



Blower Coil Air Handler

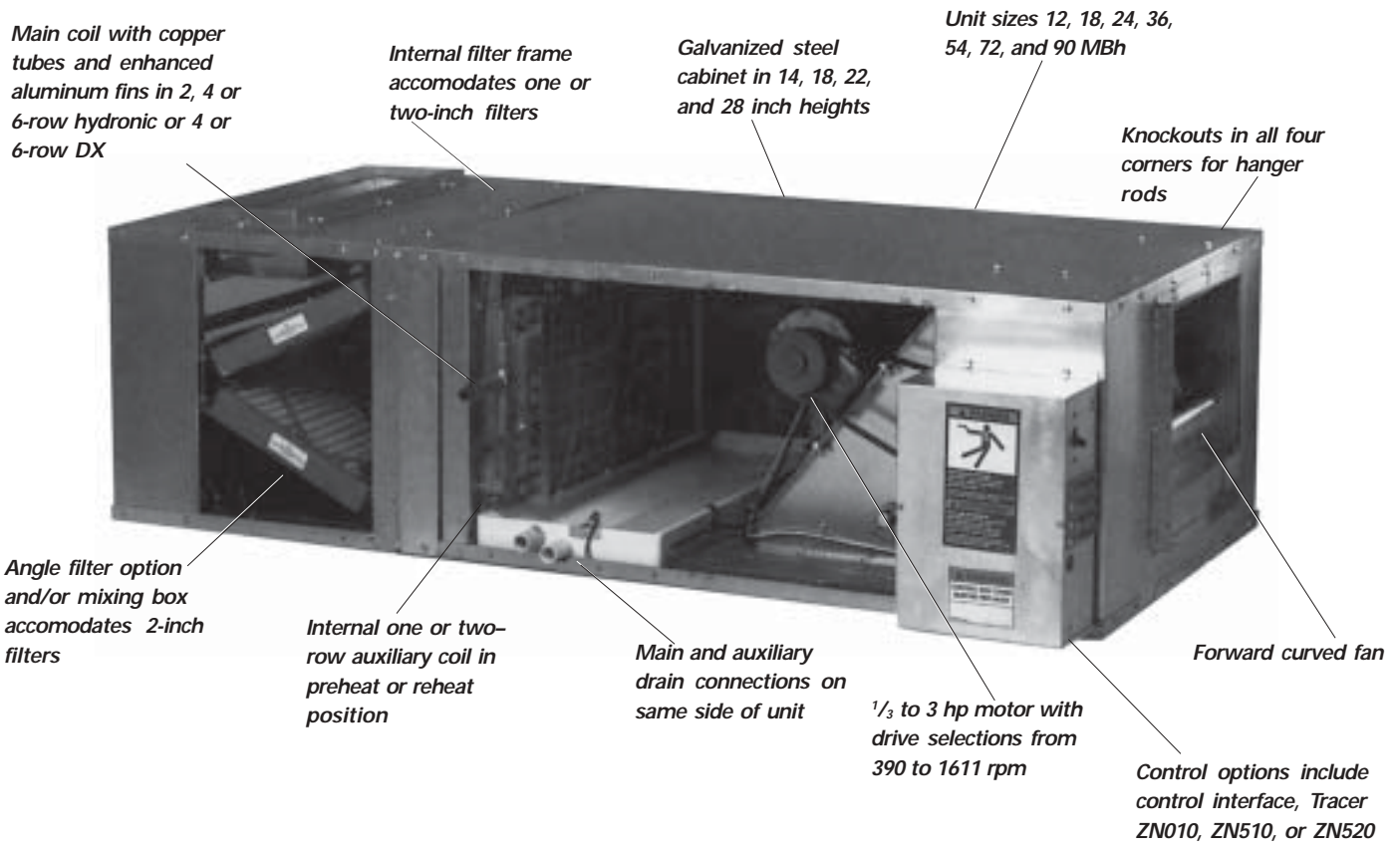
Air Terminal Devices
400 to 3000 cfm





Introduction

Trane Blower Coils — Factory Packaged How You Need It — When You Need It



Contents

Introduction.....	2
Features and Benefits	4
Application Considerations.....	8
Selection Procedure.....	11
Model Number Description	12
General Data	14
Performance Data.....	16
Airside Pressure Drop	16
Waterside Pressure Drop	18
Fan Curves	27
Cooling Capacities.....	37
Heating Capacities	45
Controls	50
Electrical Data	59
Dimensions and Weights	62
Mechanical Specifications	69



Features and Benefits

Factory Packaged – What You Need – When You Need It

The Trane blower coil air handler, model BCHC/BCVC, accommodates a variety of applications while providing a low cost method of air conditioning and/or heating buildings. These compact, low profile units can fit in small spaces and are floor or ceiling mounted. With a minimum of effort, they can be relocated within the building as needs change.

BCHC/BCVC units are light-duty air handlers, ranging from 1.0 to 7.5 tons nominal capacity. They are typically used in schools, hospitals, offices, stores, and similar applications. These units are UL/CUL listed for all 60 hertz motor voltages.

Factory Packaged Means Single Source Responsibility

Trane is the single source of responsibility because we ship BCHC/BCVC units from the factory as a total package. Included in the package are factory-mounted coils, filters, controls, motors, drives, and duct collars. Also, factory-provided piping packages are an available option. Because we provide the total package, this helps reduce jobsite labor and installation time.

Piping Packages

All blower coil air handlers are available with factory-built piping package options for field installation using field-supplied interconnecting piping. Basic or deluxe piping package options are available with a variety of control valve options:

- 2 or 3-way
- 1/2", 1", or 1 1/4"
- 2-position or modulating.

The basic piping package consists of two shutoff ball valves. The deluxe piping package has one shutoff ball valve, a strainer, and a circuit setter balancing valve. Basic or deluxe piping packages with a three-way control valve also include a balancing fitting on the bypass line.



Figure FB-1. Horizontal blower coil with factory-provided piping package option.

Controls

Trane offers a broad array of control options, from a simple control interface to the Tracer DDC controllers.

The control interface option consists of a 9 1/2 x 13-inch control box mounted on the drive side. This option also includes a circuit breaker transformer, motor contactor(s), manual disconnect switch, and terminal strips.

The Tracer controls family is the latest in control technology and includes the Tracer ZN010, ZN510, and ZN520 controllers. These controllers automatically determine the unit's correct operating mode (heat/cool) by utilizing a proportional/integral (PI) control algorithm to maintain the space temperature at the active setpoint. Entering water temperature sampling eliminates the need for inefficient bleed lines to sense automatic changeover on two-pipe changeover units. The random start-up feature helps reduce electrical demand peaks by randomly staggering multiple units at

startup. Occupied/unoccupied operation allows the controller to utilize unoccupied temperature setpoints for energy savings. Warmup and cool-down energy features are standard with Trane controls. Continuous fan or fan cycling is available with Tracer ZN010 or ZN510. Unit operation can be monitored using Tracer Summit building management system with ZN510 or ZN520. To customize unit control, Tracer Summit or Rover™ service software will allow field modification of ZN510 and ZN520 default settings. To field-modify ZN010, use Rover service software to change default settings. To maximize blower coil efficiency with free cooling, economizers and modulating valves are available on units with Tracer ZN520. Optional factory-mounted end devices such as a condensate float switch, freeze-stat, dirty filter switch, fan status switch, control valves, and actuators are available. Factory installed and wired electric heat features single-point power connection.

Features and Benefits

Flexibility

The Trane blower coil is available in either horizontal (model BCHC) or vertical (model BCVC) configurations. Horizontal units are typically ceiling suspended via threaded rods. Knockouts are provided in all four corners to pass the rods through the unit. Horizontal units can also be floor mounted. Vertical units are typically floor mounted. They have a side inlet for easy duct connection, and do not require a field fabricated inlet plenum. Vertical units ship in two pieces and can be set up in either a pre-swirl or counter-swirl configuration.

The coil, drain pan, and motor/drive assembly can easily be field-converted from right hand to left hand configurations or vice versa.

In addition, blower coils have acoustical benefits because they are typically located outside the occupied space, either in the ceiling or in a closet. This limits the amount of sound transmission (radiated) directly from the unit to the occupant.

These units are applied with discharge ductwork, which is frequently lined to help reduce the sound transmission (discharge) through the ductwork into the occupied space. For optimal acoustical performance, use three phase motors.

Coil Options

The Trane blower coil features a wide variety of coil options that include:

- two, four, or six-row hydronic cooling or heating
- four and six-row DX coils
- high capacity hydronic coils for cooling or heating

- one or two-row heating coil in either the preheat or reheat position
- one-row steam preheat

Filter Placement Options

All units have an internal flat filter frame for one or two-inch filters. Other filter placement options include:

- angle filter box for two-inch filters
- combination angle filter/mixing box
- bottom or top access filter box that accommodates two-inch filters. This option allows easy filter access through a hinged door, from the bottom of the unit on horizontal units, and from the top on vertical units.

Piping Packages

All units are available with either a basic or deluxe piping package that includes a variety of control valve sizes in two or three-way configurations. The basic package consists of a control valve and stop (ball) valves. The deluxe package consists of a control valve, a stop (ball) valve, a circuit setter, and strainer.

Motor and Drive Options

Belt-drive motors range from $\frac{1}{3}$ to 3 horsepower in a wide range of voltages. All motors have internal thermal and current overloads, permanently sealed ball bearings, and a resilient cradle mount to reduce noise and vibration transmission.

Variable pitch sheave drive kit options help make it possible to more accurately select design static pressure.

For additional flexibility, 115 volt single phase, two speed motors are optional.



Features and Benefits

Indoor Air Quality

Indoor air quality is becoming a greater concern every day. That's why Trane provides the most complete indoor air quality options of any manufacturer.

Drain Pans

The Trane blower coil uses a polymer or optional stainless steel drain pan, sloped in both directions to drain properly. See Figure FB-2.

Accessibility and Cleanability

Trane blower coils have one-inch dual density insulation that meets NFPA90A and UL181, which is designed to withstand high velocities. Trane optionally offers one-inch foil faced insulation that meets NFPA90A, UL181, and bacteriological standard ASTM C 665.

Coils mount above, not in, the drain pan and are not a structural part of the unit. The coils are easily removable, sliding in and out on rails, for cleaning. The drain pan is also easily removable for cleaning.

Filtration

All units have an internal flat filter frame that can accommodate one-inch or two-inch filters. An optional bottom (horizontal units) or top (vertical units) filter access box is also available to improve accessibility.

An optional angle filter box (two inch only), or combination angle filter/mixing box, provides extra filter face area, which results in extremely low face velocities and low pressure drop. With increased face area, the angle filters have substantially more dust-holding capacity than conventional flat filters. Thirty percent efficiency pleated angle or flat filters options are available.

An optional dirty filter switch, or accumulated fan runtime hours (with Tracer ZN520 controls), indicates when the filter needs replacement.

Ventilation

The optional mixing box delivers ventilation air directly to each unit. When the unit is equipped with a Tracer ZN520 controller, the mixing box functions as a zero to 100% economizer to improve energy efficiency. For units configured to automatically switch between high and low fan speeds, the Tracer ZN520 controller automatically adjusts the mixing box damper to provide the correct amount of fresh air to the space at all fan speeds.

Blower coil units are draw-thru configurations that use higher horsepower, belt-driven fan motors. This makes them an

excellent choice for use in an air supply ductwork system with diffusers (rather than a direct discharge system), because it enhances the space air mixing and ventilation effectiveness.

Dehumidification

For direct control of space humidity, a BCHC/BCVC unit can be configured with a hydronic heating coil in the reheat position and equipped with a Tracer ZN520 controller. This controller can independently modulate the cooling and heating coils to directly control both temperature and humidity in the space.

Easy to Service

The coils, motor, and drive are easily replaced within minutes, even when the unit is suspended. Coils slide in and out by removing the coil access panel and a few screws at the rear of the unit. Filters are easily accessed from the bottom of the unit. If the motor requires servicing, only the drive side requires access.

Durability

Trane blower coils use durable materials, including heavy gage, galvanized steel for the casing.

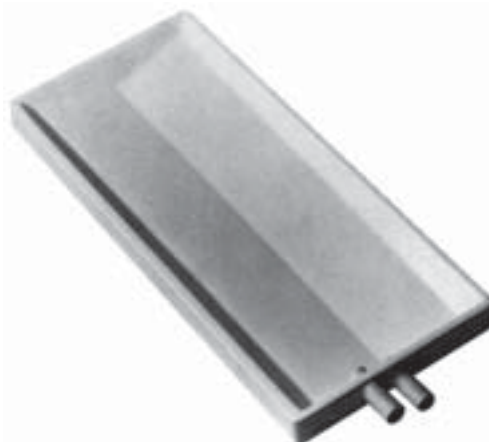


Figure FB-2. Double-sloped, polymer or optional stainless steel drain pans are easily removable and cleanable. Also main and auxiliary connections are on the same side.

Features and Benefits

Options

Optional Accessory Sections

These accessory sections make the BCHC/BCVC product more flexible:

- mixing box
- angle filter box
- angle filter & mixing box section
- bottom or top hinged access filter box
- electric heat box
- steam coil box

Mixing Box

The mixing box option ships separate and has internal low leak aluminum dampers and access panels on both sides. See Figure FB-3.

Angle Filter Box & Combination Angle Filter & Mixing Box

Filter box options include an angle filter box and a bottom/top access filter box that are factory-installed. The angle filter can be combined with the mixing box as one accessory module. The flat filter frame can accommodate one-inch or two-inch filters. The angle filter frame accommodates only two-inch filters.

Electric Heat

A factory installed open-wire electric heater is available in a wide variety of voltages and kW's. See Figure FB-4. All units have a single point power connection. Optional heater fuses, mercury or magnetic contactors, and a heater door interlocking disconnect switch are available.

Steam Coil

A steam coil box with one-row coil is available for field-installation in the preheat position.



Figure FB-3. Angle filter/mixing box option

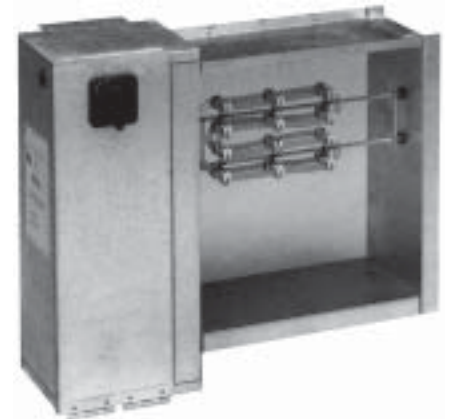


Figure FB-4. Electric heat option



Application Considerations

Application Flexibility

The Trane blower coil air handler offers a wide range of application flexibility between the fan-coil unit and the packaged climate changer.

Units are available in seven nominal capacities ranging from 1.0 to 7.5 tons cooling and 400 to 3000 cfm airflow. The basic unit is available in horizontal (model BCHC) as well as a vertical (model BCVC) configuration.

The single-zone, constant volume applications that we will discuss in this section are:

- two-pipe hydronic
- two-pipe hydronic with electric heat
- four-pipe hydronic
- economizer

Other applications of the BCHC/BCVC are:

- DX cooling
- two-pipe hydronic with steam heating

Two-Pipe Units

The standard BCHC/BCVC unit is equipped with a hydronic coil. The unit can perform cooling only, heating and cooling (changeover system) or heating only. In a changeover system the unit cools during the spring, summer, and fall seasons (summer mode) and heats during the winter season (winter mode).

Use the Trane Official Product Selection System™ (TOPSS) program for specific design criteria such as flow rate, temperature rise/drop, pressure drop, glycol mixtures, and capacity.

When selecting two-pipe changeover units, note that TOPSS will only provide output that meets both the cooling and heating capacity requirements. Because cooling and heating capacity requirements for a given unit may differ significantly, a given coil may be optimally sized for one load and over/under sized for the other load.

Two-Pipe Units With Electric Heat

With the addition of electric heat, the two-pipe system can heat or cool. In the non-changeover system the main coil is always used for cooling and the electric heater is always used for heating. In the changeover system, during the summer mode (spring, summer and fall), the main coil is used for cooling and electric heater is used for heating. During the winter

mode, the main coil is used for heating and the electric heater is disabled.

Two-pipe systems with electric heat are an economical solution to the intermediate season (spring and fall) comfort problems associated with straight two-pipe systems. In moderate climates, or where electric rates are low, non-changeover systems are typically used. In climates with significant heating loads and/or high electric rates, a changeover system, to allow hydronic heating, is typically used.

Changeover in Two-Pipe Systems

Changing between cooling and heating modes in a two-pipe system requires energy to heat or cool the mass of water in the piping system at switchover.

ASHRAE Standard 90.1–2001 defines specific requirements for minimizing the energy impact of this switchover:

- The system must allow a deadband, between changeover from one mode to the other, of at least 15°F (8°C) outdoor-air temperature.
- The system must include controls that allow the system to operate in one mode for at least four hours before changing to the other mode.
- Reset controls must be provided to allow heating and cooling supply-water temperatures, at the changeover point, to be no more than 30°F (17°C) apart.

Four-Pipe Units

The addition of a one-row or two-row heating coil to the basic BCHC/BCVC unit makes it compatible for a four-pipe cooling and heating system. The heating coil is available factory installed in either the preheat or reheat position.

Four-pipe systems solve the intermediate season (spring and fall) comfort problems associated with straight two-pipe systems because they only either cool or heat year-round. However, they do require chiller and boiler operation to be available to operate year-round.

When making the choice between a two or four-pipe system, also consider:

- cooling/heating loads in perimeter zones of the building
- the importance of temperature and humidity control for the zone
- first cost

TOPSS allows independent selection of

the cooling and heating coils for flexibility in flow rates, pressure drops, temperature rise/drop, and fluid type.

DX Cooling Units

A BCHC/BCVC unit 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 the BCHC/BCVC unit is single-circuited. **Do not manifold two, independent refrigeration circuits into a single-circuited DX (evaporator) coil.**

Dehumidification

The BCHC/BCVC has two methods for improving the dehumidification performance of the constant-volume unit.

Automatic Fan Speed Adjustment

When equipped with a Tracer ZN520 controller, the BCHC/BCVC unit can be operated in the AUTO fan speed setting that operates the fan at the lowest speed possible, while maintaining space temperature setpoint. As the cooling load decreases, the first control step is to switch the fan to operate at low speed. Upon a further drop in cooling load, the control valve modulates to further reduce the unit's cooling capacity. This results in improved dehumidification performance because less air passes through the coil and, therefore, leaves the coil at a cooler, drier condition.

To provide the proper amount of outdoor air to the space at all fan speeds, the Tracer ZN520 controller automatically adjusts the position of the economizer damper when the fan switches speeds. Fan-speed adjustment has an added acoustical advantage in that operating the fan at low speed results in quieter operation.

Four-Pipe Unit with Reheat

BCHC/BCVC units equipped with a Tracer ZN520 controller and a hydronic heating coil in the reheat position will provide direct control of space humidity. If the space humidity level does not exceed the desired upper limit, the unit responds to reduced cooling load by modulating the control valve and, if in AUTO mode, switching between fan speeds. However, if the space humidity level rises above the upper limit, the capacity of the cooling coil is increased, overcooling the air to maintain the space humidity below the

Application Considerations

upper limit. Then, the capacity of the heating coil modulates, adding a small amount of heat to temper the air and avoid overcooling the space.

The Tracer ZN520 controller responds to a signal from a humidity sensor installed in the space or a signal from a building automation system, and independently modulates the cooling and heating coils to directly control both temperature and humidity in the space. While this configuration can directly control indoor humidity levels, it does require the boiler (or other source of heat) to be available year-round.

Impact of Chilled-Water Reset

In many constant-flow pumping systems, the leaving chilled-water temperature setpoint is reset based on either outdoor dry-bulb temperature or some indication of cooling load. Use caution when implementing a chilled-water reset strategy because space humidity control can be compromised if the water gets too warm.

A BCHC/BCVC unit equipped with a Tracer ZN520 can accept an input signal from a humidity sensor in the space. A building automation system will continually poll the humidity level in all spaces, or in a single representative space, to limit the amount of chilled-water reset and maintain space humidity levels.

Airside Economizer

Adding a mixing box with a damper actuator allows economizer or free cooling applications. When using blower coils for these applications, Trane highly recommends using a freeze protection device to protect the coil(s). If the unit has a Tracer ZN520 controller, you must have an outside air temperature signal from either a hardwired outside air sensor or from the building automation system, such as Tracer Summit™.

Location and Installation

Avoid locating the unit directly above spaces where sound levels may be critical, such as areas near the occupied space. Install horizontal units over false ceilings in service areas such as corridors or storage rooms. Install vertical units in closets or mechanical rooms.

Horizontal units are installed by suspend-

ing the corners of the unit with threaded rods. Use suitable vibration isolators and take the following precautions to comply with generally accepted installation practices.

- Use flexible duct connectors or supply and return sides (if ducted).
- Use acoustic lining on the inside of main supply duct for noise control.
- Do not attach ceiling suspension wires to unit or through ducts.
- Locate return air grilles as far as possible from the unit to avoid noise transmission.
- Design and install ductwork as per ASHRAE guides, SMACNA, and local code requirements.

Acoustics

Controlling outdoor and equipment noise within the occupied space is increasingly important to system designers and building occupants/owners. Therefore, give proper consideration to this subject in the application of the BCHC/BCVC unit.

Selecting fan and coil combinations is inherently flexible for sound-sensitive applications. In such instances, a fan running at low speed with a high capacity coil normally yields satisfactory results. It also may be desirable to select a larger nominal capacity unit and operate it at less than nominal airflow for further acoustic benefit.

BCHC/BCVC sound power, Lw, data for ducted discharge, inlet + casing, and casing radiated components is available from TOPSS. This sound power data is useful in estimating the sound levels in the occupied space for a given application.

Note: All sound power data is based on three-phase motors. Trane recommends three-phase motors for sound sensitive applications to avoid potential single-phase motor hum.

Operating Limitations

Reference the General Data section for minimum and maximum operating limits. Units must not operate above maximum fan rpm or unit airflow. Unit operation above the maximum fan rpm will drastically reduce bearing life and may result in catastrophic failure. Operating the unit above the maximum airflow in

the cooling mode may result in unsatisfactory operation due to water carryover from the coil. In addition, it is often uneconomical to operate a unit at its maximum rpm due to greater motor power requirements.

The unit may not perform at an optimal acoustical performance level if it operates in the fan's traditional stall region.

Do not operate units with electric heat below the minimum airflow limit to prevent excessive leaving air temperatures and electric heat limit trips.

Do not operate hydronic and electric heat simultaneously to prevent excessive leaving air temperatures and limit trips. Electric heat units have a lockout switch to disable the electric heater if the temperature off the hydronic coil is greater than 95°F.

Do not operate units with a leaving air temperature above 130°F, unless fitted with special higher insulation class motors.

Do not operate coils above the water flow limits to prevent erosion and noise. A minimum or "self-venting" water flow rate is also listed in the General Data Section. If the coil is set to operate below this flow rate, periodically vent it by flushing at a higher flow rate.

Do not operate piping packages and water valves above the water flow limit to prevent erosion and noise. Water valves supplied with the BCHC/BCVC units as accessories are intended for use in "treated" closed loop chilled or hot water systems. Do not use valves with open or potable water systems. Such applications may cause scaling and particulate collection interference with the valve function and reduce the life and effectiveness of the valve.

Application Considerations

Typical Blower Coil Applications

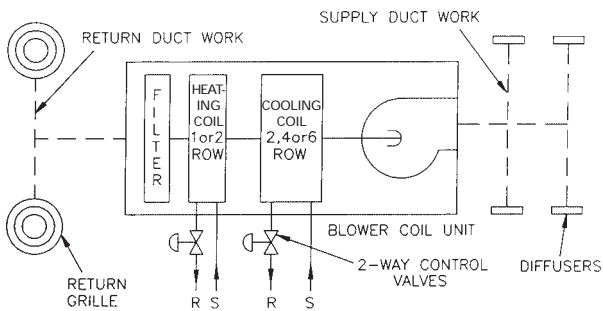


Figure AC-1. Four-pipe (preheat) typical application

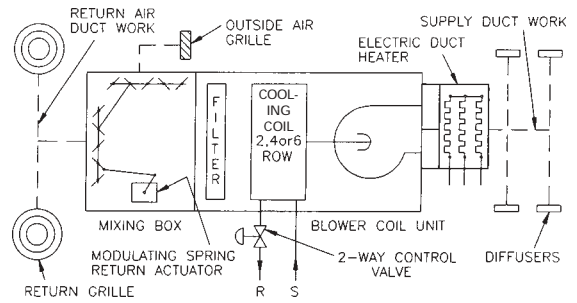


Figure AC-2. Two-pipe with electric heat and mixing box typical application

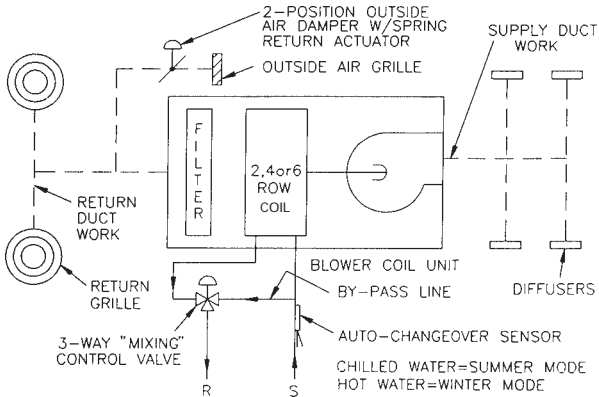


Figure AC-3. Two-pipe with changeover typical application

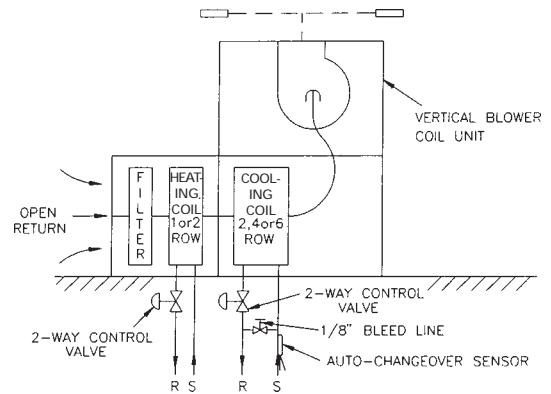


Figure AC-4. Four-pipe vertical with changeover typical application

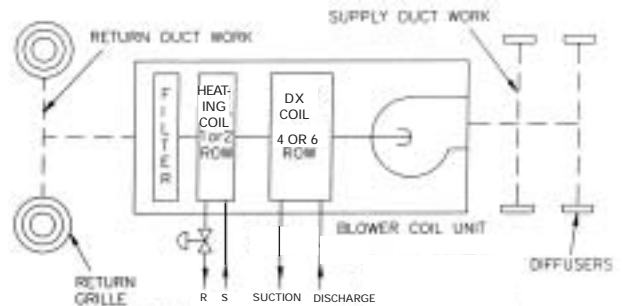


Figure AC-5. DX with hot water preheat typical application

Selection Procedure

Selection Procedure

These selection procedures are for manual computations using the general data and capacity tables in this catalog. For particular design conditions not in this catalog, use the Trane Official Selection Program™ (TOPSS) or contact your local Trane office.

Step 1. Determine Unit Capacity

Reference unit capacities on pages 36–48 to determine unit size needed for cooling and/or heating. Interpolate between given values when necessary.

Step 2. Verify Air and Water Flow Operating Limits

If design airflow equals the unit rated airflow with the coil chosen, use the waterflow rate shown in the appropriate performance table on pages 36–48. If using interpolation to determine capacity, determine waterflow using the formula:

$$\text{gpm} = \frac{\text{total capacity (MBh)}}{[(0.5) \times (\text{water temperature rise})]}$$

Airflow and water flow must fall within the unit operating limits in general data Table GD-1 on page 14 or you must reselect the unit.

Heating coils only: If entering air and water conditions are different than 60/180°F or 60/120°F respectively, refer to the associated correction factors in Table PD-28 on page 47. Divide the required capacity by the correction factor and then refer to the table to locate the corrected capacity.

Step 3. Calculate the Water Pressure Drop (hydraulic coils only)

Determine water pressure drop using the appropriate chart on pages 20–25.

Step 4. Check Fan Performance Requirements

Reference fan performance data by unit size and configuration on pages 26–35. These tables and curves include pressure drops from the casing only. Reference air pressure drop for coils, filters, and accessories using Tables PD-1 and PD-2 on pages 16–17.

Step 5. Calculate Total Static Pressure Requirements

Add the external static pressure (esp) of the coil, filter, and accessories to the system esp to obtain the total fan static pressure requirement. Then determine

bhp and fan rpm requirements using the fan performance curves.

Step 6. Determine Motor and Drive Size

Check bhp and fan rpm requirements to determine the correct motor and drive size. Drive sets are factory installed and field adjustable. Select drive sets based on the adjustment range.

Cooling Selection Example

Job example:

- horizontal blower coil
- two-inch pleated media filters
- mixing box with dampers
- total capacity required: 53.0 MBh
- sensible capacity required: 42.9 MBh
- airflow: 2000 cfm, 0.25" esp
- entering air conditions: 80°F DB/67°F WB
- entering water: 45°F
- water temperature rise: 10°F

Step 1: determine unit capacity

Using Table PD-14 on page 37, the capacity of a BCHC 54 with a six-row coil, 10°F ΔT at 1800 cfm, is 66.0 MBh total and 49.0 MBh sensible. At 2250 cfm, it is 79.1 MBh total and 59.7 MBh sensible.

Interpolate between these values for 2000 cfm to obtain 72.1 MBh total and 54.0 sensible.

Step 2: Verify cfm and gpm limits

Calculate $\text{gpm} = 72.1 / [0.5 \times (10)] = 14.4$. Reference Table GD-1, on page 14, for airflow and water limits. Both the water flow rate (14.4 gpm) and airflow (2000 cfm) fall within the range specified for a BCHC054 with a six-row cooling coil.

Step 3: Calculate wpd

From Chart PD-7 on page 21, the water pressure drop for a size 54 unit, six-row coil at 14.4 gpm = 1.5 feet of water.

Step 4: check fan performance requirements

Calculate the air pressure drop for all components using Tables PD-1 and PD-2, pages 16–17, air pressure drop adjustment. Interpolate for 2000 cfm as follows:

6-row coil	0.968" wg
2" pleated filter	0.176" wg
mix. box/dampers	0.028" wg
	1.172" wg

Step 5: calculate tsp

Unit apd 1.172" wg. + 0.25" wg. esp = 1.422" wg total static pressure.

Step 6: determine motor & drive size

Using Table PD-7 (fan performance) on page 30, interpolate for 2000 cfm at 0.975" wg total static pressure, we obtain 1000 rpm and 0.85 bhp. Therefore, select a 1 hp motor with drive E for 60 hz and drive G for 50 hz applications.

Heating Selection Example

Select a heating coil for the BCHC054, selected in the cooling selection example. Operating conditions are :

- 2000 cfm
- EWT = 180°F
- EAT = 60°F
- lat = 120°F

Step 1: determine unit capacity

Required capacity = $\text{cfm} \times 1.085 \times (\text{lat} - \text{EAT}) = 2000 \times 1.085 \times (120 - 60) = 130,200 \text{ Btu (130.2 MBh)}$

Step 2: Verify cfm and gpm limits

The capacity correction factor for a two-row coil is 1.167 for EAT = 60°F and EWT = 200°F.

Step 3: Calculate wpd

Corrected capacity required = $130.2 / 1.167 = 111.6 \text{ MBh}$.

Step 4: check fan performance requirements

Referring to Table PD-22, on page 44, note that the heating capacity for a two-row coil on the BCHC054 is:

<u>@17.2 gpm</u>	<u>@12.1 gpm</u>
@1800 cfm	
128.8 MBh	121.8 MBh
@2250 cfm	
147.8 MBh	138.9 MBh
Interpolating for 2000 cfm	
138.3 MBh	130.35 MBh

Using Chart PD-22 on page 44, interpolate for 111.6 MBh to obtain a flow rate of 15.7 gpm and a wpd of 1.2 ft wg.

Step 5: calculate tsp

From Table PD-1 on page 16, air pressure drop for a BCHC054 two-row coil is 0.165" wg.

Adding this pressure drop to the total static pressure (calculated in the cooling example) gives a total static pressure of 1.587" wg. From Table PD-7 on page 30, interpolating for 2000 cfm and 1.587" wg, we obtain 1.3 bhp and 1070 rpm. Therefore, select a 1.5 hp motor with drive E for 60 hz and drive F for 50 hz applications.



Selection Procedure

Model Number Description

Blower Coil Model Number Description

Following is a complete description of the blower coil model number. Each digit in the model number has a corresponding code that identifies specific unit options.

BC H C 012 1 C A0 A 1 G A 2 B 0 000 0 0 2 C 3 B A 2 2 B 2 0 5 R A 0 1 1 0
1 5 10 15 20 25 30 35 40

Digits 1 thru 4 — Unit Model
 BCHC = horizontal blower coil
 BCVC = vertical blower coil

Digits 5 thru 7 — Unit Size
 012 024 054
 018 036 072
 090

Digit 8 — Unit Voltage
 A = 115/60/1 H = 575/60/3
 B = 208/60/1 J = 220/50/1
 C = 230/60/1 K = 240/50/1
 D = 277/60/1 L = 380/50/3
 E = 208/60/3 M = 415/50/3
 F = 230/60/3 N = 190/50/3
 G = 460/60/3 P = 2-speed, 115/60/1
 0 = no motor, ctrls, elec ht.

Digit 9 — Insulation Type
 1 = 1" matt faced
 2 = 1" foil faced

Digits 10 & 11 — Design Sequence
 A0 = A

Digit 12 — Motor, Drive, & Control Box Location
 A = same side as coil connections, horizontal or counterswirl only
 B = opposite side from coil connections, horizontal or counterswirl only
 C = same side as coil connections, pre-swirl only
 D = opposite side from coil connections, pre-swirl only
 R = right-hand access
 L = left-hand access

Digit 13 — Drain Pan Type, Coil & Drain Connection Side
 0 = none
 1 = polymer drain pan & right-hand connections
 2 = polymer drain pan & left-hand connections
 3 = stainless steel drain pan & right-hand connections
 4 = stainless steel drain pan & left-hand connections

Digit 14 — Unit Coil #1*
 * all coils are hydronic unless stated otherwise
 0 = none
 A = 1-row heating

B = 2-row heating
 C = 4-row heating
 D = 6-row heating
 E = 2-row cooling
 F = 4-row cooling
 G = 6-row cooling
 H = 2-row heating/cooling with autochangeover
 J = 4-row heating/cooling with autochangeover
 K = 6-row heating/cooling with autochangeover
 L = 2-row high-capacity cooling
 M = 4-row high-capacity cooling
 N = 6-row high-capacity cooling
 P = 2-row heating/high-capacity cooling with autochangeover
 R = 4-row heating/high-capacity cooling with autochangeover
 T = 6-row heating/high-capacity cooling with autochangeover
 U = 4-row DX, 3/16" distributor
 V = 6-row DX, 3/16" distributor
 W = 4-row DX, 1/4" distributor
 X = 6-row DX, 1/4" distributor

Digit 15 — Unit Coil #2*
 * all coils are hydronic unless stated otherwise
 0 = none
 A = 1-row heating
 B = 2-row heating
 C = 4-row heating
 D = 6-row heating
 E = 2-row cooling
 F = 4-row cooling
 G = 6-row cooling
 H = 2-row heating/cooling with autochangeover
 J = 4-row heating/cooling with autochangeover
 K = 6-row heating/cooling with autochangeover
 L = 2-row high-capacity cooling
 M = 4-row high-capacity cooling
 N = 6-row high-capacity cooling
 P = 2-row heating/high-capacity cooling with autochangeover
 R = 4-row heating/high-capacity cooling with autochangeover
 T = 6-row heating/high-capacity cooling with autochangeover
 U = 4-row DX, 3/16" distributor
 V = 6-row DX, 3/16" distributor
 W = 4-row DX, 1/4" distributor
 X = 6-row DX, 1/4" distributor

Digit 16 — Motor Horsepower
 0 = none 4 = 1 hp
 1 = 1/3 hp 5 = 1 1/2 hp
 2 = 1/2 hp 6 = 2 hp
 3 = 3/4 hp 7 = 3 hp

Digit 17 — Motor Drives
 0 = none
 A = 390-552 rpm/60 hz or 323-457 rpm/50hz
 B = 478-678 rpm/60 hz or 396-562 rpm/50hz
 C = 619-878 rpm/60 hz or 513-727 rpm/50hz
 D = 619-878 rpm/60 hz or 513-727 rpm/50hz
 E = 727-1029 rpm/60 hz or 602-853 rpm/50hz
 F = 879-1245 rpm/60 hz or 728-1031 rpm/50hz
 G = 1000-1417 rpm/60 hz or 829-1174 rpm/50hz
 H = 1200-1700 rpm/60 hz or 995-1410 rpm/50hz
 J = 1313-1859 rpm/60 hz or 1088-1541 rpm/50hz
 K = 1615-2288 rpm/60 hz or 1338-1896 rpm/50hz
 L = 678-877 rpm/60 hz or 562-727 rpm/50hz
 M = 765-990 rpm/60 hz or 634-820 rpm/50hz
 N = 878-1136 rpm/60 hz or 727-941 rpm/50hz
 P = 1029-1332 rpm/60 hz or 853-1104 rpm/50hz
 R = 1245-1611 rpm/60 hz or 1031-1335 rpm/50hz
 T = 1174-1519 rpm/50hz

Digit 18 — Electric Heat Stages
 0 = none
 1 = 1-stage
 2 = 2-stage

Digits 19 thru 21 — Electric Heat kW
 000 = none 100 = 10.0 kW
 010 = 1.0 kW 110 = 11.0 kW
 015 = 1.5 kW 120 = 12.0 kW
 020 = 2.0 kW 130 = 13.0 kW
 025 = 2.5 kW 140 = 14.0 kW
 030 = 3.0 kW 150 = 15.0 kW
 035 = 3.5 kW 160 = 16.0 kW
 040 = 4.0 kW 170 = 17.0 kW
 045 = 4.5 kW 180 = 18.0 kW
 050 = 5.0 kW 190 = 19.0 kW
 055 = 5.5 kW 200 = 20.0 kW
 060 = 6.0 kW 210 = 21.0 kW
 065 = 6.5 kW 220 = 22.0 kW
 070 = 7.0 kW 240 = 24.0 kW
 075 = 7.5 kW 260 = 26.0 kW
 080 = 8.0 kW 280 = 28.0 kW
 090 = 9.0 kW 300 = 30.0 kW



Selection Procedure

Model Number Description

Digit 22 — Electric Heat Controls

0 = none
A = 24 volt magnetic contactors
B = 24 volt mercury contactors

Digit 23 — Electric Heat Options

0 = none
A = electric heat with heater fuse
B = electric heat interlocking non-fused disconnect
C = A & B

Digit 24 — Filters

0 = none
A = 1" throwaway
B = 2" pleated throwaway

Digit 25 — Accessory Section

0 = none
A = mixing box only
B = angle filter box
C = angle filter/mixing box
D = top access filter box
E = bottom access filter
F = A & D
G = A & E

Digit 26 — Control Type

0 = no controls (4 x 4 junction box)
1 = control interface
2 = Tracer ZN010
3 = Tracer ZN510
4 = Tracer ZN520

Digit 27 — Coil #1 Control Valve

0 = none
A = 2-way, 2-position, n.c.
B = 2-way, 2-position, n.o.
C = 3-way, 2-position, n.c.
D = 3-way, 2-position, n.o.
E = 2-way modulating
F = 3-way modulating
G = field supplied valve, 2-pos., n.c.
H = field supplied valve, 2-pos., n.o.
J = field supplied modulating valve

Digit 28 — Coil #1 Control Valve Cv

0 = none
A = 3.3 Cv, 1/2" modulating, 1/2" pipe
B = 3.3 Cv, 1/2" modulating, 3/4" pipe
C = 4.0 Cv, 1/2" modulating, 3/4" pipe
D = 6.0 Cv, 1" modulating, 1" pipe
E = 8.3 Cv, 1" modulating, 1" pipe
F = 9.0 Cv, 1 1/4" modulating, 1 1/4" pipe
G = 3.5 Cv, 1/2" 2-position, 1/2" pipe
H = 4.4 Cv, 1/2" 2-position, 1/2" pipe
J = 7.0 Cv, 3-way valve, 1" 2-position, 1" pipe OR
6.0 Cv, 2-way valve, 1" 2-position, 1" pipe
K = 8.0 Cv, 1" 2-position, 1" pipe
L = 8.3 Cv, 1" 2-position, 1" pipe
M = 9.0 Cv, 1 1/4" 2-position, 1 1/4" pipe

Digit 29 — Coil #1 Piping Package

0 = none
1 = basic piping package
2 = deluxe piping package

Digit 30 — Coil #2 Control Valve

0 = none
A = 2-way, 2-position, n.c.
B = 2-way, 2-position, n.o.
C = 3-way, 2-position, n.c.
D = 3-way, 2-position, n.o.
E = 2-way modulating
F = 3-way modulating
G = field supplied valve, 2-pos., n.c.
H = field supplied valve, 2-pos., n.o.
J = field supplied modulating valve

Digit 31 — Coil #2 Control Valve Cv

0 = none
A = 3.3 Cv, 1/2" modulating, 1/2" pipe
B = 3.3 Cv, 1/2" modulating, 3/4" pipe
C = 4.0 Cv, 1/2" modulating, 3/4" pipe
D = 6.0 Cv, 1" modulating, 1" pipe
E = 8.3 Cv, 1" modulating, 1" pipe
F = 9.0 Cv, 1 1/4" modulating, 1 1/4" pipe
G = 3.5 Cv, 1/2" 2-position, 1/2" pipe
H = 4.4 Cv, 1/2" 2-position, 1/2" pipe
J = 7.0 Cv, 3-way valve, 1" 2-position, 1" pipe OR
6.0 Cv, 2-way valve, 1" 2-position, 1" pipe
K = 8.0 Cv, 1" 2-position, 1" pipe
L = 8.3 Cv, 1" 2-position, 1" pipe
M = 9.0 Cv, 1 1/4" 2-position, 1 1/4" pipe

Digit 32 — Coil #2 Piping Package

0 = none
1 = basic piping package
2 = deluxe piping package

Digit 33 — Remote Heat Options

0 = none
1 = staged electric heat
2 = 2-position hot water, n.c.

Digit 34 — Mixing Box Damper Actuator

0 = none
1 = 2-position, n.o., ship loose
2 = modulating, n.c.
3 = modulating, n.o.
4 = modulating, ship loose
5 = field supplied 2-position, n.o.
6 = field supplied 2-position, n.c.
7 = field supplied modulating

Digit 35 — Factory Mounted Control Options

0 = none
A = fan status
B = dirty filter
C = condensate overflow
D = low limit
E = A & B
F = A & C
G = A & D
H = B & C
J = B & D
K = C & D
L = A, B, & D
M = A, B, & C
N = A, C, & D
P = B, C, & D
R = all (A, B, C, & D)

Digit 36 — Control Options 2

0 = none
A = outside air sensor, field mounted
B = discharge air sensor
C = A & B

Digit 37 — Control Options 3

0 = none
A = dehumidification with communicated value
B = dehumidification with local humidity sensor

Digit 38 — Zone Sensors

0 = none
1 = off/auto, setpoint knob, on/cancel, & comm jack
2 = off/auto/high/low, setpoint knob, on/cancel, and comm jack
3 = setpoint knob, on/cancel, comm jack
4 = on/cancel, comm jack
5 = sensor only
6 = off/auto, celsius setpoint knob, on/cancel, & comm jack
7 = off/auto/high/low, celsius setpoint knob, on/cancel, & comm jack
8 = Celsius setpoint knob, on/cancel, & comm jack

Digit 39 — Extra Belt

0 = none
1 = ship loose extra belt

Digit 40 — Extra Filter

0 = none
1 = ship loose extra 1" throwaway filter
2 = ship loose extra 2" pleated throwaway



General Data

Table GD-1. BCHC/BCVC Coil General Data

Unit size	12	18	24	36	54	72	90
Nominal cfm	400	600	800	1200	1800	2400	3000
Hydronic & DX Coil ^{Note 5}							
area, ft ²	0.83						
width, in.	^{Note 1} 7.5	7.5	12.5	12.5	17.5	17.5	22.5
length, in.	^{Note 2} 16	20	20	32	32	40	40
velocity, ft./min.	480	576	461	432	463	494	480
1-Row Hydronic Coil							
min. gpm	^{Note 3} 2.6	2.6	4.4	4.4	6.1	6.1	7.9
max. gpm	^{Note 4} 14.0	14.0	23.3	23.3	32.6	32.6	42.0
dry coil weight, lbs	6.1	7.0	9.8	13.2	17.6	20.4	25.8
wet coil weight, lbs	7.3	8.3	12.1	16.3	22.4	26.0	32.9
internal coil volume, in ³	32.5	37.0	63.9	86.3	133.4	154.3	196.7
2-Row Hydronic Coil							
min. gpm	^{Note 3} 2.6	2.6	4.4	4.4	12.2	12.2	15.7
max. gpm	^{Note 4} 14.0	14.0	23.3	23.3	65.3	65.3	83.9
min. gpm	^{Note 3} hi-cap	1.7	1.7	2.9	2.9	6.1	7.9
max. gpm	^{Note 4} hi-cap	9.3	9.3	15.5	15.5	32.6	42.0
dry coil weight, lbs	8.2	9.6	13.7	19.4	27.2	32.1	39.4
wet coil weight, lbs	10.1	11.8	17.5	24.8	36.1	42.5	52.6
internal coil volume, in ³	51.7	60.7	103.0	148.2	245.5	287.4	365.2
4-Row Hydronic & DX Coil ^{Note 5}							
min. gpm	^{Note 3} Std	2.6	2.6	4.4	4.4	12.2	14.9
max. gpm	^{Note 4} Std	14.0	14.0	23.3	23.3	65.3	79.3
min. gpm	^{Note 3} Hi-Cap	1.7	1.7	2.9	2.9	6.1	7.9
max. gpm	^{Note 4} Hi-Cap	9.3	9.3	15.5	34.2	47.0	73.1
wet coil weight, lbs	17.1	20.2	30.6	44.4	62.7	74.9	97.9
internal coil volume, in ³	96.2	114.1	192.4	282.1	433.0	516.7	688.3
6-Row Hydronic & DX Coil ^{Note 5}							
min. gpm	^{Note 3} Std	2.6	2.6	4.4	4.4	12.2	14.9
max. gpm	^{Note 4} Std	14.0	14.0	23.3	23.3	65.3	79.3
min. gpm	^{Note 3} Hi-Cap	1.7	1.7	2.9	2.9	6.1	7.9
max. gpm	^{Note 4} Hi-Cap	9.3	9.3	15.5	15.5	32.6	42.0
dry coil weight, lbs	18.3	21.7	32.6	47.5	65.4	78.6	101.5
wet coil weight, lbs	23.4	27.7	42.8	62.5	87.8	105.6	137.0
internal coil volume, in ³	140.6	167.5	281.4	416.0	620.4	745.9	983.1
1-Row Steam Coil							
area - ft ²	0.71	0.88	1.75	2.75	4.13	5.13	6.83
width, in.	^{Note 1} 6	6	12	12	18	18	24
length, in.	^{Note 2} 17	21	21	33	33	41	41
velocity, ft./min.	33	32	24	23	21	21	20
min. steam press, psig	2.0	2.0	2.0	2.0	2.0	2.0	2.0
max. steam press, psig	15.0	15.0	15.0	15.0	15.0	15.0	15.0
dry coil weight, lbs	16.7	26.4	40.2	48.8	67.1	74.5	67.5
wet coil weight, lbs	18.2	28.1	43.7	53.5	74.2	82.9	78.7
internal coil volume, in ³	41.7	47.7	95.3	130.8	196.1	231.6	308.7

Notes:

¹ Coil width = length in the direction of a coil header, typically vertical.

² Coil length = length of coil in direction of the coil tubes, typically horizontal and perpendicular to airflow.

³ The minimum water flow is to ensure the coil self-vents properly. There is no minimum waterflow limit for coils that do not require self venting. Coil water flow below minimum gpm requires coils to be vented.

⁴ Maximum gpm limits are to prevent erosion and noise problems.

⁵ DX coil dimensions and dry weights are identical to the 4 and 6-row standard hydronic coils. However, internal volumes are approximately 6% less.



General Data

Table GD-2. BCHC/BCVC Fan, Filter, & Mixing Box General Data

Unit Size	12	18	24	36	54	72	90
nominal cfm	400	600	800	1200	1800	2400	3000
airflow							
minimum cfm	250	375	500	750	1125	1500	1875
maximum cfm	500	675	1000	1600	2400	3000	4000
Fan Data							
fan wheel dia., in.	9.5 x 4.5	9.5 x 4.5	9.5 x 4.5	9.5 x 4.5	9.5 x 4.5	9.5 x 4.5	9.5 x 4.5
max rpm	2300	2300	1800	1800	1500	1500	1500
motor hp	0.33-1.0	0.33-1.0	0.33-1.0	0.33-1.5	0.33-2.0	0.33-3.0	0.33-3.0
Unit Flat Filter							
qty. - size, in.	1 - 12x 24	1 - 12x 24	1 - 16x 25	2 - 16x 20	1 - 20x 20 1 - 20x 25	3 - 16x 25	2 - 20x 25 1 - 16x 25
area, sq. ft.	2.000	2.000	2.778	4.444	5.556	6.250	8.333
velocity, ft./min.	200	300	288	270	324	384	360
Angle Filter							
qty. - size, in.	2 - 12x24	2 - 12x24	2 - 12x24	2 - 20x20	4 - 16x20	4 - 16x20	4 - 20x20
area, sq. ft.	4.000	4.000	4.000	5.556	8.889	8.889	11.111
velocity, ft./min.	100	150	200	216	203	270	270
Bottom/Top Access Filter Box							
qty. - size, in.	1 - 12x20	1 - 12x24	1 - 16x25	1 - 16x20 1 - 16x16	1 - 16x20 1 - 20x20	1 - 20x25 1 - 20x20	2 - 16x25 1 - 14x25
area, sq. ft.	1.7	2.0	2.8	4.0	5.0	6.3	8.0
velocity, ft./min.	240	300	288	300	360	384	375
Mixing Box							
damper opening width, in.	15.5	19.5	19.5	31.5	31.5	31.5	31.5
damper opening height, in.	7	7	7	7	12.75	12.75	12.75
area, sq. ft.	0.753	0.948	0.948	1.531	2.789	2.789	2.789
velocity, ft./min.	531	633	844	784	645	861	1076

Note: Minimum airflow limits apply to units with hot water or electric heat only. There is no minimum airflow limit on cooling on units. Maximum airflow limits are to help prevent moisture carryover.

Table GD-3. BCHC/BCVC Piping Package

Waterflow Limits

Piping Size	gpm
1/2"	8.6
3/4"	19.3
1"	34.3
1 1/4"	53.5

Note: Trane recommends these maximum gpm to help prevent erosion and/or noise problems. However lower gpm may be necessary, depending on the system design, to avoid exceeding close-off pressure limit of the control valve.



Performance Data

Airside Pressure Drop

coils

Table PD-1. Coil Air Pressure Drop Adjustments, in. wg.

Unit Size	face		Cooling & DX			Heating		Steam
	cfm	velocity	2-row	4-row	6-row	1-row	2-row	1-row
12	250	300	0.132	0.265	0.397	0.057	0.095	0.092
	300	360	0.178	0.356	0.534	0.078	0.125	0.126
	350	420	0.228	0.456	0.684	0.103	0.160	0.164
	400	480	0.281	0.561	0.842	0.130	0.198	0.207
	450	540	0.335	0.670	1.005	0.159	0.240	0.254
	500	600	0.391	0.782	1.172	0.192	0.286	0.305
18	375	360	0.178	0.356	0.534	0.078	0.125	0.129
	450	432	0.238	0.476	0.715	0.108	0.167	0.176
	525	504	0.302	0.604	0.907	0.141	0.215	0.230
	600	576	0.368	0.737	1.105	0.179	0.268	0.290
	675	648	0.436	0.872	1.307	0.220	0.326	0.356
24	500	288	0.124	0.247	0.371	0.053	0.089	0.064
	600	346	0.167	0.333	0.500	0.073	0.118	0.088
	700	403	0.214	0.427	0.641	0.095	0.150	0.114
	800	461	0.263	0.527	0.790	0.121	0.186	0.144
	900	518	0.315	0.631	0.946	0.148	0.225	0.176
	1000	576	0.368	0.737	1.105	0.179	0.268	0.211
36	750	270	0.111	0.222	0.333	0.047	0.081	0.059
	900	324	0.150	0.300	0.450	0.065	0.106	0.081
	1050	378	0.193	0.385	0.578	0.085	0.135	0.105
	1200	432	0.238	0.476	0.714	0.108	0.167	0.133
	1350	486	0.286	0.571	0.857	0.132	0.202	0.163
	1500	540	0.335	0.670	1.005	0.159	0.240	0.195
54	1125	289	0.124	0.249	0.373	0.053	0.089	0.059
	1350	347	0.168	0.336	0.503	0.073	0.118	0.081
	1575	405	0.215	0.430	0.645	0.096	0.151	0.105
	1800	463	0.265	0.530	0.795	0.121	0.187	0.133
	2025	521	0.317	0.634	0.952	0.149	0.226	0.163
	2250	579	0.371	0.741	1.112	0.180	0.269	0.195
72	1500	309	0.138	0.277	0.415	0.060	0.099	0.067
	1800	370	0.186	0.373	0.559	0.082	0.131	0.091
	2100	432	0.238	0.476	0.714	0.108	0.167	0.119
	2400	494	0.293	0.585	0.878	0.136	0.207	0.150
	2700	555	0.349	0.698	1.047	0.167	0.252	0.184
	3000	617	0.407	0.813	1.220	0.202	0.300	0.220
90	1875	300	0.132	0.264	0.397	0.057	0.095	0.060
	2250	360	0.178	0.356	0.534	0.078	0.125	0.082
	2625	420	0.228	0.456	0.683	0.102	0.160	0.107
	3000	480	0.280	0.561	0.841	0.130	0.198	0.134
	3375	540	0.335	0.670	1.005	0.159	0.240	0.164
	3750	600	0.391	0.781	1.172	0.192	0.286	0.197

Notes:

1. Cooling coil air pressure drop is for a typical coil running at 80/67° F EAT and 45°F EWT with 10°F water temperature.
2. Heating coil air pressure drop is for dry fin surface.
3. Four and six-row heating coil air pressure drop is equal to 4-6 times the 1-row heating coil air pressure drop.



Performance Data

Airside Pressure Drop

Table PD-2. Filter and Mixing Box Air Pressure Drop Adjustments, in. wg.

Unit Size	Flat Filters				Angle Filters		Mixing Box	
	cfm	velocity	1" T/A	2" pleat.	velocity	2" pleat.	apd	velocity
12	250	125	0.030	0.031	63	0.010	0.006	332
	300	150	0.039	0.042	75	0.013	0.008	398
	350	175	0.048	0.054	88	0.017	0.011	465
	400	200	0.058	0.067	100	0.022	0.015	531
	450	225	0.068	0.081	113	0.026	0.018	598
	500	250	0.078	0.096	125	0.031	0.022	664
18	375	188	0.053	0.060	94	0.019	0.008	396
	450	225	0.068	0.081	113	0.026	0.012	475
	525	263	0.083	0.104	131	0.034	0.016	554
	600	300	0.100	0.130	150	0.042	0.020	633
	675	338	0.117	0.158	169	0.051	0.026	712
24	500	180	0.050	0.056	125	0.031	0.014	527
	600	216	0.064	0.076	150	0.042	0.020	633
	700	252	0.079	0.098	175	0.054	0.028	738
	800	288	0.095	0.122	200	0.067	0.036	844
	900	324	0.111	0.147	225	0.081	0.045	949
	1000	360	0.128	0.175	250	0.096	0.055	1055
36	750	169	0.046	0.051	135	0.035	0.013	490
	900	203	0.059	0.068	162	0.047	0.018	588
	1050	236	0.072	0.088	189	0.061	0.024	686
	1200	270	0.087	0.109	216	0.076	0.031	784
	1350	304	0.102	0.133	243	0.092	0.039	882
	1500	338	0.117	0.158	270	0.109	0.047	980
54	1125	202	0.059	0.068	127	0.032	0.009	403
	1350	243	0.075	0.092	152	0.043	0.012	484
	1575	283	0.093	0.118	177	0.055	0.016	565
	1800	324	0.111	0.147	202	0.068	0.021	645
	2025	364	0.130	0.179	228	0.083	0.027	726
	2250	405	0.150	0.212	253	0.098	0.033	807
72	1500	240	0.074	0.090	169	0.051	0.015	538
	1800	288	0.095	0.122	202	0.068	0.021	645
	2100	336	0.117	0.156	236	0.088	0.029	753
	2400	384	0.140	0.195	270	0.109	0.037	861
	2700	432	0.164	0.236	304	0.133	0.046	768
	3000	480	0.189	0.281	337	0.158	0.057	1076
90	1875	225	0.068	0.081	169	0.051	0.023	672
	2250	270	0.087	0.109	203	0.068	0.033	807
	2625	315	0.107	0.141	236	0.088	0.044	941
	3000	360	0.128	0.175	270	0.109	0.057	1076
	3375	405	0.150	0.212	304	0.133	0.071	1210
	3750	450	0.173	0.252	338	0.158	0.087	1345

Note: Data based on clean filters.

filter & mixing box



Performance Data

Waterside Pressure Drop

2-way piping package

- 4.0 Cv = 1/2" modulating valve, 3/4" pipe
- 4.4 Cv = 1/2" two-position valve
- ▲ 7.0 Cv = 1" two-position valve
- ◆ 8.3 Cv = 1" two-position & modulating valve
- ◻ 9.0 Cv = 1 1/4" two-position & modulating valve

key

Chart PD-1. Two-Way Basic Piping Package Water Pressure Drop

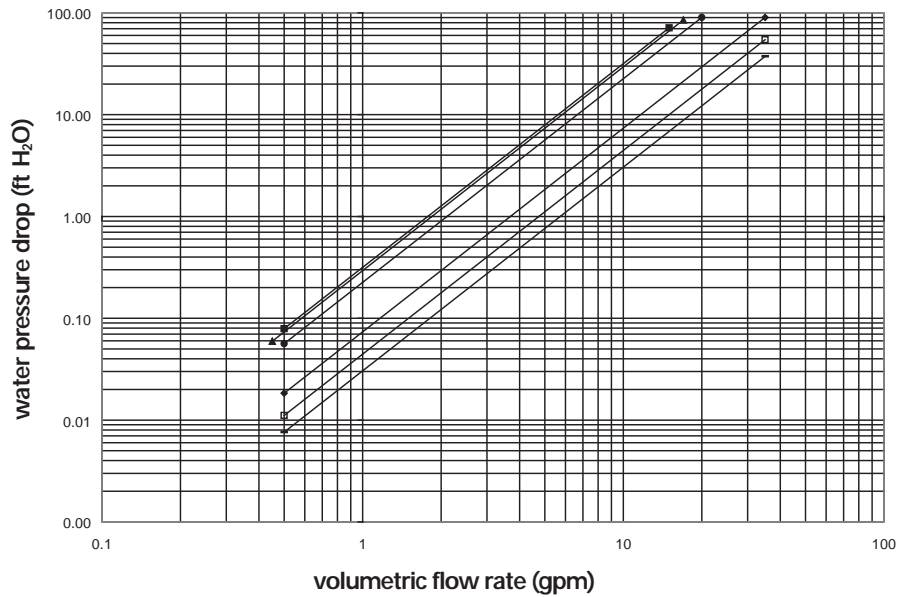
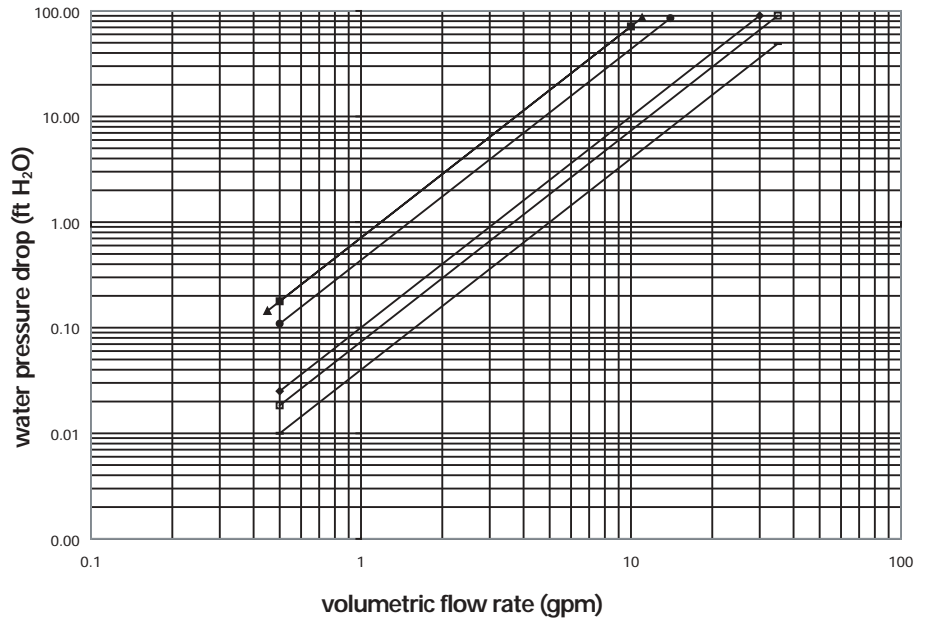


Chart PD-2. Two-Way Deluxe Piping Package Water Pressure Drop





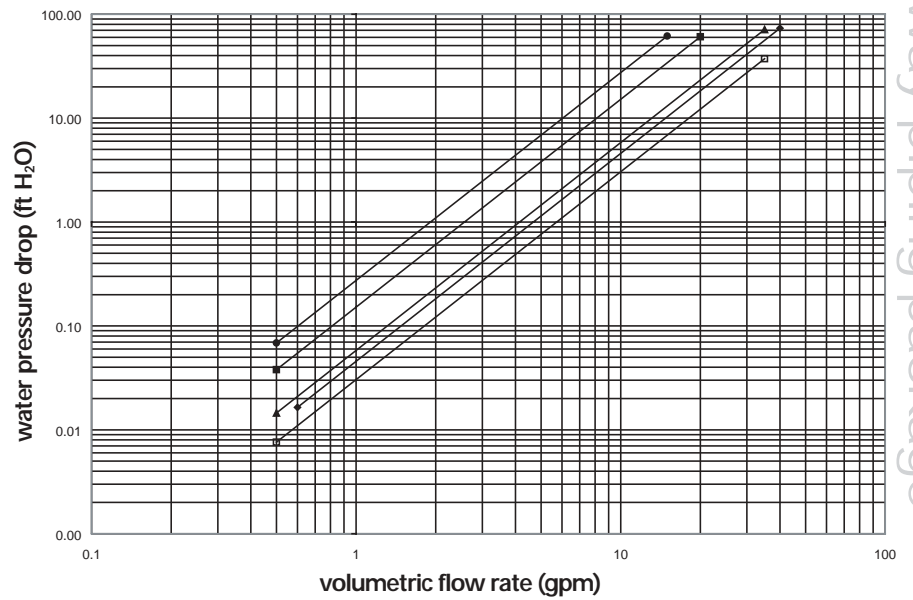
Performance Data

Waterside Pressure Drop

- 4.0 Cv = 1/2" modulating valve, 3/4" pipe
- 4.4 Cv = 1/2" two-position valve
- ▲ 7.0 Cv = 1" two-position valve
- ◆ 8.3 Cv = 1" two-position & modulating valve
- ▣ 9.0 Cv = 1 1/4" two-position & modulating valve

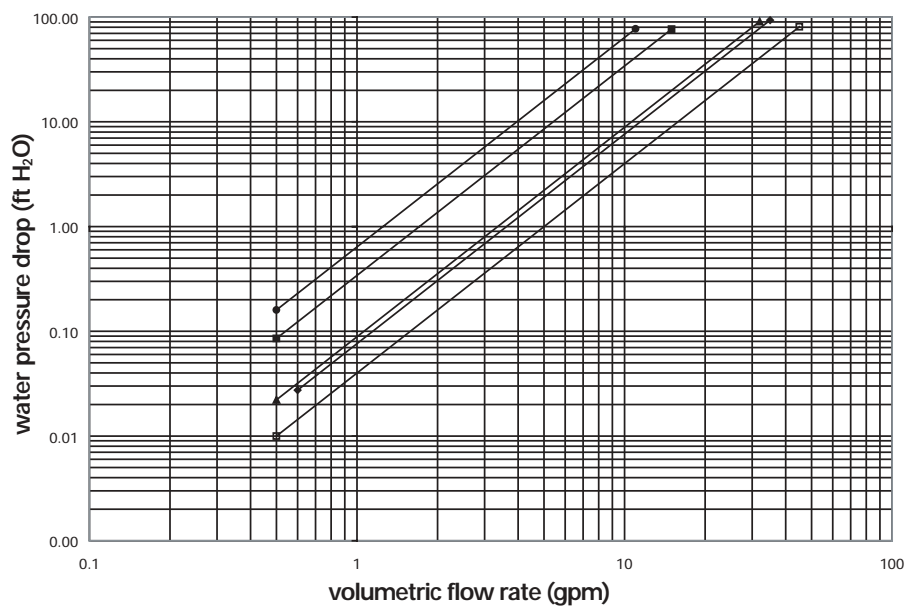
key

Chart PD-3. Three-Way Basic Piping Package Water Pressure Drop



3-way piping package

Chart PD-4. Three-Way Deluxe Piping Package Water Pressure Drop





Performance Data

Waterside Pressure Drop

cooling coils

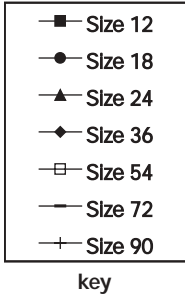


Chart PD-5. Two-Row Standard Cooling Coil Water Pressure Drop

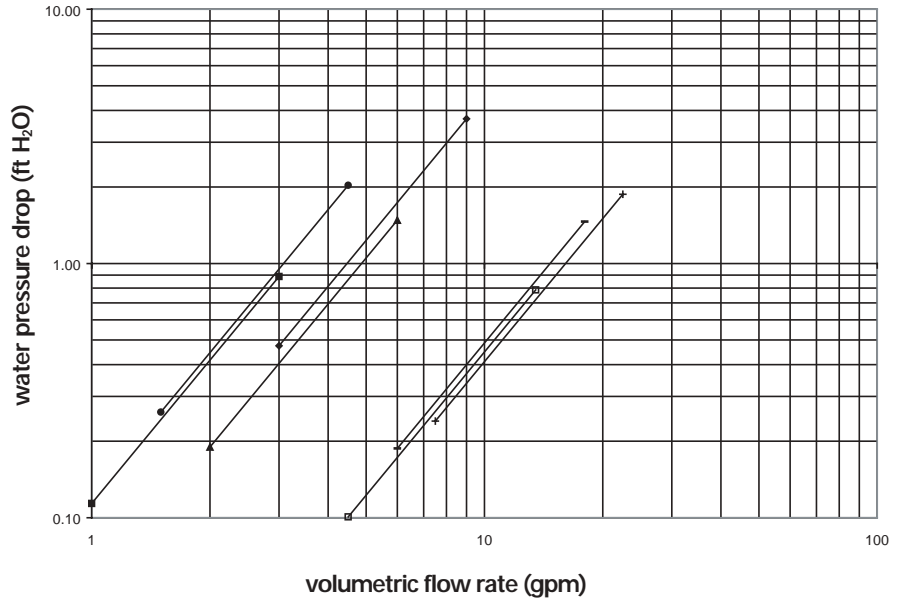
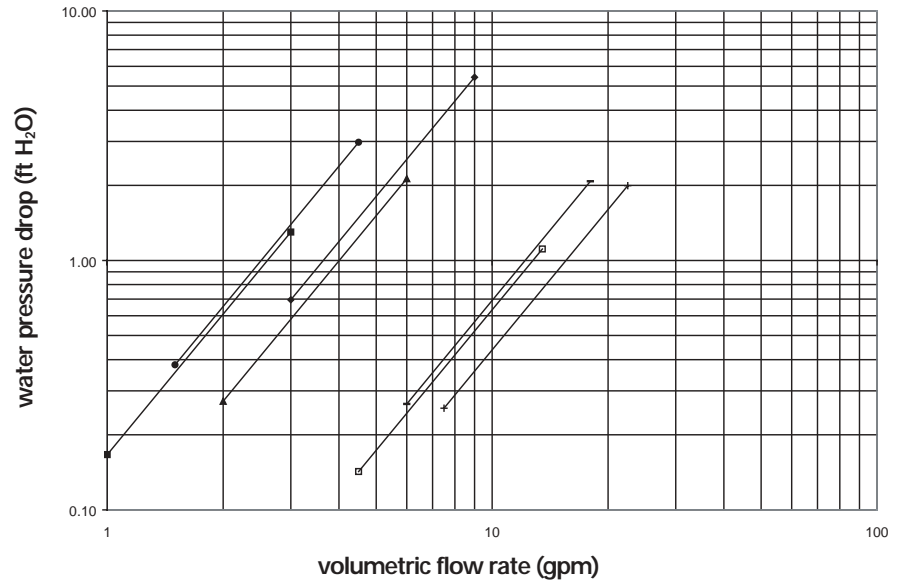


Chart PD-6. Four-Row Standard Cooling Coil Water Pressure Drop



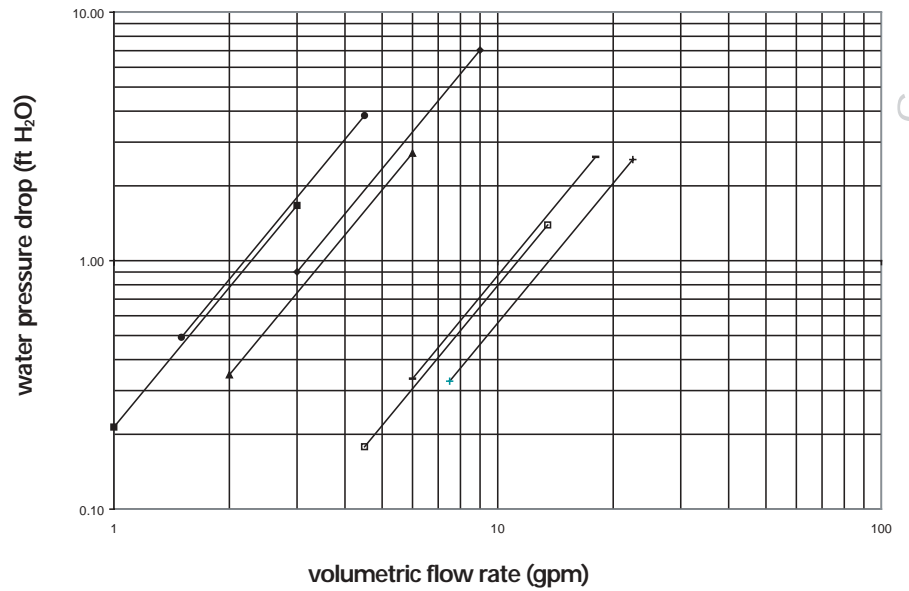


Performance Data

Waterside Pressure Drop

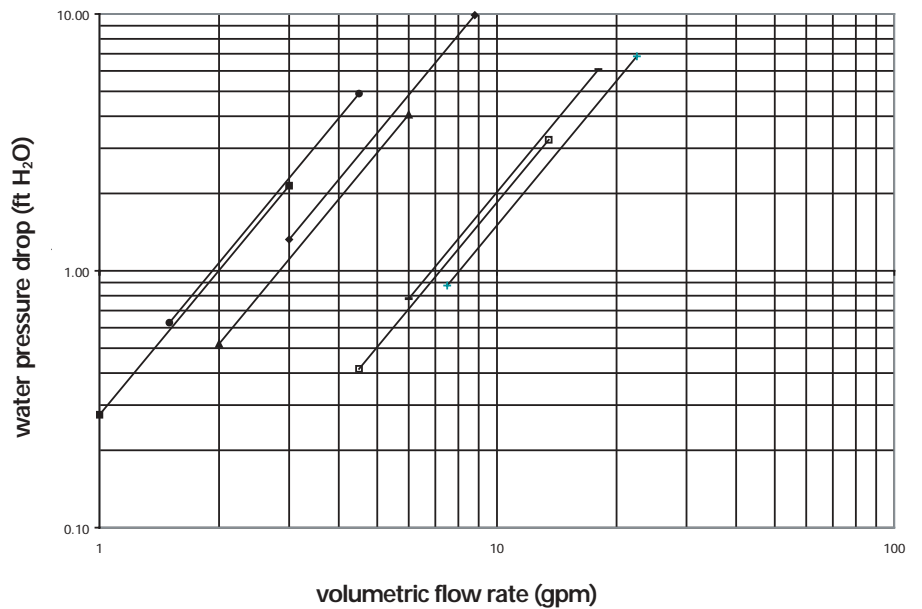
- Size 12
 - Size 18
 - ▲ Size 24
 - ◆ Size 36
 - Size 54
 - Size 72
 - + Size 90
- key

Chart PD-7. Six-Row Standard Cooling Coil Water Pressure Drop



cooling coils

Chart PD-8. Two-Row High Capacity Cooling Coil Water Pressure Drop





Performance Data

Waterside Pressure Drop

cooling coils

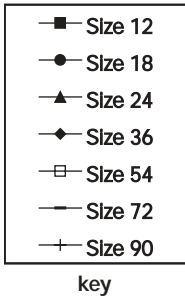


Chart PD-9. Four-Row High Capacity Cooling Coil Water Pressure Drop

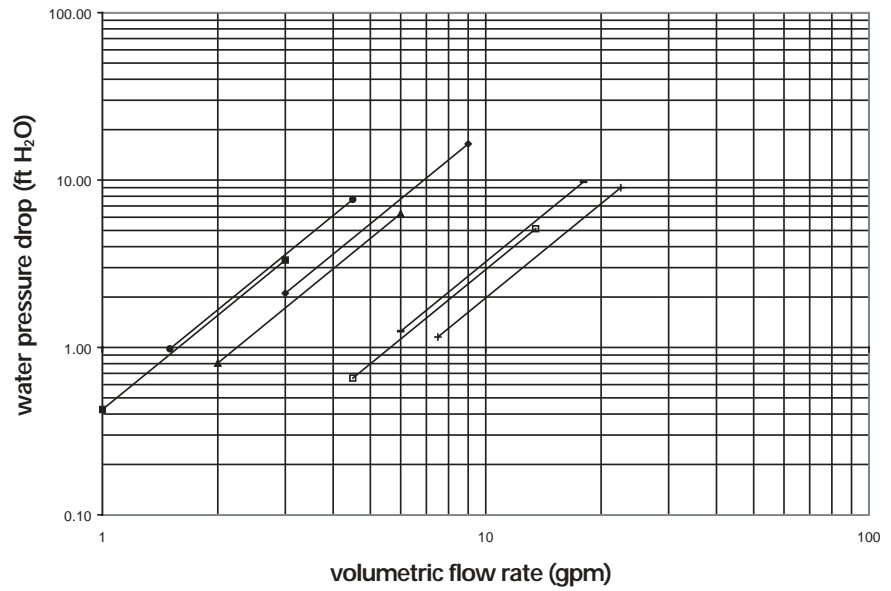
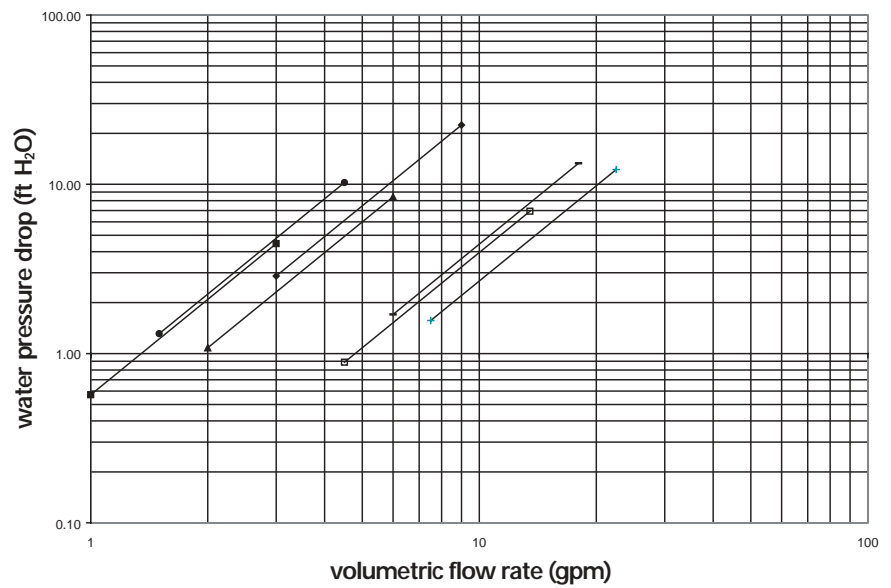


Chart PD-10. Six-Row High Capacity Cooling Coil Water Pressure Drop





Performance Data

Waterside Pressure Drop

heating coils

- | | |
|---|---------|
| ■ | Size 12 |
| ● | Size 18 |
| ▲ | Size 24 |
| ◆ | Size 36 |
| □ | Size 54 |
| — | Size 72 |
| + | Size 90 |
- key

Chart PD-11. One-Row Standard Heating Coil Water Pressure Drop

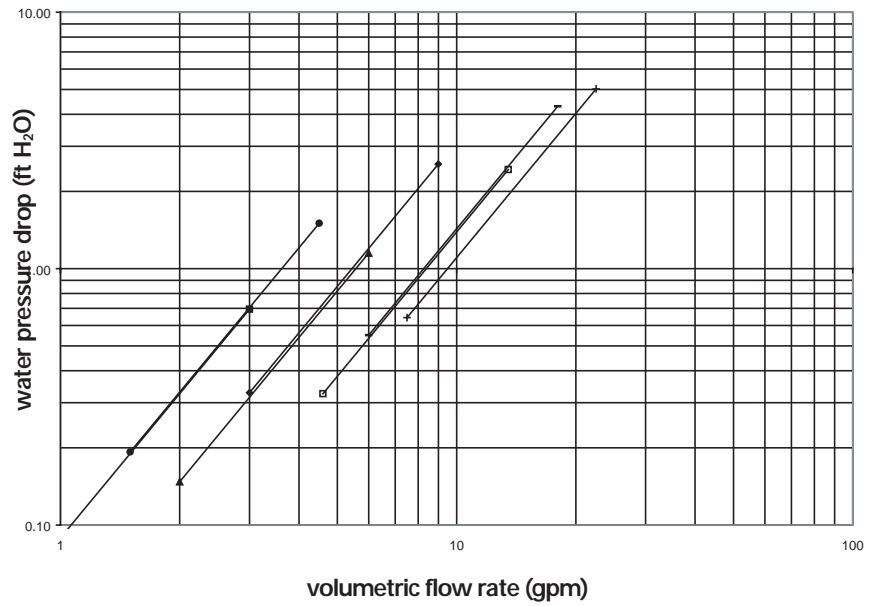
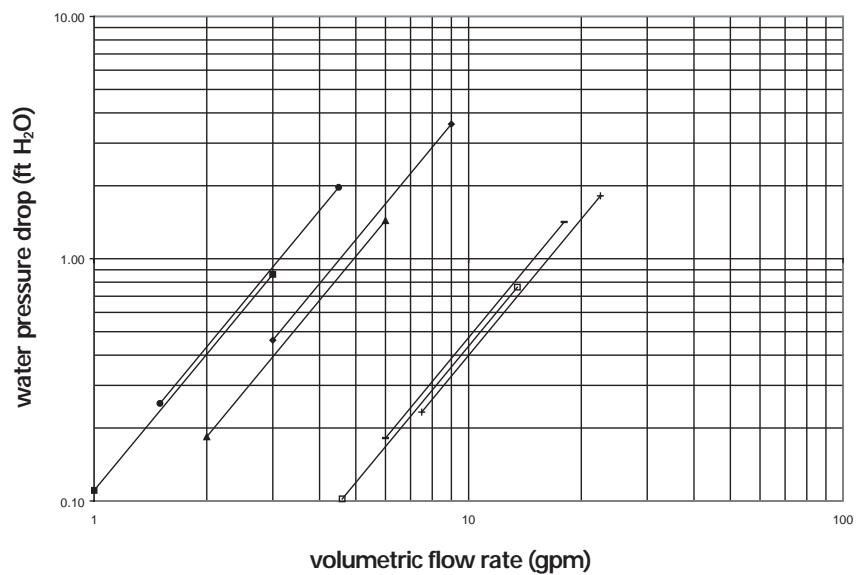


Chart PD-12. Two-Row Standard Heating Coil Water Pressure Drop





Performance Data

Waterside Pressure Drop

heating coil

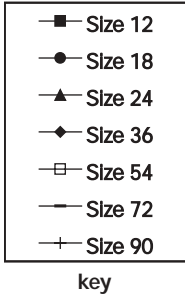


Chart PD-13. Four-Row Standard Heating Coil Water Pressure Drop

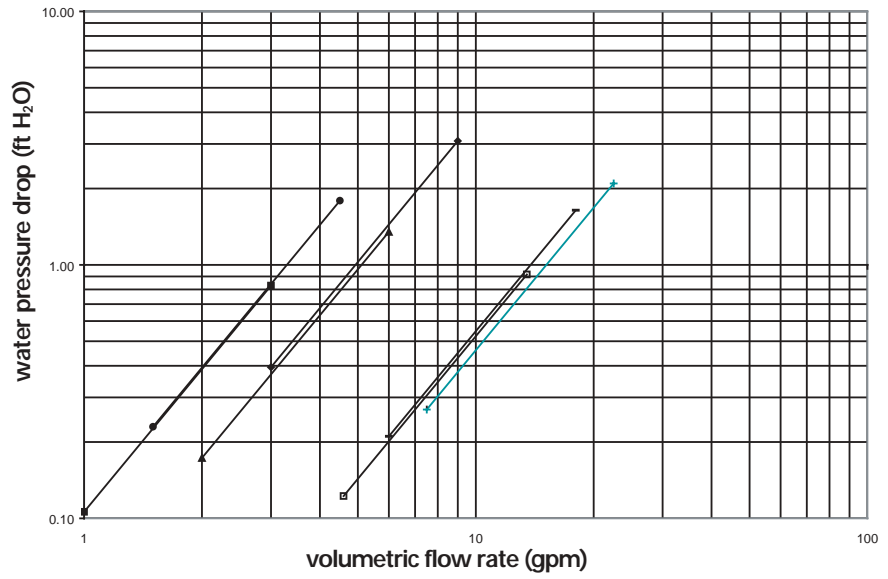
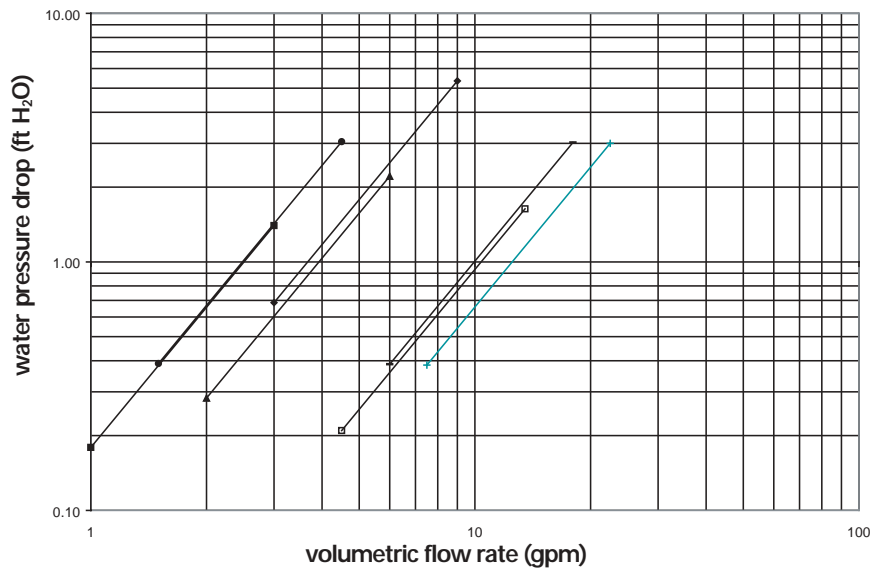


Chart PD-14. Six-Row Standard Heating Coil Water Pressure Drop



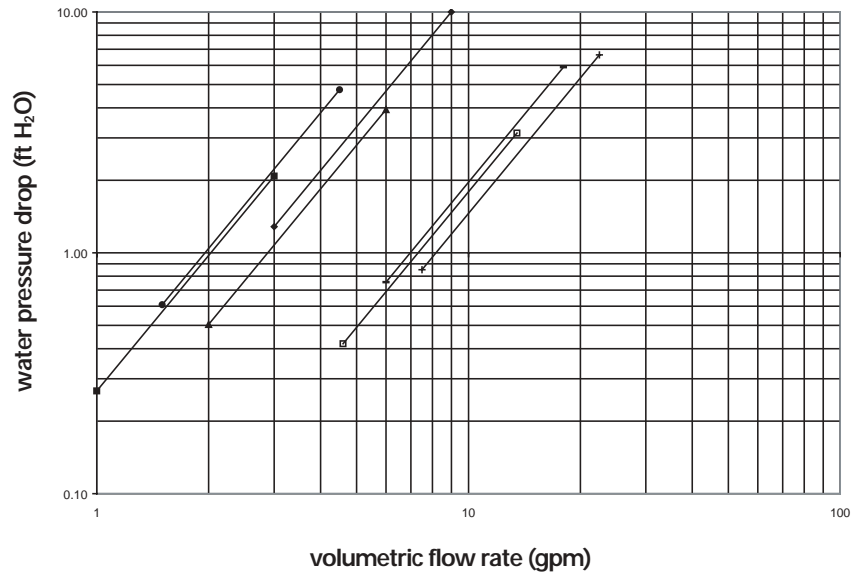


Performance Data

Waterside Pressure Drop

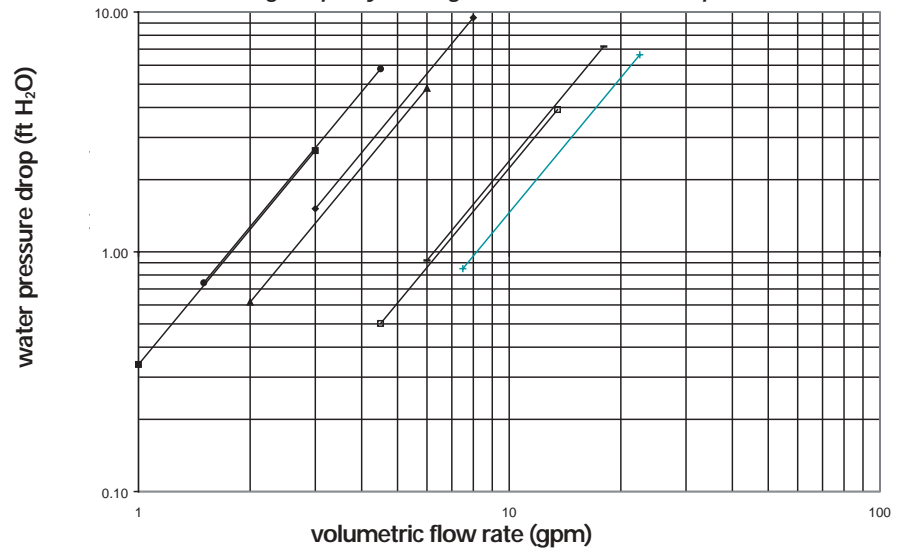
- Size 12
 - Size 18
 - ▲ Size 24
 - ◆ Size 36
 - Size 54
 - Size 72
 - + Size 90
- key

Chart PD-15. Two-Row High-Capacity Heating Coil Water Pressure Drop



heating coil

Chart PD-16. Four-Row High-Capacity Heating Coil Water Pressure Drop





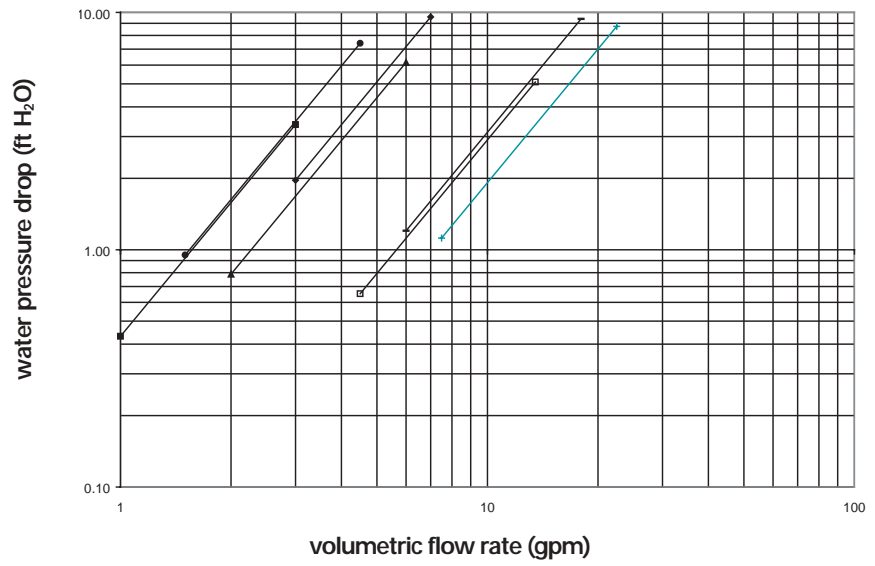
Performance Data

Waterside Pressure Drop

heating coil

- Size 12
 - Size 18
 - ▲ Size 24
 - ◆ Size 36
 - Size 54
 - Size 72
 - + Size 90
- key

Chart PD-17. Six-Row High-Capacity Heating Coil Water Pressure Drop



Performance Data

Fan Curves

Chart PD-18. Fan Performance for Size 12 and 18 Horizontal Units

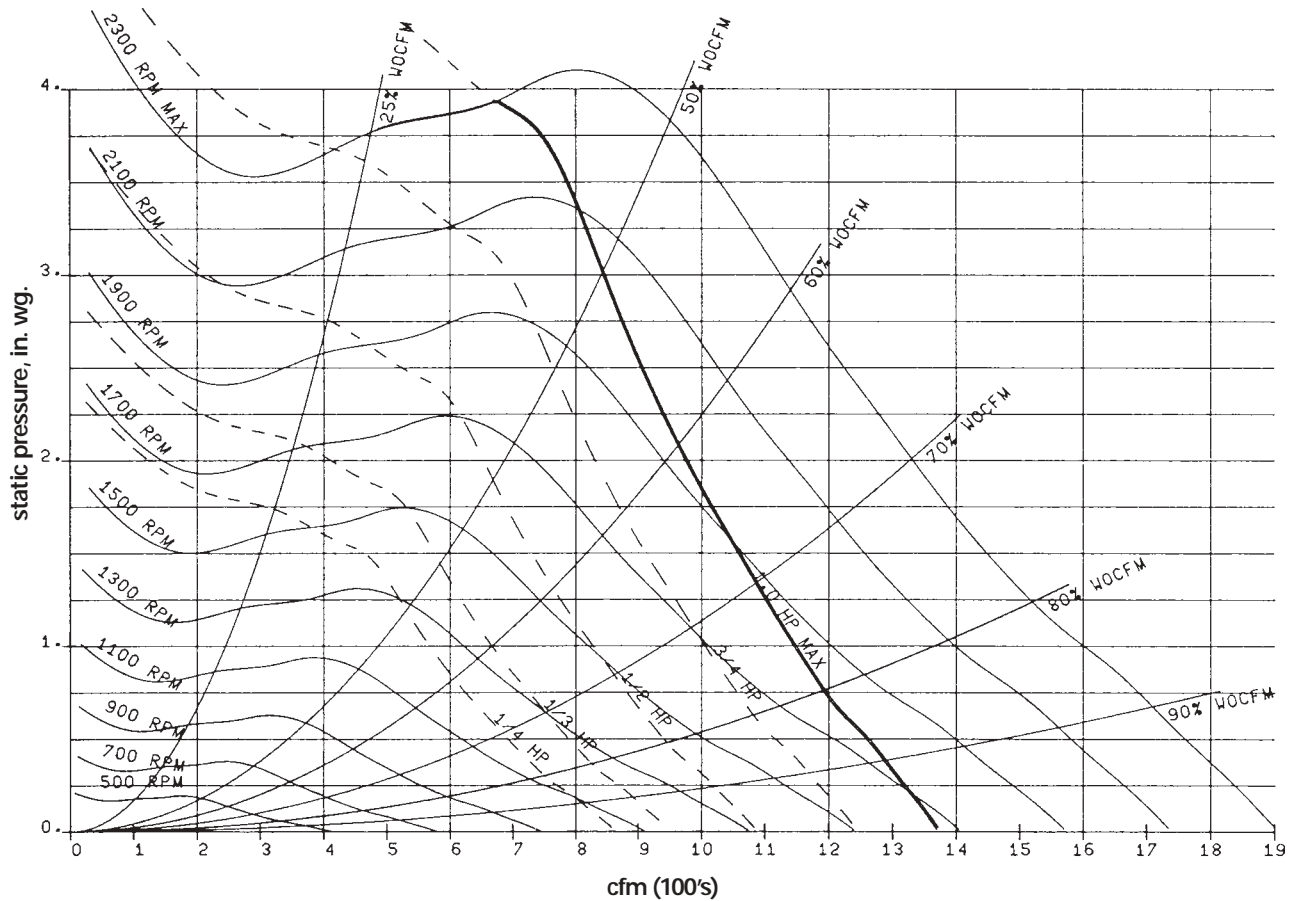
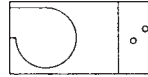


Table PD-3. Horizontal Units, Size 12 and 18

Unit Size	outlet velocity (ft/min)	Total Static Pressure, in. wg.															
		0.25		0.5		0.75		1.0		1.25		1.5		2.0		2.5	
cfm	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	
250	490	593	0.03	815	0.05	1016	0.08	1183	0.11	1337	0.15	—	—	—	—	—	
300	588	639	0.03	807	0.05	1001	0.08	1171	0.12	1316	0.16	1451	0.20	—	—	—	
350	686	690	0.05	836	0.07	984	0.09	1154	0.13	1306	0.17	1437	0.21	1674	0.31	—	
400	784	740	0.06	880	0.09	1004	0.11	1278	0.28	1285	0.18	1427	0.23	1661	0.33	1868	0.44
450	882	791	0.07	930	0.11	1041	0.14	1136	0.14	1270	0.20	1401	0.24	1651	0.35	1856	0.46
500	980	844	0.09	981	0.13	1087	0.17	1152	0.17	1287	0.23	1392	0.27	1629	0.37	1846	0.49
375	735	716	0.05	857	0.08	991	0.10	1140	0.13	1229	0.18	—	—	—	—	—	
450	882	791	0.07	930	0.11	1041	0.14	1152	0.17	1270	0.20	1401	0.24	—	—	—	
525	1029	870	0.10	1006	0.14	1112	0.18	1207	0.22	1301	0.25	1399	0.29	1615	0.38	—	
600	1176	948	0.14	1082	0.19	1189	0.23	1278	0.28	1361	0.32	1443	0.36	1613	0.44	1800	0.54
675	1324	1025	0.18	1160	0.24	1264	0.29	1355	0.34	1433	0.39	1507	0.44	1653	0.53	1805	0.62

Note: data provided for interpolation purposes only; below 25% wide open cfm.



Performance Data

Fan Curves

Chart PD-19. Fan Performance for Size 24 and 36 Horizontal Units

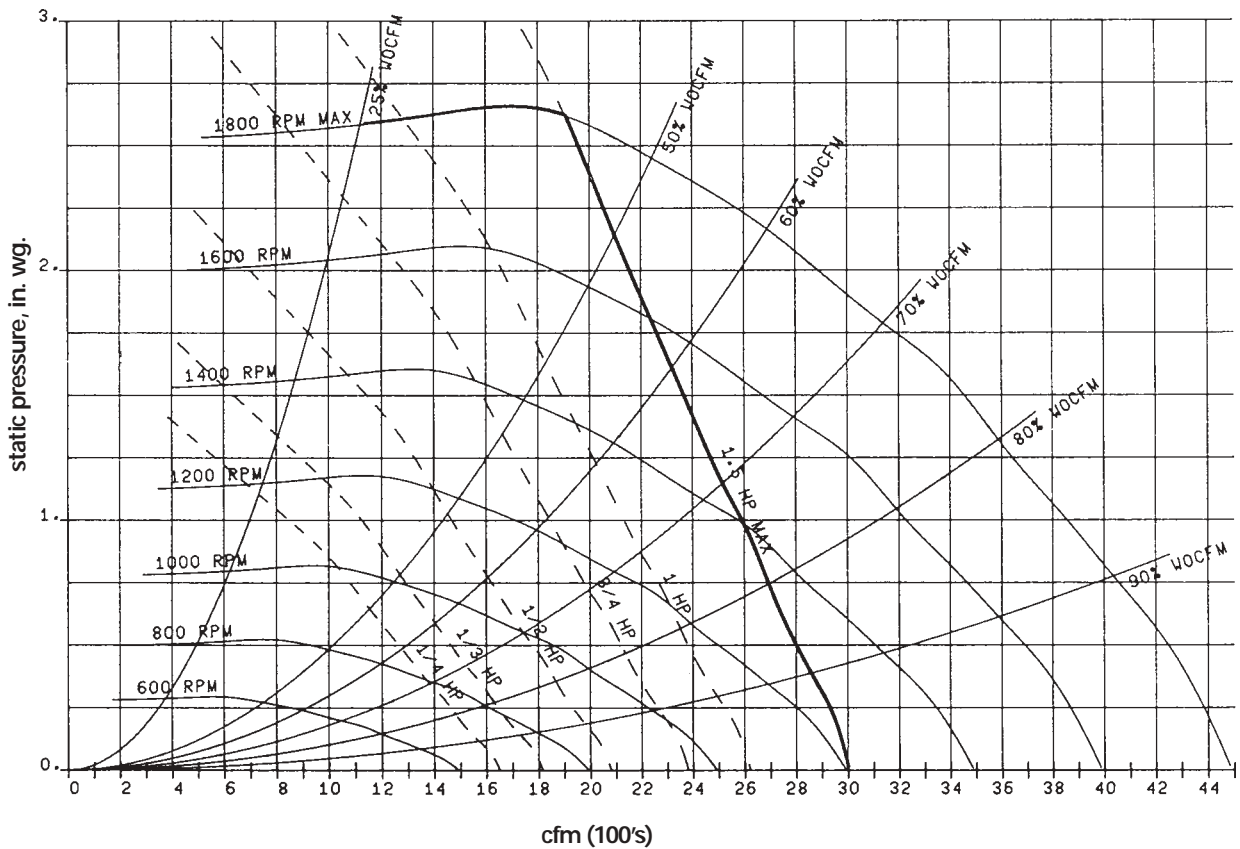


Table PD-4. Horizontal Units, Size 24 and 36

Unit Size	cfm	outlet velocity (ft/min)	Total Static Pressure, in. wg.															
			0.25		0.5		0.75		1.0		1.25		1.5		2.0		2.5	
			rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
24	500	571	553	0.04	791	0.08	974	0.12	—	—	—	—	—	—	—	—	—	—
	600	686	557	0.05	786	0.09	970	0.14	1123	0.20	1258	0.26	—	—	—	—	—	—
	700	800	572	0.06	781	0.10	965	0.16	1120	0.22	1255	0.28	—	—	—	—	—	—
	800	914	589	0.07	783	0.12	960	0.17	1115	0.24	1251	0.31	1373	0.38	—	—	—	—
	900	1029	609	0.09	795	0.14	956	0.20	1109	0.26	1246	0.33	1369	0.41	1587	0.57	—	—
36	1000	1143	631	0.11	811	0.17	961	0.22	1105	0.29	1240	0.37	1364	0.45	1583	0.62	1774	0.80
	750	857	581	0.06	781	0.11	962	0.17	1117	0.23	1253	0.29	1375	0.36	—	—	—	—
	900	1029	609	0.09	795	0.14	956	0.20	1109	0.26	1246	0.33	1369	0.41	1587	0.57	—	—
	1050	1200	644	0.12	819	0.18	966	0.24	1104	0.31	1238	0.38	1362	0.46	1581	0.64	1772	0.83
	1200	1371	679	0.16	846	0.23	989	0.29	1114	0.36	1235	0.44	1354	0.52	1573	0.71	1766	0.91
	1350	1543	717	0.21	878	0.28	1014	0.36	1136	0.44	1247	0.51	1354	0.60	1565	0.78	1758	0.99
1500	1714	763	0.27	913	0.35	1042	0.43	1161	0.52	1269	0.60	1369	0.69	1562	0.88	1750	1.09	

Note: data provided for interpolation purposes only: below 25% wide open cfm.

Performance Data

Fan Curves

Chart PD-20. Fan Performance for Size 24 and 36 Vertical Units, Pre-Swirl

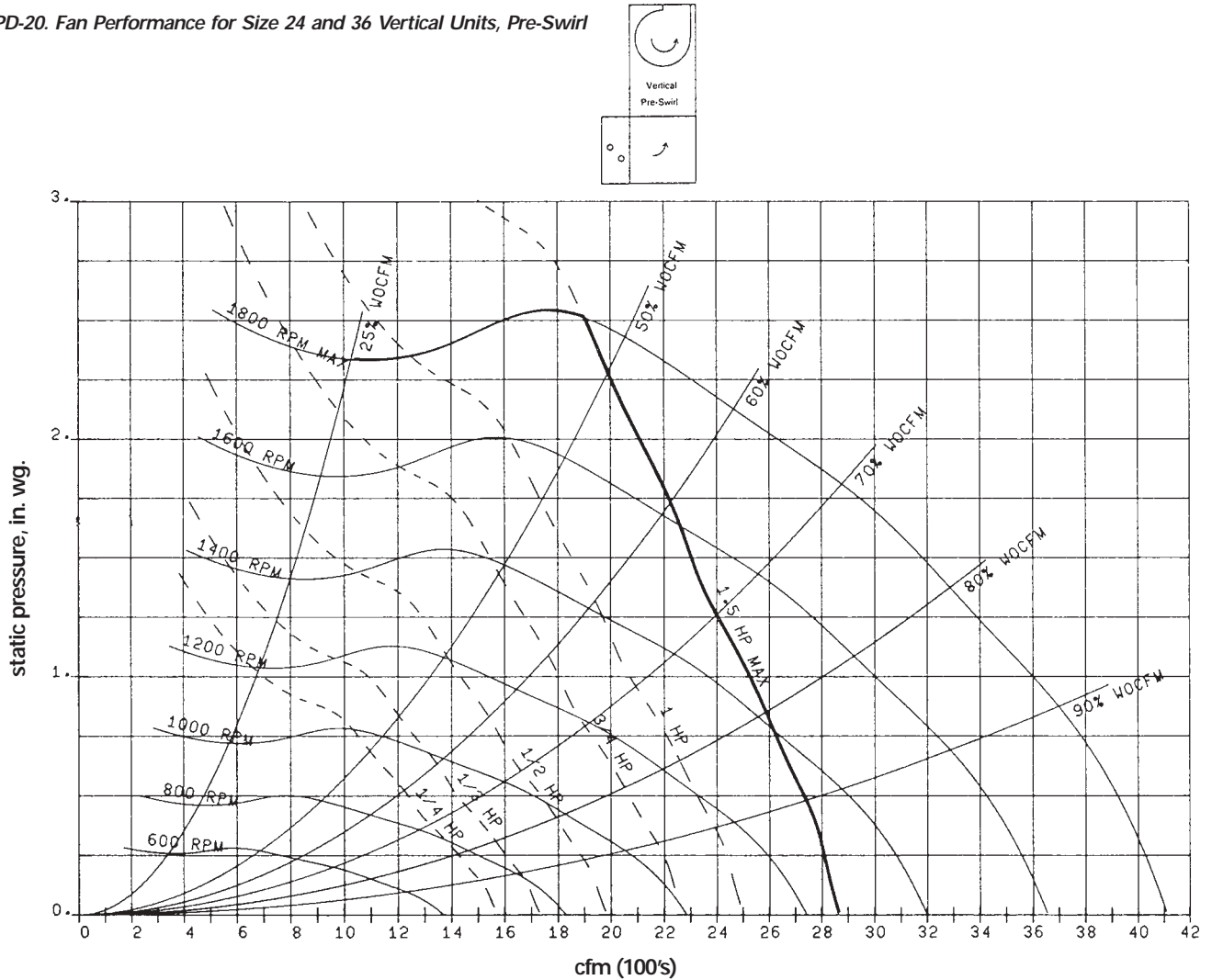


Table PD-5. Vertical Pre-Swirl Units, Size 24 and 36

Unit Size	cfm	outlet velocity (ft/min)	Total Static Pressure, in. wg.															
			0.25		0.5		0.75		1.0		1.25		1.5		2.0		2.25	
			rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
24	500	571	570	0.04	833	0.09	1014	0.14	—	—	—	—	—	—	—	—	—	—
	600	686	568	0.05	828	0.10	1020	0.16	1173	0.22	—	—	—	—	—	—	—	—
	700	800	585	0.06	808	0.11	1017	0.18	1178	0.25	1314	0.32	—	—	—	—	—	—
	800	914	607	0.07	799	0.12	1002	0.19	1175	0.27	1318	0.35	1441	0.44	—	—	—	—
	900	1029	630	0.09	810	0.15	982	0.21	1162	0.29	1314	0.38	1443	0.48	1663	0.66	—	—
	1000	1143	652	0.12	830	0.17	980	0.23	1140	0.31	1300	0.41	1438	0.51	1667	0.71	1766	0.81
36	750	857	596	0.07	800	0.11	1011	0.19	1178	0.26	1317	0.34	1438	0.42	—	—	—	—
	900	1029	630	0.09	810	0.15	982	0.21	1162	0.29	1314	0.38	1443	0.48	1663	0.66	—	—
	1050	1200	664	0.13	840	0.19	985	0.25	1132	0.32	1289	0.42	1432	0.53	1666	0.74	1768	0.84
	1200	1371	705	0.17	873	0.23	1011	0.31	1135	0.38	1264	0.46	1401	0.56	1655	0.80	1763	0.92
	1350	1543	751	0.22	907	0.30	1043	0.37	1160	0.45	1271	0.53	1383	0.62	1626	0.85	1743	0.99
	1500	1714	799	0.28	943	0.37	1077	0.45	1191	0.54	1295	0.63	1395	0.71	1600	0.92	1710	1.04

Note: data provided for interpolation purposes only: below 25% wide open cfm.



Performance Data

Fan Curves

Chart PD-21. Fan Performance for Size 24 and 36 Vertical Units, Counter-Swirl

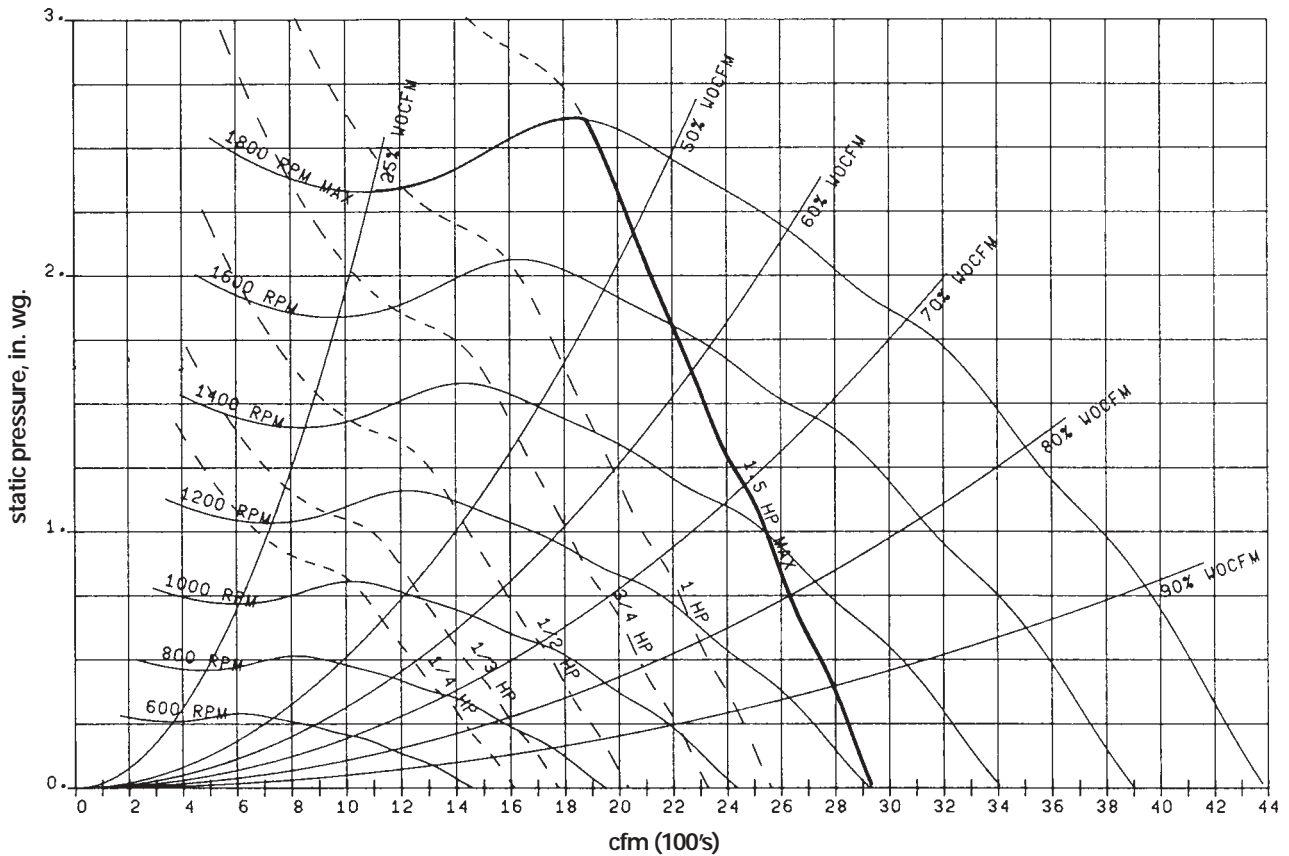
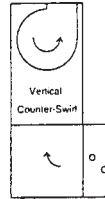


Table PD-6. Vertical Counter-Swirl Units, Size 24 and 36

Unit Size	cfm	outlet velocity (ft/min)	Total Static Pressure, in. wg.															
			0.25		0.50		0.75		1.00		1.25		1.50		2.00		2.25	
			rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
24	500	571	566	0.04	834	0.09	—	—	—	—	—	—	—	—	—	—	—	—
	600	686	559	0.05	827	0.10	1022	0.17	—	—	—	—	—	—	—	—	—	—
	700	800	574	0.06	802	0.11	1017	0.18	1180	0.26	—	—	—	—	—	—	—	—
	800	914	592	0.07	787	0.12	998	0.20	1175	0.28	1319	0.36	—	—	—	—	—	—
	900	1029	612	0.09	796	0.14	973	0.21	1159	0.30	1313	0.39	1444	0.49	—	—	—	—
36	1000	1143	637	0.11	814	0.17	965	0.23	1132	0.31	1297	0.42	1437	0.52	1669	0.73	1769	0.84
	750	857	583	0.07	792	0.11	1010	0.19	1179	0.27	1319	0.35	—	—	—	—	—	—
	900	1029	612	0.09	796	0.14	973	0.21	1159	0.30	1313	0.39	1444	0.49	1666	0.68	—	—
	1050	1200	649	0.13	823	0.18	968	0.24	1121	0.32	1284	0.43	1430	0.54	1668	0.76	1770	0.87
	1200	1371	681	0.16	850	0.23	992	0.30	1117	0.37	1249	0.46	1393	0.57	1653	0.82	1763	0.95
	1350	1543	725	0.22	884	0.29	1019	0.37	1139	0.44	1250	0.52	1365	0.62	1618	0.87	1738	1.01
	1500	1714	774	0.28	920	0.36	1047	0.45	1166	0.53	1272	0.62	1371	0.70	1583	0.92	1698	1.06

Note: data provided for interpolation purposes only; below 25% wide open cfm.

Performance Data

Fan Curves

Chart PD-22. Fan Performance for Size 54 and 72 Horizontal Units

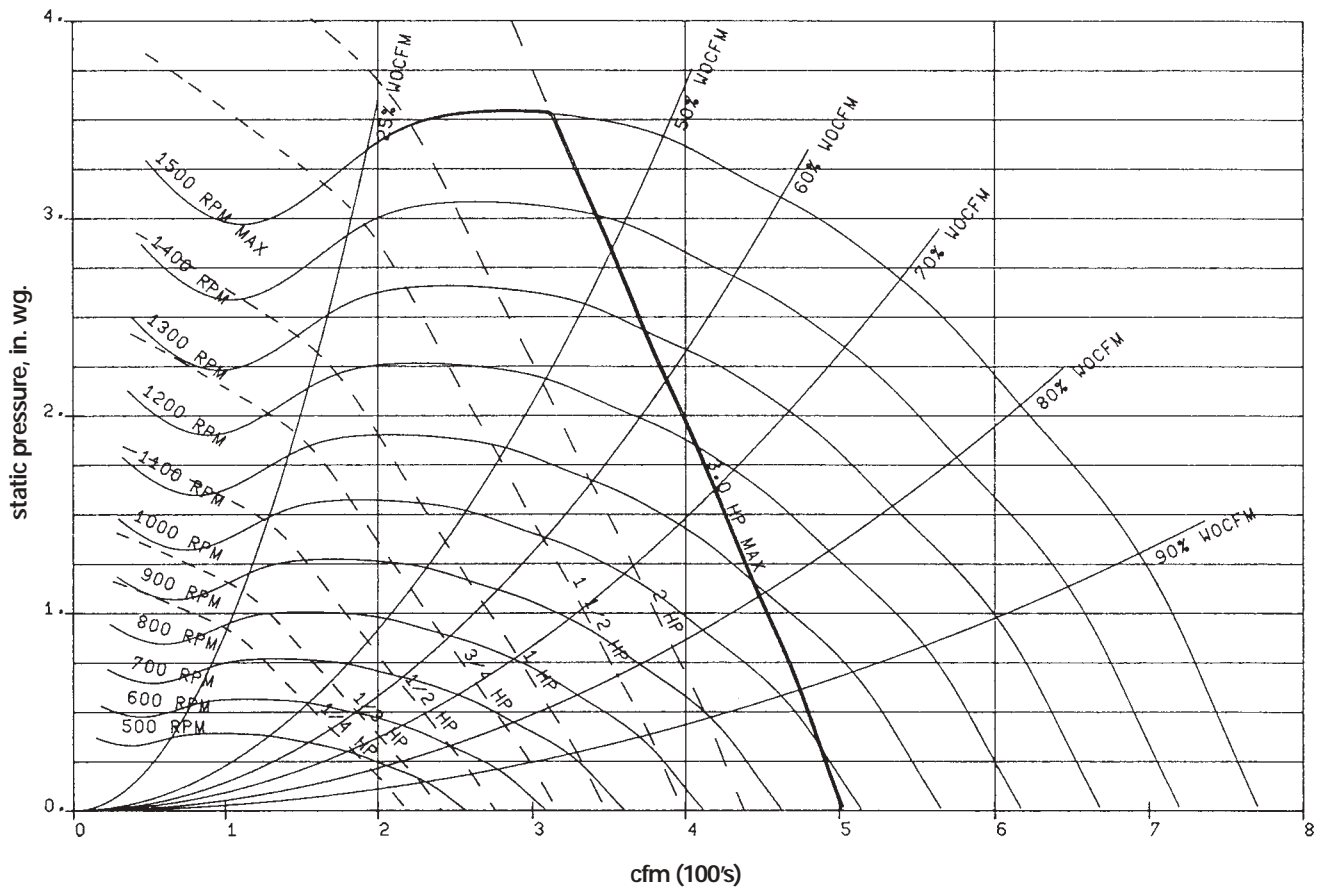
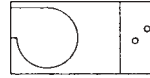


Table PD-7. Horizontal Units Size 54 and 72

Unit Size	cfm	outlet velocity (ft/min)	Total Static Pressure, in. wg.															
			0.25		0.50		0.75		1.00		1.25		1.50		2.00		2.50	
			rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
54	1125	960	412	0.09	564	0.15	693	0.22	810	0.30	925	0.39	1032	0.49	1218	0.71	—	—
	1350	1152	429	0.12	568	0.19	690	0.27	799	0.35	899	0.44	996	0.54	1183	0.76	—	—
	1575	1344	450	0.17	580	0.25	694	0.33	797	0.42	892	0.51	980	0.61	1148	0.83	1311	1.09
	1800	1536	476	0.22	597	0.31	702	0.41	801	0.51	892	0.61	976	0.71	1132	0.93	1279	1.18
	2025	1728	505	0.29	616	0.39	718	0.50	808	0.60	896	0.71	978	0.83	1128	1.06	1265	1.31
	2250	1920	537	0.37	638	0.48	735	0.60	822	0.71	903	0.83	982	0.96	1128	1.21	1261	1.47
72	1500	1280	442	0.15	575	0.23	692	0.31	797	0.40	893	0.49	983	0.58	1158	0.80	1324	1.06
	1800	1536	476	0.22	597	0.31	702	0.41	801	0.51	892	0.61	976	0.71	1132	0.93	1279	1.18
	2100	1792	516	0.31	623	0.42	724	0.53	812	0.64	898	0.75	979	0.87	1127	1.11	1263	1.36
	2400	2048	558	0.43	654	0.55	747	0.67	834	0.80	911	0.92	987	1.05	1130	1.32	1260	1.59
	2700	2304	602	0.58	692	0.71	775	0.84	856	0.98	934	1.13	1003	1.26	1137	1.55	1263	1.86
	3000	2560	650	0.76	734	0.91	808	1.06	883	1.20	956	1.36	1026	1.52	1150	1.83	1270	2.15

Note: data provided for interpolation purposes only: below 25% wide open cfm.



Performance Data

Fan Curves

Chart PD-23. Fan Performance for Size 54 and 72 Vertical Units, Pre-Swirl

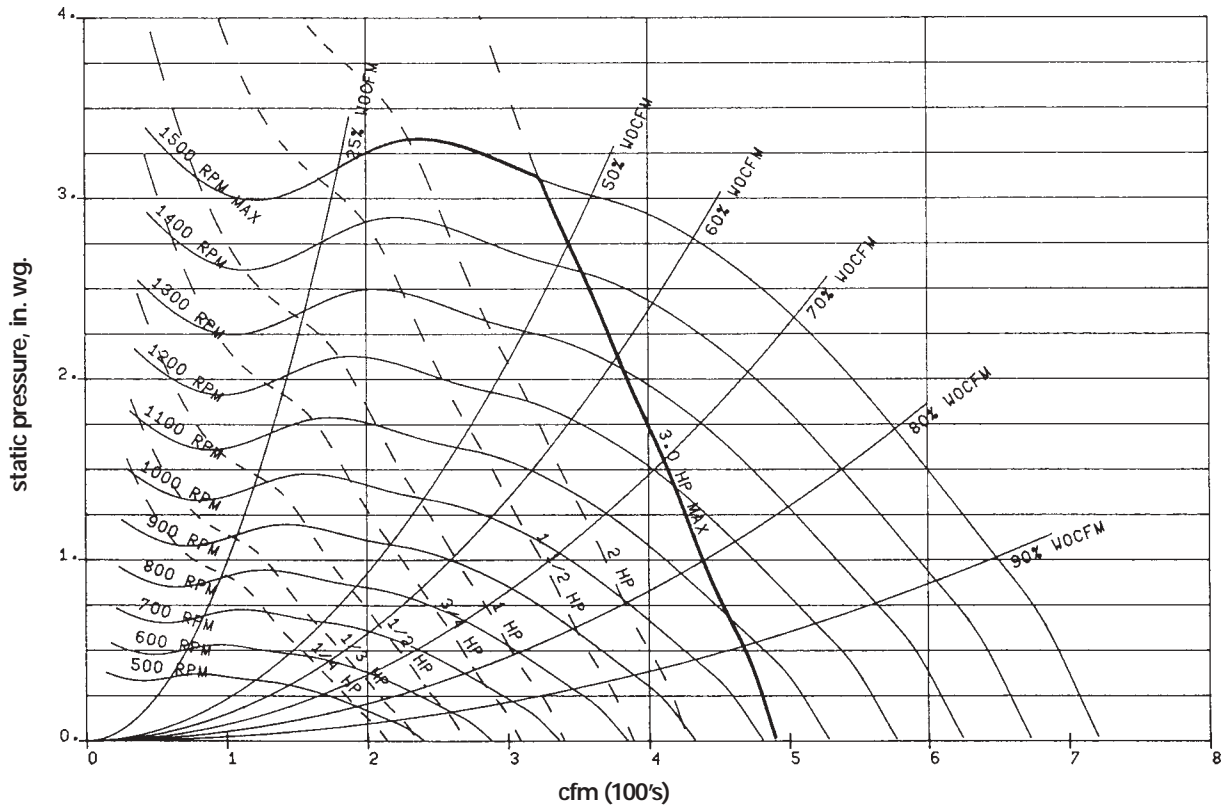
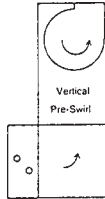


Table PD-8. Vertical Units, Pre-Swirl Arrangement, Sizes 54 and 72

Unit Size	cfm	outlet velocity (ft/min)	Total Static Pressure, in. wg.															
			0.25		0.50		0.75		1.00		1.25		1.50		2.00		2.50	
			rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
54	1125	960	437	0.09	590	0.16	712	0.22	830	0.30	943	0.39	1045	0.50	1222	0.72	—	—
	1350	1152	456	0.13	604	0.21	720	0.28	823	0.36	922	0.44	1019	0.54	1201	0.78	1360	1.04
	1575	1344	481	0.18	616	0.26	736	0.35	833	0.44	922	0.52	1007	0.62	1175	0.84	1335	1.11
	1800	1536	511	0.24	633	0.33	748	0.43	848	0.53	934	0.63	1013	0.73	1163	0.94	1310	1.19
	2025	1728	544	0.31	656	0.41	760	0.52	861	0.64	949	0.75	1026	0.86	1167	1.08	1300	1.32
	2250	1920	580	0.40	683	0.51	779	0.63	872	0.75	962	0.88	1042	1.01	1179	1.25	1304	1.50
72	1500	1280	472	0.16	612	0.24	731	0.33	829	0.41	920	0.49	1009	0.59	1183	0.82	1344	1.08
	1800	1536	511	0.24	633	0.33	748	0.43	848	0.53	934	0.63	1013	0.73	1163	0.94	1310	1.19
	2100	1792	556	0.34	664	0.44	766	0.56	864	0.67	954	0.79	1032	0.91	1170	1.14	1301	1.38
	2400	2048	604	0.47	702	0.58	794	0.71	882	0.84	969	0.97	1050	1.11	1189	1.38	1312	1.64
	2700	2304	654	0.63	745	0.76	829	0.90	910	1.05	988	1.19	1065	1.33	1209	1.65	1331	1.94
	3000	2560	706	0.82	791	0.98	868	1.12	943	1.28	1016	1.44	1086	1.60	1224	1.93	1351	2.28
	1416	13.00	706	0.61	791	0.73	868	0.84	943	0.95	1016	1.07	1086	1.19	1224	1.44	1351	1.70

Note: data provided for interpolation purposes only: below 25% wide open cfm.

Performance Data

Fan Curves

Chart PD-24. Fan Performance for Size 54 and 72 Vertical Units, Counter-Swirl

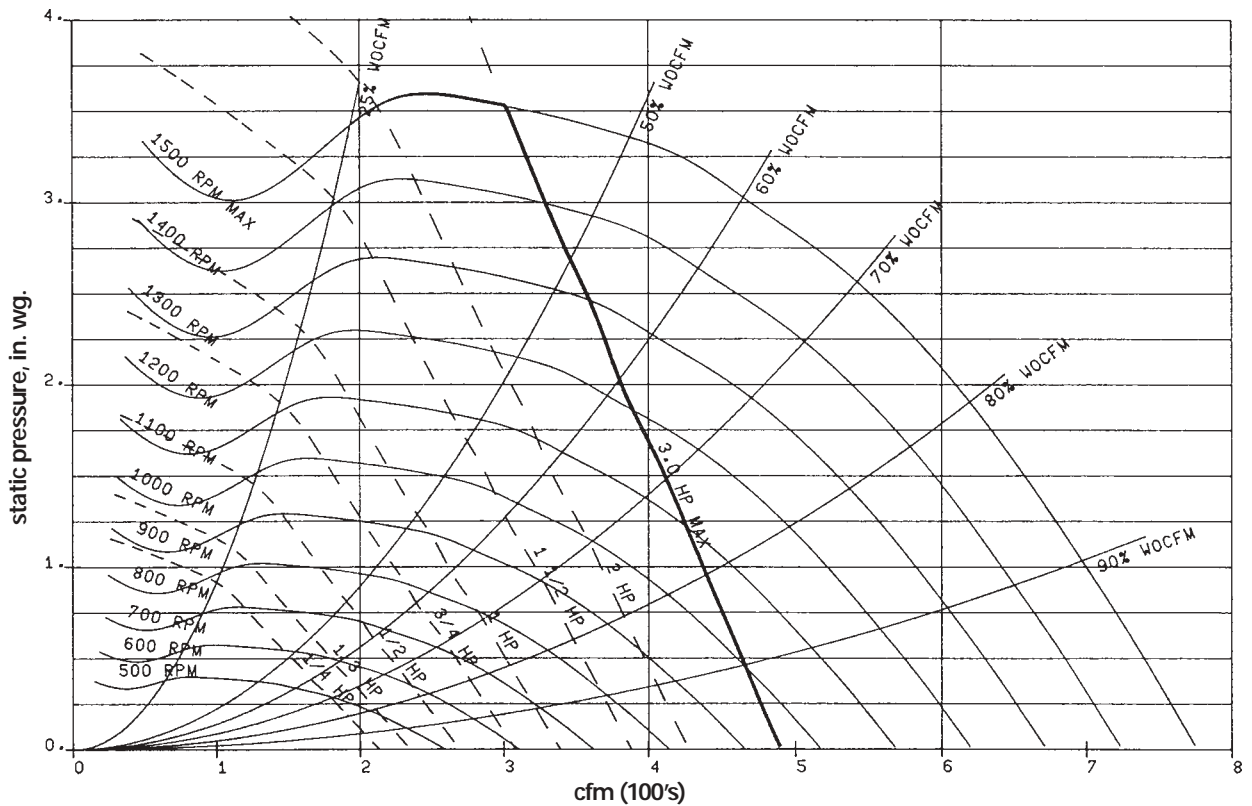
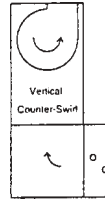


Table PD-9. Vertical Units, Counter-Swirl Arrangement, Sizes 54 and 72

Unit Size	cfm	outlet velocity (ft/min)	Total Static Pressure, in. wg.															
			0.25		0.50		0.75		1.00		1.25		1.50		2.00		2.50	
			rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
54	1125	960	413	0.09	564	0.16	685	0.22	799	0.30	914	0.39	1021	0.49	—	—	—	—
	1350	1152	433	0.13	572	0.21	690	0.28	792	0.36	887	0.45	983	0.54	1169	0.77	1336	1.02
	1575	1344	455	0.18	583	0.26	698	0.35	798	0.44	887	0.53	969	0.63	1132	0.84	1295	1.10
	1800	1536	482	0.24	600	0.34	707	0.43	805	0.53	893	0.64	973	0.74	1119	0.96	1262	1.20
	2025	1728	511	0.31	623	0.42	720	0.52	814	0.64	900	0.75	980	0.87	1122	1.10	1251	1.35
	2250	1920	544	0.40	645	0.52	740	0.64	825	0.76	910	0.89	988	1.01	1129	1.27	1255	1.53
72	1500	1280	447	0.16	579	0.24	695	0.33	796	0.41	885	0.50	971	0.60	1143	0.81	1309	1.07
	1800	1536	482	0.24	600	0.34	707	0.43	805	0.53	893	0.64	973	0.74	1119	0.96	1262	1.20
	2100	1792	522	0.34	630	0.45	726	0.56	818	0.68	903	0.80	982	0.91	1124	1.15	1251	1.40
	2400	2048	567	0.47	662	0.59	755	0.73	836	0.85	917	0.98	994	1.12	1133	1.39	1259	1.66
	2700	2304	615	0.64	701	0.77	785	0.91	865	1.07	936	1.20	1008	1.34	1144	1.65	1268	1.95
	3000	2560	664	0.84	742	0.99	819	1.14	894	1.30	965	1.47	1029	1.62	1158	1.94	1278	2.28

Note: data provided for interpolation purposes only; below 25% wide open cfm.



Performance Data

Fan Curves

Chart PD-25. Fan Performance for Size 90 Horizontal Units

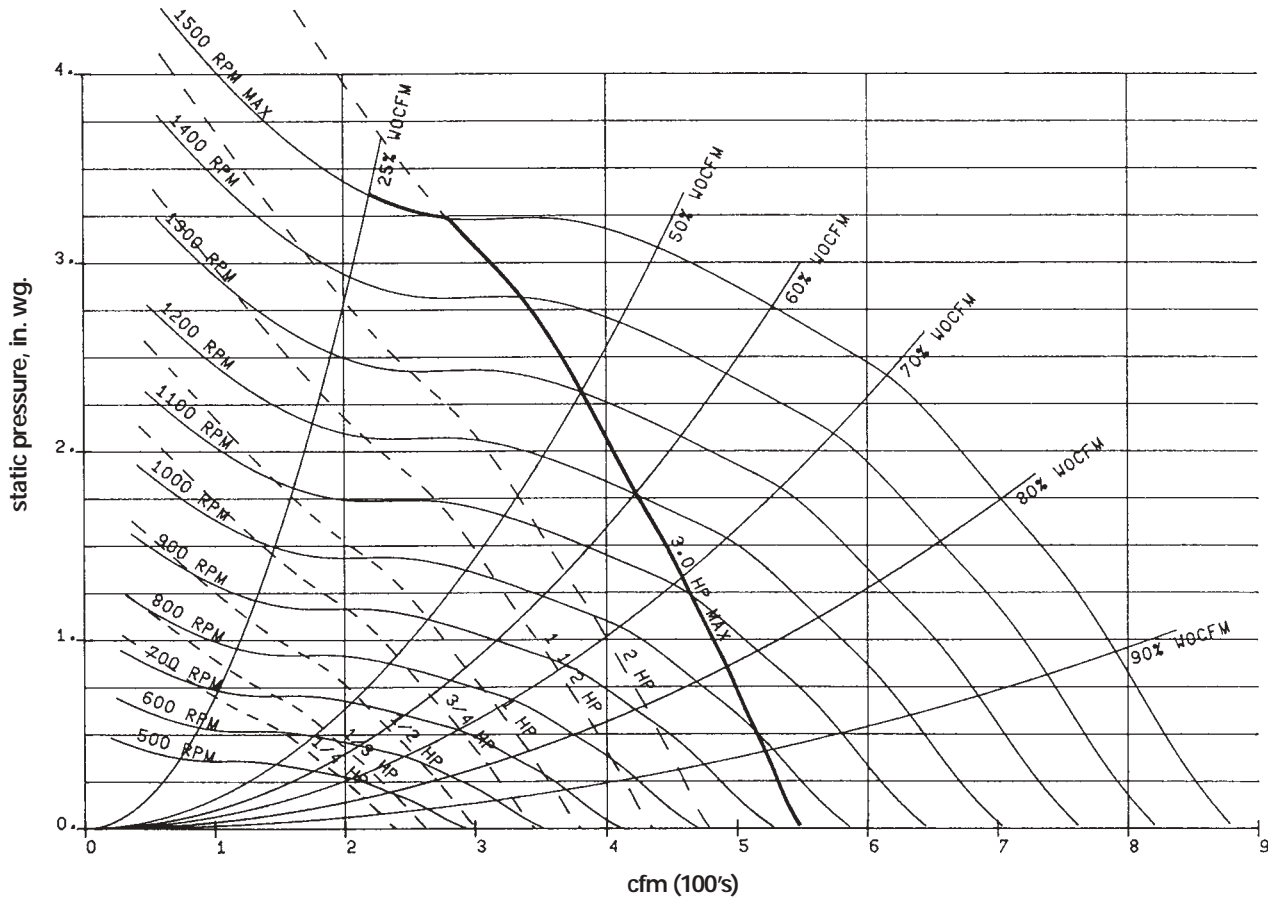


Table PD-10. Horizontal Units, Size 90

Unit Size	cfm	outlet velocity (ft/min)	Total Static Pressure, in. wg.															
			0.25		0.50		0.75		1.00		1.25		1.50		2.00		2.50	
			rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
90	1875	1600	475	0.22	611	0.33	725	0.45	833	0.60	933	0.76	1021	0.94	1168	1.30	1293	1.68
	2250	1920	514	0.32	638	0.45	745	0.59	841	0.73	932	0.89	1021	1.08	1180	1.48	1313	1.91
	2625	2240	563	0.46	668	0.60	771	0.76	862	0.92	946	1.08	1025	1.26	1179	1.68	1320	2.14
	3000	2560	613	0.64	705	0.80	801	0.97	888	1.15	968	1.33	1042	1.52	1183	1.92	1318	2.39
	3375	2880	666	0.87	751	1.04	832	1.23	918	1.42	995	1.63	1066	1.83	1199	2.25	1323	2.71
	3750	3200	723	1.15	801	1.34	872	1.54	948	1.74	1024	1.97	1094	2.20	1221	2.64	—	—

Performance Data

Fan Curves

Chart PD-26. Fan Performance for Size 90 Vertical Units, Pre-Swirl

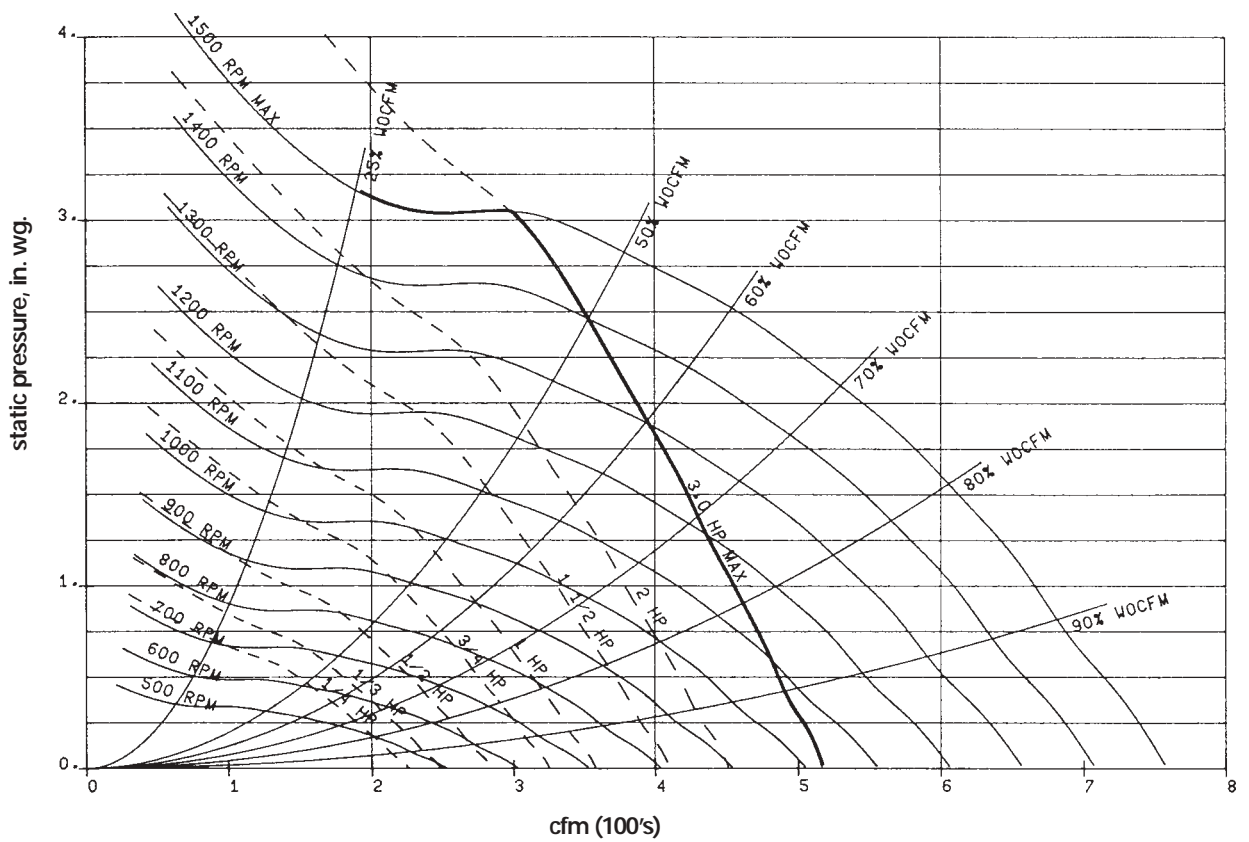
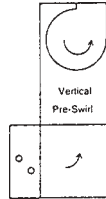


Table PD-11. Vertical Units, Pre-Swirl Arrangement Size 90

Unit Size	cfm	outlet velocity (ft/min)	Total Static Pressure, in. wg.															
			0.25		0.50		0.75		1.00		1.25		1.50		2.00		2.50	
			rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
90	1875	1600	523	0.24	654	0.36	766	0.48	864	0.61	960	0.78	1053	0.96	1215	1.36	1348	1.78
	2250	1920	574	0.37	692	0.49	797	0.63	892	0.78	976	0.93	1056	1.10	1215	1.51	1361	1.98
	2625	2240	631	0.53	737	0.68	833	0.82	923	0.99	1006	1.16	1081	1.33	1220	1.72	1358	2.18
	3000	2560	692	0.74	785	0.90	876	1.07	958	1.25	1037	1.43	1112	1.63	1246	2.02	1368	2.46
	3375	2880	758	1.01	840	1.19	922	1.38	1001	1.56	1073	1.76	1144	1.97	1277	2.40	1395	2.85
	3750	3200	826	1.35	899	1.53	972	1.74	1046	1.95	1117	2.15	1182	2.38	1308	2.85	—	—



Performance Data

Fan Curves

Chart PD-27. Fan Performance for Size 90 Vertical Units, Counter-Swirl

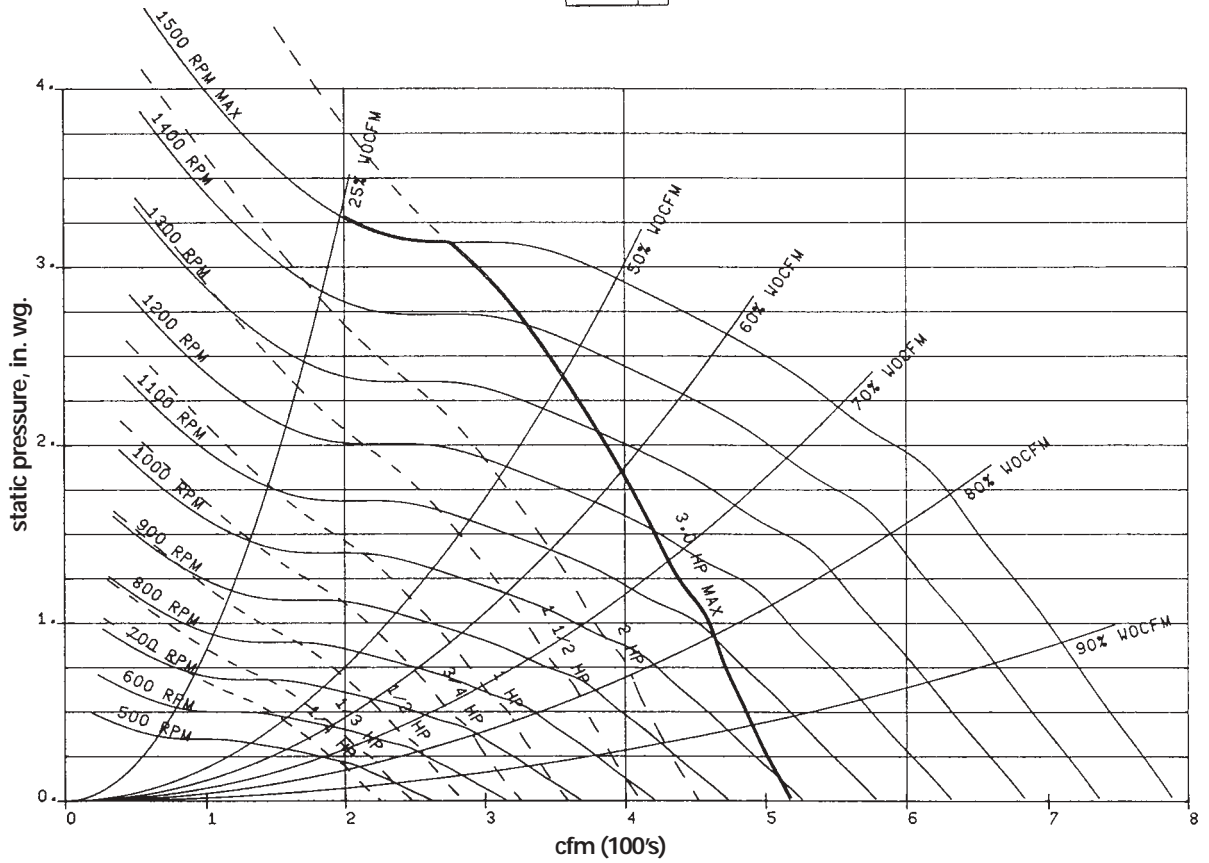
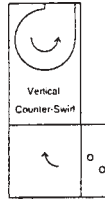


Table PD-12. Vertical Units, Counter-Swirl Arrangement Size 90

Unit Size	cfm	outlet velocity (ft/min)	Total Static Pressure, in. wg.															
			0.25		0.50		0.75		1.00		1.25		1.50		2.00		2.50	
			rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp	rpm	bhp
90	1875	1600	506	0.25	638	0.36	749	0.49	849	0.63	946	0.80	1037	0.98	1192	1.36	1320	1.77
	2250	1920	548	0.36	671	0.49	778	0.64	871	0.79	956	0.95	1038	1.14	1197	1.55	1337	2.00
	2625	2240	607	0.53	713	0.68	810	0.83	901	0.99	982	1.17	1057	1.36	1199	1.77	1338	2.24
	3000	2560	666	0.74	753	0.89	847	1.08	932	1.25	1012	1.44	1086	1.64	1219	2.06	1344	2.53
	3375	2880	728	1.01	803	1.17	891	1.38	969	1.57	1044	1.77	1116	1.98	1247	2.43	1364	2.91
	3750	3200	792	1.34	864	1.53	931	1.71	1012	1.96	1081	2.17	1149	2.39	1276	2.86	—	—



Performance Data

Cooling Capacities

Table PD-13. Chilled Water Coil Cooling Capacity, EDB = 80°F, EWB = 67°F, EWT = 45°F

Unit Size		rows of coil	airflow	Water Temperature Rise, ΔT																							
				6°F						8°F						10°F						12°F					
			tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	
12	2	300	4.8	4.8	65.6	62.2	1.6	0.27	4.0	4.0	67.9	63.0	1.0	0.11	3.7	3.7	68.9	63.3	0.7	0.06	3.4	3.4	69.8	63.6	0.6	0.04	
		400	6.0	6.0	66.3	62.5	2.0	0.42	4.5	4.5	69.8	63.7	1.1	0.14	4.1	4.1	70.7	64.0	0.8	0.08	3.8	3.8	71.5	64.2	0.6	0.05	
		500	7.1	7.1	67.2	62.8	2.4	0.57	4.9	4.9	71.2	64.1	1.2	0.16	4.4	4.4	72.0	64.4	0.9	0.09	4.0	4.0	72.7	64.6	0.7	0.05	
	4	300	11.6	8.3	54.9	54.5	3.9	2.08	9.6	7.5	57.3	56.9	2.4	0.86	7.4	6.7	59.8	59.4	1.5	0.35	7.3	7.3	63.5	61.5	1.2	0.25	
		400	14.3	10.5	56.2	55.6	4.8	3.04	11.9	9.6	58.2	57.6	3.0	1.29	9.5	8.7	60.3	59.7	1.9	0.56	8.6	8.6	64.3	61.8	1.4	0.34	
		500	16.5	12.5	57.3	56.5	5.5	3.98	13.9	11.5	59.1	58.3	3.5	1.71	11.3	10.5	60.9	60.0	2.3	0.77	8.6	8.6	64.3	61.8	1.4	0.34	
	6	300	14.9	9.8	50.4	50.3	5.0	4.27	13.5	9.2	52.2	52.1	3.4	2.10	11.8	8.5	54.3	54.2	2.4	1.10	9.9	7.8	56.6	56.5	1.7	0.58	
		400	18.7	12.6	51.5	51.4	6.2	6.49	16.9	11.8	53.2	53.1	4.2	3.18	14.9	11.0	55.1	55.0	3.0	1.68	12.8	10.1	57.0	56.9	2.1	0.91	
		500	22.1	15.1	52.6	52.4	7.4	8.80	20.0	14.2	54.2	54.0	5.0	4.29	17.7	13.3	55.9	55.7	3.5	2.28	15.2	12.3	57.6	57.4	2.5	1.25	
	18	2	450	8.6	8.0	63.9	61.2	2.9	0.87	5.7	5.7	68.5	63.2	1.4	0.24	4.9	4.9	70.1	63.7	1.0	0.12	4.5	4.5	70.9	64.0	0.8	0.07
			600	10.3	9.9	65.0	61.8	3.4	1.23	7.4	7.4	68.8	63.3	1.9	0.39	5.5	5.5	71.8	64.3	1.1	0.14	5.0	5.0	72.5	64.6	0.8	0.09
			750	11.6	11.6	66.0	62.3	3.9	1.55	8.8	8.8	69.4	63.5	2.2	0.53	5.8	5.8	73.0	64.7	1.2	0.16	5.3	5.3	73.6	64.9	0.9	0.10
4		450	17.7	12.5	54.8	54.3	5.9	4.90	15.4	11.6	56.6	56.1	3.9	2.23	12.9	10.6	58.6	58.0	2.6	1.07	10.2	9.6	60.6	60.0	1.7	0.50	
		600	21.4	15.7	56.3	55.6	7.1	6.96	18.7	14.6	57.9	57.2	4.7	3.19	16.0	13.6	59.5	58.7	3.2	1.58	13.1	12.5	61.1	60.3	2.2	0.78	
		750	24.5	18.5	57.7	56.7	8.2	8.95	21.5	17.3	59.1	58.0	5.4	4.11	18.5	16.2	60.4	59.4	3.7	2.06	15.5	15.1	61.8	60.7	2.6	1.06	
6		450	22.3	14.7	50.4	50.3	7.4	9.76	20.6	14.0	51.9	51.8	5.2	4.98	18.7	13.1	53.5	53.4	3.7	2.77	16.5	12.3	55.3	55.2	2.8	1.59	
		600	27.8	18.7	51.8	51.6	9.3	14.62	25.6	17.7	53.2	53.0	6.4	7.38	23.2	16.8	54.7	54.5	4.6	4.10	20.7	15.7	56.2	56.0	3.4	2.38	
		750	32.6	22.4	53.0	52.7	10.9	19.58	29.8	21.2	54.4	54.1	7.5	9.77	27.0	20.1	55.7	55.4	5.4	5.42	24.2	19.0	57.1	56.8	4.0	3.17	
24		2	600	12.2	11.1	63.2	60.8	4.1	0.72	8.2	8.2	67.6	62.9	2.0	0.20	7.5	7.5	68.6	63.3	1.5	0.11	6.9	6.9	69.5	63.6	1.2	0.07
			800	14.9	14.0	64.1	61.3	5.0	1.05	10.2	10.2	68.5	63.2	2.5	0.30	8.4	8.4	70.5	63.9	1.7	0.14	7.7	7.7	71.2	64.1	1.3	0.08
			1000	17.1	16.5	65.0	61.8	5.7	1.37	12.4	12.4	68.8	63.3	3.1	0.43	9.1	9.1	71.8	64.3	1.8	0.16	8.3	8.3	72.5	64.6	1.4	0.09
	4	600	25.1	17.4	53.7	53.3	8.4	3.94	21.7	16.0	55.8	55.4	5.4	1.78	18.0	14.6	58.0	57.6	3.6	0.83	13.6	12.9	60.5	60.0	2.3	0.35	
		800	30.8	22.0	55.1	54.6	10.3	5.78	26.9	20.4	56.9	56.3	6.7	2.63	22.7	18.8	58.7	58.1	4.5	1.26	18.1	17.1	60.7	60.0	3.0	0.60	
		1000	35.6	26.1	56.3	55.6	11.9	7.59	31.2	24.4	57.9	57.2	7.8	3.46	26.6	22.6	59.5	58.7	5.3	1.70	21.8	20.8	61.1	60.3	3.6	0.84	
	6	600	31.0	20.1	49.6	49.5	10.3	7.48	28.7	19.1	51.1	51.0	7.2	3.83	26.0	18.0	52.9	52.8	5.2	2.12	22.8	16.7	54.8	54.7	3.8	1.20	
		800	39.1	25.9	50.7	50.6	13.0	11.47	36.1	24.6	52.2	52.1	9.0	5.82	32.8	23.1	53.8	53.6	6.6	3.23	29.0	21.6	55.5	55.4	4.8	1.85	
		1000	46.3	31.1	51.8	51.6	15.4	15.69	42.6	29.6	53.2	53.0	10.6	7.88	38.7	27.9	54.7	54.5	7.7	4.37	34.4	26.2	56.2	56.0	5.7	2.53	
	36	2	900	24.7	19.2	60.6	58.4	8.2	3.16	19.8	17.4	62.5	60.2	5.0	1.21	13.9	13.9	66.0	62.4	2.8	0.41	10.8	10.8	69.1	63.4	1.8	0.18
			1200	29.4	23.7	62.1	59.4	9.8	4.38	24.3	21.8	63.5	60.8	6.1	1.77	18.3	18.3	66.2	62.4	3.7	0.69	12.1	12.1	70.9	64.0	2.0	0.23
			1500	33.2	27.7	63.2	60.2	11.1	5.50	27.9	25.8	64.4	61.4	7.0	2.29	21.9	21.9	66.8	62.6	4.4	0.96	15.4	15.4	70.7	64.0	2.6	0.35
4		900	41.6	27.8	52.0	51.7	13.9	12.13	38.2	26.4	53.4	53.1	9.6	6.09	34.5	24.8	55.0	54.6	6.9	3.34	30.3	23.2	56.7	56.3	5.1	1.88	
		1200	51.4	35.2	53.4	53.0	17.1	17.96	47.0	33.3	54.8	54.3	11.8	8.92	42.6	31.5	56.2	55.6	8.5	4.92	37.9	29.7	57.6	57.0	6.3	2.83	
		1500	59.8	41.9	54.7	54.0	19.9	23.84	54.5	39.7	56.0	55.3	13.6	11.74	49.4	37.7	57.2	56.5	9.9	6.46	44.2	35.6	58.5	57.7	7.4	3.76	
6		900	49.1	31.4	48.4	48.3	16.4	21.43	46.7	30.3	49.5	49.4	11.7	11.54	44.0	29.1	50.7	50.6	8.8	6.88	40.9	27.7	52.1	52.0	6.8	4.31	
		1200	62.4	40.4	49.4	49.3	20.8	33.30	59.0	38.9	50.6	50.5	14.8	17.69	55.4	37.4	51.8	51.7	11.1	10.44	51.4	35.7	53.0	52.9	8.6	6.53	
		1500	74.4	48.9	50.5	50.3	24.8	46.05	70.0	47.0	51.6	51.5	17.5	24.19	65.4	45.0	52.8	52.6	13.1	14.15	60.6	43.0	54.0	53.8	10.1	8.82	

EDB = entering dry-bulb temperature
 EWB = wet-bulb temperature
 EWT = entering water temperature
 tc = total capacity (MBh)
 sc = sensible capacity (MBh)
 ldb = leaving dry-bulb temperature
 lwb = leaving wet-bulb temperature
 gpm = water flow rate, gallons per minute
 wpd = water pressure drop @ average water density (ft H₂O)

- Notes:
- Some of the volumetric flow rates are less than those required for self-venting. See Table GD-1 on page 14.
 - Values lightly shaded means the gpm is below the minimum (<1.5 fps venting velocity) or above the maximum (>10 ft wg) recommended for most applications.
 - Values darkly shaded means the gpm is below the ARI limits (1.0 fps tubside velocity).
 - Capacities calculated with 0.00000 tube-side fouling factor.

cooling coil



Performance Data

Cooling Capacities

cooling coil

Table PD-14. Chilled Water Coil Cooling Capacity, EAT = 80°F DB/67°F WB, EWT = 45°F

		Water Temperature Rise, ΔT																								
Unit Size	rows of coil	airflow	6°F						8°F						10°F						12°F					
			tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd
54	2	1350	17.5	17.5	68.2	63.1	5.8	0.17	15.9	15.9	69.4	63.5	4.0	0.08	17.9	17.9	68.0	63.0	3.6	0.27	13.2	13.2	71.1	64.1	2.2	0.03
		1800	23.5	23.5	68.2	63.1	7.8	0.29	17.6	17.6	71.1	64.1	4.4	0.10	15.9	15.9	72.0	64.4	3.2	0.05	14.5	14.5	72.7	64.6	2.4	0.03
		2250	29.5	29.5	68.1	63.1	9.8	0.44	18.9	18.9	72.4	64.5	4.7	0.11	17.0	17.0	73.2	64.8	3.4	0.06	15.4	15.4	73.8	65.0	2.6	0.04
	4	1350	52.2	37.4	54.9	54.5	17.4	1.79	40.7	32.8	58.0	57.5	10.2	0.65	27.2	27.2	61.7	60.8	5.4	0.21	25.5	25.5	62.9	61.3	4.2	0.13
		1800	64.6	47.5	56.1	55.5	21.5	2.67	52.4	42.7	58.5	57.9	13.1	1.05	34.7	34.7	62.5	61.1	6.9	0.32	29.2	29.2	65.3	62.1	4.9	0.17
		2250	75.1	56.7	57.2	56.4	25.0	3.54	62.1	51.7	59.2	58.4	15.5	1.44	41.1	42.0	63.3	61.7	8.2	0.4	32.1	32.1	67.1	62.7	5.4	0.20
	6	1350	67.4	44.3	50.3	50.2	22.5	3.60	60.3	41.2	52.3	52.2	15.1	1.72	50.9	37.3	54.9	54.8	10.2	0.83	36.8	31.9	58.6	58.5	6.1	0.33
		1800	85.0	56.9	51.4	51.3	28.3	5.54	76.5	53.2	53.2	53.1	19.1	2.67	66.0	49.0	55.3	55.2	13.2	1.34	52.8	43.8	57.9	57.8	8.8	0.64
		2250	100.5	68.5	52.4	52.2	33.5	7.56	90.6	64.3	54.1	53.9	22.6	3.65	79.1	59.7	56.0	55.8	15.8	1.87	65.5	54.4	58.1	57.9	10.9	0.94
72	2	1800	33.2	32.0	63.9	61.4	11.1	0.60	20.3	20.3	69.8	63.6	5.1	0.14	18.5	18.5	70.7	64.0	3.7	0.07	16.9	16.9	71.5	64.2	2.8	0.05
		2400	42.0	40.7	64.6	61.7	14.0	0.93	22.5	22.5	71.5	64.2	5.6	0.16	20.3	20.3	72.3	64.5	4.1	0.09	18.4	18.4	73.0	64.7	3.1	0.05
		3000	48.8	48.2	65.5	62.1	16.3	1.24	24.0	24.0	72.7	64.6	6.0	0.19	21.6	21.6	73.5	64.9	4.3	0.10	19.6	19.6	74.1	65.1	3.3	0.06
	4	1800	73.8	51.5	54.1	53.6	24.6	3.72	63.2	47.2	56.2	55.8	15.8	1.63	49.3	41.8	58.9	58.5	9.9	0.68	32.9	32.9	63.5	61.4	5.5	0.23
		2400	90.3	64.9	55.5	54.9	30.1	5.43	78.4	60.2	57.3	56.6	19.6	2.43	64.3	54.8	59.3	58.7	12.9	1.11	44.4	44.4	63.2	61.4	7.4	0.40
		3000	104.1	77.0	56.7	55.9	34.7	7.10	91.0	71.8	58.3	57.5	22.8	3.21	76.4	66.3	60.0	59.1	15.3	1.52	57.0	57.0	62.8	61.2	9.5	0.63
	6	1800	91.9	59.9	49.8	49.7	30.6	7.07	84.9	56.8	51.4	51.3	21.2	3.58	76.1	53.1	53.3	53.2	15.2	1.94	64.8	48.6	55.5	55.4	10.8	1.03
		2400	115.5	76.7	51.0	50.9	38.5	10.79	106.5	72.9	52.5	52.4	26.6	5.44	96.2	68.5	54.1	54.0	19.2	2.98	84.0	63.6	56.0	55.8	14.0	1.66
		3000	136.4	92.3	52.1	51.9	45.5	14.69	125.2	87.5	53.6	53.4	31.3	7.33	113.4	82.7	55.0	54.8	22.7	4.03	100.2	77.4	56.6	56.4	16.7	2.29
90	2	2250	37.1	37.1	65.1	62.0	12.4	0.62	24.8	24.8	70.0	63.7	6.2	0.17	22.5	22.5	70.9	64.0	4.5	0.09	20.5	20.5	71.7	64.3	3.4	0.06
		3000	48.0	48.0	65.5	62.2	16.0	1.03	27.3	27.3	71.8	64.3	6.8	0.20	24.7	24.7	72.6	64.6	4.9	0.11	22.3	22.3	73.3	64.8	3.7	0.06
		3750	56.8	56.8	66.3	62.4	18.9	1.42	29.2	29.2	73.0	64.7	7.3	0.23	26.2	26.2	73.7	65.0	5.2	0.12	23.7	23.7	74.3	65.2	3.9	0.07
	4	2250	88.7	63.0	54.6	54.2	29.6	3.32	75.0	57.5	56.8	56.4	18.8	1.42	56.8	50.5	59.6	59.2	11.4	0.56	38.8	38.8	64.4	61.8	6.5	0.20
		3000	108.2	79.3	56.0	55.4	36.1	4.80	93.1	73.3	57.8	57.2	23.3	2.12	74.9	66.5	59.9	59.3	15.0	0.94	49.5	49.5	65.1	62.0	8.2	0.31
		3750	124.4	94.0	57.3	56.5	41.5	6.23	107.9	87.6	58.8	58.0	27.0	2.79	89.4	80.7	60.5	59.6	17.9	1.30	66.0	66.0	64.1	61.7	11.0	0.53
	6	2250	112.3	73.7	50.3	50.2	37.4	6.60	103.0	69.7	51.9	51.8	25.8	3.32	91.5	64.9	53.9	53.8	18.3	1.77	76.8	59.0	56.2	56.1	12.8	0.93
		3000	140.6	94.3	51.5	51.4	46.9	9.98	128.9	89.3	53.0	52.9	32.2	5.00	115.5	83.8	54.7	54.6	23.1	2.71	99.8	77.5	56.6	56.4	16.6	1.49
		3750	165.5	113.2	52.6	52.4	55.2	13.48	151.1	107.2	54.1	53.9	37.8	6.69	136.0	101.1	55.6	55.4	27.2	3.65	119.1	94.5	57.2	57.0	19.9	2.05

EAT = entering dry-bulb temperature
 EWB = wet-bulb temperature
 EWT = entering water temperature
 tc = total capacity (MBh)
 sc = sensible capacity (MBh)
 ldb = leaving dry-bulb temperature
 lwb = leaving wet-bulb temperature
 gpm = water flow rate, gallons per minute
 wpd = water pressure drop @ average water density (ft H2O)

- Notes:
- Some of the volumetric flow rates are less than those required for self-venting. See Table GD-1 on page 14.
 - Values lightly shaded means the gpm is below the minimum (<1.5 fps venting velocity) or above the maximum (>10 ft wg) recommended for most applications.
 - Values darkly shaded means the gpm is below the ARI limits (1.0 fps tubeside velocity).
 - Capacities calculated with 0.00000 tube-side fouling factor.



Performance Data

Cooling Capacities

high-capacity cooling coil, EWT = 40°F

Table PD-15. Chilled Water High-Capacity Cooling Coil Data, EAT = 80°F DB / 67°F WB and EWT = 40°F

Unit Size		Rows of Coil		Water Temperature Rise, ΔT																							
				6°F						10°F						16°F						20°F					
				tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd
12	2	300	9.3	6.8	59.5	57.2	3.1	2.25	5.0	5.0	65.0	62.0	1.0	0.28	3.9	3.9	68.2	63.1	0.5	0.08	3.4	3.4	69.7	63.6	0.3	0.04	
		400	11.0	8.3	61.2	58.5	3.7	3.05	6.3	6.3	65.6	62.2	1.3	0.43	4.4	4.4	70.1	63.8	0.5	0.09	3.8	3.8	71.5	64.2	0.4	0.05	
		500	12.3	9.6	62.6	59.4	4.1	3.77	7.5	7.5	66.4	62.5	1.5	0.58	4.7	4.7	71.5	64.2	0.6	0.10	4.0	4.0	72.7	64.6	0.4	0.06	
	4	300	16.1	10.3	49.0	48.6	5.4	9.70	13.4	9.0	52.7	52.3	2.7	2.71	8.2	7.0	59.0	58.5	1.0	0.48	6.6	6.4	60.7	60.2	0.7	0.22	
		400	19.9	12.9	50.8	50.3	6.6	14.19	16.4	11.4	54.2	53.6	3.3	3.91	10.5	9.1	59.5	58.8	1.3	0.75	7.4	7.4	63.1	61.3	0.7	0.27	
		500	23.0	15.2	52.4	51.7	7.7	18.65	18.9	13.5	55.6	54.8	3.8	5.07	12.4	11.0	60.1	59.3	1.6	1.01	8.2	8.2	65.1	62.0	0.8	0.32	
	6	300	19.2	11.8	44.4	44.3	6.4	17.91	17.2	10.9	47.2	47.1	3.4	5.87	13.4	9.1	52.4	52.3	1.7	1.59	10.0	7.8	56.5	56.4	1.0	0.64	
		400	24.3	15.1	45.8	45.7	8.1	27.58	21.6	13.9	48.6	48.5	4.3	8.82	16.8	11.7	53.4	53.2	2.1	2.39	13.0	10.2	56.8	56.7	1.3	1.01	
		500	28.9	18.2	47.1	46.9	9.6	37.84	25.5	16.6	49.9	49.8	5.1	11.86	19.8	14.1	54.4	54.2	2.5	3.20	15.5	12.5	57.4	57.2	1.6	1.39	
	18	2	450	14.1	10.1	59.6	57.1	4.7	5.24	9.6	8.4	63.1	60.5	1.9	1.00	5.3	5.3	69.4	63.5	0.7	0.14	4.5	4.5	70.8	64.0	0.5	0.07
			600	16.4	12.2	61.6	58.5	5.5	6.93	11.5	10.3	64.4	61.2	2.3	1.39	5.8	5.8	71.3	64.1	0.7	0.17	5.0	5.0	72.5	64.6	0.5	0.08
			750	18.1	14.0	63.1	59.5	6.0	8.41	13.0	12.0	65.4	61.8	2.6	1.74	6.2	6.2	72.5	64.6	0.8	0.19	5.3	5.3	73.6	64.9	0.5	0.09
4		450	23.8	15.2	49.4	49.0	7.9	21.65	20.3	13.6	52.5	52.0	4.1	6.38	14.4	11.2	57.4	56.9	1.8	1.46	9.7	9.4	61.0	60.4	1.0	0.48	
		600	29.0	18.9	51.4	50.8	9.7	31.19	24.6	17.0	54.4	53.7	4.9	8.98	17.7	14.2	58.5	57.7	2.2	2.11	12.7	12.4	61.3	60.5	1.3	0.78	
		750	33.4	22.2	53.2	52.3	11.1	40.42	28.1	19.9	55.9	55.0	5.6	11.44	20.4	16.9	59.5	58.5	2.6	2.72	15.2	15.0	61.9	60.8	1.5	1.06	
6		450	28.4	17.5	44.8	44.7	9.5	40.39	25.8	16.3	47.3	47.2	5.2	13.43	21.1	14.1	51.5	51.4	2.6	3.98	17.1	12.5	54.8	54.7	1.7	1.85	
		600	35.7	22.3	46.3	46.2	11.9	61.41	32.1	20.6	48.9	48.8	6.4	19.90	26.0	17.9	52.9	52.7	3.3	5.81	21.4	16.0	55.8	55.6	2.1	2.74	
		750	42.2	26.6	47.8	47.6	14.1	83.21	37.6	24.5	50.4	50.1	7.5	26.44	30.2	21.4	54.2	53.9	3.8	7.60	25.0	19.3	56.7	56.4	2.5	3.62	
24		2	600	21.2	14.7	57.8	55.7	7.1	5.51	15.1	12.2	61.5	59.2	3.0	1.13	8.2	8.2	67.6	62.9	1.0	0.16	7.2	7.2	69.2	63.4	0.7	0.08
			800	25.1	17.9	59.7	57.1	8.4	7.51	18.2	15.2	62.8	60.0	3.6	1.59	9.2	9.2	69.6	63.6	1.1	0.19	7.9	7.9	71.0	64.1	0.8	0.10
			1000	28.2	20.7	61.2	58.2	9.4	9.33	20.6	17.8	63.9	60.7	4.1	2.01	9.9	9.9	71.0	64.1	1.2	0.22	8.5	8.5	72.3	64.5	0.9	0.11
	4	600	33.9	21.3	47.8	47.5	11.3	20.30	29.6	19.3	50.8	50.4	5.9	6.19	21.7	16.0	55.8	55.4	2.7	1.50	15.3	13.5	59.6	59.1	1.5	0.53	
		800	42.0	26.8	49.6	49.1	14.0	30.09	36.3	24.3	52.5	52.0	7.3	8.96	26.9	20.4	56.9	56.3	3.4	2.21	19.9	17.7	59.9	59.3	2.0	0.86	
		1000	49.0	31.8	51.2	50.5	16.3	39.93	41.9	28.7	54.0	53.3	8.4	11.67	31.3	24.4	57.9	57.1	3.9	2.90	23.8	21.6	60.5	59.6	2.4	1.18	
	6	600	39.4	24.1	43.6	43.5	13.1	35.79	36.3	22.6	45.9	45.8	7.3	12.22	30.4	19.8	50.0	49.9	3.8	3.78	25.2	17.6	53.4	53.3	2.5	1.81	
		800	50.2	31.0	44.9	44.8	16.7	55.72	45.8	28.9	47.3	47.2	9.2	18.56	38.0	25.4	51.3	51.1	4.8	5.64	31.8	22.7	54.2	54.1	3.2	2.73	
		1000	60.0	37.4	46.1	46.0	20.0	77.13	54.2	34.7	48.6	48.4	10.8	25.19	44.6	30.4	52.4	52.3	5.6	7.52	37.5	27.5	55.1	54.9	3.7	3.67	
	36	2	900	36.0	23.9	56.0	54.0	12.0	17.67	29.4	21.1	58.8	56.6	5.9	4.71	18.1	16.7	63.2	60.9	2.3	0.81	11.2	11.2	68.8	63.3	1.1	0.23
			1200	42.9	29.2	58.0	55.6	14.3	24.46	34.8	25.9	60.5	57.9	7.0	6.42	22.8	21.3	63.9	61.2	2.9	1.24	12.4	12.4	70.6	63.9	1.2	0.27
			1500	48.5	33.8	59.6	56.8	16.2	30.74	39.2	30.0	61.9	58.9	7.8	7.97	26.6	25.3	64.7	61.6	3.3	1.63	16.4	16.4	70.1	63.7	1.6	0.45
4		900	53.6	33.3	46.5	46.2	17.9	58.72	48.6	30.9	48.8	48.5	9.7	19.26	39.9	27.1	52.7	52.4	5.0	5.71	33.0	24.2	55.6	55.2	3.3	2.71	
		1200	67.0	42.1	48.2	47.8	22.3	88.17	60.0	38.9	50.6	50.1	12.0	28.25	48.9	34.1	54.2	53.7	6.1	8.23	40.9	30.9	56.7	56.1	4.1	3.98	
		1500	78.6	50.1	49.8	49.2	26.2	118.26	69.9	46.1	52.1	51.5	14.0	37.21	56.5	40.5	55.5	54.9	7.1	10.68	47.6	36.9	57.7	57.0	4.8	5.21	
6		900	60.7	36.9	42.8	42.7	20.2	100.36	57.3	35.3	44.5	44.4	11.5	35.78	50.5	32.0	47.7	47.6	6.3	12.18	44.7	29.4	50.4	50.3	4.5	6.53	
		1200	77.9	47.7	44.0	43.9	26.0	157.96	72.8	45.3	45.8	45.7	14.6	55.06	63.3	40.8	49.1	49.0	7.9	18.21	55.9	37.6	51.6	51.5	5.6	9.71	
		1500	93.6	57.8	45.1	45.0	31.2	220.74	86.7	54.5	47.1	46.9	17.3	75.56	74.6	49.0	50.4	50.3	9.3	24.45	65.6	45.1	52.8	52.6	6.6	12.92	

EDB = entering dry-bulb temperature
 EWB = wet-bulb temperature
 EWT = entering water temperature
 tc = total capacity (MBh)
 sc = sensible capacity (MBh)
 ldb = leaving dry-bulb temperature
 lwb = leaving wet-bulb temperature
 gpm = water flow rate, gallons per minute
 wpd = water pressure drop @ average water density (ft H2O)

- Notes:
- Some of the volumetric flow rates are less than those required for self-venting. See Table GD-1 on page 14.
 - Values lightly shaded means the gpm is below the minimum (<1.5 fps venting velocity) or above the maximum (>10 ft wg) recommended for most applications.
 - Values darkly shaded means the gpm is below the ARI limits (1.0 fps tubeside velocity).
 - Capacities calculated with 0.00000 tube-side fouling factor.
 - High Capacity coils applicable where higher water pressure differentials are acceptable and are also recommended for Earthwise™ applications (See Note 6).
 - Earthwise™ is a trademark of the Trane to identify equipment designed for applications requiring greater water temperature rises, lower entering water temperatures (EWT) and lower air supply temperatures (ldb).



Performance Data

Cooling Capacities

Table PD-16. Chilled Water High-Capacity Cooling Coil Data, EAT = 80°F DB / 67°F WB and EWT = 40°F

Unit Size		rows of coil	airflow	Water Temperature Rise, ΔT																							
				6°F						10°F						16°F						20°F					
			tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	
54	2	1350	44.0	31.5	58.9	56.7	14.7	3.71	27.1	24.9	63.3	60.9	5.4	0.59	15.3	15.3	69.8	63.6	1.9	0.09	13.2	13.2	71.2	64.1	1.3	0.05	
		1800	51.8	38.4	60.7	58.0	17.3	5.00	34.2	31.7	64.0	61.2	6.8	0.90	16.8	16.8	71.5	64.2	2.1	0.11	14.4	14.4	72.8	64.6	1.4	0.06	
		2250	57.9	44.4	62.1	59.0	19.3	6.16	39.6	37.5	64.9	61.7	7.9	1.18	18.0	18.0	72.8	64.7	2.2	0.12	15.3	15.3	73.9	65.0	1.5	0.06	
	4	1350	73.2	46.5	48.8	48.4	24.4	15.17	62.7	41.8	51.9	51.6	12.5	4.50	41.2	33.0	57.8	57.4	5.2	0.90	25.9	25.9	62.6	61.2	2.6	0.26	
		1800	90.2	58.4	50.6	50.1	30.1	22.17	76.5	52.4	53.6	53.1	15.3	6.45	52.9	42.9	58.4	57.8	6.6	1.41	29.6	29.6	65.1	62.0	3.0	0.33	
		2250	104.7	69.0	52.2	51.5	34.9	29.11	88.1	62.0	55.0	54.3	17.6	8.32	60.9	50.7	60.0	59.1	7.6	1.8	39.5	39.5	64.1	61.7	4.0	0.56	
	6	1350	86.5	53.1	44.3	44.2	28.8	28.04	78.9	49.5	46.8	46.7	15.8	9.42	63.7	42.6	51.4	51.3	8.0	2.75	49.4	36.7	55.3	55.2	4.9	1.17	
		1800	109.7	68.1	45.7	45.6	36.6	43.12	98.9	63.1	48.2	48.1	19.8	14.13	79.9	54.7	52.5	52.3	10.0	4.12	64.0	48.2	55.7	55.6	6.4	1.85	
		2250	130.5	81.9	47.0	46.9	43.5	59.07	116.6	75.5	49.6	49.4	23.3	18.99	93.9	65.7	53.5	53.4	11.7	5.48	76.3	58.6	56.4	56.2	7.6	2.53	
72	2	1800	60.8	42.7	58.5	56.3	20.3	7.49	44.7	36.3	61.7	59.3	8.9	1.65	19.5	19.5	70.2	63.8	2.4	0.16	16.8	16.8	71.5	64.2	1.7	0.08	
		2400	71.3	51.9	60.4	57.7	23.8	10.05	53.4	44.9	63.0	60.2	10.7	2.28	21.5	21.5	71.9	64.4	2.7	0.18	18.3	18.3	73.1	64.8	1.8	0.09	
		3000	79.7	59.8	61.9	58.8	26.6	12.33	60.1	52.3	64.2	60.9	12.0	2.84	22.9	22.9	73.1	64.8	2.9	0.21	19.4	19.4	74.1	65.1	1.9	0.10	
	4	1800	98.5	62.4	48.6	48.2	32.8	29.42	86.1	56.8	51.4	51.0	17.2	9.08	64.6	47.8	55.9	55.5	8.1	2.30	45.1	40.3	59.7	59.2	4.5	0.81	
		2400	121.1	78.1	50.5	50.0	40.4	42.86	104.8	70.9	53.2	52.6	21.0	12.93	79.6	60.6	57.1	56.5	9.9	3.34	59.7	53.1	60.0	59.3	6.0	1.33	
		3000	140.2	92.2	52.2	51.4	46.7	56.08	120.4	83.6	54.7	54.0	24.1	16.63	91.8	72.2	58.2	57.4	11.5	4.32	71.2	64.4	60.6	59.7	7.1	1.82	
	6	1800	115.7	71.0	44.2	44.1	38.6	54.22	106.6	66.7	46.4	46.3	21.3	18.54	89.8	59.0	50.3	50.2	11.2	5.84	75.1	52.7	53.4	53.3	7.5	2.84	
		2400	146.5	90.9	45.7	45.6	48.8	83.15	133.5	84.8	48.0	47.9	26.7	27.76	111.4	74.9	51.7	51.6	13.9	8.56	94.2	67.8	54.4	54.3	9.4	4.24	
		3000	174.0	109.2	47.0	46.9	58.0	113.57	157.1	101.4	49.4	49.2	31.4	37.22	129.8	89.4	53.0	52.8	16.2	11.25	110.4	81.5	55.4	55.2	11.0	5.62	
90	2	2250	80.2	55.2	57.8	55.6	26.7	9.53	59.6	46.9	61.1	58.8	11.9	2.10	25.7	25.7	69.7	63.6	3.2	0.19	22.1	22.1	71.1	64.1	2.2	0.09	
		3000	94.4	67.1	59.7	57.1	31.5	12.94	71.3	57.9	62.5	59.7	14.3	2.93	28.3	28.3	71.5	64.2	3.5	0.22	24.1	24.1	72.7	64.6	2.4	0.11	
		3750	105.8	77.3	61.3	58.2	35.3	16.03	80.4	67.4	63.7	60.4	16.1	3.66	30.1	30.1	72.7	64.6	3.8	0.25	25.6	25.6	73.8	65.0	2.6	0.12	
	4	2250	127.0	79.8	47.8	47.5	42.3	28.77	111.8	72.8	50.7	50.3	22.4	9.00	84.7	61.3	55.3	54.9	10.6	2.34	60.2	51.8	59.1	58.7	6.0	0.85	
		3000	157.0	100.3	49.7	49.2	52.3	42.27	136.6	91.1	52.5	51.9	27.3	12.92	104.6	77.9	56.5	55.9	13.1	3.40	79.3	68.1	59.4	58.8	7.9	1.38	
		3750	182.7	118.5	51.4	50.7	60.9	55.70	157.6	107.6	54.0	53.2	31.5	16.72	121.0	92.7	57.6	56.8	15.1	4.41	94.4	82.5	60.0	59.2	9.4	1.89	
	6	2250	147.3	90.1	43.7	43.6	49.1	52.18	136.5	84.9	45.8	45.7	27.3	18.06	115.9	75.3	49.6	49.5	14.5	5.78	97.6	67.4	52.8	52.7	9.8	2.85	
		3000	187.5	115.8	45.0	44.9	62.5	80.66	171.8	108.3	47.3	47.2	34.4	27.26	144.4	95.9	51.0	50.9	18.1	8.54	122.7	86.7	53.8	53.7	12.3	4.27	
		3750	223.7	139.4	46.3	46.2	74.6	110.96	203.0	129.7	48.6	48.5	40.6	36.79	168.9	114.6	52.3	52.1	21.1	11.28	144.2	104.4	54.8	54.6	14.4	5.68	

EDB = entering dry-bulb temperature
 EWB = wet-bulb temperature
 EWT = entering water temperature
 tc = total capacity (MBh)
 sc = sensible capacity (MBh)
 ldb = leaving dry-bulb temperature
 lwb = leaving wet-bulb temperature
 gpm = water flow rate, gallons per minute
 wpd = water pressure drop @ average water density (ft H2O)

Notes:

- Some of the volumetric flow rates are less than those required for self-venting. See Table GD-1 on page 14.
- Values lightly shaded means the gpm is below the minimum (<1.5 fps venting velocity) or above the maximum (>10 ft wg) recommended for most applications.
- Values darkly shaded means the gpm is below the ARI limits (1.0 fps tubeside velocity).
- Capacities calculated with 0.00000 tube-side fouling factor.
- High Capacity coils applicable where higher water pressure differentials are acceptable and are also recommended for Earthwise™ applications (See Note 6).
- Earthwise™ is a trademark of the Trane to identify equipment designed for applications requiring greater water temperature rises, lower entering water temperatures (EWT) and lower air supply temperatures (ldb).

high-capacity cooling coil, EWT = 40°F



Performance Data

Cooling Capacities

Table PD-17. High-Capacity Chilled Water Cooling Coil Data, EAT = 80°F DB / 67°F WB and EWT = 45°F

Unit Size		rows of coil		airflow		Water Temperature Rise, ΔT																							
						10°F						12°F						16°F						20°F					
						tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd
12	2	300	4.0	4.0	67.9	63.0	0.8	0.18	3.7	3.7	68.8	63.3	0.6	0.11	3.2	3.2	70.4	63.9	0.4	0.05	2.7	2.7	71.9	64.4	0.3	0.03			
		400	4.8	4.8	69.1	63.4	1.0	0.26	4.1	4.1	70.6	63.9	0.7	0.14	3.5	3.5	72.1	64.4	0.4	0.06	2.9	2.9	73.3	64.8	0.3	0.04			
		500	5.8	5.8	69.6	63.6	1.2	0.36	4.5	4.5	71.9	64.4	0.7	0.16	3.8	3.8	73.2	64.8	0.5	0.07	3.1	3.1	74.3	65.2	0.3	0.04			
	4	300	10.1	7.7	56.7	56.3	2.0	1.61	8.6	7.1	58.5	58.0	1.4	0.87	5.9	5.9	62.2	61.0	0.7	0.26	5.2	5.2	64.3	61.8	0.5	0.14			
		400	12.4	9.8	57.8	57.2	2.5	2.35	10.7	9.1	59.3	58.6	1.8	1.29	7.2	7.2	63.8	61.6	0.9	0.37	5.9	5.9	66.5	62.5	0.6	0.18			
		500	14.4	11.7	58.8	58.0	2.9	3.06	12.5	11.0	60.1	59.2	2.1	1.70	8.7	8.7	64.2	61.7	1.1	0.53	6.5	6.5	68.2	63.1	0.7	0.21			
	6	300	13.6	9.3	52.0	51.9	2.7	3.79	12.4	8.7	53.6	53.5	2.1	2.30	9.6	7.6	57.0	56.9	1.2	0.87	7.2	6.7	59.7	59.6	0.7	0.35			
		400	17.0	11.8	53.1	53.0	3.4	5.66	15.5	11.2	54.6	54.4	2.6	3.44	12.2	9.9	57.5	57.4	1.5	1.34	8.8	8.7	60.3	60.2	0.9	0.50			
		500	20.0	14.2	54.2	54.0	4.0	7.56	18.2	13.5	55.5	55.3	3.0	4.59	14.4	12.0	58.5	58.2	1.8	1.79	10.5	10.5	61.0	60.6	1.0	0.68			
18	2	450	6.8	6.8	66.3	62.4	1.4	0.53	5.0	5.0	70.0	63.7	0.8	0.21	4.2	4.2	71.5	64.2	0.5	0.09	3.6	3.6	72.8	64.7	0.4	0.05			
		600	8.5	8.5	67.2	62.8	1.7	0.78	6.5	6.5	70.2	63.8	1.1	0.35	4.6	4.6	73.0	64.7	0.6	0.11	3.9	3.9	74.2	65.1	0.4	0.06			
		750	9.8	9.8	68.2	63.1	2.0	1.02	7.8	7.8	70.6	63.9	1.3	0.48	4.9	4.9	74.0	65.1	0.6	0.12	4.1	4.1	75.1	65.4	0.4	0.06			
	4	450	15.7	11.7	56.4	55.9	3.1	3.93	13.9	11.0	57.8	57.3	2.3	2.27	10.2	9.6	60.6	60.0	1.3	0.77	7.1	7.1	65.7	62.3	0.7	0.27			
		600	19.0	14.7	57.8	57.0	3.8	5.54	16.9	13.9	59.0	58.2	2.8	3.23	12.8	12.4	61.3	60.5	1.6	1.16	8.2	8.2	67.6	62.9	0.8	0.35			
		750	21.7	17.4	59.0	57.9	4.3	7.06	19.4	16.6	60.0	59.0	3.2	4.15	15.0	14.9	62.0	60.9	1.9	1.54	10.3	10.3	67.6	62.9	1.0	0.52			
	6	450	20.5	13.9	52.0	51.9	4.1	8.80	19.0	13.3	53.3	53.2	3.2	5.50	15.6	11.9	56.0	55.9	2.0	2.31	14.2	9.7	57.1	56.8	1.42	1.80			
		600	25.4	17.7	53.3	53.1	5.1	12.88	23.5	16.9	54.5	54.3	3.9	8.03	16.7	16.7	58.2	58.2	2.1	2.61	15.2	13.7	59.3	59.1	1.5	1.48			
		750	29.6	21.1	54.5	54.2	5.9	16.98	27.3	20.2	55.6	55.3	4.5	10.52	19.5	20.0	59.4	59.3	2.4	3.42	18.1	16.7	59.9	59.5	1.8	2.00			
24	2	600	10.8	10.6	63.9	61.5	2.2	0.61	8.0	8.0	68.0	63.0	1.3	0.25	6.6	6.6	70.0	63.7	0.8	0.11	5.6	5.6	71.5	64.2	0.6	0.05			
		800	12.9	12.9	65.4	62.1	2.6	0.84	10.5	10.5	68.1	63.1	1.7	0.41	7.4	7.4	71.6	64.3	0.9	0.13	6.2	6.2	73.0	64.7	0.6	0.06			
		1000	15.1	15.1	66.4	62.5	3.0	1.11	12.5	12.5	68.7	63.3	2.1	0.56	8.0	8.0	72.8	64.7	1.0	0.15	6.6	6.6	74.0	65.1	0.7	0.07			
	4	600	23.0	16.5	55.0	54.6	4.6	3.86	20.5	15.6	56.5	56.1	3.4	2.26	15.3	13.6	59.5	59.1	1.9	0.79	10.8	10.8	63.7	61.5	1.1	0.28			
		800	28.1	20.9	56.3	55.8	5.6	5.58	25.3	19.8	57.6	57.0	4.2	3.29	19.5	17.6	60.1	59.5	2.4	1.21	13.1	13.1	65.2	62.0	1.3	0.40			
		1000	32.5	24.9	57.5	56.7	6.5	7.25	29.3	23.6	58.6	57.8	4.9	4.30	22.9	21.2	60.7	59.9	2.9	1.63	16.2	16.2	65.3	62.1	1.6	0.59			
	6	600	29.2	19.3	50.8	50.7	5.8	8.12	27.2	18.5	52.1	52.0	4.5	5.15	22.7	16.6	54.9	54.8	2.8	2.21	18.0	14.9	57.4	57.3	1.8	1.80			
		800	36.6	24.8	52.0	51.8	7.3	12.18	34.0	23.7	53.2	53.1	5.7	7.69	28.5	21.5	55.7	55.6	3.6	3.33	22.7	19.2	58.2	58.1	2.3	1.47			
		1000	43.1	29.8	53.0	52.8	8.6	16.38	40.0	28.5	54.2	54.0	6.7	10.27	33.5	25.8	56.7	56.6	4.2	4.44	27.1	23.5	58.7	58.6	2.7	2.02			
36	2	900	22.1	18.2	61.6	59.4	4.4	2.76	19.0	17.1	62.8	60.6	3.2	1.49	11.8	11.8	68.1	63.1	1.5	0.37	8.8	8.8	71.1	64.1	0.9	0.15			
		1200	26.4	22.6	62.9	60.2	5.3	3.83	23.1	21.4	63.8	61.1	3.8	2.13	15.9	15.9	68.0	63.0	2.0	0.64	9.8	9.8	72.6	64.6	1.0	0.17			
		1500	30.0	26.5	64.0	60.9	6.0	4.81	26.5	25.2	64.7	61.7	4.4	2.73	19.1	19.1	68.4	63.2	2.4	0.89	10.4	10.4	73.7	65.0	1.0	0.20			
	4	900	38.5	26.5	53.3	53.0	7.7	12.46	35.7	25.3	54.5	54.1	6.0	7.79	29.7	22.9	56.9	56.5	3.7	3.32	23.3	20.8	59.1	59.0	2.3	1.43			
		1200	47.3	33.5	54.7	54.2	9.5	18.10	43.8	32.0	55.8	55.3	7.3	11.25	36.7	29.2	57.9	57.4	4.6	4.86	29.5	26.5	60.0	59.4	2.9	2.18			
		1500	54.9	39.8	55.9	55.2	11.0	23.70	50.7	38.2	56.9	56.2	8.4	14.68	42.5	34.9	59.1	58.3	5.3	6.33	34.7	32.1	60.6	59.9	3.5	2.93			
	6	900	46.6	30.2	49.5	49.4	9.3	24.30	44.3	29.2	50.6	50.5	7.4	15.95	39.0	27.0	52.9	52.8	4.9	7.55	32.9	24.5	55.4	55.3	3.3	3.72			
		1200	58.8	38.9	50.6	50.5	11.8	36.94	55.6	37.5	51.7	51.6	9.3	24.00	48.7	34.6	53.9	53.8	6.1	11.23	41.4	31.6	56.1	56.0	4.1	5.61			
		1500	69.7	46.8	51.7	51.5	13.9	50.21	65.7	45.1	52.7	52.6	11.0	32.37	57.3	41.8	54.8	54.7	7.2	15.00	48.8	38.3	56.9	56.7	4.9	7.52			

tc = Total capacity (MBh)
 sc = Sensible capacity (MBh)
 ldb = Leaving dry-bulb temperature (o F)
 lwb = Leaving wet-bulb temperature (o F)
 gpm = Water flow rate, gallons per minute
 wpd = Water pressure drop @ average water density (ft H2O)
 Notes:

- Some of the volumetric flow rates are less than those required for self-venting. See Table GD-1 on page 14.
- Values lightly shaded means the gpm is below the minimum (<1.5 fps venting velocity) or above the maximum (>10 ft wg) recommended for the application.
- Values darkly shaded means the gpm is below the ARI limits (1.0 fps tubeside velocity).
- Capacities calculated with 0.00000 tube-side fouling factor.
- High Capacity coils applicable where higher water pressure differentials are acceptable and are also recommended for Earthwise™ applications (See Note 6).
- Earthwise™ is a trademark of the Trane to identify equipment designed for applications requiring greater water temperature rises, lower entering water temperatures (EWT) and lower air supply temperatures (ldb).

high-capacity cooling coil, EWT = 45°F



Performance Data

Cooling Capacities

Table PD-18. High-Capacity Chilled Water Cooling Coil Data, EAT = 80°F DB / 67°F WB and EWT = 45°F

Unit Size		rows of coil	airflow	Water Temperature Rise, ΔT																							
				10°F						12°F						16°F						20°F					
		tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd	tc	sc	ldb	lwb	gpm	wpd		
54	2	1350	17.9	17.9	68.0	63.0	3.6	0.27	14.5	14.5	70.3	63.8	2.4	0.13	12.3	12.3	71.8	64.3	1.5	0.06	10.3	10.3	73.1	64.8	1.0	0.03	
		1800	24.2	24.2	67.8	63.0	4.8	0.47	16.1	16.1	71.9	64.4	2.7	0.16	13.5	13.5	73.2	64.8	1.7	0.07	11.2	11.2	74.4	65.2	1.1	0.04	
		2250	29.0	29.0	68.3	63.1	5.8	0.66	17.2	17.2	73.1	64.8	2.9	0.18	14.3	14.3	74.2	65.1	1.8	0.08	11.8	11.8	75.2	65.5	1.2	0.04	
	4	1350	48.1	35.7	56.0	55.6	9.6	2.75	41.8	33.3	57.7	57.2	7.0	1.53	25.5	25.5	62.9	61.2	3.2	0.38	20.7	20.7	66.1	62.4	2.1	0.18	
		1800	58.9	45.3	57.2	56.6	11.8	3.96	51.9	42.6	58.6	58.0	8.7	2.27	35.0	35.0	62.4	61.1	4.4	0.66	23.4	23.5	68.2	63.1	2.3	0.22	
		2250	67.9	53.9	58.3	57.5	13.6	5.13	60.4	51.0	59.4	58.6	10.1	2.97	49.5	47.6	61.1	60.2	6.2	1.22	25.5	25.5	69.7	63.6	2.6	0.25	
	6	1350	62.9	42.3	51.6	51.5	12.6	6.19	58.0	40.2	53.0	52.9	9.7	3.85	46.3	35.5	56.2	56.1	5.8	1.54	36.2	33.7	58.7	58.6	3.6	0.69	
		1800	78.5	54.1	52.8	52.6	15.7	9.19	72.4	51.6	54.0	53.9	12.1	5.73	63.1	45.93	55.9	55.8	7.9	2.67	43.5	40.5	59.6	59.5	4.3	0.92	
		2250	92.1	64.9	53.8	53.7	18.4	12.24	84.9	62.0	55.0	54.8	14.2	7.60	69.9	56.3	57.3	57.2	8.7	3.19	53.4	50.2	59.8	59.7	5.3	1.32	
72	2	1800	32.1	31.6	64.1	61.6	6.4	0.89	22.6	22.6	68.6	63.3	3.8	0.34	15.7	15.7	72.1	64.4	2.0	0.10	13.1	13.1	73.4	64.9	1.3	0.05	
		2400	37.7	37.7	65.8	62.3	7.5	1.19	30.8	30.8	68.4	63.2	5.1	0.59	17.2	17.2	73.5	64.9	2.1	0.12	14.2	14.2	74.6	65.3	1.4	0.06	
		3000	43.9	43.9	66.8	62.6	8.8	1.57	36.8	36.8	68.9	63.3	6.1	0.82	18.2	18.2	74.5	65.2	2.3	0.13	15.0	15.0	75.5	65.5	1.5	0.06	
	4	1800	67.2	48.8	55.4	55.0	13.4	5.72	60.6	46.2	56.7	56.3	10.1	3.41	52.6	34.2	58.0	57.5	6.6	0.78	26.6	26.6	66.6	62.6	2.7	0.31	
		2400	81.5	61.4	56.8	56.2	16.3	8.09	73.9	58.4	57.9	57.3	12.3	4.87	64.2	50.4	59.2	58.5	8.0	1.53	38.2	38.2	65.6	62.2	3.8	0.59	
		3000	93.5	72.8	58.0	57.2	18.7	10.38	84.9	69.5	59.0	58.1	14.2	6.26	73.8	72.7	60.3	59.4	9.2	2.64	43.9	55.1	66.8	63.1	4.4	0.64	
	6	1800	85.5	57.1	51.2	51.1	17.1	12.31	80.0	54.8	52.4	52.3	13.3	7.87	67.4	49.6	55.0	54.9	8.4	3.45	54.2	44.7	57.4	57.3	5.4	1.80	
		2400	106.5	72.8	52.5	52.4	21.3	18.21	99.2	69.8	53.6	53.5	16.5	11.54	84.1	63.8	55.9	55.8	10.5	5.11	67.6	57.5	58.3	58.2	6.8	2.32	
		3000	124.7	87.3	53.6	53.4	24.9	24.20	115.9	83.7	54.7	54.5	19.3	15.24	98.3	76.5	57.0	56.8	12.3	6.75	80.4	69.9	58.9	58.7	8.0	3.15	
90	2	2250	43.0	40.6	63.6	61.2	8.6	1.13	30.9	30.9	67.6	62.9	5.1	0.44	20.6	20.6	71.7	64.3	2.6	0.12	17.2	17.2	73.1	64.7	1.7	0.06	
		3000	52.8	51.1	64.6	61.7	10.6	1.66	41.4	41.4	67.5	62.9	6.9	0.75	22.6	22.6	73.2	64.8	2.8	0.15	18.7	18.7	74.4	65.2	1.9	0.07	
		3750	60.6	60.2	65.5	62.1	12.1	2.15	49.4	49.4	68.1	63.1	8.2	1.04	24.0	24.0	74.2	65.1	3.0	0.16	19.7	19.7	75.2	65.5	2.0	0.08	
	4	2250	87.4	62.4	54.8	54.4	17.5	5.70	79.1	59.1	56.2	55.8	13.2	3.43	60.2	51.8	59.1	58.7	7.5	1.25	40.3	39.5	63.9	61.4	4.0	1.80	
		3000	106.5	78.6	56.3	55.6	21.3	8.13	96.8	74.8	57.4	56.8	16.1	4.92	76.2	67.0	59.8	59.1	9.5	1.90	51.0	51.0	64.6	61.9	5.1	0.62	
		3750	122.6	93.3	57.4	56.6	24.5	10.48	111.5	89.0	58.5	57.7	18.6	6.34	89.5	80.7	60.5	59.6	11.2	2.54	63.9	63.9	64.6	61.8	6.4	0.93	
	6	2250	109.9	72.7	50.7	50.6	22.0	12.07	103.1	69.8	51.9	51.8	17.2	7.76	87.3	63.2	54.5	54.4	10.9	3.44	68.5	55.8	57.5	57.4	6.9	1.50	
		3000	137.4	92.9	51.9	51.8	27.5	17.99	128.4	89.1	53.1	53.0	21.4	11.46	109.3	81.4	55.4	55.3	13.7	5.12	88.2	73.2	57.9	57.8	8.8	2.34	
		3750	161.6	111.6	53.0	52.8	32.3	24.06	150.5	107.0	54.1	53.9	25.1	15.23	128.1	97.7	56.5	56.3	16.0	6.80	105.0	89.6	58.3	58.2	10.5	3.19	

tc = total capacity (MBh)
 sc = sensible capacity (MBh)
 ldb = leaving dry-bulb temperature (o F)
 lwb = leaving wet-bulb temperature (o F)
 gpm = water flow rate, gallons per minute
 wpd = water pressure drop @ average water density (ft H2O)
 Notes:

- Some of the volumetric flow rates are less than those required for self-venting. See Table GD-1 on page 14.
- Values lightly shaded means the gpm is below the minimum (<1.5 fps venting velocity) or above the maximum (>10 ft wg) recommended for the application.
- Values darkly shaded means the gpm is below the ARI limits (1.0 fps tubeside velocity).
- Capacities calculated with 0.00000 tube-side fouling factor.
- High Capacity coils applicable where higher water pressure differentials are acceptable and are also recommended for Earthwise™ applications (See Note 6).
- Earthwise™ is a trademark of Trane to identify equipment designed for applications requiring greater water temperature rises, lower entering water temperatures (EWT) and lower air supply temperatures (ldb).

high-capacity cooling coil, EWT = 45°F



Performance Data

Cooling Capacities

Table PD-19. DX Coil Capacities, Unit Sizes 12-36

Unit Size	airflow	suct. temp	4-Row Coil												6-Row Coil											
			Entering Dry Bulb/Wet Bulb °F												Entering Dry Bulb/Wet Bulb °F											
			75/63				80/67				85/71				75/63				80/67				85/71			
tc	sc	ldb	lwb	tc	sc	ldb	lwb	tc	sc	ldb	lwb	tc	sc	ldb	lwb	tc	sc	ldb	lwb	tc	sc	ldb	lwb			
12	300	40	9.3	7.3	52.7	52.3	12.2	8.5	54.2	53.8	15.3	9.6	55.9	55.5	11.4	8.3	49.6	49.5	14.4	9.5	51.1	51.0	17.4	10.6	53.0	52.9
		45	6.6	6.3	56.0	55.6	9.3	7.4	57.7	57.3	12.4	8.5	59.2	58.8	8.6	7.2	53.3	53.2	11.6	8.4	54.6	54.5	14.8	9.6	56.1	56.0
		50	4.8	4.8	60.5	57.8	6.6	6.4	60.7	60.3	9.2	7.4	62.7	62.2	6.0	5.9	56.8	56.3	8.6	7.2	58.2	58.1	11.8	8.4	59.5	59.4
	400	40	11.1	9.2	54.1	53.5	14.4	10.5	56.1	55.5	17.7	11.7	58.4	57.8	13.7	10.5	51.2	51.0	16.9	11.7	53.3	53.2	20.2	12.9	55.7	55.6
		45	8.1	8.0	56.8	56.2	11.1	9.3	59.0	58.3	14.6	10.6	61.0	60.4	10.4	9.1	54.3	54.1	13.9	10.5	56.0	55.9	17.4	11.8	58.2	58.0
		50	5.9	5.9	61.5	58.1	8.0	8.0	61.8	60.9	11.1	9.4	63.8	63.1	7.5	7.5	57.9	56.7	10.4	9.2	59.0	58.9	14.1	10.6	60.9	60.7
	500	40	12.6	10.9	55.2	54.5	16.0	12.3	57.7	56.9	19.5	13.6	60.4	59.6	15.4	12.3	52.6	52.4	18.8	13.7	55.1	54.9	22.3	14.9	57.9	57.7
		45	9.3	9.3	58.0	56.8	12.6	11.0	60.0	59.2	16.2	12.4	62.5	61.7	12.0	10.9	55.1	54.9	15.7	12.5	57.3	57.1	19.3	13.9	59.9	59.7
		50	7.0	7.0	62.4	58.4	9.3	9.3	63.2	61.3	12.6	11.2	64.8	63.9	8.9	8.9	58.8	57.1	12.0	11.1	59.8	59.6	15.9	12.6	62.1	61.
18	450	40	13.6	10.8	53.1	52.6	17.0	12.2	55.4	54.9	20.5	13.4	57.9	57.4	15.6	11.9	51.0	50.9	18.9	13.2	53.4	53.3	22.3	14.3	56.1	56.0
		45	10.1	9.4	55.9	55.4	13.7	10.9	58.0	57.4	17.4	12.3	60.3	59.7	12.4	10.5	53.7	53.6	16.0	12.0	55.7	55.6	19.6	13.3	58.1	58.0
		50	7.4	7.4	60.0	57.5	10.1	9.6	60.7	60.1	13.8	11.0	62.8	62.2	9.1	8.8	56.7	56.3	12.5	10.7	58.4	58.3	16.4	12.2	60.5	60.4
	600	40	15.6	13.3	54.8	54.1	19.3	14.8	57.6	56.8	23.0	16.2	60.6	59.8	17.9	14.6	52.9	52.7	21.4	16.0	55.7	55.6	25.0	17.3	58.9	58.6
		45	12.1	11.9	57.0	56.3	15.8	13.5	59.6	58.8	19.7	15.0	62.4	61.6	14.6	13.2	54.9	54.8	18.4	14.8	57.6	57.4	22.2	16.3	60.4	60.2
		50	9.1	9.1	61.2	58.0	12.1	12.0	61.8	60.9	15.9	13.7	64.4	63.5	11.1	11.1	58.2	56.8	14.7	13.5	59.6	59.4	18.8	15.1	62.2	62.0
	750	40	17.2	15.5	56.2	55.3	20.9	17.1	59.3	58.3	24.8	18.6	62.6	61.5	19.6	17.0	54.4	54.1	23.3	18.6	57.5	57.2	27.0	20.0	60.9	60.5
		45	13.7	13.7	58.4	56.9	17.4	15.8	60.9	59.9	21.3	17.4	64.0	62.9	16.3	15.7	56.0	55.7	20.1	17.4	58.9	58.6	24.1	19.0	62.1	61.8
		50	10.6	10.6	62.2	58.4	13.7	13.3	63.4	61.4	17.5	16.1	65.6	64.4	12.9	12.9	59.4	57.3	16.5	16.1	60.6	60.2	20.6	17.8	63.5	63.2
24	600	40	20.2	15.4	51.6	51.3	26.2	17.8	53.0	52.6	32.4	20.0	54.7	54.3	22.6	16.6	49.8	49.7	28.5	18.9	51.2	51.1	34.5	21.0	53.1	53.0
		45	14.6	13.1	55.1	54.7	20.3	15.4	56.6	56.2	26.9	17.8	58.0	57.6	17.0	14.2	53.4	53.3	23.0	16.7	54.7	54.6	29.5	19.0	56.2	56.1
		50	10.4	10.4	59.3	57.3	14.5	13.2	60.0	59.5	20.4	15.5	61.6	61.2	11.9	11.6	57.0	56.4	16.9	14.3	58.3	58.2	23.4	16.7	59.7	59.6
	800	40	24.3	19.3	53.1	52.5	31.0	22.0	55.0	54.5	37.8	24.4	57.3	56.7	27.1	20.8	51.3	51.2	33.6	23.3	53.4	53.3	40.1	25.6	55.9	55.7
		45	17.8	16.7	56.1	55.5	24.4	19.4	58.0	57.4	31.6	22.1	60.0	59.4	20.6	18.1	54.4	54.2	27.6	21.0	56.2	56.0	34.6	23.5	58.3	58.1
		50	13.0	13.0	60.3	57.7	17.7	16.9	60.8	60.2	24.5	19.6	62.9	62.2	14.9	14.9	58.1	56.8	20.6	18.3	59.2	59.0	28.0	21.1	61.1	60.9
	1000	40	27.6	22.8	54.3	53.6	34.6	25.6	56.7	56.0	41.8	28.2	59.4	58.6	30.5	24.5	52.7	52.5	37.3	27.2	55.2	55.0	44.2	29.7	58.1	57.8
		45	20.6	19.9	56.9	56.1	27.8	23.0	59.1	58.3	35.2	25.8	61.6	60.8	23.7	21.7	55.2	55.0	31.0	24.8	57.5	57.2	38.3	27.5	60.0	59.8
		50	15.3	15.3	61.1	58.0	20.5	20.3	61.6	60.7	27.9	23.3	63.9	63.1	17.6	17.6	59.0	57.2	23.7	22.1	60.0	59.7	31.4	25.1	62.3	62.0
36	900	40	32.5	24.1	50.6	50.3	41.8	27.7	51.9	51.6	51.3	31.1	53.6	53.2	37.8	26.6	48.0	47.9	46.9	30.2	49.4	49.3	56.2	33.4	51.2	51.1
		45	23.9	20.4	54.3	54.0	32.9	24.1	55.6	55.3	43.0	27.8	57.0	56.6	29.3	22.9	51.8	51.7	38.9	26.8	52.9	52.8	48.7	30.3	54.4	54.3
		50	16.6	16.2	58.2	56.9	23.7	20.6	59.2	58.8	33.2	24.2	60.7	60.2	20.5	19.4	55.4	55.3	29.5	23.1	56.7	56.6	39.9	26.9	57.9	57.8
	1200	40	39.2	30.1	52.1	51.6	49.5	34.2	54.0	53.5	60.1	37.9	56.3	55.8	45.5	33.3	49.7	49.6	55.6	37.2	51.7	51.6	66.0	40.8	54.1	54.0
		45	29.1	26.0	55.3	54.8	39.7	30.3	57.0	56.5	50.7	34.3	59.0	58.5	35.8	29.2	52.8	52.7	46.7	33.6	54.5	54.4	57.6	37.5	56.6	56.5
		50	20.9	20.9	59.2	57.2	28.9	26.3	60.1	59.6	40.0	30.5	62.0	61.4	25.7	25.2	55.9	55.8	36.0	29.5	57.7	57.6	47.8	33.9	59.4	59.3
	1500	40	44.4	35.5	53.4	52.8	55.3	39.9	55.8	55.1	66.7	43.9	58.4	57.7	51.4	39.2	51.2	51.0	62.1	43.4	53.6	53.5	73.3	47.3	56.4	56.2
		45	33.6	31.1	56.2	55.5	44.9	35.8	58.3	57.6	56.6	40.1	60.7	60.0	41.2	35.0	53.8	53.6	52.7	39.7	55.9	55.8	64.3	43.9	58.4	58.2
		50	24.7	24.7	60.1	57.6	33.4	31.6	60.9	60.2	45.2	36.2	63.2	62.4	30.1	29.4	56.7	56.3	41.5	35.5	58.5	58.4	53.8	40.1	60.8	60.6

Notes: DX coils are equipped with with a single distributor. Do not manifold two, independent refrigeration circuits into a single-circuited DX (evaporator) coil.

tc = total capacity (MBh)
 sc = sensible capacity (MBh)
 ldb = leaving dry bulb temperature
 lwb = leaving wet bulb temperature
 unshaded areas = distributor size of 3/16 inch
 shaded areas = distributor size of 1/4 inch

DX coil



Performance Data

Cooling Capacities

DX coil

Table PD-20. DX Coil Capacities, Unit Sizes 54-90

Unit Size	airflow	suct. temp	4-Row Coil Entering Dry Bulb/Wet Bulb °F												6-Row Coil Entering Dry Bulb/Wet Bulb °F											
			75/63				80/67				85/71				75/63				80/67				85/71			
			tc	sc	ldb	lwb	tc	sc	ldb	lwb	tc	sc	ldb	lwb	tc	sc	ldb	lwb	tc	sc	ldb	lwb	tc	sc	ldb	lwb
54	1350	40	46.0	34.7	51.6	51.1	58.9	39.8	53.1	52.6	72.0	44.4	55.1	54.6	54.0	38.7	48.8	48.7	66.6	43.6	50.5	50.4	79.6	48.1	52.6	52.5
		45	33.8	29.6	55.0	54.5	46.5	34.8	56.6	56.0	60.4	39.9	58.2	57.6	41.9	33.5	52.4	52.3	55.5	39.0	53.7	53.6	69.1	43.8	55.5	55.4
		50	23.8	23.8	58.9	57.1	33.5	29.9	59.9	59.3	46.8	35.0	61.5	61.0	29.6	28.6	55.7	55.6	42.1	33.8	57.3	57.2	56.7	39.2	58.7	58.5
	1800	40	54.9	43.2	53.1	52.5	68.9	48.8	55.3	54.6	83.4	53.9	57.8	57.1	64.0	48.0	50.7	50.5	77.9	53.5	53.0	52.8	92.3	58.6	55.4	55.3
		45	40.9	37.5	56.1	55.3	55.5	43.5	58.0	57.3	70.4	49.0	60.3	59.5	50.7	42.5	53.5	53.3	65.6	48.5	55.5	55.3	80.6	54.0	57.8	57.6
		50	29.8	29.8	60.0	57.5	40.6	38.0	60.8	60.1	55.8	43.9	62.9	62.1	36.7	35.8	56.5	56.2	51.0	43.0	58.3	58.1	67.0	49.0	60.3	60.1
	2250	40	61.5	50.6	54.5	53.7	76.4	56.6	57.1	56.2	91.8	62.2	59.9	59.0	71.6	56.3	52.2	52.0	86.3	62.2	54.9	54.6	101.6	67.5	57.7	57.5
		45	46.9	44.7	56.9	56.0	62.1	51.2	59.4	58.4	77.9	57.1	62.0	61.0	57.7	50.6	54.5	54.3	73.4	57.1	56.9	56.7	89.2	63.0	59.6	59.3
		50	35.0	35.0	60.9	57.9	46.7	45.5	61.7	60.7	62.4	51.8	64.2	63.1	43.0	41.8	57.6	56.6	58.2	51.5	59.2	59.0	74.9	57.9	61.7	61.4
72	1800	40	51.7	42.1	53.7	53.2	68.9	49.1	55.2	54.6	88.2	56.1	56.7	56.1	70.0	50.8	49.3	49.2	90.0	58.7	50.3	50.2	110.7	66.0	51.6	51.5
		45	36.8	36.2	56.7	56.2	51.4	42.3	58.7	58.1	69.5	49.1	60.3	59.7	51.6	43.0	53.3	53.2	71.0	50.8	54.3	54.2	92.7	58.6	55.4	55.3
		50	26.6	26.6	61.6	58.1	36.4	36.3	61.7	60.8	50.9	42.6	63.6	62.9	35.7	34.8	57.0	56.4	51.3	43.2	58.2	58.1	71.8	50.8	59.4	59.3
	2400	40	61.8	52.8	55.0	54.2	81.9	61.0	56.9	56.1	103.9	69.0	58.9	58.1	85.3	64.0	50.7	50.5	108.1	73.0	52.3	52.1	131.4	81.3	54.2	54.1
		45	44.8	44.8	58.1	56.8	61.4	53.2	59.9	59.1	82.5	61.1	61.9	61.1	63.4	54.9	54.2	54.0	86.3	64.2	55.7	55.5	110.9	73.1	57.3	57.1
		50	32.9	32.9	62.5	58.5	44.4	44.4	63.2	61.4	60.9	53.8	64.7	63.8	44.9	43.7	58.0	56.8	62.9	55.4	59.1	58.8	87.1	64.5	60.7	60.4
	3000	40	70.3	62.4	56.1	55.1	92.4	71.6	58.3	57.3	115.5	80.1	60.8	59.7	97.6	75.9	51.9	51.7	122.0	85.6	54.0	53.8	147.0	94.4	56.4	56.1
		45	51.8	51.7	59.3	57.3	69.8	63.2	60.9	59.8	92.9	72.0	63.3	62.1	73.4	65.9	55.0	54.7	98.7	76.4	56.9	56.6	124.8	86.0	59.0	58.7
		50	38.3	38.3	63.4	58.8	51.5	51.4	64.5	61.8	69.2	64.1	65.7	64.5	53.2	53.2	58.9	57.1	73.0	66.8	59.8	59.5	99.5	77.0	61.8	61.4
90	2250	40	66.0	53.3	53.4	52.9	87.8	62.1	54.9	54.4	112.4	71.0	56.3	55.8	91.4	65.1	48.6	48.5	116.7	75.2	49.5	49.4	143.2	84.5	50.8	50.7
		45	46.9	45.6	56.6	56.0	65.6	53.4	58.4	57.9	88.8	62.0	60.0	59.4	67.9	55.1	52.7	52.6	92.9	65.1	53.6	53.5	120.5	75.2	54.6	54.5
		50	33.8	33.8	61.3	58.1	46.3	46.2	61.4	60.7	65.1	53.7	63.4	62.8	46.6	45.4	56.2	56.1	67.5	55.3	57.7	57.6	94.2	65.2	58.7	58.6
	3000	40	79.1	66.8	54.7	54.0	104.7	77.2	56.6	55.9	132.8	87.4	58.5	57.8	111.6	82.2	50.0	49.8	140.9	93.7	51.5	51.4	171.1	104.2	53.4	53.2
		45	57.2	57.1	57.7	56.7	78.6	67.3	59.7	58.9	105.5	77.4	61.6	60.8	83.5	70.3	53.7	53.5	113.4	82.5	55.0	54.8	144.9	93.9	56.6	56.4
		50	41.9	41.9	62.3	58.4	56.6	56.6	62.9	61.3	77.9	67.9	64.5	63.7	58.6	57.1	57.3	56.5	83.1	70.9	58.6	58.4	114.8	82.7	60.0	59.8
	3750	40	90.0	79.0	55.8	54.9	118.4	90.8	58.0	57.0	148.0	101.6	60.4	59.4	128.2	97.5	51.3	51.0	159.7	110.0	53.3	53.0	192.4	121.3	55.6	55.3
		45	66.1	66.0	59.0	57.2	89.4	79.9	60.7	59.6	119.1	91.2	63.0	61.9	96.9	84.6	54.5	54.2	129.9	98.1	56.2	55.9	163.7	110.4	58.3	58.0
		50	48.9	48.9	63.2	58.7	65.7	65.6	64.1	61.7	88.6	80.9	65.5	64.4	69.5	67.6	58.2	56.8	96.5	85.5	59.3	59.0	131.3	98.7	61.1	60.8

Notes: DX coils are equipped with with a single distributor. Do not manifold two, independent refrigeration circuits into a single-circuited DX (evaporator) coil.

tc = total capacity (MBh)
 sc = sensible capacity (MBh)
 ldb = leaving dry bulb temperature
 lwb = leaving wet bulb temperature
 unshaded areas = distributor size of 3/16 inch
 shaded areas = distributor size of 1/4 inch



Performance Data

Heating Capacities

high-capacity hot water coil

Table PD-27. Six-Row High Capacity Hot Water Heating Coil Data, EAT = 60°F and EWT = 120°F

Unit Size	airflow	Water Temperature Drop, ΔT																															
		10°F				15°F				20°F				25°F				30°F				40°F											
		tc	lat	gpm	wpd	tc	lat	gpm	wpd	tc	lat	gpm	wpd	tc	lat	gpm	wpd	tc	lat	gpm	wpd	tc	lat	gpm	wpd	tc	lat	gpm	wpd				
12	300	18.2	115.9	3.6	5.58	17.7	114.3	2.4	2.54	17.0	112.2	1.7	1.42	16.1	109.6	1.3	0.87	15.0	106.2	1.0	0.56	11.7	96.0	0.6	0.22								
	400	23.5	114.2	4.7	8.90	22.7	112.3	3.0	4.00	21.7	110.0	2.2	2.20	20.5	107.3	1.6	1.34	19.1	104.0	1.3	0.85	14.9	94.3	0.7	0.33								
	500	28.4	112.4	5.7	12.60	27.3	110.3	3.6	5.60	26.0	107.9	2.6	3.05	24.5	105.1	2.0	1.84	22.7	101.8	1.5	1.16	17.7	92.6	0.9	0.45								
18	450	27.0	115.2	5.4	12.60	26.2	113.6	3.5	5.74	25.2	111.7	2.5	3.21	24.1	109.3	1.9	1.98	22.7	106.5	1.5	1.29	18.7	98.2	0.9	0.55								
	600	34.6	113.2	6.9	19.87	33.4	111.3	4.5	8.92	32.0	109.2	3.2	4.92	30.4	106.7	2.4	3.01	28.5	103.8	1.9	1.94	23.3	95.9	1.2	0.82								
	750	41.5	111.1	8.3	27.78	39.9	109.0	5.3	12.34	38.0	106.8	3.8	6.74	35.9	104.2	2.9	4.08	33.5	101.2	2.2	2.60	27.4	93.6	1.4	1.09								
24	600	36.8	116.5	7.4	10.84	35.9	115.2	4.8	4.98	34.8	113.5	3.5	2.81	33.5	111.5	2.7	1.76	31.8	108.9	2.1	1.16	26.7	101.1	1.3	0.52								
	800	47.7	115.0	9.6	17.41	46.3	113.4	6.2	7.90	44.7	111.5	4.5	4.41	42.7	109.2	3.4	2.73	40.4	106.6	2.7	1.79	33.9	99.0	1.7	0.79								
	1000	57.8	113.3	11.6	24.79	55.9	111.5	7.5	11.13	53.7	109.5	5.4	6.15	51.1	107.1	4.1	3.77	48.1	104.3	3.2	2.45	40.1	97.0	2.0	1.07								
36	900	55.8	117.2	11.2	29.48	54.8	116.2	7.3	13.71	53.6	114.9	5.4	7.85	52.0	113.3	4.2	5.01	50.1	111.3	3.3	3.39	44.5	105.6	2.2	1.67								
	1200	72.6	115.8	14.6	47.66	71.0	114.6	9.5	21.93	69.0	113.1	6.9	12.43	66.7	111.3	5.3	7.84	63.9	109.1	4.3	5.25	56.3	103.3	2.8	2.53								
	1500	88.4	114.3	17.7	68.26	86.1	112.9	11.5	31.11	83.3	111.2	8.4	17.47	80.2	109.3	6.4	10.92	76.4	107.0	5.1	7.25	66.8	101.0	3.3	3.43								
54	1350	82.7	116.5	16.6	8.83	80.7	115.1	10.8	4.07	78.2	113.4	7.8	2.30	75.1	111.3	6.0	1.44	71.1	108.5	4.7	0.95	58.3	99.8	2.9	0.41								
	1800	107.1	114.9	21.5	14.14	104.0	113.3	13.9	6.44	100.2	111.3	10.0	3.60	95.7	109.0	7.7	2.23	90.3	106.3	6.0	1.46	74.6	98.2	3.7	0.63								
	2250	129.9	113.2	26.0	20.09	125.5	111.4	16.8	9.05	120.3	109.3	12.1	5.01	114.4	106.9	9.2	3.07	107.5	104.1	7.2	1.99	88.8	96.4	4.4	0.86								
72	1800	110.1	116.4	22.1	16.92	107.6	115.1	14.4	7.82	104.5	113.5	10.5	4.44	100.7	111.6	8.1	2.80	96.2	109.3	6.4	1.87	82.6	102.3	4.1	0.87								
	2400	142.4	114.7	28.5	27.02	138.4	113.2	18.5	12.34	133.8	111.4	13.4	6.93	128.3	109.3	10.3	4.32	121.8	106.8	8.1	2.85	104.2	100.0	5.2	1.31								
	3000	172.3	112.9	34.5	38.25	166.7	111.3	22.3	17.30	160.4	109.3	16.1	9.62	153.1	107.1	12.3	5.94	144.7	104.5	9.7	3.89	123.0	97.8	6.2	1.76								
90	2250	137.9	116.5	27.6	15.78	134.9	115.3	18.0	7.32	131.1	113.7	13.1	4.17	126.4	111.8	10.1	2.64	120.7	109.5	8.1	1.76	103.7	102.5	5.2	0.82								
	3000	178.6	114.9	35.8	25.23	173.7	113.4	23.2	11.56	168.0	111.6	16.8	6.51	161.2	109.5	12.9	4.07	153.1	107.0	10.2	2.69	131.1	100.3	6.6	1.24								
	3750	216.3	113.2	43.3	35.75	209.5	111.5	28.0	16.22	201.7	109.6	20.2	9.04	192.6	107.4	15.4	5.60	182.1	104.8	12.2	3.67	155.0	98.1	7.8	1.67								

EAT = entering air temperature
 EWT = entering water temperature
 tc = total capacity (MBh)
 sc = sensible capacity (MBh)
 ldb = leaving dry bulb temperature
 lwb = leaving wet bulb temperature
 gpm = gallons per minute, water flow
 wpd = water pressure drop, feet of water

Notes: 1. Some of the water flow rates shown in this table are below the self-venting rates listed in table GD-1 on page 14. Consult Table GD-1 for the minimum flow rate if self-venting is required.
 2. Capacities calculated with 0.00025 fouling factor. lat = EAT + (tc x 922.1) / cfm
 3. Lat must be less than 130°F to avoid overheating the motor. LWT = EWT - (tc x 2.0) / gpm

Table PD-28. Heating Correction Factors

Use the capacity correction factors, listed below, for different entering conditions:

EAT - EWT (°F) =	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20
Correction factor =	1.500	1.417	1.333	1.250	1.167	1.083	1.000	0.917	0.833	0.750	0.667	0.583	0.500	0.417	0.333	0.250	0.167

Water pressure drop (wpd) data is shown in Figures PD-11 through PD-17 on pages 23-26. This is at 180°F. Use the wpd correction factors listed below for different average water temperatures.

Average water temp. °F =	190	180	170	160	150	140	130	120	110	100	90	80
Correction factor =	1.00	1.00	1.01	1.01	1.02	1.03	1.04	1.06	1.07	1.09	1.11	1.14



Performance Data

Heating Capacities

Table PD-29. Steam Coil Capacity Data

Unit Size	airflow	Q/ITD	Steam Pressure											
			2			5			10			15		
			tc	lat	apd	tc	lat	apd	tc	lat	apd	tc	lat	apd
12	300	0.123	19.38	120	0.11	20.46	123	0.11	21.98	128	0.11	23.26	131	0.11
	400	0.142	22.36	112	0.18	23.61	114	0.18	25.38	118	0.18	26.86	122	0.18
	500	0.157	24.80	106	0.26	26.19	108	0.26	28.15	112	0.26	29.81	115	0.26
18	450	0.168	26.49	114	0.15	27.96	117	0.15	30.05	122	0.15	31.81	125	0.15
	600	0.192	30.33	107	0.25	32.04	109	0.25	34.44	113	0.25	36.47	116	0.25
	750	0.212	33.44	101	0.36	35.33	103	0.36	37.99	107	0.36	40.24	109	0.36
24	600	0.278	44.13	128	0.08	46.53	132	0.08	49.94	137	0.08	52.83	141	0.08
	800	0.321	50.77	119	0.14	53.54	122	0.14	57.54	126	0.14	60.91	130	0.14
	1000	0.366	57.78	113	0.21	60.93	116	0.21	65.50	120	0.21	69.36	124	0.21
36	900	0.430	68.19	130	0.08	71.91	134	0.08	77.18	139	0.08	81.64	144	0.08
	1200	0.496	78.46	120	0.13	82.74	124	0.13	88.92	128	0.13	94.13	132	0.13
	1500	0.566	89.49	115	0.18	94.37	118	0.18	101.46	122	0.18	107.43	126	0.18
54	1350	0.645	102.28	130	0.08	107.86	134	0.08	115.77	139	0.08	122.45	144	0.08
	1800	0.744	117.68	120	0.13	124.10	124	0.13	133.38	128	0.13	141.20	132	0.13
	2250	0.849	134.23	115	0.18	141.55	118	0.18	152.19	122	0.18	161.15	126	0.18
72	1800	0.840	133.06	128	0.08	140.32	132	0.08	150.61	137	0.08	159.31	142	0.08
	2400	0.968	153.10	119	0.14	161.45	122	0.14	173.56	127	0.14	183.76	131	0.14
	3000	1.103	174.21	114	0.21	183.71	116	0.21	197.57	121	0.21	209.23	124	0.21
90	2250	1.077	170.67	130	0.08	179.98	134	0.08	193.17	139	0.08	204.33	144	0.08
	3000	1.242	196.37	120	0.13	207.08	124	0.13	222.58	128	0.13	235.64	132	0.13
	3750	1.417	223.95	115	0.18	236.17	118	0.18	253.95	122	0.18	268.93	126	0.18

steam heating coil

EAT = entering air temperature
 apd = air pressure drop
 lat = leaving air temperature
 tc = total capacity, MBh
 ITD = saturated steam temp entering coil - entering air temperature
 Q/ITD = tc/(sat. steam temp - EAT)

Shaded data shown only to allow performance calculations. Do not operate at this condition, lat > 130°F.

- Notes:
- To determine heating capacities at different entering steam pressures or a different entering air temperature, compute the new ITD and multiply it by the Q/ITD.
 - lat = (capacity, MBh) * (1000 Btu/h/MBh) / [(cfm) * (60 min/h) * (0.075 lb dry air/ft³) * (0.241 Btu/(lb))] + (EAT)

Controls

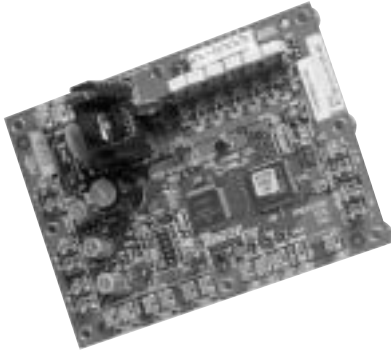


Figure C-1. Tracer ZN010 Control Board

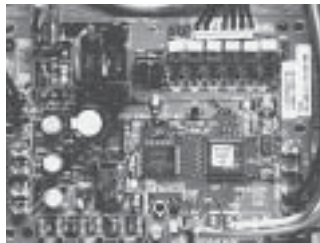


Figure C-2. Tracer ZN510 Control Board

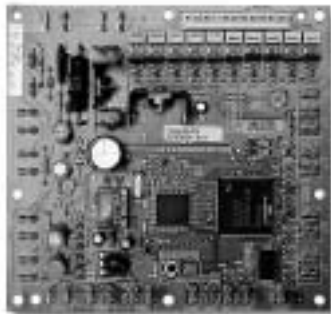


Figure C-3. Tracer ZN520 Control Board

Control Options

Blower coil air handlers are available without controls or with one of four different control options:

- control interface
- Tracer™ ZN010
- Tracer™ ZN510
- Tracer™ ZN520

Units without controls have a junction box mounted on the drive side for motor power wire terminations. Control option descriptions follow below. A complete list of controller inputs and outputs are in Tables C-1 and C-2 on page 53. See pages 55–57 for information on end device options.

Control Interface

The control interface is for use with a field-supplied low voltage thermostat. It includes a control box with a transformer, motor contactor, and disconnect switch. All hot leads to the motor are disconnected at the contactor and disconnect switch to eliminate the risk of shock during service. The end devices are mounted with the wires pulled and terminated inside the two-sided terminal strip. All field connections, other than power, are on the outside of the terminal strip.

Tracer™ Controls

The Tracer family of controllers, Tracer ZN010; ZN510; and ZN520, offer Trane's combined advantages of simple and dependable operation. Standard control features include options normally available on more elaborate control systems. All control options are available factory-configured or can be field-configured using Rover™ service software. For more detailed information, refer to the Trane publication, *CNT-IOP-1* or *CNT-SVX04A-EN*.

Tracer ZN010 is a stand-alone microprocessor controller. Tracer ZN510 or ZN520 function as either a stand-alone or as part of a Trane Integrated Comfort System (ICS).

In the stand-alone configuration, the Tracer controller receives operation commands from the zone sensor and/or the auto changeover sensor (on auto changeover units). The entering water temperature is read from the auto changeover sensor and determines if the unit is capable of cooling or heating. The zone sensor module is capable of transmitting the following information to the controller:

- timed override on/cancel request
- zone setpoint
- current zone temperature
- fan mode selection (off-auto-high-low)

Blower coil air handlers with Tracer ZN510 or ZN520 can operate as part of an Integrated Comfort™ System (ICS) building automation system controlled by Tracer Summit™. The controller is linked directly to the Summit control panel via a twisted pair communication wire, requiring no additional interface device (i.e., a command unit). The Trane ICS system can monitor or override Tracer controller control points. This includes such points as temperature and output positions.

Rover™ Service Software

This windows-based software package option allows field service personnel to easily monitor, save, download, and configure Tracer controllers through a communication link from a portable computer. When connected to the communication link, Rover can view any Tracer controller that is on the same communication link.

Controls

Control Features

The following control functions are standard features on units with Tracer ZN010, ZN510, or ZN520.

Entering Water Temperature Sampling Function

Using the entering water temperature sampling function, the controller provides accurate two-pipe system changeover—without sacrificing the benefits of two-way control valves. Also, it eliminates inefficient bleed or bypass lines that can allow unnecessary waterflow through the system.

The entering water temperature sampling function prevents a two-way control valve from sensing the incorrect entering water temperature during long periods when the control valve is closed. If the demand for heating or cooling does not exist for a long period, the entering water will eventually approach ambient temperature.

This function periodically samples the entering water temperature by opening the hydronic valve. The valve opens for 20 seconds to allow the water temperature to stabilize. Then the controller reads the entering water temperature for up to three minutes to see if the correct water temperature is available for the selected operating mode.

The entering water temperature must be five degrees or more above the space temperature to allow hydronic heating and five degrees or more below the space temperature to allow hydronic

cooling. If the correct water temperature for the operating mode is available, the unit begins normal heating or cooling operation. If the correct water temperature is not available, the controller closes the control valve and waits 60 minutes before attempting to sample the entering water temperature again.

A factory-provided thermistor senses the entering water temperature on change-over cooling/heating coil units. The sensor is wired to the controller for field-installation on the entering water pipe. This sensor must detect accurate water temperature for proper changeover.

Automatic Heat/Cool Mode Determination

The controller automatically determines whether heating or cooling is needed—based on space and system conditions. Utilizing a proportional/integral (PI) control algorithm to maintain the space temperature at the active heating or cooling setpoint. The controller measures the space temperature and active setpoint temperature to determine the unit's heating or cooling capacity (zero to 100%).

Occupied/Unoccupied Operation

The occupancy input utilizes a binary switch (i.e. motion sensor, timeclock, etc.) that allows the zone sensor to utilize its unoccupied internal setpoints.

Random Start

This feature randomly staggers multiple unit startup to reduce electrical demand spikes.

Warmup

The two-position mixing box damper option closes during the occupied mode when the space temperature is three degrees or more below the heating setpoint temperature. The damper remains closed during warmup until the space temperature is within two degrees of the heating setpoint temperature.

Cool-down

The two-position mixing box damper option closes during the occupied mode when the space temperature is three degrees or more above the cooling setpoint temperature. The damper remains closed during cool-down until the space temperature is within two degrees of the cooling setpoint temperature.

Manual Output Test Function

This feature is an invaluable tool for troubleshooting a unit. By simply pressing the controller's test button, service personnel can manually exercise outputs in a pre-defined sequence.

Peer to Peer Communication (Tracer ZN510 and ZN520)

Peer to peer communication allows multiple units in one space to share the same zone sensor and provide simultaneous heating and cooling. The Tracer ZN510 or ZN520 controller can share information between units on the same communication link using a twisted pair wire in the field. Unit configuration must be modified with Rover service tool.



Controls

Tracer ZN520 Additional Features

Automatic Ventilation Reset

To ensure proper ventilation rates, the controller is configured with two fresh air damper minimum position setpoints for occupied operation. As the fan switches speeds, the damper adjusts to maintain the correct ventilation rate for the space.

Economizing Control

With the Tracer ZN520 controller configured for economizing control, it will calculate the required cooling capacity every ten seconds and modulate the damper option open to the calculated position. If the setpoint is not satisfied, the damper will continue to open until the setpoint condition is met or the damper is 100% open. If this still does not satisfy the setpoint, the cooling valve option will begin to open to satisfy the load requirements. Once capacity exceeds the load requirements, the valve begins to close until the setpoint is reached or the damper reaches its minimum position. The minimum position is field-adjustable. This option uses a three-wire, floating point damper actuator.

When the controller is economizing or using cascade temperature control, it utilizes a thermistor to sense discharge air. It is factory mounted on blower coils without electric heat near the last coil's discharge. The sensor is field-installed in the ductwork when blower coils have electric heat. Tracer Summit® can also utilize this temperature value as a read-only point. Cascade temperature control

uses both the zone and discharge air temperatures to more accurately to calculate the required unit capacity.

A thermistor to sense fresh air is factory mounted at the unit's fresh air opening for use in economizer applications or as a read-only point for Summit. If the fresh air temperature is a read-only value, it will not impact the control algorithm. In an economizer application, a fresh air temperature signal must be provided either by this thermistor or Tracer Summit.

Fan Status

The Tracer ZN520 controller monitors the fan output status to determine if the fan is operating.

Filter Maintenance Status

The controller has an adjustable timer that indicates through Summit or Rover when filter maintenance is necessary. Filter maintenance status is based on cumulative fan run hours.

Dehumidification

When the unit is equipped with a reheat coil and humidity sensor, the controller will keep humidity levels within an acceptable range. This feature helps reduce the risk of microbial growth and damage to building interiors.

Water Valve Override

Using Summit or Rover, the water valve override function drives all water valves in every unit fully open simultaneously. This helps reduce the time required for waterside balancing.

Cascade Control

The controller maintains discharge air temperature using a cascade control algorithm. The discharge air temperature is based on the difference between the space temperature and setpoint. Unit capacity modulates to achieve the discharge air temperature.

Interoperability

The Tracer ZN520 controller can be used with a Tracer Summit system or on other control systems that support LonTalk® and the SCC profile.

Evaporator Defrost (DX units)

A frost sensing device, Froststat™, is provided on units with a DX cooling coil and either a control interface or Tracer ZN520 controls. The Froststat is factory-installed on the DX coil to indicate and help prevent possible frost conditions. When a frost condition exists, the Froststat disables the Tracer ZN520 controller compressor operation by opening the controller's triac output off. Fan and economizer damper operation continue to operate, defrosting the coil.

The Froststat automatically resets when the coil temperature returns to a normal value, closing the compressor triac output circuit. The Tracer ZN520 controller senses the defrost device reset and immediately returns to normal cooling control, clearing the defrosting and compressor lockout status, and sending out a normal diagnostic message. The minimum compressor off-time is obeyed, so the compressor may not turn on immediately when the defrost condition ends.

Controls

Table C-1. Tracer Controller Input/Output Summary

	Tracer Controller		
	ZN010	ZN510	ZN520
Binary Outputs			
2-speed fan	✓	✓	✓
2-position hydronic valve	✓	✓	✓
2-position mixing box damper	✓	✓	
1-stage electric heat	✓	✓	✓
modulating mixed air damper			✓
modulating hydronic valve			✓
2-stage electric heat			✓
reheat (hydronic)			✓
generic	✓	✓	✓
Binary Inputs			
condensate overflow detection	✓	✓	✓
low temperature detection	✓	✓	✓
occupancy	✓	✓	✓
generic input	✓	✓	✓
Analog Inputs			
zone temperature	✓	✓	✓
setpoint	✓	✓	✓
fan mode: auto, high, low	✓	✓	✓
entering water	✓	✓	✓
discharge air	✓	✓	✓
outside air			✓
generic			✓

Note: The generic input and output are for use with a Tracer Summit system only.

Table C-2. Tracer Controller Function Summary

	Tracer Controller		
	ZN010	ZN510	ZN520
Control Functions			
entering water temp. sampling (purge)	✓	✓	✓
timed override	✓	✓	✓
auto changeover	✓	✓	✓
fan cycling	✓	✓	
warmup	✓	✓	✓
pre-cool	✓	✓	✓
data sharing (master/slave)		✓	✓
random start	✓	✓	✓
dehumidification			✓
staged capacity (2-stage electric supplementary)			✓
DX cooling			✓
Other Functions			
manual test	✓	✓	✓
filter maintenance timer	✓	✓	✓
setpoint limits	✓	✓	✓



Controls

Sequence of Operation

Tracer Controls Sequence of Operation

Fan Speed Switch (Units with 2-speed fan only)

Off: Fan is turned off, two-position damper option spring-returns closed.

High or Low: Fan runs continuously at the selected speed. The two-position mixing box damper option opens to an adjustable mechanical stop-position.

Tracer ZN010 and ZN510

Off: Fan is off; control valves and the low air temperature detection option is still active.

Auto (Fan Cycling): The fan and mixing box damper cycle with control valve option to maintain setpoint temperature. If the unit has a two-speed fan, in cooling mode the fan cycles from off to high and in heating mode it cycles from off to low (factory default that can be field-adjusted using Rover service software). When no heating or cooling is required, the fan is off and the mixing box damper option closes. Units with two-speed fans can also be field-configured using Rover to run at a defined speed when the fan speed switch is in the auto position.

Low or High (Continuous Fan): The fan operates continuously while control valve option cycles to maintain setpoint temperature. The mixing damper option is open.

Tracer ZN520

Off: Fan is off; control valve options and mixing box damper options close. The low air temperature detection option is still active.

Auto: Fan speed control in the auto setting allows the modulating control valve option and single or two-speed fan to work cooperatively to meet precise capacity requirements, while minimizing fan speed (motor/energy/acoustics) and valve position (pump energy/chilled water reset). As the capacity requirement increases at low fan speed, the water valve opens. When the low fan speed capacity switch point is reached, the fan switches to high speed and the water valve repositions to maintain an equivalent capacity. The reverse sequence takes place with a decrease in required capacity.

Units with two-speed fans on low or high: The fan runs continuously at the selected speed and the valve option cycles to meet setpoint.

Controls

End Device Options

See Table C-3 for a complete list of end device options.

Two-Position Mixing Box Damper Actuator (available with all control options except Tracer ZN520)

This damper actuator uses a 24V signal. It allows zero to 50% fresh air. The damper will drive open to an adjustable mechanical stop-position whenever the fan is running during occupied mode and will spring-return closed when the fan turns off.

Note: Trane highly recommends using the low temperature detection option with mixing box dampers to detect possible freeze conditions.

Low Temperature Detection

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.

Condensate Overflow Detection

A float switch is factory-installed in the drain pan to detect a high condensate water level. When the float switch rises, the normally closed input opens a corresponding set of binary input terminals. This also causes the fan to disable, and the control valve and fresh air damper options to close. Although the float switch closes when the high condensate level recedes, you must manually reset the controller before normal unit operation can occur. If using a Tracer ZN510 or ZN520 controller you can reset using Tracer Summit. Use Rover service software to reset units with Tracer ZN010, ZN510, or ZN520.

Fan Status Switch

The fan status switch is a normally-open differential pressure device that senses the differential between the inlet and discharge of the fan housing to verify fan operation. Nominal trip pressure is factory set at 0.15 in. wg., with the maximum trip pressure slightly less than the minimum operating static pressure of the unit.

Dirty Filter Switch (only available with control interface)

The dirty filter switch is a normally-open differential pressure device that senses differential pressure through the filter to indicate a dirty filter.

Discharge Air Sensor

The discharge air sensor is factory mounted on the fan housing downstream of the coils for use as a status point or with other control algorithms. On units with optional electric heat, the sensor is field-mounted in the ductwork, downstream of the unit discharge.

End Devices On Tracer ZN520 Controllers

The following end device options are only available on blower coil air handlers with Tracer ZN520:

- economizer damper actuator
- humidity
- outside air

Table C-3. End Device Option Availability

Device	Control Interface	Tracer ZN010	Tracer ZN510	Tracer ZN520
condensate float switch	✓	✓	✓	✓
low limit	✓	✓	✓	✓
filter status	✓			
filter run-time diagnostic	✓	✓	✓	
fan status	✓			✓
positive proof fan status switch	✓			✓
2-position control valves	✓	✓	✓	✓
modulating control valves	✓			✓
2-position mixing box actuator	✓	✓	✓	
modulating mixing box actuator	✓			
1-stage electric heat	✓	✓	✓	✓
2-stage electric heat	✓			✓
Frostat™ protection (DX coils)	✓			✓

Note: Units with a DX coil are provided with a DX cool relay if unit has the control interface or Tracer ZN510 controls.

Controls

Zone Sensor Options

A variety of wall-mounted zone sensors are available for design flexibility. Zone sensors have an internal thermistor and operate on 24 VAC. Options with setpoint knobs are available in Fahrenheit or Celsius. See Figures C-4 through C-8 for available options and model number references.



Figure C-4. Zone sensor with off/ auto fan speeds, setpoint knob, on/ cancel, & comm jack. Fahrenheit: Digit 38 = 1, Celsius: Digit 38 = 6



Figure C-5. Zone sensor with off/auto/ high/low fan speeds, setpoint knob, on/cancel, and comm jack. Fahrenheit: Digit 38 = 2, Celsius: Digit 38 = 7



Figure C-6. Zone sensor with setpoint knob, on/cancel, & comm jack. Fahrenheit: Digit 38 = 3, Celsius: Digit 38 = 8



Figure C-7. Zone sensor with on/cancel and comm jack. Digit 38 = 4



Figure C-8. Zone sensor only, Digit 38 = 5

Controls

Control Valves

Blower coil air handlers with either the control interface or any of the Tracer controllers (Tracer ZN010, ZN510, or ZN520) are available with chilled and/or hot water control valves for each coil configuration. Control valve options are available as:

- modulating
- two-position, normally open or closed (n.o. or n.c.)
- two or three-way configurations
- with sweat connections
- in sizes 1/2", 1", and 1 1/4"

See Tables C-5 and C7 on page 58 for a complete list of available valve options by size.

Three-way valve options allow either full waterflow through the coil or diverted waterflow through the bypass.

See the section on page 58 titled, **How to Choose the Correct Control Valve**, to help you select the proper valve.

Two-Position Control Valves

Two-position valve options are available on blower coils with either Tracer ZN010, ZN510, ZN520, or the control interface. See Table C-5 on page 58 for complete list of valve types, options, and sizes.

Two-position valve options are spring return and non-spring return types. See Table C-5 on page 58 for a complete list of valve types by size. Spring-return valves respond to a 24V signal and will either fully open or close. Also, these valves cannot be driven or actuated to a partial open or closed position. If the spring-return type control valve loses power, the valve returns to its de-energized position. Valves that are not spring-return will stop in their last position when they lose power.

Refer to Charts PD-1 through PD-4 on pages 18–19 for the pressure drop across the respective piping packages associated with these valve Cv values. For a

complete list of two-position valve options and sizes, see Table C-5 on page 58. See the section on page 58 titled, **How to Choose the Correct Control Valve**, to help you select the proper valve.

Modulating Control Valves (Tracer ZN520 only)

Modulating control valves offer an alternative for more precise capacity control by modulating or varying the water flow through the coil. The valve responds to a 24V triac signal from the controller, which determines the valve position by a control algorithm. If the valve loses power, it remains in the position it was in when the power loss occurred.

The pressure drop across the modulating valve should fall within 25-70% of the pressure drop across the branch circuit. Table C-6 on page 58 shows the unit size, coil figuration, valve type, and the recommended valve Cv. If a different size and/or Cv is preferred, Table C-7 on page 58 shows the valve size, valve type, and available Cv values. Refer to Charts PD-1 through PD-4 on pages 18–19 for the pressure drop across the respective piping packages associated with these valve Cv values.

For a complete list of modulating valve options and sizes, see Table C-7 on page 58. See the section on page 58 titled, **How to Choose the Correct Control Valve**, to help you select the proper valve.

Field-Supplied Valves

When using field-supplied valves, choose this option so the unit controller is factory-configured for the valve's normal position. For more descriptive information on this option, see the Model Number Description section on pages 12–13.

Note: Trane does not recommend wild coil applications.

Controls

How to Choose the Correct Control Valve

Valve options are available in a variety of sizes and Cv values as discussed in the previous paragraphs. See Tables C-4 through C-7 for a complete list of valve recommendations and sizes.

Select the proper control valve using these parameters:

- 1. valve flow coefficient or Cv**, which is represented by the following formula:

$$Cv = Q/\text{square root of } \Delta P = Q/\sqrt{\Delta P}$$
- 2. branch authority or β (modulating valves only)**, which is represented by the following formula: $\beta = \text{pressure drop across the valve divided by the pressure drop across the branch circuit} \times 100\% = \Delta P_{\text{valve}}/\Delta P_{\text{branch circuit}}$.

* **Branch circuit** includes the coil and piping package (control valve, circuit setter, ball valves, fittings, and piping) between the supply and return riser.

Note: For good control, β should be between 25 and 70%.

- 3. consider the valve close-off pressure (2-way valves only)** to ensure close-off pressures are not exceeded by pump discharge pressure necessary to overcome system pipe resistance. See the recommendations in Tables C-4 and C-6, which are based on in 100 ft. of 1 1/4" system piping plus branch circuit piping.

Two-Position Valve Cv Selection

The Cv value of the two-position control valve is less critical than for the modulating valve and should be as high as available to minimize branch circuit pressure drop. Table C-4 shows the recommended valve size for each unit size and coil configuration. However, if a different Cv is preferred, see Table C-5 for the options listed by size, type, and associated Cv values. Note that the 1 1/4", two-way, n.o. valves are not available. Refer to Charts PD-1 through PD-4 on pages 18–19 for the pressure drop across the respective piping packages associated with the valve Cv values.

Modulating Valve Cv Selection

For good capacity control, the pressure drop across the valve should fall within 25-70% of the pressure drop across the branch circuit. Table C-6 shows the unit size, coil configuration, valve type and recommended valve Cv value. If a different size and/or Cv value is pre-

ferred, see Table C-7 for valve size, type, and available Cv values. Refer to Charts PD-1 through PD-4 on pages 18–19 for the pressure drop across the respective piping packages associated with these valve Cv values.

Table C-4. Two-Position Valve Cv Recommendations

Coil	Unit Size ⁽¹⁾						
	12	18	24	36	54	72	90
1 row	3.5/4.4	3.5/4.4	3.5/4.4	3.5/4.4	3.5/4.4	3.5/7.0	8.0/7.0
2 row	3.5/4.4	3.5/4.4	3.5/4.4	3.5/4.4	8.0/7.0	8.0/7.0	6.0/8.3 ⁽²⁾
4 row	3.5/4.4	3.5/4.4	8.0/7.0	8.0/7.0	8.0/7.0	8.0/8.3 ⁽²⁾	9.0/8.3 ⁽²⁾
6 row	3.5/4.4	3.5/4.4	8.0/7.0	8.0/8.3 ⁽²⁾	6.0/8.3 ⁽²⁾	6.0/8.3 ⁽²⁾	9.0/8.3 ⁽²⁾

Notes:

(1) 2-way Cv / 3-way Cv

(2) normally closed only and not spring return

Table C-5. Two-Position Valve Cv Options

Valve Size	valve type	Cv	close-off Δp (psig)
1/2"	2-way, n.o., spring return	3.5	20
1/2"	2-way, n.c., spring return	3.5	20
1"	2-way, n.o., spring return	8.0	9
1"	2-way, n.c., spring return	8.0	9
1"	2-way, n.c., non-spring return	6.0	60
1 1/4"	2-way, n.c., non-spring return	9.0	60
1/2"	3-way, spring return	4.4	25
1"	3-way, spring return	7.0	9
1"	3-way, non-spring return	8.3	60
1 1/4"	3-way, non-spring return	9.0	60

Table C-6. Modulating Valve Cv Recommendations

Coil	Unit Size ⁽¹⁾						
	12	18	24	36	54	72	90
1 row	3.3 ⁽²⁾ /4.0 ⁽²⁾	3.3 ⁽²⁾ /4.0 ⁽²⁾	6.0/4.0 ⁽²⁾	6.0/4.0 ⁽²⁾	6.0/8.3	6.0/8.3	6.0/8.3
2 row	3.3 ⁽²⁾ /4.0 ⁽²⁾	3.3 ⁽²⁾ /4.0 ⁽²⁾	6.0/4.0 ⁽²⁾	6.0/4.0 ⁽²⁾	6.0/8.3	6.0/8.3	6.0/8.3
4 row	3.3 ⁽²⁾ /4.0 ⁽²⁾	3.3 ⁽²⁾ /4.0 ⁽²⁾	6.0/4.0 ⁽²⁾	6.0/4.0 ⁽²⁾	6.0/8.3	9.0/9.0	9.0/9.0
6 row	3.3 ⁽²⁾ /4.0 ⁽²⁾	3.3 ⁽²⁾ /4.0 ⁽²⁾	6.0/4.0 ⁽²⁾	6.0/4.0 ⁽²⁾	9.0/8.3	9.0/9.0	9.0/9.0

Notes:

(1) 2-way Cv / 3-way Cv

(2) 1/2" valve with 3/4" pipe

(3) Exception for high capacity coils only: 2-way valve Cv's for sizes 24 & 36, all rows = 3.3; sizes 54 thru 90, 1-row = 9.0, other rows = 6.0.

Table C-7. Modulating Valve Cv Options

Valve Size	valve type	Cv
1/2"	2-way	3.3
1"	2-way	6.0
1 1/4"	2-way	9.0
1/2"	3-way	4.0
1"	3-way	8.3
1 1/4"	3-way	9.0

Note: Close-off pressure for all modulating valves is 60 psig.



Electrical Data

Minimum Circuit Ampacity (MCA) and Maximum Fuse Size (MFS) Calculations for Units with Electric Heat

Heater amps = (heater kW x 1000)/
heater voltage

Note: Use 120V heater voltage for 115V units. Use 240V heater voltage for 230V units. Use 480V heater voltage for 460V units. Use 600V heater voltage for 575V units.

MCA = 1.25 x (heater amps + all motor FLA's)

MFS or HACR type circuit breaker =
(2.25 x largest motor FLA) + second motor FLA

+ heater amps (if applicable)

HACR (Heating, Air-Conditioning and Refrigeration) type circuit breakers are required in the branch circuit wiring for all units with electric heat.

See Table ED-3 on page 60 for motor FLAs.

Select a standard fuse size or HACR type circuit breaker equal to the MCA.

Use the next larger standard size if the MCA does not equal a standard size.

Standard fuse sizes are: 15, 20, 25, 30, 35, 40, 45, 50, 60 amps

Useful Formulas

kW = (cfm x ΔT)/3145

ΔT = (kW x 1000)/voltage

Single phase amps = (kW x 1000)/voltage

Three phase amps = (kW x 1000)/(voltage x 1.73)

Electric heat MBh = (Heater kW) (3.413)

Table ED-1. Available Electric Heat Kw (min.-max)

Voltage	Unit Size						
	12	18	24	36	54	72	90
115/60/1	1-3	1-3	1-3	1-3	1-3	1-3	1-3
208/60/1	1-4	1-6	1-8	1-8	1-8	1-8	1-8
230/60/1	1-4	1-6	1-8	1-8	1-8	1-8	1-8
277/60/1	1-4	1-6	1-8	1-11	1-11	1-11	1-11
208/60/3	1-4	1-6	1-8	1-11	1-12	1-12	1-12
230/60/3	1-4	1-6	1-8	1-11	1-12	1-12	1-12
460/60/3	1.5-4	1.5-5	1-8	1-11	1-16	1-21	1-30
575/60/3	2-4	2-4	1-8	1-11	1-16	1-21	1-30
220/50/1	1-4	1-6	1-8	1-8	1-8	1-8	1-8
240/50/1	1-4	1-6	1-8	1-8	1-8	1-8	1-8
380/50/3	1-4	1-5	1-8	1-11	1-16	1-20	1-28
415/50/3	1.5-4	1.5-5	1-8	1-11	1-16	1-21	1-30
190/50/3	na	na	na	na	na	na	na

Notes:

- Heaters are available in the following Kw increments : 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0, 22.0, 24.0, 26.0, 28.0, 30.0.
- Magnetic contactors are standard. Mercury contactors are available on horizontal units only.
- Units with electric heat are available with or without door interlocking disconnect switch.
- Units with electric heat are available with or without line fuses.
- Units with electric heat must not be run below the minimum cfm listed in the general data section.
- Electric heat is balanced staging: 1 stage = 100%, 2 stages = 50%/50%
- Electric heat is not available on 190/50/3 units.

Table ED-2. Available Motor Horsepower

Motor	unit voltage	Motor Horsepower						
		0.33	0.50	0.75	1.00	1.50	2.00	3.00
two speed	115/60/1							
60 hz	115/1	•	•	•	•			
	208/1	•	•	•	•			
	230/1	•	•	•	•			
	277/1	•	•	•	•			
	208/3		•	•	•	•	•	•
	230/3		•	•	•	•	•	•
	460/3		•	•	•	•	•	•
50 hz	575/3		•	•	•	•	•	•
	220/1	•	•	•	•			
	240/1	•	•	•	•			
	380/3	•	•	•	•	•	•	
	415/3	•	•	•	•	•	•	
	415/3	•	•	•	•	•	•	
	190/3	•	•	•	•	•	•	



Electrical Data

Table ED-3. Motor Electrical Data

Voltage	voltage range	rpm	rated hp	lbs.	fla	lra
115/60/1	104-126	1750	1/3	18	5.8	22.8
			1/2	21	7.2	30.4
			3/4	29	12.0	58.4
			1.0	29	12.8	58.4
two-speed						
115/60/1	104-126	1750/1160	3/4	40	8.9/6.1	42.0
			1.0	41	11.5/8.1	58.2
208-230/60/1	187-253	1750	1/3	18	3.1	11.4
			1/2	21	3.6	15.2
			3/4	29	6.0	29.2
			1.0	29	6.4	29.2
277/60/1	249-305	1750	1/3	15.5	2.5	12.1
			1/2	21.5	3.6	19.3
			3/4	25	4.3	25.3
			1.0	29	5.6	32.6
208/60/3	187-229	1750	1/2	22	2.3	11.4
			3/4	26	2.9	15.9
			1.0	28	3.5	20.2
			1.5	29	4.8	30.0
			2.0	34	6.2	38.5
			3.0	49	8.6	55.1
230/60/3	207-253	1750	1/2	22	2.4	12.8
			3/4	26	3.0	18.6
			1.0	28	3.6	23.0
			1.5	29	4.8	33.4
			2.0	34	6.2	43.6
			3.0	49	8.6	62.0
460/60/3	414-506	1750	1/2	22	1.2	6.4
			3/4	26	1.5	9.3
			1.0	28	1.8	11.5
			1.5	29	2.4	16.7
			2.0	34	3.1	21.8
			3.0	49	4.3	31.0
575/60/3	518-632	1750	3/4	20.5	1.1	7.5
			1.0	22.5	1.4	9.0
			1.5	31	1.9	13.3
			2.0	36	2.5	17.9
			3.0	49	3.3	23.7
220/50/1	198-242	1450	1/3	20.5	3.0	15.6
			1/2	25	3.6	20.5
			3/4	29	5.2	25.6
			1.0	38	9.3	52.2
240/50/1	216-264	1450	1/3	20.5	3.3	17.1
			1/2	25	4.0	22.7
			3/4	29	5.5	39.1
			1.0	38	10.6	57.8
190/50/3	171-209	1450	1/3	22	1.1	5.6
			1/2	26	1.4	7.8
			3/4	28	1.7	9.8
			1.0	29	2.1	14.6
			1.5	34	2.8	18.7
380/50/3	342-418	1450	1/3	22	1.1	5.6
			1/2	26	1.4	7.8
			3/4	28	1.7	9.8
			1.0	29	2.1	14.6
			1.5	34	2.8	18.7
415/50/3	374-456	1450	1/3	22	1.2	6.8
			1/2	26	1.5	9.4
			3/4	28	1.9	11.0
			1.0	29	2.5	17.4
			1.5	34	3.1	22.6
			2.0	49	3.6	32.3

Electrical Data

Table ED-4. Motor Drive Selections

Unit Size	drive	motor horsepower						
		0.33	0.50	0.75	1.00	1.50	2.00	3.00
12, 18	D-H	■	■	■	■			
	J	■	■	■	■			
	K	○	■	■	■			
24, 36	A-F	■	■	■	■		■	
	G	■	■	■	■		■	
	H	○	■	■	■		■	
	J		○	■	■		■	
	K			○	○		○	
54, 72, 90	A-D	■	■	■	■			
	E	■	■	■	■			
	F	○	○	■	■		■	
	G		○	○	■		■	
	H			○	○		○	
	J						○	
	L-R							■
	T							○

■ Valid for 50 and 60 hz motors.
○ Valid for 50 hz motors only.

Chart ED-1. Size 012-090 Drives, 60 Hz Motors

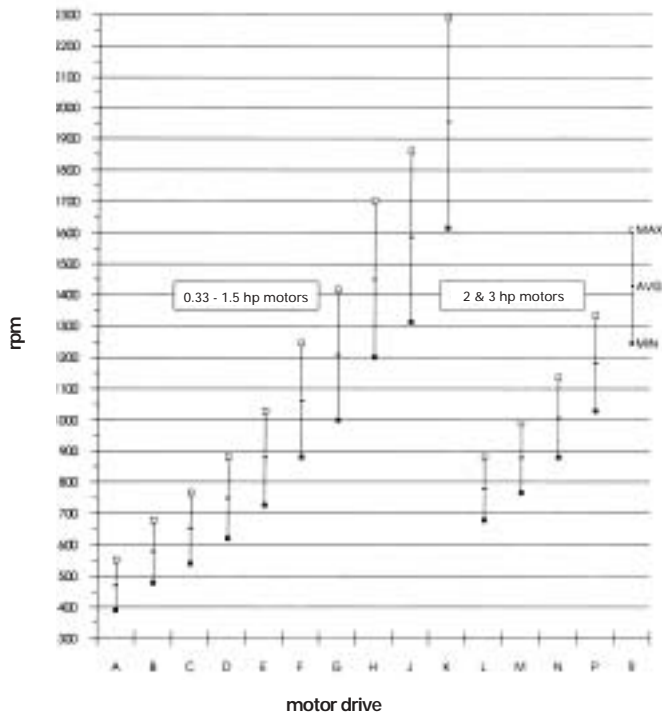
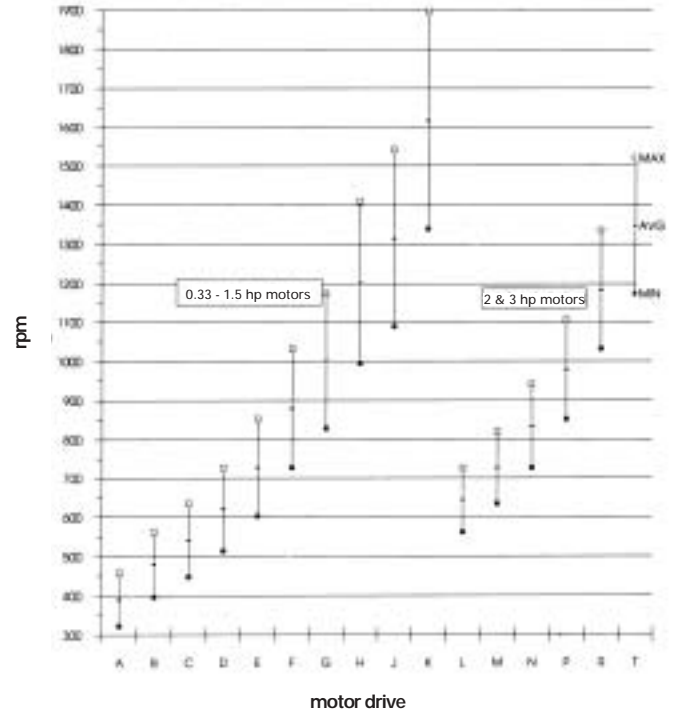


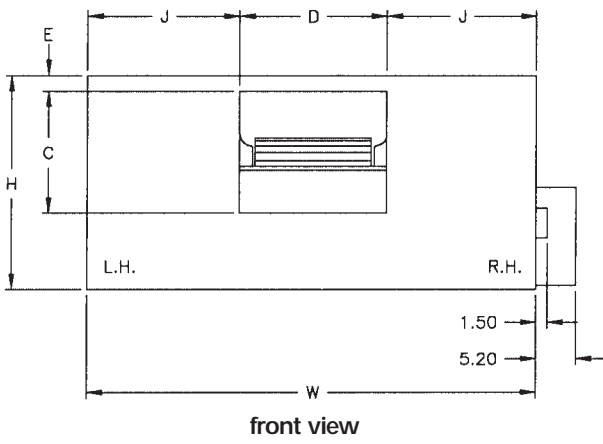
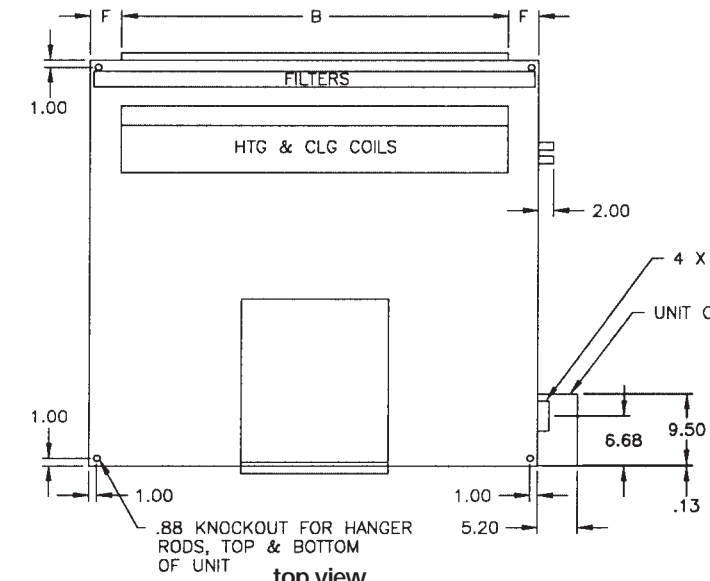
Chart ED-2. Size 012-090 Drives, 50 Hz Motors





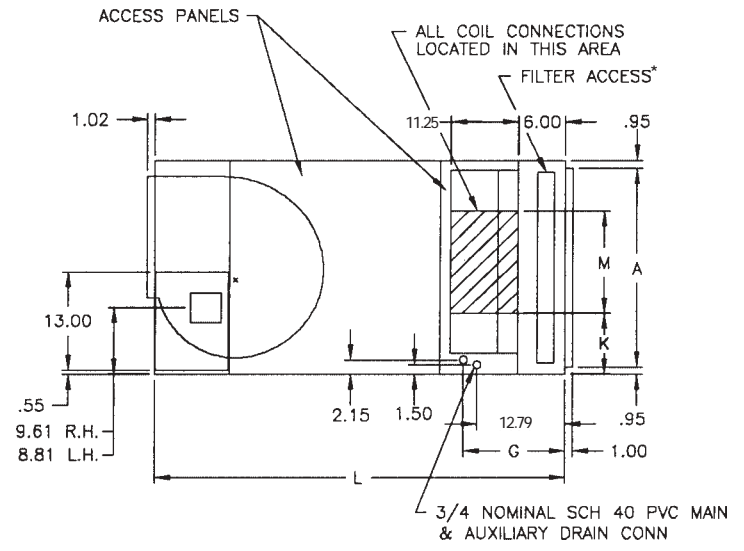
Dimensions and Weights

Horizontal Blower Coil



NOTES: ALL DIMENSIONS ARE IN INCHES.
 ALL COIL CONNECTIONS ARE SWEAT STYLE.
 WEIGHT OF BASIC UNIT INCLUDES CABINET, FAN, AVERAGE DRIVE, WIRING AND AVERAGE FILTER. IT DOES NOT INCLUDE COIL, MOTOR OR SHIPPING PACKAGE. PLEASE REFER TO CATALOG FOR MOTOR WEIGHTS.
 *ADD TO BASIC UNIT WEIGHT, 9 LBS FOR WEIGHT OF CONTROL BOX.
 4 X 4 JUNCTION BOX OR CONTROL BOX FACTORY MOUNTED ON DRIVE SIDE.

*NOTE: ON UNITS WITHOUT A BOTTOM FILTER ACCESS SECTION



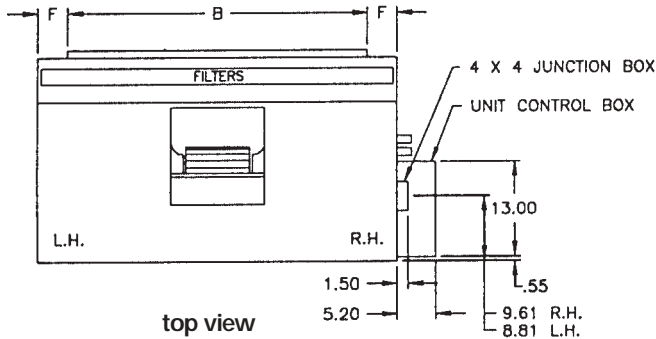
right side view

Horizontal Blower Coil Unit Dimensions and Weights, in-lbs.

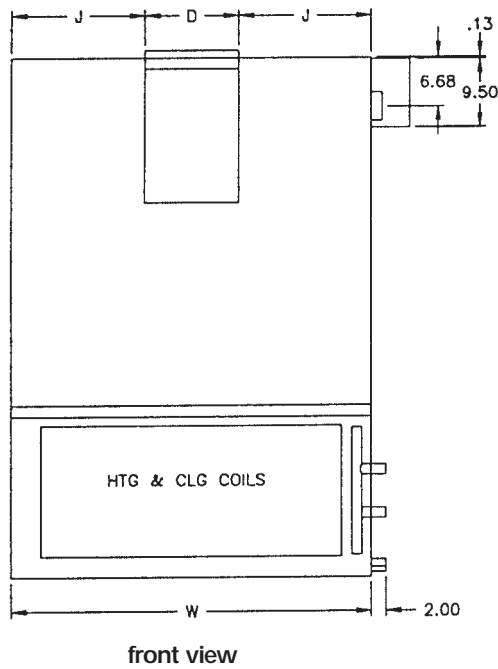
Unit Size	H	W	L	A	B	C	D	E	F	G (RH)	G (LH)	J	K	M	unit weight
12	14.00	24.00	40.75	12.09	18.00	10.56	7.09	0.55	3.00	10.79	14.79	8.46	2.82	6.80	71.5
18	14.00	28.00	40.75	12.09	22.00	10.56	7.09	0.55	3.00	10.79	14.79	10.46	2.82	6.80	77.4
24	18.00	28.00	46.00	16.09	22.00	13.56	12.56	1.30	3.00	10.79	14.79	7.72	3.58	9.00	104.1
36	18.00	40.00	46.00	16.09	34.00	13.56	12.56	1.30	3.00	10.79	14.79	13.72	3.57	9.00	121.6
54	22.00	40.00	49.00	20.09	34.00	13.56	12.56	0.72	3.00	10.79	14.79	13.72	4.21	10.43	138.9
72	22.00	48.00	49.00	20.09	40.00	13.56	12.56	0.72	4.00	10.79	14.79	17.72	4.18	10.43	152.2
90	28.00	48.00	52.00	26.09	40.00	13.56	12.56	1.66	4.00	10.79	14.79	17.72	4.81	15.61	174.8

Dimensions and Weights

Vertical Blower Coil

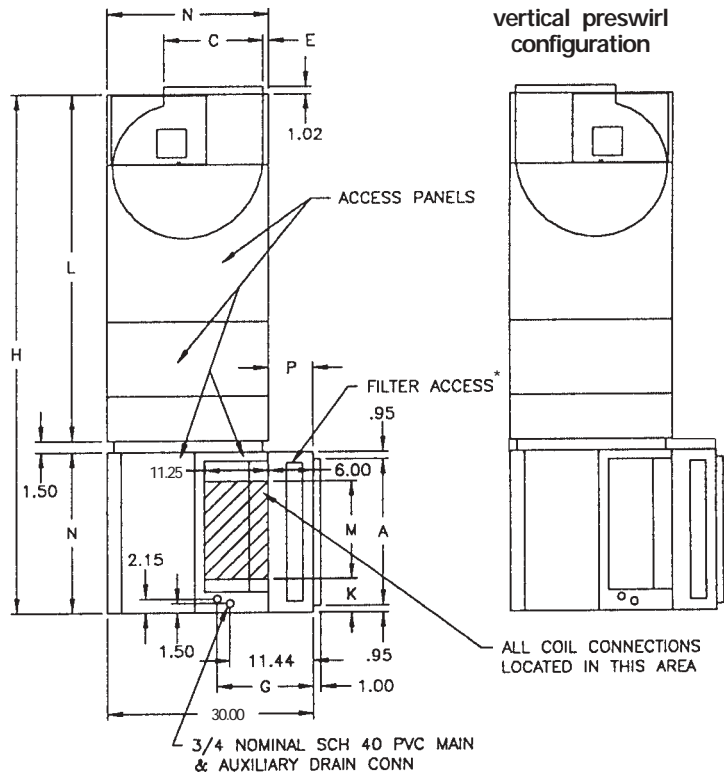


NOTES: ALL DIMENSIONS ARE IN INCHES
 ALL COIL CONNECTIONS ARE SWEAT STYLE
 WEIGHT OF BASIC UNIT INCLUDES CABINET, FAN, AVERAGE DRIVE, WIRING AND AVERAGE FILTER
 *ADD TO BASIC UNIT WEIGHT, 9 LBS FOR WEIGHT OF CONTROL BOX
 4 X 4 JUNCTION BOX OR CONTROL BOX FACTORY MOUNTED ON DRIVE SIDE
 VERTICAL COIL & FILTER SECTION SHIPS SEPARATE FOR FIELD INSTALLATION. REFER TO INSTALLATION & MAINTANCE MANUAL FOR INSTRUCTIONS.
 VERTICAL UNITS PROVIDED WITH 4 - 6" HIGH MOUNTING LEGS. LEGS ARE NOT SEISMIC RATED.



vertical counter swirl configuration

*NOTE: ON UNITS WITHOUT A TOP FILTER ACCESS SECTION



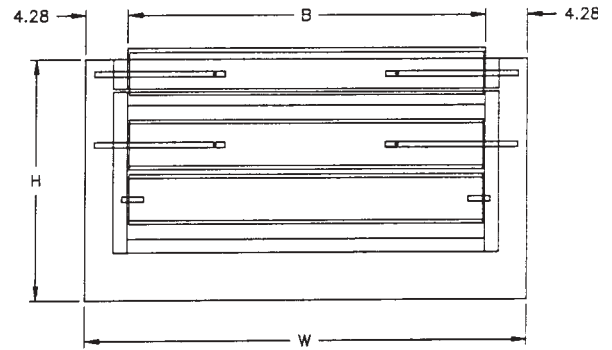
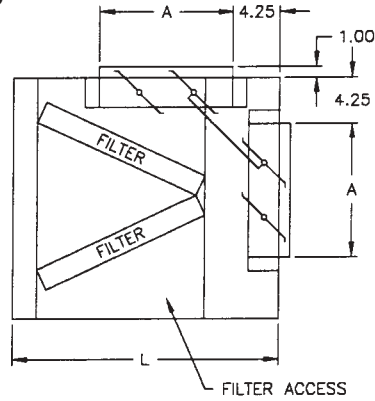
Vertical Blower Coil Unit Dimensions and Weights, in-lbs.

Unit Size	H	W	L	A	B	C	D	E	F	G (RH)	G (LH)	J	K	M	N	unit weight
24	65.50	28.00	44.00	16.09	22.00	13.56	12.56	1.30	3.00	10.79	14.79	7.72	3.58	9.00	18.00	155.5
36	65.50	40.00	44.00	16.09	34.00	13.56	12.56	1.30	3.00	10.79	14.79	13.72	3.57	9.00	18.00	185.9
54	72.50	40.00	47.00	20.09	34.00	13.56	12.56	0.72	3.00	10.79	14.79	13.72	4.21	10.43	22.00	206.4
72	72.50	48.00	47.00	20.09	40.00	13.56	12.56	0.72	4.00	10.79	14.79	17.72	4.18	10.43	22.00	228.2
90	81.50	48.00	50.00	26.09	40.00	13.56	12.56	1.66	4.00	10.79	14.79	17.72	4.81	15.61	28.00	258.4

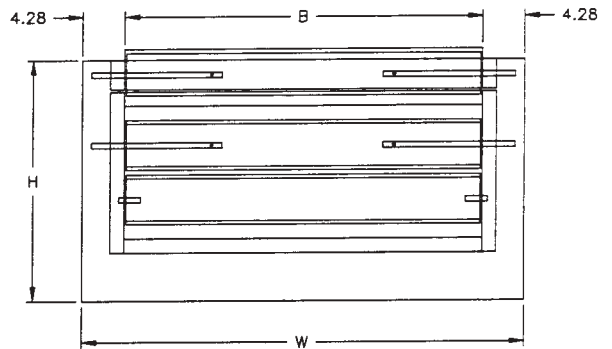
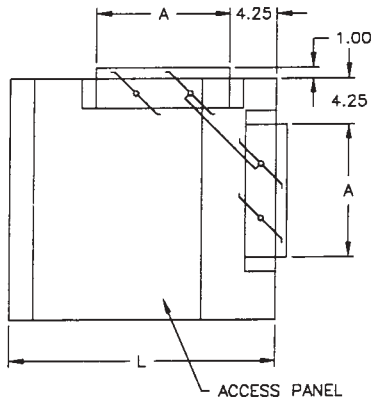
Dimensions and Weights

Angle Filter & Mixing Box

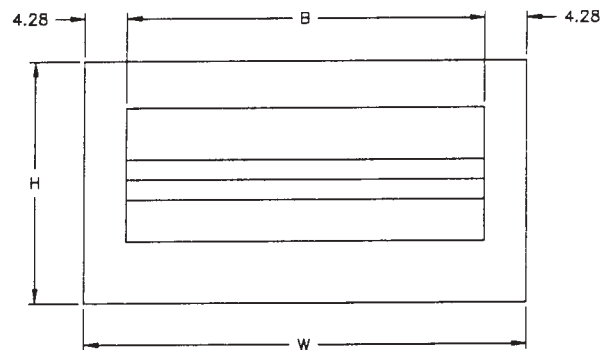
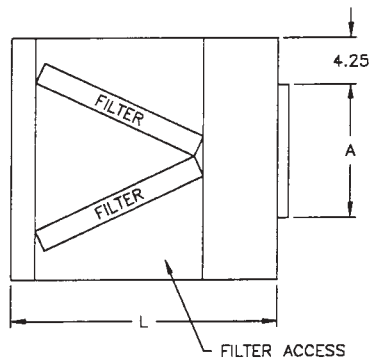
combination angle filter
& mixing box



mixing box



angle filter box



Angle Filter & Mixing Box Dimensions and Weights, in-lbs.

Unit Size	H	L	W	A	B	weight
12	14.12	22.00	24.11	7.06	15.56	36.0
18	14.12	22.00	28.11	7.06	19.56	41.0
24	18.12	19.50	28.11	7.06	19.56	43.0
36	18.12	24.50	40.11	7.06	31.56	56.0
54	22.12	23.50	40.11	12.81	31.56	72.0
72	22.00	23.50	48.00	12.81	31.56	72.5
90	27.90	27.56	48.00	12.85	31.56	84.1

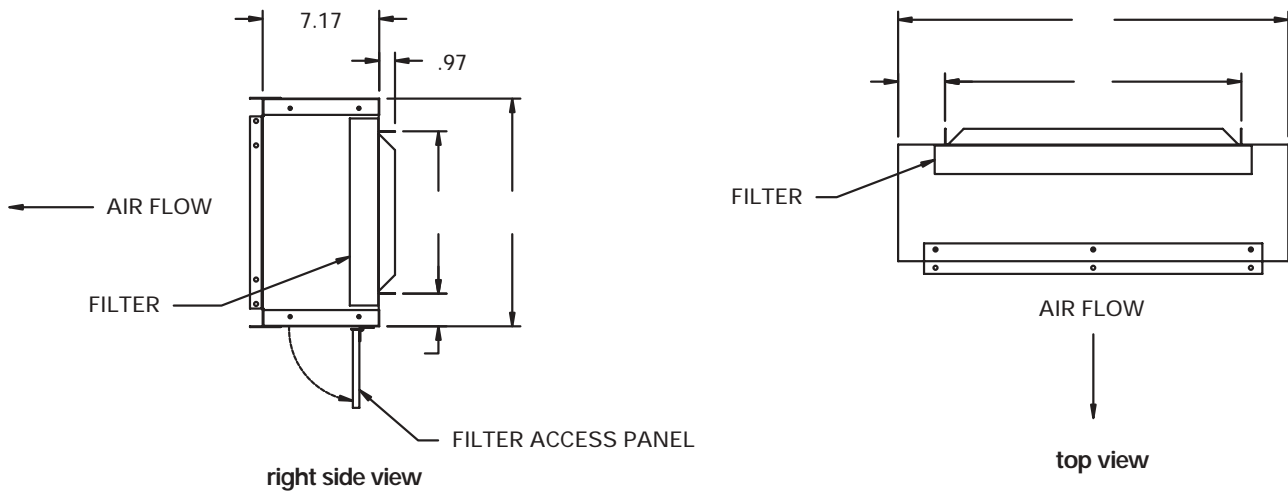
NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. MIXING BOX SHIPS ASSEMBLED FOR FIELD INSTALLATION.
3. LINKAGE BETWEEN DAMPERS IS FACTORY INSTALLED INSIDE MIXING BOX, OPPOSITE DRIVE SIDE. DRIVE ROD ON BACK DAMPER MAY BE EXTENDED THRU KNOCKOUT FOR EXTERNALLY MOUNTED ACTUATOR. TO ADJUST, LOOSEN HEX HD SET SCREW ON BLADE.
4. UNIT SIZE 36 HAS ONLY ONE ANGLE FILTER TRACK. ALL OTHER UNIT SIZES HAVE 2 FILTER TRACKS AS SHOWN.

5. ALL SECTIONS SHIP SEPARATELY.

Dimensions and Weights

Bottom or Top Access Filter Box



- NOTES:
 1. DIMENSIONS ARE IN INCHES.
 2. ROTATE 180° FOR TOP ACCESS.
 3. SECTION SHIPS ATTACHED TO THE UNIT.

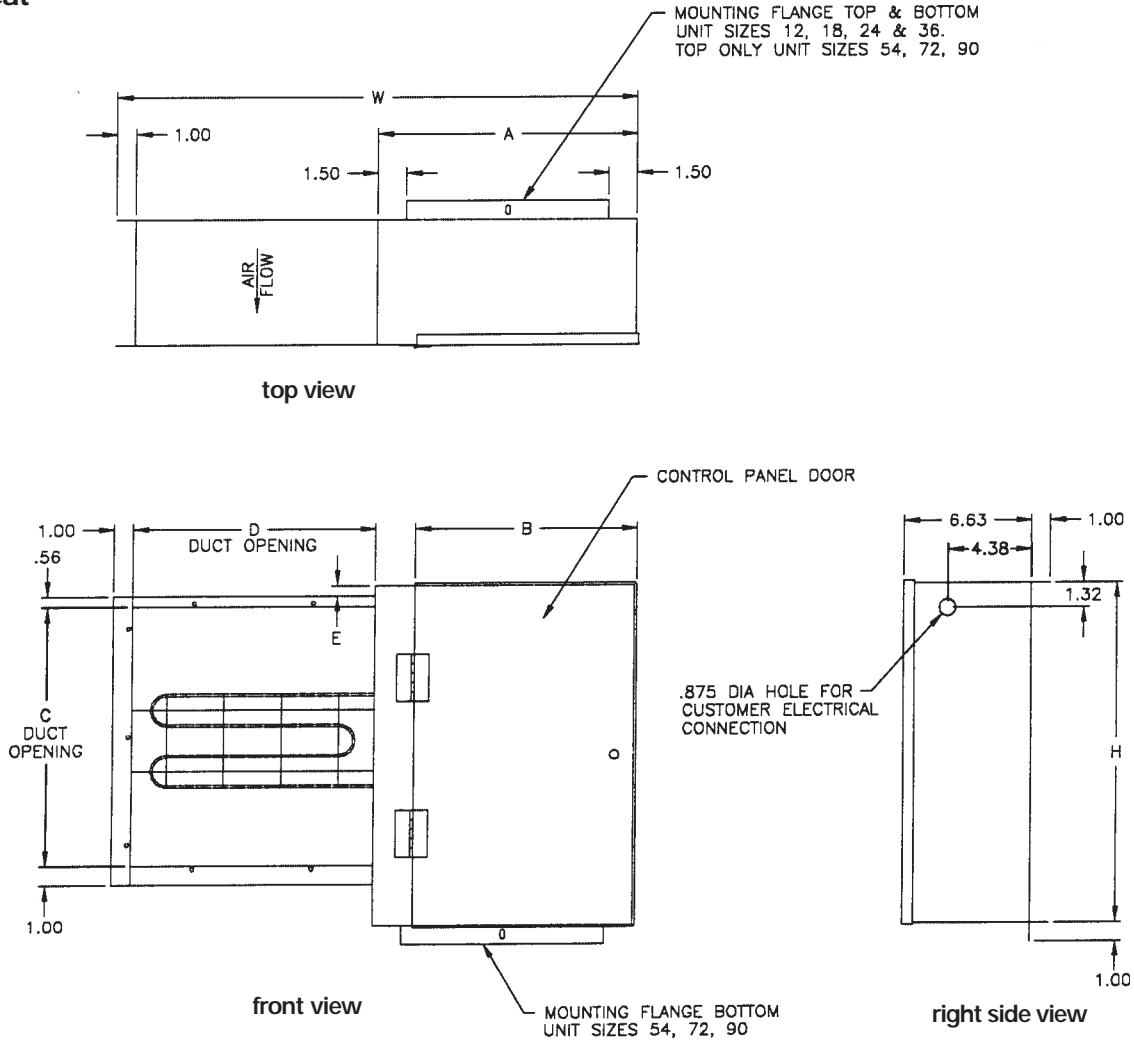
Bottom or Top Access Filter Box Dimensions and Weights, in-lbs.

Unit Size	H	W	A	B	C	D	weight
12	14.00	24.00	9.98	2.01	18.23	2.88	15
18	14.00	28.00	9.98	2.01	21.98	3.01	17
24	18.00	28.00	14.23	1.89	23.23	2.38	18
36	18.00	40.00	14.23	1.89	33.73	3.13	25
54	22.00	40.00	18.23	1.89	33.73	3.13	28
72	22.00	48.00	18.23	1.89	42.73	2.63	32
90	28.00	48.00	23.23	1.89	41.23	3.38	37



Dimensions and Weights

Electric Heat



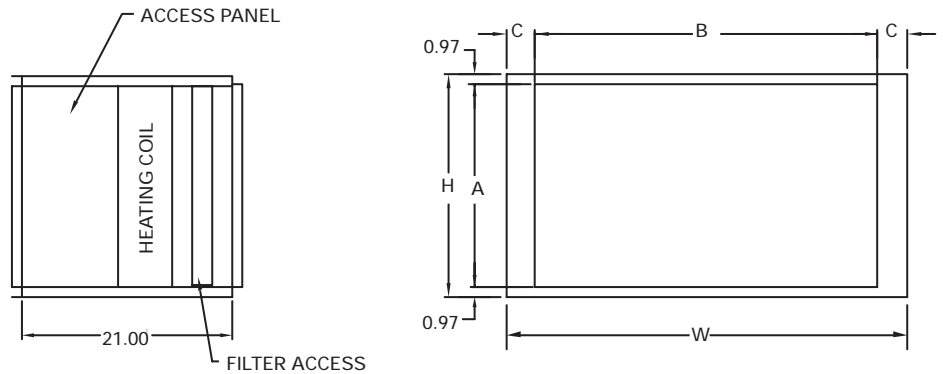
Electric Heat Dimensions and Weights, in-lbs.

Unit Size	H	W	A	B	C	D	E	weight
12	14.06	17.88	8.13	6.79	10.50	7.75	0.03	10.0
18	14.06	19.88	10.13	8.79	10.50	7.75	0.03	10.8
24	18.06	21.25	7.63	6.29	13.50	12.63	0.80	11.3
36	18.06	27.25	13.63	12.29	13.50	12.63	0.80	12.8
54	18.06	27.25	13.63	11.67	13.50	12.63	0.22	16.0
72	18.06	27.25	13.63	11.67	13.50	12.63	0.22	17.4
90	18.06	27.25	13.63	11.67	13.50	12.63	1.16	19.2

NOTES: ALL DIMENSIONS ARE IN INCHES.
ELECTRIC HEATER IS FACTORY MOUNTED ON UNIT DISCHARGE FACE & WIRED TO UNIT CONTROL BOX.
RIGHT HAND HEATER SHOWN. LEFT HAND HEATER IS MIRROR IMAGE OF RIGHT HAND.
CONTROL PANEL DOOR IS HINGED AT BOTTOM ON UNIT SIZES 12, 18, 24 & 36. UNIT SIZES 54, 72, & 90 ARE HINGED AT SIDE AS SHOWN.
HEATER MAY BE MOUNTED WITH HORIZONTAL OR VERTICAL UP AIRFLOW.
OPTIONAL MERCURY CONTACTORS CANNOT BE USED WITH VERTICAL UP AIRFLOW.

Dimensions and Weights

Steam Coil



NOTES:

1. FILTER ACCESS & ACCESS PANEL LOCATED ON BOTH SIDES.
2. WEIGHT INCLUDES CABINET WITH AVERAGE FILTER, BUT DOES NOT INCLUDE COIL WEIGHT. SEE GENERAL DATA SECTION FOR COIL WEIGHTS.

Steam Coil Box Dimensions and Weights, in-lbs.

Unit Size	H	W	A	B	C	Weight	Coil Connections, NPT	
							Supply	Return
12	14.00	24.00	12.06	18.04	2.98	34	1.0	0.75
18	14.00	28.00	12.06	22.04	2.98	37	1.0	0.75
24	18.00	28.00	16.06	22.04	2.98	40	1.5	1.00
36	18.00	40.00	16.06	34.04	2.98	48	1.5	1.00
54	22.00	40.00	20.06	34.04	2.98	50	2.0	1.00
72	22.00	48.00	20.06	42.04	2.98	56	2.0	1.00
90	28.00	48.00	26.06	40.04	3.98	63	2.5	1.25

Coil Connections

Hydronic Coil Connection Sizes, in.

Unit Size	1-row	2-row	4-row	6-row
12	0.750	0.750	0.750	0.750
18	0.750	0.750	0.750	0.750
24	0.875	0.875	0.875	0.875
36	0.875	0.875	0.875	0.875
54	1.125	1.375	1.375	1.375
72	1.125	1.375	1.375	1.375
90	1.125	1.375	1.625	1.625

High-Capacity Hydronic Coil Connection Sizes, in.

Unit Size	2-row	4-row	6-row
12	0.625	0.625	0.625
18	0.625	0.625	0.625
24	0.750	0.750	0.750
36	0.750	0.750	0.750
54	1.125	1.125	1.125
72	1.125	1.125	1.125
90	1.125	1.125	1.125

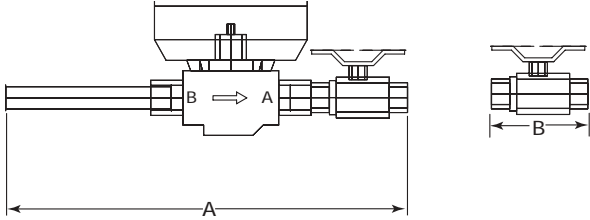
DX Coil Connection Sizes, in. O.D.

Unit Size	suction	liquid
12	1/2	1/2
18	1/2	1/2
24	7/8	1/2
36	7/8	1/2
54	7/8	1/2
72	7/8	1/2
90	1 1/4	1/2

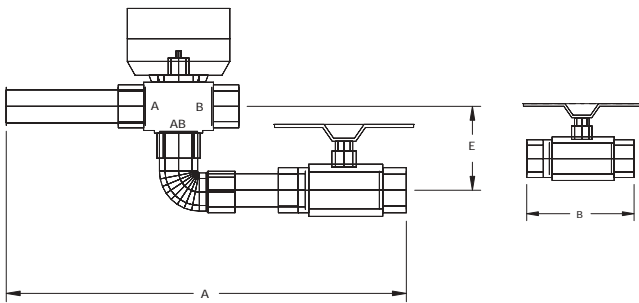
Dimensions and Weights

Piping Packages

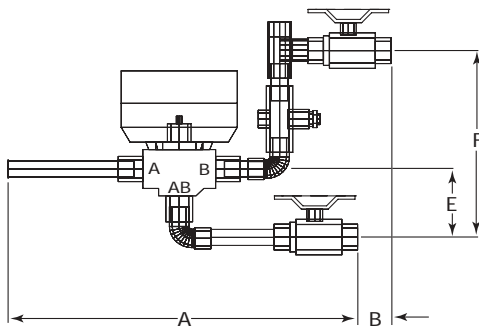
Basic Piping



Two-Way, 1/2" & 1" Basic Piping Package

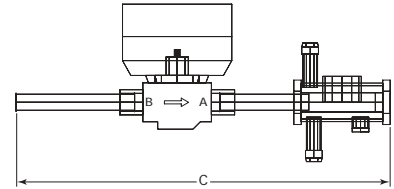
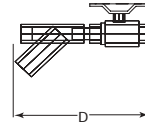


Two-Way, 1 1/4" Basic Piping Package

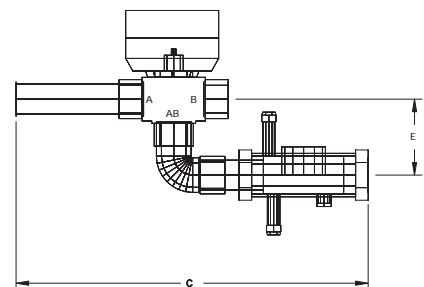
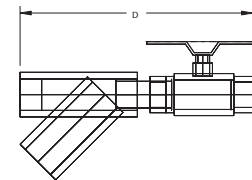


Three-Way, 1/2" & 1" Basic Piping Package

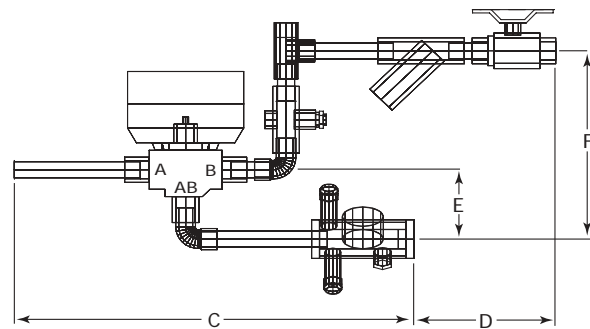
Deluxe Piping



Two-Way, 1/2" & 1" Deluxe Piping Package



Two-Way 1 1/4" Deluxe Piping Package



Three-Way, 1/2" & 1" Deluxe Piping Package

Piping Package Dimensions, in.

Piping Package	nominal size	actual size	A	B	C	D	E	F
2-way	0.50	0.625	12.025	2.650	12.625	5.650	na	na
	1.00	1.125	13.295	4.260	13.220	9.288	3.020	na
3-way	0.50	0.625	12.088	2.097	12.688	4.497	6.351	6.351
	0.75	0.875	15.623	1.750	15.313	6.290	6.701	6.701
	1.00	1.125	13.370	3.690	13.210	9.060	9.813	9.813
	1.25	1.375	16.885	3.738	16.410	10.023	3.052	10.520

Mechanical Specifications

Mechanical Specifications

General

The product line consists of horizontal and vertical air handling units and mixing boxes. Units are tested in accordance with ARI 430 and ARI 260. The unit complies with NFPA 90A and is UL listed in the U. S. and Canada.

Air handlers consist of a hydronic and/or DX coil, drain pan, and centrifugal fan with motor and drive mounted in a common cabinet. Drive location and coil connections are independent for the same or opposite side location.

Air handlers are provided with knockouts in all four corners for installing the unit suspended from the ceiling with threaded rods.

Unit and accessories are insulated with one-inch, 1½ lbs./cu. ft. density fiberglass insulation. One-inch foil faced insulation is also available.

Large motor access panels are provided on both sides of the unit and accessories. Vertical units ship in two pieces.

Casing

Casings (structural components) are constructed of 18-gauge galvanized steel, insulated with one-inch, 1½ lb density fiberglass fire resistant and odorless glass fiber material to provide thermal and acoustical insulation. Fan housing sides are directly attached to the air handler top and bottom panels strengthening the entire unit assembly. Coil access panels are located on both sides of the air handler and allow easy removal of the internal coils and drain pan. Main access panels provide generous access to the fan, motor and drive from both sides of the air handler.

Water Coils

Cooling coils are two, four, or six-row, chilled water. Heating coils are one, two, four, or six-row hot water. They are available factory installed in the preheat or reheat position. All water coils are 12 fins per inch. All water coils use highly efficient Trane Delta Flo™, Type H aluminum fins, mechanically bonded to seamless copper tubes. All coils are specifically designed and circuited for water use. All coils are factory tested with 450 psig air under water. Maximum

standard operating conditions are: 300 psig, 200°F. Sweat type connections are standard.

Direct Expansion (DX) Coils

DX coils use refrigerant 22 and have ½" OD x 0.016" W round seamless copper tubes expanded into full fin collars for permanent fin-tube bond. DX coils use highly efficient Trane Delta Flo™, Type H aluminum fins, mechanically bonded to seamless copper tubes. Four and six-row coils are available with 12 fins per inch. The coil casing is 16-gauge G90 galvanized steel. A foam sealing strip between the casing (top and bottom) channels and fins helps eliminate air bypass and reduce potential water carryover. 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 a single venturi type distributor assembly designed with a vertical downflow feed for low pressure drops.

Coils are proof tested at 450 psig and leak tested at 300 psig air-under-water. Coils are dehydrated and sealed with a dry nitrogen charge. Maximum standard operating conditions are 300 psig at 127°F with R-22. Coils are designed and tested per ARI 410.

Steam Coils (Type NS)

A one-row steam distributing coil section is available in the pre-heat position. Steam coils are non-freezing and are pitched to ensure adequate condensate drainage. Coils have 1" OD x 0.031" W round seamless copper condensing tubes expanded into full fin collars for permanent fin-tube bond. Coil headers are cast iron for permanent leaktight joints. Coils have continuous Sigma-Flo™ aluminum fins with full fin collars for maximum fin-tube contact and accurate spacing at 6 fpi. The coil casing is 16-gauge G90 galvanized steel. Coil headers 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 ⅜" 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 at 300 psig and leak tested at 200 psig air-under-water. Maximum standard operating conditions are 15 psig at 400°F. Coils are designed and tested per ARI 410.

Fan

Fans are forward curved, centrifugal blower type equipped with heavy-duty adjustable speed V-belt drive. The fan shaft is supported by heavy-duty, permanently sealed ball bearings. All fans are dynamically balanced. All air handlers have a single fan.

Drain Pan

The drain pan is noncorrosive and double-sloped to allow condensate drainage. The drainpan construction is polymer or optional stainless steel. Coils mount above the drain pan, not in the drain pan — thus allowing the drain pan to be fully inspected and cleaned. The drain pan can also be removed for cleaning. The polymer drain pan connections are unthreaded ¾" schedule 40 PVC for solvent bonding. The stainless steel drain pan connection is ¾" NPT schedule 40 stainless steel pipe. The main drain connection is at the lowest point of the drain pan. An auxiliary drain connection is provided on the same side as the main connection.

Filters

One-inch standard efficiency throwaway and two-inch pleated standard efficiency (30%) are available on all blower coil units. Units have a standard flat filter rack that is sized for less than 500 feet per minute at nominal airflow. An optional angle filter rack is available, this is sized for less than 300 feet per minute at nominal airflow. All units and filter racks use standard filter sizes.



Mechanical Specifications

Motors

Single-phase motors are available in 60 hz for 115, 208-230, 277, or 220-240 voltage operation. Three-phase motors are available for 208-230, 460, 575, or 190/380-415 voltage operation. All motors have a plus or minus 10% voltage utilization range. All standard motors are open drip-proof with permanently sealed ball bearings, internal current and thermal overload protection, a minimum 1.15 service factor and 56 frame resilient bases. Motors are factory installed and wired to the air handler junction box.

Two-Speed Motors

Two-speed motors are available for 115/60/1, 1800/1200 rpm motor has a plus or minus 10% voltage utilization range. The motor is open drip-proof with permanently sealed ball bearings, internal overload protection, and minimum 1.15 service factor and size 56 resilient base frames. The motor is factory installed and wired to the air handler junction box.

Mixing Box

Mixing boxes are constructed of heavy-gauge galvanized steel. They are complete with two low-leak parallel blade dampers that are factory linked together. A ½" extendible drive rod is provided that can be used for actuator connection, either internally or externally. Damper blades are extruded aluminum having interlocked PVC extruded edge seals. Damper frame seals are PVC extruded forms interlocked to the damper frame and provided with a continuous edge seal to the blades. Damper seals are stable in the temperature range of -50°F to 230°F.

Mixing boxes also include two side access panels as standard to provide access to the unit's internal components.

Piping Packages

The maximum entering fluid temperature to the water valves is 200°F. Insulation on the piping package is by others. The stop valves are ball type.

Electric Heater

The electric heater is made of ceramic, has a NEMA 1 rating, and is factory mounted. It is a UL recognized resistance open-wire heater with a disc-type automatic thermal primary safety device. One or two stages of control are available. A single-point power connection to the unit is provided. Optional mercury contactors, heater fuses, and a heater door interlocking disconnect switch are available.

Controls

Controls options are: 4x4 handy box, control interface, Tracer ZN010, ZN510, and ZN520. A variety of inputs and outputs are available for the control interface and Tracer controller options. A disconnect switch, fused transformer, contactor(s), and terminal strip are provided with the control interface and Tracer controller options. For specifics on the Tracer ZN010, ZN510, and ZN520 please refer to the control section of this catalog.

Control Interface

The control interface is intended to be used with a field supplied low voltage thermostat or controller. The control box contains a line voltage to 24 volt transformer; a one, two, or three-pole contactor; and a disconnect switch. The wires from the fan contactor and the low voltage side of the transformer are pulled and terminated on the inside of the two-sided terminal strip. All customer connections other than power are on the outside of the two-sided terminal strips.

Mechanical Specifications

Options

End Device Specifications

Dirty Filter and Fan Status Switch

Micro Pneumatic Logic, Inc.
Model MPL-501

Material

Body: glass-filled polyester, grade SEO
Diaphragm polyurethane
Terminals: brass/gold plated
Contact blade: phosphor bronze with gold inlay

Operating Temperature Range

-40°F/250°F (-40°C/120°C)

Burst Pressure

25 psig (1.73 bar)

Life

Over 100,000,000 cycles

Contact Form

SPST-NO (Form A)

Weight

10 grams

Condensate Float Switch

Approved Purification Corporation
Model P2000

Material

Polypropylene

Life

1,000,000,000 cycles

Electrical

1 to 240 volts, AC or DC

Power

30 watts max

Temperature

220°F Max

Low Limit Freezestat

General Electric
Model 3ART5CD

Trip Temperature: 36°F ± 2°F (2°C ± 1.11°C)

Release Temperature: 44°F ± 3°F (6.67°C ± 1.67°C)

Rating

Pilot Duty (24 VAC)

	120 VAC	240 VAC
FLA	10.0	5.0
LRA	60.0	30.0

Discharge Air and Auto Changeover Sensor

Housing material: nickel plated brass, epoxy filled

Outside Air and Discharge Air (on units with remote electric heat)

Probe sheath material: light drawn thin wall copper
Sensing element: thermistor, 10KOhms @ 77°F ± 1.8°F (25°C ± 1°C)

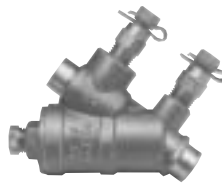
Piping Package Component Material Specifications

Ball Valve



body material: cast bronze B584-C84400
retainer: copper B16
stem packing: RTFE
seats: VTFE
handle: steel t-style, zinc plated
rating 400 psig wog, 125 psig steam

Auto Circuit Setter Valve



body material: bronze
venturi: brass
seat: teflon
o-ring: EP rubber
rating: max. operating pressure & temperature = 300 psig at 250°F

Control Valve



body material: bronze
cartridge: Ryton™, Noryl™
o-ring seals: EPDM rubber
stem: stainless steel
min. water temp: 34°F
max. water temp: 200°F
operating pressure rating: 300 psi
actuator: stainless steel case, aluminum cover

Strainer



body material: bronze B62
screen: 304 stainless steel 20 mesh
gasket: TFE
operating pressure: 400 psi

Balancing Fitting



body material: cast brass
packing washer: 11 ga. brass
o-ring: EPDM rubber
stem: rod brass
glandscrew: hex brass



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