



Product Catalog

# Packaged Rooftop Air Conditioners Precedent™ Heat Pump

High Efficiency

12.5 to 25 Tons — 60 Hz





# Introduction

## Packaged Heat Pumps

Trane's customers demand products that provide exceptional reliability, meet stringent performance requirements, and are competitively priced. Trane delivers with Precedent™.

Precedent™ features cutting edge technologies: reliable compressors, Trane engineered Symbio controls, computer-aided run testing, and Integrated Comfort™ Systems. So, whether you're the contractor, the engineer, or the owner you can be certain Precedent™ products are built to meet your needs.

Through the years, Trane has designed and developed the most complete line of Packaged Rooftop products available in the market today. Trane was the first to introduce the Micro—microelectronic unit controls—and has continued to improve and revolutionize this design concept.

Symbio control platform offers the same great features and functionality as the original Micro, with additional benefits for greater application flexibility.

With its sleek, compact cabinet, Precedent™ continues to provide the highest standards in quality and reliability, comfort, ease of service, and the performance of Trane light commercial products.

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# Features and Benefits

## Features

**Table 1. Precedent™ features – standard and optional**

	Standard Features	Options		
		Factory Installed	Factory or Field Installed	Field Installed
3-year Limited Parts Warranty	X			
5-year Limited Compressor Warranty	X			
2 inch Filter	X			
2 inch MERV 8 Filters		X		
2 inch MERV 13 Filters		X		
Access Doors		X		
Access Door (Control Box)	X			
Access Panels	X			
Anti-Short Cycle Timer (Standard with Symbio)	X			
Barometric Relief			X	
CO <sub>2</sub> Sensor				X
Clogged Filter Switch <sup>(a)</sup>			X	
Coil guards	X			
Condensate Overflow Switch <sup>(b)</sup>			X	
Convertible Airflow <sup>(c)</sup>	X			
Colored and Numbered Wiring	X			
Crankcase Heaters	X			
Direct Drive Plenum Fan	X			
Discharge Air Temperature Sensing Kit — MZVAV, SZVAV, Economizer	X			
Discharge Air Temperature Sensing Kit — Standard (Multispeed)			X	
Economizer: Low Leak — Downflow (12.5 to 25 Tons) <sup>(a)</sup>			X	
Economizer: Low Leak — Horizontal (12.5 to 25 Tons) <sup>(d) (a)</sup>				X
Economizer: Standard — Downflow (12.5 to 25 Tons) <sup>(a)</sup>			X	
Economizer: Standard — Horizontal (12.5 to 25 Tons) <sup>(a)</sup>				X
Electric Heater <sup>(b)</sup>			X	
Expansion Modules <sup>(e)</sup>			X	
Fault Detection and Diagnostics (FDD) <sup>(f)</sup>	X			
Filter Removal Tool	X			
Foil-Faced and Edge Protected Insulation	X			
Frostat™	X			
High Pressure Control	X			
High Static/Oversized Motor		X		
High Temperature Sensor				X
IAQ Dual Sloped Composite Drain Pan	X			
Liquid Line Refrigerant Drier	X			
Low Ambient Cooling to 0°F			X	
Low Ambient Cooling to 40°F	X			
Low Pressure Control	X			
Manual Outside Air Damper			X	
Motorized Outside Air Damper			X	
Multispeed Direct Drive Motors	X			
Multiple Zone VAV (Variable Air Volume)		X		



## Features and Benefits

**Table 1. Precedent™ features – standard and optional (continued)**

	Standard Features	Options		
		Factory Installed	Factory or Field Installed	Field Installed
Operating Charge of R-410A	X			
Phase Balance/Loss/Reversal Protection	X			
Phase Monitor	X			
Powered Exhaust				X
Powered or Unpowered Convenience Outlet		X		
Quick Adapt Curbs				X
Reference or Comparative Enthalpy			X	
Roof Curb				X
Single Point Power	X			
Single Side Service	X			
Smoke Detector - Return <sup>(a)</sup>		X		
Smoke Detector - Supply <sup>(b)</sup>		X		
Stainless Steel Drain Pan		X		
Standardized Components	X			
Symbio Controls	X			
Thermal Expansion Valve	X			
Through-the-Base Electrical Access		X		
Through-the-Base Electrical with Circuit Breaker		X		
Through-the-Base Electrical with Disconnect Switch		X		
Variable Air Flow (SZVAV)/Variable Air Flow (MZVAV)		X		
Ventilation Override <sup>(g)</sup>				X

<sup>(a)</sup> Includes Symbio Fresh Air Options Module.

<sup>(b)</sup> Includes Symbio Indoor Options Module.

<sup>(c)</sup> Factory ships in downflow. For WHJ150-300 units where horizontal airflow is required, FIAHZDC001\* (Horizontal Conversion Panel) is required.

<sup>(d)</sup> Provided by third party.

<sup>(e)</sup> Requires Tracer TU and utilizes TGP2 software.

<sup>(f)</sup> Fault Detection and Diagnostics (FDD) requires Advanced Controller (either Digit 21=1 for BACnet or 21=3 for Air-Fi).

<sup>(g)</sup> Requires FIASCCM001 accessory.

## Control Options

**Table 2. Precedent™ control options — standard and optional**

	Standard Features	Options		
		Factory Installed	Factory or Field Installed	Field Installed
Dual Thermistor Remote Zone Sensor				X
Symbio Service and Installation App	X			
Symbio 700 Advanced Module <sup>(a)</sup>			X	
Humidity Sensor/Humidistat				X
Thermostat				X
Wireless Zone Sensor				X
Zone Sensor				X
LonTalk® Communication Interface (LCI) <sup>(b)</sup>			X	
Trane® Air-Fi® Wireless Communication Interface (WCI) <sup>(b)</sup>			X	

**Note:** For more information, reference the Controls chapter.

<sup>(a)</sup> Symbio 700 Advanced Module includes BACnet MS/TP or IP communication protocols.

<sup>(b)</sup> Requires Symbio 700 Advanced Module (MOD03103).

## Accessories

FIA KIT #S	DESCRIPTION	Used With Cabinets	Used With Models
FIAEHW318*(a)	18kW, 208-230V Electric Heater	D	WHJ150A3-180A3
FIAEHW336*(a)	36kW, 208-230V Electric Heater	D	WHJ150A3-300A3
FIAEHW354*(a)	54kW, 208-230V Electric Heater	D	WHJ150A3-300A3
FIAEHW372*(a)	72kW, 208-230V Electric Heater	D	WHJ210A3-300A3
FIAEHW418*(a)	18kW, 460V Electric Heater	D	WHJ150A4-180A4
FIAEHW436*(a)	36kW, 460V Electric Heater	D	WHJ150A4-300A4
FIAEHW454*(a)	54kW, 460V Electric Heater	D	WHJ150A4-300A4
FIAEHW472*(a)	72kW, 460V Electric Heater	D	WHJ210A4-300A4
FIAEHW18*(a)	18kW, 575V Electric Heater	D	WHJ150AW-180AW
FIAEHW36*(a)	36kW, 575V Electric Heater	D	WHJ150AW-300AW
FIAEHW54*(a)	54kW, 575V Electric Heater	D	WHJ150AW-300AW
FIAEHW72*(a)	72kW, 575V Electric Heater	D	WHJ210AW-300AW
FIABARM003*	Barometric Relief	D	WHJ150A-300A
FIAC02K001*	CO <sub>2</sub> (DCV) Wall Mounted Sensor	ALL	WHJ150A-300A
FIAC02K002*	CO <sub>2</sub> (DCV) Duct Mounted Sensor	ALL	WHJ150A-300A
FIACURB404*	14-inch Full Perimeter Knockdown Curb	D	WHJ150A-300A
FIACLF003*(b)	Clogged Filter Switch	D	WHJ150A-300A
FIACLF004*(b)	Clogged Filter Switch (MERV13)	D	WHJ150A-300A
FIADAST008*	Discharge Air Sensing Tube Kit T/W Models	D	WHJ150A-300A
FIADFB001*(b)	Differential Dry Bulb Economizer Control	ALL	WHJ150A-300A
FIADMPR003*	Manual Damper	D	WHJ150A-300A
FIADMPR103*	Motorized Damper	D	WHJ150A-300A
FIAECON003*(b)	Dry Bulb Downflow Economizer	D	WHJ150A-300A
FIAECON303*(b)	Dry Bulb Horizontal Economizer	D	WHJ150A-300A
FIAECON103*(b)	Dry Bulb Downflow Low Leak	D	WHJ150A-300A
FIAECON203*(b)	Dry Bulb Horizontal Low Leak	D	WHJ150A-300A
FIAENTH001*	Reference Enthalpy Economizer Control	ALL	WHJ150A-300A
FIAENTH002*	Comparative Enthalpy Economizer Control	ALL	WHJ150A-300A
FIAHTST001*	High Temperature (Fire) Duct Mounted Stat	ALL	WHJ150A-300A
FIAHZDC001*	Horizontal Conversion Panel	D	WHJ150A-300A
FIALOAM001*	Low Ambient	ALL	WHJ150A-300A
FIALTCI001*	LonTalk Communication Interface	ALL	WHJ150A-300A
FIAOPTN001*	Indoor Options Module	ALL	WHJ150A-300A
FIAOPTN002*	Fresh Air Options Module	ALL	WHJ150A-300A
FIAOVFL001*(a)	Condensate Overflow Switch	ALL	WHJ150A-300A
FIAPWRX303*	Power Exhaust 230V	D	WHJ150A3-300A3
FIAPWRX403*	Power Exhaust 460V	D	WHJ150A4-300A4
FIAPWRXW03*	Power Exhaust 575V	D	WHJ150AW-300AW
FIASCCM001*(c), (d)	Symbio Customer Connection Module	ALL	WHJ150A-300A
FIAXMOD030*(d), (e)	Symbio 700 XM30 Expansion Module	ALL	WHJ150A-300A
FIAXMOD032*(d), (e)	Symbio 700 XM32 Expansion Module	ALL	WHJ150A-300A

(a) Requires Symbio Indoor Options Module.

(b) Requires Symbio Fresh Air Options Module.

(c) Provides Ventilation Override, External Auto/Stop, Alarm Indicator, Remote Min Position.

(d) Requires Symbio Advanced Controller (digit 21=1 or 3).

(e) Requires Tracer TU and Utilizes TGP2 Software (programming knowledge required).



## Key Benefits

### Airflow Distribution

Airflow is outstanding. Precedent™ can replace an older machine with old ductwork and, in many cases, improve the comfort through better air distribution.

### Cabinet Integrity

For added water integrity, Precedent™ has a raised 1 inch lip around the supply and return of the downflow units to prevent water from blowing into the ductwork.

### Coil Guards

Coil guards protect condenser coil during shipping as well as hail, vandals, wind, etc. Toolless design lends itself to ease of maintenance in cleaning coils.



### CO<sub>2</sub> Sensor — Demand Control Ventilation (DCV)

Demand-controlled ventilation (DCV) is a control strategy that responds to the actual demand (need) for ventilation by regulating the rate at which the HVAC system brings outdoor air into the building. A CO<sub>2</sub> sensor measures the concentration (parts per million, ppm) of CO<sub>2</sub> (carbon dioxide) in the air. As the CO<sub>2</sub> concentration changes, the outside air damper modulates to meet the current ventilation needs of the zone. The CO<sub>2</sub> sensor kit is available as a field installed accessory and wires directly to the Symbio 700 controller.

### Controls — Symbio

#### Enhanced BAS Integration and Connectivity

- Open standard communications
  - BACnet® over Zigbee (Air-Fi Wireless)
  - BACnet MS/TP
  - BACnet IP
  - Modbus™ RTU
  - Modbus TCP/IP
  - LonTalk®
- Securely access, troubleshoot, and monitor equipment from anywhere via Trane Connect™

#### Serviceability

- Wireless mobile app interface (iPhone and Android) to simplify startup/service
- On-board user interface
- Data Trending



- Real-time, clear language diagnostics
- Historical alarm logs
- Backup and Restore functionality to reduce commissioning and service time

**Flexibility**

- Future-ready upgradable software, supporting changing codes and new sequences of operation
- Standard, consistent pre-engineered applications that meet industry standards
- Built-in Schedules (requires Tracer® TU)
- Expandable inputs and outputs (requires Tracer TU)
- Ability to add custom programmed sequences (requires Tracer TU)

**Accessibility**

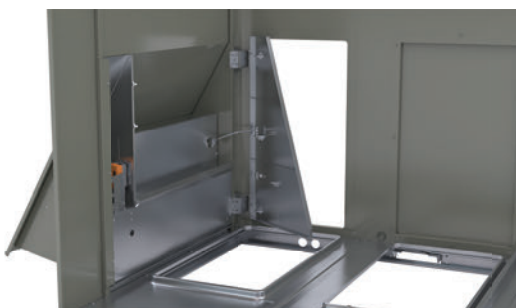
Control box consists of a multilevel design with Symbio Controls located on hinged panels which provide protection from high voltage components for ease of servicing.

**Convenience Outlet**

This option is GFCI, 120V/15A, 2 plug, convenience outlet powered or GFCI, 120V/20A, 2 plug convenience outlet unpowered. This option can be ordered when through the base electrical with either the disconnect switch or circuit breaker option is ordered.

**Convertible Units**

Units ship in a downflow configuration and can be easily converted to horizontal by simply removing two panels. Optional field accessory kits required for 12.5 to 25 ton units.





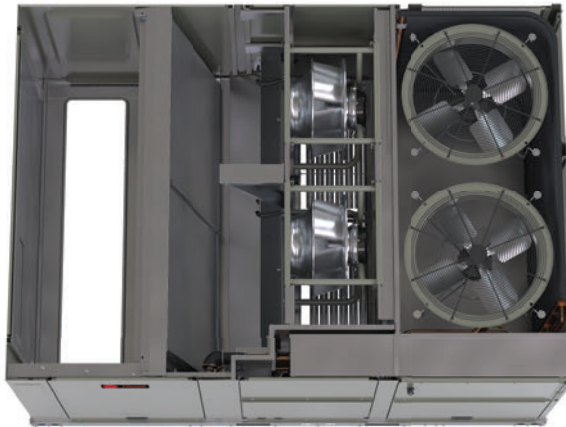
## Features and Benefits

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### Direct Drive Plenum Fans

All 12.5 to 25 tons units are equipped with a direct drive plenum fan design with the following features.

- Backward-curved fan wheel
- External rotor direct drive variable speed indoor motor
- Variable speed adjustment available in Symbio controller
- Designed to slide out for ease of maintenance



### Drain Pan

Every Precedent™ unit has an easy-to-clean, composite removable dual-sloped drain pan (IAQ).



### Fault Detection and Diagnostics (FDD)

This offering meets the mandatory requirement of CA Title 24 of fully configurable diagnostics allowing fault history and reading fault codes at the unit via Symbio™ 700 board or app. This feature provides detection of the following faults: Air temperature sensor failure/fault and notification of acceptable economizer mode. The FDD system shall be certified by the Energy Commission as meeting the requirements.

### Flexibility

Precedent™ offers ultimate flexibility. Units are built to order in our standard ship cycle time.

## High Efficiency Filtration

Precedent™ units offer a variety of high efficiency filtration options. MERV 8 and MERV 13 filters provide additional filtration beyond the capabilities of typical 2 inches throwaway filters.

## High Static Motor

Available on 25 ton models, this high static motor option extends beyond the capability of the standard motor.

## Hinged Access Doors

These doors permit easy access to the filter, fan and compressor/control sections. They reduce the potential roof damage from screws or sharp access door corners.



## Humidity Sensor/Humidistat

The humidity sensor/humidistat, when used in conjunction with our dehumidification (hot gas reheat) units will provide outstanding humidity control and comfort. Humidity sensors can be wall or duct mounted. The humidity deadband can be set between 40% and 60% relative humidity.

## Low Ambient Cooling

All Precedent™ units have cooling capabilities down to 40°F. Factory installed option or field installed accessory extends operation down to 0°F.

## Low Leak Economizer

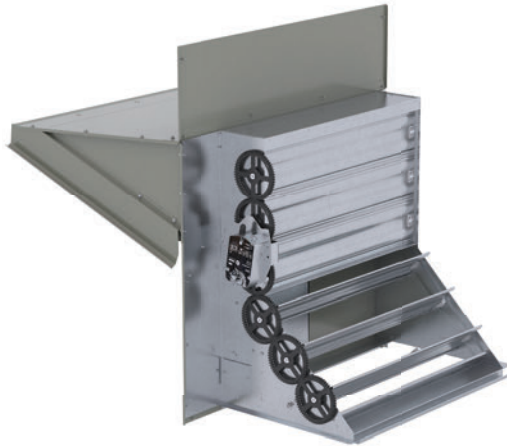
This accessory meets low leak requirements for ASHRAE 90.1, IECC, and CA Title 24 standards (4 cfm/ft<sup>2</sup>@1" wg exterior air/return air). This option allows 100% outdoor air supply from 0 to 100% modulating dampers and is standard with barometric relief. It can be paired with powered exhaust for additional building pressure relief. This option can be paired with or without fault detection and diagnostics (FDD) to meet current mandatory CA Title 24 requirements.

The economizers come with four control options, dry bulb, reference enthalpy, comparative enthalpy, or differential dry bulb.



## Features and Benefits

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*Note: Downflow low leak economizer is available as a factory installed option. Horizontal low leak economizer option is only available as a field installed option.*

### Multi-Speed Indoor Fan System

This system incorporates a multi-speed fan control to change the speed of the fan to 66% of full airflow based off of compressor stages.

### Multiple-Zone VAV Control

A multiple-zone VAV (MZVAV) system consists of a packaged rooftop unit that serves several individually controlled zones. Each zone is equipped with a VAV terminal unit that varies the quantity of air delivered to maintain the desired temperature in that zone. The rooftop unit controller varies the speed of the indoor fan to maintain the static pressure in the supply ductwork at a setpoint, ensuring that all zones receive the necessary quantity of air. In addition, cooling capacity is cycled to maintain the supply air temperature at the desired setpoint.

For decades, Trane has been an industry leader in rooftop VAV systems. Now, multiple-zone VAV control is available in the light commercial rooftop platform (12.5 to 25 tons).

### Other Benefits

- Cabinet design ensures water integrity
- Ease of Service, Installation and Maintenance
- Mixed model build enables “fastest in the industry” ship cycle times
- Outstanding Airflow Distribution
- Symbio Controls

### Quick Adapt Curbs

Enables easy upgrade of existing Voyager™ 12.5 to 25 tons units to Precedent™ units on replacement jobs.

### Rigorous Testing

All of the Precedent™ designs were rigorously rain tested at the factory to ensure water integrity.

Actual shipping tests were performed to determine packaging requirements. Units were test shipped around the country to determine the best packaging design. Factory shake and drop tests were used as part of the package design process to help assure that the unit arrives at the job site in top condition.

Rigging tests include lifting a unit into the air and letting it drop one foot, assuring that the lifting lugs and rails hold up under stress.

We perform a 100% coil leak test at the factory. The assembled unit is leak tested to 465 psig.

All parts are inspected at the point of final assembly. Sub-standard parts are identified and rejected immediately.

Every unit receives a 100% unit run test before leaving the production line to make sure it meets rigorous requirements.

### **Single Zone VAV (SZVAV)**

SZVAV is fully integrated into the control system. It provides the simplest and fastest commissioning in the industry through proven factory-installed, wired, and tested system controllers. All control modules, logic boards and sensors are factory installed and tested to ensure the highest quality and most reliable system available. This means no special programming of algorithms, or hunting at the jobsite for field installed sensors, boards, etc. SZVAV is a quick and simple solution for many applications and is available from your most trusted rooftop VAV system solution provider -Trane.

Building system modeling in energy simulation software such as TRACE is recommended to evaluate performance improvements for your application.

### **Supply/Return Air Smoke Detector**

With this option installed, if smoke is detected, all unit operation will be shut down. Reset will be manual at the unit. In order for the supply air smoke detector or return air smoke detector to properly sense smoke in the supply air stream or the return air stream, the air velocity entering the smoke detector unit must be between 500 to 4000 feet per minute. Equipment covered in this manual will develop an airflow velocity that falls within these limits over the entire airflow range specified in the evaporator fan performance table. Supply and/or return smoke detectors may not be used with the plenum smoke detector.

**Figure 1. Supply/Return air smoke detector**



### **Through-the-Base Electrical Access**

An electrical service entrance shall be provided allowing electrical access for both control and main power connections inside the curb and through-the-base of the unit. Option will allow for field installation of liquid-tight conduit and an external field installed disconnect switch.



# Model Number Description

## Digit 1 — Unit Function

W = Packaged Heat Pump

## Digit 2 — Cooling Efficiency

H = High Efficiency

## Digit 3 — Refrigerant

J = R-410A

## Digit 4,5,6 — Nominal Gross Cooling Capacity (MBh)

150 = 12.5 Ton

180 = 15 Ton

210 = 17.5 Ton

240 = 20 Ton

300 = 25 Ton

## Digit 7 — Design Sequence

## Digit 8 — Voltage Selection

3 = 208–230/60/3

4 = 460/60/3

W = 575/60/3

## Digit 9 — Unit Controls

S = Symbio™ 700

## Digit 10 — Heat Type

0 = Base Model (None or Electric)

## Digit 11 — Heating Capacity<sup>1</sup>

0 = No Heat

G = 18 kW Electric Heat

K = 27 kW Electric Heat

N = 36 kW Electric Heat

P = 54 kW Electric Heat

R = 72 kW Electric Heat

## Digit 12, 13 — Service Sequence

\*\* = Factory Assigned

## Digit 14 — Fresh Air Selection

0 = No Fresh Air

A = Manual Outside Air Damper 0–50%

B = Motorized Outside Air Damper 0–50%

C = Economizer, Dry Bulb 0–100% without Barometric Relief<sup>2</sup>

D = Economizer, Dry Bulb 0–100% with Barometric Relief<sup>2</sup>

E = Economizer, Reference Enthalpy 0–100% without Barometric Relief<sup>2</sup>

F = Economizer, Reference Enthalpy 0–100% with Barometric Relief<sup>2</sup>

G = Economizer, Comparative Enthalpy 0–100% without Barometric Relief<sup>2</sup>

H = Economizer, Comparative Enthalpy 0–100% with Barometric Relief<sup>2</sup>

K = Downflow Low Leak Economizer, Dry Bulb with Barometric Relief<sup>2</sup>

M = Downflow Low Leak Economizer, Reference Enthalpy with Barometric Relief<sup>2</sup>

P = Downflow Low Leak Economizer, Comparative Enthalpy with Barometric Relief<sup>2</sup>

R = Downflow Low Leak Economizer, Differential Dry Bulb with Barometric Relief<sup>2</sup>

## Digit 15 — Supply Fan/Motor

0 = Multi-Speed Motor

1 = Optional Oversized/High Static Motor

2 = Single Zone Variable Air Volume with Standard Motor

3 = Single Zone Variable Air Volume with Oversized/High Static Motor

4 = Multiple Zone Variable Air Volume with Standard Motor

5 = Multiple Zone Variable Air Volume with Oversized/High Static Motor

## Digit 16 — Hinged Access/Filters

0 = Standard Panels/Standard Filters

A = Hinged Access Panels/Standard Filters

B = Standard Panels/2 inch MERV 8 Filters

C = Hinged Access Panels/2 inch MERV 8 Filters

D = Standard Panels/2 inch MERV 13 Filters

E = Hinged Access Panels/2 inch MERV 13 Filters

## Digit 17 — Coil Protection

0 = Standard Coil

## Digit 18 — Through-the-Base Provisions

0 = No Through-the-Base Provisions

A = Through-the-Base Electric

## Digit 19 — Disconnect/Circuit Breaker (three-phase only)

0 = No Disconnect/No Circuit Breaker

1 = Unit Mounted/Non-Fused Disconnect

2 = Unit Mounted Circuit Breaker

## Digit 20— Convenience Outlet

0 = No Convenience Outlet

A = Unpowered 20A Convenience Outlet

B = Powered 15A Convenience Outlet (three-phase only)

## Digit 21— Communications Options

0 = No Communications Interface

1 = Advanced Controller with BACnet® Communications Interface

2 = Advanced Controller with LonTalk® Communications Interface

3 = Advanced Controller with Air-Fi® Communications Interface

## Digit 22— Refrigeration System Option

0 = Standard Refrigeration System

A = Dehumidification Option<sup>1, 3</sup>

## Digit 23— Controls Expansion Module

0 = None

1 = XM-30 Expansion Module

2 = XM-32 Expansion Module

3 = XM-30 and XM-32 Expansion Module

4 = XM-30 Expansion Module (Qty 2)

5 = XM-32 Expansion Module (Qty 2)

## Digit 24— Smoke Detector

0 = No Smoke Detector

A = Return Air Smoke Detector<sup>2</sup>

B = Supply Air Smoke Detector<sup>1</sup>

C = Supply and Return Air Smoke Detectors<sup>1, 2</sup>

**Digit 25— System Monitoring Controls**

- 0 = No Monitoring Control
- 1 = Clogged Filter Switch<sup>2</sup>
- 2 = Condensate Overflow Switch<sup>1</sup>
- 3 = Discharge Air Sensing Tube
- 4 = Clogged Filter Switch and Condensate Overflow Switch<sup>1, 2</sup>
- 5 = Clogged Filter Switch and Discharge Air Sensing Tube<sup>2</sup>
- 6 = Condensate Overflow Switch and Discharge Air Sensing Tube<sup>1</sup>
- 7 = Clogged Filter Switch, Condensate Overflow Switch and Discharge Air Sensing Tube<sup>1, 2</sup>

**Digit 26— Not Used****Digit 27— Hardware Enhancements**

- 0 = No Enhancements
- 1 = Stainless Steel Drain Pan

**Digit 28— Short Circuit Current Rating**

- 0 = Standard (5k) SCCR Marking
- A = Tier 2 (=65K) SCCR Marking

**Digit 29— Low Ambient<sup>4</sup>**

- 0 = None
- A = Low Ambient Cooling to 0°F

**Model Number Notes****Notes:**

1. Includes Symbio™ Indoor Module.
2. Includes Symbio™ Fresh Air Module.
3. Includes Symbio™ Customer Connection Module.
4. Standard Low Ambient Cooling Limit is 40°F.



# General Data

**Table 3. General data— 15 to 25 tons, high efficiency**

	12.5 Tons	15 Tons	20 Tons	25 Tons
	WHJ150	WHJ180	WHJ240	WHJ300
<b>Cooling Performance</b>				
Gross Cooling Capacity	154000	182000	246000	272000
EER	12.3	12.0	11.2	10.4
Nominal cfm/AHRI Rated cfm	5000	6000	8000	10000
AHRI Net Cooling Capacity	150000	178000	240000	262000
IEER (2-Speed)	17.8	17.9	17.2	16.1
IEER (SZVAV/MZVAV)	18.3	18.4	17.7	16.6
System Power (kW)	12.20	14.83	21.43	25.19
<b>Heating Performance</b>				
High Temp Btuh Rating	135000	162000	224000	242000
System Power (kW) / COP	10.41 / 3.80	12.05 / 3.90	18.14 / 3.60	20.21 / 3.50
Low Temp Btuh Rating	62500	76000	119000	136000
System Power (kW) / COP	8.81 / 2.08	10.66 / 2.09	16.37 / 2.13	17.11 / 2.33
<b>Compressor</b>				
Number/Type	2/Manifold Scroll	2/Manifold Scroll	2/Manifold Scroll	2/Manifold Scroll
Percent Capacity (Stage 1 - Stage 4)	33/67/100/NA	33/67/100/NA	24/36/64/100	25/37/63/100
<b>Sound</b>				
Outdoor Sound Rating (dBA)	87	87	93	93
<b>Outdoor Coil</b>				
Type	RTPF Lanced	RTPF Lanced	RTPF Lanced	RTPF Lanced
Configuration	Full Face	Full Face	Full Face	Full Face
Tube Size (in.)	0.313	0.313	0.313	0.313
Face Area (sq. ft.)	34.71	34.71	40.05	40.05
Rows/FPI (Fins per inch)	3/16	3/16	3/16	3/16
Refrigerant Control	TXV	TXV	TXV	TXV
<b>Indoor Coil</b>				
Type	RTPF Lanced	RTPF Lanced	RTPF Lanced	RTPF Lanced
Configuration	Full Face	Full Face	Full Face	Full Face
Tube Size (in.)	0.313	0.313	0.313	0.313
Face Area (sq. ft.)	25.83	25.83	30.09	30.09
Rows/FPI (Fins per inch)	4/16	4/16	4/16	4/16
Refrigerant Control	TXV	TXV	TXV	TXV
STD. Drain Connection No./Size (in.)	1/1.00 PVC Female	1/1.00 PVC Female	1/1.00 PVC Female	1/1.00 PVC Female
Stainless Drain Connection No./Size (in.)	1/1.00 NPT	1/1.00 NPT	1/1.00 NPT	1/1.00 NPT
<b>Reheat Coil</b>				
Type	RTPF Lanced	RTPF Lanced	RTPF Lanced	RTPF Lanced
Configuration	Full Face	Full Face	Full Face	Full Face
Tube Size (in.)	0.313	0.313	0.313	0.313
Face Area (sq. ft.)	-	-	-	-



**Table 3. General data— 15 to 25 tons, high efficiency (continued)**

	12.5 Tons	15 Tons	20 Tons	25 Tons
	WHJ150	WHJ180	WHJ240	WHJ300
Rows/FPI (Fins per inch)	1/16	1/16	1/16	1/16
<b>Outdoor Fan</b>				
Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter (in.)	2/26x3	2/26x3	2/28x4	2/28x4
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM	10480	10480	15810	15810
Motor HP	2/0.50	2/0.50	2/1.0	2/1.0
Motor RPM	1125	1125	1125	1125
<b>Indoor Fan</b>				
Type	BC Plenum	BC Plenum	BC Plenum	BC Plenum
No. Used/Diameter (in.)/Width (in.)	2/23x6	2/23x6	2/23x6	2/23x6
Drive Type/No. Speeds/RPM	Direct / Variable	Direct / Variable	Direct / Variable	Direct / Variable
Motor HP (Standard/Oversized)	3.0 / –	3.0 / –	3.0 / –	3.0 / 4.6
Max Motor RPM	1850	1850	1850	1850 / 1940
<b>Filters<sup>(a)</sup></b>				
Type Furnished	Throwaway	Throwaway	Throwaway	Throwaway
Number Size Recommended	(8) 20 x 24 x 2	(8) 20 x 24 x 2	(4) 20 x 24 x 2 (4) 20 x 30 x 2	(4) 20 x 24 x 2 (4) 20 x 30 x 2
<b>Refrigerant Charge</b>				
lbs of R-410A	30.0	33.0	39.0	38.0
<b>Cabinet</b>				
Cabinet Size	D0	D0	D1	D1

<sup>(a)</sup> Outdoor sound rating shown is tested in accordance with AHRI 370-2015. For additional information reference the outdoor sound power level data in the performance section.



# Gross Cooling Capacities

Table 4. Gross cooling capacities — 12.5 tons

CFM	Ent DB (°F)	Entering Wet Bulb Temp (°F)						Entering Wet Bulb Temp (°F)						Entering Wet Bulb Temp (°F)					
		61		67		73		61		67		73		61		67		73	
		MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC
		<b>Ambient Temperature 85°F</b>						<b>Ambient Temperature 95°F</b>						<b>Ambient Temperature 105°F</b>					
3750	75	138.5	109.3	154.1	85.8	169.9	61.2	130.4	105.0	145.1	81.4	159.7	56.9	121.8	100.4	135.8	77.0	149.2	52.5
	80	139.0	127.7	154.9	105.5	171.1	81.1	131.0	123.2	145.9	101.1	161.2	76.8	122.7	118.5	136.7	96.7	151.0	72.4
	85	142.3	142.3	155.3	125.0	171.9	100.8	135.5	135.5	146.5	120.7	162.1	96.5	128.4	128.4	137.2	116.2	152.0	92.2
	90	150.3	150.3	155.8	143.3	172.4	120.4	143.3	143.3	147.2	138.8	162.7	116.2	136.0	136.0	138.2	134.2	152.6	111.8
4500	75	143.5	120.7	159.2	92.5	174.3	63.1	134.9	116.2	149.6	88.0	163.7	58.8	125.8	109.9	139.9	83.5	152.7	54.3
	80	145.0	142.5	160.0	115.9	176.1	86.8	136.8	136.8	150.5	111.4	165.7	82.5	128.9	128.9	140.8	106.9	155.0	78.1
	85	152.3	152.3	160.6	139.2	177.0	110.3	144.8	144.8	151.2	133.1	166.7	106.0	137.0	137.0	141.6	128.4	156.0	101.6
	90	160.9	160.9	162.3	160.8	177.5	133.7	153.2	153.2	153.6	153.6	167.3	129.4	145.2	145.2	145.4	145.4	156.7	125.0
5000	75	146.1	128.0	161.7	96.7	176.6	64.3	137.3	121.6	151.9	92.3	165.6	59.6	128.3	116.6	141.9	87.7	153.6	55.0
	80	148.9	148.9	162.6	122.6	178.7	90.5	141.2	141.2	152.9	118.1	168.0	86.1	133.3	133.3	142.9	113.6	157.0	81.7
	85	157.8	157.8	163.5	146.6	179.6	116.5	149.9	149.9	154.0	141.8	169.0	112.1	141.7	141.7	144.3	137.0	158.1	107.7
	90	166.8	166.8	167.0	167.0	180.2	142.3	158.7	158.7	158.9	158.9	169.7	138.0	150.2	150.2	150.4	150.4	158.9	133.5
5500	75	148.5	133.1	163.8	100.9	178.4	65.5	139.6	128.2	153.8	96.4	167.3	61.1	130.4	123.2	143.6	91.8	155.8	56.6
	80	153.3	153.3	164.7	129.2	180.8	94.1	145.4	145.4	154.8	124.7	169.8	89.7	137.1	137.1	144.6	120.1	158.7	85.3
	85	162.6	162.6	166.1	155.2	181.7	122.5	154.4	154.4	156.6	150.4	170.9	118.1	145.8	145.8	146.8	145.5	159.8	113.6
	90	171.8	171.8	172.1	172.1	182.5	150.7	163.3	163.3	163.6	163.6	171.8	146.4	154.4	154.4	154.7	154.7	160.8	139.2
6000	75	150.7	139.7	165.6	104.9	180.0	66.6	141.6	134.8	155.4	100.4	168.6	62.1	132.4	129.6	145.0	95.8	156.8	57.6
	80	157.3	157.3	166.6	135.6	182.6	97.6	149.0	149.0	156.5	131.1	171.4	93.2	140.4	140.4	146.2	123.5	160.1	88.7
	85	166.8	166.8	168.7	163.6	183.6	128.4	158.2	158.2	159.0	158.8	172.6	124.0	149.3	149.3	149.4	149.4	161.3	119.5
	90	176.3	176.3	176.5	176.5	184.5	159.1	167.4	167.4	167.6	167.6	173.7	151.8	158.2	158.2	158.4	158.4	162.6	146.9
		<b>Ambient Temperature 115°F</b>						<b>Ambient Temperature 125°F</b>											
3750	75	112.8	95.7	126.1	72.4	138.3	48.0	103.0	89.1	115.6	67.5	126.5	43.2						
	80	114.0	113.6	127.0	92.1	140.4	67.9	105.3	105.3	116.5	87.2	128.9	63.2						
	85	120.8	120.8	127.4	110.2	141.4	87.7	112.5	112.5	117.1	105.0	129.9	83.0						
	90	128.2	128.2	128.9	128.9	142.0	107.4	119.7	119.7	119.9	119.9	130.6	102.6						
4500	75	116.6	104.7	129.6	78.8	141.3	49.8	106.7	99.3	118.6	74.0	129.1	45.0						
	80	120.8	120.8	130.6	102.3	143.9	73.5	112.0	112.0	119.6	97.4	131.9	68.8						
	85	128.7	128.7	131.7	123.4	145.0	97.1	119.7	119.7	121.1	118.1	133.0	92.3						
	90	136.6	136.6	136.8	136.8	145.7	120.5	127.3	127.3	127.5	127.5	133.8	113.2						
5000	75	118.8	111.4	131.4	83.0	142.8	50.9	108.7	105.8	120.1	78.1	130.1	46.0						
	80	124.8	124.8	132.4	108.9	145.6	77.1	115.6	115.6	121.2	101.0	133.4	72.4						
	85	133.0	133.0	134.2	131.9	146.8	103.1	123.5	123.5	123.7	123.7	134.6	98.3						
	90	141.1	141.1	141.4	141.4	147.6	126.4	131.3	131.3	131.5	131.5	135.7	121.0						
5500	75	120.8	117.9	132.8	87.1	143.8	51.9	110.7	110.7	121.3	82.1	130.8	47.1						
	80	128.3	128.3	134.0	112.4	147.0	80.7	118.7	118.7	122.8	106.8	134.5	75.9						
	85	136.7	136.7	136.8	136.8	148.3	109.1	126.8	126.8	126.9	126.9	135.9	104.3						
	90	145.0	145.0	145.2	145.2	149.5	134.1	134.7	134.7	134.9	134.9	137.4	128.7						
6000	75	122.8	122.8	134.0	91.0	144.5	52.9	113.0	113.0	122.3	86.1	131.4	48.1						
	80	131.2	131.2	135.5	118.1	148.2	84.1	121.3	121.3	124.2	112.4	135.5	79.3						
	85	139.8	139.8	140.0	140.0	149.5	114.9	129.6	129.6	129.7	129.7	136.9	105.9						
	90	148.4	148.4	148.6	148.6	151.2	141.7	137.7	137.7	137.9	137.9	139.0	136.2						

**Notes:**

1. All capacities shown are gross and have not considered indoor fan heat. To obtain NET cooling capacity subtract indoor fan heat. For indoor fan heat formula, refer to appropriate airflow table notes.
2. MBh = Total gross capacity
3. SHC = Sensible heat capacity

Table 5. Gross cooling capacities — 15 tons

CFM	Ent DB (°F)	Entering Wet Bulb Temp (°F)						Entering Wet Bulb Temp (°F)						Entering Wet Bulb Temp (°F)					
		61		67		73		61		67		73		61		67		73	
		MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC
		Ambient Temperature 85°F						Ambient Temperature 95°F						Ambient Temperature 105°F					
4500	75	165.1	129.5	183.4	101.0	202.7	71.5	155.7	124.2	173.1	95.8	191.4	66.3	145.8	118.8	162.4	90.4	179.6	61.0
	80	165.8	152.9	184.0	124.5	203.1	95.1	156.5	146.8	173.8	119.3	191.9	90.0	146.9	141.3	163.0	113.9	180.2	84.7
	85	169.8	169.8	184.4	147.9	203.6	118.7	161.9	161.9	174.3	142.7	192.5	113.6	153.5	153.5	163.6	137.4	180.9	108.3
	90	179.1	179.1	185.3	171.4	204.1	142.1	171.0	171.0	175.3	166.2	193.0	137.1	162.4	162.4	165.0	159.8	181.4	131.8
5400	75	170.9	142.9	189.1	108.9	208.1	73.7	161.0	137.5	178.3	103.6	196.2	68.5	150.7	132.0	167.1	98.1	183.8	63.2
	80	172.9	169.9	189.8	136.8	208.8	101.8	163.5	163.5	179.0	131.5	197.0	96.6	154.0	154.0	167.8	126.0	184.8	91.3
	85	181.4	181.4	190.5	164.6	209.3	129.8	172.7	172.7	180.0	159.4	197.7	124.6	163.6	163.6	168.9	154.0	185.5	119.3
	90	191.4	191.4	192.9	191.5	209.8	157.7	182.5	182.5	183.0	183.0	198.3	152.5	173.1	173.1	173.3	173.3	186.2	147.3
6000	75	174.0	151.5	192.1	113.9	210.9	75.1	163.9	146.1	181.0	108.5	198.6	69.9	153.4	140.6	169.5	103.0	186.0	64.5
	80	177.4	177.4	192.7	144.6	211.6	106.1	168.5	168.5	181.7	139.3	199.6	100.9	159.2	159.2	170.3	133.8	187.1	95.6
	85	187.7	187.7	194.0	175.5	212.2	137.0	178.6	178.6	183.2	168.9	200.3	131.8	169.1	169.1	172.1	163.2	187.9	126.5
	90	198.1	198.1	198.2	198.2	212.9	167.8	188.7	188.7	189.0	189.0	201.1	162.6	178.8	178.8	179.1	179.1	188.8	157.3
6600	75	176.8	160.0	194.5	118.7	213.1	76.4	166.5	154.6	183.2	113.3	200.6	71.2	156.0	147.2	171.5	107.8	187.8	65.8
	80	182.5	182.5	195.2	152.3	214.0	110.3	173.3	173.3	184.0	147.0	201.8	105.1	163.7	163.7	172.4	141.5	189.1	99.7
	85	193.2	193.2	197.1	184.6	214.6	144.0	183.7	183.7	186.2	179.1	202.5	138.8	173.8	173.8	175.0	173.4	189.8	133.4
	90	203.8	203.8	204.1	204.1	215.5	177.7	194.1	194.1	194.3	194.3	203.5	172.5	183.8	183.8	184.1	184.1	191.0	167.2
7200	75	179.3	166.6	196.6	123.4	215.0	77.7	169.0	160.9	185.1	118.0	202.4	72.5	158.4	155.0	173.2	112.5	189.3	67.1
	80	187.0	187.0	197.4	159.8	216.0	114.4	177.5	177.5	186.1	154.5	203.6	109.1	167.5	167.5	174.3	149.0	190.7	103.7
	85	197.9	197.9	200.0	194.7	216.7	150.8	188.1	188.1	189.2	189.1	204.3	145.6	177.8	177.8	178.1	178.1	191.4	140.3
	90	208.9	208.9	209.1	209.1	217.8	187.4	198.8	198.8	199.0	199.0	205.7	182.3	188.1	188.1	188.3	188.3	193.1	174.8
		Ambient Temperature 115°F						Ambient Temperature 125°F											
4500	75	135.4	113.1	151.1	84.9	167.1	55.6	124.3	107.2	139.0	79.0	153.6	49.8						
	80	136.9	135.5	151.8	108.4	167.9	79.3	126.5	126.5	139.7	102.5	154.6	73.5						
	85	144.5	144.5	152.4	131.8	168.6	102.9	134.9	134.9	140.5	126.0	155.4	97.1						
	90	153.2	153.2	154.3	154.2	169.2	126.4	143.2	143.2	143.5	143.5	156.0	120.6						
5400	75	139.9	126.3	155.3	92.5	170.8	57.7	128.5	118.8	142.6	86.6	156.8	51.9						
	80	144.7	144.7	156.0	120.4	172.0	85.8	134.5	134.5	143.4	114.5	158.2	80.0						
	85	153.9	153.9	157.4	146.9	172.7	113.8	143.3	143.3	145.2	140.8	158.9	108.0						
	90	163.0	163.0	163.3	163.3	173.5	141.8	152.1	152.1	152.4	152.4	159.8	136.0						
6000	75	142.5	133.2	157.4	97.4	172.7	59.0	131.0	126.8	144.5	91.4	158.5	53.2						
	80	149.4	149.4	158.3	128.2	174.0	90.1	138.8	138.8	145.5	122.3	159.9	84.2						
	85	158.9	158.9	160.4	157.3	174.8	120.9	147.9	147.9	148.2	148.2	160.7	115.1						
	90	168.3	168.3	168.6	168.6	175.8	151.9	156.8	156.8	157.1	157.1	161.9	146.1						
6600	75	145.0	141.1	159.2	102.1	174.3	60.3	133.4	133.4	146.0	96.1	159.8	54.4						
	80	153.5	153.5	160.2	135.8	175.7	94.2	142.4	142.4	147.2	129.9	161.4	88.3						
	85	163.2	163.2	163.5	163.5	176.5	127.9	151.7	151.7	151.9	151.9	162.3	122.1						
	90	172.8	172.8	173.1	173.1	177.9	161.8	160.9	160.9	161.1	161.1	164.0	153.4						
7200	75	147.3	147.3	160.7	106.8	175.6	61.5	136.0	136.0	147.3	100.8	161.0	55.7						
	80	157.0	157.0	162.0	143.3	177.2	98.2	145.6	145.6	148.9	134.8	162.6	92.3						
	85	166.9	166.9	167.1	167.1	178.0	134.7	155.0	155.0	155.2	155.2	163.6	128.9						
	90	176.7	176.7	176.9	176.9	179.9	168.9	164.3	164.3	164.5	164.5	165.9	162.5						

Notes:

1. All capacities shown are gross and have not considered indoor fan heat. To obtain NET cooling capacity subtract indoor fan heat. For indoor fan heat formula, refer to appropriate airflow table notes.
2. MBh = Total gross capacity
3. SHC = Sensible heat capacity



# Gross Cooling Capacities

**Table 6. Gross cooling capacities — 20 tons**

CFM	Ent DB (°F)	Entering Wet Bulb Temp (°F)						Entering Wet Bulb Temp (°F)						Entering Wet Bulb Temp (°F)					
		61		67		73		61		67		73		61		67		73	
		MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC
		<b>Ambient Temperature 85°F</b>						<b>Ambient Temperature 95°F</b>						<b>Ambient Temperature 105°F</b>					
6000	75	222.9	176.2	248.0	138.3	274.7	98.9	209.8	169.3	233.8	131.5	259.0	92.3	195.7	162.0	218.6	124.4	242.3	85.4
	80	224.4	207.8	248.9	169.8	275.3	130.6	211.6	199.6	234.8	163.0	259.9	124.1	198.0	192.1	219.7	155.9	243.5	117.2
	85	230.4	230.4	249.6	201.1	276.1	162.2	219.6	219.6	235.7	194.4	260.9	155.7	207.8	207.8	220.8	187.4	244.6	148.8
	90	243.2	243.2	251.3	232.8	276.8	193.7	232.1	232.1	237.7	226.2	261.7	187.2	220.2	220.2	223.3	217.5	245.5	180.3
7200	75	231.0	194.2	255.9	148.8	282.1	102.0	217.3	187.2	241.0	141.9	265.7	95.3	202.6	179.9	225.1	134.8	248.1	88.3
	80	234.4	230.4	256.9	186.2	283.2	139.6	221.5	221.5	242.1	179.3	267.0	133.0	208.2	208.2	226.2	172.2	249.9	126.1
	85	246.1	246.1	258.4	223.7	284.1	177.1	234.3	234.3	243.9	217.0	268.2	170.6	221.5	221.5	228.4	209.9	251.1	163.7
	90	259.9	259.9	262.2	259.7	284.9	214.5	247.8	247.8	248.7	248.7	269.2	208.0	234.8	234.8	235.1	235.1	252.3	201.2
8000	75	235.4	205.8	260.0	155.5	285.9	103.8	221.4	198.8	244.7	148.6	269.0	97.1	206.5	189.1	228.4	141.4	251.1	90.1
	80	240.7	240.7	261.0	196.7	287.2	145.4	228.4	228.4	245.9	189.9	270.7	138.7	215.3	215.3	229.8	182.7	253.2	131.8
	85	254.8	254.8	263.3	238.3	288.2	186.8	242.4	242.4	248.5	229.4	271.8	180.1	229.0	229.0	232.9	221.8	254.4	173.2
	90	269.1	269.1	269.5	269.5	289.3	228.1	256.4	256.4	256.8	256.8	273.2	221.5	242.7	242.7	243.0	243.0	256.1	214.7
8800	75	239.3	217.2	263.4	162.0	289.0	105.6	225.1	207.7	247.8	155.0	271.8	98.9	210.2	199.8	231.2	147.8	253.6	91.9
	80	247.5	247.5	264.6	207.0	290.6	151.0	234.9	234.9	249.2	200.2	273.7	144.3	221.3	221.3	232.8	193.0	255.9	137.4
	85	262.2	262.2	267.7	250.2	291.6	196.1	249.3	249.3	252.9	243.1	274.9	189.5	235.4	235.4	237.2	235.5	257.2	182.6
	90	277.0	277.0	277.4	277.4	293.2	241.4	263.7	263.7	264.1	264.1	276.8	234.8	249.5	249.5	249.8	249.8	259.4	228.0
9600	75	242.9	225.7	266.3	168.3	291.6	107.3	228.7	218.1	250.4	161.3	274.2	100.6	213.6	210.2	233.5	154.0	255.7	93.5
	80	253.6	253.6	267.8	217.1	293.4	156.5	240.5	240.5	252.2	210.3	276.3	149.8	226.6	226.6	235.6	203.1	258.2	142.8
	85	268.7	268.7	272.0	263.7	294.5	205.3	255.4	255.4	257.0	256.4	277.5	198.7	241.0	241.0	241.5	241.5	259.6	191.7
	90	283.9	283.9	284.3	284.3	296.6	254.4	270.2	270.2	270.5	270.5	280.0	247.9	255.4	255.4	255.7	255.7	262.4	241.1
		<b>Ambient Temperature 115°F</b>						<b>Ambient Temperature 125°F</b>											
6000	75	180.7	154.3	202.3	117.0	224.3	78.2	164.5	146.3	184.8	109.1	204.9	70.5						
	80	183.7	183.7	203.5	148.5	226.0	110.0	169.5	169.5	186.0	140.7	207.1	102.5						
	85	195.1	195.1	204.8	180.1	227.2	141.7	181.3	181.3	187.6	172.4	208.4	134.1						
	90	207.2	207.2	208.3	208.3	228.2	173.2	193.1	193.1	193.5	193.5	209.5	165.7						
7200	75	187.0	170.0	208.1	127.2	229.5	81.0	170.5	161.3	189.9	119.3	209.3	73.3						
	80	194.8	194.8	209.4	164.7	231.7	118.9	180.2	180.2	191.3	156.9	212.0	111.3						
	85	207.8	207.8	212.0	200.1	233.0	156.5	192.8	192.8	194.7	191.7	213.4	148.9						
	90	220.7	220.7	221.0	221.0	234.4	194.0	205.3	205.3	205.6	205.6	215.1	186.5						
8000	75	190.8	180.8	211.1	133.8	232.1	82.8	174.2	172.0	192.4	125.9	211.6	75.1						
	80	201.3	201.3	212.6	175.2	234.6	124.6	186.0	186.0	194.3	167.3	214.5	116.9						
	85	214.6	214.6	216.5	213.9	235.9	166.0	199.0	199.0	199.3	199.3	216.0	158.4						
	90	227.9	227.9	228.3	228.3	237.9	207.6	211.8	211.8	212.1	212.1	218.2	196.8						
8800	75	194.4	191.4	213.5	140.2	234.3	84.5	177.8	177.8	194.5	132.2	213.4	76.8						
	80	206.8	206.8	215.5	185.5	237.0	130.1	191.0	191.0	196.8	174.0	216.6	122.4						
	85	220.5	220.5	220.9	220.9	238.4	175.3	204.3	204.3	204.5	204.5	218.2	167.7						
	90	234.2	234.2	234.4	234.4	240.9	217.6	217.4	217.4	217.6	217.6	221.3	209.2						
9600	75	197.8	197.8	215.6	146.4	236.1	86.2	181.6	181.6	196.3	138.4	214.9	78.4						
	80	211.5	211.5	217.9	192.1	239.0	135.5	195.3	195.3	199.3	183.3	218.3	127.8						
	85	225.6	225.6	225.8	225.8	240.6	184.5	208.8	208.8	209.0	209.0	220.2	176.9						
	90	239.5	239.5	239.8	239.8	243.9	229.8	222.1	222.1	222.4	222.4	224.2	221.3						

**Notes:**

1. All capacities shown are gross and have not considered indoor fan heat. To obtain NET cooling capacity subtract indoor fan heat. For indoor fan heat formula, refer to appropriate airflow table notes.
2. MBh = Total gross capacity
3. SHC = Sensible heat capacity

**Table 7. Gross cooling capacities — 25 tons**

CFM	Ent DB (°F)	Entering Wet Bulb Temp (°F)						Entering Wet Bulb Temp (°F)						Entering Wet Bulb Temp (°F)					
		61		67		73		61		67		73		61		67		73	
		MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC	MBh	SHC
		<b>Ambient Temperature 85°F</b>						<b>Ambient Temperature 95°F</b>						<b>Ambient Temperature 105°F</b>					
7500	75	247.4	201.9	273.9	155.7	301.5	107.9	233.5	194.4	258.6	148.2	284.3	100.4	218.8	186.5	242.5	140.4	266.0	92.7
	80	250.4	238.1	275.3	193.8	303.1	146.3	237.0	230.3	260.1	186.3	286.4	138.9	222.9	222.1	244.0	178.5	268.8	131.3
	85	260.5	260.5	276.6	231.8	304.4	184.4	248.4	248.4	261.7	224.4	288.0	177.1	235.4	235.4	245.9	216.7	270.5	169.5
	90	274.9	274.9	280.0	267.7	305.4	222.4	262.5	262.5	265.6	260.0	289.1	215.2	249.2	249.2	250.6	250.6	271.7	207.6
9000	75	255.6	222.5	281.6	167.6	308.2	111.2	241.2	214.9	265.7	160.0	290.4	103.8	225.8	207.0	248.8	152.1	271.5	96.0
	80	261.5	261.5	283.1	212.5	310.7	156.6	248.1	248.1	267.3	204.9	293.4	149.1	234.5	234.5	250.5	197.0	275.0	141.4
	85	276.3	276.3	285.7	257.7	312.3	201.6	263.1	263.1	270.3	250.3	295.1	194.2	249.1	249.1	253.9	238.4	276.9	186.5
	90	291.7	291.7	292.4	292.4	313.6	246.4	278.2	278.2	278.3	278.3	296.7	239.1	263.7	263.7	264.1	264.1	278.7	231.5
10000	75	260.2	235.7	285.7	175.2	311.9	113.4	245.5	228.1	269.3	167.5	293.6	105.8	230.0	215.4	252.0	159.6	274.4	98.0
	80	268.7	268.7	287.2	224.4	314.7	163.1	255.6	255.6	271.1	216.8	297.0	155.6	241.4	241.4	254.0	209.0	278.2	147.9
	85	284.8	284.8	290.9	270.6	316.3	212.5	271.1	271.1	275.3	262.5	298.8	205.1	256.4	256.4	258.9	253.9	280.1	197.3
	90	300.8	300.8	301.2	301.2	318.1	261.9	286.7	286.7	287.0	287.0	300.9	254.5	271.5	271.5	271.8	271.8	282.6	246.9
11000	75	264.3	248.5	289.0	182.4	314.9	115.4	249.5	235.9	272.4	174.8	296.3	107.8	233.9	227.1	254.8	166.7	276.7	99.9
	80	275.8	275.8	290.8	236.0	318.1	169.4	262.0	262.0	274.5	228.4	300.0	161.9	247.2	247.2	257.2	220.5	280.9	154.1
	85	292.2	292.2	295.8	285.7	319.7	223.0	277.9	277.9	280.1	277.5	301.8	215.6	262.7	262.7	263.6	263.6	282.9	207.8
	90	308.6	308.6	308.9	308.9	322.1	276.9	293.9	293.9	294.2	294.2	304.6	269.5	278.2	278.2	278.4	278.4	286.1	261.9
12000	75	268.2	255.8	291.9	189.5	317.4	117.3	253.2	247.3	275.0	181.7	298.6	109.7	237.4	237.4	257.1	173.7	278.6	101.8
	80	281.8	281.8	294.1	247.3	320.9	175.5	267.5	267.5	277.5	239.7	302.5	167.9	252.3	252.3	260.0	231.7	283.2	160.1
	85	298.5	298.5	300.4	300.4	322.6	233.2	283.8	283.8	284.6	284.6	304.4	225.8	268.1	268.1	268.2	268.2	285.2	218.0
	90	315.3	315.3	315.7	315.7	325.7	291.4	300.1	300.1	300.4	300.4	308.0	284.1	283.9	283.9	284.1	284.1	289.3	269.9
		<b>Ambient Temperature 115°F</b>						<b>Ambient Temperature 125°F</b>											
7500	75	203.0	178.3	225.2	132.2	246.7	84.6	186.2	169.5	206.7	123.5	225.9	76.1						
	80	208.2	208.2	226.8	170.3	250.0	123.3	193.3	193.3	208.4	161.7	229.8	114.8						
	85	221.4	221.4	229.0	208.7	251.9	161.5	206.2	206.2	211.0	196.2	231.7	153.1						
	90	234.8	234.8	235.0	235.0	253.3	199.7	219.1	219.1	219.4	219.4	233.3	191.2						
9000	75	209.6	194.3	230.8	143.8	251.5	87.8	192.5	184.5	211.5	135.1	229.9	79.2						
	80	219.8	219.8	232.7	188.8	255.5	133.4	203.9	203.9	213.7	180.2	234.5	124.8						
	85	234.0	234.0	236.8	229.5	257.5	178.4	217.5	217.5	218.6	218.6	236.6	169.9						
	90	248.1	248.1	248.4	248.4	259.7	223.6	231.1	231.1	231.3	231.3	239.1	215.1						
10000	75	213.7	206.2	233.7	151.2	253.9	89.8	196.3	196.2	214.0	142.4	231.8	81.1						
	80	226.1	226.1	236.0	200.7	258.4	139.8	209.5	209.5	216.5	186.5	237.0	131.2						
	85	240.7	240.7	241.7	241.7	260.4	189.2	223.5	223.5	223.6	223.6	239.1	180.7						
	90	255.2	255.2	255.5	255.5	263.3	239.0	237.4	237.4	237.6	237.6	242.5	224.2						
11000	75	217.4	217.4	236.1	158.4	255.8	91.7	200.0	200.0	216.0	149.5	233.2	82.9						
	80	231.4	231.4	238.9	212.3	260.7	146.0	214.3	214.3	219.3	196.7	239.0	137.3						
	85	246.4	246.4	246.5	246.5	262.8	199.7	228.6	228.6	228.8	228.8	241.3	191.1						
	90	261.3	261.3	261.5	261.5	266.6	247.5	242.7	242.7	243.0	243.0	245.7	237.6						
12000	75	220.9	220.9	238.1	165.3	257.3	93.5	203.7	203.7	217.7	156.3	234.3	84.7						
	80	236.1	236.1	241.5	216.8	262.7	152.0	218.4	218.4	221.8	206.4	240.6	143.3						
	85	251.3	251.3	251.5	251.5	265.0	209.9	232.9	232.9	233.1	233.1	243.3	201.3						
	90	266.4	266.4	266.7	266.7	269.8	260.6	247.3	247.3	247.5	247.5	248.8	248.8						

**Notes:**

1. All capacities shown are gross and have not considered indoor fan heat. To obtain NET cooling capacity subtract indoor fan heat. For indoor fan heat formula, refer to appropriate airflow table notes.
2. MBh = Total gross capacity
3. SHC = Sensible heat capacity



# Heating Capacities

**Table 8. Heating capacities — 12.5 tons**

Outdoor Temp (°F) 0% RH	Integrated Heating Capacity (MBh/1000) at Indicated Dry Bulb Temp (°F)				Total Power (kW) at Indicated Dry Bulb Temp (°F)			
	60	70	75	80	60	70	75	80
-8	45.7	43.4	42.3	41.1	9.0	9.9	10.3	10.8
-3	52.6	50.3	49.1	47.9	9.1	10.0	10.5	10.9
2	59.8	57.3	56.1	54.8	9.2	10.1	10.6	11.1
7	67.3	64.6	63.3	61.9	9.4	10.3	10.8	11.3
12	75.3	72.5	71.1	69.7	9.5	10.4	10.9	11.4
17	83.7	80.6	79.1	77.7	9.7	10.6	11.1	11.6
22	92.6	89.3	87.7	86.1	9.8	10.8	11.3	11.8
27	101.9	98.3	96.5	94.8	10.0	10.9	11.5	12.0
32	111.5	107.6	105.7	103.8	10.2	11.1	11.6	12.2
37	121.1	116.8	114.7	112.7	10.4	11.3	11.8	12.4
42	130.9	126.2	124.0	121.8	10.6	11.5	12.0	12.6
47	141.0	136.0	133.5	131.2	10.8	11.7	12.3	12.8
52	151.6	146.1	143.5	140.9	11.0	12.0	12.5	13.0
57	162.5	156.5	153.7	150.9	11.2	12.2	12.7	13.3
62	173.2	166.8	163.8	160.8	11.5	12.4	13.0	13.5
67	185.1	178.1	174.8	171.5	11.7	12.7	13.2	13.8
72	196.6	188.7	185.0	181.3	12.0	12.9	13.5	14.0

**Notes:**

1. For other airflow conditions, see heating capacity correction factor Net Heating Capacity and Power Input include indoor fan heat at nominal CFM and 0.35 inch ESP. To obtain net heating at other conditions, subtract fan heat at this condition and add fan heat at new condition.
2. Heating capacities and powers are integrated to include the effects of defrost in the frost region.
3. All heating capacities and power (kW) are at 70% OD relative humidity.

**Table 9. Heating capacities — 15 tons**

Outdoor Temp (°F) 70% RH	Integrated Heating Capacity (MBh/1000) at Indicated Dry Bulb Temp (°F)				Total Power in Kilowatts at Indicated Dry Bulb Temp (°F)			
	60	70	75	80	60	70	75	80
-8	55.5	54.0	53.2	52.3	11.0	12.1	12.6	13.3
-3	63.6	61.8	60.9	59.9	11.1	12.2	12.8	13.4
2	72.0	70.0	68.9	67.9	11.3	12.4	13.0	13.6
7	80.8	78.6	77.4	76.2	11.5	12.6	13.2	13.9
12	90.2	87.7	86.4	85.1	11.7	12.8	13.4	14.1
17	99.9	97.1	95.7	94.2	11.9	13.0	13.6	14.3
22	110.3	107.2	105.6	104.0	12.1	13.2	13.8	14.5
27	121.0	117.6	115.8	114.0	12.3	13.5	14.1	14.7
32	132.2	128.4	126.5	124.5	12.5	13.7	14.3	14.9
37	143.3	139.0	136.9	134.8	12.7	13.9	14.5	15.2
42	154.7	150.0	147.6	145.3	13.0	14.1	14.8	15.4
47	166.2	161.1	158.6	156.0	13.2	14.4	15.0	15.7
52	178.2	172.6	169.8	167.1	13.4	14.6	15.3	15.9
57	190.5	184.3	181.3	178.3	13.7	14.9	15.5	16.2

**Table 9. Heating capacities — 15 tons (continued)**

Outdoor Temp (°F) 70% RH	Integrated Heating Capacity (MBh/1000) at Indicated Dry Bulb Temp (°F)				Total Power in Kilowatts at Indicated Dry Bulb Temp (°F)			
	60	70	75	80	60	70	75	80
62	202.0	195.3	192.0	188.6	14.0	15.1	15.8	16.4
67	213.9	206.6	202.9	199.2	14.3	15.4	16.1	16.7
72	226.9	218.7	214.7	210.8	14.6	15.8	16.4	17.1

**Notes:**

1. For other airflow conditions, see heating capacity correction factor Net Heating Capacity and Power Input include indoor fan heat at nominal CFM and 0.35 inch ESP. To obtain net heating at other conditions, subtract fan heat at this condition and add fan heat at new condition.
2. Heating capacities and powers are integrated to include the effects of defrost in the frost region.
3. All heating capacities and power (kW) are at 70% OD relative humidity.

**Table 10. Heating capacities — 20 tons**

Outdoor Temp (°F) 70% RH	Integrated Heating Capacity (MBh/1000) at Indicated Dry Bulb Temp (°F)				Total Power in Kilowatts at Indicated Dry Bulb Temp (°F)			
	60	70	75	80	60	70	75	80
-8	79.9	76.5	74.7	72.8	16.2	17.7	18.5	19.4
-3	91.0	87.4	85.6	83.7	16.4	17.9	18.8	19.7
2	102.4	98.7	96.8	94.8	16.7	18.2	19.0	19.9
7	114.3	110.4	108.4	106.2	16.9	18.4	19.3	20.2
12	127.1	123.0	120.8	118.5	17.1	18.7	19.5	20.5
17	140.1	135.8	133.5	131.2	17.3	18.9	19.8	20.7
22	154.1	149.5	147.1	144.6	17.6	19.2	20.1	21.0
27	168.6	163.6	161.0	158.4	17.8	19.4	20.3	21.3
32	183.7	178.3	175.5	172.8	18.1	19.7	20.6	21.5
37	198.5	192.7	189.8	186.8	18.3	20.0	20.9	21.8
42	213.9	207.6	204.4	201.2	18.6	20.2	21.1	22.1
47	229.5	222.8	219.4	216.0	18.8	20.5	21.4	22.4
52	245.7	238.5	234.8	231.1	19.1	20.8	21.7	22.7
57	262.5	254.6	250.6	246.7	19.4	21.1	22.0	23.0
62	278.8	270.3	266.0	261.7	19.6	21.3	22.3	23.3
67	295.1	285.8	281.1	276.4	19.9	21.6	22.6	23.6
72	312.8	302.3	297.1	291.9	20.2	22.0	22.9	23.9

**Notes:**

1. For other airflow conditions, see heating capacity correction factor Net Heating Capacity and Power Input include indoor fan heat at nominal CFM and 0.35 inch ESP. To obtain net heating at other conditions, subtract fan heat at this condition and add fan heat at new condition.
2. Heating capacities and powers are integrated to include the effects of defrost in the frost region.
3. All heating capacities and power (kW) are at 70% OD relative humidity.

**Table 11. Heating capacities — 25 tons**

Outdoor Temp (°F) 70% RH	Integrated Heating Capacity (MBh/1000) at Indicated Dry Bulb Temp (°F)				Total Power in Kilowatts at Indicated Dry Bulb Temp (°F)			
	60	70	75	80	60	70	75	80
-8	90.3	88.2	87.4	86.7	17.6	19.2	20.1	21.0
-3	101.7	99.4	98.4	97.7	17.8	19.5	20.4	21.3
2	113.6	111.2	110.1	109.1	18.1	19.7	20.6	21.6
7	126.1	123.4	122.2	121.0	18.3	20.0	20.9	21.8
12	139.1	136.2	134.8	133.6	18.6	20.2	21.2	22.1
17	152.6	149.3	147.8	146.5	18.8	20.5	21.4	22.4



## Heating Capacities

**Table 11. Heating capacities — 25 tons (continued)**

Outdoor Temp (°F) 70% RH	Integrated Heating Capacity (MBh/1000) at Indicated Dry Bulb Temp (°F)				Total Power in Kilowatts at Indicated Dry Bulb Temp (°F)			
	60	70	75	80	60	70	75	80
22	167.0	163.5	161.8	160.1	19.1	20.8	21.7	22.7
27	182.0	177.9	176.2	174.3	19.3	21.0	22.0	23.0
32	197.9	193.6	191.2	189.3	19.6	21.3	22.3	23.3
37	213.6	208.8	206.4	204.2	19.8	21.6	22.5	23.5
42	230.0	224.7	222.1	219.5	20.1	21.9	22.8	23.8
47	246.6	240.8	237.9	235.0	20.4	22.1	23.1	24.1
52	263.9	257.5	254.3	251.2	20.6	22.4	23.4	24.4
57	282.2	275.2	271.6	268.1	20.9	22.7	23.7	24.7
62	300.4	292.6	288.7	284.8	21.2	23.0	24.0	25.1
67	318.4	309.8	305.4	301.0	21.5	23.3	24.3	25.4
72	338.1	328.1	323.2	318.2	21.9	23.7	24.7	25.7

**Notes:**

1. For other airflow conditions, see heating capacity correction factor Net Heating Capacity and Power Input include indoor fan heat at nominal CFM and 0.35 inch ESP. To obtain net heating at other conditions, subtract fan heat at this condition and add fan heat at new condition.
2. Heating capacities and powers are integrated to include the effects of defrost in the frost region.
3. All heating capacities and power (kW) are at 70% OD relative humidity.





# Evaporator Fan Performance

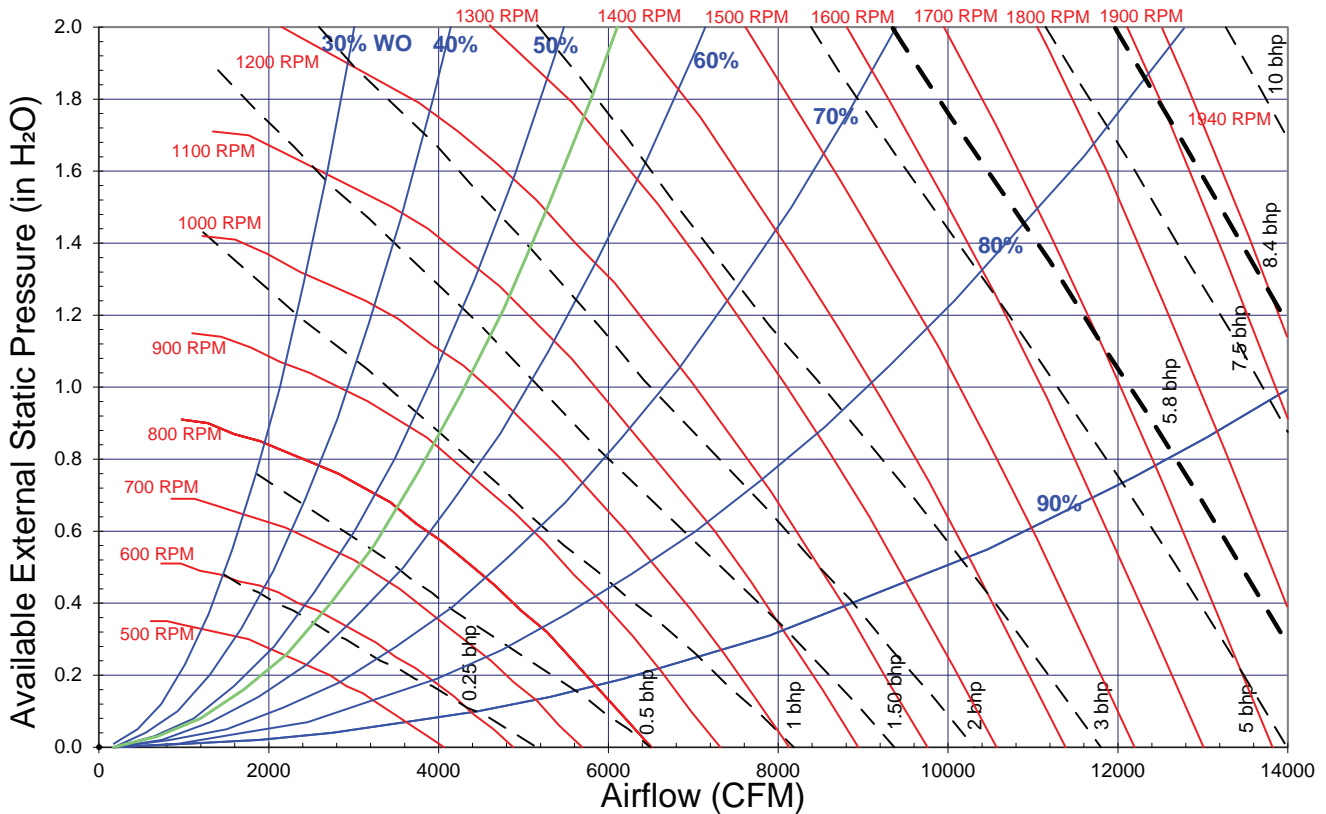
Fan Curve Limits:

- WHJ150-300 Std Motor, Max 5.8 hp or 1850 rpm
- WHJ300 High static, Max 8.4 hp or 1940 rpm
- Maximum CFM — 480 cfm/ton
- Maximum ESP = 2.0 in-H<sub>2</sub>O @ 400 cfm/ton

The fan curve graphs include standard filter and a wet indoor coil. Available static pressure is reduced with options based on the accessory table component pressure drop. To determine available static pressure at rpm/cfm with other options/accessories, select intersection point of the RPM vs CFM and then reduce available static pressure shown in graph by the sum of additional option static pressure drop listed in the fan performance accessory table section. For more detailed and precise RPM, BHP, and CFM operating points, see evaporator tables below.

## 12.5 to 25 Ton Units — Downflow

Figure 2. Fan curves — 12.5 to 25 tons, downflow





## Evaporator Fan Performance

**Table 12. Evaporator fan performance — 12.5 ton, model WHJ, downflow**

Available External Static Pressure (Inches of Water Gauge)										
CFM	0.10"	0.20"	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"	1.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
3750	541 0.19	604 0.28	661 0.37	713 0.47	761 0.58	807 0.69	850 0.80	891 0.91	930 1.03	968 1.16
4000	568 0.21	629 0.31	684 0.41	734 0.51	781 0.62	825 0.74	868 0.85	908 0.97	947 1.10	983 1.22
4500	625 0.28	679 0.38	731 0.49	779 0.61	823 0.73	866 0.85	905 0.97	944 1.10	982 1.23	1018 1.37
5000	683 0.35	732 0.47	780 0.58	826 0.71	868 0.84	908 0.97	947 1.11	983 1.24	1018 1.38	1053 1.53
5500	742 0.45	786 0.57	831 0.69	874 0.83	915 0.97	953 1.11	989 1.26	1025 1.40	1059 1.55	1092 1.70
6000	801 0.55	842 0.68	883 0.82	924 0.96	962 1.11	999 1.26	1035 1.42	1068 1.58	1102 1.74	1133 1.90
Available External Static Pressure (Inches of Water Gauge)										
CFM	1.10"	1.20"	1.30"	1.40"	1.50"	1.60"	1.70"	1.80"	1.90"	2.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
3750	1005 1.29	1040 1.43	1074 1.57	1106 1.71	1137 1.86	1168 2	1198 2.15	1228 2.31	1257 2.46	1285 2.62
4000	1019 1.36	1054 1.5	1088 1.64	1120 1.79	1152 1.94	1182 2.09	1211 2.24	1240 2.4	1269 2.56	1297 2.72
4500	1052 1.51	1085 1.65	1117 1.79	1149 1.95	1180 2.1	1211 2.26	1240 2.43	1268 2.59	1296 2.76	1323 2.93
5000	1087 1.67	1120 1.82	1151 1.98	1182 2.13	1211 2.29	1240 2.45	1269 2.62	1297 2.79	1325 2.97	1352 3.15
5500	1123 1.86	1155 2.02	1186 2.18	1216 2.34	1246 2.51	1274 2.68	1302 2.85	1328 3.02	1354 3.2	1381 3.38
6000	1164 2.06	1194 2.23	1223 2.4	1252 2.57	1281 2.74	1309 2.92	1336 3.1	1363 3.28	1389 3.47	1414 3.66

**Notes:**

1. Available External Static Pressure is the static pressure difference between the return duct and the supply duct plus the static pressure drop caused by accessories and options.
2. For direct drive evaporator fan speed (rpm), refer to the applicable table in the fan performance section.
3. Data includes pressure drop due to standard filters and wet coils. No accessories or options are included in pressure drop data.
4. To determine static pressure drop due to other options/accessories, refer to the applicable table in the fan performance section.
5. Direct drive fan motor heat is negligible.
6. Factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

**Table 13. Evaporator fan performance — 15 ton, model WHJ, downflow**

Available External Static Pressure (Inches of Water Gauge)										
CFM	0.10"	0.20"	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"	1.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
4500	625 0.28	679 0.38	731 0.49	779 0.61	823 0.73	866 0.85	905 0.97	944 1.10	982 1.23	1018 1.37
4800	660 0.32	711 0.43	760 0.54	807 0.67	850 0.79	891 0.92	930 1.05	967 1.18	1003 1.32	1039 1.46
5400	730 0.43	775 0.54	821 0.67	864 0.80	905 0.94	944 1.08	981 1.22	1017 1.37	1051 1.52	1084 1.67
6000	801 0.55	842 0.68	883 0.82	924 0.96	962 1.11	999 1.26	1035 1.42	1068 1.58	1102 1.74	1133 1.90
6600	873 0.71	911 0.85	948 1.00	985 1.15	1022 1.31	1057 1.47	1091 1.63	1123 1.81	1155 1.98	1185 2.16
7200	945 0.89	981 1.04	1014 1.20	1049 1.36	1083 1.53	1116 1.70	1148 1.88	1180 2.06	1210 2.25	1239 2.43
Available External Static Pressure (Inches of Water Gauge)										
CFM	1.10"	1.20"	1.30"	1.40"	1.50"	1.60"	1.70"	1.80"	1.90"	2.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
4500	1052 1.51	1085 1.65	1117 1.79	1149 1.95	1180 2.1	1211 2.26	1240 2.43	1268 2.59	1296 2.76	1323 2.93
4800	1073 1.61	1106 1.75	1137 1.90	1168 2.05	1198 2.21	1228 2.37	1257 2.54	1286 2.71	1313 2.88	1340 3.06
5400	1115 1.82	1148 1.98	1179 2.14	1209 2.3	1239 2.46	1267 2.63	1295 2.80	1322 2.97	1348 3.15	1375 3.33
6000	1164 2.06	1194 2.23	1223 2.40	1252 2.57	1281 2.74	1309 2.92	1336 3.10	1363 3.28	1389 3.47	1414 3.66
6600	1215 2.33	1244 2.51	1272 2.69	1300 2.87	1326 3.05	1352 3.24	1379 3.43	1405 3.62	1431 3.82	1456 4.02
7200	1268 2.63	1295 2.82	1323 3.01	1350 3.2	1376 3.4	1401 3.6	1426 3.79	1450 4.00	1474 4.2	1498 4.41

**Notes:**

1. Available External Static Pressure is the static pressure difference between the return duct and the supply duct plus the static pressure drop caused by accessories and options.
2. For direct drive evaporator fan speed (rpm), refer to the applicable table in the fan performance section.
3. Data includes pressure drop due to standard filters and wet coils. No accessories or options are included in pressure drop data.
4. To determine static pressure drop due to other options/accessories, refer to the applicable table in the fan performance section.
5. Direct drive fan motor heat is negligible.
6. Factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

**Table 14. Evaporator fan performance — 20 ton, model WHJ, downflow**

Available External Static Pressure (Inches of Water Gauge)										
CFM	0.10"	0.20"	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"	1.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
6000	785 0.51	827 0.64	868 0.77	907 0.91	945 1.05	981 1.20	1016 1.35	1049 1.50	1081 1.65	1112 1.80
6400	831 0.61	872 0.74	911 0.88	948 1.02	984 1.17	1019 1.33	1053 1.48	1085 1.64	1116 1.80	1146 1.96
7200	925 0.83	962 0.97	997 1.13	1031 1.28	1064 1.45	1096 1.61	1128 1.79	1158 1.96	1188 2.14	1217 2.32
8000	1020 1.09	1054 1.26	1086 1.42	1117 1.60	1148 1.77	1177 1.95	1206 2.14	1235 2.33	1263 2.52	1290 2.72
8800	1115 1.42	1146 1.60	1176 1.78	1205 1.96	1233 2.15	1261 2.35	1288 2.55	1314 2.75	1341 2.96	1367 3.17
9600	1211 1.81	1240 2.00	1268 2.20	1295 2.39	1321 2.60	1347 2.81	1372 3.02	1397 3.24	1421 3.46	1445 3.68
Available External Static Pressure (Inches of Water Gauge)										
CFM	1.10"	1.20"	1.30"	1.40"	1.50"	1.60"	1.70"	1.80"	1.90"	2.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
6000	1141 1.95	1170 2.1	1198 2.25	1227 2.41	1255 2.57	1282 2.74	1308 2.9	1333 3.07	1358 3.24	1383 3.41
6400	1175 2.12	1203 2.28	1231 2.44	1257 2.6	1284 2.77	1311 2.94	1337 3.11	1362 3.29	1387 3.46	1411 3.64
7200	1245 2.49	1272 2.67	1299 2.85	1324 3.03	1349 3.21	1374 3.39	1397 3.57	1421 3.76	1445 3.95	1469 4.14
8000	1317 2.91	1343 3.11	1369 3.31	1394 3.5	1418 3.7	1442 3.9	1465 4.1	1487 4.31	1510 4.5	1532 4.7
8800	1392 3.38	1417 3.59	1442 3.81	1466 4.02	1489 4.24	1512 4.46	1534 4.68	1557 4.89	1578 5.11	1599 5.33
9600	1469 3.9	1493 4.13	1517 4.37	1539 4.6	1562 4.83	1584 5.07	1606 5.31	1627 5.54	1648 5.78	- -

**Notes:**

1. Available External Static Pressure is the static pressure difference between the return duct and the supply duct plus the static pressure drop caused by accessories and options.
2. For direct drive evaporator fan speed (rpm), refer to the applicable table in the fan performance section.
3. Data includes pressure drop due to standard filters and wet coils. No accessories or options are included in pressure drop data.
4. To determine static pressure drop due to other options/accessories, refer to the applicable table in the fan performance section.
5. Direct drive fan motor heat is negligible.
6. Factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

**Table 15. Evaporator fan performance — 25 ton, model WHJ, downflow**

Available External Static Pressure (Inches of Water Gauge)										
CFM	0.10"	0.20"	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"	1.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
<b>3-hp Standard Motor</b>										
7500	961 0.92	996 1.07	1030 1.23	1063 1.40	1095 1.56	1126 1.74	1157 1.91	1187 2.09	1216 2.28	1244 2.46
8000	1020 1.09	1054 1.26	1086 1.42	1117 1.60	1148 1.77	1177 1.95	1206 2.14	1235 2.33	1263 2.52	1290 2.72
9000	1139 1.51	1170 1.69	1199 1.88	1227 2.06	1255 2.26	1282 2.46	1309 2.66	1335 2.87	1360 3.07	1386 3.29
10000	1259 2.02	1287 2.23	1314 2.43	1340 2.64	1365 2.84	1390 3.06	1415 3.28	1439 3.51	1463 3.73	1486 3.96
11000	1379 2.65	1405 2.87	1430 3.09	1454 3.32	1478 3.54	1501 3.77	1523 4.01	1546 4.25	1568 4.50	1590 4.75
12000	1500 3.39	1524 3.63	1547 3.87	1570 4.12	1592 4.37	1613 4.61	1634 4.86	1655 5.12	1676 5.39	1696 5.65
Available External Static Pressure (Inches of Water Gauge)										
CFM	1.10"	1.20"	1.30"	1.40"	1.50"	1.60"	1.70"	1.80"	1.90"	2.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
<b>3-hp Standard Motor</b>										
7500	1272 2.65	1299 2.83	1325 3.02	1350 3.2	1375 3.39	1399 3.58	1422 3.77	1446 3.96	1468 4.15	1491 4.34
8000	1317 2.91	1343 3.11	1369 3.31	1394 3.5	1418 3.7	1442 3.9	1465 4.1	1487 4.31	1510 4.5	1532 4.7
9000	1411 3.5	1436 3.72	1460 3.94	1484 4.16	1507 4.38	1530 4.61	1552 4.83	1574 5.05	1596 5.27	1617 5.5
10000	1509 4.19	1532 4.43	1555 4.67	1577 4.91	1599 5.15	1621 5.4	1643 5.64	- -	- -	- -
11000	1611 4.99	1633 5.25	1653 5.5	1674 5.76	- -	- -	- -	- -	- -	- -
12000	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

**Notes:**

1. Available External Static Pressure is the static pressure difference between the return duct and the supply duct plus the static pressure drop caused by accessories and options.
2. For direct drive evaporator fan speed (rpm), refer to the applicable table in the fan performance section.
3. Data includes pressure drop due to standard filters and wet coils. No accessories or options are included in pressure drop data.
4. To determine static pressure drop due to other options/accessories, refer to the applicable table in the fan performance section.
5. Direct drive fan motor heat is negligible.
6. Factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.



# Evaporator Fan Performance

**Table 16. Evaporator fan performance — 25 ton, downflow, model WHJ, high static drive**

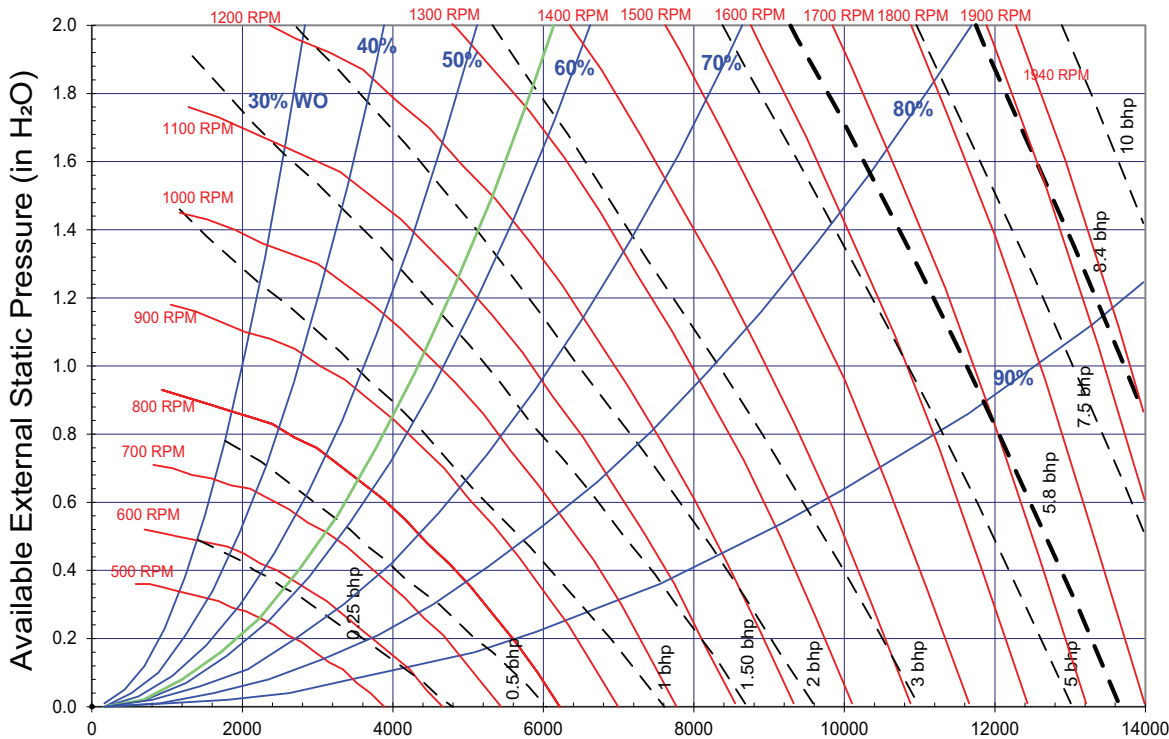
Available External Static Pressure (Inches of Water Gauge)																				
CFM	0.10"		0.20"		0.30"		0.40"		0.50"		0.60"		0.70"		0.80"		0.90"		1.00"	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
<b>5-hp Oversized Motor</b>																				
7500	983	0.94	1019	1.10	1053	1.26	1086	1.42	1117	1.59	1148	1.76	1179	1.94	1209	2.11	1238	2.29	1266	2.47
8000	1044	1.12	1078	1.28	1110	1.45	1142	1.63	1171	1.80	1200	1.98	1230	2.17	1259	2.36	1287	2.55	1314	2.74
9000	1166	1.55	1197	1.73	1226	1.92	1255	2.11	1283	2.30	1309	2.50	1335	2.70	1361	2.91	1387	3.12	1413	3.33
10000	1289	2.08	1317	2.28	1344	2.48	1370	2.69	1396	2.91	1421	3.12	1445	3.34	1468	3.56	1491	3.79	1515	4.02
11000	1412	2.72	1438	2.94	1463	3.16	1487	3.39	1511	3.62	1534	3.86	1557	4.09	1579	4.33	1601	4.58	1622	4.82
12000	1535	3.48	1560	3.72	1583	3.97	1605	4.21	1628	4.46	1650	4.72	1671	4.97	1692	5.23	1712	5.49	1732	5.75
<b>Available External Static Pressure (Inches of Water Gauge)</b>																				
CFM	1.10"		1.20"		1.30"		1.40"		1.50"		1.60"		1.70"		1.80"		1.90"		2.00"	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
<b>5-hp Oversized Motor</b>																				
7500	1294	2.66	1321	2.84	1346	3.03	1371	3.21	1396	3.4	1419	3.6	1442	3.79	1466	3.98	1489	4.18	1511	4.37
8000	1341	2.93	1367	3.12	1392	3.32	1417	3.52	1441	3.72	1464	3.92	1487	4.12	1509	4.32	1531	4.53	1553	4.74
9000	1438	3.54	1463	3.76	1487	3.97	1510	4.19	1534	4.41	1556	4.62	1579	4.85	1600	5.07	1622	5.29	1642	5.52
10000	1539	4.25	1562	4.49	1585	4.72	1607	4.96	1629	5.2	1651	5.43	1672	5.68	1693	5.92	1714	6.16	1734	6.4
11000	1643	5.07	1665	5.32	1686	5.58	1707	5.84	1728	6.1	1749	6.36	1769	6.61	1789	6.88	1809	7.14	1829	7.4
12000	1752	6.02	1771	6.28	1790	6.55	1810	6.83	1830	7.11	1850	7.39	1869	7.67	1888	7.96	1907	8.24	-	-

**Notes:**

1. Available External Static Pressure is the static pressure difference between the return duct and the supply duct plus the static pressure drop caused by accessories and options.
2. For direct drive evaporator fan speed (rpm), refer to the applicable table in the fan performance section.
3. Data includes pressure drop due to standard filters and wet coils. No accessories or options are included in pressure drop data.
4. To determine static pressure drop due to other options/accessories, refer to the applicable table in the fan performance section.
5. Direct drive fan motor heat is negligible.
6. Factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

## 12.5 to 25 Ton Units — Horizontal

**Figure 3. Fan curves — 12.5 to 25 tons, horizontal**



**Table 17. Evaporator fan performance — 12.5 ton, model WHJ, horizontal**

Available External Static Pressure (Inches of Water Gauge)										
CFM	0.10"	0.20"	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"	1.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
3750	562 0.22	618 0.30	672 0.39	723 0.49	771 0.59	815 0.70	858 0.81	898 0.93	936 1.04	972 1.16
4000	592 0.25	646 0.34	696 0.44	745 0.54	792 0.65	835 0.76	877 0.87	916 0.99	954 1.11	990 1.24
4500	653 0.33	701 0.43	748 0.54	792 0.64	835 0.76	877 0.88	917 1.00	955 1.13	991 1.26	1027 1.39
5000	716 0.43	759 0.54	802 0.65	843 0.77	882 0.89	922 1.02	959 1.15	996 1.29	1031 1.43	1065 1.57
5500	779 0.55	819 0.67	858 0.79	896 0.92	933 1.04	969 1.17	1005 1.32	1039 1.46	1073 1.61	1106 1.76
6000	842 0.69	879 0.82	915 0.95	951 1.08	985 1.22	1020 1.36	1052 1.50	1085 1.66	1117 1.82	1149 1.98
Available External Static Pressure (Inches of Water Gauge)										
CFM	1.10"	1.20"	1.30"	1.40"	1.50"	1.60"	1.70"	1.80"	1.90"	2.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
3750	1007 1.29	1042 1.42	1075 1.55	1107 1.69	1138 1.83	1168 1.97	1197 2.11	1225 2.26	1253 2.41	1280 2.56
4000	1024 1.36	1057 1.49	1090 1.63	1122 1.77	1153 1.91	1183 2.06	1212 2.21	1240 2.36	1268 2.51	1294 2.66
4500	1060 1.53	1093 1.67	1124 1.81	1155 1.95	1184 2.1	1213 2.25	1242 2.41	1270 2.56	1298 2.73	1324 2.89
5000	1098 1.71	1130 1.86	1161 2.01	1191 2.16	1220 2.32	1248 2.47	1275 2.63	1302 2.79	1328 2.96	1355 3.13
5500	1138 1.91	1169 2.07	1199 2.23	1228 2.39	1256 2.55	1284 2.72	1311 2.89	1338 3.06	1364 3.23	1389 3.4
6000	1180 2.14	1210 2.3	1239 2.47	1267 2.64	1295 2.81	1322 2.99	1348 3.16	1375 3.34	1400 3.52	1425 3.7

**Notes:**

1. Available External Static Pressure is the static pressure difference between the return duct and the supply duct plus the static pressure drop caused by accessories and options.
2. For direct drive evaporator fan speed (rpm), refer to the applicable table in the fan performance section.
3. Data includes pressure drop due to standard filters and wet coils. No accessories or options are included in pressure drop data.
4. To determine static pressure drop due to other options/accessories, refer to the applicable table in the fan performance section.
5. Direct drive fan motor heat is negligible.
6. Factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

**Table 18. Evaporator fan performance — 15 ton, model WHJ, horizontal**

Available External Static Pressure (Inches of Water Gauge)										
CFM	0.10"	0.20"	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"	1.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
4500	653 0.33	701 0.43	748 0.54	792 0.64	835 0.76	877 0.88	917 1.00	955 1.13	991 1.26	1027 1.39
4800	690 0.39	736 0.49	780 0.60	822 0.72	863 0.83	903 0.96	942 1.09	979 1.22	1015 1.36	1049 1.50
5400	766 0.53	807 0.64	846 0.76	885 0.88	923 1.01	959 1.14	995 1.28	1030 1.43	1065 1.57	1098 1.72
6000	842 0.69	879 0.82	915 0.95	951 1.08	985 1.22	1020 1.36	1052 1.50	1085 1.66	1117 1.82	1149 1.98
6600	919 0.90	953 1.03	986 1.17	1019 1.32	1051 1.47	1082 1.62	1114 1.77	1144 1.93	1173 2.09	1203 2.26
7200	997 1.13	1028 1.28	1058 1.43	1089 1.59	1118 1.75	1148 1.91	1177 2.08	1205 2.25	1233 2.42	1261 2.59
Available External Static Pressure (Inches of Water Gauge)										
CFM	1.10"	1.20"	1.30"	1.40"	1.50"	1.60"	1.70"	1.80"	1.90"	2.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
4500	1060 1.53	1093 1.67	1124 1.81	1155 1.95	1184 2.1	1213 2.25	1242 2.41	1270 2.56	1298 2.73	1324 2.89
4800	1083 1.64	1115 1.78	1146 1.93	1176 2.07	1205 2.23	1234 2.38	1261 2.53	1289 2.7	1316 2.86	1342 3.03
5400	1130 1.87	1161 2.03	1191 2.18	1220 2.34	1249 2.5	1277 2.67	1304 2.83	1331 3	1356 3.17	1382 3.34
6000	1180 2.14	1210 2.3	1239 2.47	1267 2.64	1295 2.81	1322 2.99	1348 3.16	1375 3.34	1400 3.52	1425 3.7
6600	1232 2.44	1261 2.61	1289 2.79	1317 2.97	1343 3.15	1370 3.34	1396 3.53	1421 3.71	1445 3.9	1469 4.1
7200	1288 2.77	1315 2.96	1342 3.15	1368 3.34	1394 3.53	1420 3.73	1445 3.92	1469 4.12	1493 4.33	1517 4.53

**Notes:**

1. Available External Static Pressure is the static pressure difference between the return duct and the supply duct plus the static pressure drop caused by accessories and options.
2. For direct drive evaporator fan speed (rpm), refer to the applicable table in the fan performance section.
3. Data includes pressure drop due to standard filters and wet coils. No accessories or options are included in pressure drop data.
4. To determine static pressure drop due to other options/accessories, refer to the applicable table in the fan performance section.
5. Direct drive fan motor heat is negligible.
6. Factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.



# Evaporator Fan Performance

**Table 19. Evaporator fan performance — 20 ton, model WHJ, horizontal**

Available External Static Pressure (Inches of Water Gauge)										
CFM	0.10"	0.20"	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"	1.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
6000	810 0.60	847 0.72	883 0.84	920 0.97	956 1.10	989 1.23	1022 1.37	1054 1.52	1085 1.66	1114 1.80
6400	860 0.71	894 0.84	928 0.96	962 1.10	997 1.23	1029 1.37	1061 1.52	1092 1.67	1122 1.82	1150 1.98
7200	958 0.98	990 1.11	1020 1.26	1050 1.40	1081 1.55	1112 1.71	1141 1.86	1169 2.02	1197 2.18	1225 2.35
8000	1058 1.30	1087 1.46	1114 1.61	1142 1.77	1168 1.93	1196 2.10	1224 2.27	1251 2.44	1277 2.62	1303 2.80
8800	1158 1.70	1185 1.87	1210 2.04	1235 2.21	1260 2.38	1284 2.56	1309 2.74	1335 2.93	1359 3.12	1384 3.32
9600	1259 2.17	1283 2.35	1307 2.54	1330 2.72	1353 2.91	1376 3.11	1398 3.30	1420 3.50	1444 3.70	1467 3.91
Available External Static Pressure (Inches of Water Gauge)										
CFM	1.10"	1.20"	1.30"	1.40"	1.50"	1.60"	1.70"	1.80"	1.90"	2.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
6000	1142 1.94	1170 2.09	1197 2.24	1223 2.39	1250 2.54	1276 2.7	1302 2.86	1327 3.02	1352 3.19	1377 3.36
6400	1178 2.13	1204 2.28	1231 2.43	1256 2.59	1282 2.75	1306 2.91	1331 3.07	1356 3.24	1381 3.41	1404 3.59
7200	1252 2.53	1278 2.7	1303 2.87	1327 3.04	1350 3.21	1374 3.39	1397 3.56	1420 3.74	1442 3.92	1464 4.09
8000	1327 2.97	1352 3.16	1377 3.35	1401 3.55	1424 3.74	1446 3.93	1468 4.12	1490 4.31	1511 4.5	1532 4.69
8800	1407 3.51	1431 3.7	1453 3.9	1476 4.1	1498 4.31	1520 4.52	1542 4.74	1563 4.95	1584 5.15	1604 5.36
9600	1490 4.12	1512 4.33	1533 4.53	1555 4.75	1575 4.96	1596 5.17	1617 5.4	1637 5.63	- -	- -

**Notes:**

1. Available External Static Pressure is the static pressure difference between the return duct and the supply duct plus the static pressure drop caused by accessories and options.
2. For direct drive evaporator fan speed (rpm), refer to the applicable table in the fan performance section.
3. Data includes pressure drop due to standard filters and wet coils. No accessories or options are included in pressure drop data.
4. To determine static pressure drop due to other options/accessories, refer to the applicable table in the fan performance section.
5. Direct drive fan motor heat is negligible.
6. Factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

**Table 20. Evaporator fan performance — 25 ton, model WHJ, horizontal**

Available External Static Pressure (Inches of Water Gauge)										
CFM	0.10"	0.20"	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"	1.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
<b>3-hp Standard Motor</b>										
7500	996 1.09	1026 1.23	1055 1.38	1084 1.53	1113 1.69	1143 1.85	1172 2.01	1200 2.17	1227 2.34	1253 2.51
8000	1058 1.30	1087 1.46	1114 1.61	1142 1.77	1168 1.93	1196 2.10	1224 2.27	1251 2.44	1277 2.62	1303 2.80
9000	1183 1.81	1209 1.98	1234 2.15	1259 2.33	1283 2.51	1307 2.69	1330 2.87	1356 3.07	1380 3.26	1404 3.46
10000	1309 2.44	1333 2.63	1356 2.82	1378 3.01	1400 3.21	1422 3.41	1443 3.61	1464 3.81	1486 4.02	1509 4.23
11000	1436 3.21	1457 3.41	1478 3.62	1499 3.83	1519 4.05	1539 4.26	1559 4.48	1579 4.70	1598 4.92	1617 5.14
12000	1562 4.12	1582 4.34	1602 4.57	1621 4.80	1640 5.03	1658 5.26	1676 5.5	1695 5.74	- -	- -
Available External Static Pressure (Inches of Water Gauge)										
CFM	1.10"	1.20"	1.30"	1.40"	1.50"	1.60"	1.70"	1.80"	1.90"	2.00"
	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP
<b>3-hp Standard Motor</b>										
7500	1280 2.69	1305 2.87	1330 3.05	1354 3.23	1378 3.4	1401 3.58	1423 3.76	1445 3.94	1467 4.13	1489 4.31
8000	1327 2.97	1352 3.16	1377 3.35	1401 3.55	1424 3.74	1446 3.93	1468 4.12	1490 4.31	1511 4.5	1532 4.69
9000	1428 3.65	1451 3.85	1473 4.05	1495 4.25	1517 4.46	1539 4.68	1561 4.9	1582 5.11	1602 5.33	1622 5.54
10000	1531 4.45	1553 4.67	1574 4.88	1595 5.1	1616 5.32	1636 5.54	1655 5.77	- -	- -	- -
11000	1637 5.38	1658 5.61	- -	- -	- -	- -	- -	- -	- -	- -
12000	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

**Notes:**

1. Available External Static Pressure is the static pressure difference between the return duct and the supply duct plus the static pressure drop caused by accessories and options.
2. For direct drive evaporator fan speed (rpm), refer to the applicable table in the fan performance section.
3. Data includes pressure drop due to standard filters and wet coils. No accessories or options are included in pressure drop data.
4. To determine static pressure drop due to other options/accessories, refer to the applicable table in the fan performance section.
5. Direct drive fan motor heat is negligible.
6. Factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

**Table 21. Evaporator fan performance — 25 ton, model WHJ, horizontal, high static drive**

Available External Static Pressure (Inches of Water Gauge)																				
CFM	0.10"		0.20"		0.30"		0.40"		0.50"		0.60"		0.70"		0.80"		0.90"		1.00"	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
<b>5-hp Oversized Motor</b>																				
7500	1023	1.11	1054	1.27	1086	1.42	1119	1.59	1149	1.76	1177	1.92	1205	2.09	1233	2.25	1259	2.42	1286	2.59
8000	1087	1.33	1117	1.49	1145	1.65	1177	1.83	1207	2.02	1234	2.19	1260	2.36	1286	2.54	1312	2.71	1337	2.89
9000	1216	1.85	1242	2.03	1268	2.21	1294	2.40	1323	2.60	1350	2.80	1374	3.00	1398	3.20	1421	3.39	1444	3.59
10000	1346	2.50	1369	2.69	1393	2.89	1416	3.09	1440	3.30	1465	3.53	1490	3.75	1513	3.98	1535	4.19	1556	4.41
11000	1476	3.28	1497	3.48	1519	3.70	1540	3.92	1561	4.15	1583	4.38	1606	4.63	1628	4.88	1650	5.13	1671	5.37
12000	1606	4.22	1626	4.44	1645	4.67	1665	4.91	1685	5.15	1704	5.4	1723	5.65	1745	5.92	1766	6.19	1786	6.47
Available External Static Pressure (Inches of Water Gauge)																				
CFM	1.10"		1.20"		1.30"		1.40"		1.50"		1.60"		1.70"		1.80"		1.90"		2.00"	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
<b>5-hp Oversized Motor</b>																				
7500	1311	2.76	1336	2.93	1360	3.11	1384	3.3	1408	3.48	1432	3.67	1454	3.86	1477	4.04	1500	4.23	1522	4.42
8000	1362	3.07	1386	3.25	1410	3.44	1432	3.63	1455	3.82	1478	4.01	1501	4.21	1523	4.41	1544	4.61	1565	4.81
9000	1467	3.79	1490	3.99	1512	4.19	1534	4.39	1555	4.59	1576	4.8	1597	5.01	1617	5.22	1637	5.44	1658	5.66
10000	1576	4.63	1597	4.85	1618	5.07	1639	5.29	1659	5.51	1679	5.73	1699	5.95	1718	6.18	1737	6.41	1756	6.65
11000	1690	5.61	1710	5.85	1728	6.09	1747	6.33	1766	6.57	1785	6.81	1804	7.05	1822	7.29	1841	7.54	1859	7.78
12000	1806	6.74	1825	7	1843	7.26	1860	7.52	1877	7.78	1894	8.04	1911	8.31	-	-	-	-	-	-

**Notes:**

1. Available External Static Pressure is the static pressure difference between the return duct and the supply duct plus the static pressure drop caused by accessories and options.
2. For direct drive evaporator fan speed (rpm), refer to the applicable table in the fan performance section.
3. Data includes pressure drop due to standard filters and wet coils. No accessories or options are included in pressure drop data.
4. To determine static pressure drop due to other options/accessories, refer to the applicable table in the fan performance section.
5. Direct drive fan motor heat is negligible.
6. Factory supplied motors, in commercial equipment, are definite purpose motors, specifically designed and tested to operate reliably and continuously at all cataloged conditions. Using the full horsepower range of our fan motors as shown in our tabular data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.



# Fan Performance

**Table 22. Outdoor sound power level**

Tons	Unit Model Number	Octave Center Frequency								Overall dBA
		63	125	250	500	1000	2000	4000	8000	
12.5	WHJ150A*	83	87	87	85	82	77	74	69	87
15	WHJ180A*	83	87	87	85	82	77	74	69	87
20	WHJ240A*	94	90	92	91	88	84	81	75	93
25	WHJ300A*	94	90	92	91	88	84	81	75	93

**Notes:**

1. Outdoor sound rating shown is tested in accordance with AHRI 270/370-2015. For additional information reference the outdoor sound power level data in the performance section.
2. Taken in accordance with AHRI 270/370-2015.
3. Indoor sound in accordance with AHRI 260 is available through Trane's selection software.

**Table 23. Static pressure drop through accessories (inches water column) - high efficiency- economizer**

Tons	Unit Model Number	cfm <sup>(a)</sup>	Standard Filters <sup>(b)</sup>	2" MERV 8 Filter <sup>(c)</sup>	2" MERV 13 Filter <sup>(c)</sup>	Reheat Coil	Economizer with OA/RA Dampers <sup>(d)</sup>							
							Downflow		Horizontal		Low Leak Downflow <sup>(e)</sup>		Low Leak Horizontal	
							100% OA	100% RA	100% OA	100% RA	100% OA	100% RA	100% OA	100% RA
12.5	WHJ150A	3750	0.02	0.04	0.07	0.02	0.10	0.02	0.10	0.02	0.11	0.09	0.05	0.09
		5000	0.03	0.06	0.10	0.04	0.15	0.03	0.15	0.03	0.17	0.13	0.09	0.14
		6000	0.04	0.08	0.13	0.04	0.20	0.04	0.20	0.04	0.23	0.17	0.12	0.18
15	WHJ180A	4500	0.03	0.05	0.09	0.04	0.13	0.02	0.13	0.02	0.14	0.11	0.07	0.12
		6000	0.04	0.08	0.13	0.04	0.20	0.04	0.20	0.04	0.23	0.17	0.12	0.18
		7200	0.06	0.10	0.17	0.02	0.27	0.05	0.27	0.05	0.32	0.23	0.16	0.25
20	WHJ240A	6000	0.04	0.08	0.13	0.04	0.20	0.04	0.20	0.04	0.23	0.17	0.12	0.18
		8000	0.07	0.12	0.21	0.02	0.32	0.06	0.32	0.06	0.39	0.27	0.19	0.30
		9600	0.09	0.16	0.27	0.05	0.44	0.07	0.44	0.07	0.54	0.37	0.27	0.41
25	WHJ300A	7500	0.06	0.11	0.19	0.02	0.29	0.05	0.29	0.05	0.34	0.24	0.17	0.27
		10000	0.09	0.17	0.29	0.06	0.48	0.08	0.48	0.08	0.58	0.40	0.29	0.45
		12000	0.12	0.23	0.39	0.06	0.66	0.11	0.66	0.11	0.82	0.55	0.39	0.62

<sup>(a)</sup> See below for restrictions:

Multi-speed, single zone VAV or multi-zone VAV applications are capable of running below 300 cfm/ton during low speed airflow operation.

<sup>(b)</sup> Tested with: 2-in filters 12.5 to 25 tons.

<sup>(c)</sup> Difference in pressure drop should be considered when utilizing optional 2-in pleated filters.

<sup>(d)</sup> OA = Outside Air and RA = Return Air.

<sup>(e)</sup> Model digit 11 selection of low gas heat is 5x5, medium gas heat is 7x7, and high gas heat is 8x8 for 12.5 to 25T units.

**Table 24. Static pressure drop through accessories (inches water column) - high efficiency- electric**

Tons	Unit Model Number	cfm <sup>(a)</sup>	Electric Heater			
			Accessory (kW)			
			18	36	54	72
12.5	WHJ150A	3750	0	0.01	0.01	N/A
		5000	0.01	0.03	0.03	N/A
		6000	0.01	0.04	0.04	N/A
15	WHJ180A	4500	0.01	0.02	0.02	N/A
		6000	0.01	0.04	0.04	N/A
		7200	0.02	0.06	0.06	N/A
20	WHJ240A	6000	N/A	0.04	0.04	0.04
		8000	N/A	0.08	0.08	0.08
		9600	N/A	0.12	0.12	0.12



**Table 24. Static pressure drop through accessories (inches water column) - high efficiency- electric (continued)**

Tons	Unit Model Number	cfm <sup>(a)</sup>	Electric Heater			
			Accessory (kW)			
			18	36	54	72
25	WHJ300A	7500	N/A	0.07	0.07	0.07
		10000	N/A	0.13	0.13	0.13
		12000	N/A	0.20	0.20	0.20

<sup>(a)</sup> See below for restrictions:

Multi-speed, single zone VAV or multi-zone VAV applications are capable of running below 300 cfm/ton during low speed airflow operation.



# Heating Performance

**Table 25. Auxiliary electric heat capacity**

Tons	Unit Model Number	Total <sup>(a)</sup>		No. of Stages	Stage 1		Stage 2	
		kw Input <sup>(b)</sup>	MBh Output		kw Input	MBh Output	kw Input	MBh Output
12.5 to 15	WH*150*3,4,W WH*180*3,4,W	18.00	61.47	1	18.00	61.47	-	-
		36.00	122.94	2	18.00	61.47	18.00	61.47
		54.00	184.41	2	36.00	122.94	18.00	61.47
20 to 25	WH*240*3,4,W WH*300*3,4,W	36.00	122.94	2	18.00	61.47	18.00	61.47
		54.00	184.41	2	36.00	122.94	18.00	61.47
		72	245.88	2	36	122.94	36	122.94

<sup>(a)</sup> Heaters are rated at 240V, 480V, and 600V. For other than rated voltage, CAP = (voltage/rated voltage)<sup>2</sup> x rated cap.

<sup>(b)</sup> For all input/output categories, does not include fan power or heat.

**Table 26. Air temperature rise**

kW	Stages	12.5 Tons 3750 cfm	15 Tons 4500 cfm	20 Tons 6000 cfm	25 Tons 7500 cfm
		Three Phase WH*150*3,4,W	Three Phase WH*180*3,4,W	Three Phase WH*240*3,4,W	Three Phase WH*300*3,4,W
18.00	1	15.17	12.64	-	-
27.00	2	22.76	-	-	-
36.00	2	30.35	25.28	18.96	15.17
54.00	2	45.52	37.93	28.45	22.76
72.00	2	-	-	37.93	30.34

**Note:** For minimum design airflow, see airflow performance table for each unit. To calculate temp. rise at different airflow, use the following formula:

$$\text{Temp. rise across electric heater} = (\text{kW} \times 3414) / (1.08 \times \text{cfm}).$$



## Controls

### Enhanced BAS Integration and Connectivity

- Symbio™ 700 integrates seamlessly with Trane® Tracer® Synchrony and Tracer Ensemble® to deliver optimized building automation and building management features and functions.
- Easily integrate with open standard protocols to connect seamlessly to a BAS (whether that is Trane or non-Trane).
- Digit 21 must equal 1, 2, or 3 for communication support.

#### BACnet® Communications

Symbio™ 700 includes native BACnet communications which allows the unit to communicate directly with a Tracer or non-Trane Building Automation System via open protocol BACnet MS/TP or IP.

#### Modbus Communications

Symbio 700 includes native Modbus communications which allows the unit to communicate directly with a Tracer or non-Trane Building Automation System via open protocol Modbus RTU or TCP/IP.

#### LonTalk® Communications

The optional LonTalk® communications module allows the unit to communicate directly with a Tracer or non-Trane Building Automation System via open protocol LonTalk.

#### Air-Fi® Wireless Communications

The optional Air-Fi communications module allows the unit to communicate directly with a Tracer Building Automation System via open protocol BACnet over Zigbee wireless.

### Secure Remote Connectivity with Trane Connect

The Symbio controller enables secure remote connectivity via Trane Connect to Trane Intelligent Services and remote monitoring. Trane Connect provides anywhere/anytime access to monitor and manage with secure remote access and connectivity options through a multitude of platforms. Peace of mind that the system will be operational and provide comfort to customers.

## Serviceability

### Symbio Service and Installation Mobile App

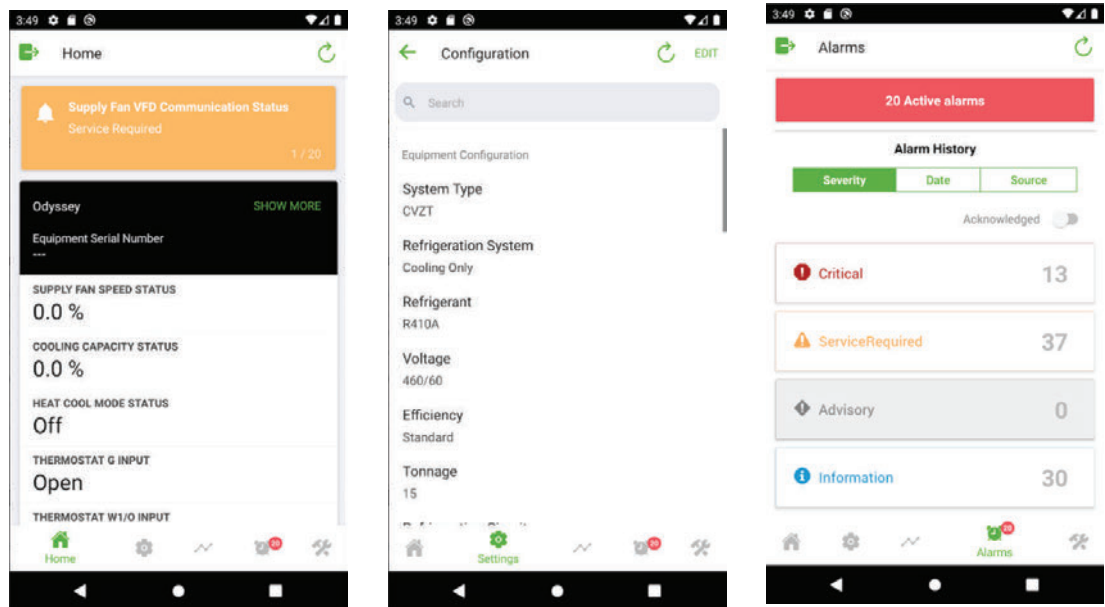
The Symbio Service and Installation mobile app is accessible through mobile devices (phones and tablets) via Bluetooth connectivity or via Trane Connect. The intuitive mobile app feels natural to technicians and operators. They'll quickly be able to view equipment status and alarms, perform startup tasks, change configurations, test the equipment's performance in specific modes—and much more. Free for download from App Store (Apple iOS) and Google Play (Android devices).

To download the Symbio Service and Installation Mobile App use the links below or scan the code with your mobile phone camera.

Apple download link (<https://apps.apple.com/us/app/symbio-service-installation/id1309310176>)

Google Play (Android) download link (<https://play.google.com/store/apps/details?id=com.trane.mobileservicetool>)

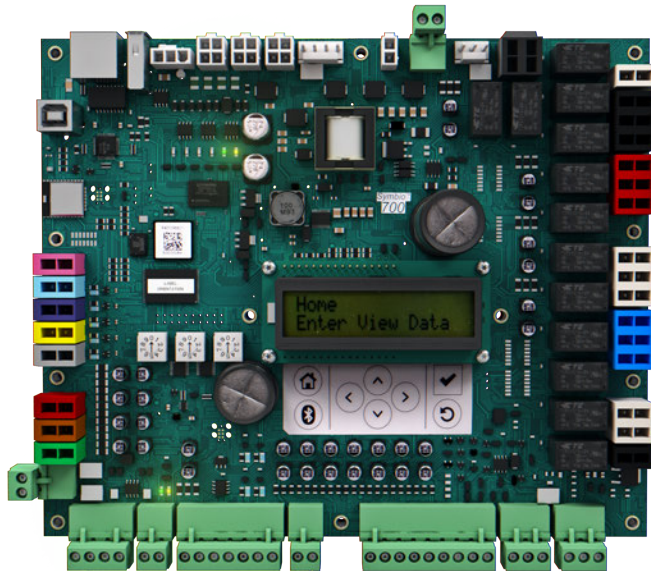
**Figure 4. Scan code**

**Figure 5. Symbio service and installation mobile app**


## Onboard User Interface

An integrated onboard user interface that makes setup and continued operation easy. It provides real time operational performance, status, data, and alarms. It also allows the user to interact with, service, troubleshoot, and control their equipment without additional service software tools or when a mobile interface is not available.

Figure 6. Onboard user interface



## Service Test Mode

Symbio 700 requires no special tools to run the unit through its paces. Simply navigate to the 'Service' section of the on-board user interface or the 'Tools' section of the Symbio Service and Installation Mobile App and enter the 'Service Test Mode' section. Here the unit can be placed in the desired operating condition for a pre-determined amount of time supporting troubleshooting efforts in the field. The Symbio 700 will return to normal control when the user exits test mode or when the pre-determined, user-selected Service Test time has expired.

## Symbio 700 controls with upgradeable software

Trane's equipment and systems feature engineered, tested, and proven applications that meet industry energy standards and provide the flexibility to customize and update over the life of the equipment. Professional operational algorithms are embedded within the Symbio 700 controller at the Trane factory. Symbio 700 standardizes each equipment unit to maintain standards for comfort, efficiency, and air quality, without additional field programming. Symbio 700 provides the flexibility over the life of the equipment to meet changing customer needs and/or industry standards.

## Flexibility

### Expansion Modules (requires Tracer® TU)

- XM30 – Provides 4 universal inputs or analog outputs
- XM32 – Provides 4 binary outputs

### Field Programming via TGP2 (requires Tracer TU)

- Control ancillary equipment
- Custom sequences

### TGP2 and XM Limitations:

- Programs will only have access to available BACnet® points. (Ensures system reliability.)
- TGP2 programs will not have direct I/O control access for factory components. (Compressors will not be able to be directly controlled On/Off without going through factory provided protection sequences.)
- Onboard I/O will not be available to custom applied TGP2 programs. If additional I/O is required for a new control loop, a separate expansion module will be required.

- Customer applied I/O will be limited to a maximum combination of 2 XM modules. Only XM30 or XM32 modules will be supported by the Symbio 700 UC.
- Tracer TU will be required to configure XMs and to create, view, or modify TGP2 programs.

## Economizer Controls

There are four options for economizer control, Dry Bulb Temperature, Comparative Enthalpy, Reference Enthalpy and Differential Dry Bulb Temperature.

### Dry Bulb Temperature Control

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

### Comparative Enthalpy Control

The comparative enthalpy system 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 temperature and humidity.

### Reference Enthalpy Control

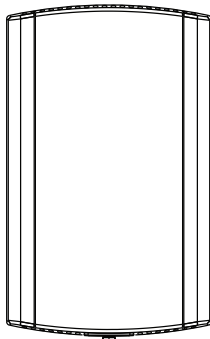
The reference enthalpy system compares outdoor air temperature and humidity to the economizer enthalpy enable setpoint. If outdoor air temperature and humidity are below the economizer enthalpy enable setpoint, the economizer will operate freely. This system provides more sophisticated control where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

### Differential Dry Bulb Temperature Control

The differential dry bulb system measures the temperature of both return air and outside air to determine when to economize. If outdoor air temperature is below the return air temperature minus a differential, the economizer will operate freely. This system is best suited for arid regions where the humidity levels of outside air would not be detrimental to building comfort and indoor air quality.

## Zone Sensors

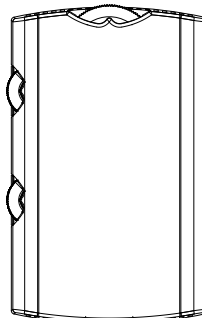
Zone Temperature Only



**BAYSENS077**

Provides temperature input only. Can be used as a secondary remote temperature input for thermostats.

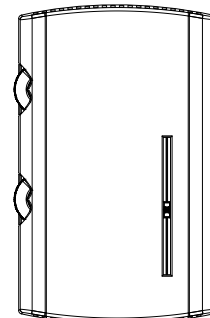
Manual Changeover



**BAYSENS106**

Heat, Cool or Off System Switch. Fan Auto or Off Switch. Single temperature setpoint thumbwheel.

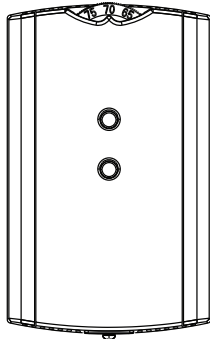
Manual/Automatic Changeover



**BAYSENS108**

Auto, Heat, Cool or Off System Switch. Fan Auto or Off Switch. Dual temperature setpoint sliders

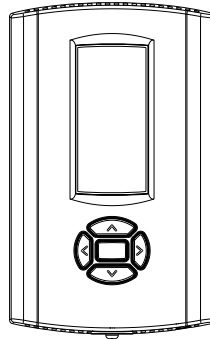
### Integrated Comfort™ System



**BAYSENS073 / BAYSENS074 / BAYSENS075**

Sensor(s) available with optional temperature adjustment and override buttons to provide central control through a Trane Integrated Comfort system.

### Wired Display Sensor



**BAYSENS135**

LCD display that provides heat, cool, auto, or off. Includes two temperature setpoints and a lockable setting with °F or °C indicators.

### Touchscreen Digital Display Communicating Sensor



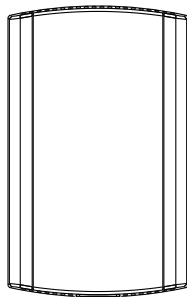
**BAYSENS800**

Uses BACnet® MS/TP link to communicate zone temperature and setpoints. Auto, Heat, Cool or Off System Switch. Fan Auto or On Switch. 7-day programmable thermostat with night setback.

*Note: Not compatible with VAV units. Requires BACnet communications.*

## Air-Fi Wireless Communicating Zone Sensors

### Wireless Zone Temperature Only

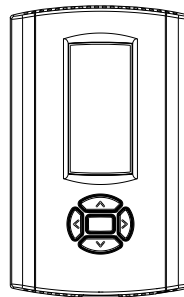


**BAYSENS203**

Measures temperature and optional humidity (with WCS-SH) for use in public spaces where no local user interface is preferred.

*Note: Requires BACnet communications.*

### Wireless Display Sensor

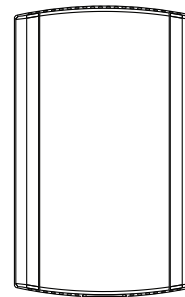


**BAYSENS202**

Easy-to-use interface for clear and simple monitoring and control. Can be configured for any Trane system or to meet the customer's preference.

*Note: Requires BACnet communications.*

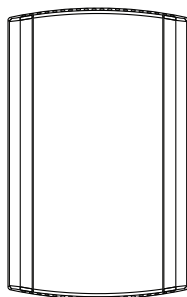
### Wired CO<sub>2</sub> Sensor



**FIACO2K001 wall mount CO<sub>2</sub> Sensor  
FIACO2K002 duct mount CO<sub>2</sub> Sensor**

The maintenance-free carbon dioxide (CO<sub>2</sub>) sensor is primarily used for demand control ventilation applications.

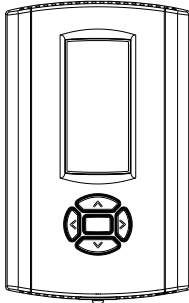
### Wired Zone Temperature and Humidity Sensor



**BAYSENS036**

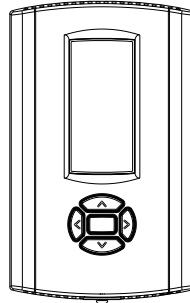
Measures temperature and relative humidity. Relative humidity input is used to control activation of dehumidification.

# Thermostats

**Digital Display Programmable Thermostat (3H/2C)**

**BAYSTAT150**

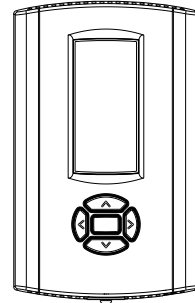
Three Heat/Two Cool Auto changeover digital display thermostat. 7-day programmable thermostat with night setback.

**Note:** Not compatible with VAV units.

**Digital Display Programmable Thermostat (1H/1C)**

**BAYSTAT151**

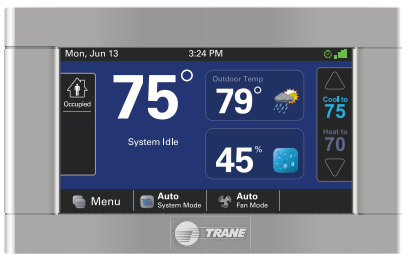
One Heat/One Cool Auto changeover digital display thermostat.

**Note:** Not compatible with VAV units.

**Digital Display Thermostat (3H/2C)**

**BAYSTAT155**

Three Heat/Two Cool Auto changeover display thermostat.

**Note:** Not compatible with VAV units.

**Pivot® Web Enabled Smart Thermostat (3H/2C)**

**BAYSTAT814**

Our Pivot Smart Thermostat system is great for commercial buildings. With its intuitive touchscreen and customizable display, it is easy for occupants to use. The Trane Pivot mobile app enables users to control multiple buildings remotely, making changes in seconds to all systems.

**Note:** Not compatible with VAV units.

**Touchscreen Programmable Thermostat with Relative Humidity Sensor (3H/2C)**

**BAYSTAT152**

Three Heat, Two Cool digital display thermostat with built-in humidity control. This thermostat combines both humidity and temperature into one.

**Note:** Not compatible with VAV units.





# Electrical Data

**Table 27. Unit wiring**

Tons	Unit Model Number	Voltage Range	Standard Indoor Fan Motor		Oversized/High Static Indoor Fan Motor		Optional Power Exhaust Standard Indoor Fan Motor		Optional Power Exhaust Oversized/High Static Indoor Fan Motor	
			MCA	Max Fuse Size or Max Circuit Breaker	MCA	Max Fuse Size or Max Circuit Breaker	MCA	Max Fuse Size or Max Circuit Breaker	MCA	Max Fuse Size or Max Circuit Breaker
12.5	WHJ150A3	187-253	72	90	-	-	78	100	-	-
	WHJ150A4	414-506	37	50	-	-	40	50	-	-
	WHJ150AW	517-633	29	40	-	-	32	40	-	-
15	WHJ180A3	187-253	78	100	-	-	83	110	-	-
	WHJ180A4	414-506	41	50	-	-	45	60	-	-
	WHJ180AW	517-633	32	40	-	-	34	45	-	-
20	WHJ240A3	187-253	108	150	-	-	113	150	-	-
	WHJ240A4	414-506	54	70	-	-	57	70	-	-
	WHJ240AW	517-633	47	60	-	-	49	70	-	-
25	WHJ300A3	187-253	119	150	124	150	125	150	129	175
	WHJ300A4	414-506	59	80	61	80	62	80	64	80
	WHJ300AW	517-633	46	60	48	60	48	60	50	60

**Table 28. Unit wiring with electric heat**

Tons	Unit Model Number	Heater Model Number	Heater kW Rating	Control Stages	Standard Indoor Fan Motor <sup>(a)</sup>		Oversized/High Static Indoor Fan Motor		Optional Power Exhaust Standard Indoor Fan Motor		Optional Power Exhaust Oversized/High Static Indoor Fan Motor	
					MCA	Max Fuse Size or Max Circuit Breaker	MCA	Max Fuse Size or Max Circuit Breaker	MCA	Max Fuse Size or Max Circuit Breaker	MCA	Max Fuse Size or Max Circuit Breaker
<b>208/230 Volts Three Phase</b>												
12.5	WHJ150A3	FIAEHWD318AA	13.5/18.0	1	119/126	125/150	-	-	125/132	125/150	-	-
		FIAEHWD336AA	27.0/36.0	2	166/180	175/200	-	-	172/186	175/200	-	-
		FIAEHWD354AA	40.6/54.0	2	213/202	225/225	-	-	219/208	225/225	-	-
15	WHJ180A3	FIAEHWD318AA	13.5/18.0	1	124/132	125/150	-	-	130/137	150/150	-	-
		FIAEHWD336AA	27.0/36.0	2	171/186	175/200	-	-	177/191	200/200	-	-
		FIAEHWD354AA	40.6/54.0	2	218/207	225/225	-	-	224/213	225/225	-	-
20	WHJ240A3	FIAEHWD336AA	27.0/36.0	2	201/216	225/225	-	-	207/222	225/225	-	-
		FIAEHWD354AA	40.6/54.0	2	248/238	300/300	-	-	254/243	300/250	-	-
		FIAEHWD372AA	54.0/72.0	2	258/281	300/300	-	-	263/287	300/300	-	-
25	WHJ300A3	FIAEHWD336AA	27.0/36.0	2	213/227	225/250	214/232	225/250	219/233	225/250	223/238	250/250
		FIAEHWD354AA	40.6/54.0	2	260/249	300/300	264/254	300/300	266/255	300/300	270/259	300/300
		FIAEHWD372AA	54.0/72.0	2	269/292	300/300	274/297	300/300	275/298	300/300	279/303	300/350
<b>460 Volts Three Phase</b>												



**Electrical Data**

**Table 28. Unit wiring with electric heat (continued)**

Tons	Unit Model Number	Heater Model Number	Heater kW Rating	Control Stages	Standard Indoor Fan Motor <sup>(a)</sup>		Oversized/High Static Indoor Fan Motor		Optional Power Exhaust Standard Indoor Fan Motor		Optional Power Exhaust Oversized/High Static Indoor Fan Motor	
					MCA	Max Fuse Size or Max Circuit Breaker	MCA	Max Fuse Size or Max Circuit Breaker	MCA	Max Fuse Size or Max Circuit Breaker	MCA	Max Fuse Size or Max Circuit Breaker
12.5	WHJ150A4	FIAEHWD418AA	18	1	64	70	-	-	67	70	-	-
		FIAEHWD436AA	36	2	91	100	-	-	94	100	-	-
		FIAEHWD454AA	54	2	102	110	-	-	105	110	-	-
15	WHJ180A4	FIAEHWD418AA	18	1	68	70	-	-	72	80	-	-
		FIAEHWD436AA	36	2	96	100	-	-	99	100	-	-
		FIAEHWD454AA	54	2	106	110	-	-	110	125	-	-
20	WHJ240A4	FIAEHWD436AA	36	2	108	110	-	-	111	125	-	-
		FIAEHWD454AA	54	2	119	150	-	-	122	125	-	-
		FIAEHWD472AA	72	2	140	150	-	-	143	150	-	-
25	WHJ300A4	FIAEHWD436AA	36	2	113	125	115	125	116	125	118	125
		FIAEHWD454AA	54	2	124	150	126	150	127	150	129	150
		FIAEHWD472AA	72	2	146	150	147	150	149	150	151	175
<b>575 Volts Three Phase</b>												
12.5	WHJ150AW	FIAEHWDW18AA	18	1	51	60	-	-	53	60	-	-
		FIAEHWDW36AA	36	2	73	80	-	-	75	80	-	-
		FIAEHWDW54AA	54	2	81	90	-	-	84	90	-	-
15	WHJ180AW	FIAEHWDW18AA	18	1	53	60	-	-	56	60	-	-
		FIAEHWDW36AA	36	2	75	80	-	-	77	80	-	-
		FIAEHWDW54AA	54	2	84	90	-	-	86	90	-	-
20	WHJ240AW	FIAEHWDW36AA	36	2	90	100	-	-	93	100	-	-
		FIAEHWDW54AA	54	2	99	125	-	-	101	110	-	-
		FIAEHWDW72AA	72	2	116	125	-	-	119	125	-	-
25	WHJ300AW	FIAEHWDW36AA	36	2	89	100	91	100	92	100	93	100
		FIAEHWDW54AA	54	2	98	125	100	110	100	110	102	110
		FIAEHWDW72AA	72	2	115	125	117	125	118	125	119	125

<sup>(a)</sup> The standard motor is a multispeed, direct drive motor.

**Table 29. Electrical characteristics - compressor motor and condenser motor**

Tons	Unit Model Number	No.	Compressor Motors						No.	Condenser Fan Motor				
			Volts	Phase	hp <sup>(a)</sup>	rpm	Amps <sup>(b)</sup>			Volts	Phase	hp	Amps	
							RLA	LRA					FLA	LRA
12.5	WHJ150A3	2	208/230	3	7.6/3.5	3500/3500	28.4/14.1	191.0/83.1	1	208/230	3	0.5	2.2	7.3
	WHJ150A4	2	460	3	7.6/3.5	3500/3500	14.6/6.5	100/41	1	460	3	0.5	1.3	4.2
	WHJ150AW	2	575	3	7.6/3.5	3500/3500	11.9/5.4	78/33	1	575	3	0.5	1.1	3.6
15	WHJ180A3	2	208/230	3	8.7/4.3	3500/3500	30.9/16.4	240/110	2	208/230	3	0.5	2.2	7.3
	WHJ180A4	2	460	3	8.7/4.3	3500/3500	16.7/8.2	130/52	2	460	3	0.5	1.3	4.2
	WHJ180AW	2	575	3	8.7/4.3	3500/3500	12.8/6.6	93.7/38.9	2	575	3	0.5	1.1	3.6
20	WHJ240A3	2	208/230	3	11.4/6.3	3500/3500	43.1/26.1	270/167	2	208/230	3	1	4.8	19.4
	WHJ240A4	2	460	3	11.4/6.3	3500/3500	21.3/12.2	147/84	2	460	3	1	2.5	10.1
	WHJ240AW	2	575	3	11.4/6.3	3500/3500	21.3/9.6	109/60	2	575	3	1	1.9	8.0
25	WHJ300A3	2	208/230	3	12.8/7.6	3500/3500	49.5/29.6	335.5/223.0	2	208/230	3	1	4.8	19.4
	WHJ300A4	2	460	3	12.8/7.6	3500/3500	23.9/14.4	141/100	2	460	3	1	2.5	10.1
	WHJ300AW	2	575	3	12.8/7.6	3500/3500	19.8/10.8	109/70	2	575	3	1	1.9	8.0

<sup>(a)</sup> Hp for each compressor.

<sup>(b)</sup> Amp draw for each motor (compressor and condenser fan motor); multiply value by number of motors to determine total amps.

**Table 30. Electrical characteristics - indoor fan motor**

Tons	Unit Model Number	No.	Volts	Phase	hp	Amps <sup>(a)</sup>	
						FLA	LRA
12.5	WHJ150A3	2	208/230	3	3	8.8	-
	WHJ150A4	2	460	3	3	4.6	-
	WHJ150AW	2	575	3	3	3.2	-
15	WHJ180A3	2	208/230	3	3	8.8	-
	WHJ180A4	2	460	3	3	4.6	-
	WHJ180AW	2	575	3	3	3.2	-
20	WHJ240A3	2	208/230	3	3	8.8	-
	WHJ240A4	2	460	3	3	4.6	-
	WHJ240AW	2	575	3	3	3.2	-
25	WHJ300A3	2	208/230	3	3	8.8	-
	WHJ300A4	2	460	3	3	4.6	-
	WHJ300AW	2	575	3	3	3.2	-

<sup>(a)</sup> Amp draw for each motor (compressor and condenser fan motor); multiply value by number of motors to determine total amps.

**Table 31. Electrical characteristics - power exhaust**

Tons	Volts	Phase	hp	rpm	FLA	LRA
12.5-25	208-230	1	0.87	1075	5.7	13.6
12.5-25	460	1	0.87	1075	3.3	7.2
12.5-25	575	1	0.80	1075	2.3	5.8



# Dimensional Data

Figure 7. 12.5 to 25 tons high efficiency

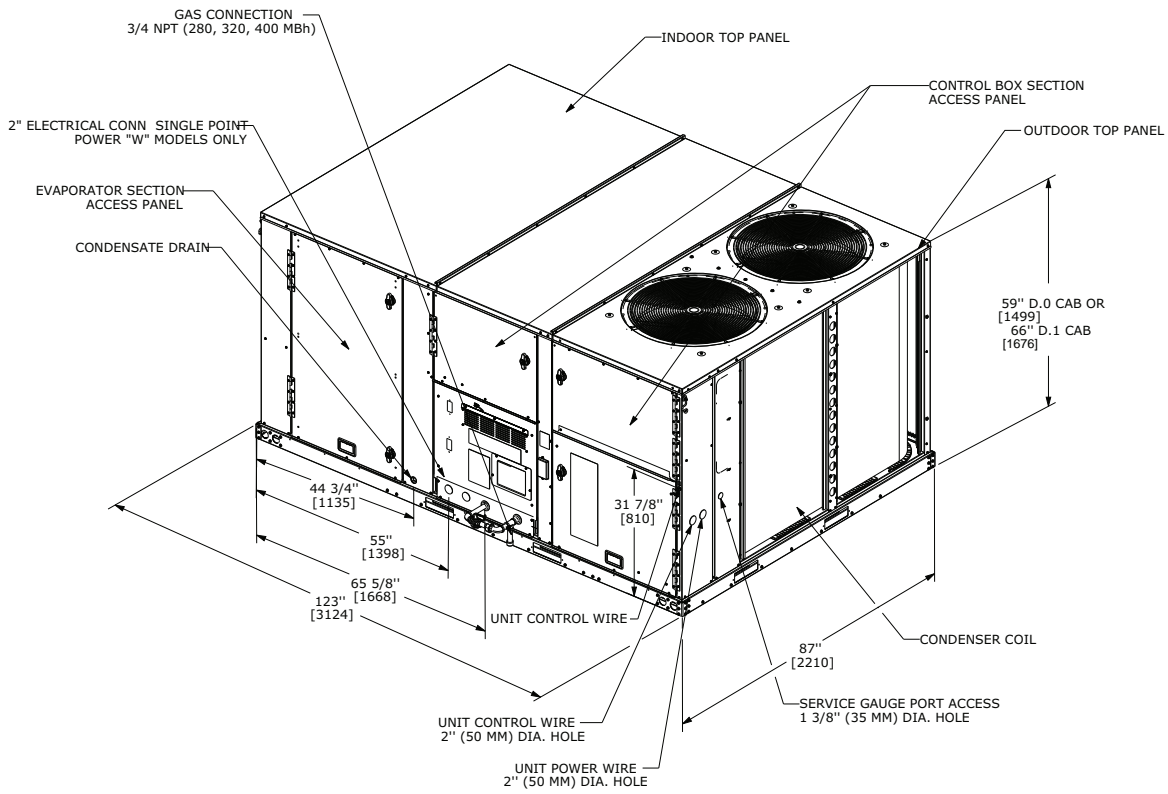


Figure 8. 12.5 to 25 tons high efficiency – downflow airflow supply/return, through-the-base utilities

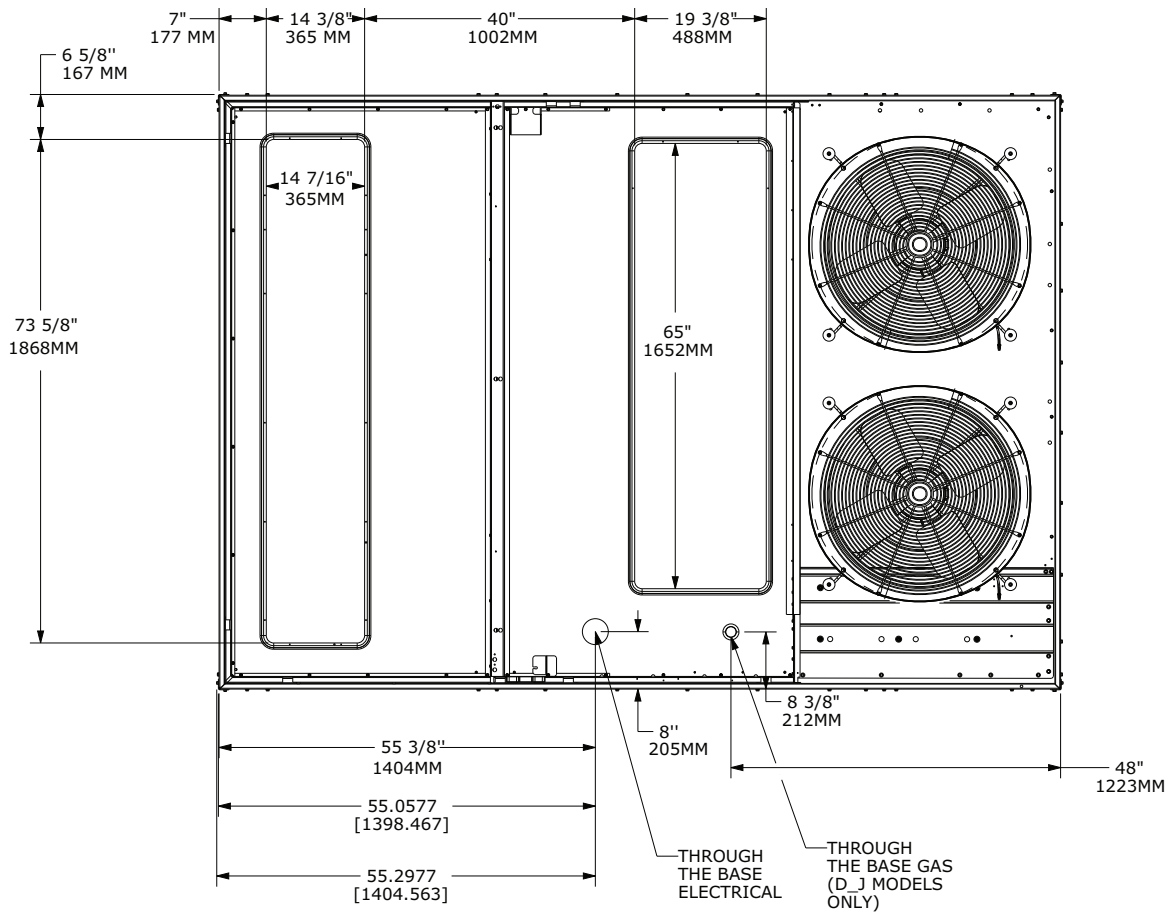
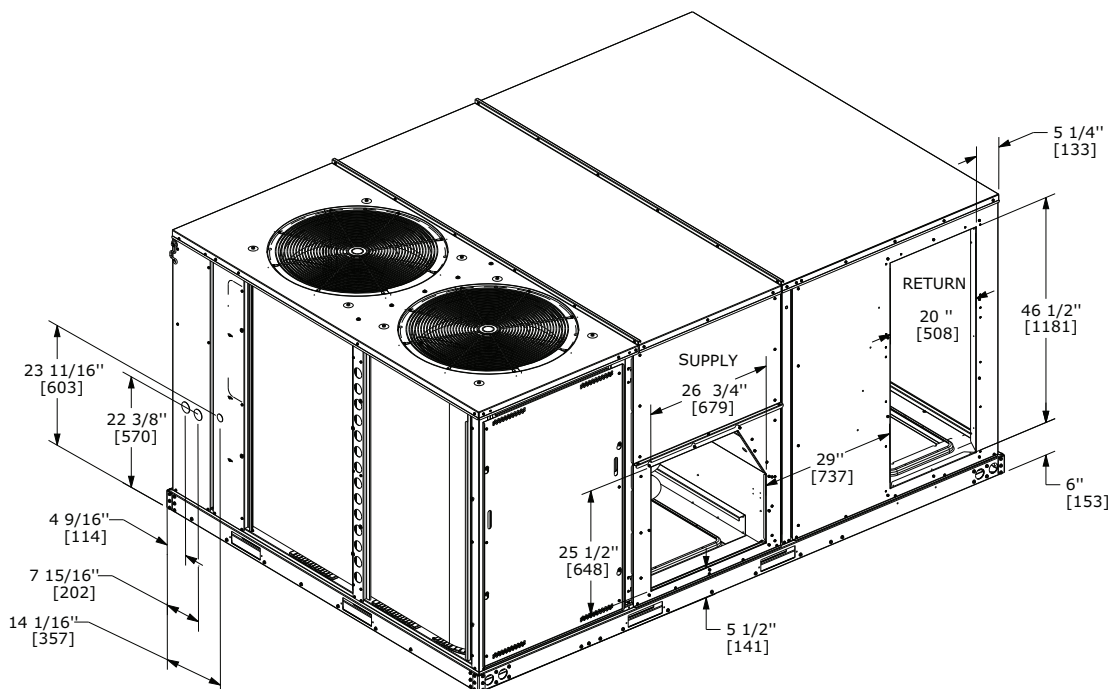


Figure 9. 12.5 to 25 tons high efficiency – horizontal airflow supply/return





## Dimensional Data

Figure 10. 12.5 to 25 tons high efficiency – power exhaust

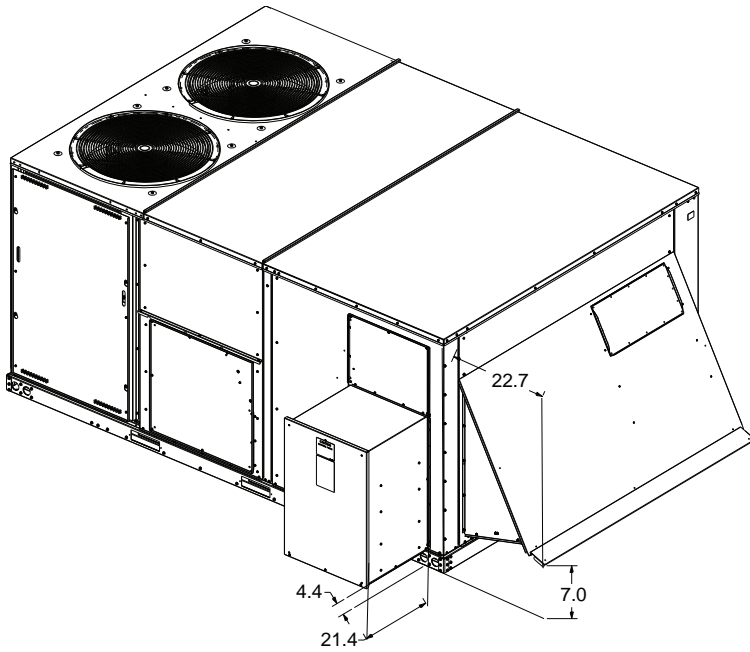


Figure 11. 12.5 to 25 tons high efficiency – unit clearance and roof opening

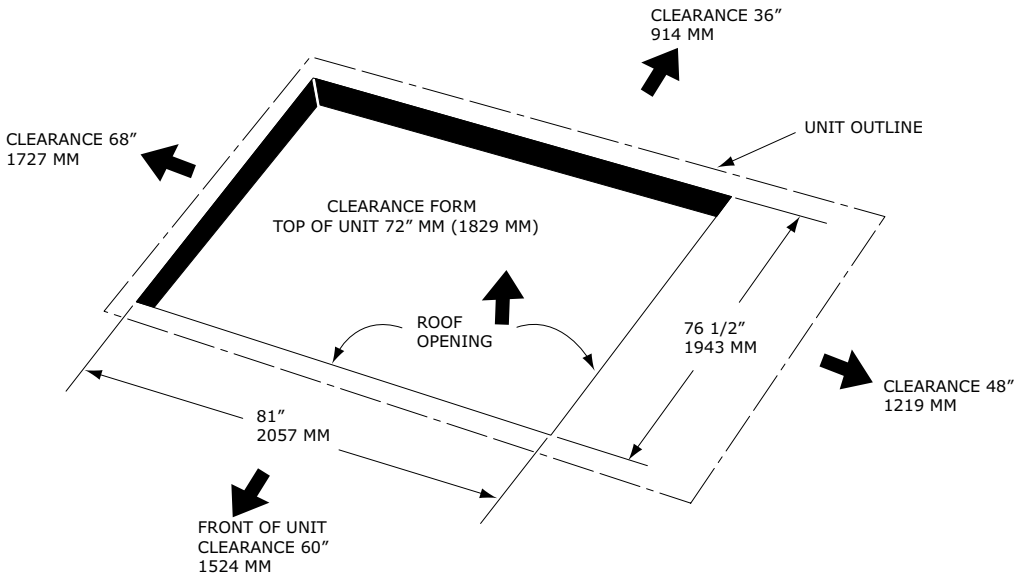


Figure 12. 12.5 to 25 tons high efficiency – roof curb

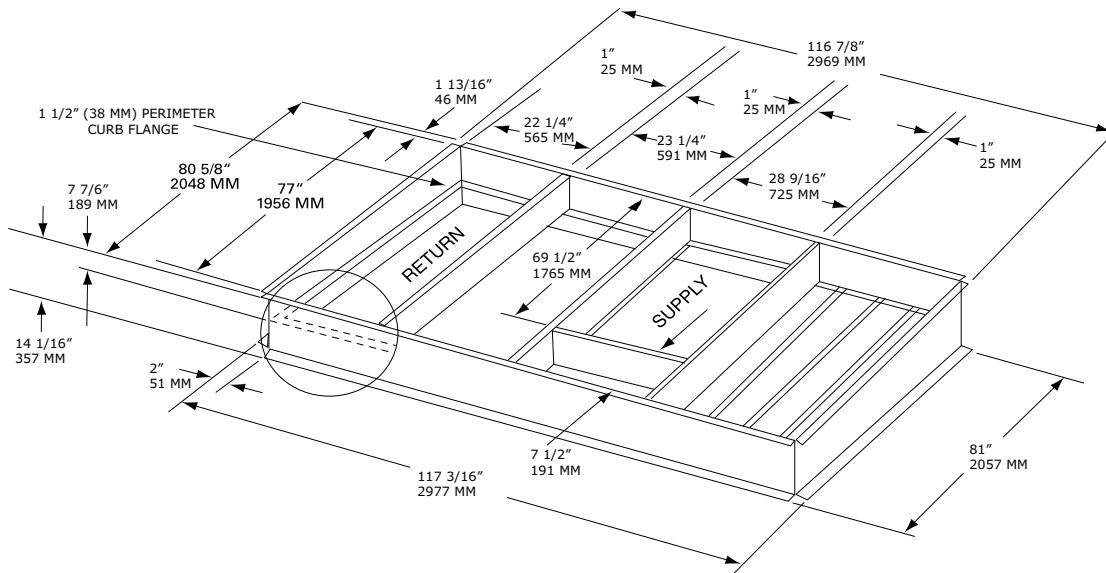
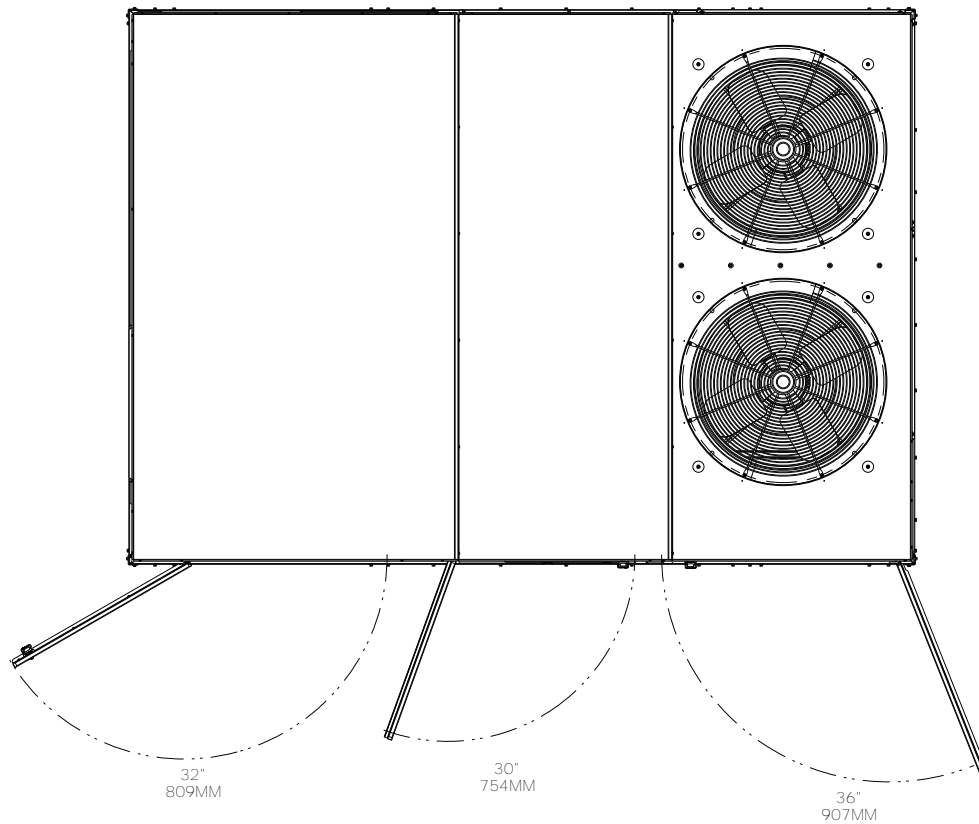


Figure 13. 12.5 to 25 ton high efficiency – swing diameter for hinged door(s) option





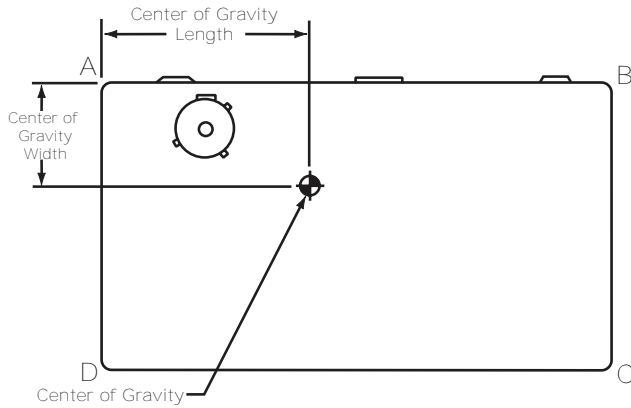
# Weights

**Table 32. Model weights, corner weights (lbs) and center of gravity dimensions (in.)**

Tons	Unit Model No.	Model Weights <sup>(a)</sup>		Corner Weights <sup>(b)</sup>				Center of Gravity (in.)	
		Shipping	Net	A	B	C	D	Length	Width
12.5	WHJ150	2225	2005	688	487	344	486	51	36
15	WHJ180	2246	2026	695	492	348	491	51	36
20	WHJ240	2403	2183	680	550	426	527	55	38
25	WHJ300	2405	2185	680	550	427	528	55	38

<sup>(a)</sup> Weights are approximate. Weights do not include additional factory or field installed options/accessories. For option/accessory additional weights to be added to unit weight, reference the following table.  
<sup>(b)</sup> Corner weights are given for information only.

**Figure 14. Corner weights**



**Table 33. Factory installed options (FIOPS)/accessory net weights (lb)**

Accessory	WHJ150-210	WHJ240-300
	12.5, 15 Tons	20, 25 Tons
Barometric Relief	40	40
Economizer	91	91
Electric Heaters	75	75
Hinged Doors	20	30
Low Leak Economizer - Downflow	150	150
Low Leak Economizer - Horizontal	180	180
Manual Outside Air Damper	15	15
Motorized Outside Air Damper	82	82
Oversized Motor	–	30
Powered Convenience Outlet	50	50
Powered Exhaust	110	110
Reheat Coil	100	100
Roof Curb	235	235
Smoke Detector, Supply	5	5
Smoke Detector, Return	5	5
Through-the-Base Electrical	10	10
Unit Mounted Circuit Breaker	10	10



**Table 33. Factory installed options (FIOPS)/accessory net weights (lb) (continued)**

Accessory	WHJ150-210	WHJ240-300
	12.5, 15 Tons	20, 25 Tons
Unit Mounted Disconnect	10	10

**Notes:**

1. Weights for options not listed are less than 5 pounds.
2. Net weight should be added to unit weight when ordering factory-installed accessories.
3. Weights are approximate.



# Mechanical Specifications

## General

- Packaged rooftop units cooling, heating capacities, and efficiencies are AHRI Certified within scope of AHRI Standard 210-240 for 12.5 to 25 Tons.
- Convertible airflow.
- Symbio controls operating range between 40°F and 125°F in cooling mode standard from the factory. Factory or field-installed low ambient kit extended operating range down to 0°F.
- Factory assembled, internally wired, fully charged with R-410A, and 100 percent run tested to check cooling and heat pump operation, fan and blower rotation, and control sequence before leaving the factory.
- Colored and numbered wiring internal to the unit for simplified identification.
- Units cULus listed and labeled, classified in accordance for Central Cooling Air Conditioners.

## Casing

- Zinc coated, heavy gauge, galvanized steel.
- Weather resistant pre-painted metal with galvanized substrate.
- Meets ASTM B117, 672 hour salt spray test.
- Removable single side maintenance access panels.
- Lifting handles in maintenance access panels (can be removed and reinstalled by removing fasteners while providing a water and air tight seal).
- Exposed vertical panels and top covers in the indoor air section insulated with a cleanable foil-faced, fire-retardant permanent, odorless glass fiber material.
- Base pan shall have no penetrations within the perimeter of the curb other than the raised 1 inch high downflow supply/return openings to provide an added water integrity precaution, if the condensate drain backs up.
- Base of the unit insulated with 1/8 inch, foil-faced, closed-cell insulation.
- Unit base provisions for forklift and/or crane lifting on three sides of unit.

## Coils

### Evaporator and Condenser

- Internally finned, 5/16-inch copper tubes mechanically bonded to a configured aluminum plate fin are standard.
- Coils are leak tested at the factory to ensure integrity.
- Evaporator coil and condenser coil are leak tested to 600 psig.
- Assembled unit is leak tested to 465 psig.
- Condenser coil is patent pending 1+1+1 hybrid coil, designed with slight gaps for cleaning ease.
- Composite, dual-sloped, removable condensate drain pan is standard.

### Coil Guards

Provides condenser coil protection.

## Compressors

- All units have direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps.
- Suction gas-cooled motor with voltage utilization range of plus or minus 10 percent of unit nameplate voltage.
- Internal overloads standard with scroll compressors.
- Crankcase heaters are standard on all compressors.
- All units have dual compressors.
- Three stages of cooling available on 12.5 to 17.5 tons units and four stages of cooling available on 20 and 25 tons units.

## Filters

- Standard throwaway filters
- Optional 2 inch MERV 8 and MERV 13 filters

## Frostat™

- Utilized as a safety device.
- Opens to prevent freezing temperatures on evaporator coil.
- Temperature will need to rise to 50°F before closing.
- Utilized in low airflow or high outside air applications (cooling only).

## Indoor Fan

- Direct drive plenum fan design – 12.5 to 25 tons units.
- Plenum fan design — backward-curved fan wheel along with an external rotor direct drive variable speed indoor motor.
- Supply fan speed adjustments can be made using the Symbio 700 or Mobile App.
- Motors are thermally protected.
- Variable speed direct drive motors are high efficiency – 12.5 to 25 tons.

## Powered or Unpowered Convenience Outlet

- Powered GFCI, 120V/15A, 2 plug, convenience outlet or unpowered GFCI, 120V/20A, 2 plug, convenience outlet.
- When convenience outlet is powered, a service receptacle disconnect will be available.
- Convenience outlet is powered from the line side of the disconnect or circuit breaker, and therefore will not be affected by the position of the disconnect or circuit breaker.
- Available to order when through-the-base electrical with disconnect switch or circuit breaker option is ordered.

## Stainless Steel Drain Pan

- Corrosion and oxidation resistance.
- Constructed of 304 stainless steel.

## Through-the-Base Electrical with Circuit Breaker

- Thermal magnetic, molded case, HACR circuit breaker with provisions for through-the-base electrical connections.
- Circuit breaker installed within unit in water tight enclosure.
- Wiring provided from the switch to the unit high voltage terminal block.
- Circuit breaker will provide overcurrent protection, sized per NEC and cULus guidelines, and agency recognized by cULus.

## Through-the-Base Electrical with Disconnect Switch

- 3-pole, molded case, disconnect switch with provisions for through-the-base electrical connections.
- Disconnect switch installed within unit in a water tight enclosure.
- Wiring provided from the switch to the unit high voltage terminal block.
- Switch cULus agency recognized.

**Note:** Disconnect switch sized per NEC and cULus guidelines but will not be used in place of unit overcurrent protection

## Economizer (Standard)

- Available with or without barometric relief.



## Mechanical Specifications

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- Fully modulating 0-100 percent motor and dampers, minimum position setting, preset linkage, wiring harness with plug, spring return actuator and fixed dry bulb control.
- Barometric relief shall provide a pressure operated damper that shall be gravity closing.
- Barometric relief shall prohibit entrance of outside air during the equipment “off” cycle.
- Optional solid state or differential enthalpy control.
- Arrives in shipping position and shall be moved to the operating position by the installing contractor.

### Manual Outside Air Damper

Rain hood and screen shall provide up to 50 percent outside air.

### Motorized Outside Air Damper

- Once set, when indoor fan starts, outdoor air dampers shall open to set position.
- When indoor fan shuts down, damper shall close to the full closed position.

### Powered Exhaust

- Available for 12.5 to 25 ton units.
- Shall provide exhaust of return air, when using an economizer.
- Maintain better building pressurization.

### Roof Curb

- Designed to mate with the unit’s downflow supply and return.
- Provide support and a water tight installation when installed properly.
- Shall allow field-fabricated rectangular supply/return ductwork to be connected directly to the curb.
- Curb shall be shipped knocked down for field assembly.
- Shall include wood nailer strips.

### Ventilation Override Operation

- Unit can be set to transition up to 3 different pre-programmed sequences for smoke purge, pressurization, and exhaust.
- Transition occurs when binary input on the Symbio is closed (shorted) (typically hard wired relay output from a smoke detector/ fire control panel).

**Note:** Requires Symbio™ Customer Connection Module, FIASCCM001\*.





**Notes**

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