

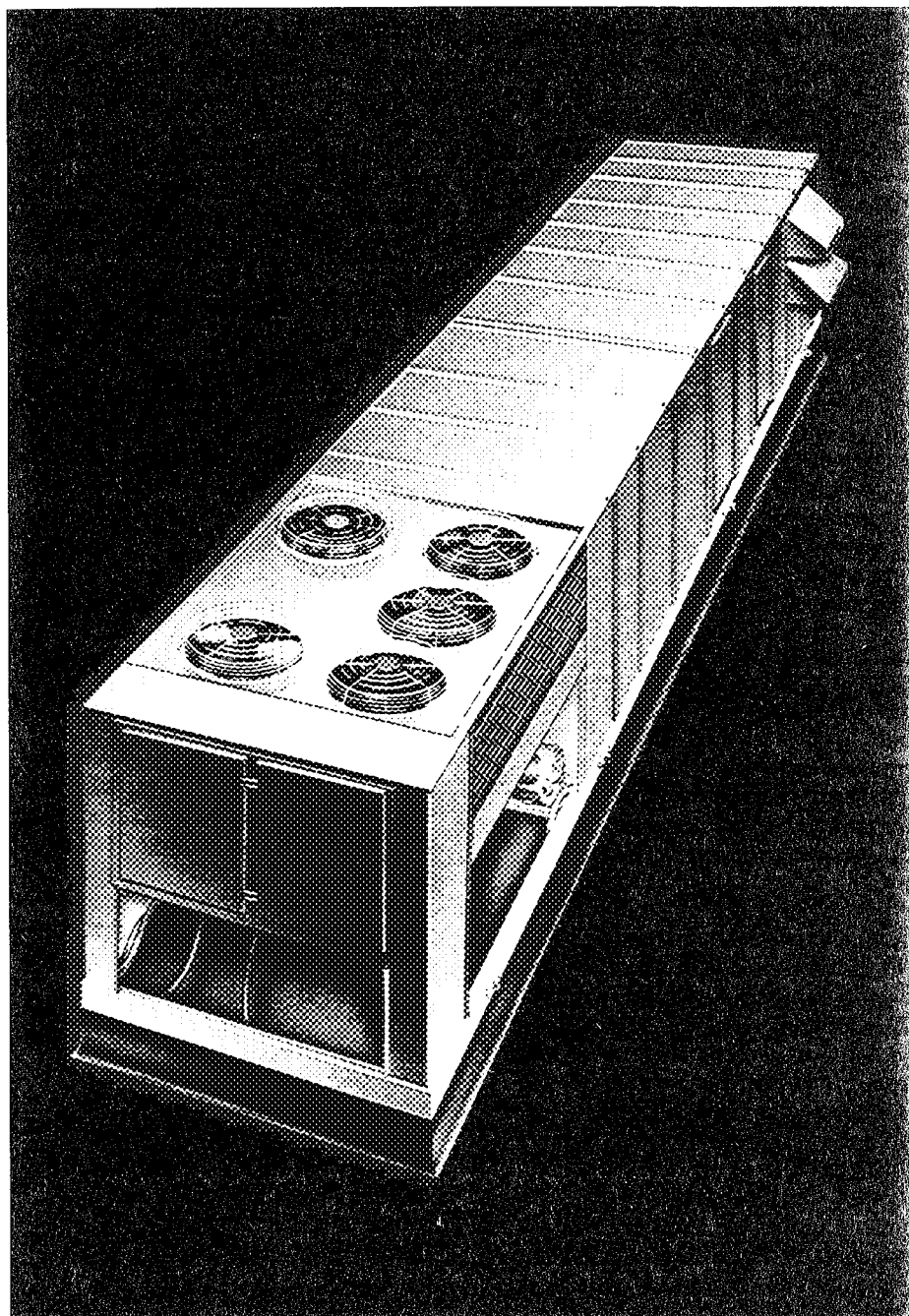


Product Data

50NB,NP Weathermaker® III Rooftop Units

Cooling with Product Integrated Controls and Optional Electric Heat

30 to 75 Nominal Tons



Single-package rooftop products with communicating controls designed to meet commercial and industrial application requirements

- constant volume (for use when unit operation is to be based on the occupied space temperature)
- variable-air volume (for use when unit operation is to be based on discharge-air temperature)
- optional digital air volume (all units) provides occupied space control of unit for more efficient heating and cooling (VAV only)
- optional factory-installed control option module for increased capabilities and functions
- factory-built vertical supply/return units (50NP)
- factory-built horizontal supply/return units (50NB)

Features/Benefits

Factory-installed product integrated controls (PIC) provide free-standing or communicating system operation as part of the Carrier Comfort Network (CCN). System operation requires units be connected by a twisted, 3-wire communications bus. Units share information, and can be monitored either on site or remotely (via a telephone modem). Unit PIC controls also interface directly with Carrier PIC controls on 35 and 45 Series units and 37 Series Moduline® terminals to form a digital-air volume (DAV) system for optimum efficiency and tenant comfort.

Standard PIC control functions include:

- up to 6 stages of capacity control
- lead-lag compressor control to equalize the operating hours

between the 2 serviceable, semi-hermetic compressors (not recommended with optional hot gas bypass)

- adaptive optimal start/morning warm-up
- adaptive optimal stop (CV only)
- head-pressure control to -20 F ambient outdoor-air temperature
- solid-state enthalpy economizer control (with optional economizer)
- supply-fan control based on occupancy schedule
- adjustment of space set point at the space on CV applications using accessory T56 space temperature sensor
- 365-day electronic time-clock with battery back-up
- occupancy control with 8 programmable occupancy periods and additional holiday period
- optional 2-stage electric heat control (50NP only)
- inlet guide vane control (VAV with optional inlet guide vanes)
- support linkage function for interface with 35 or 45 Series units and 37 Series Moduline® units to create a DAV system
- control of a field-supplied supply-air fan motor inverter
- space temperature reset (DAV and VAV applications)
- economizer and supply-air fan control
- local or remote unit alarm and alert monitoring
- filter maintenance alarm
- building purge
- self-monitoring diagnostics
- demand limiting

Unique design

The 50NB,NP units are uniquely designed in that the unit control will perform both the constant volume (CV) and the variable-air volume (VAV) control functions. The physical factors that determine whether a unit will be CV or VAV are the factory-installed options which are chosen for the unit.

Digital-air volume (DAV) system

The 50NB,NP034-074 units have as standard a support linkage function which provides the ability to interface with the 35, 37, and 45 Series VAV terminals with PIC controls to create a true DAV system. A DAV system's "zone-directed control" allows dynamic equipment response to changing space conditions, which maximizes system efficiencies and reduces overall operating costs. For maximum benefit, the temperature reset function must be used. The feedback from the conditioned space enables each piece of equipment to automatically adjust

its operation to effectively match the building load and act as a part of a synergistic HVAC system.

When using a DAV system, the conditioned space is divided into zones. Each zone has its own temperature sensor that is connected to an air terminal unit. Each zone's status (occupied or unoccupied) and space temperature requirements are directly communicated to the air terminals and rooftop unit through the system linkage software. Operation of the VAV air terminals and the 50NB,NP rooftop unit is determined by the zone's heating and cooling requirements.

System functions like morning warm-up, adaptive optimal start, nighttime free cooling, building pressurization and evacuation, and occupied heating and cooling can all be integrated into the system control strategy.

Design flexibility

Carrier Weathermaker® III rooftop units with PIC are designed to meet all customer requirements for new construction, replacement jobs, or special applications. Choose from: constant or variable-air volume applications (the base units are the same regardless of application; the options chosen are the only physical differences between the two), 3 sizes of electric heaters, 4 fan motor sizes (standard or high efficiency), and aluminum or copper condenser coils. Add optional integrated economizer with low-leak dampers, barometric relief, power exhaust or return fans (054-074 only). Filtration choices include standard 2-in. throwaway filters, 30% efficient pleated filters, and 90% efficient bag filters with prefilters.

Indoor-air quality (IAQ)

There is currently a great deal of concern over indoor-air quality in commercial establishments. Contaminants can get into the conditioned space from various sources. For example, people produce carbon dioxide and other contaminants which can affect the quality of the conditioned space.

In order to deal with possible indoor-air contaminants, ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) has created a standard (ASHRAE 62-89) for indoor-air quality (IAQ). The standard requires that on the average, 20 cfm per person or 0.20 cfm per square ft (depending on the application) of outdoor air must be used for ventilation of the conditioned space.

Meeting this requirement can be expensive and wasteful in many situa-

tions. Because of this, ASHRAE has also determined that it is acceptable to monitor indoor-air quality using an IAQ sensor and provide ventilation as necessary to maintain acceptable levels of contaminants.

The 50NB,NP units have been designed to provide control over indoor-air quality in an efficient manner. With the factory-installed control option module, an analog input is supplied to accept a zero to 10-v input from a field-supplied IAQ sensor. When the sensor indicates poor IAQ, the optional economizer steps open to increase ventilation air until the sensor registers satisfactory IAQ. (See Control Option Module section on page 4 for more information on integrated economizer operation and control.) This optional function eliminates the need to meet the ASHRAE requirements of cfm per person (or per square ft), and is especially useful in retail applications and in situations where mixed-air temperatures would be extreme.

With additional Carrier data collection software, IAQ data can be recorded and printed in user-designed reports.

The 50NB,NP units also provide the following IAQ features:

1. Building purge flushes the conditioned space. This is especially important when a temporary situation occurs in a conditioned space, such as painting, new carpeting, or carpet cleaning fumes. The unit can be set to purge the space with outdoor air for 5 to 60 minutes. The purge function starts 2 hours prior to the occupied mode to ensure maximum occupant comfort.
2. On VAV applications, maintaining a constant volume of outdoor air regardless of supply air volume can be difficult. The accessory outdoor airflow sensor, in conjunction with the factory-installed control option module, solves this problem by maintaining an inputted cfm $\pm 5\%$.
3. Space temperature reset (DAV and VAV applications). Space temperature reset maintains adequate ventilation airflow during low load operation (single or multiple sensors can be used). Resetting the discharge-air temperature allows more air to circulate, reducing the possibility of "sick building syndrome."

Unit efficiency

Electric unloaders on dual serviceable, semi-hermetic compressors, used with intertwined circuits on evaporator coils ensure optimum unloading capabilities, as well as excellent full and part load efficiency with EERs (Energy Efficiency Ratios) to 9.5. Dual refrigerant circuits provide stand-by capability should one circuit require service. Reliable Carlyle compressors are proven performers.

All units have a minimum of 4 stages of unloading. Optional hot gas bypass valve provides an additional stage of low-load operation to the refrigerant system if necessary.

The low rpm single-supply fan design reduces noise and vibration. The straight-through air path reduces internal losses and brake horsepower requirements.

The supply fan is equipped with spring vibration isolators with 2-in. deflection.

The refrigerant circuits on all units are equipped with low ambient head pressure control as standard, and are

designed to operate efficiently at outdoor-air temperatures down to -20°F . It is recommended that wind baffles be installed to achieve full low-ambient operation. Consult Service Engineering Manual SMB90-80 for baffle dimensions, mounting, and requirements for winter start capabilities.

The optional factory-installed integrated economizer supports free cooling using outdoor air to maintain the occupied set point when outdoor air is satisfactory. The integrated economizer also provides the night-time free cooling feature to maintain the conditioned space at the occupied set point (when outdoor air is satisfactory) between 3 and 7 a.m. If the outdoor air is not sufficient to keep the space cooled to the occupied set point, the adaptive optimal start will turn on the compressors at the appropriate time to ensure the building will be cooled to the occupied set point in time for the occupied shift to begin. Thus, the integrated economizer uses free outdoor air to cool the conditioned space whenever possible, and

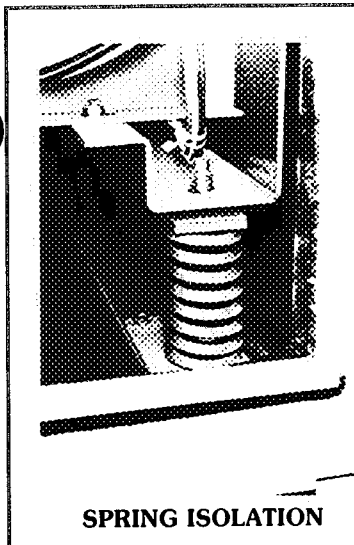
supplements with mechanical cooling only when necessary to ensure comfort.

Low-leak dampers to regulate the outdoor air and the outdoor-air enthalpy sensor are standard with the economizer option. Accessory field-installed differential enthalpy sensor is available for even greater savings. The differential enthalpy sensor allows unit control to compare the enthalpy of return air and outdoor air to determine which is more economical to use for enhanced energy savings.

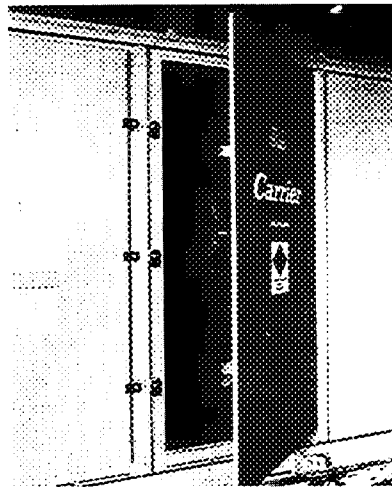
Factory-installed rainhood/filter assembly prevents moisture or objects from entering the unit. Units without economizer have a manual outdoor-air damper that allows intake of up to 25% of nominal cfm.

Exhaust/air relief is also available for economizer units:

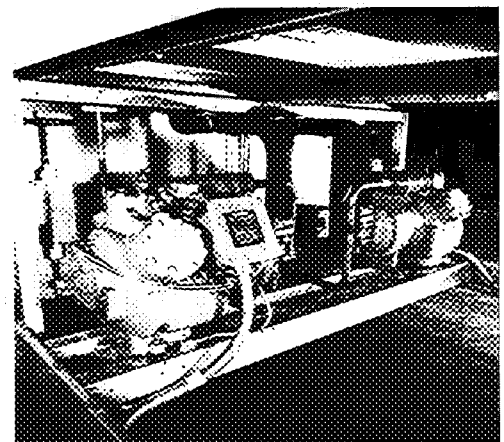
- barometric relief
 - 100% modulating power exhaust
- Using field-adjustable set points, the modulating power exhaust relieves up to 100% of nominal cfm and prevents space pressurization problems.



SPRING ISOLATION



HINGED ACCESS DOORS



DUAL COMPRESSORS

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Features/Benefits (cont)

The optional modulating return-air fan (available on 054-074 units with economizer option) discharges air within the rooftop unit so that all of the return air may be reconditioned. The return-air fans energize at the same time as the supply-air fan and continue to run as long as the supply-air fan runs. To prevent system overpressurization, barometric relief dampers are factory installed on units with return-air fans.

Optional factory-installed inlet guide vanes are available on units for fan modulation. All associated controls are factory installed. In addition, field-supplied and installed inverters may be used if desired. The PIC controls will accommodate and control either inlet guide vanes or inverters through a 4-20 mA signal.

Installation/Serviceability

All man-size access panels are hinged for easy access to serviceable components. No fasteners need to be removed, which reduces servicing time and prevents roof leaks caused by discarded screws puncturing the roof.

The virtually square duct aspect ratio makes duct fabricating, handling, and rigging easy. Ducts attach directly to the NRCA (National Roofing Contractors Association) roof curb to allow all ductwork to be completed before the unit is positioned. On horizontal units, the ducts attach directly to the unit using factory-supplied flanges. Horizontal units can be curb or slab mounted.

Single point electrical connections are standard on all units, regardless of voltage or optional heater size. Electrical service access can be made through roof curb or side of unit.

The compressors are equipped with suction and discharge service valves for easy service.

To ensure a successful start-up, every rooftop unit is factory run tested.

When the accessory HSIO (keypad interface) or building supervisor feature is installed, serviceability becomes even easier, including:

- Local or remote alarm and alert monitoring
- Self-diagnostic run testing to confirm control and component operation
- Expedited troubleshooting and unit repair through self-diagnostic display of unit troubleshooting code to immediately identify reason for unit outage

- Filter maintenance alarm
- Monitoring of supply-air fan run time, permitting easy service schedule planning

Serviceability is further facilitated with the field installation of the accessory suction and discharge pressure transducers. With this accessory, there is no need to open or modify the refrigerant circuit to check the pressures. Suction and discharge pressures can be monitored remotely, and have alarm fault capability. With the factory-installed control option module, refrigerant superheat can also be monitored remotely.

Unit controls

A self-diagnostic microprocessor controls the leaving-air temperature. The microprocessor also controls stages of cooling, heating, morning warm-up cycle, and unit safety controls. At start-up, the self-diagnostic "quick" test verifies component operation and calibration. Fault codes reduce service troubleshooting time and difficulty.

Space temperature reset uses the standard T55 space temperature sensor. Space temperature reset prevents overcooling the space and maintains higher airflow to ensure adequate ventilation air to the space. It automatically resets the discharge-air temperature when space temperature reaches the field-adjustable set point. Discharge-air temperature resets up by a user-defined amount for every degree below set point in the space.

Unit design is ETL (Electrical Testing Laboratory) and CSA (Canadian Standards Association) certified.

When installed with the modulating power exhaust option, the economizer option, the optional control option module, and a field-supplied interface with a fire and smoke control panel, units can be set to run in the building pressurization or smoke purge mode. In the event of a fire or smoke condition, a zone can be pressurized to prevent smoke from entering the zone, or smoke can be exhausted from a zone. Refer to Building Pressurization, Evacuation, and Smoke Purge and Control section on page 59 for more information.

Control option module

The control option module is a package of factory-installed controls which

provide control of the following:

1. Suction and discharge pressure transducers and suction temperature thermistors. These allow suction pressure, discharge pressure, and superheat to be monitored remotely with alarm capability. These transducers and thermistors also control condenser head pressure to maintain the minimum differential pressure required across the thermal expansion valve (TXV) for proper operation, which reduces energy consumption.
 2. Indoor-air quality (IAQ) functions to interface with economizer control. The functions included are:
 - A constant amount of outdoor-air intake on VAV applications. This maintains inputted cfm of outdoor air as indoor-air cfm varies due to load changes (accessory field installed outdoor airflow sensor and transducer required).
 - Input channel to accept a 0 to 10-v analog input from a field-supplied IAQ sensor. When the sensor indicates poor IAQ, the economizer steps open to increase ventilation air until the sensor clears.
 - Maintains a minimum set point (based on IAQ set point) when enthalpy is not suitable for free cooling.
- NOTE: The economizer still provides integrated operation with mechanical cooling when required for optimum unit efficiency.
3. Building pressurization, evacuation, smoke purge control, and unit shutdown functions are all available through software. Terminals are provided to interface with a field-supplied smoke/fire panel.
NOTE: Economizer and/or modulating power exhaust options are required.
 4. Control for a field-supplied humidifier (accessory field-supplied humidity sensor located in the space or the return-air duct required).
 5. A 4-20 mA output located on the PSIO2 optional processor module to control a field-supplied hot water valve and heating coil.
 6. A discrete output with time schedule to control items such as parking lot lights.

Features/Benefits (cont)

The optional modulating return-air fan (available on 054-074 units with economizer option) discharges air within the rooftop unit so that all of the return air may be reconditioned. The return-air fans energize at the same time as the supply-air fan and continue to run as long as the supply-air fan runs. To prevent system overpressurization, barometric relief dampers are factory installed on units with return-air fans.

Optional factory-installed inlet guide vanes are available on units for fan modulation. All associated controls are factory installed. In addition, field-supplied and installed inverters may be used if desired. The PIC controls will accommodate and control either inlet guide vanes or inverters through a 4-20 mA signal.

Installation/Serviceability

All man-size access panels are hinged for easy access to serviceable components. No fasteners need to be removed, which reduces servicing time and prevents roof leaks caused by discarded screws puncturing the roof.

The virtually square duct aspect ratio makes duct fabricating, handling, and rigging easy. Ducts attach directly to the NRCA (National Roofing Contractors Association) roof curb to allow all ductwork to be completed before the unit is positioned. On horizontal units, the ducts attach directly to the unit using factory-supplied flanges. Horizontal units can be curb or slab mounted.

Single point electrical connections are standard on all units, regardless of voltage or optional heater size. Electrical service access can be made through roof curb or side of unit.

The compressors are equipped with suction and discharge service valves for easy service.

To ensure a successful start-up, every rooftop unit is factory run tested.

When the accessory HSIO (keypad interface) or building supervisor feature is installed, serviceability becomes even easier, including:

- Local or remote alarm and alert monitoring
- Self-diagnostic run testing to confirm control and component operation
- Expedited troubleshooting and unit repair through self-diagnostic display of unit troubleshooting code to immediately identify reason for unit outage

- Filter maintenance alarm
- Monitoring of supply-air fan run time, permitting easy service schedule planning

Serviceability is further facilitated with the field installation of the accessory suction and discharge pressure transducers. With this accessory, there is no need to open or modify the refrigerant circuit to check the pressures. Suction and discharge pressures can be monitored remotely, and have alarm fault capability. With the factory-installed control option module, refrigerant superheat can also be monitored remotely.

Unit controls

A self-diagnostic microprocessor controls the leaving-air temperature. The microprocessor also controls stages of cooling, heating, morning warm-up cycle, and unit safety controls. At start-up, the self-diagnostic "quick" test verifies component operation and calibration. Fault codes reduce service troubleshooting time and difficulty.

Space temperature reset uses the standard T55 space temperature sensor. Space temperature reset prevents overcooling the space and maintains higher airflow to ensure adequate ventilation air to the space. It automatically resets the discharge-air temperature when space temperature reaches the field-adjustable set point. Discharge-air temperature resets up by a user-defined amount for every degree below set point in the space.

Unit design is ETL (Electrical Testing Laboratory) and CSA (Canadian Standards Association) certified.

When installed with the modulating power exhaust option, the economizer option, the optional control option module, and a field-supplied interface with a fire and smoke control panel, units can be set to run in the building pressurization or smoke purge mode. In the event of a fire or smoke condition, a zone can be pressurized to prevent smoke from entering the zone, or smoke can be exhausted from a zone. Refer to Building Pressurization, Evacuation, and Smoke Purge and Control section on page 59 for more information.

Control option module

The control option module is a package of factory-installed controls which

provide control of the following:

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 4. Control for a field-supplied humidifier (accessory field-supplied humidity sensor located in the space or the return-air duct required).
 5. A 4-20 mA output located on the PSIO2 optional processor module to control a field-supplied hot water valve and heating coil.
 6. A discrete output with time schedule to control items such as parking lot lights.

Features/Benefits (cont)

The optional modulating return-air fan (available on 054-074 units with economizer option) discharges air within the rooftop unit so that all of the return air may be reconditioned. The return-air fans energize at the same time as the supply-air fan and continue to run as long as the supply-air fan runs. To prevent system overpressurization, barometric relief dampers are factory installed on units with return-air fans.

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Single point electrical connections are standard on all units, regardless of voltage or optional heater size. Electrical service access can be made through roof curb or side of unit.

The compressors are equipped with suction and discharge service valves for easy service.

To ensure a successful start-up, every rooftop unit is factory run tested.

When the accessory HSIO (keypad interface) or building supervisor feature is installed, serviceability becomes even easier, including:

- Local or remote alarm and alert monitoring
- Self-diagnostic run testing to confirm control and component operation
- Expedited troubleshooting and unit repair through self-diagnostic display of unit troubleshooting code to immediately identify reason for unit outage

- Filter maintenance alarm
- Monitoring of supply-air fan run time, permitting easy service schedule planning

Serviceability is further facilitated with the field installation of the accessory suction and discharge pressure transducers. With this accessory, there is no need to open or modify the refrigerant circuit to check the pressures. Suction and discharge pressures can be monitored remotely, and have alarm fault capability. With the factory-installed control option module, refrigerant superheat can also be monitored remotely.

Unit controls

A self-diagnostic microprocessor controls the leaving-air temperature. The microprocessor also controls stages of cooling, heating, morning warm-up cycle, and unit safety controls. At start-up, the self-diagnostic "quick" test verifies component operation and calibration. Fault codes reduce service troubleshooting time and difficulty.

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Unit design is ETL (Electrical Testing Laboratory) and CSA (Canadian Standards Association) certified.

When installed with the modulating power exhaust option, the economizer option, the optional control option module, and a field-supplied interface with a fire and smoke control panel, units can be set to run in the building pressurization or smoke purge mode. In the event of a fire or smoke condition, a zone can be pressurized to prevent smoke from entering the zone, or smoke can be exhausted from a zone. Refer to Building Pressurization, Evacuation, and Smoke Purge and Control section on page 59 for more information.

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1. Suction and discharge pressure transducers and suction temperature thermistors. These allow suction pressure, discharge pressure, and superheat to be monitored remotely with alarm capability. These transducers and thermistors also control condenser head pressure to maintain the minimum differential pressure required across the thermal expansion valve (TXV) for proper operation, which reduces energy consumption.
 2. Indoor-air quality (IAQ) functions to interface with economizer control. The functions included are:
 - A constant amount of outdoor-air intake on VAV applications. This maintains inputted cfm of outdoor air as indoor-air cfm varies due to load changes (accessory field installed outdoor airflow sensor and transducer required).
 - Input channel to accept a 0 to 10-v analog input from a field-supplied IAQ sensor. When the sensor indicates poor IAQ, the economizer steps open to increase ventilation air until the sensor clears.
 - Maintains a minimum set point (based on IAQ set point) when enthalpy is not suitable for free cooling.
- NOTE: The economizer still provides integrated operation with mechanical cooling when required for optimum unit efficiency.
3. Building pressurization, evacuation, smoke purge control, and unit shut-down functions are all available through software. Terminals are provided to interface with a field-supplied smoke/fire panel.

NOTE: Economizer and/or modulating power exhaust options are required.
 4. Control for a field-supplied humidifier (accessory field-supplied humidity sensor located in the space or the return-air duct required).
 5. A 4-20 mA output located on the PSIO2 optional processor module to control a field-supplied hot water valve and heating coil.
 6. A discrete output with time schedule to control items such as parking lot lights.

Model number nomenclature

50 NP A 064 DA - 5 0 1 K K

50 — Cooling with Optional Electric Heat

NB — Constant Volume, Variable-Air Volume, Horizontal Supply and Return

NP — Constant Volume, Variable-Air Volume, Vertical Supply and Return

Heat Option (50NP Only)

- — No Electric Heat
A — Low Electric Heat
B — Medium Electric Heat
C — High Electric Heat

Nominal Tons

034 — 30
044 — 40
054 — 50
064 — 60
074 — 75

Control Package/Filter Option

-- — Standard 2-in. Throwaway
CA — Bag Filters with Pre-filters (90% Efficient)
DA — Pleated (30% Efficient)
EA — Optional Control Option Module/ Standard 2-in. Throwaway
FA — Optional Control Option Module/ Bag Filters with Pre-filters (90% Efficient)
GA — Optional Control Option Module/ Pleated (30% Efficient)

Condenser Coil Material

- — Al/Cu, without hot gas bypass
A — Al/Cu, with hot gas bypass
C — Cu/Cu, without hot gas bypass
D — Cu/Cu, with hot gas bypass

Voltage

1 — 575-3-60
5 — 208/230-3-60
6 — 460-3-60

Design Series

0 — Initial

Packaging

1 — Domestic

Outdoor-Air Option

A — Economizer Only
B — Manual 25% Outdoor Air Damper
D — Economizer with Barometric Relief Damper
J — Economizer with 6.0 Hp Modulating Power Exhaust *
K — Economizer with 10.0 Hp Modulating Power Exhaust
L — Economizer with 15.0 Hp Modulating Power Exhaust
M — Economizer with 20.0 Hp Modulating Power Exhaust †
R — Economizer with 10.0 Hp Modulating Return Air Fan †
S — Economizer with 15.0 Hp Modulating Return Air Fan †
T — Economizer with 20.0 Hp Modulating Return Air Fan †

Inlet Guide Vane (IGV)/Motor Option

A — Standard 7.5 Hp Motor, without IGV *
B — Standard 10.0 Hp Motor, without IGV *
C — Standard 15.0 Hp Motor, without IGV
D — Standard 20.0 Hp Motor, without IGV
E — Standard 25.0 Hp Motor, without IGV †
F — Standard 30.0 Hp Motor, without IGV †
G — High-Efficiency 10.0 Hp Motor, without IGV *||
H — High-Efficiency 15.0 Hp Motor, without IGV ||
J — High-Efficiency 20.0 Hp Motor, without IGV ||
K — High-Efficiency 25.0 Hp Motor, without IGV †||
L — High-Efficiency 30.0 Hp Motor, without IGV †||
M — Standard 7.5 Hp Motor, with IGV *
N — Standard 10.0 Hp Motor, with IGV *
P — Standard 15.0 Hp Motor, with IGV
Q — Standard 20.0 Hp Motor, with IGV
R — Standard 25.0 Hp Motor, with IGV †
S — Standard 30.0 Hp Motor, with IGV †
T — High-Efficiency 10.0 Hp Motor, with IGV *||
V — High-Efficiency 15.0 Hp Motor, with IGV ||
W — High-Efficiency 20.0 Hp Motor, with IGV ||
Y — High-Efficiency 25.0 Hp Motor, with IGV †||
Z — High-Efficiency 30.0 Hp Motor, with IGV †||

IGV — Inlet Guide Vanes

* Available on sizes 034 and 044 only.

† Available on sizes 054-074 only.

|| Not available on 575-v units.

Physical data

BASE UNIT 50	NP034	NB034	NP044	NB044
NOMINAL CAPACITY (tons)	30		40	
OPERATING WEIGHT (lb)				
Unit	5400	5970	6050	6620
With Economizer	5700	6270	6350	6920
COMPRESSORS	Semi-Hermetic			
Quantity...Type	2...06DG537		2...06E2250	
Capacity Steps (%)	17,33,50,66,83,100		25,50,75,100	
Number of Refrigerant Circuits	2		2	
REFRIGERANT				
Operating Charge (lb), Sys 1/Sys 2	29.0/29.0		40.0/40.0	
Without Hot Gas Bypass	31.0/29.0		42.0/40.0	
With Hot Gas Bypass				
CONDENSER COILS	3/8-in. Tube Diameter			
Quantity	2		2	
Rows...Fins/in.				
Aluminum	3 .15 0		3 .15 0	
Copper (Optional)	3...13.7		3...13.7	
Total Face Area (sq ft)	37.5		50.0	
EVAPORATOR COILS	1/2-in. Tube Diameter			
Quantity	1		2	
Rows...Fins/in.	3...15.0		3...15.0	
Total Face Area (sq ft)	32.1		45.5	
Refrigerant Feed Device...No. per Circuit	TXV...1		TXV...2	
CONDENSER FANS	Propeller Type			
Quantity...Diameter (in.)	2...30		3...30	
Nominal Cfm	18,600		26,000	
Motor Hp...Rpm	1.0...1140		1.0...1140	
EVAPORATOR FAN	Centrifugal 25 x 25 in.			
Nominal Cfm	10,500		14,000	
Maximum Allowable Cfm	15,000		20,000	
Maximum Allowable Rpm	900		900	
Shaft Diameter at Pulley (in.)	1 11/16		1 11/16	
EVAPORATOR-FAN MOTOR AND DRIVE	(Any motor available on any unit)			
Motor Hp	7.5	10.0	15.0	20.0
Motor Frame Size	213T	215T	254T	256T
Efficiency at Full Load (%)				
Standard Efficiency	82.9	85.6	84.5	87.5
High Efficiency	—	89.5	90.0	91.0
Fan Pulley Pitch Diameter (in.)	18.7	18.7	18.7	18.7
Motor Pulley Pitch Diameter A/B (in.)	4.4/5.5	5.5/6.3	6.3/7.1	7.1/8.5
Resulting Fan Rpm A/B	404/509	509/583	583/658	658/792
Belts Quantity...No.	2 .5VX750	2...5VX750	2 .5VX750	2...5VX750
Center Distance Range (in.)	19.86...15.87	19.86...15.87	19.04...15.00	19.04...15.00
OPTIONAL POWER EXHAUST	Centrifugal, 15 x 15 in. (Any motor available on any unit)			
Quantity...Motor Hp	2 .3.0	2...5.0		2 7.5
Motor Frame Size	56HZ	184T		213T
Efficiency at Full Load (%)	81.0	84.0		82.9
Fan Pulley Pitch Diameter (in.)	6.9	6.9		6.9
Motor Pulley Pitch Diameter (in.)	3.35	4.12		5.0
Shaft Diameter at Pulley	1 3/16	1 3/16		1 3/16
Resulting Fan Rpm	843	1040		1264
Maximum Allowable Rpm	1300	1300		1300
Belts Quantity...No.	2...3VX670	2...3VX670		2...3VX710
FILTERS				
Standard Efficiency Throwaway (Standard)	12.. 20 x 25 x 2		12.. 20 x 25 x 2	
Quantity...Size (in.)	4.. 16 x 20 x 2		4...16 x 20 x 2	
Medium Efficiency Pleated (Optional)	12.. 20 x 25 x 2		12...20 x 25 x 2	
Quantity...Size (in.)	4.. 16 x 20 x 2		4 . 16 x 20 x 2	
High Efficiency Bag Filters with Prefilters (Optional)	6...20 x 24 x 22		6 20 x 24 x 22	
Quantity...Size (in.)	6...20 x 20 x 22		6...20 x 20 x 22	

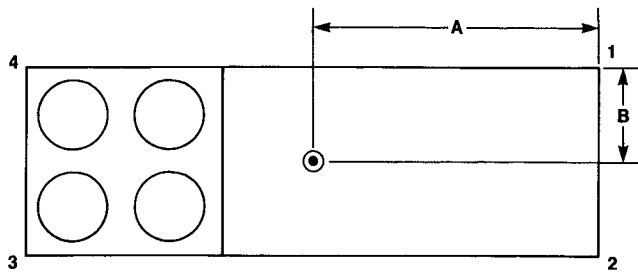
TXV — Thermostatic Expansion Valve

BASE UNIT 50	NP054	NB054	NP064	NB064	NP074	NB074
NOMINAL CAPACITY (tons)	50		60		75	
OPERATING WEIGHT (lb)						
Unit	7700	8250	8000	8550	8430	8970
With Economizer	8230	8780	8530	9080	8960	9500
COMPRESSORS	Semi-Hermetic					
Quantity...Type	1..06E7275, 1..06E2250		1..06E7275, 1..06E7275		1..06E7275, 1..06E7299	
Capacity Steps (%)	20,40,60,80,100		17,33,50,66,83,100		14,28,43,71,85,100	
Number of Refrigerant Circuits	2		2		2	
REFRIGERANT						
Operating Charge (lb), Sys 1/Sys 2						
Without Hot Gas Bypass	59.0/44.5		61.0/61.0		70.5/64.5	
With Hot Gas Bypass	62.0/44.5		64.0/61.0		73.5/64.5	
CONDENSER COILS	¾-in. Tube Diameter					
Quantity	4		4		4	
Rows...Fins/in.						
Aluminum	2 17.0, 3 17.0		3 17.0		3 17.0	
Copper (Optional)	2 15.7, 3 15.7		3 25.7		3 15.7	
Total Face Area (sq ft)	72.4		72.4		108.4	
EVAPORATOR COILS	½-in. Tube Diameter					
Quantity	2		2		2	
Rows...Fins/in.	3 17.0		4 17.0		4 17.0	
Total Face Area (sq ft)	61.5		61.5		61.5	
Refrigerant Feed Device...No. per Circuit	TXV .2		TXV .2		TXV...2	
CONDENSER FANS	Propeller Type					
Quantity...Diameter (in.)	4...30		4...30		5...30	
Nominal Cfm	40,000		40,000		50,000	
Motor Hp...Rpm	1.0...1140		1.0...1140		1.0 1140	
EVAPORATOR FAN	Centrifugal 30 x 27 in					
Nominal Cfm	17,500		21,000		24,500	
Maximum Allowable Cfm	25,000		30,000		30,000	
Maximum Allowable Rpm	750		750		750	
Shaft Diameter at Pulley (in.)	1 11/16		1 11/16		1 11/16	
EVAPORATOR-FAN MOTOR AND DRIVE	(Any motor available on any unit)					
Motor Hp	15.0		20.0		25.0	
Motor Frame Size	254T		256T		284T	
Efficiency at Full Load (%)						
Standard Efficiency	84.5		87.5		87.1	
High Efficiency	90.0		91.0		91.7	
Fan Pulley Pitch Diameter (in.)	18.7		18.7		18.7	
Motor Pulley Pitch Diameter A/B (in.)	5.9/6.7		6.7/7.1		7.1/7.5	
Resulting Fan Rpm A/B	555/625		625/660		660/700	
Belts Quantity...No.	2..5VX1250		2 5VX1250		2..5VX1250	
Center Distance Range (in.)	44.25..39.75		44.25..39.75		44.0..40.0	
OPTIONAL POWER EXHAUST	Centrifugal, 18 x 15 in. (Any motor available on any unit)					
Quantity...Motor Hp	2..5.0		2..7.5		2..10.0	
Motor Frame Size	184T		213T		215T	
Efficiency at Full Load (%)	84.0		82.9		85.6	
Fan Pulley Pitch Diameter (in.)	10.6		10.6		10.6	
Motor Pulley Pitch Diameter (in.)	4.5		5.0		5.6	
Shaft Diameter at Pulley (in.)	1 7/16		1 7/16		1 7/16	
Resulting Fan Rpm	740		820		920	
Maximum Allowable Rpm	925		925		925	
OPTIONAL RETURN FAN	Centrifugal, 18 x 15 in. (Any motor available on any unit)					
Quantity...Motor Hp	2..5.0		2..7.5		2...10.0	
Motor Frame Size	184T		213T		215T	
Efficiency at Full Load (%)	84.0		82.9		85.6	
Fan Pulley Pitch Diameter (in.)	10.6		10.6		10.6	
Motor Pulley Pitch Diameter (in.)	4.5		5.0		5.6	
Shaft Diameter at Pulley (in.)	1 7/16		1 7/16		1 7/16	
Resulting Fan Rpm	740		820		920	
Maximum Allowable Rpm	925		925		925	
FILTERS						
Standard Efficiency Throwaway (Standard)	15 20 x 25 x 2		15 20 x 25 x 2		15 20 x 25 x 2	
Quantity...Size (in.)	5...16 x 25 x 2		5 16 x 25 x 2		5 16 x 25 x 2	
Medium Efficiency Pleated (Optional)	15...20 x 25 x 2		15 20 x 25 x 2		15 20 x 25 x 2	
Quantity...Size (in.)	5 16 x 20 x 2		5 16 x 20 x 2		5 16 x 20 x 2	
High Efficiency Bag Filters with Prefilters (Optional)	6..20 x 24 x 22		6...20 x 24 x 22		6 20 x 24 x 22	
Quantity...Size (in.)	6...20 x 24 x 22		6 24 x 24 x 22		6 24 x 24 x 22	

TXV — Thermostatic Expansion Valve

Physical data (cont)

WEIGHT DISTRIBUTION AND CENTER OF GRAVITY



UNIT		WEIGHT OF CORNER (lb)*				DIMENSIONS (in.)	
		1	2	3	4	A	B
50NP	034	1173	1175	1678	1674	146.0	45.8
	044	1292	1295	1884	1879	176.0	45.8
	054	2021	2025	2094	2090	202.0	45.8
	064	2073	2077	2192	2188	204.0	45.8
	074	2263	2269	2216	2212	214.0	45.8
50NB	034	1268	1271	1867	1864	159.2	45.8
	044	1387	1389	2074	2070	188.9	45.8
	054	2005	2009	2385	2381	238.0	45.8
	064	2074	2078	2467	2461	238.0	45.8
	074	2194	2199	2556	2551	255.0	45.8

*Includes economizer weights.

OPERATING WEIGHTS OF OPTIONS AND ACCESSORIES (lb)

OPTION OR ACCESSORY	SIZE				
	034	044	054	064	074
Roof Curb					
50NP	380	465	515	515	515
50NB	450	480	560	560	560
Condenser Section Roof Curb*	—	—	540	540	625
Economizer	300	300	530	530	530
Return-Air Fan*	—	—	760	760	760
Power Exhaust	600	600	710	710	710
Barometric Relief	200	200	200	200	200
Medium Efficiency Filters	20	20	20	20	20
High Efficiency Bag Filters	35	35	40	40	40
Copper Condenser Coils	180	235	235	285	420
Hail Guard	120	150	145	145	210
Inlet Guide Vanes	95	95	115	115	115
Electric Heater (NP units only)	150	150	150	150	150

*054-074 units only

EER and IPLV ratings

The integrated part load value (IPLV) is a calculated value to compare unit part load operation. Refer to ARI 360 (Air Conditioning and Refrigeration Institute) for additional information.

UNIT 50	EER	IPLV
NP034	9.4	10.7
NB034	9.4	10.7
NP044	9.5	10.3
NB044	9.0	9.1
NP054	9.0	10.3
NB054	8.8	9.8
NP064	8.9	10.2
NB064	8.7	9.3
NP074	8.8	9.1
NB074	8.7	8.3

LEGEND

EER — Energy Efficiency Ratio
IPLV — Integrated Part Load Values

Part load operation

For efficient part load operation, the Weathermaker® III units utilize 2 semi-hermetic compressors, each on its own refrigerant circuit. Additional capacity steps allow the unit to match the cooling load without cycling compressors or artificially loading the unit with hot gas bypass. In addition, PIC controls provide lead/lag compressor operation to prolong the life of both compressors.

Units have 4 to 6 stages of cooling capacity as standard. Electric unloaders are factory installed on both compressors. Capacity reduction is handled by both the lead and lag compressors.

To provide the maximum capacity steps available, units are supplied with electric unloaders as standard.

See Physical Data table for capacity steps per unit.

Options and accessories

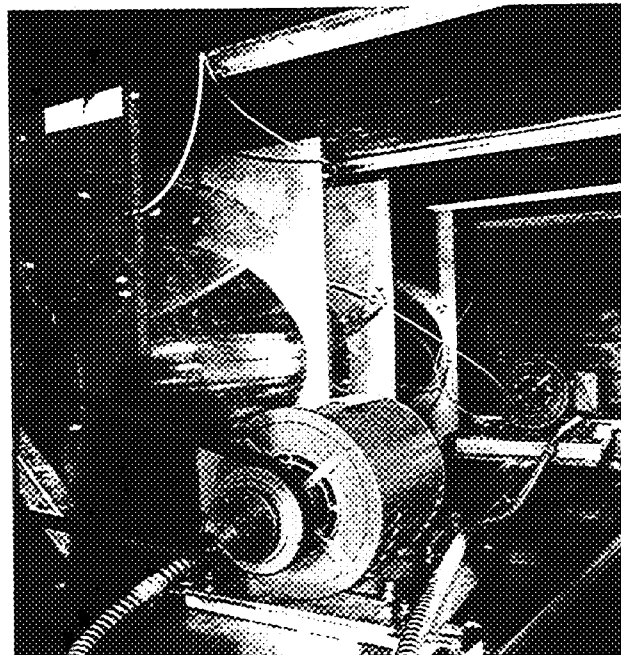
ITEM	OPTION*	ACCESSORY†
Integrated Economizer	X	
Inlet Guide Vanes	X	
Medium-Efficiency (30%) Pleated Filters	X	
High-Efficiency (90%) Bag Filters (with Pre-Filters)	X	
Copper/Copper Condenser Coil	X	
High-Efficiency Evaporator-Fan Motor**	X	
100% Modulating Return-Air Fan††	X	
Control Option Module	X	
Hot Gas Bypass	X	
Electric Heat (50NP only)	X	X
Barometric Relief	X	X
100% Modulating Power Exhaust	X	
Roof Curb:		
Unit Curb		X
Condenser Section Curb††		X
Condenser Hail Guard		X
Differential Enthalpy Sensor		X
HSIO (Keyboard and Display Module)		X
PSIO2 (Processor Module)		X
Refrigerant Pressure Transducers		X
Space Temperature Sensor (T56)		X
Humidity Control Sensors		X
Outdoor Airflow Sensor		X

*Factory installed

†Field installed

**Not available on 575-v units

††Available on sizes 054-074 only.



EXHAUST FANS

Power exhaust — When combined with the economizer, the 100% modulating power exhaust can be used to exhaust up to 100% of the return air and eliminate overpressurization of the building. The power exhaust utilizes 2 forward-curved fans, each belt driven by its own motor.

The 100% modulating power exhaust stages the 2 motors according to interior space pressure. The lead fan has a discharge modulation device. Once the lead fan is fully loaded and the interior pressure is above set point, the lag fan is energized and the lead fan modulates to maintain the space pressure set point.

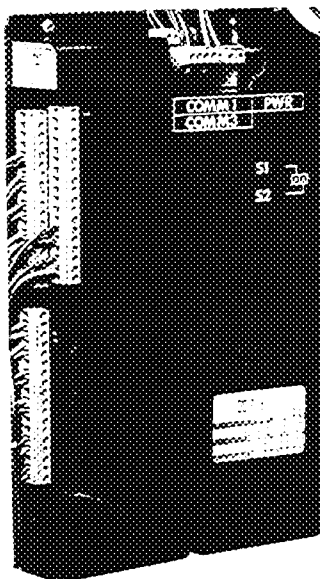
Hinged access panels on both sides of the unit allow service access to exhaust fans and motors. Exhaust fans have extended lubrication lines to aid maintenance.

NOTE: A 1/4-in plastic tube to sense supply duct pressure is field installed.

Return-air fans (054-074 units only) — The Weathermaker® III modulating return-air fan discharges air within the rooftop unit so that all of the return air may be reconditioned and returned to the building interior. The return-air fan utilizes 2 forward-curved fans, each belt driven by its own motor (5.0, 7.5 or 10.0 hp). Both fans are energized with the supply-air fan and continue to run until the supply-air fan is deenergized. On the modulating return-air fan, both fans are supplied with discharge modulation devices that are controlled by interior space pressure. Barometric relief dampers are factory installed on all units with return-air fans to allow building pressure relief.

Hinged access panels on both sides of the return-air fan sections are supplied to allow easy access to return-air fans and motors. Return-air fans have extended lubrication lines to aid maintenance.

NOTE: A 1/4-in plastic tube to sense supply duct pressure is field installed.



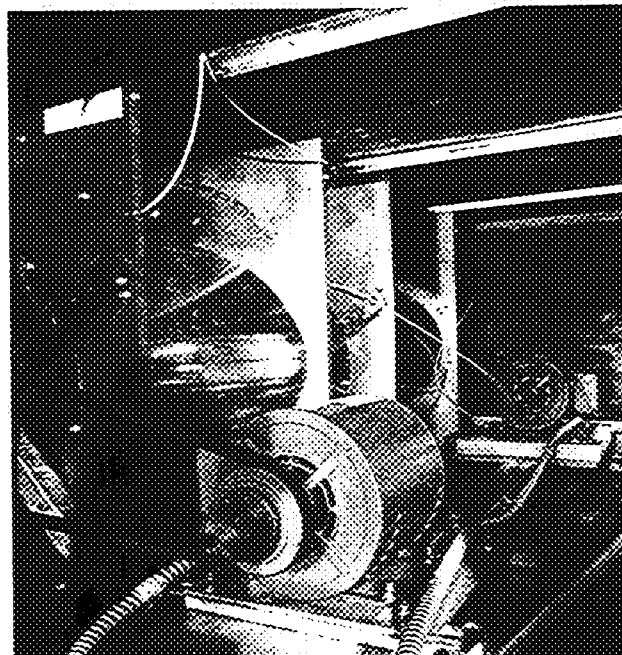
PSIO NO. 2

The accessory field-installed (factory-installed when included as part of the control option module) processor module no. 2 supports the sensors used for humidity control, outdoor-air cfm, IAQ, expanded economizer control, building pressurization and smoke purge control, hydronic coil protection, freeze protection, and superheat monitoring. In addition, the PSIO no. 2 supplies the outputs for humidity and hydronic heating coil control, and the discrete output with timed clock control.

Options and accessories

ITEM	OPTION*	ACCESSORY†
Integrated Economizer	X	
Inlet Guide Vanes	X	
Medium-Efficiency (30%) Pleated Filters	X	
High-Efficiency (90%) Bag Filters (with Pre-Filters)	X	
Copper/Copper Condenser Coil	X	
High-Efficiency Evaporator-Fan Motor**	X	
100% Modulating Return-Air Fan††	X	
Control Option Module	X	
Hot Gas Bypass	X	
Electric Heat (50NP only)	X	X
Barometric Relief	X	X
100% Modulating Power Exhaust	X	
Roof Curb:		
Unit Curb		X
Condenser Section Curb††		X
Condenser Hail Guard		X
Differential Enthalpy Sensor		X
HSIO (Keyboard and Display Module)		X
PSIO2 (Processor Module)		X
Refrigerant Pressure Transducers		X
Space Temperature Sensor (T56)		X
Humidity Control Sensors		X
Outdoor Airflow Sensor		X

*Factory installed.
†Field installed
**Not available on 575-v units.
††Available on sizes 054-074 only.



EXHAUST FANS

Power exhaust — When combined with the economizer, the 100% modulating power exhaust can be used to exhaust up to 100% of the return air and eliminate overpressurization of the building. The power exhaust utilizes 2 forward-curved fans, each belt driven by its own motor.

The 100% modulating power exhaust stages the 2 motors according to interior space pressure. The lead fan has a discharge modulation device. Once the lead fan is fully loaded and the interior pressure is above set point, the lag fan is energized and the lead fan modulates to maintain the space pressure set point.

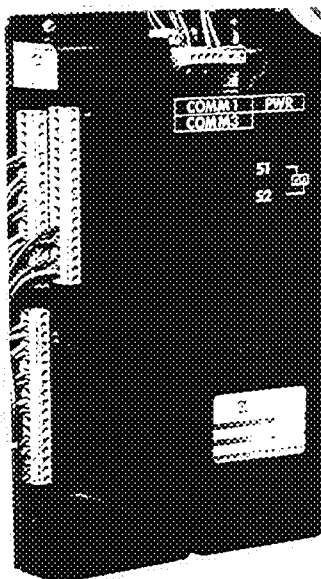
Hinged access panels on both sides of the unit allow service access to exhaust fans and motors. Exhaust fans have extended lubrication lines to aid maintenance.

NOTE: A 1/4-in. plastic tube to sense supply duct pressure is field installed.

Return-air fans (054-074 units only) — The Weathermaker® III modulating return-air fan discharges air within the rooftop unit so that all of the return air may be reconditioned and returned to the building interior. The return-air fan utilizes 2 forward-curved fans, each belt driven by its own motor (5.0, 7.5 or 10.0 hp). Both fans are energized with the supply-air fan and continue to run until the supply-air fan is deenergized. On the modulating return-air fan, both fans are supplied with discharge modulation devices that are controlled by interior space pressure. Barometric relief dampers are factory installed on all units with return-air fans to allow building pressure relief.

Hinged access panels on both sides of the return-air fan sections are supplied to allow easy access to return-air fans and motors. Return-air fans have extended lubrication lines to aid maintenance.

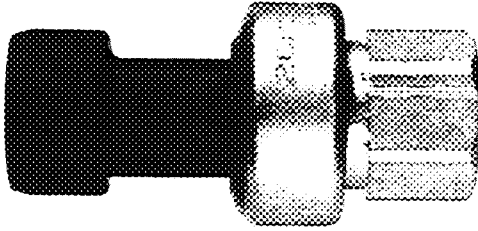
NOTE: A 1/4-in. plastic tube to sense supply duct pressure is field installed.



PSIO NO. 2

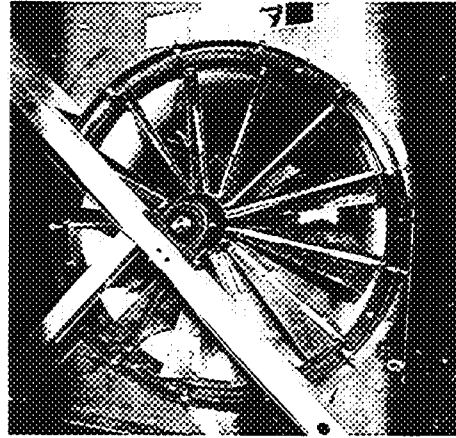
The accessory field-installed (factory-installed when included as part of the control option module) processor module no. 2 supports the sensors used for humidity control, outdoor-air cfm, IAQ, expanded economizer control, building pressurization and smoke purge control, hydronic coil protection, freeze protection, and superheat monitoring. In addition, the PSIO no. 2 supplies the outputs for humidity and hydronic heating coil control, and the discrete output with timed clock control.

Options and accessories (cont)



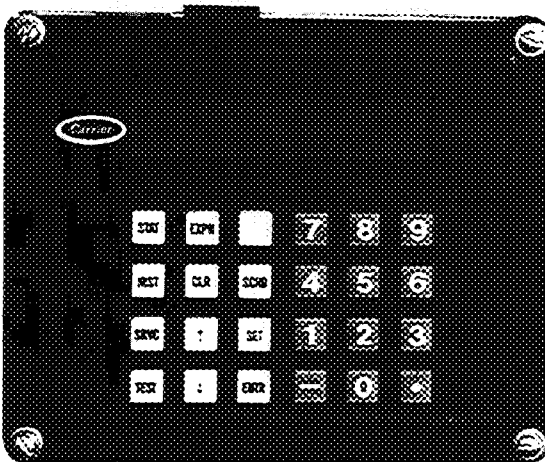
TRANSDUCERS

The transducers can be purchased as a field-installed accessory or as a factory-installed part of the control option module. The transducers monitor the refrigerant pressures, permitting improved control of head and refrigerant pressures. This information can be monitored either locally or from a remote location.



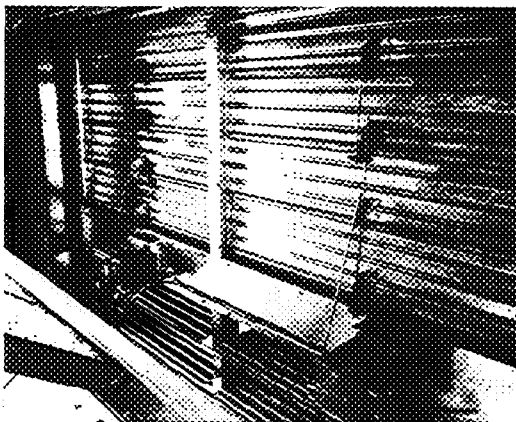
INLET GUIDE VANES

Inlet guide vanes provide fan modulation. All controls are factory installed. A 1/4-in. plastic tube to sense supply duct pressure is field installed.



HSIO

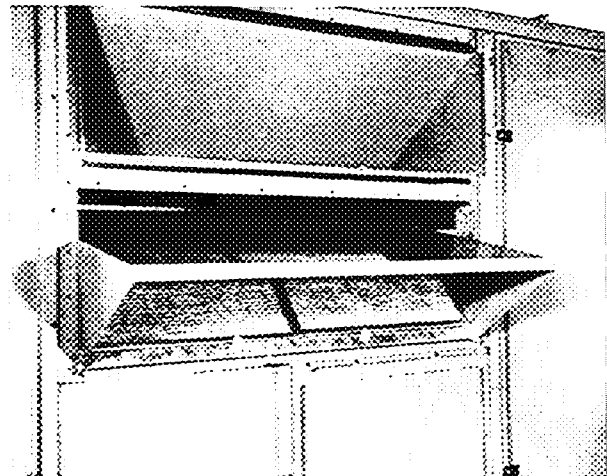
The keypad and display module is a local interface device that is purchased as an accessory and field installed. The HSIO provides unit function information at the unit, and is easily installed. The module is portable, and one module can be moved from unit to unit for ease in routine maintenance. The HSIO is required to move the unit back and forth between standby and run modes. Therefore, an accessory HSIO is required for initial start-up and for most service and diagnostic routines.



ECONOMIZER

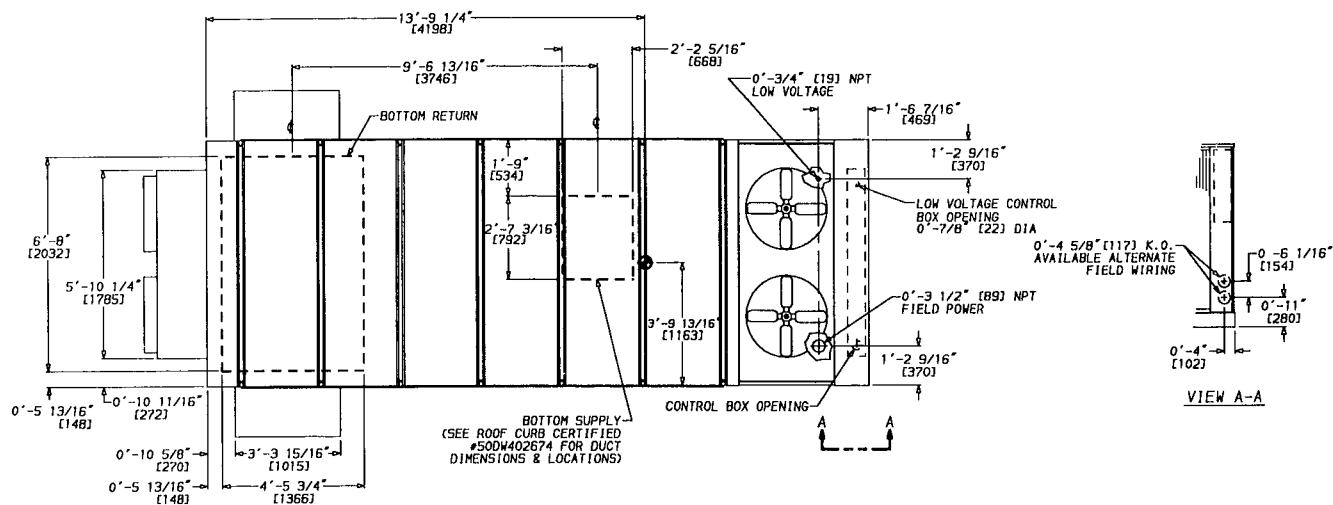
Optional integrated economizer saves energy by using low temperature outdoor air to provide cooling. A solid state enthalpy control adjusts the economizer. The electronic control logic located in the economizer motor integrates economizer cooling with mechanical cooling. If the conditioned space requires more cooling, mechanical cooling will be brought on to satisfy the cooling need. Spring return damper motor automatically closes the outdoor-air dampers in the event of a power failure.

Low-leakage design includes sealing strip along edge of damper blades and venetian blind type seal along end of damper blade. Economizer hood pivots up into the unit for shipment and storage. No installation required.

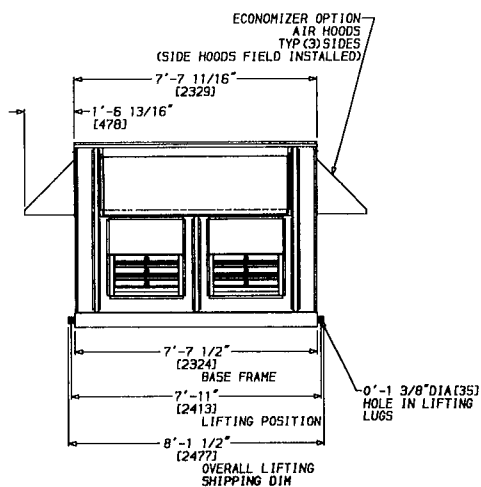
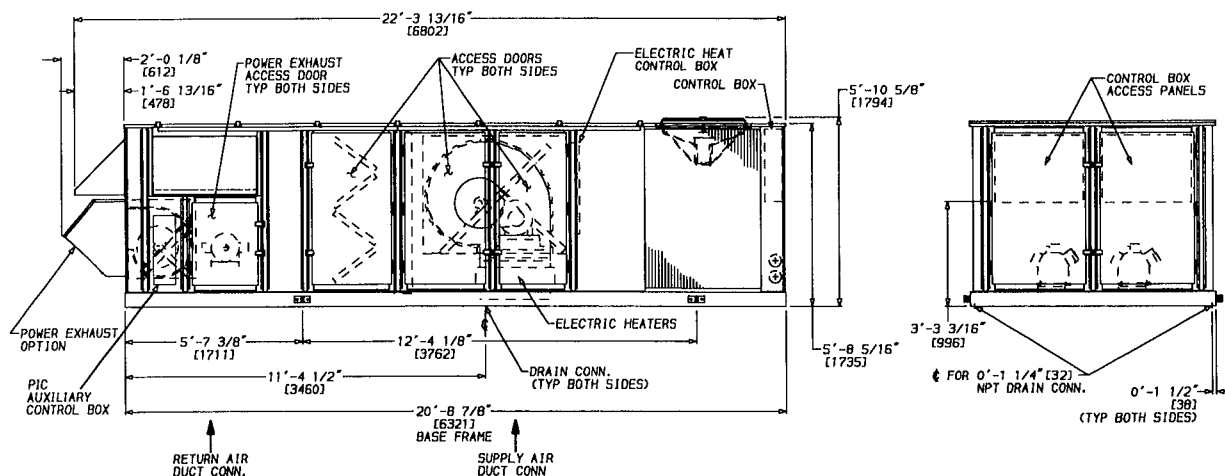


PIVOTING ECONOMIZER HOOD

Base unit dimensions — 50NP034



VIEW A-A



UNIT SIZE	WEIGHT	
	Lb	Kg
50NP034	5400	2454.6

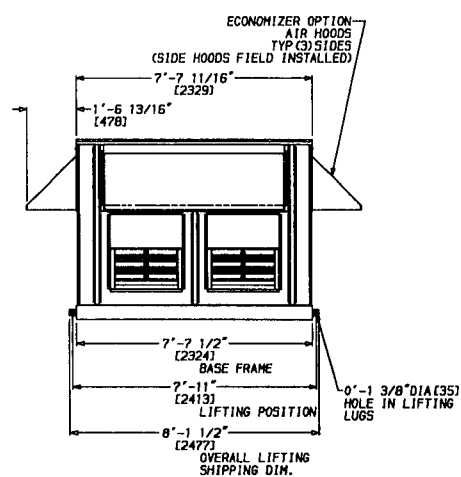
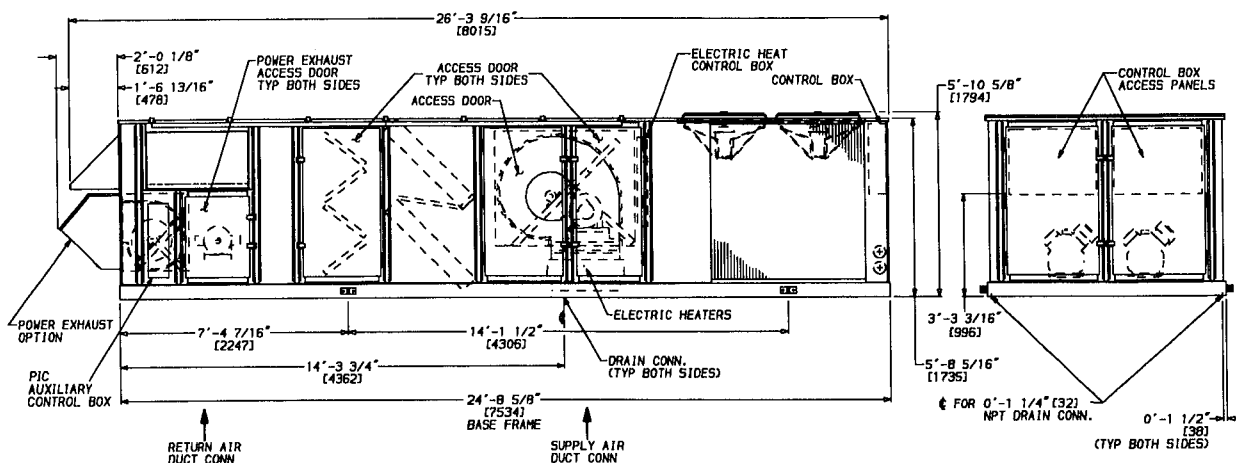
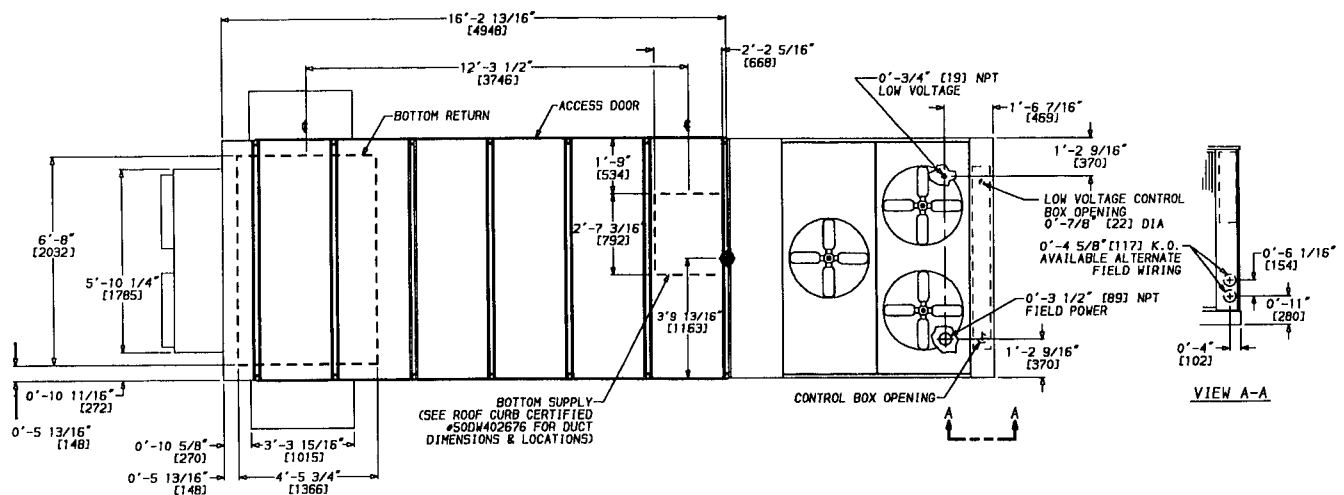
LEGEND

CONN — Connection
 DIM — Dimension
 PIC — Product Integrated Controls

NOTES:

- Dimensions in [] are in millimeters.
- Center of Gravity includes economizer. Unit weight does not include economizer.
- Unit clearances:
 Top — Do not restrict condenser fans
 Control Box End — 6'-0"
 Sides — 6'-0" (except on return fan equipped units 10'-0")
 Economizer End — 6'-0" (except power exhaust units 10'-0")
 For smaller service and operational clearances, contact Carrier Product Engineering Department.
- Downshot ducts designed to be attached to accessory roof curb. If unit is mounted on dunnage, it is recommended the ducts be supported by cross braces as done on the accessory roof curb.
- When unit is slab mounted locate the condensate drain as low as possible on vertical face of base rail at the same location as the standard condensate drain using factory supplied fitting. Plug factory drilled condensate hole.

Base unit dimensions (cont) — 50NP044



UNIT SIZE	WEIGHT	
	Lb	Kg
50NP044	6050	2750.0

LEGEND

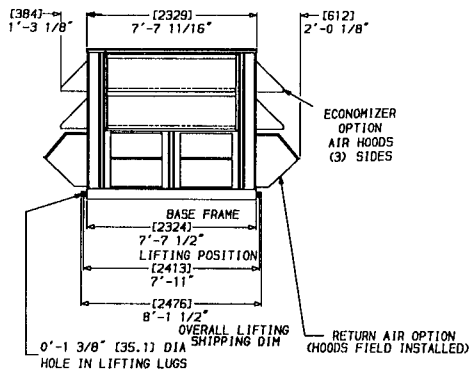
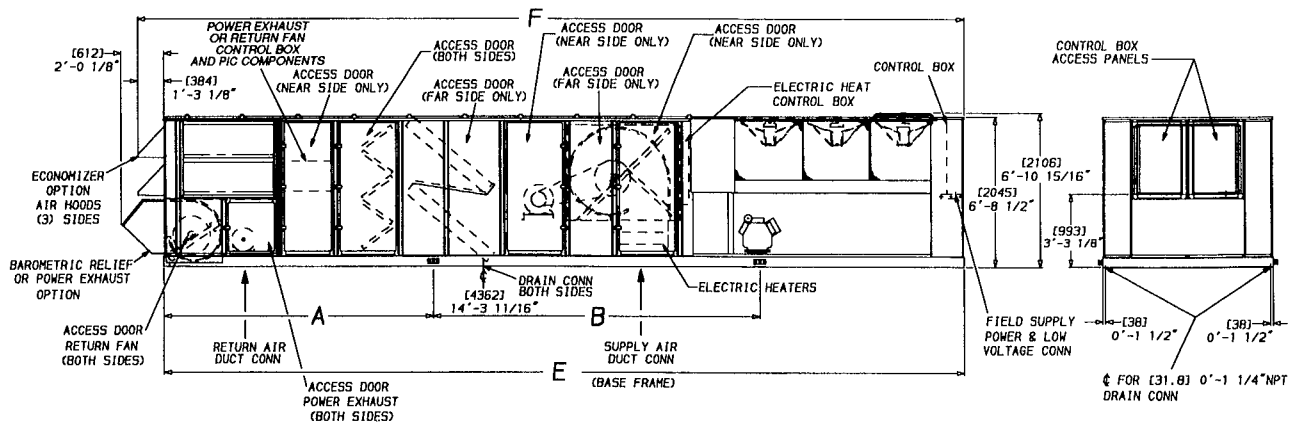
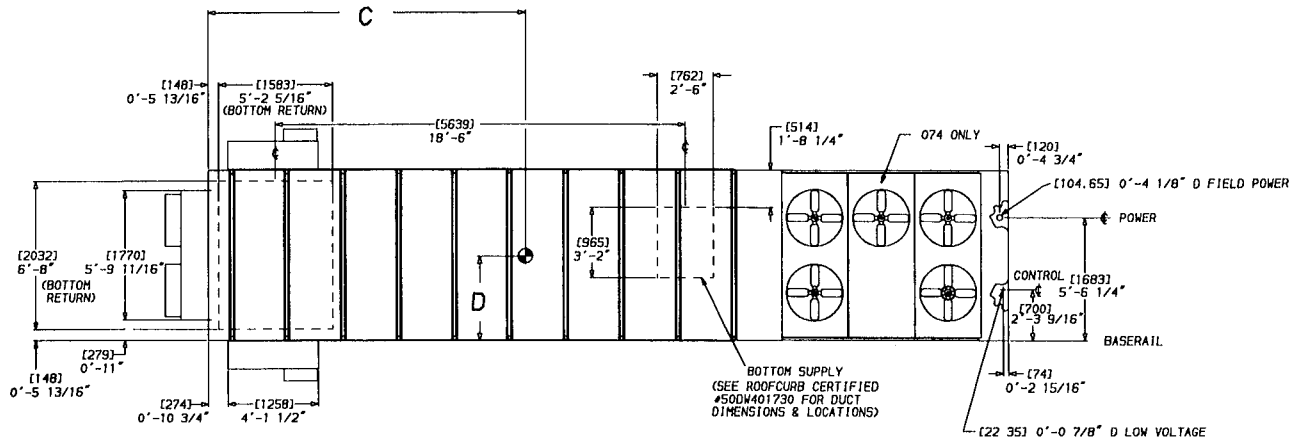
CONN — Connection
 DIM — Dimension
 PIC — Product Integrated Controls

NOTES:

- Dimensions in [] are in millimeters.
- Center of Gravity includes economizer. Unit weight does not include economizer.
- Unit clearances:
 Top — Do not restrict condenser fans
 Control Box End — 6'-0"
 Sides — 6'-0"
 Economizer End — 6'-0" (except power exhaust units 10'-0")
 For smaller service and operational clearances, contact Carrier Product Engineering Department.
- Downshot ducts designed to be attached to accessory roof curb. If unit is mounted on dunnage, it is recommended the ducts be supported by cross braces as done on the accessory roof curb.
- When unit is slab mounted locate the condensate drain as low as possible on vertical face of base rail at the same location as the standard condensate drain using factory supplied fitting. Plug factory drilled condensate hole.

Base unit dimensions (cont) — 50NP054-074

UNIT SIZE	WEIGHT		A		B		C		D		E		F	
	Lb	Kg	mm	Ft.-In.	mm	Ft.-In.	mm	Ft.-In.	mm	Ft.-In.	mm	Ft.-In.	mm	Ft.-In.
50NP054	7700	3500.0	2864	9-4¾	5347	17-6½	5537	18-2	1163	3-9⅓ ₁₆	10092	33-1⅝ ₁₆	10476	34-4 ⁷ / ₁₆
50NP064	8000	3636.4	2864	9-4¾	5347	17-6½	5537	18-2	1163	3-9⅓ ₁₆	10092	33-1⅝ ₁₆	10476	34-4 ⁷ / ₁₆
50NP074	8430	3831.9	3727	12-2¾	4483	14-8½	5969	21-3	1163	3-9⅓ ₁₆	11001	36-1⅛	11385	37-4¼



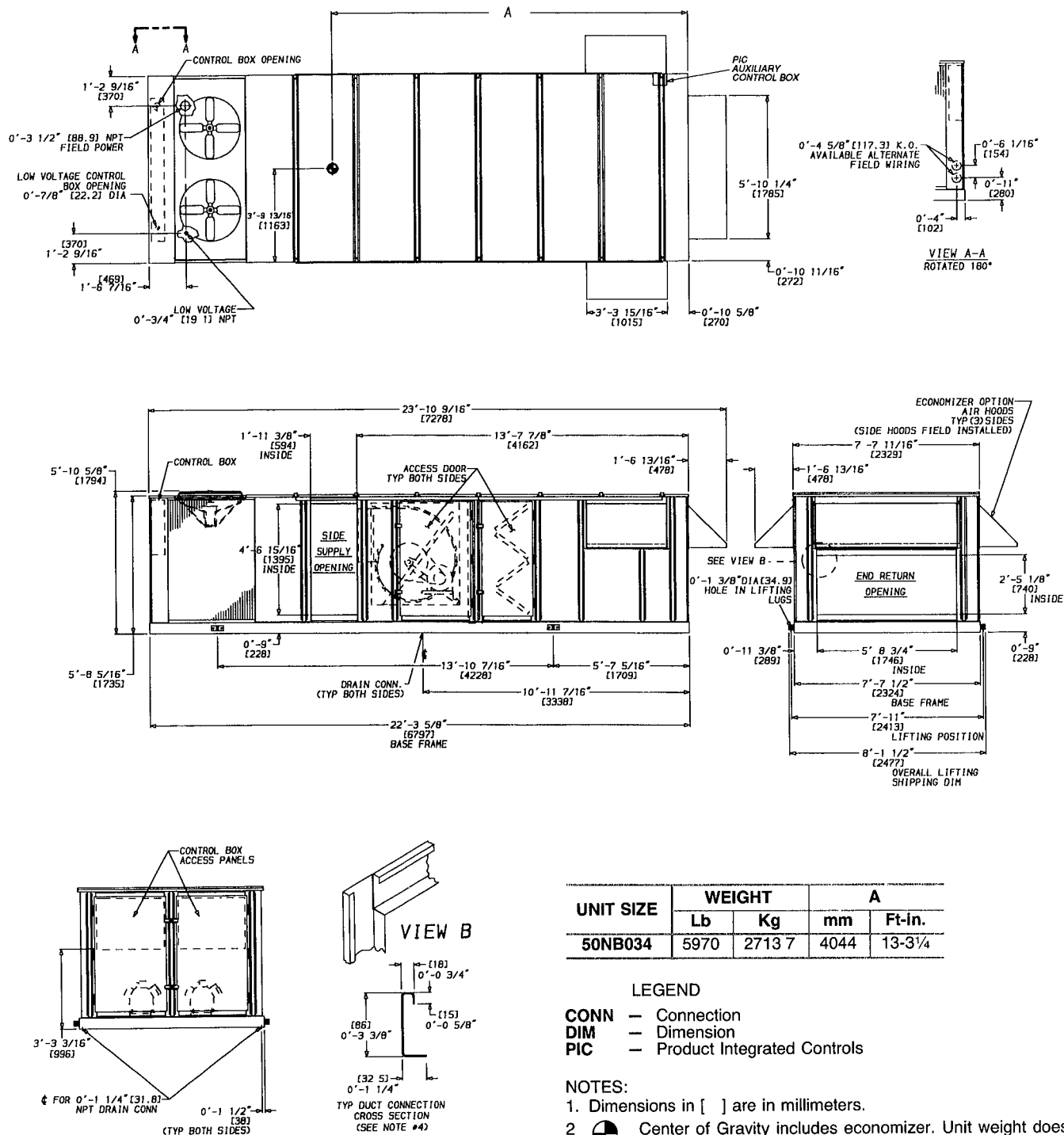
LEGEND

CONN — Connection
DIM — Dimension
PIC — Product Integrated Controls

NOTES:

1. Dimensions in [] are in millimeters.
2.  Center of Gravity includes economizer. Unit weight does not include economizer.
3. Unit clearances:
Top — Do not restrict condenser fans
Control Box End — 6'-0"
Sides — 6'-0" (except on return fan equipped units 10'-0")
Economizer End — 6'-0" (except power exhaust units 10'-0")
For smaller service and operational clearances, contact Carrier Product Engineering Department.
4. Downshot ducts designed to be attached to accessory roof curb
If unit is mounted on dunnage, it is recommended the ducts be supported by cross braces as done on the accessory roof curb.
5. When unit is slab mounted locate the condensate drain as low as possible on vertical face of base rail at the same location as the standard condensate drain using factory supplied fitting. Plug factory drilled condensate hole.

Base unit dimensions (cont) — 50NB034



UNIT SIZE	WEIGHT		A	
	Lb	Kg	mm	Ft.-in.
50NB034	5970	2713.7	4044	13-3/4

LEGEND

CONN — Connection
 DIM — Dimension
 PIC — Product Integrated Controls

NOTES:

- Dimensions in [] are in millimeters.
- Center of Gravity includes economizer. Unit weight does not include economizer.
- Unit clearances:
 Top — Do not restrict condenser fans
 Control Box End — 6'-0"
 Sides — 6'-0"
 Economizer End — 6'-0" (except power exhaust units 10'-0")
 For smaller service and operational clearances, contact Carrier Product Engineering Department.
- Suggested field connections to be made inside or outside of 32.5 mm flange.
- When unit is slab mounted locate the condensate drain as low as possible on vertical face of base rail at the same location as the standard condensate drain using factory supplied fitting. Plug factory drilled condensate hole.

Base unit dimensions (cont) 50NB044

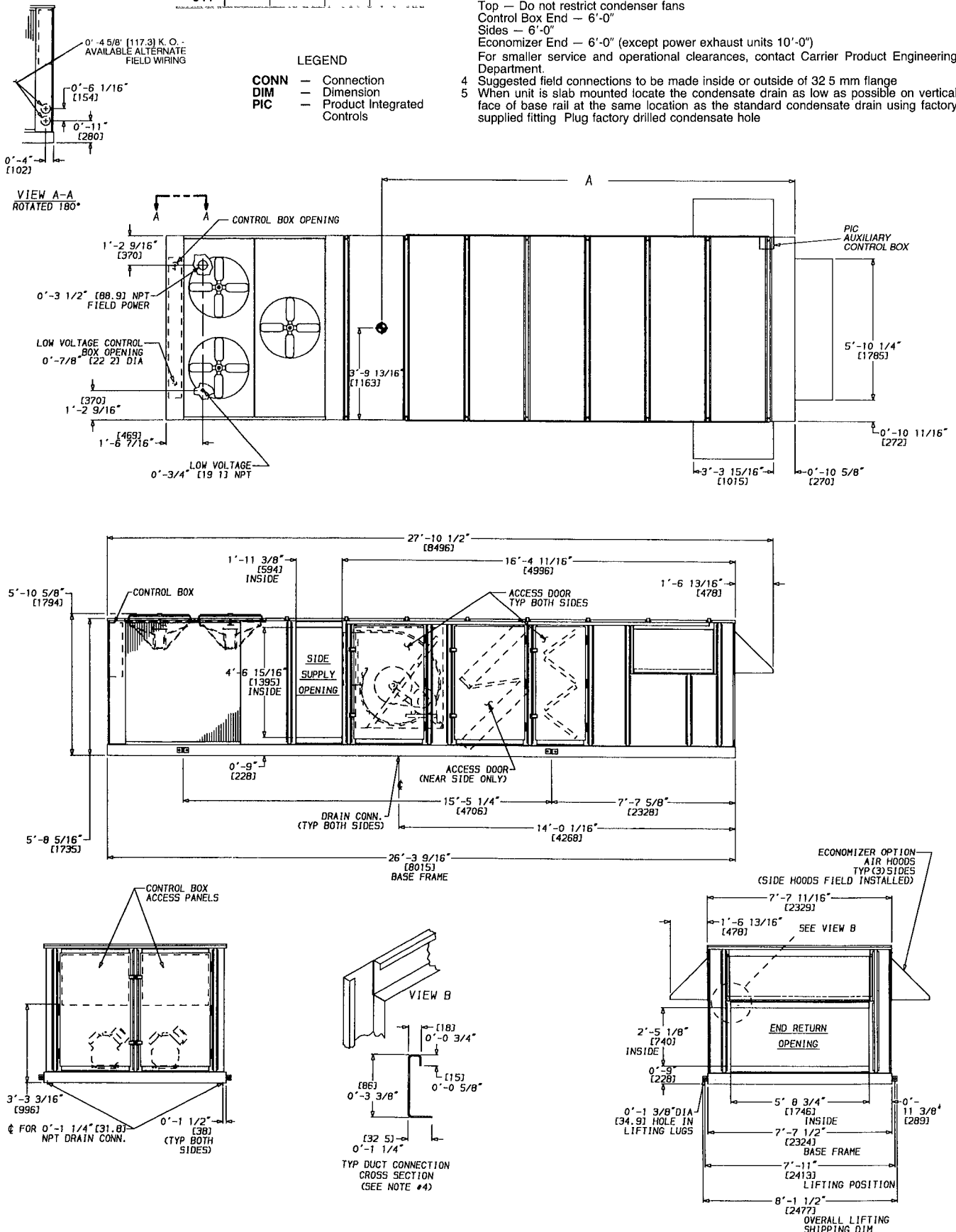
UNIT SIZE	WEIGHT		A	
	Lb	Kg	mm	Ft.-in.
50NB 044	6670	3009.1	4823	15-9 7/8

NOTES:

- Dimensions in [] are in millimeters
- Center of Gravity includes economizer Unit weight does not include economizer
- Unit clearances:
Top — Do not restrict condenser fans
Control Box End — 6'-0"
Sides — 6'-0"
Economizer End — 6'-0" (except power exhaust units 10'-0")
For smaller service and operational clearances, contact Carrier Product Engineering Department.
- Suggested field connections to be made inside or outside of 32.5 mm flange
- When unit is slab mounted locate the condensate drain as low as possible on vertical face of base rail at the same location as the standard condensate drain using factory supplied fitting. Plug factory drilled condensate hole

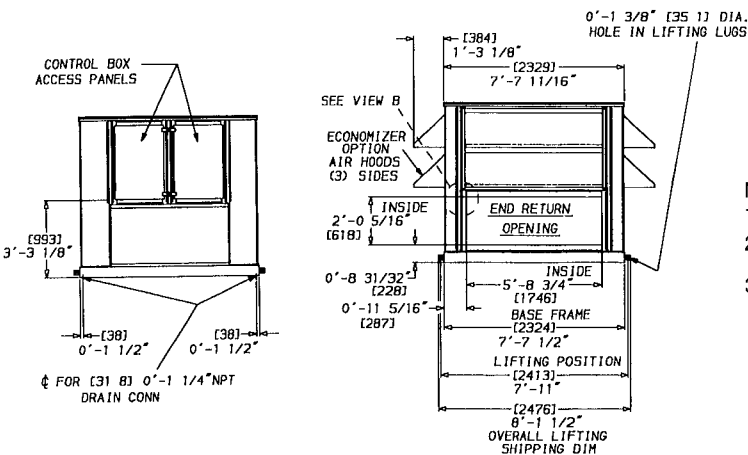
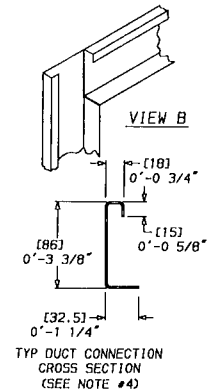
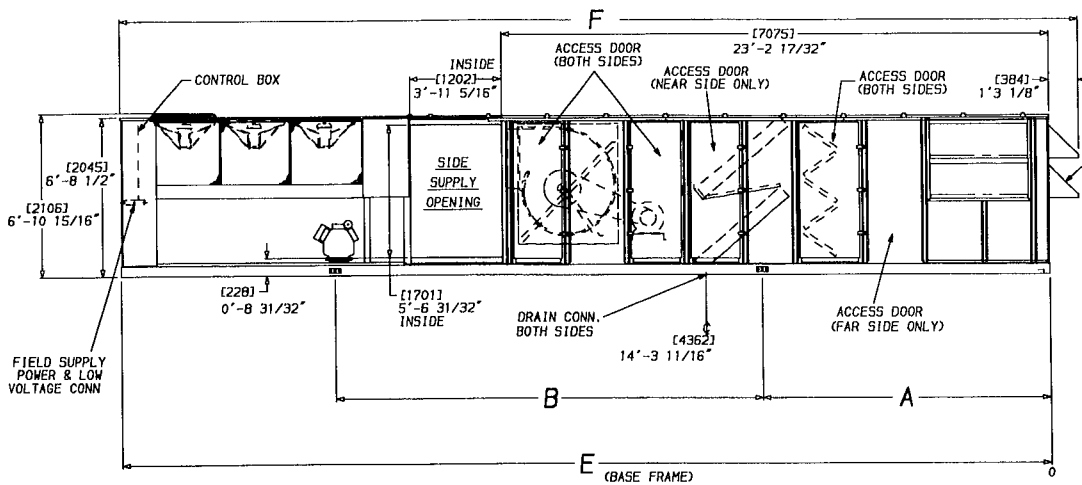
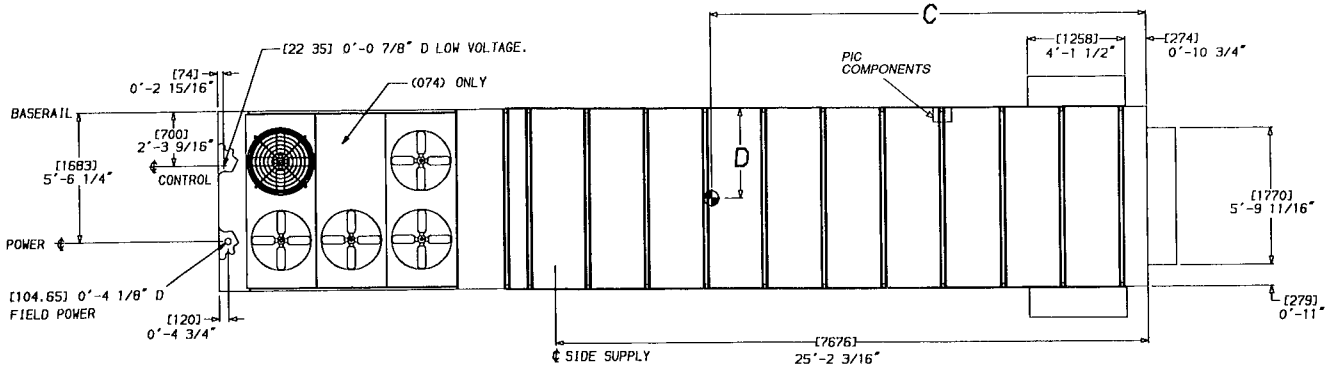
LEGEND

CONN — Connection
DIM — Dimension
PIC — Product Integrated Controls



Base unit dimensions (cont) — 50NB054-074

UNIT SIZE	WEIGHT		A		B		C		D		E		F	
	Lb	Kg	mm	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm	Ft-in.	mm	Ft-in.
50NB054	8250	3750.1	2830	9-3/4	6427	21-1	6045	19-10	1163	3-9 13/16	11140	36-6 9/16	11524	37-9 11/16
50NB064	8550	3886.4	2830	9-3/4	6427	21-1	6045	19-10	1163	3-9 13/16	11140	36-6 9/16	11524	37-9 11/16
50NB074	8970	4077.3	3694	12-1 3/4	5563	18-3	6477	21-3	1163	3-9 13/16	12049	39-6 3/8	12433	40-9 1/2



LEGEND

CONN — Connection
DIM — Dimension
PIC — Product Integrated Controls

NOTES:

- Dimensions in [] are in millimeters
- Center of Gravity includes economizer. Unit weight does not include economizer
- Unit clearances:
Top — Do not restrict condenser fans
Control Box End — 6'-0"
Sides — 6'-0" (except on return fan equipped units 10'-0")
Economizer End — 6'-0" (except power exhaust units 10'-0")
For smaller service and operational clearances, contact Carrier Product Engineering Department.
- Suggested field connections to be made inside or outside of 32.5 mm flange.
- When unit is slab mounted locate the condensate drain as low as possible on vertical face of base rail at the same location as the standard condensate drain using factory supplied fitting. Plug factory drilled condensate hole.

Accessory dimensions — 50NP034

BASE UNIT ROOF CURB — 50NP034

UNIT LEVELING TOLERANCES

DIMENSIONS*
(degrees and inches)

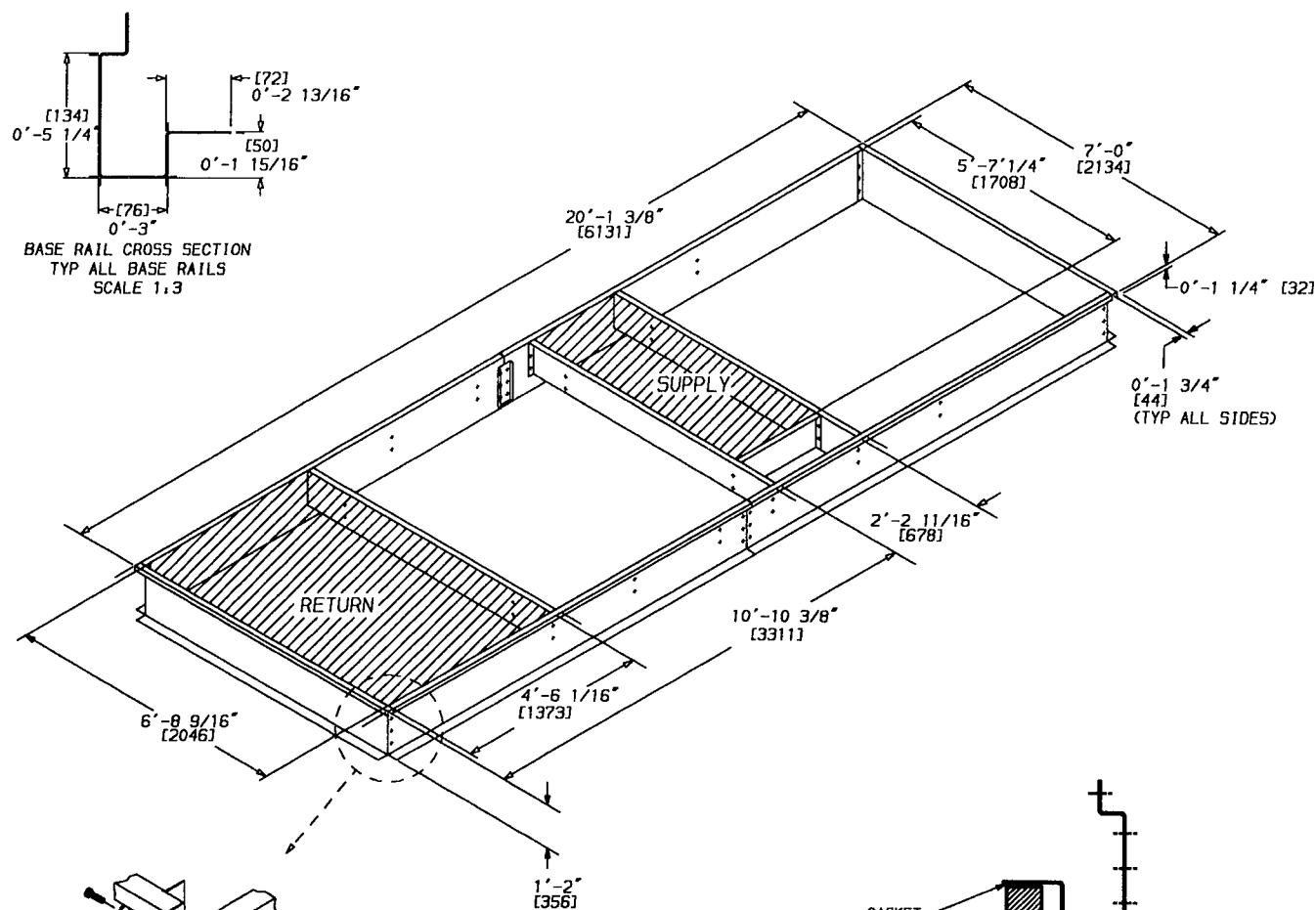
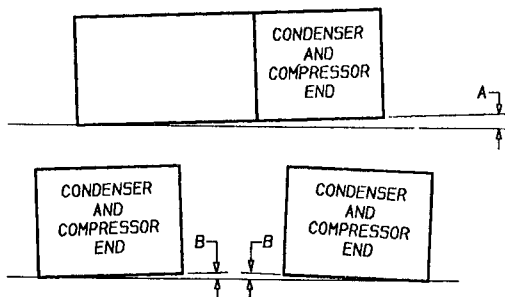
A		B	
Deg	In.	Deg	In.
1.0	2.0	.50	.75

*From edge of unit to horizontal

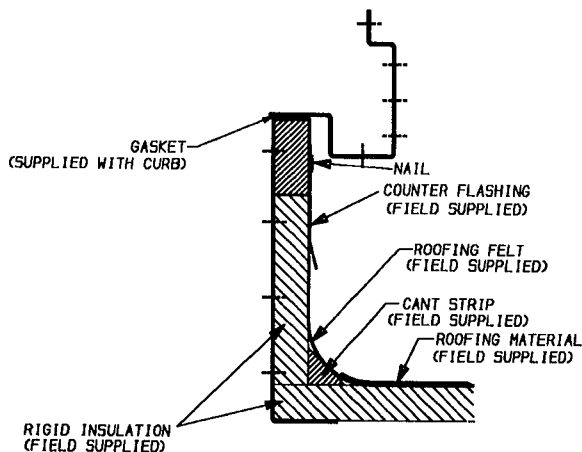
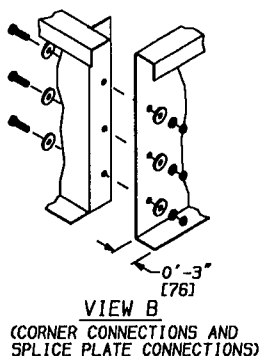
NOTES:

1. Roof curb is shipped unassembled.
2. Roof curb: 14 gage (VA03-56) steel.
3. Dimensions in [] are millimeters

NOTE: To prevent the hazard of stagnant water build-up in the drain pan of the indoor-air section, unit can only be pitched as shown



BASE RAIL CROSS SECTION
TYP ALL BASE RAILS
SCALE 1:3



Accessory dimensions (cont) — 50NP044

BASE UNIT ROOF CURB — 50NP044

UNIT LEVELING TOLERANCES

DIMENSIONS*
(degrees and inches)

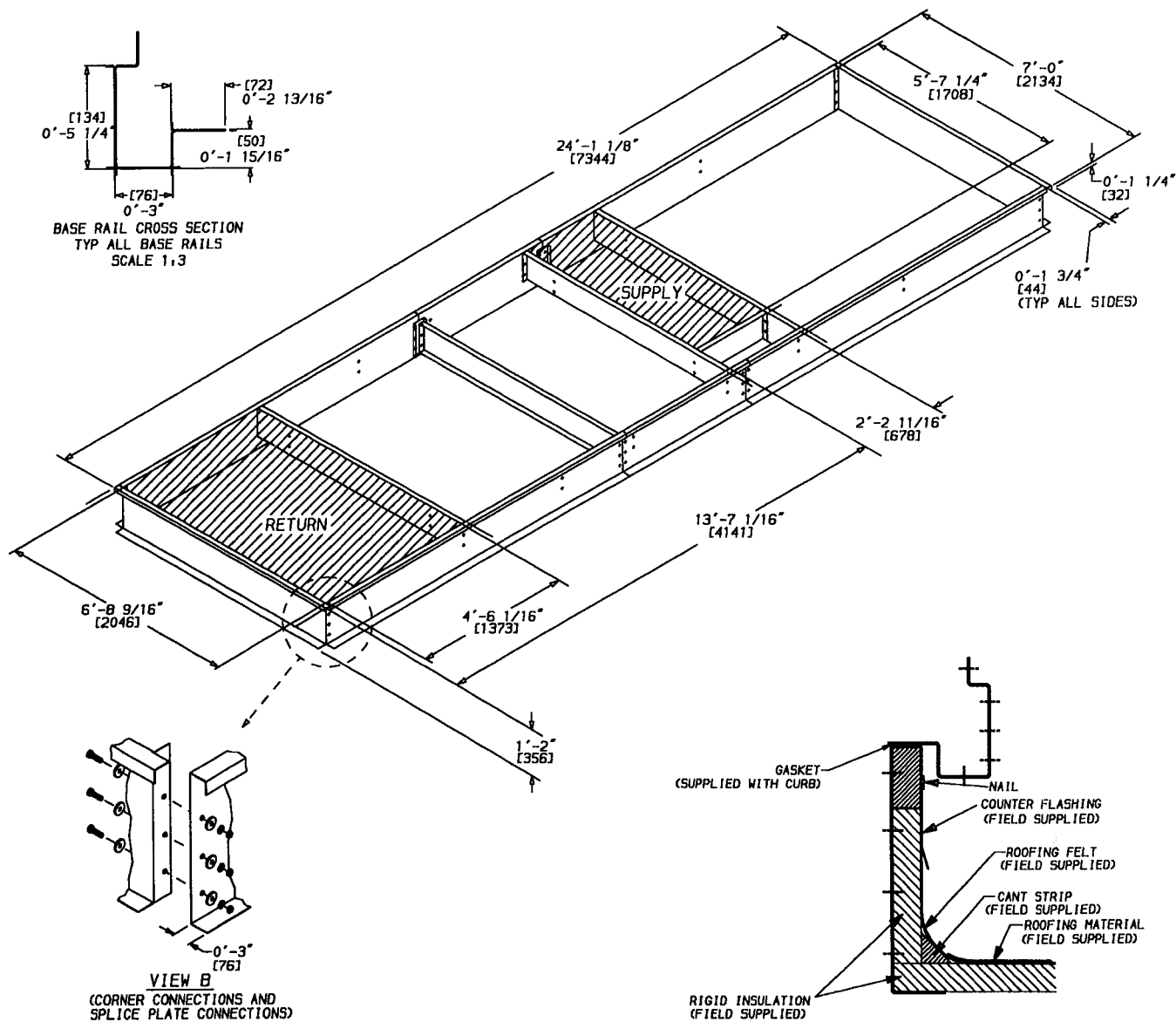
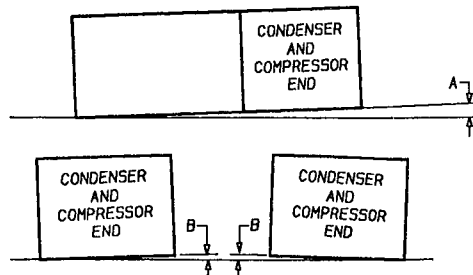
A		B	
Deg	In.	Deg	In.
1.0	2.0	.50	.75

*From edge of unit to horizontal.

NOTES:

1. Roof curb is shipped unassembled.
2. Roof curb: 14 gage (VA03-56) steel.
3. Dimensions in [] are millimeters.

NOTE: To prevent the hazard of stagnant water build-up in the drain pan of the indoor-air section, unit can only be pitched as shown.



Accessory dimensions (cont) — 50NP054-074

BASE UNIT ROOF CURB — 50NP054-074

UNIT LEVELING TOLERANCES

DIMENSIONS*
(degrees and inches)

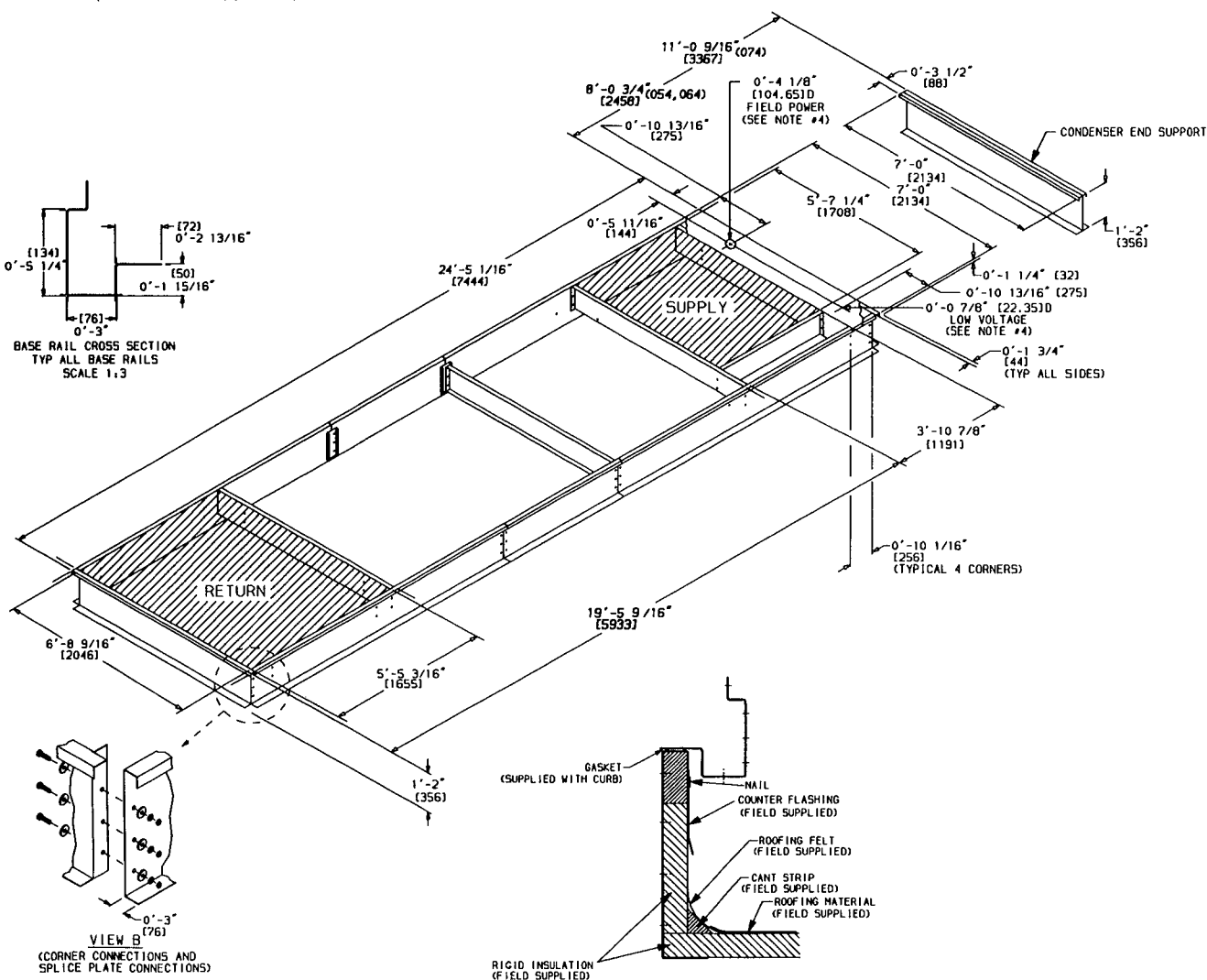
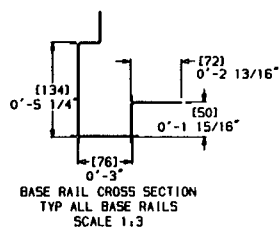
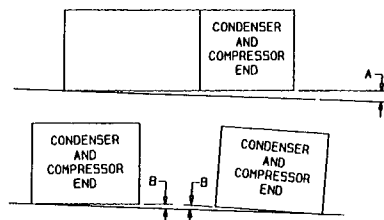
A		B	
Deg	In.	Deg	In.
1.0	2.0	.50	.75

*From edge of unit to horizontal.

NOTES:

1. Roof curb is shipped unassembled.
2. Roof curb: 14 gage (VA03-56) steel.
3. Dimensions in [] are millimeters.
4. Suggested hole location for field wiring through roof curb (holes to be supplied by field)

NOTE: To prevent the hazard of stagnant water build-up in the drain pan of the indoor-air section, unit can only be pitched as shown.



Accessory dimensions (cont) — 50NB034

BASE UNIT ROOF CURB — 50NB034

UNIT LEVELING TOLERANCES

DIMENSIONS*
(degrees and inches)

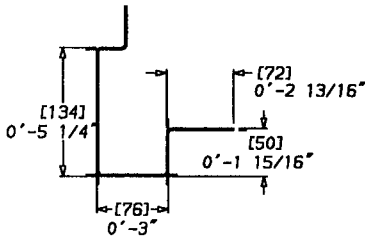
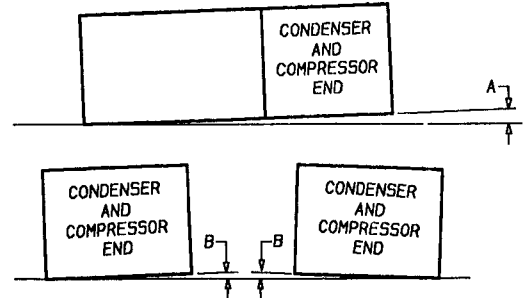
A		B	
Deg	In.	Deg	In.
1.0	2.0	.50	75

*From edge of unit to horizontal.

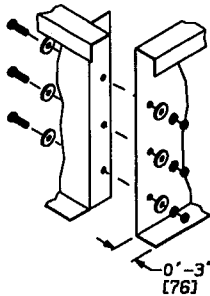
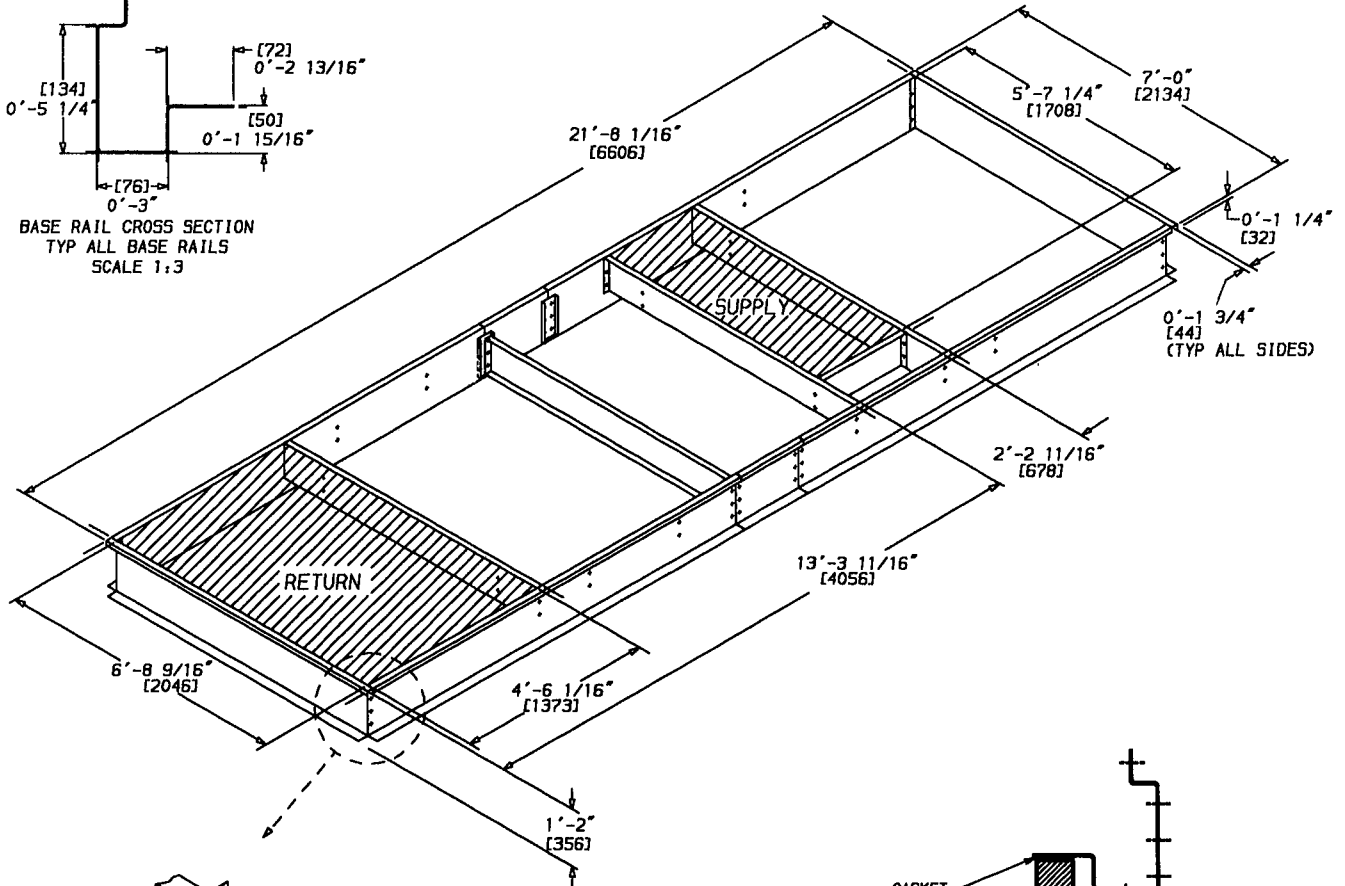
NOTES:

1. Roof curb is shipped unassembled.
2. Roof curb: 14 gage (VA03-56) steel.
3. Dimensions in [] are millimeters

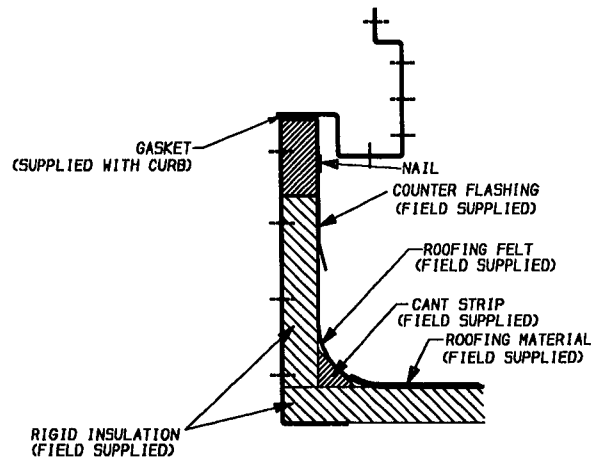
NOTE: To prevent the hazard of stagnant water build-up in the drain pan of the indoor-air section, unit can only be pitched as shown.



BASE RAIL CROSS SECTION
TYP ALL BASE RAILS
SCALE 1:3



VIEW B
(CORNER CONNECTIONS AND
SPICE PLATE CONNECTIONS)



Accessory dimensions (cont) — 50NB044

BASE UNIT ROOF CURB — 50NB044

UNIT LEVELING TOLERANCES

DIMENSIONS*
(degrees and inches)

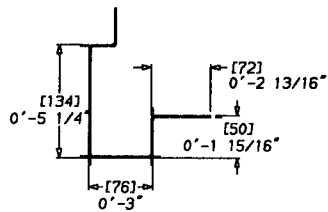
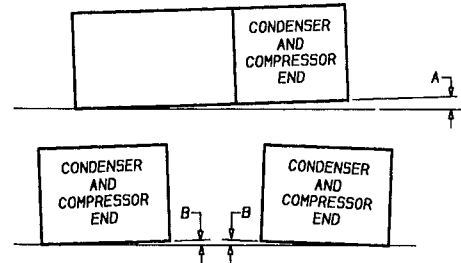
A		B	
Deg	In.	Deg	In.
1.0	2.0	.50	.75

*From edge of unit to horizontal

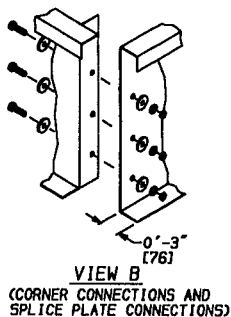
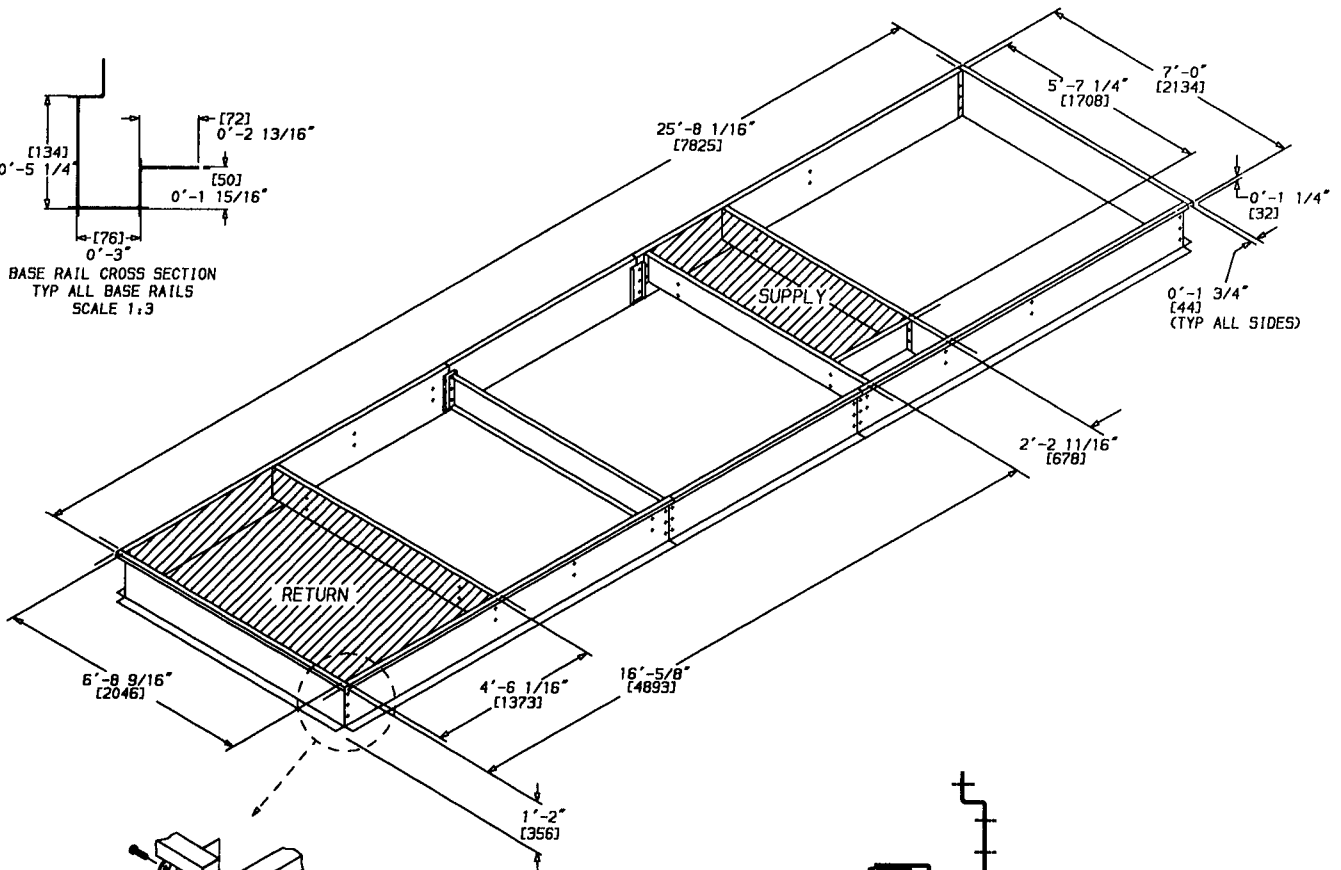
NOTES:

1. Roof curb is shipped unassembled.
2. Roof curb: 14 gage (VA03-56) steel.
3. Dimensions in [] are millimeters.

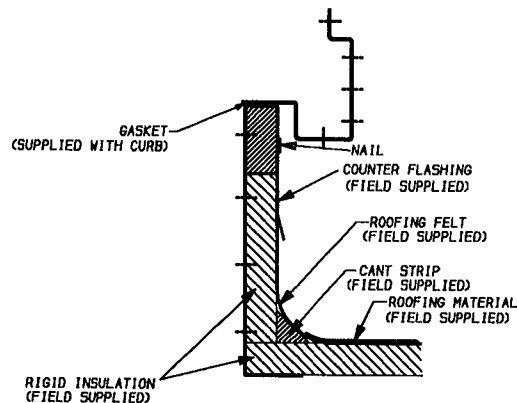
NOTE: To prevent the hazard of stagnant water build-up in the drain pan of the indoor-air section, unit can only be pitched as shown.



BASE RAIL CROSS SECTION
TYP ALL BASE RAILS
SCALE 1:3



VIEW B
(CORNER CONNECTIONS AND
SPICE PLATE CONNECTIONS)



Accessory dimensions (cont) — 50NB054-074

BASE UNIT ROOF CURB — 50NB054-074

UNIT LEVELING TOLERANCES

DIMENSIONS*
(degrees and inches)

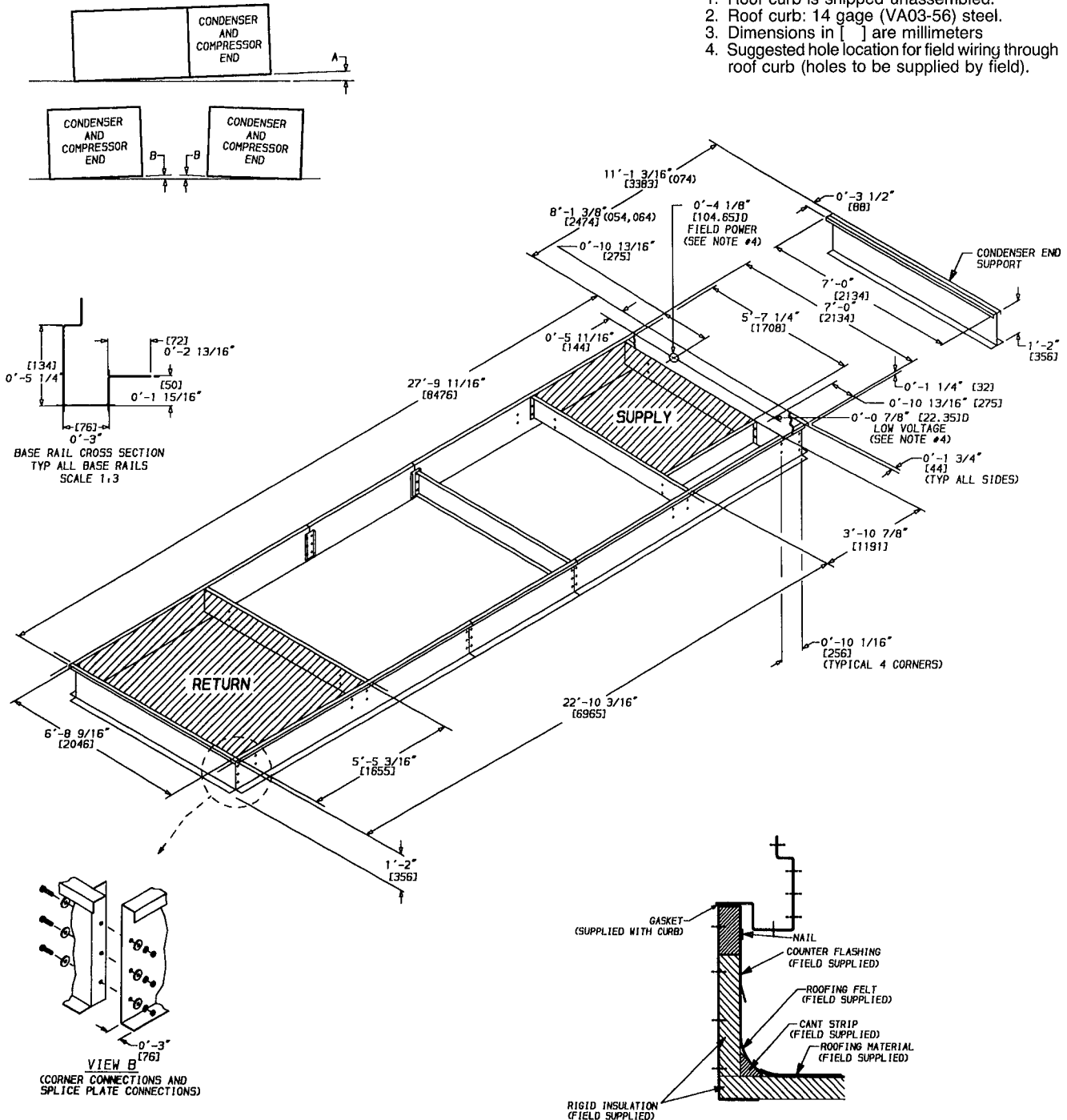
A		B	
Deg	In.	Deg	In.
10	20	50	.75

*From edge of unit to horizontal.

NOTE: To prevent the hazard of stagnant water build-up in the drain pan of the indoor-air section, unit can only be pitched as shown.

NOTES.

1. Roof curb is shipped unassembled.
2. Roof curb: 14 gage (VA03-56) steel.
3. Dimensions in [] are millimeters.
4. Suggested hole location for field wiring through roof curb (holes to be supplied by field).



Accessory dimensions (cont)

CONDENSER SECTION ROOF CURB — 50NB,NP054,064

NOTES:

1. Roof curb is shipped unassembled.
2. Dimensions in [] are millimeters.
3. Roof curb: 14 gage (VA03-56) steel
Roof curb pans: 16 gage (VA03-56) steel.

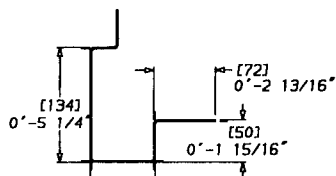
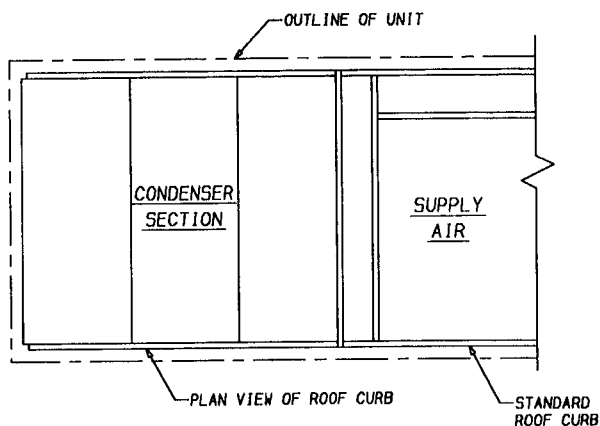
UNIT LEVELING TOLERANCES

DIMENSIONS*
(degrees and inches)

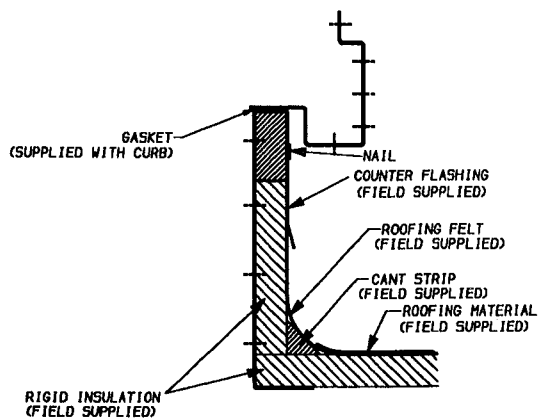
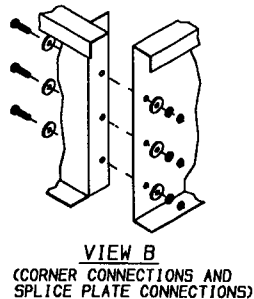
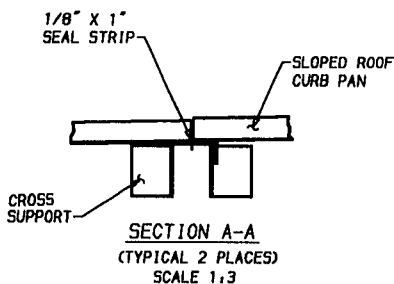
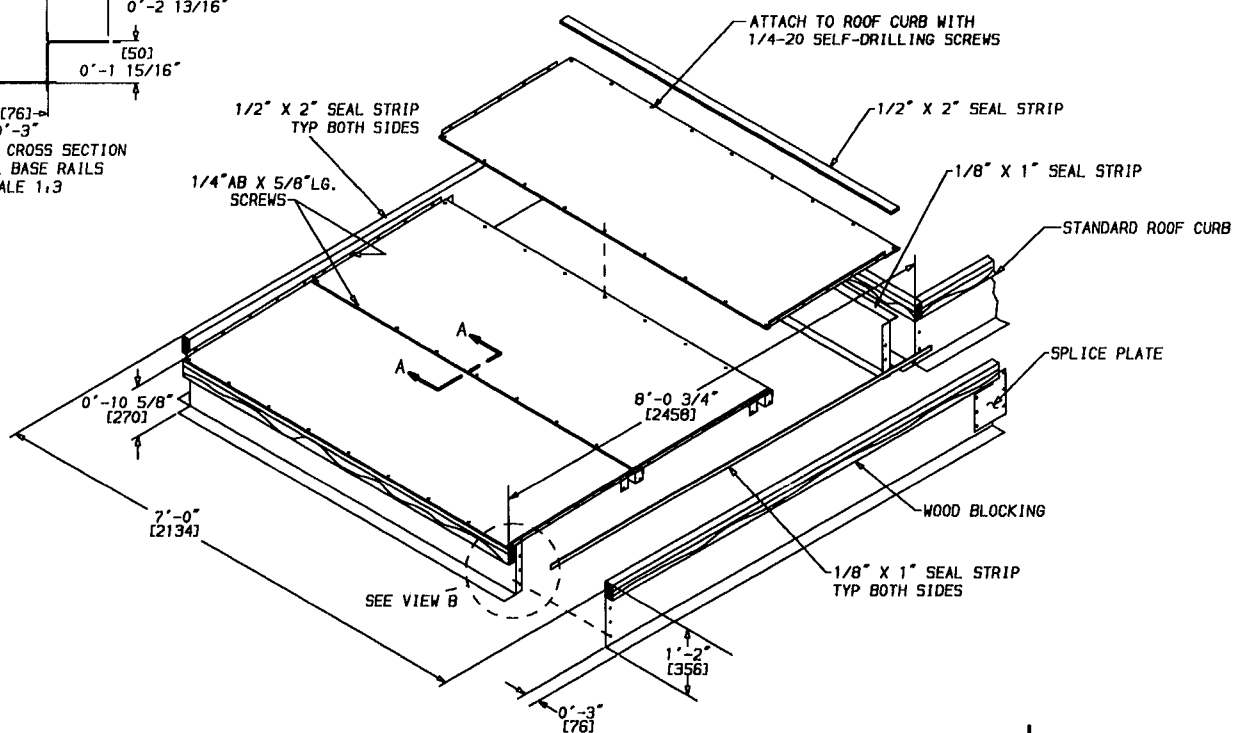
A		B	
Deg	In.	Deg	In.
1.0	2.0	.50	.75

*From edge of unit to horizontal

NOTE: To prevent the hazard of stagnant water build-up in the drain pan of the indoor-air section, unit can only be pitched as shown



BASE RAIL CROSS SECTION
TYP ALL BASE RAILS
SCALE 1:3



Accessory dimensions (cont)

CONDENSER SECTION ROOF CURB – 50NB,NP074

NOTES:

1. Roof curb is shipped unassembled
2. Dimensions in [] are millimeters
3. Roof curb: 14 gage (VA03-56) steel.
Roof curb pans: 16 gage (VA03-56) steel.

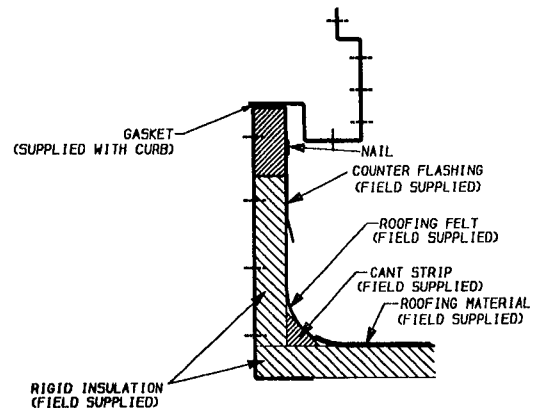
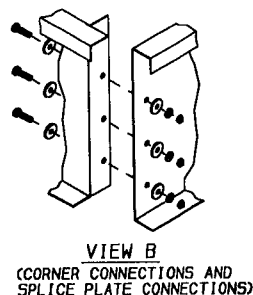
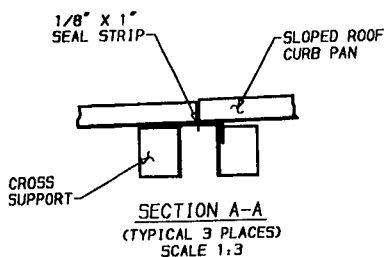
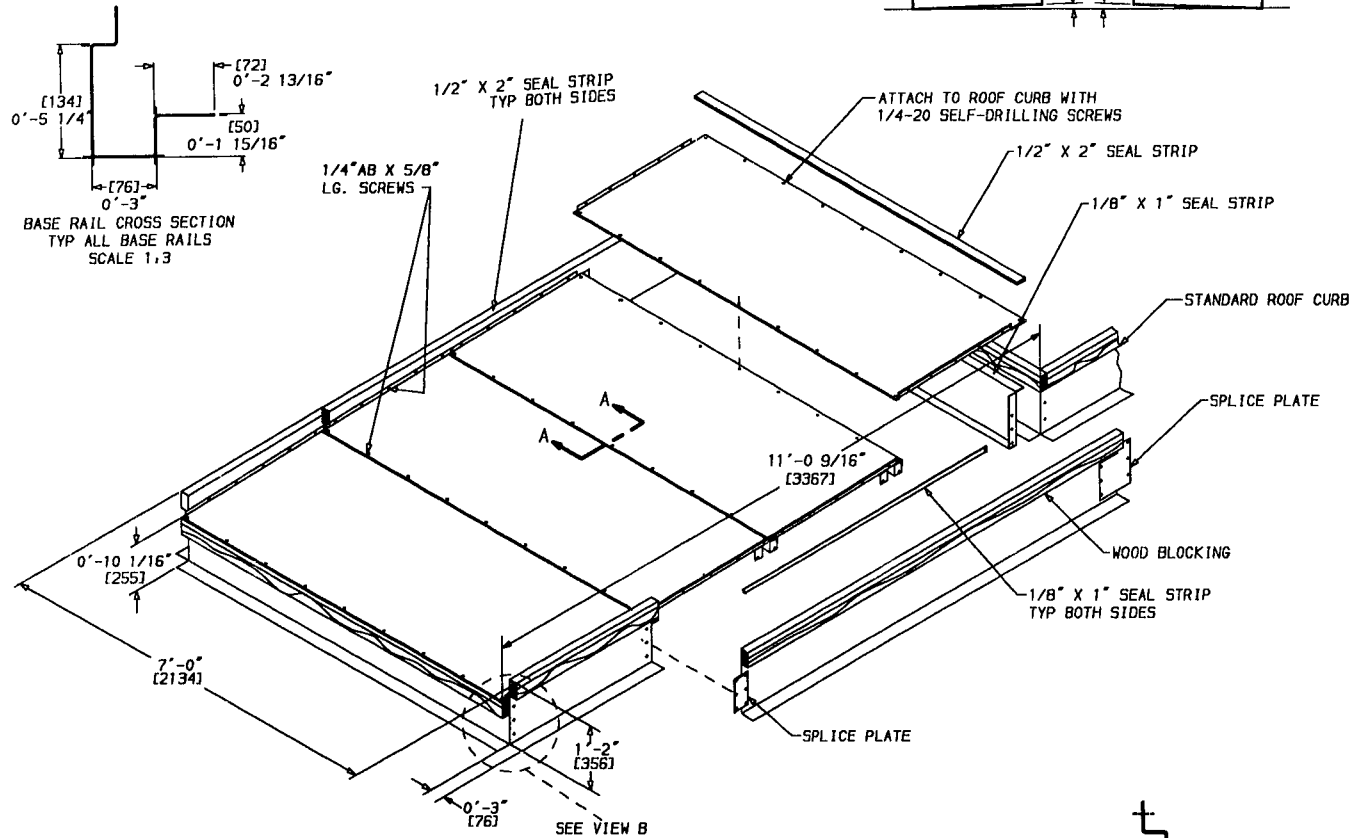
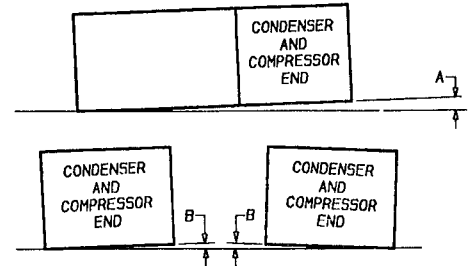
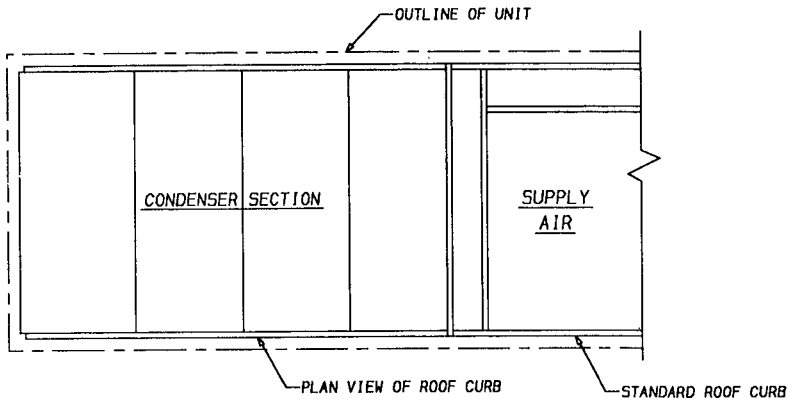
UNIT LEVELING TOLERANCES

DIMENSIONS*
(degrees and inches)

A		B	
Deg	In.	Deg	In.
1.0	2.0	.50	75

*From edge of unit to horizontal.

NOTE: To prevent the hazard of stagnant water build-up in the drain pan of the indoor-air section, unit can only be pitched as shown.



Selection procedure (with 50NP064 example)

I Determine cooling and heating requirements at design conditions.

Given:

Required Cooling Capacity (TC) ... 720,000 Btuh
Sensible Heat Capacity (SHC) 510,000 Btuh
Required Heating Capacity 245,000 Btuh
Condenser Entering Air Temperature 95 F
Indoor Air Temperature 80 F edb, 67 F ewb
Evaporator Air Quantity 24,000 Btuh
External Static Pressure 2.1 in. wg
Electrical Characteristics (V-Ph-Hz) 460-3-60
Required: Integrated Economizer and 30% filters.

II Select unit based on required cooling capacity.

Enter Cooling Capacities table at condenser entering temperature of 95 F (page 28). Unit 50NP064 at 24,000 cfm and 67 F ewb will provide a total capacity of 733,000 and a SHC of 566,000 Btuh. Calculate SHC correction, if required, using notes under cooling capacities tables.

III Select heating capacity of unit to provide design condition requirement.

The required heating capacity is 245,000 Btuh. Determine kW as follows:

$$\frac{245,000 \text{ Btuh}}{3413 \text{ Btuh/kW}} = 71.8 \text{ kW}$$

Enter the Electric Heater Capacities table (below) for 50NP064, 460-v unit. Note that the medium electric heat will provide 72 kW.

IV Determine fan speed and power requirements at design conditions.

Tabulated fan performance includes 2-in. throwaway filters and wet evaporator coil. Refer to Component Pressure Drops table (page 33) for economizer pressure drop (.19 in. wg), 72 kW heater pressure drop (.29 in. wg) and 2-in. pleated filter pressure drop (.04 in. wg). Add these pressure drops to the specified external static pressure drop of 2.1 in. wg:

$$.19 + .29 + .04 + 2.10 = 2.62 \text{ in. wg}$$

Find fan rpm and bhp at 2.6 in. wg and 24,000 cfm on Fan Performance table (page 30). Note that the fan speed is 645 and the power required is 22.1 bhp. The 25.0 hp motor is required.

V Select unit that corresponds to power source available.

The Electrical Data table (page 44) shows that a 460-3-60 unit is available.

Performance data

ELECTRIC HEATER CAPACITIES

UNIT 50NP	VOLTAGE	LOW (kW) Two Stages		MED (kW) Two Stages		HIGH (kW) Two Stages	
		1st	2nd	1st	2nd	1st	2nd
034, 044	208	15	29	29	59	59	88
	230	18	36	36	72	72	108
054- 074	208	15	29	29	59	44	88
	230	18	36	36	72	54	108
034- 074	460	18	36	36	72	72	108
	575	18	36	36	72	72	108

NUMBER OF HEATER CONTACTORS

V-PH-HZ	kW		
	36	72	108
208/230-3-60	2	4	6
460-3-602	2	2	3
575-3-60	2	2	3

Unit controls are factory wired for 2-stage electric heat operation and for morning warm-up heat operation.

Although the unit controls are set up for 2-stage heat operation, the number of contactors used to control the heater elements determines the maximum number of stages available. If each contactor is controlled individually, the number of heat stages possible ranges between 2 and 6, depending on heater size and voltage.

Accessory outdoor air thermostats can be utilized to control one or more of the heater contactors to achieve enhanced staging. The thermostats are field adjustable to allow the stage of heat to be energized only if the ambient temperature is below a predetermined set point. This limits the amount of heat energized in mild weather and lowers electrical usage, while permitting more heat in colder weather. Heater staging with outdoor-air thermostats can be very beneficial on VAV units where morning warm-up is single stage only.

Outdoor-air thermostats can be used to increase the number of heat stages or to limit stages to certain ambient temperatures. See table to the left for the number of contactors used on various heat assemblies.

Performance data (cont)

COOLING CAPACITIES

50NB,NP034

Temp (F) Air Entering Condenser		Evaporator Air Quantity – Cfm/BF											
		6000/0.03			7500/0.04			9000/0.05			10,500/0.06		
		Evaporator Air – Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	371	339	311	385	355	325	400	369	339	415	384	353
	SHC	176	209	242	189	229	269	201	249	295	213	269	321
	kW	29.9	28.6	27.5	30.5	29.2	28.0	31.1	29.9	28.6	31.6	30.5	29.2
95	TC	356	326	299	370	340	311	383	353	325	397	367	338
	SHC	170	203	235	182	223	261	194	243	287	206	261	313
	kW	32.3	30.9	29.6	32.9	31.6	30.2	33.5	32.2	30.8	34.1	32.9	31.5
100	TC	349	319	292	362	333	305	374	346	317	388	358	330
	SHC	167	200	233	179	219	258	191	239	283	203	259	309
	kW	33.5	32.0	30.6	34.2	32.7	31.2	34.8	33.4	31.9	35.5	34.0	32.6
105	TC	342	313	286	354	325	277	366	338	310	379	350	322
	SHC	164	197	229	176	217	255	188	235	279	200	255	305
	kW	34.8	33.2	31.6	35.4	33.8	32.4	36.1	34.5	33.0	36.7	35.2	33.7
115	TC	326	299	273	338	310	266	349	322	296	361	333	307
	SHC	158	191	223	169	210	247	181	229	271	193	248	297
	kW	37.2	35.4	33.8	37.8	36.2	34.4	38.6	36.8	35.2	39.3	37.6	35.9
120	TC	318	292	267	329	302	261	340	314	288	351	324	299
	SHC	155	187	219	166	206	243	178	225	267	190	244	291
	kW	38.4	36.6	34.8	39.1	37.3	35.5	39.8	38.0	36.2	40.6	38.8	37.0

50NB,NP034 (cont)

Temp (F) Air Entering Condenser		Evaporator Air Quantity — Cfm/BF								
		12,000/0.07			13,500/0.08			15,000/0.09		
		Evaporator Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	423	392	361	429	398	368	435	404	374
	SHC	224	287	343	235	303	359	245	320	374
	KW	32.0	30.8	29.5	32.2	31.1	29.8	32.4	31.3	30.0
95	TC	404	374	346	410	380	353	415	386	360
	SHC	217	279	334	227	295	347	237	312	360
	KW	34.5	33.2	31.8	34.8	33.5	32.2	35.1	33.7	32.5
100	TC	395	366	338	400	370	345	405	376	353
	SHC	214	277	329	224	293	341	234	309	353
	KW	35.9	34.4	33.0	36.1	34.7	33.3	36.3	34.9	33.7
105	TC	386	357	330	391	362	338	395	366	346
	SHC	210	273	324	220	289	335	230	305	346
	KW	37.1	35.6	34.1	37.4	35.9	34.5	37.7	36.1	34.9
115	TC	367	339	314	371	344	322	375	348	331
	SHC	204	265	312	214	281	321	224	297	331
	KW	39.6	38.0	36.4	40.0	38.3	36.9	40.2	38.5	37.5
120	TC	357	330	306	361	335	315	365	339	323
	SHC	200	261	306	210	277	315	220	293	323
	KW	41.0	39.2	37.5	41.2	39.4	38.1	41.5	39.8	38.7

50NB,NP044

Temp (F) Air Entering Condenser		Evaporator Air Quantity – Cfm/BF											
		8000/0.06			10,000/0.07			12,000/0.08			14,000/0.10		
		Evaporator Air – Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	496	452	412	517	473	431	538	494	451	559	514	469
	SHC	235	279	321	253	305	356	269	332	391	286	358	425
	kW	38.1	36.4	34.7	38.9	37.2	35.5	39.6	38.0	36.3	40.4	38.8	37.0
95	TC	474	431	392	493	451	410	512	469	427	532	488	445
	SHC	226	269	311	243	295	344	259	322	379	276	347	413
	kW	40.9	39.0	37.0	41.8	39.8	38.0	42.6	40.7	38.8	43.5	41.6	39.6
100	TC	463	420	381	481	439	398	500	457	416	519	475	434
	SHC	222	264	305	237	290	340	254	316	373	270	342	407
	kW	42.3	40.2	38.2	43.2	41.2	39.2	44.1	42.1	40.0	45.1	43.0	40.9
105	TC	451	410	371	469	428	388	487	445	405	505	463	422
	SHC	217	259	300	233	285	334	250	311	367	266	337	400
	kW	43.8	41.6	39.4	44.7	42.5	40.4	45.6	43.5	41.2	46.5	44.4	42.2
115	TC	427	388	351	444	404	366	460	420	382	477	436	398
	SHC	207	249	290	223	274	322	239	300	353	256	326	386
	kW	46.4	44.0	41.6	47.3	45.0	42.6	48.3	45.9	43.6	49.3	46.9	44.5
120	TC	416	377	340	431	392	355	446	407	370	462	422	384
	SHC	202	245	284	218	270	316	234	295	347	250	320	378
	kW	47.7	45.2	42.6	48.7	46.2	43.6	49.7	47.2	44.7	50.6	48.2	45.7

See notes on page 29.

COOLING CAPACITIES (cont)

50NB,NP044 (cont)

Temp (F) Air Entering Condenser		Evaporator Air Quantity — Cfm/BF								
		16,000/0.11			18,000/0.12			20,000/0.13		
		Evaporator Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	570	526	482	581	535	490	591	544	499
	SHC	301	381	455	314	403	476	328	426	499
	kW	41.0	39.3	37.6	41.4	39.7	37.9	42.0	40.1	38.2
95	TC	543	500	457	552	507	467	560	515	477
	SHC	290	370	440	304	393	458	317	414	477
	kW	44.0	42.1	40.2	44.4	42.5	40.6	44.8	42.8	41.1
100	TC	529	487	445	537	493	456	545	501	465
	SHC	285	365	432	298	387	449	312	408	465
	kW	45.6	43.5	41.4	45.9	43.8	41.9	46.3	44.2	42.5
105	TC	515	473	433	523	480	444	529	486	455
	SHC	280	360	425	293	381	439	306	401	455
	kW	47.1	44.9	42.7	47.4	45.2	43.3	47.7	45.6	43.9
115	TC	486	444	409	492	450	420	499	457	431
	SHC	269	349	406	283	368	418	296	389	431
	kW	49.8	47.5	45.3	50.2	47.8	45.9	50.5	48.1	46.6
120	TC	470	430	397	476	436	408	484	442	420
	SHC	264	343	396	277	362	408	290	383	420
	kW	51.2	48.8	46.5	51.6	49.1	47.2	51.9	49.4	48.0

50NB,NP054

Temp (F) Air Entering Condenser		Evaporator Air Quantity — Cfm/BF											
		10,000/0.03			12,500/0.04			15,000/0.05			17,500/0.06		
		Evaporator Air — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	594	543	496	625	574	526	647	596	548	663	613	566
	SHC	285	339	397	306	372	438	326	406	480	344	435	516
	kW	47.5	45.4	43.5	48.8	46.7	44.7	49.6	47.6	45.6	50.3	48.3	46.4
95	TC	570	521	475	598	549	502	619	570	523	634	584	539
	SHC	274	329	385	294	362	425	315	394	467	333	423	500
	kW	51.1	48.7	46.5	52.5	50.1	47.9	53.4	51.1	48.9	54.1	51.8	49.6
100	TC	557	510	464	585	536	491	604	556	512	618	571	527
	SHC	269	324	379	289	356	419	310	387	461	328	417	492
	kW	52.9	50.4	48.0	54.2	51.7	49.4	55.3	52.8	50.5	55.9	53.6	51.3
105	TC	544	497	453	571	524	478	589	542	498	602	555	513
	SHC	264	320	373	284	351	414	304	382	454	321	411	484
	kW	54.5	52.0	49.4	56.0	53.5	50.9	57.0	54.4	51.9	57.7	55.1	52.9
115	TC	517	473	429	541	496	454	556	513	472	570	527	487
	SHC	253	308	362	273	339	401	292	370	438	310	398	467
	kW	57.8	54.9	52.1	59.4	56.5	53.7	60.3	57.5	54.9	61.2	58.4	55.9
120	TC	509	467	424	525	482	441	542	498	458	552	508	474
	SHC	248	302	357	267	333	394	286	364	431	303	392	457
	kW	59.9	56.8	53.8	60.9	57.9	55.1	62.1	59.1	56.3	62.7	59.8	57.4

50NB,NP054 (cont)

Temp (F) Air Entering Condenser		Evaporator Air Quantity — Cfm/BF								
		20,000/0.07			22,500/0.08			25,000/0.08		
		Evaporator Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	676	625	581	685	635	594	693	643	607
	SHC	362	464	553	379	491	577	395	519	601
	kW	50.8	48.8	46.9	51.1	49.1	47.5	51.4	49.5	48.0
95	TC	644	596	555	655	605	568	661	613	581
	SHC	350	452	534	368	478	556	384	505	578
	kW	54.5	52.3	50.4	55.0	52.8	51.0	55.3	53.2	51.7
100	TC	630	581	541	638	590	555	644	598	567
	SHC	345	446	524	362	473	545	379	498	565
	kW	56.4	54.0	52.0	56.9	54.5	52.7	57.3	54.9	53.2
105	TC	614	566	529	622	575	541	628	582	554
	SHC	339	440	515	356	466	534	372	491	553
	kW	58.3	55.8	53.8	58.7	56.3	54.3	59.0	56.5	55.1
115	TC	580	535	502	587	543	514	592	550	526
	SHC	327	426	494	343	451	510	359	476	526
	kW	61.8	59.1	56.9	62.2	59.4	57.6	62.5	59.9	58.4
120	TC	563	519	488	569	527	500	575	533	513
	SHC	321	419	483	337	445	498	354	469	513
	kW	63.4	60.6	58.4	63.8	61.0	59.2	64.3	61.5	60.0

See notes on page 29.

Performance data (cont)

COOLING CAPACITIES (cont)

50NB,NP064

Temp (F) Air Entering Condenser		Evaporator Air Quantity – Cfm/BF											
		12,000/0.03			15,000/0.04			18,000/0.04			21,000/0.05		
		Evaporator Air – Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	731	670	613	769	707	647	793	733	674	811	751	694
	SHC	353	421	488	378	462	542	403	503	597	429	543	650
	kW	59.6	56.9	54.3	61.3	58.5	55.9	62.2	59.7	57.1	63.1	60.4	57.9
95	TC	703	644	588	738	678	621	761	702	645	778	719	666
	SHC	340	409	474	365	449	527	390	448	580	415	529	633
	kW	63.9	60.8	57.9	65.7	62.7	59.6	66.9	63.9	60.9	67.8	64.8	62.0
100	TC	689	630	575	720	663	607	745	684	630	761	702	649
	SHC	334	402	468	358	442	520	383	482	572	408	522	624
	kW	66.0	62.9	59.7	67.7	64.6	61.5	69.1	65.8	62.8	70.0	66.7	63.8
105	TC	674	616	561	704	647	592	727	668	616	743	685	633
	SHC	327	395	461	352	435	512	376	475	563	400	515	615
	kW	68.1	64.6	61.4	69.9	66.6	63.2	71.3	67.7	64.6	72.1	68.7	65.7
115	TC	641	587	534	669	616	563	691	635	585	704	650	603
	SHC	314	382	447	339	421	496	363	461	546	387	500	595
	kW	72.0	68.3	64.5	74.0	70.2	66.6	75.2	71.6	68.2	76.3	72.6	69.3
120	TC	629	575	524	649	595	546	669	615	568	688	635	590
	SHC	308	375	440	332	415	488	356	454	536	381	493	584
	kW	74.4	70.5	66.6	75.9	71.9	68.2	77.4	73.5	69.9	78.8	75.0	71.6

50NB,NP064 (cont)

Temp (F) Air Entering Condenser		Evaporator Air Quantity – Cfm/BF								
		24,000/0.06			27,000/0.07			30,000/0.08		
		Evaporator Air – Ewb (F)								
		72	67	62	72	67	62	72	67	62
85	TC	825	764	710	840	778	728	848	787	749
	SHC	450	580	695	472	614	722	493	647	749
	kW	63.7	61.0	58.7	64.3	61.6	59.4	64.6	61.9	60.1
95	TC	791	733	681	802	744	697	811	752	719
	SHC	437	566	672	458	599	695	480	632	719
	kW	68.4	65.4	62.7	69.0	66.0	63.6	69.4	66.4	64.5
100	TC	772	713	665	781	726	683	790	734	703
	SHC	429	558	661	451	591	682	473	624	703
	kW	70.6	67.4	64.8	71.1	68.1	65.7	71.6	68.5	66.6
105	TC	754	697	651	763	708	669	771	716	687
	SHC	423	551	650	444	584	669	466	617	687
	kW	72.8	69.5	66.7	73.3	70.1	67.7	73.8	70.6	68.8
115	TC	714	661	622	724	671	640	732	680	656
	SHC	409	535	622	430	568	640	451	600	656
	kW	76.9	73.3	70.4	77.5	74.0	71.7	78.0	74.6	72.7
120	TC	698	646	608	706	654	624	713	662	641
	SHC	403	529	608	424	560	624	445	591	641
	kW	79.6	75.8	73.0	80.1	76.4	74.1	80.7	77.0	75.3

50NB,NP074

Temp (F) Air Entering Condenser		Evaporator Air Quantity – Cfm/BF											
		14,000/0.05			17,500/0.06			21,000/0.07			24,500/0.08		
		Evaporator Air – Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	862	789	721	890	816	747	917	843	775	944	870	801
	SHC	406	485	565	435	531	624	463	577	684	492	622	742
	kW	70.9	67.5	64.1	72.2	68.8	65.4	73.6	70.0	66.8	74.9	71.4	68.1
95	TC	830	760	691	855	785	718	879	809	743	903	833	769
	SHC	393	472	551	421	517	609	449	562	667	477	607	725
	kW	75.7	71.8	68.1	77.0	73.1	69.5	78.3	74.5	70.9	79.6	75.8	72.3
100	TC	811	744	676	835	767	701	859	790	726	882	814	752
	SHC	386	465	544	413	510	601	441	554	658	470	600	715
	kW	77.8	73.9	70.0	79.3	75.3	71.4	80.6	76.6	72.9	82.0	78.1	74.4
105	TC	793	728	662	816	750	686	839	773	711	863	795	734
	SHC	377	457	537	406	502	594	434	547	649	462	592	705
	kW	80.1	76.1	71.9	81.5	77.4	73.5	83.0	78.9	75.0	84.4	80.2	76.5
115	TC	754	695	633	776	716	655	799	736	678	821	758	700
	SHC	363	443	524	391	487	579	419	532	632	447	577	684
	kW	84.5	80.3	75.8	86.1	81.7	77.4	87.5	83.1	79.0	89.1	84.5	80.7

See notes on page 29.

COOLING CAPACITIES (cont)

50NB,NP074 (cont)		Evaporator Air Quantity — Cfm/BF					
Temp (F) Air Entering Condenser		28,000/0.09			30,000/0.09		
		Evaporator Air — Ewb (F)					
		72	67	62	72	67	62
85	TC	997	919	854	1005	926	865
	SHC	539	692	827	554	717	853
	kW	77.1	73.6	70.5	77.5	73.9	71.0
95	TC	952	879	818	960	887	829
	SHC	524	676	805	539	700	825
	kW	81.9	78.1	74.9	82.4	78.6	75.5
100	TC	931	858	800	937	864	811
	SHC	516	668	792	532	692	809
	kW	84.3	80.4	77.1	84.8	80.8	77.7
105	TC	908	836	782	915	843	794
	SHC	508	659	779	523	683	794
	kW	86.8	82.6	79.3	87.3	83.0	80.0
115	TC	864	793	746	870	799	760
	SHC	493	642	746	509	666	760
	kW	91.7	87.0	83.7	92.0	87.5	84.5

LEGEND

- BF** — Bypass Factor
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Cap (1000 Btuh)
TC — Total Cap. (1000 Btuh) Gross

VAV units only.

NOTES:

- Direct interpolation is permissible. Do not extrapolate
- The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

$$t_{lwb} = \text{Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h}_{lwb}\text{)}$$

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil.

- SHC is based on 80 F edb temperature of air entering evaporator coil.

Below 80 F edb, subtract (corr factor x cfm) from SHC.

Above 80 F edb, add (corr factor x cfm) to SHC.

BF	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
Correction Factor						
.05	1.04	2.07	3.11	4.14	5.18	Use formula shown below.
.10	.98	1.96	2.94	3.92	4.91	
.20	.87	1.74	2.62	3.49	4.36	

Interpolation is permissible.

Correction Factor = $1.10 \times (1 - \text{BF}) \times (\text{edb} - 80)$.

- Cooling capacities are gross and do not include deduction for indoor fan motor heat.

FAN PERFORMANCE — 50NP UNITS WITHOUT IGV

UNIT 50NP	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (In. wg)																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
034	6,000	220	1.0	290	1.2	340	1.4	380	1.6	420	2.0	460	2.3	500	3.0	540	3.5	570	3.8	590	4.2
	7,500	250	1.1	300	1.3	350	1.7	400	2.2	430	2.6	470	3.0	510	3.5	550	4.0	580	4.5	600	5.0
	9,000	270	1.2	320	1.7	360	2.2	410	2.5	440	3.0	480	3.6	520	4.3	560	5.0	580	5.5	610	6.0
	10,500	300	2.2	350	2.5	390	3.0	420	3.4	460	4.0	490	4.5	530	5.1	570	5.7	590	6.3	620	7.0
	12,000	340	3.1	380	3.5	410	4.0	440	4.4	480	5.0	510	5.6	540	6.2	570	6.7	600	7.5	630	8.2
	13,500	380	3.5	410	4.5	440	5.2	470	5.7	500	6.2	530	6.9	560	7.5	580	8.0	610	8.6	640	9.3
	15,000	420	5.7	440	6.0	470	6.5	500	7.0	520	7.5	550	8.2	580	8.9	600	9.4	620	9.9	650	10.7
UNIT 50NP	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (In. wg)																			
		2.2		2.4		2.6		2.8		3.0		3.2		3.4		3.6		3.8		4.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
034	6,000	620	4.7	640	5.1	660	5.6	690	6.1	720	6.8	740	7.5	760	8.0	780	8.5	800	9.0	820	9.5
	7,500	630	5.6	660	6.1	680	6.8	710	7.5	730	8.0	750	8.5	770	9.0	800	10.0	820	10.6	840	11.0
	9,000	640	6.6	670	7.2	690	7.7	720	8.4	740	9.0	760	9.5	780	10.2	810	11.1	830	11.7	850	12.2
	10,500	640	7.6	670	8.1	700	8.7	720	9.5	750	10.5	770	11.0	790	11.8	810	12.4	830	13.0	860	13.5
	12,000	650	9.0	680	9.6	700	10.2	730	11.0	750	11.8	770	12.5	790	13.1	820	13.7	840	14.4	860	15.0
	13,500	660	10.1	690	11.0	710	11.8	730	12.5	760	13.2	780	14.1	800	15.0	830	15.7	850	16.1	870	16.5
	15,000	670	11.5	700	12.2	720	13.3	740	14.2	770	15.1	790	16.0	810	17.0	840	17.8	860	18.2	880	18.7

LEGEND

- Bhp** — Brake Horsepower
IGV — Inlet Guide Vanes

VAV units only.

NOTES:

- Fan performance is based on wet coils and clean 2-in. filters.

- See Component Pressure Drop table before using Fan Performance tables

- Conversion — Bhp to watts:

$$\text{Watts} = \frac{\text{Bhp} \times .746}{\text{Motor efficiency}}$$

See Physical Data tables for motor efficiency.

Performance data (cont)

FAN PERFORMANCE — 50NP UNITS WITHOUT IGV (cont)

UNIT 50NP	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
044	8,000	250	1.0	300	1.3	350	1.8	400	2.3	430	2.7	470	3.1	500	3.5	540	4.0	570	4.5	600	5.1
	10,000	280	1.7	320	2.0	370	2.6	420	3.2	450	3.6	480	4.0	510	4.5	550	5.1	580	5.6	600	6.2
	12,000	330	2.7	370	3.2	400	3.6	440	4.2	470	4.8	500	5.4	530	6.0	560	6.7	590	7.3	610	7.9
	14,000	370	3.8	400	4.4	430	5.0	470	5.7	500	6.4	520	7.0	550	7.6	570	8.2	600	9.0	630	9.7
	16,000	410	5.5	450	6.4	480	7.2	510	8.1	530	8.6	550	9.0	570	9.5	600	10.3	630	11.3	650	12.0
	18,000	460	8.0	490	8.7	520	9.5	550	10.5	570	11.4	590	11.9	610	12.7	630	13.5	660	14.5	680	15.4
	20,000	510	10.7	530	11.5	560	12.5	590	13.6	610	14.7	630	15.5	650	16.4	670	17.1	690	18.0	710	19.0
UNIT 50NP	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		2.2		2.4		2.6		2.8		3.0		3.2		3.4		3.6		3.8		4.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
044	8,000	620	5.7	650	6.4	680	7.0	700	7.7	720	8.2	750	8.7	770	9.2	790	9.8	820	10.8	840	12.0
	10,000	630	6.8	660	7.5	690	8.3	710	9.0	730	9.7	760	10.4	780	11.0	800	11.6	830	12.5	850	13.3
	12,000	640	8.4	670	9.0	690	9.7	720	10.4	740	11.2	760	12.0	780	12.6	810	13.5	840	14.7	860	16.0
	14,000	650	10.3	680	11.0	700	11.8	730	12.8	750	13.7	770	14.5	790	15.1	820	15.8	850	16.8	870	18.2
	16,000	670	12.8	700	13.8	720	14.5	750	15.5	770	16.5	790	17.3	810	18.2	830	19.0	860	20.0	880	21.0
	18,000	700	16.2	720	17.0	740	17.7	760	18.5	780	19.2	800	20.0	830	20.9	860	22.2	880	23.2	900	24.0
	20,000	730	19.7	750	20.4	770	21.2	790	21.9	810	22.9	830	23.4	860	24.0	—	—	—	—	—	—

UNIT 50NP	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
054	10,000	240	1.8	270	2.2	300	2.6	345	3.0	380	3.8	430	5.0	460	6.0	490	6.9	515	8.0	540	9.0
	12,500	250	2.2	280	2.6	320	3.2	350	3.6	370	4.0	405	4.7	440	5.8	485	6.9	525	8.6	560	10.2
	15,000	270	2.6	300	3.2	340	3.8	365	4.4	395	5.0	420	5.6	450	6.4	470	7.0	495	7.8	520	8.8
	17,500	300	3.8	330	4.4	360	5.0	385	5.6	415	6.6	440	7.2	465	8.1	490	8.8	510	9.6	530	10.5
	20,000	330	5.4	355	5.9	380	6.8	415	7.7	440	8.6	460	9.3	480	10.0	510	11.0	530	12.0	550	12.8
	22,500	360	7.2	385	7.8	415	8.9	445	10.2	465	11.0	490	12.0	510	13.0	530	13.9	550	14.8	570	15.7
	25,000	390	9.8	420	10.8	450	12.1	470	12.8	490	13.8	510	14.8	530	15.8	550	17.0	570	18.0	590	19.4
UNIT 50NP	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		2.2		2.4		2.6		2.8		3.0		3.2		3.4		3.6		3.8		4.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
054	10,000	555	9.8	580	11.0	605	12.4	630	14.0	650	15.8	665	16.6	685	18.2	700	19.5	720	20.8	735	22.3
	12,500	550	10.0	570	11.3	600	12.5	620	14.1	640	15.9	665	16.8	680	18.5	700	19.6	720	21.0	740	22.4
	15,000	550	10.3	570	11.4	590	12.6	620	14.2	640	16.0	660	17.0	680	18.6	700	19.8	720	21.6	730	22.6
	17,500	555	11.7	575	12.6	595	13.7	620	15.1	645	16.7	660	17.8	680	19.2	700	20.4	720	21.8	730	22.8
	20,000	570	13.8	590	15.2	610	16.4	630	17.4	645	18.4	665	19.8	680	21.0	700	22.2	720	23.4	730	23.9
	22,500	590	17.2	610	18.4	630	19.8	645	20.8	665	22.1	680	23.2	700	24.6	720	25.4	735	27.2	745	28.4
	25,000	610	20.6	625	21.6	645	23.0	660	24.0	680	25.5	700	27.1	715	28.2	730	29.8	745	31.1	—	—

UNIT 50NP	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
064	12,000	240	1.8	280	2.6	310	3.0	350	3.6	390	4.1	410	4.9	455	6.1	510	8.0	535	9.0	560	10.4
	15,000	280	2.8	320	3.4	345	3.8	375	4.6	405	5.4	430	5.9	450	6.4	480	7.4	505	8.3	535	9.4
	18,000	320	4.2	345	4.8	375	5.6	405	6.6	430	7.3	450	7.8	475	8.6	500	9.6	520	10.2	540	11.2
	21,000	350	6.0	380	7.0	410	8.0	435	8.9	460	9.9	480	10.6	505	11.6	525	12.4	545	13.4	570	14.4
	24,000	390	8.8	420	9.8	445	11.2	470	12.2	490	13.2	510	14.0	530	15.0	550	16.1	570	17.2	590	18.5
	27,000	430	12.6	460	13.8	480	15.0	500	16.0	520	17.0	540	18.4	565	19.6	580	20.7	600	22.1	620	23.2
	30,000	470	16.8	500	19.0	515	19.8	540	21.4	555	22.4	575	23.6	595	25.1	610	26.2	625	27.1	645	28.8
UNIT 50NP	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		2.2		2.4		2.6		2.8		3.0		3.2		3.4		3.6		3.8		4.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
064	12,000	580	11.4	600	12.2	625	14.0	645	15.2	655	16.0	680	18.2	695	19.0	720	20.8	735	22.2	750	23.6
	15,000	565	11.0	580	12.3	610	14.1	630	15.3	650	16.1	670	18.4	690	19.1	710	21.1	730	22.4	750	23.8
	18,000	555	12.0	580	13.2	600	14.4	625	15.6	650	17.4	670	18.6	690	20.0	710	21.5	730	23.0	750	24.6
	21,000	585	15.6	605	16.9	625	18.0	645	19.2	655	20.0	675	21.2	695	22.6	710	23.6	730	25.6	750	25.2
	24,000	610	19.6	630	21.0	645	22.1	660	23.0	680	24.6	695	25.8	715	27.0	730	28.4	745	30.0	—	—
	27,000	635	24.2	650	25.6	670	26.7	685	27.8	700	29.4	720	30.7	735	32.4	750	34.2	—	—	—	—
	30,000	660	29.7	675	30.7	690	32.0	705	33.2	725	34.5	—	—	—	—	—	—	—	—	—	—

FAN PERFORMANCE – 50NP UNITS WITHOUT IGV (cont)

UNIT 50NP	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
074	14,000	270	2.5	300	3.0	330	3.6	365	4.2	395	4.8	420	5.4	445	6.0	475	6.9	505	8.0	540	9.6
	17,500	310	4.1	340	4.6	370	5.3	400	6.2	425	6.8	450	7.6	470	8.2	495	9.1	520	10.0	540	11.0
	21,000	350	6.0	380	7.0	410	8.0	435	8.9	460	9.9	480	10.6	505	11.6	525	12.4	545	13.4	570	14.4
	24,500	400	8.5	425	10.5	450	11.7	470	12.4	495	13.6	515	14.6	535	15.6	560	16.8	575	17.8	595	19.0
	28,000	450	14.3	475	15.5	495	16.6	515	17.8	540	19.5	555	20.4	575	21.5	595	22.8	610	23.9	625	24.8
	30,000	470	16.8	500	19.0	515	19.8	540	21.4	555	22.4	575	23.6	585	25.1	610	26.2	625	27.1	645	28.8
UNIT 50NP	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		2.2		2.4		2.6		2.8		3.0		3.2		3.4		3.6		3.8		4.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
074	14,000	560	10.6	590	12.0	610	13.4	630	14.6	650	16.0	670	17.2	690	18.8	710	20.6	730	22.2	750	23.8
	17,500	560	11.9	580	12.9	600	14.1	620	15.2	650	17.0	670	18.2	690	19.6	710	21.2	730	22.8	750	24.4
	21,000	585	15.6	605	16.9	625	18.0	645	19.2	655	20.0	675	21.2	695	22.6	710	23.6	730	25.6	745	26.7
	24,500	615	20.6	630	21.7	650	23.0	670	24.2	685	25.4	700	26.6	720	27.8	735	29.1	745	30.5	—	—
	28,000	640	26.0	660	27.4	675	28.7	695	30.0	710	31.3	725	32.6	740	34.2	—	—	—	—	—	—
	30,000	660	29.7	675	30.7	690	32.0	705	33.2	725	34.5	—	—	—	—	—	—	—	—	—	—

FAN PERFORMANCE – 50NB UNITS WITHOUT IGV

UNIT 50NB	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
034	6,000	280	1.0	330	1.3	370	1.6	400	1.9	450	3.5	500	4.1	540	4.5	560	5.2	590	5.8	620	6.3
	7,500	290	1.2	340	1.4	380	1.8	410	2.2	460	3.6	510	4.3	550	5.2	570	5.6	600	6.2	630	7.0
	9,000	300	1.3	350	1.7	390	2.2	420	2.8	480	4.0	520	5.0	560	5.9	580	6.5	610	7.2	640	7.6
	10,500	320	1.5	360	2.0	400	2.6	470	4.4	510	5.8	550	6.6	580	7.2	600	7.6	630	8.2	660	9.0
	12,000	380	2.2	420	3.4	480	5.2	520	6.6	540	7.2	570	7.8	600	8.4	630	9.0	660	9.6	680	10.0
	13,500	430	4.6	480	6.0	520	7.4	550	8.2	570	8.8	600	9.4	620	9.8	650	10.4	680	11.0	700	11.8
034	15,000	500	8.0	530	8.8	560	9.4	580	10.0	600	10.4	630	11.0	660	11.6	680	12.2	700	12.8	720	13.8
UNIT 50NB	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		2.2		2.4		2.6		2.8		3.0		3.2		3.4		3.6		3.8		4.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
034	6,000	650	6.9	680	8.0	710	8.6	730	9.2	750	10.0	780	10.8	800	11.5	810	12.0	830	13.0	850	13.8
	7,500	660	7.4	690	8.2	720	9.0	740	9.5	760	10.2	790	11.0	810	11.8	820	12.5	840	13.2	—	—
	9,000	670	8.2	700	9.0	730	9.8	750	10.6	770	11.2	800	12.0	820	12.5	830	13.2	850	14.2	—	—
	10,500	690	9.5	710	10.0	740	10.8	770	11.6	790	12.4	820	13.2	840	14.2	850	15.2	—	—	—	—
	12,000	700	10.8	730	11.4	760	12.1	780	13.0	800	14.0	830	15.2	850	16.4	—	—	—	—	—	—
	13,500	720	12.4	750	13.2	770	14.0	800	15.2	820	16.2	840	17.0	—	—	—	—	—	—	—	—
044	15,000	740	14.6	770	15.2	790	16.0	820	17.4	840	19.0	—	—	—	—	—	—	—	—	—	—
UNIT 50NB	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
044	8,000	300	1.0	340	1.6	370	2.0	410	2.4	470	3.6	510	4.8	540	5.4	570	5.8	600	6.4	620	7.0
	10,000	330	1.6	370	2.0	400	2.4	440	3.2	500	5.2	530	6.0	560	6.6	580	7.0	610	7.4	640	8.0
	12,000	380	2.2	420	3.4	480	5.2	520	6.6	540	7.2	570	7.8	600	8.4	630	9.0	660	9.6	680	10.0
	14,000	440	5.0	480	6.4	510	7.6	540	8.2	570	9.0	590	9.6	620	10.2	650	10.8	670	11.4	700	12.2
	16,000	510	8.8	540	9.2	560	9.8	580	10.4	610	11.2	640	12.2	660	12.8	680	13.4	710	14.2	730	15.0
	18,000	560	11.2	580	12.0	610	13.0	630	13.6	660	14.4	690	15.2	710	16.2	730	17.0	750	17.6	770	18.4
044	20,000	610	14.4	640	15.2	660	16.0	690	17.0	710	18.0	730	19.0	750	19.6	770	20.2	790	21.2	800	21.8
UNIT 50NB	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		2.2		2.4		2.6		2.8		3.0		3.2		3.4		3.6		3.8		4.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
044	8,000	650	7.6	680	8.2	710	8.8	740	9.6	760	10.4	790	11.2	810	12.0	830	13.0	850	14.0	—	—
	10,000	670	8.6	700	9.4	720	10.0	750	11.0	770	11.6	800	12.4	820	13.2	840	14.2	—	—	—	—
	12,000	700	10.8	730	11.4	760	12.1	780	13.0	800	14.0	830	15.2	850	16.4	—	—	—	—	—	—
	14,000	720	12.8	750	13.8	770	14.6	790	15.2	820	16.4	840	18.0	—	—	—	—	—	—	—	—
	16,000	760	15.8	780	16.8	800	17.6	820	18.6	850	20.0	—	—	—	—	—	—	—	—	—	—
	18,000	790	19.2	810	20.4	830	21.6	850	22.4	—	—	—	—	—	—	—	—	—	—	—	—
044	20,000	820	22.4	830	23.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower
IGV — Inlet Guide Vanes

VAV units only.

NOTES:

1 Fan performance is based on wet coils and clean 2-in. filters.

2. See Component Pressure Drop table before using Fan Performance tables.

3 Conversion — Bhp to watts:

$$\text{Watts} = \frac{\text{Bhp} \times 746}{\text{Motor efficiency}}$$

See Physical Data tables for motor efficiency.

Performance data (cont)

FAN PERFORMANCE – 50NB UNITS WITHOUT IGV (cont)

UNIT 50NB	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
054	10,000	220	1.5	270	2.0	290	2.0	330	3.0	370	3.7	400	4.5	430	5.5	470	6.5	500	7.5	520	8.5
	12,500	240	2.0	280	2.5	310	3.0	350	4.0	380	5.0	410	5.5	440	6.0	480	7.5	510	9.0	530	10.0
	15,000	280	3.0	320	4.0	350	5.0	380	5.5	400	6.0	420	7.0	450	8.0	470	8.5	490	9.5	510	10.5
	17,500	320	5.0	350	5.5	380	6.0	400	7.0	430	8.5	450	9.0	470	10.0	500	11.0	520	12.0	550	13.5
	20,000	360	7.0	390	8.0	410	9.0	430	10.0	460	11.0	480	12.0	500	13.0	520	14.5	540	15.5	560	16.5
	22,500	390	9.0	410	10.0	440	11.0	460	12.0	480	13.0	500	14.5	520	15.5	540	16.5	560	18.0	580	19.5
	25,000	430	12.5	450	13.5	470	14.5	500	16.0	510	17.5	530	18.5	550	19.5	570	21.0	590	22.5	610	24.0

UNIT 50NB	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		2.2		2.4		2.6		2.8		3.0		3.2		3.4		3.6		3.8		4.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
054	10,000	560	9.5	580	11.0	600	12.0	620	13.0	640	13.5	660	14.5	680	15.5	690	16.5	710	17.5	730	19.0
	12,500	550	11.0	570	12.0	610	13.0	630	14.0	650	15.0	670	16.5	690	18.0	710	19.5	730	21.0	750	22.5
	15,000	530	11.5	560	12.5	590	14.0	610	15.5	630	17.0	680	19.0	700	21.5	710	22.5	730	23.5	750	25.0
	17,500	570	15.0	590	16.0	610	17.5	620	18.5	640	19.5	650	22.0	680	23.0	700	25.0	720	27.0	—	—
	20,000	580	17.5	600	19.0	620	20.0	630	21.0	650	22.0	660	23.5	670	25.5	690	28.0	720	29.5	—	—
	22,500	600	20.5	610	22.0	630	23.0	640	24.0	660	25.0	670	26.5	690	28.5	710	30.0	740	32.0	—	—
	25,000	620	25.0	640	26.0	660	27.5	680	29.0	690	30.0	700	31.0	710	32.0	730	33.0	—	—	—	—

UNIT 50NB	AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
074	15,000	280	3.0	320	4.0	350	5.0	380	5.5	400	6.0	420	7.0	450	8.0	470	8.5	490	9.5	510	10.5
	18,750	340	5.5	370	7.0	400	8.0	420	8.5	440	9.5	470	10.5	490	11.5	510	12.5	530	13.5	540	14.5
	21,000	360	7.5	390	8.5	410	9.5	440	10.5	460	11.5	490	12.5	510	14.0	530	15.0	550	16.0	560	17.0
	24,500	420	11.5	440	12.5	460	13.5	490	15.0	500	16.0	520	17.0	540	18.5	560	19.5	580	20.5	600	22.0
	28,000	470	16.0	500	18.5	510	19.5	530	21.0	550	22.5	570	24.0	590	25.0	610	26.5	630	28.0	650	29.0
	30,000	510	21.0	520	22.5	540	23.5	560	25.0	580	26.5	600	28.0	610	29.5	630	30.5	650	32.0	660	33.0

LEGEND
Bhp — Brake Horsepower
IGV — Inlet Guide Vanes
 VAV units only.

NOTES:

1. Fan performance is based on wet coils and clean 2-in. filters

2. See Component Pressure Drop table before using Fan Performance tables

3. Conversion — Bhp to watts:

$$\text{Watts} = \frac{\text{Bhp} \times .746}{\text{Motor efficiency}}$$

See Physical Data tables for motor efficiency.

FAN PERFORMANCE — POWER EXHAUST FANS

50NP034,044

AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)							
	0.2		0.4		0.6		0.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
6,000	700	1.5	880	2.3	1050	3.5	1220	5.4
8,000	720	2.6	920	3.4	1100	3.8	1250	6.3
10,000	840	4.3	950	4.9	1120	6.4	1280	7.8
12,000	970	7.0	1040	7.6	1160	8.6	1300	10.0
14,000	1090	10.8	1160	11.6	1240	12.3	—	—
16,000	1220	16.3	1280	17.2	—	—	—	—

Bhp — Brake Horsepower

FAN PERFORMANCE — POWER EXHAUST OR RETURN FANS

SIZES 054-074

AIRFLOW (Cfm)	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
10,000	415	1.5	475	1.9	525	2.2	575	2.8	625	3.3	675	4.0	725	4.7	770	5.5	810	6.2	850	6.7
12,000	480	2.6	525	3.0	570	3.5	610	4.0	660	4.6	700	5.3	740	6.0	780	6.7	820	7.4	860	8.1
14,000	540	3.9	580	4.5	620	4.8	660	5.6	700	6.4	730	7.0	770	7.6	810	8.5	840	9.0	880	10.0
16,000	610	5.7	640	6.3	675	7.0	710	7.6	750	8.5	780	9.2	810	9.7	840	10.5	875	11.3	910	12.3
18,000	680	8.3	720	9.2	740	9.7	770	10.2	800	11.0	830	11.6	860	12.3	880	13.3	—	—	—	—
20,000	750	11.4	780	12.2	810	12.7	830	13.4	860	14.0	880	14.7	920	15.6	—	—	—	—	—	—
22,000	820	14.6	850	15.5	870	16.5	900	17.2	925	17.6	—	—	—	—	—	—	—	—	—	—
24,000	890	18.8	915	19.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower

NOTE: Return fan pressure drop included in Fan Performance.

COMPONENT PRESSURE DROPS (in. wg)

SIZES 034,044

COMPONENT	CFM							
	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000
ECONOMIZER	0.06	0.09	0.12	0.16	0.21	0.25	0.29	0.35
INLET GUIDE VANES	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.10
FILTERS								
Pleated (2-in.)	0.01	0.01	0.01	0.02	0.04	0.04	0.03	0.02
Bags With Prefilters*	0.36	0.38	0.41	0.51	0.64	0.77	0.91	1.01
ELECTRIC HEAT								
36 kW	0.03	0.04	0.07	0.11	0.17	0.25	0.35	0.47
72 kW	0.03	0.06	0.12	0.18	0.25	0.35	0.46	0.64
108 kW	0.09	0.12	0.18	0.26	0.34	0.45	0.59	0.78
POWER EXHAUST	0.07	0.08	0.09	0.13	0.18	0.24	0.32	0.41

SIZES 054-074

COMPONENT	CFM										
	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000
ECONOMIZER	0.05	0.07	0.08	0.10	0.12	0.14	0.16	0.19	0.21	0.24	0.26
INLET GUIDE VANES	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.10	0.11	0.13	0.15
FILTERS											
Pleated (2-in.)	0.00	0.00	0.00	0.01	0.02	0.03	0.03	0.04	0.04	0.05	0.05
Bags With Prefilters*	0.45	0.57	0.68	0.80	0.94	1.07	1.23	1.38	—	—	—
ELECTRIC HEAT											
36 kW	0.04	0.05	0.07	0.09	0.12	0.15	0.18	0.21	0.24	0.28	0.33
72 kW	0.05	0.07	0.10	0.13	0.17	0.20	0.24	0.29	0.34	0.39	0.46
108 kW	0.07	0.09	0.13	0.17	0.22	0.27	0.32	0.38	0.44	0.51	0.59
POWER EXHAUST	0.16	0.22	0.29	0.37	0.46	0.55	0.65	0.77	0.87	0.99	1.12

*Bag filter cfm limit is 25,000.

Electrical data

50NB, NP034 208/230-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA	Total FLA	Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP
187-254	53.2	266.0	53.2	266.0	10.8	7.5	24.2/22.0	154.7/152.5	200/200	6.0	21.2/20.0	—	—	175.9/172.5	225/225
										10.0	33.4/30.0	—	—	188.1/182.5	225/225
										15.0	48.4/44.0	—	—	203.1/196.5	250/225
										—	—	36	78.9/ 91.0	154.7/152.5	200/200
										—	—	72	157.7/182.0	227.4/255.0	250/300
										—	—	108†	236.6/273.0	326.0/368.8	350/400
										6.0	21.2/20.0	36	78.9/ 91.0	175.9/172.5	225/225
										6.0	21.2/20.0	72	157.7/182.0	227.4/255.0	250/300
										6.0	21.2/20.0	108†	236.6/273.0	326.0/368.8	350/400
										10.0	33.4/30.0	36	78.9/ 91.0	188.1/182.5	225/225
										10.0	33.4/30.0	72	157.7/182.0	227.4/255.0	250/300
										10.0	33.4/30.0	108†	236.6/273.0	326.0/368.8	350/400
										15.0	48.4/44.0	36	78.9/ 91.0	203.1/196.5	250/225
										15.0	48.4/44.0	72	157.7/182.0	227.4/255.0	250/300
										15.0	48.4/44.0	108†	236.6/273.0	326.0/368.8	350/400
						10.0	30.8/28.0	161.3/158.5	200/200	6.0	21.2/20.0	—	—	182.5/178.5	225/225
										10.0	33.4/30.0	—	—	194.7/188.5	225/225
										15.0	48.4/44.0	—	—	209.7/202.5	250/250
										—	—	36	78.9/ 91.0	161.3/158.5	200/200
										—	—	72	157.7/182.0	235.6/262.5	250/300
										—	—	108†	236.6/273.0	334.2/376.3	350/400
										6.0	21.2/20.0	36	78.9/ 91.0	182.5/178.5	225/225
										6.0	21.2/20.0	72	157.7/182.0	235.6/262.5	250/300
										6.0	21.2/20.0	108†	236.6/273.0	334.2/376.3	350/400
										10.0	33.4/30.0	36	78.9/ 91.0	194.7/188.5	225/225
										10.0	33.4/30.0	72	157.7/182.0	235.6/262.5	250/300
										10.0	33.4/30.0	108†	236.6/273.0	334.2/376.3	350/400
										15.0	48.4/44.0	36	78.9/ 91.0	209.7/202.5	250/250
										15.0	48.4/44.0	72	157.7/182.0	235.6/262.5	250/300
										15.0	48.4/44.0	108†	236.6/273.0	334.2/376.3	350/400
						15.0	46.2/42.0	176.7/172.5	225/225	6.0	21.2/20.0	—	—	197.9/192.5	250/225
										10.0	33.4/30.0	—	—	210.1/202.5	250/250
										15.0	48.4/44.0	—	—	225.1/216.5	250/250
										—	—	36	78.9/ 91.0	176.7/172.5	250/250
										—	—	72	157.7/182.0	254.9/280.0	300/350
										—	—	108†	236.6/273.0	353.5/393.8	400/400
										6.0	21.2/20.0	36	78.9/ 91.0	197.9/192.5	250/250
										6.0	21.2/20.0	72	157.7/182.0	254.9/280.0	300/350
										6.0	21.2/20.0	108†	236.6/273.0	353.5/393.8	400/400
										10.0	33.4/30.0	36	78.9/ 91.0	210.1/202.5	250/250
										10.0	33.4/30.0	72	157.7/182.0	254.9/280.0	300/350
										10.0	33.4/30.0	108†	236.6/273.0	353.5/393.8	400/400
										15.0	48.4/44.0	36	78.9/ 91.0	225.1/216.5	250/250
										15.0	48.4/44.0	72	157.7/182.0	254.9/280.0	300/350
										15.0	48.4/44.0	108†	236.6/273.0	353.5/393.8	400/400
						20.0	59.4/54.0	191.4/184.7	250/225	6.0	21.2/20.0	—	—	212.6/204.7	250/250
										10.0	33.4/30.0	—	—	224.8/214.7	250/250
										15.0	48.4/44.0	—	—	239.9/228.7	250/250
										—	—	36	78.9/ 91.0	191.4/184.7	300/300
										—	—	72	157.7/182.0	271.4/295.0	350/350
										—	—	108†	236.6/273.0	370.0/408.8	450/450
										6.0	21.2/20.0	36	78.9/ 91.0	212.6/204.7	300/300
										6.0	21.2/20.0	72	157.7/182.0	271.4/295.0	350/350
										6.0	21.2/20.0	108†	236.6/273.0	370.0/408.8	450/450
										10.0	33.4/30.0	36	78.9/ 91.0	224.8/214.7	300/300
										10.0	33.4/30.0	72	157.7/182.0	271.4/295.0	350/350
										10.0	33.4/30.0	108†	236.6/273.0	370.0/408.8	450/450
										15.0	48.4/44.0	36	78.9/ 91.0	239.9/228.7	300/300
										15.0	48.4/44.0	72	157.7/182.0	271.4/295.0	350/350
										15.0	48.4/44.0	108†	236.6/273.0	370.0/408.8	450/450

LEGEND

CV	—	Constant Volume
FLA	—	Full Load Amps
Hp	—	Nominal Horsepower
IFM	—	Indoor (Evaporator) Fan Motor
LRA	—	Locked Rotor Amps
MCA	—	Minimum Circuit Amps (for wire sizing)
MOCP	—	Maximum Overcurrent Protection
OFM	—	Outdoor (Condenser) Fan Motor
RLA	—	Rated Load Amps

*Electric heat available on 50NP units only.
†108 kW available on CV applications only.



50NB,NP034
460-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA	Total FLA	Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP
414-508	28.8	120.0	28.8	120.0	5.4	7.5	11.0	81.2	100	6.0	9.6	—	—	90.8	110
										10.0	15.2	—	—	96.4	125
										15.0	22.0	—	—	103.2	125
										—	—	36	46.3	81.2	100
										—	—	72	93.0	130.0	150
										—	—	108†	139.0	187.5	200
										6.0	9.6	36	46.3	90.8	110
										6.0	9.6	72	93.0	130.0	150
										6.0	9.6	108†	139.0	187.5	200
										10.0	15.2	36	46.3	96.4	125
										10.0	15.2	72	93.0	130.0	150
										10.0	15.2	108†	139.0	187.5	200
										15.0	22.0	36	46.3	103.2	125
										15.0	22.0	72	93.0	130.0	150
										15.0	22.0	108†	139.0	187.5	200
						10.0	14.0	84.2	110	6.0	9.6	—	—	93.8	110
										10.0	15.2	—	—	99.4	125
										15.0	22.0	—	—	106.2	125
										—	—	36	46.3	84.2	110
										—	—	72	93.0	133.7	150
										—	—	108†	139.0	191.2	200
										6.0	9.6	36	46.3	93.8	110
										6.0	9.6	72	93.0	133.7	150
										6.0	9.6	108†	139.0	191.2	200
										10.0	15.2	36	46.3	99.4	125
										10.0	15.2	72	93.0	133.7	150
										10.0	15.2	108†	139.0	191.2	200
										15.0	22.0	36	46.3	106.2	125
										15.0	22.0	72	93.0	133.7	150
										15.0	22.0	108†	139.0	191.2	200
						15.0	21.0	91.2	110	6.0	9.6	—	—	100.8	125
										10.0	15.2	—	—	106.4	125
										15.0	22.0	—	—	113.2	125
										—	—	36	46.3	91.2	125
										—	—	72	93.0	142.5	175
										—	—	108†	139.0	200.0	200
										6.0	9.6	36	46.3	100.8	125
										6.0	9.6	72	93.0	142.5	175
										6.0	9.6	108†	139.0	200.0	200
										10.0	15.2	36	46.3	106.4	125
										10.0	15.2	72	93.0	142.5	175
										10.0	15.2	108†	139.0	200.0	200
										15.0	22.0	36	46.3	113.2	125
										15.0	22.0	72	93.0	142.5	175
										15.0	22.0	108†	139.0	200.0	200
						20.0	27.0	97.2	125	6.0	9.6	—	—	106.8	125
										10.0	15.2	—	—	112.4	125
										15.0	22.0	—	—	119.2	125
										—	—	36	46.3	97.2	150
										—	—	72	93.0	150.0	200
										—	—	108†	139.0	207.5	225
										6.0	9.6	36	46.3	106.8	150
										6.0	9.6	72	93.0	150.0	200
										6.0	9.6	108†	139.0	207.5	225
										10.0	15.2	36	46.3	112.4	150
										10.0	15.2	72	93.0	150.0	200
										10.0	15.2	108†	139.0	207.5	225
										15.0	22.0	36	46.3	119.2	150
										15.0	22.0	72	93.0	150.0	200
										15.0	22.0	108†	139.0	207.5	225

Electrical data (cont)

50NB,NP034
575-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA	Total FLA	Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP
518-632	23.1	96.0	23.1	96.0	4.8	7.5	9.0	65.8	80	6.0	7.8	—	—	73.6	90
										10.0	12.2	—	—	78.0	100
										15.0	18.0	—	—	83.8	100
										—	—	36	36.0	65.8	80
										—	—	72	72.0	101.3	110
										—	—	108†	108.0	146.2	150
										6.0	7.8	36	36.0	73.6	90
										6.0	7.8	72	72.0	101.3	110
										6.0	7.8	108†	108.0	146.2	150
										10.0	12.2	36	36.0	78.0	100
										10.0	12.2	72	72.0	101.3	110
										10.0	12.2	108†	108.0	146.2	150
										15.0	18.0	36	36.0	83.8	100
										15.0	18.0	72	72.0	101.3	110
										15.0	18.0	108†	108.0	146.2	150
						10.0	11.0	67.8	90	6.0	7.8	—	—	75.6	90
										10.0	12.2	—	—	80.0	100
										15.0	18.0	—	—	85.8	100
										—	—	36	36.0	67.8	90
										—	—	72	72.0	103.7	110
										—	—	108†	108.0	148.7	150
										6.0	7.8	36	36.0	75.6	90
										6.0	7.8	72	72.0	103.7	110
										6.0	7.8	108†	108.0	148.7	150
										10.0	12.2	36	36.0	80.0	100
										10.0	12.2	72	72.0	103.7	110
										10.0	12.2	108†	108.0	148.7	150
										15.0	18.0	36	36.0	85.8	100
										15.0	18.0	72	72.0	103.7	110
										15.0	18.0	108†	108.0	148.7	150
						15.0	17.0	73.8	90	6.0	7.8	—	—	81.6	100
										10.0	12.2	—	—	86.0	100
										15.0	18.0	—	—	91.8	110
										—	—	36	36.0	73.8	100
										—	—	72	72.0	111.2	125
										—	—	108†	108.0	156.2	175
										6.0	7.8	36	36.0	81.6	100
										6.0	7.8	72	72.0	111.2	125
										6.0	7.8	108†	108.0	156.2	175
										10.0	12.2	36	36.0	86.0	100
										10.0	12.2	72	72.0	111.2	125
										10.0	12.2	108†	108.0	156.2	175
										15.0	18.0	36	36.0	91.8	110
										15.0	18.0	72	72.0	111.2	125
										15.0	18.0	108†	108.0	156.2	175
						20.0	22.0	78.8	100	6.0	7.8	—	—	86.6	100
										10.0	12.2	—	—	91.0	110
										15.0	18.0	—	—	96.8	110
										—	—	36	36.0	78.8	110
										—	—	72	72.0	117.5	150
										—	—	108†	108.0	162.5	175
										6.0	7.8	36	36.0	86.6	110
										6.0	7.8	72	72.0	117.5	150
										6.0	7.8	108†	108.0	162.5	175
										10.0	12.2	36	36.0	91.0	110
										10.0	12.2	72	72.0	117.5	150
										10.0	12.2	108†	108.0	162.5	175
										15.0	18.0	36	36.0	96.8	110
										15.0	18.0	72	72.0	117.5	150
										15.0	18.0	108†	108.0	162.5	175

LEGEND

- CV — Constant Volume
- FLA — Full Load Amps
- Hp — Nominal Horsepower
- IFM — Indoor (Evaporator) Fan Motor
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps (for wire sizing)
- MOCP — Maximum Overcurrent Protection
- OFM — Outdoor (Condenser) Fan Motor
- RLA — Rated Load Amps



*Electric heat available on 50NP units only
†108 kW available on CV applications only

50NB,NP044
208/230-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA	Total FLA	Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP
187-254	69.2	345.0	69.2	345.0	16.2	7.5	24.2/22.0	196.1/193.9	250/250	6.0	21 2/20.0	—	—	217 3/213.9	250/250
										10.0	33.4/30.0	—	—	229.5/223.9	250/250
										15.0	48.4/44.0	—	—	244.5/237.9	300/300
										—	—	36	78.9/ 91.0	196.1/193.9	250/250
										—	—	72	157.7/182.0	227.4/255.0	250/300
										—	—	108†	236.6/273.0	326.0/368.8	350/400
										6.0	21 2/20.0	36	78.9/ 91.0	217 3/213.9	250/250
										6.0	21 2/20.0	72	157.7/182.0	227.4/255.0	250/300
										6.0	21 2/20.0	108†	236.6/273.0	326.0/368.8	350/400
										10.0	33.4/30.0	36	78.9/ 91.0	229.5/223.9	250/250
										10.0	33.4/30.0	72	157.7/182.0	229.5/255.0	250/300
										10.0	33.4/30.0	108†	236.6/273.0	326.0/368.8	350/400
										15.0	48.4/44.0	36	78.9/ 91.0	244.5/237.9	300/300
										15.0	48.4/44.0	72	157.7/182.0	244.5/255.0	300/300
										15.0	48.4/44.0	108†	236.6/273.0	326.0/368.8	350/400
						10.0	30.8/28.0	202.7/199.9	250/250	6.0	21 2/20.0	—	—	223.9/219.9	250/250
										10.0	33.4/30.0	—	—	236.1/229.9	300/250
										15.0	48.4/44.0	—	—	251.1/243.9	300/300
										—	—	36	78.9/ 91.0	202.7/199.9	250/250
										—	—	72	157.7/182.0	235.6/262.5	250/300
										—	—	108†	236.6/273.0	334.2/376.3	350/400
										6.0	21.2/20.0	36	78.9/ 91.0	223.9/219.9	250/250
										6.0	21.2/20.0	72	157.7/182.0	235.6/262.5	250/300
										6.0	21.2/20.0	108†	236.6/273.0	334.2/376.3	350/400
										10.0	33.4/30.0	36	78.9/ 91.0	236.1/229.9	300/250
										10.0	33.4/30.0	72	157.7/182.0	236.1/262.5	300/300
										10.0	33.4/30.0	108†	236.6/273.0	334.2/376.3	350/400
										15.0	48.4/44.0	36	78.9/ 91.0	251.1/243.9	300/300
										15.0	48.4/44.0	72	157.7/182.0	251.1/262.5	300/300
										15.0	48.4/44.0	108†	236.6/273.0	334.2/376.3	350/400
						15.0	46.2/42.0	218.1/213.9	250/250	6.0	21 2/20.0	—	—	239.3/233.9	300/300
										10.0	33.4/30.0	—	—	251.5/243.9	300/300
										15.0	48.4/44.0	—	—	266.5/257.9	300/300
										—	—	36	78.9/ 91.0	218.1/213.9	250/250
										—	—	72	157.7/182.0	254.9/280.0	300/350
										—	—	108†	236.6/273.0	353.5/393.8	400/400
										6.0	21.2/20.0	36	78.9/ 91.0	239.3/233.9	300/300
										6.0	21.2/20.0	72	157.7/182.0	254.9/280.0	300/350
										6.0	21 2/20.0	108†	236.6/273.0	353.5/393.8	400/400
										10.0	33.4/30.0	36	78.9/ 91.0	251.5/243.9	300/300
										10.0	33.4/30.0	72	157.7/182.0	254.9/280.0	300/350
										10.0	33.4/30.0	108†	236.6/273.0	353.5/393.8	400/400
										15.0	48.4/44.0	36	78.9/ 91.0	266.5/257.9	300/300
										15.0	48.4/44.0	72	157.7/182.0	266.5/280.0	300/350
										15.0	48.4/44.0	108†	236.6/273.0	353.5/393.8	400/400
						20.0	59.4/54.0	231.3/225.9	300/250	6.0	21.2/20.0	—	—	252.5/245.9	300/300
										10.0	33.4/30.0	—	—	64.7/255.9	300/300
										15.0	48.4/44.0	—	—	279.7/269.9	300/300
										—	—	36	78.9/ 91.0	231.3/225.9	300/300
										—	—	72	157.7/182.0	271.4/295.0	350/350
										—	—	108†	236.6/273.0	370.0/408.8	450/450
										6.0	21.2/20.0	36	78.9/ 91.0	252.5/245.9	300/300
										6.0	21.2/20.0	72	157.7/182.0	271.4/295.0	350/350
										6.0	21.2/20.0	108†	236.6/273.0	370.0/408.8	450/450
										10.0	33.4/30.0	36	78.9/ 91.0	264.7/255.9	300/300
										10.0	33.4/30.0	72	157.7/182.0	271.4/295.0	350/350
										10.0	33.4/30.0	108†	236.6/273.0	370.0/408.8	450/450
										15.0	48.4/44.0	36	78.9/ 91.0	279.7/269.9	300/300
										15.0	48.4/44.0	72	157.7/182.0	279.7/295.0	350/350
										15.0	48.4/44.0	108†	236.6/273.0	370.0/408.8	450/450

Electrical data (cont)

50NB,NP044
460-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA	Total FLA	Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP
414-508	34.6	173.0	34.6	173.0	8.1	7.5	11.0	96.9	125	6.0	9.6	—	—	106.5	125
										10.0	15.2	—	—	112.1	125
										15.0	22.0	—	—	118.9	150
										—	—	36	46.3	96.9	125
										—	—	72	93.0	130.0	150
										—	—	108†	139.0	187.5	200
										6.0	9.6	36	46.3	106.5	125
										6.0	9.6	72	93.0	130.0	150
										6.0	9.6	108†	139.0	187.5	200
										10.0	15.2	36	46.3	112.1	125
										10.0	15.2	72	93.0	130.0	150
										10.0	15.2	108†	139.0	187.5	200
										15.0	22.0	36	46.3	118.9	150
										15.0	22.0	72	93.0	130.0	150
										15.0	22.0	108†	139.0	187.5	200
						10.0	14.0	99.9	125	6.0	9.6	—	—	109.5	125
										10.0	15.2	—	—	115.1	125
										15.0	22.0	—	—	121.9	150
										—	—	36	46.3	99.9	125
										—	—	72	93.0	133.7	150
										—	—	108†	139.0	191.2	200
										6.0	9.6	36	46.3	109.5	125
										6.0	9.6	72	93.0	133.7	150
										6.0	9.6	108†	139.0	191.2	200
										10.0	15.2	36	46.3	115.1	125
										10.0	15.2	72	93.0	133.7	150
										10.0	15.2	108†	139.0	191.2	200
										15.0	22.0	36	46.3	121.9	150
										15.0	22.0	72	93.0	133.7	150
										15.0	22.0	108†	139.0	191.2	200
						15.0	21.0	106.9	125	6.0	9.6	—	—	116.5	150
										10.0	15.2	—	—	122.1	150
										15.0	22.0	—	—	128.9	150
										—	—	36	46.3	106.9	125
										—	—	72	93.0	142.5	175
										—	—	108†	139.0	200.0	200
										6.0	9.6	36	46.3	116.5	150
										6.0	9.6	72	93.0	142.5	175
										6.0	9.6	108†	139.0	200.0	200
										10.0	15.2	36	46.3	122.1	150
										10.0	15.2	72	93.0	142.5	175
										10.0	15.2	108†	139.0	200.0	200
										15.0	22.0	36	46.3	128.9	150
										15.0	22.0	72	93.0	142.5	175
										15.0	22.0	108†	139.0	200.0	200
						20.0	27.0	112.9	125	6.0	9.6	—	—	122.5	150
										10.0	15.2	—	—	128.1	150
										15.0	22.0	—	—	134.9	150
										—	—	36	46.3	112.9	150
										—	—	72	93.0	150.0	200
										—	—	108†	139.0	207.5	225
										6.0	9.6	36	46.3	122.5	150
										6.0	9.6	72	93.0	150.0	200
										6.0	9.6	108†	139.0	207.5	225
										10.0	15.2	36	46.3	128.1	150
										10.0	15.2	72	93.0	150.0	200
										10.0	15.2	108†	139.0	207.5	225
										15.0	22.0	36	46.3	134.9	150
										15.0	22.0	72	93.0	150.0	200
										15.0	22.0	108†	139.0	207.5	225

LEGEND

- CV — Constant Volume
- FLA — Full Load Amps
- Hp — Nominal Horsepower
- IFM — Indoor (Evaporator) Fan Motor
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps (for wire sizing)
- MOCP — Maximum Overcurrent Protection
- OFM — Outdoor (Condenser) Fan Motor
- RLA — Rated Load Amps



*Electric heat available on 50NP units only
†108 kW available on CV applications only

50NB,NP044
575-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA	Total FLA	Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP
518-632	26.7	120.0	26.7	120.0	7.2	7.5	9.0	76.3	100	6.0	7.8	—	—	84.1	110
										10.0	12.2	—	—	88.5	110
										15.0	18.0	—	—	94.3	110
										—	—	36	36.0	76.3	100
										—	—	72	72.0	101.3	110
										—	—	108†	108.0	146.2	150
										6.0	7.8	36	36.0	84.1	110
										6.0	7.8	72	72.0	101.3	110
										6.0	7.8	108†	108.0	146.2	150
										10.0	12.2	36	36.0	88.5	110
										10.0	12.2	72	72.0	101.3	110
										10.0	12.2	108†	108.0	146.2	150
										15.0	18.0	36	36.0	94.3	110
										15.0	18.0	72	72.0	101.3	110
										15.0	18.0	108†	108.0	146.2	150
						10.0	11.0	78.3	100	6.0	7.8	—	—	86.1	110
										10.0	12.2	—	—	90.5	110
										15.0	18.0	—	—	96.3	110
										—	—	36	36.0	78.3	100
										—	—	72	72.0	103.7	110
										—	—	108†	108.0	148.7	150
										6.0	7.8	36	36.0	86.1	110
										6.0	7.8	72	72.0	103.7	110
										6.0	7.8	108†	108.0	148.7	150
										10.0	12.2	36	36.0	90.5	110
										10.0	12.2	72	72.0	103.7	110
										10.0	12.2	108†	108.0	148.7	150
										15.0	18.0	36	36.0	96.3	110
										15.0	18.0	72	72.0	103.7	110
										15.0	18.0	108†	108.0	148.7	150
						15.0	17.0	84.3	110	6.0	7.8	—	—	92.1	110
										10.0	12.2	—	—	96.5	110
										15.0	18.0	—	—	102.3	125
										—	—	36	36.0	84.3	110
										—	—	72	72.0	111.2	125
										—	—	108†	108.0	156.2	175
										6.0	7.8	36	36.0	92.1	110
										6.0	7.8	72	72.0	111.2	125
										6.0	7.8	108†	108.0	156.2	175
										10.0	12.2	36	36.0	96.5	110
										10.0	12.2	72	72.0	111.2	125
										10.0	12.2	108†	108.0	156.2	175
										15.0	18.0	36	36.0	102.3	125
										15.0	18.0	72	72.0	111.2	125
										15.0	18.0	108†	108.0	156.2	175
						20.0	22.0	89.3	110	6.0	7.8	—	—	97.1	110
										10.0	12.2	—	—	101.5	125
										15.0	18.0	—	—	107.3	125
										—	—	36	36.0	89.3	110
										—	—	72	72.0	117.5	150
										—	—	108†	108.0	162.5	175
										6.0	7.8	36	36.0	97.1	110
										6.0	7.8	72	72.0	117.5	150
										6.0	7.8	108†	108.0	162.5	175
										10.0	12.2	36	36.0	101.5	125
										10.0	12.2	72	72.0	117.5	150
										10.0	12.2	108†	108.0	162.5	175
										15.0	18.0	36	36.0	107.3	125
										15.0	18.0	72	72.0	117.5	150
										15.0	18.0	108†	108.0	162.5	175

Electrical data (cont)

50NB,NP054 208/230-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		RETURN OR EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*		BASE UNIT WITH RETURN FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA		Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP	MCA	MOCP
187-254	107.7	506.0	74.4	345.0	21.6	15.0	46.2/42.0	276.8/272.6	350/350	10.0	33.4/30.4	—	—	310.2/303.0	400/400	310.2/303.0	400/400
										15.0	48.4/44.0	—	—	325.2/316.6	400/400	325.2/316.6	400/400
										20.0	61.6/56.0	—	—	338.4/328.6	400/400	338.4/328.6	400/400
										—	—	36	78.9/ 91.0	276.8/272.6	350/350	276.8/272.6	350/350
										—	—	72	157.7/182.0	276.8/280.0	350/350	276.8/280.0	350/350
										—	—	108†	236.6/273.0	353.5/393.8	400/400	353.5/393.8	400/400
										10.0	33.4/30.4	36	78.9/ 91.0	310.2/303.0	400/400	310.2/303.0	400/400
										10.0	33.4/30.4	72	157.7/182.0	310.2/303.0	400/400	310.2/310.4	400/400
										10.0	33.4/30.4	108†	236.6/273.0	353.5/393.8	400/400	386.9/424.2	450/450
										15.0	48.4/44.0	36	78.9/ 91.0	325.2/316.6	400/400	325.2/316.6	400/400
										15.0	48.4/44.0	72	157.7/182.0	325.2/316.6	400/400	325.2/324.0	400/400
										15.0	48.4/44.0	108†	236.6/273.0	353.5/393.8	400/400	401.9/437.7	450/450
										20.0	61.6/56.0	36	78.9/ 91.0	338.4/328.6	400/400	338.4/328.6	400/400
										20.0	61.6/56.0	72	157.7/182.0	338.4/328.6	400/400	338.4/336.0	400/400
										20.0	61.6/56.0	108†	236.6/273.0	353.5/393.8	400/400	415.1/449.7	450/450
						20.0	59.4/54.0	290.0/284.6	350/350	10.0	33.4/30.4	—	—	323.4/315.0	400/400	323.4/315.0	400/400
										15.0	48.4/44.0	—	—	338.4/328.6	400/400	338.4/328.6	400/400
										20.0	61.6/56.0	—	—	351.6/340.6	450/400	351.6/340.6	450/400
										—	—	36	78.9/ 91.0	290.0/284.6	350/350	290.0/284.6	350/350
										—	—	72	157.7/182.0	290.0/295.0	350/350	290.0/295.0	350/350
										—	—	108†	236.6/273.0	370.0/408.8	450/450	370.0/408.8	450/450
										10.0	33.4/30.4	36	78.9/ 91.0	323.4/315.0	400/400	323.4/315.0	400/400
										10.0	33.4/30.4	72	157.7/182.0	323.4/315.0	400/400	323.4/325.4	400/400
										10.0	33.4/30.4	108†	236.6/273.0	370.0/408.8	450/450	403.4/439.1	500/500
										15.0	48.4/44.0	36	78.9/ 91.0	338.4/328.6	400/400	338.4/328.6	400/400
										15.0	48.4/44.0	72	157.7/182.0	338.4/328.6	400/400	338.4/339.0	400/400
										15.0	48.4/44.0	108†	236.6/273.0	370.0/408.8	450/450	418.4/452.8	500/500
										20.0	61.6/56.0	36	78.9/ 91.0	351.6/340.6	450/400	351.6/340.6	450/400
										20.0	61.6/56.0	72	157.7/182.0	351.6/340.6	450/400	351.6/351.0	450/450
										20.0	61.6/56.0	108†	236.6/273.0	370.0/408.8	450/450	431.6/464.8	500/500
						25.0	74.8/68.0	305.4/298.6	400/400	10.0	33.4/30.4	—	—	338.8/329.0	400/400	338.8/329.0	400/400
										15.0	48.4/44.0	—	—	353.8/342.6	450/450	353.8/342.6	450/450
										20.0	61.6/56.0	—	—	367.0/354.6	450/450	367.0/354.6	450/450
										—	—	36	78.9/ 91.0	305.4/298.6	400/400	305.4/298.6	400/400
										—	—	72	157.7/182.0	305.4/312.5	450/450	305.4/312.5	450/450
										—	—	108†	236.6/273.0	389.3/426.3	500/500	389.3/426.3	500/500
										10.0	33.4/30.4	36	78.9/ 91.0	338.8/329.0	400/400	338.8/329.0	400/400
										10.0	33.4/30.4	72	157.7/182.0	338.8/329.0	450/450	338.8/342.9	450/450
										10.0	33.4/30.4	108†	236.6/273.0	389.3/426.3	500/500	422.6/456.7	500/500
										15.0	48.4/44.0	36	78.9/ 91.0	353.8/342.6	450/450	353.8/342.6	450/450
										15.0	48.4/44.0	72	157.7/182.0	353.8/342.6	450/450	353.8/356.5	500/450
										15.0	48.4/44.0	108†	236.6/273.0	389.3/426.3	500/500	437.6/470.3	500/500
										20.0	61.6/56.0	36	78.9/ 91.0	367.0/354.6	450/450	367.0/354.6	450/450
										20.0	61.6/56.0	72	157.7/182.0	367.0/354.6	450/450	367.0/368.5	500/500
										20.0	61.6/56.0	108†	236.6/273.0	389.3/426.3	500/500	450.9/482.3	500/600
						30.0	88.0/80.0	318.6/310.6	400/400	10.0	33.4/30.4	—	—	352.0/341.0	450/400	352.0/341.0	450/400
										15.0	48.4/44.0	—	—	367.0/354.6	450/450	367.0/354.6	450/450
										20.0	61.6/56.0	—	—	380.2/366.6	450/450	380.2/366.6	450/450
										—	—	36	78.9/ 91.0	318.6/310.6	400/400	318.6/310.6	400/400
										—	—	72	157.7/182.0	318.6/327.5	500/500	318.6/327.5	500/500
										—	—	108†	236.6/273.0	405.7/441.3	500/500	405.7/441.3	500/500
										10.0	33.4/30.4	36	78.9/ 91.0	352.0/341.0	450/400	352.0/341.0	450/400
										10.0	33.4/30.4	72	157.7/182.0	352.0/341.0	500/500	352.0/357.9	500/500
										10.0	33.4/30.4	108†	236.6/273.0	405.7/441.3	500/500	439.1/471.6	600/600
										15.0	48.4/44.0	36	78.9/ 91.0	367.0/354.6	450/450	367.0/354.6	450/450
										15.0	48.4/44.0	72	157.7/182.0	367.0/354.6	500/500	367.0/371.5	500/500
										15.0	48.4/44.0	108†	236.6/273.0	405.7/441.3	500/500	454.1/485.3	600/600
										20.0	61.6/56.0	36	78.9/ 91.0	380.2/366.6	450/450	380.2/366.6	450/450
										20.0	61.6/56.0	72	157.7/182.0	380.2/366.6	500/500	380.2/383.5	500/500
										20.0	61.6/56.0	108†	236.6/273.0	405.7/441.3	500/500	467.3/497.3	600/600

LEGEND

- CV — Constant Volume
- FLA — Full Load Amps
- Hp — Nominal Horsepower
- IFM — Indoor (Evaporator) Fan Motor
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps (for wire sizing)
- MOCP — Maximum Overcurrent Protection
- OFM — Outdoor (Condenser) Fan Motor
- RLA — Rated Load Amps

*Electric heat available on 50NP units only
†108 kW available on CV applications only.



50NB,NP054
460-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM Total FLA	IFM		BASE UNIT ONLY		RETURN OR EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*		BASE UNIT WITH RETURN FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA		Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP	MCA	MOCP
414-508	50.6	253.0	34.6	173.0	10.8	15.0	21.0	129.6	175	10.0	15.2	—	—	144.8	175	144.8	175
										15.0	22.0	—	—	151.6	200	151.6	200
										20.0	28.0	—	—	157.6	200	157.6	200
										—	—	36	46.3	129.6	175	129.6	175
										—	—	72	93.0	142.5	175	142.5	175
										—	—	108†	139.0	200.0	200	200.0	200
										10.0	15.2	36	46.3	144.8	175	144.8	175
										10.0	15.2	72	93.0	144.8	175	157.7	175
										10.0	15.2	108†	139.0	200.0	200	215.2	225
										15.0	22.0	36	46.3	151.6	200	151.6	200
										15.0	22.0	72	93.0	151.6	200	164.5	200
										15.0	22.0	108†	139.0	200.0	200	222.0	225
										20.0	28.0	36	46.3	157.6	200	157.6	200
										20.0	28.0	72	93.0	157.6	200	170.5	200
										20.0	28.0	108†	139.0	200.0	200	228.0	250
						20.0	27.0	135.6	175	10.0	15.2	—	—	150.8	200	150.8	200
										15.0	22.0	—	—	157.6	200	157.6	200
										20.0	28.0	—	—	163.6	200	163.6	200
										—	—	36	46.3	135.6	175	135.6	175
										—	—	72	93.0	150.0	200	150.0	200
										—	—	108†	139.0	207.5	225	207.5	225
										10.0	15.2	36	46.3	150.8	200	150.8	200
										10.0	15.2	72	93.0	150.8	200	165.2	200
										10.0	15.2	108†	139.0	207.5	225	222.7	250
										15.0	22.0	36	46.3	157.6	200	157.6	200
										15.0	22.0	72	93.0	157.6	200	172.0	200
										15.0	22.0	108†	139.0	207.5	225	229.5	250
										20.0	28.0	36	46.3	163.6	200	163.6	200
										20.0	28.0	72	93.0	163.6	200	178.0	225
										20.0	28.0	108†	139.0	207.5	225	235.5	250
						25.0	34.0	142.6	175	10.0	15.2	—	—	157.8	200	157.8	200
										15.0	22.0	—	—	164.6	200	164.6	200
										20.0	28.0	—	—	170.6	200	170.6	200
										—	—	36	46.3	142.6	175	142.6	175
										—	—	72	93.0	158.7	225	158.7	225
										—	—	108†	139.0	216.3	250	216.3	250
										10.0	15.2	36	46.3	157.8	200	157.8	200
										10.0	15.2	72	93.0	158.7	225	173.9	225
										10.0	15.2	108†	139.0	216.3	250	231.4	250
										15.0	22.0	36	46.3	164.6	200	164.6	200
										15.0	22.0	72	93.0	164.6	225	180.7	250
										15.0	22.0	108†	139.0	216.3	250	238.3	250
										20.0	28.0	36	46.3	170.6	200	170.6	200
										20.0	28.0	72	93.0	170.6	225	186.7	250
										20.0	28.0	108†	139.0	216.3	250	244.3	300
						30.0	40.0	148.6	175	10.0	15.2	—	—	163.8	200	163.8	200
										15.0	22.0	—	—	170.6	200	170.6	200
										20.0	28.0	—	—	176.6	225	176.6	225
										—	—	36	46.3	148.6	200	148.6	200
										—	—	72	93.0	166.2	250	166.2	250
										—	—	108†	139.0	223.7	250	223.7	250
										10.0	15.2	36	46.3	163.8	200	163.8	200
										10.0	15.2	72	93.0	166.2	250	181.4	250
										10.0	15.2	108†	139.0	223.7	250	238.9	300
										15.0	22.0	36	46.3	170.6	200	170.6	225
										15.0	22.0	72	93.0	170.6	250	188.2	250
										15.0	22.0	108†	139.0	223.7	250	245.7	300
										20.0	28.0	36	46.3	176.6	225	176.6	225
										20.0	28.0	72	93.0	176.6	250	194.2	250
										20.0	28.0	108†	139.0	223.7	250	251.8	300

Electrical data (cont)

50NB.NP054 575-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		RETURN OR EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*		BASE UNIT WITH RETURN FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA		Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP	MCA	MOCP
518-632	39.1	176.0	28.8	120.0	9.6	15.0	17.0	104.3	125	10.0	12.2	—	—	116.5	150	116.5	150
										15.0	18.0	—	—	122.3	150	122.3	150
										20.0	22.0	—	—	126.3	150	126.3	150
										—	—	36	36.0	104.3	125	104.3	125
										—	—	72	72.0	111.2	125	111.2	125
										—	—	108†	108.0	156.2	175	156.2	175
										10.0	12.2	36	36.0	116.5	150	116.5	150
										10.0	12.2	72	72.0	116.5	150	123.4	150
										10.0	12.2	108†	108.0	156.2	175	168.4	175
										15.0	18.0	36	36.0	122.3	150	122.3	150
										15.0	18.0	72	72.0	122.3	150	129.3	150
										15.0	18.0	108†	108.0	156.2	175	174.2	175
										20.0	22.0	36	36.0	126.3	150	126.3	150
										20.0	22.0	72	72.0	126.3	150	133.2	150
										20.0	22.0	108†	108.0	156.2	175	178.2	200
						20.0	22.0	109.3	125	10.0	12.2	—	—	121.5	150	121.5	150
										15.0	18.0	—	—	127.3	150	127.3	150
										20.0	22.0	—	—	131.3	150	131.3	150
										—	—	36	36.0	109.3	125	109.3	125
										—	—	72	72.0	117.5	150	117.5	150
										—	—	108†	108.0	162.5	175	162.5	175
										10.0	12.2	36	36.0	121.5	150	121.5	150
										10.0	12.2	72	72.0	121.5	150	129.7	150
										10.0	12.2	108†	108.0	162.5	175	174.7	200
										15.0	18.0	36	36.0	127.3	150	127.3	150
										15.0	18.0	72	72.0	127.3	150	135.5	175
										15.0	18.0	108†	108.0	162.5	175	180.5	200
										20.0	22.0	36	36.0	131.3	150	131.3	150
										20.0	22.0	72	72.0	131.3	150	139.5	175
										20.0	22.0	108†	108.0	162.5	175	184.5	200
						25.0	27.0	114.3	150	10.0	12.2	—	—	126.5	150	126.5	150
										15.0	18.0	—	—	132.3	150	132.3	150
										20.0	22.0	—	—	136.3	175	136.3	175
										—	—	36	36.0	114.3	150	114.3	150
										—	—	72	72.0	123.7	175	123.7	175
										—	—	108†	108.0	168.7	200	168.7	200
										10.0	12.2	36	36.0	126.5	150	126.5	150
										10.0	12.2	72	72.0	126.5	175	135.9	175
										10.0	12.2	108†	108.0	168.7	200	180.9	225
										15.0	18.0	36	36.0	132.3	150	132.3	150
										15.0	18.0	72	72.0	132.3	175	141.8	175
										15.0	18.0	108†	108.0	168.7	200	186.7	225
										20.0	22.0	36	36.0	136.3	175	136.3	175
										20.0	22.0	72	72.0	136.3	175	145.7	200
										20.0	22.0	108†	108.0	168.7	200	190.8	225
						30.0	32.0	119.3	150	10.0	12.2	—	—	131.5	150	131.5	150
										15.0	18.0	—	—	137.3	175	137.3	175
										20.0	22.0	—	—	141.3	175	141.3	175
										—	—	36	36.0	119.3	150	119.3	150
										—	—	72	72.0	130.0	200	130.0	200
										—	—	108†	108.0	175.0	225	175.0	225
										10.0	12.2	36	36.0	131.5	150	131.5	175
										10.0	12.2	72	72.0	131.5	200	142.2	200
										10.0	12.2	108†	108.0	175.0	225	187.2	225
										15.0	18.0	36	36.0	137.3	175	137.3	175
										15.0	18.0	72	72.0	137.3	200	148.0	200
										15.0	18.0	108†	108.0	175.0	225	193.0	250
										20.0	22.0	36	36.0	141.3	175	141.3	175
										20.0	22.0	72	72.0	141.3	200	152.0	200
										20.0	22.0	108†	108.0	175.0	225	197.0	250

LEGEND

- CV — Constant Volume
- FLA — Full Load Amps
- Hp — Nominal Horsepower
- IFM — Indoor (Evaporator) Fan Motor
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps (for wire sizing)
- MOCP — Maximum Overcurrent Protection
- OFM — Outdoor (Condenser) Fan Motor
- RLA — Rated Load Amps



*Electric heat available on 50NP units only.
†108 kW available on CV applications only.

50NB,NP064
208/230-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM Total FLA	IFM		BASE UNIT ONLY		RETURN OR EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*		BASE UNIT WITH RETURN FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA		Hp	FLA	MCA	MOCp	Total Hp	Total FLA	kW	FLA	MCA	MOCp	MCA	MOCp
187-254	107 7	506 0	107 0	506.0	21 6	15.0	46 2/42 0	310 1/305.9	400/400	10 0	33.4/30.4	—	—	343 5/336.3	450/400	343 5/336.3	450/400
										15 0	48 4/44 0	—	—	358 5/349 9	450/450	358 5/349 9	450/450
										20 0	61 6/56 0	—	—	371 7/361 9	450/450	371 7/361 9	450/450
										—	—	36	78 9/ 91.0	310 1/305.9	400/400	310 1/305 9	400/400
										—	—	72	157 7/182 0	310 1/305 9	400/400	310 1/305 9	400/400
										—	—	108†	236 6/273 0	353 5/393 8	400/400	353 5/393.8	400/400
										10 0	33 4/30.4	36	78 9/ 91 0	343 5/336 3	450/400	343 5/336 3	450/400
										10 0	33.4/30.4	72	157 7/182 0	343 5/336 3	450/400	343 5/336 3	450/400
										10 0	33.4/30 4	108†	236 6/273 0	353 5/393 8	450/400	386 9/424 2	450/450
										15 0	48 4/44 0	36	78 9/ 91 0	358 5/349 9	450/450	358 5/349 9	450/450
										15 0	48 4/44 0	72	157 7/182 0	358 5/349 9	450/450	358 5/349 9	450/450
										15 0	48 4/44 0	108†	236 6/273 0	358 5/393 8	450/450	401 9/437 7	450/450
										20 0	61 6/56 0	36	78 9/ 91 0	371 7/361 9	450/450	371 7/361 9	450/450
										20 0	61 6/56 0	72	157 7/182 0	371 7/361 9	450/450	371 7/361 9	450/450
										20 0	61 6/56 0	108†	236 6/273 0	371 7/393 8	450/450	415 1/449.7	450/450
						20 0	59 4/54 0	323 3/317 9	400/400	10 0	33.4/30.4	—	—	356 7/348 3	450/450	356 7/348.3	450/450
										15 0	48 4/44 0	—	—	371 7/361 9	450/450	371 7/361 9	450/450
										20 0	61.6/66 0	—	—	384 9/373 9	450/450	384 9/373 9	450/450
										—	—	36	78 9/ 91 0	323 3/317 9	400/400	323 3/317 9	400/400
										—	—	72	157 7/182 0	323 3/317 9	400/400	323 3/317 9	400/400
										—	—	108†	236 6/273 0	370 0/408 8	450/450	370 0/408 8	450/450
										10 0	33 4/30 4	36	78 9/ 91 0	356 7/348.3	450/450	356 7/348 3	450/450
										10 0	33 4/30 4	72	157 7/182 0	356 7/348 3	450/450	356 7/348 3	450/450
										10 0	33 4/30 4	108†	236 6/273 0	370 0/408 8	450/450	403 4/439 1	500/500
										15 00	48 4/44 0	36	78 9/ 91 0	371 7/361 9	450/450	371 7/361 9	450/450
										15 0	48 4/44 0	72	157 7/182 0	371 7/361 9	450/450	371 7/361 9	450/450
										15 0	48 4/44 0	108†	236 6/273 0	371 7/408 8	450/450	418 4/452 8	500/500
										20 0	61.6/56 0	36	78 9/ 91 0	384 9/373 9	450/450	384 9/373 9	450/450
										20 0	61.6/56 0	72	157 7/182 0	384 9/373 9	450/450	384 9/373 9	450/450
										20 0	61.6/56 0	108†	236 6/273 0	384 9/408 8	450/450	431 6/464.8	500/500
						25 0	74 8/68.0	338 7/331 9	400/400	10 0	33 4/30 4	—	—	372 1/362.3	450/450	372 1/362 3	450/450
										15 0	48 4/44 0	—	—	387 1/375 9	450/450	387 1/375 9	450/450
										20 0	61 6/56 0	—	—	400 3/387 9	500/450	400 3/387 9	500/450
										—	—	36	78 9/ 91 0	338 7/331 9	400/400	338 7/331 9	400/400
										—	—	72	157 7/182 0	338 7/331 9	450/450	338 7/331 9	450/450
										—	—	108†	236 6/273 0	389 3/426 3	500/500	389 3/426 3	500/500
										10 0	33 4/30 4	36	78 9/ 91 0	372 1/362 3	450/450	372 1/362 3	450/450
										10 0	33 4/30 4	72	157 7/182 0	372 1/362 3	450/450	372 1/362 3	450/450
										10 0	33 4/30 4	108†	236 6/273 0	389 3/426 3	500/500	422 6/456 7	500/500
										15 0	48 4/44 0	36	78 9/ 91 0	387 1/375 9	450/450	387 1/375 9	450/450
										15 0	48 4/44 0	72	157 7/182 0	387 1/375 9	450/450	387 1/375 9	450/450
										15 0	48 4/44 0	108†	236 6/273 0	389 3/426 3	500/500	437 6/470 3	500/500
										20 0	61 6/56 0	36	78 9/ 91 0	400 3/387 9	500/450	400 3/387 9	500/450
										20 0	61 6/56 0	72	157 7/182 0	400 3/387 9	500/450	400 3/387 9	500/450
										20 0	61 6/56 0	108†	236 6/273 0	400 3/426.3	500/500	450 9/482.3	500/600
						30.0	88.0/80 0	351 9/343.9	450/450	10 0	33 4/30 4	—	—	385 3/374 3	450/450	385 3/374 3	450/450
										15 0	48 4/44 0	—	—	400 3/387 9	500/450	400 3/387 9	500/450
										20 0	61 6/56 0	—	—	413 5/399 9	500/500	413 5/399 9	500/500
										—	—	36	78 9/ 91 0	351 9/343 9	450/450	351 9/343 9	450/450
										—	—	72	157 7/182 0	351 9/343 9	500/500	351 9/343 9	500/500
										—	—	108†	236 6/273 0	405 7/441.3	500/500	405 7/441.3	500/500
										10 0	33.4/30 4	36	78 9/ 91 0	385 3/374 3	450/450	385 3/374 3	450/450
										10 0	33.4/30 4	72	157 7/182 0	385 3/374 3	500/500	385 3/374 3	500/500
										10 0	33.4/30 4	108†	236 6/273 0	405 7/441.3	500/500	439 1/471.6	600/600
										15 0	48 4/44 0	36	78 9/ 91 0	400 3/387 9	500/450	400 3/387 9	500/450
										15 0	48 4/44 0	72	157 7/182 0	400 3/387 9	500/500	400 3/387 9	500/500
										15 0	48 4/44 0	108†	236 6/273 0	405 7/441 3	500/500	454 1/485 3	600/600
										20 0	61 6/56 0	36	78 9/ 91 0	413 5/399 9	500/500	413 5/399 9	500/500
										20 0	61 6/56 0	72	157 7/182 0	413 5/399 9	500/500	413 5/399 9	500/500
										20 0	61 6/56 0	108†	236 6/273 0	413 5/441 3	500/500	467 3/497.3	600/600

Electrical data (cont)

50NB,NP064
460-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		RETURN OR EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*		BASE UNIT WITH RETURN FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA		Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP	MCA	MOCP
414-508	50.6	253.0	50.6	253.0	10.8	15.0	21.0	145.6	175	10.0	15.2	—	—	160.8	200	160.8	200
										15.0	22.0	—	—	167.6	200	167.6	200
										20.0	28.0	—	—	173.6	200	173.6	200
										—	—	36	46.3	145.6	175	145.6	175
										—	—	72	93.0	145.6	175	145.6	175
										—	—	108†	139.0	200.0	200	200.0	200
										10.0	15.2	36	46.3	160.8	200	160.8	200
										10.0	15.2	72	93.0	160.8	200	160.8	200
										10.0	15.2	108†	139.0	200.0	200	215.2	225
										15.0	22.0	36	46.3	167.6	200	167.6	200
										15.0	22.0	72	93.0	167.6	200	167.6	200
										15.0	22.0	108†	139.0	200.0	200	222.0	225
										20.0	28.0	36	46.3	173.6	200	173.6	200
										20.0	28.0	72	93.0	173.6	200	173.6	200
										20.0	28.0	108†	139.0	200.0	200	228.0	250
						20.0	27.0	151.6	200	10.0	15.2	—	—	166.8	200	166.8	200
										15.0	22.0	—	—	173.6	200	173.6	200
										20.0	28.0	—	—	179.6	225	179.6	225
										—	—	36	46.3	151.6	200	151.6	200
										—	—	72	93.0	151.6	200	151.6	200
										—	—	108†	139.0	207.5	225	207.5	225
										10.0	15.2	36	46.3	166.8	200	166.8	200
										10.0	15.2	72	93.0	166.8	200	166.8	200
										10.0	15.2	108†	139.0	207.5	225	222.7	250
										15.0	22.0	36	46.3	173.6	200	173.6	200
										15.0	22.0	72	93.0	173.6	200	173.6	200
										15.0	22.0	108†	139.0	207.5	225	229.5	250
										20.0	28.0	36	46.3	179.6	225	179.6	225
										20.0	28.0	72	93.0	179.6	225	179.6	225
										20.0	28.0	108†	139.0	207.5	225	235.5	250
						25.0	34.0	158.6	200	10.0	15.2	—	—	173.8	200	173.8	200
										15.0	22.0	—	—	180.6	225	180.6	225
										20.0	28.0	—	—	186.6	225	186.6	225
										—	—	36	46.3	158.6	200	158.6	200
										—	—	72	93.0	158.7	225	158.7	225
										—	—	108†	139.0	216.3	250	216.3	250
										10.0	15.2	36	46.3	173.8	200	173.8	200
										10.0	15.2	72	93.0	173.8	225	173.9	225
										10.0	15.2	108†	139.0	216.3	250	231.4	250
										15.0	22.0	36	46.3	180.6	225	180.6	225
										15.0	22.0	72	93.0	180.6	225	180.7	250
										15.0	22.0	108†	139.0	216.3	250	238.3	250
										20.0	28.0	36	46.3	186.6	225	186.6	225
										20.0	28.0	72	93.0	186.6	225	186.7	250
										20.0	28.0	108†	139.0	216.3	250	244.3	300
						30.0	40.0	164.6	200	10.0	15.2	—	—	179.8	225	179.8	225
										15.0	22.0	—	—	186.6	225	186.6	225
										20.0	28.0	—	—	192.6	225	192.6	225
										—	—	36	46.3	164.6	200	164.6	200
										—	—	72	93.0	166.2	250	166.2	250
										—	—	108†	139.0	223.7	250	223.7	250
										10.0	15.2	36	46.3	179.8	225	179.8	225
										10.0	15.2	72	93.0	179.8	250	181.4	250
										10.0	15.2	108†	139.0	223.7	250	238.9	300
										15.0	22.0	36	46.3	186.6	225	186.6	225
										15.0	22.0	72	93.0	186.6	250	188.2	250
										15.0	22.0	108†	139.0	223.7	250	245.7	300
										20.0	28.0	36	46.3	192.6	225	192.6	225
										20.0	28.0	72	93.0	192.6	250	194.2	250
										20.0	28.0	108†	139.0	223.7	250	251.8	300

LEGEND

- CV — Constant Volume
- FLA — Full Load Amps
- Hp — Nominal Horsepower
- IFM — Indoor (Evaporator) Fan Motor
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps (for wire sizing)
- MOCP — Maximum Overcurrent Protection
- OFM — Outdoor (Condenser) Fan Motor
- RLA — Rated Load Amps



*Electric heat available on 50NP units only.
†108 kW available on CV applications only.

50NB,NP064
575-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		RETURN OR EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*		BASE UNIT WITH RETURN FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA	Total FLA	Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP	MCA	MOCP
518-632	39.1	176.0	39.1	176.0	9.6	15.0	17.0	114.6	150	10.0	12.2	—	—	126.8	150	126.8	150
										15.0	18.0	—	—	132.6	150	132.6	150
										20.0	22.0	—	—	136.6	175	136.6	175
										—	—	36	36.0	114.6	150	114.6	150
										—	—	72	72.0	114.6	150	114.6	150
										—	—	108†	108.0	156.2	175	156.2	175
										10.0	12.2	36	36.0	126.8	150	126.8	150
										10.0	12.2	72	72.0	126.8	150	126.8	150
										10.0	12.2	108†	108.0	156.2	175	168.4	175
										15.0	18.0	36	36.0	132.6	150	132.6	150
										15.0	18.0	72	72.0	132.6	150	132.6	150
										15.0	18.0	108†	108.0	156.2	175	174.2	175
										20.0	22.0	36	36.0	136.6	175	136.6	175
										20.0	22.0	72	72.0	136.6	175	136.6	175
										20.0	22.0	108†	108.0	156.2	175	178.2	200
						20.0	22.0	119.6	150	10.0	12.2	—	—	131.8	150	131.8	150
										15.0	18.0	—	—	137.6	175	137.6	175
										20.0	22.0	—	—	141.6	175	141.6	175
										—	—	36	36.0	119.6	150	119.6	150
										—	—	72	72.0	119.6	150	119.6	150
										—	—	108†	108.0	162.5	175	162.5	175
										10.0	12.2	36	36.0	131.8	150	131.8	150
										10.0	12.2	72	72.0	131.8	150	131.8	150
										10.0	12.2	108†	108.0	162.5	175	174.7	200
										15.0	18.0	36	36.0	137.6	175	137.6	175
										15.0	18.0	72	72.0	137.6	175	137.6	175
										15.0	18.0	108†	108.0	162.5	175	180.5	200
										20.0	22.0	36	36.0	141.6	175	141.6	175
										20.0	22.0	72	72.0	141.6	175	141.6	175
										20.0	22.0	108†	108.0	162.5	175	184.5	200
						25.0	27.0	124.6	150	10.0	12.2	—	—	136.8	175	136.8	175
										15.0	18.0	—	—	142.6	175	142.6	175
										20.0	22.0	—	—	146.6	175	146.6	175
										—	—	36	36.0	124.6	150	124.6	150
										—	—	72	72.0	124.6	175	124.6	175
										—	—	108†	108.0	168.7	200	168.7	200
										10.0	12.2	36	36.0	136.8	175	136.8	175
										10.0	12.2	72	72.0	136.8	175	136.8	175
										10.0	12.2	108†	108.0	168.7	200	180.9	225
										15.0	18.0	36	36.0	142.6	175	142.6	175
										15.0	18.0	72	72.0	142.6	175	142.6	175
										15.0	18.0	108†	108.0	168.7	200	186.7	225
										20.0	22.0	36	36.0	146.6	175	146.6	175
										20.0	22.0	72	72.0	146.6	175	146.6	200
										20.0	22.0	108†	108.0	168.7	200	190.8	225
						30.0	32.0	129.6	150	10.0	12.2	—	—	141.8	175	141.8	175
										15.0	18.0	—	—	147.6	175	147.6	175
										20.0	22.0	—	—	151.6	175	151.6	175
										—	—	36	36.0	129.6	150	129.6	150
										—	—	72	72.0	130.0	200	130.0	200
										—	—	108†	108.0	175.0	225	175.0	225
										10.0	12.2	36	36.0	141.8	175	141.8	175
										10.0	12.2	72	72.0	141.8	200	142.2	200
										10.0	12.2	108†	108.0	175.0	225	187.2	225
										15.0	18.0	36	36.0	147.6	175	147.6	175
										15.0	18.0	72	72.0	147.6	200	148.0	200
										15.0	18.0	108†	108.0	175.0	225	193.0	250
										20.0	22.0	36	36.0	151.6	175	151.6	175
										20.0	22.0	72	72.0	151.6	200	152.0	200
										20.0	22.0	108†	108.0	175.0	225	197.0	250

Electrical data (cont)

50NB,NP074 208/230-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM Total FLA	IFM		BASE UNIT ONLY		RETURN OR EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*		BASE UNIT WITH RETURN FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA		Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP	MCA	MOCP
187-254	107.7	506.0	142.3	690.0	27.8	15.0	46.2/42.0	358.8/854.6	500/450	10.0	33.4/30.4	—	—	392.2/385.0	500/500	392.2/385.0	500/500
										15.0	48.4/44.0	—	—	407.2/398.6	500/500	407.2/398.6	500/500
										20.0	61.6/56.0	—	—	420.4/410.6	500/500	420.4/410.6	500/500
										—	—	36	78.9/ 91.0	358.8/354.6	500/450	358.8/354.6	500/450
										—	—	72	157.7/182.0	358.8/354.6	500/450	358.8/354.6	500/450
										—	—	108†	236.6/273.0	358.8/393.8	500/450	358.8/393.8	500/450
										10.0	33.4/30.4	36	78.9/ 91.0	392.2/385.0	500/500	392.2/385.0	500/500
										10.0	33.4/30.4	72	157.7/182.0	392.2/385.0	500/500	392.2/385.0	500/500
										10.0	33.4/30.4	108†	236.6/273.0	392.2/393.8	500/500	392.2/424.2	500/500
										15.0	48.4/44.0	36	78.9/ 91.0	407.2/398.6	500/500	407.2/398.6	500/500
										15.0	48.4/44.0	72	157.7/182.0	407.2/398.6	500/500	407.2/398.6	500/500
										15.0	48.4/44.0	108†	236.6/273.0	407.2/398.6	500/500	407.2/437.7	500/500
										20.0	61.6/56.0	36	78.9/ 91.0	420.4/410.6	500/500	420.4/410.6	500/500
										20.0	61.6/56.0	72	157.7/182.0	420.4/410.6	500/500	420.4/410.6	500/500
										20.0	61.6/56.0	108†	236.6/273.0	420.4/410.6	500/500	420.4/449.7	500/500
						20.0	59.4/64.0	372.0/366.6	500/500	10.0	33.4/30.4	—	—	405.4/397.0	500/500	405.4/397.0	500/500
										15.0	48.4/44.0	—	—	420.4/410.6	500/500	420.4/410.6	500/500
										20.0	61.6/56.0	—	—	433.6/422.6	500/500	433.6/422.6	500/500
										—	—	36	78.9/ 91.0	372.0/366.6	500/500	372.0/366.6	500/500
										—	—	72	157.7/182.0	372.0/366.6	500/500	372.0/366.6	500/500
										—	—	108†	236.6/273.0	372.0/408.8	500/500	372.0/408.8	500/500
										10.0	33.4/30.4	36	78.9/ 91.0	405.4/397.0	500/500	405.4/397.0	500/500
										10.0	33.4/30.4	72	157.7/182.0	405.4/397.0	500/500	405.4/397.0	500/500
										10.0	33.4/30.4	108†	236.6/273.0	405.4/408.8	500/500	405.4/439.1	500/500
										15.0	48.4/44.0	36	78.9/ 91.0	420.4/410.6	500/500	420.4/410.6	500/500
										15.0	48.4/44.0	72	157.7/182.0	420.4/410.6	500/500	420.4/410.6	500/500
										15.0	48.4/44.0	108†	236.6/273.0	420.4/410.6	500/500	420.4/452.8	500/500
										20.0	61.6/56.0	36	78.9/ 91.0	433.6/422.6	500/500	433.6/422.6	500/500
										20.0	61.6/56.0	72	157.7/182.0	433.6/422.6	500/500	433.6/422.6	500/500
										20.0	61.6/56.0	108†	236.6/273.0	433.6/422.6	500/500	433.6/464.8	500/500
						25.0	74.8/68.0	387.4/380.6	500/500	10.0	33.4/30.4	—	—	420.8/411.0	500/500	420.8/411.0	500/500
										15.0	48.4/44.0	—	—	435.8/424.6	500/500	435.8/424.6	500/500
										20.0	61.6/56.0	—	—	449.0/436.6	500/500	449.0/436.6	500/500
										—	—	36	78.9/ 91.0	387.4/380.6	500/500	387.4/380.6	500/500
										—	—	72	157.7/182.0	387.4/380.6	500/500	387.4/380.6	500/500
										—	—	108†	236.6/273.0	389.3/426.3	500/500	389.3/426.3	500/500
										10.0	33.4/30.4	36	78.9/ 91.0	420.8/411.0	500/500	420.8/411.0	500/500
										10.0	33.4/30.4	72	157.7/182.0	420.8/411.0	500/500	420.8/411.0	500/500
										10.0	33.4/30.4	108†	236.6/273.0	420.8/426.3	500/500	422.6/456.7	500/500
										15.0	48.4/44.0	36	78.9/ 91.0	435.8/424.6	500/500	435.8/424.6	500/500
										15.0	48.4/44.0	72	157.7/182.0	435.8/424.6	500/500	435.8/424.6	500/500
										15.0	48.4/44.0	108†	236.6/273.0	435.8/426.3	500/500	437.6/470.3	500/500
										20.0	61.6/56.0	36	78.9/ 91.0	449.0/436.6	500/500	449.0/436.6	500/500
										20.0	61.6/56.0	72	157.7/182.0	449.0/436.6	500/500	449.0/436.6	500/500
										20.0	61.6/56.0	108†	236.6/273.0	449.0/436.6	500/500	450.9/482.3	500/600
						30.0	88.0/80.0	400.6/392.6	500/500	10.0	33.4/30.4	—	—	434.0/423.0	500/500	434.0/423.0	500/500
										15.0	48.4/44.0	—	—	449.0/436.6	500/500	449.0/436.6	500/500
										20.0	61.6/56.0	—	—	462.2/448.6	600/500	462.2/448.6	600/500
										—	—	36	78.9/ 91.0	400.6/392.6	500/500	400.6/392.6	500/500
										—	—	72	157.7/182.0	400.6/392.6	500/500	400.6/392.6	500/500
										—	—	108†	236.6/273.0	405.7/441.3	500/500	405.7/441.3	500/500
										10.0	33.4/30.4	36	78.9/ 91.0	434.0/423.0	500/500	434.0/423.0	500/500
										10.0	33.4/30.4	72	157.7/182.0	434.0/423.0	500/500	434.0/423.0	500/500
										10.0	33.4/30.4	108†	236.6/273.0	434.0/441.3	500/500	439.1/471.6	600/600
										15.0	48.4/44.0	36	78.9/ 91.0	449.0/436.6	500/500	449.0/436.6	500/500
										15.0	48.4/44.0	72	157.7/182.0	449.0/436.6	500/500	449.0/436.6	500/500
										15.0	48.4/44.0	108†	236.6/273.0	449.0/441.3	500/500	454.1/485.3	600/600
										20.0	61.6/56.0	36	78.9/ 91.0	462.2/448.6	600/500	462.2/448.6	600/500
										20.0	61.6/56.0	72	157.7/182.0	462.2/448.6	600/500	462.2/448.6	600/500
										20.0	61.6/56.0	108†	236.6/273.0	462.2/448.6	600/500	467.3/497.3	600/600

LEGEND

- CV — Constant Volume
- FLA — Full Load Amps
- Hp — Nominal Horsepower
- IFM — Indoor (Evaporator) Fan Motor
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps (for wire sizing)
- MOCP — Maximum Overcurrent Protection
- OFM — Outdoor (Condenser) Fan Motor
- RLA — Rated Load Amps

*Electric heat available on 50NP units only.
†108 kW available on CV applications only



50NB,NP074
460-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM Total FLA	IFM		BASE UNIT ONLY		RETURN OR EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*		BASE UNIT WITH RETURN FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA		Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP	MCA	MOCP
414-508	50.6	253.0	65.4	345.0	13.5	15.0	21.0	166.8	225	10.0	15.2	—	—	182.0	225	182.0	225
										15.0	22.0	—	—	188.8	250	188.8	250
										20.0	28.0	—	—	194.8	250	194.8	250
										—	—	36	46.3	166.8	225	166.8	225
										—	—	72	93.0	166.8	225	166.8	225
										—	—	108†	139.0	200.0	225	200.0	225
										10.0	15.2	36	46.3	182.0	225	182.0	225
										10.0	15.2	72	93.0	182.0	225	182.0	225
										10.0	15.2	108†	139.0	200.0	225	215.2	225
										15.0	22.0	36	46.3	188.8	250	188.8	250
										15.0	22.0	72	93.0	188.8	250	188.8	250
										15.0	22.0	108†	139.0	200.0	250	222.0	250
										20.0	28.0	36	46.3	194.8	250	194.8	250
										20.0	28.0	72	93.0	194.8	250	194.8	250
										20.0	28.0	108†	139.0	200.0	250	228.0	250
						20.0	27.0	172.8	225	10.0	15.2	—	—	188.0	250	188.0	250
										15.0	22.0	—	—	194.8	250	194.8	250
										20.0	28.0	—	—	200.8	250	200.8	250
										—	—	36	46.3	172.8	225	172.8	225
										—	—	72	93.0	172.8	225	172.8	225
										—	—	108†	139.0	207.5	225	207.5	225
										10.0	15.2	36	46.3	188.0	250	188.0	250
										10.0	15.2	72	93.0	188.0	250	188.0	250
										10.0	15.2	108†	139.0	207.5	250	222.7	250
										15.0	22.0	36	46.3	194.8	250	194.8	250
										15.0	22.0	72	93.0	194.8	250	194.8	250
										15.0	22.0	108†	139.0	207.5	250	229.5	250
										20.0	28.0	36	46.3	200.8	250	200.8	250
										20.0	28.0	72	93.0	200.8	250	200.8	250
										20.0	28.0	108†	139.0	207.5	250	235.5	250
						25.0	34.0	179.8	225	10.0	15.2	—	—	195.0	250	195.0	250
										15.0	22.0	—	—	201.8	250	201.8	250
										20.0	28.0	—	—	207.8	250	207.8	250
										—	—	36	46.3	179.8	225	179.8	225
										—	—	72	93.0	179.8	225	179.8	225
										—	—	108†	139.0	216.3	250	216.3	250
										10.0	15.2	36	46.3	195.0	250	195.0	250
										10.0	15.2	72	93.0	195.0	250	195.0	250
										10.0	15.2	108†	139.0	216.3	250	231.4	250
										15.0	22.0	36	46.3	201.8	250	201.8	250
										15.0	22.0	72	93.0	201.8	250	201.8	250
										15.0	22.0	108†	139.0	216.3	250	238.3	250
										20.0	28.0	36	46.3	207.8	250	207.8	250
										20.0	28.0	72	93.0	207.8	250	207.8	250
										20.0	28.0	108†	139.0	216.3	250	244.3	300
						30.0	40.0	185.8	250	10.0	15.2	—	—	201.0	250	201.0	250
										15.0	22.0	—	—	207.8	250	207.8	250
										20.0	28.0	—	—	213.8	250	213.8	250
										—	—	36	46.3	185.8	250	185.8	250
										—	—	72	93.0	185.8	250	185.8	250
										—	—	108†	139.0	223.7	250	223.7	250
										10.0	15.2	36	46.3	201.0	250	201.0	250
										10.0	15.2	72	93.0	201.0	250	201.0	250
										10.0	15.2	108†	139.0	223.7	250	238.9	300
										15.0	22.0	36	46.3	207.8	250	207.8	250
										15.0	22.0	72	93.0	207.8	250	207.8	250
										15.0	22.0	108†	139.0	223.7	250	245.7	300
										20.0	28.0	36	46.3	213.8	250	213.8	250
										20.0	28.0	72	93.0	213.8	250	213.8	250
										20.0	28.0	108†	139.0	223.7	250	251.8	300

Electrical data (cont)

50NB,NP074
575-3-60 (V-Ph-Hz)

VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM	IFM		BASE UNIT ONLY		RETURN OR EXHAUST FAN		ELECTRIC HEAT*		BASE UNIT WITH EXHAUST FAN AND/OR ELECTRIC HEAT*		BASE UNIT WITH RETURN FAN AND/OR ELECTRIC HEAT*	
	RLA	LRA	RLA	LRA	Total FLA	Hp	FLA	MCA	MOCP	Total Hp	Total FLA	kW	FLA	MCA	MOCP	MCA	MOCP
518-632	39.1	176.0	52.6	276.0	12.0	15.0	17.0	133.8	175	10.0	12.2	—	—	146.0	175	146.0	175
										15.0	18.0	—	—	151.8	200	151.8	200
										20.0	22.0	—	—	155.8	200	155.8	200
										—	—	36	36.0	133.8	175	133.8	175
										—	—	72	72.0	133.8	175	133.8	175
										—	—	108†	108.0	156.2	175	156.2	175
										10.0	12.2	36	36.0	146.0	175	146.0	175
										10.0	12.2	72	72.0	146.0	175	146.0	175
										10.0	12.2	108†	108.0	156.2	175	168.4	175
										15.0	18.0	36	36.0	151.8	200	151.8	200
										15.0	18.0	72	72.0	151.8	200	151.8	200
										15.0	18.0	108†	108.0	156.2	200	174.2	200
						20.0	22.0	138.8	175	20.0	22.0	36	36.0	155.8	200	155.8	200
										20.0	22.0	72	72.0	155.8	200	155.8	200
										20.0	22.0	108†	108.0	156.2	200	178.2	200
										10.0	12.2	—	—	151.0	200	151.0	200
										15.0	18.0	—	—	156.8	200	156.8	200
										20.0	22.0	—	—	160.8	200	160.8	200
										—	—	36	36.0	138.8	175	138.8	175
										—	—	72	72.0	138.8	175	138.8	175
										—	—	108†	108.0	162.5	175	162.5	175
										10.0	12.2	36	36.0	151.0	200	151.0	200
										10.0	12.2	72	72.0	151.0	200	151.0	200
										10.0	12.2	108†	108.0	162.5	200	174.7	200
										15.0	18.0	36	36.0	156.8	200	156.8	200
										15.0	18.0	72	72.0	156.8	200	156.8	200
										15.0	18.0	108†	108.0	162.5	200	180.5	200
										20.0	22.0	36	36.0	160.8	200	160.8	200
										20.0	22.0	72	72.0	160.8	200	160.8	200
										20.0	22.0	108†	108.0	162.5	200	184.5	200
						25.0	27.0	143.8	175	10.0	12.2	—	—	156.0	200	156.0	200
										15.0	18.0	—	—	161.8	200	161.8	200
										20.0	22.0	—	—	165.8	200	165.8	200
										—	—	36	36.0	143.8	175	143.8	175
										—	—	72	72.0	143.8	175	143.8	175
										—	—	108†	108.0	168.7	200	168.7	200
										10.0	12.2	36	36.0	156.0	200	156.0	200
										10.0	12.2	72	72.0	156.0	200	156.0	200
										10.0	12.2	108†	108.0	168.7	200	180.9	225
										15.0	18.0	36	36.0	161.8	200	161.8	200
										15.0	18.0	72	72.0	161.8	200	161.8	200
										15.0	18.0	108†	108.0	168.7	200	186.7	225
										20.0	22.0	36	36.0	165.8	200	165.8	200
										20.0	22.0	72	72.0	165.8	200	165.8	200
										20.0	22.0	108†	108.0	168.7	200	190.8	225
						30.0	32.0	148.8	200	10.0	12.2	—	—	161.0	200	161.0	200
										15.0	18.0	—	—	166.8	200	166.8	200
										20.0	22.0	—	—	170.8	200	170.8	200
										—	—	36	36.0	148.8	200	148.8	200
										—	—	72	72.0	148.8	200	148.8	200
										—	—	108†	108.0	175.0	225	175.0	225
										10.0	12.2	36	36.0	161.0	200	161.0	200
										10.0	12.2	72	72.0	161.0	200	161.0	200
										10.0	12.2	108†	108.0	175.0	225	187.2	225
										15.0	18.0	36	36.0	166.8	200	166.8	200
										15.0	18.0	72	72.0	166.8	200	166.8	200
										15.0	18.0	108†	108.0	175.0	225	193.0	250
										20.0	22.0	36	36.0	170.8	200	170.8	200
										20.0	22.0	72	72.0	170.8	200	170.8	200
										20.0	22.0	108†	108.0	175.0	225	197.0	250

LEGEND

- CV — Constant Volume
- FLA — Full Load Amps
- Hp — Nominal Horsepower
- IFM — Indoor (Evaporator) Fan Motor
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps (for wire sizing)
- MOCP — Maximum Overcurrent Protection
- OFM — Outdoor (Condenser) Fan Motor
- RLA — Rated Load Amps



*Electric heat available on 50NP units only.
†108 kW available on CV applications only.

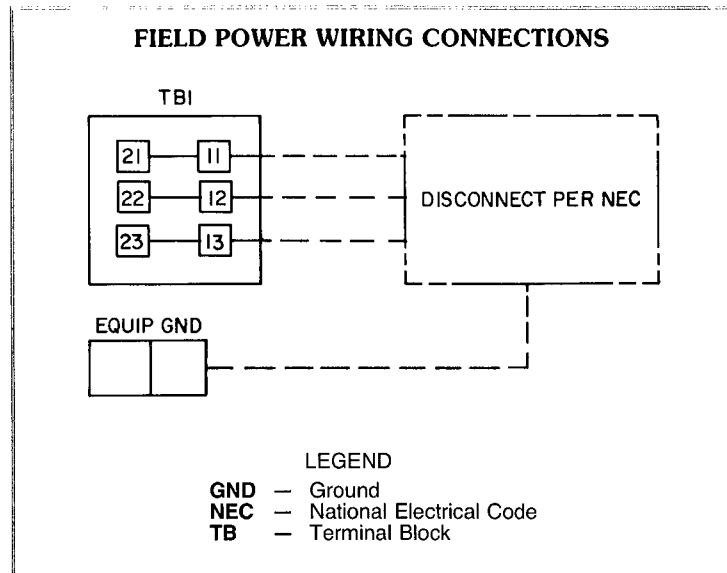
Electrical data (cont)

MOTOR LIMITATIONS

NAMEPLATE HP	EFFICIENCY	VOLTAGE	MAXIMUM ACCEPTABLE OPERATING HP
7.5	Standard	208/230	8.7
		460	9.5
10.0		208/230	10.2
		460	11.8
15.0		208/230	15.3
		460	18.0
20.0		208/230	22.4
		460	23.4
25.0		208/230	28.9
		460	29.4
30.0		208/230	35.6
		460	34.7
10.0	High	208/230	10.3
		460	11.4
15.0		208/230	16.1
		460	17.8
20.0		208/230	22.0
		460	24.0
25.0		208/230	29.8
		460	30.0
30.0		208/230	35.0
		460	36.0

Extensive motor and electrical testing on the Weather-maker® III units ensures that the full horsepower range of the motor can be utilized with confidence. Using your fan motors up to the horsepower ratings shown in the Motor Limitations table will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

Typical wiring schematics

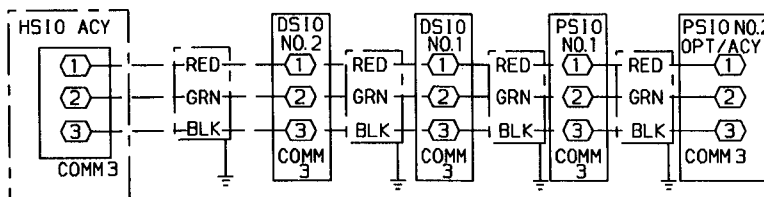
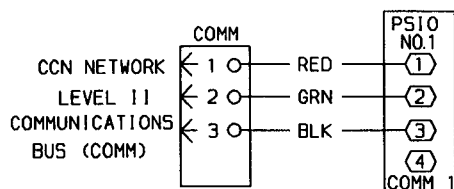
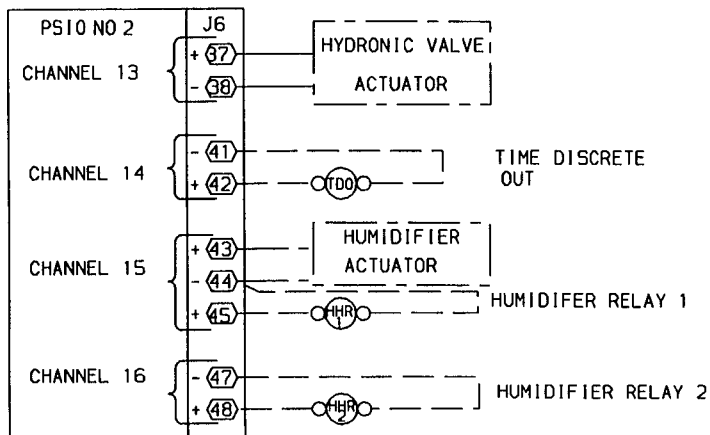
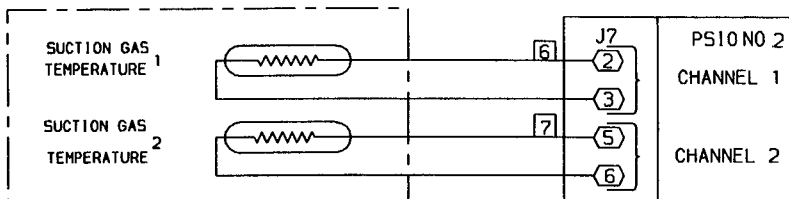
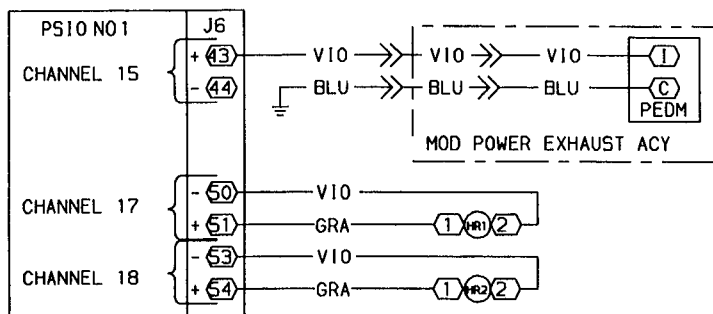
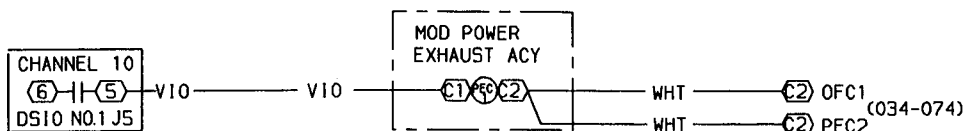


LEGEND FOR TYPICAL WIRING SCHEMATICS

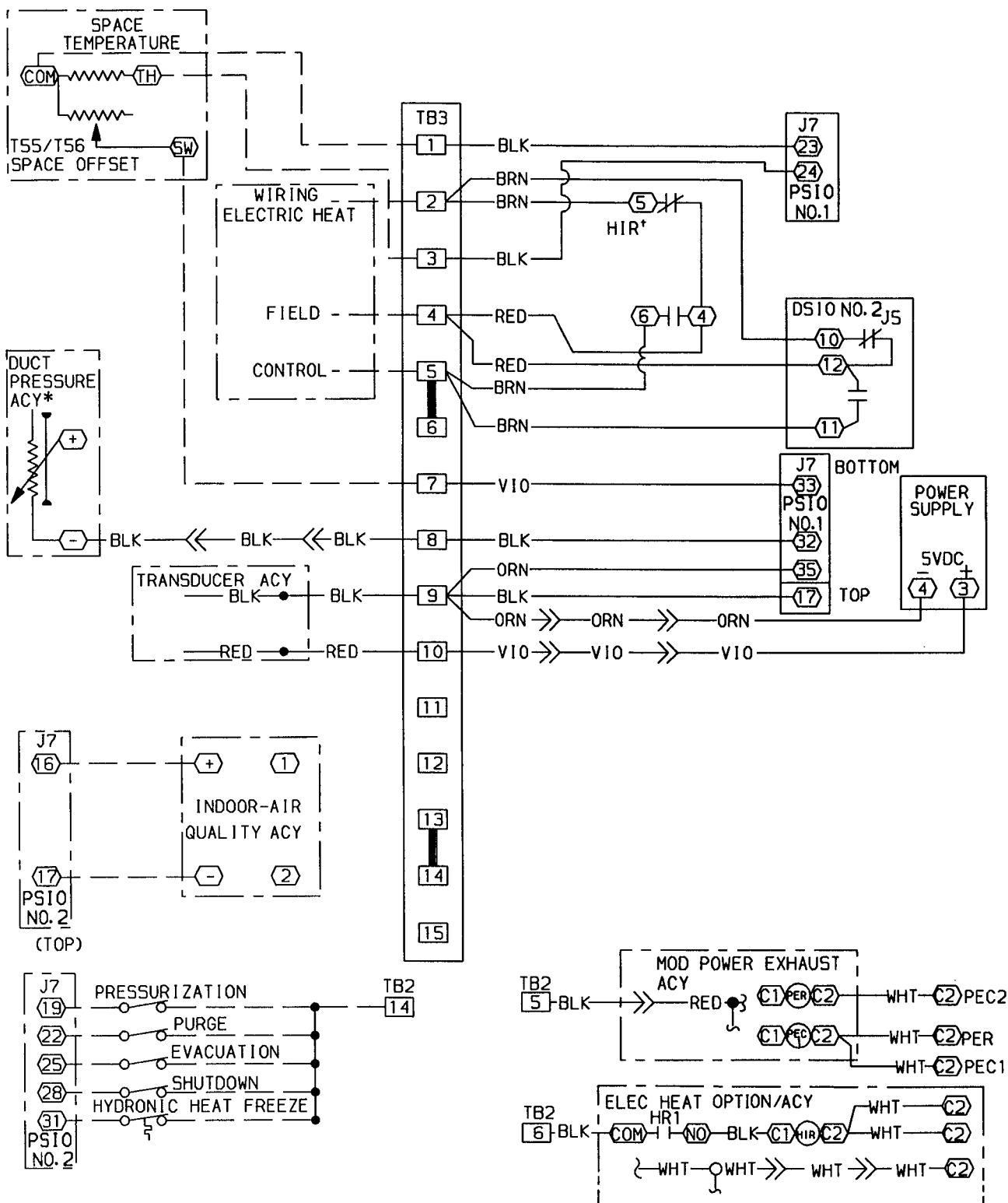
C — Contactor	OFC — Outdoor (Condenser) Fan Contactor
COM — Common Motor	PEC — Power Exhaust Contactor
DSIO — High-Voltage Relay Module	PEDM — Power Exhaust Damper
DU — Dummy Terminal	PER — Power Exhaust Relay
HIR — Heat Interlock Relay	PSIO NO. 1 — Standard Processor Module
HR — Heater Relay	PSIO NO. 2 — Accessory/Optional Processor Module
IFC — Indoor (Evaporator) Fan Contactor	SW — Switch
IGV — Inlet Guide Vanes	TB — Terminal Block
MOD — Modulating	TRAN — Transformer
MPER — Modulating Power Exhaust Relay	----
NC — Normally Closed	=====
NO — Normally Open	-----

Typical wiring schematics (cont)

FIELD CONTROL WIRING MAIN CONTROL BOX, 50NB,NP034-074 UNITS



FIELD CONTROL TERMINAL BLOCK WIRING – MAIN CONTROL BOX, 50NB,NP034,044 UNITS

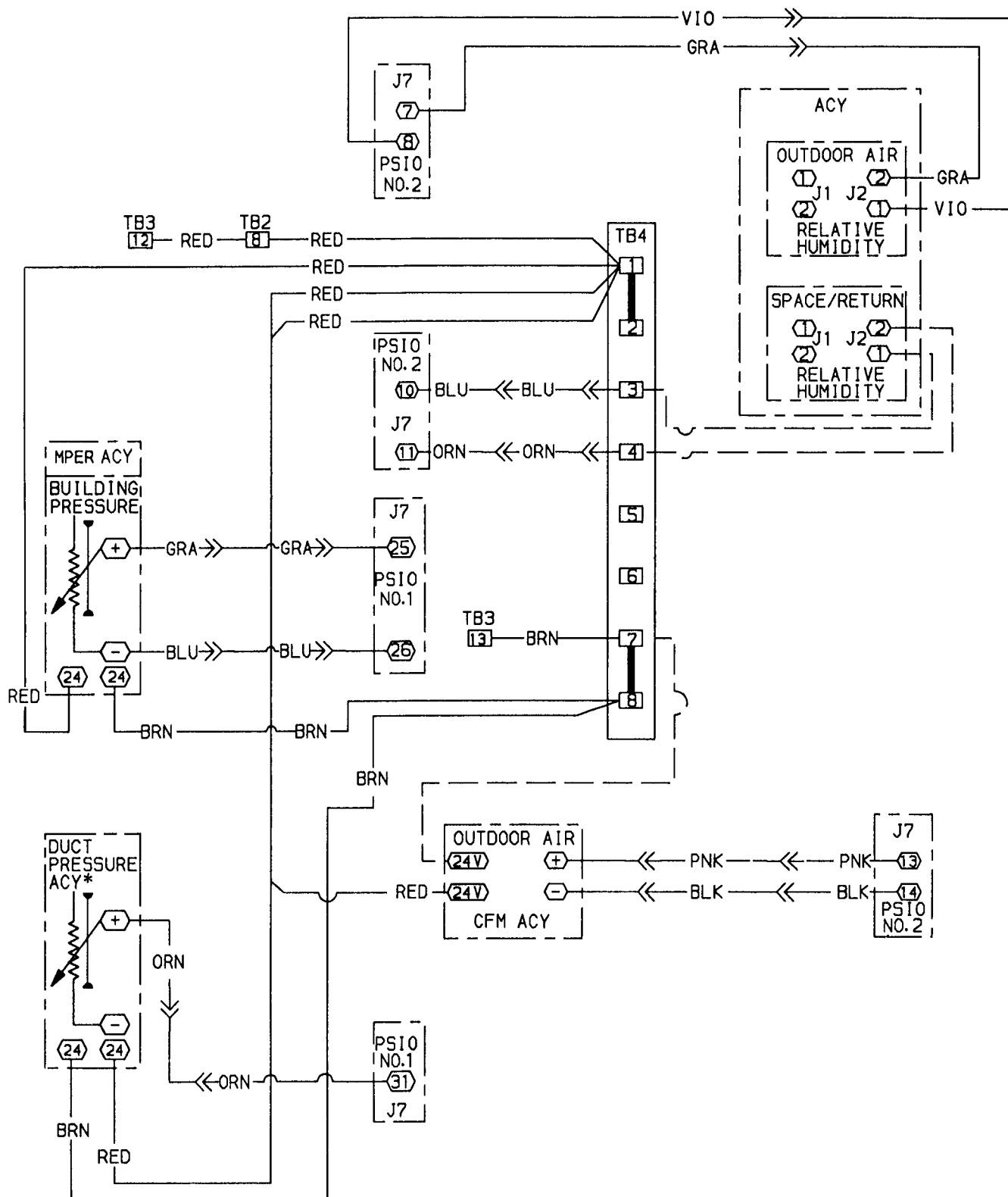


*See additional wiring information on page 52.

†HIR applies only to 50NP units with factory installed electric heat.

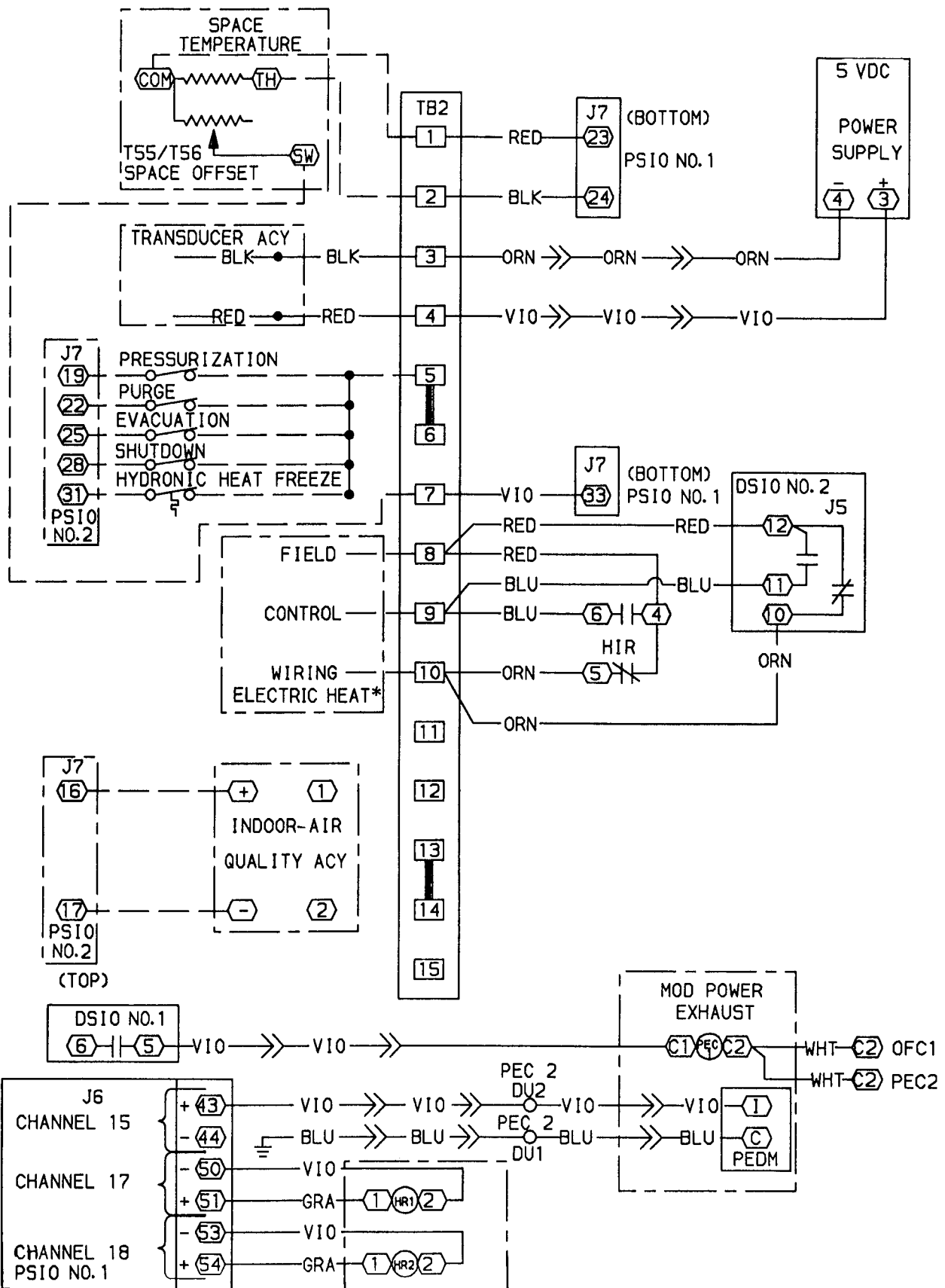
Typical wiring schematics (cont)

FIELD CONTROL TERMINAL BLOCK WIRING – AUXILIARY CONTROL BOX, 50NB,NP034,044 UNITS



*See additional wiring information on page 51.

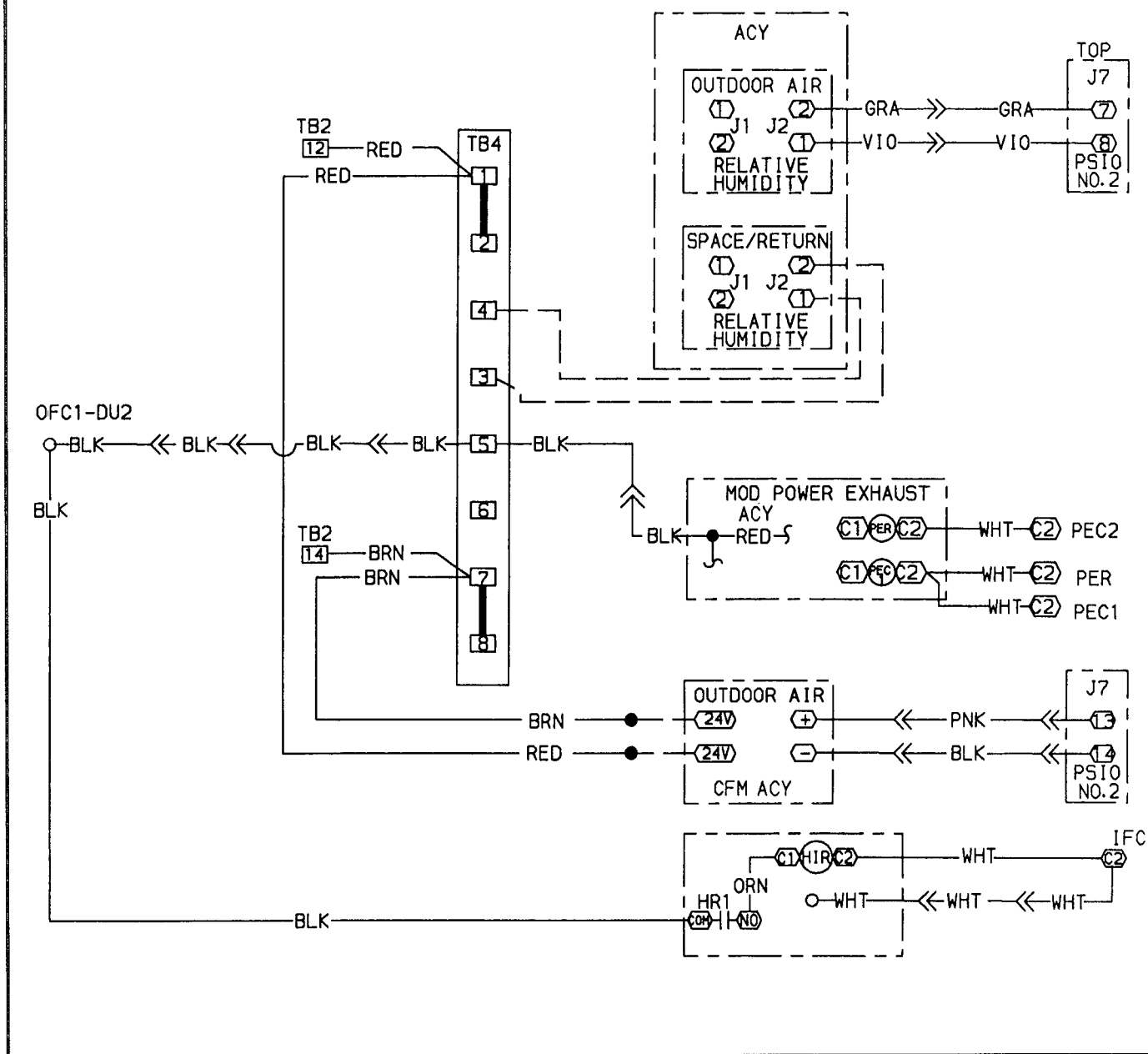
FIELD CONTROL TERMINAL BLOCK WIRING – MAIN CONTROL BOX 50NB,NP054-074 UNITS



*Only applies to units with factory-installed electric heat.

Typical wiring schematics (cont)

FIELD CONTROL TERMINAL BLOCK WIRING – AUXILIARY CONTROL BOX, 50NB,NP054-074 UNITS



Controls

Operating sequence

Cooling

NOTE: The cooling algorithms (software) used in the 50NB,NP units will only run when the supply fan is on.

Units with economizer — The economizer will modulate to satisfy the leaving-air set point if the outdoor-air enthalpy is suitable. If the economizer cannot satisfy the leaving-air set point, the economizer will remain at 100% open, and mechanical cooling will be initiated. If the outdoor-air enthalpy is not suitable, economizer will remain at minimum position during mechanical cooling.

CV operation — The controls will compare the occupied space temperature to the occupied cooling set point. If the occupied space temperature is above the set point, the unit will commence cooling. The supply-air temperature that has been determined by the PIC software is compared to the actual supply-air temperature to determine when to add or remove stages of capacity to satisfy the load.

VAV operation — The controls will compare the supply-air temperature to the modified supply-air set point. The supply-air temperature that has been determined by the PIC software is compared to the actual supply-air temperature to determine when to add or remove stages of capacity to satisfy the load.

All units — The PIC software controls capacity by maintaining the supply-air temperature at the value specified by the supply-air temperature set point through cycling the compressors and unloader(s). Both the supply- and return-air temperature sensors are used to adjust the cycling deadband to match the actual load. The control system provides cooling capacity control of up to 6 stages, using 2 compressors and up to 4 unloaders to maintain supply-air temperature (VAV applications) or occupied space temperature (CV applications) to the occupied or unoccupied set point. Automatic lead-lag circuit switching occurs to equalize run times per compressor for improved compressor reliability.

NOTE: The lead/lag function should be disabled when unit is equipped with hot gas bypass.

If unit is equipped with a humidity sensor, the controls will determine if dehumidification is required. If humidity is above the high humidity limit, a cooling demand is initiated to counteract the humidity. Stages of capacity control will be added as necessary to lower the humidity below the high humidity limit. Heating is locked off during compressor operation.

Units with return-air fans or power exhaust — On units configured for return-air fans (054-074 only), the return-air fans will be energized whenever the supply-air fan is energized. Dampers on the return-air fans will modulate to maintain the building pressure set point.

On units configured with modulating power exhaust fans, power exhaust fan no. 1 will be energized when the building pressure set point is exceeded, and the damper will modulate to maintain the building pressure set point. When the damper is approximately 90% open, the switch in the motor will energize power exhaust fan no. 2. When the power exhaust fan no. 1 damper closes to approximately 20% open, power exhaust fan no. 2 will be deenergized.

Heating (Available for 50NP units only)

NOTE: The heating algorithms on the 50NP units will only run when the supply-air fan is on.

When the unit is in the heating mode, room terminals must be fully open. The room terminals are controlled by the heat interlock relay (HIR).

During heating, the economizer dampers (if so equipped) will be at the minimum damper position during occupied heating, and will be fully closed during unoccupied heating.

CV operation — The heater is staged to prevent the occupied space temperature from falling below the desired set point. The control reads the space temperature and computes the supply-air temperature necessary to heat the space to the heating set point. The 50NP PIC controls will compare the calculated supply-air temperature set point to the actual supply-air temperature to compute the number of stages required to satisfy the conditions.

VAV operation — Heating is primarily used for morning warm-up or occupied space heating with the heater being staged to maintain desired return-air temperature. If the unit is in morning warm-up, the return-air temperature is read and compared to the heating set point. If the return-air temperature is below the heating set point, the unit will commence heating at the biased start time calculated by the morning warm-up (AOSS) routine. The supply-air temperature that has been determined by the PIC software is compared to the actual temperature to determine when to add or remove stages of capacity to satisfy the load. Once morning warm-up is completed, heat will not be activated again in the occupied mode unless the occupied heating mode has been selected.

DAV operation — Heating using a DAV system is more controlled than in a standard system because the terminals have a minimum heating cfm instead of operating fully open. Contact your sales representative for more information on DAV systems.

Morning warm-up (VAV only) — Morning warm-up occurs when the adaptive optimal start (AOS) algorithms calculate a biased occupied start time, and the unit has a call for heat. The occupied and unoccupied heating set points are variable inputs, and the user-configurable reset option can vary from the set point by the inputted value.

The warm-up will continue into the occupied period as long as there is a need for heat, even if occupied heating is disabled. When the heating demand is satisfied, the warm-up condition will terminate. The unit may reenter this mode if there is another call for heat before the start of the occupied period.

NOTE: On units equipped with optional economizer, the dampers will be fully closed during morning warm-up, except when morning warm-up continues into the occupied period. If morning warm-up continues into the occupied period, the dampers will open to the minimum position to provide ventilation air.

Room terminals should go to the fully open position when the unit enters the heating mode. This is controlled by the heating interlock relay (HIR), located in the unit control box. When the unit goes into heating mode, the HIR is energized and opens the room terminals.

Application data

General

The 50NB,NP PIC units are designed with state-of-the-art features and benefits. Some of them are a function of the base unit, and some are a function of the PIC controls. Many of these features and benefits are standard, and additional applications and functions can be achieved through the purchase of numerous options and/or accessories. The appropriate applications will be described in this section.

Base unit applications

Integrated economizer — The factory-installed integrated economizer option provides ventilation of the conditioned space with outdoor air, as well as economical cooling through the use of outdoor air instead of mechanical cooling whenever possible. When the outdoor air enthalpy is appropriate for cooling, but cannot provide enough cooling for the space, outdoor air will be used as the first stage of cooling, with mechanical cooling stages added as needed (there are 4 to 6 stages available per unit).

When the factory-installed control option module is purchased, 2 additional types of economizer control are added, providing increased economies, comfort, and indoor-air quality (IAQ) monitoring. See Control Option Module section on page 57 for more information.

Inlet guide vanes — The factory-installed inlet-guide vane option provides fan modulation of the supply-air fans.

This is desirable on most VAV applications to maintain a constant static pressure in the duct which helps avoid unacceptable noise levels. In addition, the evaporator fan is more efficient with inlet guide vanes because less operating horsepower is necessary to run the fan. When the static pressure is kept low, the fan can run at a lower brake horsepower, making it more efficient.

In some cases, field supplied and installed inverters may be used instead of inlet guide vanes to provide evaporator fan modulation. The PIC controls will output a 4-20 mA signal to control the inverters. A field-supplied pressure transducer is required, and must be the same transducer as is used for the factory-installed inlet guide vanes.

Filters — There are three types of filters available on the 50NB,NP units: Standard throwaway filters, Optional medium-efficiency (30%) pleated filters, and Optional high-efficiency (90%) bag filters. All three types are tested per ASHRAE Standard 52 test method for performance tolerance and conform to Section 7.4 of ARI Standard 850.

The correct filter choice depends on the application. The building filtration media specifications and the available unit external static pressure and filter pressure drop will dictate filter requirements. Refer to the Physical data table for specifics regarding filtration abilities.

The standard throwaway filters are adequate for applications where space cleanliness is not a primary requirement, such as warehouses and factories. The medium efficiency filters are usually used where a better job of filtering is required, such as retail and general office space. High efficiency filtration is used on applications where ceiling smudging is to be avoided and cleaner air is demanded. Also keep in mind that the more contaminated the environment, the more stringent the filtration requirements will be.

Copper/copper condenser coil — This factory-installed option should be used whenever there is an environment which may be detrimental to the aluminum fins (standard). Examples of applications which would require copper/copper condenser coils include: coastal applications or applications where corrosive or airborne contaminants which adversely affect aluminum are present.

High-efficiency evaporator fan motor — The high-efficiency fan motors reduce electric consumption because they consume less electrical power, while delivering the same horsepower. Further, the high-efficiency fan motors may qualify for rebates from the local utility company.

100% modulating return-air fans — The return-air fans are available for 054-074 units. The fans are used to overcome the return duct losses that are encountered in larger and more elaborate air conditioning systems. The return-air fans are energized with the evaporator fan, and run until the evaporator fan is deenergized. The use of outdoor air via the optional economizer will cause the return-air dampers to close as the economizer dampers open, pressurizing the return-air fan section. The fans are controlled by interior space pressure, and work in conjunction with the barometric relief dampers (standard with return-air fans) to ensure overpressurization does not occur.

NOTE: The optional factory-installed economizer is required for the modulating return-air fan option.

Barometric relief — The barometric relief package (factory-installed option or field-installed accessory) prevents overpressurization of the conditioned space.

NOTE: The optional factory-installed economizer is required with this option/accessory.

100% modulating power exhaust — The power exhaust option is available on all unit sizes and is used for relief of excess pressure in the occupied space. The power exhaust can remove larger amounts of air from the conditioned space than the barometric relief damper. The power exhaust is energized when the building pressure exceeds the set point.

NOTE: The optional factory-installed economizer is required with this option/accessory.

Roof curb — The rooftop units are designed to be set on a roof curb, and the accessory roof curb packages are specifically designed for the units they support. Use of a roof curb permits the ductwork to be connected to the curb (before the unit is delivered to the jobsite, if desired), reducing transmission of unit operating noise into the conditioned space. The accessory roof curb packages include seal strips to ensure a leakfree transition between the unit and the curb. In addition, on multi-unit applications, having the roof curbs in place in advance permits quick and easy rigging of the units. Units can simply be lifted and set onto their curbs. All electrical connections can be made through the curb, if desired.

On the 054-074 units, an additional condenser section roof curb is available. The condenser section is adequately supported by the base unit accessory roof curb, but the area under the condenser section is left open. The accessory condenser section roof curb has solid panels on the bottom, which can act as a sound barrier between the compressors and the roof. In addition, these panels can prevent oil from dripping onto the roof surface during unit servicing. The condenser section curb is also important where roofing codes

would require that roofing subcontractors reach under the condenser section (if it's open) and maintain the roof in that area when providing general roofing maintenance. With the additional accessory curb, a watertight seal is created with the factory-supplied seal strip. The section under the compressors is closed off, and therefore needs no roofing maintenance. Also, rigging expenses can be reduced because the curbs can be set up in advance, meaning there is no delay in rigging while curbs are set in place.

Hot gas bypass — The factory-installed hot gas bypass option prevents short cycling of the compressor at low load conditions. Each of the 50NB,NP units has as standard the maximum number of stages of unloading possible controlled electronically. In applications where there is the potential for loads which might be beneath the minimum unloading capability of the unit, the compressor would need to be cycled often to meet the low load. The hot gas bypass option prevents this from happening by providing additional unloading capability for the unit.

NOTE: When hot gas bypass is used, the lead/lag compressor feature should be disabled.

Differential enthalpy control sensor — The differential enthalpy control accessory is a sensor that is used in conjunction with the standard solid-state enthalpy control sensor. Using the two sensors together provides the ability to compare heat content (temperature and humidity) of outdoor and return air. When outdoor air has a lower enthalpy or heat content than the return-air, then the economizer will be used for free cooling of the space. This comparison of outdoor versus return air permits the optional economizer cut-in point to be at the most economical level possible

Space temperature reset — Variable air volume applications that require averaging multiple space temperature sensors to determine when to modify the discharge-air temperature can be satisfied using either 4 or 9 sensors as shown on page 58. Single space temperature reset wiring is shown in Field Control Terminal Block Wiring on pages 51 and 53.

NOTE: Only Carrier sensors may be used (part no. HH51BX001 for standard T55, or HH51BX004 for accessory T56). Sensors must be used in multiples of 1, 4 and 9 only, with total sensor wiring not to exceed 1000 ft. However, space temperature reset can be accomplished with only one sensor (provided standard with unit).

PIC controls

Keypad and display module (HSIO) — The keypad and display module (local interface device) is a field-installed accessory, and provides unit function information at the unit. The HSIO is the only means of switching between run and standby modes, and is required for initial unit start-up and most service and diagnostic functions. The HSIO keypad and display module is easily installed via connection of the power and communication plugs and can be easily moved from one unit to another. Due to this flexibility, only one HSIO needs to be ordered for several units.

Processor modules (PSIO) — There are two types of processor modules: standard and optional. All units come with the standard PSIO no. 1 module, which contains the operational software and controls the operation of the unit.

The standard PSIO no. 1 module monitors and processes the following inputs, outputs and system information.

INPUTS:

- transducers
- thermistors
- switches

OUTPUTS:

- compressors
- condenser-fan head pressure control
- optional integrated economizer
- optional inlet guide vanes
- optional modulating power exhaust dampers
- heat stages 1 and 2 operation (if applicable)

SYSTEM INFORMATION

- generates alert and alarm information (via transducer, thermistor and sensor inputs)
- supports level II communications
- supports DAV interface

NOTE: The optional PSIO no. 2 can be purchased on its own (as a field-installed accessory) or as part of the factory-installed control option module. When purchased as a stand-alone accessory, superheat monitoring is not available without accessory pressure transducers and thermistors. The accessory PSIO no. 2 module supports the inputs used for

- superheat monitoring
- humidity control
- IAQ
- smoke control
- hydronic coil freeze protection

In addition, the accessory/optional PSIO no. 2 supplies the outputs for humidity and hydronic heating coil control and the discrete output with timed clock control

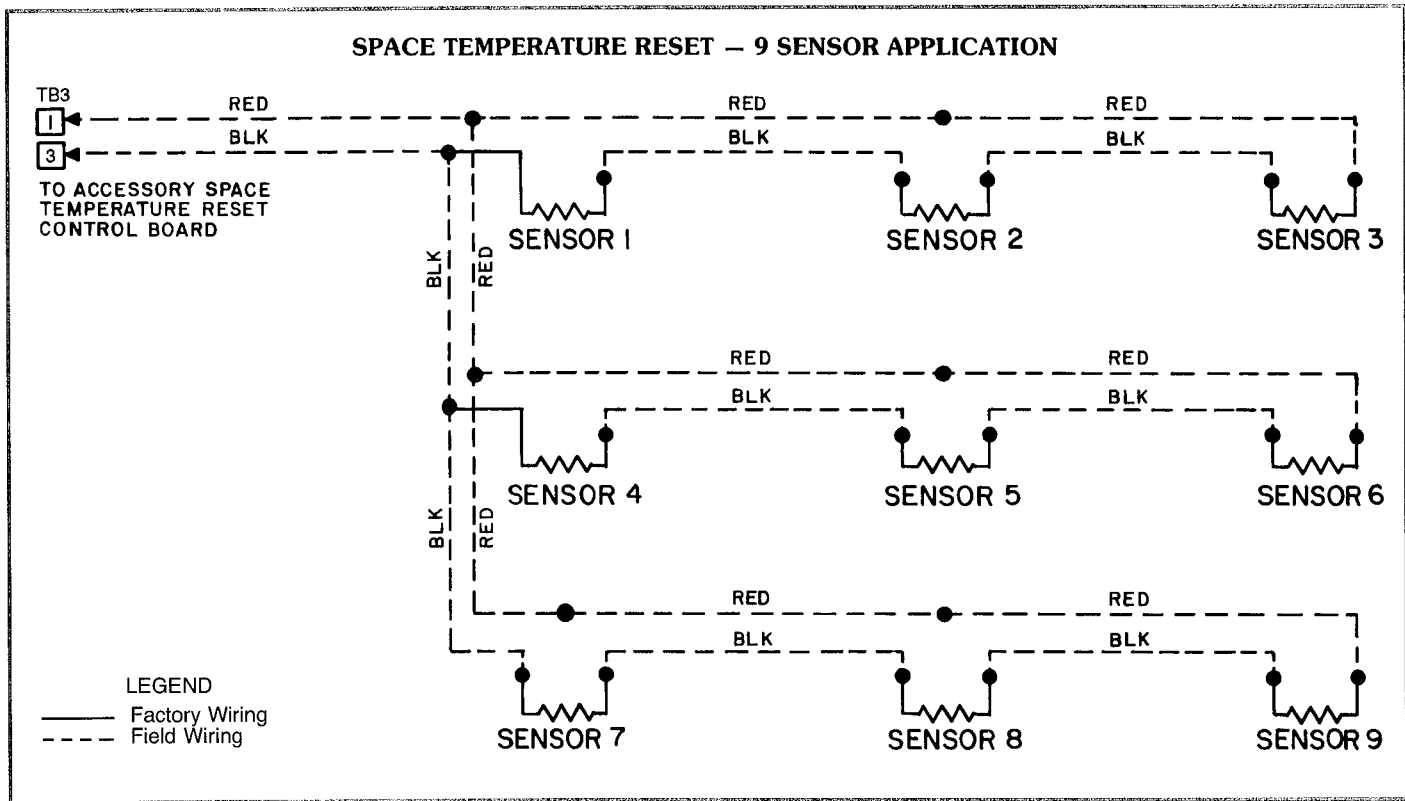
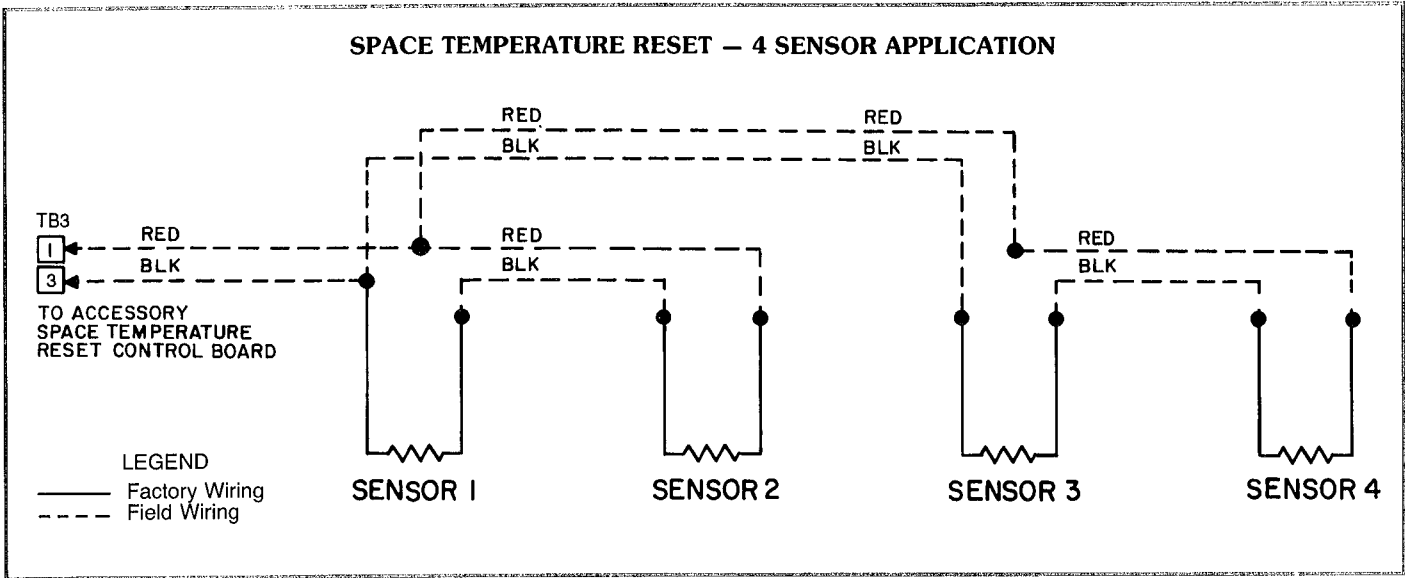
Refrigerant pressure transducers — The transducers can also be purchased either as an accessory or as a part of the control option module. Refer to the Control Option Module section below for more information on transducers as part of the factory-installed control option package. When purchased as an accessory, the transducer package comes with 4 transducers and 2 suction sensors. The transducers permit improved head pressure control capability through monitoring of the refrigerant. This can be done locally or remotely.

Control option module — The control option module is factory installed and incorporates some of the accessories available as stand-alone pieces, as well as additional functions not available outside the module. The components of the control option module are:

- PSIO no. 2 (in addition to the standard PSIO no. 1)
- 4 refrigerant pressure transducers
- 2 suction thermistors

The primary purpose of the control option module is to increase capabilities and functions of the PIC controls. Through the use of the optional factory-installed control option module, additional monitoring and control of the occupied space become possible.

Application data (cont)



PSIO — The processor module is the heart of the entire control option module system, and supports the inputs which are used for humidity and smoke control, as well as outdoor-air cfm, superheat, and IAQ monitoring. The PSIO also supplies the outputs for humidity and hydronic heating coil control, a discrete output for timed clock control, and increased optional economizer control

Humidity — The accessory humidity sensor provides information on the current humidity levels. When used in conjunction with a field-installed humidifier, the conditioned space can be kept within a preset comfort range.

Building pressurization, evacuation, and smoke purge control — It is common practice to use the rooftop unit for building pressurization, evacuation, and smoke purge functions in the event of a building fire. These functions are enhanced when multiple rooftop units are used to zone a building.

The intent of building pressurization is to keep smoke out of a zone. This is accomplished by:

- opening the optional economizer
- running the evaporator fan (optional inlet guide vanes open)
- closing the modulating power exhaust damper if installed (option)
- shutting off the power exhaust fans (if installed)

This allows the space to be overpressurized and smoke will not enter the space.

The smoke purge and evacuation functions allow the rooftop unit to remove smoke from the space. Required unit functions for smoke purge and evacuation are:

- economizer open (smoke purge)
- economizer closed (evacuation)
- exhaust fans running
- exhaust damper is open
- evaporator fan is not running (evacuation)

Note that the optional economizer and modulating power exhaust are required for both functions.

It is possible to remotely energize the power exhaust fan using the power exhaust contacts. This would allow smoke removal to occur without a fireman having to climb onto the roof before structural integrity can be verified.

Superheat — The capability to monitor superheat values is critical to both the comfort of building occupants and improving the longevity of the compressors. A major benefit of the superheat function is that the superheat can be monitored remotely. When the person monitoring the system has access to the superheat information, the problem can be fixed as soon as the system goes into the alarm lockout state (high or low superheat). This prevents long periods of down

time for the HVAC system because the service person can troubleshoot and solve the problem before the compressors need to be replaced. Repeated superheat situations and the stress they put on the compressors can be avoided, thus increasing the life of the unit

IAQ monitoring — Indoor-air quality is critical. As mentioned in the Features/Benefits section, many retail establishments will have to spend far more money than necessary to meet the generic outdoor-air cfm per square ft required by the ASHRAE 62-89 Standard if they are not able to monitor the contaminant levels (like CO₂) in the conditioned space. Being able to monitor the indoor-air quality permits compliance with the ASHRAE Standard while saving money, since only the amount of outdoor ventilation air that is required to meet the Standard is used. In addition, accessory software provides data collection and report generation capabilities.

Hydronic heating coil control — The heating coil control is used to control the field-supplied and installed heating coil and steam or hot water valve. The valve is modulated to prevent the space temperature from falling below the desired set point. The desired set point can be programmed into the PIC software, and the valve modulation will be controlled based on temperature sensed in the heating coil.

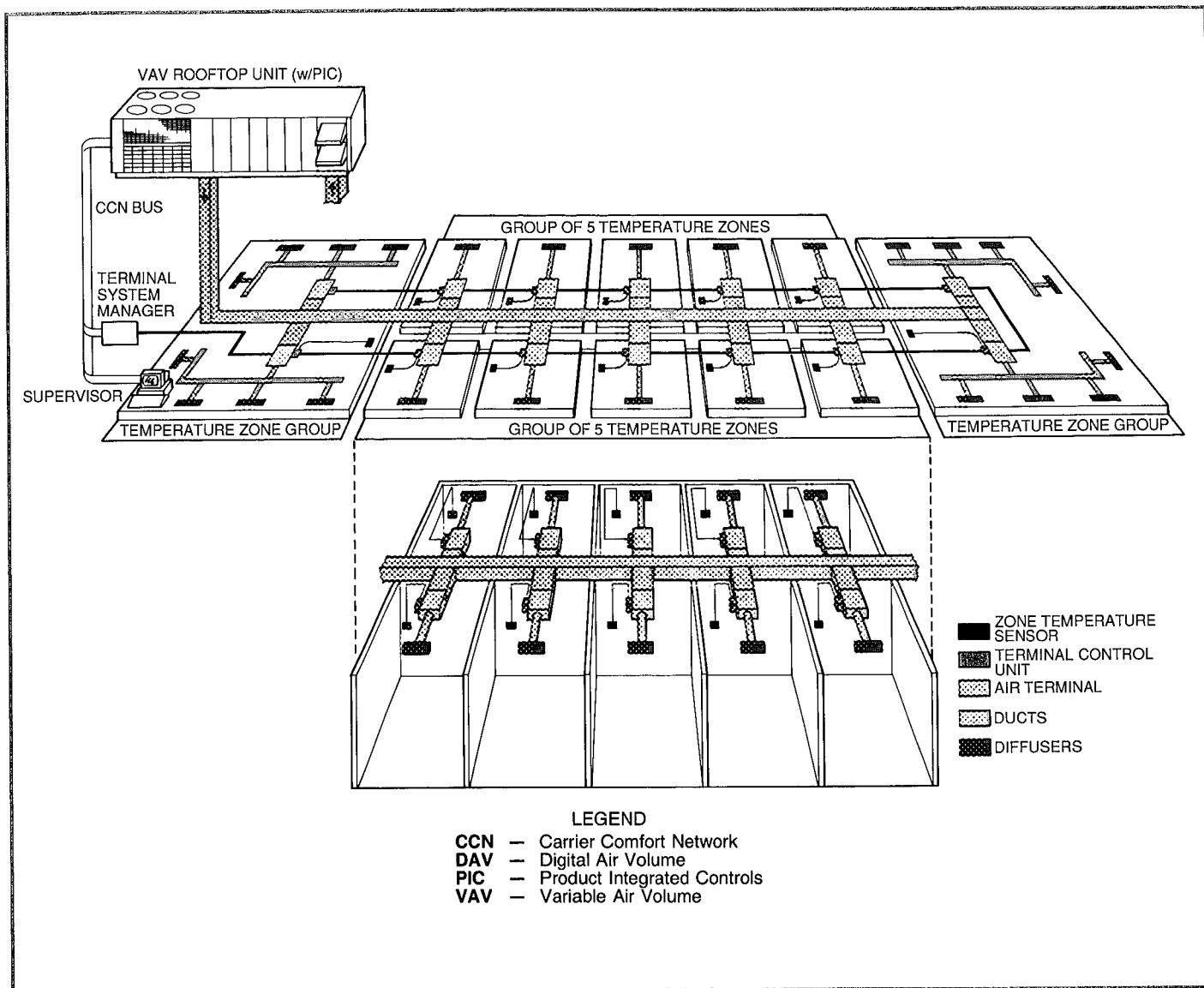
Discrete output controlled by the timed clock — Another benefit gained from the purchase of the factory-installed control option module is the ability to control an additional timed output. A single output terminal is provided for a field-supplied relay. The timed output can be used for such functions as parking lot or other outdoor light control, and this discrete timed output control is only available with the option module

Economizer controls — The control option module also permits greatly enhanced control of the economizer. The basic integrated economizer will provide free cooling with outdoor air whenever the enthalpy is favorable. The control option module provides 2 additional types of minimum position economizer control, and can be configured to review all 3 inputs and control the dominant parameter.

1. Maintains a minimum set point when enthalpy is not suitable for free cooling (standard with optional economizer).
2. Maintains a constant cfm of outdoor air on VAV applications independent of unit cfm (using control option module and accessory outdoor airflow sensor).
3. Maintains a minimum set point based on a 0 to 10 v input from a field-supplied indoor-air quality (IAQ) sensor (such as a CO₂ sensor) (using control option module).

NOTE: The economizer still provides integrated operation with mechanical cooling when required for optimum unit efficiency.

Typical piping and wiring (DAV application shown)



Guide specifications

Packaged Rooftop Cooling Unit With PIC Controls and Optional Electric Heat

HVAC Guide Specifications

Size Range: **30 to 75 Tons, Nominal**

Carrier Model Number: **50NB (Horizontal Supply/Return)**
50NP (Vertical Supply/Return)

NOTE: Items throughout the specification which apply only to "With Electric Heat" (NP) are indicated by single brackets [i.e.].

Part 1 — General

1.01 SYSTEM DESCRIPTION

Outdoor, roof-curb mounted, electronically controlled [heating and] cooling unit utilizing semi-hermetic reciprocating type compressors for cooling duty [and utilizing electric resistance coils for heating duty]. Units shall discharge supply air downward (50NP) or horizontally (50NB) as shown on the contract drawings

1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standard 360.
- B. Unit shall be designed to conform to ASHRAE 15, latest revision, UL Standard 465, and NEC.
- C. Unit shall be certified by ETL as a total package.
- D. Roof curb shall be NRCA approved.
- E. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

1.03 DELIVERY, STORAGE, AND HANDLING

Unit shall be stored and handled per manufacturer's recommendations.

Part 2 — Products

2.01 EQUIPMENT

- A. Factory-assembled, single-piece [heating and] cooling unit. Contained within the unit enclosure shall be all factory wiring, piping, refrigerant charge (R-22), operating oil charge, dual refrigerant circuits, microprocessor-based control system and associated hardware, and all special features required prior to field start-up
- B. Unit Cabinet
 - 1. Constructed of galvanized steel, bonderized and coated with a baked enamel finish
 - 2. Unit casing shall be capable of withstanding Federal test method Standard No. 141 (Method 6061) 500-hour salt spray test
 - 3. Sides shall have *man* size insulated hinged access doors for easy access to the control box and other areas requiring servicing. Each door shall seal against a rubber gasket to prevent air and water leakage, and is equipped to permit ease and safety during servicing.
 - 4. Indoor blower compartment interior cabinet surfaces shall be insulated with flexible fiberglass insulation, coated on the air side.
 - 5. Insulation shall be applied by means of adhesion using a water reducible adhesive sprayed onto

interior surface. Adhesive shall maintain a satisfactory adhesion and cohesion within the temperature range of -20 to 180 F and have excellent resistance to water and water vapor when cured.

- 6. Units shall be equipped with lifting lugs to facilitate overhead rigging.

C. Fans:

1. Evaporator Fan:

- a. Double-width, double-inlet, centrifugal belt driven forward-curve type with single outlet discharge.
- b. Fixed-pitch pulley drive with factory-supplied alternate motor pulley bolted to the fan sled.
- c. Mounted on a structural steel sled with flexible outlet connection consisting of canvas transitions.
- d. Fan shaft bearing shall be of the pillow-block type with lubrication provisions.
- e. Statically and dynamically balanced.
- f. Evaporator-fan shaft bearings shall have a life of 200,000 hours at design operating conditions in accordance with ANSI B3.15.
- g. Solid fan shaft construction.
- h. Unit shall be equipped with a 5 in. (034,044 units) or 7 in. (054-074 units) spring vibration isolator with 2-in. deflection.

2. Condenser Fans

- a. Direct-driven propeller type only.
- b. Discharge air vertically upward.
- c. Protected by PVC-coated steel wire safety guards.
- d. Statically and dynamically balanced.
- e. Three-phase, totally enclosed motors.

D. Compressors:

- 1. Reciprocating, semi-hermetic type only and shall be located for easy servicing
- 2. Equipped with a suction-cutoff type electrically controlled unloader(s).
- 3. Mounted on spring-vibration isolators with an isolation efficiency of no less than 95%.
- 4. Each equipped with an automatically reversible oil pump, operating oil charge, insert-type crankcase heater to prevent refrigerant migration to the compressor, and suction and discharge service valves.
- 5. Maximum operating speed of 1800 rpm.
- 6. Equipped with suction and discharge service valves.

E. Coils:

1. Evaporator Coil

- a. Intertwined circuiting constructed of aluminum fins mechanically bonded to seamless copper tubes.
- b. Full-face active type during full and part load conditions.
- c. Coils shall be leak tested at 150 psig and pressure tested at 450 psig.

Guide specifications (cont)

2. Condenser Coils:

- a. Constructed of aluminum fins mechanically bonded to seamless copper tubes.
- b. Air-cooled condenser coils shall be leak tested at 150 psig and pressure tested at 450 psig.
- c. All coils shall be same manufacturer as unit.

F. Outdoor-air Hood Assembly

Factory-installed manual outdoor-air damper shall allow intake of up to 25% nominal airflow (on units not equipped with optional economizer).

G. [Heating Section:] Optional 50NP units only

Electric resistance heaters shall be factory installed, open wire nichrome element type, insulated with ceramic bushings, and shall include operating and safety controls.

H. Refrigerant Components:

Unit shall be equipped with dual refrigerant circuits, each containing:

1. Liquid line service valve.
2. Filter drier.
3. Moisture indicating sight glass.
4. Thermostatic expansion valve.
5. Fusible plug.

I. Filter Section:

Filter section shall consist of 2-in. thick, throwaway fiberglass filters of commercially available sizes.

J. Controls, Safeties, and Diagnostics:

1. Controls:

- a. Control shall be accomplished through the use of a factory-installed, microprocessor-based control system and associated electronic and electrical hardware. Control system shall determine control sequences through monitoring the following operational variables:
 - 1) Evaporator leaving-air temperature.
 - 2) Return air temperature.
 - 3) Saturated condensing temperature.
 - 4) Economizer position.
 - 5) Minimum economizer set point.
 - 6) Morning warm-up set point.
 - 7) Room temperature (unoccupied [heat and] cool function).
 - 8) Supply-air fan status.
 - 9) Outdoor-air temperature.
- b. Controls shall be capable of performing the following functions:
 - 1) Capacity control based on discharge-air temperature and compensated by rate of change of return-air temperature (VAV) or room temperature (CV). Capacity control shall be accomplished through the use of electric unloaders and compressor staging.

- 2) Perform a quick test to check the status of all input and output signals to the control system using diagnostic display module.
- 3) Control of integrated economizer operation.
- 4) Single-step demand limit control (when used in conjunction with the Carrier Comfort Network).
- 5) Condenser-fan cycling to maintain correct head pressure down to -20 F.
- 6) Adaptive optimal start determines the time unit will commence cooling [or heating or heating for morning warm-up] during the unoccupied mode to ensure occupied space reaches the set point in time for occupied mode.
- 7) Adaptive optimal stop turns off the compressors a preset amount of time before the end of the occupied mode to conserve energy.

2. Safeties:

Unit components shall be equipped with the following protections:

a. Compressors:

- 1) Overtemperature (shuts down individual compressor).
- 2) Overcurrent using calibrated circuit breakers (shuts down individual compressor).
- 3) Crankcase heaters.
- 4) High-pressure switch (shuts down individual compressor, automatic reset type).
- 5) Low-pressure switch (shuts down individual compressor, automatic reset type).
- 6) Check filter switch.

b. [Heating Section:]

- 1) Automatic reset high-temperature limit switches.
- 2) Heat limiters (fusible links).
- 3) Overcurrent protection manual reset circuit breakers.
- 4) Branch circuit protection.

3. Diagnostics:

- a. Diagnostic display module shall be capable of indicating a safety lockout condition (alarm) through an expandable scrolling display.
- b. Diagnostic display module shall also be capable of indicating an alert condition which does not lock out the unit, but informs the system monitor of a condition which could be detrimental to either the unit or the comfort of the occupants if allowed to continue.
- c. Diagnostic module must also be capable of displaying outputs of microprocessor-controlled "quick test" to verify operation of every thermostat, actuator motor, fan, and compressor before unit is started.

K. Operating Characteristics.

1. Unit shall be capable of starting and running at 115 F ambient outdoor temperature per maximum load criteria of ARI Standard 360.
2. Unit shall be capable of mechanical cooling operation down to -20 F ambient outdoor temperature.
3. Provides multi-stage cooling capability.
4. [Provides a minimum of 2 stages of heating capability.]

L. Motors

1. Compressor motors shall be cooled by suction gas passing over motor windings.
2. Condenser-fan motors shall be 3-phase, totally enclosed type with permanently lubricated ball bearings and internal overtemperature protection.
3. Evaporator blower motor shall be of the 3-phase ball bearing type.

M. Electrical Requirements:

All unit power wiring shall enter unit cabinet at a single location.

N. Special Features:

Certain standard features are not applicable when the features designated * are specified. For assistance in amending the specifications, your local Carrier Sales Office should be contacted.

* 1. Integrated Economizer:

Enthalpy controlled integrated type consisting of dampers, motors, and linkages in conjunction with control system to provide primary cooling using outdoor air, enthalpy permitting, supplemented with mechanical cooling when necessary.

- a. Dampers shall be a low-leakage type, not to exceed 1% leakage and 1 in. wg pressure differential when fully closed.
- b. Motors shall have a spring-return feature which shuts dampers upon a power interruption or unit shutdown.
- c. Equipped with a solid-state enthalpy control that is capable of sensing outdoor-air heat content (temperature and humidity) and controlling economizer cut-in point at most economical level.

* 2. Optional Condenser Coil Materials:

Unit shall be factory equipped with a condenser coil made from copper tubes and copper fins.

* 3. Pleated Filters:

Unit shall be factory equipped with medium efficiency pleated filters having the following characteristics:

- a. Efficiency of no less than 30% based on testing per ASHRAE Standard 52.
- b. Minimum average arrestance of 90%.

* 4. Bag Filters with Prefilters:

Unit shall be factory equipped with bag filters and 2-in. prefilters, and shall have an average efficiency of 90% based on testing per ASHRAE Standard 52.

* 5. Roof Curb:

Size 034,044 Units:

Formed 14-gage galvanized steel with wood nailer. Supports full perimeter of unit.

Size 054-074 Units:

Formed 14-gage galvanized steel with wood nailer strip as perimeter curb supporting the air handling portion of unit, and rail for supporting the condenser portion of the unit.

* 6. Roof Curb Condenser Section (Accessory for 054-074 Units only):

Formed 14-gage galvanized steel with wood nailer strip for supporting condenser section of the unit to complete a full perimeter curb under entire unit.

* 7. 100% Modulating Power Exhaust:

Package shall include 2 double-width, double-inlet centrifugal belt drive, forward-curved power exhaust fans with modulating device at the discharge of the lead fan to maintain a field adjustable interior space pressure set point.

- a. Fan bearings shall be of the pillow block type with an average design life of 200,000 hours.
- b. Fans shall be statically and dynamically balanced.

* 8. Modulating Return-Air Fan (054-074 Units):

Modulating return-air fans shall include 2 double-width, double-inlet centrifugal belt drive, forward-curved fans with unit mounted barometric relief dampers. Fan-mounted modulating devices maintain a field-adjustable interior space pressure set point.

- a. Fan bearings shall be of the pillow block type with an average design bearing life of 200,000 hours.
- b. Exhaust hood and eliminators shall prevent objects from entering unit through the relief dampers.
- c. Fans shall be statically and dynamically balanced.

9. Hot Gas Bypass (VAV Units):

Unit shall be factory equipped with hot gas bypass valve, shutoff valve, and tubing to maintain capacity control at minimal cooling loads.

* 10. Differential Enthalpy Sensor:

- a. For use with economizer only.
- b. Capable of comparing heat content (temperature and humidity) of outdoor and return air and controlling economizer cut-in point at the most economical level.

Guide specifications (cont)

11. Barometric Relief Package:

- a. Package shall relieve excess internal pressure and consist of damper assembly, hoods, damper screen, seal strip and required hardware.
- b. Damper assembly shall close due to gravity upon unit shutoff
- c. Unit mounted on vertical applications, and duct mounted on horizontal applications.

12. Condenser Coil Hail Guard:

Expanded metal grille complete with support retainers and fasteners shall be provided for protection of condensing coil.

13. Optional high-efficiency evaporator-fan motors shall be factory supplied to reduce electric consumption.

14. Keypad/Display Module (HSIO):

Module shall provide hardware necessary for human interface with the PIC controls. Module shall contain a keypad and display for interactive communication.

15. Optional Processor Module no. 2 (PSIO-8052).

Module shall support sensors used for humidity control, outdoor-air cfm, indoor-air quality, smoke control, and superheat monitoring. The optional processor module also supplies the outputs for humidity and hydronic heating coil control, as well as the discrete output for timed clock control.

16. Suction Gas Thermistors and Refrigerant Pressure Transducers:

These accessories must be ordered together, and depending on placement, will: determine suction superheat or control the condenser fans.

NOTE: For suction superheat monitoring, the PSIO2 must also be ordered

17. Space Temperature Sensor (T56):

This space temperature sensor (for CV applications) shall determine the temperature required to satisfy the conditions. In addition, this accessory device shall provide a space temperature offset of + 5° F.

18. Humidity Control Sensors:

Package shall contain either duct- or wall-mounted sensors to measure the relative humidity of the air within the occupied space.

19. Control Option Module:

Factory-installed package shall include all hardware for additional control of base unit operation and product integrated controls features. The functions supported are:

- a. Humidity monitoring
- b. Building pressurization, evacuation, and smoke purge.
- c. Superheat monitoring.
- d. IAQ monitoring.
- e. Hydronic heating coil control.
- f. Timed discrete output.
- g. Economizer controls

- * 20 Optional Inlet Guide Vanes shall be factory-installed, and shall contain all hardware necessary for fan modulation of the evaporator fan.

* 21. [Electric Resistance Heaters:]

- a. Open wire nichrome elements with all necessary safety and operating controls.
- b. ETL listed and indicated on base unit informative plate.
- c. Multiple heat capacities available.

* 22 Outdoor Airflow Sensor:

Kit includes one transducer and all hardware required to measure the quantity of outdoor air brought in through the economizer dampers. Optional economizer is required with this accessory.

