RT-DS-8
May 1998
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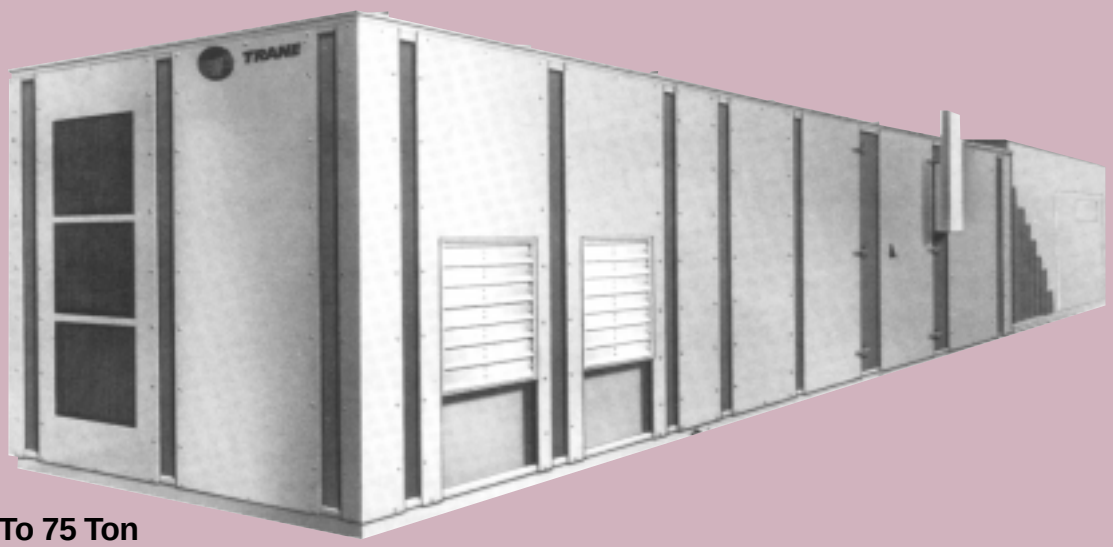
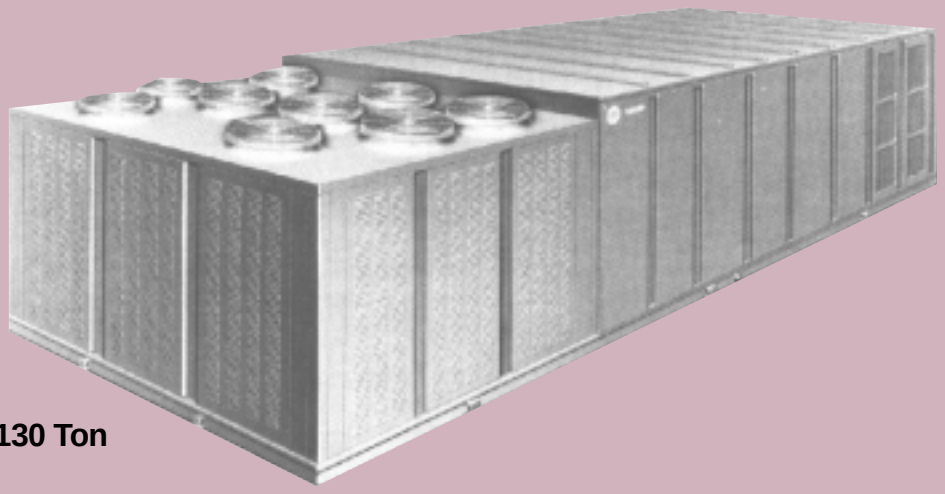
Packaged Rooftop Air Conditioners

20 To 130-Tons - 60 Hz IntelliPak® Rooftops

RT-DS-8



20 To 75 Ton



90 To 130 Ton

Designed For The 21st Century And Beyond

Trane commercial rooftops are moving into the 21st century! Innovative technology and new features have been incorporated in the IntelliPak® Rooftops to meet the demanding requirements of the coming years.

Trane's rooftop Unit Control Module (UCM) is an innovative, modular microprocessor control design that actually replaces the electromechanical controls on large rooftops. The UCM coordinates the actions of the rooftop in an efficient manner and provides stand-alone operation of the unit. Access to the unit controls is via a Human Interface Panel which is a standard component of the IntelliPak rooftop. This panel provides a high degree of control, superior monitoring capability, and unmatched diagnostic information using a 2 line, 40 character per line, English language display. There are no diagnostic "codes" requiring a translation key for interpretation. All system status information and control adjustments can be made from the onboard Human Interface Panel.

The IntelliPak rooftop can optionally be configured for direct communication with a Tracer® building management system using a twisted pair of wires. This link brings all the status data and control adjustment features of the IntelliPak rooftop to a central location for centralized building control on-site or from a remote location.

Proven features maintained in our design include: Trane's 3-D® scroll compressors, Statitrac™ direct space sensing building pressurization control, double wall access door construction, two-inch spring isolation, 90-95 percent efficient bag filters, extra large capacity (up to 130 tons) unit sizes, redesigned pitched roof, through the door nonfused disconnect and much more. All allow greater flexibility to meet the most demanding job requirements. What you really get with a Trane rooftop is a total comfort system. Total comfort means creating an environment that remains at the right temperature and is quiet, energy efficient and reliable. The 21st Century will require technology and flexibility to bring total comfort to every building space.

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 commission 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

Contents

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

Standard Features

- 20 through 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 through 130 Ton)
- 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
- 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 through 130 ton)
- Meets 672 hours of salt spray testing in accordance to ASTM B117 Standard
- Two inch standard efficiency throwaway filters on 20 through 90 ton units and two inch high efficiency throwaway filters on 105 through 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
- Comparative enthalpy 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
- Copper evaporator/condenser coils
- Suction service valves
- Replaceable core filter driers
- Phenolic coated evaporator/condenser coils
- High capacity evaporator coils (20 through 105 ton)
- 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

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Options For Optimum Building Comfort Control

- 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 through 75 ton)
- 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 ton “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

The modular control design of the UCM allows for greater application flexibility. Customers can order exactly what the job requires as options, 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.

FC Fans With Inlet Guide Vanes

Trane’s foward-curved fans 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

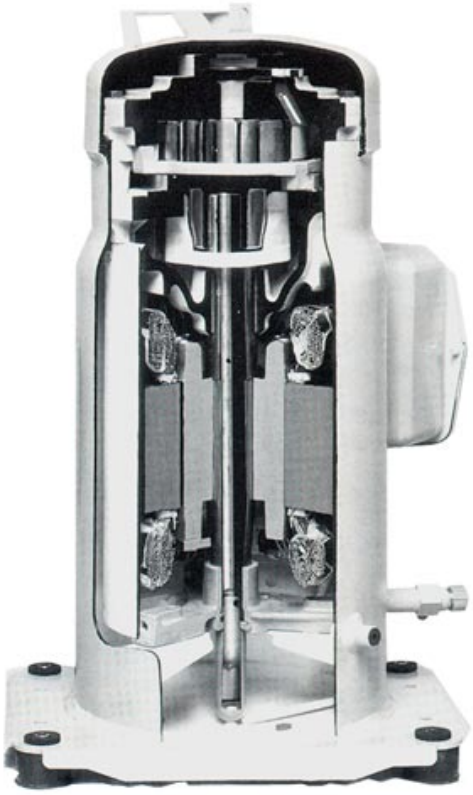
Simple Design with 70% Fewer Parts
Fewer parts than an equal capacity reciprocating compressor means significant reliability and efficiency benefits. The single orbiting scroll eliminates the need for pistons, connecting rods, wrist pins and valves. Fewer parts lead to increased reliability. Fewer moving 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 with torque variations that are only 30 percent of that produced by a reciprocating compressor. This means the scroll compressor imposes very little stress on the motor for greater reliability. Low torque variation means reduced noise and vibration.

Suction Gas Cooled Motor
Compressor motor efficiency and reliability is further optimized with this 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.

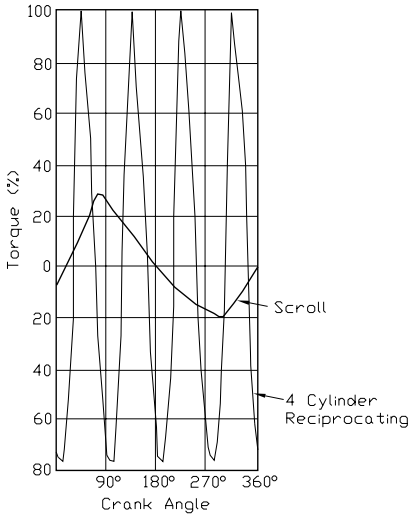


Chart illustrates low torque variation of 3-D Scroll compressor vs reciprocating compressor.

Model Number Description

S F H F C 5 5 F H A 5 5 C 6 9 D 3 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

DIGIT — UNIT TYPE
S = Self-Contained (Packaged Rooftop)

DIGIT 2 — UNIT FUNCTION
A = DX Cooling, No Heat
E = DX Cooling, Electric Heat
F = DX Cooling, Natural Gas Heat
L = DX Cooling, Hot Water Heat
S = DX Cooling, Steam Heat
X = DX Cooling, No Heat, Extended Casing

DIGIT 3 — UNIT AIRFLOW
H = Single Zone

DIGIT 4 — DEVELOPMENT SEQUENCE
F = Sixth

DIGITS 5,6,7 — NOMINAL CAPACITY

C20 =	20 Tons	C55 =	55 Tons
C25 =	25 Tons	C60 =	60 Tons
C30 =	30 Tons	C70 =	70 Tons
C40 =	40 Tons	C75 =	75 Tons
C50 =	50 Tons		

DIGIT 8 — POWER SUPPLY (See Notes)

4 =	460/60/3 XL	E =	200/60/3 XL
5 =	575/60/3 XL	F =	230/60/3 XL

Note: SEHF units (units with electric heat) utilizing 208V or 230V require dual power source.

DIGIT 9 — HEATING CAPACITY
Note: When the second digit calls for "F" (Gas Heat), the following values apply: Additionally, please note G and M available ONLY on 50 ton models and above.

H = High Heat-2-Stage
L = Low Heat-2-Stage
0 = No Heat
J = High Heat-Limited Modulation
G = Low Heat-Limited Modulation
P = High Heat-Full Modulation
M = Low Heat-Full Modulation

Note: When the second digit calls for "E" (electric heat), the following values apply:

D =	30 KW	R =	130 KW
H =	50 KW	U =	150 KW
L =	70 KW	V =	170 KW
N =	90 KW	W =	190 KW
Q =	110 KW		

Note: When the second digit calls for ''L" (Hot Water) or ''S"(Steam) Heat, one of the following valve size values must be in Digit 9:
High Heat Coil: 1 = .50", 2 = .75", 3 = 1", 4 = 1.25", 5 = 1.5", 6 = 2".
Low Heat Coil: A = .50", B = .75", C = 1", D = 1.25", E = 1.5", F = 2".

DIGIT 10 — DESIGN SEQUENCE
A = First (Factory Assigned)
Note: Sequence may be any letter A thru Z.

DIGIT 11 — EXHAUST OPTION
0 = None
1 = Barometric
2 = 100%, 1.5 HP W/Statitrac
3 = 100%, 3 HP W/Statitrac
4 = 100%, 5 HP W/Statitrac
5 = 100%, 7.5 HP W/Statitrac
6 = 100%, 10 HP W/Statitrac
7 = 100%, 15 HP W/Statitrac
8 = 100%, 20 HP W/Statitrac
A = 50%, 1.5 HP
B = 50%, 3 HP
C = 50%, 5 HP
D = 50%, 7.5 HP
E = 100%, 1.5 HP W/O Statitrac (CV Only)
F = 100%, 3 HP W/O Statitrac (CV Only)
G = 100%, 5 HP W/O Statitrac (CV Only)
H = 100%, 7.5 HP W/O Statitrac (CV Only)
J = 100%, 10 HP W/O Statitrac (CV Only)
K = 100%, 15 HP W/O Statitrac (CV Only)
L = 100%, 20 HP W/O Statitrac (CV Only)

DIGIT 12 — EXHAUST AIR FAN DRIVE

0 =	None	8 =	800 RPM
4 =	400 RPM	9 =	900 RPM
5 =	500 RPM	A =	1000 RPM
6 =	600 RPM	B =	1100 RPM
7 =	700 RPM		

DIGIT 13 — FILTER
A = Throwaway
B = Cleanable Wire Mesh
C = High-Efficiency Throwaway
D = Bag With Prefilter
E = Cartridge With Prefilter
F = Throwaway Filter Rack Less Filter Media
G = Bag Filter Rack Less Filter Media

DIGIT 14 — SUPPLY AIR FAN HP

1 = 3 HP	4 = 10 HP	7 = 25 HP
2 = 5 HP	5 = 15 HP	8 = 30 HP
3 = 7.5 HP	6 = 20 HP	9 = 40 HP

DIGIT 15 — SUPPLY AIR FAN DRIVE

5 = 500 RPM	A = 1000 RPM	
6 = 600 RPM	B = 1100 RPM	
7 = 700 RPM	C = 1200 RPM	
8 = 800 RPM	D = 1300 RPM	
9 = 900 RPM	E = 1400 RPM	
	F = 1500 RPM	

DIGIT 16 — FRESH AIR
A = No Fresh Air
B = 0-25% Manual
D = 0-100% Economizer

DIGIT 17 — SYSTEM CONTROL
1 = Constant Volume Control
2 = VAV Supply Air Temperature Control w/o Inlet Guide Vanes
3 = VAV Supply Air Temperature Control w/ Inlet Guide Vanes
4 = Space Pressure Control with Exhaust VFD w/o Bypass
5 = Space Pressure Control with Exhaust VFD and Bypass
6 = VAV Supply Air Temperature Control with VFD w/o Bypass
7 = VAV Supply Air Temperature Control with VFD and Bypass
8 = Supply and Exhaust Fan with VFD w/o Bypass
9 = Supply and Exhaust Fan with VFD and Bypass

DIGIT 18 — ACCESSORY PANEL
0 = None
A = BAYSENS008*
B = BAYSENS010*
C = BAYSENS013*
D = BAYSENS014*
E = BAYSENS019*
E = BAYSENS020*
G = BAYSENS021*

DIGIT 19 — AMBIENT CONTROL
0 = Standard
1 = 0° Fahrenheit

DIGIT 20 — AGENCY APPROVAL
0 = None (UL Gas Heater, see note)
1 = UL
2 = CSA
Note: Includes UL classified gas heating section only when second digit of Model No. is a "F."

DIGITS 21 - 38 — MISCELLANEOUS
A = Unit Disconnect Switch
B = Hot Gas Bypass
D = Comparative Enthalpy
E = Low Leak Fresh Air Dampers
F = High Duct Temperature Thermostat
G = High Capacity Evap. Coil
H = Copper Fins (Cond. Only)
K = Generic B.A.S. Module
L = High-Efficiency Motors (Supply and Exhaust)
M = Remote Human Interface
N = Ventilation Override Module
R = Extended Grease Lines
T = Access Doors
V = Inter-Processor Communication Bridge
Y = Trane Communication Interface Module
5 = VFD Line Reactor
6 = Factory-Powered 15A GFI Convenience Outlet
8 = Spring Isolators

EXAMPLE:
Model numbers: SFHFC55FHA55C69D3001N describes a unit with the following characteristics: DX cooling with natural gas heating, 55 ton nominal cooling capacity, 230/60/3 power supply, high heat model. 100 percent exhaust with Statitrac, 7.5 HP exhaust fan motor with drive selection No. 5 (500 RPM), high-efficiency throwaway filters, 20 HP supply fan motor with drive selection No. 9 (900 RPM), 0-100% economizer, VAV supply air temperature control with inlet guide vanes, no remote panel, standard ambient control, U.L. agency approval. The service digit for each model number contains 38 digits; all 38 digits must be referenced.

Model Number Description

S X H G D 1 1 4 O A H 7 C F 8 D 3 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1 2 3 4 567 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

DIGIT 1 — UNIT TYPE
S = Self-Contained (Packaged Rooftop)

DIGIT 2 — UNIT FUNCTION
E = DX Cooling, Electric Heat
F = DX Cooling, Natural Gas Heat
L = DX Cooling, Hot Water Heat
S = DX Cooling, Steam Heat
X = DX Cooling, No Heat, Extended Casing

DIGIT 3 — UNIT AIRFLOW
H = Single Zone

DIGIT 4 — DEVELOPMENT SEQUENCE
G = Seventh

DIGITS 5,6,7 — NOMINAL CAPACITY
C90 = 90 Tons
D11 = 105 Tons
D12 = 115 Tons
D13 = 130 Tons

DIGIT 8 — POWER SUPPLY
4 = 460/60/3 XL
5 = 575/60/3 XL
E = 200/60/3 XL
F = 230/60/3 XL

DIGIT 9 — HEATING CAPACITY
0 = No Heat
H = High Heat - 2-Stage
J = High Heat - Limited Modulation
P = High Heat - Full Modulation
Note:
When the second digit calls for "E" (electric heat), the following values apply in the ninth digit:
W = 190 KW
When the second digit calls for ''L" or ''S", one of the following valve size values must be in Digit 9:
High Heat Coil: 3 = 1.0", 4 = 1.25", 5 = 1.50", 6 = 2.0", 7 = 2.5"
Low Heat Coil: C = 1.0", D = 1.25", E = 1.50", F = 2.0", G = 2.5"

DIGIT 10 — DESIGN SEQUENCE
A = First (Factory Assigned)
Note: Sequence may be any letter A thru Z.

DIGIT 11 — EXHAUST OPTION
0 = None
7 = 100%, 15 HP W/Statitrac
8 = 100%, 20 HP W/Statitrac
9 = 100%, 25 HP W/Statitrac
F = 50%, 15 HP
H = 100%, 30 HP W/Statitrac
J = 100%, 40 HP W/Statitrac
K = 100%, 15 HP W/O Statitrac (CV Only)
L = 100%, 20 HP W/O Statitrac (CV Only)
M = 100%, 25 HP W/O Statitrac (CV Only)
N = 100%, 30 HP W/O Statitrac (CV Only)
P = 100%, 40 HP W/O Statitrac (CV Only)

DIGIT 12 — EXHAUST AIR FAN DRIVE
0 = None
5 = 500 RPM
6 = 600 RPM
7 = 700 RPM
8 = 800 RPM

DIGIT 13 — FILTER
A = Throwaway
C = High-Efficiency Throwaway
D = Bag With Prefilter
E = Cartridge With Prefilter
F = Throwaway Filter Rack Less Filter Media
G = Bag Filter Rack Less Filter Media

DIGIT 14 — SUPPLY AIR FAN HP
C = 30 HP (2-15 HP)
D = 40 HP (2-20 HP)
E = 50 HP (2-25 HP)
F = 60 HP (2-30 HP)
G = 80 HP (2-40 HP)

DIGIT 15 — SUPPLY AIR FAN DRIVE
5 = 500 RPM
6 = 600 RPM
7 = 700 RPM
8 = 800 RPM
9 = 900 RPM

DIGIT 16 — FRESH AIR
D = 0-100% Economizer (Std.)

DIGIT 17 — SYSTEM CONTROL
1 = Constant Volume Control
2 = VAV Supply Air Temperature Control w/o Inlet Guide Vanes
3 = VAV Supply Air Temperature Control w/ Inlet Guide Vanes
4 = Space Pressure Control with Exhaust VFD w/o Bypass
5 = Space Pressure Control with Exhaust VFD and Bypass
6 = VAV Supply Air Temperature Control with VFD w/o Bypass
7 = VAV Supply Air Temperature Control with VFD and Bypass
8 = Supply and Exhaust Fan with VFD w/o Bypass
9 = Supply and Exhaust Fan with VFD and Bypass

DIGIT 18 — ACCESSORY PANEL
0 = None
A = BAYSENS008*
B = BAYSENS010*
C = BAYSENS013*
D = BAYSENS014*
E = BAYSENS019*
F = BAYSENS020*
G = BAYSENS021*

DIGIT 19 — AMBIENT CONTROL
0 = Standard

DIGIT 20 — AGENCY APPROVAL
0 = None (UL Gas Heater, see note)
1 = UL
2 = CSA
Note: Includes UL classified gas heating section only, when second digit of Model No. is a "F."

DIGITS 21 - 36 — MISCELLANEOUS
A = Unit Disconnect Switch
B = Hot Gas Bypass (CV Only)
D = Comparative Enthalpy
E = Low Leak Fresh Air Dampers
F = High Duct Temperature Thermostat
G = High Capacity Evaporator Coil (90-105 Only)
K = Generic B.A.S. Module
L = High-Efficiency Motors (Supply and Exhaust)
M = Remote Human Interface
N = Ventilation Override Module
R = Extended Grease Lines
T = Access Doors
V = Inter-Processor Communication Bridge
Y = Trane Communication Interface Module
5 = VFD Line Reactor
6 = Factory-Powered 15A GFI Convenience Outlet

EXAMPLE:
Model numbers: SXHGD1140AH7CF8D3001 describes a unit with the following characteristics: DX cooling with extended casing, no heat, 105 ton nominal cooling capacity, 460/60/3 power supply, no heat, 100 percent exhaust with Statitrac, 30 h.p. exhaust fan motor with drive selection No. 7 — (700 RPM), high-efficiency throwaway filters, 60 hp supply fan motor with drive selection No. 8 — (800 RPM), economizer, VAV supply air temperature control with inlet guide vanes, no remote panel, standard ambient, UL agency approval. The service digit for each model number contains 36 digits; all 36 digits must be referenced.

Table 8-1 — General Data — 20-40 Ton

	20 Ton		25 Ton		30 Ton		40 Ton	
Compressor Data[3]								
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	
Evaporator Fans								
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 1/2-30	
Cfm Range[1]	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	
Exhaust Fans	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
Condenser Fans								
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	
Evaporator Coil — Standard								
Size (Ft²)	16.3		20.3		24.4		32.5	
Rows/Fin Series	2/144		2/144		2/144		2/144	
Tube Diameter/Surface	1/2/Enhanced		1/2/Enhanced		1/2/Enhanced		1/2/Enhanced	
Evaporator Coil — High Capacity								
Size (Ft²)	20.3		20.3		24.4		32.5	
Rows/Fin Series	4/144		4/144		4/144		4/144	
Tube Diameter/Surface	1/2/Enhanced		1/2/Enhanced		1/2/Enhanced		1/2/Enhanced	
Condenser Coil (Aluminum Fins)								
Size (Ft²)	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	
Electric Heat								
KW Range[2]	30-110		30-130		30-150		50-170	
Capacity Steps:	3		3		3		3	
Natural Gas Heat								
Standard Gas Heat								
Low Heat Input	235		235		350		350	
High Heat Input	500		500		500		850	
Standard Heating Capacity Steps:	2		2		2		2	
Modulating Gas Heat (Not Available on 20-40 Ton Models with Low Heat)								
High Heat - Limited Modulation[4]	33%		33%		33%		33%	
Heat Exchanger Type	Standard		Standard		Standard		Standard	
High Heat - Full Modulation[5]	100%		100%		100%		100%	
Heat Exchanger Type	High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel	
Hot Water Coil								
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	
Steam Coil								
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	
Filters								
Panel Filters								
Number/Size (Inches)	12 — 20x20x2		12 — 20x20x2		16 — 20x20x2		16 — 20x25x2	
Face Area (Ft²)	33.3		33.3		44.4		55.5	
Bag Filters								
Number/Size (Inches)	4 — 12x24x19		4 — 12x24x19		2 — 12x24x19		5 — 12x24x19	
	3 — 24x24x19		3 — 24x24x19		6 — 24x24x19		6 — 24x24x19	
Cartridge Filters	4 — 12x24x12		4 — 12x24x12		2 — 12x24x12		5 — 12x24x12	
	3 — 24x24x12		3 — 24x24x12		6 — 24x24x12		6 — 24x24x12	
Prefilters (For Bag & Cartridge)	4 — 12x24x2		4 — 12x24x2		2 — 12x24x2		5 — 12x24x2	
	3 — 24x24x2		3 — 24x24x2		6 — 24x24x2		6 — 24x24x2	
Face Area (Ft²)	20.0		20.0		28.0		34.0	
Standard Unit Minimum Outside Air Temperature For Mechanical Cooling								
Without Hot Gas Option	55 F		50 F		50 F		55 F	
With Hot Gas Option	55 F		50 F		50 F		55 F	
Low Ambient Option Minimum Outside Air Temperature								
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 35-3 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 9-1 — General Data — 50-75 Ton

	50 Ton	55 Ton	60 Ton	70 Ton	75 Ton	
Compressor Data[3]					Standard	High Capacity
Number/Size (Nominal)	2/10, 2/15 Ton	4/15 Ton	4/15 Ton	4/10, 2/15 Ton	4/10, 2/15 Ton	2/10, 4/15 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	100/69/38/19
RPM	3450	3450	3450	3450	3450	
Evaporator Fans						
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 1/2-30	7 1/2-30	10-40	10-40	10-40	
Cfm Range[1]	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	

Exhaust Fans	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

Condenser Fans					
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
Evaporator Coil — Standard					
Size (Ft.[2])	37.9	37.9	43.1	43.1	43.1
Rows/Fin Series	2/144	2/144	2/156	2/168	4/144
Tube Diameter/Surface	1/2/Enhanced	1/2/Enhanced	1/2/Enhanced	1/2/Enhanced	1/2/Enhanced
Evaporator Coil — High Capacity					
Size (Ft[2])	37.9	37.9	43.1		43.1
Rows/Fin Series	4/144	4/144	4/144	NA	4/144
Tube Diameter/Surface	1/2/Enhanced	1/2/Enhanced	1/2/Enhanced		1/2/Enhanced
Condenser Coil (Aluminum Fins)					
Size (Ft.[2])	70.0	70.0	88.0	88.0	88.0
Rows/Fin Series/Tube Diameter	3/144/ 3/8	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	3/144/ 3/8
Electric Heat					
KW Range[2]	70-190	70-190	90-190	90-190	90-190
Capacity Steps:	3	3	3	3	3
Natural Gas Heat					
Standard Gas Heat					
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
Modulating Gas Heat					
High/Low Heat - Limited Modulation[4]	33%	33%	33%	33%	33%
Heat Exchanger Type	Standard	Standard	Standard	Standard	Standard
High/Low Heat - Full Modulation[5]	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
Hot Water Coil					
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
Steam Coil					
Size (Inches)	30x66x1 Row 12x66x1 Row	30x66x1 Row 12x66x1 Row	30x90x1 Row 12x90x1 Row	30x90x1 Row 12x90x1 Row	30x90x1 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
Filters					
Panel Filters					
Number/Size (Inches)	20 — 20x25x2	20 — 20x25x2	35 — 16x20x2	35 — 16x20x2	35 — 16x20x2
Face Area (Ft[2])	69.4	69.4	77.8	77.8	77.8
Bag Filters					
Number/Size (Inches)	3 — 12x24x19 9 — 24x24x19	3 —12x24x19 9 — 24x24x19	6 — 12x24x19 8 — 24x24x19	6 — 12x24x19 8 — 24x24x19	6 — 12x24x19 8 — 24x24x19
Cartridge Filters	3 — 12x24x12 9 — 24x24x12	3 — 12x24x12 9 — 24x24x12	6 — 12x24x12 8 — 24x24x12	6 — 12x24x12 8 — 24x24x12	6 — 12x24x12 8 — 24x24x12
Prefilters (For Bag & Cartridge)	3 — 12x24x2 9 — 24x24x2	3 — 12x24x2 9 — 24x24x2	6 — 12x24x2 8 — 24x24x2	6 — 12x24x2 8 — 24x24x2	6 — 12x24x2 8 — 24x24x2
Face Area (Ft[2])	42.0	42.0	44.0	44.0	44.0
Standard Unit Min. Outside Air Temperature For Mechanical Cooling					
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
Low Ambient Option Min. Outside Air Temp					
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 35-3 for availability of electric heat kw ranges by voltage.
3. 50-75 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 10-1 — General Data — 90-130 Ton

	90 Ton		105 Ton		115 Ton		130 Ton	
Compressor Data[3]								
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	
Evaporator Fans								
Number/Size/Type	2/27"/FC		2/27"/FC		2/27"/FC		2/27"/FC	
Number of Motors	2		2		2		2	
Hp Range	30-80		30-80		30-80		30-80	
Cfm Range[1]	27,000-45,000		31,000-46,000[4]		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	
Exhaust Fans	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
Condenser Fans								
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	
Evaporator Coil — Standard								
Dimensions	122.0 x 70.0		122.0 x 71.25		122.0 x 71.25		122.0 x 71.25	
Size (Ft^2)	59.3		59.3		59.3		59.3	
Rows/Fin Series	3/120		3/168		5/144		5/144	
Tube Diameter/Surface	1/2/Enhanced		1/2/Enhanced		1/2/Enhanced		1/2/Enhanced	
Evaporator Coil — High Capacity								
Dimensions	122.0 x 70.0		122.0 x 71.25		NA		NA	
Size (Ft^2)	59.3		59.3		NA		NA	
Hi-Capacity Rows/Fin Series	5/144		5/144		NA		NA	
Tube Diameter/Surface	1/2/Enhanced		1/2/Enhanced		NA		NA	
Condenser Coil								
Size (Ft^2)	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	
Electric Heat								
KW	190		190		190		190	
Capacity Steps:	3		3		3		3	
Natural Gas Heat								
Standard Heating -- MBh Input	1000		1000		1000		1000	
Capacity Steps:	2		2		2		2	
Modulating Gas Heat								
High Heat - Limited Modulation[5]	33%		33%		33%		33%	
Heat Exchanger Type	Standard		Standard		Standard		Standard	
High Heat - Full Modulation[6]	100%		100%		100%		100%	
Heat Exchanger Type	High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel		High Grade, Stainless Steel	
Hot Water Coil								
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	
Steam Coil								
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	
Filters								
Panel Filters								
Number/Size (Inches)	25-24x24x2		25-24x24x2		25-24x24x2		25-24x24x2	
Face Area (Ft^2)	100.0		100.0		100.0		100.0	
Bag Filters	3-12x24x19		3-12x24x19		3-12x24x19		3-12x24x19	
Number/Size (Inches)	15-24x24x19		15-24x24x19		15-24x24x19		15-24x24x19	
Cartridge Filters	3-12x24x12		3-12x24x12		3-12x24x12		3-12x24x12	
	15-24x24x12		15-24x24x12		15-24x24x12		15-24x24x12	
Prefilters (For Bag & Cartridge)	3-20x24x2		3-20x24x2		3-20x24x2		3-20x24x2	
	15-24x24x2		15-24x24x2		15-24x24x2		15-24x24x2	
Face Area (Ft^2)	66.0		66.0		66.0		66.0	
Standard Unit Min. Outside Air Temperature For Mechanical Cooling								
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:
1. For cfm values outside these ranges, refer to RT-EB-104.
2 Refer to Table 35-3 for availability of electric heat kw ranges by voltage.
3. 90-130 Ton models are dual circuit.
4. Max cfm for 105 Ton std is 44,000.
5 The firing rate of the unit can vary from 33% of the Heater Mbh up to the nameplate rating of the unit.
6. 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 11-1 — ARI Performance Data[1]

ARI Performance Data[1]				
Tons	Model[3]	Capacity (MBh)	EER	IPLV[2]
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**A*****	220	9.4	12.7
	SLHFC204LA**A**A*****	220	9.4	12.6
	SSHFC204LA**A**A*****	220	9.4	12.7

Notes:
1. This information is rated in accordance to the ARI Standard 360-86 for large unitary equipment up to 20 tons. These Trane products can be found in the current ARI Directory.
2. IPLV — Integrated Part Load Value
3. This information applies to units whose design sequence (Digit 10) is "A" or later.

Table 11-2 — ARI Correction Multipliers

	Model		Multipliers (%)		
Option Description	Digit	Designator	Capacity	EER	IPLV[2]
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 11-3 — 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.

Application Considerations

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.

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.

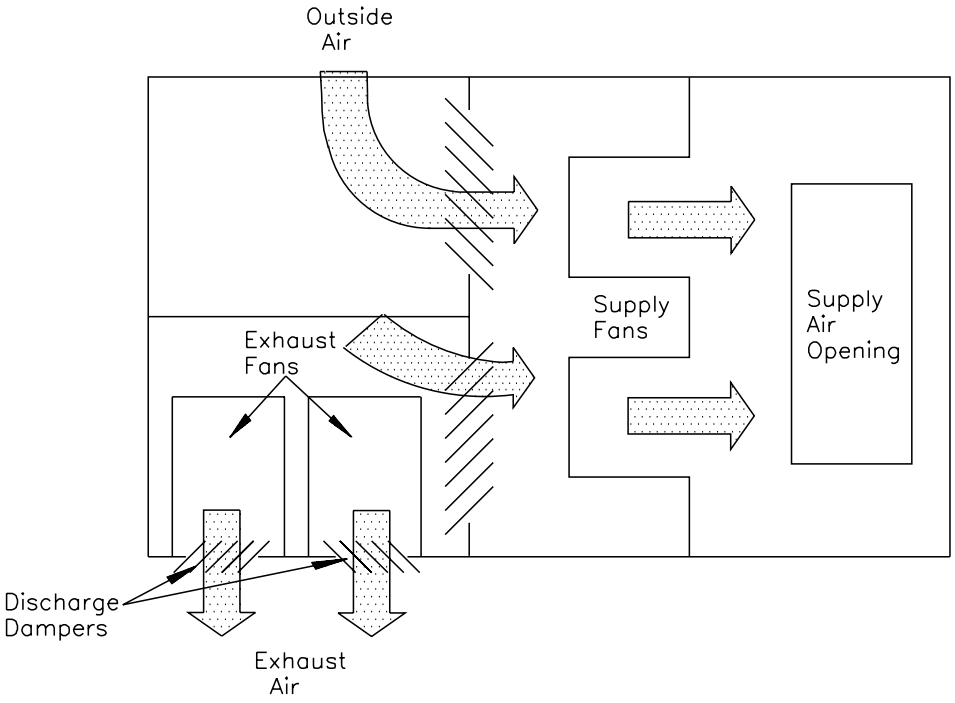
The IntelliPak® Rooftop unit offers modulating 100 percent exhaust system. This fan system has performance capabilities equal to the supply fan. The FC exhaust fans are started by the economizer's outdoor air damper position and the exhaust dampers track the economizer outdoor air damper position. The 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 12-1 — 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 13-1 and 14-1. These openings are used for the discharge and return. No special curb is needed.

- **SXHF, SFHF, SLHF, SSHF Units**

  Figure 13-1 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 13-1, 2 and 3 show dimensions for those panels.

• Horizontal Discharge On SXHF, SFHF, SLHF and SSHF Rooftops (20 through 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.

Note 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.

Note 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.

Note 3) Supply and Return Base openings **must be covered** when converting to a horizontal configuration.

Figure 13-1 Horizontal Discharge Panel Dimensions — 20 - 75 tons SXHF, SFHF, SLHF, SSHF Units

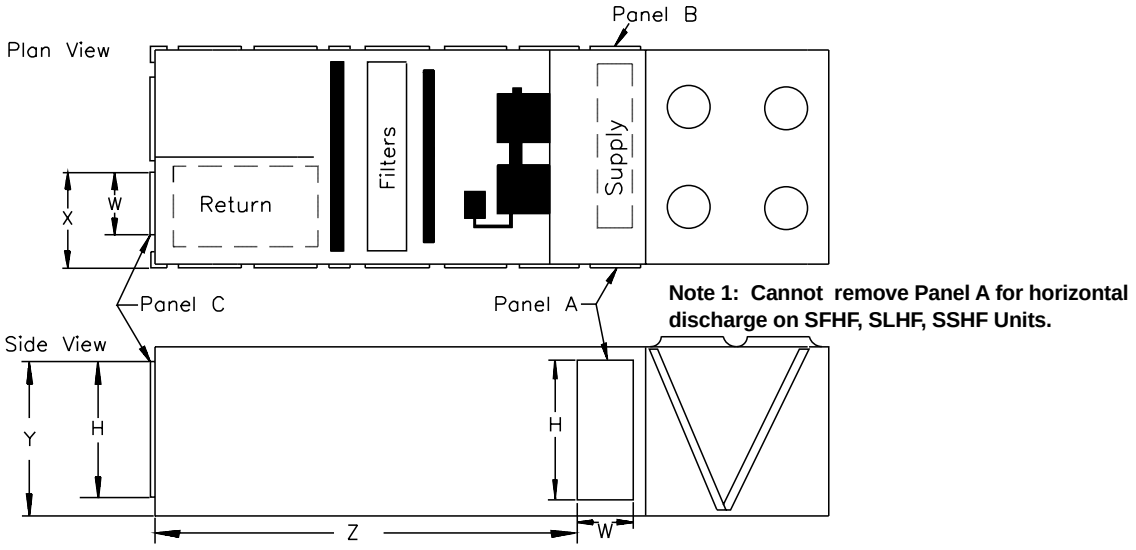


Table 13-1 — SXHF, SFHF, SSHF, SLHF — Panel A and B Dimensions

			Total Area (H X W)	
Model	H (in.)	W (in.)	(in.²)	(ft²)
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 13-2 — SXHF, SFHF, SSHF, SLHF — Panel C Dimensions

			Total Area (H X W)	
Model	H (in.)	W (in.)	(in.²)	(ft²)
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 13-3 — 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:
* = X, F , L, or S
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.

- SXHG, SLHG, SSHG Units

  Figure 14-1 is a simplified sketch showing which panels can be used for horizontal supply and/or return. On all 90 through 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*HFs by removing the exhaust fan access door (Panel B). See Tables 14-1 and 2 for S*HG panel dimensions.

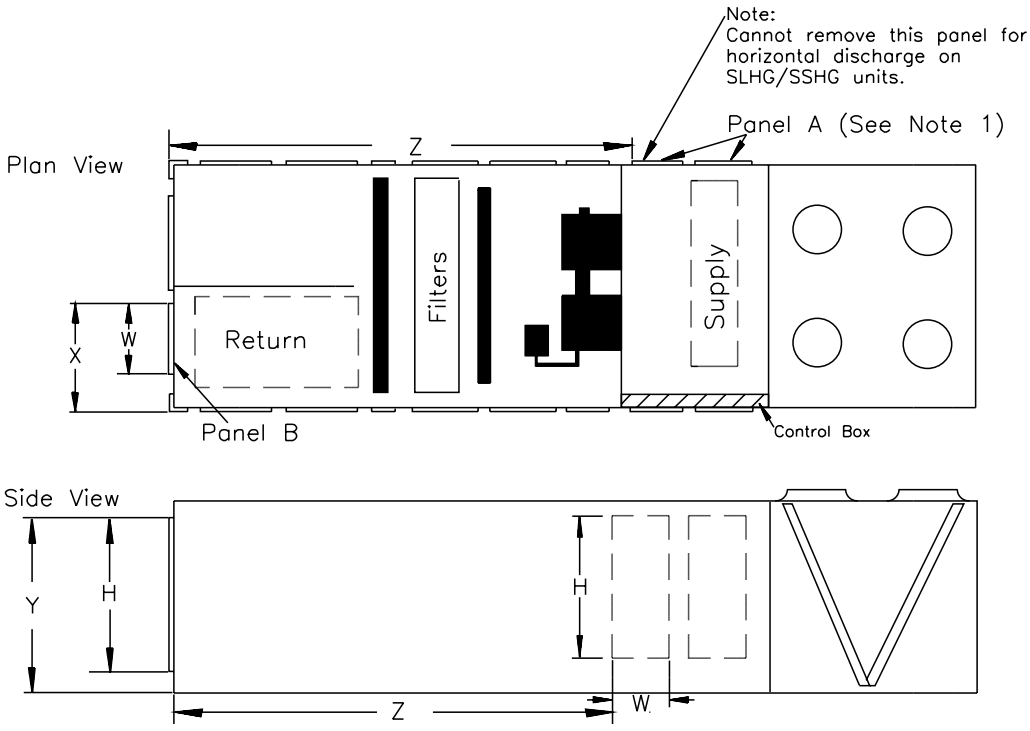
  When using an IntelliPak® Rooftop for horizontal supply and return, an additional pressure drop must be added to the supply external static to account for the 90 degree turn the air is making. This additional pressure drop depends on airflow and rooftop size, but a range of 0.10 inches to 0.30 inches 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 On SXHG, SLHG, SSHG Rooftops (90 through 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

Figure 14-1 — Horizontal Discharge Panel Dimensions — 90 - 130 tons 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 14-1 — SXHG, SLHG, SSHG — Panel A and B Dimensions

Panel	H (in.)	W (in.)	Total Area (H X W) (in.²)	(ft²)
A	72.7	27.5	1999	13.9
B	72.7	34.5	2508	17.4

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.

Table 14-2— 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

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.

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 through 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.

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 through 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 57-1 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 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 34-1, 2 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 through 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 17-1 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.

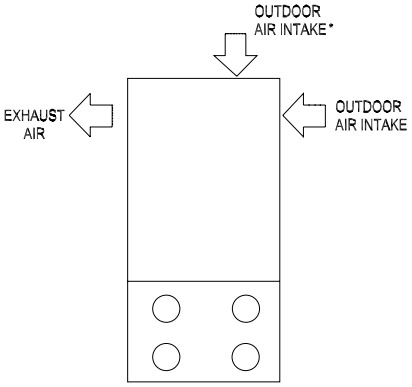
Duct Design

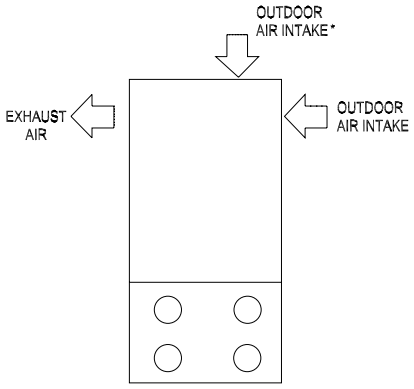
It is important to note that the rated capacities of the rooftop can be met only if the rooftop is properly installed in the field. A well-designed duct system is essential in meeting these capacities.

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 17-2.

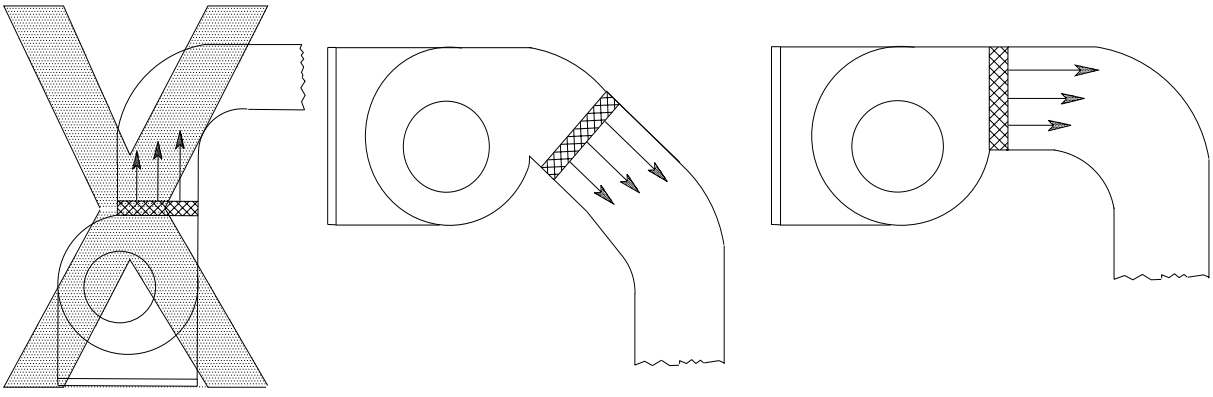
Figure 17-1 — Unit Placement





*50 Through 130 Ton Rooftop Units have two outdoor air intakes.

Figure 17-2 — Duct Design



Improper **Proper**

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 26-1, 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 + % OA (OADB - RADB) = 80 + (0.10) (95 - 80) = 80 + 1.5
= 81.5 F

Approximate wet bulb mixture temperature:
RAWB + % OA (OAWB - RAWB) =
65 + (0.10) (76 - 65) = 65 + 1.1
= 66.1 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 57-1)	0.25 inches
Return Duct Negative Static Pressure	0.65 inches
Heat Exchanger (Table 57-1)	0.31 inches
Throwaway Filter (Table 57-1)	0.10 inches
Economizer w/Exhaust Fan (Table 57-1)	0.12 inches
Trane Roof Curb (Table 57-1)	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 41-1. Table 41-1 shows 15.3 bhp with 924 rpm.

From Chart 19-1 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.

Required capacity = 430 + 66.9 + 46.0 = 543 MBh (45.2 tons)

Step 5 — Determine Unit Capacity
From Table 26-1, 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 MBh ÷ (1.085 x 17,500 cfm) = 20.0 F

Supply air dry bulb = 81.5 DB - 20.0 = 61.5 F

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

561 MBh ÷ (4.5 x 17,500 cfm) = 7.12 Btu/lb

Leaving enthalpy = h(ent WB) - h(diff). From Table 21-1 h(ent WB) = 30.9 Btu/lb

Leaving enthalpy = 30.9 Btu/lb - 7.12 Btu/lb = 23.78 Btu/lb

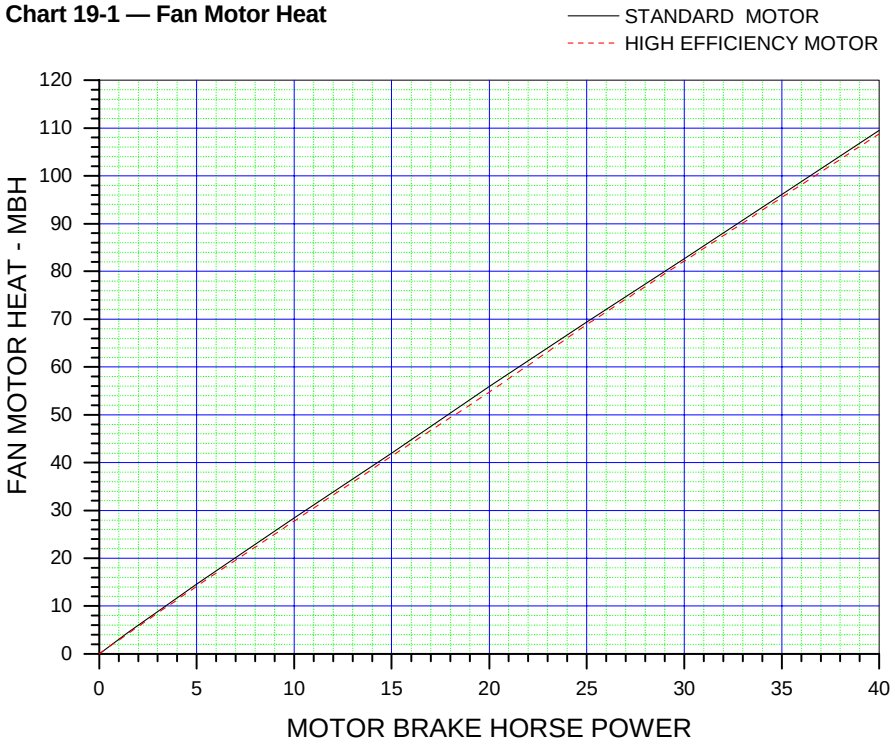
Supply air wet bulb = 55.9

Leaving air temperature = 61.5 DB/55.9 WB

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

Chart 19-1 — Fan Motor Heat



Supply air fan motor heat temperature rise = 46,000 Btu ÷ (1.085 x 17,500 cfm) = 2.42 F

Air temperature entering heating module = 63.0 + 2.42 = 65.4 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 MBh

Electric Heating System
Unit operating on 460/60/3 power supply.

From Table 35-3, 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 35-1 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 F + 30.6 F = 96.0 F.

Gas Heating System (Natural Gas)
From Table 34-1 select the high heat module (697 MBh output) to satisfy winter heating load of 563 MBh at unit cfm.

Table 34-1 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 F + 36.0 F = 101.4 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).

ITD = 190 F - 65.4 F = 125 F. Divide the winter heating load by ITD = 563 MBh ÷ 125 F = 4.50 Q/ITD.

From Table 36-1, select the low heat module. By interpolation, a Q/ITD of 4.50 can be obtained at a gpm at 25.7.

Water pressure drop at 25.7 gpm is 0.57 ft. of water. Heat module temperature rise is determined by:
$\frac{\text{Total Btu}}{1.085 \times \text{Supply cfm}} = \Delta T$

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

Unit supply air temperature = mixed air temperature + air temperature rise = 65.4 + 29.7 = 95 F.

Selection Procedure

Steam Heating System
Assume a 15 psig steam supply.

From Table 34-4, the saturated temperature steam is 250 F. Subtract mixed air temperature from the steam temperature to determine ITD. ITD = 250 F - 65.4 F = 185 F.

Divide winter heating load by ITD = 563 MBh ÷ 185 F = 3.04 Q/ITD.

From Table 34-3, select the high heat module. The high heat module at 17,500 cfm has a Q/ITD = 5.11.

Heat module capacity, Q = ITD x Q/ITD = 185 F x 5.11 Q/ITD = 945 MBh

Heat module air temperature rise = $\frac{\text{Total Btu}}{1.085 \times \text{Supply cfm}}$

945 Btu ÷ (1.085 x 17,500 cfm) = 49.8 F.

Unit supply temperature at design conditions = mixed air temperature + air temperature rise = 65.4 F + 49.8 F = 115 F.

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 58-1 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 57-1) = 0.12 inches
Total return system negative static pressure = 0.77 inches
Exhaust fan cfm = 12,000 cfm

From Table 59-1, 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 60-1 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 21-2 and 21-3 and Figure 21-1 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 21-1 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 21-1.
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.

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 21-1, the air density ratio is 0.86.
2
Tsp = 3.0-inches / 0.86 = 3.49 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 x 0.86 = 18.3 bhp actual.

Compressor MBh, SHR, and kw should be calculated at standard and then converted to actual using the correction factors in Table 21-2. 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 21-3 before calculating the heating supply air temperature.

Performance Adjustment Factors

Table 21-1 — 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 21-1 — Air Density Ratios

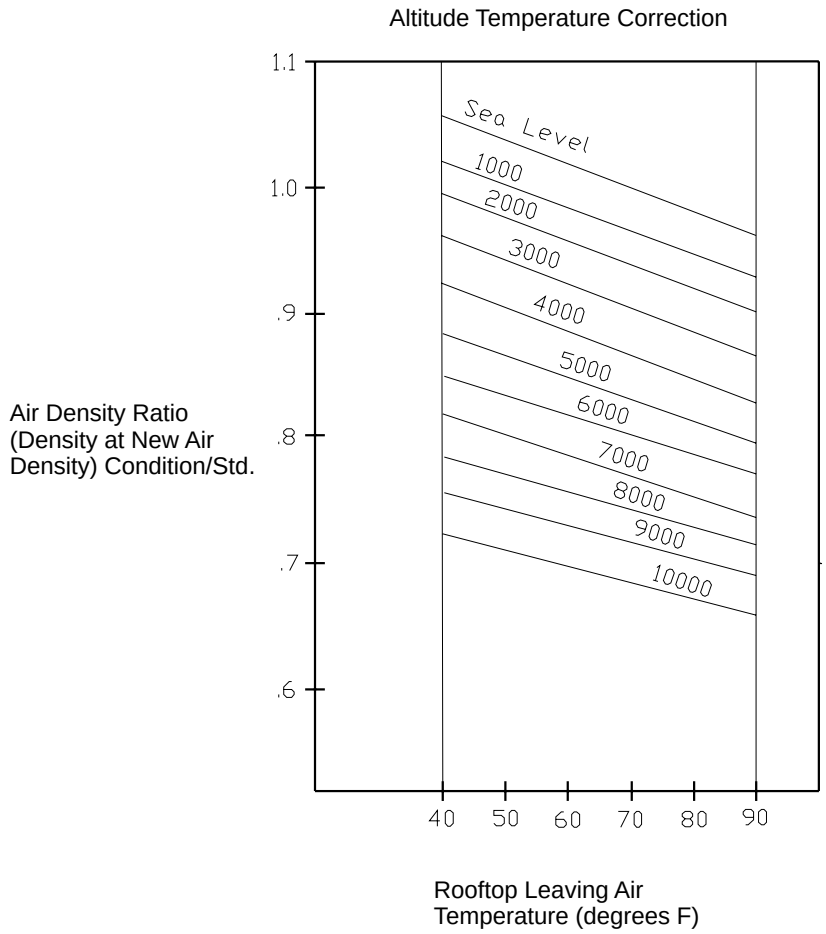


Table 21-2 — Cooling Capacity Altitude Correction Factors

	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 21-3 — 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.

Table 22-1 — 20 Ton Gross 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	CAP	SHC
	75	184	132	205	110	228	84.6	178	129	198	107	221	81.6	171	125	191	103	212	78.5	164	121	183	99.8	204	75.2
4000	80	185	149	205	129	228	106	178	146	198	125	220	102	172	142	191	122	212	989	165	139	183	118	204	95.4
	85	185	167	206	146	228	124	179	164	199	143	221	121	173	160	192	139	213	117	166	156	184	135	204	114
	90	187	186	206	164	229	142	181	181	199	160	221	139	176	176	192	157	213	135	170	170	184	153	204	132
	75	203	155	224	125	248	91.5	195	151	216	122	239	88.3	188	148	208	118	230	84.9	179	143	199	114	220	81.5
6000	80	204	180	225	150	248	119	196	176	217	146	240	115	189	172	208	142	230	111	181	168	199	138	220	108
	85	207	205	226	174	249	144	199	199	218	171	240	141	193	193	209	167	230	137	186	186	200	163	221	133
	90	215	215	226	199	250	168	209	209	219	195	241	165	203	203	210	191	231	161	196	196	202	188	222	157
	75	209	165	231	132	255	94.6	201	161	222	128	245	91.3	193	157	213	124	235	88.0	184	153	203	120	225	84.3
7000	80	210	193	231	159	255	124	203	189	223	155	246	120	195	185	214	151	236	117	186	181	204	147	226	113
	85	215	215	232	187	255	152	209	209	224	183	246	149	202	202	215	179	236	145	194	194	205	175	226	141
	90	226	226	234	215	256	180	220	220	225	211	247	176	212	212	217	207	237	172	205	205	208	203	227	168
	75	214	174	236	137	260	96.8	206	170	226	133	250	93.2	197	166	217	129	240	89.5	188	162	207	125	229	85.7
8000	80	216	206	236	168	260	129	208	202	228	164	250	125	200	198	218	160	240	122	191	191	209	155	230	118
	85	223	223	237	198	261	160	217	217	228	194	251	156	209	209	219	190	241	152	202	202	210	186	230	148
	90	235	235	240	230	262	191	228	228	231	226	252	187	221	221	223	222	242	183	213	213	213	213	231	179
	75	218	183	239	142	264	98.5	209	179	230	138	254	94.8	200	175	221	134	243	91.1	191	170	211	130	232	87.3
9000	80	221	218	241	176	264	134	212	212	231	172	254	130	204	204	222	167	244	126	196	196	212	163	233	123
	85	231	231	241	209	265	167	223	223	232	205	255	163	216	216	223	201	245	159	208	208	213	197	234	155
	90	243	243	245	244	266	201	235	235	236	236	256	197	228	228	228	228	246	193	219	219	220	220	235	189

Table 22-2 — 20 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	CAP	SHC
	75	210	152	234	126	260	97.6	202	148	225	122	251	93.7	194	144	216	118	241	89.7	185	139	207	114	230	85.6
4000	80	210	174	234	148	260	120	202	169	225	144	251	116	194	165	216	140	241	112	186	161	207	135	230	108
	85	211	195	234	170	260	143	204	191	226	165	251	139	196	187	217	161	241	135	188	184	207	157	231	130
	90	215	215	235	191	261	165	209	209	226	187	251	161	202	202	218	182	242	157	195	195	208	178	231	152
	75	231	184	256	146	283	104	222	180	246	142	272	100	212	175	235	137	260	96.1	203	170	224	133	248	91.8
6000	80	233	216	256	177	284	138	224	211	246	173	273	134	215	207	236	168	261	129	205	202	225	164	249	125
	85	240	240	258	209	284	170	232	232	248	204	273	166	224	224	237	200	261	161	216	216	227	195	250	157
	90	252	252	260	246	285	201	244	244	250	242	274	197	236	236	240	232	263	192	228	228	230	227	251	188
	75	238	199	263	155	290	107	229	194	252	151	278	103	219	189	241	146	266	98.8	208	184	230	141	254	94.4
7000	80	241	236	264	191	291	147	232	231	253	186	279	143	223	223	242	181	267	138	214	214	231	176	255	133
	85	252	252	265	227	291	182	244	244	255	222	280	178	235	235	244	218	268	173	226	226	233	213	256	168
	90	266	266	269	264	293	218	257	257	258	258	281	214	249	249	249	249	269	209	239	239	240	240	257	205
	75	244	212	268	163	295	110	234	208	257	158	283	106	224	203	246	153	271	101	213	198	234	148	258	96.8
8000	80	249	249	269	203	296	153	240	240	258	199	284	149	231	231	247	194	272	144	222	222	235	189	259	140
	85	263	263	272	245	297	194	254	254	261	240	285	189	245	245	250	235	273	184	235	235	239	231	260	180
	90	277	277	278	278	299	235	268	268	269	269	287	230	259	259	259	259	275	226	249	249	249	249	262	221
	75	249	226	272	170	300	112	239	221	261	166	287	108	228	216	249	161	274	104	217	211	237	156	261	99.2
9000	80	257	257	274	215	301	160	248	248	263	211	288	155	239	239	251	206	275	150	229	229	239	201	262	146
	85	272	272	277	262	302	205	263	263	267	257	290	200	253	253	255	252	277	195	243	243	243	243	264	191
	90	287	287	288	288	304	250	278	278	278	278	292	246	268	268	268	268	279	241	257	257	258	258	267	237

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).

Table 23-1 — 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	CAP	SHC
5000	75	245	176	272	145	302	113	236	171	262	140	291	109	226	166	252	135	280	104	216	161	241	130	268	99
	80	244	200	272	169	302	137	236	195	262	164	291	133	226	190	252	159	280	128	216	185	241	154	268	123
	85	244	224	272	193	302	162	236	220	262	189	291	157	227	214	251	184	279	152	217	209	240	178	267	147
	90	248	246	271	218	301	186	240	240	262	213	291	181	233	233	251	208	279	176	224	224	240	202	267	171
7000	75	264	201	293	160	324	118	253	196	281	155	312	114	243	191	270	150	299	109	231	185	257	145	285	104
	80	264	233	292	192	324	151	254	228	281	187	311	146	243	223	269	182	298	141	232	217	257	177	285	136
	85	267	263	292	224	323	182	258	256	281	219	311	178	248	248	269	214	298	172	239	239	257	209	285	167
	90	278	278	292	256	323	214	270	270	281	251	311	209	261	261	270	245	298	204	251	251	257	240	284	199
8750	75	274	221	304	172	336	122	264	216	292	167	323	117	252	210	279	161	309	112	240	204	266	156	294	107
	80	275	258	304	210	336	160	265	253	292	205	322	155	254	246	279	200	309	150	243	239	266	194	294	145
	80	284	284	304	248	335	198	275	275	292	243	322	193	265	265	279	238	308	188	255	255	266	232	294	183
	90	298	298	305	285	335	236	289	289	293	279	322	231	279	279	282	273	308	226	268	268	269	266	294	221
10000	75	280	234	310	179	342	124	269	228	298	174	329	119	257	223	285	169	314	114	244	217	271	163	299	109
	80	282	274	310	222	342	167	272	267	298	217	328	162	261	260	284	211	314	157	250	250	271	206	299	151
	85	295	295	310	264	342	209	285	285	297	259	328	204	275	275	285	253	314	199	264	264	271	247	299	194
	90	310	310	313	303	341	251	300	300	301	296	328	246	289	289	290	288	314	241	278	278	278	278	299	235
11000	75	284	243	314	185	347	126	272	238	302	180	333	121	260	232	288	174	318	116	248	226	274	169	303	111
	80	288	284	314	231	346	172	277	277	301	225	332	167	267	267	288	220	318	162	256	256	274	214	303	156
	85	302	302	314	276	346	217	292	292	302	271	332	212	282	282	288	265	317	207	270	270	275	258	302	201
	90	318	318	319	315	346	262	307	307	307	307	332	257	296	296	296	296	317	252	285	285	285	285	302	247

Table 23-2 — 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	CAP	SHC
5000	75	273	196	304	162	337	125	262	191	292	156	324	120	251	185	279	150	310	114	239	179	266	144	296	109
	80	273	224	303	189	337	153	262	218	291	183	324	148	251	212	279	178	310	142	239	206	266	171	296	136
	85	274	252	303	217	337	181	264	246	291	211	324	175	253	240	279	205	310	169	241	239	266	199	296	163
	90	281	281	303	244	336	208	272	272	292	238	323	202	263	263	279	232	310	197	253	253	266	226	295	191
7000	75	294	233	326	182	361	132	282	227	313	177	346	126	269	221	299	171	331	120	256	214	284	164	315	114
	80	296	272	326	222	361	171	284	266	313	216	346	165	271	259	298	210	331	159	258	252	284	204	315	153
	85	303	303	326	261	361	210	293	293	313	255	346	204	282	282	299	249	330	198	271	271	284	243	314	192
	90	319	319	328	300	360	249	308	308	315	294	345	243	297	297	301	287	330	237	285	285	287	280	314	231
8750	75	306	259	339	198	374	136	293	253	324	192	358	130	280	247	309	186	342	125	265	240	293	180	325	119
	80	310	305	338	246	374	184	298	297	324	240	358	178	286	286	309	234	341	172	274	274	293	228	324	166
	85	326	326	340	294	373	232	314	314	325	288	358	226	302	302	311	281	341	220	290	290	295	274	324	214
	90	343	343	344	338	373	279	331	331	331	330	358	274	319	319	318	318	341	268	306	306	306	306	325	261
10000	75	313	277	345	208	381	139	300	271	330	202	364	133	286	264	314	196	347	127	271	257	298	190	330	121
	80	321	321	345	263	380	193	309	309	330	257	364	187	297	297	315	250	347	181	284	284	299	244	330	175
	85	339	339	347	316	380	247	326	326	333	309	364	241	314	314	318	302	347	235	300	300	302	294	329	229
	90	356	356	356	356	380	300	344	344	344	344	364	294	331	331	331	331	348	288	317	317	317	317	331	282
11000	75	318	291	349	216	385	141	304	284	334	210	368	135	290	277	318	204	351	129	275	269	301	198	333	124
	80	329	329	349	275	385	200	317	317	334	269	368	194	304	304	318	263	351	188	291	291	302	256	333	182
	85	347	347	353	332	384	258	335	335	338	325	368	253	322	322	323	317	350	247	308	308	308	307	333	241
	90	366	366	366	366	385	316	353	353	353	353	369	310	339	339	339	339	352	304	325	325	325	325	335	297

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.

Table 24-1 — 30 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	CAP	SHC
6000	75	290	209	323	172	358	134	280	203	311	166	345	129	268	197	299	160	331	123	256	191	285	154	317	117
	80	290	238	322	201	358	163	279	233	311	195	345	158	268	227	298	190	331	152	256	220	285	183	317	146
	85	290	267	322	230	358	192	280	262	310	224	345	186	269	255	298	219	331	181	258	249	285	212	316	175
	90	294	293	322	259	357	221	286	286	310	253	344	215	276	276	298	247	331	209	267	267	284	241	316	203
9000	75	317	246	351	194	388	141	304	240	337	188	373	136	291	234	323	182	357	130	277	227	307	176	340	124
	80	317	287	351	235	388	182	305	281	337	229	373	176	292	274	322	223	357	170	278	267	307	216	340	164
	85	322	322	350	275	388	222	312	312	337	269	372	217	301	301	322	263	356	211	289	289	307	257	340	204
	90	338	338	351	316	387	263	328	328	337	309	372	257	316	316	323	302	356	251	304	304	309	295	339	244
10500	75	325	263	360	204	398	145	312	257	346	198	382	139	298	250	330	192	365	133	283	243	314	185	348	126
	80	326	308	360	250	397	190	314	301	345	244	381	184	301	293	330	237	365	178	287	285	314	231	347	172
	85	337	337	359	296	397	236	326	326	345	290	381	230	315	315	330	283	364	224	302	302	314	276	347	218
	90	354	354	361	340	397	281	343	343	347	333	381	275	331	331	333	325	364	269	318	318	319	316	347	263
12000	75	332	278	367	213	405	147	318	272	352	207	389	141	304	265	336	200	371	135	289	258	320	194	353	129
	80	335	326	367	264	405	198	322	318	352	258	388	192	309	308	336	251	371	186	296	296	320	245	353	180
	85	350	350	367	315	404	249	338	338	352	308	388	243	326	326	336	302	371	236	313	313	320	294	353	230
	90	368	368	370	361	404	299	356	356	357	352	388	293	343	343	343	342	370	287	330	330	329	329	353	280
13500	75	337	293	373	221	411	150	323	286	357	215	394	144	309	279	341	209	376	138	294	272	324	202	358	131
	80	343	341	373	277	411	205	330	330	357	271	394	199	318	318	341	264	376	193	305	305	324	258	358	187
	85	361	361	373	332	410	261	348	348	358	326	393	255	336	336	342	318	376	248	322	322	326	311	357	242
	90	379	379	380	378	410	316	367	367	366	366	393	310	353	353	353	353	376	303	339	339	339	339	357	297

Table 24-2 — 30 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	CAP	SHC
6000	75	323	233	359	192	399	148	310	227	345	185	383	141	297	220	330	178	367	135	282	212	314	171	349	128
	80	323	267	359	225	399	182	310	260	345	218	383	175	297	253	330	211	366	168	283	245	314	204	349	161
	85	325	300	359	258	398	214	312	293	345	251	383	208	299	285	330	244	366	201	286	284	314	236	349	194
	90	333	333	359	291	398	247	323	323	345	284	382	240	312	312	330	277	366	233	300	300	315	269	349	226
9000	75	353	286	391	222	432	157	338	279	374	215	414	150	322	271	357	208	395	143	306	264	338	200	375	136
	80	355	336	390	272	432	207	341	328	374	265	413	200	326	319	356	258	394	193	311	310	338	250	375	186
	85	368	368	391	322	431	257	355	355	374	315	413	250	342	342	357	308	394	243	328	328	340	300	374	236
	90	387	387	394	371	431	307	374	374	378	363	413	300	360	360	362	355	394	293	345	345	345	344	374	286
10500	75	362	309	400	235	442	161	347	301	383	228	423	154	330	293	365	221	403	147	313	285	346	213	382	140
	80	368	363	400	293	442	218	353	353	383	286	422	211	339	339	365	278	403	204	324	324	346	271	382	197
	85	386	386	402	350	441	276	372	372	384	343	422	269	358	358	367	335	402	262	343	343	349	326	382	254
	90	406	406	408	402	441	333	392	392	392	392	422	326	377	377	377	377	403	319	361	361	361	361	383	311
12000	75	370	330	408	247	450	164	354	322	390	240	430	157	337	314	371	233	409	150	320	305	351	225	388	143
	80	380	380	408	313	449	229	366	366	390	305	430	222	351	351	371	298	409	215	336	336	352	290	388	208
	85	401	401	410	376	449	294	387	387	393	368	429	287	371	371	375	359	409	280	355	355	357	350	388	272
	90	422	422	422	422	450	358	407	407	407	407	430	351	391	391	391	391	410	343	375	375	375	375		
13500	75	377	350	414	259	456	167	361	341	395	252	435	160	344	332	376	245	415	153	326	322	356	237		
	80	392	392	414	332	455	239	377	377	396	324	435	232	362	362	377	317	414	225	346	346	357	309		
	85	414	414	418	400	455	311	399	399	401	391	435	304	382	382	383	380	414	297	366	366	366	366		
	90	436	436	436	436	456	382	420	420	420	420	437	374	404	404	404	404	416	367	386	386	386	386		

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.

Table 25-1 — 40 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	CAP	SHC
	75	391	281	435	231	483	181	377	273	419	224	466	174	362	265	403	216	448	166	346	257	386	208	429	159
	80	390	320	434	270	482	220	376	312	419	263	466	212	361	304	403	255	448	205	345	296	385	247	429	197
8000	85	391	359	434	309	482	258	377	351	419	302	465	251	362	343	402	294	447	243	347	334	385	286	428	236
	90	396	394	434	348	482	297	384	384	418	340	465	290	372	372	402	332	447	282	359	359	384	324	428	274
	75	420	319	466	255	516	189	404	311	449	247	497	181	387	303	430	239	477	174	369	294	411	230	456	166
	80	419	370	466	305	516	239	404	362	448	297	497	232	387	353	430	289	476	224	370	344	410	281	455	216
11000	85	424	417	465	356	515	290	410	407	448	348	496	282	395	395	429	340	476	274	380	380	410	331	455	266
	90	442	442	465	406	515	340	429	429	448	398	496	332	415	415	430	389	476	324	400	400	411	380	455	316
	75	438	353	486	275	537	195	421	345	467	267	517	188	403	336	447	258	495	180	384	327	426	250	472	172
	80	440	413	486	336	537	256	423	404	467	328	516	249	406	394	447	319	495	241	388	383	426	311	472	233
14000	85	454	454	485	397	536	317	440	440	466	389	516	309	424	424	447	380	494	302	408	408	426	372	472	293
	90	477	477	487	456	536	378	462	462	469	447	515	370	447	447	451	437	494	362	430	430	432	425	471	354
	75	448	373	496	287	547	199	430	365	476	279	526	191	411	356	456	270	504	183	391	347	434	262	481	175
	80	451	438	495	355	547	267	435	427	476	346	526	259	418	415	455	338	503	251	400	400	434	329	480	243
16000	85	471	471	495	422	546	334	456	456	476	414	525	326	440	440	456	405	503	318	423	423	435	396	480	310
	90	495	495	500	484	546	401	480	480	482	474	525	393	463	463	464	461	503	385	446	446	446	446	479	377
	75	455	393	504	298	556	202	437	384	484	290	534	194	418	375	463	281	511	187	398	366	440	273	487	178
	80	462	458	503	372	555	276	446	445	483	364	533	269	429	429	462	356	511	261	412	412	440	347	487	252
18000	85	486	486	504	446	555	350	470	470	484	437	533	342	453	453	463	428	510	334	436	436	442	418	486	326
	90	511	511	512	508	554	424	495	495	494	494	533	416	478	478	477	477	510	408	459	459	459	459	486	399

Table 25-2 — 40 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	CAP	SHC
	75	435	314	485	258	539	200	419	305	467	249	519	192	401	295	447	240	497	183	382	286	426	231	475	174
	80	436	358	485	302	538	245	419	349	466	293	518	237	401	340	447	284	497	228	383	330	426	275	475	218
8000	85	438	403	484	346	538	289	421	393	466	337	518	280	404	384	446	328	497	271	387	382	426	318	474	262
	90	448	448	485	390	538	333	435	435	466	381	517	324	420	420	447	372	496	315	405	405	427	362	474	305
	75	468	362	520	286	576	210	449	352	499	277	553	201	429	343	477	268	529	192	408	340	454	258	504	183
	80	470	431	519	346	575	269	452	421	498	336	552	260	432	411	477	327	529	251	412	400	454	317	504	242
11000	85	482	482	520	405	575	328	466	466	499	404	552	319	449	449	477	395	528	309	431	431	455	385	503	300
	90	506	506	522	475	574	386	490	490	502	465	552	377	473	473	481	455	528	368	454	454	459	444	503	358
	75	489	415	541	316	598	217	469	405	519	307	574	209	448	395	495	298	548	200	426	384	471	288	522	190
	80	496	487	541	394	598	294	477	475	519	384	573	285	458	458	495	375	548	276	439	439	471	365	521	267
14000	85	521	521	543	470	597	371	503	503	521	460	573	362	484	484	498	450	547	353	465	465	474	440	521	343
	90	548	548	550	541	597	447	530	530	530	528	573	438	510	510	510	510	548	429	490	490	490	490	522	419
	75	500	443	552	333	609	222	479	433	528	324	584	213	457	422	504	314	557	204	435	411	479	304	530	195
	80	513	513	552	420	609	309	495	495	528	411	583	300	476	476	504	401	557	291	455	455	479	391	530	281
16000	85	541	541	555	505	608	395	523	522	533	495	583	386	503	503	509	484	556	377	482	482	485	472	529	367
	90	570	570	570	570	609	481	551	551	551	551	584	471	530	530	530	530	558	462	509	509	509	509	531	452
	75	510	470	560	349	617	226	488	459	536	340	591	218	466	447	511	330	565	208	443	435	485	320	537	199
	80	529	529	560	446	617	322	510	510	537	436	591	313	490	490	512	426	564	304	469	469	486	416	536	295
18000	85	559	559	566	537	617	418	539	539	543	525	591	409	518	518	520	513	564	400	497	497	497	496	536	390
	90	589	589	589	589	618	513	569	569	568	568	593	503	547	547	547	547	566	493	525	525	525	525	539	483

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.

Table 26-1 — 50 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	CAP	SHC
	75	475	339	529	281	587	221	458	329	510	271	567	212	440	320	490	262	545	203	421	310	469	252	522	193
	80	475	384	528	326	587	267	458	375	510	317	566	258	440	366	490	308	544	248	420	355	469	298	521	239
10000	85	474	430	528	372	586	312	458	421	509	363	566	303	440	411	489	353	544	294	421	401	468	343	521	284
	90	479	473	527	417	585	358	464	462	509	408	565	348	449	449	489	399	543	339	433	433	468	388	520	329
	75	513	386	569	309	630	231	493	376	548	300	607	222	473	366	525	290	582	212	451	355	501	279	556	202
	80	512	446	569	369	630	291	493	436	547	360	606	282	472	426	525	350	581	272	451	415	501	339	555	262
14000	85	516	503	568	429	629	351	498	492	547	419	606	341	480	478	524	409	581	331	461	461	500	398	555	321
	90	536	536	568	488	629	410	520	520	546	478	605	400	503	503	524	468	580	391	485	485	501	457	554	380
	75	534	422	592	331	654	238	513	412	569	321	629	229	491	401	545	310	603	219	468	390	519	300	575	209
	80	535	493	592	402	654	309	514	482	569	392	629	300	493	471	544	381	602	290	471	458	519	371	574	280
17500	85	547	547	591	472	653	380	530	530	568	462	628	370	512	512	544	452	602	360	492	492	518	441	574	350
	90	575	575	592	542	653	450	557	557	569	532	628	440	538	538	546	520	601	430	518	518	522	507	573	420
	75	546	445	605	344	667	243	524	435	581	334	641	233	501	424	555	324	614	223	477	413	529	313	585	213
	80	548	522	604	423	667	321	527	510	580	413	641	311	506	497	555	402	613	301	484	482	528	392	584	291
20000	85	568	568	603	501	666	399	550	550	580	491	640	389	530	530	554	481	613	379	510	510	528	470	584	369
	90	597	597	606	576	666	477	578	578	584	564	639	467	558	558	560	551	612	457	537	537	537	535	583	446
	75	555	467	615	357	678	246	533	456	590	347	651	237	509	446	564	337	623	227	484	434	537	326	593	216
	80	560	548	614	443	677	332	539	534	589	433	650	322	518	518	563	422	622	312	497	497	536	411	593	302
22500	85	586	586	613	528	677	417	567	567	589	518	650	407	546	546	563	507	622	397	525	525	537	495	592	387
	90	616	616	619	606	676	502	596	596	597	592	649	492	575	575	575	575	621	482	553	553	553	553	592	471

Table 26-2 — 50 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	CAP	SHC
	75	536	391	597	319	663	248	515	380	574	309	637	237	493	369	549	297	611	226	470	357	524	286	583	214
	80	536	448	596	376	662	303	515	437	573	365	637	292	493	426	549	354	610	281	470	414	523	342	582	270
10000	85	538	505	596	433	662	359	518	494	573	422	636	348	497	481	549	410	610	337	475	468	523	398	582	326
	90	551	551	596	489	661	415	534	534	573	478	636	404	516	516	549	466	609	393	496	496	524	454	581	382
	75	578	455	642	358	710	259	554	444	615	346	681	248	529	432	587	335	651	236	503	419	558	322	619	225
	80	580	532	641	434	709	335	557	520	615	423	680	324	533	507	587	411	650	313	507	493	558	399	619	301
14000	85	594	594	641	511	709	411	574	574	615	499	680	400	553	553	587	487	650	389	531	531	559	475	618	377
	90	624	624	644	586	708	487	603	603	618	574	679	476	582	582	592	561	649	464	559	559	564	547	618	452
	75	602	506	666	387	735	267	576	494	637	376	704	256	549	482	608	364	672	245	522	468	577	351	639	233
	80	609	595	665	481	735	360	585	580	637	469	704	349	561	561	607	457	672	338	537	537	577	444	638	326
17500	85	637	637	667	573	734	453	615	615	639	561	703	441	592	592	610	548	671	430	567	567	580	535	638	418
	90	670	670	675	659	734	545	648	648	649	644	703	534	624	624	623	623	671	522	598	598	598	598	638	510
	75	615	540	679	407	748	273	588	527	649	395	716	261	561	514	619	383	683	250	533	500	587	371	649	238
	80	628	628	678	512	748	377	605	605	649	500	716	366	581	581	618	488	683	354	556	556	587	475	649	343
20000	85	662	662	681	614	747	481	639	639	653	601	715	470	614	614	623	588	682	458	588	588	593	573	648	446
	90	697	697	697	697	747	584	673	673	673	673	716	573	647	647	647	647	683	561	621	621	621	621	649	549
	75	626	572	689	426	759	278	599	558	658	414	726	267	571	544	627	402	692	255	543	528	595	390	657	243
	80	647	647	688	542	758	393	624	624	658	530	726	382	599	599	627	517	692	370	572	572	595	505	657	359
22500	85	683	683	694	652	758	508	659	659	665	638	725	497	633	633	636	622	691	485	606	606	606	604	656	473
	90	720	720	719	719	759	622	694	694	694	694	726	610	668	668	667	667	693	598	640	640	640	640	659	585

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.

Table 27-1 — 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	CAP	SHC
	75			602	320	668	251	523	378	581	310	644	240	502	366	558	299	618	229	480	355	533	287	591	218
	80			602	373	667	304	523	431	580	363	643	293	502	420	557	352	618	282	479	408	532	340	590	271
12000	85			601	426	667	356	523	484	580	416	643	346	502	472	557	404	617	335	481	460	532	393	590	324
	90	548	543	601	479	666	409	531	530	579	468	642	398	514	514	556	457	616	387	496	496	531	445	589	376
	75	578	433	640	347	708	260	556	422	616	336	681	249	532	410	590	325	653	238	507	398	563	313	622	227
	80	577	499	640	414	707	327	555	488	615	403	680	316	532	477	590	391	652	305	507	464	562	379	622	293
16000	85	581	564	639	480	707	393	560	551	615	469	680	382	539	536	589	457	651	371	518	518	562	445	621	359
	90	602	602	639	546	706	458	584	584	614	535	679	447	565	565	589	523	651	436	544	544	562	511	621	424
	75	598	465	662	366	730	266	574	453	636	355	702	256	549	441	608	343	672	244	523	429	579	331	640	232
	80	597	541	661	443	730	343	574	530	635	431	701	332	550	517	608	420	671	320	525	503	579	407	639	309
19250	85	608	607	661	519	729	419	588	588	635	508	701	408	568	568	607	496	670	396	546	546	578	483	639	384
	90	637	637	660	595	729	494	617	617	635	583	700	483	596	596	609	570	670	472	573	573	581	556	638	460
	75	611	490	676	381	745	271	586	478	649	370	715	260	560	466	620	358	684	248	533	453	590	345	651	237
	80	612	573	675	465	744	355	588	561	648	454	715	344	564	547	619	442	683	333	538	531	589	430	651	321
22000	85	631	631	675	549	744	439	610	610	648	538	714	428	588	588	619	526	683	416	565	565	589	513	650	405
	90	662	662	676	632	743	522	641	641	650	619	713	511	618	618	623	604	682	500	594	594	596	588	649	488
	75	619	507	684	391	754	274	594	495	656	379	723	263	567	483	627	367	691	251	539	470	596	355	658	240
	80	621	595	684	481	753	364	598	581	656	469	723	353	573	565	627	457	691	341	548	547	596	445	657	329
24000	85	645	645	683	570	753	453	624	624	655	559	722	442	601	601	626	547	690	430	577	577	596	534	657	418
	90	677	677	686	656	752	542	655	655	660	642	722	531	632	632	634	626	690	519	607	607	607	606	656	507

Table 27-2 — 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	CAP	SHC
	75	618	454	686	369	760	283	593	441	659	356	730	270	567	428	630	343	698	257	539	414	599	329	664	243
	80	618	522	686	436	760	348	593	509	658	423	729	336	567	495	629	409	697	323	540	481	598	396	664	309
12000	85	621	588	685	502	759	415	597	575	657	489	729	402	572	560	629	476	697	389	547	543	598	462	663	376
	90	638	638	685	569	758	481	618	618	658	556	728	468	596	596	629	543	696	455	573	573	599	528	663	442
	75	657	516	728	405	804	293	629	503	697	392	770	280	600	489	665	378	735	267	569	474	631	364		
	80	659	603	727	492	804	379	632	588	696	478	770	366	604	573	664	465	734	353	574	557	630	450		
16000	85	674	674	727	578	803	465	651	651	696	565	769	452	626	626	664	551	734	439	600	600	631	536		
	90	707	707	730	663	802	550	683	683	700	649	768	537	658	658	669	634	733	524	631	631	637	617		
	75	679	562	751	432	828	301	649	548	718	419	792	288	619	534	684	405	755	274	587	519	648	390		
	80	685	660	750	534	827	402	657	644	717	520	791	389	629	625	683	506	754	376	600	600	648	492		
19250	85	714	714	751	635	827	503	689	689	719	621	791	490	662	662	685	606	753	476	634	634	651	591		
	90	750	750	758	730	826	603	724	724	728	713	790	590	696	696	697	694	753	576	667	667	667	667		
	75	693	599	765	453	843	307	663	585	731	440	806	294	631	569	696	426	767	280	599	553	659	411		
	80	705	701	764	567	842	420	678	678	731	554	805	407	650	650	695	540	767	394	622	622	659	525		
22000	85	742	742	767	680	842	533	715	715	734	665	804	520	686	686	700	649	766	506	657	657	665	632		
	90	780	780	781	777	841	646	752	752	752	752	804	632	723	723	723	723	766	619						
	75	703	624	774	468	852	311	672	609	739	455	814	298	640	594	703	440	775	284	606	577	666	426		
	80	720	720	773	591	851	433	693	693	739	577	813	420	665	665	703	563	774	406	635	635	666	548		
24000	85	759	759	777	710	851	555	731	731	744	695	813	541	702	702	710	678	773	528	671	671	674	659		
	90	799	799	798	798	851	676	770	770	769	769	813	662	739	739	739	739	775	648						

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.

Table 28-1 — 60 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	CAP	SHC
14000	75	605	448	674	363	749	277	583	437	649	352	722	266	560	425	623	340	693	254	535	412	596	328	663	242
	80	604	515	673	430	748	344	583	504	649	419	721	332	559	492	623	407	692	321	535	480	595	395	662	309
	85	609	581	673	497	748	410	588	569	648	486	720	399	566	555	622	474	692	388	543	539	595	462	661	376
	90	628	628	672	564	747	477	610	610	648	552	720	465	590	590	622	540	691	454	570	570	595	528	661	442
18000	75	637	497	708	393	785	286	613	485	681	381	755	275	587	473	653	369	724	263	560	460	623	356	691	251
	80	638	579	708	475	785	369	614	567	681	463	755	357	589	554	652	451	723	345	563	539	622	438	691	333
	85	651	649	707	557	784	450	630	630	680	545	754	439	609	609	652	533	723	427	586	586	622	520	690	415
	90	683	683	709	638	783	532	663	663	683	626	753	520	641	641	655	612	722	508	617	617	627	598	689	496
21000	75	654	531	727	412	805	292	629	518	699	400	773	281	602	506	669	388	741	269	573	493	638	375	707	257
	80	658	621	727	505	804	385	633	608	698	493	773	374	608	593	668	481	740	362	582	575	637	468	706	349
	85	681	681	726	598	803	478	660	660	698	586	772	466	637	637	668	573	739	454	613	613	637	560	705	442
	90	716	716	730	687	803	570	694	694	704	673	772	558	671	671	676	658	739	546	646	646	648	640	705	533
24000	75	668	562	742	431	820	298	642	549	712	419	788	286	614	536	682	406	754	274	585	523	649	393	719	262
	80	675	658	741	534	819	401	651	642	712	522	787	389	626	624	681	509	753	377	600	600	649	496	718	365
	85	707	707	741	637	819	503	684	684	712	624	786	492	660	660	682	611	753	480	635	635	650	597	717	467
	90	744	744	750	730	818	605	720	720	723	713	786	594	695	695	696	694	752	581	669	669	669	669	717	569
27000	75	680	591	754	448	832	303	653	578	723	436	799	291	624	565	691	423	764	279	594	550	658	410	728	267
	80	692	688	753	561	832	416	668	668	723	548	798	404	644	644	691	536	764	392	618	618	658	523	728	379
	85	729	729	754	672	831	528	705	705	724	659	798	516	680	680	694	645	763	504	653	653	662	629	727	491
	90	768	768	768	764	830	639	743	743	742	742	797	627	717	717	716	716	762	615	689	689	689	689	726	603

Table 28-2 — 60 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	CAP	SHC
14000	75	669	498	745	402	826	303	642	484	715	389	793	290	614	470	684	375	759	277	585	456	651	360	723	264
	80	671	575	744	478	825	379	644	573	714	464	792	366	617	558	683	450	758	353	588	543	651	435	722	339
	85	678	664	744	553	825	455	653	648	714	540	792	441	629	629	683	525	758	427	604	604	651	511	722	413
	90	707	707	746	629	824	529	684	684	717	630	791	516	661	661	686	615	757	502	636	636	654	600	721	488
18000	75	705	570	781	443	865	314	675	556	749	429	829	301	645	541	715	415	792	288	613	526	680	400	753	274
	80	710	668	781	542	864	414	682	653	748	529	828	400	652	636	714	514	791	387	622	618	679	500	752	373
	85	735	735	782	642	863	513	710	710	750	628	828	499	684	684	716	613	790	485	656	656	682	598	752	471
	90	772	772	788	739	863	611	747	747	757	723	827	598	720	720	725	706	790	584	691	691	693	687	752	570
21000	75	724	614	801	468	885	322	694	600	767	455	847	308	662	584	731	440	809	295	629	569	694	426	769	281
	80	734	721	800	583	884	436	706	703	766	569	847	422	678	678	731	555	808	408	649	649	694	540	768	394
	85	771	771	803	696	884	549	744	744	770	682	846	536	716	716	735	666	807	522	686	686	700	650	767	508
	90	811	811	815	801	883	662	783	783	784	781	846	649	754	754	754	754	808	634	724	724	724	724	769	620
24000	75	740	656	816	493	901	328	709	641	781	479	862	315	676	625	744	465	822	301	642	608	706	450	781	287
	80	759	759	816	622	900	457	731	731	781	608	861	443	703	703	744	593	821	429	672	672	707	578	780	415
	85	801	801	821	747	899	584	772	772	787	731	861	571	743	743	752	715	821	557	711	711	716	696	779	543
	90	843	843	843	843	900	711	814	814	814	814	862	697	783	783	783	783	823	683	751	751	751	751	782	668
27000	75	754	695	828	517	913	335	722	678	792	502	873	321	688	661	754	488	832	307	655	642	715	473	790	293
	80	782	782	828	659	912	477	754	754	792	645	873	463	723	723	755	630	832	449	692	692	717	614	790	435
	85	826	826	837	794	912	618	796	796	802	776	872	605	765	765	767	756	831	591	732	732	732	732	789	576
	90	871	871	870	870	914	758	840	840	840	840	875	744	807	807	807	807	835	729	774	774	774	774	794	713

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.

Table 29-1 — 70 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil

AIR-FLOW CFM	ENT DB (F)	Ambient Temperature (F) 85						95						105						115					
		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	688	504	766	411	852	305	656	484	731	391	813	288	623	464	695	374	773	269	588	443	656	351	731	251
	80	692	581	768	489	853	392	660	561	734	469	815	372	627	541	698	449	775	353	593	520	660	428	733	333
	85	699	660	773	565	856	471	669	641	738	545	818	452	637	621	702	525	778	432	604	600	664	504	736	412
	90	720	720	776	642	859	547	693	693	742	622	821	527	664	664	706	601	782	507	634	634	669	580	740	486
20000	75	724	553	803	443	889	319	690	533	765	423	848	301	654	511	726	402	804	282	617	489	685	381	759	263
	80	729	646	807	534	891	419	695	625	770	514	850	399	660	604	731	492	807	379	624	583	690	470	762	358
	85	738	738	811	625	894	512	709	709	774	605	853	492	679	679	735	583	810	471	646	646	694	561	766	449
	90	779	779	816	717	899	602	749	749	780	697	858	581	718	717	742	675	815	560	684	684	702	654	771	538
22000	75	738	576	817	461	903	326	703	555	779	437	861	307	666	533	738	415	817	288	627	511	696	393	770	269
	80	744	676	822	555	906	431	710	655	783	534	863	411	674	634	743	512	819	391	637	612	702	490	774	370
	85	761	761	826	653	909	531	731	731	788	632	867	510	699	699	748	610	823	489	666	666	706	588	778	467
	90	803	803	833	752	914	627	772	772	796	732	872	607	739	739	757	710	828	585	705	705	716	688	783	563
24000	75	750	597	829	470	915	332	714	576	790	449	872	313	676	554	749	428	827	294	637	532	706	405	780	273
	80	758	705	835	574	918	443	723	684	795	553	875	423	686	663	754	531	830	402	649	641	712	509	783	381
	85	782	782	839	679	922	548	751	751	800	658	879	527	718	718	759	636	835	506	683	683	717	614	788	484
	90	825	825	848	786	927	652	793	793	810	765	884	631	759	759	770	744	840	609	723	723	729	722	793	587
26000	75	760	618	840	482	926	337	724	596	800	461	882	318	685	574	758	439	836	298	645	551	714	417	788	277
	80	770	733	846	593	929	454	735	712	806	572	885	434	698	690	764	550	840	413	657	657	720	527	792	392
	85	801	801	850	705	933	565	768	768	811	683	890	544	734	734	769	661	844	522	698	698	726	638	797	500
	90	845	845	861	819	939	675	812	812	822	798	895	654	776	776	783	776	850	632	739	739	739	739	802	610
27000	75	765	628	845	488	931	340	728	606	805	467	886	320	689	584	762	445	840	300	649	561	718	422	791	279
	80	776	747	851	602	934	459	740	726	810	581	890	439	699	699	768	558	844	418	664	664	724	536	796	397
	85	809	809	856	717	939	573	776	776	815	696	895	552	742	742	773	673	849	530	706	706	730	651	801	508
	90	854	854	867	835	944	687	820	820	829	814	900	665	784	784	784	784	854	643	747	747	746	746	806	621

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

Table 30-1 — 75 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil

		Ambient Temperature (F)																					
		85						95						105						115			
AIR-	ENT	Entering Wet Bulb (F)																					
FLOW	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	CAP	SHC
	75	760	567	846	456	937	336	724	546	806	435	893	316	686	524	764	413	847	296	646	501	720	391	799	274
16000	80	765	659	848	547	939	433	730	637	808	526	895	412	692	615	767	505	849	391	653	592	723	482	801	370
	85	776	753	850	637	941	523	742	732	811	616	898	502	703	703	770	593	852	480	669	669	727	571	804	458
	90	806	806	856	728	944	614	775	775	817	706	900	593	742	742	777	684	855	571	707	707	734	661	806	548
	75	799	630	884	494	976	350	760	608	841	473	929	329	719	585	796	458	880	308	677	561	750	436		
20000	80	808	743	887	605	978	469	770	721	844	583	932	443	730	698	799	560	883	421	689	674	753	536		
	85	830	830	892	714	982	576	796	796	850	692	935	554	760	760	806	669	886	532	723	723	760	645		
	90	875	875	902	826	984	684	840	840	860	803	937	662	803	803	817	780	889	639	764	764	773	757		
	75	814	660	899	513	991	356	774	637	855	491	943	335	732	614	809	477	892	314	689	590	761	455		
22000	80	826	783	902	631	994	480	787	761	858	609	945	458	746	738	812	586	895	436	702	702	765	562		
	85	856	856	908	751	997	601	821	821	865	728	949	579	784	784	820	705	899	557	745	745	773	681		
	90	903	903	921	872	1000	718	866	866	879	850	952	695	828	828	835	827	903	672	788	788	787	787		
	75	827	688	912	529	1004	361	786	666	867	507	954	340	744	642	819	485	903	319	700	618	771	462		
24000	80	842	822	915	657	1007	494	802	800	870	634	957	473	759	759	823	611	906	451	720	720	775	587		
	85	880	880	923	786	1010	625	843	843	879	763	960	602	804	804	833	740	909	579	764	764	785	716		
	90	927	927	938	918	1014	750	890	890	889	889	965	728	850	850	849	849	915	704	808	808	808	808		
	75	839	716	923	546	1015	367	798	693	876	524	964	346	754	669	829	501	912	324	710	645	778	476		
26000	80	851	851	926	682	1018	509	815	815	881	659	968	487	776	776	833	636	915	465	736	736	784	611		
	85	900	900	936	821	1021	647	863	863	891	798	971	624	823	823	844	774	919	601	781	781	796	750		
	90	950	950	949	949	1026	782	911	911	910	910	977	759	869	869	869	869	926	736						
	75	845	730	927	571	1020	369	803	707	881	548	969	348	759	683	831	524	915	327	714	658	781	500		
27000	80	860	860	931	694	1023	516	823	823	885	671	972	494	784	784	838	648	920	472	743	743	788	623		
	85	910	910	942	838	1026	658	872	872	897	815	975	635	831	831	850	791	923	612	789	789	801	767		
	90	960	960	960	960	1032	798	920	920	920	920	982	775	879	879	878	878	930	751						

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

Table 30-2 — 75 Ton Gross Cooling Capacity — HIGH CAPACITY Configuration

		Ambient Temperature																					
		85						95						105						115			
AIR-	ENT	Entering Wet Bulb																					
FLOW	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	CAP	SHC
	75	841	610	933	495	1034	374	802	587	891	473	987	352	761	563	847	449	939	330	719	538				
16000	80	845	701	936	588	1035	471	807	678	894	565	989	449	766	654	849	541	940	426	725	629				
	85	854	795	939	680	1038	562	816	772	896	657	991	539	777	748	851	632	943	516	736	723				
	90	872	872	943	770	1040	653	839	839	901	746	994	630	804	804	857	722	945	607	768	768				
	75	886	674	980	536	1082	388	844	650	934	512	1031	366	800	625	886	488	979	343	755	599				
20000	80	894	787	983	648	1083	508	852	762	937	624	1033	485	809	737	889	600	981	462	765	712				
	85	909	903	986	757	1086	616	866	866	941	733	1036	592	829	829	894	708	984	569						
	90	949	949	995	869	1089	727	912	912	950	844	1039	704	873	873	903	820	986	678						
	75	903	704	998	553	1100	395	860	680	951	530	1048	372	816	654	901	505	994	349	769	629				
22000	80	913	827	1001	676	1102	525	871	803	953	651	1050	503	827	777	904	626	996	473	782	752				
	85	932	932	1006	794	1105	641	894	894	959	770	1053	618	855	855	910	745	1000	594						
	90	981	981	1016	916	1107	761	942	942	970	891	1056	736	902	902	923	866	1002	711						
	75	919	733	1013	571	1116	400	875	709	965	547	1062	378	829	683	914	523	1007	354	782	657				
24000	80	931	867	1016	702	1118	543	888	842	967	677	1065	511	843	816	917	651	1009	487						
	85	958	958	1023	830	1121	666	920	920	975	806	1068	642	879	879	925	780	1013	618						
	90	1009	1009	1036	962	1124	793	969	969	989	937	1071	769	927	927	940	912	1017	744						
	75	933	762	1027	588	1129	406	888	737	977	564	1074	383	841	711	925	539	1018	360						
26000	80	947	905	1030	727	1131	549	903	880	980	702	1077	526	858	854	929	676	1021	501						
	85	982	982	1038	865	1135	690	942	942	989	840	1080	666	900	900	938	815	1024	641						
	90	1034	1034	1053	1007	1138	825	993	993	1006	982	1085	801	949	949	949	949	1029	775						
	75	939	775	1032	598	1135	409	894	750	982	574	1080	386	846	724	930	549	1022	362						
27000	80	955	924	1036	739	1137	556	911	899	986	714	1082	533	860	860	934	688	1026	508						
	85	993	993	1045	882	1141	701	953	953	995	857	1086	678	910	910	944	832	1028	651						
	90	1046	1046	1062	1029	1145	841	1004	1004	1014	1004	1091	816	960	960	959	959	1035	791						

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

Table 31-1 — 90 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil

AIR-FLOW CFM	ENT DB (F)	Ambient Temperature 85						95						105						115					
		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
27000	75	934	719	1036	571	1147	412	890	693	988	545	1095	389	844	666	938	519	1040	366	797	638	887	493	984	341
	80	940	841	1040	695	1149	540	897	815	992	668	1097	515	852	788	942	641	1043	489	806	761	891	613	986	462
	85	954	954	1044	813	1153	663	917	917	997	787	1101	637	878	878	947	760	1047	612	837	837	896	732	991	585
	90	1006	1006	1051	933	1156	783	968	968	1004	907	1105	757	927	927	956	880	1051	730	885	885	906	853	995	703
32000	75	964	773	1067	604	1180	427	918	746	1017	578	1125	402	871	718	965	551	1068	376	821	690	911	524	1009	350
	80	974	912	1071	742	1182	568	930	886	1021	715	1128	543	884	859	969	688	1071	517	836	831	915	660	1012	490
	85	1006	1006	1076	878	1186	708	966	966	1026	851	1132	683	924	924	975	824	1076	656	881	881	922	795	1016	628
	90	1061	1061	1087	1016	1190	843	1020	1020	1039	990	1136	817	977	977	990	963	1080	789	931	931	939	935	1022	761
37000	75	988	822	1091	634	1204	438	940	794	1039	608	1147	412	891	766	985	581	1088	385	840	737	929	553	1027	358
	80	1003	979	1095	786	1207	595	957	952	1044	759	1151	569	907	907	990	731	1092	542	862	862	935	703	1031	515
	85	1048	1048	1101	938	1210	749	1006	1006	1051	911	1154	723	962	962	998	883	1096	695	915	915	943	855	1036	667
	90	1105	1105	1119	1095	1217	899	1062	1062	1070	1068	1161	872	1017	1017	1016	1016	1102	845	969	969	968	968	1042	816
42000	75	1007	867	1110	662	1224	446	959	839	1057	636	1165	420	908	811	1000	607	1105	393	857	782	943	578	1042	366
	80	1023	1023	1115	828	1227	619	981	981	1062	801	1169	593	936	936	1007	772	1109	566	890	890	950	743	1047	538
	85	1083	1083	1123	996	1231	787	1039	1039	1071	968	1174	760	993	993	1017	940	1114	732	945	945	962	911	1052	703
	90	1143	1143	1142	1142	1237	952	1098	1098	1097	1097	1180	925	1050	1050	1050	1050	1120	896	1001	1001	1000	1000	1058	868
45000	75	1017	893	1118	783	1233	453	968	865	1063	756	1174	427	918	837	1008	729	1113	416	865	807	950	702	1049	390
	80	1041	1041	1126	852	1237	633	997	997	1072	824	1178	606	951	951	1016	795	1118	579	904	904	958	766	1055	552
	85	1101	1101	1135	1028	1242	809	1057	1057	1082	1001	1183	781	1009	1009	1028	973	1123	753	960	960	972	944	1060	724
	90	1163	1163	1162	1162	1248	982	1117	1117	1116	1116	1190	955	1069	1069	1068	1068	1129	926	1018	1018	1017	1017	1067	897

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

Table 31-2 — 90 Ton Gross Cooling Capacity — HIGH CAPACITY Evaporator Coil

AIR-FLOW CFM	ENT DB (F)	Ambient Temperature 85						95						105						115					
		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
27000	75	1034	835	1146	649	1266	454	984	806	1090	629	1205	427	932	777	1032	602	1142	400	878	747	973	573	1077	373
	80	1048	989	1149	800	1269	609	999	961	1094	772	1209	582	948	932	1036	743	1146	555	892	892	977	713	1081	526
	85	1086	1086	1157	950	1273	761	1042	1042	1102	922	1213	734	996	996	1046	893	1151	706	948	948	988	863	1086	677
	90	1146	1146	1172	1103	1277	910	1101	1101	1118	1075	1217	882	1053	1053	1064	1046	1155	853	1003	1003	1003	1003	1091	823
32000	75	1068	909	1178	693	1298	468	1015	880	1120	666	1235	441	961	850	1060	637	1169	414	905	820	998	608	1101	386
	80	1083	1083	1182	867	1302	648	1037	1037	1125	838	1239	620	989	989	1066	809	1174	592	939	939	1004	778	1106	564
	85	1147	1147	1194	1043	1307	824	1099	1099	1138	1014	1244	796	1050	1050	1079	984	1177	765	998	998	1019	954	1110	736
	90	1211	1211	1210	1210	1313	994	1162	1162	1161	1161	1250	966	1111	1111	1110	1110	1186	937	1057	1057	1057	1057	1119	907
37000	75	1095	980	1202	736	1322	481	1041	951	1142	708	1256	454	986	921	1079	676	1188	427	928	890	1015	645	1118	398
	80	1129	1129	1209	931	1327	684	1080	1080	1149	902	1261	656	1029	1029	1088	872	1194	628	977	977	1025	841	1125	599
	85	1196	1196	1225	1132	1331	881	1146	1146	1167	1102	1266	852	1093	1093	1107	1072	1199	822	1038	1038	1046	1042	1130	792
	90	1263	1263	1263	1263	1341	1076	1211	1211	1211	1211	1277	1047	1157	1157	1156	1156	1211	1018	1100	1100	1100	1100	1143	987
42000	75	1118	1049	1220	773	1340	494	1063	1019	1159	744	1273	467	1007	988	1095	713	1204	438	944	944	1030	682	1132	409
	80	1167	1167	1230	993	1346	719	1116	1116	1169	963	1279	691	1063	1063	1107	933	1210	662	1008	1008	1042	902	1139	633
	85	1236	1236	1251	1218	1351	936	1184	1184	1193	1188	1285	907	1129	1129	1128	1128	1216	877	1071	1071	1071	1071	1146	846
	90	1306	1306	1306	1306	1364	1155	1252	1252	1251	1251	1299	1126	1195	1195	1195	1195	1231	1096	1135	1135	1135	1135	1162	1065
45000	75	1131	1088	1229	827	1349	502	1075	1058	1167	797	1281	475	1013	1013	1103	767	1211	447	959	959	1037	736	1139	419
	80	1186	1186	1241	1029	1355	739	1134	1134	1180	999	1288	711	1080	1080	1116	968	1218	682	1024	1024	1051	937	1145	650
	85	1257	1257	1257	1257	1361	968	1204	1204	1203	1203	1294	939	1147	1147	1147	1147	1225	909	1088	1088	1088	1088	1154	878
	90	1329	1329	1329	1329	1376	1201	1273	1273	1273	1273	1310	1171	1215	1215	1214	1214	1243	1141	1154	1154	1154	1154	1173	1111

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

Table 32-1 — 105 Ton Gross Cooling Capacity — STANDARD CAPACITY Evaporator Coil

AIR-FLOW CFM	ENT DB (F)	Ambient Temperature 85 Entering Wet Bulb 61 CAP	61 SHC	67 CAP	67 SHC	73 CAP	73 SHC	95 61 CAP	61 SHC	67 CAP	67 SHC	73 CAP	73 SHC	105 61 CAP	61 SHC	67 CAP	67 SHC	73 CAP	73 SHC	115 61 CAP	61 SHC	67 CAP	67 SHC	73 CAP	73 SHC
31000	75	1091	872	1207	710	1336	482	1041	843	1152	683	1276	456	989	814	1095	656	1213	430	934	783	1035	628	1148	402
	80	1105	1031	1212	838	1338	642	1056	1002	1158	809	1279	615	1006	973	1100	779	1216	587	953	942	1041	749	1152	558
	85	1139	1139	1219	991	1343	799	1095	1095	1165	962	1283	772	1050	1050	1109	932	1221	743	1001	1001	1050	902	1155	713
	90	1201	1201	1234	1147	1347	950	1156	1156	1182	1119	1288	922	1109	1109	1127	1090	1226	893	1060	1060	1071	1060	1161	863
35000	75	1115	922	1232	713	1361	493	1064	892	1176	685	1299	467	1010	862	1116	656	1234	439	955	831	1055	626	1167	410
	80	1134	1098	1237	882	1364	668	1084	1069	1180	853	1302	641	1026	1026	1122	823	1238	613	977	977	1061	792	1171	584
	85	1182	1182	1246	1052	1368	841	1136	1136	1190	1023	1306	812	1088	1088	1133	993	1242	782	1038	1038	1073	962	1175	752
	90	1247	1247	1266	1226	1373	1006	1200	1200	1213	1198	1312	978	1150	1150	1149	1149	1248	948	1098	1098	1098	1098	1183	918
39000	75	1136	969	1252	742	1381	504	1084	939	1194	713	1317	476	1029	909	1133	684	1251	447	972	877	1069	652	1182	418
	80	1151	1151	1257	925	1384	693	1105	1105	1199	895	1321	665	1057	1057	1139	865	1255	637	1006	1006	1077	834	1187	608
	85	1219	1219	1269	1111	1388	879	1171	1171	1212	1081	1325	850	1121	1121	1154	1051	1260	820	1068	1068	1093	1020	1192	789
	90	1286	1286	1285	1285	1395	1060	1237	1237	1236	1236	1332	1031	1185	1185	1185	1185	1268	1001	1131	1131	1131	1131	1201	971
42000	75	1150	1003	1264	823	1393	513	1097	973	1203	788	1328	483	1041	942	1142	759	1261	459	984	910	1078	729	1192	432
	80	1174	1174	1270	955	1397	711	1127	1127	1211	925	1333	683	1077	1077	1150	895	1266	654	1025	1025	1087	864	1197	625
	85	1243	1243	1285	1153	1402	907	1194	1194	1227	1124	1338	877	1143	1143	1168	1093	1272	847	1089	1089	1106	1062	1203	817
	90	1313	1313	1311	1311	1409	1099	1262	1262	1261	1261	1346	1070	1209	1209	1208	1208	1281	1040	1154	1154	1153	1153	1213	1009
44000	75	1159	1025	1270	835	1401	515	1105	995	1211	806	1336	487	1049	964	1149	777	1268	465	991	932	1085	747	1197	437
	80	1188	1188	1278	975	1405	722	1140	1140	1219	945	1340	694	1089	1089	1158	915	1273	665	1036	1036	1094	883	1203	636
	85	1258	1258	1294	1181	1410	925	1208	1208	1237	1151	1345	895	1156	1156	1177	1121	1279	865	1102	1102	1115	1090	1209	834
	90	1329	1329	1328	1328	1418	1125	1277	1277	1276	1276	1354	1096	1223	1223	1222	1222	1288	1065	1167	1167	1166	1166	1220	1035

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.

Table 32-2 — 105 Ton Gross Cooling Capacity — HIGH CAPACITY Evaporator Coil

AIR-FLOW CFM	ENT DB (F)	Ambient Temperature 85 Entering Wet Bulb 61 CAP	61 SHC	67 CAP	67 SHC	73 CAP	73 SHC	95 61 CAP	61 SHC	67 CAP	67 SHC	73 CAP	73 SHC	105 61 CAP	61 SHC	67 CAP	67 SHC	73 CAP	73 SHC	115 61 CAP	61 SHC	67 CAP	67 SHC	73 CAP	73 SHC
31000	75	1160	943	1283	732	1417	510	1105	912	1223	703	1351	482	1049	881	1160	673	1283	453	990	849	1096	641	1212	424
	80	1177	1119	1286	903	1420	686	1124	1089	1226	872	1355	657	1069	1058	1165	841	1287	628	1009	1009	1100	809	1216	597
	85	1221	1221	1296	1073	1424	858	1173	1173	1237	1043	1359	829	1123	1123	1176	1011	1291	799	1070	1070	1113	979	1221	769
	90	1287	1287	1314	1247	1428	1027	1238	1238	1257	1217	1364	997	1187	1187	1198	1186	1297	966	1132	1132	1132	1132	1227	934
35000	75	1187	1001	1308	766	1442	521	1131	971	1246	736	1374	493	1073	939	1182	706	1304	464	1012	906	1115	675	1231	434
	80	1210	1199	1312	955	1446	716	1150	1150	1251	925	1379	687	1099	1099	1187	893	1309	657	1045	1045	1122	861	1236	627
	85	1269	1269	1325	1146	1451	908	1218	1218	1265	1115	1383	878	1165	1165	1202	1083	1314	848	1110	1110	1137	1051	1240	814
	90	1338	1338	1350	1341	1457	1093	1286	1286	1286	1286	1390	1063	1232	1232	1232	1232	1321	1032	1175	1175	1175	1175	1250	1000
39000	75	1209	1058	1328	800	1463	532	1152	1027	1265	770	1393	503	1093	994	1199	739	1321	474	1032	961	1129	705	1246	444
	80	1237	1237	1334	1006	1467	745	1186	1186	1271	975	1398	715	1132	1132	1207	943	1326	685	1077	1077	1139	911	1252	655
	85	1309	1309	1351	1216	1470	953	1256	1256	1289	1185	1402	923	1201	1201	1225	1153	1331	891	1144	1144	1160	1121	1257	859
	90	1382	1382	1381	1381	1481	1158	1327	1327	1327	1327	1413	1127	1271	1271	1270	1270	1342	1096	1211	1211	1211	1211	1270	1064
43000	75	1229	1112	1345	832	1480	542	1171	1081	1281	802	1409	514	1111	1048	1212	768	1335	484	1049	1015	1143	735	1259	453
	80	1269	1269	1353	1055	1485	773	1217	1217	1289	1024	1414	743	1161	1161	1223	992	1341	713	1104	1104	1155	959	1265	682
	85	1344	1344	1373	1285	1489	997	1289	1289	1311	1253	1419	966	1232	1232	1246	1221	1346	935	1173	1173	1172	1172	1271	902
	90	1419	1419	1419	1419	1501	1221	1363	1363	1363	1363	1432	1190	1304	1304	1304	1304	1361	1158	1242	1242	1242	1242	1287	1126
46000	75	1243	1152	1356	891	1491	550	1184	1120	1290	861	1419	522	1123	1088	1221	823	1344	492	1061	1054	1151	791	1267	462
	80	1291	1291	1366	1091	1496	793	1237	1237	1301	1060	1424	763	1181	1181	1234	1027	1350	733	1122	1122	1165	994	1274	702
	85	1368	1368	1389	1335	1501	1030	1312	1312	1326	1303	1430	999	1253	1253	1252	1252	1357	967	1192	1192	1192	1192	1281	934
	90	1445	1445	1444	1444	1515	1267	1387	1387	1386	1386	1445	1236	1326	1326	1326	1326	1373	1204	1263	1263	1263	1263	1299	1171

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.

Table 33-1 — 115 Ton Gross Cooling Capacity With 5-Row I-F Evaporator Coil — 100% Load

AIR-FLOW CFM	ENT DB (F)	Ambient Temperature 85						95						105						115					
		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	1235	980	1365	777	1507	542	1175	947	1299	734	1434	511	1112	912	1229	701	1357	479	1045	875	1156	666	1277	446
	80	1251	1156	1369	940	1509	719	1192	1122	1303	907	1437	687	1130	1088	1233	871	1361	654	1065	1051	1160	835	1281	621
	85	1285	1285	1377	1109	1513	892	1233	1233	1312	1076	1441	860	1177	1177	1243	1041	1365	826	1118	1118	1171	1005	1286	792
	90	1353	1353	1393	1283	1518	1063	1299	1299	1329	1250	1445	1029	1242	1242	1262	1215	1370	994	1181	1181	1193	1179	1291	959
35000	75	1264	1039	1393	801	1535	554	1202	1005	1325	768	1460	522	1137	970	1253	734	1381	490	1069	933	1177	699	1298	457
	80	1285	1236	1397	992	1538	750	1225	1202	1329	958	1463	717	1154	1154	1257	923	1385	684	1094	1094	1182	887	1303	650
	85	1336	1336	1409	1183	1543	941	1281	1281	1342	1149	1468	909	1222	1222	1271	1113	1390	875	1160	1160	1198	1077	1308	841
	90	1407	1407	1431	1377	1547	1129	1351	1351	1366	1343	1474	1095	1290	1290	1289	1289	1396	1060	1226	1226	1226	1226	1316	1025
39000	75	1289	1096	1416	835	1558	565	1226	1061	1346	802	1481	533	1159	1025	1272	768	1400	501	1089	988	1194	732	1315	467
	80	1316	1314	1421	1043	1562	779	1249	1249	1351	1009	1485	746	1190	1190	1278	973	1404	712	1127	1127	1202	937	1320	678
	85	1379	1379	1436	1253	1566	989	1322	1322	1368	1219	1490	957	1260	1260	1296	1183	1408	920	1196	1196	1220	1147	1324	884
	90	1454	1454	1453	1453	1574	1194	1394	1394	1394	1394	1498	1160	1331	1331	1331	1331	1419	1125	1265	1265	1264	1264	1336	1089
43000	75	1311	1151	1435	868	1577	575	1246	1116	1363	834	1498	543	1178	1080	1287	800	1415	511	1107	1042	1207	762	1329	476
	80	1340	1340	1441	1093	1581	806	1283	1283	1370	1058	1503	774	1221	1221	1296	1022	1420	740	1156	1156	1218	985	1335	705
	85	1417	1417	1460	1322	1586	1036	1357	1357	1390	1287	1507	999	1294	1294	1317	1251	1425	964	1227	1227	1241	1214	1340	928
	90	1495	1495	1494	1494	1596	1257	1433	1433	1432	1432	1519	1223	1367	1367	1367	1367	1439	1187	1298	1298	1298	1298	1355	1151
44000	75	1316	1164	1438	906	1581	578	1251	1129	1366	873	1502	546	1182	1093	1290	840	1419	514	1111	1055	1211	805	1332	480
	80	1349	1349	1446	1105	1585	813	1290	1290	1375	1070	1507	781	1228	1228	1300	1034	1424	747	1163	1163	1222	997	1338	712
	85	1426	1426	1466	1339	1589	1044	1366	1366	1396	1304	1511	1010	1302	1302	1322	1268	1429	975	1234	1234	1246	1231	1344	939
	90	1504	1504	1503	1503	1601	1272	1442	1442	1441	1441	1524	1238	1376	1376	1375	1375	1443	1203	1306	1306	1305	1305	1359	1166
46000	75	1325	1191	1446	926	1589	583	1260	1156	1373	893	1509	551	1191	1119	1297	859	1425	519	1119	1081	1217	824	1338	485
	80	1364	1364	1455	1129	1594	827	1305	1305	1383	1094	1514	794	1242	1242	1308	1058	1431	760	1175	1175	1229	1021	1344	726
	85	1443	1443	1477	1372	1598	1066	1382	1382	1406	1337	1519	1032	1316	1316	1332	1301	1436	996	1248	1248	1247	1247	1350	960
	90	1522	1522	1521	1521	1611	1303	1459	1459	1458	1458	1533	1269	1391	1391	1391	1391	1452	1233	1320	1320	1320	1320	1367	1196

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

Table 33-2 — 130 Ton Gross Cooling Capacity With 5-Row I-F Evaporator Coil — 100% Load

AIR-FLOW CFM	ENT DB (F)	Ambient Temperature 85						95						105						115					
		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	1372	1050	1519	842	1678	605	1310	1015	1451	809	1604	573	1247	979	1381	775	1527	540	1180	942	1307	729		
	80	1386	1226	1523	1007	1681	785	1325	1191	1456	973	1606	751	1263	1155	1385	938	1529	717	1197	1118	1312	902		
	85	1412	1408	1528	1180	1684	958	1348	1348	1462	1145	1611	924	1293	1293	1393	1109	1534	890	1235	1235	1320	1072		
	90	1472	1472	1543	1353	1688	1130	1419	1419	1478	1318	1615	1097	1362	1362	1409	1282	1538	1062	1303	1303	1338	1245		
35000	75	1407	1110	1554	869	1714	618	1343	1075	1484	835	1637	585	1277	1038	1411	799	1557	552	1209	1001	1334	763		
	80	1425	1307	1558	1063	1717	816	1363	1271	1488	1029	1640	782	1298	1235	1415	993	1560	748	1231	1197	1338	954		
	85	1459	1459	1567	1254	1721	1009	1403	1403	1498	1218	1644	975	1345	1345	1426	1182	1565	940	1285	1285	1352	1144		
	90	1535	1535	1586	1448	1725	1200	1479	1479	1519	1413	1649	1166	1419	1419	1448	1376	1569	1129	1356	1356	1376	1339		
39000	75	1436	1168	1582	904	1743	630	1371	1132	1510	869	1664	597	1303	1095	1435	833	1581	563	1233	1057	1356	797		
	80	1460	1385	1587	1117	1746	846	1396	1350	1513	1080	1667	812	1330	1313	1439	1043	1585	777	1253	1253	1361	1005		
	85	1509	1509	1599	1325	1750	1057	1451	1451	1529	1290	1672	1023	1391	1391	1455	1253	1589	988	1327	1327	1379	1215		
	90	1589	1589	1624	1540	1755	1265	1530	1530	1555	1504	1677	1230	1467	1467	1483	1468	1596	1194	1401	1401	1400	1400		
43000	75	1462	1224	1606	937	1767	641	1396	1188	1532	902	1686	607	1326	1150	1455	866	1601	573	1254	1112	1374	829		
	80	1491	1462	1610	1166	1770	874	1426	1425	1537	1130	1689	840	1352	1352	1461	1093	1605	805	1288	1288	1382	1054		
	85	1554	1554	1628	1395	1775	1104	1494	1494	1556	1359	1694	1069	1430	1430	1481	1322	1610	1034	1364	1364	1402	1283		
	90	1637	1637	1659	1630	1782	1329	1575	1575	1573	1573	1703	1293	1509	1509	1509	1509	1620	1257	1440	1440	1440	1440		
44000	75	1468	1238	1610	974	1772	643	1401	1201	1536	940	1691	610	1331	1164	1458	905	1605	576	1259	1125	1377	869		
	80	1499	1480	1616	1178	1776	881	1422	1422	1542	1142	1694	847	1360	1360	1466	1105	1610	812	1295	1295	1386	1066		
	85	1564	1564	1635	1412	1780	1115	1503	1503	1562	1376	1699	1081	1439	1439	1486	1338	1615	1045	1372	1372	1408	1300		
	90	1648	1648	1667	1652	1789	1345	1585	1585	1584	1584	1709	1309	1519	1519	1518	1518	1625	1272						
46000	75	1480	1265	1620	993	1783	649	1412	1228	1545	959	1700	615	1342	1190	1466	924	1614	581	1268	1151	1385	888		
	80	1499	1499	1627	1202	1786	895	1439	1439	1553	1166	1704	860	1376	1376	1475	1129	1618	825	1311	1311	1395	1090		
	85	1583	1583	1647	1446	1791	1138	1522	1522	1574	1409	1709	1103	1457	1457	1498	1372	1623	1068	1389	1389	1419	1333		
	90	1669	1669	1668	1668	1800	1376	1605	1605	1604	1604	1720	1340	1537	1537	1537	1537	1636	1303						

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

Table 34-1 — 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	29377	30000
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	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	

Note:
1. All heaters are 82% efficient.
2. 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.
3. Air Temperature Rise = Heat Output (Btu) ÷ (Cfm x 1.085).

Table 34-2 — Natural Gas Heating Capacities

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

Table 34-3 — Steam Heating Capacities (Q/ITD)[1]

20 Nominal Ton Unit

Steam Module	Unit Standard Air Volume (Cfm) 4000	6000	8000	10000
Low Heat	0.95	1.18	1.37	1.52
High Heat	1.94	2.47	2.95	3.31

25 Nominal Ton Unit

Steam Module	Unit Standard Air Volume (Cfm) 5000	7500	10000	12500
Low Heat	1.06	1.33	1.52	1.74
High Heat	2.20	2.85	3.31	3.65

30 Nominal Ton Unit

Steam Module	Unit Standard Air Volume (Cfm) 6000	9000	12000	15000
Low Heat	1.18	1.64	1.69	2.00
High Heat	2.47	3.12	3.59	3.95

40 Nominal Ton Unit

Steam Module	Unit Standard Air Volume (Cfm) 8000	12000	16000	20000
Low Heat	1.61	2.01	2.29	2.60
High Heat	3.36	4.28	4.93	5.43

50 Nominal Ton Unit

Steam Module	Unit Standard Air Volume (Cfm) 10000	15000	20000	25000
Low Heat	1.82	2.21	2.60	2.85
High Heat	3.86	4.79	5.43	5.97

55 Nominal Ton Unit

Steam Module	Unit Standard Air Volume (Cfm 11000	16500	22000	27500
Low Heat	1.91	2.38	2.72	2.92
High Heat	4.09	5.01	5.64	6.41

60 Nominal Ton Unit

Steam Module	Unit Standard Air Volume (Cfm) 12000	18000	24000	30000
Low Heat	2.32	2.81	3.33	3.71
High Heat	3.85	4.84	5.62	6.18

70 & 75 Nominal Ton Unit

Steam Module	Unit Standard Air Volume (Cfm) 16000	20000	24000	30000
Low Heat	2.65	2.98	3.33	3.71
High Heat	4.50	5.10	5.62	6.18

90, 105, 115, 130 Nominal Ton Units

Steam Module	Unit Standard Air Volume (Cfm) 27000	33000	40000	46000
Low Heat	5.17	5.70	6.19	6.53
High Heat	8.83	8.80	9.04	9.26

Note:
1. 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.

Table 34-4 — 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

Performance Data

Table 35-1 — 20 to 75-Ton Electric Heat Air Temperature Rise

KW	Total	Cfm											
Input	MBh	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 ton (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 35-2 — 90 To 130-Ton Electric Heat Air Temperature Rise

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

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

Table 35-3 — Electric Heat KW Ranges

Nominal	Nominal Voltage			
Tons	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 36-1 — Hot Water Heating Capacities (Q/ITD)[1]

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:

1. 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.

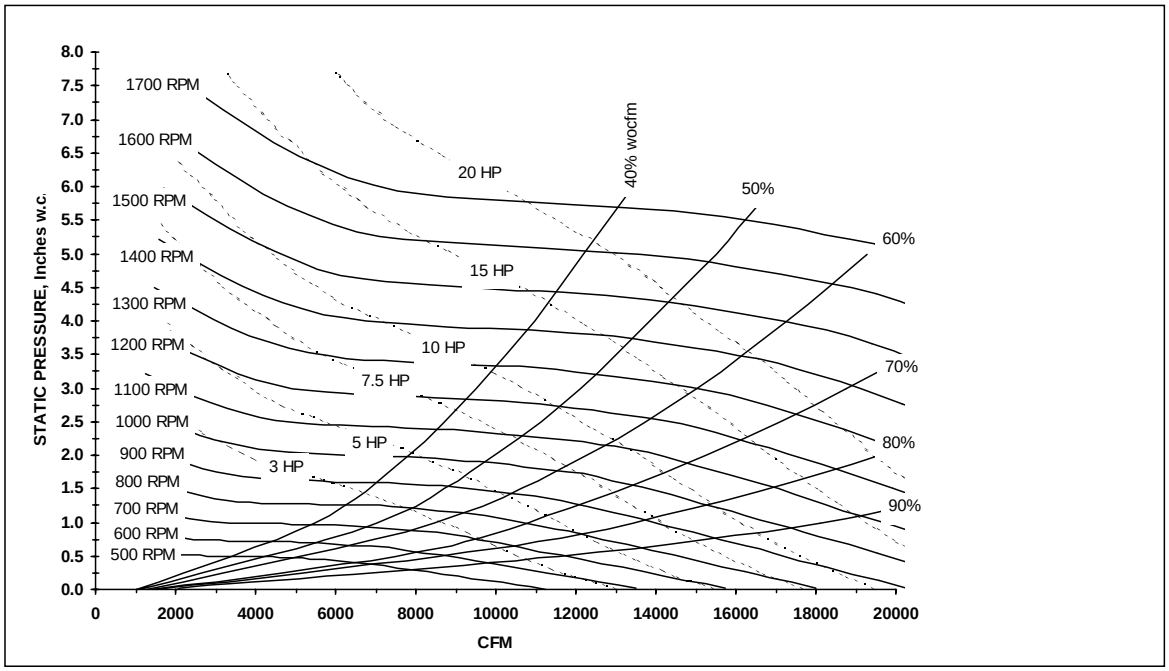
Table 37-1 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 20 and 25 Ton

Cfm	Total Static Pressure															
Std	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
Air	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	Total Static Pressure															
Std	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	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	Total Static Pressure															
Std	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
Air	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 through 15 hp motor Rpm is 1655.
8. See RT-EB-104 for further details



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H_2O.

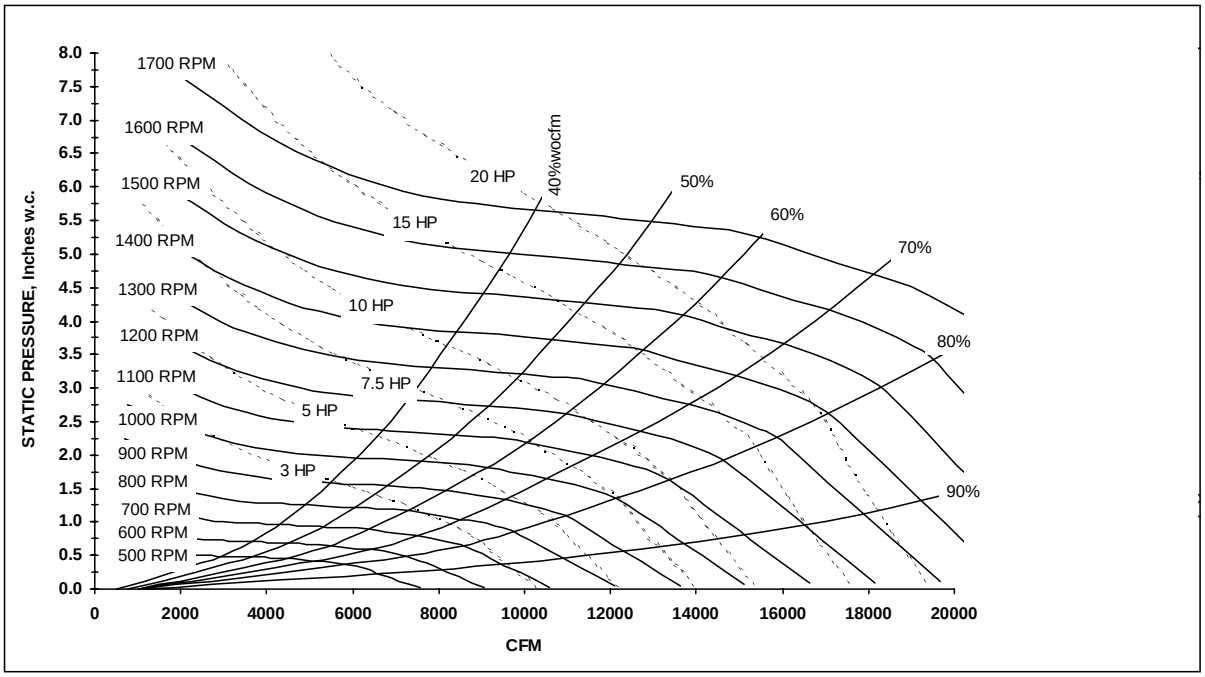
Table 38-1 — Supply Fan Performance WITH INLET VANES — 20 and 25 Ton

Cfm	Total Static Pressure															
Std	,250		,500		,750		1.000		1.250		1.500		1.750		2.000	
Air	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	Total Static Pressure															
Std	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	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	Total Static Pressure															
Std	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
Air	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 through 15 hp motor Rpm is 1655.
8. See RT-EB-104 for further details



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H_2O.

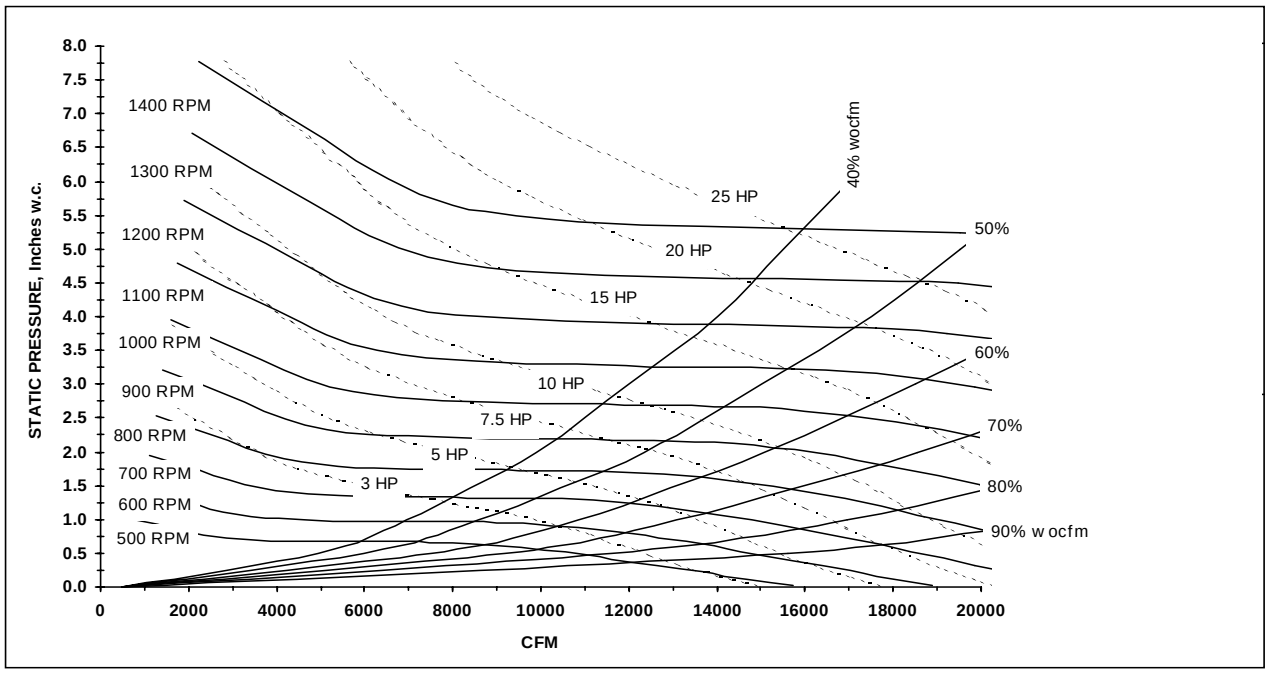
Table 39 1 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 30 Ton

Cfm	Total Static Pressure															
Std	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
Air	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	Total Static Pressure															
Std	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	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	Total Static Pressure															
Std	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
Air	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.



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H_2O.

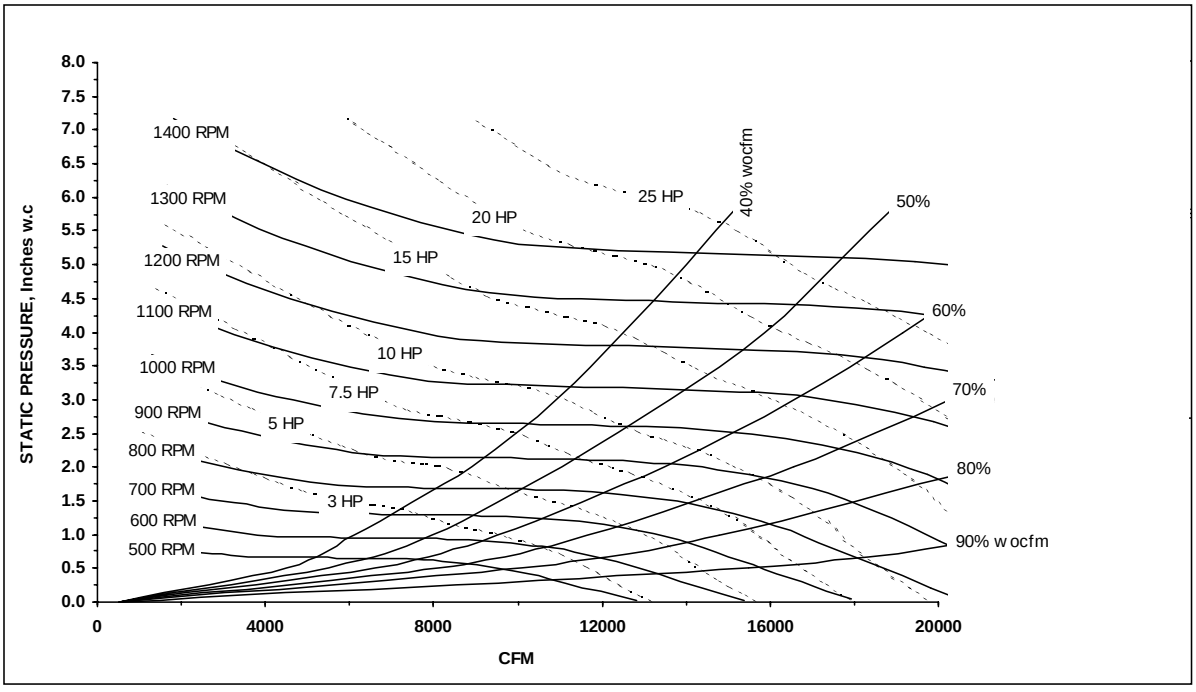
Table 40-1 — Supply Fan Performance WITH INLET VANES — 30 Ton

Cfm	Total Static Pressure															
Std	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
Air	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	Total Static Pressure															
Std	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	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	Total Static Pressure															
Std	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
Air	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.



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H_2O.

Table 41-1 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 40, 50 and 55 Ton

Cfm	Total Static Pressure															
Std	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
Air	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

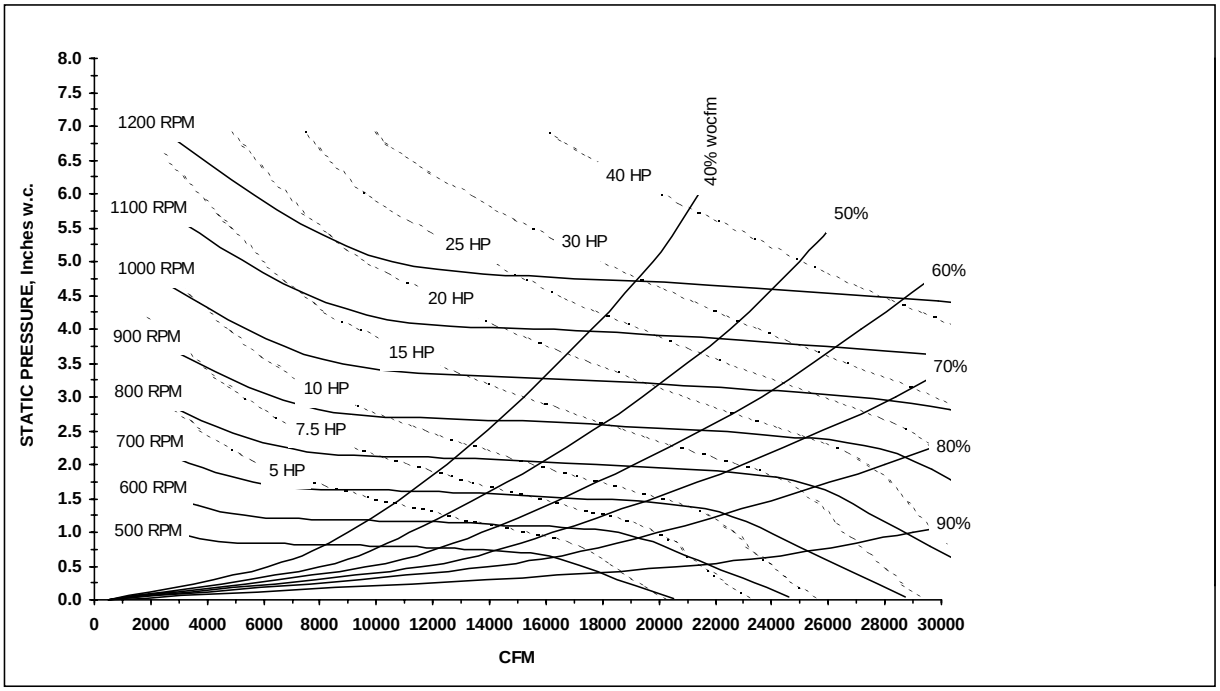
Cfm	Total Static Pressure															
Std	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8000	814	6.80	854	7.73	892	8.69	927	9.67	961	10.66	993	11.67	1023	12.69	1053	13.71
9000	819	7.32	861	8.28	901	9.27	938	10.31	972	11.37	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	Total Static Pressure							
Std	4.250		4.500		4.750		5.000	
Air	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						

(See following page for Fan Performance Chart)

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 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: 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.

Figure 42-1 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 40, 50 and 55 Ton



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H_2O.

Table 43-1 — Supply Fan Performance WITH INLET VANES — 40, 50 and 55 Ton

Cfm	Total Static Pressure															
Std	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8000	318	.79	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	Total Static Pressure															
Std	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	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

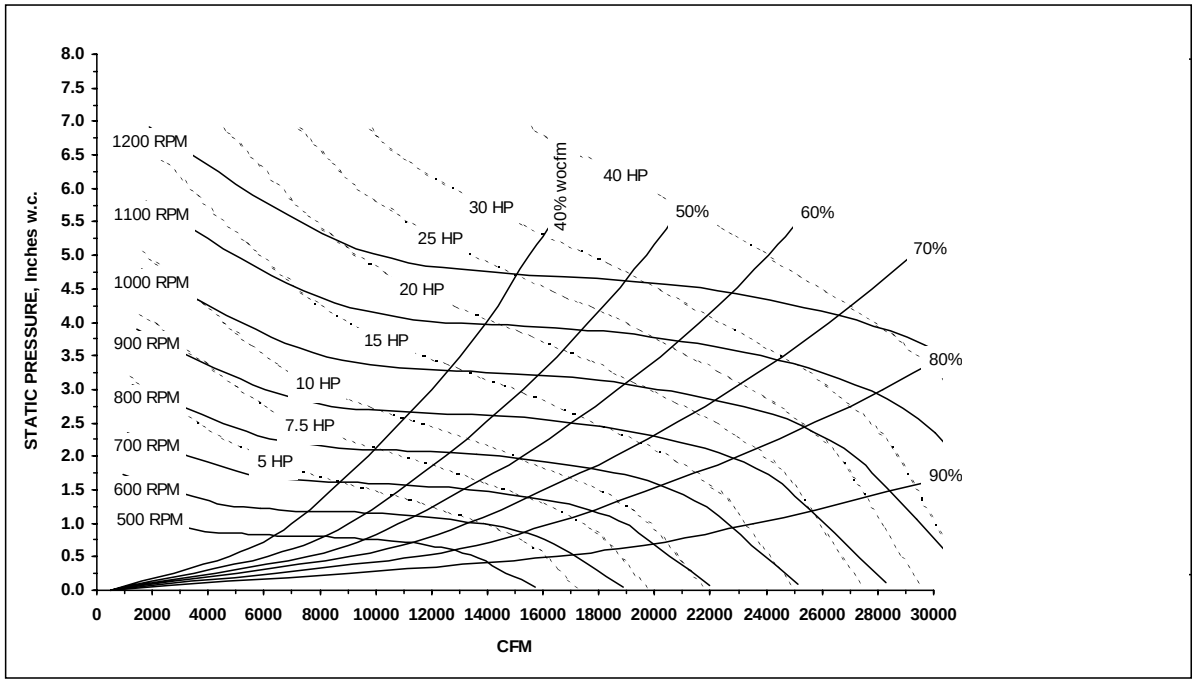
Cfm	Total Static Pressure							
Std	4.250		4.500		4.750		5.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8000	1087	14.97	1114	16.01	1141	17.07	1166	18.13
9000	1102	16.10	1131	17.24	1158	18.39		
10000	1114	17.13	1143	18.36				
11000	1123	18.11	1153	19.40				
12000	1129	19.08	1160	20.43				
13000	1134	20.08	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								

(See following page for Fan Performance Chart)

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.

Figure 44-1 — Supply Fan Performance WITH INLET VANES — 40, 50 and 55 Ton



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H_2O.

Table 45-1 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 60, 70 and 75 Ton

Cfm	Total Static Pressure															
Std	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
Air	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	Total Static Pressure															
Std	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	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

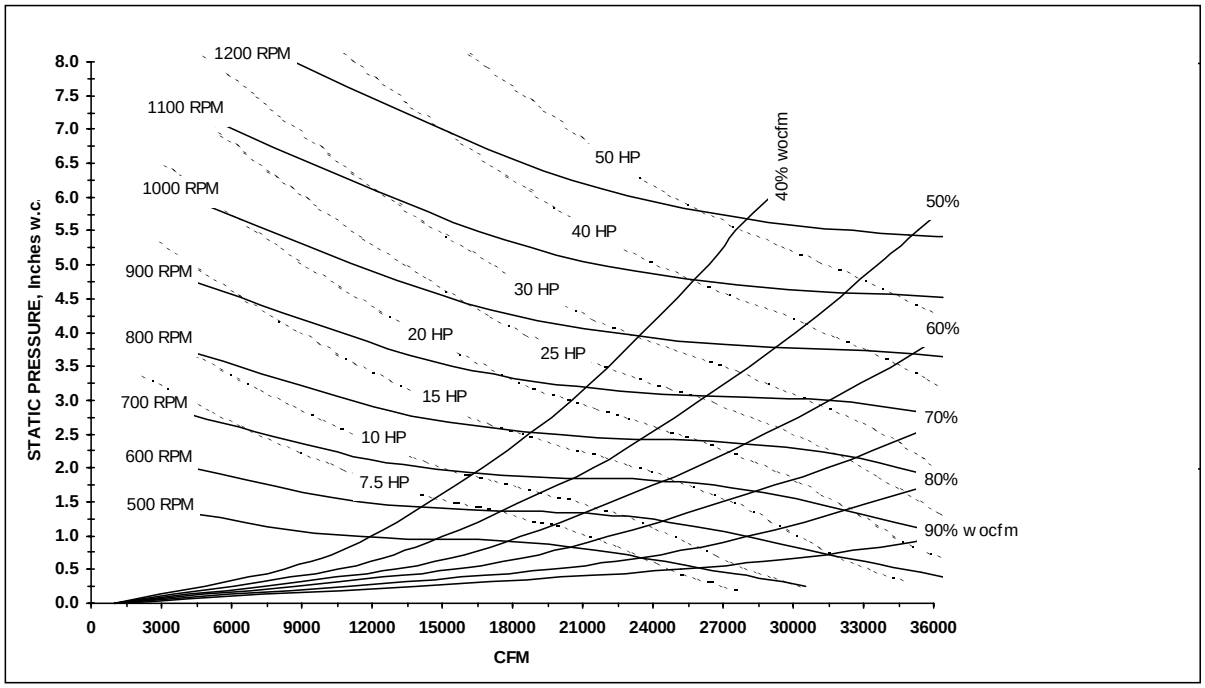
Cfm	Total Static Pressure															
Std	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
14000	947	21.47	970	22.92	993	24.39	1015	25.89	1036	27.40	1057	28.93	1077	30.49	1097	32.06
15000	957	22.59	981	24.09	1003	25.61	1025	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								

(See following page for Fan Performance Chart)

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.

Figure 46-1 — Supply Fan Performance With VARIABLE FREQUENCY DRIVE or WITHOUT INLET VANES — 60, 70 and 75 Ton



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H_2O.

Table 47-1 — Supply Fan Performance WITH INLET VANES — 60, 70 and 75 Ton

Cfm	Total Static Pressure															
Std	.250		.500		.750		1.000		1.250		1.500		1.750		2.000	
Air	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	Total Static Pressure															
Std	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	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

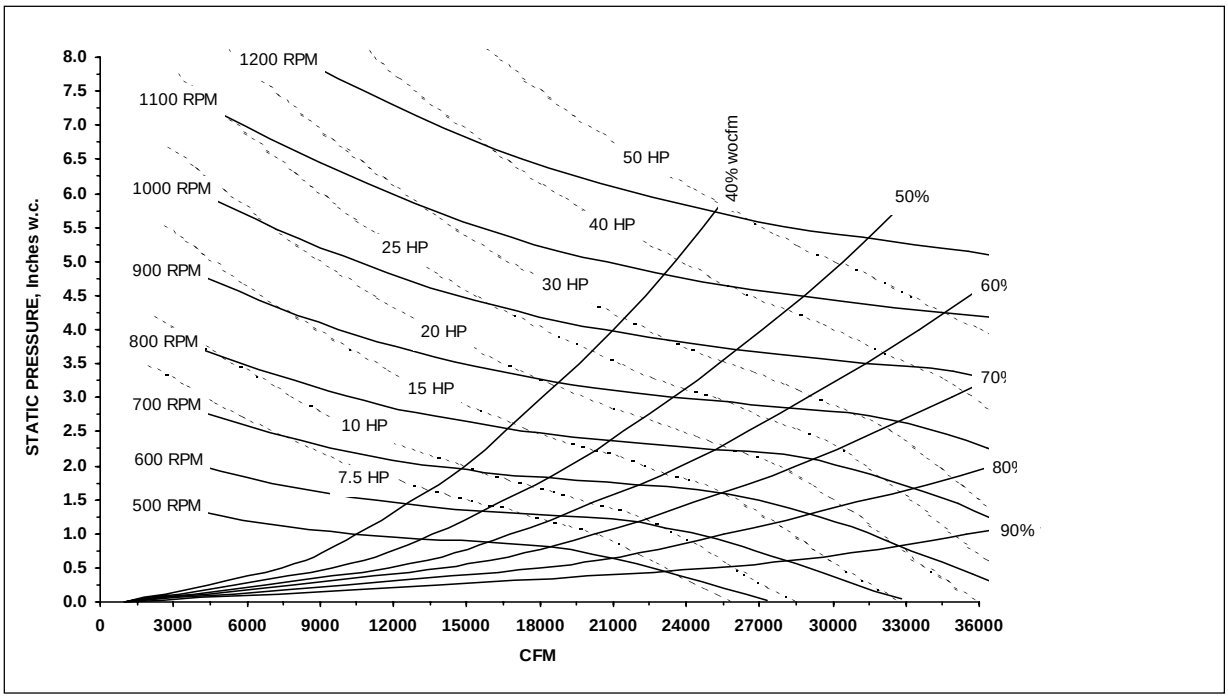
Cfm	Total Static Pressure															
Std	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
14000	956	21.90	980	23.36	1003	24.83	1025	26.32	1047	27.83	1068	29.35	1088	30.90	1108	32.46
15000	966	23.07	989	24.60	1013	26.14	1035	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								

(See following page for Fan Performance Chart)

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.

Figure 48-1 — Supply Fan Performance WITH INLET VANES — 60, 70 and 75 Ton



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H_2O.

Table 49-1 — Supply Fan Performance WITH VARIABLE FREQUENCY DRIVE or WITHOUT INLET GUIDE VANES — 90 Ton

Cfm	Total Static Pressure															
Std.	0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	294	5.00	338	6.57	374	8.02	405	9.33	433	10.54	460	12.07	485	13.46	511	14.87
28000	301	5.45	345	7.09	381	8.61	412	10.06	438	11.22	466	12.76	491	14.26	515	15.69
29000	309	5.92	351	7.63	387	9.23	419	10.79	445	12.00	471	13.44	496	15.08	519	16.56
30000	316	6.43	358	8.21	394	9.88	425	11.50	452	12.86	476	14.18	502	15.88	525	17.48
31000	323	6.96	365	8.82	400	10.55	431	12.21	459	13.77	482	15.03	507	16.67	531	18.42
32000	331	7.52	372	9.46	407	11.26	438	12.99	466	14.69	489	16.00	512	17.51	536	19.34
33000	338	8.11	379	10.13	413	12.01	444	13.80	472	15.59	496	17.06	518	18.44	541	20.24
34000	346	8.74	386	10.83	420	12.78	450	14.64	478	16.48	503	18.15	524	19.51	546	21.18
35000	354	9.40	393	11.56	427	13.59	457	15.52	484	17.39	510	19.25	531	20.69	552	22.22
36000	361	10.09	400	12.33	434	14.43	463	16.44	491	18.37	516	20.33	538	21.94	558	23.39
37000	369	10.82	407	13.14	440	15.31	470	17.39	497	19.39	523	21.40	545	23.22	565	24.70
38000	377	11.59	415	13.98	447	16.23	477	18.37	504	20.45	528	22.46	552	24.50	572	26.10
39000	384	12.39	422	14.86	454	17.18	483	19.40	510	21.54	535	23.63	559	25.77	579	27.56
40000	392	13.23	429	15.78	461	18.17	490	20.47	517	22.68	541	24.83	565	27.02	586	29.03
41000	400	14.11	436	16.73	468	19.20	497	21.57	523	23.85	548	26.08	570	28.25	593	30.48
42000	408	15.03	444	17.73	475	20.28	504	22.71	530	25.07	554	27.36	577	29.60	599	31.92
43000	416	15.99	451	18.77	482	21.39	511	23.90	536	26.33	561	28.69	583	31.00	605	33.34
44000	424	16.99	459	19.85	489	22.54	517	25.13	543	27.63	567	30.06	590	32.44	611	34.76
45000	432	18.04	466	20.97	497	23.74	524	26.40	550	28.98	574	31.48	596	33.92	617	36.32

Cfm	Total Static Pressure															
Std.	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	538	16.30	563	17.68	587	19.02	611	20.42	633	21.97	655	23.71	676	25.66	697	27.75
28000	540	17.18	566	18.65	590	20.06	613	21.45	635	22.92	657	24.53	678	26.34	699	28.34
29000	543	18.07	568	19.62	592	21.12	616	22.57	638	24.02	659	25.55	680	27.22	701	29.08
30000	547	19.01	571	20.59	595	22.19	618	23.73	640	25.22	662	26.73	682	28.32	703	30.04
31000	552	20.01	574	21.61	597	23.25	620	24.89	643	26.47	664	28.01	685	29.57	705	31.21
32000	558	21.05	579	22.68	600	24.35	623	26.05	645	27.74	666	29.35	687	30.94	707	32.55
33000	563	22.10	584	23.80	604	25.49	626	27.23	647	28.99	669	30.71	690	32.37	710	34.01
34000	569	23.13	589	24.96	609	26.70	629	28.45	650	30.26	671	32.07	692	33.83	712	35.53
35000	574	24.15	595	26.13	615	27.96	634	29.73	653	31.56	674	33.42	694	35.28	714	37.09
36000	579	25.21	600	27.27	620	29.24	639	31.08	657	32.92	677	34.81	697	36.73	717	38.64
37000	585	26.36	606	28.41	626	30.52	644	32.47	662	34.35	681	36.26	700	38.21	719	40.19
38000	591	27.66	611	29.59	631	31.77	650	33.87	668	35.84	685	37.77	703	39.74	722	41.75
39000	598	29.11	616	30.87	636	33.02	655	35.26	673	37.36	691	39.35	708	41.34	725	43.37
40000	605	30.66	623	32.31	642	34.33	661	36.62	679	38.87	696	40.98	713	43.01	730	45.05
41000	612	32.28	629	33.91	647	35.76	666	37.99	684	40.36	702	42.61	718	44.74	735	46.82
42000	619	33.93	636	35.62	653	37.35	671	39.45	690	41.83	707	44.23	724	46.49	740	48.65
43000	625	35.58	643	37.41	660	39.11	677	41.04	695	43.34	713	45.82	730	48.23	746	50.51
44000	632	37.20	650	39.24	667	41.00	683	42.81	700	44.95	718	47.41	735	49.95	751	52.38
45000	638	38.81	657	41.07	674	42.96	690	44.74	706	46.72	723	49.07	740	51.64	757	54.22

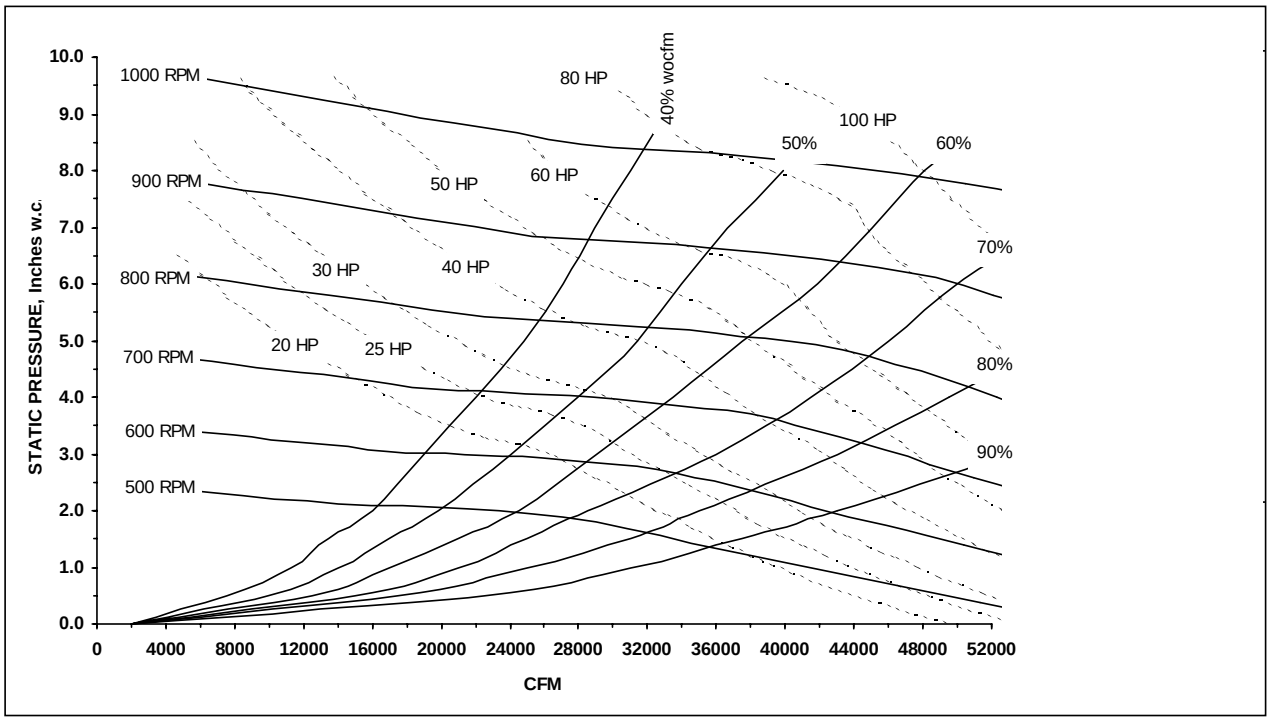
Cfm	Total Static Pressure															
Std.	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	717	29.93	737	32.15	756	34.38	775	36.59	793	38.75	811	40.89	829	43.00	846	45.09
28000	719	30.49	738	32.73	757	35.03	776	37.34	795	39.65	812	41.91	830	44.14	847	46.35
29000	720	31.13	740	33.33	759	35.64	778	38.00	796	40.40	814	42.79	831	45.16	848	47.49
30000	722	31.95	742	34.04	760	36.29	779	38.65	797	41.08	815	43.55	832	46.03	849	48.50
31000	724	32.99	744	34.94	762	37.07	781	39.36	799	41.77	816	44.25	834	46.79	851	49.36
32000	727	34.25	746	36.07	764	38.05	782	40.22	800	42.54	818	44.99	835	47.53	852	50.13
33000	729	35.67	748	37.42	766	39.28	784	41.29	802	43.48	820	45.84	837	48.33	854	50.91
34000	731	37.22	750	38.93	769	40.72	787	42.62	804	44.67	821	46.88	838	49.26	855	51.78
35000	734	38.84	753	40.57	771	42.34	789	44.17	806	46.11	824	48.17	840	50.40	857	52.80
36000	736	40.50	755	42.29	773	44.07	791	45.88	809	47.76	826	49.73	842	51.82	859	54.06
37000	738	42.14	757	44.04	776	45.89	794	47.72	811	49.58	828	51.49	845	53.49	861	55.61
38000	741	43.78	760	45.79	778	47.74	796	49.63	813	51.51	830	53.41	847	55.37	863	57.40
39000	744	45.44	762	47.52	780	49.58	798	51.58	816	53.53	833	55.46	849	57.40	866	59.39
40000	747	47.15	765	49.28	783	51.41	801	53.52	818	55.57	835	57.57	852	59.55	868	61.54
41000	751	48.92	768	51.08	786	53.26	803	55.45	820	57.61	838	59.71	854	61.77	870	63.80
42000	756	50.78	772	52.94	789	55.15	806	57.39	823	59.63	840	61.84	857	64.01	873	66.11
43000	761	52.70	777	54.89	793	57.11	809	59.38	826	61.67	842	63.97	859	66.23	875	68.45
44000	767	54.67	782	56.91	797	59.15	813	61.43	829	63.76	845	66.11	861	68.45	878	70.77
45000	772	56.66	787	58.99	802	61.28	817	63.57	832	65.91	848	68.29	864	70.69	880	73.09

(Contiued on the following page)

Table 49-1 — Supply Fan Performance WITH VARIABLE FREQUENCY DRIVE or WITHOUT INLET GUIDE VANES — 90 Ton (Cont.)

Cfm	Total Static Pressure													
Std.	6.250		6.500		6.750		7.000		7.250		7.500		7.750	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	863	47.16	880	49.23	896	51.30	912	53.36	927	55.42	942	57.50	957	59.58
28000	864	48.53	881	50.69	897	52.85	913	54.99	928	57.13	944	59.27	959	61.41
29000	865	49.79	882	52.07	898	54.33	914	56.57	929	58.79	945	61.01	960	63.23
30000	866	50.93	883	53.33	899	55.71	915	58.06	931	60.39	946	62.70	961	65.01
31000	867	51.92	884	54.46	900	56.96	916	59.43	932	61.88	947	64.30	962	66.71
32000	869	52.77	885	55.42	901	58.05	917	60.66	933	63.24	948	65.79	963	68.31
33000	870	53.57	886	56.27	902	59.00	918	61.73	934	64.44	949	67.12	964	69.78
34000	872	54.40	888	57.11	904	59.87	920	62.67	935	65.48	950	68.29	965	71.08
35000	873	55.34	889	58.00	905	60.75	921	63.56	936	66.42	952	69.31	967	72.21
36000	875	56.47	891	59.03	907	61.72	923	64.50	938	67.36	953	70.27	968	73.23
37000	877	57.87	893	60.28	909	62.85	924	65.55	939	68.36	954	71.26	969	74.22
38000	879	59.54	895	61.81	911	64.23	926	66.80	941	69.51	956	72.34		
39000	882	61.46	897	63.62	913	65.90	928	68.32	943	70.89	958	73.61		
40000	884	63.57	900	65.67	915	67.85	930	70.14	945	72.56	960	75.13		
41000	886	65.83	902	67.90	917	70.03	932	72.23	947	74.54	962	76.96		
42000	889	68.19	904	70.27	920	72.38	935	74.54	950	76.77	964	79.09		
43000	891	70.61	907	72.75	922	74.87	937	77.02	952	79.22				
44000	894	73.05	909	75.27	925	77.45	940	79.63						
45000	896	75.46	912	77.80	927	80.08								

Notes:
1. Shaded areas indicate non-standard BHP or RPM selections. Contact your local Trane representive 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_20 positive. The static pressure drops from the supply fan to the space cannot exceed 4.0'' H_20.
4. Minimum motor horsepower is 30 hp.
5. See RT-EB-104 for further details.



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from fan to the space cannot exceed 4.0" H_2O.

Table 51-1 — Supply Fan Performance WITH INLET GUIDE VANES — 90 Ton

Cfm	Total Static Pressure															
Std.	0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	321	5.90	358	7.27	389	8.56	416	9.67	444	10.86	472	12.25	499	13.62	527	15.24
28000	330	6.47	366	7.90	397	9.23	424	10.48	450	11.58	478	13.03	504	14.41	530	15.96
29000	339	7.07	374	8.57	405	9.96	432	11.31	457	12.41	483	13.81	509	15.28	534	16.76
30000	348	7.72	383	9.27	413	10.73	440	12.16	464	13.34	489	14.63	515	16.20	539	17.67
31000	357	8.40	391	10.02	421	11.54	448	13.02	472	14.33	495	15.53	520	17.11	544	18.67
32000	366	9.12	400	10.81	429	12.39	456	13.90	480	15.36	502	16.56	526	18.04	550	19.72
33000	375	9.89	408	11.64	437	13.29	464	14.85	488	16.41	510	17.69	532	19.04	555	20.76
34000	384	10.70	417	12.52	446	14.22	472	15.85	496	17.48	517	18.89	538	20.17	561	21.81
35000	394	11.56	426	13.44	454	15.21	480	16.90	503	18.57	525	20.13	545	21.42	567	22.94
36000	403	12.46	434	14.40	462	16.24	488	17.99	511	19.68	533	21.38	553	22.78	573	24.18
37000	412	13.41	443	15.42	471	17.32	496	19.13	519	20.89	541	22.66	561	24.20	580	25.56
38000	422	14.41	452	16.48	479	18.45	504	20.32	527	22.14	549	23.96	569	25.65	588	27.07
39000	431	15.46	461	17.60	488	19.62	512	21.57	535	23.44	557	25.28	577	27.12	595	28.65
40000	441	16.56	470	18.76	496	20.86	521	22.86	543	24.80	564	26.68	585	28.61	603	30.29
41000	450	17.72	479	19.98	505	22.14	529	24.21	551	26.21	572	28.15	592	30.12	611	31.96
42000	460	18.93	488	21.26	514	23.48	538	25.61	560	27.67	580	29.68	600	31.66	619	33.65
43000	469	20.19	497	22.59	522	24.87	546	27.07	568	29.19	588	31.26	608	33.27	627	35.36
44000	479	21.52	506	23.98	531	26.32	554	28.58	576	30.77	597	32.90	616	34.97	635	37.09
45000	488	22.90	515	25.42	540	27.83	563	30.16	585	32.41	605	34.60	624	36.74	642	38.86

Cfm	Total Static Pressure															
Std.	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	553	16.94	576	18.56	598	20.13	619	21.72	640	23.38	661	25.15	683	27.05	704	29.04
28000	556	17.70	581	19.44	603	21.10	624	22.73	644	24.38	665	26.11	685	27.95	705	29.90
29000	560	18.47	584	20.29	607	22.07	629	23.78	649	25.46	668	27.18	688	28.97	707	30.87
30000	564	19.30	588	21.14	611	23.02	633	24.84	653	26.60	673	28.34	692	30.13	711	31.98
31000	568	20.23	592	22.02	615	23.95	637	25.89	658	27.75	677	29.56	696	31.37	715	33.21
32000	573	21.28	596	22.98	619	24.90	641	26.91	662	28.89	682	30.80	701	32.67	719	34.53
33000	578	22.42	600	24.05	622	25.90	645	27.93	666	30.00	686	32.04	705	33.99	723	35.92
34000	584	23.59	605	25.25	627	27.01	648	28.99	670	31.10	690	33.24	710	35.32	728	37.33
35000	589	24.77	611	26.53	631	28.24	652	30.14	673	32.23	694	34.42	714	36.62	733	38.75
36000	594	25.95	616	27.84	636	29.60	657	31.41	677	33.43	698	35.62	718	37.88	737	40.14
37000	600	27.20	621	29.15	642	31.03	662	32.83	681	34.75	701	36.89	721	39.16	740	41.49
38000	606	28.58	627	30.46	647	32.47	667	34.34	686	36.21	705	38.25	725	40.49	744	42.85
39000	613	30.10	633	31.86	653	33.90	672	35.91	691	37.81	710	39.76	729	41.92	748	44.25
40000	621	31.77	639	33.38	658	35.36	678	37.48	697	39.48	715	41.43	733	43.48	751	45.74
41000	629	33.53	646	35.06	664	36.91	683	39.05	702	41.19	720	43.20	738	45.20	756	47.36
42000	637	35.36	653	36.89	670	38.59	689	40.65	708	42.88	726	45.02	743	47.06	760	49.15
43000	644	37.22	661	38.83	677	40.45	695	42.37	713	44.58	731	46.86	749	49.00	765	51.08
44000	652	39.11	669	40.85	685	42.46	701	44.23	719	46.36	737	48.68	754	50.97	771	53.13
45000	660	41.02	677	42.91	692	44.59	708	46.27	725	48.25	742	50.53	759	52.93	776	55.22

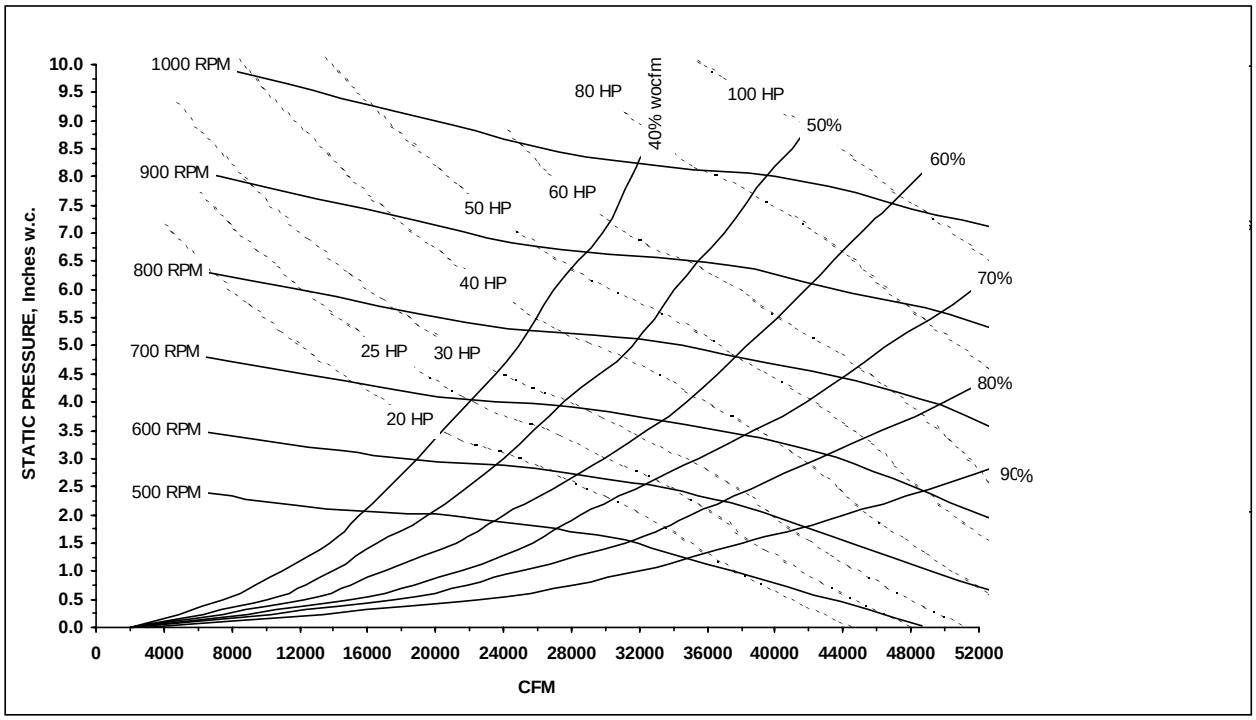
Cfm	Total Static Pressure															
Std.	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	724	31.09	745	33.17	764	35.25	783	37.32	802	39.37	820	41.41	837	43.44	854	45.47
28000	726	31.95	746	34.07	765	36.22	785	38.38	803	40.53	821	42.67	839	44.79	856	46.90
29000	727	32.88	747	34.99	766	37.17	786	39.38	804	41.62	822	43.86	840	46.08	857	48.29
30000	730	33.93	749	35.99	768	38.16	787	40.39	805	42.67	823	44.98	841	47.30	859	49.61
31000	733	35.12	751	37.12	770	39.23	788	41.45	806	43.74	824	46.08	842	48.46	860	50.85
32000	737	36.43	754	38.40	772	40.45	790	42.61	808	44.87	826	47.21	843	49.61	861	52.05
33000	741	37.84	758	39.80	776	41.82	793	43.91	810	46.12	827	48.42	845	50.81	862	53.26
34000	746	39.31	763	41.29	780	43.31	796	45.38	813	47.52	830	49.76	846	52.11	863	54.54
35000	750	40.81	767	42.85	784	44.89	800	46.96	817	49.08	833	51.27	849	53.55	865	55.93
36000	755	42.32	772	44.44	789	46.54	805	48.64	821	50.76	836	52.93	852	55.16	868	57.48
37000	759	43.80	776	46.04	793	48.22	809	50.38	825	52.53	841	54.71	856	56.93	871	59.20
38000	763	45.24	781	47.61	798	49.91	814	52.15	830	54.36	845	56.57	860	58.80	875	61.07
39000	766	46.68	785	49.14	802	51.56	818	53.92	834	56.22	850	58.49	865	60.76	880	63.05
40000	770	48.16	788	50.66	806	53.18	823	55.66	839	58.08	854	60.44	869	62.78	884	65.10
41000	774	49.72	792	52.21	809	54.78	827	57.36	843	59.91	859	62.39	874	64.82	889	67.21
42000	778	51.41	795	53.85	813	56.42	830	59.05	847	61.70	863	64.31	879	66.85	893	69.34
43000	782	53.25	799	55.61	817	58.13	834	60.77	851	63.47	867	66.18	883	68.85	898	71.46
44000	787	55.27	804	57.52	820	59.96	837	62.56	854	65.27	870	68.03	886	70.81	902	73.55
45000	793	57.41	809	59.61	825	61.95	841	64.47	858	67.15	874	69.92	890	72.75	906	75.58

(Continued on the following page)

Table 51-1 — Supply Fan Performance WITH INLET GUIDE VANES — 90 Ton (Cont.)

Cfm	Total Static Pressure													
Std.	6.250		6.500		6.750		7.000		7.250		7.500		7.750	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27000	870	47.49	886	49.52	902	51.54	917	53.57	932	55.61	947	57.65	961	59.70
28000	872	49.01	888	51.11	904	53.21	920	55.31	935	57.41	949	59.51	964	61.62
29000	874	50.48	890	52.67	906	54.84	922	57.02	937	59.19	952	61.37	966	63.54
30000	876	51.90	892	54.18	908	56.44	924	58.70	939	60.95	954	63.20	969	65.45
31000	877	53.24	894	55.62	910	57.98	926	60.33	941	62.67	956	65.01		
32000	878	54.51	895	56.98	911	59.45	927	61.90	943	64.34	958	66.76		
33000	879	55.76	896	58.29	912	60.84	928	63.38	944	65.92	959	68.45		
34000	880	57.04	897	59.59	913	62.18	929	64.80	945	67.43	961	70.05		
35000	882	58.40	898	60.94	914	63.55	930	66.20	946	68.88	962	71.58		
36000	884	59.89	900	62.40	915	64.98	931	67.63	947	70.33	963	73.07		
37000	887	61.55	902	63.99	917	66.53	933	69.15	948	71.84	964	74.59		
38000	890	63.39	905	65.77	920	68.25	935	70.81	950	73.47	965	76.19		
39000	894	65.36	909	67.72	923	70.15	938	72.65	952	75.24	967	77.92		
40000	899	67.44	913	69.81	927	72.21	941	74.67	955	77.21	970	79.82		
41000	903	69.60	917	71.99	931	74.40	945	76.85	959	79.35				
42000	908	71.80	922	74.24	936	76.69	950	79.15						
43000	912	74.02	927	76.54	940	79.04								
44000	917	76.23	931	78.85	945	81.43								
45000	921	78.39	936	81.14	950	83.82								

Notes:
1. Shaded areas indicate non-standard BHP or RPM selections. Contact your local Trane representive 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_20 positive. The static pressure drops from the supply fan to the space cannot exceed 4.0'' H_20.
4. Minimum motor horsepower is 30 hp.
5. See RT-EB-104 for further details.



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from fan to the space cannot exceed 4.0" H_2O.

Table 53-1 — Supply Fan Performance WITH VARIABLE FREQUENCY DRIVE or WITHOUT INLET GUIDE VANES — 105, 115, 130 Ton

Cfm	Total Static Pressure															
Std.	0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	323	6.96	365	8.82	400	10.55	431	12.21	459	13.77	482	15.03	507	16.67	531	18.42
32000	331	7.52	372	9.46	407	11.26	438	12.99	466	14.69	489	16.00	512	17.51	536	19.34
33000	338	8.11	379	10.13	413	12.01	444	13.80	472	15.59	496	17.06	518	18.44	541	20.24
34000	346	8.74	386	10.83	420	12.78	450	14.64	478	16.48	503	18.15	524	19.51	546	21.18
35000	354	9.40	393	11.56	427	13.59	457	15.52	484	17.39	510	19.25	531	20.69	552	22.22
36000	361	10.09	400	12.33	434	14.43	463	16.44	491	18.37	516	20.33	538	21.94	558	23.39
37000	369	10.82	407	13.14	440	15.31	470	17.39	497	19.39	523	21.40	545	23.22	565	24.70
38000	377	11.59	415	13.98	447	16.23	477	18.37	504	20.45	528	22.46	552	24.50	572	26.10
39000	384	12.39	422	14.86	454	17.18	483	19.40	510	21.54	535	23.63	559	25.77	579	27.56
40000	392	13.23	429	15.78	461	18.17	490	20.47	517	22.68	541	24.83	565	27.02	586	29.03
41000	400	14.11	436	16.73	468	19.20	497	21.57	523	23.85	548	26.08	570	28.25	593	30.48
42000	408	15.03	444	17.73	475	20.28	504	22.71	530	25.07	554	27.36	577	29.60	599	31.92
43000	416	15.99	451	18.77	482	21.39	511	23.90	536	26.33	561	28.69	583	31.00	605	33.34
44000	424	16.99	459	19.85	489	22.54	517	25.13	543	27.63	567	30.06	590	32.44	611	34.76
45000	432	18.04	466	20.97	497	23.74	524	26.40	550	28.98	574	31.48	596	33.92	617	36.32
46000	440	19.13	474	22.14	504	24.99	531	27.72	557	30.37	580	32.94	603	35.46	624	37.92

Cfm	Total Static Pressure															
Std.	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	552	20.01	574	21.61	597	23.25	620	24.89	643	26.47	664	28.01	685	29.57	705	31.21
32000	558	21.05	579	22.68	600	24.35	623	26.05	645	27.74	666	29.35	687	30.94	707	32.55
33000	563	22.10	584	23.80	604	25.49	626	27.23	647	28.99	669	30.71	690	32.37	710	34.01
34000	569	23.13	589	24.96	609	26.70	629	28.45	650	30.26	671	32.07	692	33.83	712	35.53
35000	574	24.15	595	26.13	615	27.96	634	29.73	653	31.56	674	33.42	694	35.28	714	37.09
36000	579	25.21	600	27.27	620	29.24	639	31.08	657	32.92	677	34.81	697	36.73	717	38.64
37000	585	26.36	606	28.41	626	30.52	644	32.47	662	34.35	681	36.26	700	38.21	719	40.19
38000	591	27.66	611	29.59	631	31.77	650	33.87	668	35.84	685	37.77	703	39.74	722	41.75
39000	598	29.11	616	30.87	636	33.02	655	35.26	673	37.36	691	39.35	708	41.34	725	43.37
40000	605	30.66	623	32.31	642	34.33	661	36.62	679	38.87	696	40.98	713	43.01	730	45.05
41000	612	32.28	629	33.91	647	35.76	666	37.99	684	40.36	702	42.61	718	44.74	735	46.82
42000	619	33.93	636	35.62	653	37.35	671	39.45	690	41.83	707	44.23	724	46.49	740	48.65
43000	625	35.58	643	37.41	660	39.11	677	41.04	695	43.34	713	45.82	730	48.23	746	50.51
44000	632	37.20	650	39.24	667	41.00	683	42.81	700	44.95	718	47.41	735	49.95	751	52.38
45000	638	38.81	657	41.07	674	42.96	690	44.74	706	46.72	723	49.07	740	51.64	757	54.22
46000	644	40.41	664	42.89	681	44.97	697	46.80	712	48.68	729	50.86	745	53.38	762	56.03

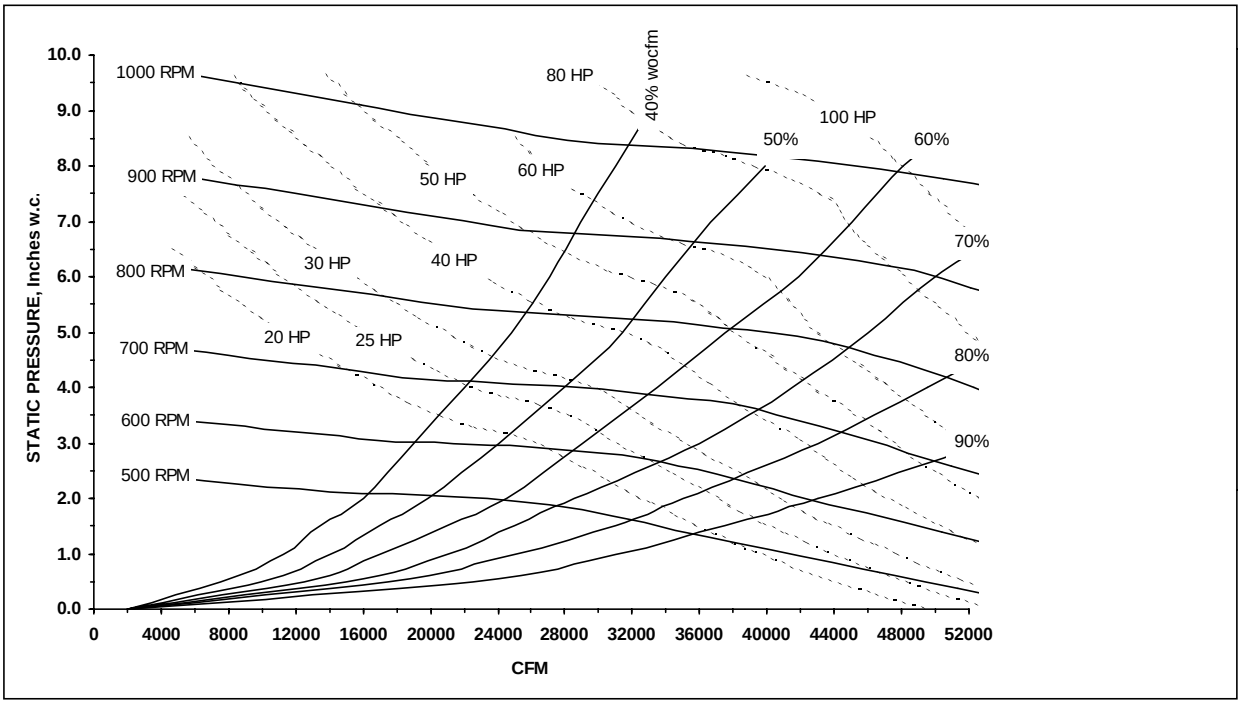
Cfm	Total Static Pressure															
Std.	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	724	32.99	744	34.94	762	37.07	781	39.36	799	41.77	816	44.25	834	46.79	851	49.36
32000	727	34.25	746	36.07	764	38.05	782	40.22	800	42.54	818	44.99	835	47.53	852	50.13
33000	729	35.67	748	37.42	766	39.28	784	41.29	802	43.48	820	45.84	837	48.33	854	50.91
34000	731	37.22	750	38.93	769	40.72	787	42.62	804	44.67	821	46.88	838	49.26	855	51.78
35000	734	38.84	753	40.57	771	42.34	789	44.17	806	46.11	824	48.17	840	50.40	857	52.80
36000	736	40.50	755	42.29	773	44.07	791	45.88	809	47.76	826	49.73	842	51.82	859	54.06
37000	738	42.14	757	44.04	776	45.89	794	47.72	811	49.58	828	51.49	845	53.49	861	55.61
38000	741	43.78	760	45.79	778	47.74	796	49.63	813	51.51	830	53.41	847	55.37	863	57.40
39000	744	45.44	762	47.52	780	49.58	798	51.58	816	53.53	833	55.46	849	57.40	866	59.39
40000	747	47.15	765	49.28	783	51.41	801	53.52	818	55.57	835	57.57	852	59.55	868	61.54
41000	751	48.92	768	51.08	786	53.26	803	55.45	820	57.61	838	59.71	854	61.77	870	63.80
42000	756	50.78	772	52.94	789	55.15	806	57.39	823	59.63	840	61.84	857	64.01	873	66.11
43000	761	52.70	777	54.89	793	57.11	809	59.38	826	61.67	842	63.97	859	66.23	875	68.45
44000	767	54.67	782	56.91	797	59.15	813	61.43	829	63.76	845	66.11	861	68.45	878	70.77
45000	772	56.66	787	58.99	802	61.28	817	63.57	832	65.91	848	68.29	864	70.69	880	73.09
46000	778	58.63	793	61.09	808	63.46	822	65.79	837	68.14	852	70.53	867	72.97	883	75.42

(Continued on the following page)

Table 53-1 — Supply Fan Performance WITH VARIABLE FREQUENCY DRIVE or WITHOUT INLET GUIDE VANES — 105, 115, 130 Ton (Cont.)

Cfm	Total Static Pressure													
Std.	6.250		6.500		6.750		7.000		7.250		7.500		7.750	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	867	51.92	884	54.46	900	56.96	916	59.43	932	61.88	947	64.30	962	66.71
32000	869	52.77	885	55.42	901	58.05	917	60.66	933	63.24	948	65.79	963	68.31
33000	870	53.57	886	56.27	902	59.00	918	61.73	934	64.44	949	67.12	964	69.78
34000	872	54.40	888	57.11	904	59.87	920	62.67	935	65.48	950	68.29	965	71.08
35000	873	55.34	889	58.00	905	60.75	921	63.56	936	66.42	952	69.31	967	72.21
36000	875	56.47	891	59.03	907	61.72	923	64.50	938	67.36	953	70.27	968	73.23
37000	877	57.87	893	60.28	909	62.85	924	65.55	939	68.36	954	71.26	969	74.22
38000	879	59.54	895	61.81	911	64.23	926	66.80	941	69.51	956	72.34		
39000	882	61.46	897	63.62	913	65.90	928	68.32	943	70.89	958	73.61		
40000	884	63.57	900	65.67	915	67.85	930	70.14	945	72.56	960	75.13		
41000	886	65.83	902	67.90	917	70.03	932	72.23	947	74.54	962	76.96		
42000	889	68.19	904	70.27	920	72.38	935	74.54	950	76.77	964	79.09		
43000	891	70.61	907	72.75	922	74.87	937	77.02	952	79.22				
44000	894	73.05	909	75.27	925	77.45	940	79.63						
45000	896	75.46	912	77.80	927	80.08								
46000	898	77.88	914	80.31	929	82.70								

Notes:
1. Shaded areas indicate non-standard BHP or RPM selections. Contact your local Trane representive 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_20 positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H_20.
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.



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from fan to the space cannot exceed 4.0" H_2O.

Table 55-1 — Supply Fan Performance WITH INLET GUIDE VANES — 105,115,130 Ton

Cfm	Total Static Pressure															
Std.	0.250		0.500		0.750		1.000		1.250		1.500		1.750		2.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	357	8.40	391	10.02	421	11.54	448	13.02	472	14.33	495	15.53	520	17.11	544	18.67
32000	366	9.12	400	10.81	429	12.39	456	13.90	480	15.36	502	16.56	526	18.04	550	19.72
33000	375	9.89	408	11.64	437	13.29	464	14.85	488	16.41	510	17.69	532	19.04	555	20.76
34000	384	10.70	417	12.52	446	14.22	472	15.85	496	17.48	517	18.89	538	20.17	561	21.81
35000	394	11.56	426	13.44	454	15.21	480	16.90	503	18.57	525	20.13	545	21.42	567	22.94
36000	403	12.46	434	14.40	462	16.24	488	17.99	511	19.68	533	21.38	553	22.78	573	24.18
37000	412	13.41	443	15.42	471	17.32	496	19.13	519	20.89	541	22.66	561	24.20	580	25.56
38000	422	14.41	452	16.48	479	18.45	504	20.32	527	22.14	549	23.96	569	25.65	588	27.07
39000	431	15.46	461	17.60	488	19.62	512	21.57	535	23.44	557	25.28	577	27.12	595	28.65
40000	441	16.56	470	18.76	496	20.86	521	22.86	543	24.80	564	26.68	585	28.61	603	30.29
41000	450	17.72	479	19.98	505	22.14	529	24.21	551	26.21	572	28.15	592	30.12	611	31.96
42000	460	18.93	488	21.26	514	23.48	538	25.61	560	27.67	580	29.68	600	31.66	619	33.65
43000	469	20.19	497	22.59	522	24.87	546	27.07	568	29.19	588	31.26	608	33.27	627	35.36
44000	479	21.52	506	23.98	531	26.32	554	28.58	576	30.77	597	32.90	616	34.97	635	37.09
45000	488	22.90	515	25.42	540	27.83	563	30.16	585	32.41	605	34.60	624	36.74	642	38.86
46000	498	24.34	524	26.93	549	29.40	572	31.79	593	34.11	613	36.36	632	38.56	650	40.71

Cfm	Total Static Pressure															
Std.	2.250		2.500		2.750		3.000		3.250		3.500		3.750		4.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	568	20.23	592	22.02	615	23.95	637	25.89	658	27.75	677	29.56	696	31.37	715	33.21
32000	573	21.28	596	22.98	619	24.90	641	26.91	662	28.89	682	30.80	701	32.67	719	34.53
33000	578	22.42	600	24.05	622	25.90	645	27.93	666	30.00	686	32.04	705	33.99	723	35.92
34000	584	23.59	605	25.25	627	27.01	648	28.99	670	31.10	690	33.24	710	35.32	728	37.33
35000	589	24.77	611	26.53	631	28.24	652	30.14	673	32.23	694	34.42	714	36.62	733	38.75
36000	594	25.95	616	27.84	636	29.60	657	31.41	677	33.43	698	35.62	718	37.88	737	40.14
37000	600	27.20	621	29.15	642	31.03	662	32.83	681	34.75	701	36.89	721	39.16	740	41.49
38000	606	28.58	627	30.46	647	32.47	667	34.34	686	36.21	705	38.25	725	40.49	744	42.85
39000	613	30.10	633	31.86	653	33.90	672	35.91	691	37.81	710	39.76	729	41.92	748	44.25
40000	621	31.77	639	33.38	658	35.36	678	37.48	697	39.48	715	41.43	733	43.48	751	45.74
41000	629	33.53	646	35.06	664	36.91	683	39.05	702	41.19	720	43.20	738	45.20	756	47.36
42000	637	35.36	653	36.89	670	38.59	689	40.65	708	42.88	726	45.02	743	47.06	760	49.15
43000	644	37.22	661	38.83	677	40.45	695	42.37	713	44.58	731	46.86	749	49.00	765	51.08
44000	652	39.11	669	40.85	685	42.46	701	44.23	719	46.36	737	48.68	754	50.97	771	53.13
45000	660	41.02	677	42.91	692	44.59	708	46.27	725	48.25	742	50.53	759	52.93	776	55.22
46000	668	42.95	685	45.00	700	46.80	715	48.47	731	50.31	748	52.48	765	54.88	782	57.32

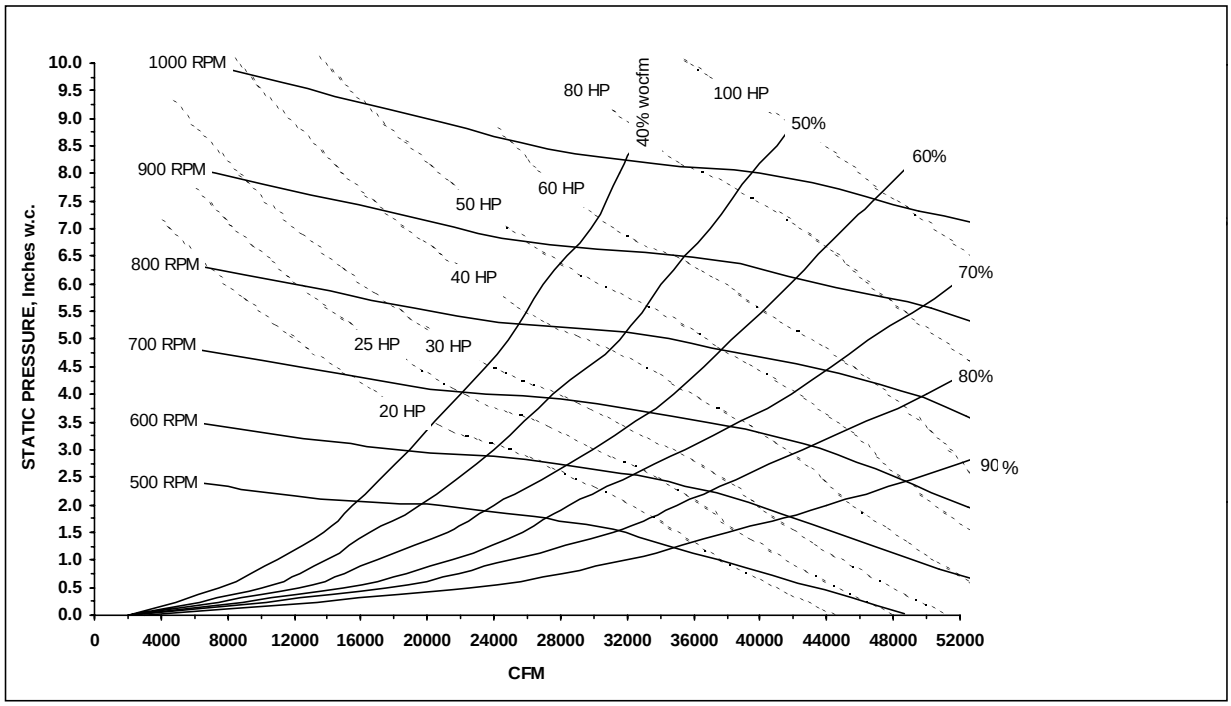
Cfm	Total Static Pressure															
Std.	4.250		4.500		4.750		5.000		5.250		5.500		5.750		6.000	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	733	35.12	751	37.12	770	39.23	788	41.45	806	43.74	824	46.08	842	48.46	860	50.85
32000	737	36.43	754	38.40	772	40.45	790	42.61	808	44.87	826	47.21	843	49.61	861	52.05
33000	741	37.84	758	39.80	776	41.82	793	43.91	810	46.12	827	48.42	845	50.81	862	53.26
34000	746	39.31	763	41.29	780	43.31	796	45.38	813	47.52	830	49.76	846	52.11	863	54.54
35000	750	40.81	767	42.85	784	44.89	800	46.96	817	49.08	833	51.27	849	53.55	865	55.93
36000	755	42.32	772	44.44	789	46.54	805	48.64	821	50.76	836	52.93	852	55.16	868	57.48
37000	759	43.80	776	46.04	793	48.22	809	50.38	825	52.53	841	54.71	856	56.93	871	59.20
38000	763	45.24	781	47.61	798	49.91	814	52.15	830	54.36	845	56.57	860	58.80	875	61.07
39000	766	46.68	785	49.14	802	51.56	818	53.92	834	56.22	850	58.49	865	60.76	880	63.05
40000	770	48.16	788	50.66	806	53.18	823	55.66	839	58.08	854	60.44	869	62.78	884	65.10
41000	774	49.72	792	52.21	809	54.78	827	57.36	843	59.91	859	62.39	874	64.82	889	67.21
42000	778	51.41	795	53.85	813	56.42	830	59.05	847	61.70	863	64.31	879	66.85	893	69.34
43000	782	53.25	799	55.61	817	58.13	834	60.77	851	63.47	867	66.18	883	68.85	898	71.46
44000	787	55.27	804	57.52	820	59.96	837	62.56	854	65.27	870	68.03	886	70.81	902	73.55
45000	793	57.41	809	59.61	825	61.95	841	64.47	858	67.15	874	69.92	890	72.75	906	75.58
46000	798	59.62	814	61.84	830	64.11	845	66.53	862	69.14	878	71.88	894	74.72	909	77.61

(Continued on the following page)

Table 55-1 — Supply Fan Performance WITH INLET GUIDE VANES — 105,115,130 Ton (Cont.)

Cfm	Total Static Pressure											
Std.	6.250		6.500		6.750		7.000		7.250		7.500	
Air	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
31000	877	53.24	894	55.62	910	57.98	926	60.33	941	62.67	956	65.01
32000	878	54.51	895	56.98	911	59.45	927	61.90	943	64.34	958	66.76
33000	879	55.76	896	58.29	912	60.84	928	63.38	944	65.92	959	68.45
34000	880	57.04	897	59.59	913	62.18	929	64.80	945	67.43	961	70.05
35000	882	58.40	898	60.94	914	63.55	930	66.20	946	68.88	962	71.58
36000	884	59.89	900	62.40	915	64.98	931	67.63	947	70.33	963	73.07
37000	887	61.55	902	63.99	917	66.53	933	69.15	948	71.84	964	74.59
38000	890	63.39	905	65.77	920	68.25	935	70.81	950	73.47	965	76.19
39000	894	65.36	909	67.72	923	70.15	938	72.65	952	75.24	967	77.92
40000	899	67.44	913	69.81	927	72.21	941	74.67	955	77.21	970	79.82
41000	903	69.60	917	71.99	931	74.40	945	76.85	959	79.35		
42000	908	71.80	922	74.24	936	76.69	950	79.15				
43000	912	74.02	927	76.54	940	79.04						
44000	917	76.23	931	78.85	945	81.43						
45000	921	78.39	936	81.14	950	83.82						
46000	925	80.51	940	83.38	954	86.20						

Notes:
1. Shaded areas indicate non-standard BHP or RPM selections. Contact your local Trane representive 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_20 positive. The static pressure drops from the supply fan to the space cannot exceed 4.0" H_20.
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.



Important: Maximum static pressure leaving the rooftop is 4.0" H_2O positive. The static pressure drops from fan to the space cannot exceed 4.0" H_2O.

Performance Data

Table 57-1 — Component Static Pressure Drops (in. W.G.)

Nominal Tons	Cfm Std Air	Evaporator Coil: Standard Wet	Standard Dry	High Capacity Wet	High Capacity Dry	Heating System: SFHF/G Low	SFHF/G High	SEHF/G All KW's	SLHF/G Low	SLHF/G High	SSHF/G Low	SSHF/G High	Filters: Throwaway Std. Fiber	Throwaway High Effic.	Perm Wire Mesh	Bag And Prefilter	Cartridge And Prefilter	Std Roof Curb	Economizer With Or Without Exhaust Fan
	4000	.09	.07	.13	.10	.02	N/A	.02	.05	.06	.02	.06	.03	.03	.01	.3	.24	.01	.03
	6000	.17	.14	.25	.19	.05	.05	.04	.09	.12	.05	.12	.06	.06	.02	.5	.44	.02	.06
20	8000	.28	.22	.40	.32	.09	.09	.07	.15	.19	.10	.20	.09	.09	.03	.71	.68	.05	.12
	9000	.34	.27	.48	.39	.12	.12	.09	.19	.24	.12	.22	.11	.11	.04	.83	.81	.07	.15
	10000	.41	.32	.58	.46	.14	.15	.11	.23	.28	.15	.29	.13	.13	.05	.95	.95	.10	.19
	12000	.54	.43	.76	.62	.20	.22	.17	.33	.40	.22	.42	.15	.15	.06	1.19	1.26	.14	.27
	5000	.08	.07	.19	.14	.03	N/A	.03	.07	.09	.04	.09	.05	.05	.02	.40	.34	.01	.03
	6000	.12	.09	.25	.19	—	.05	—	—	—	—	—	—	—	—	.50	.44	—	—
	7500	.17	.14	.36	.28	.08	.08	.06	.14	.17	.09	.18	.09	.09	.03	.66	.62	.04	.10
25	10000	.28	.22	.58	.46	.14	.15	.11	.23	.28	.15	.29	.13	.13	.05	.95	.95	.10	.19
	11000	.34	.26	.66	.54	.17	.18	.13	.29	.33	.19	.35	.15	.15	.06	1.06	1.11	.12	.23
	12500	.41	.32	.82	.67	.22	.23	.18	.33	.42	.24	.42	.19	.19	.08	1.29	1.34	.19	.30
	14000	.49	.38	.99	.80	.28	.29	.21	.41	.53	.30	.53	.24	.24	.10	—	—	.24	.39
	6000	.09	.07	.19	.14	.05	.05	.04	.09	.12	.05	.12	.04	.04	.01	.34	.26	.02	.06
	9000	.17	.14	.36	.28	.11	.12	.09	.19	.24	.12	.22	.07	.07	.02	.54	.48	.07	.15
30	12000	.28	.22	.57	.46	.20	.21	.16	.31	.39	.22	.41	.11	.11	.04	.75	.75	.16	.27
	14000	.36	.28	.73	.60	.26	.29	.22	.40	.51	.30	.50	.14	.14	.06	.95	.95	.25	.39
	15000	.40	.32	.82	.67	.30	.33	.25	.45	.57	.33	.52	.16	.16	.07	1.03	1.06	.30	.43
	17000	.49	.39	.99	.83	.39	.42	.35	.58	.73	.42	.67	.21	.21	.09	1.20	1.30	.39	.59
	8000	.09	.07	.19	.14	.09	N/A	.07	.09	.11	.05	.11	.04	.04	.02	.37	.31	.01	.03
	10000	.13	.10	.27	.20	—	.11	—	—	—	—	—	—	—	—	.49	.43	—	—
	12000	.17	.14	.36	.28	.20	.15	.16	.17	.22	.11	.21	.08	.08	.03	.61	.56	.04	.07
40	16000	.28	.22	.57	.46	.34	.26	.29	.28	.36	.20	.36	.12	.12	.05	.88	.87	.10	.09
	17000	.31	.24	.63	.50	N/A	.29	.32	.31	.39	.22	.41	.13	.13	.06	.95	.95	.12	.11
	20000	.40	.32	.82	.67	N/A	.41	.44	.42	.52	.30	.51	.17	.17	.08	1.17	1.22	.19	.17
	22000	.47	.37	.96	.80	N/A	.50	.53	.51	.63	.36	.62	.21	.21	.10	—	—	.23	.20
	10000	.10	.08	.21	.16	.12	.10	.11	.13	.16	.07	.15	.04	.04	.01	.37	.30	.03	.05
	14000	.17	.14	.36	.28	.26	.20	.22	.22	.28	.15	.28	.07	.07	.03	.56	.50	.07	.08
50/55	17000	.24	.19	.49	.39	.39	.29	.32	.31	.40	.22	.41	.10	.10	.04	.72	.68	.12	.11
	20000	.31	.25	.64	.52	.58	.41	.44	.42	.52	.30	.51	.12	.12	.05	.88	.88	.19	.17
	24000	.42	.34	.86	.70	.73	.58	.62	.48	.72	.45	.75	.16	.16	.07	1.11	1.17	.30	.23
	28000	.54	.44	1.1	.90	.99	.79	.84	.62	.98	.61	.99	.20	.20	.10	—	—	.39	.30
	12000	.12	.09	.22	.18	.10	.08	.16	.10	.13	.06	.11	.05	.05	.01	.44	.37	.02	.07
	16000	.19	.15	.36	.29	.18	.14	.29	.17	.21	.11	.19	.07	.07	.02	.63	.58	.05	.10
60	20000	.28	.21	.52	.42	.27	.21	.44	.24	.31	.16	.27	.10	.10	.03	.84	.82	.10	.16
	24000	.37	.29	.70	.57	.40	.30	.62	.33	.42	.22	.39	.11	.11	.04	1.06	1.08	.16	.23
	28000	.46	.37	.90	.73	.48	.33	.85	.44	.55	.32	.50	.17	.17	.06	—	—	.30	.30
	30000	.50	.41	1.0	.82	.62	.38	.98	.51	.63	.37	.57	.20	.20	.07	—	—	.34	.34
	12000	.13	.10	N/A	N/A	.10	.08	.16	.10	.13	.06	.11	.05	.05	.01	.44	.37	.02	.07
	16000	.21	.16	N/A	N/A	.18	.14	.29	.17	.21	.11	.19	.07	.07	.02	.63	.58	.05	.10
	20000	.29	.23	N/A	N/A	.27	.21	.44	.24	.31	.16	.27	.10	.10	.03	.84	.82	.10	.16
	22000	.34	.27	N/A	N/A	.33	.25	.53	.29	.37	.19	.33	.12	.12	.04	.95	.95	.13	.20
70	24000	.39	.31	N/A	N/A	.40	.30	.62	.33	.42	.22	.39	.14	.14	.04	1.06	1.08	.16	.23
	26000	.44	.35	N/A	N/A	.47	.32	.73	.39	.49	.27	.45	.16	.16	.05	1.17	1.23	.23	.26
	28000	.49	.39	N/A	N/A	.54	.33	.85	.44	.55	.32	.50	.17	.17	.06	1.22	1.29	.30	.30
	31000	.58	.46	N/A	N/A	.60	.40	1.04	.49	.61	.39	.55	.21	.21	.07	—	—	.37	.36
	33000	.63	.50	N/A	N/A	.65	.46	1.18	.52	.67	.44	.60	.24	.24	.08	—	—	.42	.40
	12000	.22	.18	.22	.18	.10	.08	.16	.10	.13	.06	.11	.05	.05	.01	.44	.37	.02	.07
	16000	.36	.29	.36	.29	.18	.14	.29	.17	.21	.11	.19	.07	.07	.02	.63	.58	.05	.10
	20000	.52	.42	.52	.42	.27	.21	.44	.24	.31	.16	.27	.10	.10	.03	.84	.82	.10	.16
	22000	.61	.49	.61	.49	.33	.25	.53	.29	.37	.19	.33	.12	.12	.04	.95	.95	.13	.20
75	24000	.70	.57	.70	.57	.40	.30	.62	.33	.42	.22	.39	.14	.14	.04	1.06	1.08	.16	.23
	26000	.80	.64	.80	.64	.47	.32	.73	.39	.49	.27	.45	.16	.16	.05	1.17	1.23	.23	.26
	28000	.90	.73	.90	.73	.54	.33	.85	.44	.55	.32	.50	.17	.17	.06	1.22	1.29	.30	.30
	31000	1.06	.87	1.06	.87	.60	.40	1.04	.49	.61	.39	.55	.21	.21	.07	—	—	.37	.36
	33000	1.16	.96	1.16	.96	.65	.46	1.18	.52	.67	.44	.60	.24	.24	.08	—	—	.42	.40
	27000	.32	.25	.64	.51	N/A	.25	.13	.26	.31	.22	.32	.11	.13	N/A	.68	.65	—	.20
	32000	.42	.33	.82	.68	N/A	.31	.16	.35	.41	.30	.43	.14	.16	N/A	.84	.84		.31
90	37000	.54	.42	1.05	.88	N/A	.39	.23	.45	.52	.40	.55	.17	.19	N/A	1.02	1.04		.41
	42000	.66	.52	1.30	1.05	N/A	.46	.29	.56	.65	.50	.68	.21	.22	N/A	1.19	1.06		.52
	45000	.74	.58	1.43	1.20	N/A	.52	.32	.63	.73	.58	.76	.24	.24	N/A	—	—		.63
	31000	.53	.42	.78	.76	N/A	.28	.17	.33	.39	.29	.40	N/A	.13	N/A	.82	.80	—	.22
	35000	.63	.51	.98	.78	N/A	.36	.21	.41	.48	.36	.50	N/A	.16	N/A	.96	.96		.32
105	39000	.74	.60	1.24	.94	N/A	.42	.26	.49	.57	.44	.60	N/A	.19	N/A	1.09	1.12		.44
	43000	.86	.70	1.33	1.10	N/A	.45	.30	.57	.66	.53	.71	N/A	.22	N/A	1.22	1.30		.54
	46000	—	—	1.48	1.24	N/A	.55	.34	.65	.75	.61	.79	N/A	.24	N/A	—	—		.64
	31000	.78	.76	N/A	N/A	N/A	.28	.17	.33	.39	.29	.40	N/A	.13	N/A	.82	.80	—	.22
	35000	.98	.78	N/A	N/A	N/A	.36	.21	.41	.48	.36	.50	N/A	.16	N/A	.96	.96		.32
115/130	39000	1.24	.94	N/A	N/A	N/A	.42	.26	.49	.57	.44	.60	N/A	.19	N/A	1.09	1.12		.44
	43000	1.33	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	1.48	1.24	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 58-1 — 20-75 Ton Supply Air Fan Drive Selections

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

Table 58-2 — 90-130 Ton Supply Air Fan Drive Selections

Nominal Tons	30 Hp RPM	30 Hp Drive No	40 Hp RPM	40 Hp Drive No	50 Hp RPM	50 Hp Drive No	60 Hp RPM	60 Hp Drive No	80 Hp RPM	80 Hp Drive No
	500	5								
	600	6	600	6	700	7	800	8	900	9
90	700	7	700	7	800	8	900	9		
			800	8	900	9				
	500	5								
	600	6	600	6	700	7	800	8	900	9
105/115/130	700	7	700	7	800	8	900	9		
			800	8	900	9				

Performance Data

Table 59-1 — Modulating 100% Exhaust Fan Performance

Nominal Tons	Cfm Std Air	Negative 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
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
50	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	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
55	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
	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
60	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
	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
70/75	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
	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

Nominal Tons	Cfm Std Air	Negative Static Pressure																			
		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	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 60-1 — 20-75 Ton 100% Exhaust Fan Drive Selections

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

Table 60-2 — 90-130 Ton 100% Exhaust Fan Drive Selections

	15 HP		20 HP		25 HP		30 HP		40 HP	
Nominal		Drive		Drive		Drive		Drive		Drive
Tons	RPM	No	RPM	No	RPM	No	RPM	No	RPM	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 61-1 — 50% Exhaust Fan Performance

Nominal Tons	Cfm Std Air	Negative Static Pressure (In. W.G.) 0.200 RPM	0.200 BHP	0.400 RPM	0.400 BHP	0.600 RPM	0.600 BHP	0.800 RPM	0.800 BHP	1.000 RPM	1.000 BHP	1.200 RPM	1.200 BHP	1.400 RPM	1.400 BHP
	2000	364	0.17	487	0.30	582	0.45	658	0.58	731	0.73	797	0.90	856	1.08
20/25	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
	6000	722	2.13	779	2.47	830	2.72	870	2.86	905	2.96				
	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
30	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
	6000	722	2.13	779	2.47	830	2.72	870	2.86	905	2.96	944	3.16	994	3.59
	7000	824	3.23	874	3.64	922	4.02	965	4.30	1000	4.48	1032	4.59	1062	4.72
	3000	288	0.22	393	0.38	477	0.55	547	0.74	611	0.94	668	1.16	721	1.39
	5000	372	0.66	430	0.83	495	1.05	557	1.29	621	1.57	680	1.87	732	2.16
40	7000	472	1.55	522	1.82	563	2.04	606	2.29	653	2.59	698	2.91	742	3.24
	9000	578	3.06	621	3.41	661	3.76	695	4.06	725	4.34	758	4.65	794	5.01
	11000	688	5.36	725	5.80	760	6.24	793	6.66	823	7.06	850	7.42	875	7.76
	3000	288	0.22	393	0.38	477	0.55	547	0.74	611	0.94	668	1.16	721	1.39
50/55	5000	372	0.66	430	0.83	495	1.05	557	1.29	621	1.57	680	1.87	732	2.16
	7000	472	1.55	522	1.82	563	2.04	606	2.29	653	2.59	698	2.91	742	3.24
	9000	578	3.06	621	3.41	661	3.76	695	4.06	725	4.34	758	4.65	794	5.01
	11000	688	5.36	725	5.80	760	6.24	793	6.66	823	7.06	850	7.42	875	7.76
	4000	271	0.29	364	0.54	438	0.82	499	1.07	550	1.30	601	1.56	651	1.87
	6000	339	0.71	391	0.90	456	1.22	517	1.60	572	2.01	622	2.43	668	2.85
60	8000	425	1.55	460	1.73	497	1.96	542	2.30	591	2.72	639	3.20	684	3.73
	10000	517	2.88	543	3.13	571	3.34	600	3.59	632	3.94	668	4.37	707	4.87
	12000	612	4.84	633	5.15	655	5.43	678	5.68	702	5.95	726	6.29	752	6.71
	13000	659	6.09	679	6.44	699	6.76	720	7.04	741	7.31				
	4000	271	0.29	364	0.54	438	0.82	499	1.07	550	1.30	601	1.56	651	1.87
70/75	6000	339	0.71	391	0.90	456	1.22	517	1.60	572	2.01	622	2.43	668	2.85
	8000	425	1.55	460	1.73	497	1.96	542	2.30	591	2.72	639	3.20	684	3.73
	10000	517	2.88	543	3.13	571	3.34	600	3.59	632	3.94	668	4.37	707	4.87
	12000	612	4.84	633	5.15	655	5.43	678	5.68	702	5.95	726	6.29	752	6.71
	13000	659	6.09	679	6.44	699	6.76	720	7.04	741	7.31				

Nominal Tons	Cfm Std Air	Negative Static Pressure (In. W.G.) 0.250 RPM	0.250 BHP	0.500 RPM	0.500 BHP	0.750 RPM	0.750 BHP	1.000 RPM	1.000 BHP	1.250 RPM	1.250 BHP	1.500 RPM	1.500 BHP	1.750 RPM	1.750 BHP	2.000 RPM	2.000 BHP	2.250 RPM	2.250 BHP	2.500 RPM	2.500 BHP
	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
90-130	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
	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:
Shaded areas indicate non-standard drive selections. These drive selections must be manually factory selected.

Performance Data

Table 62-1 — 50% Exhaust Fan Drive Selections

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

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

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 3 AMPS OR MORE

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

MCA = (1.25 x LOAD1) + LOAD2 + LOAD4

MOP = (2.25 x LOAD1) + LOAD2 + 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 x LOAD1) + LOAD2 + 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).

For units using heaters less than 50 kw.

MCA = 1.25 x (LOAD1 + LOAD2 + LOAD4) + (1.25 x LOAD3)

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

MCA = 1.25 x (LOAD1 + LOAD2 + LOAD4) + 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 x LOAD1) + LOAD2 + LOAD3 + 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 x LOAD1) + LOAD2 + LOAD3 + 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 x LOAD3)
MOP = (1.25 x 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 = 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 through 130 ton rooftops, the selected MOP value is stamped in the MOP field on the nameplate.

Electrical Data

Table 64-1 — 20-130 Ton Electrical Service Sizing Data[1]— Compressor

Nominal Tons	Coil Type	Compressor Number Per Unit	Compressor Standard Capacity KW (ea)	Compressor High Capacity KW (ea)	Nominal Voltage 200 RLA[1] (ea)	200 LRA (ea)	230 RLA[1] (ea)	230 LRA (ea)	460 RLA[1] (ea)	460 LRA (ea)	575 RLA[1] (ea)	575 LRA (ea)
				Compressor								
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	15.4	15.7	62.8	409	62.8	376	27.3	178	21.8	143
40	Std and Hi-Cap	4	9.7	10.1	41.9	269	41.9	251	18.2	117	14.6	94
50	Std and Hi-Cap	2	14.8	15.4	62.8	409	62.8	376	27.3	178	21.8	143
		2	9.5	9.9	41.9	269	41.9	251	18.2	117	14.6	94
55	Std and Hi-Cap	4	15.1	15.9	62.8	409	62.8	376	27.3	178	21.8	143
60	Std and Hi-Cap	4	14.7	15.2	62.8	409	62.8	376	27.3	178	21.8	143
70	Std	2	15.9	—	62.8	409	62.8	376	27.3	178	21.8	143
		4	10.2	—	41.9	269	41.9	251	18.2	117	14.6	94
75	Std	2	16.5	—	62.8	409	62.8	376	27.3	178	21.8	143
		4	10.6	—	41.9	269	41.9	251	18.2	117	14.6	94
75	Hi-Cap	4	—	18.0	62.8	409	62.8	376	27.3	178	21.8	143
		2	—	12.0	41.9	269	41.9	251	18.2	117	14.6	94
90	Std and Hi-Cap	4	15.9	16.4	62.8	409	62.8	376	27.3	178	21.8	143
		2	10.6	11.0	41.9	269	41.9	251	18.2	117	14.6	94
105	Std and Hi-Cap	6	15.7	16.1	62.8	409	62.8	376	27.3	178	21.8	143
115	Std	4	16.7	—	62.8	409	62.8	376	27.3	178	21.8	143
		4	11.3	—	41.9	269	41.9	251	18.2	117	14.6	94
130	Std	8	17.3	—	—	—	—	—	27.3	178	21.8	143

Note:

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

Table 64-2 — 20-130 Ton Electrical Service Sizing Data — Motors

	Nominal Voltage 200	230	460	575
	FLA	FLA	FLA	FLA
Nominal Tons		**Condenser Fan Motors**		
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
Motor Hp		**Supply Fan Motor**		
3	11.2	8.8	4.4	3.8
5	15.2	13.4	6.6	5.3
$7^1/_2$	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
Motor Hp		**Exhaust Fan Motor**		
$1^1/_2$	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
$7^1/_2$	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 64-3 — 20-130 Ton Electrical Service Sizing Data — Electric Heat Module (Electric Heat Units Only)

	Voltage 200	230	460	575
Module KW	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 64-4 — 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

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 ambient conditions are below the enthalpy control setting or below the return air enthalpy if unit has comparative enthalpy installed. If outside air is not suitable for "economizing," the fresh air dampers drive to the minimum open position. A field adjustable, factory default setting in the Human Interface Panel or Tracer® or a remote potentiometer can provide the input to establish the minimum damper position.

  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.

- **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).

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 ambient conditions are below the enthalpy control setting or below the return air enthalpy if unit has comparative enthalpy. If outside air is not suitable for “economizing,” the fresh air dampers drive to the minimum open position. A field adjustable, factory default setting in the Human Interface Panel or Tracer® or a remote potentiometer can provide the input to establish the minimum damper position.

  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.

- **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.

Control Sequences of Operation That Are 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 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 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.

The Main Menus of the Human Interface panels are:
- **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 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 a 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.

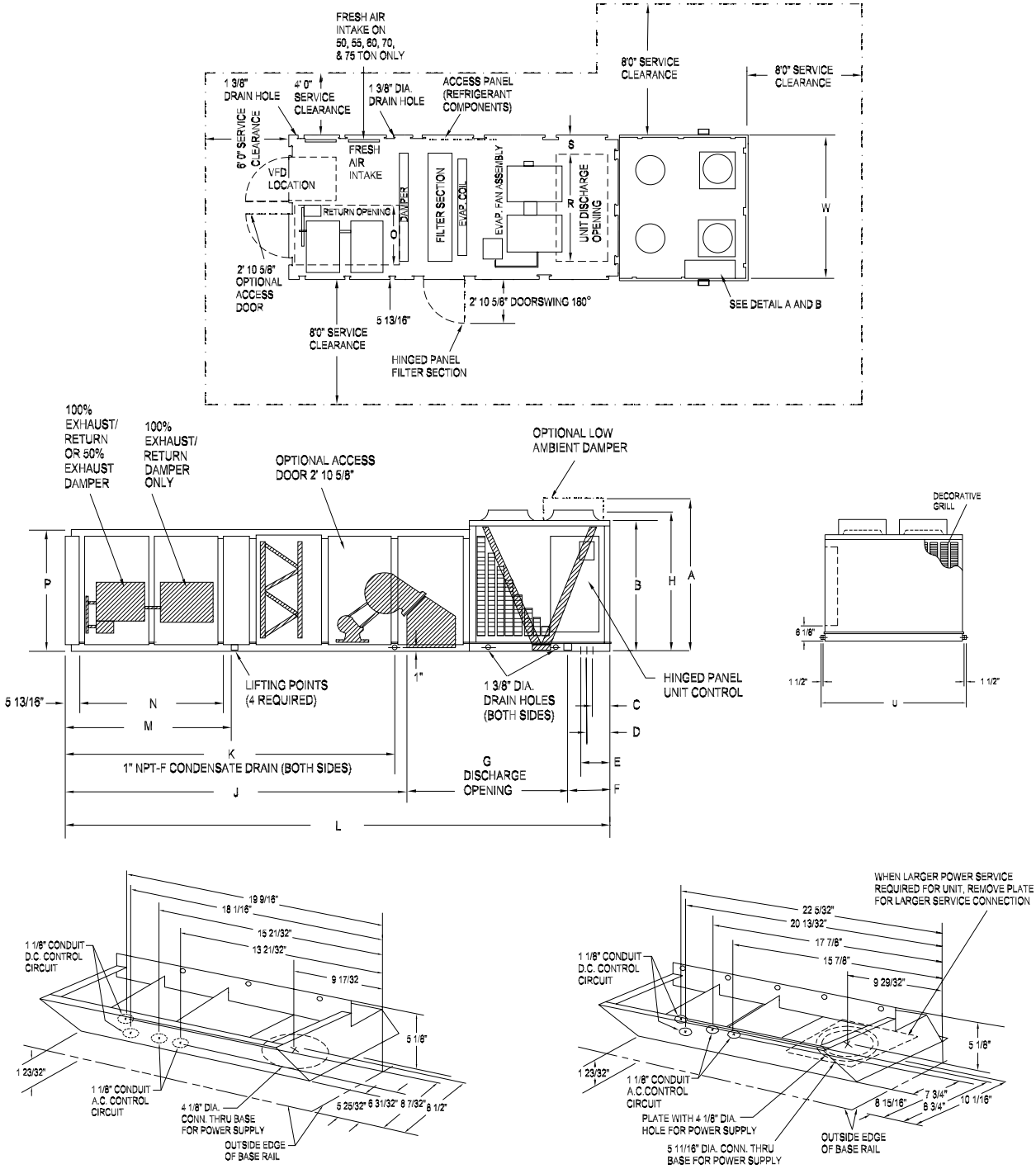
10
Comparative Enthalpy Control of Economizer
An optional Comparative Enthalpy system is used to control the operation of the economizer, and measures the temperature and humidity of both return air and outside air to determine which source has lower enthalpy. This system allows true comparison of outdoor air and return air enthalpy by measurement of outdoor air and return air temperatures and humidities.

Note: If Comparative Enthalpy is not ordered, the standard method is to compare outdoor air enthalpy with a fixed reference enthalpy. The reference enthalpy is set through the Human Interface Panel.

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 ton 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.

Figure 70-1 — 20-75 Ton Cooling Only Unit Dimensions — SAHF



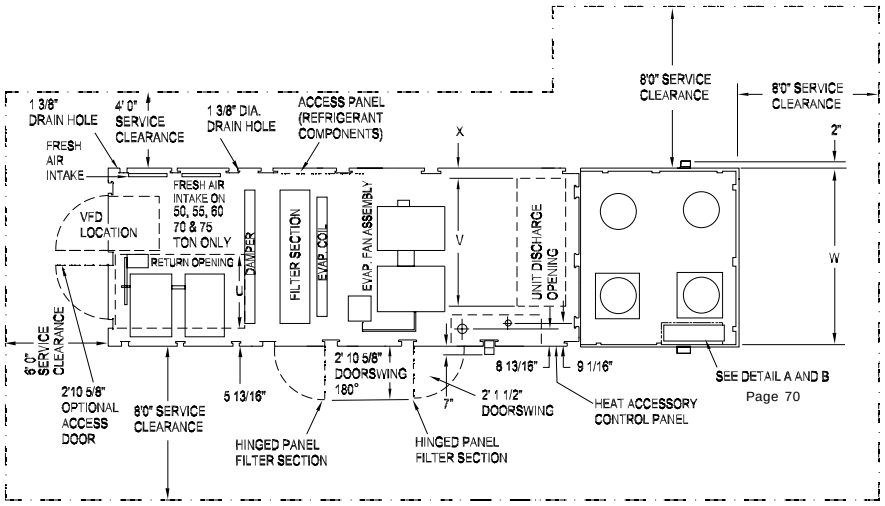
DETAIL "A" COVERS 20, 25, 30, 50 AND 55 TON UNITS

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

Table 70-1 — 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 15/16	21-9 3/4	7-6 1/2	6-4 3/16	5-3 1/8	0-9 1/2	1-3 5/8	1-7 9/16	1-3 1/2	2-2 1/2	14-0 1/4	12-6	7-0	6-6 15/16	3-9 5/16	3-4 3/8	5-7	0-11 3/4	7-9 1/2
30	6-2 7/16	21-9 3/4	7-6 1/2	6-9 11/16	5-8 5/8	0-9 1/2	1-3 5/8	1-7 9/16	1-3 1/2	2-2 1/2	14-0 1/4	12-6	7-0	6-6 15/16	4-9 5/16	3-4 3/8	5-7	0-11 3/4	7-9 1/2
40	6-7 3/8	27-0	7-6 1/2	7-2 5/8	6-1 5/8	0-9 7/8	1-5 7/8	1-10 1/8	2-5	2-5	16-7 13/16	15-11 1/8	8-0	7-8 3/16	5-9 5/16	3-4 3/8	5-7	0-11 3/4	7-9 1/2
50 & 55	5-8 7/8	29-8	7-6 1/2	6-4 1/8	5-3 1/8	0-9 1/2	1-3 5/8	1-7 9/16	2-5	2-5	16-7 13/16	15-11 1/8	8-0	7-8 3/16	6-9 3/8	3-4 3/8	5-7	0-11 3/4	7-9 1/2
60	6-7 3/8	27-0	9-8	7-2 5/8	6-1 5/8	0-9 7/8	1-5 7/8	1-10 1/8	2-5	2-5	16-7 13/16	15-11 1/8	8-0	7-8 3/16	5-9 5/16	4-5 3/8	6-10 7/8	1-4 9/16	9-11
70 & 75	6-7 3/8	27-0	9-8	7-2 5/8	6-1 5/8	0-9 7/8	1-5 7/8	1-10 1/8	2-5	2-5	16-7 13/16	15-11 1/8	8-0	7-8 3/16	5-9 5/16	4-5 3/8	6-10 7/8	1-4 9/16	9-11

Figure 71-1 — 20-75 Ton Heating/Cooling Unit Dimensions



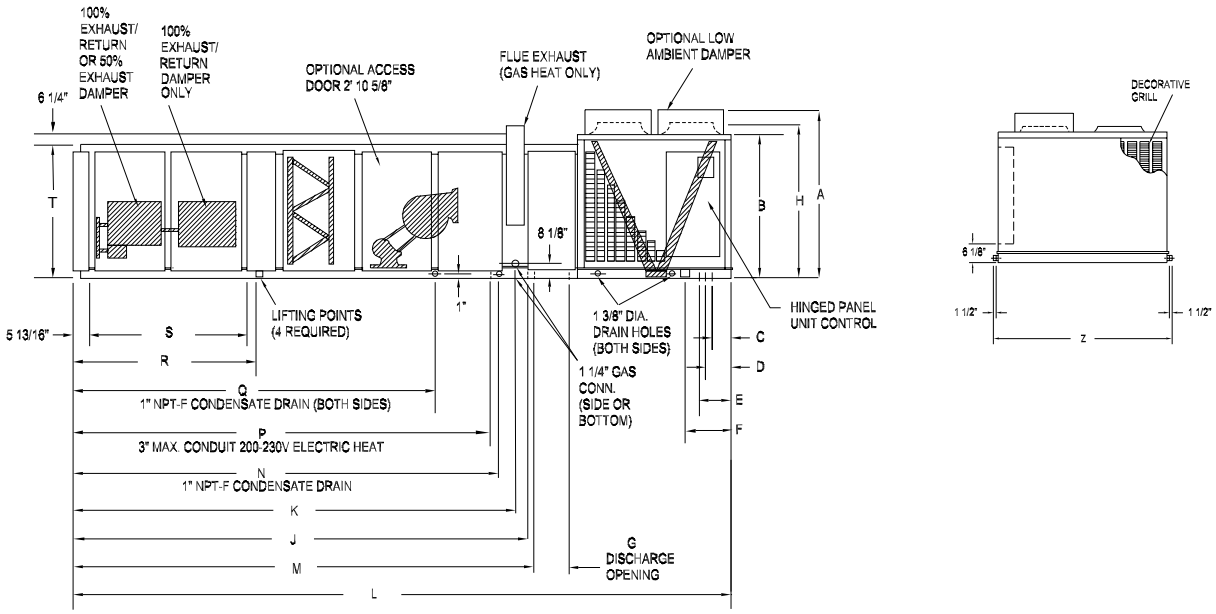


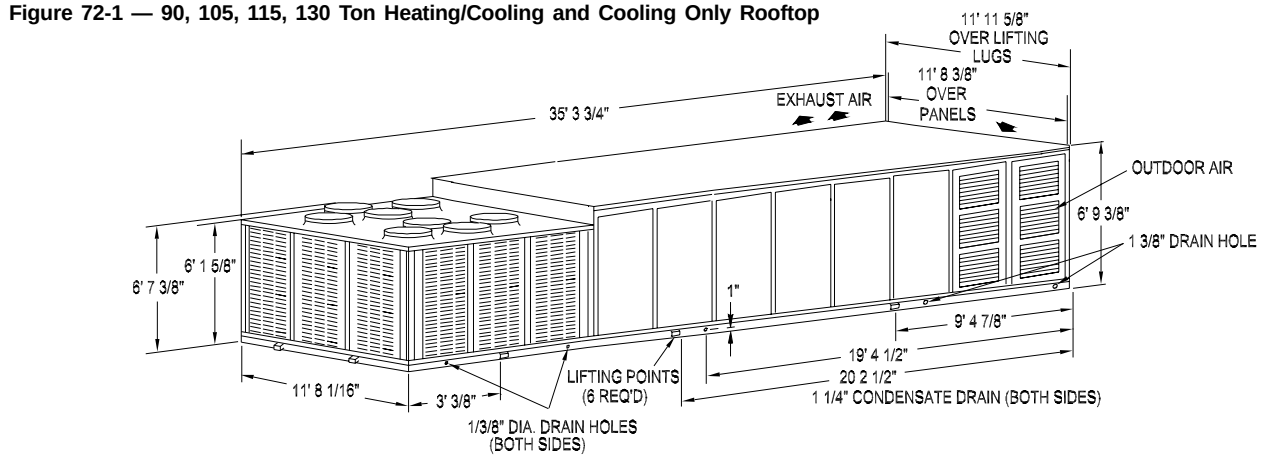
Table 71-1 — Heating/Cooling Unit Dimensions (Ft. In.) — SEHF, SFHF, SSHF, SLHF, SXHF

Nom. Tons	H	L	W	A	B	C	D	E	F	G	J[1] / K[1]	M	N	P	Q	R	S	T	U	V	X	Z
20 & 25	5-8 15/16	24-1 3/8	7-6 1/2	6-4 3/16	5-3 1/8	0-9 1/2	1-3 5/8	1-7 9/16	1-3 1/2	2-2 1/2	16-9 3/4 16-6 / 16-9 3/4 16-6	16-3 13/16	16-7	15-5 5/16	13-3	7-0	6-6 15/16	3-9 5/16	3-4 3/8	5-7	0-5 13/16	7-9 1/2
30	6-2 3/8	24-1 3/8	7-6 1/2	6-9 5/8	5-8 5/8	0-9 1/2	1-3 5/8	1-7 9/16	1-3 1/2	2-2 1/2	16-9 3/4 16-6 / 16-9 3/4 16-6	16-3 13/16	16-7	15-5 5/16	13-3	7-0	6-6 15/16	4-9 5/16	3-4 3/8	5-7	0-5 13/16	7-9 1/2
40	6-7 3/8	30-2 1/2	7-6 1/2	7-2 5/8	6-1 5/8	0-9 7/8	1-5 7/8	1-10 1/8	2-5	2-5	20-1 3/4 19-6 / 20-6 3/4 20-3	19-10 5/16	19-7	18-11 11/16	15-11 1/8	8-0	7-8 3/16	5-9 5/16	3-4 3/8	5-7	0-5 13/16	7-9 1/2
50 & 55	5-8 7/8	32-10 1/2	7-6 1/2	6-4 1/8	5-3 1/8	0-9 1/2	1-3 5/8	1-7 9/16	2-5	2-5	20-1 3/4 19-6 / 20-6 3/4 20-3	19-10 5/16	19-7	18-11 11/16	15-11 1/8	8-0	7-8 3/16	6-9 3/8	3-4 3/8	5-7	0-5 13/16	7-9 1/2
60	6-7 3/8	30-2 1/2	9-8	7-2 5/8	6-1 5/8	0-9 7/8	1-5 7/8	1-10 1/8	2-5	2-5	20-1 3/4 19-6 / 20-6 3/4 20-3	19-10 5/16	19-7	18-11 11/16	15-11 1/8	8-0	7-8 3/16	5-9 5/16	4-5 3/8	7-8 1/2	0-5 13/16	9-11
70 & 75	6-7 3/8	30-2 1/2	9-8	7-2 5/8	6-1 5/8	0-9 7/8	1-5 7/8	1-10 1/8	2-5	2-5	20-1 3/4 19-6 / 20-6 3/4 20-3	19-10 5/16	19-7	18-11 11/16	15-11 1/8	8-0	7-8 3/16	5-9 5/16	4-5 3/8	7-8 1/2	0-5 13/16	9-11

Note:

1. Dimensions shown are for $\frac{\text{High Heat}}{\text{Low Heat}}$ gas heat units.

Figure 72-1 — 90, 105, 115, 130 Ton Heating/Cooling and Cooling Only Rooftop



Note: See page 73 for service clearance.

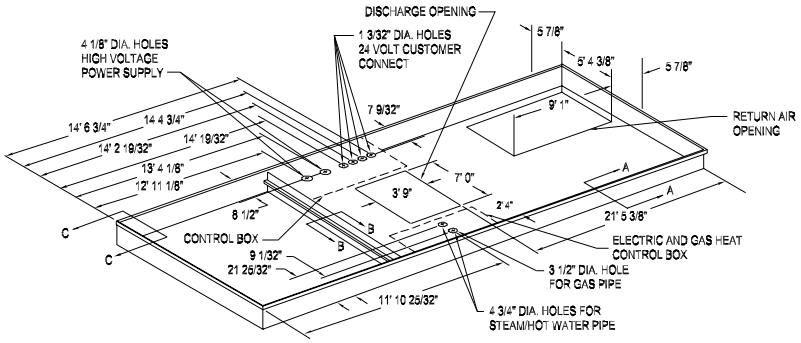
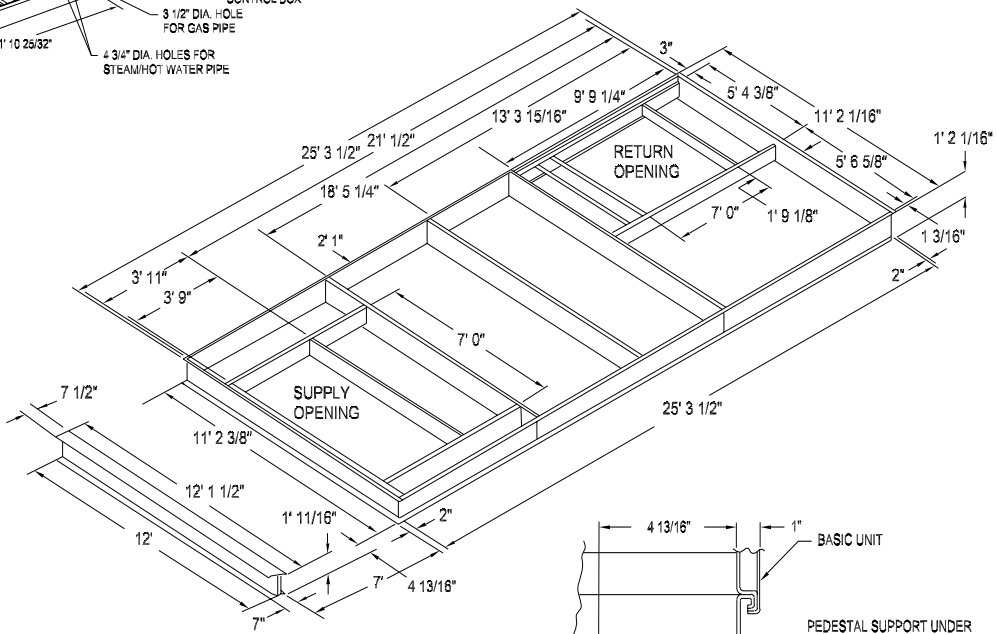
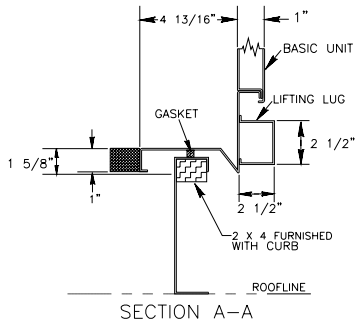


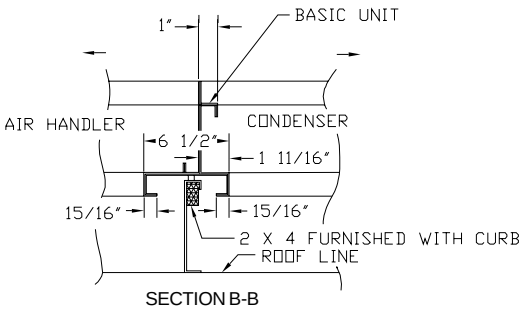
Figure 72-2 — 90-130 Ton Roof Curb Dimensions



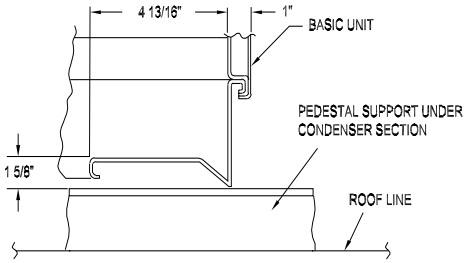
Cross Section Thru
Roof Curb and base pan



SECTION A–A



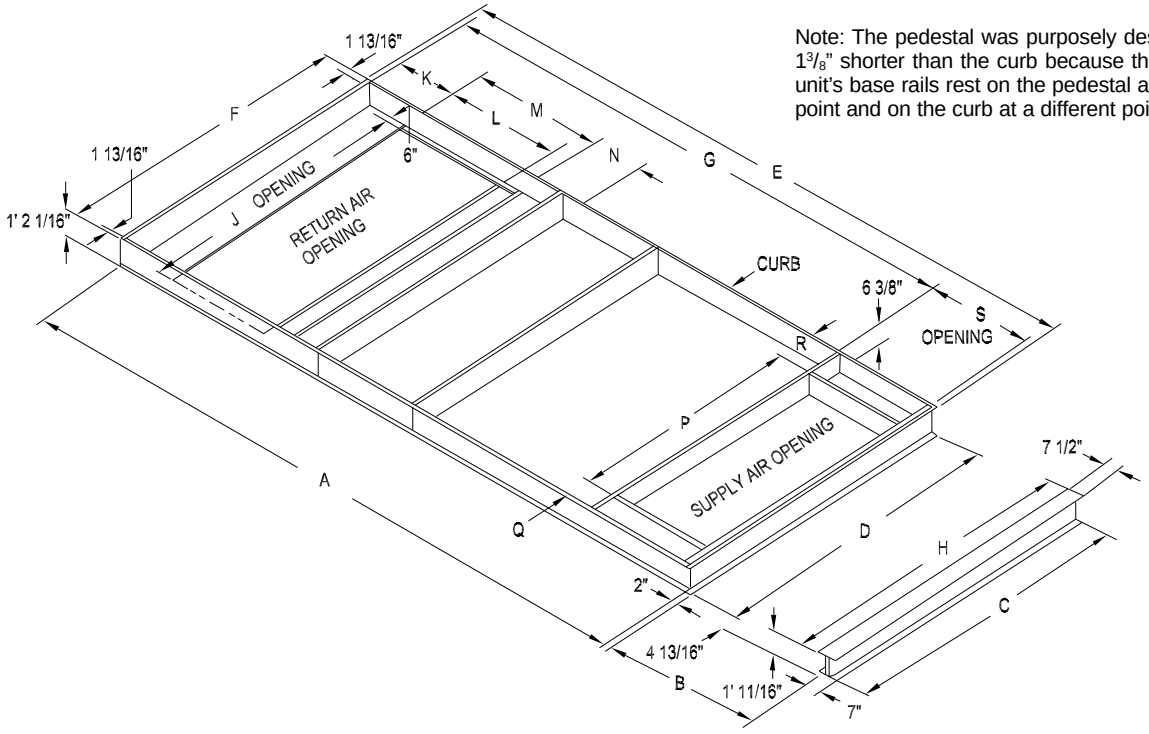
SECTION B-B



SECTION C-C

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.

Figure 73-1 — 20 to 75 Ton Optional Roof Curb Dimensions (Downflow)



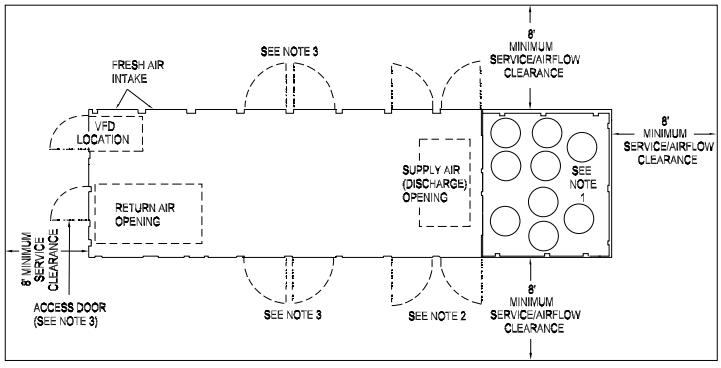
Note: The pedestal was purposely designed $1^{3}/_{8}$" shorter than the curb because the unit's base rails rest on the pedestal at one point and on the curb at a different point.

Table 73-1 — 20 to 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 15/16"	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 9/16"	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 15/16"
	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 15/16"
50,55	SAHF	19'-1 15/16"	7'-10 1/16"	7'-10 7/16"	7'-0 13/16"	19'-1 5/8"	7'-0 1/2"	16'-2 9/16"	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 15/16"
	S*HF	22'-4 1/2"	7'-10 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 15/16"
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 9/16"	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 15/16"
	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 15/16"	2'-0"	3'-6"	4'-0"	1'-10 5/8"	*7'-8 3/4"	0'-11 3/16"	**0'-2 3/8"	2'-5 15/16"

Note:
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 Ton SEHF (Units with electric heat).
**"R" dimension is 2' $5^{1}/_{8}$" on 60, 70, 75 Ton SEHF (Units with electric heat).

Figure 73-2 — 90 to 130 Ton Units — Service Clearance



Notes:
1. Provide **unrestricted** clearance over the condenser fans.
2. A **minimum** clearance of 2' 4-1/2" is required to open the hinged control panel doors. Both doors swing outward in a 180-degree arc.
3. A **minimum** clearance of 2' 10-3'4" is required to open the access doors on the unit's supply fan, evaporator, filter and exhaust fan sections. All hinged doors swing outward in a 180-degree arc.

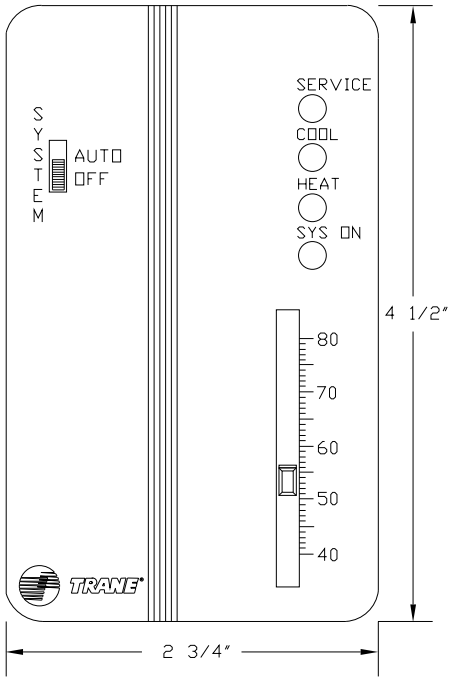
Weights

Table 74-1 — Approximate Operating Weights (Lbs./Kg)

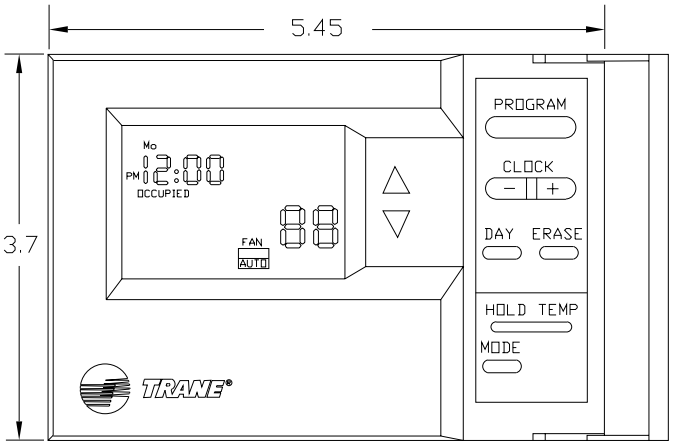
Nominal Tons		Rooftops Without Exhaust Fans					Rooftops With Exhaust Fans					Roof Curb	
		SA	SX	SE	SF	SL/SS	SA	SX	SE	SF	SL/SS	SA	All Heating Units & SXHF/G
20	Lb.	3950	4160	4300	4560	4300	4310	4520	4660	4920	4660	490	510
	Kg	1792	1887	1950	2068	1950	1955	2050	2114	2232	2114	222	231
25	Lb.	4130	4350	4480	4740	4480	4490	4710	4840	5100	4840	490	510
	Kg	1873	1973	2032	2150	2032	2037	2136	2195	2313	2195	222	231
30	Lb.	4710	4950	5080	5340	5080	5130	5370	5490	5760	5490	490	510
	Kg	2136	2245	2304	2422	2304	2327	2436	2490	2613	2490	222	231
40	Lb.	6260	6630	6780	7250	6780	6860	7210	7360	7840	7360	515	550
	Kg	2840	3007	3075	3287	3075	3112	3270	3338	3556	3338	234	249
50	Lb.	7110	7500	7660	8130	7660	7760	8150	8300	8770	8300	515	550
	Kg	3225	3402	3475	3688	3475	3520	3697	3765	3978	3765	234	249
55	Lb.	7260	7670	7800	8280	7800	7910	8290	8450	8920	8450	515	550
	Kg	3293	3479	3538	3756	3538	3588	3760	3833	4046	3833	234	249
60	Lb.	8240	8400	8560	9030	8560	9130	9280	9430	9910	9430	610	640
	Kg	3738	3810	3883	4096	3883	4141	4209	4277	4495	4277	277	290
70	Lb.	8600	8750	8910	9380	8910	9470	9620	9790	10260	9790	610	640
	Kg	3901	3969	4042	4255	4042	4296	4364	4441	4654	4441	277	290
75	Lb.	8600	8750	8910	9380	8910	9470	9620	9790	10260	9790	610	640
	Kg	3901	3969	4042	4255	4042	4296	4364	4441	4654	4441	277	290
90	Lb.	N/A	12670	12830	13480	12830	N/A	14020	14160	14800	14160	N/A	770
	Kg	N/A	5747	5820	6115	5820	N/A	6359	6423	6713	6423	N/A	349
105	Lb.	N/A	13230	13390	14040	13390	N/A	14570	14720	15370	14720	N/A	770
	Kg	N/A	6001	6074	6369	6074	N/A	6609	6677	6972	6677	N/A	349
115	Lb.	N/A	13660	13810	14450	13810	N/A	14990	15150	15790	15150	N/A	770
	Kg	N/A	6196	6264	6555	6264	N/A	6799	6872	7162	6872	N/A	349
130	Lb.	N/A	14000	14160	14800	14160	N/A	15350	15490	16140	15490	N/A	770
	Kg	N/A	6350	6423	6713	6423	N/A	6963	7026	7321	7026	N/A	349

Notes:
1. Weights shown include the following features: standard coils, 100% economizer, throwaway filters, maximum motor sizes (high efficiency), inlet guide vanes, 460V XL, High Heat.
2. Weights shown represent approximate operating weights and have a ±5% accuracy. **ACTUAL WEIGHTS ARE STAMPED ON THE UNIT NAMEPLATE.**
3. 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.

SINGLE SETPOINT SENSOR WITH SYSTEM FUNCTION LIGHTS
BAYSENS021*

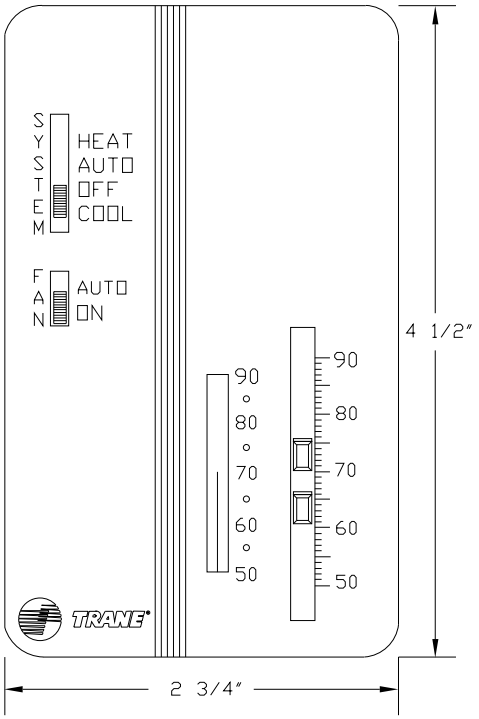


PROGRAMMABLE NIGHT-SETBACK SENSOR
BAYSENS020*

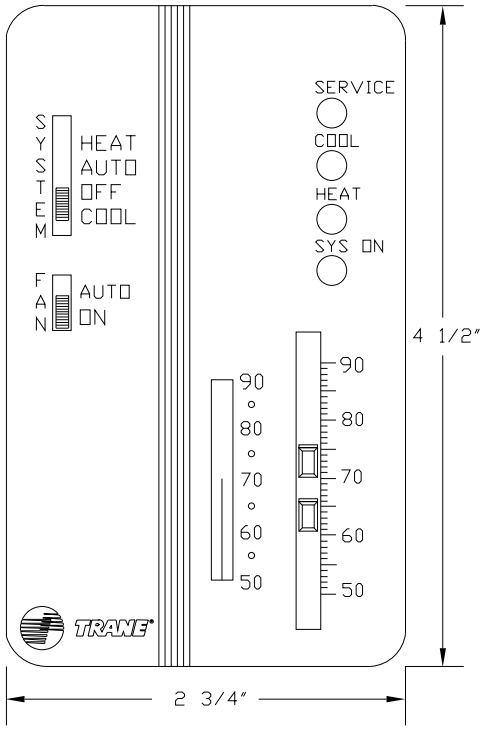


NOTE: Remote sensors are available for use with all zone sensors to provide remote sensing capabilities.

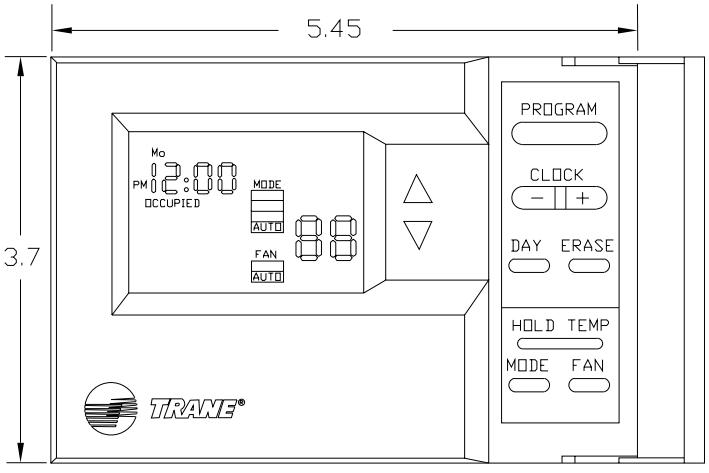
DUAL SETPOINT, MANUAL/AUTOMATIC CHANGEOVER SENSOR BAYSENS008*



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



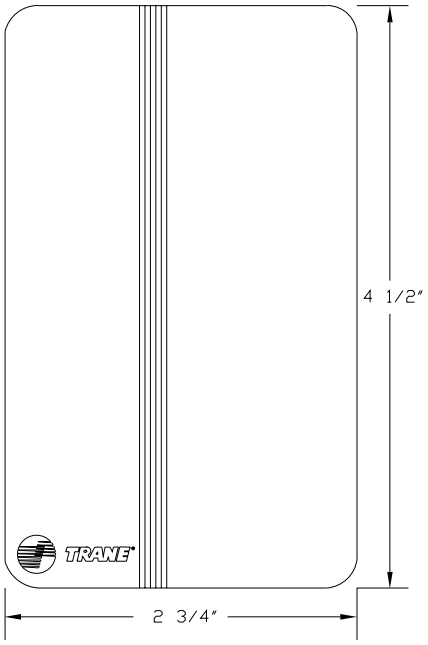
PROGRAMMABLE NIGHT SETBACK SENSOR BAYSENS019*



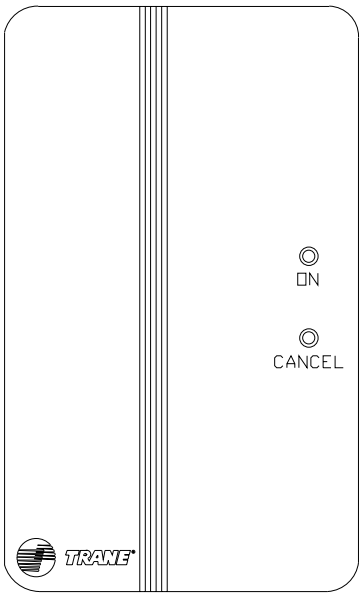
NOTE: Remote sensors are available for use with all zone sensors to provide remote sensing capabilities.

Integrated Comfort™ System Sensors

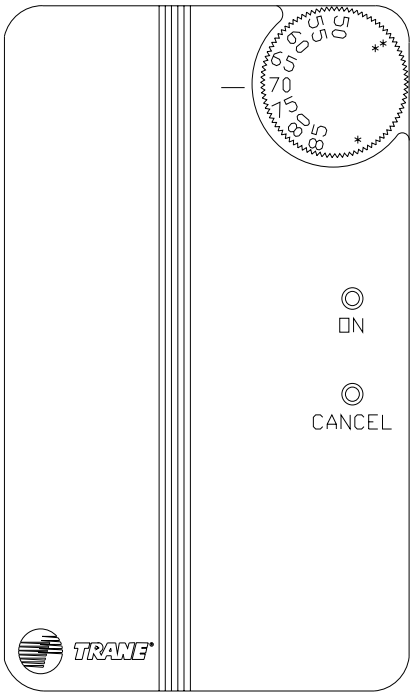
ZONE TEMPERATURE SENSOR ONLY
BAYSENS017*



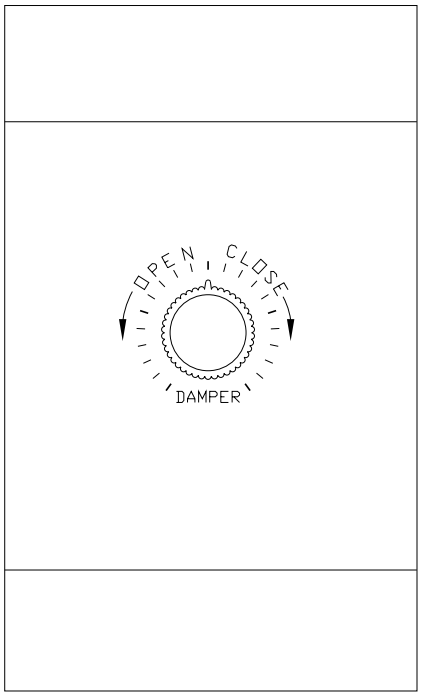
ZONE TEMPERATURE SENSOR W/TIMED OVERRIDE BUTTONS
BAYSENS013*



ZONE TEMPERATURE SENSOR W/TIMED OVERRIDE BUTTONS AND LOCAL SETPOINT ADJUSTMENT
BAYSENS014*



REMOTE MINIMUM POSITION POTENTIOMETER CONTROL
BAYSTAT023*



A full range of factory-installed modular options are available on standard ship cycles, allowing your rooftop design to be best suited to 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 through 130 ton 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 Through 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, enthalpy lockout, minimum position control and spring return motor. It is provided with standard low leak outside air dampers with a leakage rate of 2.5 percent of nominal airflow at one inch W.C. static pressure.

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.
- 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.
- Comparative Enthalpy Control — 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.
- 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 (RHI) — 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 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 through 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.

Features Summary

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

INSTALLABILITY

- 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.

SERVICEABILITY

- 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 through 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 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.

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 expansion cooling with natural gas, 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 factoryinstalled. 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 through 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. On 70 through 130 ton units, each compressor shall have crankcase heaters installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles

Evaporator Coil
Internally enhanced seamless copper tubing of $^1/_2$-inch O.D. shall be mechanically bonded to heavy-duty aluminum fins of configurated design. All coils shall be equipped with thermal expansion valves and factory pressure and leak tested at 300 psi.

Condenser Coil
Configurated aluminum fin or configurated copper fin secondary surface shall be mechanically bonded to primary surface of $^3/_8$-inch O.D. seamless 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.

AIR HANDLING SYSTEM

SUPPLY FAN

20 through 75 Ton Units
All supply fans shall have two doubleinlet, 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 through 130 Ton Units
All supply fans shall have two independent fan assemblies with double inlet, FC 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.

Mechanical Specifications

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.

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).

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 enthalpy 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.

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.

Mechanical Specifications

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.

The Trane Company
2701 *Wilma Rudolph Boulevard*
Clarksville, TN 37040
http://www.trane.com

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