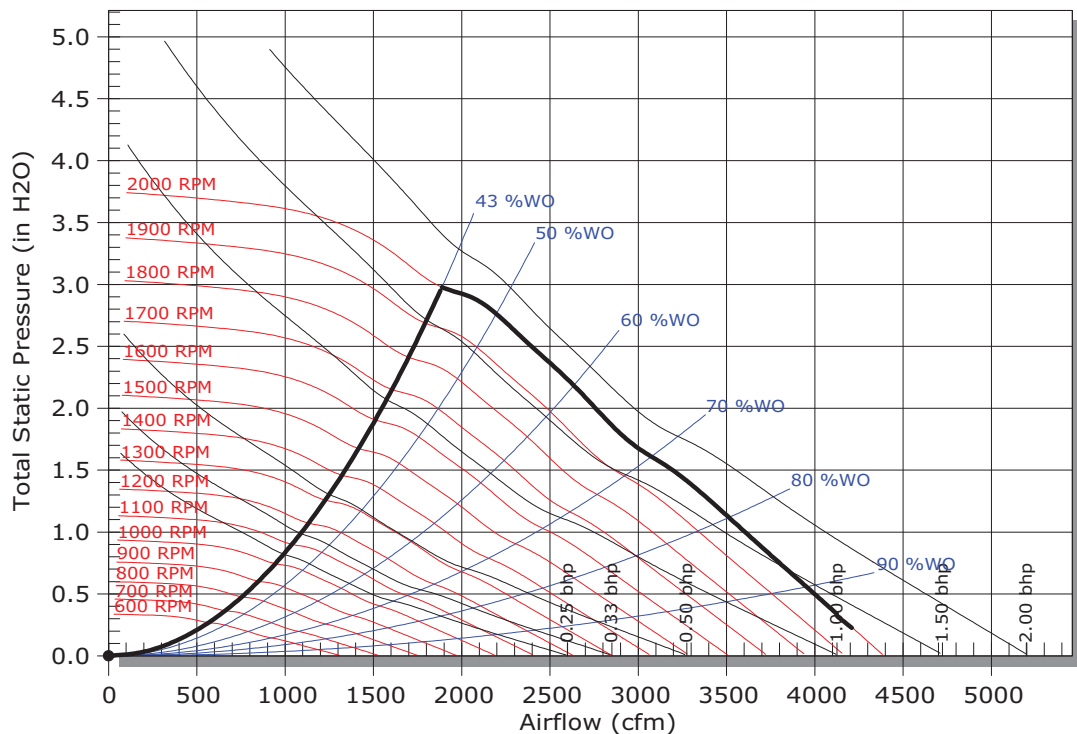


Figure 35. Size 6 460 volt DDP fan

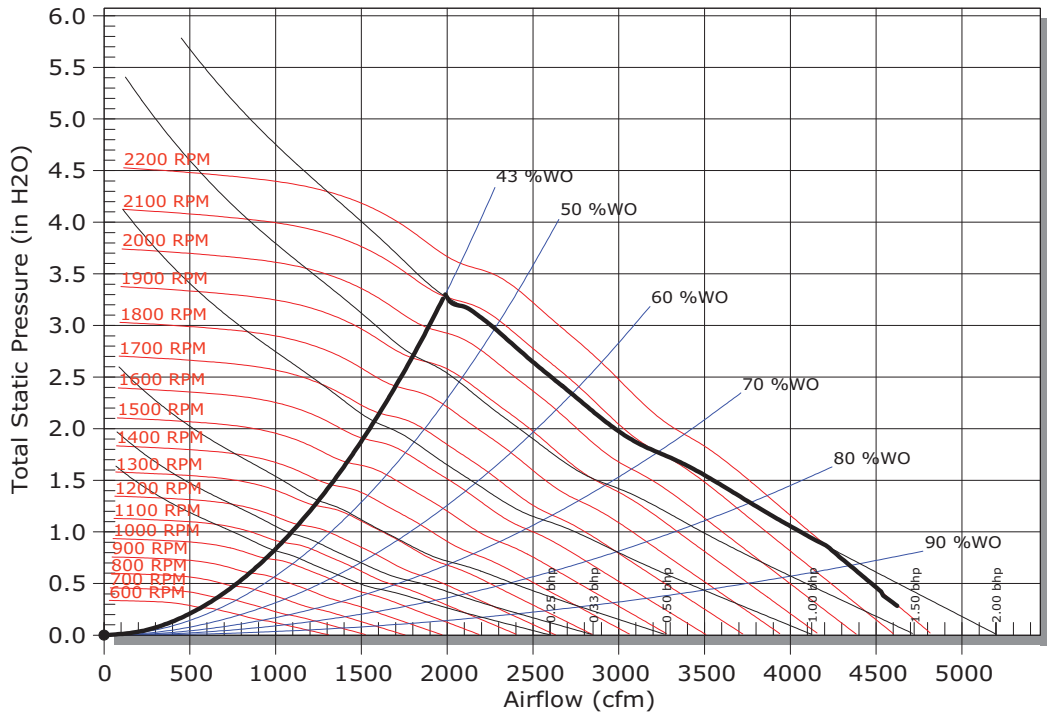


Figure 36. Size 8 208/230-460 volt DDP fan

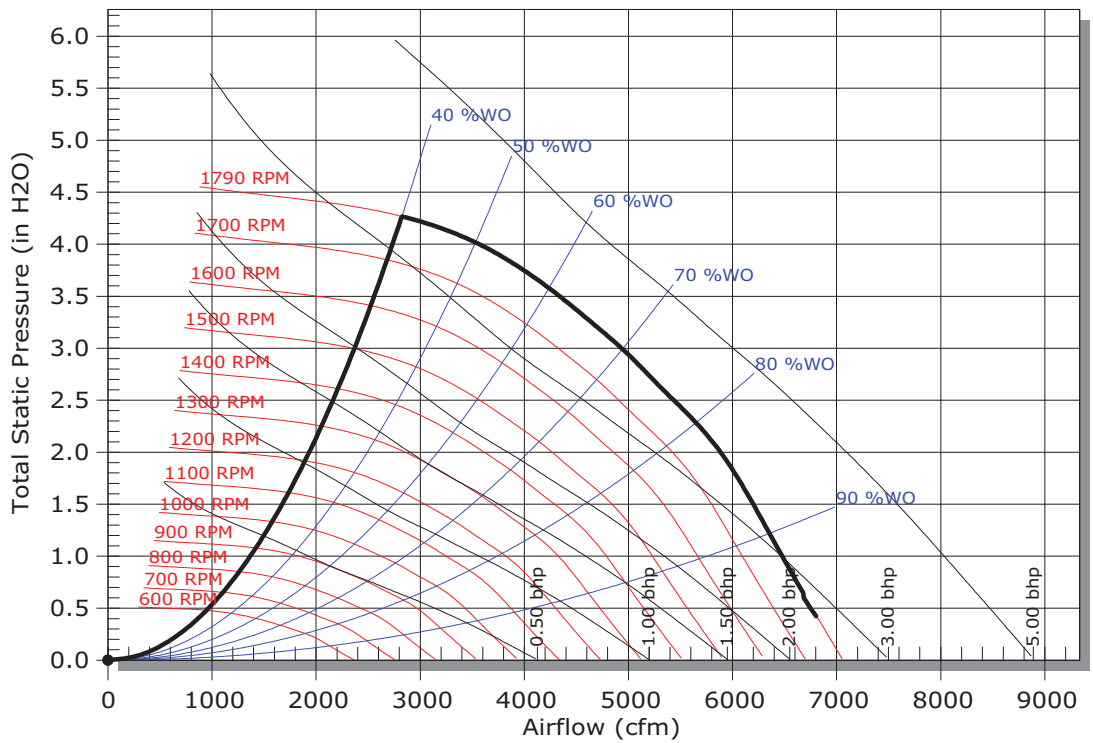




Figure 37. Size 10 208/230-460 volt DDP fan

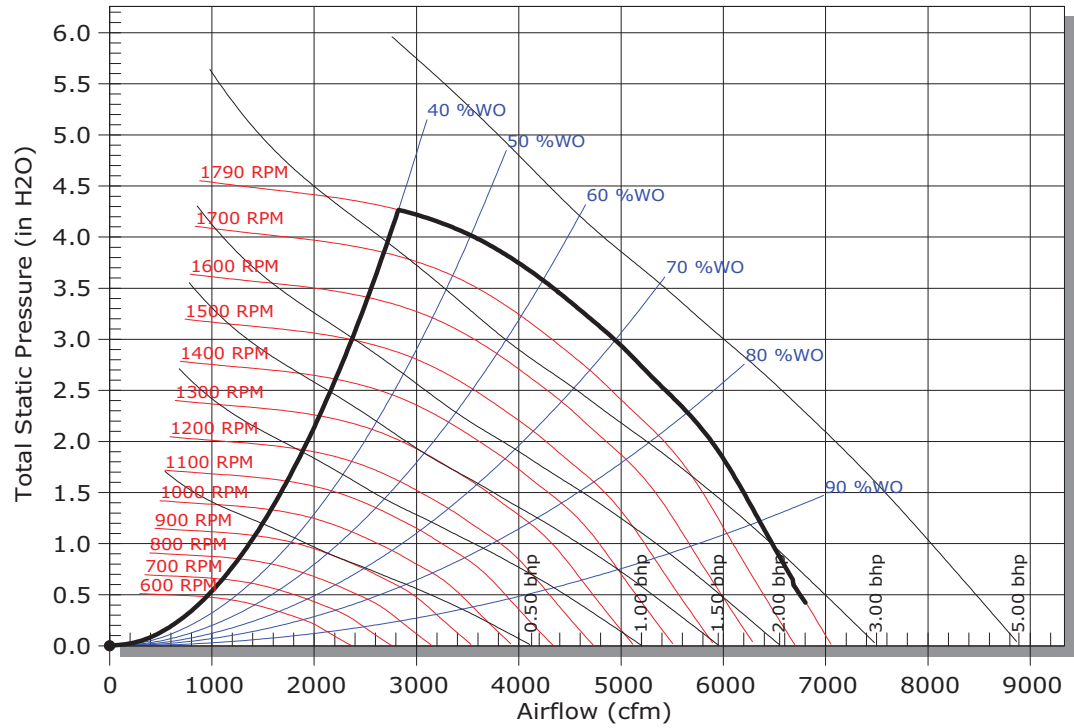


Figure 38. Size 12 208/230-460 volt DDP fan

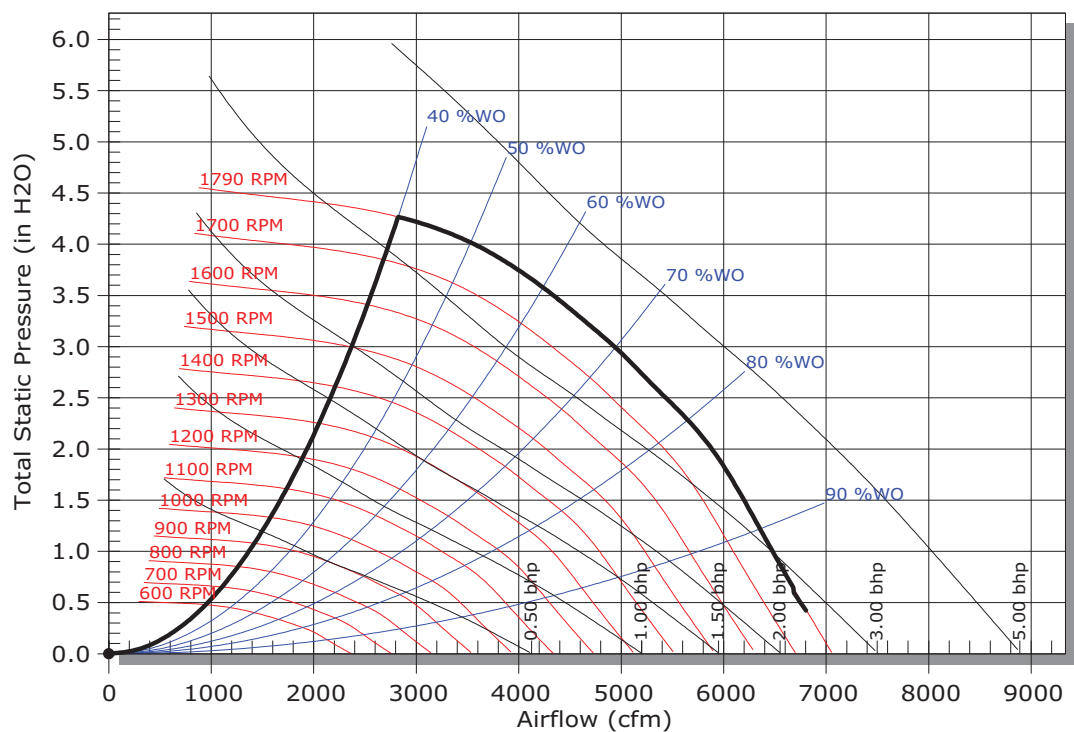


Figure 39. Size 14 208/230-460 volt DDP fan

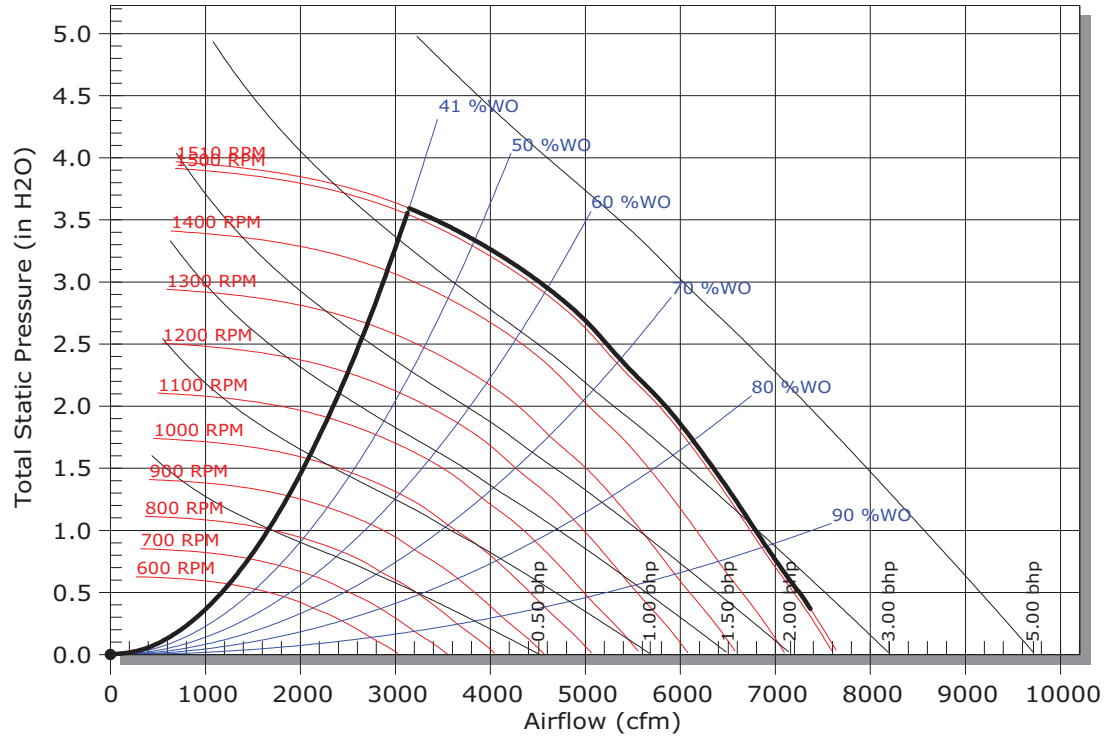


Figure 40. Size 17 208/230-460 volt DDP fan

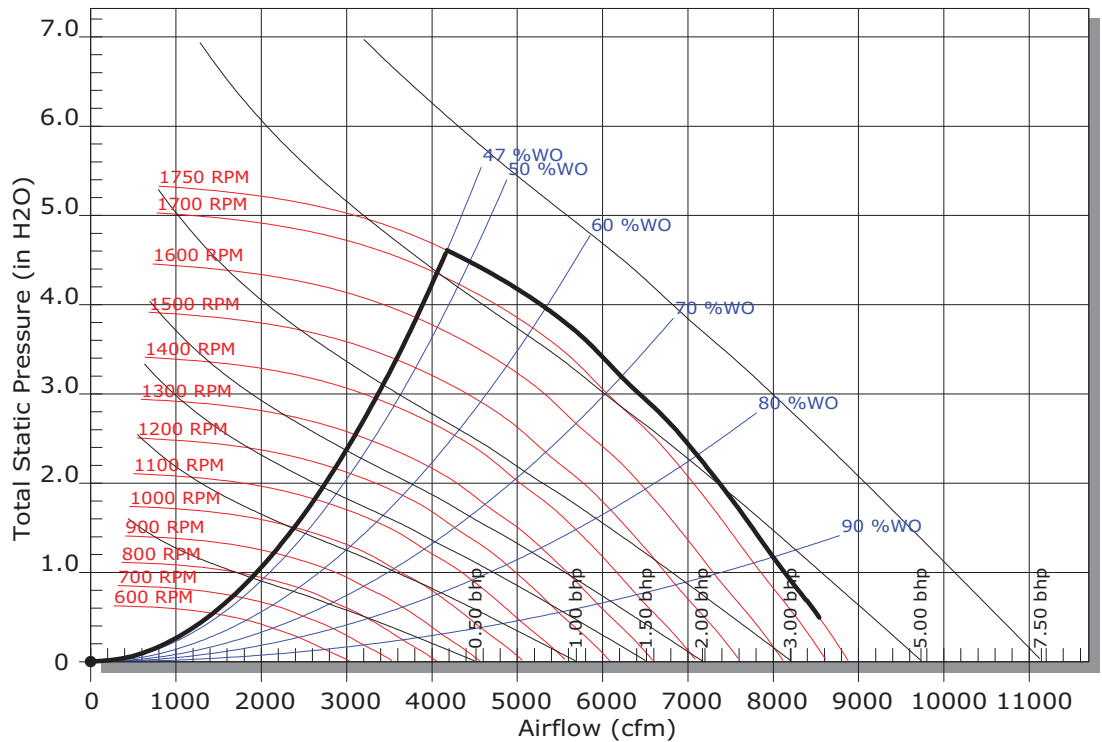


Figure 41. Size 21 208/230-460 volt DDP fan

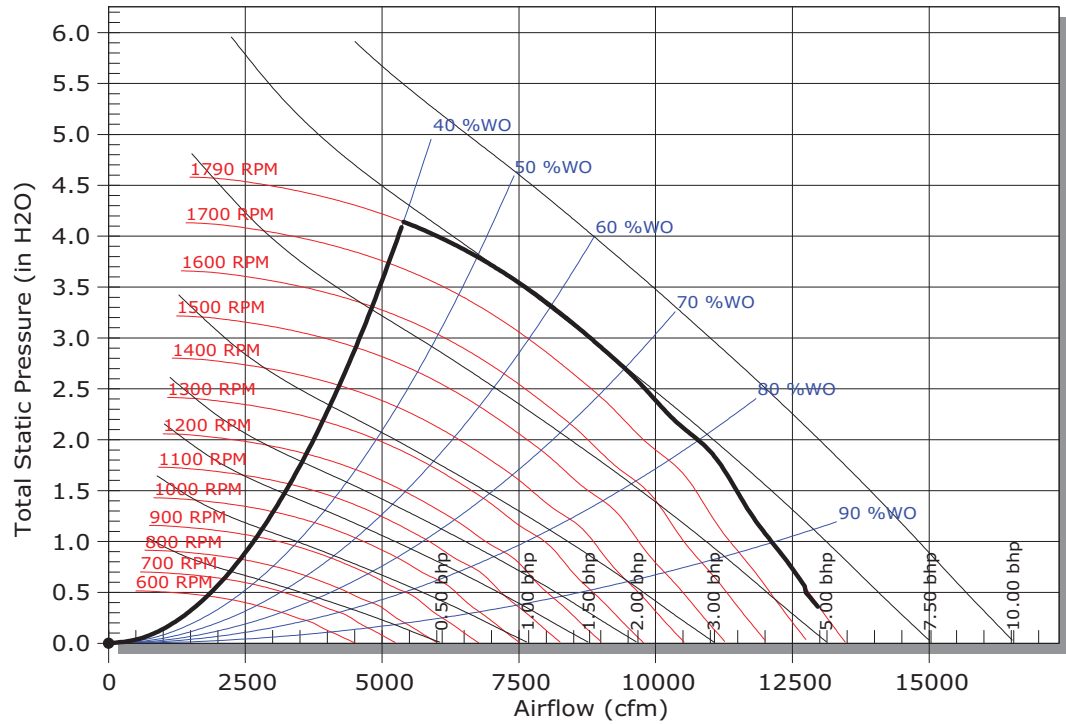
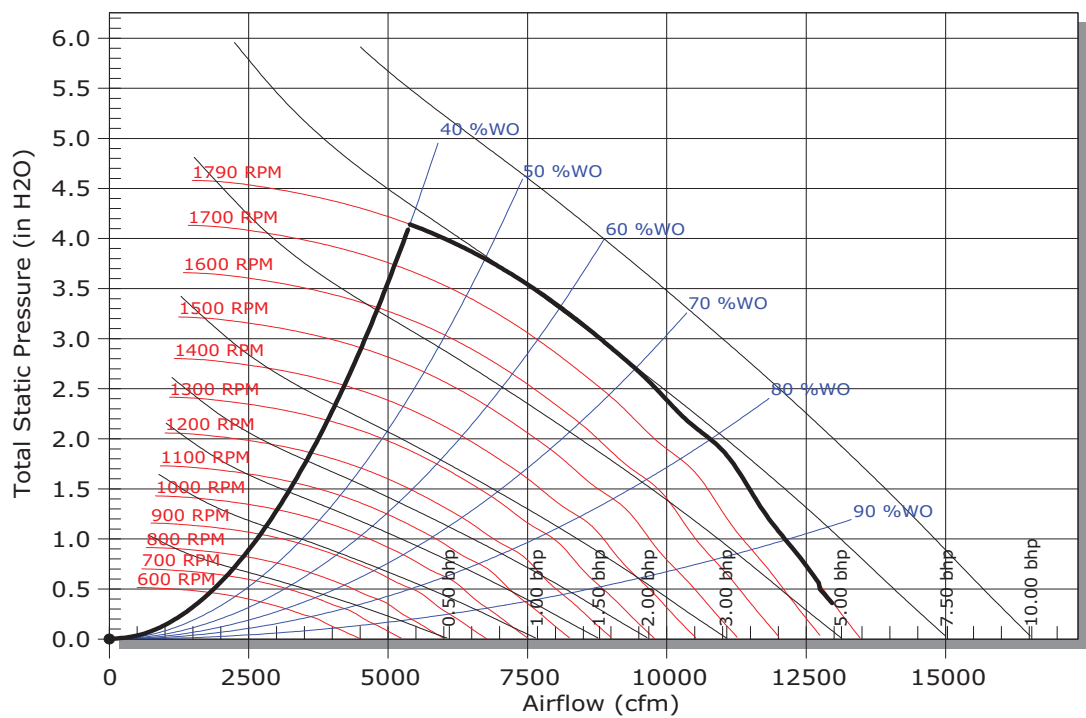
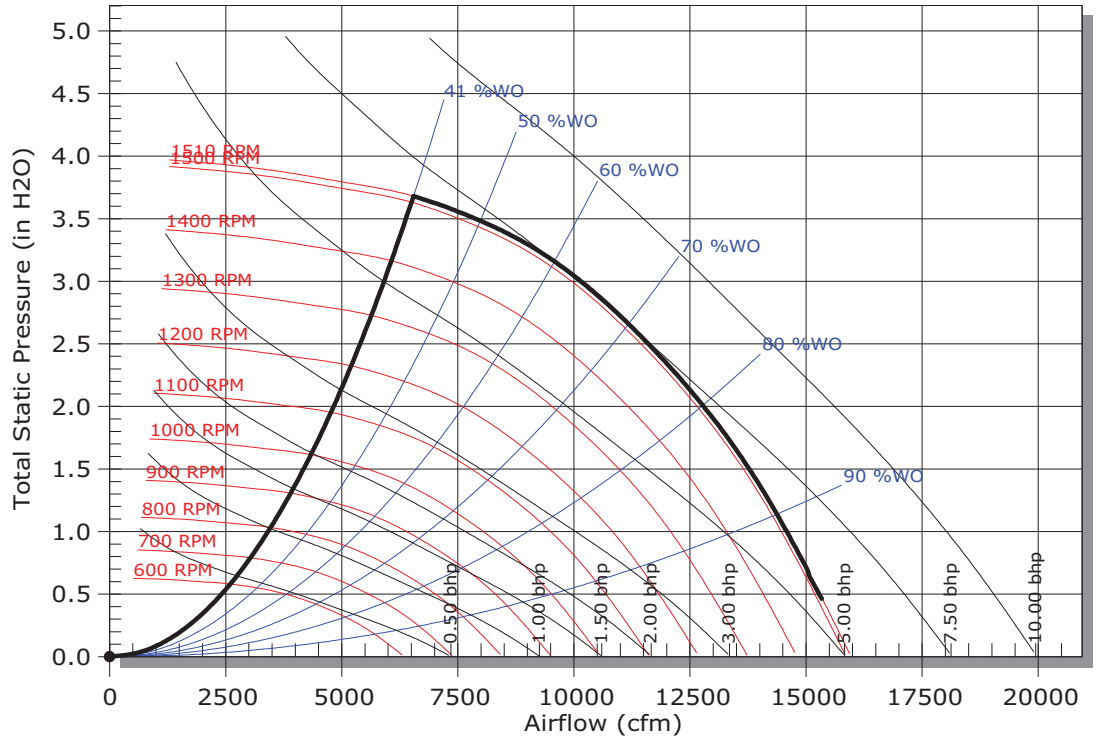


Figure 42. Size 25 208/230-460 volt DDP fan

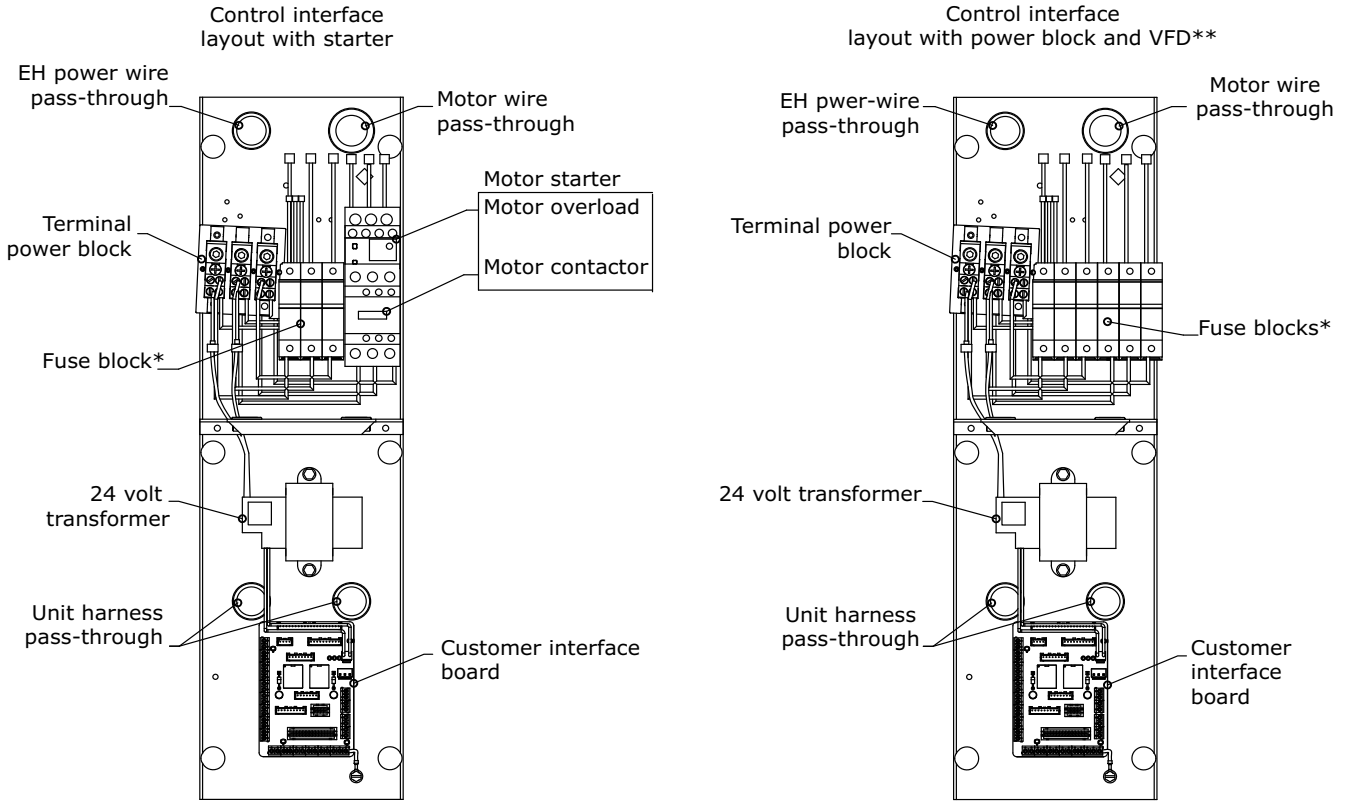


**Figure 43. Size 30 208/230-460 volt DDP fan**


# 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.

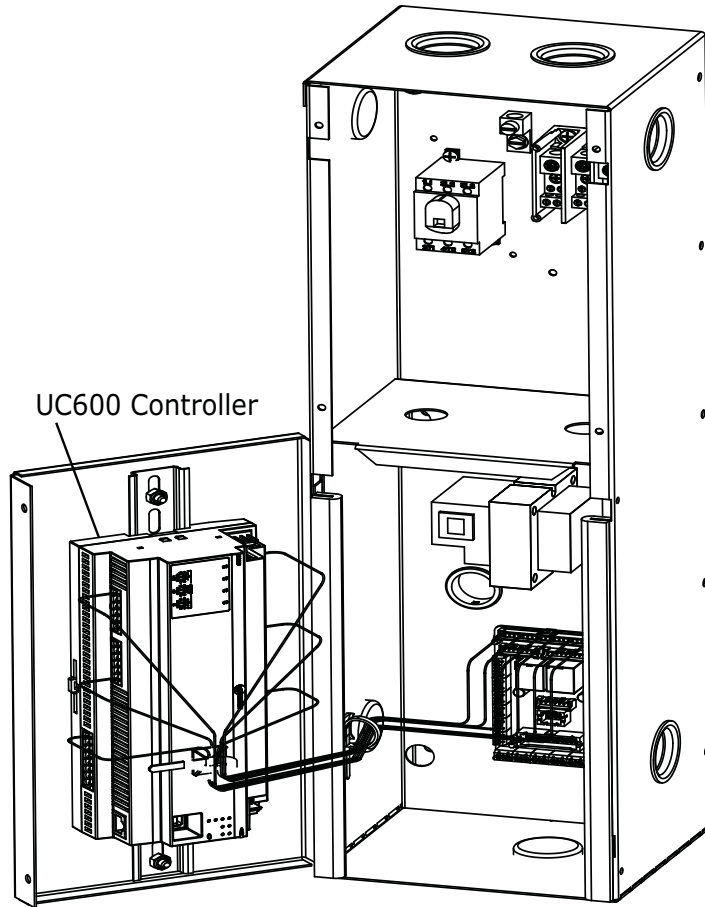
Figure 44. Control panel components



\*Fuse blocks only available for single-point power with return fan

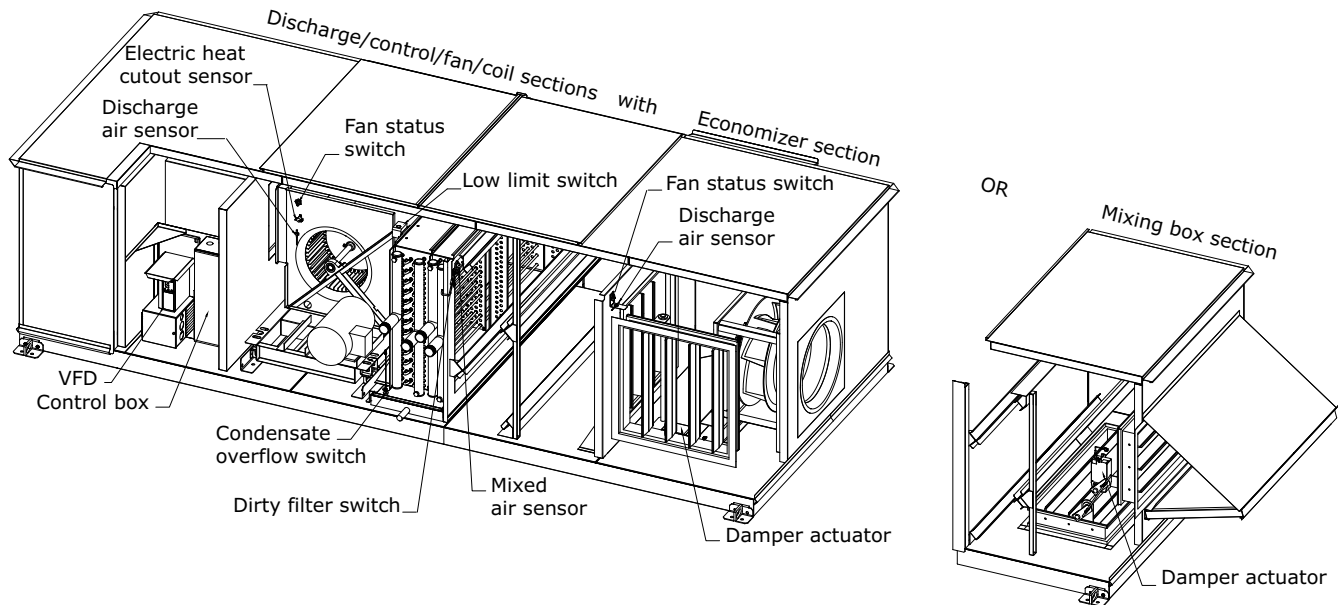
\*\*VFD located in separate enclosure

Figure 45. UC600 Controller



## Factory-Mounted and Wired End Devices

Figure 46. Factory-mounted and wired end devices for mixing box unit or economizer 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



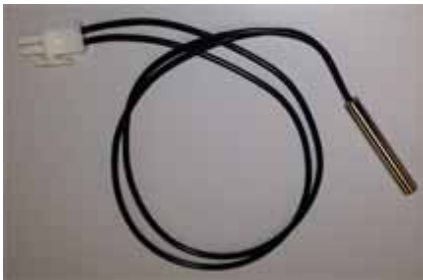
Differential pressure sensing switch, with diaphragm-operated contacts. Contacts have screw adjustment for accuracy. Pressure setting of 0.05 in. w.g. Part number X13240269.

### 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 0–10 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

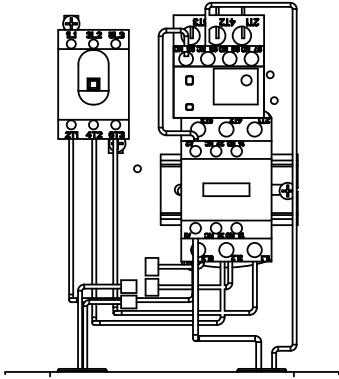
Thermistor-type sensors are provided by Trane as required for field-wiring. Factory-provided, ships loose for field mounting and wiring. Part number X13790861.



### 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 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.



### **Motorized Impeller**

Economizer offering incorporates back or bottom inlet motorized impellers. These fans are direct-drive plenum fans with backwards inclined, high efficiency welded-aluminum impellers. The electronically commutated motor (ECM) is available for 200V, 230V, or 460V line input and contains integrated power electronics minimizing wiring and additional electrical components required. The motorized impeller accepts 0-10VDC input for variable speed control.

### **Controller**



### **Tracer UC600 Controller**

The Tracer™ UC600 is a programmable BACnet® unit controller that is designed to work with the Tracer SC and third-party BACnet MS/TP systems. The UC600 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 7. Electric heat kW limits (min/max)

Voltage		208/3/60				230/3/60				460/3/60				575/3/60			
Unit Size	Min Airflow (CFM)	1 Stage	2 Stages	4 Stages	SSR	1 Stage	2 Stages	4 Stages	SSR	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	6/13	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	6/24	6/24	n/a	6/26	6/26	6/26	n/a	n/a
8	2800	7/28	7/28	n/a	7/32	7/32	7/32	n/a	7/34	7/32	7/32	n/a	7/34	7/34	7/34	n/a	n/a
10	3500	8/38	8/41	n/a	8/32	8/38	8/41	n/a	8/36	8/44	8/44	n/a	8/44	8/44	8/44	n/a	n/a
12	4200	10/50	10/50	18/50	10/32	10/53	10/53	20/53	10/36	10/53	10/53	41/50	10/53	10/53	10/53	50/53	n/a
14	4900	12/50	12/50	18/50	12/32	12/59	12/59	20/59	12/36	12/63	12/63	41/63	12/63	12/63	12/63	50/63	n/a
17	5950	14/50	14/50	18/50	14/32	14/59	14/59	20/59	14/36	14/75	14/75	41/75	14/71	14/75	14/75	50/75	n/a
21	7350	17/50	17/50	18/50	17/32	17/59	17/59	20/59	17/36	17/95	17/95	41/95	17/71	17/95	17/95	50/95	n/a
25	8750	20/47	20/47	20/47	20/32	20/56	20/56	20/56	20/36	20/95	20/95	41/95	20/71	20/95	20/95	50/95	n/a
30	10,500	20/41	20/41	20/41	20/32	20/50	20/50	20/50	20/36	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 8. Electric heat voltage ratings

Unit Voltage	Heater Voltage
208	208
230	240
460	480
575	600

**Useful formulas:**

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

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

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

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

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

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 [Table 9](#). 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 9. 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 10. Transformer full load current**

Description	Primary Voltage	Secondary Voltage	Volt Amps (VA)	Full Load Current
1T1 Transformer (Control) <sup>1</sup>	200	24	75	0.50
	230	24	75	0.43
	460	24	75	0.22
	575	24	75	0.17
Electric Heater Transformer (SSR)	208	24	75	0.48
	240	24	75	0.42
	480	24	75	0.21
	600	24	75	0.17

Note: <sup>1</sup>1T1 transformer present when control interface or UC600 is selected.

**Table 11. 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
K1 Relay	0.1
K2 Relay	0.1
Valve 1 Field-supplied	10
Valve 2 Field-supplied	10



## Electrical Data

### Motor Data

**Table 12. 3-phase 1800 RPM motor FLA (amps)**

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
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 13. Return fan motor amps**

Unit Size	208 V	230 V	460 V
3	4.3	3.9	2.5
6	4.3	3.9	2.5
8	8.5	7.7	3.7
10	8.5	7.7	3.7
12	8.5	7.7	3.7
14	8.8	8.0	4.0
17	13.5	12.2	6.4
21	8.5	7.7	3.7
25	8.5	7.7	3.7
30	8.8	8.0	4.0

Note: Amperage listed is per motor.

**Table 14. 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 15. Trane TR 150 dual fan VFD inverter input current (amps)**

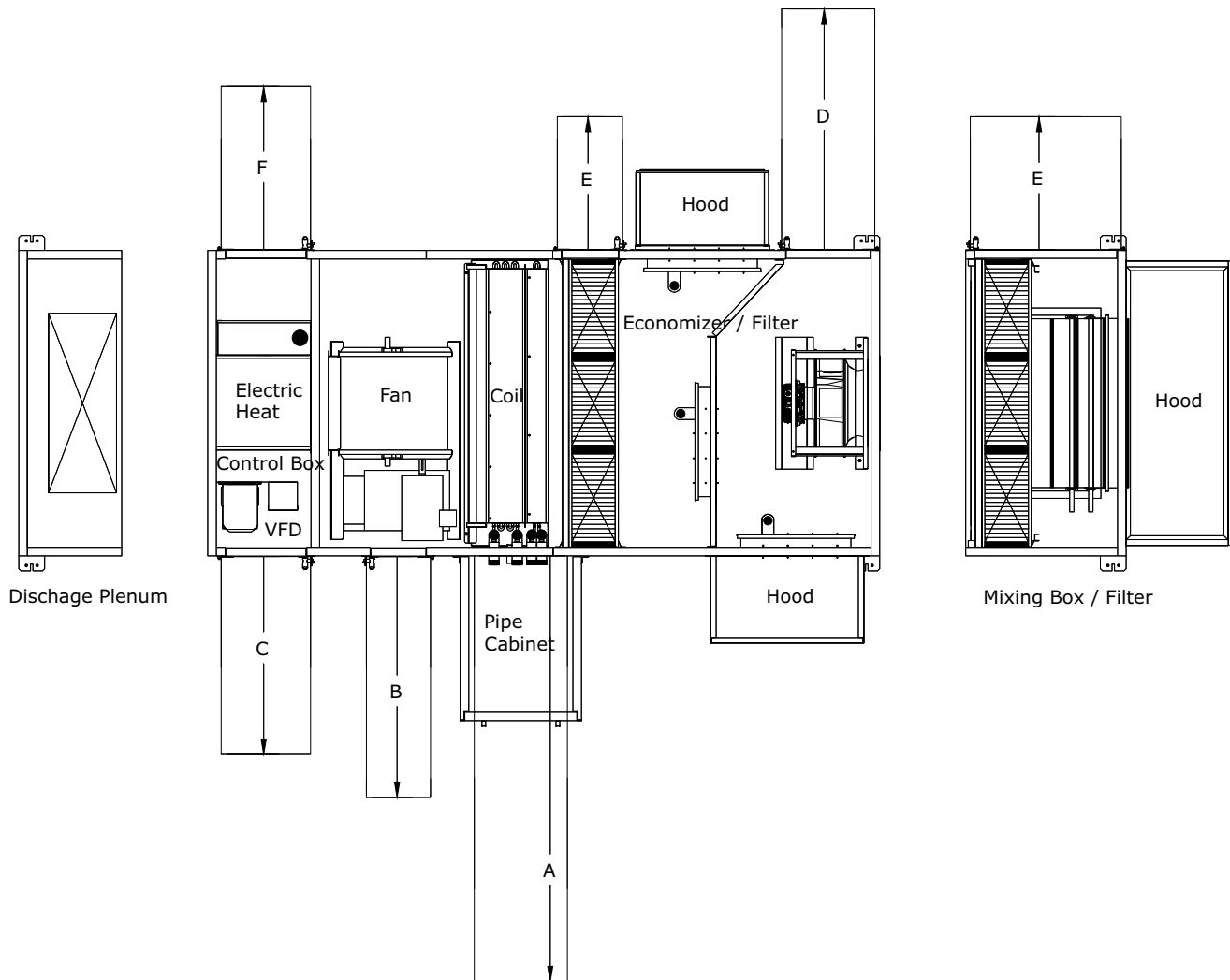
HP	200 V	230 V	460 V	575 V
2	----	----	----	----
3	22.00	22.00	9.66	9.00
5	36.80	36.80	14.00	11.00
7.5	55.20	55.20	21.00	17.48
10	59.40	59.40	27.00	22.00
15	88.00	88.00	40.00	34.00

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

# Dimensions and Weights

## Service Clearances

Figure 47. Service clearances



## Dimensions and Weights

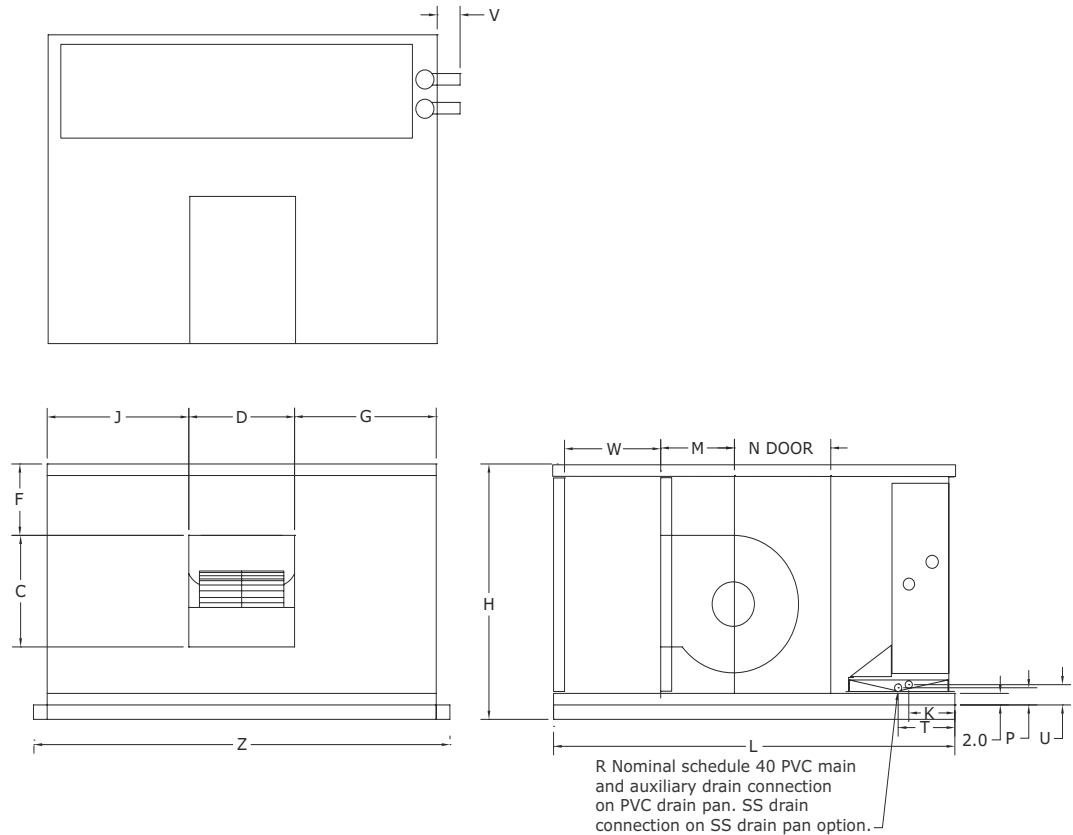
**Table 16. Service clearance dimensions (inches)**

Component	UNIT SIZE									
	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
D Return Fan Door	48.00	48.00	48.00	51.00	54.00	58.00	61.00	61.00	66.00	66.00
E Filter (mixing box, opposite motor side)	40.00	44.00	42.00	42.00	40.00	45.00	45.00	45.00	51.00	51.00
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 48. Horizontal unit**





**Table 17. Horizontal unit dimensions (inches) and weight (pounds)**

Size	Height	Width	Length	Total Weight with FC Fan	Total Weight with DDP Fan
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

**Note:** Weights include cabinet, supply fan/coil and average drive.

**Table 18. Horizontal unit dimensions (inches)**

Size	C	D	F	G	J	K (LH)	K (RH)	M	N	P	S	T	U	R
3	10.60	9.40	3.60	12.30	12.30	7.50	12.50	13.80	10.20	2.70	6.30	10.0	3.40	0.75
6	13.80	12.50	3.80	17.30	17.30	7.50	12.50	13.80	13.20	2.70	4.90	10.00	3.40	0.75
8	13.80	15.90	11.00	20.30	14.80			13.80	10.60	2.80	4.00	10.00		1.00
10	16.20	18.90	6.10	22.10	22.10			16.10	10.60	2.80	3.35	10.00		1.00
12	19.20	19.20	3.50	25.90	25.90			13.80	12.60	2.80	2.81	10.00		1.00
14	19.20	22.20	7.30	24.40	24.40			13.80	13.10	2.80	2.88	10.00		1.00
17	25.10	20.10	3.20	29.50	29.50			13.80	17.10	2.80	2.63	10.00		1.00
21	25.10	25.10	9.40	27.00	27.00			13.80	18.10	2.80	2.63	10.00		1.00
25	25.50	23.50	16.30	28.80	28.80			13.80	19.20	2.80	3.43	10.00		1.25
30	28.50	26.50	11.90	33.80	33.80			20.40	19.20	2.80	4.54	10.00		1.25

**Table 19. Dimension V (inches)**

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

## Electric Heat

Figure 49. Electric heat

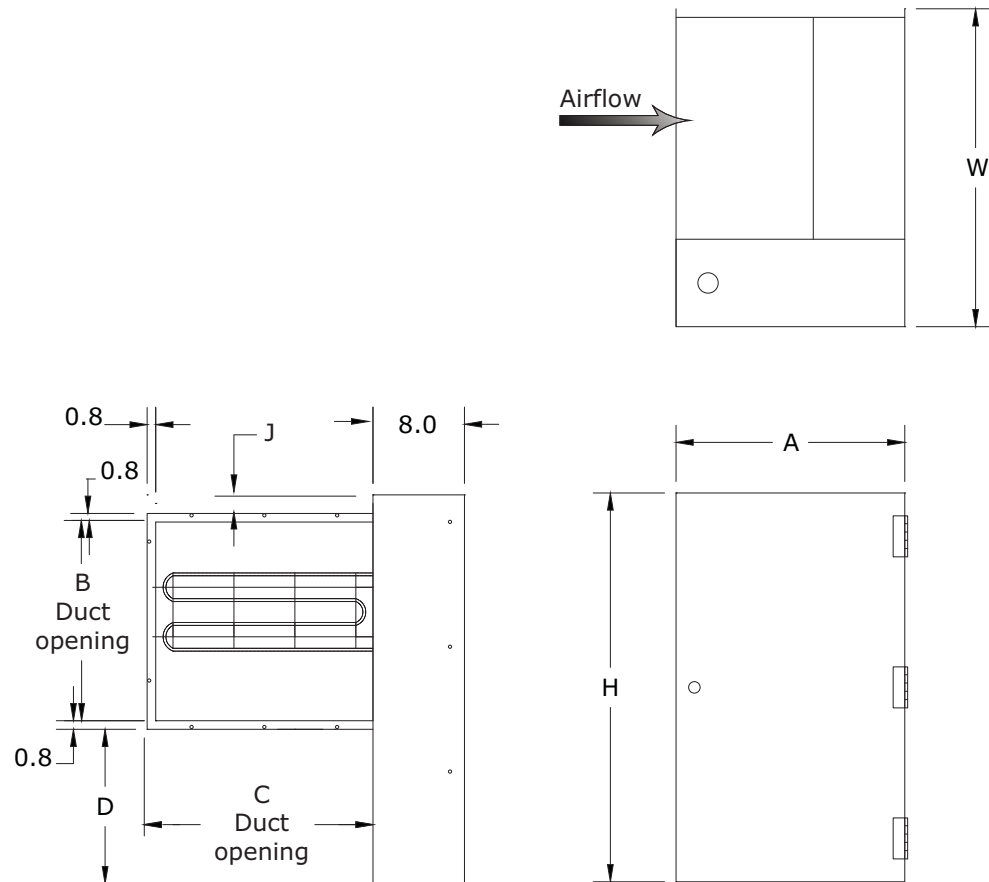


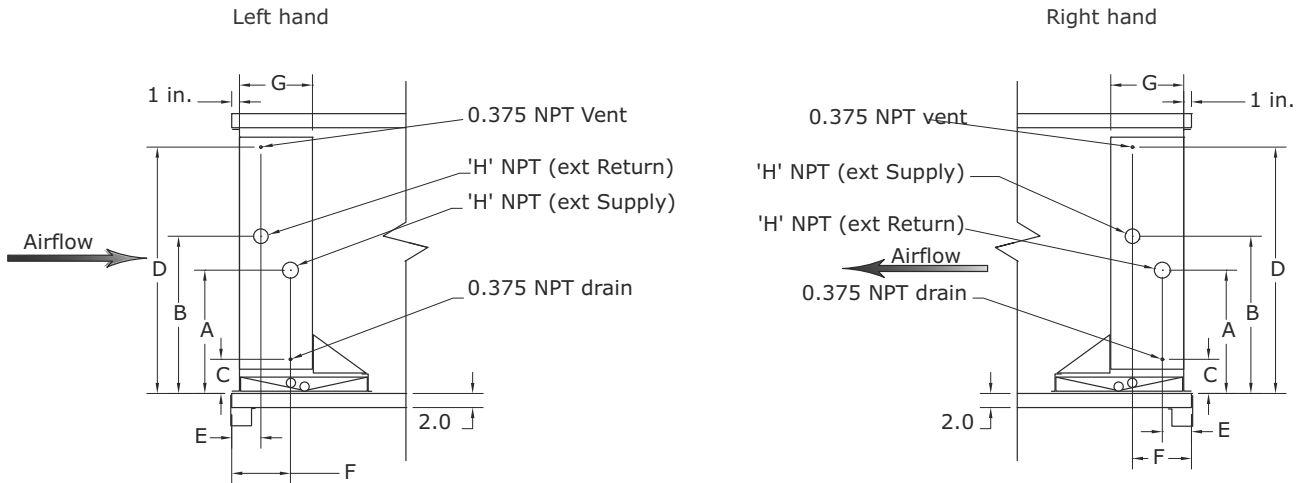
Table 20. Electric heat dimensions (inches) and weight (pounds)

Unit size	H	W	A	B	C	D	J	Weight
3	23.00	18.00	23.50	10.60	10.10	10.37	1.50	34.00
6	24.00	21.00	23.50	13.80	13.10	8.69	n/a	38.00
8	24.70	24.50	23.50	13.50	15.80	8.04	1.60	44.00
10	29.00	27.50	23.50	16.00	18.80	10.50	1.00	62.00
12	34.00	27.80	23.50	19.00	19.00	13.50	n/a	66.00
14	34.00	30.80	23.50	19.00	22.00	13.50	n/a	69.00
17	34.00	28.60	23.50	24.90	19.90	7.60	n/a	73.00
21	34.00	33.60	23.50	24.90	24.90	7.60	n/a	77.00
25	34.00	32.00	23.50	25.30	23.30	7.20	n/a	79.00
30	34.00	35.10	23.50	28.30	26.40	4.20	n/a	82.00

# Coils

## Hydronic Coils

Figure 50. 1/2-inch Hydronic Coils





## Dimensions and Weights

Table 21. 1/2-inch Hydronic (water) coil dimensions

	Coil 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	20.50	10.19	13.31	3.63	19.88	2.69	4.63	5.38	1.50
	6	24.63	13.31	16.44	4.25	25.50	12.69	15.81	3.63	24.88	2.69	4.63	5.38	1.50
	8,10	29.63	16.31	19.44	4.75	31.00	15.69	18.81	4.13	30.38	2.69	4.63	5.38	1.50
	12	32.13	17.56	20.69	4.75	33.50	16.94	20.06	4.13	32.88	2.44	4.88	5.38	2.00
	14,17	37.13	20.06	23.19	4.75	38.50	19.44	22.56	4.13	37.88	2.44	4.88	5.38	2.00
	21	45.80	23.81	26.94	4.75	46.00	24.44	27.56	5.38	46.63	2.44	4.88	5.38	2.00
	25,30	52.13	27.56	30.69	4.75	53.50	26.94	30.06	4.13	53.50	3.00	5.50	6.50	2.00
2-row coils	3	19.63	9.88	13.00	3.63	19.25	11.13	14.25	4.88	20.50	2.81	4.56	5.38	1.50
	6	24.63	13.00	16.13	4.25	24.88	13.00	16.13	4.25	24.88	2.81	4.56	5.38	1.50
	8,10	29.63	16.00	19.13	4.75	30.38	16.00	19.13	4.75	30.38	2.81	4.56	5.38	1.50
	12	32.13	17.25	20.38	4.75	32.88	17.25	20.38	4.75	32.88	2.56	4.81	5.38	2.00
	14,17	37.13	19.75	22.88	4.75	37.88	19.75	23.00	4.75	37.88	2.56	4.81	5.38	2.00
	21	45.80	24.13	27.25	4.75	46.63	24.13	27.25	4.75	46.63	2.56	4.81	5.38	2.00
	25,30	52.13	27.25	30.38	4.75	52.88	27.25	30.38	4.75	52.88	2.88	5.63	6.50	2.50
4-row coils	3	19.63	9.88	13.00	3.63	19.25	11.13	14.25	4.88	20.50	4.94	8.19	9.00	1.50
	6	24.63	13.00	16.13	4.25	24.88	13.00	16.13	4.25	24.88	4.94	8.19	9.00	1.50
	8,10	29.63	16.00	19.13	4.75	30.38	16.00	19.13	4.75	30.38	4.94	8.19	9.00	1.50
	12	32.13	17.25	20.38	4.75	32.88	17.25	20.38	4.75	32.88	4.94	8.19	9.00	2.00
	14,17	37.13	19.75	22.88	4.75	37.88	19.75	22.88	4.75	37.88	4.94	8.19	9.00	2.00
	21	45.80	24.13	27.25	4.75	46.63	24.13	27.25	4.75	46.63	4.94	8.19	9.00	2.50
	25,30	52.13	27.25	30.38	4.75	52.88	27.25	30.38	4.75	52.88	4.94	8.19	9.00	2.50
6-row coils	3	19.63	9.88	13.00	3.63	19.25	11.13	14.25	4.88	20.50	2.81	8.19	9.00	1.50
	6	24.63	13.00	16.13	4.25	24.88	13.00	16.13	4.25	24.88	2.81	8.19	9.00	1.50
	8,10	29.63	16.00	19.13	4.75	30.38	16.00	19.13	4.75	30.38	2.81	8.19	9.00	1.50
	12	32.13	17.25	20.38	4.75	32.88	17.25	20.38	4.75	32.88	2.81	8.19	9.00	2.00
	14,17	37.13	19.75	22.88	4.75	37.88	19.75	22.88	4.75	37.88	2.81	8.19	9.00	2.00
	21	45.80	24.13	27.25	4.75	46.63	24.13	27.25	4.75	46.63	2.81	8.19	9.00	2.50
	25,30	52.13	27.25	30.38	4.75	52.88	27.25	30.38	4.75	52.88	2.81	8.19	9.00	2.50
8-row coils	3	19.63	9.88	13.00	3.63	19.25	11.13	14.25	4.88	20.50	2.81	10.38	11.19	1.50
	6	24.63	13.00	16.13	4.25	24.88	13.00	16.13	4.25	24.88	2.81	10.38	11.19	1.50
	8,10	29.63	16.00	19.13	4.75	30.38	16.00	19.13	4.75	30.38	2.81	10.38	11.19	1.50
	12	32.13	17.25	20.38	4.75	32.88	17.25	20.38	4.75	32.88	2.81	10.38	11.19	2.00
	14,17	37.13	19.75	22.88	4.75	37.88	19.75	22.88	4.75	37.88	2.81	10.38	11.19	2.00
	21	45.80	24.13	27.25	4.75	46.63	24.13	27.25	4.75	46.63	2.81	10.38	11.19	2.50
	25,30	52.13	27.25	30.38	4.75	52.88	27.25	30.38	4.75	52.88	2.81	10.38	11.19	2.50

## Steam Coils

Figure 51. 1/2-inch Steam coils

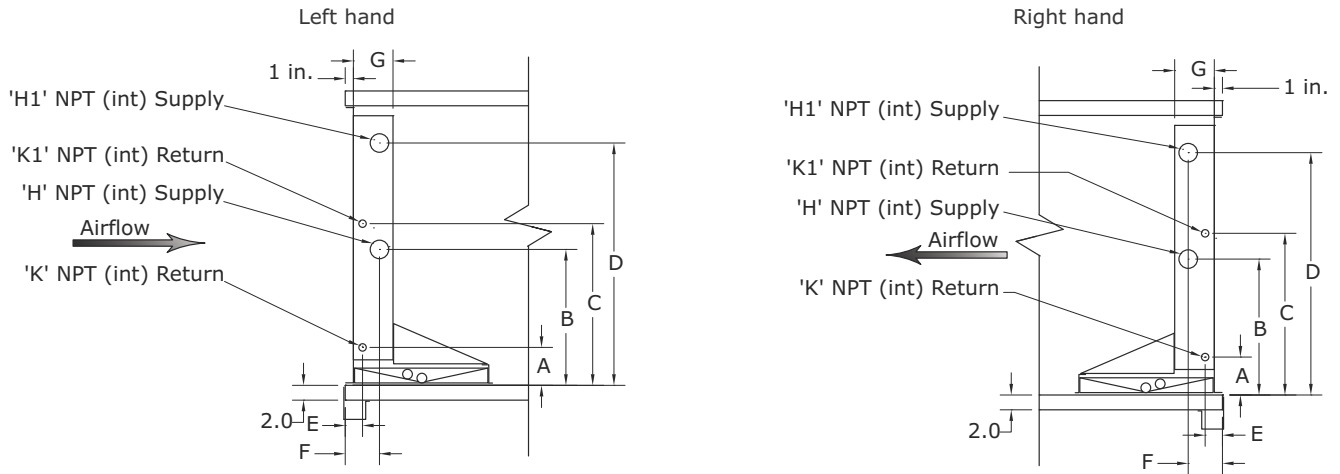


Table 22. 1/2-inch Steam coil dimensions

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

## Dimensions and Weights

### DX Coils

Figure 52. 1/2-inch DX single circuit coils size 3-10

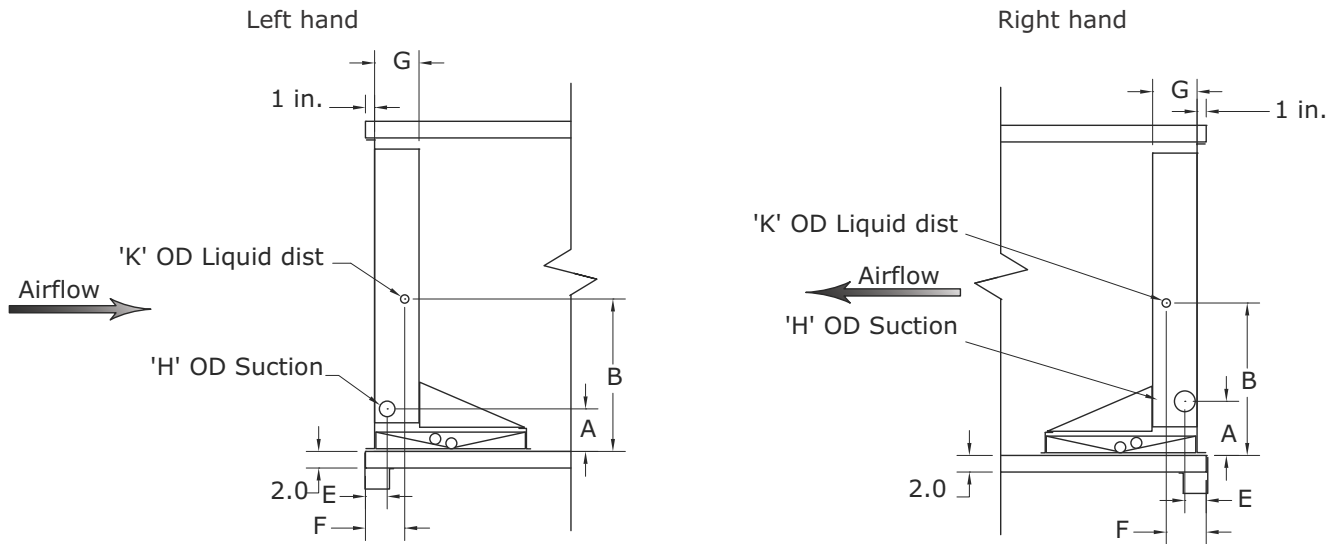
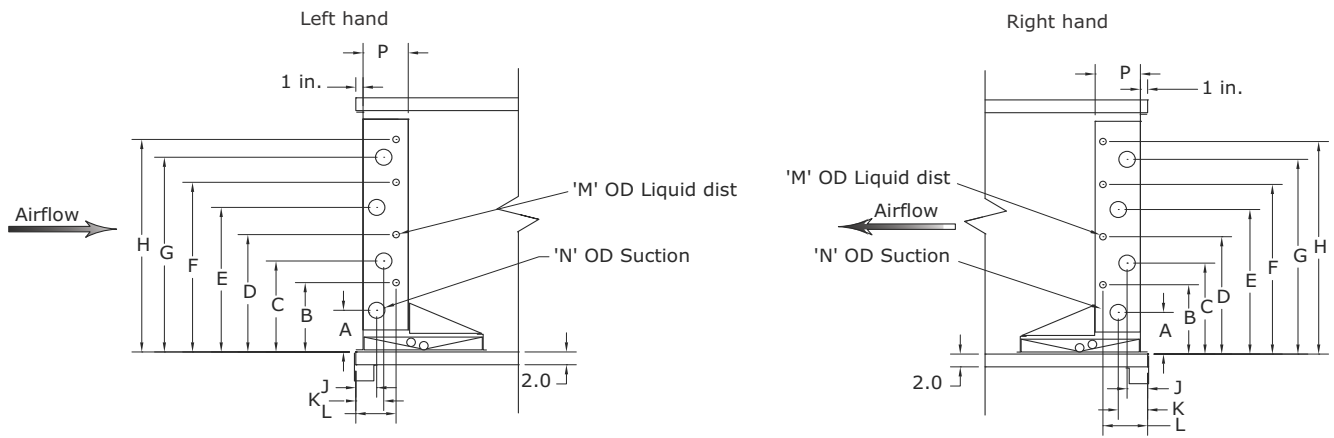


Table 23. 1/2-inch DX single circuit coil dimensions

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 53. 1/2-inch DX horizontal face split coils





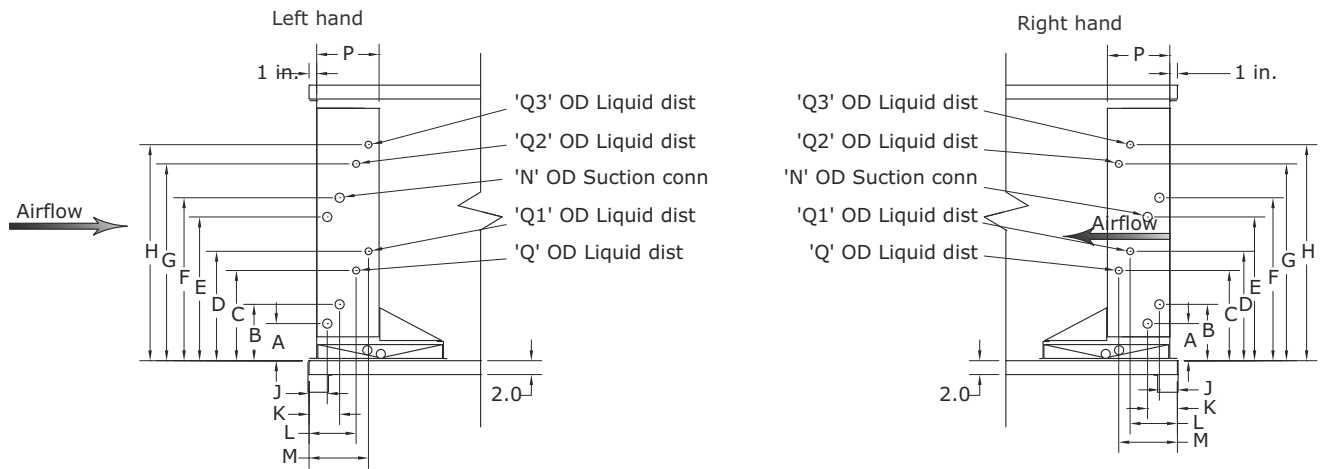
## Dimensions and Weights

Table 24. 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				N	M	P
			B	D	F	H	B	D	F	H			
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 54. 1/2-inch DX intertwined coils size 8-30





## Dimensions and Weights

Table 25. 1/2-inch DX intertwined coil dimensions

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

## Mixing Box/Filter Section

Figure 55. Mixing box/filter section

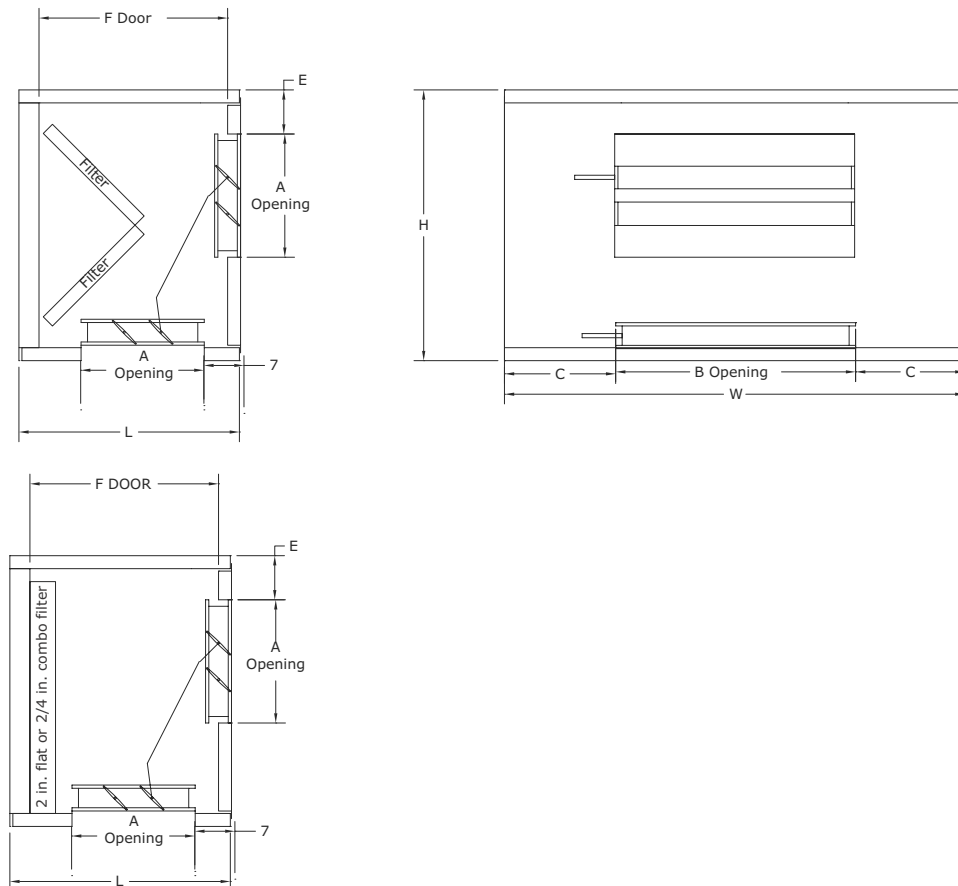


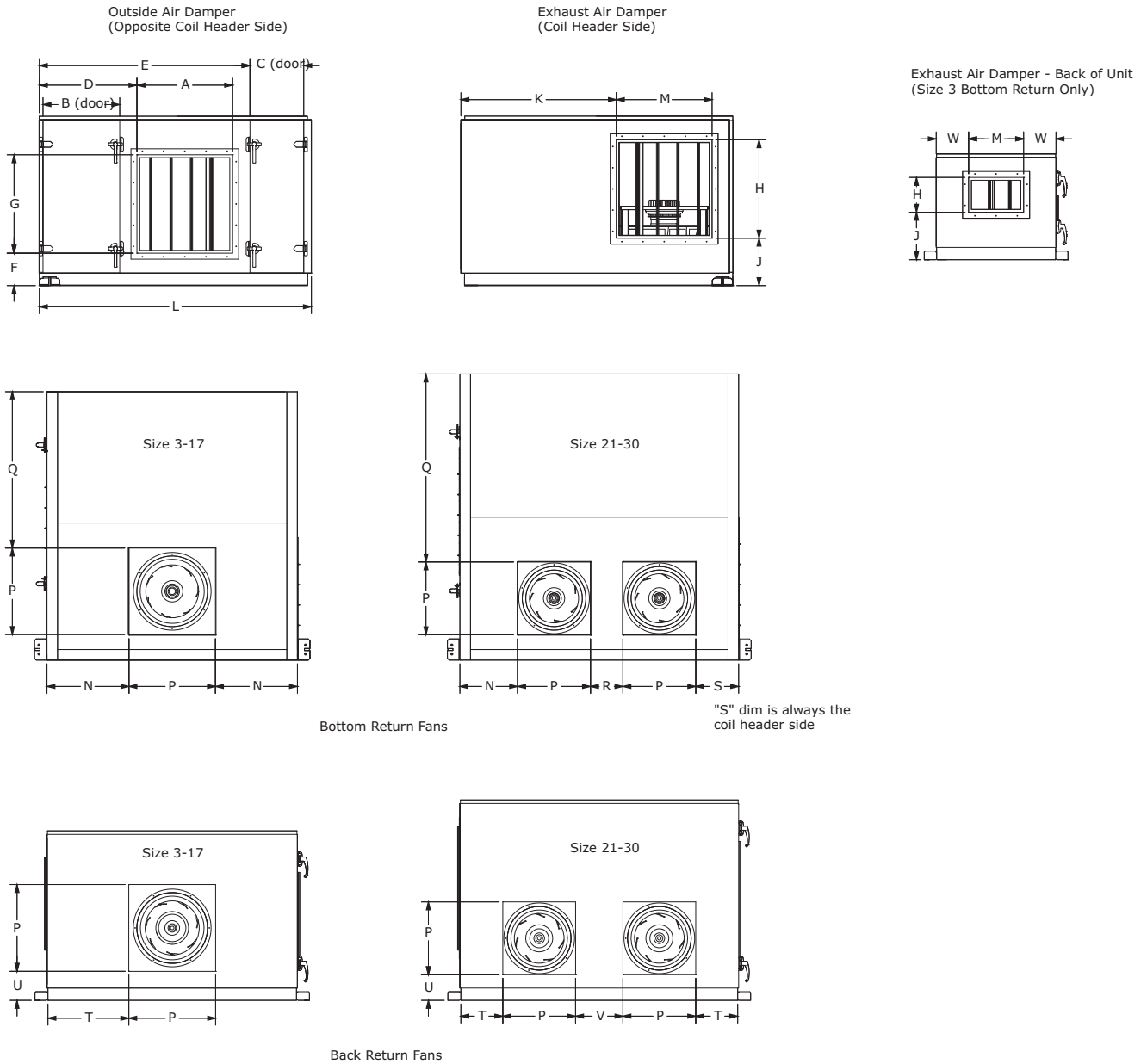
Table 26. Mixing box section with filter weight (lbs) and dimensions (inches)

Size	H	W	L	A	B	C	E	F	Weight <sup>1</sup>
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

Note: <sup>1</sup>Weight includes heaviest filter.

# Economizer/Filter Section

Figure 56. Economizer section



**Table 27. Economizer section dimensions (inches) and weights (pounds)**

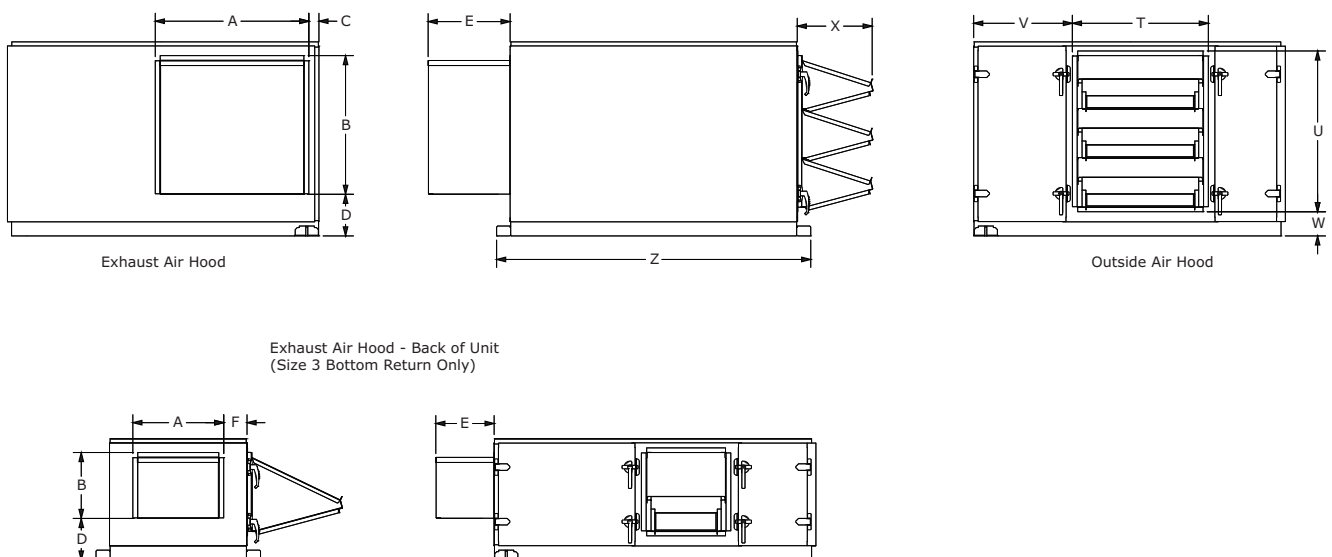
Size	L	A	B	C	D	E	F	G	H	J	K
3	78.50	16.00	32.00	15.30	39.50	61.25	9.00	10.30	10.30	13.30	46.00
6	72.50	21.70	17.00	18.80	24.50	51.75	9.00	15.30	15.30	13.30	45.00
8	73.50	21.70	20.00	16.50	27.50	55.00	9.00	20.80	20.80	13.30	46.00
10	77.00	27.50	18.00	16.50	25.50	58.50	9.00	20.80	20.80	13.30	43.80
12	76.00	27.50	18.00	14.80	25.50	59.25	9.00	24.30	24.30	13.30	42.80
14	76.00	27.50	20.00	13.50	27.50	60.50	9.00	28.30	28.30	13.30	42.80
17	88.00	31.20	23.50	18.00	31.00	68.00	9.00	30.80	30.80	13.30	51.00
21	81.00	33.20	18.00	14.80	25.50	64.25	9.00	37.00	37.00	13.30	42.00
25	84.50	33.20	18.00	18.00	25.50	64.50	9.00	43.30	43.30	13.30	45.50
30	92.00	39.00	20.00	18.00	27.50	72.00	9.00	43.30	43.30	13.30	47.30

Size	M	N	P	Q	R	S	T	U	V	W	Weight <sup>1</sup>
3	16.00	8.00	18.00	48.50	n/a	n/a	8.00	7.00	n/a	9.00	532
6	21.70	14.50	18.00	47.50	n/a	n/a	14.50	7.00	n/a	n/a	661
8	21.70	15.00	20.90	45.50	n/a	n/a	15.00	7.10	n/a	n/a	795
10	27.50	21.00	20.90	49.00	n/a	n/a	21.00	7.10	n/a	n/a	934
12	27.50	25.00	20.90	48.00	n/a	n/a	25.00	7.10	n/a	n/a	1022
14	27.50	23.00	24.90	44.10	n/a	n/a	23.00	8.10	n/a	n/a	1106
17	31.20	26.20	26.60	54.40	n/a	n/a	26.20	7.70	n/a	n/a	1335
21	33.20	16.20	20.90	53.00	8.90	12.00	12.00	7.10	13.10	n/a	1408
25	33.20	18.30	20.90	56.50	8.90	11.90	13.00	7.10	13.10	n/a	1531
30	39.00	21.60	24.90	60.10	10.80	11.90	14.00	8.10	16.10	n/a	1818

Note: <sup>1</sup>Weight includes heaviest filter.

**Figure 57. Economizer hoods**





## Dimensions and Weights

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**Table 28. Economizer outside air hood dimensions (inches)**

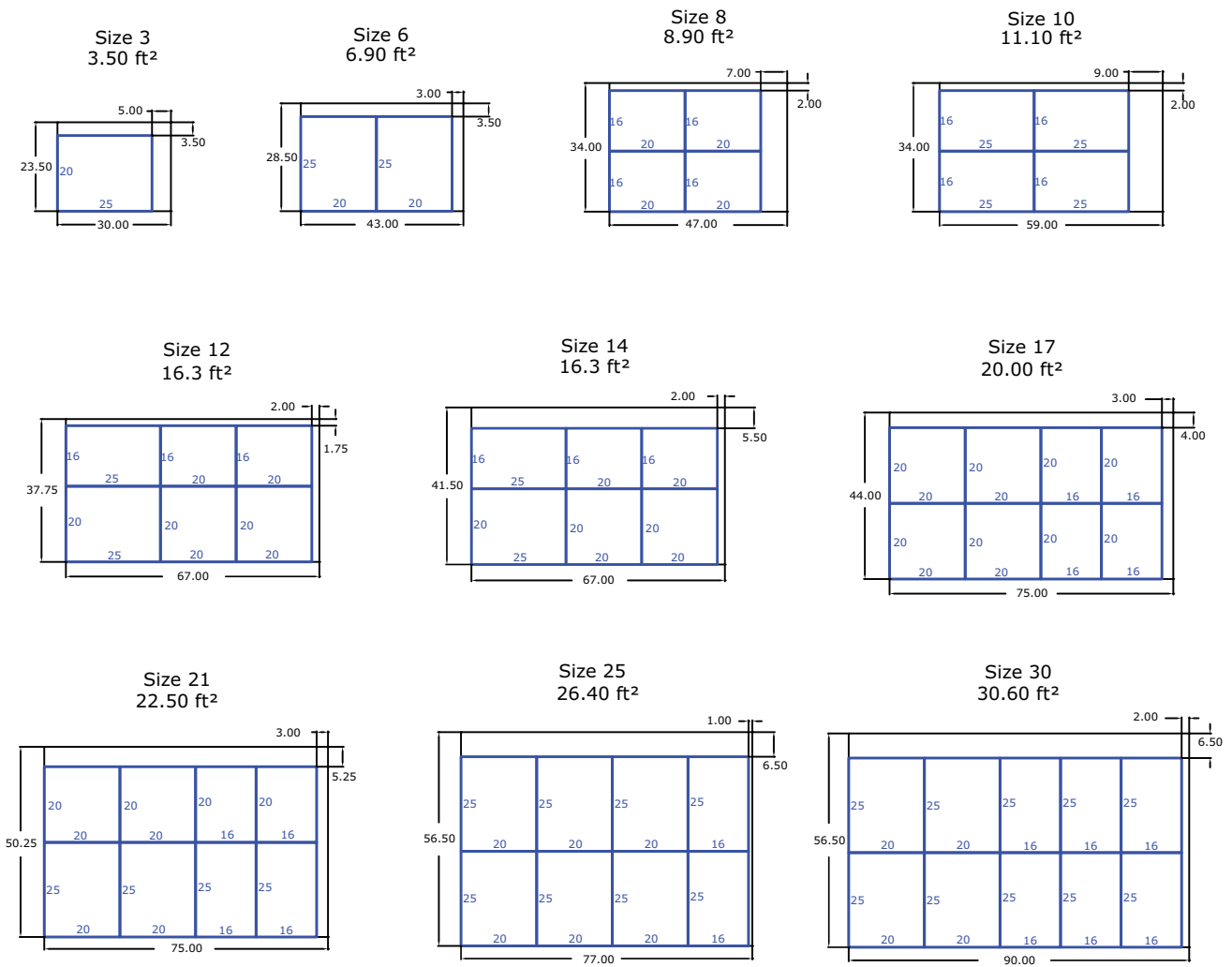
Size	T	U	V	W	X	Z	# of Hood Openings
3	22.1	21.8	36.4	6.0	23.8	41.3	1
6	27.8	26.8	21.4	6.0	18.5	54.3	2
8	27.8	32.3	24.4	6.0	21.4	58.3	2
10	33.6	32.3	22.4	6.0	21.4	70.3	2
12	33.6	36.1	22.4	6.0	24.0	78.3	2
14	33.6	39.8	24.4	6.0	19.0	78.3	3
17	37.3	42.4	27.9	5.9	20.4	86.3	3
21	39.3	48.6	22.4	6.0	23.3	86.3	3
25	39.3	54.9	22.4	5.9	27.2	88.3	3
30	45.1	54.9	24.4	5.9	27.9	101.3	3

**Table 29. Economizer exhaust hood dimensions (inches)**

Size	A	B	C	D	E	F
3	22.5	16.3	13.3	10.4	15.3	5.8
6	28.2	21.3	2.5	10.4	17.5	n/a
8	28.2	26.8	2.5	10.4	19.7	n/a
10	34.0	26.8	2.5	10.4	19.7	n/a
12	35.0	30.3	2.5	10.4	23.0	n/a
14	38.0	34.3	2.5	10.4	21.2	n/a
17	41.2	36.8	2.5	10.4	24.7	n/a
21	43.2	43.0	2.5	10.4	27.8	n/a
25	39.7	49.3	2.5	10.4	35.2	n/a
30	45.5	49.3	2.5	10.4	35.2	n/a

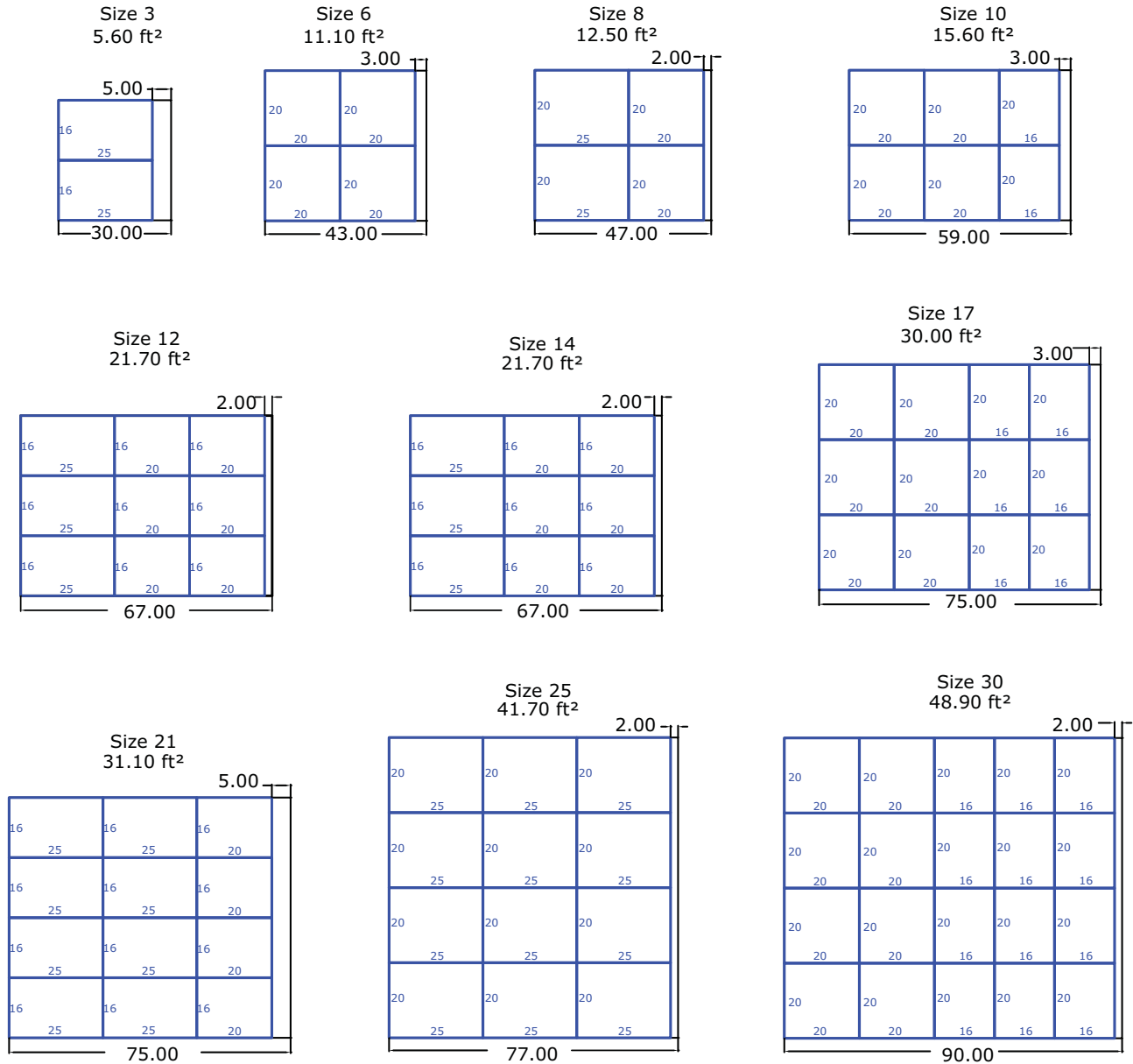
## Filter Placement

Figure 58. Flat filter arrangement



## Dimensions and Weights

Figure 59. Angle filter arrangement





## Fans

Table 30. Fan weights (pounds)

Unit Size	Supply fan - FC Fan <sup>1</sup>	Supply fan - DDP Fan <sup>1</sup>	Return fan - DDP Fan with EC motor <sup>2</sup>
3	30.71	60.63	57.00
6	47.09	96.03	57.00
8	69.21	110.09	98.00
10	83.02	149.12	98.00
12	97.90	158.25	98.00
14	110.46	164.44	125.00
17	133.09	172.89	160.00
21	155.81	290.14	196.00
25	168.83	304.07	196.00
30	208.34	317.00	250.00

Note: <sup>1</sup>Add motor weight to get total weight of the supply fan. <sup>2</sup>Includes the weight of fan and motor for the return fan.

## Motors

Table 31. Supply fan motor weights (pounds)

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



## Dimensions and Weights

Table 32. VFD Weights (pounds) and Line Input

HP	Type	FLA	RPM	VFD (single Fan)		VFD (dual Fan)	
				Line Input	Weight	Line Input	Weight
1	208 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	208 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		
2	208 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	208 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	208 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	208 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	208 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	208 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 CLCH-SVX009\*-EN Installation, Operation, and Maintenance manual for UCCA air handlers. The units are also to be installed in strict accordance with the specifications.

All units will be shipped with an integral base frame designed for safe installation. Unit base shall be designed to allow the unit to be either pier-mounted or rest on a roof curb when field-installed. Units will ship in a single piece with four lifting lugs for proper lift and installation. Units are shipped with all openings covered to protect unit interior from in-transit debris.

Installing contractor is responsible for long-term storage in accordance with the Installation, Operation and Maintenance manual (CLCH-SVX009\*-EN).

## Certification

Unit shall be 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 two-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 four inches w.g. positive or negative static pressure. The unit panels shall not exceed 0.005 inch deflection per inch of panel span at four 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 ft<sup>2</sup>\*h\*F/Btu throughout the entire unit. 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

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.



## Mechanical Specifications

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### 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 two-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.

### Pipe Cabinet

Piping cabinet shall be supplied by the manufacturer (factory-assembled) and shall be of the same construction as the main unit casing. Piping cabinet shall be mounted external to the unit and shipped separate to be field-installed.

## 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.

### Fan Isolation

All fans, including 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 for FC fans 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 of the supply fan in a VAV application.

## Supply Fan Motors

Supply fan motors are open drip-proof (ODP) with permanently sealed ball bearings. Return fan motor is sealed IP 54 rated. Motor options include:

- 208 volt, 3-phase, 60 Hz
- 230 volt, 3-phase, 60 Hz
- 460 volt, 3-phase, 60 Hz
- 575 volt, 3-phase, 60 Hz (supply fans only)

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-410A 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.



## Mechanical Specifications

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The coil casing may be galvanized or stainless steel. Coils have round, seamless, copper pipe liquid lines and suction headers with male 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 1/4-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 are 300 psig with R-22 and 480 psig with R-410A. 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. Disconnect must be field-provided and installed external to the unit.

## Control Options

- Step controller (0-10VDC)
  - The electric heater shall be factory-wired to an electronic step controller relay bank. This type of control may be connected to a 0-10VDC signal from a standalone thermostat or building automation system, which is converted to stages of heat. The heater shall be available with up to four electric heat stages.
- SSR-full modulating control (0-10VDC)
  - The electric heater shall be factory-wired to accommodate SSR-full modulating control. The SSR control can receive a 0-10VDC signal from a standalone thermostat or building automation system providing full modulating control of the heater.

## Filters

The unit is available with either a mixing box/filter section or an economizer/filter section. All filters are standard sizes. Available filters are:

- Two-inch, MERV 8 or MERV 13 flat filters
- Two-inch, MERV 8 or MERV 13 angled filters
- Two-inch, MERV 8/Four-inch MERV 11 combination filter
- Two-inch, MERV 8/Four-inch MERV 13 combination filter
- Two-inch, MERV 13/Four-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 three cfm/ft<sup>2</sup> at one-inch w.g. and eight cfm/ft<sup>2</sup> at four-inch w.g. Dampers are double-skin airfoil design or equivalent. Damper blades and frames are galvanized steel. The damper has a properly sized drive for use with an optional factory-mounted actuator.

Available filters 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 section has an access door on the drive side.

## Economizer with Return Fan Section

A return fan economizer section is available containing the following components:

- Return fan - the fan assembly shall be a nine-blade fan, single width, single inlet, direct-direct plenum fan with backward inclined, 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 external 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. Fans shall be arranged for bottom or back inlet. Motor contains integrated PID controller and accepts 0-10VDC input for variable speed control. Signal is wired back to the UC600 controller or terminal strip.
- Dampers - damper arrangement in the economizer section allows for exhaust air out of the unit, return air through the air, and outside air intake into the unit. The dampers are 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 three cfm/ft<sup>2</sup> at one-inch w.g. and eight cfm/ft<sup>2</sup> at four inches w.g. Dampers are double-skin airfoil design or equivalent. Damper blades and frames are galvanized steel. The damper has a properly sized drive for use with an optional factory-mounted actuator.



## Mechanical Specifications

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- Filters - The economizer section is available the following filter options:
  - Two-inch, MERV 8 or MERV 13 flat filters
  - Two-inch, MERV 8 or MERV 13 angled filters
  - Two-inch, MERV 8/Four-inch MERV 11 combination filter
  - Two-inch, MERV 8/Four-inch MERV 13 combination filter
  - Two-inch, MERV 13/Four-inch MERV 13 combination filter

## Control Interface

A control interface is available that includes:

- Fan motor disconnect switch
- Fused 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
- Return air sensor

## UC600 Controller

An optional factory installed Tracer UC600 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 UC600 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 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 w/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.

# Notes





Trane optimizes the performance of homes and buildings around the world. A business of Ingersoll Rand, the leader in creating and sustaining safe, comfortable and energy efficient environments, Trane offers a broad portfolio of advanced controls and HVAC systems, comprehensive building services, and parts. For more information, visit [www.Trane.com](http://www.Trane.com).

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