



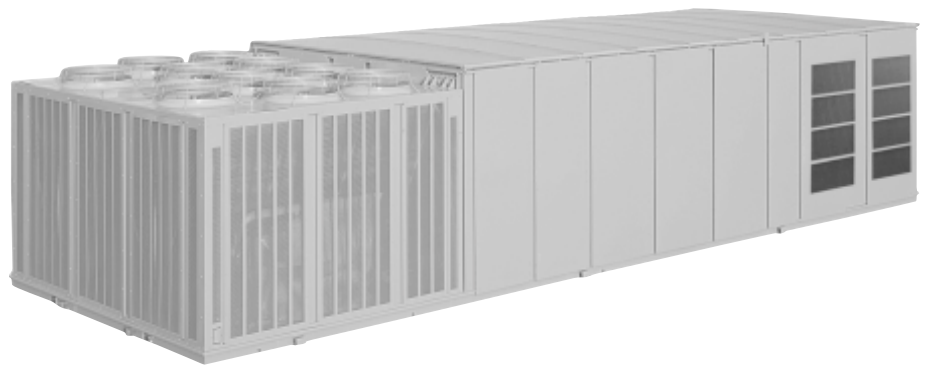
# Packaged Rooftop Air Conditioners

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IntelliPak® Rooftops  
20 - 130Tons — 60 Hz



*20 - 75 Tons*



*90 - 130 Tons*

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October 2001

RT-PRC010-EN



## Introduction

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# IntelliPak<sup>®</sup>

## Designed For Today and Beyond

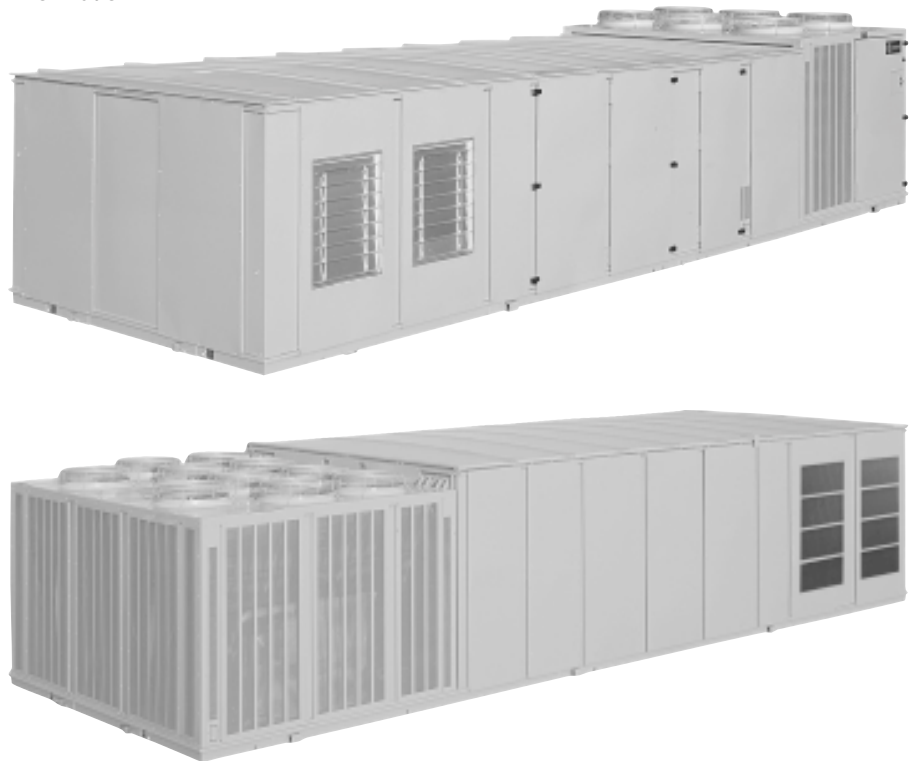
Innovative technology and an impressive line-up of features make the Trane IntelliPak<sup>®</sup> Rooftop line the number one choice for today and the future.

Trane's rooftop Unit Control Module (UCM), an innovative, modular microprocessor control design, coordinates the actions of the IntelliPak rooftop in an efficient manner and allows for stand-alone operation of the unit.

Access to the unit controls, via a Human Interface Panel, provides a high degree of control, superior monitoring capability, and unmatched diagnostic information.

Optionally, for centralized building control on-site, or from a remote location, IntelliPak can be configured for direct communication with a Tracer<sup>®</sup> building management system using a twisted pair of wires. With Tracer, the IntelliPak status data and control adjustment features can be conveniently monitored from a central location.

IntelliPak has the technology *and flexibility* to bring total comfort to every building space.



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# Features and Benefits

## Standard Features

- 20 to 130 ton industrial/ commercial rooftops
- Fully integrated, factory-installed/ commissioned microelectronic controls
- Unit mounted Human Interface Panel with a 2 line x 40 character English display and a 16 function key-pad that includes Custom, Diagnostics, and Service Test mode menu keys.
- Trane 3-D® Scroll compressors (20 to 130Tons)
- Compressor or circuit lead/lag depending on unit
- Horizontal discharge/return duct connections (SX, SL, SS models)
- CV or VAV control
- Low ambient compressor lockout control on units with economizers
- FROSTAT™ coil frost protection on all units
- Daytime Warm-up (Occupied mode) on VAV models and Morning Warm-up operation on all units with heating options
- Supply air static overpressurization protection on units with inlet guide vanes and VFD's.
- Supply airflow proofing
- Exhaust airflow proofing on units with exhaust option
- Supply air tempering control
- Supply air heating control on VAV modulating hot water or steam heat units
- Emergency stop input
- Liquid and Discharge Service Valves
- Mappable sensors and setpoint sources
- Occupied/Unoccupied switching
- Timed override activation
- Forward-curved supply fans
- Pitched roof over air handler section
- Stainless steel flue stack on gas heat units
- 14-gauge, single-piece construction base rails

- UL and CSA approval on standard options
- Two-inch spring fan isolation (90 to 130 tons)
- Meets 672 hours of salt spray testing in accordance to ASTM B117 Standard
- Two inch standard efficiency throwaway filters on 20 to 90 ton units and two inch high efficiency throwaway filters on 105 to 130 ton units.

## Optional Features

- Trane Communication Interface Module: ICS interface control module
- Remote Human Interface Panel (controls up to 4 units)
- Five ventilation override sequences
- Heating options: natural gas, electric, hot water or steam
- Generic BAS interface
- Choose from three economizer control options: comparative enthalpy, reference enthalpy, dry bulb control
- Variable frequency drive control of supply/exhaust fan motor
- Inlet guide vanes on FC supply fans (VAV only)
- Outside air CFM compensation on VAV units with IGV (or VFD) and economizer
- Hot gas bypass to the evaporator inlet
- Copper evaporator/condenser coils
- Suction service valves
- Replaceable core filter driers
- Phenolic coated evaporator/condenser coils
- High capacity evaporator coils (20 to 105 tons)
- Special paint colors
- Extended casing (SX models)
- Double wall access doors
- Double wall construction/perforated double wall
- Stainless steel drain pan in evaporator section
- Pitch evaporator drain pan
- Filter rack only (no filters)
- High efficiency throwaway filters
- 90-95 percent bag filters

- 90-95 percent cartridge filters
- Final filters
- Barometric relief
- 50 percent modulating exhaust with forward-curved fans
- Trane's air quality (Traq™) sensor
- Modulating Gas Heat
- 10 year limited warranty on Full Modulation Gas Heat
- 100 percent modulating exhaust with forward-curved fans
- 100 percent modulating exhaust with FC fans and Statitrac™ direct space sensing building pressurization control
- High duct temperature thermostats
- 0 F low ambient control
- 0-100 percent modulating fresh air economizer
- Ultra low leak dampers for 0-100 percent modulating fresh air economizers
- Dual electrical power connection
- Two-inch spring fan isolation (20 to 75 tons)
- High efficiency motors
- U-frame motors
- Oversized motors
- Thru the door non-fused disconnect with external handle
- Electrical convenience outlet
- Power supply monitoring
- Correction capacitors
- Horizontal or Roof discharge w/gas heat (20-75 tons "F" style units only)

## Field Installed Accessories

- Roof curbs
- Programmable sensors with night set back — CV and VAV
- Sensors without night set back — CV and VAV
- Remote zone sensors — used for remote sensing with remote panels.
- ICS zone sensors used with Tracer® system for zone control
- Outdoor temperature sensor for units without economizers
- Remote minimum position control for economizer
- Field installed module kits available for field upgrade of controls

# Features and Benefits

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## Features Summary

IntelliPak® rooftop features make installation and servicing easy and reliable operation a reality.

### Installation Ease

- Factory-installed/commissioned controls
  - ease of start up
  - single twisted wire pair
  - communication for ICS interface
  - full unit points access, no field wiring of required points
- Unit mounted Human Interface Panel standard
  - user friendly keypad — edit parameters
  - thru the access door interface
  - start up adjustments
  - unit mounted and remote interface panel key pads are identical
- Unit mounted lifting lugs facilitate installation and can be used as unit tiedown points.

### Easy to Service

- The microprocessor unit controls coordinates the operation of the rooftop with quality, industry-accepted components for service ease.
- Unit mounted Human Interface Panel standard
  - user friendly keypad — edit parameters
  - thru the access door interface
  - start up adjustments
  - unit mounted and remote interface panel key pads are identical
- Modularity of unit control design
  - individual replaceable functional boards
- Advanced diagnostics

### Reliability

- Advanced diagnostics
- Microprocessor controls
- Built-in safeties
- Modular control design
- UL approval as standard
- Forward-curved supply and exhaust fans are Trane designed and factory balanced.
- Fully insulated and gasketed panels reduce ambient air infiltration.
- Fixed-speed evaporator fan and exhaust drive for smooth fan operation and belt durability.
- 200,000 average life fan bearings enhance unit durability.
- Gas heater with free-floating stainless steel heat exchanger relieves the stresses of expansion and contraction. Stainless steel provides corrosion resistance through the entire material thickness.
- Integral condenser subcooler improves efficiency while helping avoid liquid flashing.
- Factory-wired and commissioned controls assure efficient and reliable rooftop operation.
- Trane Scroll compressors are used on 20 to 130 ton units. They are designed for tough industrial operation and meet demanding operating conditions both in efficiency and reliability.
- Roll-formed construction enhances cabinet integrity and assures a leakproof casing.
- Three-phase, direct-drive condenser fan motors enhance dependability and increase rooftop life.
- Trane industrial quality evaporator and condensing coils help increase rooftop life.

### Application Flexibility

- Modularity in design
- Increased offering of standard options
- Generic BAS interface
- Five factory preset/re-definable in the field ventilation override sequences
- Superior Tracer® interface for ICS applications
  - factory-installed Trane Communication Interface
- Unit mounted or Remote Human Interface panels
  - all parameter are editable from the Human Interface Panel
- Comparative enthalpy, Reference enthalpy, or Dry bulb control for economizers
- Statitrac™ direct space building pressure control
- Compensated outdoor air control — IAQ
- Factory-installed filter rack includes two-inch throwaway filters.
- CV controls stage both compressors and heat based on space requirements.
- Variable Frequency Drives (VFD) Included With or Without Bypass Control for Supply and Exhaust Fans.
- An array of heating options are available, including Steam, Hot Water, Electric and Natural Gas heat. The Gas Heating option provides a choice of two-stage gas heat, as well as full and limited modulating gas heat.



# Features and Benefits

## Integrated Rooftop Systems: Profitable, Simple Integrated Comfort™ System (ICS)

Trane integrated rooftop systems make design and installation of rooftop comfort systems profitable and easy. The Integrated Comfort™ system (ICS) improves job profit and increases job control by combining Trane rooftop units and a Tracer® building management system. This integrated system provides total building comfort and control. The primary motivation for building owners/managers in making the purchasing decision of HVAC controls system is no longer just saving energy; it is having the ability to automate their facilities and the convenience of interface to control systems.

### Simplifying The Comfort System

At Trane, we think new technology and innovation should bring you more capabilities, more flexibility and at the same time be able to give you equipment and systems that are easier to use, easier to install, commission and service. The Rooftop Integrated Comfort system saves you time and money by simplifying system design and system installation. When used with Trane's DDC/VAV boxes (or VariTrane™), system balancing almost goes away because each VAV box is commissioned and tested before it leaves the factory. All the status information and editing data from the rooftop units, VAV boxes, lighting, exhaust and other auxiliary equipment is available from Tracer for control, monitoring and service support of your

facility. Tracer, a family of building automation products from Trane, is designed with robust, application specific software packages to minimize custom programming requirements and enable system setup and control through simple editing of parameters in the standard applications software. Should you select an Integrated Comfort system for your facility, the accountability for equipment, automation and controls is Trane's, Trane's, and Trane's!

The IntelliPak® rooftop, as a part of an Integrated Comfort system, provides powerful maintenance monitoring, control and reporting capabilities. The Tracer places the rooftop in the appropriate operating mode for operation for: system on/off, night setback, demand limiting, setpoint adjustment based on outside parameters and much more. Up to 48 different unit diagnostic conditions can be monitored through Tracer to let you know about things like: sensor failures, loss of supply airflow, and a compressor trip out. Further, the addition of Building Management Network software offers remote scanning, automatic receipt of alarms, and easy dial-up access to over 100 various Tracer sites across town or across the country.

Typical points available through Tracer:

### IntelliPak Rooftops monitoring points available through Tracer

- all active Rooftop diagnostics
- history of last 20 unit diagnostics
- all system setpoints
- system sensor inputs
- supply fan mode and status
- inlet guide vane position/VFD speed
- unit heat/cool mode
- exhaust fan status
- exhaust damper position
- economizer position, minimum position setpoint, economizing setpoint
- on/off status of each compressor
- refrigerant evaporator and saturated condenser temperatures
- hydronic heat valve position
- electric heat stage status
- ventilation override mode status



### Tracer control points for IntelliPak® Rooftops

- cooling and heating setpoints
- zone setpoint offsets for use with demand limiting
- VAV discharge air setpoints
- supply air pressure setpoint
- space pressure setpoint
- zone and outdoor temperature values
- cooling and heating enable/disable
- economizer enable/disable
- economizer setpoint
- economizer minimum position
- activation of ventilation override modes
- diagnostics reset
- unit priority shutdown

### IntelliPak Rooftops set-up and configuration information through Tracer

- supply fan mode
- configuration of supply air reset
- ventilation override mode configuration
- default system setpoint values
- sensor calibration offsets

# Features and Benefits

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## Optimum Building Comfort Control

The modular control design of the UCM allows for greater application flexibility. Customers can order exactly the options required for the job, instead of one large control package. Unit features are distributed among multiple field replaceable printed circuit boards. The Trane UCM can be set up to operate under one of three control applications:

- 1) stand-alone
- 2) interface with Trane's Tracer® building management system
- 3) interface with a generic (non-Trane) building management system. All set-up parameters are preset from the factory, requiring less start-up time during installation.

The unit mounted Human Interface and the Remote Human Interface Panels' functions are identical, except for the Service mode is not available on the Remote Human Interface Panel. This common interface feature requires less time for building maintenance personnel to learn to interact with the unit. All of the rooftop's control parameters are adjustable and can be set up through the Remote Human Interface Panel such as, but not limited to: system on/off, demand limiting type, night setback setpoints, and many other setpoints. No potentiometers are required for setpoint adjustment, all adjustments are done through the Remote Human Interface key-pad. Also up to 48 different rooftop diagnostic points can be monitored through the human interfaces such as: sensor failures, loss of supply airflow, and compressor trip. No special tools are required for servicing of the unit. All diagnostic displays are available in clear English at the Remote Human Interface and will be held in memory, so that the operator/servicer can diagnose the root cause of failures.

## Statitrac™ Direct Space Building Pressurization Control

Trane's Statitrac™ control is a highly accurate and efficient method of maintaining building pressure control with a large rooftop air conditioner.

The efficiency is achieved with a 100 percent modulating exhaust system with two forward-curved fans with modulating discharge dampers that operate only when needed, compared to some systems that operate continually. And most of the operating hours of the 100 percent modulating exhaust system are at part load, saving more energy. Trane's Statitrac, with the 100 percent modulating exhaust system, provides comfort and economy for buildings with large rooftop air conditioning systems.

Statitrac control is simple! The space pressure control turns the exhaust fans on and off as required and modulates exhaust dampers to maintain space pressure within the space pressure dead band. Using the unit mounted Human Interface Panel you can

- 1) adjust space pressure setpoint
- 2) adjust space pressure dead band
- 3) measure and read building space pressure. The modulating exhaust system maintains the desired building pressure, saving energy while keeping the building at the right pressure. Proper building pressurization eliminates annoying door whistling, doors standing open, and odors from other zones.

The Statitrac™ direct space building control sequence will be maintained when a variable frequency drive is used.

## Fans With Inlet Guide Vanes

Trane's forward curved fans (20 through 75 tons) and air foil fans (90 through 130 tons) with inlet guide vanes pre-rotate the air in the direction of the fan wheel, decreasing static pressure and horsepower, essentially unloading the fan wheel. The unloading characteristics of a Trane FC fan with inlet guide vanes result in superior part load performance.

## Variable Frequency Drives (VFD)

Variable Frequency Drives are factory installed and tested to provide supply/exhaust fan motor speed modulation. VFD's, as compared to inlet guide vanes or discharge dampers, are quieter, more efficient, and are eligible for utility rebates. The VFD's are available with or without a bypass option. Bypass control will simply provide full nominal airflow in the event of drive failure.



# Features and Benefits

## Trane 3-D® Scroll Compressor Simple Design with 70% Fewer Parts

Fewer parts than an equal capacity reciprocating compressor means significant reliability and efficiency benefits. The single orbiting scroll eliminates the need for pistons, connecting rods, wrist pins and valves. Fewer parts lead to increased reliability. Fewer moving parts, less rotating mass and less internal friction means greater efficiency than reciprocating compressors.

The Trane 3-D Scroll provides important reliability and efficiency benefits. The 3-D Scroll allows the orbiting scrolls to touch in all three dimensions, forming a completely enclosed compression chamber which leads to increased efficiency. In addition, the orbiting scrolls only touch with enough force to create a seal; there is no wear between the scroll plates. The fixed and orbiting scrolls are made of high strength cast iron which results in less thermal distortion, less leakage, and higher efficiencies. The most outstanding feature of the 3-D Scroll compressor is that slugging will not cause failure. In a reciprocating compressor, however, the liquid or dirt can cause serious damage.

### Low Torque Variation

The 3-D Scroll compressor has a very smooth compression cycle; torque variations are only 30 percent of that produced by a reciprocating compressor. This means that the scroll compressor imposes very little stress on the motor resulting in greater reliability. Low torque variation reduces noise and vibration.

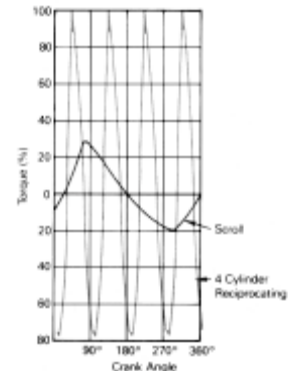
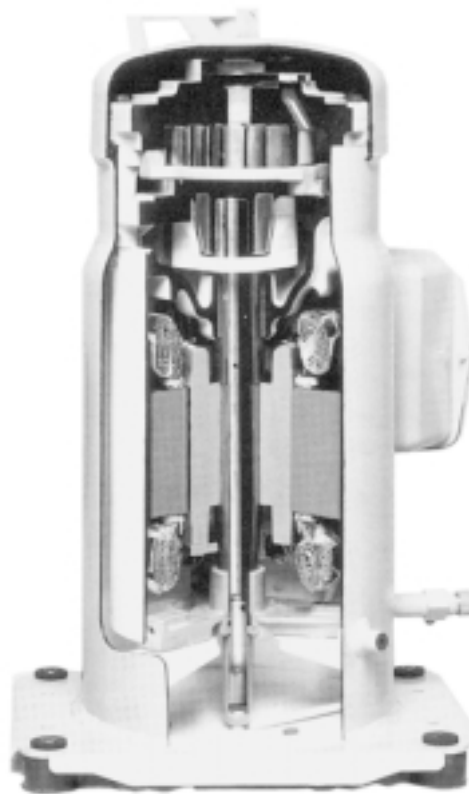
### Suction Gas Cooled Motor

Compressor motor efficiency and reliability is further optimized with the latest scroll design. Cool suction gas keeps the motor cooler for longer life and better efficiency.

## Proven Design Through Testing and Research

With over twenty years of development and testing, Trane 3-D Scroll compressors have undergone more

than 400,000 hours of laboratory testing and field operation. This work combined with over 25 patents makes Trane the worldwide leader in air conditioning scroll compressor technology.



One of two matched scroll plates — the distinguishing feature of the scroll compressor.

Chart illustrates low torque variation of 3-D Scroll compressor vs reciprocating compressor.



# Application Considerations

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## EXHAUST AIR OPTIONS

When is it necessary to provide building exhaust? Whenever an outdoor air economizer is used, a building generally requires an exhaust system. The purpose of the exhaust system is to exhaust the proper amount of air to prevent over or underpressurization of the building. The goal is to exhaust approximately 10 percent less air than the amount of outside air going into the building. This maintains a slightly positive building pressure.

A building may have all or part of its exhaust system in the rooftop unit. Often, a building provides exhaust external to the air conditioning equipment. This external exhaust must be considered when selecting the rooftop exhaust system.

IntelliPak® Rooftop units offer four types of exhaust systems:

- 1  
100 percent modulating exhaust with Statitrac™ direct space sensing building pressurization control (with or without variable frequency drives).
- 2  
100 percent modulating exhaust without Statitrac.
- 3  
50 percent power exhaust.
- 4  
Barometric relief dampers.

## Application Recommendations

### 1 100 percent modulating exhaust with Statitrac™ control

For both CV and VAV rooftops, the 100 percent modulating exhaust discharge dampers (or VFD) are modulated in response to building pressure. A differential pressure control system, called Statitrac™, uses a differential pressure transducer to compare indoor building pressure to atmospheric pressure. The FC exhaust fan is turned on when required to lower building static pressure to setpoint. The Statitrac control system then modulates the discharge dampers (or VFD) to control the building pressure to within the adjustable, specified dead band that is set at the Human Interface Panel.

### Advantages of the Statitrac™ 100 percent modulating exhaust system are:

- a  
The exhaust fan runs only when needed to lower building static pressure.
- b  
Statitrac compensates for pressure variations within the building from remote exhaust fans and makeup air units.
- c  
The exhaust fan discharges in a single direction resulting in more efficient fan operation compared to return fan systems.

### d

Because discharge dampers modulate the airflow, the exhaust fan may be running unloaded whenever the economizer dampers are less than 100 percent open.

With an exhaust fan system, the supply fan must be sized to pull the return air back to the unit through the return system during non-economizer operation. However, a supply fan can typically overcome return duct losses more efficiently than a return air fan system. Essentially, one large fan by itself is normally more efficient than two fans in series because of only one drive loss not two as with return air systems.

The reason for either a return air fan or an exhaust fan is to control building pressure. The Trane 100 percent modulating exhaust system with Statitrac does a better job controlling building pressure than return fans simply because 100 percent modulating exhaust discharge dampers (or VFD) are controlled directly from building pressure, rather than from an indirect indicator of building pressure such as outdoor air damper position.

The 100 percent modulating exhaust system with Statitrac may be used on any rooftop application that has an outdoor air economizer. However, when most exhaust is handled external to the rooftop or when building pressure is not critical, one of the other less expensive methods of exhaust may be used.

# Application Considerations

2

## 100 Percent Exhaust System

Competitive rooftops use a return air fan system for controlling the amount of exhaust air during economizer operation. The return fan is in series with the supply fan and must operate whenever the supply fan is operating. During economizer operation, the economizer outdoor air dampers control the position of the return and exhaust air dampers, to exhaust the proper amount of air. The disadvantage of a return air fan is that it runs continuously, versus an exhaust fan system which runs only when needed to lower or maintain building static pressure. Also, the return fan must discharge air in two directions, through the return air dampers and/or exhaust air dampers, resulting in less efficient operation compared to an exhaust fan.

The IntelliPak® Rooftop unit offers modulating 100 percent exhaust system. This fan system has performance capabilities equal to the supply fan. The FC exhaust fans are started by the

economizer's outdoor air damper position and the exhaust dampers track the economizer outdoor air damper position. The amount of air exhausted by this fan is controlled by modulating discharge dampers at the fan outlet. The discharge damper position is controlled by a signal that varies with the position of the economizer dampers. When the exhaust fans start, the modulating discharge dampers are fully closed, and exhaust airflow is 15 to 20 percent of total exhaust capabilities.

3

## 50 Percent Exhaust System

The 50 percent exhaust system is a single FC exhaust fan with half the air-moving capabilities of the supply fan system. The experience of The Trane Company is that a non-modulating exhaust system selected for 40 to 50 percent of nominal supply CFM can be applied successfully.

The 50 percent exhaust system generally should not be selected for more than 40 to 50 percent of design supply airflow. Since it is an on/off nonmodulating

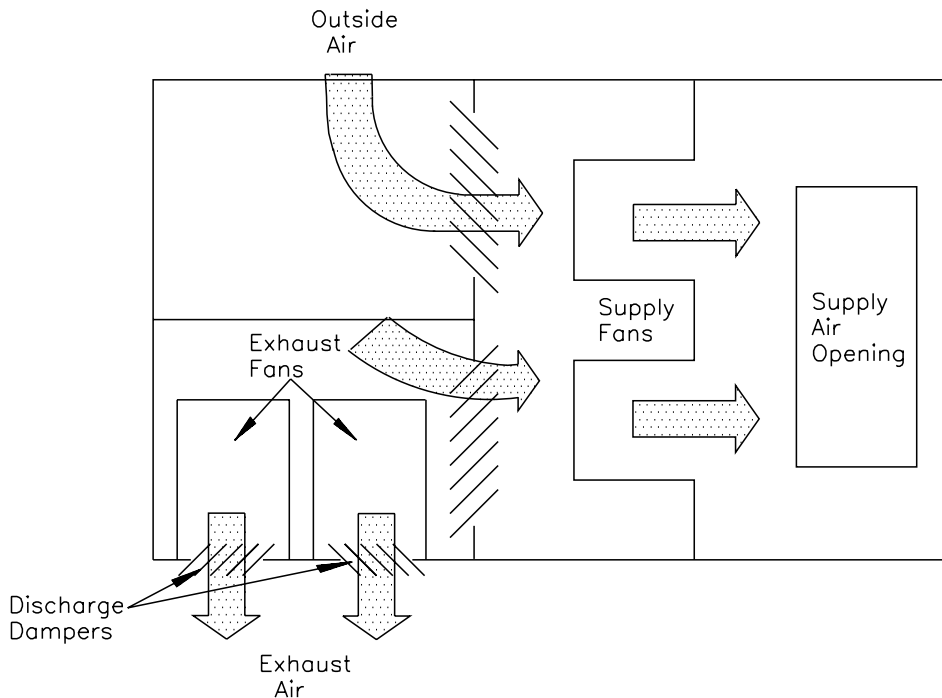
system, it does not vary exhaust CFM with the amount of outside air entering the building. Therefore, if selected for more than 40 to 50 percent of supply airflow, the building may become under-pressurized when economizer operation is allowing lesser amounts of outdoor air into the building. If, however, building pressure is not of a critical nature, the non-modulating exhaust system may be sized for more than 50 percent of design supply airflow.

4

## Barometric Relief Dampers

Barometric relief dampers consist of gravity dampers which open with increased building pressure. As the building pressure increases, the pressure in the unit return section also increases, opening the dampers and relieving air. Barometric relief may be used to provide relief for single story buildings with no return ductwork and exhaust requirements less than 25 percent.

Figure AC-1 — Plan View of Modulating 100 Percent Exhaust System



# Application Considerations

## Horizontal Discharge

The typical rooftop installation has both the supply and return air paths routed through the roof curb and building roof. However, many rooftop installations require horizontal supply and/or return from the rooftop because of a building's unique design or for acoustic considerations.

Trane has two ways to accomplish horizontal supply and/or return. The first applies to all IntelliPak® Rooftop units. Special field supplied curbs are installed that use the unit's **standard** discharge and return openings. The supply and return air is routed through the curb to horizontal openings on the sides of the curb. The second method available for horizontal supply and return applies to

**20 - 75 tons SXHF, SFHF, SLHF, SSHF, and 90 - 130 tons SXHG, SLHG and SSHG design units ONLY.** With this method the standard discharge and return openings are blocked in the field. Access panels are removed as indicated in Figures AC-1 and AC-2. These openings are used for the discharge and return. No special curb is needed.

## SXHF, SFHF, SLHF, SSHF Units

Figure AC-1 is a simplified sketch of the rooftop showing which panels can be used for horizontal supply and/or return. To supply air horizontally, the panels that normally house the heat accessory controls (Panel A) and the gas heat barometric dampers (Panel B) can be removed and either of the openings

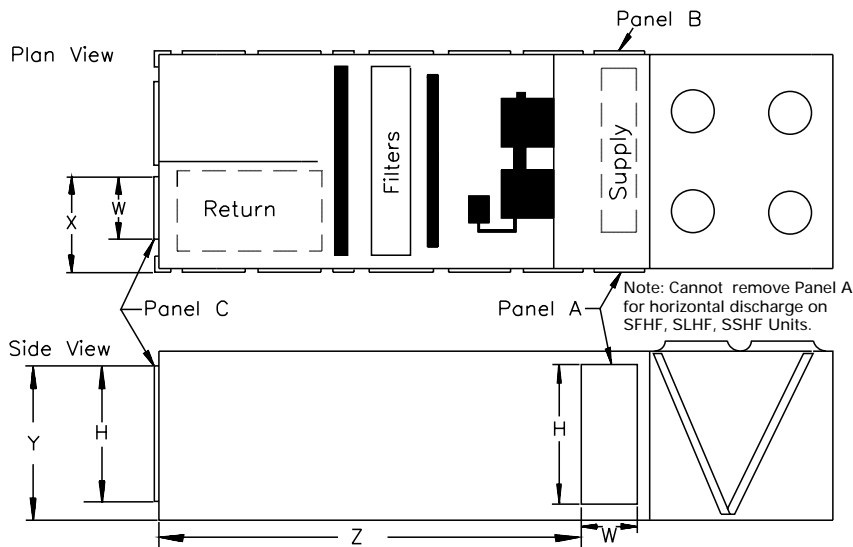
used as a unit discharge (see note 1). To return air horizontally, the exhaust fan access door (Panel C) can be removed and used as a return opening. Tables AC-1, 2 and 3 show dimensions for those panels.

## Horizontal Discharge on SXHF, SFHF, SLHF and SSHF Rooftops (20 to 75 tons)

The SXHF (extended casing cooling only), SFHF (gas heat), SSHF (steam heat) and SLHF (hot water heat) rooftops can be field modified to supply and return air horizontally without the use of a horizontal supply/return curb.

To supply air horizontally on SXHF only, the panels that normally house the heat accessory controls (Panel A) and the gas heat barometric dampers (Panel B) can be removed and either of the openings used as a unit discharge. To return air horizontally, the exhaust fan access door (Panel C) can be removed and used as a return opening.

Figure AC-2 Horizontal Discharge Panel Dimensions — 20 - 75 Tons SXHF, SFHF, SLHF, SSHF Units



1. For horizontal discharge on SFHF, SLHF and SSHF units, only the Panel B can be removed. Panel A cannot be used due to the location of the heating coils.
2. For horizontal discharge on SFHF (gas heat) models, the block off under the heater must be removed. After removal, a support must be added for the drain tube.
3. Supply and Return Base openings must be covered when converting to a horizontal configuration.

Table AC-1 — SXHF, SFHF, SSHF, SLHF — Panel A and B Dimensions

Model	H (in.)	W (in.)	Total Area (H X W)	
			(in. <sup>2</sup> )	(ft <sup>2</sup> )
S*HF C20	40.7	25.5	1038	7.2
S*HF C25	40.7	25.5	1038	7.2
S*HF C30	52.7	25.5	1344	9.3
S*HF C40	64.5	34.5	2225	15.5
S*HF C50	76.7	34.5	2646	18.4
S*HF C55	76.7	34.5	2646	18.4
S*HF C60	64.6	34.5	2229	15.5
S*HF C70	64.6	34.5	2229	15.5
S*HF C75	64.6	34.5	2229	15.5

Table AC-2 — SXHF, SFHF, SSHF, SLHF — Panel C Dimensions

Model	H (in.)	W (in.)	Total Area (H X W)	
			(in. <sup>2</sup> )	(ft <sup>2</sup> )
S*HF C20	40.7	34.5	1404	9.8
S*HF C25	40.7	34.5	1404	9.8
S*HF C30	52.7	34.5	1818	12.6
S*HF C40	64.5	34.5	2225	15.5
S*HF C50	76.7	34.5	2646	18.4
S*HF C55	76.7	34.5	2646	18.4
S*HF C60	64.6	34.5	2229	15.5
S*HF C70	64.6	34.5	2229	15.5
S*HF C75	64.6	34.5	2229	15.5

Table AC-3 — SXHF, SFHF, SSHF, SLHF — X, Y and Z Dimensions

Model	X (in.)	Y (in.)	Z (in.)
S*HF C20	35.5	44.0	201.5
S*HF C25	35.5	44.0	201.5
S*HF C30	35.5	56.0	201.5
S*HF C40	44.5	67.8	237.0
S*HF C50	44.5	80.0	237.0
S*HF C55	44.5	80.0	237.0
S*HF C60	44.5	68.0	237.5
S*HF C70	44.5	68.0	237.5
S*HF C75	44.5	68.0	237.5

Notes:

1. Add an extra 0.20-inches pressure drop to the supply external static to account for the extra turn the air is making.
2. The openings all have a 1.25-inch lip around the perimeter to facilitate ductwork attachment.
3. If exhaust fans are being used, provisions should be made for access to the exhaust components, since the access door is now being used as a return.
4. Use the dimensions provided and the supply Cfm to calculate the velocity (ft/min) through the openings to be sure they are acceptable.

\* = X, F, L, or S

# Application Considerations

Figure AC-3 is a simplified sketch showing which panels can be used for horizontal supply and/or return. On 90 to 130 ton units, only one side of the extended casing may be used for horizontal supply because of the location of the unit control panel. There are, however, on SXHF models two panels (Panels A) on the side opposite the control box which can be removed along with the vertical support which separates the two. Removal of the vertical support is optional, but will ensure maximum airflow. On SLHG, SSHG models only one of the Panel A's may be used for horizontal supply

because of the location of the heating coil. Horizontal return is accomplished in much the same way as on S\*HF's by removing the exhaust fan access door (Panel B). See Tables AC-4 and 5 for S\*HG panel dimensions.

When using an IntelliPak® Rooftop for horizontal supply and return, an additional pressure drop must be added to the supply external static to account for the 90 degree turn the air is making. This additional pressure drop depends on airflow and rooftop size, but a range of 0.10 inches to 0.30 inches can be expected. The openings on the rooftop all have a one inch lip around the

perimeter to facilitate ductwork attachment. If exhaust fans are being used on an IntelliPak Rooftop unit with horizontal return, provisions should be made for access to the exhaust components, since the access door opening is now being used as a return. Perhaps the return ductwork attachment to the rooftop can include a section of removable duct. Use the dimensions provided and the supply and exhaust CFM to calculate the velocity (ft/min) through the openings.

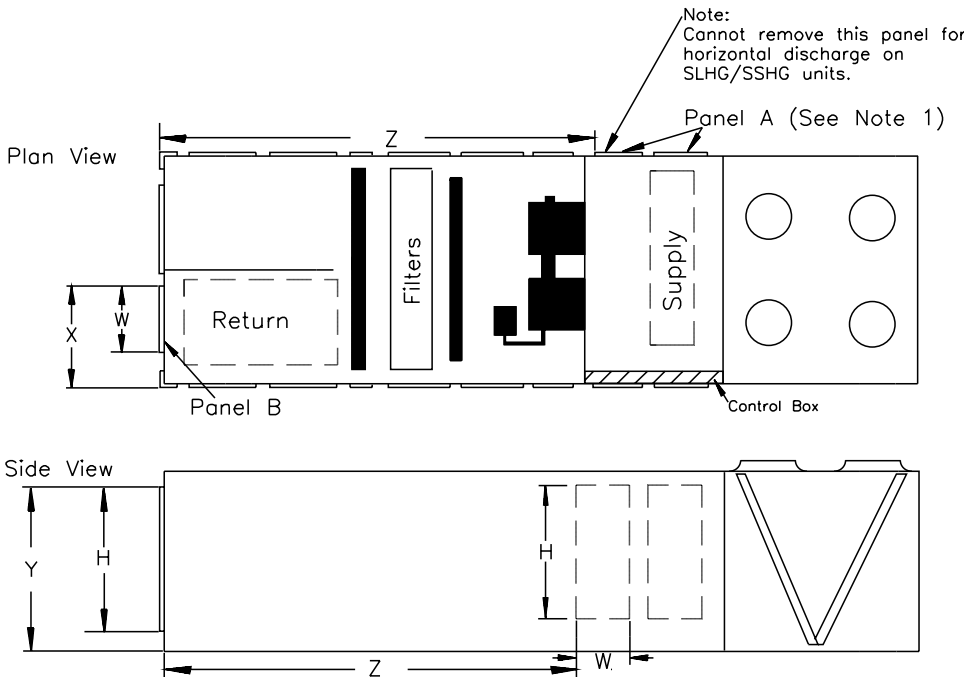
### Horizontal Discharge SXHG, SLHG, SSHG Rooftops (90 to 130 tons)

The SXHG, SLHG, SSHG rooftops can be field modified to supply and return air horizontally without the use of a horizontal supply/return curb.

To supply air horizontally, use Panel A only. The Panel on the opposite side cannot be used due to the location of the unit control Panel. SXHG rooftop air conditioners do not have a panel configuration like the 20 to 75 ton rooftops. To achieve maximum airflow, vertical support can be removed after the unit has been placed on the roof curb. It is secured by four screws. (See Note 1) For horizontal discharge on SLHG and SSHG units, only the Panel A next to the condenser fan section can be removed. The other Panel A next to the supply fan cannot be used due to the location of the heating coils.

To return air horizontally, the exhaust fan access door (Panel B) can be removed and used as a return opening.

Figure AC-3 — Horizontal Discharge Panel Dimensions — 90 - 130 Tonns SXHG, SLHG, SSHG Units



Note:  
1. SXHG units have two Panel A's that can be removed. Once unit is installed, panel(s) and the 6 1/2" vertical support channel in between may be removed.

Table AC-4 — SXHG, SLHG, SSHG —

Panel A and B Dimensions				
Panel	H (in.)	W (in.)	Total Area (H X W)	
			(in. <sup>2</sup> )	(ft. <sup>2</sup> )
A	72.7	27.5	1999	13.9
B	72.7	34.5	2508	17.4

Notes:

- Add an extra 0.20-inches pressure drop to the supply external static to account for the extra turn the air is making.
- The openings all have a 1.25-inch lip around the perimeter to facilitate ductwork attachment.

Table AC-5 — SXHG, SLHG, SSHG —

X, Y and Z Dimensions			
Model	X (in.)	Y (in.)	Z (in.)
S*HG 90-130	69.0	77.8	244.7

\* = X, L, or S

- If exhaust fans are being used, provisions should be made for access to the exhaust components, since the access door is now being used as a return.
- Use the dimensions provided and the supply Cfm to calculate the velocity (ft/min) through the openings to be sure they are acceptable.

# Application Considerations

## High Capacity Evaporator Coil

Rooftops are popular because of their “packaged” nature. Everything needed is contained in one box; mix-matching is neither necessary nor available. With this convenience comes some disadvantages; one is the rooftop’s cooling capacity may not exactly match the building load. It is conceivable that a 50 ton rooftop would need to be used on an application that is 41 tons, simply because the 40 ton rooftop does not meet capacity.

In order to avoid such occurrences, and to more closely match the rooftop’s capacity to the building load, a high capacity evaporator coil option is available on all IntelliPak® Rooftops 20 to 105 tons. These high capacity coils have an increased number of evaporator coil rows as compared to standard and enhanced evaporator tube surfaces, resulting in a higher capacity. Capacity tables for both standard and high capacity coils are available in the cooling data section of this catalog. See Table PD-43 for the pressure drops associated with the high capacity coil option. This pressure drop should be added to the total static pressure used to size the supply fan motor.

## Low Ambient Operation — Human Interface Recommendations

Who wants to be on a roof at sub-zero temperatures? We can understand a service technician’s reluctance to do this; that’s why we recommend using a remote mounted Human Interface Panel. The service technician can troubleshoot and diagnose in the comfort of a mechanical room.

## Corrosive Atmospheres

Trane’s IntelliPak® Rooftops are designed and built to industrial standards and will perform to those standards for an extended period

depending on the hours of use, the quality of maintenance performed, and the regularity of that maintenance. One factor that can have an adverse effect on unit life is its operation in a corrosive environment.

When rooftops are operated in corrosive environments, Trane recommends that copper fins be utilized on the condenser and/or evaporator coil. Because copper is more resistant to corrosion than aluminum, coil life expectancy is greatly increased. Some industry applications expose equipment to corrosive agents that even copper cannot fully resist. For those special applications, a baked phenolic resin coating (i.e. Heresite) is highly desirable. Baked phenolic coatings or copper fins on the condenser and/or evaporator coils are available on Trane’s IntelliPak Rooftops.

## Ventilation Override Sequences

One of the benefits of using an exhaust fan rather than a return fan, in addition to the benefits of lower energy usage and improved building pressurization control, is that the rooftop can be used as part of a ventilation override system. Several types of sequences can be easily done when exhaust fans are a part of the rooftop system.

What would initiate the ventilation override control sequence? Typically, a manual switch is used and located near the fire protection control panel. This enables the fire department access to the control for use during or after a fire. It is also possible to initiate the sequence from a field-installed automatic smoke detector. In either case, a contact closure begins the ventilation override control sequence. **CAUTION! The ventilation override system should not be used to signal the presence of smoke caused by a fire.**

Trane can provide five (5) different ventilation override sequences on both

CV and VAV IntelliPak® Rooftops. For your convenience the sequences can be factory preset or fully field editable from the Human Interface Panel or Tracer®. Any or all five sequences may be “locked” in by the user at the Human Interface Panel.

The user can customize up to five (5) different override sequences for purposes such as smoke control. The following parameters within the unit can be defined for each of the five sequences:

- **Supply Fan — on/off**
- **Inlet Guide Vanes — open/closed/controlling**
- **Variable Frequency Drives — on (60 Hz)/off (0 Hz)/controlling**
- **Exhaust Fan — on/off**
- **Exhaust Dampers — open/closed**
- **Economizer dampers — open/closed**
- **Heat — off/controlling (output for) VAV Boxes — open/controlling**

Compressors and condenser fans are shut down for any Ventilation Override sequence. Factory preset sequences include unit Off, Exhaust, Purge, Purge with duct pressure control, and Pressurization. Any of the user-defined Ventilation Override sequences can be initiated by closing a field supplied switch or contacts connected to an input on the Ventilation Override Module. If more than one ventilation override sequence is being requested, the sequence with the highest priority is initiated. Refer to the Sequence of Operation provided in the Control section of this catalog for more details on each override sequence.

## Natural Gas Heating Considerations

The IntelliPak standard, or limited modulation, gas heat exchangers are not recommended for applications with mixed air conditions entering the heat exchanger below 50°F. Mixed air temperatures below 50°F can cause condensation to form on the heat



# Application Considerations

exchanger, leading to premature failure. For increased reliability, the recommendation in these applications is full modulation gas heat. For airflow limitations and temperature rise across the heat exchanger information, see Table PD-24, 25 and RT-EB-104.

## Acoustical Considerations

The ideal time to make provisions to reduce sound transmission to the space is during the project design phase. Proper placement of rooftop equipment is critical to reducing transmitted sound levels to the building. The most economical means of avoiding an acoustical problem is to place any rooftop equipment away from acoustically critical area. If possible, rooftop equipment should not be located directly above areas such as: offices, conference rooms, executive office areas and classrooms. Ideal locations are above corridors, utility rooms, toilet facilities, or other areas where higher sound levels are acceptable.

Several basic guidelines for unit placement should be followed to minimize sound transmission through the building structure:

- 1  
Never cantilever the condensing section of the unit. A structural cross member must support this end of the unit.
- 2  
Locate the unit's center of gravity close to or over a column or main support beam to minimize roof deflection and vibratory noise.
- 3  
If the roof structure is very light, roof joists should be replaced by a structural shape in the critical areas described above.
- 4  
If several units are to be placed on one span, they should be staggered to reduce deflection over that span.

It is impossible to totally quantify the effect of building structure on sound transmission, since this depends on the response of the roof and building members to the sound and vibration of the unit components. However, the guidelines listed above are experience proven guidelines which will help reduce sound transmission.

There are several other sources of unit sound, i.e., supply fan, compressors, exhaust fans, condenser fans and aerodynamic noise generated at the duct fittings. Refer to the ASHRAE Applications Handbook, Chapter 42, 1991 edition for guidelines for minimizing the generation of aerodynamic noise associated with duct fittings.

Trane's Engineering Bulletin RT-EB-80 describes various duct installation considerations specifically addressing indoor sound level concerns. This bulletin includes sound power data on Trane's IntelliPak Rooftops 20 to 130 tons. Ask your local Trane representative for this informative engineering bulletin.

The VariTrane® Computerized Duct Design Program can be used to analyze the truck duct, run-out duct, VAV control unit and terminal unit noise attenuation. This program quantifies the airborne sound generation that can be expected in each terminal so that the designer can identify potential sound problems and make design alterations before equipment installation.

The Trane Acoustics Program (TAP) allows modeling of rooftop installation parameters. The output of this program shows the resulting indoor NC level for the modeled installation. This program is available from Trane's Customer Direct Service Network™ (C.D.S.), ask your local Trane representative for additional information on this program.

## Clearance Requirements

The recommended clearances identified with unit dimensions should be

maintained to assure adequate serviceability, maximum capacity and peak operating efficiency. A reduction in unit clearance could result in condenser coil starvation or warm condenser air recirculation. If the clearances shown are not possible on a particular job, consider the following:

- Do the clearances available allow for major service work such as changing compressors or coils?
- Do the clearances available allow for proper outside air intake, exhaust air removal and condenser airflow?
- If screening around the unit is being used, is there a possibility of air recirculation from the exhaust to the outside air intake or from condenser exhaust to condenser intake?

Actual clearances which appear inadequate should be reviewed with a local Trane sales engineer.

When two or more units are to be placed side by side, the distance between the units should be increased to 150 percent of the recommended single unit clearance. The units should also be staggered as shown in Figure AC-4 for two reasons:

- 1  
To reduce span deflection if more than one unit is placed on a single span. Reducing deflection discourages sound transmission.
- 2  
To assure proper diffusion of exhaust air before contact with the outside air intake of adjacent unit.

# Application Considerations

## Duct Design

It is important to note that the rated capacities of the rooftop can be met only if the rooftop is properly installed in the field. A well-designed duct system is essential in meeting these capacities.

The satisfactory distribution of air throughout the system requires that there be an unrestricted and uniform airflow from the rooftop discharge duct. This discharge section should be straight for at least several duct diameters to allow the conversion of fan energy from velocity pressure to static pressure.

However, when job conditions dictate elbows be installed near the rooftop outlet, the loss of capacity and static pressure may be reduced through the use of guide vanes and proper direction of the bend in the elbow. The high velocity side of the rooftop outlet should be directed at the outside radius of the elbow rather than the inside as illustrated in Figure AC-5.

Figure AC-4 — Unit Placement

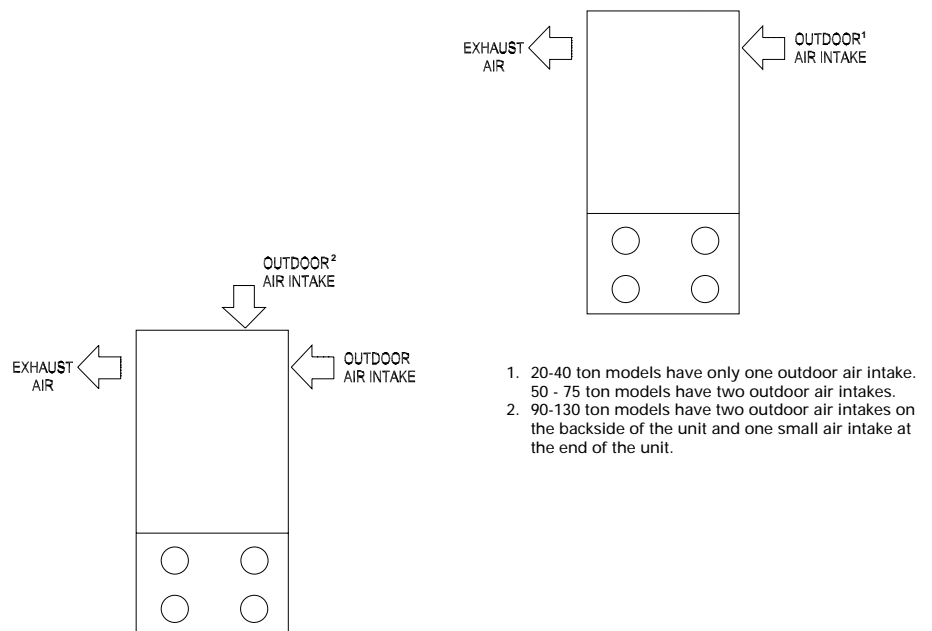
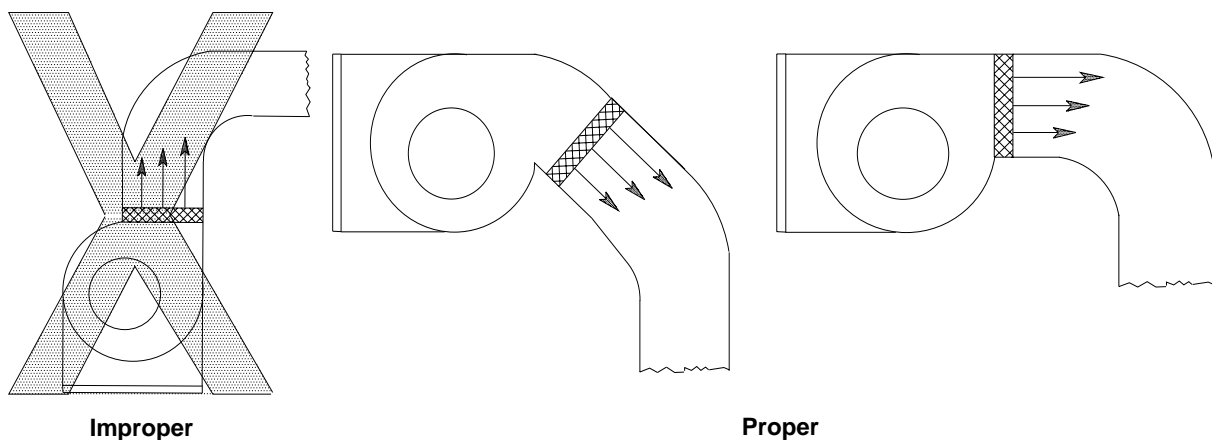


Figure AC-5 — Duct Design





# Selection Procedure

This section outlines a step-by-step procedure that may be used to select a Trane single-zone air conditioner. The sample selection is based on the following conditions:

- Summer outdoor design conditions — 95 DB/76 WB ambient temperature
- Summer room design conditions — 78 DB/65 WB
- Total cooling load — 430 MBh (35.8 tons)
- Sensible cooling load — 345 MBh (28.8 tons)
- Outdoor air ventilation load — 66.9 MBh
- Return air temperature — 80 DB/65 WB

#### Winter Design:

- Winter outdoor design conditions — 0 F
- Return air temperature — 70 F
- Total heating load — 475 MBh
- Winter outdoor air ventilation load — 133 MBh

#### Air Delivery Data:

- Supply fan cfm — 17,500 cfm
- External static pressure — 1.2 in wg
- Minimum outdoor air ventilation — 1,750 cfm
- Exhaust fan cfm — 12,000 cfm
- Return air duct negative static pressure — 0.65 in wg

#### Electrical Characteristics:

- Voltage/cycle/phase — 460/60/3 Unit Accessories:
- Gas fired heat exchanger — high heat module
- Throwaway filters
- Economizer
- Modulating 100 percent exhaust/return fan

### COOLING CAPACITY SELECTION

#### Step 1 — Nominal Unit Size Selection

A summation of the peak cooling load and the outside air ventilation load shows: 430 MBh + 66.9 MBh = 496.9 MBh required unit capacity. From

Table PD-9, a 50 ton unit capacity with standard capacity evaporator coil at 80 DB/65 WB, 95 F outdoor air temperature and 17,500 total supply cfm is 551 MBh total and 422 MBh sensible. Thus, a nominal 50 ton unit with standard capacity evaporator coil is selected.

#### Step 2 — Evaporator Coil Entering Conditions

Mixed air dry bulb temperature determination:

Using the minimum percent of OA (1,750 cfm ÷ 17,500 cfm = 10 percent), determine the mixture dry bulb to the evaporator.

$$RADB + \% \text{ OA (OADB - RADB)} = 80 + (0.10)(95 - 80) = 80 + 1.5 = 81.5 \text{ F}$$

Approximate wet bulb mixture temperature:

$$RAWB + \% \text{ OA (OAWB - RAWB)} = 65 + (0.10)(76 - 65) = 65 + 1.1 = 66.1 \text{ F}$$

#### Step 3 — Determine Supply Fan Motor Heat Gain

Having selected a nominal 50 ton unit, the supply fan bhp can be calculated. The supply fan motor heat gain must be considered in final determination of unit capacity.

#### Supply Air Fan

Determine unit total static pressure at design supply cfm:

External Static Pressure	1.2 inches
Evaporator Coil (Table PD-43)	0.25 inches
Return Duct Negative Static Pressure	<u>0.65 inches</u>
Heat Exchanger (Table PD-43)	0.31 inches
Throwaway Filter (Table PD-43)	0.10 inches
Economizer w/Exhaust Fan (Table PD-43)	0.12 inches
Trane Roof Curb (Table PD-43)	0.13 inches
Unit Total Static Pressure	2.76 inches

Using total of 17,500 cfm and total static pressure of 2.76 inches, enter Table PD-36. Table PD-36 shows 15.3 bhp with 924 rpm.

From Chart SP-1 supply fan motor heat gain = 46.0 MBh.

#### Step 4 — Determine Total Required Cooling Capacity

Required capacity = Total peak load + OA load + supply air fan motor heat.

$$\text{Required capacity} = 430 + 66.9 + 46.0 = 543 \text{ MBh (45.2 tons)}$$

#### Step 5 — Determine Unit Capacity

From Table PD-9, unit capacity at 81.5 DB/66.1 WB entering the evaporator, 17,500 supply air cfm, 95 F outdoor ambient, is 561 MBh (45.8 tons) with 426 MBh sensible.

#### Step 6 — Determine Leaving Air Temperature

Unit sensible heat capacity corrected for supply air fan motor heat = 426 MBh - 46 MBh = 380 MBh.

Supply air dry bulb temperature difference =

$$\frac{\text{Sensible Btu}}{1.085 \times \text{Supply cfm}} =$$

$$380 \text{ MBh} \div (1.085 \times 17,500 \text{ cfm}) = 20.0 \text{ F}$$

$$\text{Supply air dry bulb} = 81.5 \text{ DB} - 20.0 = 61.5 \text{ F}$$

$$\text{Unit enthalpy difference} = \frac{\text{Total Btu}}{4.5 \times \text{Supply cfm}} =$$

$$561 \text{ MBh} \div (4.5 \times 17,500 \text{ cfm}) = 7.12 \text{ Btu/lb}$$

$$\text{Leaving enthalpy} = h(\text{ent WB}) - h(\text{diff}). \text{ From Table 21-1 } h(\text{ent WB}) = 30.9 \text{ Btu/lb}$$

$$\text{Leaving enthalpy} = 30.9 \text{ Btu/lb} - 7.12 \text{ Btu/lb}$$

$$\text{Supply air wet bulb} = 55.9$$

$$\text{Leaving air temperature} = 61.5 \text{ DB/55.9 WB}$$



# Selection Procedure

## HEATING CAPACITY SELECTION

### Step 1 — Determine Air Temperature Entering Heating Module

Mixed air temperature = RADB + % OA  
 (OADB - RADB) = 70 + (0.10) (0 - 70) = 63 F

Supply air fan motor heat temperature rise =  $46,000 \text{ Btu} \div (1.085 \times 17,500 \text{ cfm}) = 2.42 \text{ F}$

Air temperature entering heating module =  $63.0 + 2.42 = 65.4 \text{ F}$

### Step 2 — Determine Total Winter Heating Load

Total winter heating load = peak heating load + ventilation load - supply fan motor heat =  $475 + 133 - 46.0 = 562 \text{ MBh}$

### Electric Heating System

Unit operating on 460/60/3 power supply.

From Table PD-30, kw may be selected for a nominal 50 ton unit operating

460-volt power. The 170 kw heat module (580.1 MBh) will satisfy the winter heating load of 563 MBh.

Table PD-28 shows an air temperature rise of 30.6 F for 17,500 cfm through the 170 kw heat module.

Unit supply temperature at design heating conditions = mixed air temperature + air temperature rise =  $65.4 \text{ F} + 30.6 \text{ F} = 96.0 \text{ F}$

### Gas Heating System (Natural Gas)

From Table PD-24 select the high heat module (697 MBh output) to satisfy winter heating load of 563 MBh at unit cfm.

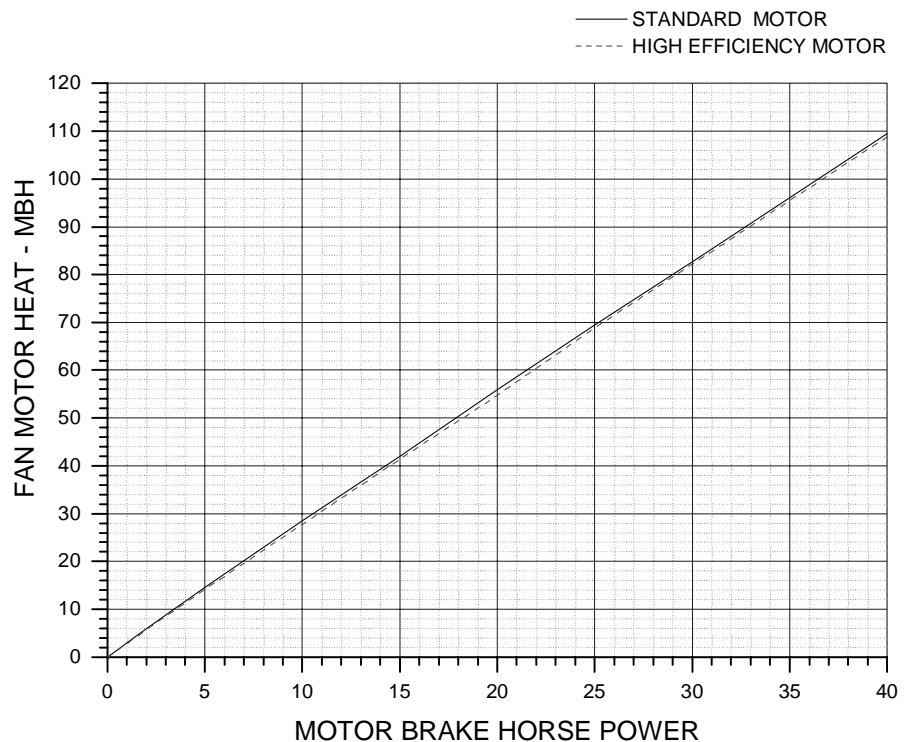
Table PD-26 also shows an air temperature rise of 36.0 F for 17,500 cfm through the heating module.

Unit supply temperature at design heating conditions = mixed air temperature + air temperature rise =  $65.4 \text{ F} + 36.0 \text{ F} = 101.4 \text{ F}$

### Hot Water Heating

Assume a hot water supply temperature of 190 F. Subtract the mixed air temperature from the hot water temperature to determine the ITD (initial temperature difference).

Chart SP-1 — Fan Motor Heat



ITD =  $190 \text{ F} - 65.4 \text{ F} = 125 \text{ F}$ . Divide the winter heating load by ITD =  $563 \text{ MBh} \div 125 \text{ F} = 4.50 \text{ Q/ITD}$ .

From Table PD-31, select the low heat module. By interpolation, a Q/ITD of 4.50 can be obtained at a gpm of 25.7.

Water pressure drop at 25.7 gpm is 0.57 ft. of water. Heat module temperature rise is determined by:

$$\frac{\text{Total Btu}}{1.085 \times \text{Supply cfm}} = \Delta T$$

$$\frac{563,000}{(1.085 \times 17,500)} = 29.7 \text{ F}$$

Unit supply air temperature = mixed air temperature + air temperature rise =  $65.4 + 29.7 = 95 \text{ F}$

### Steam Heating System

Assume a 15 psig steam supply.

From Table PD-27, the saturated temperature steam is 250 F. Subtract mixed air temperature from the steam

temperature to determine ITD. ITD =  $250 \text{ F} - 65.4 \text{ F} = 185 \text{ F}$

Divide winter heating load by ITD =  $563 \text{ MBh} \div 185 \text{ F} = 3.04 \text{ Q/ITD}$

From Table PD-26, select the high heat module. The high heat module at 17,500 cfm has a Q/ITD = 5.11.

Heat module capacity,  $Q = \text{ITD} \times \text{Q/ITD} = 185 \text{ F} \times 5.11 \text{ Q/ITD} = 945 \text{ MBh}$

Heat module air temperature rise

$$= \frac{\text{Total Btu}}{1.085 \times \text{Supply cfm}}$$

$$945 \text{ Btu} \div (1.085 \times 17,500 \text{ cfm}) = 49.8 \text{ F}$$

Unit supply temperature at design conditions = mixed air temperature + air temperature rise =  $65.4 \text{ F} + 49.8 \text{ F} = 115 \text{ F}$



# Selection Procedure

## AIR DELIVERY PROCEDURE

Supply fan performance tables include internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drop (evaporator coil, filters, optional economizer, optional exhaust fan, optional heating system, optional cooling only extended casing, optional roof curb).

### Supply Fan Motor Sizing

The supply fan motor selected in the cooling capacity determination was 15.3 bhp and 924 rpm. Thus, a 20 hp supply fan motor is selected. Enter Table PD-45 to select the proper drive. For a 50 ton rooftop with 20 hp motor, a drive number 9 — 900 rpm is selected.

### Exhaust Fan Motor Sizing

The exhaust fan is selected based on total return system negative static pressure and exhaust fan cfm. Return system negative static include return duct static and roof curb static pressure drop.

Return duct static pressure = 0.65 inches

Trane roof curb (Table PD-43) = 0.12 inches

Total return system negative static pressure = 0.77 inches

Exhaust fan cfm = 12,000 cfm

From Table PD-47, the required bhp is 3.45 hp at 574 rpm. Thus, the exhaust fan motor selected is 5 hp.

To select a drive, enter Table PD-49 for a 5 hp motor for a 50 ton unit. Drive selection number 6 — 600 rpm.

Where altitudes are significantly above sea level, use Tables PAF-2 and PAF-3 and Figure PAF-1 for applicable correction factors.

## UNIT ELECTRICAL REQUIREMENTS

Selection procedures for electrical requirements for wire sizing amps, maximum fuse sizing, and dual element fuses are given in the electrical service section of this catalog.

### Altitude Corrections

The rooftop performance tables and curves of this catalog are based on standard air (.075 lbs/ft). If the rooftop airflow requirements are at other than standard conditions (sea level), an air density correction is needed to project accurate unit performance.

Figure PAF-1 shows the air density ratio at various temperatures and elevations. Trane rooftops are designed to operate between 40 and 90 degrees Fahrenheit leaving air temperature.

The procedure to use when selecting a supply or exhaust fan on a rooftop for elevations and temperatures other than standard is as follows:

1

First, determine the air density ratio using Figure PAF-1.

2

Divide the static pressure at the nonstandard condition by the air density ratio to obtain the corrected static pressure.

3

Use the actual cfm and the corrected static pressure to determine the fan rpm and bhp from the rooftop performance tables or curves.

4

The fan rpm is correct as selected.

5

Bhp must be multiplied by the air density ratio to obtain the actual operating bhp.

# Selection Procedure

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In order to better illustrate this procedure, the following example is used:

Consider a 60 ton rooftop unit that is to deliver 18,000 actual cfm at 3-inches total static pressure (tsp), 55 F leaving air temperature, at an elevation of 5,000 ft.

1

From Figure PAF-1, the air density ratio is 0.86.

2

$Tsp = 3.0\text{-inches} / 0.86 = 3.49\text{ inches tsp.}$

3

From the performance tables: a 60 ton rooftop (without inlet vanes) will deliver 18,000 cfm at 3.49-inches tsp at 906 rpm and 21.25 bhp.

4

The rpm is correct as selected - 906 rpm.

5

$Bhp = 21.25 \times 0.86 = 18.3\text{ bhp actual.}$

Compressor MBh, SHR, and kw should be calculated at standard and then converted to actual using the correction factors in Table PAF-2. Apply these factors to the capacities selected at standard cfm so as to correct for the reduced mass flow rate across the condenser.

Heat selections other than gas heat will not be affected by altitude. Nominal gas capacity (output) should be multiplied by the factors given in Table PAF-3 before calculating the heating supply air temperature.

## HEATING CAPACITY SELECTION

### Step 1 — Determine Air Temperature Entering Heating Module

Mixed air temperature =  $RADB + \% OA (OADB - RADB) = 70 + (0.10) (0 - 70) = 63\text{ F}$

Supply air fan motor heat temperature rise =  $46,000\text{ Btu} \div (1.085 \times 17,500\text{ cfm}) = 2.42\text{ F}$

Air temperature entering heating module =  $63.0 + 2.42 = 65.4\text{ F}$







# General Data

**Table GD-1— General Data — 20-40 Tons**

	20Ton		25Ton		30Ton		40Ton	
<b>Compressor Data<sup>3</sup></b>								
Number/Size (Nominal)	2/10 Ton		1/10 Ton, 1/15 Ton		2/15 Ton		4/10 Ton	
Model	Scroll		Scroll		Scroll		Scroll	
Unit Capacity Steps (%)	100/50		100/40		100/50		100/75/50/25	
RPM	3450		3450		3450		3450	
<b>Evaporator Fans</b>								
Number/Size/Type	2/15"/FC		2/15"/FC		2/18"/FC		2/20"/FC	
Number of Motors	1		1		1		1	
Hp Range	3-15		3-15		5-20		7 <sup>1</sup> / <sub>2</sub> -30	
Cfm Range <sup>1</sup>	4000-9000		5000-11000		6000-13500		8000-18000	
ESP Range — (In. WG)	0.25-4.0		0.25-4.0		0.25-4.0		0.25-4.0	
<b>Exhaust Fans</b>								
	50%	100%	50%	100%	50%	100%	50%	100%
Number/Size/Type	1/15"/FC	2/15"/FC	1/15"/FC	2/15"/FC	1/15"/FC	2/15"/FC	1/18"/FC	2/18"/FC
Hp Range	1.5-3	1.5-3	1.5-3	3-5	3-5	3-7.5	5-7.5	5-10
Cfm Range	2000-6000	4000-10000	2000-6000	4000-12000	2000-7000	4000-14000	3000-11000	7500-16000
ESP Range — (In. WG)	0.25-1.4	0.2-2.0	0.25-1.4	0.2-2.0	0.25-1.4	0.2-2.0	0.25-1.4	0.2-2.0
<b>Condenser Fans</b>								
Number/Size/Type	2/26"/Prop.		3/26"/Prop.		3/26"/Prop.		4/26"/Prop.	
Hp (Each)	1.0		1.0		1.0		1.0	
Cfm	14000		18300		20900		28200	
Cycle/Phase	60/3		60/3		60/3		60/3	
<b>Evaporator Coil - Standard</b>								
Size (Ft <sup>2</sup> )	20.3		20.3		24.4		32.5	
Rows/Fin Series	2/148		2/148		3/148		2/148	
Tube Diameter/Surface	1/2/Enhanced		1/2/Enhanced		1/2/Enhanced		1/2/Enhanced	
<b>Evaporator Coil - High Capacity</b>								
Size (Ft <sup>2</sup> )	20.3		20.3		24.4		32.5	
Rows/Fin Series	4/148		4/148		4/148		4/148	
Tube Diameter/Surface	1/2/Enhanced		1/2/Enhanced		1/2/Enhanced		1/2/Enhanced	
<b>Condenser Coil (Aluminum Fins)</b>								
Size (Ft <sup>2</sup> )	35.0		35.0		46.3		63.2	
Rows/Fin Series/Tube Diameter	3/144/ 3/8		3/144/ 3/8		3/144/ 3/8		3/144/ 3/8	
Copper Condenser Fins (Optional)	3/144/ 3/8		3/144/ 3/8		3/144/ 3/8		3/144/ 3/8	
<b>Electric Heat</b>								
KW Range <sup>2</sup>	30-110		30-130		30-150		50-170	
Capacity Steps:	3		3		3		3	
<b>Natural Gas Heat</b>								
<b>Standard Gas Heat</b>								
Low Heat Input	235		235		350		350	
High Heat Input	500		500		500		850	
Standard Heating Capacity Steps:	2		2		2		2	
<b>Modulating Gas Heat (Not Available on 20-40 Ton Models with Low Heat)</b>								
High Heat - Limited Modulation <sup>4</sup>	33%		33%		33%		33%	
Heat Exchanger Type	Standard		Standard		Standard		Standard	
High Heat - Full Modulation <sup>5</sup>	100%		100%		100%		100%	
Heat Exchanger Type	High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel	
<b>Hot Water Coil</b>								
Size (Inches)	30x66x2 Row		30x66x2 Row		30x66x2 Row		42x66x2 Row	
Type	Type W, Prima Flo		Type W, Prima Flo		Type W, Prima Flo		Type W, Prima Flo	
High Heat (Fins/Ft)	110		110		110		110	
Low Heat (Fins/Ft)	80		80		80		80	
<b>Steam Coil</b>								
Size (Inches)	30x66x1 Row		30x66x1 Row		30x66x1 Row		30x66x1 Row & 12x66x1 Row	
Type	Type NS		Type NS		Type NS		Type NS	
High Heat (Fins/Ft)	96		96		96		96	
Low Heat (Fins/Ft)	42		42		42		42	

# General Data

**Table GD-1— General Data — 20-40 Tons Continued**

	20Ton	25Ton	30Ton	40Ton
<b>Filters</b>				
<b>Panel Filters</b>				
Number/Size (Inches)	12 — 20x20x2	12 — 20x20x2	16 — 20x20x2	16 — 20x25x2
Face Area (Ft <sup>2</sup> )	33.3	33.3	44.4	55.5
<b>Bag Filters</b>				
Number/Size (Inches)	4 — 12x24x19	4 — 12x24x19	2 — 12x24x19	5 — 12x24x19
	3 — 24x24x19	3 — 24x24x19	6 — 24x24x19	6 — 24x24x19
<b>Cartridge Filters</b>				
	4 — 12x24x12	4 — 12x24x12	2 — 12x24x12	5 — 12x24x12
	3 — 24x24x12	3 — 24x24x12	6 — 24x24x12	6 — 24x24x12
<b>Prefilters (For Bag &amp; Cartridge)</b>				
	4 — 12x24x2	4 — 12x24x2	2 — 12x24x2	5 — 12x24x2
	3 — 24x24x2	3 — 24x24x2	6 — 24x24x2	6 — 24x24x2
Face Area (Ft <sup>2</sup> )	20.0	20.0	28.0	34.0
<b>Standard Unit Minimum Outside Air Temperature For Mechanical Cooling</b>				
Without Hot Gas Option	55 F	50 F	50 F	55 F
With Hot Gas Option	55 F	50 F	50 F	55 F
<b>Low Ambient Option Minimum Outside Air Temperature</b>				
Without Hot Gas Option	0 F	0 F	0 F	0 F
With Hot Gas Option	10 F	10 F	10 F	10 F

**Notes:**

1. For cfm values outside these ranges, refer to RT-EB-104.
2. Refer to Table PD-30 for availability of electric heat kw ranges by voltage.
3. 20-30 Ton models are single circuit, 40 Ton models are dual circuit.
4. The firing rate of the unit can vary from 33% of the Heater Mbh up to the nameplate rating of the unit.
5. The firing rate of the unit can vary from pilot rate of 125,000 Btuh up to the nameplate rating of the unit.



# General Data

**Table GD-2 — General Data — 50-75 Tons**

	50Ton		55Ton		60Ton		70Ton		75Ton	
<b>Compressor Data<sup>3</sup></b>										
Number/Size (Nominal)	2/10, 2/15 Ton		4/15 Ton		4/15 Ton		4/10, 2/15 Ton		Standard 4/10, 2/15 Ton High Capacity 4/10, 2/15 Ton	
Model	Scroll		Scroll		Scroll		Scroll		Scroll	
Unit Capacity Steps (%)	100/80/60/30		100/75/50/25		100/75/50/25		100/72/44/22		100/72/44/22	
RPM	3450		3450		3450		3450		3450	
<b>Evaporator Fans</b>										
Number/Size/Type	2/20"/FC		2/20"/FC		2/22"/FC		2/22"/FC		2/22"/FC	
Number of Motors	1		1		1		1		1	
Hp Range	7 <sup>1</sup> / <sub>2</sub> -30		7 <sup>1</sup> / <sub>2</sub> -30		10-40		10-40 <sup>6</sup>		10-40 <sup>6</sup>	
Cfm Range <sup>1</sup>	10000-22500		12000-24000		14000-27000		16000-27000		16000-27000	
ESP Range — (In. WG)	0.25-4.0		0.25-4.0		0.25-4.0		0.25-4.0		0.25-4.0	
<b>Exhaust Fans</b>										
	50%	100%	50%	100%	50%	100%	50%	100%	50%	100%
Number/Size/Type	1/18"/FC	2/18"/FC	1/18"/FC	2/18"/FC	1/20"/FC	2/20"/FC	1/20"/FC	2/20"/FC	1/20"/FC	2/20"/FC
Hp Range	5-7.5	5-15	5-7.5	5-15	5-7.5	5-20	5-7.5	5-20	5-7.5	5-20
Cfm Range	3000-11000	9000-20000	3000-11000	10000-21500	4000-13000	12000-27000	4000-13000	12000-27000	4000-13000	12000-27000
ESP Range — (In. WG)	0.25-1.4	0.2-2.0	0.25-1.4	0.2-2.0	0.25-1.4	0.2-2.0	0.25-1.4	0.2-2.0	0.25-1.4	0.2-2.0
<b>Condenser Fans</b>										
Number/Size/Type	6/26"/Prop		6/26"/Prop		6/26"/Prop		6/26"/Prop		6/26"/Prop	
Hp (Each)	1.0		1.0		1.0		1.0		1.0	
Cfm	36600		36600		40800		40800		40800	
Cycle/Phase	60/3		60/3		60/3		60/3		60/3	
<b>Evaporator Coil - Standard</b>										
Size (Ft. <sup>2</sup> )	37.9		37.9		43.1		43.1		43.1	
Rows/Fin Series	3/148		3/148		2/164		3/180		4/148	
Tube Diameter/Surface	1/2/Enhanced		1/2/Enhanced		1/2/Enhanced		1/2/Enhanced		1/2/Enhanced	
<b>Evaporator Coil - High Capacity</b>										
Size (Ft. <sup>2</sup> )	37.9		37.9		43.1				43.1	
Rows/Fin Series	4/148		4/148		4/148		NA		5/148	
Tube Diameter/Surface	1/2/Enhanced		1/2/Enhanced		1/2/Enhanced				1/2/Enhanced	
<b>Condenser Coil (Aluminum Fins)</b>										
Size (Ft. <sup>2</sup> )	70.0		70.0		88.0		88.0		88.0	
Rows/Fin Series/Tube Diameter	3/144/ 3/8		4/144/ 3/8		4/144/ 3/8		4/144/ 3/8		3/144/ 3/8	
Copper Condenser Fins (Optional)	3/144/ 3/8		3/144/ 3/8		3/144/ 3/8		3/144/ 3/8		3/144/ 3/8	
<b>Electric Heat</b>										
KW Range <sup>2</sup>	70-190		70-190		90-190		90-190		90-190	
Capacity Steps:	3		3		3		3		3	
<b>Natural Gas Heat</b>										
<b>Standard Gas Heat</b>										
Low Heat Input	500		500		500		500		500	
High Heat Input	850		850		850		850		850	
Standard Heating Capacity Steps:	2		2		2		2		2	
<b>Modulating Gas Heat</b>										
High/Low Heat - Limited Modulation <sup>4</sup>	33%		33%		33%		33%		33%	
Heat Exchanger Type	Standard		Standard		Standard		Standard		Standard	
High/Low Heat - Full Modulation <sup>5</sup>	100%		100%		100%		100%		100%	
Heat Exchanger Type	High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel	
<b>Hot Water Coil</b>										
Size (Inches)	42x66x2 Row		42x66x2 Row		42x90x2 Row		42x90x2 Row		42x90x2 Row	
Type	Type W, Prima Flo		Type W, Prima Flo		Type W, Prima Flo		Type W, Prima Flo		Type W, Prima Flo	
High Heat (Fins/Ft)	110		110		110		110		110	
Low Heat (Fins/Ft)	80		80		80		80		80	
<b>Steam Coil</b>										
Size (Inches)	30x66x1 Row		30x66x1 Row		30x90x1 Row		30x90x1 Row		30x90x1 Row	
Type	12x66x1 Row		12x66x1 Row		12x90x1 Row		12x90x1 Row		12x90x1 Row	
Type	Type NS		Type NS		Type NS		Type NS		Type NS	
High Heat (Fins/Ft)	96		96		72		72		72	
Low Heat (Fins/Ft)	42		42		42		42		42	



# General Data

**Table GD-2 — General Data — 50-75 Tons Continued**

	50Ton	55Ton	60Ton	70Ton	75Ton
<b>Filters</b>					
<b>Panel Filters</b>					
Number/Size (Inches)	20 — 20x25x2	20 — 20x25x2	35 — 16x20x2	35 — 16x20x2	35 — 16x20x2
Face Area (Ft <sup>2</sup> )	69.4	69.4	77.8	77.8	77.8
<b>Bag Filters</b>					
Number/Size (Inches)	3 — 12x24x19	3 — 12x24x19	6 — 12x24x19	6 — 12x24x19	6 — 12x24x19
	9 — 24x24x19	9 — 24x24x19	8 — 24x24x19	8 — 24x24x19	8 — 24x24x19
<b>Cartridge Filters</b>					
	3 — 12x24x12	3 — 12x24x12	6 — 12x24x12	6 — 12x24x12	6 — 12x24x12
	9 — 24x24x12	9 — 24x24x12	8 — 24x24x12	8 — 24x24x12	8 — 24x24x12
<b>Prefilters (For Bag &amp; Cartridge)</b>					
	3 — 12x24x2	3 — 12x24x2	6 — 12x24x2	6 — 12x24x2	6 — 12x24x2
	9 — 24x24x2	9 — 24x24x2	8 — 24x24x2	8 — 24x24x2	8 — 24x24x2
Face Area (Ft <sup>2</sup> )	42.0	42.0	44.0	44.0	44.0
<b>Standard Unit Min. Outside Air Temperature For Mechanical Cooling</b>					
Without Hot Gas Option	35 F	40 F	30 F	45 F	45 F
With Hot Gas Option	35 F	40 F	30 F	45 F	45 F
<b>Low Ambient Option Min. Outside Air Temp</b>					
Without Hot Gas Option	0 F	0 F	0 F	0 F	0 F
With Hot Gas Option	10 F	10 F	10 F	10 F	10 F

**Notes:**

1. For cfm values outside these ranges, refer to RT-EB-104.
2. Refer to Table PD-30 for availability of electric heat kw ranges by voltage.
3. 50 - 75 Tons models are dual circuit.
4. The firing rate of the unit can vary from 33% of the Heater Mbh up to the nameplate rating of the unit.
5. The firing rate of the unit can vary from pilot rate of 125,000 Btuh up to the nameplate rating of the unit.
6. 40 Hp available as standard in 460 volt only.



# General Data

**Table GD-3 — General Data — 90-130 Tons**

	90Ton		105Ton		115Ton		130Ton	
<b>Compressor Data<sup>3</sup></b>								
Number/Size (Nominal)	2/10, 4/15 Ton		6/15 Ton		4/10, 4/15 Ton		8/15 Ton	
Model	Scroll		Scroll		Scroll		Scroll	
Unit Capacity Steps (%)	100/69/38/19		100/67/33/17		100/70/40/20		100/75/50/25	
RPM	3450		3450		3450		3450	
<b>Evaporator Fans</b>								
Number/Size/Type	2/28"/AF		2/28"/AF		2/28"/AF		2/28"/AF	
Number of Motors	2		2		2		2	
Hp Range	30-80		30-80		30-80		30-80	
Cfm Range <sup>1</sup>	27,000-45,000		31,000-46,000 <sup>4</sup>		31,000-46,000		31,000-46,000	
ESP Range — (In. WG)	1.0-4.75		1.0-4.70		1.0-4.70		1.0-4.70	
<b>Exhaust Fans</b>								
	50%	100%	50%	100%	50%	100%	50%	100%
Number/Size/Type	1/22"/FC	2/22"/FC	1/22"/FC	2/22"/FC	1/22"/FC	2/22"/FC	1/22"/FC	2/22"/FC
Hp Range	15	15-40	15	15-40	15	15-40	15	15-40
Cfm Range	12,000-20,000	28,000-40,000	12,000-20,000	28,000-40,000	12,000-20,000	28,000-40,000	12,000-20,000	28,000-40,000
ESP Range — (In. WG)	.25-2.5	.25-2.5	.25-2.5	.25-2.5	.25-2.5	.25-2.5	.25-2.5	.25-2.5
<b>Condenser Fans</b>								
Number/Size/Type	8/26"/Prop.		10/26"/Prop.		10/26"/Prop.		12/26"/Prop.	
Hp (Each)	1.0		1.0		1.0		1.0	
Cfm	56,400		57,000		60,000		63,200	
Cycle/Phase	60/3		60/3		60/3		60/3	
<b>Evaporator Coil - Standard</b>								
Dimensions	122.0 x 70.0		122.0 x 71.25		122.0 x 71.25		122.0 x 71.25	
Size (F <sup>2</sup> )	59.3		59.3		59.3		59.3	
Rows/Fin Series	3/148		3/180		5/148		5/148	
Tube Diameter/Surface	1/2"/Enhanced		1/2"/Enhanced		1/2"/Enhanced		1/2"/Enhanced	
<b>Evaporator Coil - High Capacity</b>								
Dimensions	122.0 x 70.0		122.0 x 71.25		NA		NA	
Size (F <sup>2</sup> )	59.3		59.3		NA		NA	
Hi-Capacity Rows/Fin Series	5/148		5/148		NA		NA	
Tube Diameter/Surface	1/2"/Enhanced		1/2"/Enhanced		NA		NA	
<b>Condenser Coil</b>								
Size (F <sup>2</sup> )	152		152		152		152	
Rows/Fin Series/Tube Diameter	3/144/ 3/8		4/144/ 3/8		4/144/ 3/8		4/144/ 3/8	
<b>Electric Heat</b>								
KW	190		190		190		190	
Capacity Steps:	3		3		3		3	
<b>Natural Gas Heat</b>								
Standard Heating -- MBh Input	1000		1000		1000		1000	
Capacity Steps:	2		2		2		2	
<b>Modulating Gas Heat</b>								
High Heat - Limited Modulation <sup>5</sup>	33%		33%		33%		33%	
Heat Exchanger Type	Standard		Standard		Standard		Standard	
High Heat - Full Modulation <sup>6</sup>	100%		100%		100%		100%	
Heat Exchanger Type	High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel	
<b>Hot Water Coil</b>								
Size (Inches)	(2) 30x84x2 Row		(2) 30x84x2 Row		(2) 30x84x2 Row		(2) 30x84x2 Row	
Type	Type W, Prima Flo		Type W, Prima Flo		Type W, Prima Flo		Type W, Prima Flo	
High Heat (Fins/Ft)	110		110		110		110	
Low Heat (Fins/Ft)	80		80		80		80	
<b>Steam Coil</b>								
Size (Inches)	(2) 30x84x1 Row		(2) 30x84x1 Row		(2) 30x84x1 Row		(2) 30x84x1 Row	
Type	Type NS		Type NS		Type NS		Type NS	
High Heat (Fins/Ft)	96		96		96		96	
Low Heat (Fins/Ft)	52		52		52		52	

# General Data

**Table GD-3 — General Data — 90-130 Tons Continued**

	90Ton	105Ton	115Ton	130Ton
<b>Filters</b>				
Panel Filters				
Number/Size (Inches)	25-24x24x2	25-24x24x2	25-24x24x2	25-24x24x2
Face Area (Ft <sup>2</sup> )	100.0	100.0	100.0	100.0
Bag Filters				
Number/Size (Inches)	3-12x24x19	3-12x24x19	3-12x24x19	3-12x24x19
Cartridge Filters				
Number/Size (Inches)	15-24x24x12	15-24x24x12	15-24x24x12	15-24x24x12
Number/Size (Inches)	3-12x24x12	3-12x24x12	3-12x24x12	3-12x24x12
Number/Size (Inches)	15-24x24x12	15-24x24x12	15-24x24x12	15-24x24x12
Prefilters (For Bag & Cartridge)				
Number/Size (Inches)	3-20x24x2	3-20x24x2	3-20x24x2	3-20x24x2
Number/Size (Inches)	15-24x24x2	15-24x24x2	15-24x24x2	15-24x24x2
Face Area (Ft <sup>2</sup> )	66.0	66.0	66.0	66.0
<b>Standard Unit Min. Outside Air Temperature For Mechanical Cooling</b>				
Without Hot Gas Bypass	45 F	45 F	45 F	45 F
With Hot Gas Bypass	45 F	45 F	45 F	45 F

**Notes:**

- For cfm values outside these ranges, refer to RT-EB-104.
- Refer to Table PD-30 for availability of electric heat kw ranges by voltage.
- 90-130 Ton models are dual circuit.
- Max cfm for 105 Ton std is 44,000.
- The firing rate of the unit can vary from 33% of the Heater Mbh up to the nameplate rating of the unit.
- The firing rate of the unit can vary from pilot rate of 125,000 Btuh up to the nameplate rating of the unit.

**Table GD-4 — ARI Performance Data<sup>1</sup>**

ARI Performance Data <sup>1</sup>					
Tons	Model <sup>3</sup>	Capacity			
		(MBh)	EER	IPLV <sup>2</sup>	
20	SAHFC2040A**A**A*****	220	9.5	12.8	
	SXHFC2040A**A**A*****	220	9.5	12.8	
	SFHFC204LA**A**A*****	220	9.4	12.7	
	SEHFC204**A**A*****	220	9.4	12.7	
	SLHFC204LA**A**A*****	220	9.4	12.6	
	SSHFC204LA**A**A*****	220	9.4	12.7	

**Notes:**

- This information is rated and tested in accordance with ARI Standard 360-93 for large unitary equipment up to 25 tons. These Trane products can be found in the current ARI Directory.
- IPLV — Integrated Part Load Value
- This information applies to units whose design sequence (Digit 10) is "A" or later.

**Table GD-5 — ARI Correction Multipliers**

Option Description	Model		Multipliers (%)		
	Digit	Designator	Capacity	EER	IPLV <sup>2</sup>
High Heat — Gas	9	H,J,P	100	100	100
High Heat — Steam	9	H	100	99	98
High Heat — Hot Water	9	H	100	99	99
Wire Mesh Filter	13	B	100	101	101
95% Bag filter	13	D	99	95	91
95% Cartridge Filter	13	E	99	95	92
100% Economizer	16	D	100	99	98
High Capacity Coil	21	G	114	109	107
High Efficiency Motor	21	L	100	101	101
Inlet Guide Vanes	17	3	100	99	99
VFD (60 Hz)	17	6-9	99	98	98

**Table GD-6 — Economizer Outdoor Air Damper Leakage (Of Rated Airflow)**

	ΔP Across Dampers (In. WC)	
	0.5 (In.)	1.0 (In.)
Standard "Low Leak"	1.5 %	2.5 %
Optional "Ultra Low Leak"	0.5 %	1.0 %

**Note:**

- Above data based on tests completed in accordance with AMCA Standard 575 at AMCA Laboratories.

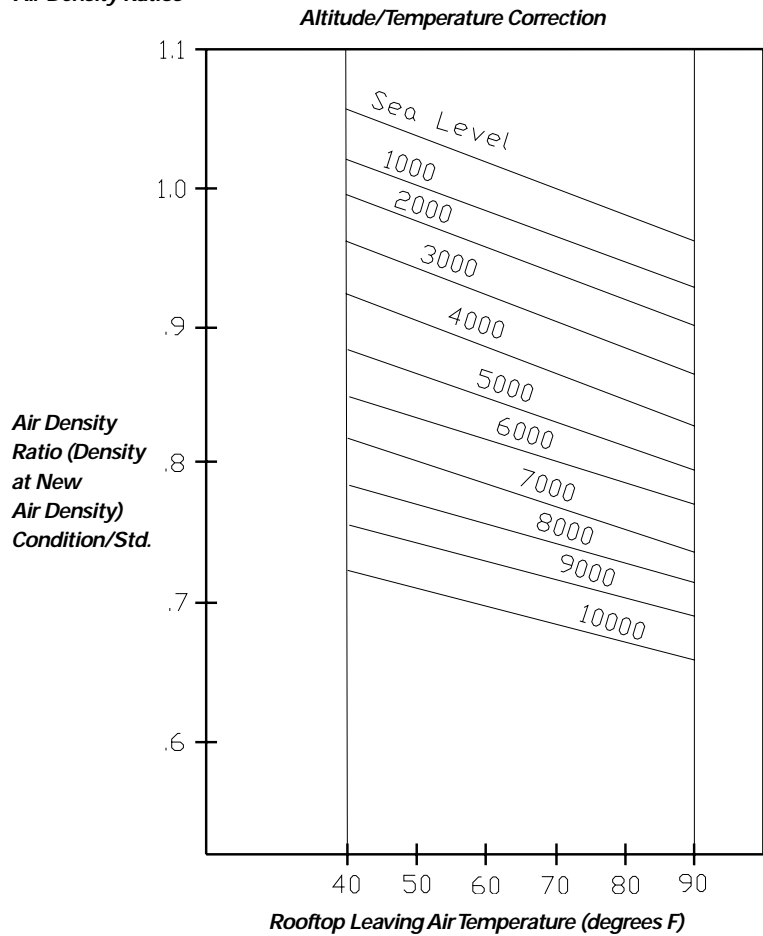


# Performance Adjustment Factors

**Table PAF-1 — Enthalpy of Saturated AIR**

Wet Bulb Temperature	Btu Per Lb.
40	15.23
41	15.70
42	16.17
43	16.66
44	17.15
45	17.65
46	18.16
47	18.68
48	19.21
49	19.75
50	20.30
51	20.86
52	21.44
53	22.02
54	22.62
55	23.22
56	23.84
57	24.48
58	25.12
59	25.78
60	26.46
61	27.15
62	27.85
63	28.57
64	29.31
65	30.06
66	30.83
67	31.62
68	32.42
69	33.25
70	34.09
71	34.95
72	35.83
73	36.74
74	37.66
75	38.61

**Figure PAF-1 — Air Density Ratios**



**Table PAF-2 — Cooling Capacity Altitude Correction Factors**

	Altitude (Ft.)							
	Sea Level	1000	2000	3000	4000	5000	6000	7000
Cooling Capacity Multiplier	1.00	0.99	0.99	0.98	0.97	0.96	0.95	0.94
KW Correction Multiplier (Compressors)	1.00	1.01	1.02	1.03	1.04	1.05	1.06	1.07
SHR Correction Multiplier	1.00	.98	.95	.93	.91	.89	.87	.85
Maximum Condenser Ambient	115 F	114 F	113 F	112 F	111 F	110 F	109 F	108 F

Note:  
SHR = Sensible Heat Ratio

**Table PAF-3 — Gas Heating Capacity Altitude Correction Factors**

	Altitude (Ft.)						
	Sea Level To 2000	2001 To 2500	2501 To 3500	3501 To 4500	4501 To 5500	5501 To 6500	6501 To 7500
Capacity Multiplier	1.00	.92	.88	.84	.80	.76	.72

Note:  
Correction factors are per AGA Std 221.30 — 1964, Part VI, 6.12. Local codes may supersede.



# Performance Data (20 Ton)

**Table PD-1 — 20 Ton Gross Cooling Capacities (MBh) — STANDARD CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
CFM	ENT DB (F)	61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
4000	75	194	140	215	116	239	89	187	136	208	112	231	86	180	133	200	109	222	82	173	128	192	105	213	79
	80	194	159	216	135	239	111	188	155	208	132	231	108	181	151	201	128	222	103	173	147	192	124	213	99
	85	195	178	216	154	239	130	189	174	209	151	231	126	182	170	201	147	222	122	175	166	192	143	213	118
	90	196	196	216	173	239	149	191	191	209	169	231	145	185	185	201	165	223	141	179	179	193	161	213	137
6000	75	214	166	236	133	261	96	206	162	228	129	251	93	198	158	218	125	241	89	189	154	208	121	230	85
	80	215	193	236	160	261	125	207	190	228	156	251	121	199	185	219	152	241	117	190	181	209	147	230	113
	85	218	218	237	186	261	152	212	212	228	182	252	148	205	205	219	178	241	144	197	197	210	173	231	140
	90	229	229	238	213	262	178	223	223	230	209	252	175	215	215	221	205	242	170	208	208	212	201	231	166
7000	75	220	178	243	140	268	99	212	174	234	136	257	95	203	169	224	132	247	92	194	165	214	127	235	88
	80	222	209	243	170	268	131	214	205	234	166	258	127	206	201	224	162	247	123	197	197	214	157	235	119
	85	229	229	244	200	268	162	222	222	235	196	258	158	215	215	225	192	247	154	207	207	215	188	236	149
	90	241	241	246	231	269	192	234	234	238	228	259	188	226	226	229	223	248	183	218	218	219	219	237	179
8000	75	225	189	248	146	273	101	216	185	239	142	262	98	207	180	228	138	251	94	198	176	217	134	239	90
	80	228	224	249	180	273	136	220	220	239	176	263	133	211	211	229	172	251	129	203	203	218	167	240	124
	85	239	239	250	214	273	171	231	231	240	210	263	167	223	223	231	206	252	162	215	215	220	201	240	158
	90	251	251	253	249	274	204	243	243	243	243	264	200	235	235	235	235	253	196	226	226	226	226	241	191
9000	75	229	199	252	152	277	104	221	195	242	148	266	100	211	190	232	144	255	96	202	186	221	139	242	92
	80	234	234	253	189	277	142	226	226	243	185	266	138	218	218	233	181	255	134	209	209	222	176	243	130
	85	246	246	254	227	278	179	239	239	245	223	267	175	230	230	235	218	256	171	221	221	224	214	244	166
	90	259	259	259	259	279	216	251	251	251	251	268	212	242	242	242	242	256	207	233	233	233	233	244	203

**Table PD-2 — 20 Ton Gross Cooling Capacities (MBh) — HIGH CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
CFM	ENT DB (F)	61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
4000	75	216	158	240	129	265	100	208	153	231	125	256	96	200	149	222	121	245	91	191	144	212	116	234	87
	80	217	180	240	152	265	123	209	176	231	148	256	118	201	171	222	143	245	114	192	166	212	139	234	110
	85	218	203	240	174	266	145	211	198	232	170	256	141	202	194	222	166	246	137	194	189	213	161	235	132
	90	222	222	241	196	266	167	216	216	232	192	256	163	209	209	223	187	246	159	201	201	213	183	235	154
6000	75	238	190	262	150	288	106	228	186	251	145	277	102	219	181	241	141	264	97	208	176	229	136	252	93
	80	240	223	262	182	289	140	231	219	252	177	277	136	221	214	241	172	265	131	211	209	229	167	252	127
	85	247	247	263	214	289	172	239	239	253	209	278	168	231	231	242	204	265	163	222	222	231	199	253	158
	90	260	260	266	247	289	204	251	251	256	242	278	200	243	243	245	237	266	195	233	233	235	232	253	190
7000	75	245	205	268	158	295	109	235	200	258	154	283	104	225	196	246	149	270	100	214	190	234	144	257	95
	80	248	244	269	195	296	148	238	238	258	190	284	144	229	229	247	186	271	139	220	220	235	180	257	134
	85	260	260	271	233	296	185	251	251	260	228	284	180	242	242	249	223	271	175	232	232	238	218	258	170
	90	273	273	275	271	297	221	264	264	264	264	285	217	254	254	254	254	273	212	244	244	244	244	259	207
8000	75	250	220	274	168	301	111	240	215	262	164	288	107	230	210	251	159	274	102	219	205	238	154	260	98
	80	256	256	275	208	301	156	247	247	264	203	289	152	238	238	252	198	275	147	228	228	239	193	261	142
	85	270	270	278	251	302	197	261	261	267	246	289	192	251	251	255	241	276	187	241	241	243	236	262	182
	90	284	284	284	284	303	238	275	275	275	275	291	233	265	265	264	264	278	228	254	254	253	253	264	223
9000	75	255	234	278	175	305	114	245	229	266	171	292	109	234	224	254	166	278	105	223	219	241	161	264	100
	80	264	264	279	221	306	164	255	255	268	216	293	159	245	245	256	211	279	155	235	235	243	206	265	150
	85	279	279	283	269	306	208	269	269	272	264	293	203	259	259	260	259	280	198	248	248	248	248	266	193
	90	294	294	294	294	308	254	284	284	284	284	296	249	273	273	273	273	283	244	261	261	261	261	269	239

Notes:  
 1. All capacities shown are gross and have not considered indoor fan heat.  
 2. CAP = Total gross cooling capacity (MBH).  
 3. SHC = Sensible heat capacity (MBH).



# Performance Data (25 Ton)

**Table PD-3 — 25 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
ENT		Entering Wet Bulb																							
DB		61		67		73		61		67		73		61		67		73		61		67		73	
CFM	(F)	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC		
5000	75	245	179	272	148	301	112	237	175	263	143	290	107	228	170	253	139	279	103	219	165	242	134	267	98
	80	246	205	272	173	301	141	238	200	263	169	290	137	229	195	253	164	279	130	220	190	243	159	267	125
	85	248	230	273	198	301	165	240	226	263	194	290	161	231	221	254	189	279	156	223	216	243	184	267	151
	90	253	253	273	223	301	190	246	246	264	218	301	186	238	238	254	214	279	181	230	230	244	209	267	176
7000	75	265	207	292	164	320	118	255	202	281	160	308	114	245	197	270	155	295	109	234	192	258	150	281	104
	80	267	241	293	198	320	154	258	237	282	194	308	149	248	232	270	188	295	144	237	226	258	183	281	139
	85	272	272	293	232	321	188	264	264	282	227	309	183	255	255	271	221	296	178	246	246	259	216	282	173
	90	285	285	295	266	321	221	277	277	285	261	309	216	268	268	274	255	296	211	258	258	262	250	282	205
8750	75	276	228	303	177	331	122	266	223	291	172	318	118	255	218	279	167	304	113	243	213	266	162	289	108
	80	280	271	303	218	331	164	270	266	292	212	318	160	258	258	279	207	304	155	248	248	266	201	289	149
	85	291	291	305	258	331	205	282	282	293	253	318	200	272	272	281	247	304	195	261	261	268	242	289	189
	90	305	305	309	299	331	245	295	295	298	294	318	240	285	285	285	305	234	274	274	273	273	290	289	228
10000	75	282	243	308	186	336	125	271	237	296	180	322	121	260	232	283	175	308	116	248	226	270	169	293	110
	80	286	286	309	230	336	171	277	277	297	225	322	167	267	267	284	219	308	162	256	256	271	214	293	156
	85	301	301	311	275	336	216	291	291	299	270	323	211	281	281	287	265	308	206	269	269	274	259	293	200
	90	316	316	315	315	337	260	305	305	305	323	255	294	294	294	309	250	309	250	282	282	282	282	294	244
11000	75	286	253	312	192	339	128	275	248	299	186	325	123	264	243	286	181	311	117	252	237	272	175	295	112
	80	293	293	313	240	339	177	283	283	300	234	326	172	273	273	287	229	311	167	261	261	273	223	295	161
	85	308	308	315	289	340	225	298	298	303	284	326	220	287	287	291	278	311	214	275	275	277	272	296	208
	90	323	323	323	323	340	273	312	312	312	327	267	300	300	300	300	312	262	300	288	288	287	287	297	256

**Table PD-4 — 25 Ton Gross Cooling Capacity — HIGH CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
ENT		Entering Wet Bulb																							
DB		61		67		73		61		67		73		61		67		73		61		67		73	
CFM	(F)	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC		
5000	75	273	273	303	163	334	125	263	194	291	158	322	120	253	188	280	153	309	115	242	182	267	147	296	110
	80	274	226	303	191	334	155	264	221	292	186	322	150	254	215	280	180	310	145	243	209	268	174	296	139
	85	277	255	304	219	334	184	267	249	292	214	323	179	257	244	281	209	310	174	246	238	268	202	296	168
	90	283	283	305	246	334	210	275	275	294	241	323	205	266	266	282	235	310	200	257	257	270	229	297	194
7000	75	295	235	325	185	355	131	283	230	312	179	342	126	271	223	299	173	328	121	259	217	285	168	313	115
	80	298	275	325	226	355	171	287	270	313	220	342	167	275	264	299	214	328	161	263	257	285	208	313	156
	85	307	307	327	264	355	212	297	297	315	258	342	207	286	286	302	252	328	202	275	275	288	246	313	196
	90	322	322	330	304	355	247	312	312	318	298	343	245	301	301	306	292	329	240	290	290	292	286	314	234
8750	75	308	262	336	200	365	135	296	256	323	195	351	130	283	250	309	189	337	125	269	244	294	184	321	119
	80	314	313	337	248	365	185	302	302	324	243	352	180	290	290	310	237	337	175	279	279	296	231	321	170
	85	329	329	340	297	365	236	318	318	327	292	352	230	307	307	314	286	337	223	294	294	300	280	322	217
	90	344	344	344	344	367	281	333	333	333	333	353	275	322	322	322	339	270	309	309	309	309	309	324	264
10000	75	315	281	342	211	370	137	302	275	328	206	356	133	289	269	314	200	341	127	276	262	299	193	325	122
	80	324	324	343	265	370	195	313	313	330	260	357	190	301	301	316	254	342	185	288	288	301	247	326	180
	85	340	340	347	321	371	248	329	329	334	315	357	243	317	317	321	309	342	237	304	304	306	303	326	231
	90	356	356	356	356	372	303	345	345	345	345	359	297	332	332	332	344	291	319	319	319	319	319	329	285
11000	75	320	296	345	220	374	140	307	290	332	215	360	135	294	283	317	207	344	130	280	277	302	201	328	124
	80	331	331	347	278	374	203	320	320	334	273	360	198	308	308	320	267	345	193	295	295	305	260	328	187
	85	348	348	352	339	375	259	337	337	339	333	360	254	324	324	324	324	345	249	311	311	311	311	329	243
	90	364	364	364	364	376	318	352	352	352	352	362	313	339	339	339	339	348	308	326	326	326	326	332	302

- Notes  
 1. All capacities shown are gross and have not considered indoor fan heat.  
 2. CAP = Total gross cooling capacity.  
 3. SHC = Sensible heat capacity.



# Performance Data (30 Ton)

**Table PD-5 — 30Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
CFM	ENT	Entering Wet Bulb																							
	DB (F)	61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
6000	75	312	230	346	188	382	142	301	224	333	182	368	137	289	218	320	176	353	131	276	211	306	170	337	125
	80	313	264	346	222	382	178	302	257	334	216	368	172	290	251	320	210	353	166	278	244	306	203	337	160
	85	316	298	347	255	382	211	305	292	334	249	368	205	294	285	321	242	353	199	282	279	307	236	338	193
	90	324	324	348	288	382	245	315	315	336	282	368	239	305	305	323	275	354	233	294	294	309	269	338	226
9000	75	341	277	375	216	410	151	328	270	360	210	394	145	314	263	345	204	376	139	299	256	329	197	358	133
	80	345	326	376	264	410	201	333	320	361	257	394	195	319	313	346	250	377	189	304	304	329	243	359	182
	85	357	357	378	311	411	250	346	346	363	305	394	243	334	334	348	298	377	236	321	321	332	291	359	229
	90	375	375	382	360	411	296	363	363	368	354	395	289	350	350	353	347	378	283	336	336	336	336	361	276
10500	75	351	298	384	229	418	155	337	291	368	222	401	149	322	284	352	215	383	143	307	277	335	208		
	80	357	355	384	282	418	212	343	343	369	276	402	206	330	330	353	269	384	199	317	317	336	262		
	85	374	374	387	338	419	266	361	361	372	331	402	260	348	348	357	324	385	253	334	334	340	317		
	90	392	392	392	392	420	320	379	379	379	379	404	313	365	365	365	365	386	306	350	350	350	350		
12000	75	359	318	390	240	424	158	344	311	374	233	407	152	329	304	358	226	389	146	314	297	340	219		
	80	368	368	391	300	425	222	355	355	376	294	408	216	342	342	359	287	390	209	327	327	342	279		
	85	387	387	395	363	425	282	374	374	380	356	408	276	359	359	364	349	390	269	345	345	347	342		
	90	406	406	406	406	427	342	392	392	392	392	410	336	377	377	377	377	392	329	362	362	361	361		
13500	75	365	338	395	250	429	162	351	331	379	244	412	156	336	323	362	237	393	150	320	316	344	229		
	80	378	378	397	318	430	232	365	365	381	311	412	225	351	351	364	304	394	218	336	336	347	296		
	85	398	398	403	387	431	297	384	384	387	380	413	291	369	369	369	369	394	284	353	353	353	353		
	90	417	417	417	417	433	365	402	402	402	402	416	358	387	387	387	387	397	351						

**Table PD-6 — 30Ton Gross Cooling Capacity — HIGH CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
CFM	ENT	Entering Wet Bulb																							
	DB (F)	61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
6000	75	324	237	358	194	395	148	312	230	345	188	381	142	299	224	331	181	365	136	285	219	316	174	349	129
	80	325	269	359	229	395	183	313	263	345	223	381	177	300	260	331	216	365	171	287	253	316	210	349	164
	85	328	304	360	261	395	218	316	297	346	254	381	212	304	296	332	248	366	206	291	289	317	240	350	199
	90	337	337	361	294	396	250	327	327	348	287	381	244	316	316	334	280	366	237	304	304	319	273	350	230
9000	75	354	289	388	225	423	156	340	284	373	218	407	150	325	277	357	211	389	144	310	267	339	204		
	80	359	341	389	275	423	208	345	334	374	268	407	202	331	327	358	261	390	196	315	315	341	254		
	85	372	372	391	325	424	260	360	360	376	319	408	254	347	347	361	312	390	247	333	333	344	304		
	90	390	390	396	377	424	308	378	378	381	370	409	302	364	364	366	363	391	295	350	350	350	350		
10500	75	364	312	397	239	431	159	349	305	381	231	414	153	334	297	365	224	396	147	318	290	347	217		
	80	370	370	398	295	431	220	357	357	382	289	415	214	344	344	366	282	397	207	329	329	349	274		
	85	389	389	401	354	432	278	376	376	386	347	415	271	362	362	370	340	397	264	348	348	353	333		
	90	408	408	408	408	433	334	394	394	394	394	417	328	380	380	380	380	399	321						
12000	75	373	335	403	253	437	162	357	332	387	246	420	157	342	325	370	240	402	150	325	312	352	233		
	80	384	384	405	315	437	232	370	370	389	309	420	226	356	356	372	301	402	219	341	341	355	294		
	85	403	403	410	382	438	299	389	389	394	375	421	292	375	375	378	368	403	286	359	359	361	361		
	90	422	422	422	422	440	360	408	408	408	408	424	353	392	392	392	392	406	346						
13500	75	380	357	408	266	442	166	364	349	392	257	425	160	348	342	375	248	406	154	330	330	356	241		
	80	394	394	411	335	442	243	380	380	395	328	425	237	366	366	378	321	406	231	350	350	360	313		
	85	414	414	417	409	443	312	400	400	400	400	426	306	384	384	384	384	407	299						
	90	433	433	433	433	446	385	418	418	418	418	429	378	403	403	403	403	411	371						

Notes:  
 1. All capacities shown are gross and have not considered indoor fan heat.  
 2. CAP = Total gross cooling capacity.  
 3. SHC = Sensible heat capacity.



# Performance Data (40Ton)

**Table PD-7 — 40 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil With Scroll Compressor**

ENT		Ambient Temperature																							
		85						95						105						115					
		DB		61		67		73		61		67		73		61		67		73		61		67	
CFM	(F)	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
8000	75	395	289	438	237	483	179	382	282	423	230	467	173	367	274	407	223	448	166	352	265	389	215	429	158
	80	396	329	438	278	483	226	383	322	423	271	466	220	368	314	407	264	448	210	353	306	390	256	429	202
	85	399	371	439	319	483	265	386	364	424	312	467	258	372	356	408	304	449	251	358	348	390	295	429	243
	90	406	406	439	359	484	306	395	395	425	352	467	299	383	383	409	344	449	291	370	370	392	335	430	283
11000	75	425	331	468	263	514	189	409	323	451	255	495	182	393	315	432	247	474	175	375	306	413	239	452	167
	80	428	385	469	317	514	246	413	377	451	309	495	239	397	369	433	301	474	231	380	360	413	292	452	222
	85	435	435	470	370	515	300	422	422	453	362	496	293	408	408	434	353	475	285	393	393	415	344	453	276
	90	456	456	473	423	515	353	443	443	457	415	496	345	428	428	439	407	476	337	412	412	420	398	454	328
14000	75	443	367	487	285	533	197	427	359	468	277	512	190	410	351	448	269	490	183	391	342	427	260	466	174
	80	450	435	488	350	533	265	434	428	469	342	512	257	415	415	449	333	490	249	399	399	428	324	467	241
	85	468	468	490	415	533	331	453	453	472	407	513	323	437	437	452	398	491	314	420	420	431	389	468	305
	90	490	490	497	482	535	395	475	475	479	474	514	386	458	458	458	458	492	378	440	440	440	440	469	369
16000	75	453	390	496	299	542	203	436	382	476	290	521	195	418	373	455	282	498	187	399	364	434	272	473	178
	80	460	460	497	370	542	277	445	445	478	362	521	269	429	429	457	353	498	261	412	412	435	344	474	252
	85	484	484	500	443	543	349	469	469	482	435	522	341	452	452	462	426	499	332	433	433	440	417	475	323
	90	508	508	508	508	544	420	492	492	491	491	523	412	474	474	474	501	403	455	455	455	455	455	477	394
18000	75	462	412	503	311	549	207	444	403	483	302	527	200	425	394	462	293	504	192	406	385	439	284	479	181
	80	473	473	504	389	549	288	458	458	484	381	528	280	441	441	463	372	504	272	422	422	441	363	479	263
	85	498	498	509	470	550	367	482	482	490	462	529	358	464	464	470	453	505	350	445	445	448	444	480	340
	90	523	523	523	523	552	445	506	506	505	505	531	437	487	487	487	487	508	428	467	467	467	467	483	419

**Table PD-8 — 40 Ton Gross Cooling Capacity — HIGH CAPACITY Evaporator Coil With Scroll Compressor**

ENT		Ambient Temperature																							
		85						95						105						115					
		DB		61		67		73		61		67		73		61		67		73		61		67	
CFM	(F)	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
8000	75	436	321	483	261	533	199	420	313	465	253	514	192	403	304	446	244	493	183	385	294	426	235	471	174
	80	438	367	484	309	533	247	422	359	466	300	514	239	405	350	447	291	493	230	387	340	427	282	471	222
	85	442	415	485	351	534	294	426	406	467	347	515	286	410	397	448	338	494	277	392	388	427	328	472	268
	90	453	453	486	401	534	341	439	439	469	393	515	333	425	425	450	383	494	319	409	409	430	374	472	314
11000	75	469	372	517	293	566	208	451	365	497	284	544	200	432	355	475	275	521	192	411	345	452	265	496	183
	80	474	436	518	357	566	273	456	427	498	349	544	264	437	417	476	340	521	256	418	407	453	328	497	247
	85	487	487	520	420	567	337	471	471	500	408	545	328	454	454	479	399	522	320	436	436	457	388	498	310
	90	511	511	525	480	567	400	495	495	506	471	546	391	478	478	485	462	523	382	459	459	464	452	499	369
14000	75	491	419	536	320	585	216	472	409	515	311	561	207	451	399	493	302	537	199	429	389	468	292	511	190
	80	501	501	538	397	585	297	482	482	517	388	562	289	463	463	495	378	538	280	444	444	471	368	512	271
	85	525	525	542	475	586	374	507	507	522	466	563	365	489	489	500	456	538	355	464	464	477	446	512	346
	90	550	550	550	550	588	450	532	532	532	532	566	441	513	513	513	513	541	432	492	492	492	492	516	422
16000	75	503	449	545	337	594	220	483	440	524	329	570	212	461	429	500	320	544	203	439	419	476	310	518	194
	80	517	517	548	424	594	313	499	499	526	415	571	304	480	480	504	405	545	296	459	459	479	395	519	286
	85	544	544	555	513	595	397	525	525	533	503	571	389	506	506	511	494	546	379	485	485	487	488	520	369
	90	570	570	570	570	599	484	551	551	551	551	575	475	531	531	531	531	551	466	509	509	509	509	524	456
18000	75	512	478	553	355	601	225	492	469	531	346	576	216	470	458	507	337	550	208	445	445	481	327	523	199
	80	532	532	556	450	601	328	513	513	534	441	577	320	494	494	511	431	551	311	472	472	486	420	524	302
	85	560	560	565	549	602	421	540	540	544	540	579	412	520	520	519	519	553	402	498	498	497	497	526	392
	90	587	587	587	587	607	517	567	567	567	567	584	508	545	545	545	545	559	499	522	522	522	522	532	489

Notes:  
 1. All capacities shown are gross and have not considered indoor fan heat.  
 2. CAP = Total gross cooling capacity.  
 3. SHC = Sensible heat capacity.





# Performance Data (50 Ton)

**Table PD-9 — 50Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
CFM	ENT DB (F)	61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
10000	75	521	382	578	313	638	238	502	372	557	304	615	229	483	362	536	294	591	219	462	351	513	283	566	209
	80	523	437	579	369	638	297	504	427	558	359	615	288	485	416	536	349	591	278	465	406	514	338	566	268
	85	527	493	579	423	639	352	509	483	559	413	616	342	491	473	537	403	592	332	471	462	515	392	566	322
	90	539	539	581	477	639	407	524	524	561	467	617	397	507	507	540	457	593	387	490	490	517	446	567	376
14000	75	562	443	620	352	680	250	541	433	597	341	654	241	519	422	572	331	626	231	496	410	546	320	597	221
	80	568	519	621	425	680	328	547	508	598	414	654	318	525	497	573	403	627	307	503	486	547	391	598	297
	85	581	581	623	497	681	402	563	563	600	487	655	392	544	544	576	475	628	382	524	524	550	464	598	370
	90	610	610	628	572	681	474	591	591	606	561	656	464	571	571	582	550	629	452	550	550	557	538	600	441
17500	75	586	492	642	391	701	259	563	481	617	381	674	250	540	469	590	369	645	240	515	457	563	358	614	229
	80	596	585	644	467	702	352	575	574	619	456	674	342	551	551	592	445	645	331	529	529	565	433	615	320
	85	622	622	648	556	702	441	602	602	623	545	675	430	580	580	597	534	646	419	557	557	570	522	616	407
	90	652	652	658	648	704	527	631	631	631	631	677	517	609	609	608	608	648	505	585	585	585	585	618	494
20000	75	599	524	654	398	712	265	576	513	627	387	684	256	552	501	600	375	654	246	527	489	572	363	622	235
	80	612	612	656	496	713	368	592	592	630	485	685	358	570	570	602	473	655	347	547	547	574	461	623	336
	85	644	644	661	596	714	466	622	622	636	585	686	455	599	599	609	573	656	444	575	575	582	561	624	432
	90	675	675	675	675	716	564	653	653	653	653	688	553	629	629	629	629	658	541	604	604	604	604	627	529
22500	75	610	554	663	415	721	271	587	543	636	403	692	262	562	531	608	392	661	251	536	519	579	380	629	240
	80	629	629	665	523	722	383	608	608	639	512	693	373	585	585	611	500	662	363	561	561	582	488	630	350
	85	662	662	673	634	722	490	640	640	647	623	694	479	616	616	620	612	663	468	590	590	590	590	631	456
	90	694	694	694	694	723	598	671	671	671	671	697	587	646	646	646	646	667	576	619	619	619	619	635	564

**Table PD-10 — 50Ton Gross Cooling Capacity — HIGH CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
CFM	ENT DB (F)	61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
10000	75	540	397	598	324	660	247	520	387	577	314	637	237	500	376	554	303	612	227	478	365	529	292	585	217
	80	542	455	599	382	660	306	522	444	577	372	637	296	502	433	554	361	612	286	480	422	530	350	586	276
	85	547	514	600	440	660	365	528	503	578	429	637	355	508	492	555	419	613	344	487	481	531	407	586	333
	90	560	560	602	497	661	421	544	544	581	486	638	411	526	526	558	475	613	401	508	508	534	463	587	390
14000	75	582	463	642	366	701	258	560	452	617	356	675	248	537	440	591	345	647	238	512	428	564	333	618	228
	80	589	544	643	443	701	340	567	532	619	433	675	330	544	521	592	420	648	320	520	509	565	408	618	309
	85	605	605	645	520	702	417	586	586	622	509	676	407	565	565	596	498	648	396	544	544	569	486	619	385
	90	635	635	651	599	703	495	616	616	628	588	677	484	595	595	604	577	649	473	572	572	578	565	621	461
17500	75	608	517	663	395	722	266	584	505	638	385	695	257	559	493	611	374	665	246	533	480	582	362	634	236
	80	620	617	665	489	723	368	595	595	639	479	695	358	573	573	613	467	666	348	550	550	584	455	635	333
	85	648	648	670	585	723	460	627	627	646	574	696	450	604	604	619	563	666	439	581	581	592	551	636	427
	90	678	678	678	678	725	553	657	657	657	657	699	543	634	634	634	634	670	532	609	609	609	609	639	520
20000	75	620	547	673	419	731	271	595	535	647	408	703	262	570	522	619	397	673	251	543	510	590	385	642	241
	80	634	634	675	516	731	384	613	613	649	505	704	372	590	590	622	494	674	359	566	566	593	481	643	348
	85	667	667	682	622	732	484	645	645	657	611	704	474	621	621	631	600	675	462	597	597	603	587	643	451
	90	698	698	698	698	732	858	676	676	676	676	708	576	651	651	651	651	679	565	626	626	626	626	648	553
22500	75	634	588	683	435	741	278	609	576	656	424	712	268	582	563	628	412	682	258	555	551	598	400	649	247
	80	656	656	687	553	742	399	633	633	660	541	713	389	610	610	632	530	683	379	585	585	603	517	650	368
	85	689	689	697	673	743	516	666	666	671	662	714	506	641	641	641	641	684	495	615	615	615	615	652	483
	90	721	721	721	721	747	633	698	698	698	698	719	623	672	672	672	672	690	612	645	645	645	645	658	600

Notes:  
 1. All capacities shown are gross and have not considered indoor fan heat.  
 2. CAP = Total gross cooling capacity.  
 3. SHC = Sensible heat capacity.



# Performance Data (55 Ton)

**Table PD-11 — 55 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
ENT		Entering Wet Bulb																							
DB		61		67		73		61		67		73		61		67		73		61		67		73	
CFM	(F)	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC		
12000	75	637	470	706	384	782	291	614	457	681	372	753	279	590	445	654	360	724	268	565	431	626	347	692	256
	80	639	537	707	453	782	365	617	525	682	441	753	354	593	512	655	428	723	342	568	499	627	415	692	327
	85	646	608	708	520	782	432	624	596	683	508	754	420	601	583	656	495	724	408	577	570	628	481	693	395
	90	662	662	710	587	783	501	643	643	686	575	755	489	623	623	659	562	726	476	601	601	632	549	694	463
16000	75	679	532	750	423	827	305	654	519	722	411	795	293	627	505	692	398	762	281	599	491	660	385	726	268
	80	685	621	751	510	827	396	660	608	723	497	795	384	634	594	693	484	762	371	607	580	662	469	727	358
	85	699	699	754	596	828	485	678	678	726	583	797	472	655	655	696	569	764	460	631	631	666	555	729	447
	90	735	735	760	684	829	570	712	712	733	671	798	557	689	689	704	658	765	544	663	663	674	644	731	530
19250	75	703	577	774	452	851	314	676	564	744	439	817	302	648	550	712	426	782	290	619	536	679	411		
	80	713	683	776	551	852	420	688	670	746	538	818	408	661	656	714	524	783	395	631	631	681	510		
	85	741	741	780	653	852	523	717	717	750	639	819	510	692	692	720	626	784	496	665	665	687	611		
	90	779	779	791	757	855	622	754	754	762	744	822	609	728	728	733	730	787	595	700	700	700	700		
22000	75	719	614	790	472	866	321	691	600	757	458	831	309	662	586	724	445	795	297	632	571	690	430		
	80	734	733	792	584	867	439	705	705	760	570	833	426	680	680	728	556	796	413	653	653	693	541		
	85	769	769	798	698	869	552	744	744	767	684	834	539	717	717	735	670	798	525	689	689	702	656		
	90	809	809	808	808	871	663	782	782	782	782	837	650	755	755	754	754	802	636	725	725	725	725		
24000	75	729	639	798	486	876	327	701	625	766	473	840	315	671	611	732	458	803	302	641	596	697	444		
	80	746	746	801	606	877	452	721	721	769	593	841	439	694	694	736	578	804	426	666	666	701	564		
	85	787	787	809	730	879	573	760	760	778	716	843	559	733	733	746	702	806	545	703	703	712	687		
	90	827	827	827	827	882	693	800	800	800	800	847	679	771	771	771	771	811	665						

**Table PD-12 — 55 Ton Gross Cooling Capacity — HIGH CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
ENT		Entering Wet Bulb																							
DB		61		67		73		61		67		73		61		67		73		61		67		73	
CFM	(F)	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC		
12000	75	655	472	724	394	796	296	631	460	697	381	768	285	606	446	669	368	737	273	579	432	639	355	704	260
	80	658	538	725	457	796	370	634	525	698	441	768	359	609	512	670	428	737	346	583	497	640	414	704	334
	85	665	606	726	520	797	435	642	593	699	507	768	422	618	580	672	494	738	410	593	566	642	479	705	404
	90	683	683	729	585	797	497	663	663	703	572	769	485	642	642	676	558	738	472	619	619	647	544	706	458
16000	75	697	552	767	434	837	308	670	538	737	424	805	296	642	524	706	411	771	284	613	510	673	394	735	271
	80	705	647	768	527	837	405	679	633	738	514	805	393	652	619	707	501	771	381	623	605	674	486	736	367
	85	722	722	771	619	837	496	699	699	743	606	806	483	675	675	712	592	772	470	649	649	680	577	736	457
	90	758	758	779	681	838	588	735	735	751	699	807	576	709	709	721	685	773	561	682	682	690	671	738	547
19250	75	722	603	788	463	857	316	693	589	758	450	824	304	664	574	725	437	788	291	633	560	691	423		
	80	735	716	789	572	857	432	707	703	759	558	824	420	676	676	727	544	789	407	649	649	693	530		
	85	765	765	796	681	858	537	739	739	766	667	825	525	713	713	734	653	790	512	684	684	701	639		
	90	800	800	808	792	860	644	774	774	779	779	828	631	747	747	746	746	793	617	717	717	717	717		
22000	75	738	644	802	487	870	322	709	630	770	473	836	310	679	615	737	460	799	298	647	600	701	446		
	80	753	753	804	608	870	454	728	728	773	594	836	435	700	700	740	580	800	422	671	671	705	566		
	85	791	791	813	731	871	575	765	765	782	717	837	557	737	737	750	703	800	543	707	707	716	689		
	90	828	828	828	828	873	595	801	801	801	801	842	677	771	771	771	771	806	663	740	740	740	740		
24000	75	749	672	809	503	878	328	719	658	778	490	843	315	688	643	743	476	806	302	656	628	707	461		
	80	770	770	813	633	878	462	743	743	781	620	843	449	715	715	748	606	806	436	685	685	712	591		
	85	808	808	823	767	879	594	780	780	792	753	844	580	751	751	759	739	807	566	720	720	725	724		
	90	845	845	845	845	885	723	817	817	817	817	850	709	787	787	786	786	814	695						

- Notes:  
 1. All capacities shown are gross and have not considered indoor fan heat.  
 2. CAP = Total gross cooling capacity.  
 3. SHC = Sensible heat capacity.



# Performance Data (60 Ton)

**Table PD-13 — 60Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
ENT		Entering Wet Bulb																							
CFM	DB (F)	61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
14000	75	617	467	683	379	754	279	596	456	659	367	726	268	573	444	633	355	696	257	549	431	605	343	664	245
	80	621	540	684	450	755	361	600	528	660	439	727	345	578	516	634	426	697	334	554	504	606	413	665	321
	85	631	616	687	521	756	430	611	604	663	509	728	419	587	587	636	497	698	407	566	566	608	483	665	393
	90	655	655	691	593	757	500	637	637	667	581	730	488	617	617	641	569	700	475	595	595	614	555	668	462
18000	75	651	522	718	413	789	292	627	510	690	401	758	281	603	498	661	388	725	269	576	484	630	374	689	256
	80	659	614	721	500	790	386	636	603	693	488	759	374	612	590	664	475	726	362	586	577	633	461	690	349
	85	680	680	723	588	792	475	659	659	697	576	761	463	637	637	668	563	727	449	612	612	637	549	692	435
	90	715	715	732	680	794	562	693	693	705	667	763	549	669	669	678	654	729	535	643	643	648	640	693	521
21000	75	670	560	736	434	807	300	645	548	708	422	775	288	619	535	677	409	739	276	591	521	645	395	702	263
	80	682	666	739	534	809	406	658	654	710	521	776	394	630	630	680	508	741	381	605	605	647	494	703	368
	85	712	712	744	635	811	505	689	689	715	623	778	493	664	664	685	609	743	479	638	638	654	595	705	464
	90	748	748	756	740	813	604	724	724	729	728	780	591	698	698	698	698	745	577	669	669	669	669	707	562
24000	75	685	596	751	454	821	307	660	583	721	442	787	296	632	570	689	428	751	284	603	556	655	414	711	270
	80	699	699	754	566	823	424	676	676	724	553	789	412	651	651	692	539	751	398	625	625	658	524	712	383
	85	737	737	760	680	825	534	713	713	731	667	791	521	687	687	700	653	754	507	658	658	667	638	715	492
	90	775	775	775	775	827	645	749	749	749	749	793	631	721	721	721	721	757	617	690	690	690	690	718	602
27000	75	698	629	762	473	832	314	672	616	731	460	797	301	643	603	699	446	759	288	613	588	664	432	719	275
	80	720	720	765	596	833	440	695	695	735	583	798	427	669	669	702	569	761	413	641	641	667	554	720	398
	85	758	758	774	722	836	561	733	733	744	708	801	547	705	705	712	694	763	533	674	674	674	674	722	517
	90	797	797	797	797	839	683	770	770	769	769	804	669	739	739	739	739	767	655	706	706	706	706	733	641

**Table PD-14 — 60Ton Gross Cooling Capacity — HIGH CAPACITY Evaporator Coil With Scroll Compressor**

		Ambient Temperature																							
		85						95						105						115					
ENT		Entering Wet Bulb																							
CFM	DB (F)	61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
14000	75	676	514	749	413	822	305	651	503	721	400	792	293	625	488	691	387	758	280	597	474	660	374	724	267
	80	682	596	750	495	823	387	657	583	722	483	792	375	631	569	693	470	759	362	604	555	661	456	725	349
	85	692	680	752	574	823	469	668	667	724	561	793	457	643	643	695	547	760	444	620	620	664	532	726	430
	90	721	721	757	654	824	551	699	699	730	641	794	535	676	676	701	627	761	522	652	652	670	612	726	508
18000	75	714	579	784	453	856	315	686	571	753	440	823	303	658	552	721	427	787	290	628	537	687	413	750	277
	80	724	684	785	556	856	420	697	670	755	543	823	408	669	656	723	529	788	395	638	638	689	514	751	381
	85	750	750	790	653	857	524	725	725	760	639	824	512	700	700	729	625	789	499	672	672	695	610	751	484
	90	786	786	799	755	859	625	761	761	770	742	826	606	734	734	740	728	792	592	706	706	705	705	754	578
21000	75	735	626	802	481	872	322	706	612	770	468	838	310	676	597	737	455	802	297	645	582	701	441	763	284
	80	749	747	804	593	873	444	721	721	772	579	839	432	694	694	739	565	803	419	666	666	705	550	764	405
	85	784	784	811	709	874	565	758	758	780	696	839	550	730	730	747	681	803	530	701	701	713	666	765	516
	90	822	822	822	822	878	671	795	795	795	795	843	657	767	767	766	766	807	643	735	735	735	735	769	629
24000	75	752	670	815	505	885	330	722	656	782	489	850	317	691	641	748	475	813	304	659	626	712	460	773	290
	80	772	772	819	632	887	467	746	746	787	619	851	455	718	718	752	604	813	442	688	688	717	589	774	428
	85	812	812	828	765	888	492	785	785	797	751	851	579	755	755	764	736	814	565	724	724	728	721	775	550
	90	851	851	850	850	892	721	822	822	822	822	856	707	792	792	792	792	819	693	759	759	758	758	780	678
27000	75	765	713	826	527	895	336	736	699	792	520	859	323	704	684	757	498	821	310	671	668	720	490	780	297
	80	794	794	831	671	896	491	766	766	798	657	860	478	737	737	763	642	822	465	706	706	726	627	781	452
	85	835	835	843	818	897	627	806	806	812	805	861	613	775	775	775	775	823	599	742	742	742	742	783	584
	90	876	876	876	876	922	776	844	844	844	844	876	759	811	811	811	811	830	742	777	777	777	777	790	727

Notes:  
 1. All capacities shown are gross and have not considered indoor fan heat.  
 2. CAP = Total gross cooling capacity.  
 3. SHC = Sensible heat capacity.



# Performance Data (70Ton)

Table PD-15 — 70 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil

AIR- FLOW CFM	ENT DB (F)	Ambient Temperature (F)																									
		85						95						105						115							
		61		67		73		61		67		73		61		67		73		61		67		73			
CAP		SHC		CAP		SHC		CAP		SHC		CAP		SHC		CAP		SHC		CAP		SHC		CAP		SHC	
16000	75	742	558	824	449	913	327	708	538	786	430	872	308	672	517	747	410	829	289	635	495	707	390	785	269		
	80	749	650	826	537	914	424	716	630	789	518	873	405	681	609	750	497	831	385	644	587	710	476	787	364		
	85	763	746	830	628	916	513	730	725	793	607	876	493	693	693	754	586	834	473	661	661	714	565	790	453		
	90	792	792	837	719	919	603	762	762	801	698	879	584	731	731	763	677	836	563	698	698	724	656	792	543		
20000	75	781	622	862	492	952	341	744	601	822	473	908	322	706	580	780	452	863	302	667	557	736	430	815	282		
	80	793	736	864	596	954	460	757	715	824	575	910	435	719	693	783	554	865	415	681	671	740	532	818	394		
	85	815	815	872	706	957	567	783	783	832	685	913	547	749	749	792	664	868	526	714	714	749	642	821	505		
	90	859	859	884	819	960	676	826	826	846	798	917	655	792	792	806	776	872	634	755	755	764	754	826	612		
22000	75	796	652	877	503	967	347	758	631	835	482	922	328	720	609	793	462	875	308	679	587	748	440	827	288		
	80	810	777	879	623	969	471	774	756	839	602	924	451	736	734	796	580	878	430	693	693	752	558	829	409		
	85	841	841	889	743	972	592	808	808	848	722	927	572	772	772	806	701	881	551	736	736	763	678	832	529		
	90	887	887	904	866	976	710	852	852	864	845	932	689	816	816	816	816	886	668	779	779	778	778	839	646		
24000	75	809	682	889	520	980	353	771	660	847	500	934	334	731	638	803	479	886	314	690	615	757	457	836	293		
	80	826	817	893	649	982	486	783	783	851	628	936	466	748	748	808	606	889	445	711	711	763	584	839	424		
	85	864	864	903	780	985	617	829	829	862	758	939	596	793	793	820	736	891	574	755	755	775	714	842	552		
	90	911	911	922	913	991	743	875	875	875	875	946	722	838	838	838	838	899	701	799	799	799	799	851	679		
26000	75	821	710	899	537	990	359	782	688	856	517	944	339	742	666	812	495	895	319	700	643	765	472	844	298		
	80	835	835	904	675	993	501	801	801	862	653	946	480	765	765	818	631	898	459	727	727	772	609	848	438		
	85	884	884	917	815	995	640	848	848	875	794	949	618	811	811	831	772	901	597	772	772	787	749	851	574		
	90	933	933	932	932	1003	776	896	896	895	895	958	755	857	857	857	910	733	817	817	817	817	817	861	711		
27000	75	826	724	904	546	995	361	787	702	861	525	948	342	747	680	816	503	899	322	705	657	768	480	848	301		
	80	844	844	909	688	998	508	809	809	867	666	951	487	772	772	822	644	902	467	734	734	777	621	851	445		
	85	893	893	923	833	1000	651	857	857	881	811	954	630	819	819	837	789	905	608	779	779	792	766	855	585		
	90	943	943	942	942	1009	792	905	905	905	905	963	771	866	866	866	866	915	749	825	825	825	825	866	726		

Notes:

1. All capacities shown are gross and have not considered indoor fan heat.
2. CAP = Total Gross Cooling Capacity
3. SHC = Sensible Heat Capacity



# Performance Data (75 Ton)

**Table PD-16 — 75 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil**

		Ambient Temperature (F)																							
		85						95						105						115					
AIR- FLOW CFM	ENT DB (F)	Entering Wet Bulb (F)																							
		61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
16000	75	767	576	853	462	946	340	731	555	814	441	903	320	694	533	773	421	858	300	656	511	731	399	811	279
	80	774	670	856	555	947	437	739	649	817	534	904	417	702	627	776	513	860	396	664	605	733	491	813	375
	85	787	768	859	648	950	533	753	747	820	627	907	509	717	717	780	605	862	488	683	683	738	582	816	467
	90	820	820	867	741	952	623	789	789	828	720	910	602	756	756	788	698	865	581	722	722	747	676	819	560
20000	75	807	642	892	505	986	353	769	620	850	484	939	333	729	598	806	462	891	312	688	575	761	441	841	291
	80	819	760	895	616	988	473	781	738	853	594	942	453	742	715	809	572	894	432	702	692	764	549	844	410
	85	846	846	902	729	991	592	812	812	861	707	945	565	776	776	818	685	897	543	739	739	773	662	848	521
	90	891	891	914	845	994	698	856	856	874	823	949	676	820	820	832	801	902	654	782	782	788	778	853	631
22000	75	823	674	907	525	1000	359	783	652	863	504	953	339	743	629	818	483	904	318	701	606	772	461	853	297
	80	837	802	910	644	1003	490	799	780	867	622	956	470	760	758	823	599	907	449	718	718	777	576	856	427
	85	872	872	919	768	1006	612	837	837	877	746	959	591	800	800	833	723	910	570	762	762	787	700	859	546
	90	920	920	934	895	1010	733	884	884	893	873	964	712	846	846	845	845	916	689	806	806	806	806	866	666
24000	75	837	704	919	545	1013	365	796	682	875	523	965	344	755	659	829	495	914	323	712	635	782	473		
	80	854	844	923	671	1015	507	812	812	880	649	967	487	775	775	834	626	918	466	737	737	787	603		
	85	896	896	934	806	1019	638	860	860	891	784	970	615	822	822	846	761	921	593	782	782	800	737		
	90	946	946	953	944	1024	768	908	908	908	908	977	746	868	868	868	868	928	724	827	827	827	827		
26000	75	849	734	930	556	1023	370	808	712	885	535	974	350	766	688	838	512	923	329	722	665	789	488		
	80	867	867	935	698	1026	524	831	831	891	676	977	503	793	793	845	653	927	482	753	753	797	629		
	85	918	918	948	843	1029	661	880	880	904	821	980	639	840	840	858	798	930	616	799	799	811	774		
	90	968	968	968	968	1036	802	929	929	929	929	989	780	889	889	889	889	939	757	846	846	846	846		
27000	75	854	749	935	575	1028	373	813	726	889	554	979	352	771	703	841	529	927	331	727	679	793	506		
	80	877	877	941	711	1031	532	839	839	895	689	982	504	801	801	849	666	931	483	760	760	801	642		
	85	928	928	954	862	1034	673	889	889	910	839	985	651	849	849	864	816	934	628	807	807	817	792		
	90	979	979	979	979	1042	819	939	939	939	939	994	797	898	898	898	898	944	774	855	855	855	855		

**Table PD-17 — 75 Ton Gross Cooling Capacity — HIGH CAPACITY Configuration**

		Ambient Temperature																							
		85						95						105						115					
AIR- FLOW CFM	ENT DB (F)	Entering Wet Bulb																							
		61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
16000	75	828	613	921	492	1021	369	790	591	878	470	974	347	750	568	834	448	926	325	708	544	788	425		
	80	835	711	923	591	1023	467	797	688	881	569	976	445	757	664	837	545	928	423	716	640	791	522		
	85	846	810	926	687	1025	565	809	788	885	664	979	543	771	765	841	641	931	520	732	732	796	617		
	90	877	877	933	783	1028	661	844	844	892	760	982	639	809	809	849	737	934	616	772	772	804	712		
20000	75	873	684	965	537	1067	383	831	660	920	514	1016	361	789	636	872	491	964	338	744	611	823	467		
	80	884	805	968	659	1069	505	843	781	922	635	1019	482	801	757	875	608	967	459	757	732	827	583		
	85	908	908	975	773	1072	626	871	871	930	750	1023	603	833	833	883	726	971	580	794	794	835	701		
	90	956	956	986	893	1075	741	919	919	942	869	1026	718	880	880	896	845	975	694	839	839	849	820		
22000	75	890	717	982	558	1083	389	848	693	935	535	1032	367	804	669	886	511	978	344	758	644	836	487		
	80	904	851	985	690	1086	522	862	827	939	666	1035	500	819	802	891	638	982	477	773	773	840	613		
	85	938	938	994	815	1089	655	900	900	948	791	1038	632	861	861	900	767	985	609	819	819	851	741		
	90	989	989	1009	947	1093	779	950	950	963	923	1043	755	909	909	917	898	991	731						
24000	75	906	750	997	578	1097	395	862	726	948	555	1045	372	817	701	898	532	990	350	771	676	847	508		
	80	923	895	1001	721	1100	540	880	871	953	697	1048	517	835	835	904	667	994	494	793	793	853	642		
	85	965	965	1011	856	1103	684	926	926	964	832	1052	661	885	885	915	807	997	636	842	842				
	90	1018	1018	1029	999	1109	815	977	977	983	975	1058	792	935	935	934	934	1005	768						
26000	75	919	782	1009	599	1109	400	875	758	960	575	1056	378	829	733	909	552	1000	355	782	707	856	527		
	80	936	936	1014	751	1112	557	896	896	965	727	1059	534	855	855	915	695	1004	511	812	812				
	85	990	990	1027	896	1116	713	949	949	978	871	1062	687	906	906	928	846	1008	663	862	862				
	90	1044	1044	1044	1044	1123	852	1002	1002	1002	1002	1070	828	958	958	958	958	1016	804						
27000	75	926	798	1015	609	1114	403	881	783	965	585	1061	380	834	757	913	561	1005	357	787	732				
	80	946	946	1021	767	1118	565	906	906	971	742	1064	543	864	864	920	709	1009	520	821	821				
	85	1001	1001	1034	916	1121	724	959	959	985	891	1068	700	916	916	935	866	1013	676						
	90	1056	1056	1056	1056	1129	870	1013	1013	1013	1013	1076	846	968	968	968	968	1022	822						

- Notes:  
 1. All capacities shown are gross and have not considered indoor fan heat.  
 2. CAP = Total Gross Cooling Capacity  
 3. SHC = Sensible Heat Capacity



# Performance Data (90Ton)

**Table PD-18 — 90 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil**

AIR- FLOW	ENT DB	Ambient Temperature																							
		85						95						105						115					
		61		67		73		61		67		73		61		67		73		61		67		73	
CFM	(F)	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC		
27000	75	929	749	1029	583	1137	408	885	723	981	559	1084	385	840	697	930	534	1029	362	792	670	878	508	971	338
	80	944	888	1033	719	1139	548	901	863	984	693	1087	524	857	837	934	667	1032	499	811	810	882	640	975	474
	85	978	978	1039	852	1143	685	939	939	991	827	1091	660	898	898	942	801	1036	635	855	855	891	774	978	608
	90	1031	1031	1054	990	1147	817	991	991	1008	964	1095	791	949	949	960	938	1040	765	905	905	904	904	984	739
32000	75	959	812	1057	622	1166	423	914	786	1007	597	1110	399	866	759	954	571	1053	375	817	732	899	543	994	351
	80	980	974	1061	775	1169	581	932	932	1011	749	1114	557	890	890	959	722	1057	531	846	846	905	695	998	506
	85	1029	1029	1071	930	1172	737	988	988	1022	904	1118	711	944	944	971	878	1061	685	898	898	918	851	1002	658
	90	1086	1086	1094	1091	1178	888	1043	1043	1042	1042	1124	863	998	998	997	997	1068	837	951	951	950	950	1010	810
37000	75	983	871	1078	657	1187	436	936	844	1025	630	1131	413	887	817	971	603	1071	388	837	789	915	575	1010	363
	80	1011	1011	1083	828	1191	612	969	969	1031	801	1135	587	924	924	978	775	1076	562	878	878	923	747	1015	536
	85	1070	1070	1098	1004	1196	785	1026	1026	1047	978	1139	759	980	980	995	951	1081	732	932	932	942	923	1020	705
	90	1130	1130	1129	1129	1203	956	1085	1085	1084	1084	1147	930	1037	1037	1037	1037	1090	904	988	988	987	987	1030	876
42000	75	1003	926	1094	687	1205	449	955	899	1041	661	1146	425	905	872	986	633	1086	399	854	844	929	605	1023	374
	80	1043	1043	1101	878	1209	641	998	998	1049	851	1151	615	952	952	994	824	1091	590	903	903	938	796	1029	564
	85	1104	1104	1121	1073	1214	830	1058	1058	1069	1047	1156	804	1010	1010	1009	1009	1096	777	960	960	960	960	1034	749
	90	1166	1166	1166	1166	1223	1020	1119	1119	1119	1119	1167	994	1070	1070	1069	1069	1108	967	1018	1018	1018	1018	1048	939
45000	75	1013	957	1103	705	1213	450	965	930	1049	678	1154	425	915	903	993	651	1093	400	859	859	935	622	1029	373
	80	1059	1059	1111	906	1218	657	1013	1013	1058	879	1159	632	966	966	1003	852	1098	606	917	917	946	824	1034	577
	85	1122	1122	1133	1113	1223	856	1075	1075	1074	1074	1165	829	1026	1026	1025	1025	1104	802	975	975	974	974	1041	774
	90	1185	1185	1185	1185	1234	1057	1137	1137	1137	1137	1177	1030	1087	1087	1086	1086	1118	1003	1034	1034	1034	1034	1057	976

**Table PD-19 — 90 Ton Gross Cooling Capacity — HIGH CAPACITY Evaporator Coil**

AIR- FLOW	ENT DB	Ambient Temperature																							
		85						95						105						115					
		61		67		73		61		67		73		61		67		73		61		67		73	
CFM	(F)	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC		
27000	75	1028	842	1134	652	1253	449	978	814	1079	626	1193	423	927	786	1023	599	1130	396	875	757	965	571	1065	369
	80	1045	1002	1138	805	1256	611	997	975	1084	777	1196	585	948	947	1028	749	1134	557	897	897	971	720	1070	530
	85	1089	1089	1149	960	1261	765	1045	1045	1095	932	1201	738	999	999	1040	903	1139	710	951	951	983	875	1074	682
	90	1149	1149	1167	1118	1265	917	1104	1104	1115	1090	1207	890	1056	1056	1056	1056	1145	861	1007	1007	1007	1007	1082	832
32000	75	1061	920	1165	703	1283	463	1010	892	1107	676	1220	437	957	863	1049	649	1155	410	902	834	988	621	1088	383
	80	1086	1086	1171	875	1286	654	1040	1040	1114	847	1225	627	992	992	1056	818	1160	600	942	942	997	789	1093	572
	85	1150	1150	1186	1058	1290	830	1102	1102	1130	1029	1229	802	1052	1052	1073	1000	1165	773	1001	1001	1014	971	1098	744
	90	1214	1214	1214	1214	1298	1006	1165	1165	1164	1164	1240	979	1113	1113	1113	1113	1176	951	1059	1059	1059	1059	1110	921
37000	75	1088	995	1188	752	1305	476	1035	967	1128	725	1241	450	981	938	1068	697	1174	423	926	908	1006	669	1105	395
	80	1130	1130	1197	943	1308	695	1081	1081	1139	915	1246	669	1031	1031	1078	885	1180	641	979	979	1017	856	1111	613
	85	1198	1198	1218	1153	1312	889	1147	1147	1161	1124	1252	862	1094	1094	1102	1094	1186	833	1039	1039	1039	1039	1118	804
	90	1265	1265	1264	1264	1323	1091	1213	1213	1213	1264	1065	1158	1158	1158	1158	1201	1037	1101	1101	1101	1101	1134	1007	
42000	75	1111	1068	1206	801	1321	488	1058	1039	1144	751	1257	462	998	998	1082	721	1189	435	945	945	1019	691	1118	407
	80	1167	1167	1218	1009	1324	736	1116	1116	1158	980	1263	711	1063	1063	1097	950	1195	682	1008	1008	1034	920	1123	651
	85	1237	1237	1245	1244	1330	947	1184	1184	1184	1184	1269	920	1129	1129	1129	1129	1203	892	1071	1071	1071	1071	1134	862
	90	1304	1304	1304	1304	1344	1174	1252	1252	1252	1284	1148	1196	1196	1195	1195	1222	1120	1136	1136	1136	1136	1136	1136	
45000	75	1124	1110	1214	823	1329	495	1065	1065	1153	794	1265	470	1013	1013	1089	764	1196	442	959	959	1026	734	1125	415
	80	1186	1186	1229	1047	1333	743	1134	1134	1169	1018	1271	718	1079	1079	1107	988	1201	687	1024	1024	1043	957	1131	657
	85	1258	1258	1257	1257	1339	981	1203	1203	1203	1203	1278	954	1147	1147	1146	1146	1212	926	1088	1088	1088	1088		
	90	1324	1324	1324	1324	1355	1222	1271	1271	1271	1271	1295	1196	1215	1215	1215	1215	1233	1169						

Notes:  
 1. All capacities shown are gross and have not considered indoor fan heat.  
 2. CAP = Total Gross Cooling Capacity  
 3. SHC = Sensible Heat Capacity



# Performance Data (105 Ton)

**Table PD-20 — 105 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil**

		Ambient Temperature																							
		85				95				105				115											
AIR- FLOW	ENT DB	Entering Wet Bulb																							
CFM	(F)	61		67		73		61		67		73		61		67		73							
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC						
31000	75	1085	885	1198	689	1320	477	1035	857	1143	660	1260	452	983	828	1085	632	1197	426	929	798	1025	627	1131	399
	80	1102	1051	1202	848	1323	644	1053	1023	1148	820	1263	617	1003	995	1090	790	1201	590	946	946	1030	761	1135	562
	85	1143	1143	1212	1008	1327	807	1099	1099	1158	980	1268	780	1052	1052	1101	951	1204	750	1004	1004	1042	921	1139	721
	90	1205	1205	1230	1172	1332	963	1160	1160	1177	1144	1273	935	1111	1111	1123	1115	1211	907	1061	1061	1060	1060	1146	877
35000	75	1109	939	1222	720	1344	489	1058	910	1165	692	1282	463	1005	881	1105	664	1217	437	949	850	1042	633	1149	410
	80	1132	1124	1226	896	1347	671	1075	1075	1170	867	1285	645	1028	1028	1111	838	1221	617	979	979	1050	808	1154	589
	85	1186	1186	1239	1074	1351	850	1139	1139	1183	1046	1289	822	1090	1090	1125	1016	1225	793	1039	1039	1065	986	1158	763
	90	1250	1250	1262	1258	1358	1024	1202	1202	1201	1201	1297	996	1152	1152	1151	1151	1233	967	1099	1099	1098	1098	1167	937
39000	75	1130	990	1241	750	1363	500	1078	961	1181	721	1299	474	1023	931	1120	691	1233	448	967	900	1057	661	1164	420
	80	1154	1154	1246	941	1367	698	1108	1108	1189	913	1303	671	1059	1059	1128	883	1237	643	1007	1007	1066	852	1168	614
	85	1222	1222	1261	1138	1371	891	1173	1173	1205	1109	1308	863	1122	1122	1146	1079	1242	834	1068	1068	1085	1049	1173	804
	90	1288	1288	1288	1288	1379	1082	1238	1238	1238	1317	1054	1186	1186	1185	1185	1252	1025	1130	1130	1130	1130	1184	995	
42000	75	1144	1026	1251	770	1375	508	1091	997	1192	742	1310	479	1036	967	1131	712	1243	452	979	937	1066	681	1172	423
	80	1177	1177	1259	975	1379	717	1129	1129	1201	946	1314	690	1078	1078	1140	916	1247	662	1025	1025	1076	885	1178	633
	85	1245	1245	1277	1184	1383	921	1195	1195	1219	1155	1319	893	1143	1143	1160	1125	1252	863	1088	1088	1098	1094	1183	833
	90	1313	1313	1313	1313	1393	1125	1262	1262	1261	1261	1330	1096	1208	1208	1207	1207	1264	1067	1151	1151	1150	1150	1196	1037
44000	75	1153	1050	1259	784	1382	513	1099	1021	1199	755	1317	483	1043	991	1137	725	1249	454	986	960	1072	694	1178	426
	80	1190	1190	1267	996	1386	729	1142	1142	1208	967	1321	702	1090	1090	1146	937	1254	674	1036	1036	1083	906	1183	645
	85	1259	1259	1286	1214	1391	941	1209	1209	1228	1185	1326	912	1155	1155	1169	1155	1259	882	1100	1100	1099	1099	1189	852
	90	1329	1329	1328	1328	1401	1152	1276	1276	1276	1338	1124	1221	1221	1221	1221	1272	1094	1163	1163	1163	1163	1203	1064	

**Table PD-21 — 105 Ton Gross Cooling Capacity — HIGH CAPACITY Evaporator Coil**

		Ambient Temperature																							
		85				95				105				115											
AIR- FLOW	ENT DB	Entering Wet Bulb																							
CFM	(F)	61		67		73		61		67		73		61		67		73							
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC						
31000	75	1151	953	1269	733	1395	503	1097	923	1209	711	1331	476	1041	893	1148	682	1264	449	983	861	1084	652	1195	420
	80	1173	1136	1273	910	1398	688	1121	1107	1215	881	1334	661	1063	1063	1154	851	1268	633	1012	1012	1090	820	1199	600
	85	1226	1226	1285	1086	1402	861	1177	1177	1228	1057	1339	834	1127	1127	1168	1027	1273	805	1074	1074	1106	996	1203	776
	90	1291	1291	1307	1267	1408	1035	1242	1242	1252	1238	1346	1007	1190	1190	1190	1190	1280	977	1136	1136	1136	1136	1212	947
35000	75	1178	1015	1292	770	1418	514	1122	985	1231	750	1352	487	1065	954	1168	712	1284	459	1006	922	1102	681	1213	431
	80	1202	1202	1298	965	1421	722	1153	1153	1238	936	1356	694	1102	1102	1176	905	1288	666	1048	1048	1111	874	1217	630
	85	1271	1271	1314	1163	1426	913	1221	1221	1255	1134	1360	885	1168	1168	1194	1103	1292	854	1113	1113	1130	1072	1221	824
	90	1339	1339	1339	1339	1435	1105	1288	1288	1287	1287	1370	1076	1233	1233	1233	1304	1047	1176	1176	1176	1176	1234	1016	
39000	75	1201	1075	1310	804	1436	524	1144	1044	1249	776	1369	497	1086	1013	1184	746	1299	469	1025	981	1115	713	1227	441
	80	1239	1239	1318	1018	1440	755	1188	1188	1257	989	1373	727	1134	1134	1194	958	1304	699	1078	1078	1128	927	1232	660
	85	1310	1310	1338	1237	1444	960	1257	1257	1279	1208	1378	931	1202	1202	1217	1177	1309	902	1145	1145	1153	1146	1237	871
	90	1380	1380	1380	1380	1457	1174	1326	1326	1326	1326	1391	1145	1269	1269	1269	1269	1323	1115	1210	1210	1210	1210	1253	1084
43000	75	1221	1133	1326	838	1452	534	1163	1102	1262	807	1383	507	1104	1070	1196	776	1312	479	1043	1038	1128	744	1238	450
	80	1270	1270	1336	1070	1456	787	1218	1218	1274	1041	1388	746	1162	1162	1210	1010	1317	718	1104	1104	1143	978	1244	689
	85	1343	1343	1361	1310	1461	1007	1288	1288	1300	1280	1393	918	1231	1231	1231	1231	1323	948	1172	1172	1171	1171	1251	917
	90	1415	1415	1415	1415	1477	1240	1359	1359	1359	1359	1410	1211	1300	1300	1300	1300	1341	1181	1239	1239	1239	1239	1269	1150
44000	75	1225	1147	1328	845	1455	537	1168	1116	1265	815	1386	509	1108	1084	1199	784	1315	481	1041	1041	1131	752	1241	453
	80	1277	1277	1340	1083	1459	781	1224	1224	1278	1053	1391	753	1168	1168	1213	1023	1320	725	1110	1110	1146	991	1246	696
	85	1350	1350	1366	1328	1465	1019	1295	1295	1305	1298	1397	989	1238	1238	1238	1238	1327	959	1178	1178	1177	1177	1254	928
	90	1424	1424	1423	1423	1481	1257	1367	1367	1366	1366	1414	1227	1308	1308	1307	1307	1345	1197	1245	1245	1245	1245	1273	1166
46000	75	1234	1175	1335	860	1461	541	1176	1144	1271	830	1392	514	1116	1112	1205	799	1320	486	1051	1051	1136	767	1246	458
	80	1290	1290	1348	1108	1466	796	1237	1237	1284	1078	1397	768	1180	1180	1220	1048	1325	739	1121	1121	1153	1016	1251	710
	85	1364	1364	1376	1363	1472	1041	1309	1309	1308	1308	1404	1012	1251	1251	1250	1250	1333	982	1189	1189	1189	1189	1260	951
	90	1439	1439	1439	1439	1490	1289	1381	1381	1381	1381	1422	1259	1321	1321	1321	1352	1229	1258	1258	1258	1258	1280	1198	

Notes:  
 1. All capacities shown are gross and have not considered indoor fan heat.  
 2. CAP = Total Gross Cooling Capacity.  
 3. SHC = Sensible Heat Capacity.



# Performance Data (115, 130Tons)

**Table PD-22 — 115 Ton Gross Cooling Capacity With 5-Row I-F Evaporator Coil — 100% Load**

		Ambient Temperature																							
		85						95						105						115					
AIR- FLOW CFM	ENT DB	Entering Wet Bulb																							
		61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
31000	75	1234	993	1361	776	1496	539	1177	962	1298	746	1429	510	1118	929	1233	715	1358	480	1056	895	1165	684	1284	450
	80	1254	1176	1365	950	1499	724	1198	1145	1303	920	1431	695	1140	1112	1238	886	1361	665	1074	1074	1170	853	1287	634
	85	1297	1297	1376	1126	1503	898	1247	1247	1315	1095	1435	869	1194	1194	1251	1063	1365	838	1139	1139	1185	1030	1292	807
	90	1366	1366	1396	1307	1507	1074	1314	1314	1336	1276	1441	1044	1260	1260	1274	1244	1372	1012	1203	1203	1203	1203	1299	980
35000	75	1263	1056	1387	816	1523	550	1205	1024	1323	786	1453	521	1144	991	1256	755	1380	491	1080	957	1186	713	1304	460
	80	1289	1262	1392	1005	1525	758	1232	1230	1329	974	1456	729	1170	1170	1262	942	1383	699	1114	1114	1193	908	1308	668
	85	1348	1348	1407	1203	1530	950	1295	1295	1345	1172	1460	920	1240	1240	1279	1139	1388	890	1181	1181	1211	1106	1312	858
	90	1419	1419	1433	1406	1537	1145	1364	1364	1364	1364	1469	1114	1307	1307	1307	1307	1397	1082	1247	1247	1247	1247	1323	1049
39000	75	1288	1116	1408	855	1544	560	1228	1084	1343	812	1472	531	1166	1050	1274	781	1397	501	1101	1016	1203	748	1320	470
	80	1316	1316	1415	1059	1547	791	1262	1262	1350	1028	1475	762	1206	1206	1283	995	1401	732	1147	1147	1212	961	1324	701
	85	1390	1390	1434	1278	1551	1000	1335	1335	1370	1246	1480	970	1277	1277	1304	1214	1405	937	1217	1217	1234	1180	1329	904
	90	1464	1464	1463	1463	1562	1213	1407	1407	1406	1406	1492	1182	1347	1347	1347	1347	1419	1150	1284	1284	1284	1284	1343	1117
43000	75	1310	1174	1426	877	1561	570	1249	1141	1359	846	1488	541	1186	1108	1289	814	1412	511	1120	1073	1215	779	1333	480
	80	1351	1351	1435	1111	1564	824	1295	1295	1369	1080	1492	795	1237	1237	1300	1047	1416	751	1176	1176	1229	1013	1338	719
	85	1426	1426	1457	1351	1568	1047	1369	1369	1393	1319	1496	1016	1309	1309	1325	1286	1422	983	1246	1246	1256	1252	1344	950
	90	1502	1502	1502	1502	1583	1280	1443	1443	1443	1443	1512	1248	1381	1381	1381	1381	1438	1216	1316	1316	1316	1316	1361	1183
44000	75	1315	1189	1430	885	1565	573	1254	1156	1362	854	1491	543	1190	1122	1292	823	1415	513	1124	1087	1218	787	1335	483
	80	1359	1359	1439	1124	1569	818	1303	1303	1373	1092	1496	788	1244	1244	1304	1059	1420	758	1183	1183	1232	1025	1341	726
	85	1435	1435	1463	1369	1573	1058	1377	1377	1398	1337	1500	1027	1317	1317	1330	1304	1425	995	1253	1253	1253	1253	1347	962
	90	1511	1511	1511	1511	1588	1296	1451	1451	1451	1451	1516	1265	1389	1389	1389	1389	1442	1232	1323	1323	1323	1323	1365	1199
46000	75	1325	1217	1437	902	1572	578	1263	1184	1369	871	1498	548	1199	1150	1297	836	1421	518	1133	1115	1224	802	1341	487
	80	1373	1373	1448	1150	1576	833	1317	1317	1379	1118	1502	803	1257	1257	1312	1084	1426	772	1195	1195	1239	1050	1346	740
	85	1450	1450	1474	1404	1581	1081	1392	1392	1408	1372	1508	1050	1331	1331	1330	1330	1432	1017	1266	1266	1266	1266	1354	984
	90	1528	1528	1527	1527	1598	1329	1467	1467	1467	1467	1525	1297	1404	1404	1404	1404	1451	1265	1337	1337	1337	1337	1373	1231

**Table PD-23 — 130 Ton Gross Cooling Capacity With 5-Row I-F Evaporator Coil — 100% Load**

		Ambient Temperature																							
		85						95						105						115					
AIR- FLOW CFM	ENT DB	Entering Wet Bulb																							
		61		67		73		61		67		73		61		67		73		61		67		73	
		CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC	CAP	SHC
31000	75	1356	1064	1497	839	1646	594	1295	1030	1430	806	1574	562	1232	995	1360	773	1498	530	1165	958	1287	739	1418	497
	80	1375	1252	1502	1018	1649	784	1315	1218	1435	985	1576	752	1253	1182	1365	951	1500	720	1188	1146	1293	917	1421	687
	85	1409	1409	1511	1201	1653	964	1356	1356	1446	1167	1580	932	1300	1300	1377	1132	1505	898	1241	1241	1305	1096	1425	864
	90	1482	1482	1530	1386	1658	1146	1428	1428	1466	1352	1586	1114	1370	1370	1398	1317	1511	1081	1309	1309	1328	1281	1432	1044
35000	75	1390	1129	1528	880	1678	605	1327	1094	1459	848	1602	574	1261	1059	1387	814	1524	541	1193	1022	1311	779	1442	508
	80	1415	1340	1533	1078	1680	820	1353	1305	1464	1043	1605	787	1289	1270	1392	1008	1527	755	1217	1217	1318	972	1445	721
	85	1466	1466	1547	1280	1684	1017	1410	1410	1479	1246	1610	985	1351	1351	1409	1211	1531	951	1289	1289	1335	1175	1450	917
	90	1542	1542	1571	1488	1690	1219	1484	1484	1505	1454	1617	1186	1423	1423	1437	1419	1540	1151	1359	1359	1359	1359	1459	1115
39000	75	1419	1191	1553	920	1703	616	1354	1156	1482	887	1625	585	1287	1120	1408	841	1545	552	1217	1083	1331	806		
	80	1450	1425	1559	1133	1705	854	1377	1377	1489	1099	1628	822	1318	1318	1416	1063	1548	789	1255	1255	1340	1027		
	85	1514	1514	1577	1357	1710	1069	1456	1456	1508	1323	1633	1036	1394	1394	1436	1287	1553	1003	1329	1329	1361	1251		
	90	1592	1592	1608	1587	1719	1290	1532	1532	1531	1531	1643	1256	1468	1468	1468	1468	1564	1221	1401	1401	1401	1401		
43000	75	1444	1252	1574	944	1723	627	1378	1216	1501	910	1644	595	1309	1180	1426	876	1562	562	1238	1142	1347	840		
	80	1474	1474	1581	1187	1726	888	1415	1415	1510	1152	1647	855	1353	1353	1436	1116	1565	822	1288	1288	1358	1080		
	85	1555	1555	1603	1432	1731	1119	1494	1494	1533	1397	1652	1086	1430	1430	1460	1362	1570	1051	1363	1363	1384	1325		
	90	1636	1636	1635	1635	1744	1358	1573	1573	1573	1573	1666	1324	1507	1507	1507	1507	1586	1289	1437	1437	1437	1437		
44000	75	1449	1267	1578	954	1728	629	1383	1231	1505	919	1648	597	1314	1194	1429	884	1566	565	1243	1185	1357	866		
	80	1483	1483	1587	1200	1731	896	1423	1423	1515	1165	1652	850	1361	1361	1440	1130	1570	816	1295	1295	1362	1093		
	85	1564	1564	1610	1450	1736	1132	1503	1503	1539	1416	1657	1099	1439	1439	1466	1380	1574	1062	1371	1371	1389	1343		
	90	1646	1646	1645	1645	1749	1375	1583	1583	1582	1582	1672	1341	1516	1516	1516	1516	1591	1306	1446	1446	1445	1445		
46000	75	1460	1296	1587	969	1737	634	1393	1260	1514	936	1656	602	1324	1223	1437	901	1573	570	1252	1185	1357	866		
	80	1500	1500	1596	1226	1740	913	1439	1439	1524	1191	1660	864	1376	1376	1449	1155	1577	831	1309	1309	1371	1118		
	85	1582	1582	1621	1487	1745	1156	1520	1520	1550	1452	1664	1121	1454	1454	1476	1416	1582	1086	1385	1385	1399	1379		
	90	1665	1665	1665	1665	1760	1409	1601	1601	1599	1599	1682	1374	1533	1533	1533	1533	1600	1339	1461	1461	1461	1461		





# Performance Data

**Table PD-24 — Natural Gas Heating Capacities**

Nom. Tons	Gas Heat Module	Heat Input (MBh)	Heat Output (MBh)	Air Temperature Rise Vs Unit Cfm																							
				CFM																							
				4000	5000	5760	6000	6284	7000	8000	9000	9792	10000	10682	10830	11200	11750	12000	13500	15000	16129	18000	20000	22500	23040	25000	27000
20	Low	235	192.7	44	36	31	30	28	25	22	20																
	High	500	410.0			66	63	60	54	47	42																
25	Low	235	192.7		36	31	30	28	25	22	20	18	18	17	16												
	High	500	410.0			66	63	60	54	47	42	39	38	35	35	34											
30	Low	350	287.0			44	42	38	33	29	27	26	25	24	24	23	22	20									
	High	500	410.0			60	54	54	47	42	39	38	35	35	34	32	31	28									
40	Low	350	287.0						33	29	27	26	25	24	24	23	22	20	18	16							
	High	850	697.0								66	64	60	59	57	55	54	48	43	40	36						
50	Low	500	410.0								38	35	35	34	32	31	28	25	23	21	19	17					
	High	850	697.0										60	59	57	55	54	48	43	40	36	32	29				
55	Low	500	410.0										38	35	35	34	32	31	28	25	23	21	19	17	16		
	High	850	697.0												55	54	48	43	40	36	32	29	28	26			
60	Low	500	410.0												31	28	25	23	21	19	17	16	15	14			
	High	850	697.0												54	48	43	40	36	32	29	28	26	24			
70	Low	500	410.0												31	28	25	23	21	19	17	16	15	14	13	13	
	High	850	697.0												54	48	43	40	36	32	29	28	26	24	22		
75	Low	500	410.0												31	28	25	23	21	19	17	16	15	14	13	13	
	High	850	697.0												54	48	43	40	36	32	29	28	26	24	22		

**Notes:**

- All heaters are 82% efficient.
- Cfm values below the minimums and above the maximums shown in this table are not UL/CSA approved, see RT-EB-104 for further details.
- Air Temperature Rise = Heat Output (Btu) ÷ (Cfm x 1.085).

**Table PD-25 — Natural Gas Heating Capacities**

Nominal Tons	Gas Heat Module	Heat Input (MBh)	Heat Output (MBh)	Air Temperature Rise Vs Unit Cfm								
				CFM								
				28,350	30,250	32,550	34,750	37,000	39,250	41,500	43,000	46,000
90	High	1000	820	27	25	23	22	20	19	18	18	
105	High	1000	820			23	22	20	19	18	18	16
115	High	1000	820			23	22	20	19	18	18	16
130	High	1000	820			23	22	20	19	18	18	16

**Notes:**

- All heaters are 82% efficient.
- Cfm values below the minimums and above the maximums shown in this table are not UL/CSA approved.
- Air Temperature Rise = Heat Output (Btu) ÷ (Cfm x 1.085).

**Table PD-26 — Steam Heating Capacities (Q/ITD)<sup>1</sup>**

20 Nominal Ton Unit					25 Nominal Ton Unit					30 Nominal Ton Unit				
Steam Module	Unit Standard Air Volume (Cfm)				Steam Module	Unit Standard Air Volume (Cfm)				Steam Module	Unit Standard Air Volume (Cfm)			
	4000	6000	8000	10000		5000	7500	10000	12500		6000	9000	12000	15000
Low Heat	0.95	1.18	1.37	1.52	Low Heat	1.06	1.33	1.52	1.74	Low Heat	1.18	1.64	1.69	2.00
High Heat	1.94	2.47	2.95	3.31	High Heat	2.20	2.85	3.31	3.65	High Heat	2.47	3.12	3.59	3.95
40 Nominal Ton Unit					50 Nominal Ton Unit					55 Nominal Ton Unit				
Steam Module	Unit Standard Air Volume (Cfm)				Steam Module	Unit Standard Air Volume (Cfm)				Steam Module	Unit Standard Air Volume (Cfm)			
	8000	12000	16000	20000		10000	15000	20000	25000		11000	16500	22000	27500
Low Heat	1.61	2.01	2.29	2.60	Low Heat	1.82	2.21	2.60	2.85	Low Heat	1.91	2.38	2.72	2.92
High Heat	3.36	4.28	4.93	5.43	High Heat	3.86	4.79	5.43	5.97	High Heat	4.09	5.01	5.64	6.41
60 Nominal Ton Unit					70 & 75 Nominal Ton Unit					90, 105, 115, 130 Nominal Ton Units				
Steam Module	Unit Standard Air Volume (Cfm)				Steam Module	Unit Standard Air Volume (Cfm)				Steam Module	Unit Standard Air Volume (Cfm)			
	12000	18000	24000	30000		16000	20000	24000	30000		27000	33000	40000	46000
Low Heat	2.32	2.81	3.33	3.71	Low Heat	2.65	2.98	3.33	3.71	Low Heat	5.17	5.70	6.19	6.53
High Heat	3.85	4.84	5.62	6.18	High Heat	4.50	5.10	5.62	6.18	High Heat	8.83	8.80	9.04	9.26

**Table PD-27 — Properties of Steam**

Steam Pressure (Psig)	2	5	10	15	20	25	30	40	50
Temperature Of Steam (F)	219	227	239	250	259	267	274	287	298

**Note:**

- Capacities expressed as MBH (Q) per initial temperature difference (ITD) between the entering air temperature to the steam module and the entering steam temperature. Maximum recommended operating pressure is 35 PSIG.



# Performance Data

**Table PD-28 — 20 to 75-Tons Electric Heat Air Temperature Rise**

KW Input	Total MBh	Cfm											
		4000	6000	8000	10000	12000	14000	16000	18000	20000	22000	24000	26000
30	102.4	23.6	15.7	11.8	9.4	7.9	6.7	5.9	5.2	4.7	4.3	3.9	3.6
50	170.6	39.3	26.2	19.7	15.7	13.1	11.2	9.8	8.7	7.9	7.1	6.6	6.0
70	238.8	55.0	36.7	27.5	22.0	18.3	15.7	13.8	12.2	11.0	10.0	9.2	8.5
90	307.1		47.2	35.4	28.3	23.6	20.2	17.7	15.7	14.2	12.9	11.8	10.9
110	375.3		57.7	43.2	34.6	28.8	24.7	21.6	19.2	17.3	15.7	14.4	13.3
130	443.6			51.1	40.9	34.1	29.2	25.6	22.7	20.4	18.6	17.0	15.7
150	511.8			59.0	47.2	39.3	33.7	29.5	26.2	23.6	21.4	19.7	18.1
170	580.1				53.5	44.6	38.2	33.4	29.7	26.7	24.3	22.3	20.6
190	648.3				59.8	49.8	42.7	37.3	33.2	29.9	27.2	24.9	23.0

**Notes:**

1. Maximum permitted air temperature rise; 20-30 tons (UL — 50 F) (CSA — 60 F), 40 — 60 ton (UL/CSA — 50 F).
2. Air temperature rise = kw x 3413 ÷ (scfm x 1.085)
3. All heaters on units provide 3 increments of capacity.
4. 200 and 230 volt electric heat rooftops require dual power supplies to the control box. All other rooftops have single power connections. See Electrical Data Section for electrical sizing information.

**Table PD-29— 90 To 130-Ton Electric Heat Air Temperature Rise**

KW Input	Total MBh	Cfm					
		24000	27000	30000	33000	36000	40000
190	648.3	24.9	22.1	19.9	18.1	16.5	15.3

**Notes:**

1. Air Temperature = kw x 3413 ÷ (scfm x 1.085)
2. Only available in 460/60/3 and 575/60/3 voltages.

**Table PD-30— Electric Heat KW Ranges**

Nominal Tons	Nominal Voltage			
	200	230	460	575
20	30-90	30-110	30-110	30-110
25	30-90	30-110	30-130	30-130
30	30-110	30-110	30-150	30-150
40	50-110	50-110	50-170	50-170
50	70-110	70-110	70-190	70-190
55	70-110	70-110	70-190	70-190
60	90-110	90-110	90-190	90-190
70	90-110	90-110	90-190	90-190
75	90-110	90-110	90-190	90-190
90	NA	NA	190	190
105	NA	NA	190	190
115	NA	NA	190	190
130	NA	NA	190	190

# Performance Data

**Table PD-31— Hot Water Heating Capacities (Q/ITD)<sup>1</sup>**

**20, 25, 30 Nominal Tons**

Hot Water		Water	Unit Standard Air Volume (Cfm)					
Module	Gpm	PD (Ft)	4000	6000	8000	10000	12000	14000
Low	10	0.54	1.65	1.99	2.21	2.37	2.48	2.56
High	20	0.91	2.23	2.78	3.16	3.44	3.67	3.85
Low	20	0.91	1.88	2.35	2.69	2.94	3.12	3.27
High	30	1.49	2.36	3.00	3.46	3.81	4.09	4.31
Low	30	1.49	1.97	2.51	2.90	3.19	3.42	3.60
High	40	2.25	2.43	3.12	3.63	4.02	4.34	4.60
Low	40	2.25	2.02	2.60	3.02	3.34	3.60	3.79
High	50	3.2	2.48	3.20	3.74	4.17	4.51	4.80
Low	60	4.31	2.08	2.69	3.16	3.51	3.79	4.02
High	70	5.65	2.54	3.30	3.88	4.35	4.73	5.04

**40, 50, 55 Nominal Tons**

Hot Water		Water	Unit Standard Air Volume (Cfm)					
Module	Gpm	PD (Ft)	8000	11000	14000	17000	20000	23000
Low	20	0.70	3.00	3.44	3.75	3.98	4.14	4.29
High	30	1.05	3.85	4.46	4.91	5.26	5.54	5.76
Low	40	1.51	3.40	4.00	4.43	4.76	5.02	5.21
High	50	2.10	4.20	4.95	5.52	5.97	6.34	6.64
Low	60	2.78	3.56	4.23	4.73	5.11	5.40	5.63
High	75	4.04	4.39	5.24	5.89	6.41	6.85	7.21
Low	80	4.50	3.65	4.36	4.89	5.31	5.63	5.88
High	90	5.54	4.46	5.34	6.03	6.58	7.04	7.42
Low	100	6.66	3.71	4.44	5.00	5.43	5.77	6.04
High	125	9.99	4.56	5.50	6.23	6.83	7.33	7.75

**60, 70, 75 Nominal Tons**

Hot Water		Water	Unit Standard Air Volume (Cfm)					
Module	Gpm	PD (Ft)	12000	16000	20000	24000	28000	31500
Low	25	0.98	4.28	4.82	5.20	5.48	5.69	5.83
High	30	1.22	5.24	5.91	6.40	6.77	7.06	7.27
Low	50	2.48	4.90	5.63	6.18	6.60	6.92	7.15
High	60	3.33	6.01	6.94	7.66	8.22	8.69	9.03
Low	75	4.83	5.14	5.97	6.60	7.09	7.46	7.73
High	90	6.65	6.32	7.38	8.20	8.87	9.42	9.83
Low	100	8.0	5.28	6.16	6.84	7.36	7.78	8.07
High	120	11.15	6.49	7.62	8.51	9.23	9.84	10.30
Low	125	11.99	5.37	6.29	6.99	7.54	7.98	8.29
High	150	16.8	6.60	7.77	8.71	9.47	10.11	10.60

**90, 105, 115, 130 Nominal Tons**

Hot Water		Water	Unit Standard Air Volume (Cfm)					
Module	Gpm	PD (Ft)	27000	30000	33000	36000	39000	42000
Low	30	0.77	6.68	6.87	7.04	7.18	7.30	7.41
High	40	1.02	8.51	8.80	9.04	9.26	9.45	9.62
Low	60	1.69	8.07	8.38	8.64	8.87	9.07	9.25
High	80	2.6	10.21	10.64	11.03	11.38	11.69	11.98
Low	100	3.71	8.82	9.19	9.52	9.80	10.05	10.26
High	120	5.07	10.95	11.46	11.92	12.33	12.71	13.05
Low	140	6.59	9.19	9.60	9.96	10.27	10.55	10.79
High	160	8.37	11.37	11.93	12.43	12.88	13.30	13.67
Low	175	9.8	9.39	9.82	10.20	10.53	10.82	11.07
High	200	12.52	11.64	12.23	12.76	13.24	13.68	14.08

Note:

- Capacities expressed as MBh per initial temperature difference (ITD) between the entering air temperature to the hot water coil and the entering water temperature. Ethylene glycol or other capacities can be determined from the Trane heating coil computer program. Capacity and pressure drop of ethylene glycol varies greatly with temperature and concentration.



# Performance Data (20, 25 Tons)

**Table PD-32 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 20 and 25 Ton**

Cfm Std Air	Total Static Pressure															
	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4000	370	.34	504	.62	614	.96	707	1.35	788	1.77	859	2.20	922	2.65	980	3.11
5000	390	.48	514	.80	618	1.16	710	1.57	793	2.02	867	2.51	934	3.02	996	3.54
6000	419	.67	529	1.03	628	1.43	715	1.85	795	2.32	869	2.83	938	3.37	1002	3.95
7000	451	.92	550	1.32	642	1.76	726	2.23	802	2.71	873	3.24	940	3.80	1004	4.39
8000	485	1.23	579	1.68	659	2.15	741	2.67	814	3.20	882	3.75	946	4.32	1008	4.93
9000	520	1.60	609	2.13	685	2.63	757	3.17	829	3.77	895	4.36	957	4.97	1015	5.59
10000	556	2.05	641	2.65	715	3.22	780	3.78	845	4.39	910	5.05	971	5.71	1028	6.38
11000	593	2.58	675	3.25	745	3.89	809	4.51	867	5.13	926	5.80	986	6.53	1043	7.26

Cfm Std Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4000	1034	3.58	1085	4.06	1132	4.56	1177	5.07	1220	5.58	1261	6.11	1301	6.65	1339	7.20
5000	1053	4.09	1106	4.64	1156	5.20	1203	5.78	1247	6.36	1290	6.95	1331	7.55	1370	8.16
6000	1061	4.54	1117	5.16	1169	5.79	1219	6.43	1265	7.08	1310	7.74	1353	8.42	1393	9.09
7000	1064	5.01	1121	5.67	1175	6.34	1226	7.04	1274	7.75	1321	8.47	1365	9.21	1408	9.96
8000	1067	5.57	1123	6.24	1177	6.94	1228	7.66	1278	8.41	1325	9.18	1371	9.96	1415	10.77
9000	1072	6.25	1127	6.93	1180	7.64	1231	8.38	1280	9.15	1327	9.94	1373	10.75	1418	11.59
10000	1082	7.05	1135	7.76	1186	8.48	1235	9.24	1284	10.02	1330	10.82	1376	11.65	1420	12.50
11000	1096	7.99	1147	8.72	1196	9.47	1243	10.24	1290	11.04	1336	11.86	1380	12.70	1423	13.57

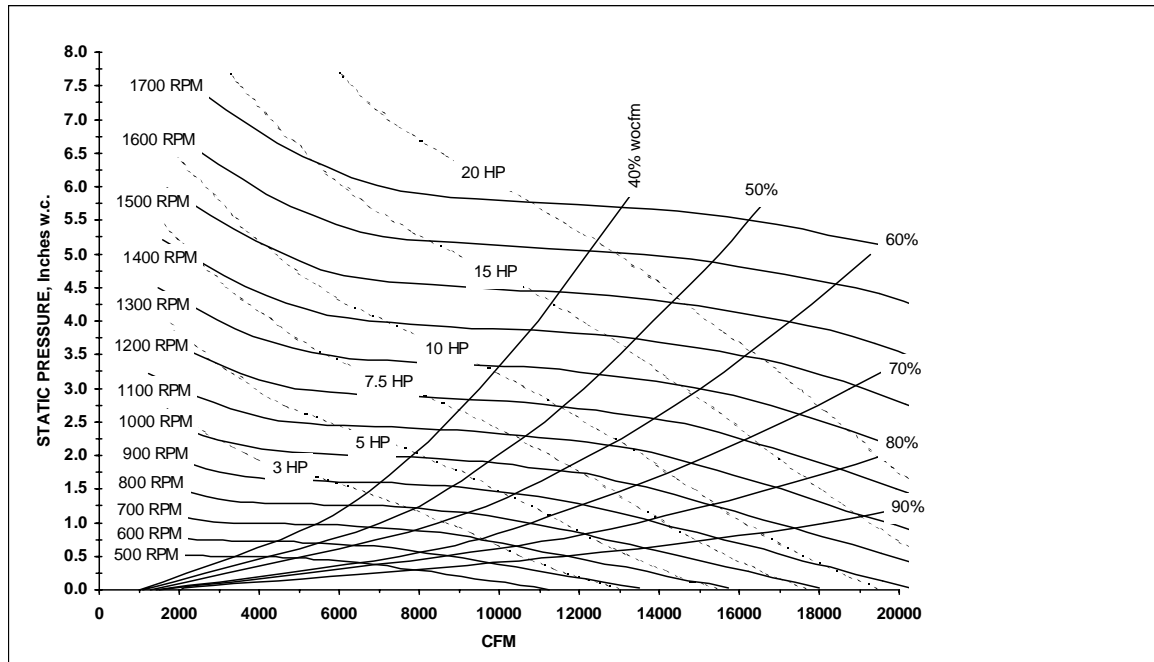
Cfm Std Air	Total Static Pressure															
	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4000	1376	7.76	1412	8.33	1446	8.90	1480	9.49	1513	10.08	1545	10.69	1576	11.30	1606	11.92
5000	1408	8.78	1445	9.41	1480	10.05	1515	10.70	1548	11.35	1581	12.02	1613	12.69	1644	13.37
6000	1433	9.78	1470	10.48	1507	11.18	1542	11.89	1577	12.61	1610	13.34	1643	14.07		
7000	1449	10.71	1488	11.48	1526	12.25	1563	13.03	1599	13.82	1633	14.62				
8000	1457	11.58	1498	12.41	1538	13.24	1576	14.09	1613	14.95	1649	15.81				
9000	1461	12.44	1503	13.31	1543	14.20	1582	15.10	1620	16.01						
10000	1463	13.38	1505	14.27	1545	15.19	1585	16.12	1624	17.08						
11000	1466	14.46	1507	15.37	1547	16.30	1587	17.25	1626	18.22						

- Notes:
1. Fan performance for 20 and 25 ton rooftops is identical. However, note maximum motor hp size for each size. Contact your local Trane representative for information on oversized motors.
  2. Shaded areas at table extremes note non-standard Bhp or Rpm selection. Contact your local Trane representative for more information.
  3. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops (evaporator coil, filters, optional economizer, optional exhaust fan, optional heating system, optional cooling only extended casing, optional roof curb).
  4. Maximum Cfm (for UL approval) as follows: 20 Ton — 9,000 Cfm, 25 Ton — 11,000 Cfm
  5. Minimum motor horsepower is 3 hp.
  6. Maximum motor horsepower as follows: 20 Ton — 15 hp, 25 Ton — 15 hp
  7. Maximum 3 hp and 5 hp motor Rpm is 1,100, maximum 7.5 hp to 15 hp motor Rpm is 1655.
  8. See RT-EB-104 for further details

# Performance Data

(20, 25 Tons)

Figure PD-1— Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 20 and 25 Tons



Note:

1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (20, 25 Tons)

**Table PD-33 — Supply Fan Performance WITH INLET VANES — 20 and 25 Tons**

Cfm Std Air	Total Static Pressure															
	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4000	387	.37	514	.65	621	.99	712	1.37	791	1.78	861	2.22	925	2.67	983	3.13
5000	420	.55	530	.85	631	1.22	721	1.62	800	2.06	872	2.54	939	3.05	1000	3.57
6000	469	.82	557	1.13	646	1.51	730	1.95	810	2.43	881	2.92	947	3.45	1009	4.01
7000	526	1.21	591	1.50	673	1.92	748	2.36	819	2.85	892	3.40	958	3.96	1018	4.54
8000	586	1.72	638	2.02	702	2.41	775	2.90	841	3.41	903	3.94	967	4.54	1029	5.17
9000	647	2.37	692	2.68	742	3.05	803	3.53	868	4.10	928	4.67	983	5.24	1038	5.87
10000	708	3.15	750	3.51	792	3.88	840	4.33	895	4.88	954	5.50	1010	6.14	1060	6.77
11000	769	4.10	809	4.51	846	4.90	886	5.33	931	5.85	982	6.46	1036	7.14	1088	7.85

Cfm Std Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4000	1037	3.61	1087	4.09	1135	4.59	1180	5.11	1224	5.63	1265	6.16	1305	6.70	1343	7.26
5000	1056	4.12	1109	4.67	1159	5.24	1206	5.82	1251	6.40	1293	7.00	1334	7.61	1374	8.23
6000	1067	4.60	1122	5.21	1174	5.84	1223	6.48	1269	7.14	1314	7.80	1356	8.48	1397	9.16
7000	1076	5.14	1131	5.78	1183	6.45	1233	7.13	1281	7.84	1327	8.56	1371	9.29	1413	10.04
8000	1086	5.82	1140	6.47	1192	7.14	1241	7.85	1289	8.58	1335	9.34	1380	10.11	1423	10.90
9000	1095	6.56	1151	7.27	1203	8.00	1252	8.72	1299	9.47	1344	10.23	1388	11.02	1431	11.84
10000	1109	7.43	1160	8.14	1211	8.90	1262	9.70	1310	10.50	1355	11.30	1399	12.12	1441	12.94
11000	1136	8.54	1181	9.24	1225	9.97	1271	10.75	1318	11.58	1364	12.45	1409	13.33	1452	14.21

Cfm Std Air	Total Static Pressure															
	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4000	1380	7.82	1416	8.39	1450	8.97	1484	9.56	1517	10.16	1549	10.77	1580	11.38	1611	12.01
5000	1412	8.85	1449	9.49	1484	10.13	1519	10.78	1552	11.44	1585	12.11	1617	12.79	1648	13.47
6000	1436	9.85	1474	10.55	1511	11.26	1547	11.98	1581	12.70	1615	13.44	1647	14.18		
7000	1453	10.80	1493	11.57	1531	12.34	1567	13.13	1603	13.92	1638	14.72				
8000	1465	11.71	1505	12.54	1544	13.37	1582	14.22	1618	15.07	1654	15.94				
9000	1473	12.68	1514	13.53	1553	14.41	1591	15.30	1629	16.20						
10000	1482	13.79	1522	14.66	1561	15.55	1600	16.46	1637	17.40						
11000	1493	15.10	1533	15.99	1572	16.89	1609	17.82	1646	18.76						

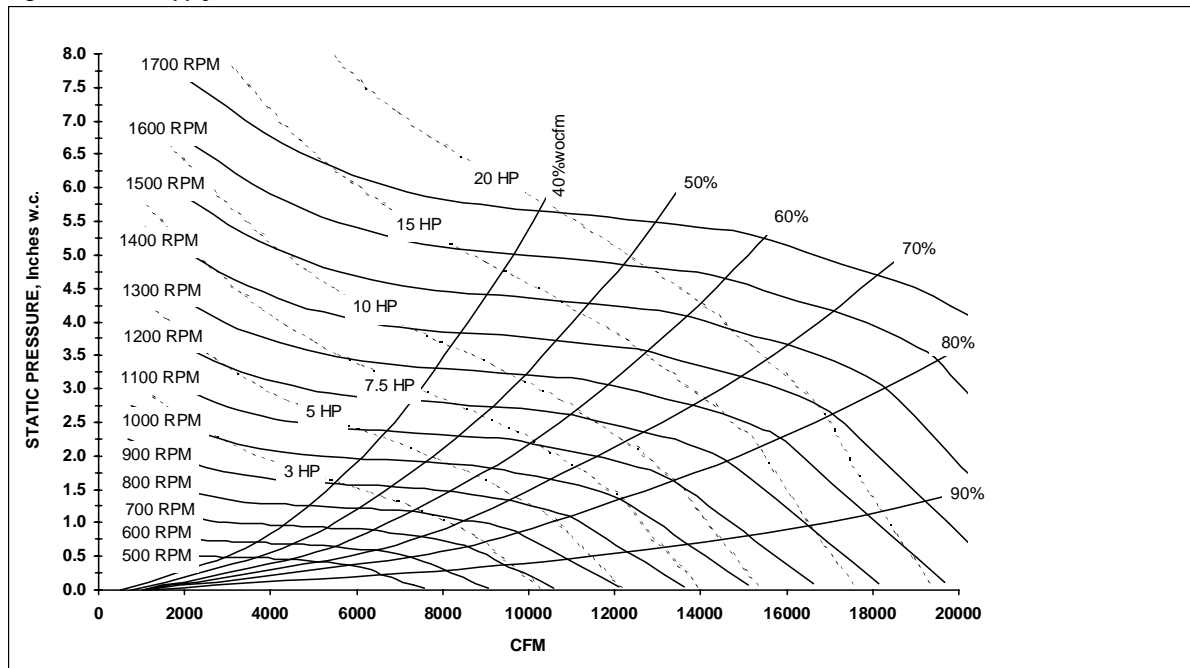
**Notes:**

1. Fan performance for 20 and 25 ton rooftops is identical. However, note maximum motor hp size for each size. Contact your local Trane representative for information on oversized motors.
2. Shaded areas at table extremes note non-standard Bhp or Rpm selection. Contact your local Trane representative for more information.
3. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops (evaporator coil, filters, optional economizer, optional exhaust fan, optional heating system, optional cooling only extended casing, optional roof curb).
4. Maximum Cfm (for UL approval) as follows: 20 Ton — 9,000, Cfm 25 Ton — 11,000 Cfm.
5. Minimum motor horsepower is 3 hp.
6. Maximum motor horsepower as follows: 20 Ton — 10 hp, 25 Ton — 15 hp.
7. Maximum 3 hp and 5 hp motor Rpm is 1,100, maximum 7.5 hp to 15 hp motor Rpm is 1655.
8. See RT-EB-104 for further details

# Performance Data

(20, 25 Tons)

Figure PD-2 — Supply Fan Performance WITH INLET VANES — 20 and 25 Tons



Note:

1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (30 Ton)

Table PD-34 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 30 Ton

Cfm Std Air	Total Static Pressure															
	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	316	.50	426	.89	519	1.36	598	1.88	666	2.42	728	2.99	784	3.59	835	4.22
7000	334	.65	430	1.05	521	1.56	600	2.12	669	2.71	731	3.32	788	3.97	841	4.64
8000	354	.85	440	1.27	523	1.78	602	2.37	671	3.01	733	3.67	791	4.36	844	5.08
9000	376	1.09	456	1.54	530	2.06	603	2.66	673	3.33	736	4.04	793	4.78	846	5.54
10000	399	1.38	474	1.87	542	2.40	609	3.00	674	3.69	737	4.43	795	5.22	849	6.02
11000	424	1.73	493	2.25	558	2.82	619	3.43	679	4.11	739	4.86	797	5.68	851	6.53
12000	450	2.13	515	2.70	576	3.30	633	3.93	688	4.62	744	5.37	798	6.19	852	7.07
13000	475	2.59	537	3.21	595	3.85	649	4.52	701	5.22	753	5.98	804	6.79	854	7.67
13500	488	2.85	549	3.50	605	4.15	658	4.83	709	5.55	758	6.32	808	7.13	856	8.01

Cfm Std Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	883	4.86	927	5.51	968	6.18	1007	6.86	1043	7.54	1078	8.24	1111	8.94	1143	9.65
7000	890	5.33	936	6.04	979	6.78	1020	7.52	1059	8.28	1095	9.05	1130	9.83	1164	10.62
8000	894	5.82	941	6.57	985	7.35	1027	8.15	1067	8.97	1105	9.80	1142	10.65	1177	11.51
9000	896	6.32	944	7.13	989	7.95	1031	8.79	1072	9.66	1111	10.54	1149	11.43	1185	12.35
10000	899	6.85	946	7.70	991	8.57	1034	9.46	1075	10.37	1115	11.29	1153	12.24	1189	13.20
11000	901	7.41	949	8.30	994	9.22	1037	10.15	1078	11.11	1118	12.08	1156	13.07	1193	14.07
12000	903	7.99	951	8.94	996	9.90	1039	10.88	1080	11.88	1120	12.89	1158	13.93	1195	14.98
13000	904	8.61	952	9.60	998	10.61	1041	11.63	1083	12.68	1122	13.74	1161	14.82	1198	15.91
13500	905	8.95	953	9.94	998	10.97	1042	12.02	1084	13.09	1123	14.18	1162	15.28	1199	16.40

Cfm Std Air	Total Static Pressure															
	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	1174	10.37	1203	11.10	1231	11.83	1259	12.57	1285	13.32	1311	14.08	1336	14.85	1361	15.62
7000	1196	11.41	1227	12.22	1256	13.03	1285	13.85	1313	14.68	1340	15.51	1366	16.35		
8000	1210	12.38	1243	13.26	1274	14.14	1304	15.04	1333	15.94	1361	16.85				
9000	1219	13.28	1253	14.22	1285	15.18	1316	16.14	1347	17.11	1376	18.10				
10000	1225	14.17	1259	15.16	1292	16.17	1324	17.19	1355	18.23						
11000	1228	15.09	1263	16.13	1297	17.18	1329	18.25	1361	19.33						
12000	1231	16.04	1266	17.13	1300	18.22	1333	19.33	1365	20.46						
13000	1234	17.03	1268	18.15	1302	19.30	1335	20.45	1368	21.62						
13500	1235	17.53	1270	18.68	1303	19.85	1337	21.03	1369	22.22						

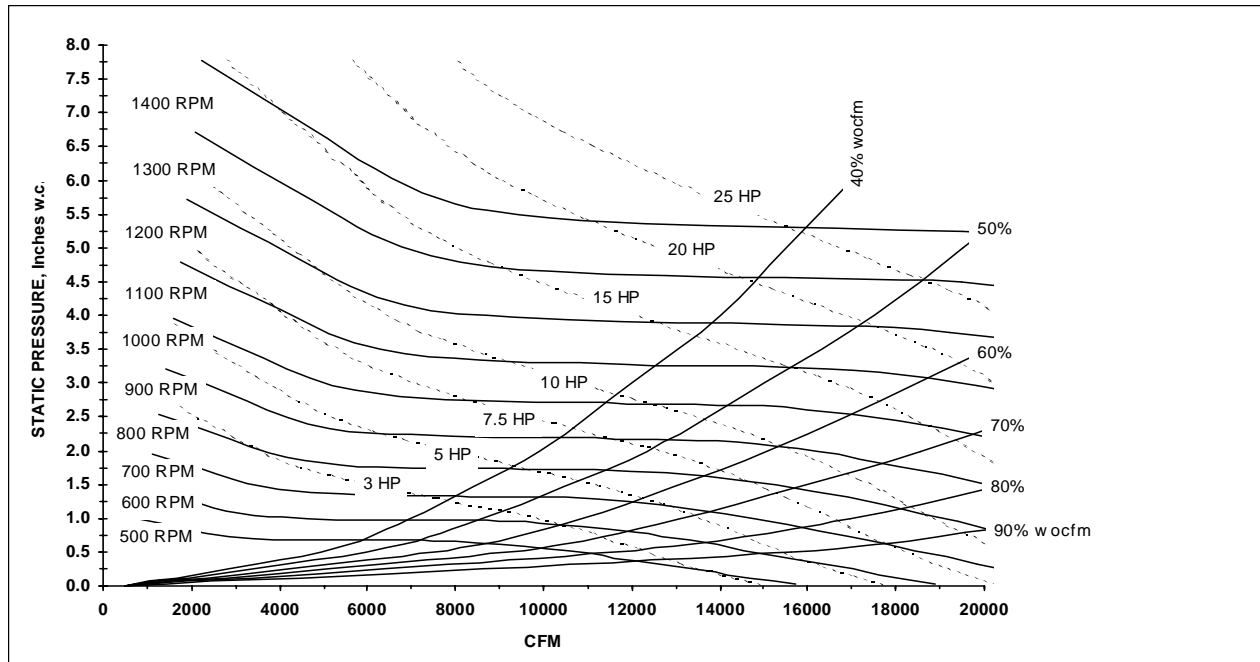
Notes:

1. Shaded areas at table extremes note non-standard Bhp or Rpm selection. Contact your local Trane representative for more information.
2. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops (evaporator coil, filters, optional economizer, optional exhaust fan, optional heating system, optional cooling only extended casing, optional roof curb).
3. Minimum motor horsepower is 5 hp, maximum motor horsepower is 20 hp. Maximum RPM is 1379.
4. Max Cfm (for UL approval) as follows: 30 Ton-13,500 Cfm.
5. See RT-EB-104 for further details.



# Performance Data (30 Ton)

Figure PD-3— Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 30 Ton



Note:

1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (30Ton)

Table PD-35 — Supply Fan Performance WITH INLET VANES — 30 Ton

Cfm Std Air	Total Static Pressure															
	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	327	.53	433	.93	526	1.34	607	1.83	677	2.43	739	3.08	794	3.73	844	4.37
7000	349	.70	440	1.10	529	1.61	608	2.09	679	2.62	743	3.28	801	4.00	853	4.76
8000	376	.94	453	1.34	534	1.85	611	2.45	680	3.00	744	3.57	803	4.24	857	5.02
9000	406	1.25	472	1.64	543	2.15	615	2.77	683	3.45	746	4.06	804	4.68	858	5.36
10000	438	1.63	496	2.02	559	2.54	623	3.13	687	3.85	749	4.60	806	5.30	860	5.97
11000	471	2.09	523	2.49	578	3.00	636	3.60	695	4.29	753	5.08	809	5.91	863	6.70
12000	505	2.62	552	3.05	601	3.56	653	4.17	707	4.84	760	5.60	814	6.46	866	7.37
13000	538	3.24	583	3.72	627	4.22	674	4.82	723	5.51	772	6.26	822	7.09	871	8.01
13500	555	3.59	599	4.08	641	4.59	685	5.19	732	5.89	779	6.64	827	7.45	875	8.35

Cfm Std Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	890	5.01	933	5.66	974	6.32	1012	6.99	1049	7.67	1084	8.36	1118	9.08	1151	9.80
7000	902	5.52	947	6.27	989	7.02	1029	7.77	1066	8.52	1102	9.28	1137	10.05	1170	10.83
8000	908	5.85	955	6.71	999	7.58	1041	8.45	1080	9.30	1117	10.16	1152	11.01	1186	11.87
9000	910	6.15	959	7.03	1004	7.96	1048	8.92	1088	9.89	1127	10.87	1164	11.84	1199	12.81
10000	911	6.68	960	7.46	1006	8.34	1050	9.30	1092	10.31	1133	11.36	1171	12.43	1208	13.52
11000	913	7.44	961	8.19	1007	8.97	1051	9.83	1094	10.78	1135	11.81	1174	12.90	1212	14.03
12000	916	8.26	964	9.09	1009	9.90	1053	10.71	1095	11.57	1136	12.49	1175	13.50	1213	14.58
13000	920	8.98	967	9.96	1012	10.90	1055	11.79	1097	12.66	1137	13.54	1176	14.46	1214	15.44
13500	922	9.34	969	10.36	1014	11.37	1057	12.33	1098	13.25	1138	14.16	1177	15.07	1215	16.02

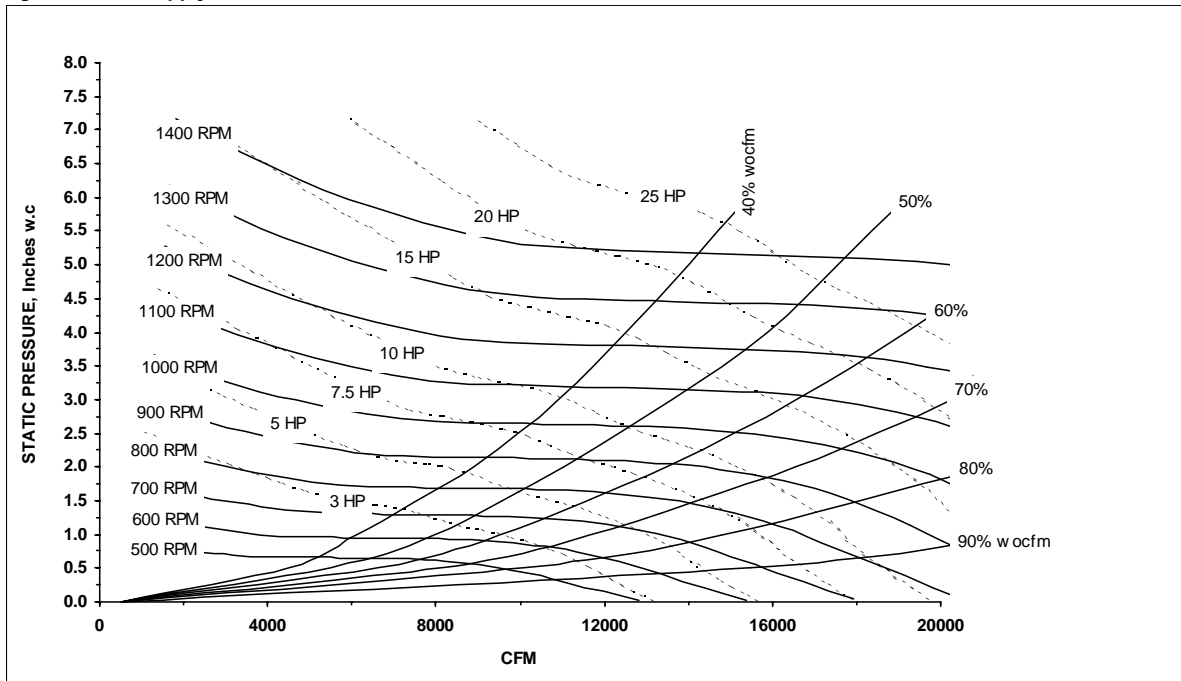
Cfm Std Air	Total Static Pressure															
	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	1183	10.54	1213	11.30	1243	12.07	1272	12.86	1300	13.66	1328	14.47	1355	15.30		
7000	1202	11.62	1233	12.42	1263	13.23	1293	14.06	1321	14.90	1349	15.75	1376	16.62		
8000	1219	12.73	1251	13.60	1282	14.47	1311	15.36	1340	16.25	1368	17.15				
9000	1233	13.77	1266	14.73	1297	15.69	1327	16.66	1357	17.62						
10000	1243	14.60	1276	15.68	1309	16.76	1340	17.83	1370	18.90						
11000	1248	15.19	1283	16.37	1317	17.56	1349	18.75								
12000	1250	15.73	1286	16.93	1321	18.16	1354	19.42								
13000	1251	16.49	1287	17.61	1322	18.81	1356	20.06								
13500	1252	17.02	1288	18.09	1323	19.23	1357	20.45								

Notes:

1. Shaded areas at table extremes note non-standard Bhp or Rpm selection. Contact your local Trane representative for more information.
2. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops (evaporator coil, filters, optional economizer, optional exhaust fan, optional heating system, optional cooling only extended casing, optional roof curb).
3. Minimum motor horsepower is 5 hp, maximum motor horsepower is 20 hp. Maximum RPM is 1379.
4. See RT-EB-104 for further details.

# Performance Data (30 Ton)

Figure PD-4 — Supply Fan Performance WITH INLET VANES — 30 Ton



Note:  
 1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (40, 50, 55 Tons)

**Table PD-36 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 40, 50 and 55 Tons**

Cfm Std Air	Total Static Pressure															
	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8000	290	.66	396	1.27	479	1.95	550	2.67	613	3.44	671	4.23	723	5.05	770	5.90
9000	298	.77	400	1.44	482	2.16	553	2.93	616	3.75	673	4.61	725	5.49	774	6.39
10000	311	.94	404	1.61	486	2.38	556	3.20	618	4.07	675	4.99	727	5.93	776	6.89
11000	329	1.16	409	1.79	490	2.63	559	3.50	621	4.41	677	5.37	729	6.37	778	7.40
12000	349	1.43	414	2.00	494	2.89	563	3.81	624	4.77	680	5.78	731	6.82	780	7.90
13000	370	1.75	424	2.26	499	3.16	567	4.15	628	5.16	683	6.21	734	7.30	782	8.43
14000	391	2.12	438	2.60	504	3.44	571	4.49	632	5.57	687	6.67	737	7.80	785	8.97
15000	413	2.54	455	3.01	510	3.77	576	4.86	636	5.99	690	7.15	741	8.33	789	9.55
16000	435	3.02	474	3.50	520	4.18	581	5.24	640	6.43	695	7.65	745	8.89	792	10.16
17000	457	3.54	494	4.06	534	4.68	586	5.65	645	6.89	699	8.17	749	9.47	796	10.79
18000	479	4.13	515	4.68	550	5.29	595	6.15	650	7.37	703	8.71	753	10.07	800	11.46
19000	501	4.78	536	5.38	569	5.98	607	6.76	656	7.89	708	9.27	758	10.70	804	12.14
20000	524	5.49	558	6.15	588	6.75	622	7.49	664	8.50	713	9.85	762	11.34	809	12.84
21000	546	6.28	580	7.00	608	7.61	639	8.32	676	9.25	719	10.49	767	12.00	813	13.57
22000	569	7.14	602	7.92	629	8.55	658	9.26	690	10.12	728	11.25	773	12.70	818	14.32
22500	580	7.60	613	8.40	640	9.05	667	9.76	698	10.60	734	11.68	776	13.07	820	14.70
23000	591	8.08	624	8.90	651	9.58	677	10.29	706	11.11	740	12.15	780	13.48	823	15.09
24000	614	9.10	646	9.97	672	10.70	697	11.41	724	12.22	754	13.19	789	14.41	829	15.93

Cfm Std Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8000	814	6.80	854	7.73	892	8.69	927	9.67	961	10.66	993	11.67	1023	12.69	1053	13.71
9000	819	7.32	861	8.28	901	9.27	938	10.31	972	11.37	1006	12.45	1037	13.55	1068	14.67
10000	822	7.88	865	8.89	906	9.92	944	10.98	980	12.07	1015	13.20	1048	14.35	1079	15.53
11000	824	8.45	867	9.52	908	10.61	948	11.72	985	12.85	1021	14.00	1055	15.18	1087	16.40
12000	826	9.01	869	10.15	910	11.30	950	12.47	988	13.66	1024	14.87	1059	16.09	1092	17.34
13000	828	9.59	871	10.78	912	11.99	952	13.23	989	14.48	1026	15.75	1061	17.04	1095	18.34
14000	830	10.18	873	11.42	914	12.69	954	13.98	991	15.30	1028	16.63	1063	17.98	1097	19.35
15000	833	10.80	876	12.09	917	13.40	956	14.75	994	16.12	1030	17.51	1065	18.92	1099	20.35
16000	837	11.46	879	12.78	920	14.14	958	15.54	996	16.96	1032	18.40	1067	19.87	1101	21.36
17000	840	12.14	882	13.52	923	14.92	961	16.36	999	17.82	1035	19.32	1069	20.83	1103	22.38
18000	844	12.86	886	14.28	926	15.73	964	17.21	1002	18.72	1037	20.26	1072	21.82	1106	23.41
19000	848	13.60	890	15.08	930	16.58	968	18.11	1005	19.66	1040	21.24	1075	22.85	1108	24.48
20000	852	14.36	894	15.90	934	17.46	972	19.04	1008	20.64	1044	22.27	1078	23.92	1111	25.60
21000	857	15.15	898	16.75	938	18.37	976	20.00	1012	21.66	1047	23.33	1081	25.03	1114	26.75
22000	861	15.96	902	17.63	942	19.30	980	20.99	1016	22.70	1051	24.43	1085	26.18	1118	27.95
22500	864	16.38	905	18.07	944	19.78	982	21.50	1018	23.24	1053	25.00	1087	26.77	1120	28.57
23000	866	16.80	907	18.52	946	20.26	984	22.01	1020	23.78	1055	25.57	1089	27.37	1122	29.19
24000	871	17.66	912	19.45	951	21.25	988	23.06	1024	24.89	1059	26.73	1093	28.59	1125	30.47

Cfm Std Air	Total Static Pressure							
	4.250		4.500		4.750		5.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8000	1081	14.75	1108	15.78	1134	16.83	1160	17.88
9000	1097	15.80	1125	16.94	1152	18.08		
10000	1109	16.73	1138	17.95	1166	19.18		
11000	1118	17.64	1148	18.91				
12000	1124	18.61	1155	19.91				
13000	1128	19.65	1159	20.99				
14000	1130	20.73	1162	22.12				
15000	1132	21.80	1164	23.26				
16000	1134	22.86	1166	24.39				
17000	1136	23.94	1168	25.52				
18000	1138	25.03	1170	26.66				
19000	1141	26.15						
20000	1144	27.30						
21000	1147	28.50						
22000	1150	29.74						
22500	1152	30.38						
23000	1153	31.03						
24000	1157	32.36						

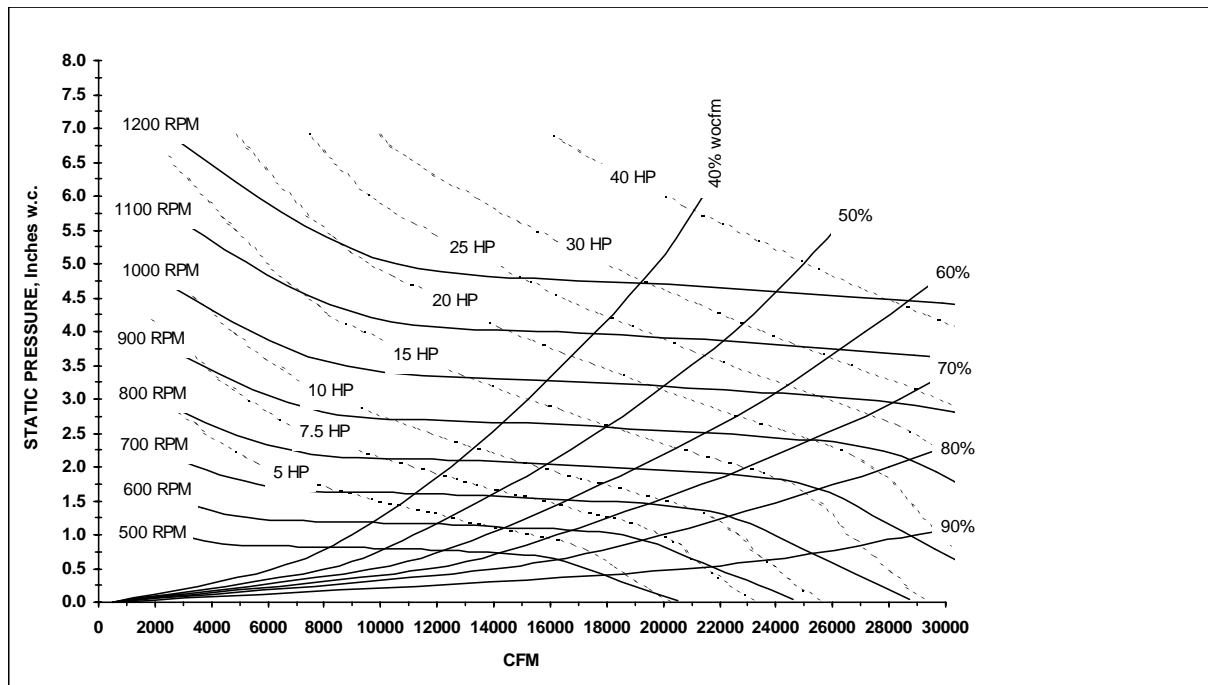
**Notes:**

- Fan performance for 40, 50, and 55 ton rooftops is identical. However, note maximum motor hp size for each size. Contact your local Trane representative for information on oversized motors.
- Shaded areas at table extremes note non-standard Bhp or Rpm selection. Contact your local Trane representative for more information.
- Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops (evaporator coil, filters, optional economizer, optional exhaust fan, optional heating system, optional cooling only extended casing, optional roof curb).
- Maximum Cfm (for UL approval) as follows:  
40 Ton — 18,000 Cfm  
50 Ton — 22,500 Cfm  
55 Ton — 24,000 Cfm
- Minimum motor horsepower is 7.5 hp.
- Maximum motor horsepower as follows:  
40 Ton — 30 hp  
50 Ton — 30 hp  
55 Ton — 30 hp
- Maximum 7.5 hp to 15 hp motor Rpm is 1,141 Rpm, maximum 20 hp to 30 hp motor Rpm is 1,170 Rpm.
- See RT-EB-104 for further details.

# Performance Data

(40, 50, 55 Tons)

Figure PD-5 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 40, 50 and 55 Tons



Note:

1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (40, 50, 55 Tons)

**Table PD-37 — Supply Fan Performance WITH INLET VANES — 40, 50 and 55 Ton**

Cfm Std Air	Total Static Pressure															
	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8000	318	7.9	406	1.35	485	1.98	555	2.70	618	3.49	675	4.31	726	5.17	773	6.06
9000	339	1.01	416	1.56	491	2.24	558	2.97	621	3.79	678	4.67	730	5.58	778	6.52
10000	364	1.28	428	1.81	499	2.53	564	3.30	624	4.13	680	5.04	733	6.00	781	7.00
11000	391	1.63	444	2.13	509	2.85	571	3.68	629	4.53	684	5.45	735	6.44	784	7.48
12000	419	2.04	463	2.51	521	3.22	580	4.08	636	4.99	689	5.92	739	6.93	787	8.00
13000	448	2.53	486	2.97	536	3.66	591	4.52	645	5.49	696	6.47	744	7.49	791	8.57
14000	478	3.09	511	3.53	553	4.19	604	5.03	655	6.02	704	7.07	751	8.12	796	9.22
15000	507	3.74	537	4.18	574	4.80	619	5.63	667	6.60	714	7.69	760	8.82	803	9.95
16000	537	4.46	565	4.93	597	5.52	636	6.32	680	7.28	725	8.36	769	9.54	812	10.74
17000	567	5.28	593	5.78	622	6.35	656	7.11	695	8.05	738	9.12	780	10.30	821	11.56
18000	597	6.20	622	6.74	648	7.30	678	8.02	713	8.93	752	9.99	792	11.16	832	12.43
19000	627	7.22	652	7.80	675	8.37	702	9.05	733	9.92	768	10.97	806	12.12	844	13.38
20000	657	8.35	681	8.98	703	9.55	727	10.22	755	11.05	786	12.06	821	13.21	857	14.45
21000	687	9.60	711	10.27	732	10.87	754	11.53	779	12.32	807	13.28	838	14.41	871	15.64
22000	718	10.96	741	11.67	761	12.31	781	12.97	804	13.74	829	14.66	857	15.74	888	16.97
22500	733	11.69	756	12.42	776	13.08	795	13.74	817	14.50	841	15.40	868	16.46	897	17.68
23000	748	12.45	770	13.20	790	13.88	810	14.55	830	15.31	853	16.19	878	17.23	906	18.42
24000	779	14.08	800	14.86	820	15.59	838	16.28	857	17.03	878	17.88	901	18.87	926	20.02

Cfm Std Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8000	817	6.98	858	7.92	896	8.89	932	9.88	966	10.88	998	11.89	1029	12.90	1058	13.93
9000	823	7.50	865	8.50	904	9.52	942	10.58	977	11.65	1010	12.74	1042	13.85	1073	14.97
10000	827	8.02	870	9.08	910	10.16	948	11.26	985	12.39	1019	13.55	1052	14.73	1084	15.92
11000	830	8.56	873	9.67	914	10.81	953	11.96	990	13.15	1026	14.35	1059	15.58	1092	16.83
12000	833	9.11	876	10.27	917	11.46	956	12.67	994	13.91	1030	15.17	1064	16.46	1098	17.76
13000	836	9.71	879	10.90	920	12.13	959	13.39	997	14.69	1033	16.00	1068	17.34	1102	18.70
14000	840	10.37	882	11.58	923	12.84	962	14.14	999	15.47	1036	16.84	1071	18.23	1105	19.65
15000	846	11.11	887	12.33	926	13.61	965	14.93	1002	16.30	1038	17.71	1073	19.14	1107	20.61
16000	853	11.95	893	13.18	931	14.47	969	15.81	1006	17.19	1042	18.62	1076	20.09	1110	21.60
17000	861	12.84	900	14.13	938	15.43	975	16.77	1010	18.17	1046	19.62	1080	21.11	1113	22.64
18000	871	13.77	909	15.12	945	16.48	981	17.85	1016	19.26	1051	20.71	1084	22.22	1117	23.76
19000	881	14.74	918	16.15	954	17.58	989	19.01	1023	20.46	1057	21.92	1090	23.43	1122	24.99
20000	893	15.80	929	17.23	964	18.72	998	20.22	1031	21.73	1064	23.24	1096	24.77	1128	26.34
21000	906	16.98	940	18.40	974	19.91	1008	21.46	1040	23.05	1072	24.63	1104	26.21	1135	27.81
22000	920	18.28	953	19.69	986	21.19	1018	22.77	1050	24.40	1082	26.05	1112	27.71	1143	29.37
22500	928	18.99	960	20.39	992	21.88	1024	23.46	1055	25.10	1086	26.78	1117	28.47	1147	30.17
23000	936	19.73	967	21.13	998	22.61	1030	24.18	1061	25.82	1092	27.52	1122	29.24	1151	30.98
24000	954	21.31	983	22.70	1012	24.17	1043	25.73	1073	27.36	1102	29.07	1132	30.83	1161	32.63

Cfm Std Air	Total Static Pressure							
	4.250		4.500		4.750		5.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8000	1087	14.97	1114	16.01	1141	17.07	1166	18.13
9000	1102	16.10	1131	17.24	1158	18.39		
10000	1114	17.13	1143	18.36				
11000	1123	18.11	1153	19.40				
12000	1129	19.08	1160	20.43				
13000	1134	20.08	1165	21.48				
14000	1137	21.08	1169	22.54				
15000	1140	22.09						
16000	1143	23.13						
17000	1146	24.21						
18000	1149	25.35						
19000	1153	26.59						
20000	1159	27.94						
21000	1165	29.43						
22000								
22500								
23000								
24000								

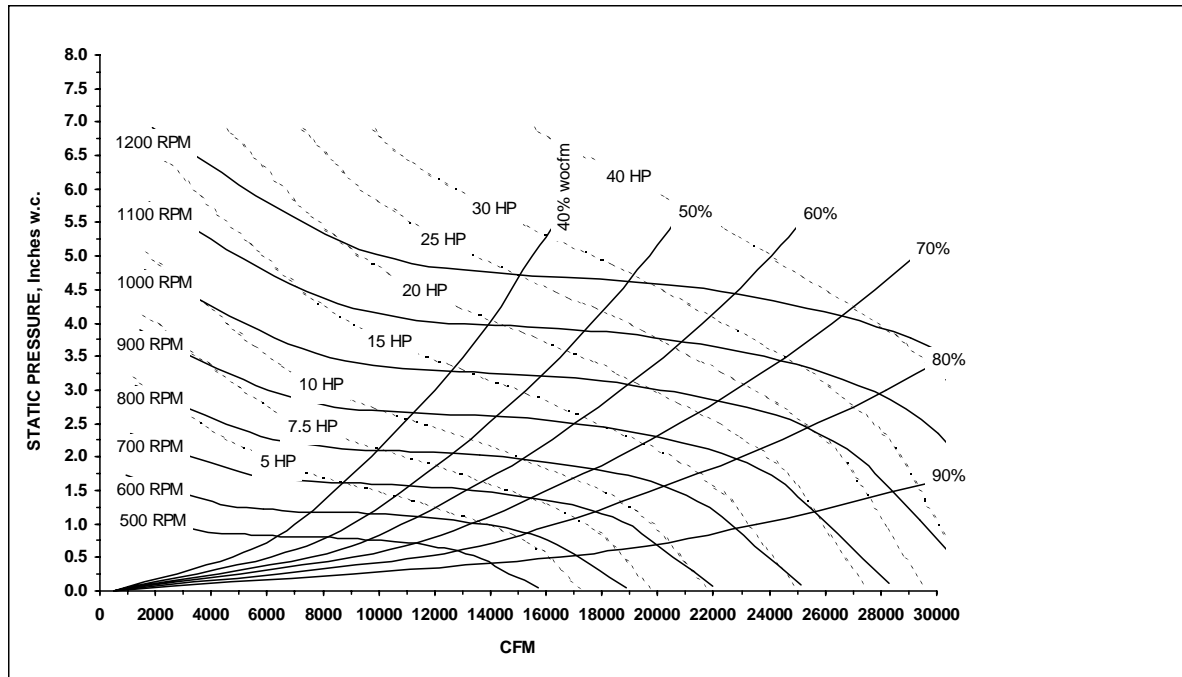
**Notes:**

1. Fan performance for 40, 50, and 55 ton rooftops is identical. However, note maximum motor hp size for each size. Contact your local Trane representative for information on non-standard motors.
2. Shaded areas at table extremes note non-standard Bhp or Rpm selection. Contact your local Trane representative for more information.
3. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops (evaporator coil, filters, optional economizer, optional exhaust fan, optional heating system, optional cooling only extended casing, optional roof curb).
4. Maximum Cfm (for UL approval) as follows: 40 Ton — 18,000 Cfm, 50 Ton — 22,500 Cfm, 55 Ton — 24,000 Cfm
5. Minimum motor horsepower is 7.5 hp.
6. Maximum motor horsepower as follows: 40 Ton — 30 hp, 50 Ton — 30 hp, 55 Ton — 30 hp
7. Maximum 7.5 hp through 15 hp motor Rpm is 1,141 Rpm, maximum 20 hp through 30 hp motor Rpm is 1,170 Rpm.
8. See RT-EB-104 for further details.

# Performance Data

(40, 50, 55 Tons)

Figure PD-6 — Supply Fan Performance WITH INLET VANES — 40, 50 and 55 Ton



Note:

1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (60, 70, 75 Tons)

**Table PD-38— Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 60, 70 and 75 Tons**

Cfm Std Air	Total Static Pressure															
	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
14000	295	1.55	366	2.32	441	3.34	505	4.44	559	5.65	606	6.89	648	8.15	687	9.41
15000	305	1.80	373	2.59	442	3.60	508	4.74	563	5.98	611	7.29	654	8.63	693	9.97
16000	316	2.08	380	2.90	444	3.88	509	5.08	566	6.33	615	7.69	659	9.10	699	10.52
17000	327	2.38	389	3.24	448	4.20	510	5.43	568	6.72	619	8.09	663	9.55	704	11.06
18000	338	2.72	399	3.62	454	4.60	512	5.78	569	7.15	621	8.53	667	10.02	708	11.58
19000	349	3.09	408	4.03	461	5.04	515	6.18	570	7.59	623	9.02	670	10.51	712	12.11
20000	361	3.48	419	4.48	469	5.52	519	6.65	572	8.03	624	9.55	672	11.06	715	12.66
21000	372	3.91	429	4.97	478	6.04	525	7.19	575	8.51	625	10.07	673	11.66	718	13.27
22000	384	4.37	440	5.51	488	6.61	533	7.79	579	9.07	627	10.60	674	12.27	719	13.93
23000	395	4.87	450	6.08	497	7.22	541	8.43	584	9.72	629	11.18	675	12.88	720	14.63
24000	407	5.41	461	6.70	508	7.88	550	9.12	591	10.43	633	11.85	677	13.51	721	15.33
25000	419	5.98	473	7.37	518	8.59	559	9.86	599	11.20	639	12.61	680	14.20	723	16.03
26000	431	6.60	484	8.08	528	9.35	569	10.66	607	12.03	645	13.45	685	14.99	725	16.76
27000	443	7.26	495	8.83	539	10.16	579	11.50	616	12.90	653	14.36	690	15.89	728	17.58

Cfm Std Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
14000	723	10.67	757	11.95	788	13.24	818	14.55	846	15.89	873	17.25	898	18.63	923	20.04
15000	730	11.32	764	12.68	796	14.04	826	15.41	855	16.81	882	18.22	908	19.65	933	21.11
16000	736	11.96	771	13.39	803	14.84	834	16.28	863	17.74	891	19.22	917	20.71	943	22.22
17000	741	12.57	777	14.10	810	15.62	841	17.15	870	18.69	899	20.23	926	21.79	951	23.36
18000	746	13.17	782	14.78	815	16.39	847	18.01	877	19.63	906	21.25	933	22.88	959	24.52
19000	751	13.76	787	15.44	821	17.14	853	18.84	883	20.54	912	22.25	940	23.96	967	25.68
20000	755	14.36	791	16.10	826	17.87	858	19.65	889	21.44	918	23.23	946	25.03	973	26.83
21000	758	14.97	795	16.76	830	18.59	863	20.45	894	22.32	924	24.19	952	26.08	979	27.96
22000	761	15.64	799	17.44	834	19.32	867	21.23	899	23.18	929	25.13	958	27.10	985	29.07
23000	762	16.37	801	18.17	838	20.06	871	22.03	903	24.03	933	26.06	962	28.10	990	30.15
24000	764	17.14	803	18.96	840	20.86	875	22.84	907	24.89	938	26.98	967	29.09	995	31.22
25000	765	17.94	805	19.82	842	21.72	878	23.70	910	25.77	942	27.90	971	30.07	1000	32.27
26000	766	18.72	806	20.70	844	22.65	880	24.64	913	26.71	945	28.86	975	31.07	1004	33.32
27000	768	19.51	807	21.57	845	23.62	881	25.65	915	27.72	948	29.87	978	32.09	1008	34.38

Cfm Std Air	Total Static Pressure															
	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
14000	947	21.47	970	22.92	993	24.39	1015	25.89	1036	27.40	1057	28.93	1077	30.49	1097	32.06
15000	957	22.59	981	24.09	1003	25.61	1025	27.16	1047	28.72	1068	30.30	1088	31.91	1108	33.53
16000	967	23.75	991	25.30	1014	26.87	1036	28.46	1057	30.08	1078	31.71	1099	33.36	1119	35.03
17000	976	24.94	1000	26.55	1023	28.17	1046	29.81	1067	31.48	1089	33.16	1109	34.86	1129	36.58
18000	985	26.17	1009	27.83	1032	29.51	1055	31.20	1077	32.92	1098	34.65	1119	36.40		
19000	992	27.40	1017	29.13	1041	30.87	1064	32.63	1086	34.40	1108	36.19	1129	37.99		
20000	999	28.63	1024	30.44	1048	32.25	1072	34.08	1094	35.91	1116	37.76				
21000	1006	29.85	1031	31.74	1055	33.63	1079	35.53	1102	37.44	1124	39.35				
22000	1012	31.04	1037	33.02	1062	35.00	1086	36.98	1109	38.96						
23000	1017	32.21	1043	34.27	1068	36.34	1092	38.41	1116	40.47						
24000	1022	33.35	1048	35.50	1074	37.65	1098	39.80	1122	41.96						
25000	1027	34.48	1053	36.70	1079	38.93	1104	41.17	1127	43.41						
26000	1031	35.60	1058	37.89	1084	40.20	1109	42.52								
27000	1036	36.71	1062	39.07	1088	41.45	1113	43.85								

**Notes:**

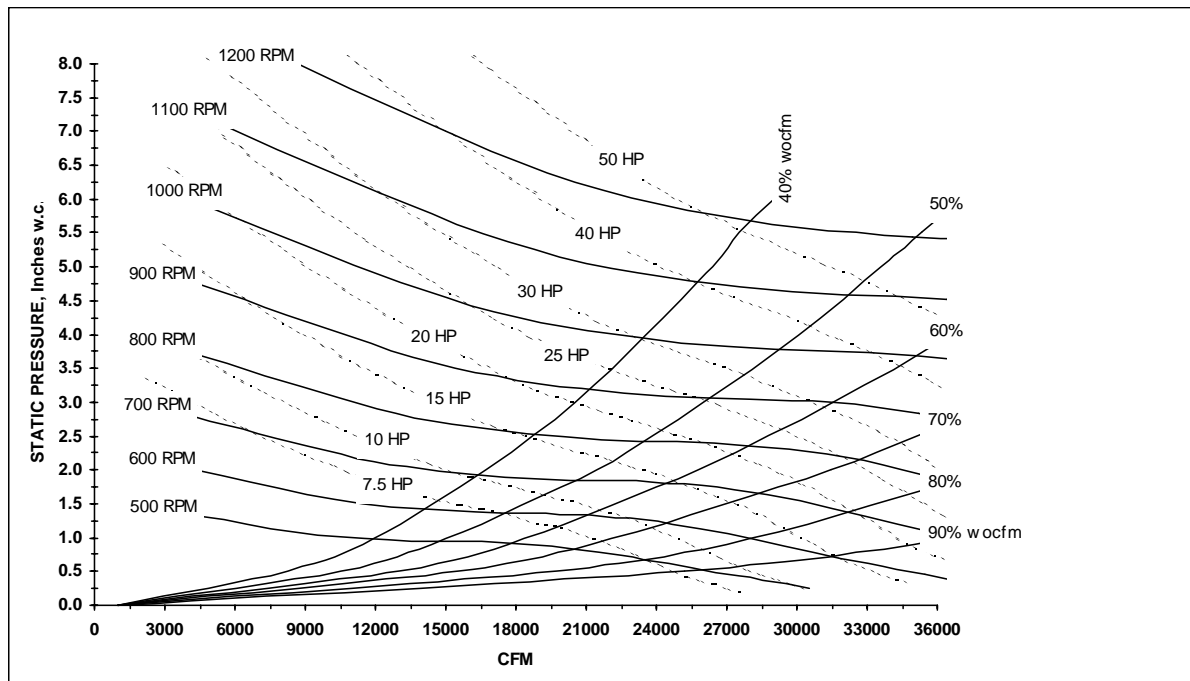
1. Fan performance for 60, 70 and 75 ton rooftops are identical. However, note maximum motor hp size for each size. Contact your local Trane representative for information on non-standard motors.
2. Shaded areas at table extremes note non-standard Bhp or Rpm selection. Contact your local Trane representative for more information.
3. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops (evaporator coil, filters, optional economizer, optional exhaust fan, optional heating system, optional cooling only extended casing, optional roof curb).
4. Maximum Cfm (for UL approval) as follows: 60 Ton — 27,000 Cfm, 70 & 75 Ton — 30,000 Cfm
5. Minimum motor horsepower is 10 hp.
6. Maximum motor horsepower is 40 hp.
7. Maximum motor Rpm is 1,130.
8. See RT-EB-104 for further details.



# Performance Data

(60, 70, 75 Tons)

Figure PD-7 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 60, 70 and 75 Tons



Note:

1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (60, 70, 75 Tons)

Table PD-39 — Supply Fan Performance WITH INLET VANES — 60, 70 and 75 Tons

Cfm Std Air	Total Static Pressure															
	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
14000	316	1.77	382	2.48	454	3.51	514	4.62	567	5.84	613	7.03	655	8.22	693	9.47
15000	330	2.07	390	2.79	458	3.83	518	4.95	572	6.22	619	7.52	661	8.78	700	10.07
16000	344	2.41	401	3.17	462	4.15	523	5.34	576	6.60	624	7.98	667	9.36	707	10.71
17000	359	2.80	413	3.59	466	4.50	528	5.76	580	7.02	629	8.43	673	9.91	713	11.36
18000	374	3.24	425	4.05	474	4.94	532	6.18	585	7.51	633	8.90	677	10.43	718	12.00
19000	390	3.72	437	4.55	485	5.47	535	6.61	590	8.04	638	9.44	682	10.96	723	12.59
20000	405	4.24	450	5.10	496	6.06	541	7.12	594	8.57	643	10.05	686	11.55	727	13.19
21000	420	4.81	464	5.70	508	6.71	550	7.74	597	9.10	647	10.69	691	12.23	732	13.84
22000	436	5.44	478	6.37	520	7.40	560	8.46	602	9.70	651	11.32	696	12.96	737	14.58
23000	452	6.11	492	7.10	532	8.14	572	9.25	610	10.43	654	11.96	700	13.71	742	15.39
24000	468	6.85	507	7.89	545	8.94	583	10.10	620	11.27	659	12.67	704	14.44	746	16.25
25000	484	7.64	522	8.74	558	9.81	595	11.01	631	12.21	667	13.53	707	15.19	750	17.10
26000	500	8.49	538	9.66	572	10.74	608	11.97	642	13.22	676	14.51	713	16.04	754	17.93
27000	516	9.41	553	10.64	586	11.75	620	12.99	654	14.30	687	15.60	720	17.04	758	18.81

Cfm Std Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
14000	729	10.76	762	12.09	794	13.45	824	14.83	853	16.22	880	17.62	906	19.03	932	20.46
15000	736	11.39	770	12.77	802	14.18	832	15.62	861	17.09	889	18.57	915	20.06	941	21.56
16000	743	12.07	777	13.48	809	14.93	840	16.43	869	17.95	897	19.50	924	21.07	950	22.65
17000	750	12.80	784	14.25	817	15.73	848	17.26	877	18.83	905	20.43	932	22.06	958	23.71
18000	756	13.53	791	15.05	824	16.58	855	18.14	884	19.75	913	21.39	940	23.07	966	24.78
19000	761	14.25	797	15.87	830	17.48	862	19.09	891	20.72	920	22.40	948	24.11	974	25.86
20000	766	14.93	802	16.67	836	18.37	868	20.06	898	21.76	927	23.47	955	25.21	981	27.00
21000	771	15.60	807	17.42	842	19.25	874	21.04	905	22.82	934	24.59	962	26.38	988	28.20
22000	775	16.31	812	18.16	847	20.08	880	21.99	911	23.88	940	25.74	968	27.60	995	29.46
23000	780	17.11	816	18.94	851	20.89	884	22.89	916	24.90	946	26.87	974	28.82	1002	30.77
24000	785	18.00	821	19.81	855	21.74	889	23.78	921	25.87	951	27.96	980	30.03	1008	32.07
25000	789	18.94	826	20.77	860	22.68	893	24.71	925	26.84	956	29.01	985	31.19	1013	33.35
26000	794	19.91	830	21.81	865	23.72	898	25.72	930	27.84	960	30.05	990	32.31	1019	34.58
27000	797	20.85	835	22.88	870	24.85	902	26.85	934	28.93	965	31.13	994	33.43	1023	35.77

Cfm Std Air	Total Static Pressure															
	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
14000	956	21.90	980	23.36	1003	24.83	1025	26.32	1047	27.83	1068	29.35	1088	30.90	1108	32.46
15000	966	23.07	989	24.60	1013	26.14	1035	27.69	1057	29.26	1078	30.84	1099	32.44	1119	34.05
16000	975	24.24	999	25.84	1022	27.45	1045	29.07	1067	30.70	1088	32.35	1109	34.01	1130	35.68
17000	983	25.38	1008	27.06	1031	28.75	1054	30.44	1076	32.15	1098	33.87	1119	35.60		
18000	992	26.51	1016	28.26	1040	30.02	1063	31.80	1085	33.58	1107	35.38	1128	37.18		
19000	1000	27.64	1024	29.45	1048	31.28	1071	33.13	1094	34.99	1116	36.86				
20000	1007	28.82	1032	30.67	1056	32.55	1079	34.46	1102	36.38	1124	38.32				
21000	1014	30.05	1039	31.93	1064	33.86	1087	35.81	1110	37.79						
22000	1021	31.35	1046	33.27	1071	35.22	1095	37.21	1118	39.23						
23000	1028	32.71	1053	34.67	1078	36.66	1102	38.67	1125	40.72						
24000	1034	34.10	1060	36.13	1085	38.17	1109	40.22								
25000	1040	35.49	1066	37.60	1091	39.71	1115	41.83								
26000	1046	36.83	1072	39.06	1097	41.27	1122	43.46								
27000	1051	38.12	1077	40.47	1103	42.80	1128	45.09								

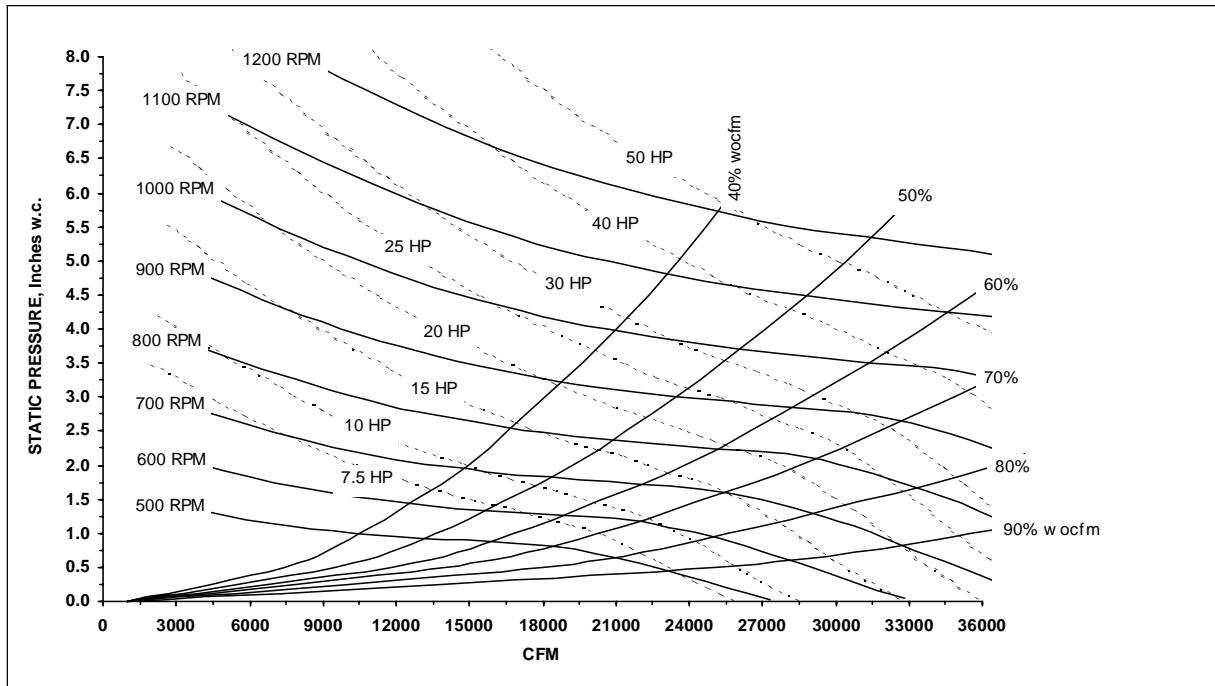
Notes:

1. Fan performance for 60, 70 and 75 ton rooftops are identical. Contact your local Trane representative for information on non-standard motors.
2. Shaded areas at table extremes note non-standard Bhp or Rpm selection. Contact your local Trane representative for more information.
3. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops (evaporator coil, filters, optional economizer, optional exhaust fan, optional heating system, optional cooling only extended casing, optional roof curb).
4. Maximum Cfm (for UL approval) as follows: 60 Ton — 27,000 Cfm, 70 & 75 Ton — 30,000 Cfm
5. Minimum motor horsepower is 10 hp.
6. Maximum motor horsepower is 40 hp.
7. Maximum motor Rpm is 1,130.
8. See RT-EB-104 for further details.

# Performance Data

(60, 70, 75 Tons)

Figure PD-8 — Supply Fan Performance WITH INLET VANES — 60, 70 and 75 Tons



Note:

1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (90Ton)

Table PD-40 — Supply Fan Performance WITH VARIABLE FREQUENCY DRIVE or WITHOUT INLET GUIDE VANES — 90Ton

Cfm Std. Air	Total Static Pressure															
	0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	646	4.62	690	6.01	732	7.13	773	8.31	808	9.53	840	10.71	872	11.97	904	13.34
28000	667	5.03	710	6.51	750	7.70	791	8.86	826	10.15	857	11.37	888	12.63	920	14.04
29000	687	5.46	730	7.03	768	8.31	809	9.45	843	10.81	875	12.09	905	13.38	935	14.74
30000	708	5.92	749	7.58	787	8.93	826	10.13	861	11.49	893	12.84	922	14.16	951	15.50
31000	729	6.40	769	8.14	806	9.60	842	10.84	879	12.17	910	13.61	939	14.94	968	16.34
32000	749	6.92	789	8.73	825	10.29	860	11.59	897	12.88	928	14.40	957	15.80	985	17.22
33000	770	7.46	809	9.36	844	10.99	878	12.39	914	13.69	946	15.20	975	16.72	1002	18.14
34000	791	8.02	829	10.01	864	11.73	896	13.21	931	14.55	963	16.02	993	17.63	1019	19.10
35000	812	8.62	849	10.69	884	12.51	915	14.06	948	15.46	981	16.88	1010	18.54	1037	20.11
36000	833	9.25	869	11.41	903	13.29	934	14.95	965	16.41	998	17.83	1028	19.49	1054	21.14
37000	854	9.90	890	12.14	923	14.12	954	15.87	983	17.40	1015	18.87	1046	20.48	1073	22.22
38000	875	10.60	910	12.91	942	14.98	973	16.81	1002	18.44	1032	19.93	1063	21.48	1090	23.30
39000	896	11.32	930	13.72	962	15.88	992	17.79	1021	19.52	1050	21.08	1080	22.60	1108	24.38
40000	918	12.08	951	14.56	982	16.80	1012	18.82	1040	20.62	1067	22.24	1097	23.80	1126	25.51
41000	939	12.86	971	15.43	1003	17.77	1032	19.86	1059	21.76	1086	23.48	1114	25.08	1143	26.70
42000	960	13.70	992	16.33	1023	18.76	1051	20.94	1078	22.91	1105	24.73	1131	26.37	1160	28.05
43000	981	14.57	1013	17.28	1043	19.78	1071	22.05	1098	24.12	1124	26.03	1149	27.75	1177	29.44
44000	1003	15.47	1034	18.27	1063	20.85	1091	23.20	1117	25.37	1143	27.34	1168	29.16	1194	30.90
45000	1024	16.41	1054	19.29	1083	21.96	1111	24.39	1137	26.63	1162	28.72	1186	30.62	1211	32.38

Cfm Std. Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	935	14.69	963	15.96	992	17.34	1022	18.73	1051	20.17	1079	21.61	1106	23.09	1133	24.58
28000	950	15.45	978	16.82	1005	18.12	1034	19.60	1062	21.03	1090	22.49	1116	23.99	1144	25.57
29000	965	16.20	993	17.66	1019	19.02	1046	20.44	1075	21.97	1102	23.47	1128	24.99	1154	26.53
30000	980	16.97	1008	18.50	1035	19.98	1061	21.43	1087	22.88	1114	24.43	1140	25.98	1166	27.60
31000	995	17.77	1023	19.30	1051	20.93	1076	22.44	1101	23.90	1127	25.46	1153	27.07	1178	28.67
32000	1011	18.66	1038	20.19	1065	21.81	1091	23.42	1116	25.00	1140	26.52	1165	28.13	1190	29.77
33000	1028	19.59	1054	21.12	1081	22.78	1107	24.46	1132	26.14	1155	27.66	1178	29.28	1201	30.85
34000	1045	20.61	1070	22.10	1096	23.75	1122	25.47	1147	27.24	1170	28.84	1193	30.52	1216	32.16
35000	1062	21.64	1087	23.18	1112	24.78	1137	26.48	1162	28.28	1186	30.12	1208	31.73	1230	33.43
36000	1080	22.76	1105	24.31	1128	25.91	1152	27.60	1177	29.38	1200	31.19	1224	33.06	1246	34.83
37000	1097	23.86	1122	25.46	1145	27.10	1169	28.78	1192	30.55	1215	32.39	1239	34.32	1261	36.21
38000	1115	25.02	1139	26.67	1163	28.37	1185	30.03	1208	31.78	1230	33.59	1254	35.56	1276	37.52
39000	1133	26.18	1157	27.94	1180	29.64	1202	31.36	1224	33.08	1247	34.94	1268	36.79	1291	38.78
40000	1151	27.40	1175	29.24	1197	30.98	1220	32.75	1242	34.53	1263	36.29	1284	38.18	1306	40.22
41000	1168	28.62	1192	30.54	1215	32.40	1237	34.16	1259	35.99	1280	37.80	1301	39.66	1322	41.65
42000	1186	29.90	1211	31.91	1233	33.78	1255	35.66	1276	37.46	1297	39.32	1317	41.23	1338	43.18
43000	1204	31.18	1228	33.28	1251	35.23	1272	37.15	1293	39.02	1314	40.93	1334	42.81	1354	44.71
44000	1221	32.65	1246	34.66	1268	36.69	1290	38.68	1311	40.68	1331	42.56	1351	44.48	1371	46.43
45000	1239	34.19	1263	36.03	1286	38.23	1308	40.30	1328	42.32	1349	44.29	1369	46.26	1387	48.17

Cfm Std. Air	Total Static Pressure															
	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	1160	26.16	1186	27.74	1211	29.37	1239	31.13	1264	32.84	1288	34.49	1315	36.34	1339	38.10
28000	1170	27.15	1195	28.67	1220	30.31	1246	32.08	1271	33.81	1296	35.56	1322	37.43	1345	39.11
29000	1180	28.14	1205	29.73	1230	31.38	1255	33.08	1280	34.82	1304	36.58	1328	38.37	1352	40.26
30000	1192	29.23	1216	30.78	1240	32.44	1266	34.22	1290	35.98	1312	37.66	1335	39.46	1360	41.36
31000	1202	30.25	1227	31.96	1252	33.64	1274	35.28	1298	37.03	1323	38.91	1345	40.72	1368	42.53
32000	1214	31.39	1239	33.12	1263	34.83	1286	36.57	1308	38.25	1332	40.14	1355	41.95	1377	43.77
33000	1227	32.65	1250	34.28	1274	36.08	1298	37.84	1321	39.64	1342	41.36	1364	43.18	1387	45.10
34000	1239	33.81	1262	35.56	1285	37.32	1309	39.20	1332	41.01	1353	42.75	1375	44.60	1398	46.55
35000	1252	35.08	1275	36.89	1297	38.62	1321	40.53	1343	42.38	1365	44.23	1387	46.10	1408	47.97
36000	1268	36.54	1289	38.26	1310	40.05	1332	41.84	1354	43.72	1377	45.70	1398	47.59	1420	49.59
37000	1283	37.98	1303	39.67	1323	41.44	1345	43.29	1367	45.22	1388	47.15	1411	49.18	1431	51.09
38000	1297	39.39	1318	41.23	1339	43.07	1359	44.90	1379	46.70	1401	48.78	1422	50.74	1443	52.69
39000	1314	40.92	1334	42.77	1354	44.67	1373	46.46	1393	48.32	1413	50.26	1434	52.27	1455	54.37
40000	1328	42.21	1349	44.35	1370	46.35	1389	48.20	1408	50.13	1427	52.02	1447	53.99	1467	56.03
41000	1343	43.69	1365	45.87	1385	47.98	1404	49.91	1424	51.90	1442	53.86	1462	55.90	1481	57.89
42000	1358	45.16	1380	47.38	1400	49.53	1419	51.58	1438	53.65	1458	55.79	1476	57.77	1494	59.70
43000	1375	46.83	1394	48.88	1415	51.07	1435	53.27	1455	55.61	1473	57.58	1491	59.62	1509	61.73
44000	1391	48.51	1410	50.50	1430	52.72	1450	54.96	1469	57.20	1489	59.58	1507	61.69	1524	63.73
45000	1407	50.19	1426	52.33	1445	54.36	1464	56.64	1485	59.05	1502	61.19	1523	63.73	1540	65.85

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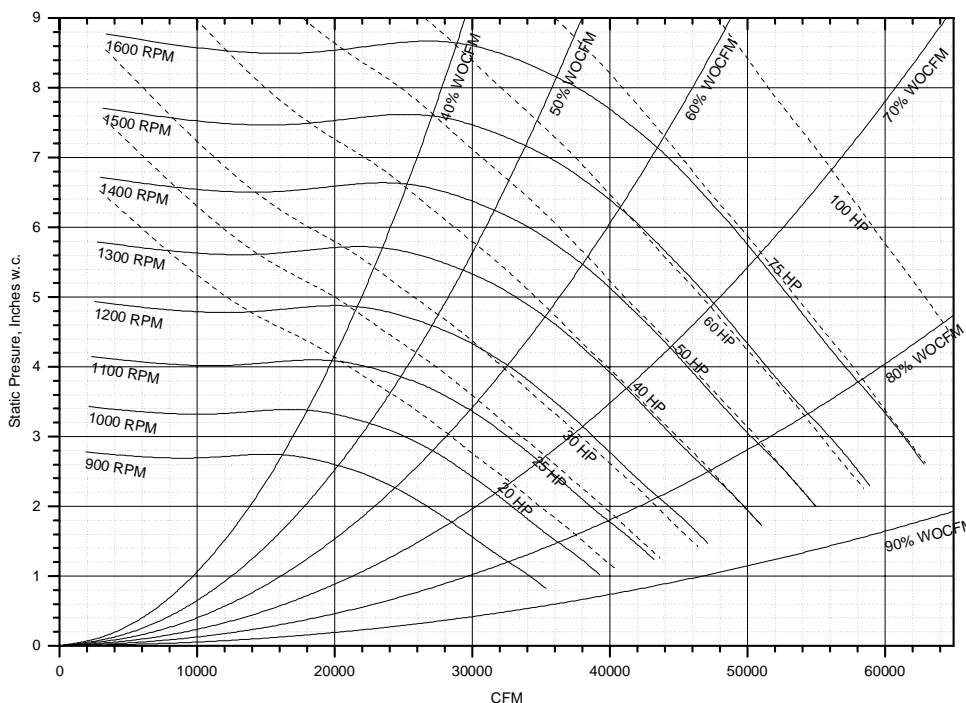
# Performance Data (90 Ton)

**Table PD-40 — Supply Fan Performance WITH VARIABLE FREQUENCY DRIVE or WITHOUT INLET GUIDE VANES — 90 Ton (Cont.)**

Cfm Std. Air	Total Static Pressure													
	6.250		6.500		6.750		7.000		7.250		7.500		7.750	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	1363	39.85	1388	41.68	1414	43.54	1437	45.26	1461	47.06	1486	48.96	1508	50.67
28000	1371	41.10	1393	42.85	1417	44.70	1441	46.61	1466	48.56	1489	50.33	1512	52.19
29000	1375	42.04	1398	43.93	1423	45.91	1445	47.74	1469	49.80	1491	51.64	1515	53.66
30000	1382	43.16	1406	45.18	1428	47.06	1453	49.17	1475	51.11	1498	53.15	1518	54.98
31000	1391	44.45	1413	46.37	1437	48.39	1458	50.25	1479	52.20	1501	54.25	1524	56.40
32000	1400	45.71	1422	47.64	1444	49.67	1465	51.55	1486	53.51	1508	55.58	1530	57.74
33000	1408	46.93	1430	48.87	1452	50.91	1473	52.93	1496	55.05	1517	57.14	1537	59.16
34000	1418	48.38	1440	50.32	1462	52.37	1481	54.27	1503	56.40	1524	58.50	1544	60.53
35000	1430	49.93	1449	51.76	1471	53.81	1490	55.72	1512	57.86	1532	59.96	1552	62.01
36000	1441	51.47	1461	53.44	1481	55.39	1502	57.43	1521	59.43	1542	61.55	1562	63.77
37000	1452	53.10	1473	55.10	1492	57.07	1513	59.13	1532	61.15	1552	63.26	1571	65.33
38000	1464	54.72	1484	56.74	1505	58.86	1523	60.81	1542	62.85	1562	64.98	1582	67.21
39000	1474	56.33	1494	58.37	1515	60.51	1535	62.61	1555	64.83	1573	66.83	1592	68.92
40000	1487	58.15	1507	60.24	1528	62.42	1546	64.40	1566	66.63	1584	68.66	1603	70.93
41000	1500	59.94	1519	62.08	1538	64.16	1558	66.32	1576	68.43	1595	70.62	1615	72.92
42000	1512	61.69	1531	63.88	1551	66.15	1569	68.21	1588	70.35	1607	72.58	1626	74.89
43000	1527	63.79	1545	65.91	1563	67.95	1582	70.21	1600	72.40	1619	74.67	1637	76.85
44000	1542	65.85	1559	67.89	1576	70.00	1594	72.18	1612	74.41	1631	76.72	1650	79.12
45000	1558	68.03	1575	70.14	1592	72.31	1610	74.56	1625	76.54	1643	78.91		

- Notes:
1. Shaded areas indicate non-standard BHP or RPM selections. Contact your local Trane representative for more information.
  2. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops. (evaporator coil, filters, optional economizer, optional heating system, optional roof curb).
  3. Maximum static pressure leaving the rooftop is 4.0" H2O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H2O.
  4. Minimum motor horsepower is 30 hp.
  5. See RT-EB-104 for further details.

**Figure PD-9— Supply Fan Performance WITH VARIABLE FREQUENCY DRIVE or WITHOUT INLET GUIDE VANES — 90 Ton**



- Note:
1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (90Ton)

Table PD-41 — Supply Fan Performance WITH INLET GUIDE VANES — 90Ton

Cfm Std. Air	Total Static Pressure															
	0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	695	6.14	734	7.25	770	8.39	805	9.55	840	10.81	873	12.11	904	13.44	935	14.77
28000	718	6.76	756	7.92	791	9.07	825	10.28	858	11.56	891	12.90	922	14.26	952	15.65
29000	741	7.42	778	8.62	812	9.81	845	11.05	878	12.35	909	13.73	940	15.12	969	16.53
30000	764	8.13	800	9.37	833	10.61	866	11.88	897	13.19	928	14.59	958	16.05	987	17.50
31000	787	8.88	822	10.17	854	11.44	886	12.74	916	14.08	947	15.51	976	16.99	1004	18.47
32000	810	9.68	844	11.01	876	12.32	906	13.66	936	15.03	966	16.48	995	17.97	1023	19.52
33000	833	10.53	866	11.90	897	13.25	927	14.63	957	16.04	985	17.50	1014	19.02	1041	20.57
34000	857	11.42	889	12.84	919	14.24	948	15.65	977	17.09	1005	18.57	1032	20.09	1059	21.71
35000	880	12.37	911	13.83	941	15.28	969	16.71	998	18.21	1025	19.70	1051	21.25	1078	22.86
36000	903	13.38	934	14.88	963	16.37	991	17.85	1018	19.35	1045	20.89	1071	22.48	1097	24.11
37000	927	14.44	957	15.98	985	17.52	1012	19.03	1039	20.58	1065	22.14	1091	23.77	1116	25.42
38000	950	15.55	979	17.14	1007	18.71	1034	20.27	1060	21.85	1086	23.46	1111	25.08	1135	26.76
39000	973	16.72	1002	18.36	1030	19.98	1056	21.59	1081	23.19	1106	24.81	1131	26.51	1155	28.18
40000	997	17.95	1025	19.64	1052	21.29	1077	22.94	1102	24.57	1127	26.27	1151	27.98	1175	29.67
41000	1020	19.24	1048	20.97	1074	22.68	1099	24.36	1124	26.04	1148	27.75	1171	29.47	1195	31.24
42000	1044	20.60	1071	22.37	1097	24.12	1122	25.86	1145	27.55	1169	29.31	1192	31.09	1215	32.89
43000	1067	22.02	1094	23.84	1119	25.63	1144	27.41	1167	29.18	1190	30.93	1213	32.75	1236	34.58
44000	1091	23.50	1117	25.35	1142	27.19	1166	29.02	1189	30.82	1212	32.65	1234	34.44	1256	36.36
45000	1114	25.05	1140	26.95	1165	28.85	1188	30.69	1211	32.56	1233	34.40	1255	36.26	1277	38.17

Cfm Std. Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	964	16.12	993	17.48	1024	18.97	1053	20.45	1081	21.97	1110	23.54	1139	25.13	1166	26.75
28000	980	17.00	1009	18.42	1038	19.90	1066	21.38	1093	22.90	1122	24.51	1149	26.14	1177	27.79
29000	998	17.97	1026	19.42	1053	20.88	1080	22.38	1108	24.00	1134	25.55	1162	27.23	1188	28.85
30000	1015	18.95	1042	20.42	1069	21.94	1095	23.50	1122	25.08	1148	26.68	1173	28.29	1200	30.01
31000	1032	19.99	1058	21.49	1085	23.07	1111	24.59	1136	26.19	1162	27.84	1188	29.56	1212	31.21
32000	1050	21.08	1076	22.64	1102	24.20	1127	25.78	1151	27.38	1177	29.10	1201	30.75	1226	32.51
33000	1068	22.20	1094	23.79	1119	25.42	1144	27.07	1169	28.73	1193	30.40	1216	32.05	1246	33.79
34000	1086	23.37	1112	25.04	1137	26.68	1161	28.35	1185	30.02	1208	31.68	1231	33.45	1254	35.19
35000	1104	24.55	1130	26.28	1154	27.95	1178	29.68	1202	31.41	1225	33.14	1248	34.90	1270	36.71
36000	1122	25.82	1148	27.58	1172	29.32	1195	31.07	1219	32.87	1241	34.59	1264	36.42	1286	38.21
37000	1141	27.16	1165	28.89	1189	30.70	1213	32.52	1236	34.32	1258	36.10	1281	38.00	1303	39.85
38000	1160	28.52	1184	30.31	1208	32.13	1231	34.03	1254	35.91	1276	37.76	1297	39.57	1319	41.49
39000	1179	29.94	1203	31.81	1226	33.64	1249	35.54	1272	37.50	1293	39.35	1315	41.30	1335	43.12
40000	1199	31.49	1222	33.32	1245	35.22	1267	37.13	1289	39.08	1311	41.08	1333	43.03	1353	44.91
41000	1218	33.03	1241	34.91	1263	36.82	1286	38.79	1308	40.82	1328	42.74	1350	44.76	1371	46.79
42000	1238	34.70	1260	36.59	1282	38.50	1304	40.55	1326	42.58	1347	44.56	1368	46.66	1388	48.67
43000	1257	36.41	1279	38.30	1301	40.27	1323	42.32	1344	44.34	1365	46.39	1386	48.55	1406	50.65
44000	1278	38.21	1299	40.11	1320	42.07	1341	44.11	1363	46.28	1383	48.31	1404	50.46	1424	52.62
45000	1298	40.11	1319	42.02	1340	44.05	1361	46.07	1381	48.15	1402	50.34	1422	52.47	1442	54.70

Cfm Std. Air	Total Static Pressure															
	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	1194	28.37	1222	30.11	1249	31.85	1278	33.71	1307	35.64	1334	37.52	1361	39.44	1390	41.50
28000	1203	29.43	1231	31.21	1258	32.97	1284	34.70	1313	36.71	1338	38.51	1367	40.63	1392	42.47
29000	1215	30.60	1240	32.27	1266	34.05	1293	35.96	1320	37.83	1344	39.65	1371	41.67	1397	43.62
30000	1225	31.73	1250	33.43	1276	35.25	1303	37.19	1326	38.91	1353	40.92	1378	42.87	1404	44.94
31000	1238	32.97	1262	34.71	1288	36.57	1312	38.38	1337	40.30	1361	42.16	1385	44.13	1411	46.21
32000	1250	34.26	1275	36.04	1299	37.86	1322	39.70	1347	41.66	1370	43.55	1395	45.54	1417	47.44
33000	1265	35.66	1287	37.41	1311	39.27	1335	41.16	1358	43.07	1382	45.09	1404	46.91	1428	49.05
34000	1277	36.96	1301	38.84	1323	40.66	1347	42.59	1371	44.63	1393	46.60	1415	48.46	1439	50.63
35000	1293	38.54	1315	40.32	1337	42.19	1360	44.17	1382	46.07	1404	48.07	1427	50.18	1449	52.17
36000	1309	40.11	1330	41.94	1352	43.87	1373	45.72	1395	47.66	1417	49.71	1440	51.86	1461	53.90
37000	1324	41.65	1345	43.54	1367	45.54	1388	47.44	1409	49.43	1431	51.53	1452	53.51	1473	55.59
38000	1340	43.35	1361	45.30	1381	47.17	1402	49.13	1423	51.18	1445	53.33	1465	55.36	1486	57.49
39000	1357	45.12	1377	47.05	1397	48.97	1418	50.99	1439	53.11	1458	55.10	1478	57.18	1499	59.35
40000	1373	46.89	1394	48.88	1415	50.96	1433	52.84	1454	55.02	1473	57.07	1493	59.20	1513	61.31
41000	1390	48.74	1411	50.79	1430	52.84	1450	54.88	1469	56.90	1488	59.01	1508	61.21	1526	63.24
42000	1408	50.69	1428	52.81	1447	54.82	1466	56.92	1485	59.00	1505	61.17	1523	63.30	1543	65.53
43000	1426	52.74	1445	54.82	1464	56.89	1484	59.06	1501	61.08	1521	63.31	1539	65.51	1557	67.66
44000	1444	54.79	1462	56.83	1482	59.08	1500	61.20	1519	63.40	1537	65.57	1556	67.83	1574	70.04
45000	1462	56.94	1480	59.06	1499	61.27	1518	63.45	1536	65.72	1554	67.82	1571	70.01	1589	72.27

(Continued on the following page)

# Performance Data (90 Ton)

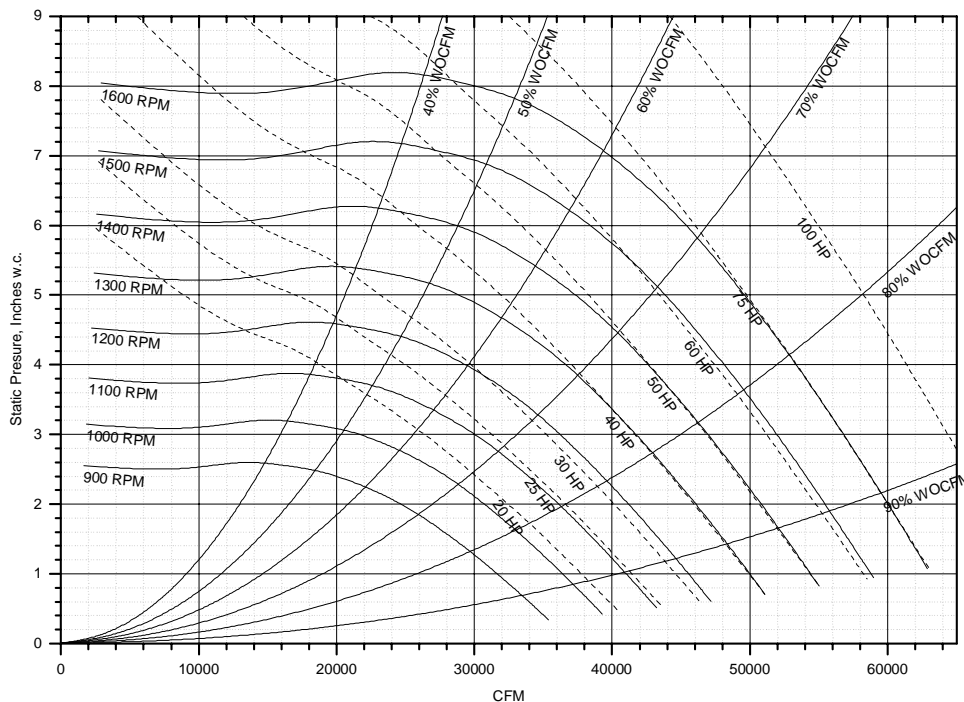
**Table PD-41 — Supply Fan Performance WITH INLET GUIDE VANES — 90 Ton (Cont.)**

Cfm Std. Air	Total Static Pressure													
	6.250		6.500		6.750		7.000		7.250		7.500		7.750	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	1416	43.47	1440	45.34	1467	47.44	1492	49.40	1516	51.32	1540	53.35	1562	55.17
28000	1420	44.66	1444	46.52	1472	48.74	1497	50.83	1520	52.76	1544	54.79	1568	56.92
29000	1424	45.81	1450	47.90	1474	49.87	1499	51.95	1524	54.15	1547	56.17	1573	58.46
30000	1428	46.91	1453	49.00	1479	51.22	1503	53.30	1528	55.49	1552	57.66	1577	59.94
31000	1434	48.20	1459	50.30	1484	52.52	1508	54.60	1532	56.79	1557	59.10	1579	61.23
32000	1442	49.55	1464	51.55	1489	53.77	1512	55.85	1538	58.33	1559	60.35	1584	62.78
33000	1451	51.09	1473	53.11	1496	55.23	1518	57.33	1541	59.53	1565	61.85	1589	64.28
34000	1461	52.70	1482	54.63	1506	56.90	1527	59.03	1550	61.26	1570	63.29	1594	65.73
35000	1471	54.27	1491	56.22	1515	58.53	1536	60.68	1558	62.93	1578	64.99	1601	67.45
36000	1482	55.91	1503	58.03	1523	60.10	1544	62.28	1566	64.55	1589	66.93	1609	69.11
37000	1494	57.77	1514	59.79	1534	61.91	1555	64.11	1576	66.42	1597	68.68	1618	71.04
38000	1505	59.46	1527	61.78	1547	63.94	1568	66.19	1586	68.24	1608	70.69	1627	72.92
39000	1518	61.37	1540	63.74	1560	65.94	1579	68.09	1598	70.33	1617	72.50	1638	74.92
40000	1533	63.50	1552	65.66	1572	67.90	1592	70.24	1610	72.37	1629	74.58	1649	77.03
41000	1547	65.62	1566	67.82	1585	69.97	1603	72.20	1624	74.68	1642	76.94	1661	79.28
42000	1561	67.70	1580	69.96	1598	72.15	1617	74.44	1635	76.65	1654	79.10		
43000	1576	69.89	1593	72.06	1613	74.46	1630	76.64	1650	79.22				
44000	1591	72.20	1609	74.43	1628	76.89	1645	79.12						
45000	1607	74.63	1625	76.92	1643	79.30								

**Notes:**

1. Shaded areas indicate non-standard BHP or RPM selections. Contact your local Trane representative for more information.
2. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops. (evaporator coil, filters, optional economizer, optional heating system, optional roof curb).
3. Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.
4. Minimum motor horsepower is 30 hp.
5. See RT-EB-104 for further details.

**Figure PD-10— Supply Fan Performance WITH INLET GUIDE VANES — 90 Ton**



**Note:**

1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (105, 115, 130 Tons)

**Table PD-42 — Supply Fan Performance WITH VARIABLE FREQUENCY DRIVE or WITHOUT INLET GUIDE VANES — 105, 115, 130 Ton**

Cfm	Total Static Pressure																
	Std. Air	0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	729	6.40	769	8.14	806	9.60	842	10.84	879	12.17	910	13.61	939	14.94	968	16.34	
32000	749	6.92	789	8.73	825	10.29	860	11.59	897	12.88	928	14.40	957	15.80	985	17.22	
33000	770	7.46	809	9.36	844	10.99	878	12.39	914	13.69	946	15.20	975	16.72	1002	18.14	
34000	791	8.02	829	10.01	864	11.73	896	13.21	931	14.55	963	16.02	993	17.63	1019	19.10	
35000	812	8.62	849	10.69	884	12.51	915	14.06	948	15.46	981	16.88	1010	18.54	1037	20.11	
36000	833	9.25	869	11.41	903	13.29	934	14.95	965	16.41	998	17.83	1028	19.49	1054	21.14	
37000	854	9.90	890	12.14	923	14.12	954	15.87	983	17.40	1015	18.87	1046	20.48	1073	22.22	
38000	875	10.60	910	12.91	942	14.98	973	16.81	1002	18.44	1032	19.93	1063	21.48	1090	23.30	
39000	896	11.32	930	13.72	962	15.88	992	17.79	1021	19.52	1050	21.08	1080	22.60	1108	24.38	
40000	918	12.08	951	14.56	982	16.80	1012	18.82	1040	20.62	1067	22.24	1097	23.80	1126	25.51	
41000	939	12.86	971	15.43	1003	17.77	1032	19.86	1059	21.76	1086	23.48	1114	25.08	1143	26.70	
42000	960	13.70	992	16.33	1023	18.76	1051	20.94	1078	22.91	1105	24.73	1131	26.37	1160	28.05	
43000	981	14.57	1013	17.28	1043	19.78	1071	22.05	1098	24.12	1124	26.03	1149	27.75	1177	29.44	
44000	1003	15.47	1034	18.27	1063	20.85	1091	23.20	1117	25.37	1143	27.34	1168	29.16	1194	30.90	
45000	1024	16.41	1054	19.29	1083	21.96	1111	24.39	1137	26.63	1162	28.72	1186	30.62	1211	32.38	
46000	1045	17.38	1075	20.36	1104	23.10	1131	25.63	1156	27.96	1181	30.10	1205	32.09	1229	33.93	

Cfm	Total Static Pressure																
	Std. Air	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	995	17.77	1023	19.30	1051	20.93	1076	22.44	1101	23.90	1127	25.46	1153	27.07	1178	28.67	
32000	1011	18.66	1038	20.19	1065	21.81	1091	23.42	1116	25.00	1140	26.52	1165	28.13	1190	29.77	
33000	1028	19.59	1054	21.12	1081	22.78	1107	24.46	1132	26.14	1155	27.66	1178	29.28	1201	30.85	
34000	1045	20.61	1070	22.10	1096	23.75	1122	25.47	1147	27.24	1170	28.84	1193	30.52	1216	32.16	
35000	1062	21.64	1087	23.18	1112	24.78	1137	26.48	1162	28.28	1186	30.12	1208	31.73	1230	33.43	
36000	1080	22.76	1105	24.31	1128	25.91	1152	27.60	1177	29.38	1200	31.19	1224	33.06	1246	34.83	
37000	1097	23.86	1122	25.46	1145	27.10	1169	28.78	1192	30.55	1215	32.39	1239	34.32	1261	36.21	
38000	1115	25.02	1139	26.67	1163	28.37	1185	30.03	1208	31.78	1230	33.59	1254	35.56	1276	37.52	
39000	1133	26.18	1157	27.94	1180	29.64	1202	31.36	1224	33.08	1247	34.94	1268	36.79	1291	38.78	
40000	1151	27.40	1175	29.24	1197	30.98	1220	32.75	1242	34.53	1263	36.29	1284	38.18	1306	40.22	
41000	1168	28.62	1192	30.54	1215	32.40	1237	34.16	1259	35.99	1280	37.80	1301	39.66	1322	41.65	
42000	1186	29.90	1211	31.91	1233	33.78	1255	35.66	1276	37.46	1297	39.32	1317	41.23	1338	43.18	
43000	1204	31.18	1228	33.28	1251	35.23	1272	37.15	1293	39.02	1314	40.93	1334	42.81	1354	44.71	
44000	1221	32.65	1246	34.66	1268	36.69	1290	38.68	1311	40.68	1331	42.56	1351	44.48	1371	46.43	
45000	1239	34.19	1263	36.03	1286	38.23	1308	40.30	1328	42.32	1349	44.29	1369	46.26	1387	48.17	
46000	1255	35.78	1281	37.60	1304	39.76	1326	41.92	1347	44.02	1366	46.03	1386	48.06	1405	50.01	

Cfm	Total Static Pressure																
	Std. Air	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	1202	30.25	1227	31.96	1252	33.64	1274	35.28	1298	37.03	1323	38.91	1345	40.72	1368	42.53	
32000	1214	31.39	1239	33.12	1263	34.83	1286	36.57	1308	38.25	1332	40.14	1355	41.95	1377	43.77	
33000	1227	32.65	1250	34.28	1274	36.08	1298	37.84	1321	39.64	1342	41.36	1364	43.18	1387	45.10	
34000	1239	33.81	1262	35.56	1285	37.32	1309	39.20	1332	41.01	1353	42.75	1375	44.60	1398	46.55	
35000	1252	35.08	1275	36.89	1297	38.62	1321	40.53	1343	42.38	1365	44.23	1387	46.10	1408	47.97	
36000	1268	36.54	1289	38.26	1310	40.05	1332	41.84	1354	43.72	1377	45.70	1398	47.59	1420	49.59	
37000	1283	37.98	1303	39.67	1323	41.44	1345	43.29	1367	45.22	1388	47.15	1411	49.18	1431	51.09	
38000	1297	39.39	1318	41.23	1339	43.07	1359	44.90	1379	46.70	1401	48.78	1422	50.74	1443	52.69	
39000	1314	40.92	1334	42.77	1354	44.67	1373	46.46	1393	48.32	1413	50.26	1434	52.27	1455	54.37	
40000	1328	42.21	1349	44.35	1370	46.35	1389	48.20	1408	50.13	1427	52.02	1447	53.99	1467	56.03	
41000	1343	43.69	1365	45.87	1385	47.98	1404	49.91	1424	51.90	1442	53.86	1462	55.90	1481	57.89	
42000	1358	45.16	1380	47.38	1400	49.53	1419	51.58	1438	53.65	1458	55.79	1476	57.77	1494	59.70	
43000	1375	46.83	1394	48.88	1415	51.07	1435	53.27	1455	55.61	1473	57.58	1491	59.62	1509	61.73	
44000	1391	48.51	1410	50.50	1430	52.72	1450	54.96	1469	57.20	1489	59.58	1507	61.69	1524	63.73	
45000	1407	50.19	1426	52.33	1445	54.36	1464	56.64	1485	59.05	1502	61.19	1523	63.73	1540	65.85	
46000	1424	52.08	1443	54.17	1461	56.25	1480	58.44	1499	60.76	1518	63.07	1537	65.51	1555	67.92	

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# Performance Data

(105, 115, 130 Tons)

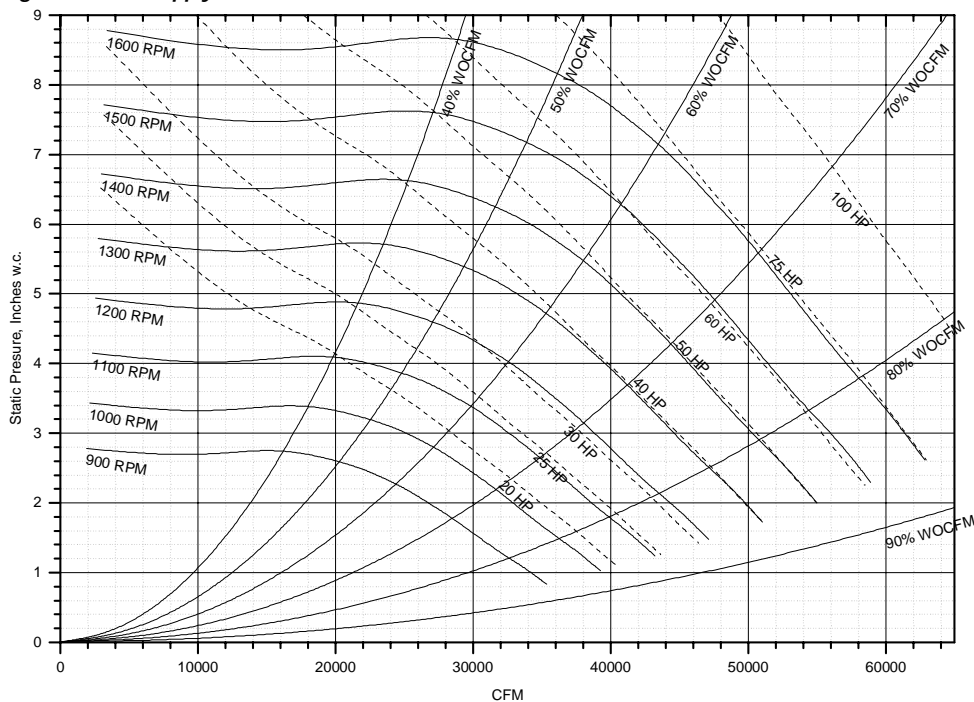
**Table PD-42 — Supply Fan Performance WITH VARIABLE FREQUENCY DRIVE or WITHOUT INLET GUIDE VANES — 105, 115, 130 Tons (Cont.)**

Cfm Std. Air	Total Static Pressure													
	6.250		6.500		6.750		7.000		7.250		7.500		7.750	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	1391	44.45	1413	46.37	1437	48.39	1458	50.25	1479	52.20	1501	54.25	1524	56.40
32000	1400	45.71	1422	47.64	1444	49.67	1465	51.55	1486	53.51	1508	55.58	1530	57.74
33000	1408	46.93	1430	48.87	1452	50.91	1473	52.93	1496	55.05	1517	57.14	1537	59.16
34000	1418	48.38	1440	50.32	1462	52.37	1481	54.27	1503	56.40	1524	58.50	1544	60.53
35000	1430	49.93	1449	51.76	1471	53.81	1490	55.72	1512	57.86	1532	59.96	1552	62.01
36000	1441	51.47	1461	53.44	1481	55.39	1502	57.43	1521	59.43	1542	61.55	1562	63.77
37000	1452	53.10	1473	55.10	1492	57.07	1513	59.13	1532	61.15	1552	63.26	1571	65.33
38000	1464	54.72	1484	56.74	1505	58.86	1523	60.81	1542	62.85	1562	64.98	1582	67.21
39000	1474	56.33	1494	58.37	1515	60.51	1535	62.61	1555	64.83	1573	66.83	1592	68.92
40000	1487	58.15	1507	60.24	1528	62.42	1546	64.40	1566	66.63	1584	68.66	1603	70.93
41000	1500	59.94	1519	62.08	1538	64.16	1558	66.32	1576	68.43	1595	70.62	1615	72.92
42000	1512	61.69	1531	63.88	1551	66.15	1569	68.21	1588	70.35	1607	72.58	1626	74.89
43000	1527	63.79	1545	65.91	1563	67.95	1582	70.21	1600	72.40	1619	74.67	1637	76.85
44000	1542	65.85	1559	67.89	1576	70.00	1594	72.18	1612	74.41	1631	76.72	1650	79.12
45000	1558	68.03	1575	70.14	1592	72.31	1610	74.56	1625	76.54	1643	78.91		
46000	1573	70.18	1590	72.35	1607	74.59	1623	76.74	1640	78.95				

**Notes:**

1. Shaded areas indicate non-standard BHP or RPM selections. Contact your local Trane representative for more information.
2. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops, (evaporator coil, filters, optional economizer, optional heating system, optional roof curb).
3. Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.
4. Maximum Cfm as follows: 105 Ton Std. — 44,000 Cfm, 105 Hi-Cap., 115, 130 Ton — 46,000 Cfm
5. Minimum motor horsepower is 30 hp.
6. See RT-EB-104 for further details.

**Figure PD-11— Supply Fan Performance WITH VARIABLE FREQUENCY DRIVE or WITHOUT INLET GUIDE VANES — 105, 115, 130 Tons**



**Note:**

1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (105, 115, 130 Tons)

**Table PD-43— Supply Fan Performance WITH INLET GUIDE VANES — 105, 115, 130 Tons**

Cfm Std. Air	Total Static Pressure															
	0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	787	8.88	822	10.17	854	11.44	886	12.74	916	14.08	947	15.51	976	16.99	1004	18.47
32000	810	9.68	844	11.01	876	12.32	906	13.66	936	15.03	966	16.48	995	17.97	1023	19.52
33000	833	10.53	866	11.90	897	13.25	927	14.63	957	16.04	985	17.50	1014	19.02	1041	20.57
34000	857	11.42	889	12.84	919	14.24	948	15.65	977	17.09	1005	18.57	1032	20.09	1059	21.71
35000	880	12.37	911	13.83	941	15.28	969	16.71	998	18.21	1025	19.70	1051	21.25	1078	22.86
36000	903	13.38	934	14.88	963	16.37	991	17.85	1018	19.35	1045	20.89	1071	22.48	1097	24.11
37000	927	14.44	957	15.98	985	17.52	1012	19.03	1039	20.58	1065	22.14	1091	23.77	1116	25.42
38000	950	15.55	979	17.14	1007	18.71	1034	20.27	1060	21.85	1086	23.46	1111	25.08	1135	26.76
39000	973	16.72	1002	18.36	1030	19.98	1056	21.59	1081	23.19	1106	24.81	1131	26.51	1155	28.18
40000	997	17.95	1025	19.64	1052	21.29	1077	22.94	1102	24.57	1127	26.27	1151	27.98	1175	29.67
41000	1020	19.24	1048	20.97	1074	22.68	1099	24.36	1124	26.04	1148	27.75	1171	29.47	1195	31.24
42000	1044	20.60	1071	22.37	1097	24.12	1122	25.86	1145	27.55	1169	29.31	1192	31.09	1215	32.89
43000	1067	22.02	1094	23.84	1119	25.63	1144	27.41	1167	29.18	1190	30.93	1213	32.75	1236	34.58
44000	1091	23.50	1117	25.35	1142	27.19	1166	29.02	1189	30.82	1212	32.65	1234	34.44	1256	36.36
45000	1114	25.05	1140	26.95	1165	28.85	1188	30.69	1211	32.56	1233	34.40	1255	36.26	1277	38.17
46000	1138	26.67	1163	28.62	1187	30.53	1210	32.46	1233	34.34	1254	36.20	1276	38.12	1297	40.06

Cfm Std. Air	Total Static Pressure															
	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	1032	19.99	1058	21.49	1085	23.07	1111	24.59	1136	26.19	1162	27.84	1188	29.56	1212	31.21
32000	1050	21.08	1076	22.64	1102	24.20	1127	25.78	1151	27.38	1177	29.10	1201	30.75	1226	32.51
33000	1068	22.20	1094	23.79	1119	25.42	1144	27.07	1169	28.73	1193	30.40	1216	32.05	1240	33.79
34000	1086	23.37	1112	25.04	1137	26.68	1161	28.35	1185	30.02	1208	31.68	1231	33.45	1254	35.19
35000	1104	24.55	1130	26.28	1154	27.95	1178	29.68	1202	31.41	1225	33.14	1248	34.90	1270	36.71
36000	1122	25.82	1148	27.58	1172	29.32	1195	31.07	1219	32.87	1241	34.59	1264	36.42	1286	38.21
37000	1141	27.16	1165	28.89	1189	30.70	1213	32.52	1236	34.32	1258	36.10	1281	38.00	1303	39.85
38000	1160	28.52	1184	30.31	1208	32.13	1231	34.03	1254	35.91	1276	37.76	1297	39.57	1319	41.49
39000	1179	29.94	1203	31.81	1226	33.64	1249	35.54	1272	37.50	1293	39.35	1315	41.30	1335	43.12
40000	1199	31.49	1222	33.32	1245	35.22	1267	37.13	1289	39.08	1311	41.08	1333	43.03	1353	44.91
41000	1218	33.03	1241	34.91	1263	36.82	1286	38.79	1308	40.82	1328	42.74	1350	44.76	1371	46.79
42000	1238	34.70	1260	36.59	1282	38.50	1304	40.55	1326	42.58	1347	44.56	1368	46.66	1388	48.67
43000	1257	36.41	1279	38.30	1301	40.27	1323	42.32	1344	44.34	1365	46.39	1386	48.55	1406	50.65
44000	1278	38.21	1299	40.11	1320	42.07	1341	44.11	1363	46.28	1383	48.31	1404	50.46	1424	52.62
45000	1298	40.11	1319	42.02	1340	44.05	1361	46.07	1381	48.15	1402	50.34	1422	52.47	1442	54.70
46000	1319	42.04	1339	43.96	1360	45.99	1380	48.07	1401	50.21	1421	52.39	1440	54.58	1460	56.79

Cfm Std. Air	Total Static Pressure															
	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	1238	32.97	1262	34.71	1288	36.57	1312	38.38	1337	40.30	1361	42.16	1385	44.13	1411	46.21
32000	1250	34.26	1275	36.04	1299	37.86	1322	39.70	1347	41.66	1370	43.55	1395	45.54	1417	47.44
33000	1265	35.66	1287	37.41	1311	39.27	1335	41.16	1358	43.07	1382	45.09	1404	46.91	1428	49.05
34000	1277	36.96	1301	38.84	1323	40.66	1347	42.59	1371	44.63	1393	46.60	1415	48.46	1439	50.63
35000	1293	38.54	1315	40.32	1337	42.19	1360	44.17	1382	46.07	1404	48.07	1427	50.18	1449	52.17
36000	1309	40.11	1330	41.94	1352	43.87	1373	45.72	1395	47.66	1417	49.71	1440	51.86	1461	53.90
37000	1324	41.65	1345	43.54	1367	45.54	1388	47.44	1409	49.43	1431	51.53	1452	53.51	1473	55.59
38000	1340	43.35	1361	45.30	1381	47.17	1402	49.13	1423	51.18	1445	53.33	1465	55.36	1486	57.49
39000	1357	45.12	1377	47.05	1397	48.97	1418	50.99	1439	53.11	1458	55.10	1478	57.18	1499	59.35
40000	1373	46.89	1394	48.88	1415	50.96	1433	52.84	1454	55.02	1473	57.07	1493	59.20	1513	61.31
41000	1390	48.74	1411	50.79	1430	52.84	1450	54.88	1469	56.90	1488	59.01	1508	61.21	1526	63.24
42000	1408	50.69	1428	52.81	1447	54.82	1466	56.92	1485	59.00	1505	61.17	1523	63.30	1543	65.53
43000	1426	52.74	1445	54.82	1464	56.89	1484	59.06	1501	61.08	1521	63.31	1539	65.51	1557	67.66
44000	1444	54.79	1462	56.83	1482	59.08	1500	61.20	1519	63.40	1537	65.57	1556	67.83	1574	70.04
45000	1462	56.94	1480	59.06	1499	61.27	1518	63.45	1536	65.72	1554	67.82	1571	70.01	1589	72.27
46000	1479	58.99	1498	61.30	1516	63.45	1535	65.70	1553	68.04	1571	70.20	1588	72.45	1606	74.78

# Performance Data

(105, 115, 130 Tons)

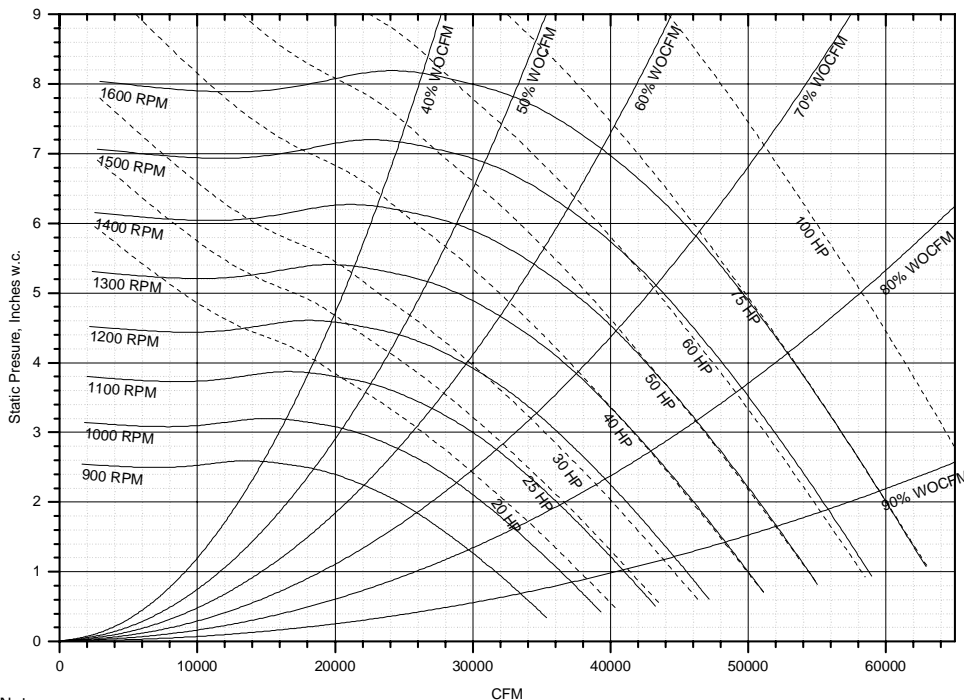
**Table PD-43 — Supply Fan Performance WITH INLET GUIDE VANES — 105, 115, 130 Tons (Cont.)**

Cfm Std. Air	Total Static Pressure													
	6.250		6.500		6.750		7.000		7.250		7.500			
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP		
31000	1434	48.20	1459	50.30	1484	52.52	1508	54.60	1532	56.79	1557	59.10	1579	61.23
32000	1442	49.55	1464	51.55	1489	53.77	1512	55.85	1538	58.33	1559	60.35	1584	62.78
33000	1451	51.09	1473	53.11	1496	55.23	1518	57.33	1541	59.53	1565	61.85	1589	64.28
34000	1461	52.70	1482	54.63	1506	56.90	1527	59.03	1550	61.26	1570	63.29	1594	65.73
35000	1471	54.27	1491	56.22	1515	58.53	1536	60.68	1558	62.93	1578	64.99	1601	67.45
36000	1482	55.91	1503	58.03	1523	60.10	1544	62.28	1566	64.55	1589	66.93	1609	69.11
37000	1494	57.77	1514	59.79	1534	61.91	1555	64.11	1576	66.42	1597	68.68	1618	71.04
38000	1505	59.46	1527	61.78	1547	63.94	1568	66.19	1586	68.24	1608	70.69	1627	72.92
39000	1518	61.37	1540	63.74	1560	65.94	1579	68.09	1598	70.33	1617	72.50	1638	74.92
40000	1533	63.50	1552	65.66	1572	67.90	1592	70.24	1610	72.37	1629	74.58	1649	77.03
41000	1547	65.62	1566	67.82	1585	69.97	1603	72.20	1624	74.68	1642	76.94	1661	79.28
42000	1561	67.70	1580	69.96	1598	72.15	1617	74.44	1635	76.65	1654	79.10		
43000	1576	69.89	1593	72.06	1613	74.46	1630	76.64	1650	79.22				
44000	1591	72.20	1609	74.43	1628	76.89	1645	79.12						
45000	1607	74.63	1625	76.92	1643	79.30								
46000	1624	77.20	1641	79.40										

**Notes:**

1. Shaded areas indicate non-standard BHP or RPM selections. Contact your local Trane representative for more information.
2. Supply fan performance table includes internal resistance of rooftop. For total static pressure determination, system external static must be added to appropriate component static pressure drops, (evaporator coil, filters, optional economizer, optional heating system, optional roof curb).
3. Maximum static pressure leaving the rooftop is 4.0" H2O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H2O.
4. Maximum Cfm as follows: 105 Ton Std. — 44,000 Cfm, 105 Hi-Cap., 115, 130 Tons — 46,000 Cfm
5. Minimum motor horsepower is 30 hp.
6. See RT-EB-104 for further details.

**Figure PD-12 — Supply Fan Performance WITH INLET GUIDE VANES — 105, 115, 130 Tons**



**Note:**

1. Important: Maximum static pressure leaving the rooftop is 4.0" H<sub>2</sub>O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H<sub>2</sub>O.



# Performance Data (20 -75 Tons)

Table PD-44 — Component Static Pressure Drops (in. W.G.)

Nominal Tons	Cfm Std Air	Evaporator Coil				Heating System								Filters					Std Roof Curb	Economizer With Or Without Exhaust Fan
		Standard Wet	Standard Dry	High Capacity Wet	High Capacity Dry	SFHF/G		SEHF/G All KW's	SLHF/G		SSHF/G		Throwaway Std.	Throwaway High	Perm Wire Mesh	Bag And Prefilter	Cartridge And Prefilter			
20	4000	.07	.05	.14	.10	.02	N/A	.02	.05	.06	.02	.06	.03	.03	.01	.3	.24	.01	.03	
	6000	.13	.10	.27	.20	.05	.05	.04	.09	.12	.05	.12	.06	.06	.02	.5	.44	.02	.06	
	8000	.21	.16	.43	.32	.09	.09	.07	.15	.19	.10	.20	.09	.09	.03	.71	.68	.05	.12	
	9000	.26	.20	.52	.39	.12	.12	.09	.19	.24	.12	.22	.11	.11	.04	.83	.81	.07	.15	
	10000	.31	.23	.61	.46	.14	.15	.11	.23	.28	.15	.29	.13	.13	.05	.95	.95	.10	.19	
	12000	.41	.31	.82	.63	.20	.22	.17	.33	.40	.22	.42	.15	.15	.06	1.19	1.26	.14	.27	
25	5000	.10	.07	.20	.15	.03	N/A	.03	.07	.09	.04	.09	.05	.05	.02	.40	.34	.01	.03	
	6000	.13	.10	.27	.20	—	—	—	—	—	—	—	—	—	.50	.44	—	—		
	7500	.19	.15	.39	.29	.08	.08	.06	.14	.17	.09	.18	.09	.09	.03	.66	.62	.04	.10	
	10000	.31	.23	.61	.46	.14	.15	.11	.23	.28	.15	.29	.13	.13	.05	.95	.95	.10	.19	
	11000	.36	.27	.71	.54	.17	.18	.13	.29	.33	.19	.35	.15	.15	.06	1.06	1.11	.12	.23	
	12500	.44	.34	.87	.67	.22	.23	.18	.33	.42	.24	.42	.19	.19	.08	1.29	1.34	.19	.30	
14000	.52	.40	1.05	.81	.28	.29	.21	.41	.53	.30	.53	.24	.24	.10	—	—	.24	.39		
30	6000	.15	.11	.20	.15	.05	.05	.04	.09	.12	.05	.12	.04	.04	.01	.34	.26	.02	.06	
	9000	.29	.22	.39	.29	.11	.12	.09	.19	.24	.12	.22	.07	.07	.02	.54	.48	.07	.15	
	12000	.46	.35	.61	.46	.20	.21	.16	.31	.39	.22	.41	.11	.11	.04	.75	.75	.16	.27	
	14000	.59	.45	.78	.60	.26	.29	.22	.40	.51	.30	.50	.14	.14	.06	.95	.95	.25	.39	
	15000	.65	.50	.87	.67	.30	.33	.25	.45	.57	.33	.52	.16	.16	.07	1.03	1.06	.30	.43	
17000	.80	.62	1.06	.82	.39	.42	.35	.58	.73	.42	.67	.21	.21	.09	1.20	1.30	.39	.59		
40	8000	.10	.07	.20	.15	N/A	.07	.09	.11	.05	.11	.04	.04	.02	.37	.31	.01	.03		
	10000	.14	.11	.29	.21	—	.11	—	—	—	—	—	—	—	.49	.43	—	—		
	12000	.19	.14	.39	.29	.20	.15	.16	.17	.22	.11	.21	.08	.08	.03	.61	.56	.04	.07	
	16000	.31	.23	.61	.46	.34	.26	.29	.28	.36	.20	.36	.12	.12	.05	.88	.87	.10	.09	
	17000	.34	.26	.67	.51	N/A	.29	.32	.31	.39	.22	.41	.13	.13	.06	.95	.95	.12	.11	
	20000	.44	.34	.87	.67	N/A	.41	.44	.42	.52	.30	.51	.17	.17	.08	1.17	1.22	.19	.17	
22000	.51	.39	1.02	.79	N/A	.50	.53	.51	.63	.36	.62	.21	.21	.10	—	—	.23	.20		
50/55	10000	.17	.13	.23	.17	.12	.10	.11	.13	.16	.07	.15	.04	.04	.01	.37	.30	.03	.05	
	14000	.29	.22	.39	.29	.26	.20	.22	.28	.15	.28	.07	.07	.03	.56	.50	.07	.08		
	17000	.39	.30	.53	.40	.39	.29	.32	.31	.40	.22	.41	.10	.10	.04	.72	.68	.12	.11	
	20000	.51	.39	.68	.52	.58	.41	.44	.42	.52	.30	.51	.12	.12	.05	.88	.88	.19	.17	
	24000	.69	.53	.91	.70	.73	.58	.62	.48	.72	.45	.75	.16	.16	.07	1.11	1.17	.30	.23	
28000	.88	.68	1.17	.91	.99	.79	.84	.62	.98	.61	.99	.20	.20	.10	—	—	.39	.30		
60	12000	.13	.10	.25	.18	.10	.08	.16	.10	.13	.06	.11	.05	.05	.01	.44	.37	.02	.07	
	16000	.20	.16	.39	.29	.18	.14	.29	.17	.21	.11	.19	.07	.07	.02	.63	.58	.05	.10	
	20000	.29	.23	.55	.42	.27	.21	.44	.24	.31	.16	.27	.10	.10	.03	.84	.82	.10	.16	
	24000	.39	.31	.74	.57	.30	.22	.33	.42	.22	.39	.11	.11	.04	1.06	1.08	.16	.23		
	28000	.50	.39	.95	.73	.48	.33	.85	.44	.55	.32	.50	.17	.17	.06	—	—	.30	.30	
	30000	.56	.44	1.06	.82	.62	.38	.98	.51	.63	.37	.57	.20	.20	.07	—	—	.34	.34	
70	12000	.20	.16	N/A	N/A	.10	.08	.16	.10	.13	.06	.11	.05	.05	.01	.44	.37	.02	.07	
	16000	.32	.26	N/A	N/A	.18	.14	.29	.17	.21	.11	.19	.07	.07	.02	.63	.58	.05	.10	
	20000	.46	.37	N/A	N/A	.27	.21	.44	.24	.31	.16	.27	.10	.10	.03	.84	.82	.10	.16	
	22000	.54	.43	N/A	N/A	.33	.25	.53	.29	.37	.19	.33	.12	.12	.04	.95	.95	.13	.20	
	24000	.62	.50	N/A	N/A	.40	.30	.62	.33	.42	.22	.39	.14	.14	.04	1.06	1.08	.16	.23	
	26000	.70	.56	N/A	N/A	.47	.32	.73	.39	.49	.27	.45	.16	.16	.05	1.17	1.23	.23	.26	
	28000	.79	.64	N/A	N/A	.54	.33	.85	.44	.55	.32	.50	.17	.17	.06	1.22	1.29	.30	.30	
	31000	.93	.75	N/A	N/A	.60	.40	1.04	.49	.61	.39	.55	.21	.21	.07	—	—	.37	.36	
33000	1.03	.83	N/A	N/A	.65	.46	1.18	.52	.67	.44	.60	.24	.24	.08	—	—	.42	.40		
75	12000	.25	.18	.31	.23	.10	.08	.16	.10	.13	.06	.11	.05	.05	.01	.44	.37	.02	.07	
	16000	.39	.29	.49	.37	.18	.14	.29	.17	.21	.11	.19	.07	.07	.02	.63	.58	.05	.10	
	20000	.55	.42	.69	.53	.27	.21	.44	.24	.31	.16	.27	.10	.10	.03	.84	.82	.10	.16	
	22000	.65	.49	.81	.62	.33	.25	.53	.29	.37	.19	.33	.12	.12	.04	.95	.95	.13	.20	
	24000	.74	.57	.93	.71	.40	.30	.62	.33	.42	.22	.39	.14	.14	.04	1.06	1.08	.16	.23	
	26000	.84	.65	1.05	.81	.47	.32	.73	.39	.49	.27	.45	.16	.16	.05	1.17	1.23	.23	.26	
	28000	.95	.73	.92	.54	.33	.85	.44	.55	.32	.50	.17	.17	.06	1.22	1.29	.30	.30		
	31000	1.12	.87	1.40	1.08	.60	.40	1.04	.49	.61	.39	.55	.21	.21	.07	—	—	.37	.36	
33000	1.24	.96	1.55	1.20	.65	.46	1.18	.52	.67	.44	.60	.24	.24	.08	—	—	.42	.40		

Please see notes on the following page.



# Performance Data

(90-130 Tons)

**Table PD-45 — Component Static Pressure Drops (in. W.G.)**

Nominal Tons	Cfm Std Air	Evaporator Coil				Heating System								Filters				Std Roof Curb	Economizer With Or Without Exhaust Fan
		Standard		High Capacity		SFHF/G		SEHF/G		SLHF/G		SSHF/G		Throwaway		Perm	Bag		
		Wet	Dry	Wet	Dry	Low	High	All KW's	Low	High	Low	High	Std.	High	Wire Mesh	And Prefilter	And Prefilter		
90	27000	.40	.31	.67	.51	N/A	.25	.13	.26	.31	.22	.32	.11	.13	N/A	.68	.65	—	.20
	32000	.53	.41	.89	.68	N/A	.31	.16	.35	.41	.30	.43	.14	.16	N/A	.84	.84	—	.31
	37000	.67	.52	1.12	.86	N/A	.39	.23	.45	.52	.40	.55	.17	.19	N/A	1.02	1.04	—	.41
	42000	.82	.63	1.36	1.06	N/A	.46	.29	.56	.65	.50	.68	.21	.22	N/A	1.19	1.06	—	.52
	45000	.92	.71	1.53	1.19	N/A	.52	.32	.63	.73	.58	.76	.24	.24	N/A	—	—	—	.63
105	31000	.56	.45	.84	.64	N/A	.28	.17	.33	.39	.29	.40	N/A	.13	N/A	.82	.80	—	.22
	35000	.68	.54	1.02	.78	N/A	.36	.21	.41	.48	.36	.50	N/A	.16	N/A	.96	.96	—	.32
	39000	.81	.65	1.21	.94	N/A	.42	.26	.49	.57	.44	.60	N/A	.19	N/A	1.09	1.12	—	.44
	43000	.94	.76	1.42	1.10	N/A	.45	.30	.57	.66	.53	.71	N/A	.22	N/A	1.22	1.30	—	.54
	46000	1.05	.84	1.58	1.23	N/A	.55	.34	.65	.75	.61	.79	N/A	.24	N/A	—	—	—	.64
115/130	31000	.84	.64	N/A	N/A	N/A	.28	.17	.33	.39	.29	.40	N/A	.13	N/A	.82	.80	—	.22
	35000	1.03	.79	N/A	N/A	N/A	.36	.21	.41	.48	.36	.50	N/A	.16	N/A	.96	.96	—	.32
	39000	1.21	.94	N/A	N/A	N/A	.42	.26	.49	.57	.44	.60	N/A	.19	N/A	1.09	1.12	—	.44
	43000	1.42	1.10	N/A	N/A	N/A	.45	.30	.57	.66	.53	.71	N/A	.22	N/A	1.22	1.30	—	.54
	46000	1.58	1.23	N/A	N/A	N/A	.55	.34	.65	.75	.61	.79	N/A	.24	N/A	—	—	—	.64

**Notes:**

1. Static pressure drops of accessory components must be added to external static pressure to enter fan selection tables.
2. Gas heat section maximum temperature rise of 60 F.
3. Throwaway filter option limited to 300 ft/min face velocity.
4. Bag filter option limited to 740 ft/min face velocity.
5. Horizontal roof curbs assume 0.50" static pressure drop or double the standard roof curb pressure drop, whichever is greater.
6. No additional pressure loss for model SXHF.
7. 90-130 ton roofcurbs adds no pressure drop.



# Performance Data

**Table PD-46 — 20-75 — Tons Supply Air Fan Drive Selections**

Nominal Tons	3 Hp		5 Hp		7½ Hp		10 Hp		15 Hp		20 Hp		25 Hp		30 Hp		40 Hp	
	RPM	Drive No.	RPM	Drive No.	RPM	Drive No.	RPM	Drive No.	RPM	Drive No.	RPM	Drive No.	RPM	Drive No.	RPM	Drive No.	RPM	Drive No.
20	600	6	700	7	900	9	1100	B	1200	C								
	700	7	800	8	1000	A	1200	C	1300	D								
	800	8	900	9	1100	B	1300	D	1400	E								
	900	9	1000	A	1200	C	1400	E	1500	F								
25	600	6	700	7	800	8	1000	A	1200	C								
	700	7	800	8	900	9	1100	B	1300	D								
	800	8	900	9	1000	A	1200	C	1400	E								
	900	9	1000	A	1100	B	1300	D	1500	F								
30			600	6	700	7	800	8	900	9	1100	B						
			700	7	800	8	900	9	1000	A	1200	C						
			800	8	900	9	1000	A	1100	B	1300	D						
			900	9	1000	A	1100	B	1200	C								
40					500	5	700	7	800	8	900	9	1000	A	1000	A		
					600	6	800	8	900	9	1000	A	1100	B	1100	B		
					700	7	900	9	1000	A	1100	B						
					800	8												
50/55					500	5	600	6	700	7	800	8	900	9	1000	A	1100	B
					600	6	700	7	800	8	900	9	1000	A	1100	B		
					700	7	800	8	900	9	1000	A	1100	B				
					800	8	900	9	1000	A	1100	B						
60							500	3	600	6	700	7	800	8	900	A	900	9
							600	6	700	7	800	8	900	9	1000	B	1000	B
							700	7	800	8	900	9	1000	A		1100	B	
70/75							500	5	600	6	700	7	800	8	900	A	900	9
							600	6	700	7	800	8	900	9	1000	B	1000	A
							700	7	800	8	900	9	1000	A		1100	B	

**Table PD-47 — 90-130 — Tons Supply Air Fan Drive Selections**

RPM	15 Hp	20 Hp	25 Hp	30 Hp	40 Hp
	Drive No.	Drive No.	Drive No.	Drive No.	Drive No.
900	9				
1000	A	A			
1100	B	B	B		
1200	C	C	C	C	
1300		D	D	D	D
1400			E	E	E
1500			F	F	F
1600				G	G



# Performance Data

**Table PD-48 — 20-75 Tons — Modulating 100% Exhaust Fan Performance**

Nominal Tons	Cfm		Negative Static Pressure																
	Std Air	RPM	0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000		
			BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP		
20	4000	399	0.38	538	0.75	640	1.08	730	1.45	811	1.87	882	2.34	947	2.88				
	6000	453	0.74	570	1.17	675	1.65	765	2.22	845	2.78								
	8000	547	1.59	619	1.81	711	2.48	797	3.01										
	10000	640	2.79																
25	4000	399	0.38	538	0.75	640	1.08	730	1.45	811	1.87	822	2.34	947	2.88	1017	3.55		
	6000	453	0.74	570	1.17	675	1.65	765	2.22	845	2.78	912	3.27	975	3.77	1036	4.30		
	8000	547	1.59	619	1.81	711	2.48	797	3.01	876	3.66	947	4.40						
	10000	640	2.79	712	3.25	767	3.48	837	4.26	911	5.04								
	12000	737	4.44																
30	4000	399	0.38	538	0.75	640	1.08	730	1.45	811	1.87	882	2.34	947	2.88	1017	3.55		
	6000	453	0.74	570	1.17	675	1.65	765	2.22	845	2.78	912	3.27	975	3.77	1036	4.30		
	8000	547	1.59	619	1.81	711	2.48	797	3.01	876	3.66	947	4.40	1013	5.18	1075	5.94		
	10000	640	2.79	712	3.25	767	3.48	837	4.26	911	5.04	980	5.70	1045	6.46	1106	7.31		
	12000	737	4.44	806	5.22	860	5.64	905	5.89	956	6.49								
	14000	837	6.67																
40	7500	334	0.75	438	1.21	535	1.77	616	2.35	686	2.98	750	3.64	809	4.34	864	5.06		
	9000	362	1.09	449	1.57	536	2.16	618	2.84	689	3.52	753	4.24	812	4.99	867	5.77		
	12000	435	2.19	496	2.70	563	3.35	628	4.04	693	4.83	757	5.71	817	6.63	873	8.53		
	14000	486	3.22	542	3.86	594	4.47	653	5.25	707	6.04	763	6.91	819	7.86	874	8.89		
	16000	537	4.55	592	5.35	636	6.00	683	6.74	735	7.64	783	8.53	831	9.47	880	10.48		
	9000	362	1.09	449	1.57	536	2.16	618	2.84	689	3.52	753	4.24	812	4.99	867	5.77		
50	12000	435	2.19	496	2.70	563	3.35	628	4.04	693	4.83	757	5.71	817	6.63	873	7.53		
	15000	511	3.85	567	4.56	614	5.18	667	5.96	720	6.80	771	7.66	824	8.60	876	9.63		
	18000	590	6.21	642	7.16	685	7.97	724	8.69	766	9.54	812	10.54	856	11.55	898	12.56		
	20000	644	8.26	692	9.35	735	10.33	772	11.17	807	11.97	844	12.91	885	14.00	926	15.13		
	10000	386	1.40	463	1.90	540	2.48	618	3.18	691	3.94	755	4.70	814	5.48	869	6.30		
55	13000	461	2.67	518	3.23	578	3.88	639	4.61	698	5.39	759	6.26	818	8.22	874	8.21		
	16000	537	4.55	592	5.35	636	6.00	683	6.74	735	7.64	783	8.53	831	9.47	880	10.48		
	19000	617	7.19	667	8.21	710	9.10	747	9.87	785	10.68	827	11.66	870	12.73	911	31.80		
	21500	685	10.08	731	11.26	772	12.36	809	13.33	842	14.20	874	15.08	910	16.10	948	17.28		
12000	351	1.49	423	2.09	502	3.00	572	4.02	634	5.07	690	6.09	740	7.04	784	7.91			
60	15000	412	2.68	460	3.15	521	3.96	585	5.02	646	6.24	702	7.53	754	8.83	801	10.14		
	18000	478	4.41	516	4.88	557	5.54	607	6.49	662	7.66	715	9.01	766	10.48	814	12.01		
	21000	547	6.75	578	7.36	612	7.92	647	8.71	688	9.77	735	11.03	781	12.46	827	14.03		
	24000	617	9.83	644	10.59	672	11.22	702	11.88	732	12.77	766	13.89	805	15.22	846	16.72		
	27000	688	15.11	711	15.09	736	15.45	761	16.18	788	17.02	815	17.92	844	18.99	876	20.31		
	12000	351	1.49	423	2.09	502	3.00	572	4.02	634	5.07	690	6.09	740	7.04	784	7.91		
70/75	15000	412	2.68	460	3.15	521	3.96	585	5.02	646	6.24	702	7.53	754	8.83	801	10.14		
	18000	478	4.41	516	4.88	557	5.54	607	6.49	662	7.66	715	9.01	766	10.48	814	12.01		
	21000	547	6.75	578	7.36	612	7.92	647	8.71	688	9.77	735	11.03	781	12.46	827	14.03		
	24000	617	9.83	644	10.59	672	11.22	702	11.88	732	12.77	766	13.89	805	15.22	846	16.72		
	27000	688	15.11	711	15.09	736	15.45	761	16.18	788	17.02	815	17.92	844	18.99	876	20.31		

**Table PD-49 — 90-130 Tons Modulating 100% Exhaust Fan Performance**

Nominal Tons	Cfm		Negative Static Pressure																			
	Std Air	RPM	0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000		2.250		2.500	
			BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
90-130	28000	516	11.42	551	12.41	586	13.70	622	15.25	657	16.71	690	18.16	723	19.90	754	21.74	785	23.60	815	25.45	
	30000	550	13.94	579	14.86	614	16.25	646	17.72	680	19.45	712	20.93	743	22.54	773	24.41	803	26.38	832	28.36	
	32000	583	16.82	609	17.68	642	19.12	672	20.58	704	22.34	735	24.12	764	25.67	793	27.42	822	29.41	850	31.50	
	34000	617	20.09	640	20.92	670	22.30	700	23.87	728	25.53	759	27.51	788	29.30	815	30.96	842	32.82	869	34.93	
	36000	650	23.76	672	24.58	699	25.86	728	27.55	755	29.19	782	31.11	811	33.21	838	35.05	864	36.81	889	38.77	
	38000	684	27.86	704	28.68	728	29.87	757	31.60	783	33.33	808	35.14	834	37.30	861	39.48	887	41.38	911	43.23	
	40000	718	32.41	737	33.24	758	34.36	785	36.02	811	37.91	835	39.71	859	41.74	885	44.08	910	46.33	934	48.32	

**Notes:**

1. Shaded areas indicate non-standard drive selections. These drive selections must be manually factory selected.
2. Refer to General Data Table for minimum and maximum hp's.



# Performance Data

**Table PD-50 — 20-75 Tons — 100% Exhaust Fan Drive Selections**

Nominal Tons	1½ Hp		3 Hp		5 Hp		7½ Hp		10 Hp		15 Hp		20 Hp	
	RPM	Drive No	RPM	Drive No	RPM	Drive No	RPM	Drive No	RPM	Drive No	RPM	Drive No	RPM	Drive No
20	500	5	600	6										
	600	6	700	7										
	700	7	800	8										
			900	9										
25			500	5	700	7								
			600	6	800	8								
			700	7	900	9								
			800	8	1000	A								
			900	9										
30			500	5	700	7	800	8						
			600	6	800	8	900	9						
			700	7	900	9	1000	A						
			800	8	1000	A	1100	B						
			900	9										
40					500	5	600	6	700	7				
					600	6	700	7	800	8				
					700	7	800	8						
					800	8								
50/55					400	4	600	6	700	7	700	7		
					500	5	700	7	800	8	800	8		
					600	6	800	8			900	9		
					700	7								
60					400	4	600	6	600	6	700	7	800	8
					500	5	700	7	700	7	800	8		
					600	6								
70/75					400	4	600	6	600	6	700	7	800	8
					500	5	700	7	700	7	800	8		
					600	6								

**Table PD-51 — 90-130 Tons — 100% Exhaust Fan Drive Selections**

Nominal Tons	15 HP		20 HP		25 HP		30 HP		40 HP	
	RPM	Drive No	RPM	Drive No	RPM	Drive No	RPM	Drive No	RPM	Drive No
90	500	5	600	6	700	7	700	7	800	8
	600	6	700	7	800	8	800	8		
105-130	500	5	600	6	700	7	700	7	800	8
	600	6	700	7	800	8	800	8		



# Performance Data

**Table PD-52 — 20-75 Tons — 50% Exhaust Fan Performance**

Nominal Tons	Cfm Std Air	Negative Static Pressure (In. W.G.)													
		0.200		0.400		0.600		0.800		1.000		1.200		1.400	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
20/25	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
	3000	435	0.36	522	0.51	614	0.67	694	0.88	765	1.11	830	1.34	886	1.54
	4000	529	0.76	592	0.86	654	1.03	728	1.29	797	1.51	861	1.77	919	2.05
	5000	623	1.32	687	1.56	735	1.67	778	1.79	836	2.13	896	2.45	953	2.72
30	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
	3000	435	0.36	522	0.51	614	0.67	694	0.88	765	1.11	830	1.34	886	1.54
	4000	529	0.76	592	0.86	654	1.03	728	1.29	797	1.51	861	1.77	919	2.05
	5000	623	1.32	687	1.56	735	1.67	778	1.79	836	2.13	896	2.45	953	2.72
40	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
	3000	435	0.36	522	0.51	614	0.67	694	0.88	765	1.11	830	1.34	886	1.54
	4000	529	0.76	592	0.86	654	1.03	728	1.29	797	1.51	861	1.77	919	2.05
	5000	623	1.32	687	1.56	735	1.67	778	1.79	836	2.13	896	2.45	953	2.72
50/55	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
	3000	435	0.36	522	0.51	614	0.67	694	0.88	765	1.11	830	1.34	886	1.54
	4000	529	0.76	592	0.86	654	1.03	728	1.29	797	1.51	861	1.77	919	2.05
	5000	623	1.32	687	1.56	735	1.67	778	1.79	836	2.13	896	2.45	953	2.72
60	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
	3000	435	0.36	522	0.51	614	0.67	694	0.88	765	1.11	830	1.34	886	1.54
	4000	529	0.76	592	0.86	654	1.03	728	1.29	797	1.51	861	1.77	919	2.05
	5000	623	1.32	687	1.56	735	1.67	778	1.79	836	2.13	896	2.45	953	2.72
70/75	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
	3000	435	0.36	522	0.51	614	0.67	694	0.88	765	1.11	830	1.34	886	1.54
	4000	529	0.76	592	0.86	654	1.03	728	1.29	797	1.51	861	1.77	919	2.05
	5000	623	1.32	687	1.56	735	1.67	778	1.79	836	2.13	896	2.45	953	2.72
80	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
	3000	435	0.36	522	0.51	614	0.67	694	0.88	765	1.11	830	1.34	886	1.54
	4000	529	0.76	592	0.86	654	1.03	728	1.29	797	1.51	861	1.77	919	2.05
	5000	623	1.32	687	1.56	735	1.67	778	1.79	836	2.13	896	2.45	953	2.72
90-130	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
	3000	435	0.36	522	0.51	614	0.67	694	0.88	765	1.11	830	1.34	886	1.54
	4000	529	0.76	592	0.86	654	1.03	728	1.29	797	1.51	861	1.77	919	2.05
	5000	623	1.32	687	1.56	735	1.67	778	1.79	836	2.13	896	2.45	953	2.72
100-110	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
	3000	435	0.36	522	0.51	614	0.67	694	0.88	765	1.11	830	1.34	886	1.54
	4000	529	0.76	592	0.86	654	1.03	728	1.29	797	1.51	861	1.77	919	2.05
	5000	623	1.32	687	1.56	735	1.67	778	1.79	836	2.13	896	2.45	953	2.72
120-130	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
	3000	435	0.36	522	0.51	614	0.67	694	0.88	765	1.11	830	1.34	886	1.54
	4000	529	0.76	592	0.86	654	1.03	728	1.29	797	1.51	861	1.77	919	2.05
	5000	623	1.32	687	1.56	735	1.67	778	1.79	836	2.13	896	2.45	953	2.72

**Table PD-53 — 90-130 Tons — 50% Exhaust Fan Performance**

Nominal Tons	Cfm Std Air	Negative Static Pressure (In. W.G.)																			
		0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000		2.250		2.500	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
90-130	12000	452	3.68	495	4.21	536	4.85	576	5.46	614	6.17	651	6.95	687	7.73	722	8.55	759	9.46	797	10.45
	14000	516	5.71	551	6.21	586	6.85	622	7.63	657	8.36	690	9.09	723	9.96	754	10.88	785	11.79	815	12.72
	16000	583	8.41	609	8.85	643	9.57	672	10.29	704	11.18	735	12.07	764	12.84	793	13.72	822	14.72	850	15.76
	18000	650	11.88	672	12.29	699	12.94	729	13.79	755	14.59	782	15.56	811	16.62	838	17.53	864	18.41	889	19.39
100-110	20000	718	16.20	737	16.62	758	17.18	785	18.03	811	18.97	835	19.86	859	20.87	885	22.05	910	23.18	934	24.17

Note:

1. Shaded areas indicate non-standard drive selections. These drive selections must be manually factory selected.



# Performance Data

**Table PD-54— 50% Exhaust Fan Drive Selections**

Nominal Unit Size	1½ HP		3 HP		5 HP		7½ HP		15 HP	
	RPM	Drive No	RPM	Drive No	RPM	Drive No	RPM	Drive No	RPM	Drive No
20	500	5	700	7						
	600	6	800	8						
	700	7	900	9						
	800	8								
25	500	5	700	7						
	600	6	800	8						
	700	7	900	9						
	800	8								
30			600	6	800	8				
			700	7	900	9				
			800	8	1000	A				
			900	9						
40					500	5	700	7		
					600	6	800	8		
					700	7				
50/55					500	5	700	7		
					600	6	800	8		
					700	7				
60					400	4	700	7		
					500	5				
					600	6				
70/75					400	4	700	7		
					500	5				
					600	6				
90									500	5
									600	6
									700	7
									800	8
105/115/130									500	5
									600	6
									700	7
									800	8

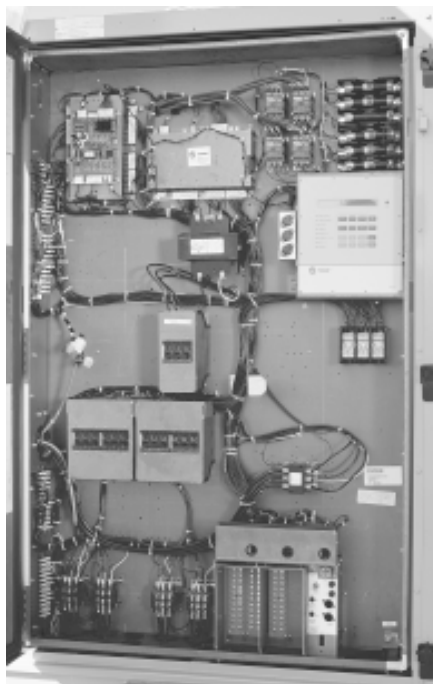
# Controls

(VAV Units)

## VAV Units Only

### Sequence Of Operation

NOTE: When noted in this sequence "Human Interface Panel," the reference is to both the unit mounted and remote mounted Human Interface Panel. All setpoint adjustments can be accomplished at the unit or Remote Human Interface Panel.



### 1 Supply Air Pressure Control Inlet Guide Vanes Control

Inlet guide vanes are driven by a modulating 0-10 vdc signal from the Rooftop Module (RTM). A pressure transducer measures duct static pressure, and the inlet guide vanes are modulated to maintain the supply air static pressure within an adjustable user-defined range. The range is determined by the supply air pressure setpoint and supply air pressure deadband, which are set through the Human Interface Panel.

Inlet guide vane assemblies installed on the supply fan inlets regulate fan capacity and limit horsepower at lower system air requirements. When in any position other than full open, the vanes pre-spin intake air in the same direction as supply fan rotation. As the vanes approach the full-closed position, the amount of "spin" induced by the vanes increases at the same time that intake airflow and fan horsepower diminish. The inlet guide vanes will close when the supply fan is shut down, except during night setback.

### Variable Frequency Drive (VFD) Control

Variable frequency drives are driven by a modulating 0-10 vdc signal from the Rooftop Module (RTM). A pressure transducer measures duct static pressure, and the VFD is modulated to maintain the supply air static pressure within an adjustable user-defined range. The range is determined by the supply air pressure setpoint and supply air pressure deadband, which are set through the Human Interface Panel.

Variable frequency drives provide supply fan motor speed modulation. The drive will accelerate or decelerate as required to maintain the supply static pressure setpoint. When subjected to high ambient return conditions the VFD shall reduce its output frequency to maintain operation. Bypass control is offered to provide full nominal airflow in the event of drive failure.

### Supply Air Static Pressure Limit

The opening of the inlet guide vanes and VAV boxes are coordinated during unit start up and transition to/from Occupied/Unoccupied modes to prevent overpressurization of the supply air ductwork. However, if for any reason the supply air pressure exceeds the user-defined supply air static pressure limit that was set at the Human Interface Panel, the supply fan/VFD is shut down and the inlet guide vanes (if included) are closed. The unit is then allowed to restart three times. If the overpressurization condition occurs on the third time, the unit is shut down and a manual reset diagnostic is set and displayed at the Human Interface Panel.

### 2 Supply Air Temperature Controls Cooling/Economizer

During Occupied cooling mode of operation, the economizer (if available) and mechanical cooling are used to control the supply air temperature. The supply air temperature setpoint and deadband are user-defined at the Human Interface Panel. If the enthalpy of the outside air is appropriate to use "free cooling," the economizer will be used first to attempt to satisfy the supply air setpoint; then if required the mechanical cooling will be staged on to maintain supply air temperature setpoint. Minimum On/Off timing of the mechanical cooling prevents rapid cycling.

On units with economizer, a call for cooling will modulate the fresh air dampers open. The rate of economizer modulation is based on deviation of the discharge temperature from setpoint, i.e., the further away from setpoint, the faster the fresh air damper will open. First stage of cooling will be allowed to start after the economizer reaches full open.

Note that the economizer is only allowed to function freely if one of the following conditions is met. For dry bulb economizer control the ambient temperature must be below the dry bulb temperature control setting. For reference enthalpy economizer control, outdoor air enthalpy must be below the enthalpy control setting. For comparative enthalpy economizer control, outdoor air enthalpy must be below the enthalpy of the return air.

At outdoor air conditions above the enthalpy control setting, mechanical cooling only is used and the fresh air dampers remain at minimum position.

If the unit does not include an economizer, mechanical cooling only is used to satisfy cooling requirements. Outdoor air dampers may be set manually for a maximum of 25 percent outdoor air, if rooftop is equipped with 0 to 25 percent manual fresh air damper.



# Controls

# (VAV Units)

## Heating: Hot Water or Steam

On units with hot water or steam heating, the supply air temperature can be controlled to a heating set point during the Occupied mode. The supply air temperature heating set point and deadband are user-defined at the Human Interface Panel. VAV Occupied heating on hot water and steam heat units is enabled by closing a field-supplied switch or contacts connected to an changeover input on the RTM.

## Heating: Modulating Gas

Upon a call for heating, the UCM closes the heating contacts, beginning the firing sequence. First, the heat exchanger combustion blower begins operation. Upon positive proving of combustion airflow, a pre-purge cycle is executed. Then the ignition sequence takes place.

If ignition is not proven, the ignition transformer is de-energized. After a time delay, another pre-purge cycle takes place, followed by another attempt to ignite. If ignition fails a second time, the heating section will be shut down and locked out until manually reset at the unit mounted Human Interface Panel.

As additional heat is required, the air damper opens, increasing the firing rate.

During heating operation, an electronic flame safety control provides continuous flame supervision. If combustion should become unstable for any reason, heating will automatically shut down. After one minute, another 60 second pre-purge and ignition cycle begins.

As the heating requirement is satisfied, the UCM will reduce the combustion air and the firing rate will lower to maintain the desired outlet temperature. When the requirement is fully satisfied, the heating contacts are opened, de-energizing the heat. The specific sequence of operation of the gas heat will depend on the size of the heat exchanger.

## Supply Air Setpoint Reset

Supply air reset can be used to adjust the supply air temperature setpoint on the basis of a zone temperature or on outdoor air temperature. Supply air reset adjustment is available from the Human Interface Panel for supply air heating and supply air cooling control.

### A

#### reset based on outdoor air temperature

Outdoor air cooling reset is sometimes used in applications where the outdoor temperature has a large effect on building load. When the outside air temperature is low and the building cooling load is low, the supply air setpoint can be raised, thereby preventing subcooling of critical zones. This reset can lower usage of mechanical cooling, thus savings in compressor KW, but a increase in supply fan KW may occur.

Outdoor air heating reset is the inverse of cooling, with the same principles applied.

For both outdoor air cooling reset and heating reset, there are three user defined parameters that are adjustable through the Human Interface Panel.

- beginning reset temperature
- ending reset temperature
- maximum amount of temperature reset

### B

#### reset based on zone temperature

Zone reset is applied to the zone(s) in a building that tend to overcool or overheat. The supply air temperature setpoint is adjusted based on the temperature of the critical zone(s). This can have the effect of improving comfort and/or lowering energy usage. The user-defined parameters are the same as for outdoor air reset.

## Supply Air Tempering

Hot water, steam, and modulating gas units only — When supply air temperature falls below the supply air

temperature deadband low end, the heating valve is modulated open to maintain the set minimum supply air temperature.

### 3

## Zone Temperature Control

### Unoccupied Zone Heating and Cooling

During Unoccupied mode, the unit is operated as a CV unit. Inlet guide vanes and VAV boxes are driven full open. The unit controls zone temperature within the Unoccupied zone cooling and heating (heating units only) deadbands.

### Daytime warm-up

This feature is available on all types of heating units. During Occupied mode, if the zone temperature falls to a preset, user-defined zone low limit temperature setpoint the unit is put into Unoccupied mode and Daytime Warm-up is initiated. The system changes over to CV heating (full unit airflow), the VAV boxes are fully opened and full heating capacity is provided until the Daytime Warm-up setpoint is reached. The unit is then returned to normal Occupied mode.

### 4

## Outdoor Air CFM Compensation

The purpose of this feature is to modulate the minimum position of the economizer to compensate for varying unit airflows in VAV units, thereby minimizing the large variation of outdoor air CFM that can occur. The feature allows the user to set (calibrate) the economizer minimum position with inlet guide vanes (or VFD) at 0 percent and at 100 percent. On units with inlet guide vanes (or VFD) and economizer, the minimum position of the economizer is modulated based on inlet guide vane position (or VFD speed).

# Controls

## (CV Units)

### CV Units Only

#### Sequence Of Operation

1

#### Occupied Zone Temperature Control

##### Cooling/Economizer

During Occupied cooling mode, the economizer (if provided) and mechanical cooling are used to control zone temperature. If the enthalpy of outside air is appropriate to use "free cooling", the economizer will be used first to attempt to satisfy the cooling zone temperature setpoint; then the compressors will be staged up as necessary. Minimum on/off timing of compressors prevents rapid cycling.

On units with economizer, a call for cooling will modulate the fresh air dampers open. The rate of economizer modulation is based on deviation of the zone temperature from setpoint, i.e., the further away from setpoint, the faster the fresh air damper will open. First stage of cooling will be allowed to start after the economizer reaches full open.

Note that the economizer is only allowed to function freely if one of the following conditions is met: For dry bulb economizer control, the ambient temperature must be below the dry bulb temperature control setting. For reference enthalpy economizer control, outdoor air enthalpy must be below the enthalpy control setting. For comparative enthalpy economizer control, outdoor air enthalpy must be below the enthalpy of the return air.

At outdoor air temperatures above the enthalpy control setting, mechanical cooling only is used and the outdoor air dampers remain at minimum position.

If the unit does not include an economizer, mechanical cooling only is used to satisfy cooling requirements. Outdoor air dampers may be set manually for a maximum of 25 percent outdoor air, if rooftop is equipped with 0 to 25 percent manual fresh air damper.

A

#### Heating

##### Gas Heating - Two-Stage

Upon a call for heating, the UCM closes the first stage heating contacts beginning the firing sequence. First, the heat exchanger combustion blower begins operation. Upon positive proving of combustion airflow, a pre-purge cycle is executed. Then the ignition sequence takes place.

If ignition is not proven, the ignition transformer is de-energized. After a time delay another pre-purge cycle takes place followed by another attempt to ignite. If ignition fails a second time, the cycle repeats on 235 and 350 MBh modules. 500, 850 and 1000 MBh modules, the heating section will be shut down and locked out until manually reset at the unit mounted Human Interface Panel.

As additional heat is required, the UCM will close the second stage heating contacts and depending on heat module size, will open either the second stage of the gas valve, or a second stage gas valve.

During heating operation, an electronic flame safety control provides continuous flame supervision. If combustion should become unstable for any reason, heating will automatically shut down. After one minute, another 60 second pre-purge and ignition cycle begins.

As the heating requirement is satisfied, the UCM will open the second stage heating relay, de-energizing the second stage of heat. When the requirement is fully satisfied, the first stage contacts are opened, de-energizing the first stage of heat. The specific sequence of operation of the gas heat will depend on the size of the heat exchanger.



# Controls

(CV Units)

## Gas Heating: Modulating Gas

Upon a call for heating, the UCM closes the heating contacts, beginning the firing sequence. First, the heat exchanger combustion blower begins operation. Upon positive proving of combustion airflow, a pre-purge cycle is executed. Then the ignition sequence takes place.

If ignition is not proven, the ignition transformer is de-energized. After a time delay, another pre-purge cycle takes place, followed by another attempt to ignite. If ignition fails a second time, the heating section will be shut down and locked out until manually reset at the unit mounted Human Interface Panel.

As additional heat is required, the air damper opens, increasing the firing rate.

During heating operation, an electronic flame safety control provides continuous flame supervision. If combustion should become unstable for any reason, heating will automatically shut down. After one minute, another 60 second pre-purge and ignition cycle begins.

As the heating requirement is satisfied, the UCM will reduce the combustion air, and the firing rate will lower to maintain the desired outlet temperature. When the requirement is fully satisfied, the heating contacts are opened, de-energizing the heat. The specific sequence of operation of the gas heat will depend on the size of the heat exchanger.

## Electric Heating

The three stages of electric heat will be sequenced on the zone demand signal from the zone sensor. The signal is sent to the UCM and the stages are sequenced based on load demand.

## Hot Water or Steam Heating

Upon a call for heat, the UCM will send a varying voltage signal to the valve actuator. The valve will modulate to meet building demand as indicated by the voltage signal. When heating is satisfied, the valve will modulate closed.

A temperature sensor is located on the coldest section of the coil. When it senses an impending freeze condition, a signal is sent to the hydronic valve to

drive it full open. If the supply fan is on, or if the outside air damper is open when this freezing condition is sensed, the supply fan is turned off and the outside air damper is closed.

## B

### Supply Air Tempering

For gas and electric heat units in the Heat mode but not actively heating, if the supply air temperature drops to 10 F below the Occupied zone heating temperature setpoint, one stage of heat will be brought on to maintain a minimum supply air temperature. The heat stage is dropped if the supply air temperature rises to 10 F above the Occupied zone heating temperature setpoint.

## C

### Auto Changeover

When the System Mode is "Auto," the mode will change to cooling or heating as necessary to satisfy the zone cooling and heating setpoints. The zone cooling and heating setpoints can be as close as 2 F apart.

## 2

### Unoccupied Zone Temperature Control Cooling and Heating

Both cooling or heating modes can be selected to maintain Unoccupied zone temperature deadbands. For Unoccupied periods, heating, economizer operation or compressor operation can be selectively locked out at the Human Interface Panels.

# Controls

## (VAV/CV Units)

### Control Sequences of Operation Common to Both VAV and CV Units

1

#### Space Pressure Control — Statitrac™

A pressure transducer is used to measure and report direct space (building) static pressure. The user-defined control parameters used in this control scheme are space static pressure setpoint and deadband. As the economizer opens, the building pressure rises and enables the exhaust fan and dampers or exhaust VFD. The exhaust dampers or VFD then modulate to maintain space pressure within the deadband.

2

#### Morning Warm-up

This feature is available on all types of factory-installed heat units and on units with no heat, this function may still be selected to support systems with heat sources not provided by the rooftop unit. At the conclusion of Unoccupied mode, while the economizer (if supplied) is kept closed, the selected zone is heated to the user-defined Morning Warm-up setpoint. The unit is then released to Occupied mode. There are two types of Morning Warm-up: full capacity or cycling capacity.

A

#### Full Capacity Morning Warm-up (MWU)

Full capacity Morning Warm-up uses full heating capacity, and heats the zone up as quickly as possible. Full heating capacity is provided until the Morning Warm-up setpoint is met. At this point, the unit is released to Daytime mode.

B

#### Cycling Capacity Morning Warm-up (MWU)

Cycling capacity Morning Warm-up provides a more gradual heating of the zone. Normal zone temperature control with varying capacity is used to raise the zone temperature to the MWU zone temperature setpoint. This method of

warm-up is used to overcome the “building sink” effect. Cycling capacity MWU will operate until MWU setpoint is reached or for 60 minutes, then the unit switches to Occupied mode.

Note: When using the Morning Warmup option in a VAV heating/cooling rooftop, airflow must be maintained through the rooftop unit. This can be accomplished by electrically tying the VAV boxes to the unoccupied output relay contacts on the Rooftop Module (RTM) or by using changeover thermostats. Either of these methods will assure adequate airflow through the unit and satisfactory heating of the building.

3

#### Ventilation Override (VOM)

The user can customize up to five (5) different override sequences for purposes of ventilation override control. If more than one VOM sequence is being requested, the sequence with the highest priority is initiated first. Priority schedule is that sequence “A” (unit off) is first, with sequence “E” (purge with duct pressure control) last.

#### UNIT OFF sequence “A”

When complete system shut down is required the following sequence could be used.

- Supply fan - Off.
- Supply fan VFD - Off (0 Hz) (if equipped)
- Inlet guide vanes - Closed (if equipped).
- Exhaust fan - Off, exhaust dampers - Closed (if equipped).
- Exhaust fan VFD - Off (0 Hz) (if equipped)
- Outside air dampers - Closed.
- Heat - all stages - Off, Modulating heat output at 0 vdc.
- Occupied/Unoccupied output - Deenergized
- VO relay - Energized

#### PRESSURIZE sequence “B”

Perhaps a positively pressurized space is desired instead of a negatively pressurized space. In this case, the supply fan should be turned on with inlet



# Controls

# (VAV/CV Units)

guide vanes open and the exhaust fan should be turned off.

- Supply fan - On.
- Supply fan VFD - On (60 Hz) (if equipped)
- Inlet guide vanes/VAV boxes - Open (if equipped).
- Exhaust fan - Off, exhaust dampers - Closed (if equipped).
- Exhaust fan VFD - Off (0 Hz) (if equipped)
- Outside air dampers - Open.
- Heat - all stages - Off, Modulating heat output at 0 vdc.
- Occupied/Unoccupied output - Energized
- VO relay - Energized

### EXHAUST sequence "C"

With only the exhaust fans running (supply fan off), the space that is conditioned by that rooftop would become negatively pressurized. This is desirable for clearing the area of smoke from the now-extinguished fire, possibly keeping smoke out of areas that were not damaged.

- Supply fan - Off.
- Supply fan VFD - Off (0 Hz) (if equipped)
- Inlet guide vanes - Closed (if equipped).
- Exhaust fan - On, exhaust dampers - Open (if equipped).
- Exhaust fan VFD - On (60 Hz) (if equipped)
- Outside air dampers - Closed.
- Heat - all stages - Off, Modulating heat output at 0 vdc.
- Occupied/Unoccupied output - Deenergized
- VO relay - Energized

### PURGE sequence "D"

Possibly this sequence could be used for purging the air out of a building before coming out of Unoccupied mode of operation on VAV units or when the purging of smoke or stale air is required after a fire.

- Supply fan - On.
- Supply fan VFD - On (60 Hz) (if equipped)
- Inlet guide vanes/VAV boxes - Open (if equipped).

- Exhaust fan - On, exhaust dampers - Open (if equipped).
- Exhaust fan VFD - On (60 Hz) (if equipped)
- Outside air dampers - Open.
- Heat - all stages - Off, Modulating heat output at 0 vdc.
- Occupied/Unoccupied output - Energized
- VO relay - Energized

### PURGE with duct pressure control "E"

This sequence can be used when supply air control is required for smoke control.

- Supply fan - On.
- Supply fan VFD - On (if equipped)
- Inlet guide vanes/VFD controlled by supply air pressure control function with supply air pressure high limit disabled.
- Exhaust fan - On, exhaust dampers - Open (if equipped).
- Exhaust fan VFD - On (60 Hz) (if equipped)
- Outside air dampers - Open.
- Heat - all stages - Off, Modulating heat output at 0 vdc.
- Occupied/Unoccupied output - Energized
- VO relay - Energized

Note: Each system (cooling, exhaust, supply air, etc.) within the unit can be redefined in the field for each of the five sequences, if required. Also the definitions of any or all of the (5) five sequences may be locked into the software by simple key strokes at the Human Interface Panel.

## 4

### Human Interface Panel (H.I.)

The Human Interface (HI) Panel provides a 2 line X 40 character clear English liquid crystal display and a 16 button keypad for monitoring, setting, editing and controlling. The Human Interface Panel is mounted in the unit's main control panel and is accessible through a hatch built into the unit's control panel door.

The optional remote-mount version of the Human Interface (RHI) Panel has all the functions of the unit-mount version except Service Mode. To use a RHI the



# Controls

## (VAV/CAV Units)

unit must be equipped with an optional InterProcessor Communications Bridge (IPCB). The RHI can be located up to 1,000 feet from the unit. A single RHI can be used to monitor and control up to 4 rooftops, each containing an IPCB.

### Human Interface Panel Main Menu

- **STATUS** — used to monitor all temperatures, pressures, humidities, setpoints, input and output status. The
- **CUSTOM** key allows the user to customize a status report—consisting of up to (4) screens of the data available in the main Status menu.
- **SET POINTS** — used to edit all factory preset Default setpoints
- **DIAGNOSTICS** — used to review active and historical lists of diagnostic conditions. A total of 49 different diagnostics can be read at the Human Interface Panel and the last 20 diagnostics can be held in a active history buffer log at the Human Interface Panel.
- **SETUP** — Control parameters, sensor selections, setpoint source selections, output definitions, and numerous other points can be edited in this menu. All points have factory preset values so unnecessary editing is kept to a minimum.
- **CONFIGURATION** — Preset with the proper configuration for the unit as it ships from the factory, this information would be edited only if certain features were physically added or deleted from the unit. For example, if a field supplied Trane Communication Interface (TCI) module or Ventilation Override Module was added to the unit in the field, the unit configuration would need to be edited to reflect that feature.
- **SERVICE** — used to selectively control outputs (for compressors, fans, damper position, etc.) for servicing or troubleshooting the unit. This menu is accessible only at the unit-mounted Human Interface Panel.

### 5

### Generic Building Automation System Module (GBAS)

The Generic Building Automation System Module (GBAS) is used to

provide broad control capabilities for building automation systems other than the Trane's Tracer® system. A field provided potentiometer or a 0-5 vdc signal can be applied to any of the inputs of the GBAS to provide:

### a

**Analog Inputs** — 4 Analog inputs that can be configured to be any of the following:

- (1) Occupied Zone Cooling
- (2) Unoccupied Zone Cooling
- (3) Occupied Zone Heating
- (4) Unoccupied Zone Heating
- (5) SA Cooling Setpoint
- (6) SA Heating Setpoint
- (7) Space Static Pressure Setpoint
- (8) SA Static Pressure Setpoint

### b

**Binary Outputs** — each of the five (5) relay outputs can be mapped to any/all of the available diagnostics.

### c

**Demand Limiting Binary Input** — This function is operational on units with a GBAS and is used to reduce electrical consumption at peak load times. There are two types of demand limiting, 50% and 100%. When demand limiting is needed, mechanical cooling and heating operation are either partially (50%), or completely disabled (100%), in order to save energy. The definition of Demand Limit is user definable at the Human Interface Panel. Demand Limit binary input accepts a field supplied switch or contact closure. When the need for demand limiting has been discontinued, the unit's cooling/heating functions will again become fully enabled.

### 6

### Evaporator Coil Frost Protection — FROSTAT™

A temperature sensor on the evaporator is used to determine if the coil is getting close to a freezing condition. Mechanical cooling capacity is shed as necessary to prevent icing.

The FROSTAT™ system eliminates the need for hot gas bypass and adds a suction line surface temperature sensor



# Controls

# (VAV/CV Units)

near the TXV bulb location to shut the cooling off when coil frosting conditions occur. The supply fans are not shut off and will de-ice the coil. Timers prevent the compressors from rapid cycling.

7

## Occupied/Unoccupied Switching

a

Description — 3 ways to switch Occupied/Unoccupied:

- (1) NSB Panel
- (2) Field-supplied contact closure (hardwired binary input to RTM)
- (3) TRACER

## Night Setback Sensors

Trane's night setback sensors are programmable with a time clock function that provides communication to the rooftop unit through a 2-wire communications link. The desired transition times are programmed at the night setback sensor and communicated to the rooftop.

Night setback (unoccupied mode) is operated through the time clock provided in the sensors with night setback. When the time clock switches to night setback operation, the outdoor air dampers close and heating/cooling can be enabled or disabled depending on set-up parameters. As the building load changes, the night setback sensor energizes the rooftop heating/cooling (if enabled) function and the evaporator fan. The rooftop unit will cycle through the evening as heating/cooling (if enabled) is required in the space. When the time clock switches from night setback to occupied mode, all heating/cooling functions begin normal operation.

When using the night setback options with a VAV heating/cooling rooftop, airflow must be maintained through the rooftop unit. This can be accomplished by electrically tying the VAV boxes to the Unoccupied output relay contacts on the Rooftop Module (RTM) or by using changeover thermostats. Either of these methods will assure adequate airflow through the unit and satisfactory temperature control of the building.

## Occupied/Unoccupied input on the RTM

This input accepts a field supplied switch or contacts closure such as a time clock.

### Trane Tracer® System

The Trane Tracer System can control the Occupied/Unoccupied status of the rooftop.

8

### Timed Override Activation — ICS

This function is operational when the RTM is the zone temperature sensor source, which was set up at the Human Interface Panel. When this function is initiated by the push of an override button on the ICS sensor, the Tracer will switch the unit to the Occupied mode. Unit operation (Occupied mode) during timed override is terminated by a signal from Tracer.

### Timed Override Activation — Non-ICS

This function is active whenever the RTM is selected as the Zone Temperature Sensor source, which was set up at the Human Interface Panel. When this function is initiated by the push of an override button on the zone sensor, the unit will switch to the Occupied mode. Automatic Cancellation of the Timed Override Mode occurs after three hours of operation.

9

### Low Ambient Compressor Lockout

This function will lock out the compressor if the outdoor air temperature is below the low ambient compressor lock out temperature set point. The factory setpoint is 50 F on standard units and 0 F on low ambient units. This setpoint is adjustable at the Human Interface Panel. Compressors will be locked out when outdoor air temperatures falls below that selected temperature and will be allowed to start again when the temperature rises 5 F above the setpoint.

10

### Comparative Enthalpy Control of Economizer

An optional Comparative Enthalpy system is used to control the operation of the economizer, and measures the temperature and humidity of both return

air and outside air to determine which source has lower enthalpy. This system allows true comparison of outdoor air and return air enthalpy by measurement of outdoor air and return air temperatures and humidities.

### Reference Enthalpy Control of Economizer

The optional reference enthalpy compares ambient temperature and humidity to the economizer enthalpy control setpoint. If ambient temperature and humidity are below the economizer enthalpy control setpoint the economizer will operate freely. This system provides more sophisticated control where outdoor air humidity levels may not be acceptable for building comfort and indoor air quality.

### Dry Bulb Temperature Control of Economizer

The optional dry bulb system measures ambient temperature comparing it to the economizer control temperature setpoint. If the ambient temperature is below the economizer dry bulb temperature control setpoint, the economizer will operate freely. This system is best suited for arid regions where the humidity levels of fresh air would not be detrimental to building comfort and indoor air quality.

11

### Compressor Lead/Lag

Compressor lead/lag is a user-selectable feature through the Human Interface Panel available on all units. After each request for compressor operation, the lead refrigeration circuit or compressor on 20-30 tons units switches, thereby causing a more equitable or balanced run time among compressors.

12

### Emergency Stop Input

A binary input is provided on the Rooftop Module (RTM) for installation of field provided switch or contacts for immediate shutdown of all unit functions.

# Electrical Data

## Electrical Service Sizing

To correctly size electrical service wiring for your unit, find the appropriate calculations listed below. Each type of unit has its own set of calculations for MCA (Minimum Circuit Ampacity), MOP (Maximum Overcurrent Protection), and RDE (Recommended Dual Element fuse size). Read the load definitions that follow and then find the appropriate set of calculations based on your unit type.

Set 1 is for cooling only and cooling with gas heat units, and set 2 is for cooling with electric heat units.

Load Definitions: (To determine load values, see the Electrical Service Sizing Data Tables on the following page.)

LOAD1 = CURRENT OF THE LARGEST MOTOR (COMPRESSOR OR FAN MOTOR)

LOAD2 = SUM OF THE CURRENTS OF ALL REMAINING MOTORS

LOAD3 = CURRENT OF ELECTRIC HEATERS

LOAD4 = ANY OTHER LOAD RATED AT 1 AMP OR MORE

### Set 1. Cooling Only Rooftop Units and Cooling with Gas Heat Rooftop Units

$$MCA = (1.25 \times \text{LOAD1}) + \text{LOAD2} + \text{LOAD4}$$

$$MOP = (2.25 \times \text{LOAD1}) + \text{LOAD2} + \text{LOAD4}$$

Select a fuse rating equal to the MOP value. If the MOP value does not equal a standard fuse size as listed in NEC 240-6, select the next lower standard fuse rating. NOTE: If selected MOP is less than the MCA, then reselect the lowest standard maximum fuse size which is equal to or larger than the MCA, provided the reselected fuse size does not exceed 800 amps.

$$RDE = (1.5 \times \text{LOAD1}) + \text{LOAD2} + \text{LOAD4}$$

Select a fuse rating equal to the RDE value. If the RDE value does not equal a standard fuse size as listed in NEC 240-6, select the next higher standard fuse rating. NOTE: If the selected RDE is greater than the selected MOP value,

then reselect the RDE value to equal the MOP value.

### Set 2. Rooftop units with Electric Heat

a. Single Source Power (380V, 415V, 460V, and 575V)

To arrive at the correct MCA, MOP, and RDE values for these units, you must perform two sets of calculations. First calculate the MCA, MOP, and RDE values as if the unit was in cooling mode (use the equations given in Set 1). Then calculate the MCA, MOP, and RDE values as if the unit were in the heating mode as follows.

(Keep in mind when determining LOADS that the compressors don't run while the unit is in the heating mode).

$$\text{For units using heaters less than 50 kw.}$$

$$MCA = 1.25 \times (\text{LOAD1} + \text{LOAD2} + \text{LOAD4}) + (1.25 \times \text{LOAD3})$$

For units using heaters equal to or greater than 50 kw.

$$MCA = 1.25 \times (\text{LOAD1} + \text{LOAD2} + \text{LOAD4}) + \text{LOAD3}$$

The nameplate MCA value will be the larger of the cooling mode MCA value or the heating mode MCA value calculated above.

$$MOP = (2.25 \times \text{LOAD1}) + \text{LOAD2} + \text{LOAD3} + \text{LOAD4}$$

The selection MOP value will be the larger of the cooling mode MOP value or the heating mode MOP value calculated above.

Select a fuse rating equal to the MOP value. If the MOP value does not equal a standard fuse size as listed in NEC 240-6, select the next lower standard fuse rating. NOTE: If selected MOP is less than the MCA, then reselect the lowest standard maximum fuse size which is equal to or larger than the MCA, provided the reselected fuse size does not exceed 800 amps.

$$RDE = (1.5 \times \text{LOAD1}) + \text{LOAD2} + \text{LOAD3} + \text{LOAD4}$$

The selection RDE value will be the larger of the cooling mode RDE value or the heating mode RDE value calculated above.

Select a fuse rating equal to the RDE value. If the RDE value does not equal a standard fuse size as listed in NEC 240-6, select the next higher standard fuse rating. NOTE: If the selected RDE is greater than the selected MOP value, then reselect the RDE value to equal the MOP value.

### b. Dual Source Power units (200V and 230V)

These units will have two circuit values shown on the nameplate. The first circuit value will be the refrigeration (cooling mode) values calculated per Set 1. The second set of circuit values shown on the nameplate will be for the electric heating circuit as follows.

$$MCA = (1.25 \times \text{LOAD3})$$

$$MOP = (1.25 \times \text{LOAD3})$$

Select a fuse rating for the electric heating circuit that's equal to the MOP value obtained in the equation above. If the MOP value does not equal a standard fuse size as listed in NEC 240-6, select the next lower standard fuse rating (see note below for exception).

NOTE: If selected MOP is less than the MCA obtained in the equation above, then reselect the lowest standard maximum fuse size which is equal to or larger than the MCA, provided the reselected fuse size does not exceed 800 amps.

$$RDE = \text{LOAD3}$$

Select a fuse rating for the electric heating circuit that's equal to the RDE value. If the RDE value does not equal a standard fuse size as listed in NEC 240-6, select the next higher standard fuse rating. NOTE: If the selected RDE is greater than the selected MOP value, then reselect the RDE value to equal the MOP value.

### GENERAL NOTES:

On 20 to 130 ton rooftops, the selected MOP value is stamped in the MOP field on the nameplate.



# Electrical Data

**Table ED-1 — 20-130 Tons Electrical Service Sizing Data<sup>1</sup>— Compressor**

Nominal Tons	Coil Type	Compressor		Nominal Voltage								
		Number Per Unit	Standard	High	200		230		460		575	
			Capacity KW (ea)	Capacity KW (ea)	RLA <sup>1</sup> (ea)	LRA (ea)	RLA <sup>1</sup> (ea)	LRA (ea)	RLA <sup>1</sup> (ea)	LRA (ea)	RLA <sup>1</sup> (ea)	LRA (ea)
<b>Compressor</b>												
20	Std and Hi-Cap	2	9.8	10.2	41.9	269	41.9	251	18.2	117	14.6	94
25	Std and Hi-Cap	1	15.0	15.5	62.8	409	62.8	376	27.3	178	21.8	143
		1	9.6	9.9	41.9	269	41.9	251	18.2	117	14.6	94
30	Std and Hi-Cap	2	15.7	15.7	62.8	409	62.8	376	27.3	178	21.8	143
40	Std and Hi-Cap	4	9.8	10.1	41.9	269	41.9	251	18.2	117	14.6	94
50	Std and Hi-Cap	2	15.3	15.4	62.8	409	62.8	376	27.3	178	21.8	143
		2	9.8	9.9	41.9	269	41.9	251	18.2	117	14.6	94
55	Std and Hi-Cap	4	15.3	15.6	62.8	409	62.8	376	27.3	178	21.8	143
60	Std and Hi-Cap	4	14.4	15.0	62.8	409	62.8	376	27.3	178	21.8	143
70	Std	2	15.6	—	62.8	409	62.8	376	27.3	178	21.8	143
		4	9.9	—	41.9	269	41.9	251	18.2	117	14.6	94
75	Std	2	15.8	—	62.8	409	62.8	376	27.3	178	21.8	143
		4	10.1	—	41.9	269	41.9	251	18.2	117	14.6	94
75	Hi-Cap	2	—	16.9	62.8	409	62.8	376	27.3	178	21.8	143
		4	—	11.2	41.9	269	41.9	251	18.2	117	14.6	94
90	Std and Hi-Cap	4	15.7	16.3	62.8	409	62.8	376	27.3	178	21.8	143
		2	10.5	10.9	41.9	269	41.9	251	18.2	117	14.6	94
105	Std and Hi-Cap	6	15.6	15.9	62.8	409	62.8	376	27.3	178	21.8	143
115	Std	4	16.4	—	62.8	409	62.8	376	27.3	178	21.8	143
		4	10.9	—	41.9	269	41.9	251	18.2	117	14.6	94
130	Std	8	15.5	—	—	—	—	—	27.3	178	21.8	143

Note:

1. Use this table only for sizing electrical service. DO NOT USE FOR CALCULATING EER.



# Electrical Data

**Table ED-2— 20-130 Tons Electrical Service Sizing Data — Motors**

Nominal Tons	Nominal Voltage			
	200	230	460	575
	FLA	FLA	FLA	FLA
<b>Condenser Fan Motors</b>				
20	8.2	8.2	3.6	2.8
25	12.3	12.3	5.4	4.2
30	12.3	12.3	5.4	4.2
40	16.4	16.4	7.2	5.6
50	24.6	24.6	10.8	8.4
55	24.6	24.6	10.8	8.4
60	24.6	24.6	10.8	8.4
70	24.6	24.6	10.8	8.4
75	24.6	24.6	10.8	8.4
90	32.8	32.8	14.4	11.2
105	41.0	41.0	18.0	14.0
115	41.0	41.0	18.0	14.0
130	49.2	49.2	21.6	16.8
<b>Supply Fan Motors</b>				
Motor Horsepower				
3	11.2	8.8	4.4	3.8
5	15.2	13.4	6.6	5.3
7½	22.3	19.6	9.8	7.8
10	29.7	26.4	13.2	10.3
15	44.4	38.6	19.3	15.4
20	58.7	51.0	25.5	20.4
25	70.5	61.0	30.5	24.5
30	86.5	75.0	37.5	30.0
40	112.0	97.0	48.5	39.0
<b>Exhaust Fan Motor</b>				
Motor Hp				
1½	5.0	4.4	2.2	1.8
3	11.2	8.8	4.4	3.8
5	15.2	13.4	6.6	5.3
7½	22.3	19.6	9.8	7.8
10	29.7	26.4	13.2	10.3
15	44.4	38.6	19.3	15.4
20	58.7	51.0	25.5	20.4
25	70.5	61.0	30.5	24.5
30	86.5	75.0	37.5	30.0
40	112.0	97.0	48.5	39.0

**Table ED-3 — 20-130 Tons Electrical Service Sizing Data — Electric Heat Module (Electric Heat Units Only)**

Module KW	Voltage			
	200	230	460	575
	FLA	FLA	FLA	FLA
30	83.3	72.2	36.1	28.9
50	138.8	120.3	60.1	48.1
70	194.3	168.4	84.2	67.4
90	249.8	216.5	108.3	86.6
110	305.3	264.6	132.3	105.9
130			156.4	125.1
150			180.4	144.3
170			204.5	163.6
190			228.5	182.8

Note: Electric heat FLA are determined at 208, 240, 480 and 600 volts.

**Table ED-4 — 20-130 Tons Electrical Service Sizing Data — Control Power Transformer — Heating and Cooling Modes**

Nominal Tons	(Add) FLA
20-40	3
50-75	6
90-130	8

**Table ED-5 — 20-130 Tons — Electrical Service Sizing Data — Crankcase Heaters — (Heating Mode on 460/575 Volt Only)**

Nominal Tons	(Add) FLA
20-30	1
40-60	2
70-105	3
115-130	4

**Table ED-6 — Voltage Utilization Range**

Unit Voltage	Voltage Utilization Range
200/60/3	180-220
230/60/3	207-253
380/50/3	342-418
415/50/3	373-457
460/60/3	414-506
575/60/3	517-633

# Dimensional Data (20 - 75 Tons)

Figure DD-1 — 20-75 Ton Cooling Only Unit Dimensions — SAHF

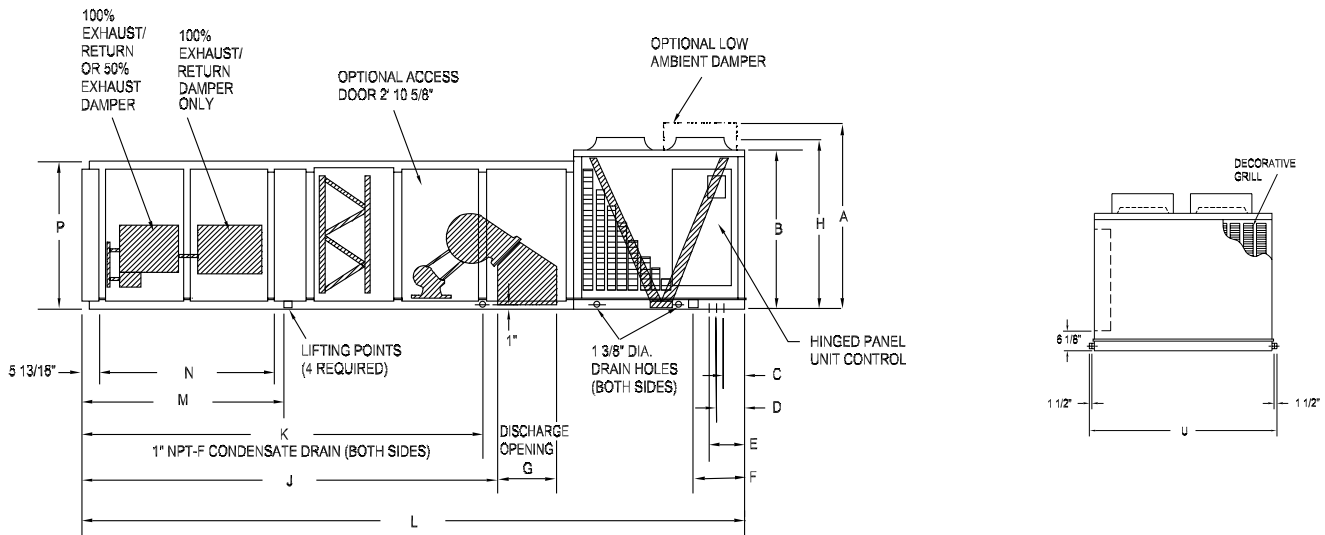
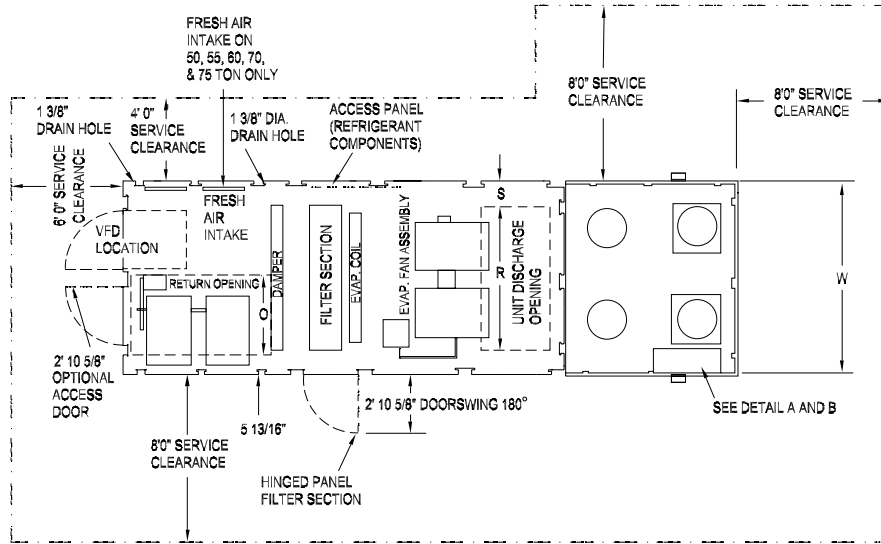


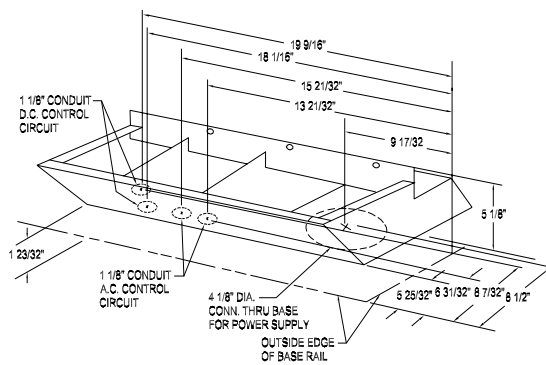
Table DD-1 — Cooling Only Unit Dimensions (Ft. In.) — SAHF

Nominal Tons	H	L	W	A	B	C	D	E	F	G	J	K	M	N	P	Q	R	S	U
20 & 25	5-8 <sup>15</sup> / <sub>16</sub>	21-9 <sup>3</sup> / <sub>4</sub>	7-6 <sup>1</sup> / <sub>2</sub>	6-4 <sup>3</sup> / <sub>16</sub>	5-3 <sup>1</sup> / <sub>8</sub>	0-9 <sup>1</sup> / <sub>2</sub>	1-3 <sup>5</sup> / <sub>8</sub>	1-7 <sup>7</sup> / <sub>16</sub>	1-3 <sup>1</sup> / <sub>2</sub>	2-2 <sup>1</sup> / <sub>2</sub>	14-0 <sup>1</sup> / <sub>4</sub>	12-6	7-0	6-6 <sup>15</sup> / <sub>16</sub>	3-9 <sup>9</sup> / <sub>16</sub>	3-4 <sup>3</sup> / <sub>8</sub>	5-7	0-11 <sup>3</sup> / <sub>4</sub>	7-9 <sup>1</sup> / <sub>2</sub>
30	6-2 <sup>1</sup> / <sub>16</sub>	21-9 <sup>3</sup> / <sub>4</sub>	7-6 <sup>1</sup> / <sub>2</sub>	6-9 <sup>11</sup> / <sub>16</sub>	5-8 <sup>5</sup> / <sub>8</sub>	0-9 <sup>1</sup> / <sub>2</sub>	1-3 <sup>5</sup> / <sub>8</sub>	1-7 <sup>7</sup> / <sub>16</sub>	1-3 <sup>1</sup> / <sub>2</sub>	2-2 <sup>1</sup> / <sub>2</sub>	14-0 <sup>1</sup> / <sub>4</sub>	12-6	7-0	6-6 <sup>15</sup> / <sub>16</sub>	4-9 <sup>9</sup> / <sub>16</sub>	3-4 <sup>3</sup> / <sub>8</sub>	5-7	0-11 <sup>3</sup> / <sub>4</sub>	7-9 <sup>1</sup> / <sub>2</sub>
40	6-7 <sup>3</sup> / <sub>8</sub>	27-0	7-6 <sup>1</sup> / <sub>2</sub>	7-2 <sup>5</sup> / <sub>8</sub>	6-1 <sup>5</sup> / <sub>8</sub>	0-9 <sup>1</sup> / <sub>8</sub>	1-5 <sup>7</sup> / <sub>8</sub>	1-10 <sup>1</sup> / <sub>8</sub>	2-5	2-5	16-7 <sup>13</sup> / <sub>16</sub>	15-11 <sup>1</sup> / <sub>8</sub>	8-0	7-8 <sup>3</sup> / <sub>16</sub>	5-9 <sup>9</sup> / <sub>16</sub>	3-4 <sup>3</sup> / <sub>8</sub>	5-7	0-11 <sup>3</sup> / <sub>4</sub>	7-9 <sup>1</sup> / <sub>2</sub>
50 & 55	5-8 <sup>7</sup> / <sub>8</sub>	29-8	7-6 <sup>1</sup> / <sub>2</sub>	6-4 <sup>1</sup> / <sub>8</sub>	5-3 <sup>1</sup> / <sub>8</sub>	0-9 <sup>1</sup> / <sub>2</sub>	1-3 <sup>5</sup> / <sub>8</sub>	1-7 <sup>7</sup> / <sub>16</sub>	2-5	2-5	16-7 <sup>13</sup> / <sub>16</sub>	15-11 <sup>1</sup> / <sub>8</sub>	8-0	7-8 <sup>3</sup> / <sub>16</sub>	6-9 <sup>9</sup> / <sub>16</sub>	3-4 <sup>3</sup> / <sub>8</sub>	5-7	0-11 <sup>3</sup> / <sub>4</sub>	7-9 <sup>1</sup> / <sub>2</sub>
60	6-7 <sup>3</sup> / <sub>8</sub>	27-0	9-8	7-2 <sup>5</sup> / <sub>8</sub>	6-1 <sup>5</sup> / <sub>8</sub>	0-9 <sup>1</sup> / <sub>8</sub>	1-5 <sup>7</sup> / <sub>8</sub>	1-10 <sup>1</sup> / <sub>8</sub>	2-5	2-5	16-7 <sup>13</sup> / <sub>16</sub>	15-11 <sup>1</sup> / <sub>8</sub>	8-0	7-8 <sup>3</sup> / <sub>16</sub>	5-9 <sup>9</sup> / <sub>16</sub>	4-5 <sup>5</sup> / <sub>8</sub>	6-10 <sup>7</sup> / <sub>8</sub>	1-4 <sup>9</sup> / <sub>16</sub>	9-11
70 & 75	6-7 <sup>3</sup> / <sub>8</sub>	27-0	9-8	7-2 <sup>5</sup> / <sub>8</sub>	6-1 <sup>5</sup> / <sub>8</sub>	0-9 <sup>1</sup> / <sub>8</sub>	1-5 <sup>7</sup> / <sub>8</sub>	1-10 <sup>1</sup> / <sub>8</sub>	1-4	2-5	16-7 <sup>13</sup> / <sub>16</sub>	15-11 <sup>1</sup> / <sub>8</sub>	8-0	7-8 <sup>3</sup> / <sub>16</sub>	5-9 <sup>9</sup> / <sub>16</sub>	4-5 <sup>5</sup> / <sub>8</sub>	6-10 <sup>7</sup> / <sub>8</sub>	1-4 <sup>9</sup> / <sub>16</sub>	9-11

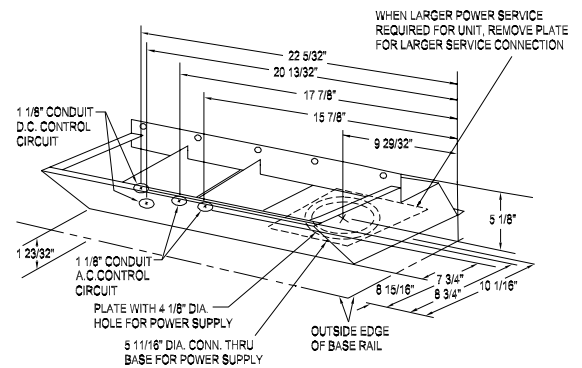
# Dimensional Data

(20 - 75 Tons)

Figure DD-1 — 20-75 Ton Cooling Only Unit Dimensions — SAHF Continued



DETAIL "A" COVERS 20, 25, 30, 50 AND 55 TON UNITS



DETAIL "B" COVERS 40, 60, 70 AND 75 TON UNITS

# Dimensional Data (20 - 75 Tons)

Figure DD-2 — 20-75 Ton Heating/Cooling Unit Dimensions

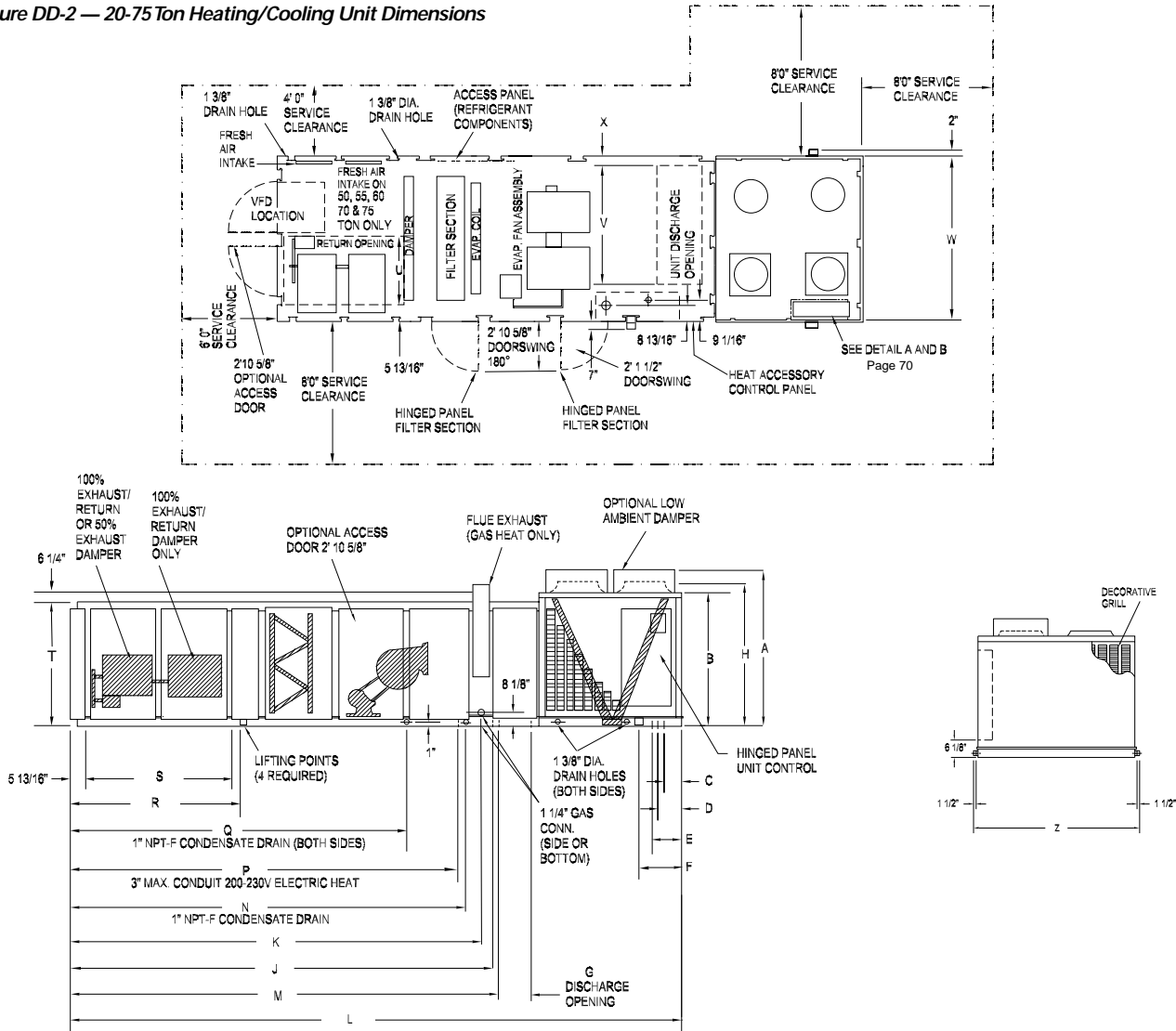


Table DD-2 — Heating/Cooling Unit Dimensions (Ft. In.) — SEHF, SFHF, SSHF, SLHF, SXHF

Nom. Tons	H	L	W	A	B	C	D	E	F	G	J'	K'	M	N	P	Q	R	S	T	U	V	X	Z
20 & 25	5-8 <sup>15</sup> / <sub>16</sub>	24-1 <sup>3</sup> / <sub>8</sub>	7-6 <sup>1</sup> / <sub>2</sub>	6-4 <sup>3</sup> / <sub>16</sub>	5-3 <sup>1</sup> / <sub>8</sub>	0-9 <sup>1</sup> / <sub>2</sub>	1-3 <sup>3</sup> / <sub>8</sub>	1-7 <sup>9</sup> / <sub>16</sub>	1-3 <sup>1</sup> / <sub>2</sub>	2-2 <sup>1</sup> / <sub>2</sub>	16-9 <sup>3</sup> / <sub>16</sub>	16-6	16-3 <sup>13</sup> / <sub>16</sub>	16-7	15-5 <sup>5</sup> / <sub>16</sub>	13-3	7-0	6-6 <sup>15</sup> / <sub>16</sub>	3-9 <sup>9</sup> / <sub>16</sub>	3-4 <sup>3</sup> / <sub>8</sub>	5-7	0-5 <sup>13</sup> / <sub>16</sub>	7-9 <sup>1</sup> / <sub>2</sub>
30	6-2 <sup>3</sup> / <sub>8</sub>	24-1 <sup>3</sup> / <sub>8</sub>	7-6 <sup>1</sup> / <sub>2</sub>	6-9 <sup>5</sup> / <sub>8</sub>	5-8 <sup>5</sup> / <sub>8</sub>	0-9 <sup>1</sup> / <sub>2</sub>	1-3 <sup>5</sup> / <sub>8</sub>	1-7 <sup>9</sup> / <sub>16</sub>	1-3 <sup>1</sup> / <sub>2</sub>	2-2 <sup>1</sup> / <sub>2</sub>	16-9 <sup>3</sup> / <sub>16</sub>	16-6	16-3 <sup>13</sup> / <sub>16</sub>	16-7	15-5 <sup>5</sup> / <sub>16</sub>	13-3	7-0	6-6 <sup>15</sup> / <sub>16</sub>	4-9 <sup>9</sup> / <sub>16</sub>	3-4 <sup>3</sup> / <sub>8</sub>	5-7	0-5 <sup>13</sup> / <sub>16</sub>	7-9 <sup>1</sup> / <sub>2</sub>
40	6-7 <sup>3</sup> / <sub>8</sub>	30-2 <sup>1</sup> / <sub>2</sub>	7-6 <sup>1</sup> / <sub>2</sub>	7-2 <sup>5</sup> / <sub>8</sub>	6-1 <sup>5</sup> / <sub>8</sub>	0-9 <sup>9</sup> / <sub>8</sub>	1-5 <sup>7</sup> / <sub>8</sub>	1-10 <sup>1</sup> / <sub>8</sub>	2-5	2-5	20-1 <sup>1</sup> / <sub>4</sub>	19-6	19-10 <sup>9</sup> / <sub>16</sub>	19-7	18-11 <sup>11</sup> / <sub>16</sub>	15-11 <sup>1</sup> / <sub>8</sub>	8-0	7-8 <sup>3</sup> / <sub>16</sub>	5-9 <sup>9</sup> / <sub>16</sub>	3-4 <sup>3</sup> / <sub>8</sub>	5-7	0-5 <sup>13</sup> / <sub>16</sub>	7-9 <sup>1</sup> / <sub>2</sub>
50 & 55	5-8 <sup>7</sup> / <sub>8</sub>	32-10 <sup>1</sup> / <sub>2</sub>	7-6 <sup>1</sup> / <sub>2</sub>	6-4 <sup>1</sup> / <sub>8</sub>	5-3 <sup>1</sup> / <sub>8</sub>	0-9 <sup>1</sup> / <sub>2</sub>	1-3 <sup>3</sup> / <sub>8</sub>	1-7 <sup>9</sup> / <sub>16</sub>	2-5	2-5	20-6 <sup>3</sup> / <sub>4</sub>	20-3	19-10 <sup>9</sup> / <sub>16</sub>	19-7	18-11 <sup>11</sup> / <sub>16</sub>	15-11 <sup>1</sup> / <sub>8</sub>	8-0	7-8 <sup>3</sup> / <sub>16</sub>	6-9 <sup>3</sup> / <sub>8</sub>	3-4 <sup>3</sup> / <sub>8</sub>	5-7	0-5 <sup>13</sup> / <sub>16</sub>	7-9 <sup>1</sup> / <sub>2</sub>
60	6-7 <sup>3</sup> / <sub>8</sub>	30-2 <sup>1</sup> / <sub>2</sub>	9-8	7-2 <sup>5</sup> / <sub>8</sub>	6-1 <sup>5</sup> / <sub>8</sub>	0-9 <sup>9</sup> / <sub>8</sub>	1-5 <sup>7</sup> / <sub>8</sub>	1-10 <sup>1</sup> / <sub>8</sub>	2-5	2-5	20-1 <sup>1</sup> / <sub>4</sub>	19-6	19-10 <sup>9</sup> / <sub>16</sub>	19-7	18-11 <sup>11</sup> / <sub>16</sub>	15-11 <sup>1</sup> / <sub>8</sub>	8-0	7-8 <sup>3</sup> / <sub>16</sub>	5-9 <sup>9</sup> / <sub>16</sub>	4-5 <sup>3</sup> / <sub>8</sub>	7-8 <sup>1</sup> / <sub>2</sub>	0-5 <sup>13</sup> / <sub>16</sub>	9-11
70 & 75	6-7 <sup>3</sup> / <sub>8</sub>	30-2 <sup>1</sup> / <sub>2</sub>	9-8	7-2 <sup>5</sup> / <sub>8</sub>	6-1 <sup>5</sup> / <sub>8</sub>	0-9 <sup>9</sup> / <sub>8</sub>	1-5 <sup>7</sup> / <sub>8</sub>	1-10 <sup>1</sup> / <sub>8</sub>	1-4	2-5	20-1 <sup>1</sup> / <sub>4</sub>	19-6	19-10 <sup>9</sup> / <sub>16</sub>	19-7	18-11 <sup>11</sup> / <sub>16</sub>	15-11 <sup>1</sup> / <sub>8</sub>	8-0	7-8 <sup>3</sup> / <sub>16</sub>	5-9 <sup>9</sup> / <sub>16</sub>	4-5 <sup>3</sup> / <sub>8</sub>	7-8 <sup>1</sup> / <sub>2</sub>	0-5 <sup>13</sup> / <sub>16</sub>	9-11

Note:

1. Dimensions shown are for 

High Heat
Low Heat

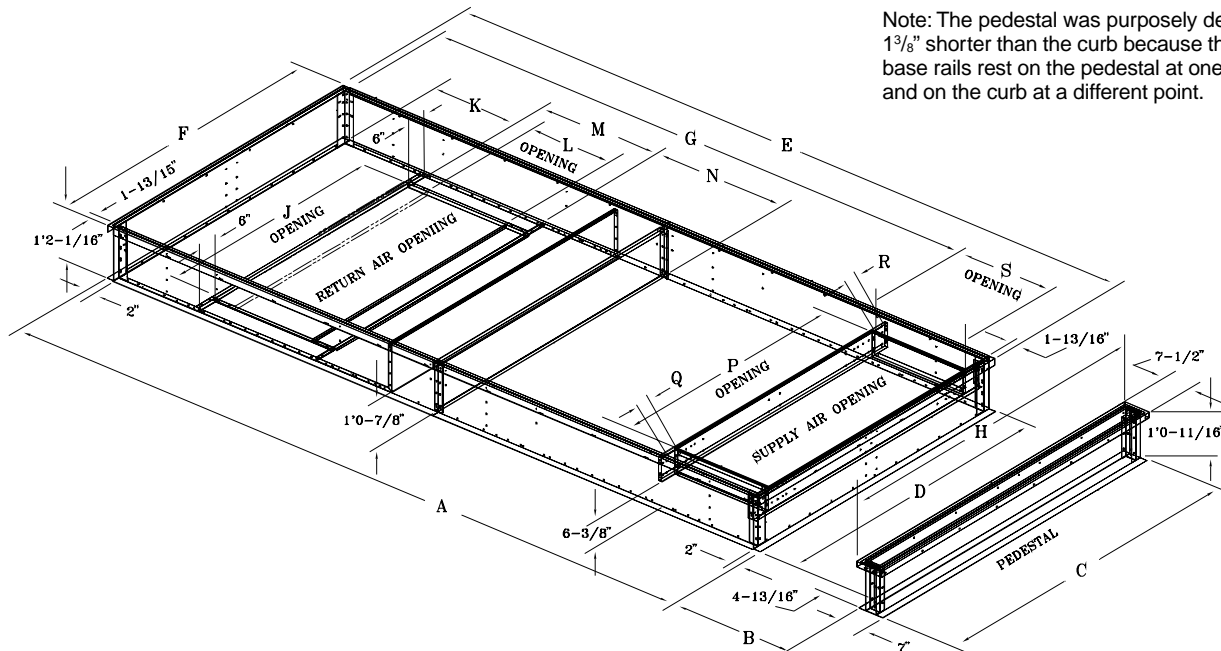
 gas heat units.



# Dimensional Data

(20 - 75 Tons)

Figure DD-3 — 20 - 75 Ton Optional Roof Curb Dimensions (Downflow)



Note: The pedestal was purposely designed 1 3/8" shorter than the curb because the unit's base rails rest on the pedestal at one point and on the curb at a different point.

Table DD-3 — 20 - 75 Ton Downflow Roof Curb Dimensions (Ft. In.)

Tons	Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
20,25,30	SAHF	16'-3 7/8"	2'-10 1/16"	7'-10 7/16"	7'-0 13/16"	16'-3 9/16"	7'-0 1/2"	13'-6 5/16"	7'-11 15/16"	5'-8 13/16"	2'-0"	2'-5 5/16"	2'-11 5/16"	1'-10 5/8"	5'-9 1/2"	0'-5 11/16"	0'-5 11/16"	2'-3 5/16"
	S*HF	18'-7 1/2"	2'-10 1/16"	7'-10 7/16"	7'-0 13/16"	18'-7 3/16"	7'-0 1/2"	15'-10 9/16"	7'-11 15/16"	5'-8 13/16"	2'-0"	2'-5 5/16"	2'-11 5/16"	1'-10 5/8"	5'-7 3/8"	1'-0 7/16"	0'-1"	2'-3 5/16"
40	SAHF	19'-1 15/16"	5'-2 1/16"	7'-10 7/16"	7'-0 13/16"	19'-1 5/8"	7'-0 1/2"	16'-2 7/16"	7'-11 15/16"	5'-8 13/16"	2'-0"	3'-6"	4'-0"	1'-10 5/8"	5'-9 1/2"	0'-5 11/16"	0'-5 11/16"	2'-5 5/16"
	S*HF	22'-4 1/2"	5'-2 1/16"	7'-10 7/16"	7'-0 13/16"	22'-4 1/8"	7'-0 1/2"	19'-5"	7'-11 15/16"	5'-8 13/16"	2'-0"	3'-6"	4'-0"	1'-10 5/8"	5'-7 3/8"	0'-11 3/16"	0'-2 1/4"	2'-5 5/16"
50,55	SAHF	19'-1 15/16"	7'-10 7/16"	7'-10 7/16"	7'-0 13/16"	19'-1 5/8"	7'-0 1/2"	16'-2 7/16"	7'-11 15/16"	5'-8 13/16"	2'-0"	3'-6"	4'-0"	1'-10 5/8"	5'-9 1/2"	0'-5 11/16"	0'-5 11/16"	2'-5 5/16"
	S*HF	22'-4 1/2"	7'-10 7/16"	7'-10 7/16"	7'-0 13/16"	22'-4 1/8"	7'-0 1/2"	19'-5"	7'-11 15/16"	5'-8 13/16"	2'-0"	3'-6"	4'-0"	1'-10 5/8"	5'-7 3/8"	0'-11 3/16"	0'-2 1/4"	2'-5 5/16"
60,70,75	SAHF	19'-1 15/16"	5'-2 1/16"	9'-11 15/16"	9'-2 5/16"	19'-1 5/8"	9'-2"	16'-2 7/16"	10'-1 7/16"	7'-10 5/16"	2'-0"	3'-6"	4'-0"	1'-10 5/8"	6'-11 7/8"	0'-11 3/16"	0'-11 3/16"	2'-5 5/16"
	S*HF	22'-4 1/2"	5'-2 1/16"	9'-11 15/16"	9'-2 5/16"	22'-4 1/8"	9'-2"	19'-5"	10'-1 7/16"	7'-10 5/16"	2'-0"	3'-6"	4'-0"	1'-10 5/8"	*7'-8 3/4"	0'-11 3/16"	**0'-2 3/8"	2'-5 5/16"

Note:

1. The return opening of the roof curb is provided with an adjustable filler panel six inches wide. This panel allows adjustment of the return air opening in order to clear roof members of all standard roof constructions with both the supply and return openings. The return air opening of the curb is at a 90 degree angle as compared to the rooftop return air opening to allow this placement flexibility. The curb acts as a plenum between the ductwork and the unit return opening. A retainer clip is used to secure the adjustable filler piece to the roof curb.

\*\* "P" dimension is 5' 6" on 60, 70, 75 Tons SEHF (Units with electric heat).

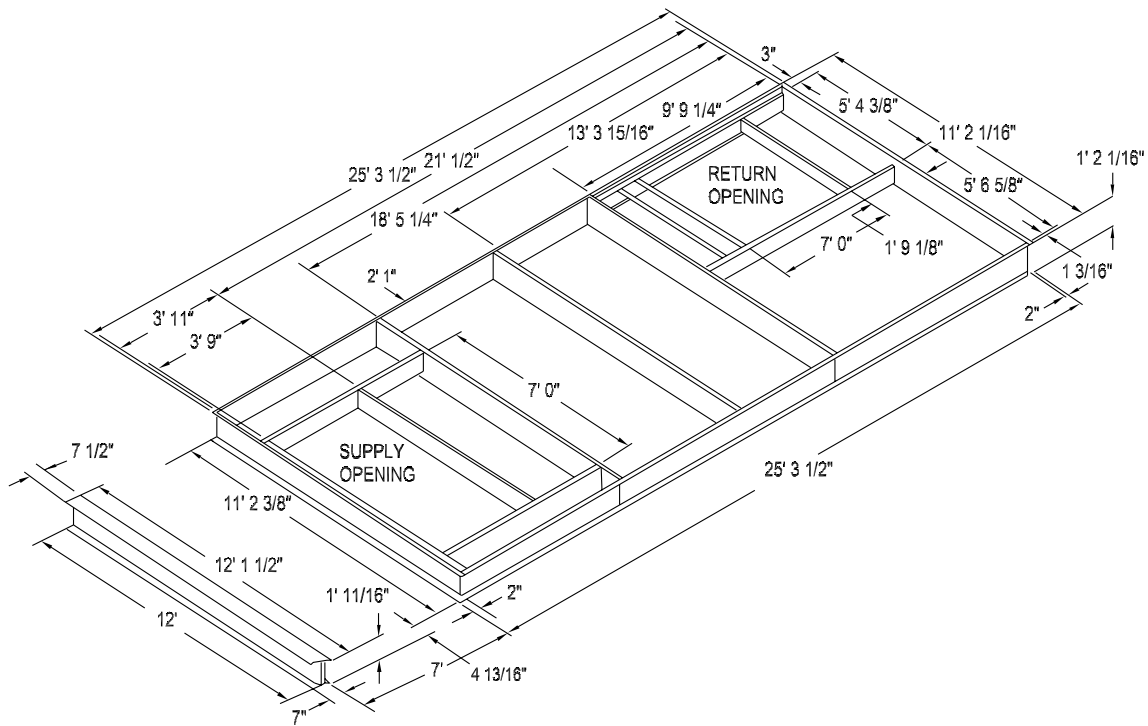
\*\*\* "R" dimension is 2' 5 1/8" on 60, 70, 75 Tons SEHF (Units with electric heat).



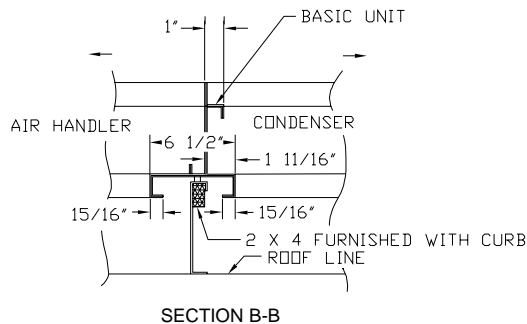
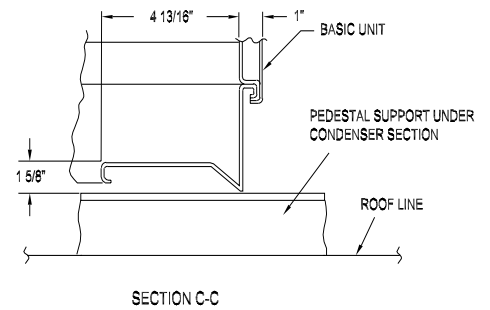
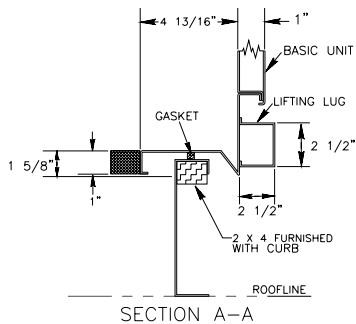
# Dimensional Data

(90 - 130Tons)

Figure DD-6 — 90 - 130Ton Roof Curb Dimensions



Cross Section Thru Roof Curb and base pan

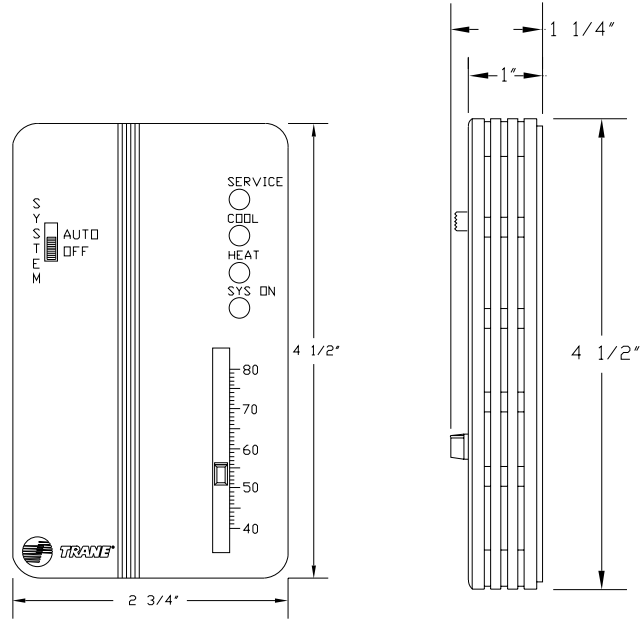


# Dimensional Data

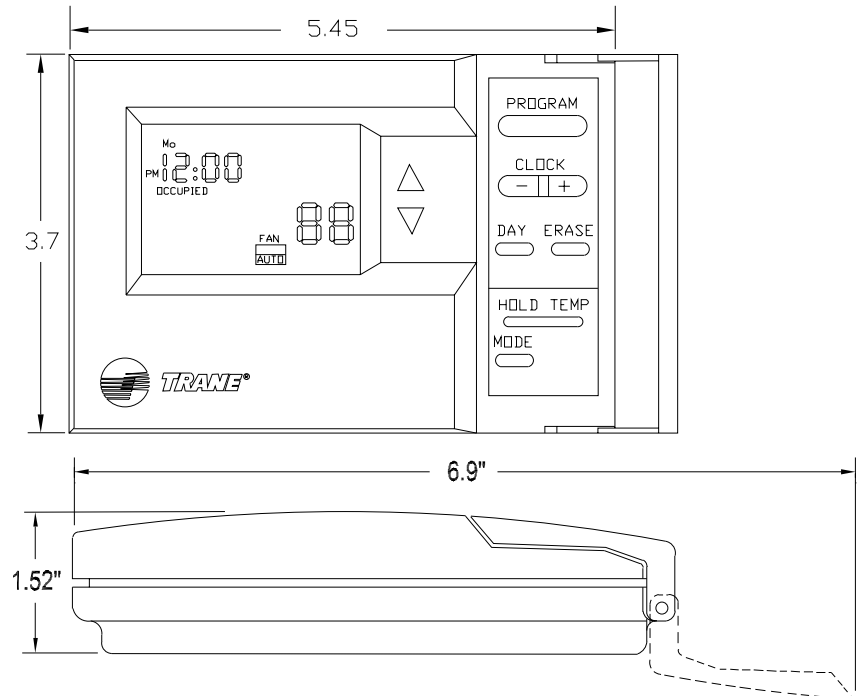
(Variable Air Volume VAV)

## Field Installed Sensors

### SINGLE SETPOINT SENSOR WITH SYSTEM FUNCTION LIGHTS (BAYSENS021\*)



### PROGRAMMABLE NIGHT-SETBACK SENSOR (BAYSENS020\*)



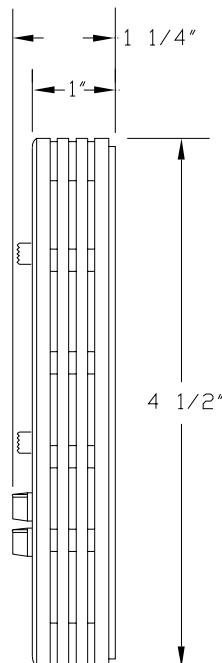
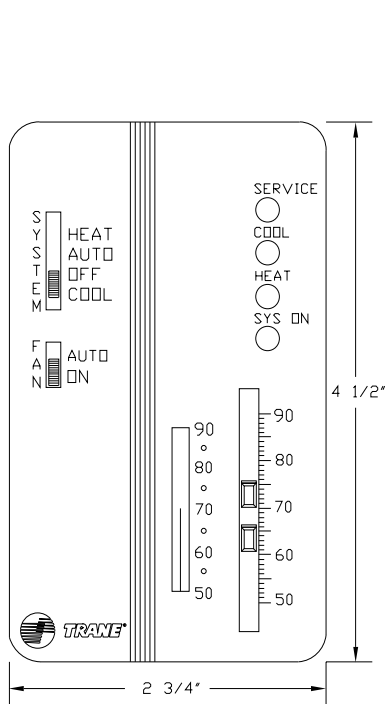
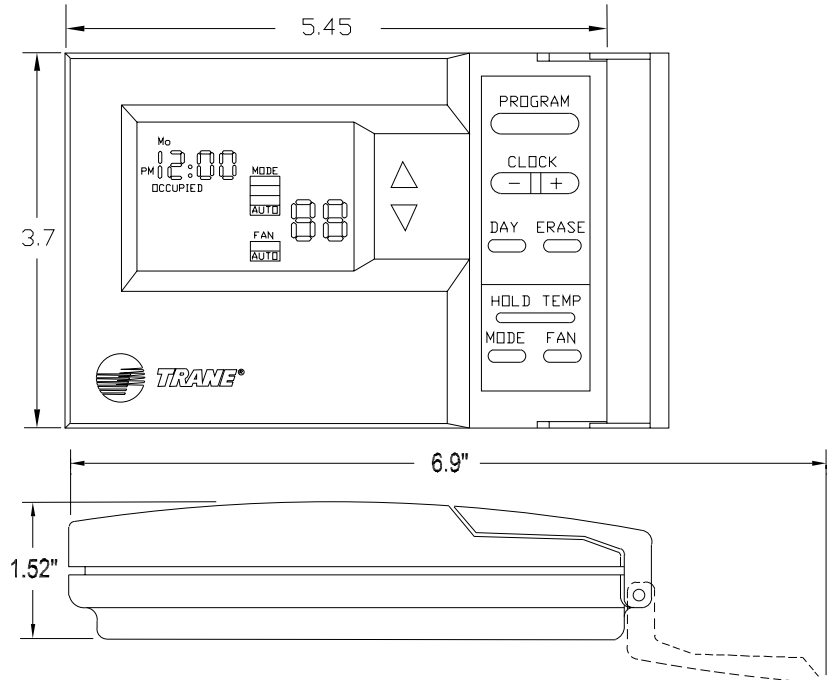
Note:  
1. Remote sensors are available for use with all zone sensors to provide remote sensing capabilities.

# Dimensional Data

(Constant Volume CV)

## Field Installed Sensors

### PROGRAMMABLE NIGHT-SETBACK SENSOR (BAYSENS019\*)



**DUAL SETPOINT, MANUAL/AUTOMATIC CHANGEOVER SENSOR WITH SYSTEM FUNCTION LIGHTS (BAYSENS010\*)**

**WITHOUT LED STATUS INDICATORS (BAYSENS008\*)**

**SINGLE SETPOINT WITHOUT LED STATUS INDICATORS (BAYSENS006\*)**

Note:

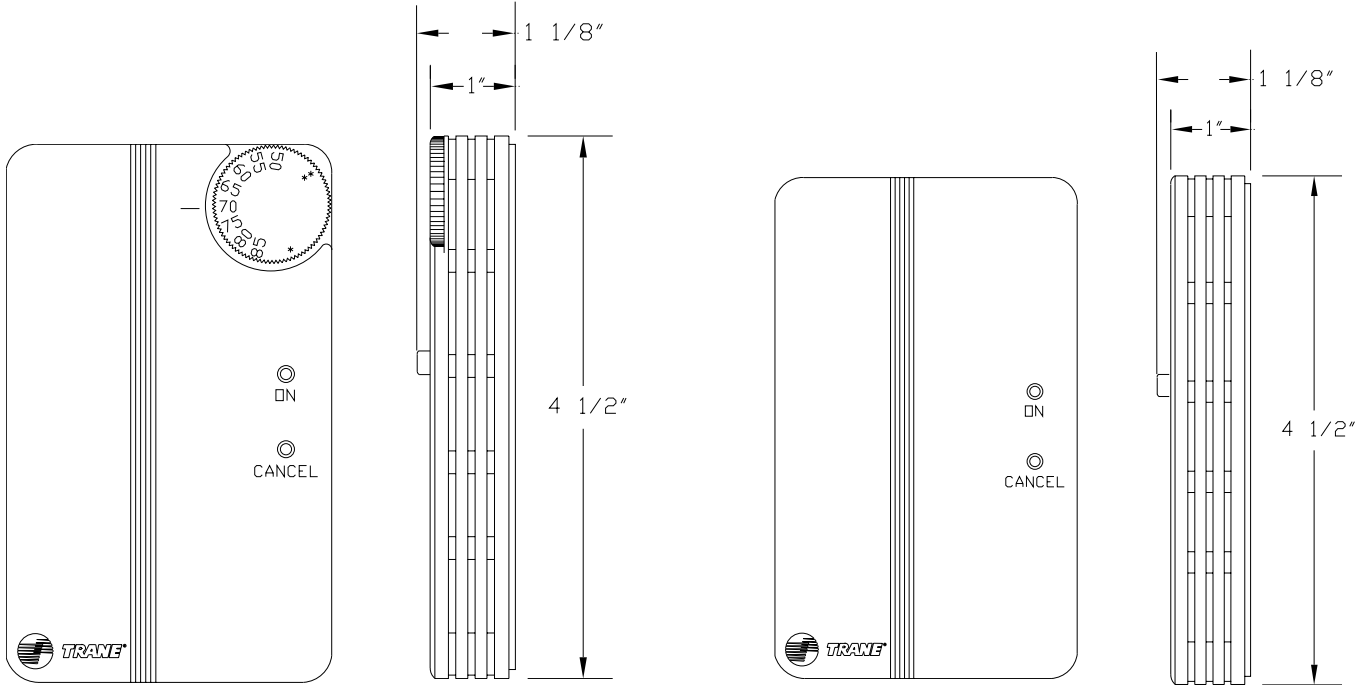
1. Remote sensors are available for use with all zone sensors to provide remote sensing capabilities.

# Dimensional Data (CV and VAV)

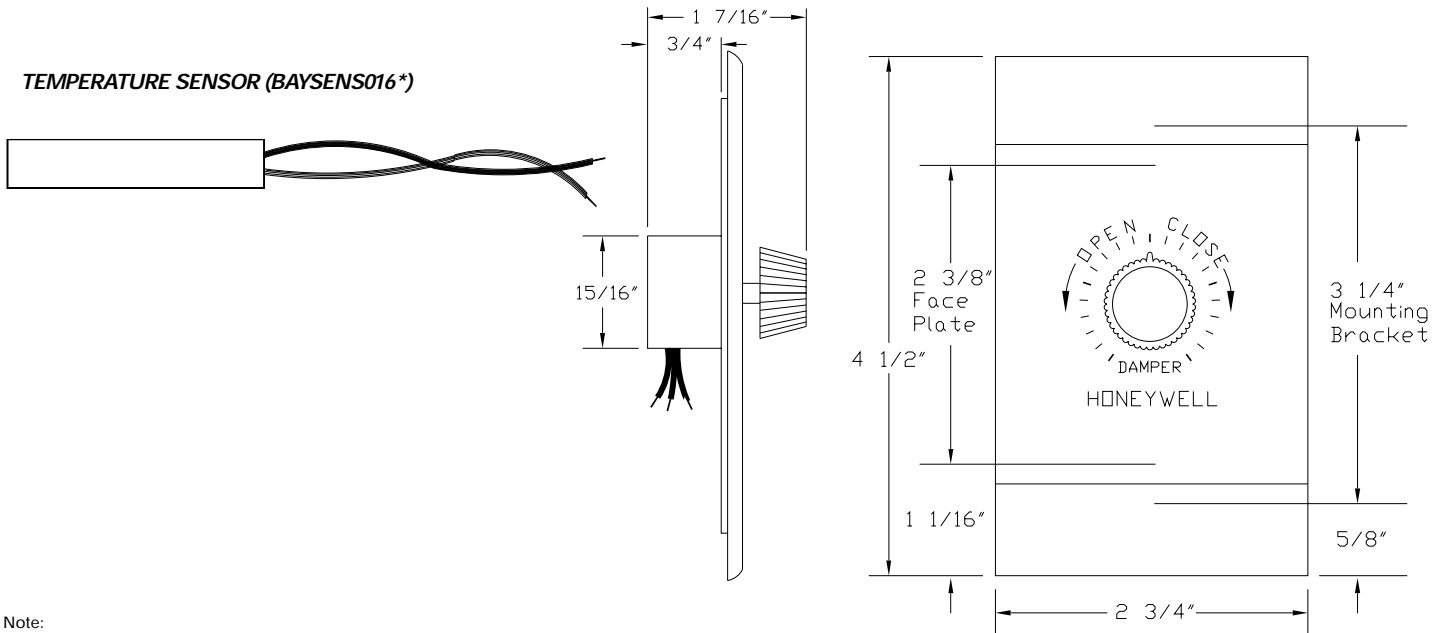
## Integrated Comfort™ System Sensors

**ZONE TEMPERATURE SENSOR W/TIMED OVERRIDE BUTTON AND LOCAL SETPOINT ADJUSTMENT (BAYSENS014)\***

**ZONE TEMPERATURE SENSOR W/TIMED OVERRIDE BUTTONS (BAYSENS013\*) ALSO AVAILABLE SENSOR ONLY (BAYSENS017\*)**



**REMOTE MINIMUM POSITION POTENTIOMETER CONTROL (BAYSTAT023\*)**



Note:  
1. Remote sensors are available for use with all zone sensors to provide remote sensing capabilities.

# Weights

**Table W-1 — Approximate Operating Weights (Lbs./Kg)**

Nominal Tons	Rooftops Without Exhaust Fans					Rooftops With Exhaust Fans					Roof Curb	
	SA	SX	SE	SF	SL/SS	SA	SX	SE	SF	SL/SS	SA	All Heating Units & SXHF/G
20 Lb.	4000	4220	4330	4620	4330	4360	4580	4690	4970	4690	490	510
Kg	1814	1914	1964	2096	1964	1978	2077	2127	2254	2127	222	231
25 Lb.	4160	4370	4500	4770	4500	4520	4750	4860	5130	4860	490	510
Kg	1887	1982	2041	2164	2041	2050	2155	2204	2327	2204	222	231
30 Lb.	4800	5040	5160	5430	5160	5220	5460	5590	5840	5590	490	510
Kg	2177	2286	2341	2463	2341	2368	2477	2536	2649	2536	222	231
40 Lb.	6270	6650	6810	7290	6810	6890	7240	7400	7880	7400	515	550
Kg	2844	3016	3089	3307	3089	3125	3284	3357	3574	3357	234	249
50 Lb.	7250	7630	7800	8260	7800	7890	8290	8450	8900	8450	515	550
Kg	3289	3461	3538	3747	3538	3579	3760	3833	4037	3833	234	249
55 Lb.	7500	7890	8050	8530	8050	8140	8540	8690	9170	8690	515	550
Kg	3402	3579	3651	3869	3651	3692	3874	3942	4159	3942	234	249
60 Lb.	8450	8610	8770	9230	8770	9320	9480	9650	10120	9650	610	640
Kg	3833	3905	3978	4187	3978	4227	4300	4377	4590	4377	277	290
70/75 Lb.	8970	9150	9300	9780	9300	9860	10040	10160	10640	10160	610	640
Kg	4069	4150	4218	4436	4218	4472	4554	4608	4826	4608	277	290
90 Lb.	N/A	13240	13390	14030	13390	N/A	14580	14730	15400	14730	N/A	770
Kg	N/A	6006	6074	6364	6074	N/A	6613	6681	6985	6681	N/A	349
105 Lb.	N/A	13810	13950	14600	13950	N/A	15160	15310	15940	15310	N/A	770
Kg	N/A	6264	6328	6622	6328	N/A	6876	6944	7230	6944	N/A	349
115 Lb.	N/A	14200	14380	15020	14380	N/A	15560	15730	16370	15730	N/A	770
Kg	N/A	6441	6523	6813	6523	N/A	7058	7135	7425	7135	N/A	349
130 Lb.	N/A	14580	14740	15380	14740	N/A	15930	16080	16710	16080	N/A	770
Kg	N/A	6613	6686	6976	6686	N/A	7226	7294	7580	7294	N/A	349

**Notes:**

- Weights shown include the following features: standard coils, 100% economizer, throwaway filters, maximum motor sizes (high efficiency), inlet guide vanes, 460V XL, High Heat.
- Weights shown represent approximate operating weights and have a ±5% accuracy. **ACTUAL WEIGHTS ARE STAMPED ON THE UNIT NAMEPLATE.**
- If unit is not as specified in note 1, you must reference RT-EB-103 for more details, as well as for point loading and center of gravity.



# Options

## Options

A full range of factory-installed modular options are available on standard ship cycles, allowing your rooftop design to best suit each individual application.

### Cooling Only/Heating Casings

- **Cooling Only** — Two casing choices are available, one designed for high airside efficiency and one for sound sensitive applications. The 90 to 130 tons are extended casing only.
- **Electric Heat** — Nickel-chromium electric heating elements in individually fused circuits of 48 amps or less and with all necessary safeties. A full range of sizing options is available.
- **Natural Gas Heat -- Two Stage and Limited Modulation** — Two-pass stainless steel tubular free floating heat exchanger has industrial type burner and combustion blower. Available with high or low fire and UL or CSA approval.
- **Natural Gas Heat - Full Modulation** — The heat exchanger drum, tubes and front and rear headers are constructed of the most corrosion resistant austenitic stainless steel alloys available.
- **Steam Heat** — ARI certified type NS coil with non-freeze steam distribution. Coils are pitched for drainage and are provided with steam modulating valve with actuator. High and low heat options are available.
- **Hot Water Heat** — ARI certified type W coil mounted for drainage and provided with hot water modulating valve with actuator. High and low heat options are available.

### Power Supplies

Rooftops are available with 200, 230, 460 and 575 voltage power supplies.

### Exhaust

- **No Exhaust** — Rooftops can be built for makeup air applications with no exhaust. Relief opening is sealed watertight.
- **Barometric Relief** — Gravity dampers are provided that open to relieve positive pressure.
- **50 Percent Exhaust Fan** — One double inlet forward-curved fan can exhaust up to 50 percent of supply air. Control is on/off based on economizer damper

position. Barometric dampers at fan outlet prevent air backdraft.

- **100 Percent Modulating Exhaust Fan** — Two double inlet forward-curved fans can exhaust up to 100 percent supply air. Fans operate when economizer damper is open greater than minimum position. Discharge dampers at fan outlet modulate in response to economizer damper position on CV rooftops.
- **100 Percent Modulating Exhaust with Statitrac™ Control** — For both CV and VAV rooftops, the 100 percent modulating exhaust discharge dampers are modulated in response to building pressure. A differential pressure control system, called Statitrac™, uses a differential pressure transducer to compare indoor building pressure to atmospheric pressure. The FC exhaust fan is turned on when required to lower building static pressure to setpoint. The Statitrac control system then modulates the discharge dampers to control the building pressure to within the adjustable, specified dead band that is set at the Human Interface Panel.

### Filters

- **No Filters (two inch throwaway filter rack only)** — complete set of two-inch thick filter racks, **without the filter media** to accommodate applications which require field supplied filters.
- **No Filters (bag/cartridge with prefilter filter rack)** — long-lasting galvanized steel frame **without the filter media** to accommodate applications which require field supplied filters.
- **Throwaway** — Two-inch, 30 percent efficient throwaway filters, includes rack as **standard**.
- **Cleanable Wire Mesh** — Two-inch permanent washable wire mesh filters are provided with metal frame.
- **High-Efficiency Throwaway** — Two inch throwaway filters include rack and have an average arrestance in excess of 90 percent when tested in accordance with ASHRAE 52-76.
- **90-95 Percent Bag Filter (with prefilter)** — Glass fiber extended media bag filter is mounted in a galvanized steel frame. 90-95 percent dust spot efficiency. Two-inch throwaway prefilters are included with this option.

- **90-95 Percent Cartridge Filter (with prefilter)** — These twelve-inch deep cartridge filters are mounted in a galvanized steel frame. They are Class 1 listed by Underwriters Laboratories and have a 90-95 percent dust spot efficiency per ASHRAE 52-76. To ensure maximum cartridge filter life, two-inch prefilters are included.

### Fresh Air

- **0 To 25 Percent Manual Outside Air** — Includes outside air opening with moisture eliminator and manually positioned damper for drawing up to 25 percent outside air. (20-75 tons only)
- **Economizer** — Includes the primary temperature controls necessary to automatically use outdoor air for free cooling. Option includes modulating return and outside air dampers, high ambient temperature lockout, minimum position control and spring return motor. Standard low leak outside air dampers are provided with a leakage rate of 2.5 percent of nominal airflow at one inch W.C. static pressure. The 0 to 100% fresh air economizer has three optional economizer controls available: comparative enthalpy, reference enthalpy, or dry bulb control.

### System Control

- **Constant Volume** — Provided with all the necessary controls to operate rooftop from a zone sensor, including CV microprocessor unit control module, a microprocessor compressor controller and a unit mounted Human Interface Panel.
- **VAV Supply Air Temperature control without inlet guide vanes** — Provided with all the necessary controls to operate a VAV rooftop from the discharge air temperature, including discharge air microprocessor controller and discharge air sensor. The microprocessor controller coordinates the economizer control and the stages of cooling with zone or outdoor air reset capabilities and an adjustable control band to fine-tune the control to specific applications.



# Options

- VAV Supply Air Temperature control with inlet guide vanes — Provided with all the necessary controls to control/operate a VAV rooftop from the discharge air temperature, including a discharge air microprocessor controller, a discharge air sensor, pressure sensor and inlet guide vanes. The microprocessor controller coordinates the economizer control and the stages of cooling with zone or outdoor air reset capabilities and an adjustable control band to fine-tune the control to specific applications. The inlet guide vanes are used with VAV rooftops to control duct static pressure. Option includes vanes and static pressure controls. Forward-curved fans with inlet vanes are the most efficient way to mechanically modulate airflow.
  - Exhaust Fan Variable Frequency Drives w/o Bypass (with Statitrac Only) — Provided with all the necessary controls to control/maintain building space pressure through a CV or VAV rooftop. The Variable Frequency Drive (VFD) modulates the speed of the exhaust fan motor in response to building pressure. A differential pressure control system, called Statitrac, uses a differential pressure transducer to compare indoor building pressure to atmospheric pressure. The VFD receives a 0-10vdc signal from the unit microprocessor based upon the space static pressure and causes the drive to accelerate or decelerate as required to maintain the space pressure within the deadband.
  - Exhaust Fan Variable Frequency Drives and Bypass (with Statitrac Only) — Bypass control provides full nominal airflow in the event of drive failure.
  - VAV Supply Air Temperature Control with Variable Frequency Drives w/o Bypass — Provided with all necessary controls to operate a VAV rooftop from the discharge air temperature, including discharge air microprocessor controller and discharge air sensor. The microprocessor controller coordinates the economizer control and the stages of cooling with discharge air temperature reset capabilities. Includes factory installed and tested variable frequency drives (VFD) to provide supply fan motor speed modulation.
- VFD receives 0-10vdc from the unit microprocessor based upon supply static pressure and causes the drive to accelerate or decelerate as required to maintain the supply static pressure setpoint.
- VAV Supply Air Temperature Control with Variable Frequency Drives and Bypass — Bypass control provides full nominal airflow in the event of drive failure.
- Ambient Control**
- Low Ambient Dampers are provided on condenser fan to allow the unit to operate down to 0 F. (20-75 tons only)
- Agency Approval**
- Rooftops can be provided with either Underwriter's Laboratories (UL) or Canadian Standards Association (CSA) approval.
- Miscellaneous Options**
- Non-Fused Disconnect Switch with External Handle — External handle enables the operator to disconnect unit power with the control box door closed for safety.
  - Hot Gas Bypass — Valves, piping and controls are all included to allow operation at low airflow, avoiding coil frosting and damage to compressor. When suction pressure falls below valve adjustable setpoint, the valves modulate hot gas to the inlet of the evaporator.
  - Economizer Control with Comparative Enthalpy — used with the fresh air economizer, two enthalpy sensors are provided to compare total heat content of the indoor air and outdoor air to determine the most efficient air source when economizing.
  - Economizer Control with Reference Enthalpy — used with the fresh air economizer, an outdoor enthalpy sensor is provided to compare the total heat content of outdoor air to a locally adjustable setpoint. The setpoint is programmed at the human interface, or remote human interface, to determine if the outdoor enthalpy condition is suitable for economizer operation.
  - Economizer Control with Dry Bulb — used with the fresh air economizer, an outdoor temperature sensor is included for comparing the outdoor dry bulb temperature to a locally adjustable temperature setpoint. The setpoint is programmed either at the human interface, or remote human interface, to determine if outdoor air temperature is suitable for economizer operation.
  - Ultra Low Leak Fresh Air Dampers — Dampers have chlorinated polyvinyl chloride gasketing to seal to a leakage rate of 1 percent of nominal airflow at one-inch W.C. static pressure.
  - High Duct Temperature Thermostats — Two manual reset thermostats, one located in the discharge section of the unit set at 240 F and the other in the return section set at 135 F. The rooftop will shut down if the thermostats are tripped.
  - High Capacity Evaporator Coil — Additional rows of coil and enhanced evaporator tube surfaces provide increased capacity compared to standard coils.
  - Copper Fins On Condenser Coil — Copper fins offer extra corrosion resistance as compared to standard aluminum fins.
  - Generic Building Automation System (GBAS) Module — Provided for those cases where the customer uses a nonTracer building management systems. The GBAS module provides a binary input for Demand Limiting, four (4) analog inputs for setpoint adjustment and five (5) relay outputs for diagnostic reporting. Inputs can use a potentiometer or 0-5 vdc signal.
  - High Efficiency Motors — Supply and exhaust fans are provided with high efficiency motors.
  - Remote Human Interface Panel (RHIP) — Remote Human Interface Panel can perform all the same functions as unit mounted Human Interface Panel, except for the Service Mode. Up to 4 rooftop units can be monitored and controlled with a single Remote Human Interface Panel. This panel uses the same attractive enclosure as our Tracker® building control panel. With features such as a 2 line X 40 character clear English display, a red LED light to indicate an alarm condition (alarm also shown on the two line display), a simple 16 key keypad that is used in conjunction with the display, to prompt



## Options

the infrequent user when making desired changes and an attractive hinged door makes the RHI very suitable for mounting on any wall. The RHI can be mounted inside a building, up to 5,000 feet from the unit. The RHI is wired to the IPCB mounted in the rooftop with twisted wire pair communication wiring and 24V control wiring.

- Ventilation Override Module (VOM) — With the Ventilation Override Module installed, the unit can be programmed to transition to up to 5 different programmed sequences for Smoke Purge, Evacuation, Pressurization, Purge, Purge with duct control sequence and Unit off. The transition occurs when a binary input on the VOM is closed (shorted); this would typically be a hard wired relay output from a smoke detector or fire control panel.
- Extended Grease Lines — Lines allow greasing of supply and exhaust fan bearings through the filter access door.
- Access Doors — Hinged access doors provide easy access to supply fan, filters, exhaust fan, and the heating section. These access doors feature double wall construction with dual density insulation sandwiched between 18 gauge and 20 gauge galvanized steel panels for strength and durability.
- Inter-Processor Communication Bridge (IPCB) — This module provides an amplified and filtered version of the IPC link for connection to a Remote Human Interface Panel. Each rooftop that is tied into a Remote Human Interface Panel must have a IPCB installed into it.
- Trane Communication Interface Module — provides interface to Trane's Integrated Comfort system (ICS), which allows control and monitoring of the rooftop by a Tracer building management system.
- GFI Convenience Outlet (Factory Powered) — A 15A, 115V Ground Fault Interrupter convenience outlet shall be factory installed. It shall be wired and powered from a factory mounted transformer. Unit mounted non-fused disconnect with external handle shall

be furnished with factory powered outlet.

- Two-inch Spring Isolators — Supply and exhaust fan (if applicable) assemblies are isolated with two-inch nominal deflection to reduce transmission of vibrations. (Standard feature on 90 to 130 tons.)
- VFD Line Reactors — available on all units with Variable Frequency Drives (VFD).
- Special Unit Paint Colors — allows matching of HVAC equipment to building color and sometimes eliminates the need for expensive barrier walls.

### Field Installed Accessories

#### Electronic Zone Sensors

- Zone Sensors — two temperature set point levers, heat, auto, off, or cool system switch, fan auto or fan on switch. Optional status indication LED lights, System On, Heat, Cool, and Service are available. These sensors are used with CV units.
- Programmable Night Setback Sensors — electronic programmable sensors with auto or manual changeover with seven day programming. Keyboard selection of heat, cool, fan auto or on. All programmable sensors have System On, Heat, Cool, Service LED/indicators as standard. Night setback sensors have (1) Occupied, (1) Unoccupied and (2) Override programs per day. Models are available for CV zone temperature control and VAV supply air temperature control.
- Zone Sensor — sensor with supply air single temperatures setpoint and AUTO/OFF system switch. Status indication LED lights; System On, Heat, Cool, and Service are provided. Sensors are available to be used with VAV units.
- Remote Sensor — can be used for remote zone temperature sensing capabilities when zone sensors are used as remote panels.
- Full Warm-Up Sensor — Morning warm-up sensor for use with VAV units.
- Integrated Comfort™ System sensors — used for zone temperature sensing when Tracer® is communicating with the rooftop. The sensors are available

with options such as sensor only, sensor with timed override button, and a sensor with local temperature adjustment control, with timed override button.

- Remote Minimum Position Potentiometer — Minimum position setting of economizer can be remotely adjusted with this accessory.
- Temperature Sensor — bullet or pencil type sensor that could be used for temperature input such as return air duct temperature.
- Trane Communication Interface/ Interprocessor Communication Bridge kit and Remote Human Interface kit — For future sales opportunities and flexibility of field upgrades on new IntelliPak® rooftops after they have been installed, two factory provided hardware kits are available. The first kit is an Trane Communication Interface (TCI) module, which is required for communication with Tracer®. Also in this kit is an Interprocessor Communicating Bridge (IPCB) module which is required for communication with an Remote Human Interface Panel. The second kit is the Remote Human Interface Panel, which can control up to four rooftops. The Remote Human Interface Panel has all the features of the Unit Mounted Human Interface Panel, except no service mode interface is allowed remotely for safety reasons. All other modules and their required hardware are available through our service parts organization for field upgrades and future sales opportunities.

#### Roof Curb

- Roof Curb — Curb supports the rooftop and allows for smooth transition of airflow from the rooftop to the ductwork. Curb ships from stock and ductwork can be attached directly. Two-inch by two-inch nailer strip is also provided, as well as gasketing to seal supply and return openings. Curb is 14 inches high and is approved by the National Roofing Contractors Association.

# Mechanical Specifications

## General

Units shall be specifically designed for outdoor rooftop installation on a roof curb and be completely factory assembled and tested, piped, internally wired, fully charged with R-22, compressor oil and shipped in one piece. Units shall be available for direct expansion cooling only, or direct electric, hot water or steam heating. Filters, outside air system, exhaust air system, optional non-fused disconnect switches and all operating and safety controls shall be furnished factory installed. All units shall be UL approved and factory run tested. Cooling capacity shall be rated in accordance with ARI Standard 360. All units shall have decals and tags to aid in service and indicate caution areas. Electrical diagrams shall be printed on long life water resistant material and shall ship attached to control panel doors.

## Casing

Exterior panels shall have a minimum of 1.25-ounce zinc coating per square foot of steel, phosphatized and painted with a slate grey finish which meets a 672 hour salt spray test based on the ASTM B117 standard for salt spray resistance. Screws shall be coated with zinc-plus-zinc chromate. Eighteen gauge steel hinged access panels with tiebacks to secure door in open position shall provide access to filters and heating sections. Refrigeration components, supply air fan and compressor shall be accessible through removable panels as standard. Unit control panel shall be accessible through hinged access panel with quick release latches. Double Wall Construction hinged access doors shall provide access to filters, return/exhaust air, heating and supply fan section. All access doors and panels shall have neoprene gaskets. Interior surfaces or exterior casing members shall have 1/2-inch Tuf-Skin fiberglass insulation. Unit base shall be watertight with 14-gauge formed load bearing members, formed recess and curb overhang. Unit lifting lugs shall accept chains or cables for rigging. Lifting lugs shall also serve as unit tiedown points.

## REFRIGERATION SYSTEM

### Compressors

#### 20 to 130 Ton Units

Trane 3-D® Scroll compressors have a simple mechanical design with only three major moving parts. Scroll type compression provides inherently low vibration. The 3-D Scroll provides a completely enclosed compression chamber which leads to increased efficiency. Exhaustive testing on the 3-D Scroll, including start up with the shell full of liquid, has proven that slugging does not fail involutes. Direct-drive, 3600 rpm, suction gas-cooled hermetic motor. Trane 3-D Scroll compressor includes centrifugal oil pump, oil level sightglass and oil charging valve. Each compressor shall have crankcase heaters installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles. Discharge and liquid line service valves are standard on each refrigerant circuit.

### Evaporator Coil

Internally enhanced copper tubing of 1/2-inch O.D. shall be mechanically bonded to heavy-duty aluminum fins of configured design. All coils shall be equipped with thermal expansion valves and factory pressure and leak tested at 300 psi.

### Condenser Coil

Configured aluminum fin or configured copper fin secondary surface shall be mechanically bonded to primary surface of 3/8-inch O.D. copper tubing for extra corrosion resistance. Subcooling circuit(s) shall be provided as standard. All coils shall be factory tested at 450 psig air pressure and vacuum dehydrated.

### Condenser Fans and Motors

All condenser fans shall be vertical discharge, direct drive fans, statically balanced, with steel blades and zinc plated steel hubs. Condenser fan motors shall be three-phase motors with permanently lubricated ball bearings, built-in current and thermal overload protection and weathertight slingers over motor bearings.



# Mechanical Specifications

## AIR HANDLING SYSTEM

### Supply Fan

#### 20 - 75 Ton Units

All supply fans shall have two double-inlet, forward-curved fans mounted on a common shaft with fixed sheave drive and shall be dynamically balanced and tested in factory. Supply fan shall be test run in unit as part of unit test and unit shall reach rated rpm before the fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000 hours average life. Optional extended grease lines shall allow greasing of bearings from unit filter section. Fan motor and fan assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assembly shall be completely isolated from unit and fan board by double deflection rubber-in-shear isolators or by two-inch deflection spring isolation on motor sizes larger than five hp. All supply fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

#### 90 - 130 Ton Units

All supply fans shall have two independent fan assemblies with double inlet, air foil fan, motor and fixed pitch sheave drive. All fans shall be statically and dynamically balanced and tested in factory. Supply fans shall be test run in unit as part of unit test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shafts shall be mounted on two grease lubricated ball bearings designed for 200,000 hours average life. Optional extended grease lines shall allow greasing of bearings from unit filter section. Fan motor and fan assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assemblies shall be completely isolated from unit and fan board by two-inch deflection spring isolators. All supply fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

### Controls

Unit shall be completely factory wired with necessary control and contactor pressure lugs or terminal block for power wiring. Units shall provide an internal location for a non-fused disconnect with external handle for safety. Unit mounted microprocessor controls shall provide anti-short cycle timing for compressors to provide a high level of machine protection.

#### Unit Controller

DDC microprocessor controls shall be provided to control all unit functions. The control system shall be suitable to control CV or VAV applications. The controls shall be factory-installed and mounted in the main control panel. All factory-installed controls shall be fully commissioned (run tested) at the factory. The unit shall have a Human Interface Panel with a 16 key keypad, a 2 line X 40 character clear English display as standard to provide the operator with full adjustment and display of control data functions. The unit controls shall be used as a stand-alone controller, or as part of a building management system involving multiple units.

#### 1

The unit shall be equipped with a complete microprocessor control system. This system shall consist of temperature and pressure (thermistor and transducer) sensors, printed circuit boards (modules), and a unit mounted Human Interface Panel. Modules (boards) shall be individually replaceable for ease of service. All microprocessors, boards and sensors shall be factory mounted, wired and tested.

The microprocessor boards shall be stand-alone DDC controls not dependent on communications with an on-site PC or a Building Management Network. The microprocessors shall be equipped with on-board diagnostics, indicating that all hardware, software and interconnecting wiring are in proper operating condition.

The modules (boards) shall be protected to prevent RFI and voltage transients from affecting the board's circuits. All field wiring shall be terminated at separate, clearly marked terminal strip.

Direct field wiring to the I/O boards is not acceptable.

The microprocessor's memory shall be non-volatile EEPROM type requiring no battery or capacitive backup, while maintaining all data.

#### 2

Zone sensors shall be available in several combinations with selectable features depending on sensor.

#### 3

The Human Interface Panel's keypad display character format shall be 40 characters x 2 lines. The character font shall be 5 x 7 dot matrix plus cursor. The display shall be Supertwist Liquid Crystal Display (LCD) with blue characters on a gray/green background which provides high visibility and ease of interface. The display format shall be in clear English. Two or three digit coded displays are not acceptable.

#### 4

The keypad shall be equipped with 16 individual touch-sensitive membrane key switches. The switches shall be divided into four separate sections and be password protected from change by unauthorized personnel. The six main menus shall be STATUS, SETPOINTS, DIAGNOSTICS, SETUP, CONFIGURATION and SERVICE MODE.

### Filters

#### General

Filter options shall mount integral within unit and be accessible by hinged access panels.

#### No Filters (two inch throwaway filter rack only) option

Shall provide a complete set of two-inch thick filter racks, without the filter media to accommodate applications which require field supplied filters.

#### No filters (bag/cartridge with prefilter filter rack option)

Shall provide a long-lasting galvanized steel frame without the filter media to accommodate applications which require field supplied filters.

# Mechanical Specifications

Standard filters provided shall be two-inch thick throwaway glass fiber filter, 30 percent efficient mounted in a metal rack.

#### **Permanent cleanable wire mesh option**

Shall be washable permanent wire mesh with metal frame.

#### **High efficiency throwaway option**

Shall be two-inch high efficiency media filters with average dust spot efficiency of 25-35 percent and an average arrestance in excess of 90 percent when tested in accordance with ASHRAE 52-76.

#### **90-95 percent bag filter option**

Shall have glass fiber media mounted in a galvanized steel frame. These Class 1 single piece disposable bag filters shall have a 90-95% dust spot efficiency rating per ASHRAE 52-76. To ensure maximum bag filter life two-inch prefilters shall be included with the bag filters.

#### **90-95 percent cartridge filter option**

Twelve-inch deep cartridge filters shall be mounted in a galvanized steel frame. Filters shall be Class 1 listed by Underwriters Laboratories and have a 90-95% dust spot efficiency per ASHRAE 52-76. To ensure maximum cartridge filter life, two-inch prefilters shall be provided.

### **Exhaust Air**

#### **General**

Return air options shall include no relief, barometric relief, 50 percent exhaust fan, 100 percent modulating exhaust fan and 100 percent modulating exhaust fan with direct space building pressurization control.

#### **No Relief (standard)**

Relief air opening shall be sealed with panel and made watertight.

#### **Barometric relief option**

Gravity dampers shall open to relieve positive pressure in the return air section of the rooftop. Barometric relief dampers shall relieve building overpressurization, when that overpressurization is great enough to overcome the return duct pressure drops.

#### **50 percent exhaust air fan option**

One, double inlet, forward-curved fan shall be mounted rigidly to base with fixed sheave drive. Fan shall be dynamically balanced and tested in factory. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000 hours average life. Optional extended grease lines shall allow greasing of bearings from unit filter section. Barometric dampers at fan outlet shall prevent air backdraft. Fifty percent exhaust fan shall be an on/off control based on economizer OA damper position. All exhaust fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

#### **Modulating 100 percent exhaust air fan option**

Two, double-inlet, forward-curved fans shall be mounted on a common shaft with fixed sheave drive. All fans shall be dynamically balanced and tested in factory before being installed in unit. Exhaust fan shall be test run in unit as part of unit test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000-hour average life. Optional extended grease lines shall be provided to allow greasing of bearings from unit filter section. Fan motor and assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. On motor sizes larger than five hp entire assembly shall be completely isolated from unit and fan board by double deflection, rubber in shear isolators or spring isolation. Discharge dampers at unit outlet shall modulate exhaust airflow in response to OA damper position. All exhaust fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

#### **Modulating 100 Percent Exhaust Fan with Statitrac™ Control Option**

Two, double-inlet, forward-curved fans shall be mounted on a common shaft with fixed sheave drive. All fans shall be dynamically balanced and tested in

factory before being installed in unit. Exhaust fan shall be test run as part of unit final run test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000-hour average life. Optional extended grease lines shall be provided to allow greasing of bearings from unit filter section. Fan motor and assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assembly shall be completely isolated from unit and fan board by double deflection, rubber in shear isolators or spring isolation on motor sizes larger than five hp. For both CV and VAV rooftops, the 100 percent modulating exhaust discharge dampers (or VFD) shall be modulated in response to building pressure. A differential pressure control system, (Statitrac™), shall use a differential pressure transducer to compare indoor building pressure to outdoor ambient atmospheric pressure. The FC exhaust fan shall be turned on when required to lower building static pressure setpoint. The (Statitrac™) control system shall then modulate the discharge dampers (or VFD) to control the building pressure to within the adjustable, specified dead band that shall be adjustable at the Human Interface Panel. All exhaust fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).



# Mechanical Specifications

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## Outside Air

### General

Three outside air options: 100 percent return air, 0 to 25 percent manually controlled outside air, and 0-100 percent fully modulating economizer.

### Manual outside air option

Manually controlled outside air damper shall provide up to 25 percent outside air. Manual outside air damper shall be set at desired position at unit start-up.

### 0-100 percent modulating economizer option

Operated through the primary temperature controls to automatically utilize OA for "free" cooling. Automatically modulated return and OA dampers shall maintain proper temperature in the conditioned space. Economizer shall be equipped with an automatic lockout when the outdoor high ambient temperature is too high for proper cooling. Minimum position control shall be standard and adjustable at the Human Interface Panel or with a remote potentiometer or through the building management system. A spring return motor shall ensure closure of OA dampers during unit shutdown or power interruption. Mechanical cooling shall be available to aid the economizer mode at any ambient. Low leak economizer dampers shall be standard with a leakage rate of 2.5 percent of nominal airflow (400 CFM/ton) at 1 inch wg. static pressure.

### Ultra low-leak economizer dampers option

Standard low leak dampers shall be provided with chlorinated polyvinyl chloride gasketing added to the damper blades and rolled stainless steel jamb seals to the sides of the damper assembly. Ultra low-leak economizer dampers shall have a leakage rate of one percent based on testing data completed in accordance with AMCA Standard 575 at AMCA Laboratories.

### Economizer Control with Comparative Enthalpy

Used with the fresh air economizer, two enthalpy sensors are provided to compare total heat content of the indoor air and outdoor air to determine the most efficient air source when economizing.

### Economizer Control with Reference Enthalpy

Used with the fresh air economizer, an outdoor enthalpy sensor is provided to compare the total heat content of outdoor air to a locally adjustable setpoint. The setpoint is programmed at the human interface, or remote human interface, to determine if the outdoor enthalpy condition is suitable for economizer operation.

### Economizer Control with Dry Bulb

Used with the fresh air economizer, an outdoor temperature sensor is included for comparing the outdoor dry bulb temperature to a locally adjustable temperature setpoint. The setpoint is programmed at the human interface, or remote human interface, to determine if outdoor air temperature is suitable for economizer operation.

# Mechanical Specifications

## Heating System

### Electric heating option

All electric heat models shall be completely assembled and have wired electric heating system integral within the rooftop unit. Heavy duty nickel chromium elements internally wired with a maximum density of 40 watts per square inch shall be provided. Heater circuits shall be 48 amps or less, each individually fused. Automatic reset high limit control shall operate through heater backup contactors. The 460 and 575 volt electric units shall have optional factory mounted non-fused disconnect switch located in the main control panel to serve the entire unit. The 200 and 230 volt SEHF models shall have separate power supply to heating section. All voltages of the SEHG models shall have single power supply to serve the entire unit.

### Steam heating option

Steam coils shall be Type NS, with non-freeze steam distribution circuits. Distributor tubes shall be located concentrically within condensing tubes to assure even steam distribution. Coils shall be pitched to provide complete drainage. Steam modulating valve with actuator shall be provided.

### Hot water heating option

Hot water coils shall be Type W and factory mounted in the rooftop unit to provide complete drainage of coil. Hot water modulating valve with actuator shall be provided.

### Gas-fired heating option

All gas-fired units shall be completely assembled and have a wired gas fired heating system integral within unit. Units shall be UL or CSA approved specifically for outdoor applications downstream from refrigerant cooling coils. All gas piping shall be threaded connection with a pipe cap provided. Gas supply connection shall be provided through the side or bottom of unit. All units shall be fire tested prior to shipment.

- Heat Exchanger shall be tubular two pass design with 16-gauge stainless steel primary and 18-gauge stainless

steel secondary heat exchanger surfaces. Free floating design shall eliminate expansion and contraction stresses and noises. Gasketed cleanout plate shall be provided for cleaning of tubes/turbulators. Heat exchanger shall be factory pressure and leak tested.

- Burner shall be industrial type burner with a air proving switch to prevent burner operation if burner is open for maintenance or inspection. Ceramic cone shall be provided to shape the flame to prevent impingement on sides of heat exchanger drum. Burner assembly shall house ignition and monitoring electrode.
- Combustion Blower shall be centrifugal type fan to provide air required for combustion. Fan motor shall have built-in thermal overload protection.
- Gas Safety Controls shall include electronic flame safety controls to require proving of combustion air prior to ignition sequence which shall include a 60 second pre-purge cycle. Direct spark ignition shall be provided on 235 and 350 MBh heat exchangers and pilot ignition shall be provided on 500, 850 and 1000 MBh heat exchanger units. Sixty second delay shall be provided between first and second stage gas valve operation on two-stage heaters. Continuous electronic flame supervision shall be provided as standard.
- Full Modulation Gas Heaters shall be made from grades of stainless steel suitable for condensing situations. The heater shall have a turn down ratio of at least 4 to 1.
- Limited Modulation Gas Heaters shall have a minimum turn down ratio of at least 3 to 1.

## Accessories

### Roof Mounting Curb

Roof mounting curb shall be fourteen gauge zinc coated steel with nominal two-inch by four-inch nailer setup. Supply/return air opening gasketing shall be provided. Curb shall ship knocked down for easy assembly.

Channel shall be provided to allow for adjustment of return air opening location. Curb shall be manufactured to National Roofing Contractors Association guidelines.

### Electronic Zone Sensors

- Zone Sensors shall provide two temperature setpoint levers, Heat, Auto, Off, or Cool system switch, Fan Auto or Fan On switch. Optional status indication LED lights, System On, Heat, Cool, and Service shall be available. These sensors shall be used with CV units.
- Programmable Night Setback Sensors shall be electronic programmable sensors with auto or manual changeover with 7 day programming. Keyboard shall provide selection of Heat, Cool, Fan Auto or On. All programmable sensors shall have System On, Heat, Cool, Service LED/indicators as standard. Night setback sensors shall have (1) Occupied, (1) Unoccupied and (2) Override programs per day. Sensors shall be available for CV zone temperature control and VAV Supply Air temperature control.
- VAV zone sensor shall be provided with supply air single temperature setpoint and AUTO/OFF system switch. Status indication LED lights shall include: System On, Heat, Cool and Service. Sensor shall be provided for zone temperature control with VAV units.
- Remote Sensor shall be available to be used for remote zone temperature sensing capabilities when zone sensors are used as Remote panels.
- Fast Warm-Up Sensor shall be used as Morning warm-up sensor with VAV units.
- Integrated Comfort™ System sensors shall be available with sensor only, sensor with timed override, and sensor with local temperature setpoint adjustment with timed override.
- Remote Minimum Position Potentiometer shall be available to remotely adjust the minimum position setting of the unit's economizer.



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