



Packaged Heat Pumps

Voyager™
12½ – 20 Tons — 60 Hz



October 2003

PKGP-PRC001-EN



Introduction



Voyager™ . . . a proven performer built to provide ultimate indoor comfort. Voyager continues to provide the highest standards in quality and reliability, comfort, ease of service, and the performance of Trane light commercial products.

For contractors, Voyager saves time and money, increasing their ability to win jobs. It meets engineer's design criteria and offers solutions to cover many special applications. And, of course, Voyager carries the Trane reputation for excellence, quality and reliability.

Contents

Introduction	2
Features and Benefits	4
Application Considerations	8
Selection Procedure	9
Model Number Description	10
General Data	11
Performance Data	13
Cooling Performance	13
Fan Performance	16
Heat Performance	21
Controls	26
Electric Power	27
Dimension and Weights	38
Mechanical Specifications	48



Features and Benefits



Weather Tight Top and Cabinet

- Voyager units incorporate either a one piece top or the Trane-Tite-Top (T³). Each part of the top (either two or three pieces) overlaps in such a way that water cannot leak into the unit. These overlapped edges are gasketed and sealed to ensure superior water integrity.
- Quick- Access (12½-20 tons) panels reduce the number of possible water entry points.
- For added water integrity, Voyager has a raised 1¹/₈" lip around the supply and return of the downflow units to prevent water from blowing into the ductwork.

Quality And Reliability Testing

- The fan and idler arm assembly designs have been tested to over 300,000 cycles each. Our combined cycle testing is now over 7,000,000 cycles.
- All of Voyager's 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. 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 evaporator and condenser coils are leak tested at 200 psig and pressure tested to 450 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 lives up to rigorous Trane requirements.

We test designs at our factory not on our customers!

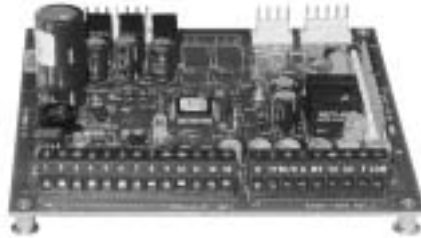
Conversionless Units

- The dedicated design units (either downflow or horizontal) require no panel removal or alteration time to convert in the field — a major cost savings during installation.
- Horizontal units come complete with duct flanges so the contractor doesn't have to field fabricate them. These duct flanges are a time and cost saver.

U-shaped Airflow

- U-shaped airflow allows for improved static capabilities.

Features and Benefits



ReliaTel™

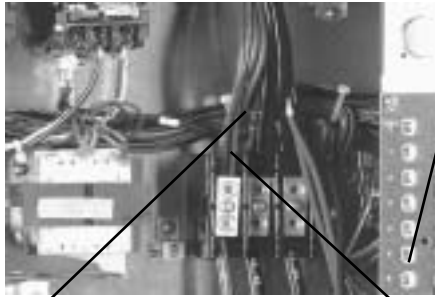
Several years ago, Trane was the first to introduce ReliaTel into the Light Commercial Market. That design, along with immeasurable experience, has provided the technology for Trane's second-generation ReliaTel microprocessor controls.

ReliaTel:

- Provides unit control for heating, cooling, and ventilating by utilizing input from sensors that measure outdoor and indoor temperature.
- Improves quality and reliability through the use of time-tested microprocessor controls and logic.
- Prevents the unit from short cycling, considerably improving compressor life.
- Ensures that the compressor will run for a specific amount of time, which allows oil to return for better lubrication, enhancing the reliability of the compressor.
- Reduces the number of components required to operate the unit, thereby reducing possibilities for component failure.

- Eliminates the need for field-installed components with its built-in anti-short-cycle timer, time delay relay and minimum "on" time controls. These controls are factory tested to assure proper operation.
- Requires no special tools to run the unit through its paces during testing. Simply place a jumper between Test 1 and Test 2 terminals on the Low Voltage Terminal Board and the unit will stage through its operational steps. The unit automatically returns control after 60 minutes to the zone sensor after stepping through the test mode a single time, even if the jumper is left on the unit.
- As long as the unit has power and the LED is lit, the ReliaTel is operational. The light indicates that the ReliaTel is functioning properly.
- Features expanded diagnostic capabilities when used with Trane's Integrated Comfort™ Systems.
- As an energy benefit, softens electrical "spikes" by staging on fans, compressors and heaters.
- The Intelligent Fallback or Adaptive Control is a benefit to the building occupant. If a component goes astray, the unit will continue to operate at predetermined temperature set points.
- Intelligent Anticipation is a standard feature of the ReliaTel. Functioning constantly, the ReliaTel and zone sensors work together in harmony, to provide tight comfort control.

Features and Benefits



Standardized Components

- Components are placed in the same location on all Voyager units. Familiarize yourself with one Voyager and you are familiar with every Voyager.
- ReliaTel can fit all Voyager Packaged Gas/Electrics, Cooling with Electric Heat, and Heat Pump models. This provides standardization of parts for the contractors. Less money is tied up in inventory using the ReliaTel.
- Contractors/owners can stock fewer parts due to standardized components throughout Voyager units.

Single Side Service

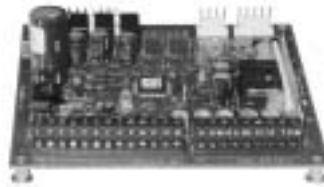
Single side service is standard on all Voyager 12½-20 tons.

Quick-Access Panels On The 12½-20 Tons

Remove three or fewer screws for access to the standardized internal components and wiring.

Easy Access Low Voltage Terminal Board

Voyager's Low Voltage Terminal Board is external to the electrical control cabinet. It is extremely easy to locate and attach the thermostat wire. This is another cost and time saving installation feature.



Low Voltage Connections

The wiring of the low voltage connections to the unit and the zone sensors is as simple as 1-1, 2-2, and 3-3. This simplified system makes it easy for the installer to wire.

Colored And Numbered Wiring

You save time and money tracing wires and diagnosing the unit.

VariTrac™

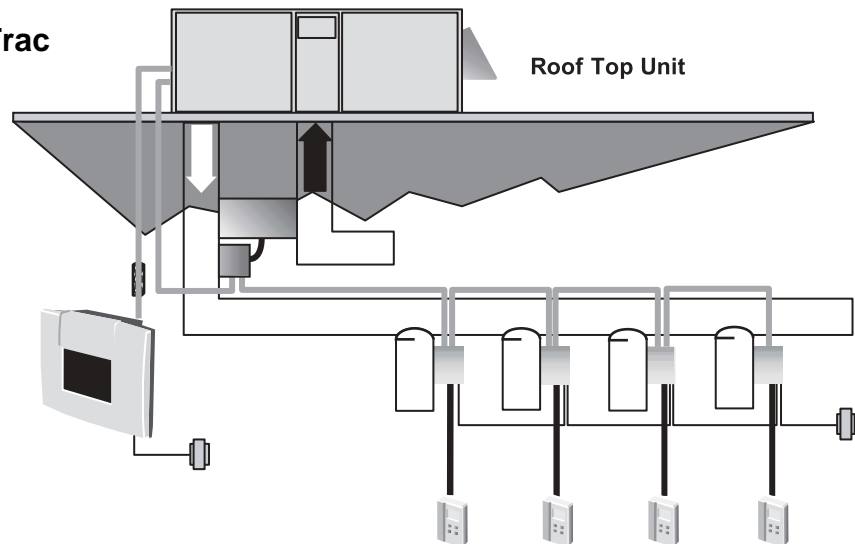
When Trane's changeover VAV System for light commercial applications is coupled with Voyager, it provides the latest in technological advances for comfort management systems and can allow thermostat control in every zone served by VariTrac.



Quick-Adjust Idler Arm

With the Quick-Adjust Idler Arm, the belt and sheaves on all 12½-20 tons can be quickly adjusted without moving the mounted fan motor. The result is a major savings in time and money.

VariTrac



Features and Benefits

Capacity Modulation

- The 12½-20 tons have dual compressors.

Compressors

- Voyager contains the best compressor technology available to achieve the highest possible performance. The dual compressor models are outstanding for humidity control, light load cooling conditions and system back-up applications.

Low Ambient Cooling

All Voyager 12½-20 tons have cooling capabilities down to 0°F as standard.

Power Exhaust Option

This option is available on the 12½-20 tons downflow units. It provides exhaust of the return air, when using a downflow economizer, to maintain proper building pressurization. Great for relieving most building overpressurization problems.

CO₂ Sensing

The CO₂ sensor has the ability to monitor space occupancy levels within the building by measuring the parts per million of CO₂ (Carbon Dioxide) in the air. As the CO₂ levels increase, the outside air damper modulates to meet the CO₂ space ventilation requirements. The CO₂ sensor kit is available as a field installed accessory.

Ventilation Override Accessory

With the Ventilation Override Accessory installed, the unit can be set to transition to up to 3 different pre-programmed sequences for Smoke Purge, Pressurization, and Exhaust. The transition occurs when a binary input on the RTOM is closed (shorted). This would typically be a hard wired relay output from a smoke detector or fire control panel. The ventilation override kit is available as a field installed accessory.

Flexible Applications

- Only two roof curbs for the entire Voyager line simplifies curb selection.
- Airflow is outstanding. The Voyager can replace an older machine with old ductwork and, in many cases, improve the comfort through better air distribution.
- A wide variety of Factory Installed Options (FIOPs) are available.

Trane Communication Interface (TCI)

Available factory or field installed. This module when applied with the Micro easily interfaces with Trane's Integrated Comfort™ System.

Single Point Power

A single electrical connection powers the unit.

Sloped Drain Pans

Standard on every unit.

Downflow And Horizontal Economizers

The economizers come with three control options — dry bulb is standard, enthalpy and differential enthalpy are optional.

High Static Drive Accessory

Available on many models, this high static drive accessory extends the capability of the standard motor. Avoid expensive motors and operating costs by installing this optimized sheave accessory.

Factory Built Roof Curbs

Available for the downflow units.

Zone Sensors

Available in programmable, automatic and manual styles.

The following options round-out the complete line of Voyager accessories:

- 0 - 25% manual outside air hood
- Motorized outside air for 12½-20 tons

One Of Our Finest Assets:

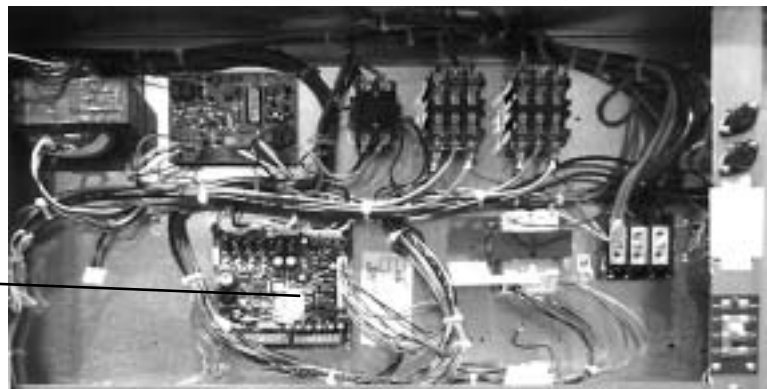
Trane Sales Representatives are a Support group that can assist you with:

- Product
- Application
- Service
- Training
- Special Applications
- Specifications
- Computer Programs and much more

Voyager has the features and benefits that make it first class in the light commercial rooftop market. Designed with input from field contractors and engineers, its U-shaped airflow performance is outstanding.

If all of your customers knew about Voyager, all would insist on it.

ReliaTel





Application Considerations

Application of this product should be within the cataloged airflow and cooling considerations.

Low Ambient Cooling

This Voyager line features, as standard, low ambient cooling down to 0°F. Contact your local Trane Representative for more assistance with low ambient cooling applications.

Barometric Relief

This product line offers an optional barometric relief damper included in the downflow economizer accessory. This accessory consists of gravity dampers which open with increased pressure. As the building air pressure increases, the pressure in the unit return air section also increases, opening the dampers and relieving the conditioned space.

NOTE: THE EFFECTIVENESS OF BAROMETRIC RELIEF DAMPER DURING ECONOMIZING OPERATION IS SYSTEM RELATED.

PRESSURE DROP OF THE RETURN AIR SYSTEM SHOULD BE CONSIDERED TO CONTROL BUILDING PRESSURIZATION.

Power Exhaust Accessory

The power exhaust accessory is available on all 12½-20 tons downflow units. This accessory can be field installed and will assist in relieving building pressurization.

Condensate Trap

The evaporator is a draw-thru configuration. A trap must be field provided prior to start-up on the cooling cycle.

Clearance Requirements

The recommended clearances identified with unit dimensions should be maintained to assure adequate serviceability, maximum capacity and peak operating efficiency. Actual clearances which appear inadequate should be reviewed with the local Trane sales personnel.

Unit Pitch

These units have sloped condensate drain pans. Units must be installed level, any unit slope must be toward access side of unit.

Selection Procedure

Example:

Cooling Capacity

Step 1

Calculate the building's total and sensible cooling loads at design conditions. Use the American Standard calculation form or any other standard accepted method.

Step 2

Given the following building requirements:

- A Electrical Characteristics: 460/60/3
- B Summer Design Conditions:
Entering Evaporator Coil: 80 DB/ 67 WB
Outdoor Ambient: 95 DB
- C Total Cooling Load: 172 MBh
- D Sensible Cooling Load: 122 MBh
- E Airflow: 6000 cfm
- F External Static Pressure: .50 in. w.g.
- G Rooftop - downflow configuration.
- H Accessories
Economizer
Supplementary Electric Heat
- I Heating Capacity 88 MBh
460 volt/3 phase Electric Supplemental Heat - at 6000 cfm

Size the equipment using Table PD-3. As a starting point, a rough determination of the size of the unit must be made. This selection will then be confirmed after examining the performance at the given conditions. Divide the total cooling load by nominal BTUH per ton (12 MBh per ton); then round up to the nearest unit size. 172 MBh/12 MBh = 14.33 (approx. 15 tons.)

Step 3

Table PD-3 shows that a WCD180B4 has a gross cooling capacity of 183.0 MBh and 129.0 MBh sensible capacity at 95 degree ambient and 6000 cfm with 80 DB/67 WB air entering the evaporator.

To Find Capacity at Intermediate Conditions

When the design conditions are between two numbers that are in the capacity table, interpolation is required to approximate the capacity.

Note: Extrapolation outside of the table conditions is not recommended.

Step 4

Verify that there will be enough capacity by determining net capacity. In order to select the correct unit which meets the building's requirements, the fan motor heat must be deducted from the gross cooling capacity. The amount of heat that the fan motor generates is dependent on the effort by the motor cfm and static pressure. To determine the total unit static pressure, add the following:

External Static: 0.50 in.

Standard Filter 1 in: 0.11 in. (from table PD-12)

Economizer Return Air: 0.04 in. (from table PD-12)

Electric Heater Size 18 kW: .06 in.

Total Static Pressure: .71 in.

Note: The Evaporator Fan Performance Table PD-7 has already accounted for the pressure drop for standard filters and wet coils.

Therefore, the actual Total Static Pressure is .71 - .11 = .60.

With 6000 cfm and .60 inches, Table PD-7 shows 2.66 Bhp.

The note below Table PD-7 gives a formula to calculate Fan Motor Heat:

$$3.15 \times \text{bhp} = \text{MBh}$$

$$3.15 \times 2.66 = 8.38 \text{ MBh}$$

Now subtracting the fan motor heat from the gross cooling capacity of the unit:

Net Total Cooling Capacity =

$$183 - 8.38 = 174.62$$

Net Sensible Cooling Capacity =

$$129 - 8.38 = 120.62$$

Step 5

If the performance will not meet the required load of the building, try a selection at the next higher size unit.

Heating Capacity

Step 1

Calculate the building heating load using the American Standard calculation form or other standard accepted method.

Step 2

Size the equipment using Table PD-15 to match the heating loads at design conditions.

- A Total Heating Load: 88 MBh
- B Outdoor Ambient (Winter) 17 DB
- C Indoor Return Temperature: 70 DB
- D Airflow: 6000 Cfm

Use the integrated portion of Table PD-15 for the WCD180B4 to determine capacity at winter design conditions. The mechanical heating portion of the heat pump will provide 45 MBh.

Step 3

Because 45 MBh is less than the building's required heating capacity at winter design conditions, a supplementary heater must be selected. 88 MBh - 45 MBh = 43 MBh

From Table PD-19, at 480 volts, the 18 kW Heater will be adequate to do the job. 18 kW 61 MBh

From Table ED-3 select heater AYDHTRK418A (18 kW 460/60/3).



Model Number Description

Packaged Heat Pump Unit Model Nomenclature

<u>W</u>	<u>C</u>	<u>D</u>	<u>1</u>	<u>5</u>	<u>0</u>	<u>C</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>B</u>	<u>A</u>
1	2	3	4	5	6	7	8	9	10	11	12

Digits 1,2 Product Type

WC = Heat Pump, Packaged
WF = With Factory Installed Options

Digit 3 - Airflow Configuration

D = Downflow
H = Horizontal

Digits 4, 5, 6 - Nominal Gross Cooling Capacity (MBh)

150 = 12½ ton
180 = 15 ton
240 = 20 ton

Digit 7- Major Development Sequence

Digit 8 - Electrical Characteristics

3 = 208-230/60/3
4 = 460/60/3
W = 575/60/3

Digits 9, 10 - Factory Installed Options

OO = Packed Stock, No Options
OA = Factory Installed Downflow Economizer
OB = Oversize Motor
OC = Downflow Economizer and Oversize Motor
OF = Trane Communications Interface (TCI)
OG = Downflow Economizer and TCI

Digit 11- Minor Design Sequence

Digit 12- Service Digit



General Data

(12½ Ton)

Table GD-1 — General Data

	12½ Ton Downflow and Horizontal Units	
	WCD150B3, B4, BW	WCH150B3, B4, BW
Cooling Performance¹		
Gross Cooling Capacity	152,00	152,000
EER ²	9.5	9.5
Nominal CFM / ARI Rated CFM	4,400 / 4,400	4,400 / 4,400
ARI Net Cooling Capacity	144,000	144,000
Integrated Part Load Value ³	9.9	9.9
System Power KW	15.16	15.16
Heating Performance¹		
High Temp. Btuh Rating	135,000	132,000
System Power KW/COP	12.76/3.10	12.48/3.10
Low Temp. Btuh Rating	78,000	72,000
System Power KW/COP	10.88/2.1	10.55/2.0
HSPF (Btu/Watts-hr)	—	—
Compressor		
No./Type	2/Climatuff Scroll	2/Climatuff Scroll
ARI Sound Rating (BELS)⁴		
	9.2	9.2
Outdoor Coil — Type		
	Hi-Performance	Hi-Performance
Tube Size (in.) OD	.375	.375
Face Area (sq ft)	23.96	23.96
Rows/FPI	2/16	2/16
Refrigerant Control	Expansion Valve	Expansion Valve
Indoor Coil — Type		
	Hi-Performance	Hi-Performance
Tube Size (in.)	.375	.375
Face Area (sq ft)	15.83	17.50
Rows/FPI	2/15	2/15
Refrigerant Control	Capillary Tube	Capillary Tube
Drain Connection No./Size (in.)	1/1.00 NPT	1/1.00 NPT
Outdoor Fan — Type		
	Propeller	Propeller
No. Used/Diameter (in.)	2/26	2/26
Drive Type/No. Speeds	Direct/1	Direct/1
CFM	10,800	10,800
No. Motors/HP	2/5.0	2/5.0
Motor RPM	1,110	1,110
Indoor Fan — Type		
	FC Centrifugal	FC Centrifugal
No. Used	1	1
Diameter x Width (in.)	15 x 15	15 x 15
Drive Type/No. Speeds	Belt/1	Belt/1
No. Motors	1	1
Motor HP (Standard/Oversized)	3.0/5.0	3.0/5.0
Motor RPM (Standard/Oversized)	1,740/3,450	1,740/3,450
Motor Frame Size (Standard/Oversized)	145T/145T	145T/145T
Filters — Type Furnished⁶		
(No.) Size Recommended (in.)	Throwaway (2) 20 x 20 x 2 (4) 20 x 25 x 2	Throwaway (2) 20 x 20 x 2 (4) 20 x 25 x 2
Refrigerant Charge (Lbs of R-22)⁵		
	11.1/11.4/Circuit	11.5/11.8/Circuit

NOTES:

- Cooling Performance and Heating Performance is rated at 95°F ambient, 80°F entering dry bulb, 67°F entering wet bulb. Gross capacity does not include the effect of fan motor heat. ARI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal cfm. Certified in accordance with the Unitary Large Equipment certification program, which is based on ARI Standard 340/360-93.
- EER is rated at ARI conditions and in accordance with DOE test procedures.
- Integrated Part Load Value is based in accordance with ARI Standard 210/240 or 340. Units are rated at 80°F entering dry bulb, and 67°F entering wet bulb at ARI rated cfm.
- Sound Rating shown is tested in accordance with ARI Standard 270 or 370.
- Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
- Optional 2 inch pleated filter also available.

*Indicates both downflow and horizontal units.



General Data

(15, 20 Ton)

Table GD-2 — General Data

	15 Ton Downflow and Horizontal Units		20 Ton Downflow and Horizontal Units	
	WC*180B3, B4, BW		WCD240B3, B4, BW	WCH240B3, B4, BW
Cooling Performance¹				
Gross Cooling Capacity	183,500		233,000	237,000
EER ²	9.5		10.0	10.5
Nominal CFM / ARI Rated CFM	6,000 / 5,300		8,000 / 8,000	8,000/7,000
ARI Net Cooling Capacity	174,000		222,000	224,000
Integrated Part Load Value ³	10.0		9.7	10.3
System Power KW	18.31		22.2	21.3
Heating Performance¹				
High Temp. Btuh Rating	160,000		208,000	204,000
System Power KW/COP	15.12/3.10		19.65/3.10	19.29/3.10
Low Temp. Btuh Rating	88,000		128,000	118,000
System Power KW/COP	12.89/2.0		18.75/2.0	17.29/2.00
HSPF (Btu/Watts-hr)	—		—	—
Compressor				
No./Type	2/Trane 3-D Scroll		2/Copeland Scroll	2/Copeland Scroll
Sound Rating (BELS) ⁴	9.2		9.4	9.4
Outdoor Coil — Type				
Tube Size (in.) OD	Hi-Performance		Hi-Performance	Hi-Performance
Face Area (sq ft)	.375		.375	.375
Rows/FPI	28.21		35.3	35.3
Refrigerant Control	2/16		3/16	3/16
	Expansion Valve		Expansion Valve	Expansion Valve
Indoor Coil — Type				
Tube Size (in.)	Hi-Performance		Hi-Performance	Hi-Performance
Face Area (sq ft)	.375		.375	.375
Rows/FPI	17.50		26.00	26.00
Refrigerant Control	2/15		3/15	3/15
Drain Connection No./Size (in.)	Capillary Tube		Capillary Tube	Capillary Tube
	1/1.00 NPT		1/1.00 NPT	1/1.00 NPT
Outdoor Fan — Type				
No. Used/Diameter (in.)	Propeller		Propeller	Propeller
Drive Type/No. Speeds	2/26		2/28	2/28
CFM	Direct/1		Direct/1	Direct/1
No. Motors/HP	11,200		13,800	13,800
Motor RPM	2/50		2/1.0	2/1.0
	1,100		1,125	1,125
Indoor Fan — Type				
No. Used	FC Centrifugal		FC Centrifugal	FC Centrifugal
Diameter x Width (in.)	1		1	1
Drive Type/No. Speeds	15 x 15		18 x 18	18 x 18
No. Motors	Belt/1		Belt/1	Belt/1
Motor HP (Standard/Oversized)	1		1	1
Motor RPM (Standard/Oversized)	3.0/5.0		5.0/7.5	5.0/7.5
Motor Frame Size (Standard/Oversized)	1,740/3,450		3,450/3,450	3,450/3,450
	145T/145T		184T/184T	184T/184T
Filters — Type Furnished⁶				
(No.) Size Recommended (in.)	Throwaway		Throwaway	Throwaway
	(2) 20 x 20 x 2		(4) 20 x 20 x 2	(8) 20 x 25 x 2
	(4) 20 x 25 x 2		(4) 20 x 25 x 2	
Refrigerant Charge (Lbs of R-22)⁵				
	13.2/12.8/Circuit		22.0/21.0/Circuit	22.0/21.0/Circuit

NOTES:

- Cooling Performance and Heating Performance is rated at 95°F ambient, 80°F entering dry bulb, 67°F entering wet bulb. Gross capacity does not include the effect of fan motor heat. ARI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal cfm. Certified in accordance with the Unitary Large Equipment certification program, which is based on ARI Standard 340/360-93.
- EER is rated at ARI conditions and in accordance with DOE test procedures.
- Integrated Part Load Value is based in accordance with ARI Standard 210/240 or 340. Units are rated at 80°F entering dry bulb, and 67°F entering wet bulb at ARI rated cfm.
- Sound Rating shown is tested in accordance with ARI Standard 270 or 370.
- Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
- Optional 2 inch pleated filter also available.

*Indicates both downflow and horizontal units.



Performance Data (15 Ton)

Table PD-3 — Gross Cooling Capacities (MBh) 15 Ton Downflow and Horizontal Three Phase WC*180B

CFM		Ambient Temperature (F)																							
		85					95					105					115								
		Entering Wet Bulb (F)																							
Airflow	Enter. Dry Bulb (F)	61	67	73	61	67	73	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								
5400	75	170.0	133.0	186.0	104.0	194.0	71.6	156.0	126.0	180.0	100.0	194.0	69.4	141.0	118.0	166.0	102.0	189.0	66.1	125.0	110.0	150.0	95.1	177.0	60.6
	80	170.0	157.0	186.0	126.0	196.0	96.2	157.0	150.0	180.0	123.0	195.0	93.4	143.0	142.0	167.0	117.0	189.0	89.3	130.0	130.0	150.0	109.0	177.0	83.8
	85	175.0	175.0	188.0	147.0	197.0	114.0	165.0	165.0	181.0	146.0	196.0	115.0	153.0	153.0	167.0	140.0	190.0	113.0	141.0	141.0	151.0	132.0	178.0	107.0
	90	183.0	183.0	189.0	169.0	199.0	133.0	177.0	177.0	182.0	169.0	197.0	136.0	165.0	165.0	169.0	164.0	190.0	135.0	153.0	153.0	153.0	153.0	178.0	130.0
6000	75	173.0	140.0	187.0	115.0	195.0	71.9	160.0	133.0	183.0	105.0	195.0	70.8	145.0	125.0	170.0	109.0	191.0	67.7	129.0	117.0	153.0	101.0	181.0	62.1
	80	175.0	165.0	189.0	130.0	197.0	100.0	162.0	159.0	183.0	129.0	197.0	98.9	148.0	148.0	171.0	123.0	191.0	92.5	135.0	135.0	154.0	115.0	181.0	87.3
	85	180.0	180.0	190.0	153.0	199.0	115.0	172.0	172.0	184.0	153.0	198.0	118.0	160.0	160.0	171.0	148.0	192.0	117.0	148.0	148.0	155.0	140.0	181.0	112.0
	90	188.0	188.0	192.0	175.0	201.0	136.0	183.0	183.0	186.0	178.0	200.0	140.0	173.0	173.0	175.0	174.0	193.0	141.0	160.0	160.0	160.0	160.0	182.0	137.0
6600	75	176.0	145.0	189.0	119.0	196.0	74.1	164.0	140.0	185.0	107.0	196.0	72.2	148.0	132.0	174.0	115.0	193.0	68.6	132.0	123.0	157.0	108.0	183.0	64.8
	80	178.0	172.0	191.0	133.0	198.0	99.0	166.0	166.0	186.0	134.0	197.0	98.4	153.0	153.0	175.0	129.0	193.0	95.5	140.0	140.0	157.0	121.0	184.0	90.6
	85	184.0	184.0	192.0	157.0	201.0	120.0	178.0	178.0	187.0	160.0	200.0	121.0	166.0	166.0	175.0	156.0	194.0	121.0	153.0	153.0	159.0	149.0	184.0	118.0
	90	191.0	191.0	194.0	181.0	203.0	140.0	187.0	187.0	189.0	186.0	202.0	144.0	179.0	179.0	179.0	179.0	196.0	146.0	167.0	167.0	166.0	166.0	185.0	144.0
7200	75	179.0	151.0	190.0	122.0	197.0	75.3	167.0	146.0	187.0	111.0	197.0	73.5	151.0	138.0	177.0	121.0	194.0	69.1	135.0	130.0	159.0	114.0	185.0	65.5
	80	181.0	179.0	192.0	136.0	199.0	100.0	171.0	171.0	188.0	138.0	199.0	99.9	158.0	158.0	177.0	135.0	195.0	98.4	145.0	145.0	160.0	127.0	186.0	93.4
	85	187.0	187.0	194.0	161.0	202.0	122.0	182.0	182.0	189.0	166.0	201.0	124.0	172.0	172.0	179.0	164.0	196.0	125.0	159.0	159.0	162.0	156.0	186.0	123.0
	90	194.0	194.0	196.0	186.0	205.0	144.0	191.0	191.0	191.0	191.0	203.0	148.0	184.0	184.0	184.0	184.0	198.0	151.0	172.0	172.0	172.0	172.0	187.0	150.0

NOTES:

1. Dry Coil Condition. Total Gross Cooling Capacity (MBh) shown to the left is not applicable. In this case the Sensible Heat Capacity (SHC) is the total capacity.
2. All capacities shown are gross and have not considered indoor fan heat. To obtain net cooling subtract indoor fan heat.
3. MBH = Total Gross Capacity
4. SHC = Sensible Heat Capacity

*Indicates both downflow and horizontal units.



Performance Data (12½ Ton)

Table PD-6 — Evaporator Fan Performance — 12½ Ton — WC*150B

CFM	External Static Pressure (Inches of Water)																					
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00			
RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
4000	3 HP Standard Motor & Field Supplied Low Static Drive (1)																					
4500	511	0.87	541	0.98	572	1.09	603	1.21	634	1.32	664	1.43	693	1.55	721	1.68	749	1.81	777	1.94	805	2.32
5000	551	1.16	580	1.31	612	1.39	640	1.51	672	1.67	700	1.78	727	1.90	754	2.03	779	2.18	805	2.32	837	2.76
5500	597	1.54	626	1.68	656	1.80	682	1.89	709	2.04	738	2.22	763	2.34	788	2.46	813	2.60	837	2.76	871	3.27
6000	644	1.99	674	2.10	699	2.28	727	2.37	749	2.48	774	2.66	801	2.85	825	3.00	848	3.13	871	3.27		

3 HP Standard Motor & High Static Drive Accessory

Table PD-6 — Evaporator Fan Performance — 12½ Ton — WC*150B — Continued

CFM	External Static Pressure (Inches of Water)																					
	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	RPM	BHP	
4000	3 HP Standard Motor & Drive										3 HP Standard Motor & High Static Drive Accessory											
4500	786	1.70	815	1.82	843	1.94	870	2.06	897	2.20	923	2.34	949	2.48	974	2.64	998	2.80	1022	2.96	1033	3.28
5000	806	2.06	833	2.18	860	2.30	886	2.43	912	2.56	937	2.69	962	2.83	986	2.98	1010	3.13	1033	3.28	1064	4.29
5500	830	2.47	855	2.61	880	2.74	905	2.88	930	3.01	954	3.15	978	3.29	1001	3.43	1024	3.58	1047	3.73	1083	4.94
6000	860	2.92	883	3.08	906	3.24	929	3.39	952	3.54	975	3.69	997	3.84	1020	3.99	1042	4.14	1064	4.29	1083	4.94
	893	3.43	915	3.59	936	3.77	957	3.94	978	4.12	999	4.29	1020	4.46	1041	4.62	1062	4.78	1083	4.94		
	5 HP Oversized Motor & Drive																					

Fan motor heat (MBH) = 3.15 x Fan BHP.
 Data includes pressure Drop Due to Wet Coils and Filters.
 No accessories or options are included in pressure drop data.
 Refer to Table PD-19 to determine add'l static pressure drop due to other options/accessories.

Notes:
 1. Field Supplied Fan Sheave BK115 Required. Field Supplied Belt may be necessary.

Trane's 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 tabulated data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.



Performance Data (15 Ton)

Table PD-7 — Evaporator Fan Performance — 15 Ton — WC*180B

CFM	External Static Pressure (Inches of Water)																			
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00	
	3 HP Standard Motor & Field Supplied Low Static Drive (1)									3 HP Standard Motor & Drive										
4800	546	1.07	574	1.18	601	1.29	629	1.41	657	1.52	685	1.63	713	1.75	740	1.89	767	2.03	793	2.17
5400	593	1.34	620	1.49	647	1.65	673	1.80	701	1.96	730	2.13	756	2.25	781	2.37	806	2.51	830	2.66
6000	648	1.92	674	2.10	699	2.28	727	2.37	749	2.48	774	2.66	801	2.85	825	3.00	848	3.13	871	3.27
6600	702	2.63	731	2.72	754	2.92	778	3.08	803	3.17	823	3.29	845	3.47	870	3.70	893	3.89	914	4.03
7200	761	3.39	789	3.48	811	3.65	831	3.88	855	4.02	877	4.12	895	4.24	915	4.43	938	4.68	960	4.91
	5 HP Oversized Motor & Drive																			

Table PD-7 — Evaporator Fan Performance — 15 Ton — WC*180B — Continued

CFM	External Static Pressure (Inches of Water)																			
	1.10		1.20		1.30		1.40		1.50		1.60		1.70		1.80		1.90		2.00	
	3 HP Standard Motor & Drive						3 HP Standard Motor & Field Supplied High Static Drive Accessory (2)													
4800	819	2.30	846	2.43	872	2.56	897	2.69	922	2.82	947	2.96	971	3.09	995	3.24	1018	3.38	1041	3.54
5400	853	2.82	877	2.98	900	3.13	924	3.28	947	3.43	970	3.58	993	3.72	1016	3.87	1038	4.02	1060	4.17
6000	893	3.43	915	3.59	936	3.77	957	3.94	978	4.12	999	4.29	1020	4.46	1041	4.62	1062	4.78	1083	4.94
6600	935	4.18	956	4.33	976	4.50	996	4.68	1016	4.87	1035	5.07	1054	5.26	1073	5.45	1092	5.64	—	—
7200	980	5.09	999	5.25	1018	5.40	1037	5.57	1056	5.75	—	—	—	—	—	—	—	—	—	—
	5 HP Oversized Motor & Drive																			

Fan motor heat (MBH) = 3.15 x Fan BHP.
 Data includes pressure Drop Due to Wet Coils and Filters.
 No accessories or options are included in pressure drop data.
 Refer to Table PD-19 to determine add'l static pressure drop due to other options/accessories.

Notes:

1. Field Supplied Fan Sheave BK105 Required. Field Supplied Belt may be necessary.
2. Field Supplied Motor Sheave IVP50 Required.

Trane's 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 tabulated data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.

5 HP Oversized Motor & Field Supplied High Static Drive (2)



Performance Data (20 Ton)

Table PD-8 — Evaporator Fan Performance — 20 Ton — WC*240B

CFM	External Static Pressure (Inches of Water)																						
	.10		.20		.30		.40		.50		.60		.70		.80		.90		1.00				
RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP		
5 HP Standard Motor & Field Supplied Low Static Drive (1)										5 HP Standard Motor & Drive													
6400	—	—	531	1.80	556	1.97	582	2.14	610	2.28	634	2.44	658	2.61	681	2.79	705	2.98	729	3.19			
7200	552	2.23	576	2.16	605	2.60	631	2.81	655	3.00	678	3.18	701	3.36	722	3.55	743	3.74	763	3.94			
8000	605	3.01	627	3.16	655	3.39	679	3.63	702	3.86	724	4.07	745	4.28	766	4.48	786	4.68	805	4.90			
8800	648	3.83	678	4.10	705	4.34	729	4.61	751	4.87	771	5.12	791	5.36	811	5.59	830	5.81	848	6.03			
9600	702	4.91	729	5.21	755	5.49	779	5.77	800	6.06	820	6.34	839	6.61	857	6.88	875	7.13	893	7.37			
										(2)		7.5 HP Oversized Motor & Drive											

Table PD-8 — Evaporator Fan Performance — 20 Ton — WC*240B — Continued

CFM	External Static Pressure (Inches of Water)																					
	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	RPM	BHP	
5 HP Standard Motor & Drive								5 HP Standard Motor & High Static Drive Accessory														
6400	753	3.39	776	3.59	799	3.80	822	4.02	844	4.24	865	4.47	886	4.69	906	4.92	925	5.16	944	5.40		
7200	784	4.15	806	4.38	827	4.61	848	4.84	869	5.07	889	5.30	910	5.54	930	5.79	950	6.04	969	6.29		
8000	824	5.11	842	5.32	860	5.55	880	5.80	899	6.06	918	6.31	937	6.56	956	6.81	974	7.07	993	7.33		
8800	866	6.26	884	6.49	901	6.73	917	6.96	934	7.20	951	7.46	969	7.74	986	8.02	1004	8.30	—	—		
9600	910	7.61	927	7.85	943	8.10	960	8.35	975	8.61	—	—	—	—	—	—	—	—	—	—		
								7.5 HP Oversized Motor & Drive														

Notes:

Fan motor heat (MBH) = 3.15 x Fan BHP.
 Data includes pressure Drop Due to Wet Coils and Filters.
 No accessories or options are included in pressure drop data.
 Refer to Table PD-19 to determine add'l static pressure drop due to other options/accessories.

Notes:

1. Field Supplied Fan Sheave BK190 Required. Field Supplied Belt may be necessary.
2. 7.5 HP Oversize Motor with Field Supplied Motor Sheave 1VP50 Required. Field Supplied Belt may be necessary.

Trane's 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 tabulated data will not result in nuisance tripping or premature motor failure. Our product's warranty will not be affected.



Performance Data (12½ - 20 Tons)

Table PD-9 — Standard Motor & Drive/Fan Speed (RPM)

Tons	Unit Model No.	6 Turns Open	5 Turns Open	4 Turns Open	3 Turns Open	2 Turns Open	1 Turn Open	Closed
12½	WC*150B	640	680	720	760	800	840	N/A
15	WC*180B	679	721	764	806	849	891	N/A
20	WC*240B	615	659	703	747	791	835	N/A

Factory set at 3 turns open.

Table PD-10 — Standard Motor With High Static Drive Fan Speed (RPM)

Tons	Unit Model No.	6 Turns Open	5 Turns Open	4 Turns Open	3 Turns Open	2 Turns Open	1 Turn Open	Closed
12½	WC*150B	807	857	908	958	1009	1059	N/A
20	WC*240B	835	879	923	967	1011	1055	N/A

Table PD-11 — Oversized Motor & Drive/Fan Speed (RPM)

Tons	Unit Model No.	6 Turns Open	5 Turns Open	4 Turns Open	3 Turns Open	2 Turns Open	1 Turn Open	Closed
12½	WC*150B	869	923	978	1032	1087	1141	N/A
15	WC*180B	806	856	907	957	1008	1058	N/A
20	WC*240B	816	853	890	928	965	1002	N/A

*Indicates both downflow and horizontal units.



Performance Data (12½ - 20 Tons)

Table PD-12 — Static Pressure Drops Through Accessories (Inches Water Column)

Tons	Unit Model No.	CFM	Standard Filters ³	2 Inch Pleated Filters ⁴	Economizer with OA /RA Dampers ¹		Electric Heater Accessory (KW) ²				
					100% OA	100% RA	5-12	14-23	36	54	72
12½	WC*150B	4000	0.05	0.08	0.20	0.02	—	0.03	0.03	0.04	—
		5000	0.07	0.11	0.26	0.03	—	0.04	0.05	0.06	—
		6000	0.11	0.15	0.35	0.04	—	0.06	0.07	0.09	—
15	WC*180B	4800	0.07	0.10	0.24	0.03	—	0.04	0.04	0.05	—
		6000	0.11	0.15	0.35	0.04	—	0.06	0.07	0.08	—
		7200	0.15	0.19	0.42	0.05	—	0.09	0.10	0.12	—
20	WCD240B	6400	0.07	0.11	0.22	0.04	—	—	0.06	0.08	0.09
		8000	0.11	0.15	0.31	0.05	—	—	0.10	0.12	0.14
		9600	0.16	0.02	0.44	0.07	—	—	0.14	0.17	0.20
20	WCH240B	6400	0.06	0.01	0.22	0.04	—	—	0.06	0.08	0.09
		8000	0.09	0.13	0.31	0.05	—	—	0.10	0.12	0.14
		9600	0.13	0.17	0.44	0.07	—	—	0.14	0.17	0.20

NOTES:

1. OA = Outside Air and RA = Return Air.
2. Nominal KW ratings at 240, 480, 600 volts.
3. Tested with:2" filters 12½-20 tons.
4. Difference in pressure drop should be considered when utilizing optional 2" pleated filters.

*Indicates both downflow and horizontal units.



Performance Data (12½ Ton)

Table PD-13 — 12½ Ton Downflow Three Phase Heating Capacities (Net) WCD150B3, B4, BW At 5000 CFM

Outdoor Temp.	Integrated Heating Capacity (MBh/1000) At Indicated Indoor Dry Bulb Temp.				Total Power in Kilowatts At Indicated Indoor Dry Bulb Temp.			
	F.	60	70	75	80	60	70	75
-8	51.9	50.3	49.6	49	9.56	10.37	10.83	11.32
-3	56.8	55.3	54.6	54	9.61	10.45	10.92	11.42
2	62.1	60.7	60	59.4	9.74	10.55	11.03	11.53
7	67.9	66.4	65.7	65.1	9.85	10.72	11.2	11.71
12	74.1	72.6	71.9	71.1	9.98	10.87	11.36	11.88
17	80.7	79.1	78.3	77.6	10.13	11.03	11.53	12.06
22	87.8	86	85.1	84.3	10.3	11.22	11.72	12.26
27	95.3	93.3	92.3	91.4	10.48	11.41	11.92	12.48
32	103.2	101	99.9	98.9	10.68	11.62	12.14	12.7
37	111.1	108.6	107.4	106.3	10.89	11.84	12.37	12.94
42	119.2	116.4	115.1	113.9	11.11	12.07	12.61	13.18
47	138.6	135.3	133.8	132.3	11.93	12.96	13.53	14.14
52	148.1	144.5	142.9	141.2	12.2	13.25	13.83	14.43
57	155.6	151.4	149.4	147.4	12.46	13.49	14.06	14.67
62	168.8	164.2	161.9	159.7	12.8	13.86	14.43	15.04
67	179.3	174.3	171.8	169.4	13.17	14.24	14.82	15.44
72	189.9	184.5	181.8	179.1	13.55	14.64	15.23	15.85

For other airflow conditions, see heating capacity correction factor (Table PD-18).
 Net Heating Capacity and Power Input include indoor fan heat at nominal cfm and .35 inch ESP. To obtain net heating at other conditions, subtract fan heat at this condition and add fan heat at new condition.
 Heating capacities and powers are integrated to include the effects of defrost in the frost region.
 All heating capacities and power (Kw) are at 70% OD relative humidity.

Table PD-14— 12½ Ton Horizontal Three Phase Heating Capacities (Net) WCH150B3, B4, BW At 5000 CFM

Outdoor Temp.	Integrated Heating Capacity (MBh/1000) At Indicated Indoor Dry Bulb Temp.				Total Power in Kilowatts At Indicated Indoor Dry Bulb Temp.			
	F.	60	70	75	80	60	70	75
-8	48.2	46.6	46	45.4	9.18	9.96	10.4	10.87
-3	52.7	51.3	50.6	50	9.23	10.03	10.48	10.96
2	57.7	56.3	55.7	55.1	9.35	10.13	10.58	11.07
7	63.1	61.7	61.1	60.4	9.46	10.29	10.75	11.24
12	68.9	67.5	66.8	66.1	9.58	10.43	10.9	11.4
17	75.2	73.6	72.9	72.1	9.73	10.59	11.07	11.58
22	81.8	80.1	79.3	78.4	9.88	10.77	11.25	11.77
27	88.9	87	86	85.1	10.06	10.96	11.45	11.98
32	96.3	94.2	93.1	92.1	10.25	11.16	11.66	12.2
37	103.7	101.4	100.2	99.1	10.45	11.37	11.88	12.42
42	111.3	108.7	107.5	106.3	10.67	11.6	12.11	12.66
47	137.3	133.9	132.4	130.9	11.53	12.52	13.07	13.66
52	146.8	143.1	141.4	139.8	11.8	12.8	13.36	13.96
57	154.4	150.1	148.1	146.1	12.04	13.04	13.6	14.19
62	167.7	162.9	160.7	158.4	12.37	13.39	13.95	14.55
67	178.1	173.1	170.6	168.2	12.72	13.76	14.33	14.93
72	188.8	183.4	180.7	178	13.1	14.15	14.73	15.33

For other airflow conditions, see heating capacity correction factor (Table PD-18).
 Net Heating Capacity and Power Input include indoor fan heat at nominal cfm and .40 inch ESP. To obtain net heating at other conditions, subtract fan heat at this condition and add fan heat at new condition.
 Heating capacities and powers are integrated to include the effects of defrost in the frost region.
 All heating capacities and power (Kw) are at 70% OD relative humidity.



Performance Data (15 Ton)

Table PD-15 — 15 Ton Downflow Three Phase Heating Capacities (Net) WC*180B3, B4, BW At 6000 CFM

Outdoor Temp.	Integrated Heating Capacity (MBh/1000) At Indicated Indoor Dry Bulb Temp.				Total Power in Kilowatts At Indicated Indoor Dry Bulb Temp.			
	60	70	75	80	60	70	75	80
F.								
-8	59.4	58.3	57.9	57.7	12.02	12.65	13.11	13.64
-3	65	63.9	63.6	63.4	12.05	12.78	13.27	13.84
2	70.9	69.9	69.5	69.3	12.09	12.9	13.42	14.01
7	77.3	76.3	75.9	75.6	12.15	13.02	13.57	14.19
12	84.3	83.1	82.7	82.3	12.24	13.16	13.74	14.39
17	91.6	90.4	89.8	89.4	12.34	13.32	13.92	14.6
22	99.3	98	97.3	96.8	12.47	13.51	14.13	14.83
27	107.5	105.9	105.2	104.6	12.62	13.71	14.36	15.09
32	116	114.2	113.4	112.7	12.8	13.94	14.61	15.36
37	124.5	122.5	121.6	120.7	13	14.18	14.88	15.64
42	133.3	131	130	129	13.22	14.44	15.16	15.94
47	165.5	162.5	161.1	159.8	14.04	15.35	16.12	16.94
52	176.4	173.1	171.5	170	14.32	15.68	16.46	17.29
57	187.7	184	182.3	180.5	14.63	16.03	16.82	17.66
62	198.5	193.7	197	195	14.82	16.19	17.2	18.05
67	210.5	205.4	202.8	200.3	15.24	16.64	17.42	18.24
72	222.7	217.1	214.3	211.5	15.67	17.1	17.88	18.71

For other airflow conditions, see heating capacity correction factor (Table PD-18).

Net Heating Capacity and Power Input include indoor fan heat at nominal cfm and .35 inch ESP. To obtain net heating at other conditions, subtract fan heat at this condition and add fan heat at new condition.

Heating capacities and powers are integrated to include the effects of defrost in the frost region.

All heating capacities and power (Kw) are at 70% OD relative humidity.



Performance Data (20 Ton)

Table PD-16 — 20 Ton Downflow Three Phase Heating Capacities (Net) WCD240B3, B4, BW At 8000 CFM

Outdoor Temp.	Integrated Heating Capacity (MBh/1000) At Indicated Indoor Dry Bulb Temp.				Total Power in Kilowatts A Indicated Indoor Dry Bulb Temp.			
	60	70	75	80	60	70	75	80
F. -8	78.1	75.8	74.9	74.0	16.7	17.8	18.4	19.1
-3	86.8	84.4	83.4	82.5	16.8	17.9	18.6	19.3
2	96.0	93.6	92.4	91.4	16.9	18.1	18.7	19.5
7	106.4	103.8	102.0	100.9	17.1	18.3	18.9	19.7
12	119.9	117.1	115.8	114.6	17.3	18.6	19.2	20.0
17	131.0	128.0	126.6	125.3	17.5	18.8	19.5	20.2
22	142.5	139.4	137.9	136.4	17.7	19.0	19.8	20.5
27	154.5	151.2	149.6	148.0	18.0	19.3	20.0	20.8
32	167.2	163.6	161.7	160.0	18.3	19.6	20.3	21.1
37	180.8	176.9	174.8	172.9	18.5	19.8	20.5	21.3
42	194.0	189.8	187.5	185.5	18.7	20.0	20.7	21.5
47	213.9	209.0	206.6	204.3	18.9	20.2	20.9	21.7
52	228.5	223.1	220.4	217.8	19.0	20.4	21.1	21.9
57	243.4	237.4	234.5	231.7	19.4	20.8	21.5	22.3
62	262.1	255.5	252.3	249.1	19.9	21.2	21.9	22.7
67	278.3	271.2	267.7	264.1	20.3	21.7	22.4	23.2
72	295.6	288.1	284.3	280.5	20.8	22.2	23.0	23.8

For other airflow conditions, see heating capacity correction factor (Table PD-18).
 Net Heating Capacity and Power Input include indoor fan heat at nominal cfm and .40 inch ESP. To obtain net heating at other conditions, subtract fan heat at this condition and add fan heat at new condition.
 Heating capacities and powers are integrated to include the effects of defrost in the frost region.
 All heating capacities and power (Kw) are at 70% OD relative humidity.

Table PD-17 — 20 Ton Horizontal Three Phase Heating Capacities (Net) WCH240B3, B4, BW At 8000 CFM

Outdoor Temp.	Integrated Heating Capacity (MBh/1000) At Indicated Indoor Dry Bulb Temp.				Total Power in Kilowatts At Indicated Indoor Dry Bulb Temp.			
	60	70	75	80	60	70	75	80
F. -8	77.7	75.4	74.5	73.6	15.4	16.4	17.0	17.6
-3	86.3	84.0	82.9	82.0	15.5	16.5	17.1	17.8
2	95.5	93.0	92.0	90.9	15.6	16.7	17.3	18.0
7	105.9	103.2	101.5	100.4	15.8	16.9	17.5	18.2
12	109.9	107.3	106.1	105.0	16.0	17.1	17.8	18.4
17	120.0	117.3	116.1	114.8	16.2	17.3	18.0	18.7
22	130.6	127.7	126.4	125.0	16.4	17.6	18.2	18.9
27	141.6	138.5	137.1	135.6	16.6	17.8	18.5	19.2
32	153.2	149.9	148.2	146.6	16.9	18.1	18.7	19.5
37	179.7	175.9	173.8	172.0	17.6	18.9	19.6	20.4
42	192.9	188.7	186.5	184.5	17.9	19.2	19.9	20.7
47	210.6	205.8	203.4	201.1	18.3	19.6	20.3	21.0
52	225.0	219.6	217.0	214.4	19.0	20.3	21.0	21.8
57	239.6	233.7	230.9	228.0	19.4	20.7	21.4	22.2
62	256.8	250.3	247.2	244.0	19.8	21.1	21.9	22.6
67	272.6	265.7	262.3	258.8	20.3	21.6	22.3	23.1
72	289.6	282.2	278.5	274.8	20.8	22.1	22.9	23.7

For other airflow conditions, see heating capacity correction factor (Table PD-18).
 Net Heating Capacity and Power Input include indoor fan heat at nominal cfm and .40 inch ESP. To obtain net heating at other conditions, subtract fan heat at this condition and add fan heat at new condition.
 Heating capacities and powers are integrated to include the effects of defrost in the frost region.
 All heating capacities and power (Kw) are at 70% OD relative humidity.



Performance Data (12½ - 20Tons)

Table PD-18— Heating Capacity Correction Factors

% Variation of Nominal CFM	- 20	- 10	0	+ 10	+ 20
Total Gross Capacity Multiplier	.96	.98	1.0	1.01	1.02

Table PD-19 — Auxiliary Electric Heat Capacity

Tons	Unit Model No.	Total ²		No. of Stages	Stage 1		Stage 2	
		KW Input ¹	MBh Output ¹		KW Input ¹	MBh Output ¹	KW Input ¹	MBh Output ¹
12½, 15	WC*150B3, B4, BW WC*180B3, B4, BW	18.00	61.00	1	18.00	61.00	—	—
		36.00	123.00	2	18.00	61.00	18.00	61.00
		54.00	184.00	2	36.00	123.00	18.00	61.00
20	WC* 240B3, B4, BW	36.00	123.00	2	18.00	61.00	18.00	61.00
		54.00	184.00	2	36.00	123.00	18.00	61.00
		72.00	246.00	2	36.00	123.00	36.00	123.00

NOTES:

- Does not include indoor fan power or heat.
- Heaters are rated at 240v, 480v, and 600v. For other than rated voltage, CAP = $\left(\frac{\text{Voltage}}{\text{Rated Voltage}}\right)^2 \times \text{rated cap.}$

Table PD-20 —Electric Heater Voltage Correction Factors (Applicable to Auxiliary Heat Capacity)

Nominal Voltage	Distribution Voltage	Capacity Multiplier
240	208	0.75
	230	0.92
	240	1.00
480	440	0.84
	460	0.94
	480	1.00
600	540	0.81
	575	0.92
	600	1.00

*Indicates both downflow and horizontal units.



Performance Data

(12½ - 20 Tons)

Table PD-21— Air Temperature Rise Across Electric Heaters (Degree F)

KW	Stages	12½ Ton	15 Ton	20 Ton
		5000 CFM	6000 CFM	8000 CFM
		Three Phase	Three Phase	Three Phase
		WC*150B	WC*180B	WC*240B
9.00	1	—	—	—
17.30	1	—	—	—
18.00	1	11.4	9.5	—
27.00	2	—	—	—
36.00	2	23.0	19.0	14.2
54.00	2	34.1	28.4	21.3
72.00	2	—	—	28.5

Table PD-22 — Electric Heater Temperature Rise Correction Factors

% Variation From Nominal CFM	- 20	- 15	- 10	- 5	0	+5	+10	+15	+20
Temperature Rise Multiplier	1.25	1.17	1.11	1.05	1.00	0.95	0.91	0.87	0.83

Controls

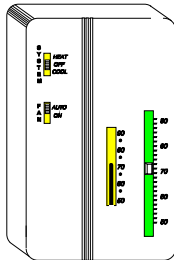
Field Installed Control Options

Zone Sensors

Zone sensors are the building occupant's comfort control devices. They replace the conventional electro-mechanical thermostats. The following zone sensor options are available for Voyager units with the ReliaTel™ control:

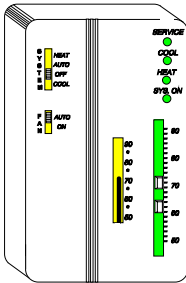
Manual Changeover

Heat, Cool or Off System Switch. Fan Auto or Off Switch. One temperature setpoint lever.



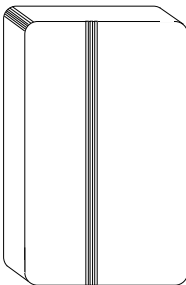
Manual/Automatic Changeover

Auto, Heat, Cool or Off System Switch. Fan Auto or Off Switch. Two temperature setpoint levers. Optional Status Indication LED lights, System On, Heat, Cool, or Service.



Remote Sensor

Sensor(s) available for all zone sensors to provide remote sensing capabilities.

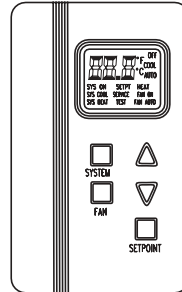


Dual Thermistor Remote Zone Sensor

This sensor will allow the customer to reduce the total number of remote sensors to obtain space temperature averaging. This sensor should be utilized with ReliaTel controls.

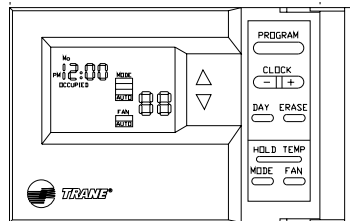
Digital Display Zone Sensor

The Digital LCD (Liquid Crystal Display) zone sensor has the look and functionality of standard zone sensors. This sensor includes a digital display of set point adjustment and space temperature in F (Fahrenheit) or C (Celsius). Includes FAN and SYSTEM buttons (supports the service functions of the standard sensor). E-squared memory stores last programmed set points. Requires 24 VAC (Volts AC). This sensor should be utilized with ReliaTel™ controls.



Programmable Night Setback

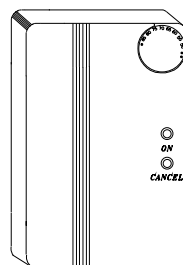
Auto or manual changeover with seven-day programming. Keyboard selection



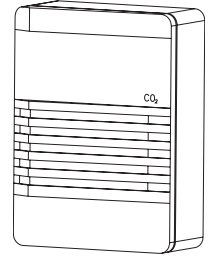
of Heat, Cool, Fan, Auto, or On. All programmable sensors have System On, Heat, Cool, Service LED/indicators as standard. Night Setback Sensors have one (1) Occupied, one (1) Un-occupied, and two (2) Override programs per day.

Integrated Comfort™ System

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



CO₂ Sensing —The CO₂ sensor has the ability to monitor space occupancy levels within the building by measuring the parts per million of CO₂ (Carbon Dioxide) in the air. As the CO₂ levels increase, the outside air damper modulates to meet the CO₂ space ventilation requirements. The CO₂ sensor kit is available as a field installed accessory.



Economizer Controls

The standard equipment offering is a fixed dry bulb changeover control. In addition, there are two optional controls, Enthalpy and Differential Enthalpy Control.

Enthalpy Control

Replaces the dry bulb control with a wet bulb changeover controller which has a fully adjustable set point. Enthalpy control offers a higher level of comfort control, along with energy savings potential, than the standard dry bulb control. This is due to the additional wet bulb sensing capability.

Differential Enthalpy

Replaces the standard dry bulb control with two enthalpy sensors that compare total heat content of the indoor air and outdoor air to determine the most efficient air source. This control option offers the highest level of comfort control, plus energy efficiency, available.

Remote Potentiometer

Minimum position setting of economizer can be remotely adjusted with this accessory.

Differential Pressure Switches

This factory or field-installed option allows individual fan failure and dirty filter indication. The fan failure switch will disable all unit functions and "flash" the Service LED on the zone sensor. The dirty filter switch will light the Service LED on the zone sensor and will allow continued unit operation.

Trane Communication Interface (TCI)

This factory or field-installed micro-processor interface allows the unit to communicate to Trane's Integrated Comfort™ system.

Electrical Data

Table ED-1 — Unit Wiring

Tons	Unit Model No.	Unit Operating Voltage Range	Standard Indoor Fan Motor		Oversize Indoor Fan Motor	
			Minimum Circuit Ampacity	Maximum Fuse Size or Maximum Circuit Breaker ¹	Minimum Circuit Ampacity	Maximum Fuse Size or Maximum Circuit Breaker ¹
12½	WC*150B3	187-253	66.0	80	72.0	80
	WC*150B4	414-506	31.0	40	34.0	40
	WC*150BW	517-633	25.0	30	28.0	35
15	WC*180B3	187-253	77.0	90	83.0	100
	WC*180B4	414-506	40.0	45	43.0	50
	WC*180BW	517-633	32.0	35	34.0	40
20	WC*240B3	187-253	96.0	125	103.0	125
	WC*240B4	414-506	49.0	60	53.0	60
	WC*240BW	517-633	38.0	45	41.0	50

NOTE:

1. HACR type circuit breaker per NEC.

Table ED-2 — Electrical Characteristics — Power Exhaust Accessory

Tons	Accessory Model Number	Accessory Operating Voltage	Phase	HP	RPM	Amps	
						FLA	LRA
12½, 15, 20	BAYPWRX019	208-230	1	3/4	1040	6.6	13.5
	BAYPWRX020	460	1	3/4	1040	3.2	8.4
	BAYPWRX021	575	1	3/4	1040	2.1	5.2

*Indicates both downflow and horizontal units.



Electrical Data

Table ED-3 — Unit Wiring With Electric Heat (Single Point Connection, Continued)

Tons	To Use With	Heater Model No.	Heater KW Rating ¹	Control Stages	Standard Indoor Motor		Oversize Indoor Motor	
					MCA	Max Fuse Size Or Max Circuit Breaker ²	MCA	Max Fuse Size Or Max Circuit Breaker ²
208/230 Volts Three Phase								
12½	WCD150B3	AYDHTRK318A	13.5/18.0	1	113/120	125/125	119/127	125/150
		AYDHTRK336A	27.0/36.0	2	160/175	175/175	166/181	175/200
		AYDHTRK354A	40.5/54.0	2	207/229	225/250	213/235	225/250
	WCH150B3	AYHHTRN318A	13.5/18.0	1	113/120	125/125	119/127	125/150
		AYHHTRP336A	27.0/36.0	2	160/175	175/175	166/181	175/200
		AYHHTRP354A	40.5/54.0	2	207/229	225/250	213/235	225/250
15	WCD180B3	AYDHTRK318A	13.5/18.0	1	124/131	125/150	130/137	150/150
		AYDHTRK336A	27.0/36.0	2	171/185	175/200	177/191	200/200
		AYDHTRK354A	40.5/54.0	2	218/240	225/250	224/246	225/250
	WCH180B3	AYHHTRN318A	13.5/18.0	1	124/131	125/150	130/137	150/150
		AYHHTRP336A	27.0/36.0	2	171/185	175/200	177/191	200/200
		AYHHTRP354A	40.5/54.0	2	218/240	225/250	224/246	225/250
20	WCD240B3	AYDHTRL336A	27.0/36.0	2	190/204	200/225	197/212	200/225
		AYDHTRL354A	40.5/54.0	2	237/258	250/300	244/266	250/300
		AYDHTRK372A	54.0/72.0	2	284/312	300/350	291/320	300/350
	WCH240B3	AYHHTRN336A	27.0/36.0	2	190/204	200/225	197/212	200/225
		AYHHTRN354A	40.5/54.0	2	237/258	250/300	177/266	250/300
		AYHHTRN372A	54.0/72.0	2	284/312	300/350	224/320	300/350

NOTES:

1. Heater kw ratings are at 208/240 for 208/230V unit
480V for 460 V unit
2. HACR type circuit breaker per NEC.

*Indicates both downflow and horizontal units.



Electrical Data

Table ED-3 — Unit Wiring With Electric Heat (Single Point Connection, Continued)

Tons	To Use With	Heater Model No.	Heater KW Rating ¹	Control Stages	Standard Indoor Motor		Oversize Indoor Motor	
					MCA	Max Fuse Size Or Max Circuit Breaker ²	MCA	Max Fuse Size Or Max Circuit Breaker ²
460 Volts Three Phase								
12½	WCD150B4	AYDHTRK418A	18.0	1	58	60	61	70
		AYDHTRK436A	36.0	2	85	90	88	90
		AYDHTRK454A	54.0	2	112	125	115	125
	WCH150B4	AYHHTRP418A	18.0	1	58	60	61	70
		AYHHTRP436A	36.0	2	85	90	88	90
		AYHHTRP454A	54.0	2	112	125	115	125
15	WCD180B4	AYDHTRK418A	18.0	1	67	70	70	70
		AYDHTRK436A	36.0	2	94	100	97	100
		AYDHTRK454A	54.0	2	121	125	124	125
	WCH180B4	AYHHTRP418A	18.0	1	67	70	70	70
		AYHHTRP436A	36.0	2	94	90	97	100
		AYHHTRP454A	54.0	2	121	125	124	125
20	WCD240B4	AYDHTRL436A	36.0	2	104	110	107	110
		AYDHTRL454A	54.0	2	131	150	134	150
		AYDHTRK472A	72.0	2	158	175	161	175
	WCH240B4	AYHHTRN436A	36.0	2	104	110	107	110
		AYHHTRN454A	54.0	2	131	150	134	150
		AYHHTRN472A	72.0	2	158	175	161	175

NOTES:

1. Heater kw ratings are at 480V for 460V unit
2. HACR type circuit breaker per NEC.



Electrical Data

Table ED-3 — Unit Wiring With Electric Heat (Single Point Connection, Continued)

Tons	To Use With	Heater Model No.	Heater KW Rating ¹	Control Stages	Standard Indoor Motor		Oversize Indoor Motor	
					MCA	Max Fuse Size Or Max Circuit Breaker ²	MCA	Max Fuse Size Or Max Circuit Breaker ²
575 Volts Three Phase								
12½	WCD150BW	AYDHTRKW18A	18.0	1	47	50	49	50
		AYDHTRKW36A	36.0	2	69	70	71	80
		AYDHTRKW54A	54.0	2	90	90	93	100
	WCH150BW	AYHHTRNW18A	18.0	1	47	50	49	50
		AYHHTRQW36A	36.0	2	69	70	71	80
		AYHHTRPW54A	54.0	2	90	90	93	100
15	WCD180BW	AYDHTRKW18A	18.0	1	54	60	56	60
		AYDHTRKW36A	36.0	2	76	80	78	80
		AYDHTRKW54A	54.0	2	97	100	99	100
	WCH180BW	AYHHTRNW18A	18.0	1	54	60	56	60
		AYHHTRQW36A	36.0	2	76	80	78	80
		AYHHTRPW54A	54.0	2	97	100	99	100
20	WCD240BW	AYDHTRLW36A	36.0	2	81	90	84	90
		AYDHTRLW54A	54.0	2	103	110	106	110
		AYDHTRKW72A	72.0	2	125	125	128	150
	WCH240BW	AYHHTRNW36A	36.0	2	81	90	84	90
		AYHHTRNW54A	54.0	2	103	110	106	110
		AYHHTRNW72A	72.0	2	125	125	128	150

NOTES:

1. Heater kw ratings are at 600V for 575V unit
2. HACR type circuit breaker per NEC.

*Indicates both downflow and horizontal units.



Electrical Data

Table ED-4 — Electrical Characteristics — Evaporator Fan Motors — 60 Cycle

Tons	Unit Model No.	Standard Evaporator Fan Motor						Oversized Evaporator Fan Motor					
		No.	Volts	Phase	HP	Amps		No.	Volts	Phase	HP	Amps	
						FLA	LRA					FLA	LRA
12½	WC*150B3	1	208-230	3	3.00	10.6	81.0	1	208-230	3	5.00	16.7	109.8
	WC*150B4	1	460	3	3.00	4.8	40.5	1	460	3	5.00	7.6	54.9
	WC*150BW	1	575	3	3.00	3.9	31.0	1	575	3	5.00	6.1	41.6
15	WC*180B3	1	208-230	3	3.00	10.6	81.0	1	208-230	3	5.00	16.7	109.8
	WC*180B4	1	460	3	3.00	4.8	40.5	1	460	3	5.00	7.6	54.9
	WC*180BW	1	575	3	3.00	3.9	31.0	1	575	3	5.00	6.1	41.6
20	WC*240B3	1	208-230	3	5.00	16.7	109.8	1	208-230	3	7.50	17.6	120.4
	WC*240B4	1	460	3	5.00	7.6	54.9	1	460	3	7.50	8.6	74.0
	WC*240BW	1	575	3	5.00	6.1	41.6	1	575	3	7.50	7.0	60.0

*Indicates both downflow and horizontal units.



Electrical Data

Table ED-5 — Electrical Characteristics — Compressor Motor And Condenser Motor — 60 Cycle

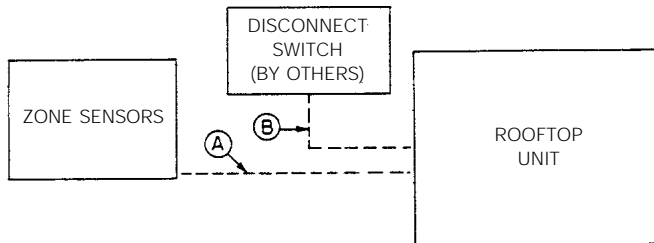
Tons	Unit Model No.	No.	Volts	Phase	Compressor Motors				Condenser Fan Motors				
					HP ²	RPM	Amps ¹		No.	Phase	HP	Amps ¹	
							RLA	LRA				FLA	LRA
12½	WC*150B3	2	208-230	3	6.00	3450	21.7	156	2	1	.50	3.2	8.8
	WC*150B4	2	460	3	6.00	3450	10.0	75	2	1	.50	1.6	4.0
	WC*150BW	2	575	3	6.00	3450	8.2	54	2	1	.50	1.3	3.2
15	WC*180B3	2	208-230	3	7.50	3450	26.5	181.5	2	1	.50	3.2	8.8
	WC*180B4	2	460	3	7.50	3450	14.0	95	2	1	.50	1.6	4.0
	WC*180BW	2	575	3	7.50	3450	11.2	69	2	1	.50	1.3	3.2
20	WC*240B3	2	208-230	3	9.00	3500	30.1	225	2	1	1.00	5.5	18.3
	WC*240B4	2	460	3	9.00	3500	15.8	114	2	1	1.00	2.9	9.3
	WC*240BW	2	575	3	9.00	3500	12.2	80	2	1	1.00	2.0	5.7

NOTES:

- 1. Amp draw for each motor; multiply value by numbers of motors to determine total amps.
- 2. HP for each compressor.

*Indicates both downflow and horizontal units.

Jobsite Connections



Zone Sensors —Typical Number Of Wires

A— Manual Changeover	6
Manual/Auto Changeover	7
Manual/Auto Changeover with Status Indication LED's	10
Programmable Night Setback with Status Indication LED's	7
B— 3 Power Wires + 1 Ground Wire (three phase)	
2 Power Wires + 1 Ground Wire (single phase)	

For specific wiring information, see the installation instructions.
All wiring except power wires is low voltage.

All customer supplied wiring to be copper and must conform to NEC or CEC and local electrical codes. Wiring shown dotted is to be furnished and installed by the customer.

Typical Wiring

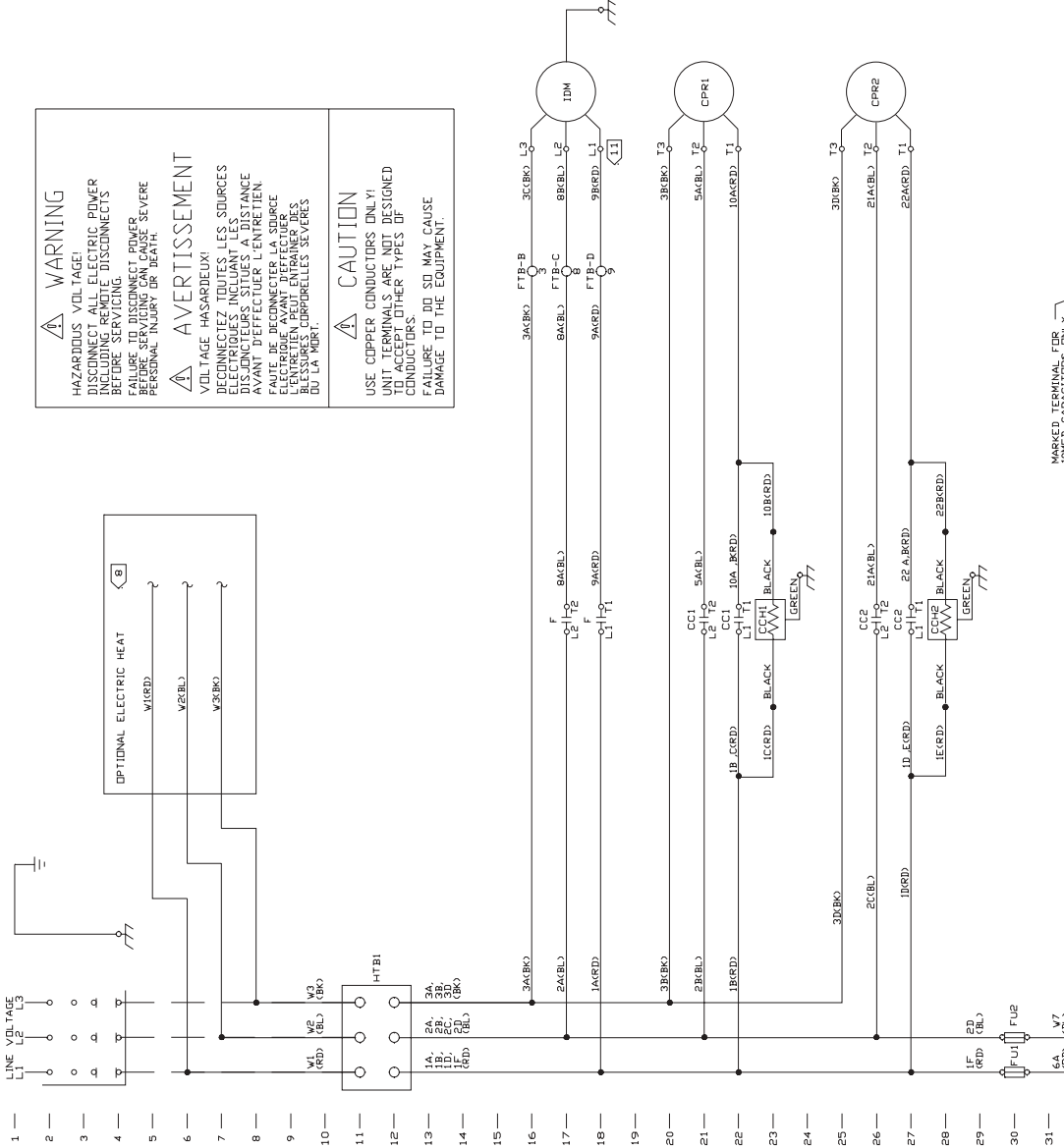
(12½ - 20 Tons)

DEVICE DESIGNATION	LEGEND	DESCRIPTION	LINE NUMBERS
AHCH		HEATER CONTACTOR (STAGE 1)	106-107
AHCH2		HEATER CONTACTOR (STAGE 2)	106-109
BPM		BUILDING MANAGEMENT SYSTEM	91
CG1CG2		COMPRESSOR CONTACTOR	64-65
CG1CG2H		CRANKCASE HEATER	23-28
CG1CG2R		OUTDOOR MOTOR CAPACITOR	33-37
CFS		CLOGGED FILTER SWITCH	98
CPRLCPR2		COMPRESSOR	21-26
EXF		EXHAUST FAN RELAY	91
DTS		DISCHARGE TEMPERATURE SENSOR	93
ECA		ECONOMIZER ACTUATOR	100
FFS		FAN FAILURE SWITCH	17-18
F		INDOOR FAN CONTACTOR	17-18
RTDM		RELIATEL OPTIONS MODULE	
RTM		RELIATEL REFRIGERATION MODULE	
CDMM		COMMUNICATION MODULE	
FU1-F2		UNIT FUSE	29
FTB		FAN TERMINAL BLOCK	16,17,18
HTB1		HEATER TERMINAL BLOCK	11
HTB2		HEATER TERMINAL BLOCK	11
IDM		INDOOR FAN MOTOR	17
LTB		LOW VOLTAGE TERM BLOCK	78-80
LPCLLPC2		LOW PRESSURE CONTROL	78-80
OAS		OUTDOOR AIR SENSOR	70
DHS		OUTDOOR HUMIDITY SENSOR	100
DDMLDDM2		OUTDOOR FAN MOTOR	33-37
DDFLDDF2		OUTDOOR FAN RELAY	69,68,34,38
RAS		RETURN AIR SENSOR	96
RHS		RETURN HUMIDITY SENSOR	98
RHT		RETURN HIGH TEMPERATURE	66
RMP		REMOTE MINIMUM POSITION	98
SAS		SUPPLY AIR SENSOR	91
SHT		SUPPLY HIGH TEMPERATURE	66
SDV1SDV2		SWITCH-OVER VALVE	81-80
TNS1		INDOOR FAN TRANSFORMER	98
TNS2		OUTDOOR FAN TRANSFORMER	99
YFR		EXHAUST FAN RELAY	99
ZSM		ZONE SENSOR MODULE	80
PPF6,PPN6		ECONOMIZER PLUG	90-102
PPF7,PPN7		ELECTRIC HEAT PLUG	
PPF8,PPN8		DEFROST PLUG W/O ECONOMIZER	117-120
PPM9		DEFROST PLUG W/ ECONOMIZER	97-99
PPF10		DEFROST PLUG W/ ECONOMIZER	84-87

⚠ WARNING
 HAZARDOUS VOLTAGE!
 DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING.
 FAILURE TO DISCONNECT POWER BEFORE SERVICING MAY CAUSE SEVERE PERSONAL INJURY OR DEATH.

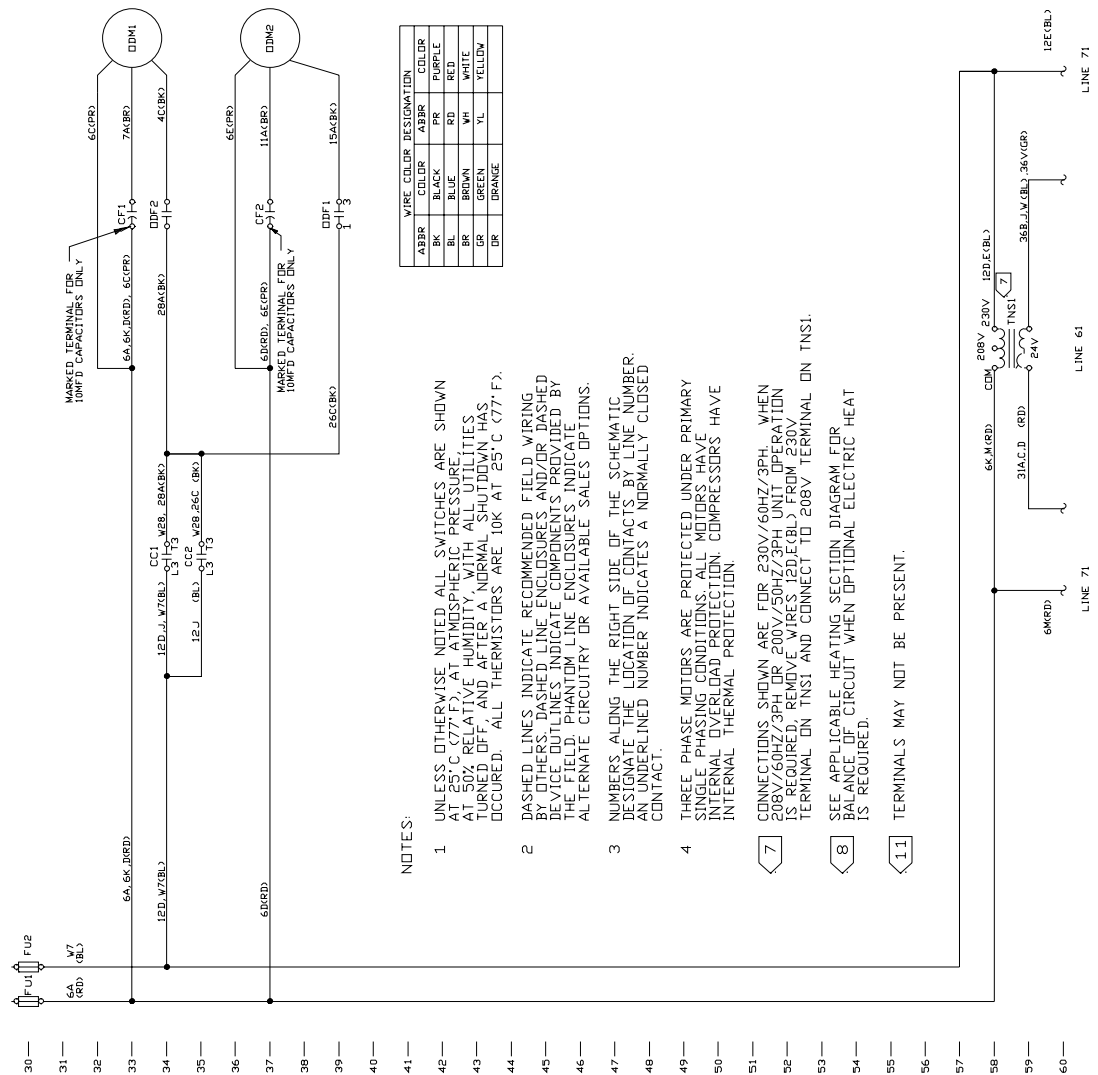
⚠ AVERTISSEMENT
 VOLTAGE HASARDEUX!
 DECONNECTEZ TOUTES LES SOURCES ELECTRIQUES INCLUANT LES DISCONNECTEURS SITUÉS A DISTANCE AVANT D'EFFECTUER L'ENTRETIEN ELECTRIQUE AVANT D'EFFECTUER L'ENTRETIEN POUR ENTRAÎNER DES BLESSURES CORPORELLES SEVERES OU LA MORT.

⚠ CAUTION
 USE COPPER CONDUCTORS ONLY!
 UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.
 FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.



Typical Wiring

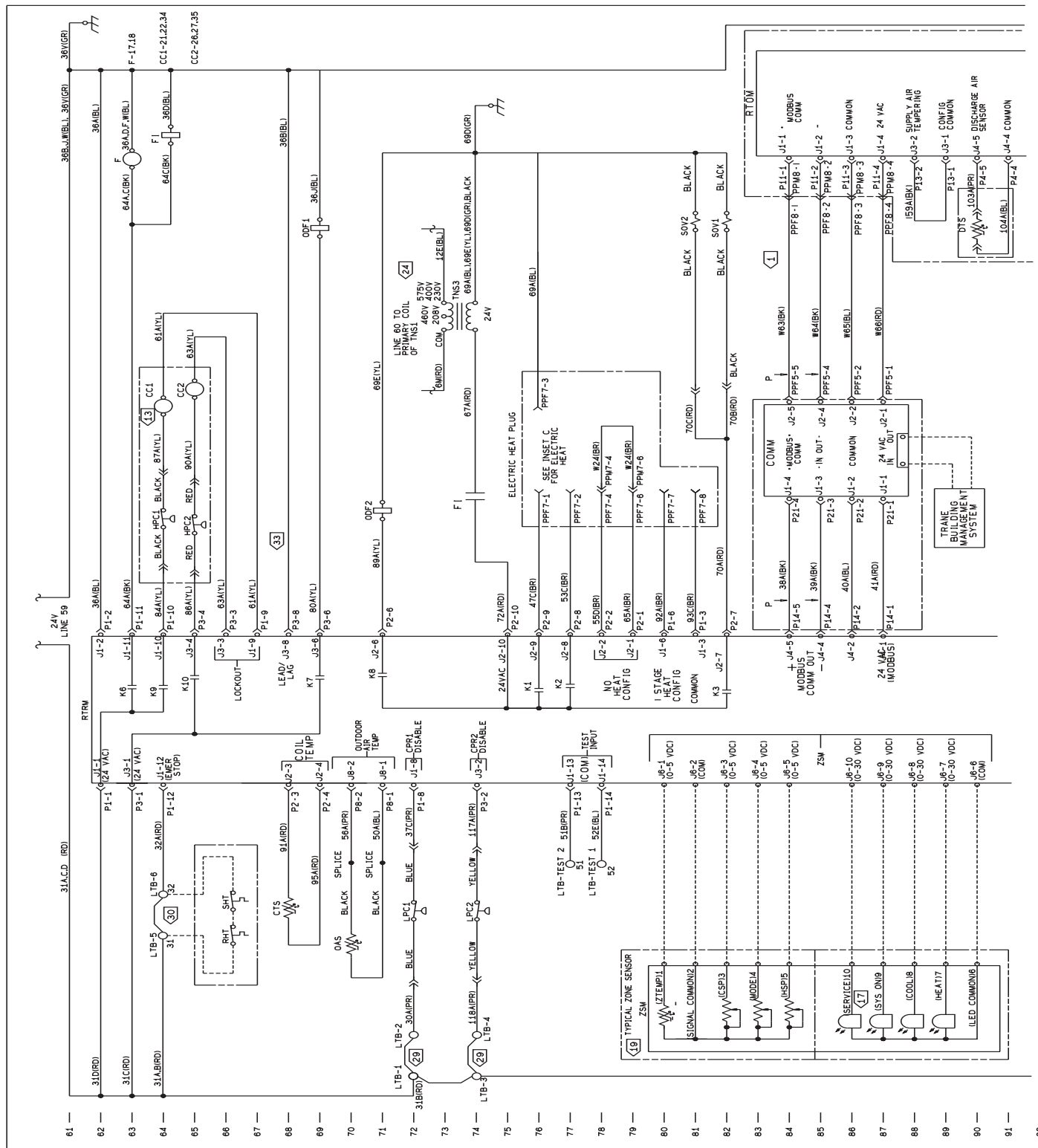
(12½ - 20Tons)



2309-3115

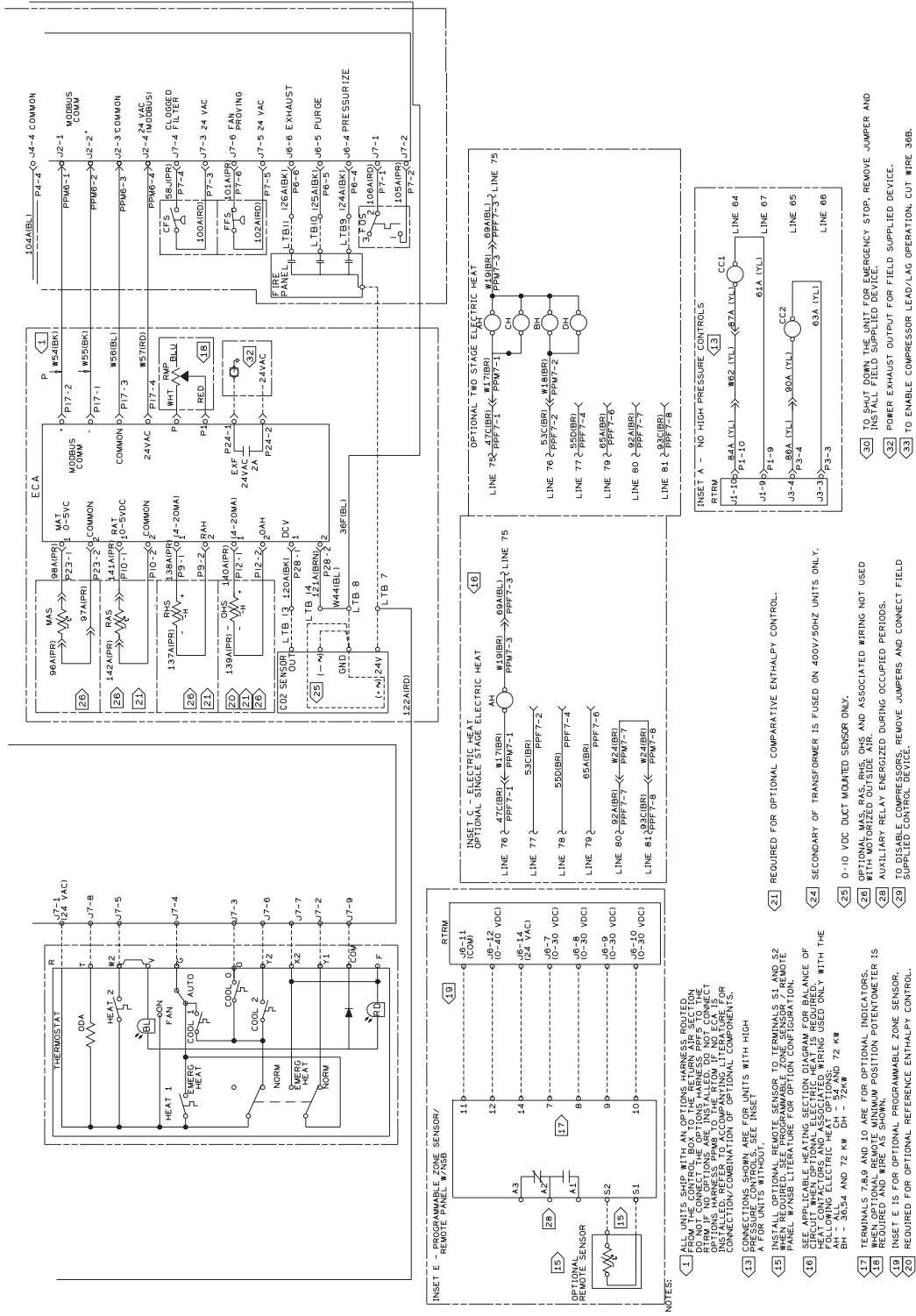
Typical Wiring

(12½ - 20 Tons)



Typical Wiring

(12½ - 20Tons)



2309-3108 C

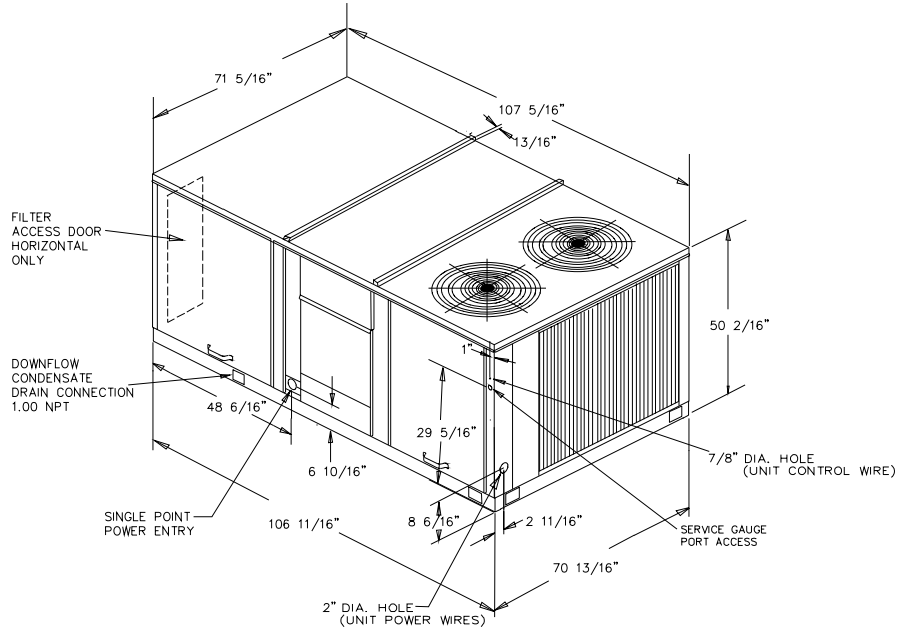
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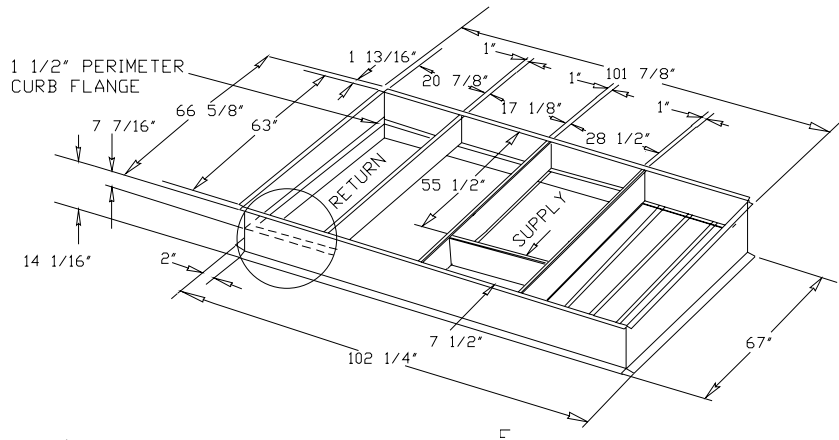


Dimensional Data (12½, 15 Ton)

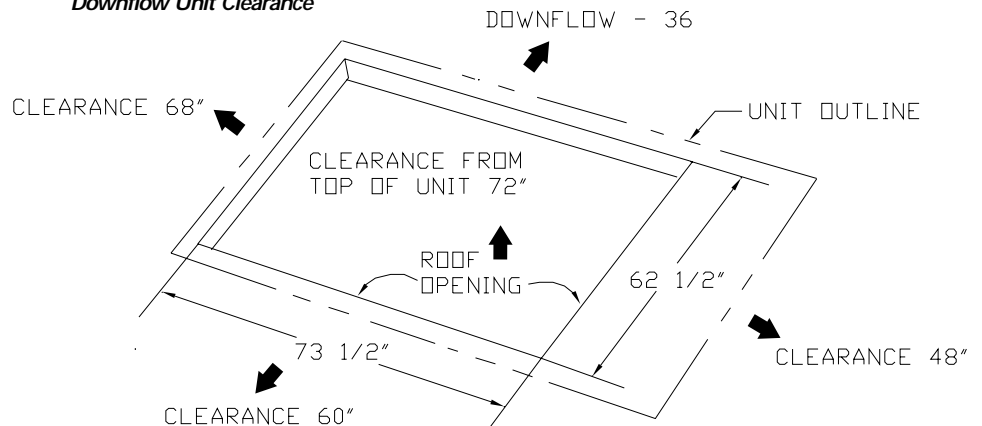
All dimensions are in inches.



NOTE:
 Duct flanges mount 7-7/16" down inside the curb on the 1½" curb flanges. See recommended duct dimensions on the next page. Roofcurb is intended for downflow use only.



Downflow Unit Clearance

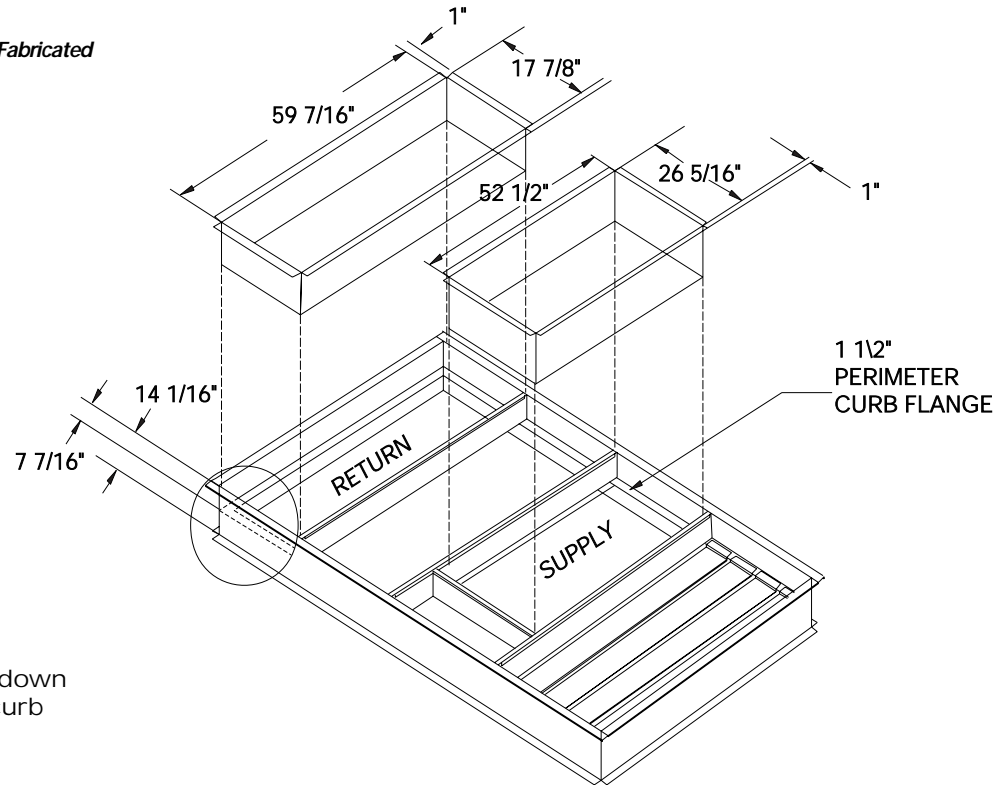


Dimensional Data

(12½, 15 Ton)

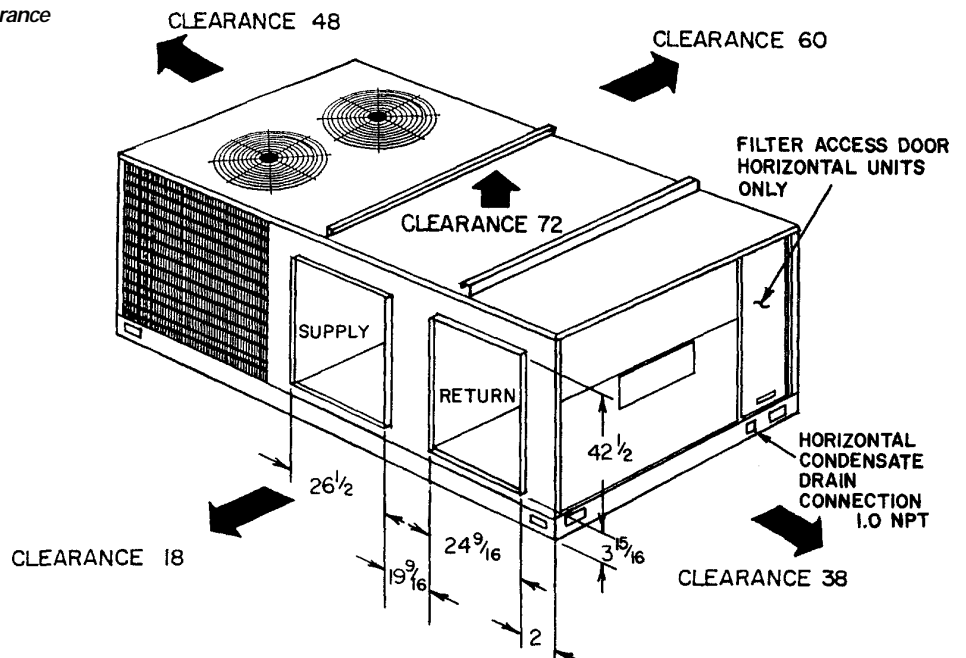
All dimensions are in inches.

Downflow Duct Connections — Field Fabricated



NOTE:
 Duct flanges mount 7-7/16" down inside the curb on the 1½" curb flanges.
 Roofcurb is intended for downflow use only.

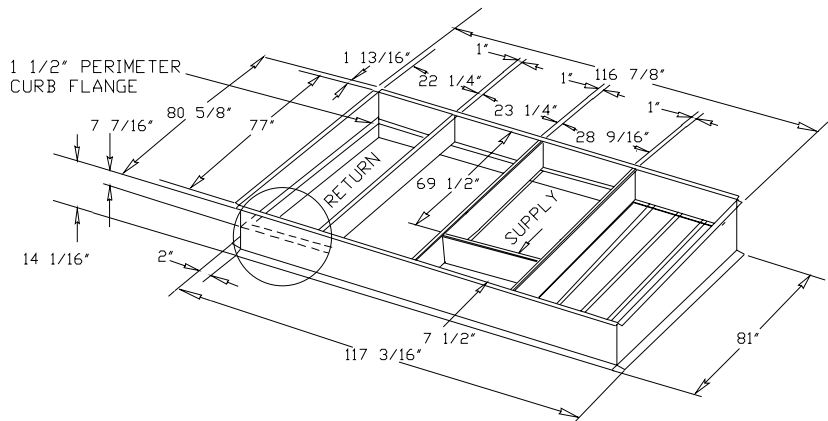
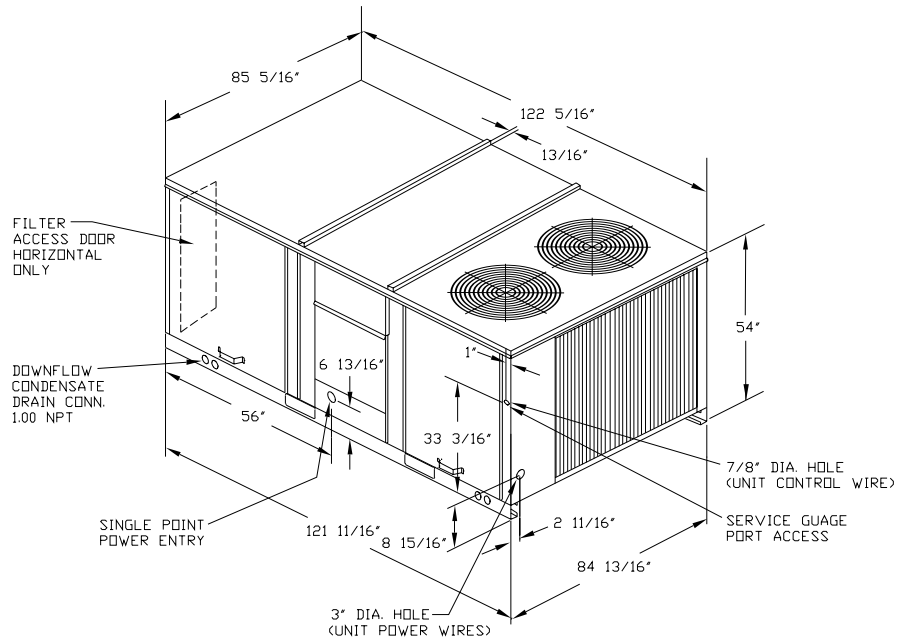
Horizontal Unit Supply/Return and Unit Clearance





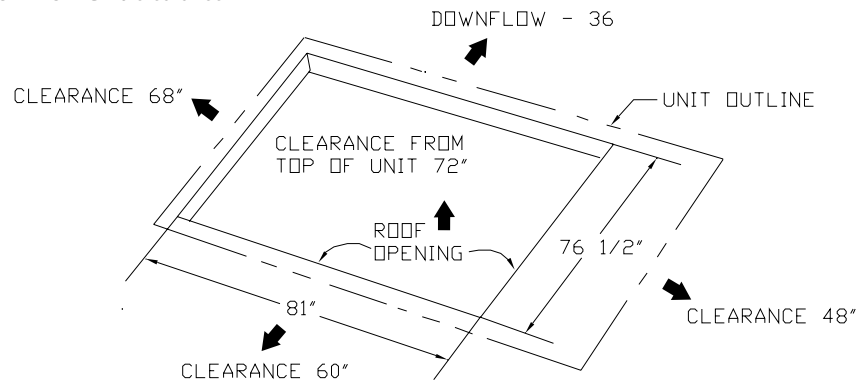
Dimensional Data (20 Ton)

All dimensions are in inches.



NOTE:
Duct flanges mount 7-7/16" down inside the curb on the 1 1/2" curb flanges. See recommended duct dimensions on the next page. Roofcurb is intended for downflow use only.

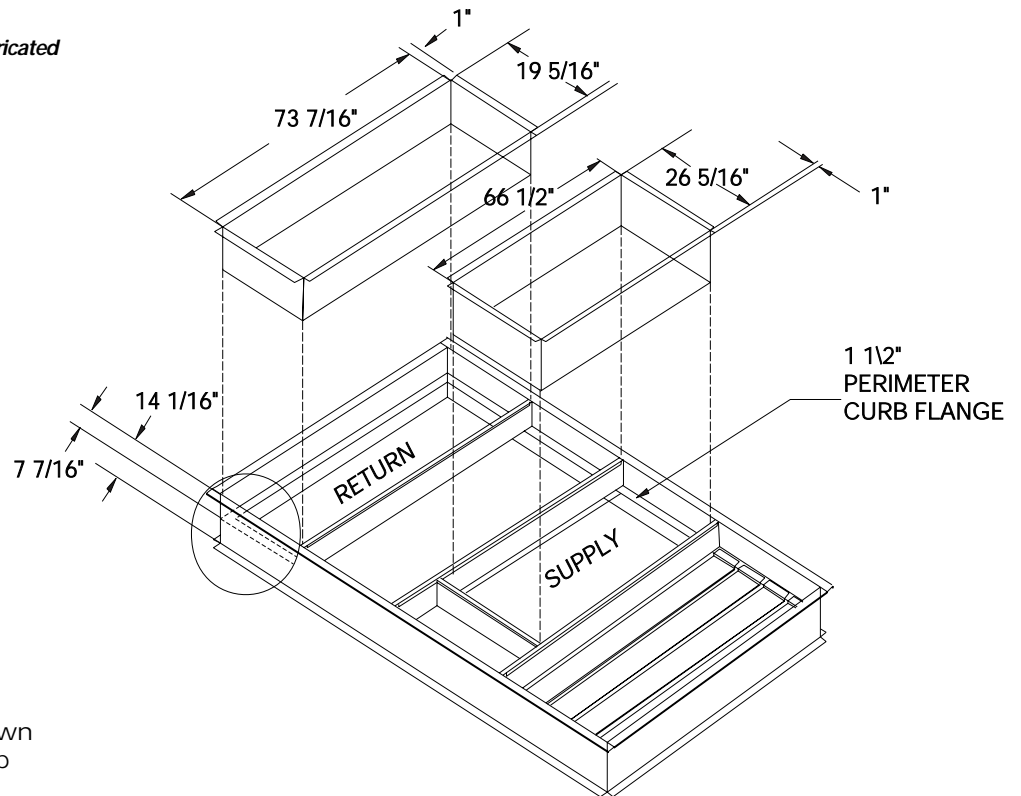
Downflow Unit Clearance



Dimensional Data (20 Ton)

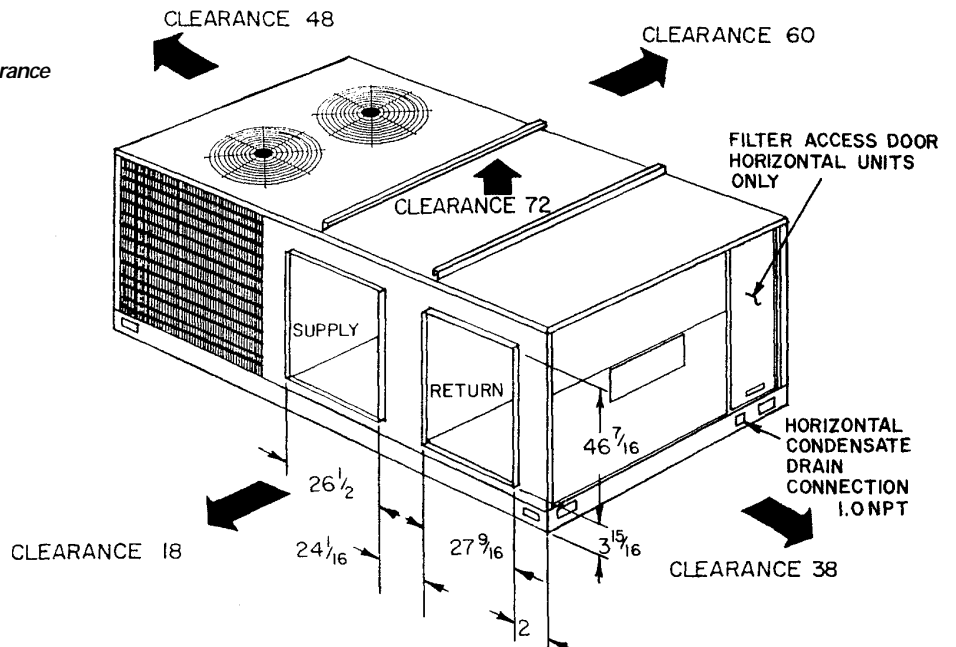
All dimensions are in inches.

Downflow Duct Connections — Field Fabricated



NOTE:
 Duct flanges mount $7\text{-}7/16$ " down inside the curb on the $1\frac{1}{2}$ " curb flanges.
 Roofcurb is intended for downflow use only.

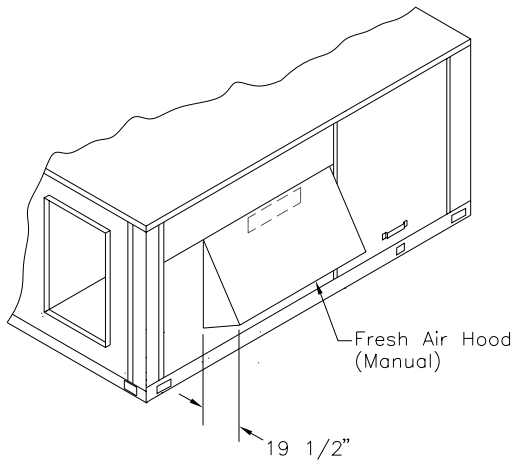
Horizontal Unit Supply/Return and Unit Clearance



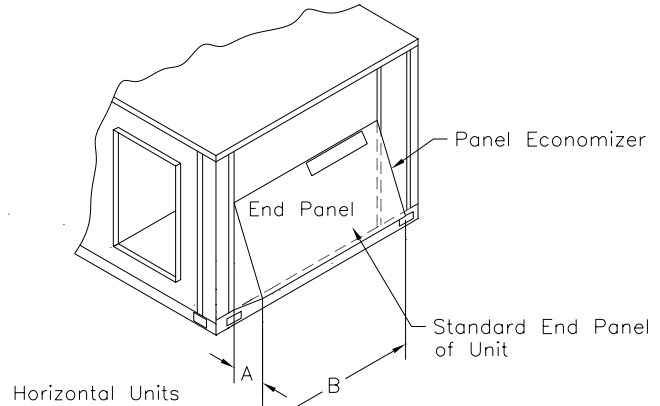
Dimensional Data

(12½ - 20Tons) Accessories

All dimensions are in inches.

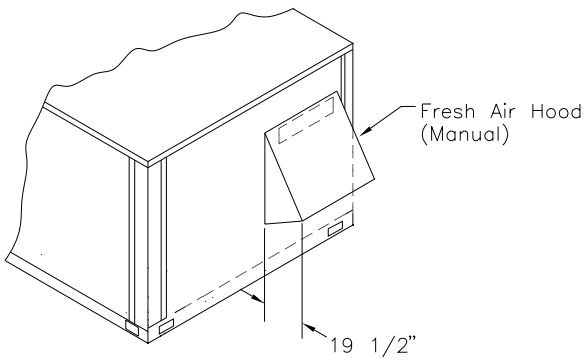


Horizontal Units

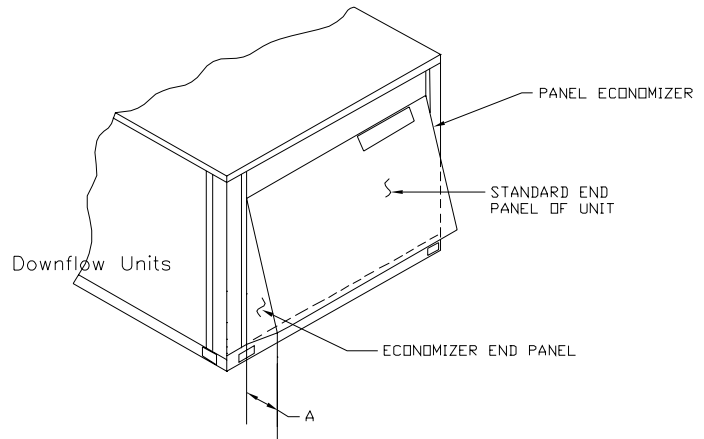


Horizontal Units

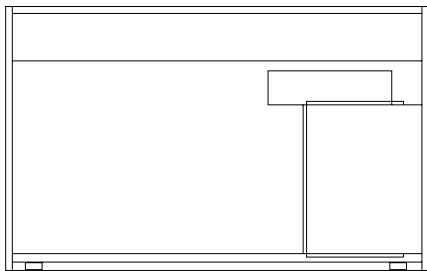
Note:
When applying economizer to horizontal units, connecting ductwork must be run full size to allow proper operation of Economizer Damper.



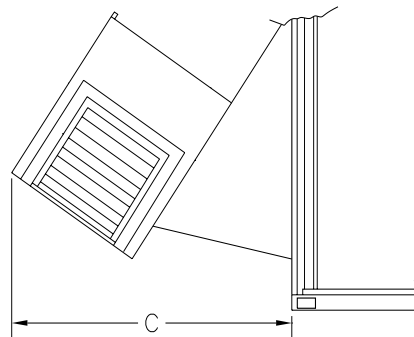
Downflow Units



Downflow Units



Power Exhaust with Downflow Economizers Only. End Panel View



Power Exhaust with Downflow Economizers Only, Side View

Table DD-1

Tons	A	B ¹	C ²
12½, 15	17½	53¾	36
20	19½	64¾	39

NOTES:
1. Horizontal dimension only. Downflow economizer is width of end panel.
2. Power exhaust is applied on downflow economizer only.

Dimensional Data

Factory Installed Options (FIOPS)

All dimensions are in inches.

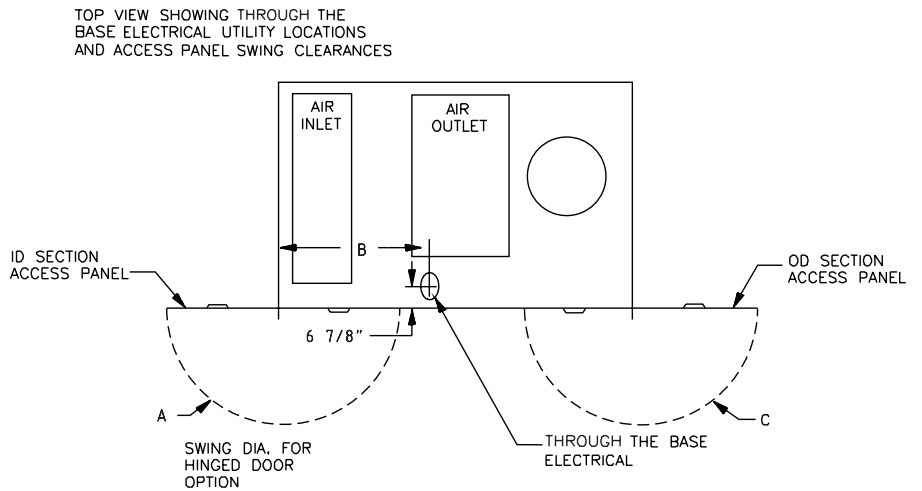
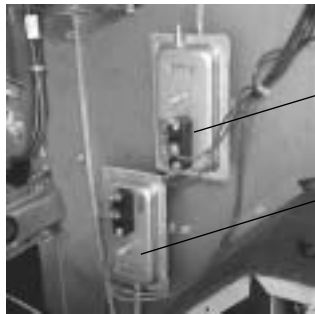


Table DD-2

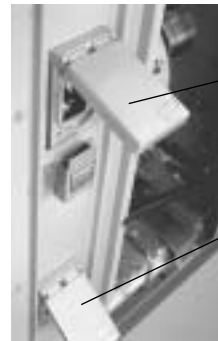
Unit Model #	A	B	C
WCD150-180	$42\frac{3}{8}$	$48\frac{3}{8}$	31
WCD240	$29\frac{1}{2}$	56	$38\frac{1}{2}$

Dimensional Data

Factory Installed Options (FIOPS)

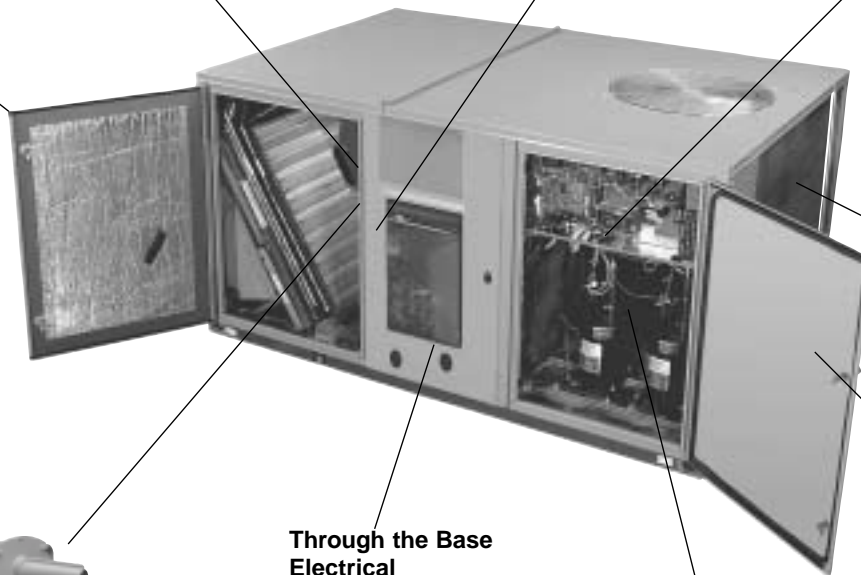


Fan Failure Switch
Clogged Filter Switch



Disconnect Switch or Circuit Breaker
Powered Or Unpowered Convenience Outlet

Hinged Access Door



Trane Communication Interface

Black Epoxy Coated Outdoor Coils

Hinged Access Door

Through the Base Electrical

High Pressure Cut Out



Supply and/or Return Smoke Detectors

Dimensional Data

(12½ - 20 Tons)

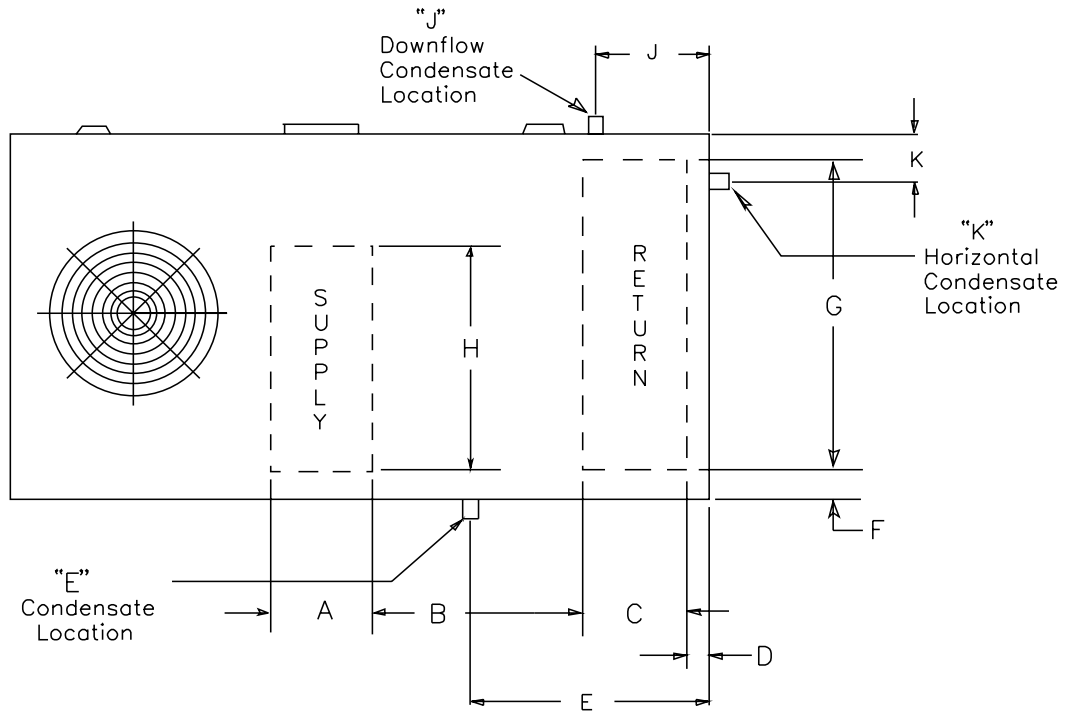


Table DD-3 — 12½-20 Tons

Tons	Downflow Only							Condensate Drain Size	Condensate Drain Location			
	A	B	C	D	F	G	H		Downflow		Horizontal	
									E	J	E	K
12½, 15	26 ^{7/16}	22 ^{1/2}	18 ^{11/16}	4 ^{1/4}	4 ^{1/4}	62 ^{7/16}	54 ^{11/16}	1 NPT	—	25 ^{5/8}	—	5 ^{3/8}
20	26 ^{7/16}	28 ^{3/4}	19 ^{15/16}	4 ^{1/4}	4 ^{1/4}	76 ^{5/16}	68 ^{11/16}	1 NPT	—	26 ^{3/4}	—	5 ^{3/8}



Weights

(12½ - 20Tons)

Table W-1 — Accessory Net Weights (Lbs)

Tons	Unit Model No.	Economizer ¹		Outside Air Damper		Power Exhaust ⁴	Roof Curb ⁴	Oversized Motor Adder	High Static Drive
		Net	Ship	Manual	Motorized				
12½,15	WCD150,180B	65	205	32	60	95	205	5	10/NA
20	WCD240B	80	265	32	75	95	235	5	10
12½,15	WCH150,180B	50	150	32	60	—	—	5	10/NA
20	WCH240B	65	210	32	75	—	—	5	15

Table W-1 — (Continued)

Tons	Unit Model No.	All Zone Sensors	Electric Heaters			
			5-18 KW 240/480V ^{2,3}	23-36 KW 240/480V ^{2,3}	54 KW 240/480V ^{2,3}	72 KW 240/480V ^{2,3}
12½,15	WCD150,180B	1	28/21	31/27	38/32	—
20	WCD240B	1	—	33/27	40/32	43/34
12½,15	WCH150,180B	1	28/21	31/27	38/32	—
20	WCH240B	1	—	33/27	40/32	43/34

NOTES:

1. Net weight should be added to unit weight when ordering factory installed economizer or oversize motor.
2. For 600V heaters net weights are same as 480V heaters.
3. To estimate shipping weight add 5 lbs to net weight.
4. Downflow only.

*Indicates both downflow and horizontal units.

Weights

Table W-2 — Maximum Unit Weights, Corner Weights (Lbs) And Center Of Gravity Dimensions (In.)

Tons	Unit Model No.	Maximum Weights (Lbs)		Corner Weights (Lbs)				Center of Gravity (In.)	
		Shipping	Net	A	B	C	D	Length	Width
12½	WC*150	1719	1351	465	344	231	311	46	29
15	WC*180	1857	1489	547	368	231	343	43	27
20	WC*240	2467	2008	707	510	331	460	51	34

1. Corner weights are given for information only. 10-20 ton models must be supported continuously by a curb or equivalent frame support.

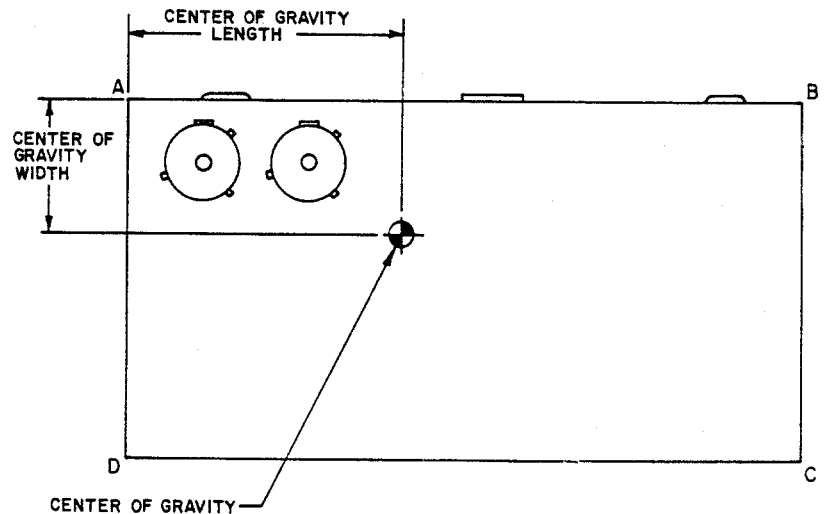


Table W-3 — Factory Installed Options (FIOPS) Net Weights (Lbs)^{1,2,3}

Accessory	Accessory Model Number	Weight
High Efficiency Motors	FIYHEMT001,002	15
	FIYHEMT003-005	49
	FIYHEMT006-008	36
Hinged Doors	FIYHNGE002	10
	FIYHNGE003-009	27
Powered Convenience Outlet	FIYCOPO101-206	38
Through the Base Electrical	FIYTBUE101-111	16
	FIYTBUE201-216	23
Unit Mounted Circuit Breaker	FIYUCB4150	5
	FIYUCB3175-3250	10
Unit Mounted Disconnect	FIYUDC4150,6100	5
	FIYUDC3250	10

NOTES:

- Weights for FIOP accessories not listed are >5 lbs.
- Net weight should be added to unit weight when ordering factory installed accessories.
- See Table W-1 for standard factory installed economizer, electric heater and oversized motor.



Mechanical Specifications

General

The units shall be dedicated downflow or horizontal airflow. The operating range shall be between 115°F and 0°F in cooling as standard from the factory for all units. Cooling performance shall be rated in accordance with ARI testing procedures. All units shall be factory assembled, internally wired, fully charged with R-22, and 100 percent run tested to check cooling operation, fan and blower rotation and control sequence, before leaving the factory. Wiring internal to the unit shall be colored and numbered for simplified identification. Units shall be UL listed and labeled, classified in accordance to UL 1995/CAN/CSA No. 236-M90 for Heat Pumps. Canadian units shall be CSA Certified.

Casing

Unit casing shall be constructed of zinc coated, heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit's surface shall be tested 500 hours in a salt spray test in compliance with ASTM B117. Cabinet construction shall allow for all maintenance on one side of the unit. Service panels shall have lifting handles and be removing not more than three screws on the 12½-20 tons while providing a water and air tight seal. All exposed vertical panels and top covers in the indoor air section shall be insulated with a 1/2 inch, 1 pound density matt-faced, fire-resistant, permanent, odorless, glass fiber material. The base of the downflow unit shall be insulated with 1/2 inch, 1 pound density foil-faced, closed-cell material. The downflow unit's base pan shall have no penetrations within the perimeter of the curb other than the raised 1⅛ inch high supply/return openings to provide an added water integrity precaution, if the condensate drain backs up. The base of the unit shall have provisions for forklift and crane lifting.

Unit Top

The top cover shall be one piece, or where seams exist, double hemmed and gasket sealed to prevent water leakage.

Filters

Two inch standard filters shall be factory supplied on all units. Optional two inch pleated media filters shall be available for 12½-20 ton models.

Compressors

External high pressure cutout shall be provided on all 15 and 20 models. Low pressure switches shall be standard. All 12½-20 tons shall have direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of nameplate voltage. Internal overloads shall be provided with the scroll compressors. Crankcase heaters shall be utilized with all scroll compressors.

Refrigerant Circuits

Each refrigerant circuit shall have independent fixed orifice or thermostatic expansion devices, service pressure ports, and refrigerant line filter driers factory installed as standard. An area shall be provided for replacement suction line driers.

Evaporator and Condenser Coils

Internally finned, 3/8" copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. Coils shall be leak tested at the factory to ensure the pressure integrity. The evaporator coil and condenser coil shall be leak tested to 200 psig and pressure tested to 450 psig. All dual compressor units shall have intermingled evaporator coils. Sloped condensate drain pans are standard.

Outdoor Fans

The outdoor fan shall be direct-drive, statically and dynamically balanced, draw-through in the vertical discharge position. The fan motor(s) shall be permanently lubricated and shall have built-in thermal overload protection.

Indoor Fan

Units above shall have belt driven, FC centrifugal fans with adjustable motor sheaves. Units with standard motors above 12½ tons shall have an adjustable idler-arm assembly for quick-adjustment of fan belts and motor sheaves. All motors shall be thermally protected. Oversized motors shall be available for high static application. All indoor fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

Controls

Unit shall be completely factory wired with necessary controls and contactor pressure lugs or terminal block for power wiring. Unit shall provide an external location for mounting a fused disconnect device. ReliaTel controls shall be provided for all 24 volt control functions. The resident control algorithms shall make all heating, cooling, and/or ventilating decisions in response to electronic signals from sensors measuring indoor and outdoor temperatures. The control algorithm maintains accurate temperature control, minimizes drift from set point, and provides better building comfort. A centralized control shall provide anti-short cycle timing and time delay between compressors to provide a higher level of machine protection.

Defrost Controls

A time initiated, temperature terminated defrost system shall ship with a setting of 70 with a choice of 50 or 90 minute cycle. Timed override limits defrost cycle to 10 minutes shall be available on all 12½-20 tons.

Mechanical Specifications

Accessories

Electric Heaters

Electric heat modules shall be available for installation within basic unit. Electric heater elements shall be constructed of heavy-duty nickel chromium elements internally delta connected for 240 volt, wye connected for 480 and 600 volt. Staging shall be achieved through ReliaTel. Each heater package shall have automatically reset high limit control operating through heating element contactors. All heaters shall be individually fused from the factory, where required, and shall meet all NEC and CEC requirements when properly installed. Power assemblies shall provide single-point connection. Electric heat modules shall be UL listed or CSA certified.

Roof Curb - Downflow

The roof curb shall be designed to mate with the downflow unit and provide support and a water tight installation when installed properly. The roof curb design shall allow field-fabricated rectangular supply/return ductwork to be connected directly to the curb. Curb design shall comply with NRCA requirements. Curb shall be shipped knocked down for field assembly and shall include wood nailer strips.

Economizer - Downflow

This accessory shall be either field or factory-installed. The assembly includes fully modulating 0-100 percent motor and dampers, barometric relief, minimum position setting, preset linkage, wiring harness with plug, fixed dry bulb and spring return actuator. The barometric relief damper shall be standard with the downflow economizer and shall provide a pressure operated damper that shall be gravity closing and shall prohibit entrance of outside air during the equipment "off" cycle. Solid state enthalpy and differential enthalpy control shall be field-installed options.

Economizer - Horizontal

This accessory shall be field-installed only. The horizontal economizer shall contain the same features as the downflow economizer with the exception of barometric relief.

Remote Potentiometer

The minimum position setting of the economizer shall be adjusted with this accessory.

Powered Exhaust

The field installed powered exhaust shall provide exhaust of return air, when using an economizer, to maintain better building pressurization.

Manual Outside Air Damper

Field installed rain hood and screen shall provide up to 25 percent outside air.

Motorized Outside Air Dampers

Manually set outdoor air dampers shall provide up to 50 percent outside air. Once set, outdoor air dampers shall open to set position when indoor fan starts. The damper shall close to the full closed position when indoor fan shuts down.

High Static Drive

Field installed high static drive option shall allow the standard motor on the 12½ and 20 ton units to operate with improved external static capabilities.

Oversized Motors

Factory or field installed oversized motors shall be available for high static applications.

Control Options

Trane Communication Interface (TCI)

This factory or field installed option shall allow communication with the Trane Integrated Comfort™ Systems.

Zone Sensors

This option shall be provided to interface with the Micro equipped Voyagers and shall be available in either manual, automatic, programmable with night setback, with system malfunction lights or remote sensor options.

Differential Pressure Switches

These field installed options allow for individual fan failure and dirty filter indication. The fan failure switch will disable all unit functions and "flash" the Service LED on the zone sensor. The dirty filter switch will light the Service LED on the zone sensor and will allow continued unit operation.

LonTalk® Communications Interface

The LonTalk communications interface, when installed in a Voyager unit, allows the unit to communicate as a Tracer™ LCI-V device or directly with generic LonTalk Network Building Automation System Controls.

CO₂ Sensing

The CO₂ sensor has the ability to monitor space occupancy levels within the building by measuring the parts per million of CO₂ (Carbon Dioxide) in the air. As the CO₂ levels increase, the outside air damper modulates to meet the CO₂ space ventilation requirements. The CO₂ accessory kit is available as a field installed accessory.

Ventilation Override Accessory

With the Ventilation Override Accessory installed, the unit can be set to transition up to 3 different pre-programmed sequences for Smoke Purge, Pressurization, and Exhaust. The transition occurs when a binary input on the RTOM is closed (shorted). This would typically be a hard wired relay output from a smoke detector or fire control panel. The ventilation override kit is available as a field installed accessory.

Digital Display Zone Sensor

The Digital LCD (Liquid Crystal Display) zone sensor has the look and functionality of standard zone sensors. This sensor includes a digital display of set point adjustment and space temperature in F (Fahrenheit) or C (Celsius). Includes FAN and SYSTEM buttons (supports the service functions of the standard sensor). E-squared memory stores last programmed set points. Requires 24 VAC (Volts AC). This sensor should be utilized with ReliaTel™ controls.

Dual Thermistor Remote Zone Sensor

This sensor will allow the customer to reduce the total number of remote sensors to obtain space temperature averaging. This sensor should be utilized with ReliaTel controls.



Mechanical Specifications

Additional Factory Installed Options (FIOPS)

Electric Heaters

Factory installed and wired electric heaters are available for all 3 phase horizontal and downflow 12½ - 20 tons. If ordering the Through the Base Electrical option with an Electric Heater, the heater must be factory installed.

Through the Base Electrical with Circuit Breaker

This option is a factory installed thermal magnetic, molded case, HACR Circuit Breaker with provisions for through the base electrical connections. The circuit breaker will be installed in a water tight enclosure in the unit with access through a swinging door. Factory wiring will be provided from the switch to the unit high voltage terminal block. The circuit breaker will provide overcurrent protection, be sized per NEC and UL guidelines, and be agency recognized by UL/CSA. This option is available on all 12½-20 tons downflow models.

Powered or Unpowered Convenience Outlet

This option is a GFCI, 120v/15amp, 2 plug, convenience outlet, either powered or unpowered. When the convenience outlet is powered, a service receptacle disconnect will be available. The 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. This option can only be ordered when the Through the Base Electrical with either the Disconnect Switch, or Circuit Breaker, option is ordered. This option is available on all 12½-20 tons downflow models.

Clogged Filter/Fan Failure Switch

A dedicated differential pressure switch is available to achieve active fan failure indication and/or clogged filter indication. These indications will be registered with either a zone sensor with status indication lights or an Integrated Comfort™ System.

Reference or Comparative Enthalpy

Reference or Comparative Enthalpy option shall be available when a factory installed Downflow Economizer is ordered. This option is available on all 12½-20 tons downflow models.

High Pressure Cutout

This option is offered for units that do not have High Pressure cutout as standard. The Voyager units with High Pressure Cutout as standard are WC*180-240B.

Hinged Access Doors

Sheet metal hinges are available factory installed on the Filter/Evaporator Access Door and the Compressor/Control Access Door. This option is available on all 12½-20 tons downflow models.

Trane Communications Interface (TCI)

An option for a factory installed Trane Communication Interface is available to allow twisted wire pair communication with an Integrated Comfort™ System. Order this option when a combination of TCI and oversized motor is desired.

Discharge Air Sensing Kit

This kit provides true discharge air sensing in heating models. This sensor is a status indicator readable through Tracer™ or Tracker™. The kit is functional only with the ReliaTel Options Module.

Coil Guards

Hail protection quality coil guards shall be either factory or field-installed for condenser coil protection.

High Efficiency Motors

This option is available with efficiency ratings from 86.5 up to 91.0. It is not available for all models.

Mechanical Specifications

Supply and/or 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. Return Air Smoke Detectors require minimum allowable airflow when used with certain models. See the Installation, Operation, and Maintenance (IOM) manual for the models affected and the minimum allowable airflow required. This option is available on all 12½-20 tons downflow models.

Black Epoxy Coated Condenser Coil

The coil provides corrosion protection to condenser coils for seacoast application. The protection is a factory applied thermoset vinyl coating, bonded to normal aluminum fin stock. The uniform thickness of the bonded vinyl layer exhibits excellent corrosion protection in salt spray tests performed in accordance with ASTM B117.

Frostat

This factory or field installed option is to be utilized as a safety device. The Frostat opens when temperatures on the evaporator coil fall below 10°F. The temperature will need to rise to 50°F before closing. This option should be utilized in low airflow or high outside air applications.

Novar Unit Controls

Novar rooftop unit controls will be factory installed and tested. The Novar electronic thermostat module will interface to the unit microprocessor and will control the unit to the desired stage of cooling or heating. The Novar electronic thermostat module will monitor the following unit information: fan failure status, cooling stage 1 on status, cooling stage 2 on status, heating on status, clogged filter status or unit shutdown status, and discharge air temperature. The Novar electronic thermostat module will have the ability to enable the unit mounted economizer.

Novar Return Air Sensor

This option, when used in conjunction with Novar Controls, will contain a factory provided wired zone temperature sensor located in the return air stream.

Through the Base Utilities 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.

Through the Base Electrical With Disconnect Switch

Factory installed 3-pole, molded case, disconnect switch with provisions for through the base electrical connections are available. The disconnect switch will be installed in the unit in a water tight enclosure with access through a swinging door. Factory wiring will be provided from the switch to the unit high voltage terminal block. The switch will be UL/CSA agency recognized. Note: The disconnect switch will be sized per NEC and UL guidelines but will not be used in place of unit overcurrent protection. This option is available on all 12½-20 tons downflow models.

Two-Inch Pleated Filters

Two inch pleated media filters shall be available on all 12½-20 ton models.



*Downflow Units only



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