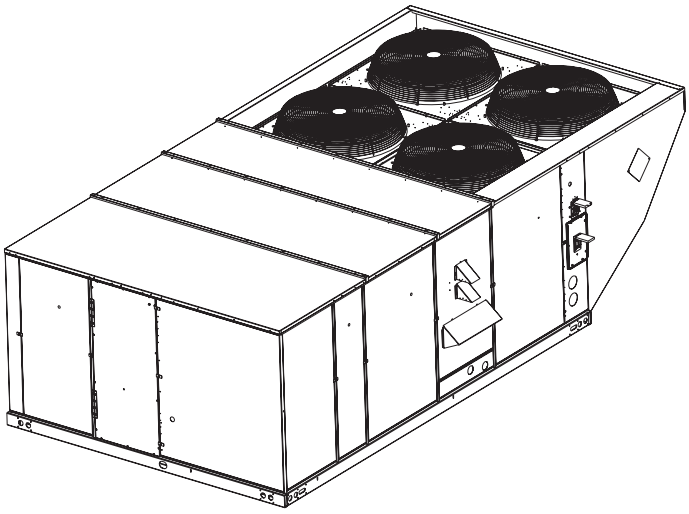
YORK®
Heating and Air Conditioning

TECHNICAL GUIDE

R-410A
ZJ/ZR/ZF SERIES
15 - 25 TON
60 Hertz



ZJ/ZR Shown

Description

YORK® ZJ Series Sunline Magnum™ /ZR Series MagnaDRY™/ZF Series Sunline™ units are convertible single package high efficiency rooftops. All models have independent refrigeration circuits for efficient part load operation.

Although the units are primarily designed for curb mounting on a roof, they can also be slab-mounted at ground level or set on steel beams above a finished roof.

All ZJ/ZR/ZF units are self-contained and assembled on rigid full perimeter base rails allowing for overhead rigging. Every unit is completely charged, wired, piped, and tested at the factory to provide a quick and easy field installation.

All models (including those with an economizer) are convertible between bottom and horizontal duct connections.

ZJ/ZR/ZF units are available in the following configurations: cooling only, cooling with electric heat, and cooling with gas heat. Electric heaters are available as factory-installed options only.

Tested in accordance with:

DESIGN CERTIFIED

C SA US

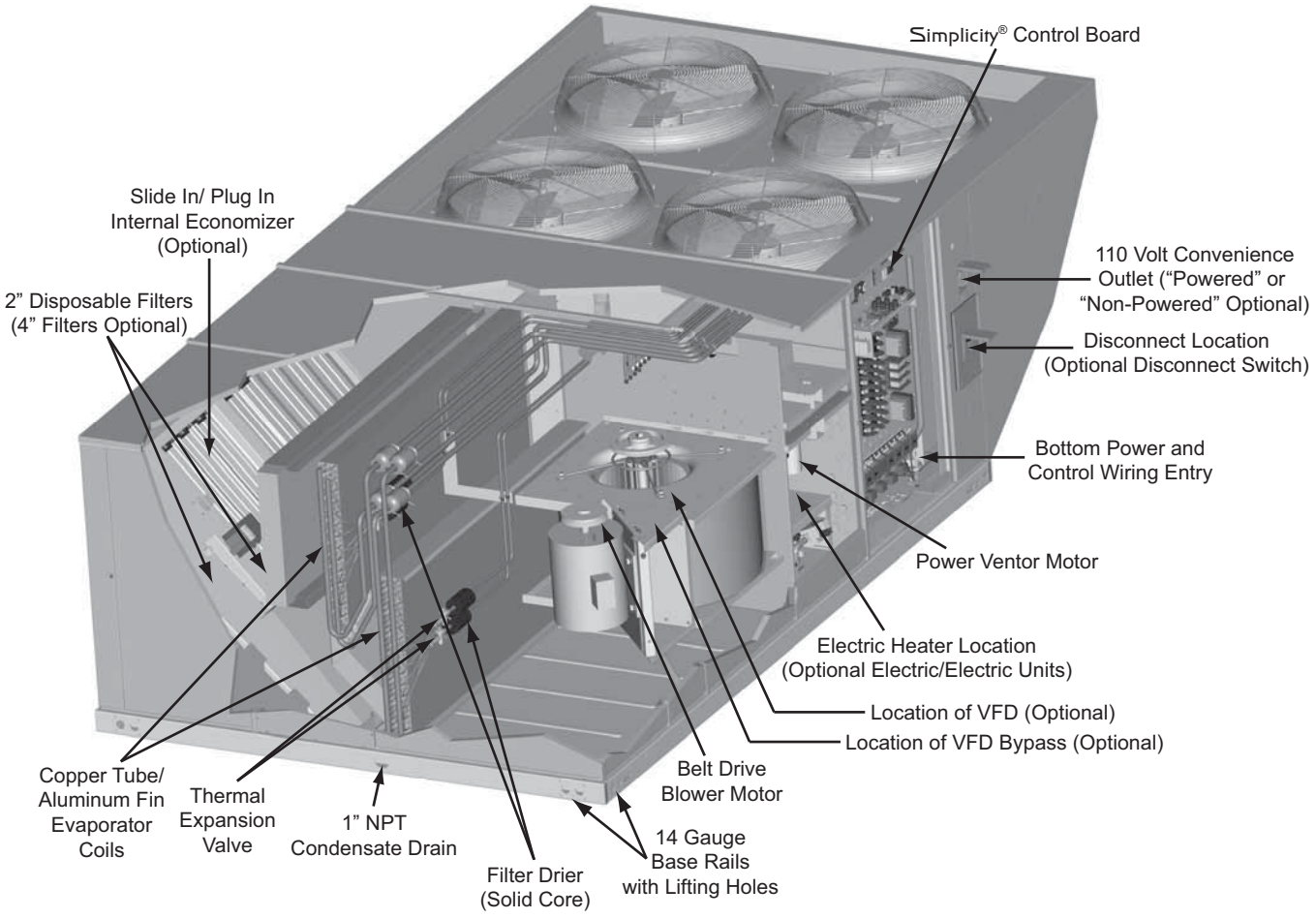
ARI PERFORMANCE CERTIFIED
ARI Standard 340/360
Commercial and Industrial Unitary
Air Conditioning Equipment

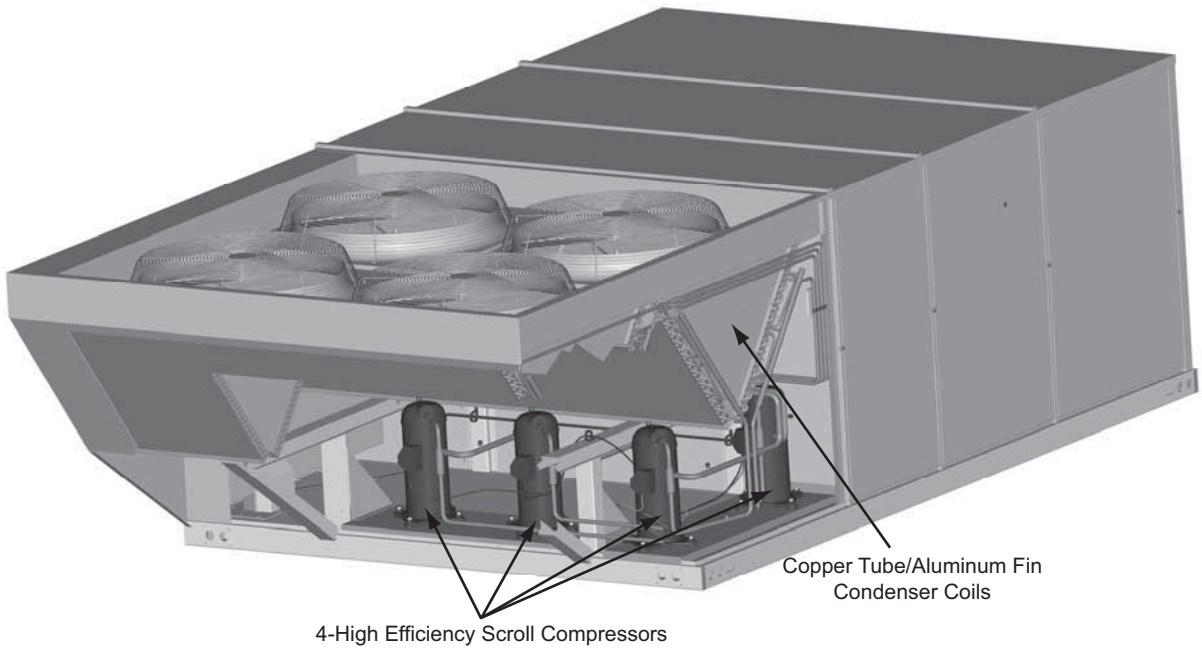
CSA CERTIFIED

Table of Contents

Component Location

(ZJ shown)





Nomenclature

15-25 Ton Sunline Magnum™ Model Number Nomenclature

Z	J	180	N24	A	2	A	AA	1	0	1	2	4	A

Product Category
Z = A/C, Single Pkg., R-410A

Product Identifier
J = 11.0+ EER A/C
R = 90.1 w/Reheat
F = 10 thru 11 EER A/C

Nominal Cooling Capacity
180 = 15 Ton
210 = 17.5 Ton
240 = 20 Ton
300 = 25 Ton

Heat Type and Nominal Heat Capacity
C00 = Cooling Only. No field installed electric heat

Gas Heat Options
N24 = 240 MBH Output Aluminized Steel
N32 = 320 MBH Output Aluminized Steel
S24 = 240 MBH Output Stainless Steel
S32 = 320 MBH Output Stainless Steel

Electric Heat Options
E18 = 18 KW
E36 = 36 KW
E54 = 54 KW
E72 = 72 KW

Airflow
A = Std. Drive
B = Std. Drive/Single Input Econo.
C = Std. Drive/Single Input Econo./Power Exhaust (Downflow Only)
D = Std. Drive/Motorized Damper
E = Std. Drive/Motorized Damper Barometric Relief
J = Std. Drive/Single input Econo./Barometric Relief
N = Hi Static Drive
P = Hi Static Drive/Single Input Econo.
Q = Hi Static Drive/Single Input Econo./Power Exhaust (Downflow Only)
R = Hi Static Drive/Motorized Damper
K = Hi Static Drive Motorized Damper/Barometric Relief
S = Hi Static Drive Single Input Econo./Barometric Relief
2 = Low Static Drive
3 = Low Static Drive/Single Input Econo.
4 = Low Static Drive/Single Input Econo./Power Exhaust (Downflow Only)
5 = Low Static Drive/Motorized Damper
6 = Low Static Drive/Motorized Damper/Barometric Relief
7 = Low Static Drive/Single Input Econo./Barometric Relief

Voltage
2 = 208/230-3-60
4 = 460-3-60
5 = 575-3-60

Installation Options

A = No Options Installed	N = Options 2 & 3
B = Option 1	P = Options 2 & 4
C = Option 2	Q = Options 2, 3, & 4
D = Options 1 & 2	R = Options 3 & 4
E = Option 3	S = Option 5
F = Option 4	T = Options 1 & 5
G = Options 1 & 3	U = Options 1, 3, & 5
H = Options 1 & 4	V = Options 1, 4, & 5
J = Options 1, 2 & 3	W = Options 1, 3, 4, & 5
K = Options 1, 2, & 4	X = Options 3 & 5
L = Options 1,3 & 4	Y = Options 4 & 5
M = Options 1, 2, 3, & 4	Z = Options 3, 4 & 5

Options

1 = Disconnect	4 = Smoke Detector R.A.
2 = Non-Pwr'd Conv. Outlet	5 = Pwr'd Conv. Outlet
3 = Smoke Detector S.A.	

Additional Options

Standard Cabinet	Hinged Filter Door & Tool Free Access Cabinet
AA = None	BA = Hinged Filter Door & Tool Free Access Panels
AB = Phase Monitor	BB = Phase Monitor, Hinged Filter Door & Tool Free Access Panels
AC = Coil Guard	BC = Coil Guard, Hinged Filter Door & Tool Free Access Panels
AD = Dirty Filter Switch	BD = Dirty Filter Switch, Hinged Filter Door & Tool Free Access Panels
AE = Phase Monitor & Coil Guard	BE = Phase Monitor & Coil Guard, Hinged Filter Door & Tool Free Access Panels
AF = Phase Monitor & Dirty Filter Switch	BF = Phase Monitor & Dirty Filter Switch, Hinged Filter Door & Tool Free Access Panels
AG = Coil Guard & Dirty Filter Switch	BG = Coil Guard & Dirty Filter Switch, Hinged Filter Door & Tool Free Access Panels
AH = Phase Monitor, Coil Guard & Dirty Filter Switch	BH = Phase Monitor, Coil Guard & Dirty Filter Switch, Hinged Filter Door & Tool Free Access Panels
RC = Coil Guard & American Flag	
TA = Technicoat Condenser Coil	
TJ = Technicoat Evaporator Coil	
TS = Technicoat Evaporator & Condenser Coils	

ZZ = If desired option combination is not listed above, ZZ will be assigned and configuration options will be located in digits 15-18.

Product Generation
1 = First Generation

Configuration Options (not required for all units)
These four digits will not be assigned until a quote is requested, or an order placed.

- SS Drain Pan
- CPC Controller, DFS, APS
- Johnson Controller, DFS, APS
- Honeywell Controller, DFS, APS
- Novar Controller, DFS, APS
- Simplicity IntelliComfort Controller
- Simplicity IntelliComfort Controller w/ModLinc
- Hot Gas Bypass (Standard on VAV, Optional on CV)
- Variable Air Volume, VFD (not available with factory installed BAS options)
- Variable Air Volume, VFD with ModLINC (not available with factory installed BAS options)
- Variable Air Volume, VFD and Manual Bypass (not available with factory installed BAS options)
- Variable Air Volume, VFD and Manual Bypass with ModLINC (not available with factory installed BAS options)
- Variable Air Volume, VFD (BAS ready)
- Variable Air Volume, VFD and Manual Bypass (BAS ready)
- Variable Air Volume, VFD Ready (for customer provided, field installed drive)
- Variable Air Volume, VFD Ready with ModLINC (for customer-provided, field-installed drive)
- 2" Pleated filters
- 4" Pleated filters
- BAS Ready Economizer (2-10 V.D.C. Actuator without a controller)
- Double Wall Construction
- Any Combination of Additional Options that Don't Have an Option Code Pre-assigned

Product Style
A = Style A

Features and Benefits

Standard Features

- **High Efficiency** - High efficiency units reach as high as 12.4 EER. Gas/electric units have electronic spark ignition and power vented combustion with steady state efficiencies of 80%. These efficiencies exceed all legislated minimum levels and provide low operating costs.
- **Balanced Heating** -
  - **Gas Heat** - All gas heat units are built with two heating sections for two equal stages of capacity control. Each section includes a durable heat exchanger with aluminized steel or optional stainless steel tubes, a redundant gas valve, spark ignition, power venting, an ignition module for 100% shut-off and all of the safety controls required to meet the latest ANSI standards.

    The gas supply piping can be routed into the heating compartment through a hole in the base pan of the unit or through a knockout in the piping panel on the front of the unit.
  - **Electric Heat** - All electric heat models (factory installed only) are wired for a single power source and include a bank of nickel chromium elements mounted at the discharge of the supply air blower to provide a high velocity and uniform distribution of air across the heating elements. Every element is fully protected against excessive current and temperature by fuses and two thermal limit switches.

    The power supply wiring can be routed into the control box through a threaded pipe connection in the base pan of the unit or through a knockout in the wiring panel on the front of the unit.
- **Convertible Airflow Design** - All models (including those with an economizer) are suitable for either bottom or horizontal duct connections. **Models with factory installed power exhaust are suitable for bottom duct connections** only. For bottom duct, you remove the sheet metal panels from the supply and return air openings through the base of the unit. For horizontal duct, you replace the supply and return air panels on the rear of the unit with a side duct flange accessory.
- **Factory Mounted Outdoor Air Dampers** - All models are available with these "factory mounted" outdoor air damper options:
  - Single enthalpy economizer with or without power exhaust
  - BAS-ready economizer with or without power exhaust
  - Motorized outdoor air damper
  - Barometric Relief Damper

  A fixed outdoor air intake assembly will be shipped in the return air compartment of all units ordered without an economizer or motorized outdoor air damper option. The assembly includes a rain hood with a damper that can be set for 10, 15 or 25% outdoor air. With bottom duct connections, the intake damper assembly should be mounted over the opening in the return air panel. With horizontal ductwork, it should be mounted on the return air duct.
- **System Protection** - Suction line freezestats are supplied on all units to protect against loss of charge and coil frosting when the economizer operates at low outdoor air temperatures while the compressors are running. Every unit has solid-core liquid line filter-driers and high and low-pressure switches. Internal compressor protection is standard on all compressors. Crankcase heaters are standard on reciprocating compressors. Scroll compressors do not require crankcase heaters. Phase Monitors are standard on units with scroll compressors. This accessory monitors the incoming power to the unit and protects the unit from phase loss and reversed phase rotation.
- **Advanced Controls** - Simplicity™ ZJ/ZR/ZF control boards have standardized a number of features previously available only as options or by utilizing additional controls.
  - **Low Ambient** - An integrated low-ambient control allows all units to operate in the cooling mode down to 0°F outdoor ambient without additional assistance. Optionally, the control board can be programmed to lockout the compressors when the outdoor air temperature is low or when free cooling is available.
  - **Anti-Short Cycle Protection** - To aid compressor life, an anti-short cycle delay is incorporated into the standard controls. Compressor reliability is further ensured by programmable minimum run times. For testing, the anti-short cycle delay can be temporarily overridden with the push of a button.
  - **Lead-Lag** - An integrated Lead-Lag option allows equal run time hours on all compressors, thereby extending the life of all compressors. This option is selectable on the unit control board.
  - **Fan Delays** - Fan on and fan off delays are fully programmable. Furthermore, the heating and cooling fan delay times are independent of one another. All units are programmed with default values based upon their configuration of cooling and heat.
  - **Safety Monitoring** - The control board monitors the high and low-pressure switches, the freezestats, the gas valve, if applicable, and the temperature limit switch on gas and electric heat units. The unit control board will alarm on ignition failures, compressor lockouts and repeated limit switch trips.
  - **Nuisance Trip Protection and Strikes** - To prevent nuisance trouble calls, the control board uses a “three times, you’re out” philosophy. The high and low-pressure switches and the freezestats must trip three times within two hours before the unit control board will lock out the associated compressor.
  - **On Board Diagnostics** - Each alarm will energize a trouble light on the thermostat, if so equipped, and flash an alarm code on the control board LED. Each high and low-pressure switch alarm as well as each freezestat alarm has its own flash code. The control board saves the five most recent alarms in memory, and these alarms can be reviewed at any time. Alarms and programmed values are retained through the loss of power.

- **Reliable** - From the beginning - All units undergo computer automated testing before they leave the factory. Units are tested for refrigerant charge and pressure, unit amperage, and 100% functionality. For the long term - All units are painted with a long lasting, powder paint that stands up over the life of the unit. The paint used has been proven by a 1000 hour salt spray test.
- **Full Perimeter Base Rails** - The permanently attached base rails provide a solid foundation for the entire unit and protect the unit during shipment. The rails offer rigging holes so that an overhead crane can be used to place the units on a roof.
- **Easy Installation** - Gas and electric utility knockouts are supplied in the unit underside as well as the side of the unit. Utility connections can be made quickly and with a minimum amount of field labor. All units are shipped with 2" throw-away filters installed.
- **Wide Range of Indoor Airflows** - All supply air blowers are equipped with a belt drive that can be adjusted to meet the exact requirements of the job. A high static drive option is available for applications with a higher CFM and/ or static pressure requirement.
- **Warranty** - All models include a 1-year limited warranty on the complete unit. Compressors and electric heater elements each carry a 5-year warranty. Aluminized steel and stainless steel tubular heat exchangers carry a 10-year warranty.

Factory Installed Options

YORK® offers several equipment options factory installed, for the ZJ/ZR/ZF Series.

- **Single Input Electronic Enthalpy Economizers** - Includes a slide-in / plug-in damper assembly with fully modulating spring-return motor actuator capable of introducing up to 100% outdoor air with nominal 1% leakage type dampers.

  The enthalpy system contains one sensor that monitors the outdoor air and determines when the air is cool enough and dry enough to provide free cooling.

  The rainhood is painted to match the basic unit and must be field-assembled before installing.
- **BAS-Ready Economizer** - Includes a slide-in / plug-in damper assembly with fully modulating spring-return motor actuator with zero to 95-degree rotation capable of introducing up to 100% outdoor air with nominal 1% leakage type dampers.

  Actuator requires 2-10 VDC input from an external source, such as a field-installed or factory-installed BAS controller. BAS-ready actuators have an adjustable auxiliary end-switch for optional power exhaust control.

  For units with optional VAV or Simplicity® Intelli-Comfort™ control, a factory-installed, dry bulb sensor determines if outdoor air temperature is low enough to provide free-cooling operation. (Field-installed humidity sensors for either outdoor air or outdoor & return air streams are available for single enthalpy and differential enthalpy configurations, respectively).

  The rainhood is painted to match the basic unit and must be field-assembled before installing.
- **Power Exhaust** - Our economizer options are available with power exhaust. Whenever the outdoor air intake dampers are opened for free cooling, the exhaust fan will be energized to prevent the conditioned space from being over-pressurized during economizer operation.

  The exhaust fan, motor and controls are installed and wired at the factory. The rain hood must be assembled and installed in the field.

  The power exhaust option can only be used on bottom duct configurations.
- **Motorized Outdoor Air Intake Damper** - Includes a slide-in / plug-in damper assembly with a 2- position, spring return motor actuator which opens to a pre-set position whenever the supply air blower is operating and will drive fully closed when the blower unit shuts down.

  The rain hood is painted to match the basic unit and must be field assembled before installing.
- **Barometric Relief Damper** - This damper option can be used to relieve internal building air pressure on units with an economizer without power exhaust. This accessory includes a rain hood, a bird screen and a fully assembled damper. With bottom duct connections, the damper should be mounted over the opening in the return air panel. With horizontal ductwork, the accessory should be mounted on the return air duct.
- **Phenolic Coated Evaporator And Condenser Coils** - Special coating process that utilizes Technicoat 10-1" processes. Coating is applied by total immersion of the complete coil for maximum protection.
- **Electric Heaters** - wired for single point power supply.

  These nickel chromium heater elements are provided with limit and automatic reset capability to prevent operation at excessive temperatures.
- **Variable Air Volume (VAV)** - A factory-installed variable frequency drive (VFD), mounted in the Blower Access compartment, is used to control the speed of the indoor blower motor in order to maintain a constant static pressure in the supply duct. A pressure transducer and VAV control board are mounted inside the control box. The drive comes completely wired and pre-programmed from the factory.

  An optional, factory-installed manual bypass switch available with factory-installed VFD can be found in the Blower Motor Access compartment. The switch can be used to either route power to the VFD for modulating control of the blower motor, to bypass the drive and operate the motor at full speed, or to power the drive (and not the motor) for diagnostic purposes.

  Due to space limitations, VAV is not available with any of the factory-installed BAS options described below, but is available with 'BAS-ready' models. Terminal blocks are provided in the control box for field wiring of the customer-installed BAS.

  A 'VFD-ready' option provides the provisions for a customer-installed drive. The unit comes with a mounting bracket installed in the Blower Access compartment which

may accommodate other vendor's drives depending on their size. In order to utilize the unit's mounting bracket, the maximum recommended drive dimensions are as follows:

For 5-hp motor applications..... 13" H x 6" W x 7" D

For 7.5 thru 15-hp motor applications ..... 13" H x 8" W x 8" D

If the drive will not fit in the allotted space, then it will have to be mounted elsewhere; either within the building on a perpendicular wall which is not subjected to excessive temperature, vibration, humidity, dust, corrosive gas, explosive gas, etc., or within an appropriate enclosure rated for outside installation to safeguard against moisture, dust and excessive heat.

A terminal block located in the control box is provided for field connection of the VFD controls.

- **Hot Gas Bypass** - To allow for low cooling load operation, a direct-acting pressure-modulating bypass control valve installed on the system #1 discharge line is used to divert high temperature, high pressure refrigerant around the TXV in order to maintain a desired minimum evaporator pressure. HGBP is standard on all units with VAV and optional with CV units.
- **Filter Options** - Standard units are shipped with 2" throw-away filters installed. 2" pleated and 4" pleated filters are offered as a factory installed option.
- **Convenience Outlet** - This 110 volt outlet can be "powered" by the unit with a stepdown transformer or you may order the unit with a "non-powered" convenience outlet that can be wired in the field.
- **Disconnect Switch** - For gas heat units and cooling units with electric heat, a HACR breaker sized to the unit is provided. For cooling only units, a switch sized to the largest electric heat available for the particular unit is provided. Factory installed option only.
- **Double Wall Construction** - Optional double wall construction is available to provide smooth inner surfaces for easy and effective cleaning to reduce risk of dirt and bacterial accumulation. Fiberglass insulation is sandwiched between heavy gauge steel sheets to form a durable, rigid casing to withstand higher working pressures and impact forces. The heavy-duty construction provides excellent acoustic and thermal insulation and eliminates erosion of insulation material and contamination of the air stream.
- **Smoke Detectors** - (supply air & return air) The smoke detectors stop operation of the unit by interrupting power to the control board if smoke is detected within the air compartment.

⚠WARNING

Factory installed smoke detectors in the return air, may be subjected to freezing temperatures during "off" times due to out side air infiltration. these smoke detectors have an operational limit of 32°F to 131°F. smoke detectors installed in areas that could be out side those limitations will have to be moved to prevent having false alarms.

- **Coil Guard** - Customers can purchase a coil guard kit to protect the condenser coil from damage. This is not a hail guard kit.
- **Stainless Steel Heat Exchanger** - For applications in corrosive environments, this option provides a full stainless steel heat exchanger assembly.
- **Stainless Steel Drain Pan** - An optional rustproof stainless steel drain pan is available to provide years of trouble-free operation in corrosive environments.
- **Phase Monitors** - Designed to prevent unit damage. The phase monitor will shut the unit down in an out-of phase condition.
- **High Static Drive** - May include a belt, blower pulley, motor pulley or a motor change to enhance blower performance.
- **Low Static Drive** - May include a belt, blower pulley, motor pulley or a motor change when standard airflow is not required. (**ZJ/ZR/ZF300 only**).
- **Dirty Filter Switch** - This kit includes a differential pressure switch that energizes the fault light on the unit thermostat, indicating that there is an abnormally high pressure drop across the filters. Factory installed option or field installed accessory.
- **Hinged Filter Door/"Tool Free" Blower And Access Panels (Not Hinged)** - This option allows for easy access and maintenance.

NOTE: Knobs are shipped separately within the unit to prevent shipping damage. These must be field installed for tool free operation.

- **Hinged/"Tool Free" Blower, Blower Motor, Filter And Electric Access Panels** - This option allows for complete hinged and tool free access to the unit's blower, blower motor, filters and electrical panel sections.

Control Options

- **BAS - Building Automation System Controls (available on two-system cooling product only).**

  Simplicity™ INTELLI-Comfort™ Control - The York® Simplicity™ INTELLI-CO_2 sensor to perform Differential Demand Ventilation. It uses a Patented Comfort Ventilation algorithm to provide comfortable ventilation air temperature. The patented economizer-loading algorithm will protect the equipment when harsh operating conditions exist. Humidity in the occupied space or return duct can be monitored and controlled via humidity sensors and the on-board connection for hot gas re-heat system. It uses the INTELLI-Start™ algorithm to maximize energy savings by recovering the building from the Unoccupied Setpoints to the Occupied Setpoints just in time for the Occupied Time Period to begin. The Simplicity™ INTELLI-Comfort™ balances space temperature, ventilation air temperature, CO_2 and humidity for ultimate comfort.

  Simplicity™ INTELLI-Comfort™ with ModLINC Control - The York® Simplicity™ INTELLI-Comfort™ with ModLINC control is factory installed. It includes all the features of the INTELLI-Comfort™ control with an

additional control to translate communications from MODBUS to the BACnet MSTP protocol.

Novar® BAS Control - The Novar® ETC-3 building automation system controller is factory installed. Incudes supply air sensor, return air sensor, dirty filter indicator switch, and air proving switch.

Johnson Controls BAS Control - The Johnson Control YK-UNT-1126 building automation system controller is factory installed. Includes supply air sensor, return air sensor, dirty filter indicator switch, and air proving switch.

CPC BAS Control - The Computer Process Controls Model 810-3060 ARTC Advanced Rooftop building automation system controller is factory installed. Includes supply air sensor, return air sensor, dirty filter indicator switch and air proving switch.

Honeywell BAS Control - The Honeywell W7750C building automation system controller is factory installed. Includes air supply sensor, return air sensor, dirty filter indicator switch, and air proving switch.

Field Installed Accessories

YORK® offers several equipment accessories for field installation, for the ZJ/ZR/ZF Series.

- **Single Input Electronic Enthalpy Economizers -** Includes a slide-in / plug-in damper assembly with fully modulating spring-return motor actuator capable of introducing up to 100% outdoor air with nominal 1% leakage type dampers.
  The enthalpy system contains one sensor that monitors the outdoor air and determines when the air is cool enough and dry enough to provide free cooling.
  The rainhood is painted to match the basic unit and must be field-assembled before installing.
- **Motorized Outdoor Air Intake Damper -** Includes a slide-in / plug-in damper assembly with a 2-position, spring return motor actuator which opens to some pre-set position whenever the supply air blower is operating and will drive fully closed when the blower unit shuts down.
  The rain hood is painted to match the basic unit and must be field assembled before installing.
- **Roof Curbs -** Fourteen-inch high roof curbs provide a water-tight seal between the unit and the finished roof.
  These full perimeter curbs meet the requirements of the National Roofing Contractors Association (NRCA) and are shipped knocked-down for field assembly.
  They're designed to fit inside the base rails of the unit and include both a wood nailing strip and duct hanger supports.
- **High Altitude Natural Gas -** Burner orifices and pilot orifices are provided for proper furnace operation at altitudes up to 6,000 feet.
- **Propane -** Burner orifices, pilot orifices and gas valve parts are provided to convert a natural gas furnace to propane.
- **High Altitude Propane -** Burner orifices and pilot orifices are provided for proper furnace operation at altitudes up to 6,000 feet. This accessory supplements the basic propane conversion kit.
- **Side Duct Flanges -** One-inch flanges replace the supply and return air panels on the rear of the unit to accommodate horizontal duct connections. These flanges can also be used individually for bottom supply / horizontal return or horizontal supply/bottom return. They cannot be used on units with power exhaust.
- **Barometric Relief Damper -** This damper accessory can be used to relieve internal building air pressure on units with an economizer without power exhaust. This accessory includes a rain hood, a bird screen and a fully assembled damper. With bottom duct connections, the damper should be mounted over the opening in the return air panel. With horizontal ductwork, the accessory should be mounted on the return air duct.
- **High Static Drive -** May include a belt, blower pulley, motor pulley or a motor change to enhance blower performance.
- **Enthalpy Accessory Control Kit -** This kit contains the required components to convert a single enthalpy economizer to dual enthalpy.
- **Burglar Bars -** Mount in the supply and return openings to prevent entry into the duct work.
- **Flue Exhaust Extension Kit -** In locations with wind or weather conditions which may interfere with proper exhausting of furnace combustion products, this kit can be installed to prevent the flue exhaust from entering nearby fresh air intakes.
- **Wood Skid -** Allows unit to be handled with 90" forks.
- **CO_2 Sensor -** Senses CO_2 levels and automatically overrides the economizer when levels rise above the present limits.
- **Coil Guard -** Customers can purchase a coil guard kit to protect the condenser coil from damage. This is not a hail guard kit.
- **Phase Monitors -** Designed to prevent unit damage. The phase monitor will shut the unit down in an out-of phase condition.

Guide Specifications

General

Units shall be manufactured by York International Unitary Products Group in an ISO 9001 certified facility.

York's ZJ/ZR/ZF units are convertible single package units. All models have four independent refrigerant circuits for efficient part load operation and maximum comfort control. Although the units are primarily designed for curb mounting on a roof, they can also be slab-mounted at ground level or set on steel beams above a finished roof. Cooling only, cooling with gas heat and cooling with electric heat models are available with a wide variety of factory-mounted options and field-installed accessories to make them suitable for almost every application. All units are self-contained and assembled on full perimeter base rails with holes in the four corners for overhead rigging. Every unit is completely piped, wired, charged and tested at the factory to simplify the field installation and to provide years of dependable operation. All models (including those with an

economizer) are suitable for either bottom or horizontal duct connections. Models with power exhaust are suitable for bottom duct connections only. For bottom duct, remove the sheet metal panels from the supply and return air openings through the base of the unit. For horizontal duct, replace the supply and return air panels on the rear of the unit with a side duct flange accessory. All supply air blowers are equipped with a belt drive that can be adjusted to meet the exact requirements of the job.

Each unit shall have 4 condenser fan motors. A high static drive option is available for applications with a higher CFM and/or static pressure requirement. All compressors include crankcase heat and internal pressure relief. Every refrigerant circuit includes an expansion valve, a liquid line filter-drier, a discharge line high pressure switch and a suction line with a freezestat and low pressure/loss of charge switch. The unit control circuit includes a 75 VA transformer, a 24-volt circuit breaker and a relay board with two compressor lockout circuits, a terminal strip for thermostat wiring, plus an additional set of pin connectors to simplify the interface of additional field controls. All units have long lasting powder paint cabinets with 1000 hour salt spray test approval under ASTM-B117 procedures. All 208/230, 460 and 575-volt models are CSA approved. All models include a 1-year limited warranty on the complete unit. Compressors and electric heater elements carry an additional 4-year warranty. Aluminized steel tubular heat exchangers carry an additional 9-year warranty.

Description

ZJ units shall be factory-assembled, single packaged, ZJ***N Electric Cooling/Gas Heat, ZJ***C/E Electric Cooling/Optional Electric Heat, designed for outdoor mounted installation. The 15 ton unit shall have a minimum EER rating of 12.4. The 17.5 ton unit shall have a minimum EER rating of 12.1. The 20 ton unit shall have a minimum EER rating of 11.6. The 25 ton unit shall have a minimum EER rating of 10.4.

ZR units shall be factory-assembled, single packaged, ZR***N Electric Cooling/Gas Heat, ZR***C/E Electric Cooling/Optional Electric Heat, designed for outdoor mounted installation. The 15 ton unit shall have a minimum EER rating of 11.6. The 20 ton unit shall have a minimum EER rating of 12.1. The 25 ton unit shall have a minimum EER rating of 10.5.

ZF units shall be factory-assembled, single packaged, ZF***N Electric Cooling/Gas Heat, ZF***C/E Electric Cooling/Optional Electric Heat, designed for outdoor mounted installation. The 15 and 17.5 ton units shall have a minimum EER rating of 11.0. The 20 and 25 ton units shall have a minimum EER rating of 10.

They shall have built-in field convertible duct connections for down discharge supply/return or horizontal discharge supply/return, and be available with factory installed options or field installed accessories. The units shall be factory wired, piped, charged with R-410A refrigerant and factory tested prior to shipment. All unit wiring shall be both numbered and color coded. All units shall be manufactured in a facility certified to ISO 9001 standards and the cooling performance shall be rated in accordance with DOE and ARI test procedures. Units shall be CSA listed, classified to ANSIZ21.47 standards, UL 1995/CAN/CSA No. 236-M90 conditions.

Unit Cabinet

Unit cabinet shall be constructed of G90 galvanized steel, with exterior surfaces coated with a non-chalking, powdered paint finish, certified at 1000 hours salt spray test per ASTM-B117 standards. Indoor blower section shall be insulated with a minimum 1/2" thick insulation, coated on the airside. Aluminum foil faced insulation shall be used in the furnace compartment and be fastened with ridged fasteners to prevent insulation from entering the air stream. Cabinet panels shall be "large" size, easily removable for servicing and maintenance. Full perimeter base rails shall be provided to assure reliable transit of equipment, overhead rigging and proper sealing on roof curb applications. Disposable 2" filters shall be furnished and be accessible through a removable access door, sealed airtight. Units filter track shall be designed to accommodate either 1" or 2" filters. Fan performance measuring ports shall be provided on the outside of the cabinet to allow accurate air measurements of evaporator fan performance without removing panels or creating air by-pass of the coils. Condensate pan shall be internally sloped and conform to ASHRAE 62-89 self-draining standards. Condensate connection shall be a minimum of 1" I.D. female and be a ridged mount connection. Unit shall incorporate a fixed outdoor air damper with an outdoor air intake opening covered with a bird screen and a rain hood painted to match the exterior of the unit.

Indoor (Evaporator) Fan Assembly

Fan shall be a belt drive assembly and include an adjustable-pitch motor pulley. Job site selected (B.H.P.) brake horsepower shall not exceed the motors nameplate horsepower rating, plus the service factor. Units shall be designed not to operate above service factor. Fan wheel shall be double-inlet type with forward-curved blades, dynamically balanced to operate smoothly throughout the entire range of operation. Airflow design shall be constant air volume.

A variable air volume (VAV) option using a variable frequency drive (VFD) is available for applications requiring a constant supply duct static pressure. Units equipped for VAV shall be controlled by a duct pressure transducer with a 0 - 5” WC pressure range. The pressure transducer shall provide a 0 - 5 VDC output signal to a VAV control board which, in turn shall provide a 2 - 10 VDC speed reference signal to the VFD. The VAV control board shall operate using factory-installed Supply Air, Return Air and Outside Air Temperature Sensors. Units equipped with VFD’s shall have factory-installed manual bypass as an option.

Outdoor (Condenser) Fan Assembly

The outdoor fans shall be of the direct-driven propeller type, discharge air vertically, have aluminum blades riveted to corrosion resistant steel spider brackets and shall be dynamically balanced for smooth operation. The 4 outdoor fan motors shall be totally enclosed with permanently lubricated

bearings, internally protected against overload conditions and staged independently.

Refrigerant Components

Compressors:

a. Shall be Scroll compressors internally protected with internal high-pressure relief and over temperature protection.

b. Shall have internal spring isolation and sound muffling to minimize vibration and noise, and be externally isolated on a dedicated, independent mounting.

Coils:

a. Evaporator and condenser coils shall have aluminum plate fins mechanically bonded to seamless internally enhanced copper tubes with all joints brazed. Special Phenolic coating shall be available as a factory option.

b. Evaporator and Condenser coils shall be of the direct expansion, draw-thru, design.

Refrigerant Circuit and Refrigerant Safety Components shall include:

a. Balance-port thermostatic expansion valve with independent circuit feed system.

b. Filter drier/strainer to eliminate any moisture or foreign matter.

c. Accessible service gage connections on both suction and discharge lines to charge, evacuate, and measure refrigerant pressure during any necessary servicing or troubleshooting, without losing charge.

d. The refrigeration system shall provide at least 15° F of sub-cooling at design conditions.

e. All models shall have four independent circuits.

f. Hot gas bypass option shall be factory-installed on compressor #1 discharge line to provide cooling in low-load applications. HGBP shall be a standard feature on VAV models and an optional feature on CV models.

Unit Controls

a. Unit shall be complete with self-contained low-voltage control circuit protected by a resettable circuit breaker on the 24-volt transformer side.

b. Unit shall incorporate a lockout circuit which provides reset capability at the space thermostat or base unit, should any of the following standard safety devices trip and shut off compressor.

c. Loss-of-charge/Low-pressure switch.

1. High-pressure switch.

2. Freeze-protection thermostat, evaporator coil. If any of the above safety devices trip, a LED (light-emitting diode) indicator shall flash a diagnostic code that indicates which safety switch has tripped.

d. Unit shall incorporate "AUTO RESET" compressor over temperature, over current protection.

e. Unit shall operate with conventional thermostat designs and have a low voltage terminal strip for easy hook-up.

f. Unit control board shall have on-board diagnostics and fault code display.

g. Standard controls shall include anti-short cycle and low voltage protection, and permit cooling operation down to 0 °F.

h. Control board shall monitor each refrigerant safety switch independently.

i. Control board shall retain last 5 fault codes in non volatile memory, which will not be lost in the event of a power loss.

Gas Heating Section (ZJ/ZR/ZF*N Models)**

Shall be designed with induced draft combustion with post purge logic and energy saving direct spark ignition, redundant main gas valve. Ventor wheel shall be constructed of stainless steel for corrosion resistance. The heat exchanger shall be of the tubular type, constructed of T1-40 aluminized steel for corrosion resistance and allowing minimum mixed air entering temperature of 25 °F. Burners shall be of the in-shot type, constructed of aluminum coated steel and contain air mixture adjustments. All gas piping shall enter the unit cabinet at a single location through either the side or curb, without any field modifications. An integrated control board shall provide timed control of evaporator fan functioning and burner ignition. Heating section shall be provided with the following minimum protection:

a. Primary and auxiliary high-temperature limit switches.

b. Induced draft motor speed sensor.

c. Flame roll out switch (automatic reset).

d. Flame proving controls. Unit shall have two independent stages of capacity.

Electric Heating (ZJ/ZR/ZF*C/E Models)**

Nickel chromium electric heating elements shall be provided as required by the application with 1 or 2 stage control, as required, from 13.5 KW to 72 KW capacities. The heating section shall have a primary limit control(s) and automatic reset to prevent the heating element system from operating at an excessive temperature. Units with Electric Heating shall be wired for a single point power supply with branch circuit fusing (where required).

Unit Operating Characteristics

Unit shall be capable of starting and running at 125° F outdoor temperature, exceeding maximum load criteria of ARI Standard 340/360. The compressor, with standard controls, shall be capable of operation down to 25° F outdoor temperature. Accessory low ambient kit shall be available for operation to 0° F. Unit shall be provided with fan time delay to prevent cold air delivery before heat exchanger warms up (Gas heat only).

Electrical Requirements

All unit power wiring shall enter unit cabinet at a single factory provided location and be capable of side or bottom entry, to minimize roof penetrations and avoid unit field modifications. Separate side and bottom openings shall be provided for the control wiring.

Standard Limited Warranties

- Compressor 5 Years
- Heat Exchanger 10 Years
- Electric Heat Element 5 Years
- Other Parts 1 Year

Optional Outdoor Air (Shall be made available by either/or):

- **Electronic Enthalpy Automatic Economizer -** Outdoor and return air dampers that are interlocked and positioned by a fully-modulating, spring-return damper actuator. The maximum leakage rate for the outdoor air intake dampers shall not exceed 2% when dampers are fully closed and operating against a pressure differential of 0.5 IWG. A unit-mounted potentiometer shall be provided to adjust the outdoor and return air damper assembly to take in CFM of outdoor air to meet the minimum ventilation requirement of the conditioned space during normal operation. During economizer operation, a mixed-air temperature control shall modulate the outdoor and return air damper assembly to prevent the supply air temperature from dropping below 55°F. Changeover from compressor to economizer operation shall be provided by an integral electronic enthalpy control that feeds input into the basic module. The outdoor intake opening shall be covered with a rain hood that matches the exterior of the unit. Water eliminator/filters shall be provided. Simultaneous economizer/compressor operation is also possible. Dampers shall fully close on power loss.
- **Motorized Outdoor Air Dampers -** Outdoor and return air dampers that are interlocked and positioned by a 2-position, spring-return damper actuator. The maximum leakage rate for the outdoor air intake dampers shall not exceed 2% when dampers are fully closed and operating against a pressure differential of 0.5 IWG. A unit-mounted potentiometer shall be provided to adjust the outdoor and return air damper assembly to take in the design CFM of outdoor air to meet the ventilation requirements of the conditioned space during normal operation. Whenever the indoor fan motor is energized, the dampers open up to one of two pre-selected positions - regardless of the outdoor air enthalpy. Dampers return to the fully closed position when the indoor fan motor is de-energized. Dampers shall fully close on power loss.

Other Pre-engineered Accessories Available

- **Roof Curb -** 14" high, full perimeter curb with wood nailer (shipped knocked-down).
- **100% Barometric Relief Damper -** Contains a rain hood, air inlet screen, exhaust damper and mounting hardware. Used to relieve internal air pressure through the unit.
- **Propane Conversion Kit -** Contains new orifices and gas valve parts to convert from natural to L.P. gas. One per unit required.
- **High Altitude - Natural Gas -** Contains orifices required for applications between 2000 and 6000 feet altitude.
- **High Altitude - Propane Gas** - Contains orifices required for applications between 2000 and 6000 feet altitude. Must be used with propane conversion kit.
- **Burglar Bars -** Designed to work with above roof curbs, depending on unit model. Fits duct openings of curb supply and return air openings.
- **Side Duct Flange -** Supply and return air duct flanges for side duct applications. Do not use on units with power exhaust.
- **High Static Drive -** May include a belt, blower pulley, motor pulley or a motor change to enhance blower performance.
- **Wood Skid -** Allows unit to be handled with 90" forks.
- **Economizer/motorized Damper Rain Hood (ZJ/ZR/ZFN/E/C300 only) -** Contains all hood panels and the hardware for assembling.
- **Anti-Recycle Timer -** Assures 5-minute off time between compressor cycles.
- **Low Ambient Kit -** Provides unit cooling operation down to 0 °F.
- **Coil Guard Kit** - Guard for cooling coil.

OTHER FACTORY INSTALLED OPTIONS

- **Power Exhaust Option** - To work in conjunction with economizers.
- **Stainless Steel Heat Exchanger**
- **Stainless Steel Drain Pan**
- **Technicoat Phenolic Coated Condenser And Evaporator Coil**
- **Electronic Single Enthalpy Economizer**
- **Dirty Filter Switch**
- **Double Wall**
- **Phase Monitor**
- **Coil Guard**
- **Powered GFI Convenience Outlet**
- **Non-powered GFI Convenience Outlet**
- **BAS Controls** (Simplicity® Intelli-*Comfort*™, CPC, JOHNSON, HONEYWELL, NOVAR)
- **BAS Ready Economizer** (2-10 V.D.C. Actuator Without a Controller)
- **Hinged Filter Door Access And Tool Free Access Panels**
- **Hinged Tool Free Blower, Blower Motor, Filter And Electrical Access Panels**
- **High Static Drive**
- **Low Static Drive (ZJ/ZR/ZF300 only)**
- **2" Pleated Filters**

- **4" Throw Away Filters**
- **Disconnect Switch**
- **Supply Air Smoke Detector**
- **Return Air Smoke Detector**

Reheat Mode Sequence Of Operation

The reheat control board allows the user to select two different modes of operation via a jumper connection on the board. (See Reheat Control Board.) Each mode is described below. Refer to Reheat Controls - Part 1 and Part 2 when reading this section.

“Normal” Mode

When the reheat control board (RCB) detects a need for dehumidification (24VAC) at "HUM" via the field supplied dehumidistat connected to RHTB-1 and RHTB-2 and there is not a call for cooling, it energizes the hot gas relay (HGR), which energizes the 3-way valve (SOL 3), the condenser coil valve (SOL 2), and de-energizes the reheat coil bleed valve (SOL 1). The Y1 signal is passed to the unit control board (UCB), which engages circuit # 1, resulting in circuit #1 reheat mode operation.

When the room thermostat calls for first stage cooling, with or without a call for dehumidification, the RCB senses a signal through "Y1", de-energizing the HGR, which de-energizes SOL 3 and SOL 2, and energizes SOL 1, engaging circuit # 1, resulting in circuit #1 cooling mode operation.

When the room thermostat calls for second stage cooling, the RCB senses a signal through "Y1" & "Y2" and engages circuit #1 and circuit #2 in the cooling mode.

Indoor blower operation is initiated upon a call for first stage cooling, second stage cooling or dehumidification.

Anytime there is a call for 2 stages of cooling, the unit will not operate in the reheat mode, even if there is a call for dehumidification at "HUM".

The unit will not operate in the reheat mode if there is any call for heating.

On units with economizers, the unit will not operate in the reheat mode if there is a call for cooling and the economizer is operating as first stage of cooling.

All safety devices function as previously described.

"Alternate” Mode

When the RCB detects a need for dehumidification (24VAC) at "HUM" via the field supplied dehumidistat connected to RHTB-1 and RHTB-2, and there is not a call for cooling, it energizes the HGR, which energizes the SOL 3, SOL 2, and de-energizes SOL 1. The unit then operates with circuit #1 in reheat mode and circuit #2 in cooling mode.

When the room thermostat calls for first stage cooling while there is still a call for dehumidification, no operational change is made. The call for cooling is ignored and the unit continues to operate with circuit #1 in reheat mode and circuit #2 in cooling mode.

When the room thermostat calls for second stage cooling, the RCB senses a signal through "Y1" & "Y2" and de-energizes the HGR, which de-energizes SOL 3 and SOL 2, and energizes SOL 1. Both circuits operate in the cooling mode.

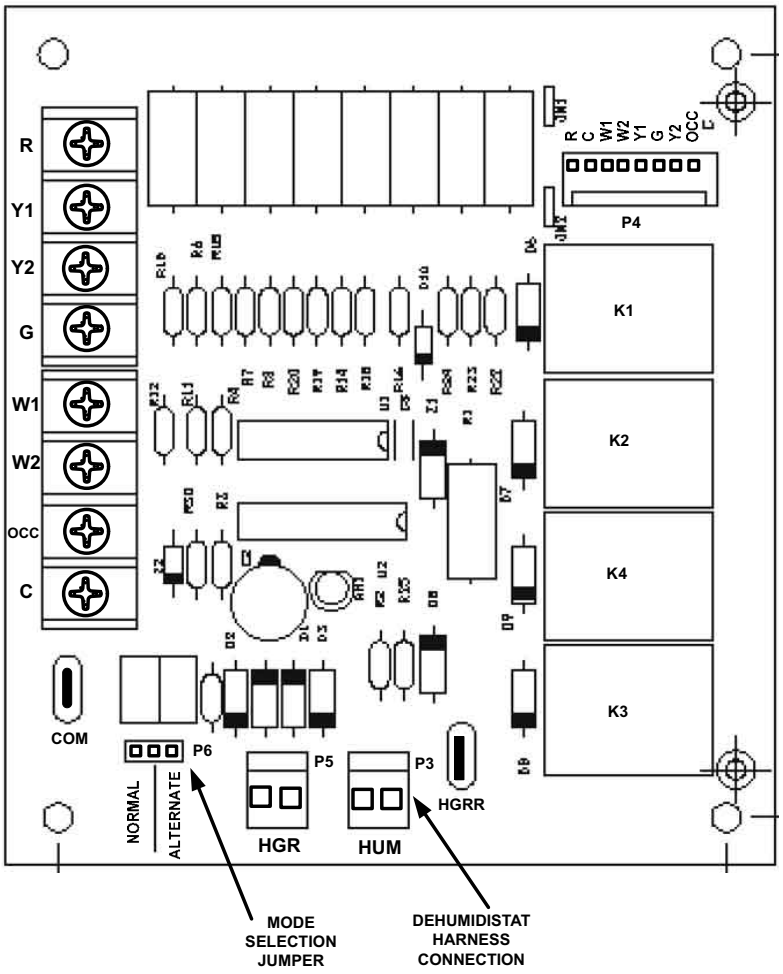
Indoor blower operation is initiated upon a call for first stage cooling, second stage cooling or dehumidification.

Anytime there is a call for 2 stages of cooling, the unit will not operate in the reheat mode, even if there is still a call for dehumidification at "HUM".

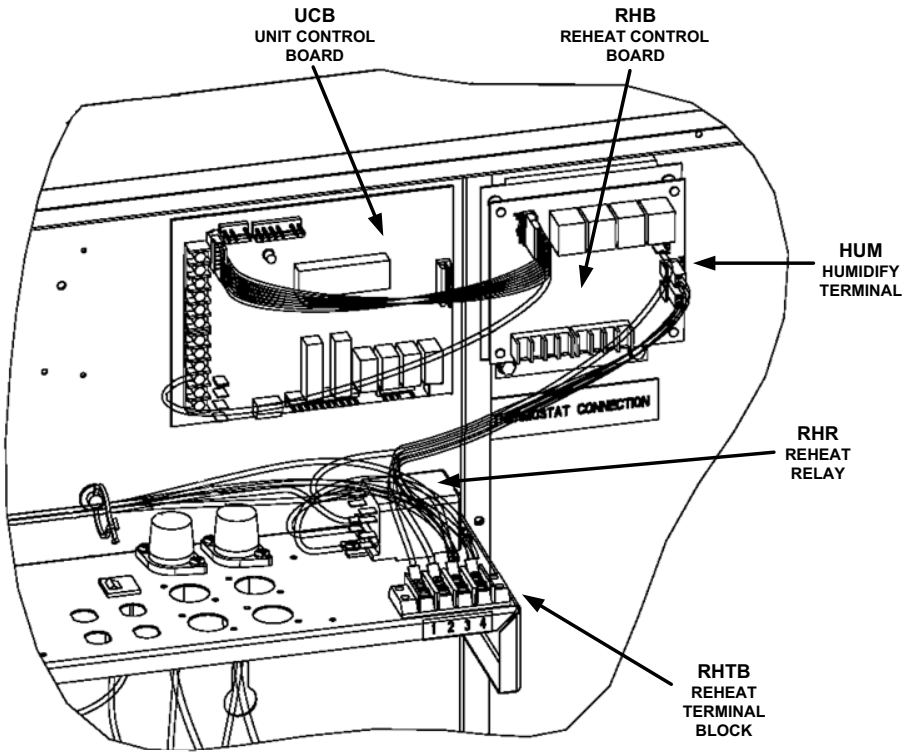
The unit will not operate in the reheat mode if there is any call for heating.

All safety devices function as previously described.

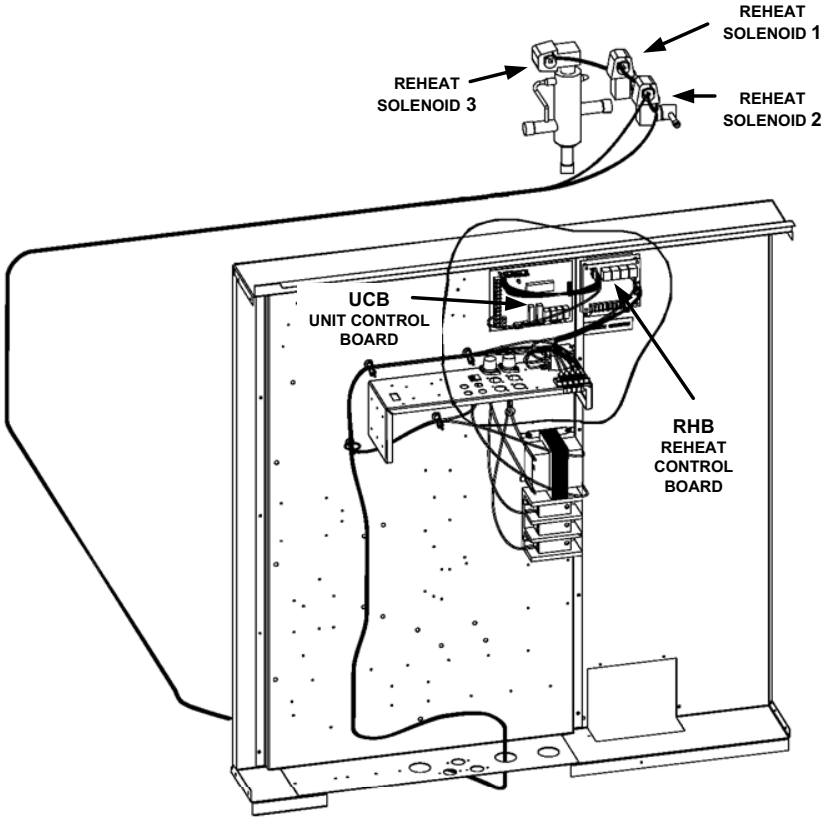
Reheat Control Board



Reheat Controls - Part 1



Reheat Controls - Part 2



Physical Data

ZJ180-300 Physical Data

Component	Models							
	ZJ180		ZJ210		ZJ240		ZJ300	
Nominal Tonnage	**15**		**17.5**		**20**		**25**	
ARI COOLING PERFORMANCE								
Gross Capacity @ ARI A point (Btu)	183500		213700		242000		312000	
ARI net capacity (Btu)	178500		206000		235000		295000	
EER	12.4		12.1		11.6		10.4	
SEER	-		-		-		-	
IPLV	13.9		13.2		12.9		10.6	
Nominal CFM	6000		7000		8000		10000	
System power (KW)	14.40		17.10		20.10		28.50	
Refrigerant type	R-410a		R-410a		R-410a		R-410a	
Refrigerant charge (lb-oz)								
System 1	12-8		12-8		12-0		12-8	
System 2	12-8		13-8		12-0		13-8	
System 3	12-8		12-8		12-0		13-0	
System 4	12-8		12-8		12-0		12-8	
ARI HEATING PERFORMANCE								
Heating model	24	32	24	32	24	32	24	32
Heat input (K Btu)	300	400	300	400	300	400	300	400
Heat output (K Btu)	240	320	240	320	240	320	240	320
AFUE %	-	-	-	-	-	-	-	-
Steady state efficiency (%)	80	80	80	80	80	80	80	80
No. burners	6	8	6	8	6	8	6	8
No. stages	2	2	2	2	2	2	2	2
Temperature Rise Range (ºF)	20-50	30-60	20-50	30-60	20-50	30-60	20-50	30-60
Gas Limit Setting (ºF)	195	195	195	195	195	195	195	195
Gas piping connection (in.)	1	1	1	1	1	1	1	1
DIMENSIONS (inches)								
Length	180-19/32							
Width	92							
Height	52-5/8							
OPERATING WT. (lbs.)	2609		2665		2697		2783	
COMPRESSORS								
Type	Scroll		Scroll		Scroll		Scroll	
Quantity	4		4		4		4	
Unit Capacity Steps (%)	25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100	
CONDENSER COIL DATA								
Face area (Sq. Ft.)	63.8		63.8		63.8		63.8	
Rows	2		2		2		2	
Fins per inch	20		20		20		20	
Tube diameter (in.)	3/8		3/8		3/8		3/8	
Circuitry Type	Split-face		Split-face		Split-face		Split-face	
EVAPORATOR COIL DATA								
Face area (Sq. Ft.)	25		25		25		25	
Rows	4		4		4		4	
Fins per inch	13.5		13.5		13.5		13.5	
Tube diameter	3/8		3/8		3/8		3/8	
Circuitry Type	Split-face		Split-face		Split-face		Split-face	
Refrigerant control	TXV		TXV		TXV		TXV	

ZJ180-300 Physical Data (Continued)

Component	Models								
	ZJ180		ZJ210		ZJ240		ZJ300		
Nominal Tonnage	**15**		**17.5**		**20**		**25**		
CONDENSER FAN DATA									
Quantity	4		4		4		4		
Fan diameter (Inch)	24		24		30		30		
Type	Prop		Prop		Prop		Prop		
Drive type	Direct		Direct		Direct		Direct		
No. speeds	1		1		1		1		
Number of motors	2		2		2		2		
Motor HP each	1/3		1/3		1/3		1/3		
RPM	850		850		870		870		
Nominal total CFM	4000		4000		5000		5000		
BELT DRIVE EVAP FAN DATA									
Quantity	1		1		1		1		
Fan Size (Inch)	15 X 15		18 X 15		18 X 15		18 X 15		
Type	Centrifugal		Centrifugal		Centrifugal		Centrifugal		
Motor Sheave	1VP65	1VP65	1VP60	1VP60	1VP60	1VP60	1VP60	1VP75X	1VP75X
Blower Sheave	BK110	BK090	BK110	BK090	BK110	BK090	1B5V94	1B5V110	1B5V94
Belt	BX85	BX81	BX78	BX75	BX78	BX75	BX78	5VX840	5VX860
Motor HP each	5	5	5	7.5	5	7.5	7.5	10	15
RPM	1725	1725	1725	1725	1725	1725	1725	1725	1725
Frame size	184T	184T	184T	213T	184T	213T	213T	215T	254T
FILTERS									
Quantity - Size	12 - 12 x 24 x 2		12 - 12 x 24 x 2		12 - 12 x 24 x 2		12 - 12 x 24 x 2		

ZF180-300 Physical Data (Continued)

Component	Models								
	ZF180		ZF210		ZF240		ZF300		
Nominal Tonnage	15		17.5		20		25		
CONDENSER FAN DATA									
Quantity	2		2		2		2		
Fan diameter (Inch)	24		24		30		30		
Type	Prop		Prop		Prop		Prop		
Drive type	Direct		Direct		Direct		Direct		
No. speeds	1		1		1		1		
Number of motors	2		2		2		2		
Motor HP each	1.25		1.25		1.25		1.25		
RPM	1140		1140		1140		1140		
Nominal total CFM	5765		7000		7000		7000		
BELT DRIVE EVAP FAN DATA									
Quantity	1		1		1		1		
Fan Size (Inch)	15 X 15		18 X 15		18 X 15		18 X 15		
Type	Centrifugal		Centrifugal		Centrifugal		Centrifugal		
Motor Sheave	1VP65	1VP65	1VP60	1VP60	1VP60	1VP60	1VP60	1VP75X	1VP75X
Blower Sheave	BK110	BK090	BK110	BK090	BK110	BK090	1B5V94	1B5V110	1B5V94
Belt	BX85	BX81	BX78	BX75	BX78	BX75	BX78	5VX840	5VX860
Motor HP each	5	5	5	7.5	5	7.5	7.5	10	15
RPM	1725	1725	1725	1725	1725	1725	1725	1725	1725
Frame size	184T	184T	184T	213T	184T	213T	213T	215T	254T
FILTERS									
Quantity - Size	-		4 - 16 x 25 x 2		4 - 16 x 25 x 2		4 - 16 x 25 x 2		
	5 - 18 x 24 x 2		4 - 16 x 20 x 2		4 - 16 x 20 x 2		4 - 16 x 20 x 2		

ZJ/ZR/ZF180-300 Unit Limitations

Size (Tons)	Unit Voltage	Unit Limitations		
		Applied Voltage		Outdoor DB Temp
		Min	Max	Max (°F)
180 (15)	208/230-3-60	187	252	125
	460-3-60	432	504	125
	575-3-60	540	630	125
210 (17.5)	208/230-3-60	187	252	125
	460-3-60	432	504	125
	575-3-60	540	630	125
240 (20)	208/230-3-60	187	252	125
	460-3-60	432	504	125
	575-3-60	540	630	125
300 (25)	208/230-3-60	187	252	125
	460-3-60	432	504	125
	575-3-60	540	630	125

Capacity Performance

ZJ180-300 Cooling Capacities

ZJ180 (15 Ton)

Air on Evaporator Coil		Temperature of Air on Condenser Coil															
		Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)						Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)					
CFM	WB (°F)			Return Dry Bulb (°F)								Return Dry Bulb (°F)					
				90	85	80	75	70	65			90	85	80	75	70	65
		75°F								**85°F**							
3750	77	235.0	10.5	96.3	78.3	60.2	-	-	-	221.1	12.0	97.5	79.4	61.3	-	-	-
	72	217.3	10.4	126.5	108.5	90.4	72.4	-	-	205.1	11.8	125.1	106.9	88.8	70.7	-	-
	67	199.7	10.2	156.7	138.7	120.6	102.6	84.5	-	189.0	11.7	152.6	134.5	116.4	98.2	80.1	-
	62	184.4	10.1	184.4	175.3	149.9	131.9	113.8	95.8	174.9	11.6	174.9	170.4	143.8	125.7	107.6	89.4
4500	77	243.3	10.5	106.9	86.4	65.9	-	-	-	228.9	11.9	108.2	87.7	67.1	-	-	-
	72	225.1	10.3	139.9	119.4	99.0	78.5	-	-	212.3	11.8	138.4	117.8	97.2	76.6	-	-
	67	206.8	10.2	173.0	152.5	132.0	111.5	91.1	-	195.6	11.7	168.5	148.0	127.4	106.8	86.2	-
	62	190.9	10.1	190.9	184.8	164.1	143.6	123.2	102.7	181.1	11.5	181.1	178.0	157.4	136.8	116.3	95.7
	57	188.9	10.1	188.9	188.9	168.1	147.7	127.2	106.7	179.1	11.5	179.1	179.1	160.3	139.7	119.1	98.5
5250	77	251.7	10.4	117.4	94.5	71.6	-	-	-	236.7	11.9	119.0	95.9	72.9	-	-	-
	72	232.8	10.3	153.3	130.4	107.5	84.6	-	-	219.5	11.7	151.7	128.7	105.6	82.6	-	-
	67	213.9	10.2	189.2	166.3	143.4	120.5	97.6	-	202.3	11.6	184.5	161.4	138.4	115.3	92.3	-
	62	197.4	10.0	197.4	194.4	178.3	155.4	132.5	109.6	187.2	11.5	187.2	185.7	171.1	148.0	125.0	101.9
	57	195.4	10.0	195.4	195.4	182.7	159.8	136.9	114.0	185.2	11.5	185.2	185.2	174.2	151.1	128.1	105.0
6000	77	260.0	10.4	128.0	102.6	77.3	-	-	-	244.4	11.8	129.7	104.2	78.7	-	-	-
	72	240.5	10.3	166.7	141.4	116.1	90.7	-	-	226.7	11.7	165.0	139.5	114.0	88.5	-	-
	67	220.9	10.1	205.5	180.1	154.8	129.5	104.2	-	208.9	11.6	200.4	174.9	149.4	123.9	98.4	-
	62	204.0	10.0	204.0	204.0	192.4	167.1	141.8	116.5	193.4	11.4	193.4	193.4	184.7	159.2	133.7	108.1
	57	201.9	10.0	201.9	201.9	197.2	171.8	146.5	121.2	191.3	11.5	191.3	191.3	188.0	162.5	137.0	111.5
6600	72	243.0	10.3	173.5	147.0	120.6	94.1	-	-	228.9	11.7	172.8	146.0	119.2	92.4	-	-
	67	223.2	10.2	215.5	187.3	160.9	134.4	107.9	-	210.9	11.6	206.7	182.9	156.1	129.4	102.6	-
	62	206.1	10.0	206.1	206.1	200.3	173.8	147.4	120.9	195.2	11.5	195.2	195.2	190.9	164.1	137.3	110.5
	57	204.0	10.0	204.0	204.0	201.6	175.1	148.6	122.2	193.1	11.5	193.1	193.1	191.5	164.7	137.9	111.1
7200	72	245.4	10.3	180.3	152.7	125.1	97.4	-	-	231.0	11.7	180.5	152.4	124.3	96.3	-	-
	67	225.5	10.2	225.5	194.5	166.9	139.3	111.6	-	212.9	11.6	212.9	191.0	162.9	134.8	106.7	-
	62	208.2	10.1	208.2	208.2	208.2	180.6	152.9	125.3	197.1	11.5	197.1	197.1	197.1	169.0	140.9	112.8
	57	206.0	10.1	206.0	206.0	206.0	178.4	150.8	123.1	195.0	11.5	195.0	195.0	195.0	166.9	138.8	110.7
		95°F								**105°F**							
3750	77	207.2	13.4	98.7	80.5	62.3	-	-	-	193.7	15.3	88.6	74.0	56.0	-	-	-
	72	192.8	13.3	123.6	105.4	87.2	69.0	-	-	180.0	15.1	117.5	99.5	81.5	63.4	-	-
	67	178.3	13.2	148.5	130.3	112.1	93.9	75.6	-	166.2	15.0	146.3	124.9	106.9	88.9	70.9	-
	62	165.5	13.1	165.5	165.5	137.7	119.5	101.3	83.1	154.2	14.8	154.2	154.2	131.2	113.2	95.2	77.2
4500	77	214.4	13.4	109.6	88.9	68.2	-	-	-	200.5	15.2	102.7	82.1	61.5	-	-	-
	72	199.5	13.2	136.9	116.2	95.4	74.7	-	-	186.3	15.0	130.6	110.0	89.4	68.8	-	-
	67	184.5	13.1	164.1	143.4	122.7	102.0	81.3	-	172.0	14.9	158.5	137.9	117.3	96.7	76.2	-
	62	171.2	13.0	171.2	171.2	150.8	130.1	109.4	88.7	159.6	14.8	159.6	159.6	144.0	123.5	102.9	82.3
	57	169.3	13.0	169.3	169.3	152.5	131.8	111.1	90.3	159.2	14.8	159.2	159.2	142.7	122.1	101.5	80.9
5250	77	221.6	13.3	120.5	97.3	74.1	-	-	-	207.3	15.1	116.7	90.1	67.0	-	-	-
	72	206.2	13.2	150.1	126.9	103.7	80.5	-	-	192.6	14.9	143.7	120.5	97.4	74.2	-	-
	67	190.7	13.1	179.7	156.5	133.3	110.1	86.9	-	177.8	14.8	170.7	150.9	127.8	104.6	81.5	-
	62	177.0	12.9	177.0	177.0	163.8	140.6	117.4	94.2	165.0	14.7	165.0	165.0	156.9	133.7	110.6	87.4
	57	175.0	13.0	175.0	175.0	165.7	142.5	119.3	96.1	164.6	14.7	164.6	164.6	155.4	132.2	109.0	85.9
6000	77	228.9	13.2	131.4	105.7	80.0	-	-	-	214.1	15.0	130.8	98.2	72.4	-	-	-
	72	212.9	13.1	163.4	137.7	112.0	86.3	-	-	198.9	14.8	156.8	131.1	105.8	79.6	-	-
	67	196.9	13.0	195.3	169.7	144.0	118.3	92.6	-	183.6	14.7	182.8	164.0	138.2	112.5	86.7	-
	62	182.8	12.9	182.8	182.8	176.9	151.2	125.5	99.8	170.4	14.6	170.4	170.4	169.7	144.0	118.2	92.5
	57	180.7	12.9	180.7	180.7	178.9	153.2	127.5	101.8	170.0	14.6	170.0	170.0	168.1	142.3	116.6	90.8
6600	72	214.8	13.1	172.0	144.9	117.8	90.7	-	-	200.4	14.9	165.4	138.2	111.0	83.9	-	-
	67	198.7	13.0	197.9	178.5	151.4	124.3	97.2	-	185.1	14.7	184.7	172.0	145.7	118.5	91.4	-
	62	184.4	12.9	184.4	184.4	181.4	154.3	127.2	100.1	171.8	14.6	171.8	171.8	171.4	144.2	117.1	89.9
	57	182.3	12.9	182.3	182.3	181.4	154.3	127.2	100.1	171.3	14.6	171.3	171.3	170.4	143.2	116.0	88.9
7200	72	216.6	13.1	180.6	152.1	123.6	95.1	-	-	202.0	14.9	173.9	145.3	116.7	88.1	-	-
	67	200.4	13.0	200.4	187.4	158.9	130.4	101.9	-	186.5	14.7	186.5	180.0	153.2	124.6	96.0	-
	62	186.0	12.9	186.0	186.0	186.0	157.4	128.9	100.4	173.1	14.6	173.1	173.1	173.1	144.5	115.9	87.3
	57	183.9	12.9	183.9	183.9	183.9	155.4	126.8	98.3	172.7	14.6	172.7	172.7	172.7	144.1	115.5	86.9

ZJ180 (15 Ton) (Continued)

Air on Evaporator Coil		Temperature of Air on Condenser Coil															
		Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)						Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)					
CFM	WB (°F)			Return Dry Bulb (°F)								Return Dry Bulb (°F)					
				90	85	80	75	70	65			90	85	80	75	70	65
		115°F								**125°F**							
3750	77	180.3	17.1	78.5	67.6	49.8	-	-	-	166.8	18.9	68.4	61.1	43.5	-	-	-
	72	167.2	16.9	111.3	93.5	75.7	57.9	-	-	154.4	18.7	105.1	87.6	70.0	52.4	-	-
	67	154.0	16.8	144.1	119.5	101.7	83.9	66.1	-	141.9	18.6	141.9	114.0	96.5	78.9	61.3	-
	62	143.0	16.6	143.0	143.0	124.7	106.9	89.1	71.3	131.7	18.4	131.7	131.7	120.0	100.6	83.0	65.5
4500	77	186.6	17.0	95.7	75.3	54.8	-	-	-	172.7	18.8	89.1	68.5	48.1	-	-	-
	72	173.0	16.8	124.3	103.8	83.4	62.9	-	-	159.8	18.6	118.0	97.7	77.3	57.0	-	-
	67	159.5	16.7	152.9	132.4	111.9	91.5	71.0	-	146.9	18.4	146.9	126.9	106.6	86.2	65.9	-
	62	148.0	16.5	148.0	148.0	137.3	116.8	96.4	75.9	136.4	18.3	136.4	136.4	130.6	110.2	89.9	69.6
	57	149.2	16.6	149.2	149.2	132.8	112.4	91.9	71.5	139.1	18.4	139.1	139.1	123.0	102.7	82.3	62.0
5250	77	193.0	16.8	113.0	83.0	59.8	-	-	-	178.6	18.6	109.8	75.8	52.7	-	-	-
	72	178.9	16.7	137.3	114.2	91.0	67.9	-	-	165.3	18.4	130.9	107.8	84.7	61.6	-	-
	67	164.9	16.5	161.6	145.3	122.2	99.1	76.0	-	152.0	18.3	152.0	139.8	116.7	93.6	70.5	-
	62	153.1	16.4	153.1	153.1	149.9	126.8	103.7	80.5	141.1	18.1	141.1	141.1	141.1	119.9	96.8	73.7
	57	154.2	16.5	154.2	154.2	145.0	121.9	98.8	75.6	143.8	18.2	143.8	143.8	134.7	111.6	88.5	65.4
6000	77	199.3	16.7	130.3	90.7	64.9	-	-	-	184.5	18.5	130.5	83.2	57.3	-	-	-
	72	184.8	16.6	150.3	124.5	98.7	72.9	-	-	170.8	18.3	143.7	117.9	92.0	66.2	-	-
	67	170.3	16.4	170.3	158.3	132.5	106.7	80.9	-	157.0	18.1	157.0	152.6	126.8	100.9	75.1	-
	62	158.1	16.3	158.1	158.1	162.5	136.7	110.9	85.1	145.8	18.0	145.8	145.8	145.8	129.5	103.6	77.8
	57	159.3	16.3	159.3	159.3	157.2	131.4	105.6	79.8	148.6	18.1	148.6	148.6	146.4	120.5	94.7	68.8
6600	72	186.1	16.6	158.7	131.5	104.3	77.0	-	-	171.7	18.3	152.1	124.8	97.5	70.2	-	-
	67	171.5	16.4	171.5	165.5	140.0	112.7	85.5	-	157.9	18.1	157.9	157.9	134.2	106.9	79.7	-
	62	159.2	16.3	159.2	159.2	161.4	134.2	106.9	79.7	146.6	18.0	146.6	146.6	146.6	124.1	96.8	69.5
	57	160.4	16.4	160.4	160.4	159.4	132.1	104.9	77.7	149.4	18.1	149.4	149.4	148.3	121.1	93.8	66.5
7200	72	187.3	16.6	167.1	138.5	109.8	81.2	-	-	172.7	18.3	160.4	131.6	102.9	74.2	-	-
	67	172.6	16.4	172.6	172.6	147.4	118.8	90.1	-	158.8	18.2	158.8	158.8	141.7	113.0	84.2	-
	62	160.3	16.3	160.3	160.3	160.3	131.6	102.9	74.3	147.4	18.0	147.4	147.4	147.4	118.7	90.0	61.2
	57	161.5	16.4	161.5	161.5	161.5	132.8	104.2	75.5	150.3	18.1	150.3	150.3	150.3	121.6	92.8	64.1

1. These capacities are gross ratings. For net capacity, deduct air blower motor, MBh = 3.415 x kW. Refer to the appropriate Blower Performance Table for the kW of the supply air blower motor.
2. These ratings include the condenser fan motors (total 1 kW) and the compressor motors but not the supply air blower motor.

ZJ210 (17.5 Ton)

Air on Evaporator Coil		Temperature of Air on Condenser Coil															
				Sensible Capacity (MBh)								Sensible Capacity (MBh)					
CFM	WB (°F)	Total Capacity[1] (MBh)	Total Input (kW)[2]	Return Dry Bulb (°F)						Total Capacity[1] (MBh)	Total Input (kW)[2]	Return Dry Bulb (°F)					
				90	85	80	75	70	65			90	85	80	75	70	65
		75°F								**85°F**							
5500	77	270.6	12.1	132.5	106.5	83.0	-	-	-	259.2	13.6	124.3	100.8	77.2	-	-	-
	72	251.8	11.9	165.5	142.0	118.4	94.9	-	-	239.5	13.5	159.7	136.1	112.6	89.0	-	-
	67	233.1	11.8	198.5	177.5	153.9	130.4	106.9	-	219.8	13.4	195.0	171.5	147.9	124.4	100.9	-
	62	201.7	11.6	201.7	201.7	184.3	160.7	137.2	113.7	200.5	13.2	200.5	200.5	179.2	155.6	132.1	108.6
6000	77	276.9	12.1	138.1	112.7	87.4	-	-	-	264.9	13.7	132.2	106.9	81.5	-	-	-
	72	257.7	12.0	175.5	150.1	124.8	99.5	-	-	244.7	13.6	169.5	144.2	118.8	93.4	-	-
	67	238.5	11.8	212.9	187.5	162.2	136.8	111.5	-	224.6	13.4	206.8	181.5	156.1	130.7	105.4	-
	62	206.4	11.6	206.4	206.4	194.1	168.8	143.4	118.1	204.9	13.3	204.9	204.9	189.0	163.7	138.3	113.0
	57	217.2	11.6	217.2	217.2	200.9	175.6	150.2	124.9	207.3	13.3	207.3	207.3	190.9	165.5	140.1	114.8
6500	77	283.1	12.2	143.6	119.0	91.9	-	-	-	270.6	13.7	140.1	112.9	85.8	-	-	-
	72	263.5	12.0	185.4	158.3	131.1	104.0	-	-	250.0	13.6	179.4	152.2	125.0	97.8	-	-
	67	243.9	11.9	227.2	197.6	170.4	143.3	116.1	-	229.4	13.5	218.6	191.4	164.3	137.1	109.9	-
	62	211.1	11.6	211.1	211.1	204.0	176.8	149.7	122.5	209.3	13.3	209.3	209.3	198.9	171.7	144.6	117.4
	57	222.1	11.7	222.1	222.1	211.1	184.0	156.8	129.7	211.8	13.3	211.8	211.8	200.8	173.7	146.5	119.3
7000	77	289.4	12.2	149.2	125.3	96.3	-	-	-	276.3	13.8	148.0	119.0	90.0	-	-	-
	72	269.4	12.0	195.4	166.4	137.5	108.5	-	-	255.3	13.6	189.2	160.2	131.2	102.2	-	-
	67	249.3	11.9	241.6	207.6	178.7	149.7	120.7	-	234.3	13.5	230.4	201.4	172.4	143.4	114.4	-
	62	215.8	11.7	215.8	215.8	213.8	184.9	155.9	126.9	213.7	13.4	213.7	213.7	208.8	179.8	150.8	121.8
	57	227.0	11.7	227.0	227.0	221.3	192.4	163.4	134.4	216.2	13.4	216.2	216.2	210.8	181.8	152.8	123.8
7875	72	276.6	12.1	208.5	177.4	146.3	115.1	-	-	262.0	13.7	203.1	171.6	140.1	108.6	-	-
	67	256.0	11.9	252.2	221.2	190.1	158.9	127.8	-	240.4	13.5	238.5	215.6	184.1	152.6	121.1	-
	62	221.7	11.7	221.7	221.7	220.7	189.5	158.4	127.2	219.3	13.4	219.3	219.3	216.9	185.4	153.9	122.4
	57	233.1	11.8	233.1	233.1	230.3	199.1	168.0	136.9	221.9	13.4	221.9	221.9	219.2	187.7	156.2	124.7
8750	72	283.9	12.1	221.7	188.4	155.0	121.7	-	-	268.6	13.7	216.9	182.9	149.0	115.0	-	-
	67	262.7	12.0	262.7	234.8	201.5	168.1	134.8	-	246.5	13.5	246.5	229.7	195.7	161.8	127.8	-
	62	227.5	11.7	227.5	227.5	227.5	194.2	160.8	127.5	224.9	13.4	224.9	224.9	224.9	190.9	157.0	123.0
	57	239.2	11.8	239.2	239.2	239.2	205.9	172.6	139.3	227.5	13.4	227.5	227.5	227.5	193.6	159.6	125.6
		95°F								**105°F**							
5500	77	247.8	15.2	116.1	95.1	71.5	-	-	-	239.3	17.2	112.2	91.4	67.5	-	-	-
	72	227.1	15.1	153.8	130.3	106.7	83.2	-	-	217.3	17.0	150.0	126.1	102.2	78.2	-	-
	67	206.4	15.0	191.6	165.5	141.9	118.4	94.8	-	195.2	16.9	187.8	160.8	136.9	113.0	89.0	-
	62	199.3	14.9	199.3	199.3	174.1	150.5	127.0	103.4	190.6	16.9	190.6	190.6	164.1	140.2	116.3	92.4
6000	77	252.9	15.3	126.3	101.0	75.6	-	-	-	242.7	17.2	125.5	96.9	71.3	-	-	-
	72	231.8	15.1	163.6	138.2	112.8	87.4	-	-	220.4	17.1	159.3	133.6	107.9	82.3	-	-
	67	210.7	15.0	200.8	175.4	150.0	124.6	99.2	-	198.0	17.0	193.1	170.3	144.6	118.9	93.3	-
	62	203.4	14.9	203.4	203.4	184.0	158.6	133.2	107.8	193.3	16.9	193.3	193.3	173.4	147.7	122.0	96.4
	57	197.4	14.9	197.4	197.4	180.8	155.4	130.1	104.7	189.6	16.9	189.6	189.6	172.0	146.3	120.6	94.9
6500	77	258.1	15.3	136.6	106.9	79.6	-	-	-	246.1	17.2	138.8	102.5	75.1	-	-	-
	72	236.5	15.2	173.3	146.1	118.9	91.6	-	-	223.5	17.1	168.6	141.2	113.7	86.3	-	-
	67	215.0	15.1	210.0	185.3	158.1	130.9	103.6	-	200.8	17.0	198.4	179.8	152.4	124.9	97.5	-
	62	207.5	15.0	207.5	207.5	193.9	166.7	139.5	112.2	196.1	17.0	196.1	196.1	182.7	155.3	127.8	100.4
	57	201.4	15.0	201.4	201.4	190.6	163.3	136.1	108.9	192.2	16.9	192.2	192.2	181.2	153.7	126.3	98.9
7000	77	263.2	15.4	146.9	112.8	83.7	-	-	-	249.5	17.3	152.2	108.1	78.9	-	-	-
	72	241.2	15.2	183.1	154.0	124.9	95.9	-	-	226.6	17.2	177.9	148.7	119.5	90.3	-	-
	67	219.2	15.1	219.2	195.2	166.2	137.1	108.1	-	203.6	17.0	203.6	189.3	160.1	130.9	101.7	-
	62	211.6	15.0	211.6	211.6	203.8	174.7	145.7	116.6	198.8	17.0	198.8	198.8	192.0	162.8	133.6	104.4
	57	205.4	15.0	205.4	205.4	200.3	171.2	142.2	113.1	194.9	17.0	194.9	194.9	190.4	161.2	132.0	102.8
7875	72	247.3	15.2	197.6	165.7	133.9	102.1	-	-	232.2	17.2	191.9	160.0	128.1	96.2	-	-
	67	224.8	15.1	224.8	209.9	178.1	146.2	114.4	-	208.7	17.0	208.7	200.1	171.6	139.7	107.8	-
	62	217.0	15.0	217.0	217.0	213.1	181.2	149.4	117.6	203.7	17.0	203.7	203.7	200.3	168.4	136.5	104.6
	57	210.6	15.0	210.6	210.6	208.1	176.2	144.4	112.6	199.7	17.0	199.7	199.7	197.5	165.6	133.7	101.8
8750	72	253.4	15.2	212.1	177.5	142.9	108.2	-	-	237.8	17.2	205.9	171.3	136.7	102.1	-	-
	67	230.3	15.1	230.3	224.6	190.0	155.4	120.8	-	213.7	17.0	213.7	210.9	183.1	148.5	114.0	-
	62	222.3	15.0	222.3	222.3	222.3	187.7	153.1	118.5	208.6	17.0	208.6	208.6	208.6	174.0	139.4	104.9
	57	215.8	15.0	215.8	215.8	215.8	181.2	146.6	112.0	204.6	17.0	204.6	204.6	204.6	170.0	135.4	100.8

ZJ210 (17.5 Ton) (Continued)

Air on Evaporator Coil		Temperature of Air on Condenser Coil															
		Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)						Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)					
CFM	WB (°F)			Return Dry Bulb (°F)								Return Dry Bulb (°F)					
				90	85	80	75	70	65			90	85	80	75	70	65
		115°F								**125°F**							
5500	77	230.9	19.1	108.4	87.7	63.4	-	-	-	222.4	21.1	112.0	81.5	59.3	-	-	-
	72	207.5	19.0	146.2	121.9	97.6	73.3	-	-	197.6	20.9	142.4	117.7	93.1	68.4	-	-
	67	184.1	18.9	184.1	156.1	131.8	107.5	83.2	-	172.9	20.8	172.9	151.5	126.8	102.1	77.4	-
	62	181.9	18.8	181.9	181.9	154.2	129.9	105.6	81.3	173.3	20.8	173.3	173.3	144.2	119.6	94.9	70.2
6000	77	232.5	19.1	124.7	92.9	67.0	-	-	-	222.3	21.1	128.9	88.9	62.6	-	-	-
	72	209.0	19.0	155.1	129.1	103.1	77.1	-	-	197.5	21.0	150.8	124.5	98.2	72.0	-	-
	67	185.4	18.9	185.4	165.2	139.2	113.2	87.3	-	172.7	20.8	172.7	160.1	133.8	107.6	81.3	-
	62	183.3	18.9	183.3	183.3	162.8	136.9	110.9	84.9	173.2	20.8	173.2	173.2	152.3	126.0	99.7	73.4
	57	181.7	18.9	181.7	181.7	163.1	137.2	111.2	85.2	173.9	20.8	173.9	173.9	154.3	128.0	101.7	75.5
6500	77	234.2	19.2	141.1	98.2	70.5	-	-	-	222.3	21.1	145.8	96.3	65.9	-	-	-
	72	210.5	19.1	163.9	136.2	108.6	80.9	-	-	197.4	21.0	159.2	131.3	103.4	75.5	-	-
	67	186.7	18.9	186.7	174.3	146.6	119.0	91.3	-	172.6	20.9	172.6	168.8	140.9	113.0	85.1	-
	62	184.6	18.9	184.6	184.6	171.5	143.8	116.2	88.5	173.1	20.9	173.1	173.1	160.3	132.4	104.5	76.6
	57	183.0	18.9	183.0	183.0	171.8	144.1	116.5	88.8	173.8	20.9	173.8	173.8	162.4	134.5	106.7	78.8
7000	77	235.9	19.2	157.4	103.4	74.1	-	-	-	222.2	21.2	162.7	103.7	69.2	-	-	-
	72	212.0	19.1	172.7	143.4	114.0	84.7	-	-	197.4	21.0	167.6	138.1	108.6	79.1	-	-
	67	188.1	19.0	188.1	183.4	154.0	124.7	95.3	-	172.5	20.9	172.5	172.5	147.9	118.5	89.0	-
	62	185.9	19.0	185.9	185.9	180.1	150.8	121.5	92.1	173.0	20.9	173.0	173.0	168.3	138.8	109.3	79.8
	57	184.3	18.9	184.3	184.3	180.5	151.1	121.8	92.4	173.8	20.9	173.8	173.8	170.6	141.1	111.6	82.1
7875	72	217.1	19.1	186.2	154.2	122.3	90.3	-	-	202.0	21.0	180.5	148.5	116.5	84.5	-	-
	67	192.6	19.0	192.6	190.3	165.2	133.2	101.2	-	176.6	20.9	176.6	176.6	158.7	126.7	94.6	-
	62	190.4	18.9	190.4	190.4	187.5	155.6	123.6	91.7	177.1	20.9	177.1	177.1	174.8	142.8	110.7	78.7
	57	188.8	18.9	188.8	188.8	186.9	154.9	123.0	91.0	177.9	20.9	177.9	177.9	176.3	144.3	112.3	80.2
8750	72	222.3	19.1	199.7	165.1	130.5	96.0	-	-	206.7	21.0	193.5	158.9	124.4	89.8	-	-
	67	197.2	19.0	197.2	197.2	176.3	141.7	107.1	-	180.6	20.9	180.6	180.6	169.4	134.9	100.3	-
	62	194.9	18.9	194.9	194.9	194.9	160.4	125.8	91.2	181.2	20.9	181.2	181.2	181.2	146.7	112.1	77.6
	57	193.3	18.9	193.3	193.3	193.3	158.7	124.1	89.6	182.0	20.9	182.0	182.0	182.0	147.5	112.9	78.4

1. These capacities are gross ratings. For net capacity, deduct air blower motor, MBh = 3.415 x kW. Refer to the appropriate Blower Performance Table for the kW of the supply air blower motor.
2. These ratings include the condenser fan motors (total 1 kW) and the compressor motors but not the supply air blower motor.

ZJ240 (20 Ton)

Air on Evaporator Coil		Temperature of Air on Condenser Coil															
		Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh) Return Dry Bulb (°F)						Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh) Return Dry Bulb (°F)					
CFM	WB (°F)			90	85	80	75	70	65			90	85	80	75	70	65
		75°F								**85°F**							
5000	77	312.8	14.5	131.5	108.5	85.8	-	-	-	296.3	16.3	127.4	104.6	81.9	-	-	-
	72	286.7	14.3	169.5	146.7	124.0	101.2	-	-	272.0	16.2	164.1	141.3	118.5	95.7	-	-
	67	260.5	14.1	207.5	184.9	162.2	139.4	116.7	-	247.7	16.0	200.8	178.0	155.2	132.4	109.6	-
	62	241.1	13.9	241.1	223.6	195.3	172.5	149.8	127.0	232.5	15.8	232.5	218.9	187.9	165.1	142.3	119.5
6000	77	326.2	14.6	145.7	119.9	94.0	-	-	-	306.7	16.4	141.3	115.5	89.6	-	-	-
	72	298.9	14.4	187.6	161.7	135.8	110.0	-	-	281.5	16.3	181.5	155.6	129.8	104.0	-	-
	67	271.6	14.2	229.4	203.5	177.7	151.8	125.9	-	256.3	16.1	221.6	195.8	169.9	144.1	118.3	-
	62	251.5	14.0	251.5	239.8	213.9	188.1	162.2	136.3	240.7	15.9	240.7	231.6	205.7	179.9	154.1	128.2
	57	244.1	14.1	244.1	244.4	221.2	195.3	169.5	143.6	235.2	16.0	235.2	235.2	210.7	184.9	159.0	133.2
7000	77	339.6	14.7	160.0	131.2	102.2	-	-	-	317.0	16.5	155.2	126.3	97.4	-	-	-
	72	311.2	14.5	205.7	176.7	147.7	118.7	-	-	291.0	16.3	198.8	170.0	141.1	112.2	-	-
	67	282.8	14.3	251.4	222.2	193.2	164.2	135.2	-	265.0	16.2	242.5	213.6	184.7	155.8	127.0	-
	62	261.9	14.1	261.9	256.0	232.6	203.6	174.7	145.7	248.8	16.0	248.8	244.2	223.6	194.7	165.9	137.0
	57	254.2	14.2	254.2	254.3	240.5	211.5	182.5	153.6	243.2	16.1	243.2	243.2	229.0	200.1	171.3	142.4
8000	77	353.0	14.8	174.2	142.5	110.4	-	-	-	327.4	16.5	169.1	137.1	105.2	-	-	-
	72	323.5	14.6	223.8	191.7	159.6	127.5	-	-	300.5	16.4	216.2	184.3	152.4	120.4	-	-
	67	294.0	14.3	273.3	240.8	208.7	176.6	144.5	-	273.7	16.3	263.3	231.4	199.5	167.6	135.6	-
	62	272.2	14.2	272.2	272.2	251.3	219.2	187.1	155.0	256.9	16.1	256.9	256.9	241.5	209.6	177.7	145.7
	57	264.3	14.3	264.3	264.3	259.8	227.7	195.6	163.5	251.1	16.2	251.1	251.1	247.3	215.4	183.5	151.6
8700	72	330.8	14.5	233.9	199.7	165.5	131.3	-	-	308.6	16.4	227.1	193.0	158.9	124.8	-	-
	67	300.6	14.3	290.3	250.7	216.5	182.3	148.2	-	281.0	16.2	275.9	242.1	208.0	174.0	139.9	-
	62	278.4	14.2	278.4	278.4	260.7	226.5	192.3	158.2	263.8	16.0	263.8	263.8	251.9	217.8	183.7	149.6
	57	270.2	14.3	270.2	270.2	268.0	233.8	199.6	165.5	257.9	16.1	257.9	257.9	256.0	221.9	187.8	153.7
9400	72	338.1	14.5	243.9	207.7	171.5	135.2	-	-	316.7	16.3	237.9	201.7	165.4	129.2	-	-
	67	307.3	14.3	307.3	260.5	224.3	188.0	151.8	-	288.4	16.2	288.4	252.8	216.6	180.3	144.1	-
	62	284.5	14.1	284.5	284.5	270.0	233.8	197.6	161.3	270.8	16.0	270.8	270.8	262.2	226.0	189.7	153.4
	57	276.1	14.3	276.1	276.1	276.1	239.9	203.7	167.4	264.6	16.1	264.6	264.6	264.6	228.4	192.1	155.9
		95°F								**105°F**							
5000	77	279.8	18.1	123.4	100.8	77.9	-	-	-	266.3	20.4	113.1	96.4	73.6	-	-	-
	72	257.3	18.0	158.7	135.9	113.1	90.2	-	-	242.4	20.3	153.2	130.4	107.6	84.9	-	-
	67	234.9	18.0	194.1	171.0	148.2	125.4	102.5	-	218.6	20.3	193.2	164.4	141.7	118.9	96.1	-
	62	224.0	17.7	224.0	214.2	180.5	157.6	134.8	112.0	209.6	20.1	209.6	204.7	170.6	147.8	125.0	102.3
6000	77	287.1	18.1	136.9	111.1	85.3	-	-	-	272.9	20.5	132.5	106.6	80.7	-	-	-
	72	264.1	18.1	175.4	149.6	123.8	98.0	-	-	248.5	20.4	169.8	143.9	118.0	92.1	-	-
	67	241.0	18.1	213.8	188.0	162.2	136.4	110.6	-	224.1	20.3	207.1	181.2	155.4	129.5	103.6	-
	62	229.9	17.8	229.9	223.3	197.5	171.7	145.9	120.1	214.8	20.1	214.8	211.6	187.1	161.2	135.3	109.4
	57	226.4	17.9	226.4	226.0	200.2	174.4	148.6	122.8	212.7	20.2	212.7	212.5	187.7	161.8	136.0	110.1
7000	77	294.4	18.2	150.4	121.4	92.7	-	-	-	279.5	20.5	151.8	116.8	87.8	-	-	-
	72	270.8	18.2	192.0	163.2	134.5	105.7	-	-	254.5	20.5	186.4	157.4	128.4	99.4	-	-
	67	247.2	18.1	233.6	205.0	176.2	147.5	118.7	-	229.5	20.4	221.1	198.1	169.1	140.1	111.0	-
	62	235.7	17.9	235.7	232.5	214.6	185.8	157.1	128.3	220.1	20.2	220.1	218.4	203.5	174.5	145.5	116.5
	57	232.1	17.9	232.1	232.0	217.5	188.7	160.0	131.2	217.8	20.2	217.8	217.7	204.3	175.3	146.3	117.3
8000	77	301.7	18.3	163.9	131.8	100.0	-	-	-	286.2	20.6	171.2	127.1	94.9	-	-	-
	72	277.5	18.3	208.6	176.9	145.2	113.4	-	-	260.6	20.5	203.1	171.0	138.8	106.7	-	-
	67	253.3	18.2	253.3	222.0	190.3	158.5	126.8	-	235.0	20.4	235.0	214.9	182.8	150.6	118.5	-
	62	241.6	18.0	241.6	241.6	231.7	199.9	168.2	136.5	225.3	20.2	225.3	225.3	220.0	187.9	155.8	123.7
	57	237.9	18.0	237.9	237.9	234.8	203.1	171.3	139.6	223.0	20.3	223.0	223.0	220.8	188.7	156.6	124.5
8700	72	286.4	18.2	220.3	186.3	152.3	118.3	-	-	268.6	20.5	214.5	180.2	145.9	111.6	-	-
	67	261.5	18.2	261.5	233.6	199.6	165.6	131.6	-	242.2	20.4	242.2	226.0	192.0	157.7	123.4	-
	62	249.3	17.9	249.3	249.3	243.0	209.0	175.0	141.0	232.2	20.2	232.2	232.2	228.9	194.6	160.3	126.0
	57	245.5	18.0	245.5	245.5	244.0	210.0	176.0	142.0	229.8	20.2	229.8	229.8	228.7	194.4	160.1	125.8
9400	72	295.3	18.1	231.9	195.7	159.4	123.1	-	-	276.5	20.4	225.9	189.4	152.9	116.4	-	-
	67	269.6	18.1	269.6	245.2	208.9	172.6	136.4	-	249.4	20.3	249.4	237.2	201.3	164.8	128.3	-
	62	257.1	17.9	257.1	257.1	254.4	218.1	181.8	145.6	239.1	20.2	239.1	239.1	237.8	201.3	164.8	128.3
	57	253.1	17.9	253.1	253.1	253.1	216.9	180.6	144.3	236.7	20.2	236.7	236.7	236.7	200.2	163.7	127.2

ZJ240 (20 Ton) (Continued)

Air on Evaporator Coil		Temperature of Air on Condenser Coil															
		Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)						Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)					
CFM	WB (°F)			Return Dry Bulb (°F)								Return Dry Bulb (°F)					
				90	85	80	75	70	65			90	85	80	75	70	65
		115°F								**125°F**							
5000	77	252.8	22.8	102.8	92.0	69.2	-	-	-	239.3	25.2	98.0	86.4	64.9	-	-	-
	72	227.6	22.7	147.6	124.9	102.2	79.5	-	-	212.7	25.0	142.0	119.4	96.7	74.1	-	-
	67	202.4	22.5	192.4	157.8	135.1	112.4	89.7	-	186.1	24.8	186.1	151.2	128.6	105.9	83.3	-
	62	195.2	22.4	195.2	195.2	160.7	138.0	115.3	92.5	180.9	24.7	180.9	180.9	150.8	128.1	105.5	82.8
6000	77	258.7	22.8	128.0	102.1	76.1	-	-	-	244.6	25.2	127.2	97.6	71.5	-	-	-
	72	232.9	22.7	164.2	138.3	112.3	86.3	-	-	217.4	25.0	158.7	132.6	106.6	80.5	-	-
	67	207.1	22.6	200.4	174.5	148.5	122.5	96.6	-	190.2	24.8	190.2	167.7	141.6	115.6	89.5	-
	62	199.8	22.4	199.8	199.8	176.6	150.6	124.6	98.7	184.8	24.7	184.8	184.8	166.1	140.0	114.0	87.9
	57	198.9	22.5	198.9	198.9	175.3	149.3	123.3	97.3	185.2	24.8	185.2	185.2	162.8	136.7	110.7	84.6
7000	77	264.7	22.9	153.2	112.2	83.0	-	-	-	249.8	25.2	156.5	108.7	78.1	-	-	-
	72	238.3	22.7	180.9	151.7	122.4	93.2	-	-	222.0	25.0	175.3	145.9	116.4	86.9	-	-
	67	211.9	22.6	208.5	191.1	161.9	132.6	103.4	-	194.2	24.8	194.2	184.2	154.7	125.2	95.8	-
	62	204.4	22.5	204.4	204.4	192.5	163.2	134.0	104.8	188.8	24.8	188.8	188.8	181.4	151.9	122.5	93.0
	57	203.5	22.5	203.5	203.5	191.1	161.8	132.6	103.3	189.2	24.8	189.2	189.2	177.8	148.3	118.9	89.4
8000	77	270.6	22.9	178.5	122.3	89.8	-	-	-	255.1	25.2	185.7	119.9	84.7	-	-	-
	72	243.6	22.8	197.5	165.0	132.5	100.0	-	-	226.7	25.0	192.0	159.1	126.2	93.3	-	-
	67	216.6	22.6	216.6	207.8	175.3	142.8	110.3	-	198.3	24.8	198.3	198.3	167.8	134.9	102.0	-
	62	209.0	22.5	209.0	209.0	208.4	175.9	143.4	110.9	192.7	24.8	192.7	192.7	192.7	163.9	131.0	98.1
	57	208.1	22.5	208.1	208.1	206.8	174.3	141.8	109.3	193.2	24.8	193.2	193.2	192.9	160.0	127.1	94.2
8700	72	250.7	22.7	208.7	174.1	139.5	104.9	-	-	232.8	25.0	202.9	168.0	133.1	98.2	-	-
	67	222.9	22.6	222.9	218.5	184.5	149.9	115.3	-	203.7	24.8	203.7	203.7	176.9	142.0	107.1	-
	62	215.1	22.5	215.1	215.1	214.8	180.2	145.6	111.0	198.0	24.7	198.0	198.0	198.0	165.7	130.8	95.9
	57	214.1	22.5	214.1	214.1	213.5	178.9	144.3	109.7	198.4	24.8	198.4	198.4	198.3	163.4	128.5	93.6
9400	72	257.8	22.7	219.9	183.2	146.5	109.8	-	-	239.0	25.0	213.8	176.9	140.0	103.1	-	-
	67	229.2	22.6	229.2	229.2	193.7	157.0	120.3	-	209.0	24.8	209.0	209.0	186.1	149.2	112.2	-
	62	221.1	22.4	221.1	221.1	221.1	184.5	147.8	111.1	203.2	24.7	203.2	203.2	203.2	167.6	130.7	93.8
	57	220.2	22.5	220.2	220.2	220.2	183.5	146.8	110.1	203.7	24.8	203.7	203.7	203.7	166.8	129.9	92.9

1. These capacities are gross ratings. For net capacity, deduct air blower motor, MBh = 3.415 x kW. Refer to the appropriate Blower Performance Table for the kW of the supply air blower motor.
2. These ratings include the condenser fan motors (total 1 kW) and the compressor motors but not the supply air blower motor.

ZJ300 (25 Ton)

Air on Evaporator Coil		Temperature of Air on Condenser Coil															
		Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)						Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)					
CFM	WB (°F)			Return Dry Bulb (°F)								Return Dry Bulb (°F)					
				90	85	80	75	70	65			90	85	80	75	70	65
		75°F								**85°F**							
6250	77	329.7	19.3	272.5	244.5	216.4	-	-	-	340.3	21.8	215.3	187.8	160.3	-	-	-
	72	331.9	19.3	263.2	235.2	207.1	179.1	-	-	327.9	21.7	230.9	203.4	175.8	148.3	-	-
	67	334.0	19.3	253.9	225.8	197.8	169.8	141.7	-	315.4	21.5	246.4	218.9	191.4	163.8	136.3	-
	62	310.6	19.2	310.6	267.5	238.2	210.2	182.1	154.1	293.0	21.2	293.0	266.6	233.1	205.5	178.0	150.5
7500	77	338.9	19.4	296.1	266.3	236.4	-	-	-	349.9	22.0	234.1	204.4	174.7	-	-	-
	72	341.1	19.4	286.2	256.3	226.5	196.6	-	-	337.2	21.8	251.0	221.4	191.7	162.0	-	-
	67	343.3	19.5	276.2	246.3	216.5	186.6	156.8	-	324.4	21.7	268.0	238.3	208.6	178.9	149.2	-
	62	319.3	19.3	319.3	290.6	260.7	230.9	201.0	171.2	301.4	21.3	301.4	283.7	254.0	224.4	194.7	165.0
	57	306.6	19.1	306.6	306.6	288.7	258.9	229.0	199.2	292.1	21.2	292.1	292.1	277.8	248.1	218.4	188.7
8750	77	348.2	19.6	319.7	288.1	256.4	-	-	-	359.6	22.1	252.9	221.0	189.2	-	-	-
	72	350.4	19.6	309.1	277.4	245.8	214.1	-	-	346.5	22.0	271.2	239.4	207.5	175.7	-	-
	67	352.7	19.6	298.5	266.8	235.2	203.5	171.8	-	333.4	21.8	289.5	257.7	225.8	194.0	162.1	-
	62	328.0	19.5	328.0	313.6	283.2	251.5	219.9	188.2	309.7	21.5	309.7	300.9	275.0	243.2	211.3	179.5
	57	315.0	19.2	315.0	315.0	313.6	281.9	250.3	218.6	300.2	21.3	300.2	300.2	300.7	268.9	237.0	205.1
10000	77	357.4	19.7	343.3	309.9	276.4	-	-	-	369.3	22.3	271.7	237.6	203.6	-	-	-
	72	359.7	19.7	332.1	298.6	265.1	231.6	-	-	355.8	22.1	291.4	257.4	223.4	189.3	-	-
	67	362.0	19.7	320.8	287.3	253.8	220.3	186.9	-	342.4	22.0	311.1	277.1	243.1	209.1	175.0	-
	62	336.7	19.6	336.7	336.7	305.7	272.2	238.8	205.3	318.0	21.6	318.0	318.0	296.0	262.0	228.0	194.0
	57	323.3	19.3	323.3	323.3	338.5	305.0	271.5	238.1	308.3	21.5	308.3	308.3	323.7	289.6	255.6	221.6
11250	72	362.7	20.5	352.6	322.0	291.4	260.8	-	-	358.1	22.7	307.6	275.8	243.9	212.1	-	-
	67	365.0	20.6	344.4	310.2	279.6	249.1	218.5	-	344.6	22.5	329.0	297.3	265.5	233.6	201.7	-
	62	339.5	20.4	339.5	339.5	324.0	293.4	262.8	232.2	320.1	22.2	320.1	320.1	309.1	277.2	245.4	213.5
	57	326.0	20.1	326.0	326.0	333.6	303.0	272.4	241.9	310.3	22.0	310.3	310.3	318.0	286.1	254.3	222.4
12500	72	365.8	21.4	373.1	345.4	317.7	290.1	-	-	360.4	23.2	323.9	294.2	264.5	234.8	-	-
	67	368.0	21.4	368.0	333.1	305.4	277.8	250.1	-	346.8	23.1	346.8	317.5	287.8	258.1	228.4	-
	62	342.2	21.2	342.2	342.2	342.2	314.5	286.9	259.2	322.2	22.7	322.2	322.2	322.2	292.5	262.8	233.1
	57	328.7	20.9	328.7	328.7	328.7	301.0	273.3	245.7	312.3	22.5	312.3	312.3	312.3	282.6	252.9	223.2
		95°F								**105°F**							
6250	77	350.8	24.4	158.2	131.2	104.2	-	-	-	332.2	27.0	148.2	122.8	95.7	-	-	-
	72	323.9	24.0	198.5	171.5	144.5	117.5	-	-	306.0	26.7	190.4	163.3	136.2	109.1	-	-
	67	296.9	23.7	238.9	211.9	184.9	157.9	130.9	-	279.7	26.4	232.6	203.9	176.8	149.7	122.6	-
	62	275.5	23.2	275.5	265.7	227.9	200.9	173.9	146.9	260.5	25.8	260.5	255.6	218.5	191.4	164.3	137.3
7500	77	360.9	24.6	172.1	142.6	113.1	-	-	-	340.1	27.2	163.0	133.6	104.2	-	-	-
	72	333.2	24.2	215.9	186.4	156.9	127.4	-	-	313.2	26.9	207.2	177.8	148.3	118.9	-	-
	67	305.5	23.9	259.8	230.2	200.7	171.2	141.7	-	286.3	26.5	251.4	221.9	192.5	163.1	133.7	-
	62	283.5	23.3	283.5	276.9	247.4	217.9	188.3	158.8	266.7	26.0	266.7	263.4	238.0	208.5	179.1	149.7
	57	277.7	23.3	277.7	277.7	266.8	237.3	207.8	178.2	261.9	26.0	261.9	261.9	254.2	224.8	195.4	165.9
8750	77	371.1	24.7	186.1	154.0	122.0	-	-	-	347.9	27.4	177.8	144.4	112.7	-	-	-
	72	342.6	24.4	233.3	201.3	169.2	137.2	-	-	320.4	27.0	224.0	192.2	160.5	128.7	-	-
	67	314.1	24.1	280.6	248.6	216.5	184.5	152.4	-	292.9	26.7	270.2	240.0	208.2	176.5	144.7	-
	62	291.4	23.5	291.4	288.1	266.9	234.8	202.8	170.7	272.8	26.1	272.8	271.2	257.4	225.7	193.9	162.1
	57	285.5	23.5	285.5	285.5	287.8	255.8	223.7	191.7	267.9	26.1	267.9	267.9	275.0	243.2	211.5	179.7
10000	77	381.2	24.9	200.0	165.4	130.9	-	-	-	355.8	27.6	192.6	155.3	121.2	-	-	-
	72	351.9	24.6	250.7	216.2	181.6	147.0	-	-	327.7	27.2	240.8	206.7	172.6	138.5	-	-
	67	322.7	24.2	301.4	266.9	232.3	197.8	163.2	-	299.6	26.9	289.0	258.1	224.0	189.9	155.8	-
	62	299.4	23.7	299.4	299.4	286.3	251.8	217.2	182.7	279.0	26.3	279.0	279.0	276.9	242.8	208.7	174.6
	57	293.3	23.6	293.3	293.3	308.8	274.2	239.7	205.1	274.0	26.3	274.0	274.0	295.7	261.6	227.5	193.4
11250	72	353.5	24.8	262.7	229.6	196.4	163.3	-	-	325.9	27.5	251.5	219.1	186.7	154.3	-	-
	67	324.1	24.5	313.5	284.4	251.3	218.1	185.0	-	297.9	27.1	292.6	271.3	242.3	209.9	177.5	-
	62	300.7	23.9	300.7	300.7	294.2	261.1	227.9	194.8	277.5	26.5	277.5	277.5	276.4	244.0	211.6	179.2
	57	294.6	23.9	294.6	294.6	302.4	269.2	236.1	202.9	272.5	26.5	272.5	272.5	283.3	250.9	218.5	186.1
12500	72	355.1	25.1	274.7	243.0	211.2	179.5	-	-	324.1	27.7	262.2	231.5	200.8	170.1	-	-
	67	325.6	24.7	325.6	302.0	270.3	238.5	206.8	-	296.3	27.4	296.3	284.5	260.6	229.9	199.2	-
	62	302.1	24.2	302.1	302.1	302.1	270.4	238.7	206.9	275.9	26.8	275.9	275.9	275.9	245.2	214.5	183.8
	57	295.9	24.1	295.9	295.9	295.9	264.2	232.5	200.8	270.9	26.8	270.9	270.9	270.9	240.2	209.5	178.8

ZJ300 (25 Ton) (Continued)

Air on Evaporator Coil		Temperature of Air on Condenser Coil															
		Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)						Total Capacity[1] (MBh)	Total Input (kW)[2]	Sensible Capacity (MBh)					
CFM	WB (°F)			Return Dry Bulb (°F)								Return Dry Bulb (°F)					
				90	85	80	75	70	65			90	85	80	75	70	65
		115°F								**125°F**							
6250	77	313.7	29.7	138.3	114.3	87.2	-	-	-	295.1	32.3	123.1	105.9	78.7	-	-	-
	72	288.1	29.4	182.3	155.1	127.9	100.7	-	-	270.2	32.0	174.1	146.9	119.6	92.3	-	-
	67	262.5	29.0	226.2	195.8	168.7	141.5	114.3	-	245.2	31.7	219.9	187.8	160.5	133.3	106.0	-
	62	245.5	28.5	245.5	245.5	209.1	182.0	154.8	127.6	230.5	31.1	230.5	230.5	202.7	172.5	145.2	118.0
7500	77	319.2	29.9	153.9	124.6	95.3	-	-	-	298.4	32.5	144.8	115.6	86.4	-	-	-
	72	293.2	29.5	198.5	169.1	139.8	110.5	-	-	273.2	32.2	189.7	160.5	131.2	102.0	-	-
	67	267.1	29.2	243.0	213.7	184.3	155.0	125.7	-	247.9	31.8	234.6	205.4	176.1	146.9	117.6	-
	62	249.9	28.6	249.9	249.9	228.6	199.2	169.9	140.6	233.1	31.2	233.1	233.1	219.2	189.9	160.7	131.4
	57	246.1	28.7	246.1	246.1	241.6	212.3	183.0	153.6	230.3	31.4	230.3	230.3	229.0	199.8	170.5	141.3
8750	77	324.8	30.0	169.6	134.8	103.4	-	-	-	301.7	32.7	166.6	125.3	94.1	-	-	-
	72	298.3	29.7	214.6	183.2	151.7	120.2	-	-	276.2	32.3	205.3	174.1	142.9	111.7	-	-
	67	271.8	29.3	259.7	231.5	200.0	168.5	137.0	-	250.7	32.0	249.3	222.9	191.7	160.5	129.3	-
	62	254.3	28.8	254.3	254.3	248.0	216.5	185.0	153.5	235.7	31.4	235.7	235.7	235.7	207.3	176.1	144.9
	57	250.4	28.8	250.4	250.4	262.2	230.7	199.2	167.7	232.8	31.5	232.8	232.8	232.8	218.1	186.9	155.7
10000	77	330.4	30.2	185.2	145.1	111.5	-	-	-	305.0	32.8	188.4	134.9	101.7	-	-	-
	72	303.4	29.8	230.8	197.2	163.5	129.9	-	-	279.2	32.5	220.9	187.7	154.5	121.3	-	-
	67	276.5	29.5	276.5	249.3	215.6	182.0	148.4	-	253.4	32.1	253.4	240.5	207.3	174.1	140.9	-
	62	258.6	28.9	258.6	258.6	267.4	233.8	200.1	166.5	238.2	31.6	238.2	238.2	238.2	224.8	191.6	158.4
	57	254.7	29.0	254.7	254.7	282.7	249.0	215.4	181.8	235.4	31.7	235.4	235.4	235.4	235.4	203.3	170.1
11250	72	298.2	30.1	240.3	208.6	177.0	145.3	-	-	270.6	32.7	229.1	198.2	167.2	136.3	-	-
	67	271.7	29.7	271.7	258.1	233.3	201.6	170.0	-	245.5	32.4	245.5	245.0	224.3	193.4	162.5	-
	62	254.2	29.2	254.2	254.2	258.6	226.9	195.3	163.6	230.9	31.8	230.9	230.9	230.9	209.8	178.9	148.0
	57	250.3	29.2	250.3	250.3	264.3	232.7	201.0	169.3	228.2	31.9	228.2	228.2	228.2	214.4	183.4	152.5
12500	72	293.0	30.3	249.8	220.1	190.4	160.7	-	-	262.0	32.9	237.3	208.6	179.9	151.2	-	-
	67	267.0	30.0	267.0	267.0	251.0	221.3	191.6	-	237.7	32.6	237.7	237.7	237.7	212.7	184.0	-
	62	249.8	29.4	249.8	249.8	249.8	220.1	190.4	160.7	223.6	32.0	223.6	223.6	223.6	194.9	166.2	137.5
	57	246.0	29.4	246.0	246.0	246.0	216.3	186.6	156.9	221.0	32.1	221.0	221.0	221.0	192.3	163.6	134.9

1. These capacities are gross ratings. For net capacity, deduct air blower motor, MBh = 3.415 x kW. Refer to the appropriate Blower Performance Table for the kW of the supply air blower motor.
2. These ratings include the condenser fan motors (total 1 kW) and the compressor motors but not the supply air blower motor.

Airflow Performance

ZJ180-300 Side Duct Application

ZJ180 (15 Ton) Side Duct

Air Flow (CFM)	Available External Static Pressure - IWG[1]																					
	0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Standard 5 HP & Field Supplied Drive						Standard 5 HP & Drive								High Static 5 HP & Drive									
4000	727	1.14	765	1.47	806	1.77	848	2.04	891	2.29	934	2.52	977	2.73	1020	2.93	1061	3.12	1101	3.30	1138	3.48	1174	3.67
4400	753	1.51	792	1.84	832	2.14	874	2.41	917	2.66	960	2.88	1004	3.09	1046	3.29	1087	3.48	1127	3.67	1165	3.85	1200	4.03
4800	781	1.92	820	2.25	861	2.55	903	2.82	946	3.06	989	3.29	1032	3.50	1074	3.70	1116	3.89	1155	4.08	1193	4.26	1228	4.44
5200	812	2.37	850	2.70	891	3.00	933	3.27	976	3.52	1019	3.74	1062	3.95	1105	4.15	1146	4.34	1186	4.53	1223	4.71	1259	4.89
5600	844	2.86	882	3.19	923	3.49	965	3.76	1008	4.01	1051	4.23	1094	4.45	1137	4.64	1178	4.83	1218	5.02	1255	5.20	1291	5.39
6000	877	3.39	916	3.72	957	4.02	999	4.29	1042	4.54	1085	4.76	1128	4.98	1170	5.17	1212	5.36	1251	5.55	1289	5.73	-	-
6400	912	3.96	951	4.29	992	4.59	1034	4.86	1077	5.10	1120	5.33	1163	5.54	1205	5.74	-	-	-	-	-	-	-	-
6800	949	4.56	988	4.89	1028	5.19	1070	5.46	1113	5.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7200	986	5.20	1025	5.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
																			5 HP & Field Supplied Drive					

1. Blower performance includes gas heat exchangers and 2" filters. See STATIC RESISTANCE table for additional applications.
2. See RPM SELECTION table to determine desired motor sheave setting and to determine the maximum continuous BHP.
3. kW = BHP x 0.898.

ZJ210 (17.5 Ton) Side Duct

Air Flow (CFM)	Available External Static Pressure - IWG[1]																					
	0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Standard 5 HP & Field Supplied Drive						Standard 5 HP & Drive										High Static 7.5 HP & Drive							
4400	636	0.65	672	1.14	709	1.60	745	2.03	780	2.43	815	2.78	849	3.09	882	3.35	914	3.55	944	3.70	973	3.78	999	3.79
4800	649	0.99	685	1.48	721	1.94	757	2.37	793	2.77	828	3.12	862	3.43	895	3.69	927	3.89	957	4.04	985	4.12	1012	4.13
5200	663	1.34	700	1.83	736	2.29	772	2.72	808	3.11	843	3.47	877	3.78	910	4.04	942	4.24	972	4.39	1000	4.47	1027	4.48
5600	680	1.71	717	2.20	753	2.66	789	3.09	825	3.48	860	3.84	894	4.15	927	4.41	959	4.61	989	4.76	1017	4.84	1044	4.85
6000	699	2.11	735	2.60	772	3.06	808	3.49	844	3.88	879	4.24	913	4.55	946	4.80	977	5.01	1007	5.15	1036	5.24	1062	5.25
6400	719	2.55	756	3.03	792	3.49	828	3.92	864	4.32	899	4.67	933	4.98	966	5.24	998	5.45	1028	5.59	1056	5.67	1083	5.68
6800	742	3.02	778	3.51	814	3.97	850	4.40	886	4.79	921	5.15	955	5.46	988	5.72	1020	5.92	1050	6.07	1078	6.15	1105	6.16
7200	765	3.54	802	4.03	838	4.49	874	4.92	910	5.32	945	5.67	979	5.98	1012	6.24	1044	6.44	1074	6.59	1102	6.67	1129	6.68
7600	790	4.11	827	4.60	863	5.06	899	5.49	935	5.88	970	6.24	1004	6.55	1037	6.81	1069	7.01	1099	7.16	1127	7.24	1154	7.25
8000	817	4.72	853	5.21	890	5.67	926	6.10	962	6.50	997	6.85	1031	7.16	1064	7.42	1095	7.62	1125	7.77	1154	7.85	1180	7.86
8400	845	5.38	881	5.87	918	6.33	954	6.76	990	7.16	1025	7.51	1059	7.82	1092	8.08	1123	8.28	1153	8.43	1182	8.51	1208	8.52
8800	874	6.09	911	6.58	947	7.04	983	7.47	1019	7.86	1054	8.22	1088	8.53	-	-	-	-	-	-	-	-	-	-
																			7.5 HP & Field Supplied Drive					

1. Blower performance includes gas heat exchangers and 2" filters. See STATIC RESISTANCE table for additional applications.
2. See RPM SELECTION table to determine desired motor sheave setting and to determine the maximum continuous BHP.
3. kW = BHP x 0.838.

ZJ240 (20 Ton) Side Duct

Air Flow (CFM)	Available External Static Pressure - IWG[1]																					
	0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Standard 5 HP & Field Supplied Drive				Standard 5 HP & Drive										High Static 7.5 HP & Drive									
5200	663	1.34	700	1.83	736	2.29	772	2.72	808	3.11	843	3.47	877	3.78	910	4.04	942	4.24	972	4.39	1000	4.47	1027	4.48
5600	680	1.71	717	2.20	753	2.66	789	3.09	825	3.48	860	3.84	894	4.15	927	4.41	959	4.61	989	4.76	1017	4.84	1044	4.85
6000	699	2.11	735	2.60	772	3.06	808	3.49	844	3.88	879	4.24	913	4.55	946	4.80	977	5.01	1007	5.15	1036	5.24	1062	5.25
6400	719	2.55	756	3.03	792	3.49	828	3.92	864	4.32	899	4.67	933	4.98	966	5.24	998	5.45	1028	5.59	1056	5.67	1083	5.68
6800	742	3.02	778	3.51	814	3.97	850	4.40	886	4.79	921	5.15	955	5.46	988	5.72	1020	5.92	1050	6.07	1078	6.15	1105	6.16
7200	765	3.54	802	4.03	838	4.49	874	4.92	910	5.32	945	5.67	979	5.98	1012	6.24	1044	6.44	1074	6.59	1102	6.67	1129	6.68
7600	790	4.11	827	4.60	863	5.06	899	5.49	935	5.88	970	6.24	1004	6.55	1037	6.81	1069	7.01	1099	7.16	1127	7.24	1154	7.25
8000	817	4.72	853	5.21	890	5.67	926	6.10	962	6.50	997	6.85	1031	7.16	1064	7.42	1095	7.62	1125	7.77	1154	7.85	1180	7.86
8400	845	5.38	881	5.87	918	6.33	954	6.76	990	7.16	1025	7.51	1059	7.82	1092	8.08	1123	8.28	1153	8.43	1182	8.51	1208	8.52
8800	874	6.09	911	6.58	947	7.04	983	7.47	1019	7.86	1054	8.22	1088	8.53	-	-	-	-	-	-	-	-	-	-
9200	905	6.85	941	7.33	977	7.79	1014	8.22	1049	8.62	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9600	936	7.65	973	8.13	1009	8.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10000	969	8.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
																			7.5 HP & Field Supplied Drive					

1. Blower performance includes gas heat exchangers and 2” filters. See STATIC RESISTANCE table for additional applications.
2. See RPM SELECTION table to determine desired motor sheave setting and to determine the maximum continuous BHP.
3. kW = BHP x 0.838.

ZJ300 (25 Ton) Side Duct

Air Flow (CFM)	Available External Static Pressure - IWG[1]															
	0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Low Static 7.5 HP & Field Supplied Drive				Low Static 7.5 HP & Drive											
6600	760	2.51	793	3.11	824	3.68	856	4.23	887	4.74	919	5.23	950	5.70	983	6.15
7000	775	2.99	808	3.60	839	4.17	871	4.71	902	5.22	934	5.72	966	6.19	998	6.64
7400	792	3.51	824	4.11	856	4.69	887	5.23	918	5.74	950	6.24	982	6.70	1014	7.16
7800	809	4.07	841	4.67	873	5.24	904	5.78	935	6.30	967	6.79	999	7.26	1031	7.71
8200	826	4.66	859	5.27	890	5.84	922	6.38	953	6.89	985	7.39	1016	7.86	1049	8.31
8600	845	5.30	877	5.90	909	6.47	940	7.01	972	7.53	1003	8.02	1035	8.49	1067	8.94
9000	864	5.97	896	6.57	928	7.14	960	7.69	991	8.20	1022	8.69	1054	9.16	1087	9.61
9400	884	6.68	916	7.28	948	7.86	980	8.40	1011	8.91	1042	9.41	1074	9.88	1107	10.33
9800	905	7.43	937	8.04	969	8.61	1000	9.15	1032	9.67	1063	10.16	1095	10.63	1127	11.08
10200	926	8.22	958	8.83	990	9.40	1021	9.94	1053	10.46	1084	10.95	1116	11.42	1148	11.87
10600	948	9.05	980	9.66	1012	10.23	1043	10.77	1075	11.29	1106	11.78	1138	12.25	1170	12.70
11000	970	9.92	1003	10.52	1034	11.09	1066	11.64	1097	12.15	1128	12.64	1160	13.11	1193	13.56
11400	993	10.82	1025	11.43	1057	12.00	1089	12.54	1120	13.06	1151	13.55	1183	14.02	1216	14.47
11800	1017	11.76	1049	12.37	1081	12.94	1112	13.48	1143	14.00	1175	14.49	1207	14.96	1239	15.41
12200	1040	12.74	1073	13.34	1104	13.91	1136	14.46	1167	14.97	1199	15.46	1231	15.93	1263	16.38
12600	1065	13.75	1097	14.35	1129	14.92	1160	15.47	1192	15.98	1223	16.47	1255	16.94	-	-
	High Static 15 HP & Drive															

Standard 10 HP & Drive

Air Flow (CFM)	Available External Static Pressure - IWG[1]															
	2.0		2.2		2.4		2.6		2.8		3.0		3.2		3.4	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Standard 10 HP & Drive										High Static 15 HP & Drive					
6600	1016	6.59	1050	7.00	1086	7.41	1123	7.81	1161	8.19	1202	8.58	1244	8.95	1289	9.33
7000	1031	7.07	1065	7.49	1101	7.89	1138	8.29	1176	8.68	1217	9.06	1259	9.44	1304	9.82
7400	1047	7.59	1081	8.01	1117	8.41	1154	8.81	1192	9.20	1233	9.58	1275	9.96	1320	10.34
7800	1064	8.14	1098	8.56	1134	8.97	1171	9.36	1209	9.75	1250	10.13	1292	10.51	1337	10.89
8200	1082	8.74	1116	9.16	1152	9.56	1189	9.96	1227	10.35	1268	10.73	1310	11.11	1355	11.49
8600	1101	9.37	1135	9.79	1170	10.20	1207	10.59	1246	10.98	1286	11.36	1329	11.74	1374	12.12
9000	1120	10.05	1154	10.46	1189	10.87	1226	11.27	1265	11.65	1305	12.04	1348	12.41	1393	12.79
9400	1140	10.76	1174	11.18	1209	11.58	1246	11.98	1285	12.37	1325	12.75	1368	13.13	1413	13.51
9800	1160	11.51	1195	11.93	1230	12.33	1267	12.73	1306	13.12	1346	13.50	1389	13.88	1434	14.26
10200	1182	12.30	1216	12.72	1251	13.12	1288	13.52	1327	13.91	1367	14.29	1410	14.67	1455	15.05
10600	1204	13.13	1238	13.55	1273	13.95	1310	14.35	1349	14.74	1389	15.12	1432	15.50	1477	15.88
11000	1226	14.00	1260	14.41	1296	14.82	1332	15.22	1371	15.60	1412	15.99	1454	16.36	1499	16.74
11400	1249	14.90	1283	15.32	1318	15.72	1355	16.12	1394	16.51	1434	16.89	-	-	-	-
11800	1272	15.84	1306	16.26	1342	16.66	1379	17.06	-	-	-	-	-	-	-	-
12200	1296	16.82	1330	17.23	-	-	-	-	-	-	-	-	-	-	-	-
12600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15 HP & Field Supplied Drive															

1. Blower performance includes gas heat exchangers and 2” filters. See STATIC RESISTANCE table for additional applications.
2. See RPM SELECTION table to determine desired motor sheave setting and to determine the maximum continuous BHP.
3. kW = BHP x 0.82.

ZJ180-300 Bottom Duct Application

ZJ180 (15 Ton) Bottom Duct

Air Flow (CFM)	Available External Static Pressure - IWG[1]																					
	0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Standard 5 HP & Field Supplied Drive				Standard 5 HP & Drive								High Static 5 HP & Drive											
4000	768	1.24	806	1.55	846	1.83	888	2.09	930	2.32	972	2.53	1015	2.73	1056	2.91	1097	3.09	1136	3.27	1173	3.44	1208	3.61
4400	797	1.65	835	1.96	875	2.24	916	2.49	959	2.72	1001	2.93	1043	3.13	1085	3.32	1126	3.50	1165	3.67	1202	3.84	1237	4.02
4800	828	2.09	866	2.40	906	2.68	947	2.93	989	3.16	1032	3.38	1074	3.58	1116	3.76	1157	3.94	1196	4.11	1233	4.28	1267	4.46
5200	860	2.57	898	2.88	938	3.16	980	3.41	1022	3.65	1064	3.86	1107	4.06	1148	4.24	1189	4.42	1228	4.59	1265	4.77	1300	4.94
5600	894	3.09	932	3.40	972	3.68	1014	3.93	1056	4.16	1098	4.38	1141	4.57	1182	4.76	1223	4.94	1262	5.11	1299	5.28	1334	5.46
6000	930	3.64	968	3.95	1008	4.23	1049	4.48	1091	4.71	1134	4.93	1176	5.12	1218	5.31	1259	5.49	1298	5.66	-	-	-	-
6400	966	4.22	1005	4.53	1045	4.81	1086	5.06	1128	5.30	1171	5.51	1213	5.71	-	-	-	-	-	-	-	-	-	-
6800	1005	4.84	1043	5.14	1083	5.42	1124	5.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7200	1044	5.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
																	5 HP & Field Supplied Drive							

1. Blower performance includes gas heat exchangers and 2" filters. See STATIC RESISTANCE table for additional applications.
2. See RPM SELECTION table to determine desired motor sheave setting and to determine the maximum continuous BHP.
3. kW = BHP x 0.898.

ZJ210 (17.5 Ton) Bottom Duct

Air Flow (CFM)	Available External Static Pressure - IWG[1]																					
	0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Standard 5 HP & Field Supplied Drive				Standard 5 HP & Drive												High Static 7.5 HP & Drive							
4400	661	0.74	697	1.19	733	1.62	768	2.03	803	2.40	838	2.73	871	3.02	904	3.26	935	3.45	964	3.59	992	3.66	1018	3.67
4800	677	1.07	712	1.53	748	1.96	784	2.36	819	2.73	853	3.06	887	3.35	919	3.59	950	3.79	980	3.92	1008	4.00	1034	4.01
5200	694	1.43	730	1.89	766	2.32	801	2.72	836	3.09	871	3.42	904	3.71	937	3.95	968	4.14	997	4.28	1025	4.35	1051	4.37
5600	713	1.82	749	2.27	785	2.71	820	3.11	856	3.48	890	3.81	923	4.10	956	4.34	987	4.53	1017	4.67	1045	4.74	1071	4.75
6000	734	2.25	770	2.70	806	3.13	841	3.53	877	3.90	911	4.23	944	4.52	977	4.77	1008	4.96	1038	5.09	1066	5.17	1092	5.18
6400	757	2.71	793	3.17	829	3.60	864	4.00	899	4.37	934	4.70	967	4.99	1000	5.23	1031	5.42	1060	5.56	1088	5.64	1114	5.65
6800	781	3.22	817	3.68	853	4.11	888	4.51	923	4.88	958	5.21	991	5.50	1024	5.74	1055	5.94	1085	6.07	1112	6.15	1139	6.16
7200	807	3.78	843	4.23	878	4.66	914	5.07	949	5.44	983	5.77	1017	6.06	1049	6.30	1081	6.49	1110	6.63	1138	6.70	1164	6.71
7600	834	4.38	870	4.83	905	5.26	941	5.67	976	6.04	1010	6.37	1044	6.66	1076	6.90	1108	7.09	1137	7.23	1165	7.30	1191	7.31
8000	862	5.02	898	5.48	934	5.91	969	6.31	1004	6.68	1039	7.01	1072	7.30	1105	7.55	1136	7.74	1166	7.87	1194	7.95	1220	7.96
8400	892	5.71	928	6.17	963	6.60	999	7.00	1034	7.37	1069	7.70	1102	7.99	1134	8.24	1166	8.43	1195	8.56	-	-	-	-
8800	923	6.45	959	6.91	994	7.34	1030	7.74	1065	8.11	1099	8.44	-	-	-	-	-	-	-	-	-	-	-	-
																	7.5 HP & Field Supplied Drive							

1. Blower performance includes gas heat exchangers and 2" filters. See STATIC RESISTANCE table for additional applications.
2. See RPM SELECTION table to determine desired motor sheave setting and to determine the maximum continuous BHP.
3. kW = BHP x 0.838.

ZJ240 (20 Ton) Bottom Duct

Air Flow (CFM)	Available External Static Pressure - IWG[1]																					
	0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Standard 5 HP & Field Supplied Drive		Standard 5 HP & Drive												High Static 7.5 HP & Drive									
5200	694	1.43	730	1.89	766	2.32	801	2.72	836	3.09	871	3.42	904	3.71	937	3.95	968	4.14	997	4.28	1025	4.35	1051	4.37
5600	713	1.82	749	2.27	785	2.71	820	3.11	856	3.48	890	3.81	923	4.10	956	4.34	987	4.53	1017	4.67	1045	4.74	1071	4.75
6000	734	2.25	770	2.70	806	3.13	841	3.53	877	3.90	911	4.23	944	4.52	977	4.77	1008	4.96	1038	5.09	1066	5.17	1092	5.18
6400	757	2.71	793	3.17	829	3.60	864	4.00	899	4.37	934	4.70	967	4.99	1000	5.23	1031	5.42	1060	5.56	1088	5.64	1114	5.65
6800	781	3.22	817	3.68	853	4.11	888	4.51	923	4.88	958	5.21	991	5.50	1024	5.74	1055	5.94	1085	6.07	1112	6.15	1139	6.16
7200	807	3.78	843	4.23	878	4.66	914	5.07	949	5.44	983	5.77	1017	6.06	1049	6.30	1081	6.49	1110	6.63	1138	6.70	1164	6.71
7600	834	4.38	870	4.83	905	5.26	941	5.67	976	6.04	1010	6.37	1044	6.66	1076	6.90	1108	7.09	1137	7.23	1165	7.30	1191	7.31
8000	862	5.02	898	5.48	934	5.91	969	6.31	1004	6.68	1039	7.01	1072	7.30	1105	7.55	1136	7.74	1166	7.87	1194	7.95	1220	7.96
8400	892	5.71	928	6.17	963	6.60	999	7.00	1034	7.37	1069	7.70	1102	7.99	1134	8.24	1166	8.43	1195	8.56	-	-	-	-
8800	923	6.45	959	6.91	994	7.34	1030	7.74	1065	8.11	1099	8.44	-	-	-	-	-	-	-	-	-	-	-	-
9200	955	7.23	991	7.68	1026	8.11	1062	8.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9600	988	8.05	1024	8.51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
															7.5 HP & Field Supplied Drive									

1. Blower performance includes gas heat exchangers and 2" filters. See STATIC RESISTANCE table for additional applications.
2. See RPM SELECTION table to determine desired motor sheave setting and to determine the maximum continuous BHP.
3. kW = BHP x 0.838.

ZJ300 (25 Ton) Bottom Duct

Air Flow (CFM)	Available External Static Pressure - IWG[1]														
	0.4		0.6		0.8		1.0		1.2		1.4		1.6		
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
	Low Static 7.5 HP & Field Supplied Drive		Low Static 7.5 HP & Drive												
6600	787	2.67	819	3.23	850	3.76	881	4.27	912	4.75	943	5.21	974	5.65	
7000	804	3.18	835	3.74	867	4.27	898	4.78	928	5.26	959	5.72	991	6.16	
7400	821	3.72	853	4.28	884	4.82	915	5.32	946	5.80	977	6.26	1008	6.70	Standard 10 HP & Drive
7800	839	4.30	871	4.86	902	5.40	933	5.90	964	6.39	995	6.85	1026	7.28	
8200	858	4.92	890	5.48	921	6.02	952	6.52	983	7.01	1013	7.47	1045	7.90	
8600	877	5.58	909	6.14	940	6.68	971	7.18	1002	7.66	1033	8.12	1064	8.56	
9000	898	6.28	929	6.84	960	7.37	991	7.88	1022	8.36	1053	8.82	1084	9.26	
9400	918	7.01	950	7.57	981	8.10	1012	8.61	1043	9.09	1074	9.55	1105	9.99	
9800	940	7.78	972	8.34	1003	8.87	1034	9.38	1064	9.86	1095	10.32	1127	10.76	
10200	962	8.58	994	9.14	1025	9.68	1056	10.18	1086	10.67	1117	11.13	1149	11.56	
10600	984	9.42	1016	9.98	1047	10.52	1078	11.02	1109	11.51	1140	11.96	1171	12.40	
11000	1007	10.30	1039	10.86	1070	11.39	1101	11.90	1132	12.38	1163	12.84	1194	13.28	
11400	1031	11.20	1063	11.76	1094	12.30	1125	12.80	1156	13.29	1187	13.75	1218	14.18	
11800	1055	12.14	1087	12.70	1118	13.24	1149	13.74	1180	14.23	1211	14.69	1242	15.12	
12200	1080	13.11	1111	13.68	1142	14.21	1173	14.72	1204	15.20	1235	15.66	1266	16.10	
12600	1104	14.12	1136	14.68	1167	15.21	1198	15.72	1229	16.20	1260	16.66	1291	17.10	
	High Static 15 HP & Drive														

Air Flow (CFM)	Available External Static Pressure - IWG[1]																	
	1.8		2.0		2.2		2.4		2.6		2.8		3.0		3.2		3.4	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Standard 10 HP & Drive										High Static 15 HP & Drive							
6600	1006	6.07	1039	6.48	1072	6.87	1107	7.25	1144	7.62	1182	7.98	1221	8.33	1263	8.68	1307	9.04
7000	1023	6.58	1055	6.98	1089	7.37	1124	7.75	1160	8.12	1198	8.48	1238	8.84	1280	9.19	1324	9.54
7400	1040	7.12	1072	7.53	1106	7.92	1141	8.30	1177	8.67	1215	9.03	1255	9.38	1297	9.74	1341	10.09
7800	1058	7.71	1090	8.11	1124	8.50	1159	8.88	1195	9.25	1233	9.61	1273	9.97	1315	10.32	1359	10.67
8200	1077	8.33	1109	8.73	1143	9.12	1178	9.50	1214	9.87	1252	10.23	1292	10.59	1334	10.94	1378	11.29
8600	1096	8.98	1129	9.39	1162	9.78	1197	10.16	1234	10.53	1272	10.89	1311	11.24	1353	11.60	1397	11.95
9000	1116	9.68	1149	10.08	1183	10.47	1218	10.85	1254	11.22	1292	11.58	1332	11.94	1373	12.29	1418	12.64
9400	1137	10.41	1170	10.82	1203	11.21	1238	11.59	1275	11.95	1313	12.32	1352	12.67	1394	13.02	1438	13.37
9800	1159	11.18	1191	11.59	1225	11.98	1260	12.35	1296	12.72	1334	13.09	1374	13.44	1416	13.79	1460	14.14
10200	1181	11.99	1213	12.39	1247	12.78	1282	13.16	1318	13.53	1356	13.89	1396	14.25	1438	14.60	1482	14.95
10600	1203	12.82	1236	13.23	1269	13.62	1304	14.00	1341	14.37	1379	14.73	1418	15.08	1460	15.44	1504	15.79
11000	1226	13.70	1259	14.10	1293	14.49	1327	14.87	1364	15.24	1402	15.60	1441	15.96	1483	16.31	1528	16.66
11400	1250	14.61	1282	15.01	1316	15.40	1351	15.78	1387	16.15	1425	16.51	1465	16.87	1507	17.22	-	-
11800	1274	15.55	1307	15.95	1340	16.34	1375	16.72	1411	17.09	-	-	-	-	-	-	-	-
12200	1298	16.52	1331	16.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15 HP & Field Supplied Drive																	

1. Blower performance includes gas heat exchangers and 2” filters. See STATIC RESISTANCE table for additional applications.
2. See RPM SELECTION table to determine desired motor sheave setting and to determine the maximum continuous BHP.
3. kW = BHP x 0.82.

RPM Selection

Size (Tons)	Model	HP	Max BHP	Motor Sheave	Blower Sheave	6 Turns Open	5 Turns Open	4 Turns Open	3 Turns Open	2 Turns Open	1 Turn Open	Fully Closed
180 (15)	ZJ/ZF	5	5.75	1VP65	BK110	815	850	885	920	950	985	N/A
		5	5.75	1VP65	BK090	1010	1055	1095	1135	1180	1220	N/A
210 (17.5)	ZJ/ZF	5	5.75	1VP60	BK110	730	765	800	835	870	905	N/A
		7.5	8.63	1VP60	BK090	905	950	990	1035	1075	1120	N/A
240 (20)	ZJ/ZF	5	5.75	1VP60	BK110	730	765	800	835	870	905	N/A
		7.5	8.63	1VP60	BK090	905	950	990	1035	1075	1120	N/A
300 (25)	ZJ/ZF	7.5	8.63	1VP60	1B5V94	810	850	885	920	960	1000	N/A
		10	11.50	1VP75X	1B5V110	975	1005	1040	1070	1100	1135	1165
		15	17.25	1VP75X	1B5V94	1140	1180	1215	1255	1290	1330	1365
180 (15)	ZR	5	5.75	1VP65	BK110	815	850	885	920	950	985	N/A
		7.5	8.63	1VP65	BK090	1010	1055	1095	1135	1180	1220	N/A
240 (20)	ZR	7.5	8.63	1VP60	BK110	730	765	800	835	870	905	N/A
		10	11.50	1VP60	BK090	905	950	990	1035	1075	1120	N/A
300 (25)	ZR	7.5	8.63	1VP60	1B5V94	810	850	885	920	960	1000	N/A
		10	11.50	1VP75X	1B5V110	975	1005	1040	1070	1100	1135	1165
		15	17.25	1VP75X	1B5V94	1140	1180	1215	1255	1290	1330	1365

Additional Static Resistance

Size (Tons)	Model	CFM	Cooling Only[1]	Economizer[2 3]	Electric Heat kW[2]			
					18	36	54	72
180 (15)	ZJ ZR ZF	4500	0.10	0.10	0.10	0.10	0.20	0.20
		6000	0.10	0.10	0.10	0.20	0.30	0.40
		7500	0.10	0.10	0.10	0.30	0.40	0.60
210 (17.5) 240 (20) 300 (25)	ZJ ZR ZF	6000	0.10	0.10	0.10	0.10	0.20	0.20
		7500	0.10	0.10	0.10	0.20	0.30	0.40
		9000	0.15	0.15	0.10	0.30	0.40	0.60
		10500	0.15	0.15	0.20	0.40	0.60	0.80
		12000	0.20	0.20	0.30	0.50	0.70	0.90

1. Add these values to the available static resistance in the respective Blower Performance Tables.
2. Deduct these values from the available external static pressure shown in the respective Blower Performance Tables.
3. The pressure drop through the economizer is greater for 100% outdoor air than for 100% return air. If the resistance of the return air duct is less than 0.25 IWG, the unit will deliver less CFM during full economizer operation.

Drive Selection

1. Determine desired airflow.
2. Calculate or measure the amount of external static pressure.
3. Using the operating point determined from steps 1 & 2, locate this point on the appropriate supply air blower performance table. (Linear interpolation may be necessary.)
4. Noting the RPM and BHP from step 3, locate the appropriate model and drive on the RPM selection table.
5. Review the BHP compared to the motor options available. Select the appropriate motor.
6. Review the RPM range for the motor options available. Select the appropriate drive if multiple drives are available for the chosen motor.
7. Determine turns open to obtain the desired operation point.

Example

1. 19000 CFM
2. 5.4 iwg
3. Using the supply air blower performance table below, the following data point was located: 1150 RPM & 36 BHP.
4. Using the RPM selection table below, Size X and Model Y is found.
5. 36 BHP exceeds the maximum continuous BHP rating of the 30 HP motor. The 40 HP motor is required.
6. 1150 RPM is within the range of the 30 & 40 HP drives, but step 5 requires the 40 HP motor.
7. Using the 40 HP motor and drive, 5.5 turns open will achieve 1150 RPM.

Example Supply Air Blower Performance

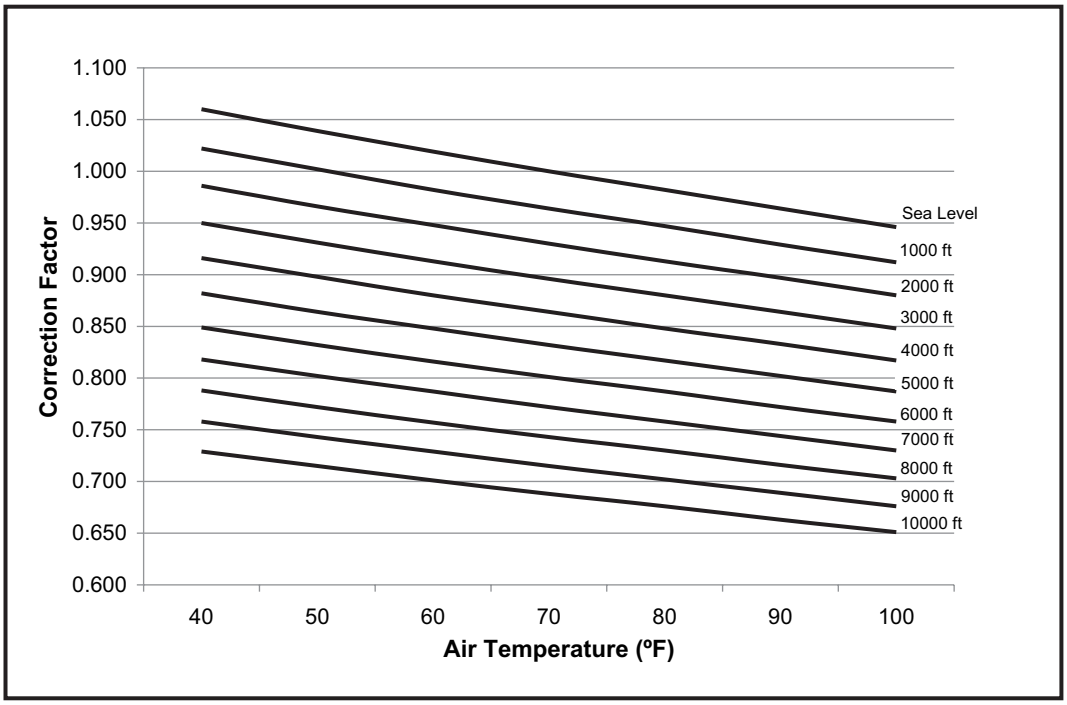
Air Flow (CFM)	Available External Static Pressure - IWG																			
	3.0		3.4		3.8		4.2		4.6		5.0		5.4		5.8		6.2		6.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	30 HP & Field Supplied Drive								Standard 30 HP & Drive						Alternate 40 HP & Drive					
18000	800	10.00	850	14.00	900	18.00	950	22.00	1000	26.00	1050	30.00	1100	34.00	1150	38.00	1200	42.00	1250	46.00
19000	850	12.00	900	16.00	950	20.00	1000	24.00	1050	28.00	1100	32.00	1150	36.00	1200	40.00	1250	44.00	1300	48.00
20000	900	14.00	950	18.00	1000	22.00	1050	26.00	1100	30.00	1150	34.00	1200	38.00	1250	42.00	1300	46.00	1350	50.00
21000	950	16.00	1000	20.00	1050	24.00	1100	28.00	1150	32.00	1200	36.00	1250	40.00	1300	44.00	1350	48.00	1400	52.00

Table X: RPM Selection

Size (Tons)	Model	HP	Max BHP	Motor Sheave	Blower Sheave	6 Turns Open	5 Turns Open	4 Turns Open	3 Turns Open	2 Turns Open	1 Turn Open	Fully Closed
X	Y	30	34.50	1VL51	BK99	1000	1025	1045	1060	1110	1150	N/A
		40	46.00	1VL63	BK67	1125	1175	1250	1325	1400	1475	N/A

Altitude/Temperature Correction Factors

Air Temp.	Altitude (Ft.)										
	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
40	1.060	1.022	0.986	0.950	0.916	0.882	0.849	0.818	0.788	0.758	0.729
50	1.039	1.002	0.966	0.931	0.898	0.864	0.832	0.802	0.772	0.743	0.715
60	1.019	0.982	0.948	0.913	0.880	0.848	0.816	0.787	0.757	0.729	0.701
70	1.000	0.964	0.930	0.896	0.864	0.832	0.801	0.772	0.743	0.715	0.688
80	0.982	0.947	0.913	0.880	0.848	0.817	0.787	0.758	0.730	0.702	0.676
90	0.964	0.929	0.897	0.864	0.833	0.802	0.772	0.744	0.716	0.689	0.663
100	0.946	0.912	0.880	0.848	0.817	0.787	0.758	0.730	0.703	0.676	0.651



Gas Heat Minimum Supply Air

Size (Tons)	Heat Size	Supply Air (CFM)			
		Cooling		Heating	
		Min	Max	Min	Max
180	24	4500	7000	4500	7000
(15)	32	4500	7000	4500	7000
210	24	6000	8750	6000	8750
(17.5)	32	6000	8750	6000	8750
240	24	6000	9400	6000	9400
(20)	32	6000	9400	6000	9400
300	24	7500	12500	7500	12500
(25)	32	7500	12500	7500	12500

⚠ CAUTION

For units with VFD and gas heat, the speed of the indoor blower motor continues to be controlled by duct static pressure via the VAV control board.

If there are VAV boxes present in the duct system, the boxes must be driven to the full-open position using a customer-supplied power source to assure adequate airflow across electric heating elements or gas heat exchanger tubes.

Electric Heat Minimum Supply Air

Size (Tons)	Voltage	Minimum Supply Air (CFM) Heater kW			
		18	36	54	72
180 (15)	208/230-3-60	4500	4500	5000	5000
	460-3-60	4500	4500	5000	4500
	600-3-60	4500	4500	4500	4500
210 (17.5)	208/230-3-60	6000	6000	6000	6000
	460-3-60	6000	6000	6000	6000
	600-3-60	6000	6000	6000	6000
240 (20)	208/230-3-60	6000	6000	6000	6000
	460-3-60	6000	6000	6000	6000
	600-3-60	6000	6000	6000	6000
300 (25)	208/230-3-60	7500	7500	7500	7500
	460-3-60	7500	7500	7500	7500
	600-3-60	7500	7500	7500	7500

⚠ CAUTION

For units with VFD and electric heat, the speed of the indoor blower motor continues to be controlled by duct static pressure via the VAV control board.

If there are VAV boxes present in the duct system, the boxes must be driven to the full-open position using a customer-supplied power source to assure adequate airflow across electric heating elements or gas heat exchanger tubes.

Indoor Blower Specifications

Size (Tons)	Model	Motor					Motor Sheave			Blower Sheave			Belt
		HP	RPM	Eff.	SF	Frame	Datum Dia. (in.)	Bore (in.)	Model	Datum Dia. (in.)	Bore (in.)	Model	
180 (15)	ZJ/ZF	5	1725	0.89	1.15	184T	5.2 - 6.4	1 1/8	1VP65	10.4	1	BK110	BX85
		5	1725	0.89	1.15	184T	5.2 - 6.4	1 1/8	1VP65	8.4	1	BK090	BX81
210 (17.5)	ZJ/ZF	5	1725	0.89	1.15	184T	4.2 - 5.5	1 1/8	1VP60	10.4	1 3/16	BK110	BX78
		7.5	1725	0.91	1.15	213T	4.2 - 5.5	1 3/8	1VP60	8.4	1 3/16	BK090	BX75
240 (20)	ZJ/ZF	5	1725	0.89	1.15	184T	4.2 - 5.5	1 1/8	1VP60	10.4	1 3/16	BK110	BX78
		7.5	1725	0.91	1.15	213T	4.2 - 5.5	1 3/8	1VP60	8.4	1 3/16	BK090	BX75
300 (25)	ZJ/ZF	7.5	1725	0.91	1.15	213T	4.2 - 5.5	1 3/8	1VP60	9.5	1 7/16	1B5V94	BX78
		10	1725	0.89	1.15	215T	5.8 - 7.0	1 3/8	1VP75X	11.1	1 7/16	1B5V110	5VX840
		15	1725	0.91	1.15	254T	6.2 - 7.4	1 5/8	1VP75X	9.5	1 7/16	1B5V94	5VX860
180 (15)	ZR	5	1725	0.89	1.15	184T	5.2 - 6.4	1 1/8	1VP65	10.4	1	BK110	BX85
		7.5	1725	0.91	1.15	213T	5.2 - 6.4	1 3/8	1VP65	8.4	1	BK090	BX81
240 (20)	ZR	7.5	1725	0.91	1.15	213T	4.2 - 5.5	1 3/8	1VP60	10.4	1 3/16	BK110	BX78
		10	1725	0.89	1.15	215T	4.2 - 5.5	1 3/8	1VP60	8.4	1 3/16	BK090	BX75
300 (25)	ZR	7.5	1725	0.91	1.15	213T	4.2 - 5.5	1 3/8	1VP60	9.5	1 7/16	1B5V94	BX78
		10	1725	0.89	1.15	215T	5.8 - 7.0	1 3/8	1VP75X	11.1	1 7/16	1B5V110	5V840
		15	1725	0.91	1.15	254T	6.2 - 7.4	1 5/8	1VP75X	9.5	1 7/16	1B5V94	5VX860

Power Exhaust Specifications

Voltage	Motor			Motor			CFM @ 0.2 ESP
	HP	RPM[1]	QTY	LRA	FLA	MCA	
208/230-1-60	3/4	1075	1	7.7	5.0	6.25	5250
460-1-60	3/4	1075	1	4.1	2.2	2.75	5250
575-1-60	3/4	1050	1	2.84	1.5	1.875	5250

1. Motors are multi-tapped and factory wired for high speed.

Electric Heat Multipliers

Voltage		kW Capacity Multipliers[1]
Nominal	Applied	
240	208	0.75
	230	0.92
480	460	0.92
600	575	0.92

1. Electric heaters are rated at nominal voltage. Use this table to determine the electric heat capacity for heaters applied at lower voltages.

Sound Performance

ZJ/ZR/ZF Indoor Sound Power Levels

Size (Tons)	CFM	ESP (IWG)	Blower		Sound Power, dB (10^{-12}) Watts								
					Sound Rating[1]	Octave Band Centerline Frequency (Hz)							
			RPM	BHP	dB (A)	63	125	250	500	1000	2000	4000	8000
180 (15)	6000	1	1080	4.6	89	99	99	89	82	84	77	72	67
210 (17.5)	8000	1	1129	6.65	92	102	102	92	85	87	80	75	70
240 (20)	8000	1	1129	6.65	92	102	102	92	85	87	80	75	70
300 (25)	10000	1.3	1160	12.5	98	108	108	98	91	93	86	81	76

1. These values have been accessed using a model of sound propagation from a point source into the hemispheric/free field. The dBA values provided are to be used for reference only. Calculation of dBA values cover matters of system design and the fan manufacture has no way of knowing the details of each system. This constitutes an exception to any specification or guarantee requiring a dBA value of sound data in any other form than sound power level ratings.

Electrical Data

ZJ180 - 300

ZJ180-300 - Standard Drive Without Powered Convenience Outlet

Size (Tons)	Volt	Compressors (each)			OD Fan Motors (each)	Supply Blower Motor	Pwr Conv Outlet	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		RLA	LRA	MCC	FLA	FLA	FLA	Model	kW	Stages	Amps		
180 (15)	208-3-60	14.7	115	23.0	2.1	15.4	0.0	None	-	-	-	86.5	100
								E18	13.5	1	37.5	86.5	100
								E36	27.0	2	74.9	112.9	125
								E54	40.6	2	112.7	160.1	175
								E72	54.1	2	150.2	169.4	200
	230-3-60	14.7	115	23.0	2.1	14.4	0.0	None	-	-	-	85.3	90
								E18	18.0	1	43.3	85.3	90
								E36	36.0	2	86.6	126.3	150
								E54	54.0	2	129.9	147.9	175
								E72	72.0	2	173.2	191.2	225
	460-3-60	7.7	50	12.0	1.1	7.2	0.0	None	-	-	-	44.3	50
								E18	18.0	1	21.7	44.3	50
								E36	36.0	2	43.3	63.1	70
								E54	54.0	2	65.0	74.0	90
								E72	72.0	2	86.6	95.6	110
	575-3-60	6.4	40	10.0	0.9	5.9	0.0	None	-	-	-	36.7	40
								E18	18.0	1	17.3	36.7	40
								E36	36.0	2	34.6	50.7	60
								E54	54.0	2	52.0	59.3	70
								E72	72.0	2	69.3	76.7	90
210 (17.5)	208-3-60	16.7	120	26.0	2.1	15.4	0.0	None	-	-	-	94.8	110
								E18	13.5	1	37.5	94.8	110
								E36	27.0	2	74.9	112.9	125
								E54	40.6	2	112.7	160.1	175
								E72	54.1	2	150.2	169.4	200
	230-3-60	16.7	120	26.0	2.1	14.4	0.0	None	-	-	-	93.8	110
								E18	18.0	1	43.3	93.8	110
								E36	36.0	2	86.6	126.3	150
								E54	54.0	2	129.9	147.9	175
								E72	72.0	2	173.2	191.2	225
	460-3-60	8.7	60	15.5	1.1	7.2	0.0	None	-	-	-	48.6	50
								E18	18.0	1	21.7	48.6	50
								E36	36.0	2	43.3	63.1	70
								E54	54.0	2	65.0	74.0	90
								E72	72.0	2	86.6	95.6	110
	575-3-60	6.7	42	10.5	0.9	5.9	0.0	None	-	-	-	38.0	40
								E18	18.0	1	17.3	38.0	40
								E36	36.0	2	34.6	50.7	60
								E54	54.0	2	52.0	59.3	70
								E72	72.0	2	69.3	76.7	90

ZJ180-300 - Standard Drive Without Powered Convenience Outlet (Continued)

Size (Tons)	Volt	Compressors (each)			OD Fan Motors (each)	Supply Blower Motor	Pwr Conv Outlet	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		RLA	LRA	MCC	FLA	FLA	FLA	Model	kW	Stages	Amps		
240 (20)	208-3-60	17.9	120	28.0	3.7	15.4	0.0	None	-	-	-	106.3	110
								E18	13.5	1	37.5	106.3	110
								E36	27.0	2	74.9	112.9	125
								E54	40.6	2	112.7	160.1	175
								E72	54.1	2	150.2	169.4	200
	230-3-60	17.9	120	28.0	3.7	14.4	0.0	None	-	-	-	105.3	110
								E18	18.0	1	43.3	105.3	110
								E36	36.0	2	86.6	126.3	150
								E54	54.0	2	129.9	147.9	175
								E72	72.0	2	173.2	191.2	225
	460-3-60	9.6	70	15.0	1.9	7.2	0.0	None	-	-	-	55.6	60
								E18	18.0	1	21.7	55.6	60
								E36	36.0	2	43.3	63.1	70
								E54	54.0	2	65.0	74.0	90
								E72	72.0	2	86.6	95.6	110
	575-3-60	7.4	53	11.5	1.5	5.9	0.0	None	-	-	-	43.4	50
								E18	18.0	1	17.3	43.4	50
								E36	36.0	2	34.6	50.7	60
								E54	54.0	2	52.0	59.3	70
								E72	72.0	2	69.3	76.7	90
300 (25)	208-3-60	23.0	160	31.5	3.7	28.0	0.0	None	-	-	-	141.8	150
								E18	13.5	1	37.5	141.8	150
								E36	27.0	2	74.9	141.8	150
								E54	40.6	2	112.7	175.9	200
								E72	54.1	2	150.2	185.2	200
	230-3-60	23.0	160	31.5	3.7	26.0	0.0	None	-	-	-	139.3	150
								E18	18.0	1	43.3	139.3	150
								E36	36.0	2	86.6	140.8	150
								E54	54.0	2	129.9	162.4	175
								E72	72.0	2	173.2	205.7	225
	460-3-60	12.2	87	17.1	1.9	13.0	0.0	None	-	-	-	72.7	80
								E18	18.0	1	21.7	72.7	80
								E36	36.0	2	43.3	72.7	80
								E54	54.0	2	65.0	81.2	90
								E72	72.0	2	86.6	102.9	110
	575-3-60	8.7	62	13.5	1.5	10.3	0.0	None	-	-	-	53.7	60
								E18	18.0	1	17.3	53.7	60
								E36	36.0	2	34.6	56.2	60
								E54	54.0	2	52.0	64.8	70
								E72	72.0	2	69.3	82.2	90

1. Minimum Circuit Ampacity.
2. Dual Element, Time Delay Type.
3. HACR type per NEC.

ZJ180-300 - Standard Drive With Powered Convenience Outlet

Size (Tons)	Volt	Compressors (each)			OD Fan Motors (each)	Supply Blower Motor	Pwr Conv Outlet	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		RLA	LRA	MCC	FLA	FLA	FLA	Model	kW	Stages	Amps		
180 (15)	208-3-60	14.7	115	23.0	2.1	15.4	10.0	None	-	-	-	96.5	110
								E18	13.5	1	37.5	96.5	110
								E36	27.0	2	74.9	125.4	150
								E54	40.6	2	112.7	172.6	175
								E72	54.1	2	150.2	181.9	200
	230-3-60	14.7	115	23.0	2.1	14.4	10.0	None	-	-	-	95.3	100
								E18	18.0	1	43.3	95.3	100
								E36	36.0	2	86.6	138.8	150
								E54	54.0	2	129.9	160.4	175
								E72	72.0	2	173.2	203.7	225
	460-3-60	7.7	50	12.0	1.1	7.2	5.0	None	-	-	-	49.3	50
								E18	18.0	1	21.7	49.3	50
								E36	36.0	2	43.3	69.4	70
								E54	54.0	2	65.0	80.2	90
								E72	72.0	2	86.6	101.9	110
	575-3-60	6.4	40	10.0	0.9	5.9	4.0	None	-	-	-	40.7	45
								E18	18.0	1	17.3	40.7	45
								E36	36.0	2	34.6	55.7	60
								E54	54.0	2	52.0	64.3	70
								E72	72.0	2	69.3	81.7	90
210 (17.5)	208-3-60	16.7	120	26.0	2.1	15.4	10.0	None	-	-	-	104.8	110
								E18	13.5	1	37.5	104.8	110
								E36	27.0	2	74.9	125.4	150
								E54	40.6	2	112.7	172.6	175
								E72	54.1	2	150.2	181.9	200
	230-3-60	16.7	120	26.0	2.1	14.4	10.0	None	-	-	-	103.8	110
								E18	18.0	1	43.3	103.8	110
								E36	36.0	2	86.6	138.8	150
								E54	54.0	2	129.9	160.4	175
								E72	72.0	2	173.2	203.7	225
	460-3-60	8.7	60	15.5	1.1	7.2	5.0	None	-	-	-	53.6	60
								E18	18.0	1	21.7	53.6	60
								E36	36.0	2	43.3	69.4	70
								E54	54.0	2	65.0	80.2	90
								E72	72.0	2	86.6	101.9	110
	575-3-60	6.7	42	10.5	0.9	5.9	4.0	None	-	-	-	42.0	45
								E18	18.0	1	17.3	42.0	45
								E36	36.0	2	34.6	55.7	60
								E54	54.0	2	52.0	64.3	70
								E72	72.0	2	69.3	81.7	90
240 (20)	208-3-60	17.9	120	28.0	3.7	15.4	10.0	None	-	-	-	116.3	125
								E18	13.5	1	37.5	116.3	125
								E36	27.0	2	74.9	125.4	150
								E54	40.6	2	112.7	172.6	175
								E72	54.1	2	150.2	181.9	200
	230-3-60	17.9	120	28.0	3.7	14.4	10.0	None	-	-	-	115.3	125
								E18	18.0	1	43.3	115.3	125
								E36	36.0	2	86.6	138.8	150
								E54	54.0	2	129.9	160.4	175
								E72	72.0	2	173.2	203.7	225
	460-3-60	9.6	70	15.0	1.9	7.2	5.0	None	-	-	-	60.6	70
								E18	18.0	1	21.7	60.6	70
								E36	36.0	2	43.3	69.4	70
								E54	54.0	2	65.0	80.2	90
								E72	72.0	2	86.6	101.9	110
	575-3-60	7.4	53	11.5	1.5	5.9	4.0	None	-	-	-	47.4	50
								E18	18.0	1	17.3	47.4	50
								E36	36.0	2	34.6	55.7	60
								E54	54.0	2	52.0	64.3	70
								E72	72.0	2	69.3	81.7	90

ZJ180-300 - Standard Drive With Powered Convenience Outlet (Continued)

Size (Tons)	Volt	Compressors (each)			OD Fan Motors (each)	Supply Blower Motor	Pwr Conv Outlet	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		RLA	LRA	MCC	FLA	FLA	FLA	Model	kW	Stages	Amps		
300 (25)	208-3-60	23.0	160	31.5	3.7	28.0	10.0	None	-	-	-	151.8	175
								E18	13.5	1	37.5	151.8	175
								E36	27.0	2	74.9	151.8	175
								E54	40.6	2	112.7	188.4	200
								E72	54.1	2	150.2	197.7	200
	230-3-60	23.0	160	31.5	3.7	26.0	10.0	None	-	-	-	149.3	175
								E18	18.0	1	43.3	149.3	175
								E36	36.0	2	86.6	153.3	175
								E54	54.0	2	129.9	174.9	175
								E72	72.0	2	173.2	218.2	225
	460-3-60	12.2	87	17.1	1.9	13.0	5.0	None	-	-	-	77.7	90
								E18	18.0	1	21.7	77.7	90
								E36	36.0	2	43.3	77.7	90
								E54	54.0	2	65.0	87.5	90
								E72	72.0	2	86.6	109.1	110
	575-3-60	8.7	62	13.5	1.5	10.3	4.0	None	-	-	-	57.7	60
								E18	18.0	1	17.3	57.7	60
								E36	36.0	2	34.6	61.2	70
								E54	54.0	2	52.0	69.8	70
								E72	72.0	2	69.3	87.2	90

1. Minimum Circuit Ampacity.
2. Dual Element, Time Delay Type.
3. HACR type per NEC.

ZJ180-300 - High Static Drive Without Powered Convenience Outlet

Size (Tons)	Volt	Compressors (each)			OD Fan Motors (each)	Supply Blower Motor	Pwr Conv Outlet	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		RLA	LRA	MCC	FLA	FLA	FLA	Model	kW	Stages	Amps		
180 (15)	208-3-60	14.7	115	23.0	2.1	15.4	0.0	None	-	-	-	86.5	100
								E18	13.5	1	37.5	86.5	100
								E36	27.0	2	74.9	112.9	125
								E54	40.6	2	112.7	160.1	175
								E72	54.1	2	150.2	169.4	200
	230-3-60	14.7	115	23.0	2.1	14.4	0.0	None	-	-	-	85.3	90
								E18	18.0	1	43.3	85.3	90
								E36	36.0	2	86.6	126.3	150
								E54	54.0	2	129.9	147.9	175
								E72	72.0	2	173.2	191.2	225
	460-3-60	7.7	50	12.0	1.1	7.2	0.0	None	-	-	-	44.3	50
								E18	18.0	1	21.7	44.3	50
								E36	36.0	2	43.3	63.1	70
								E54	54.0	2	65.0	74.0	90
								E72	72.0	2	86.6	95.6	110
	575-3-60	6.4	40	10.0	0.9	5.9	0.0	None	-	-	-	36.7	40
								E18	18.0	1	17.3	36.7	40
								E36	36.0	2	34.6	50.7	60
								E54	54.0	2	52.0	59.3	70
								E72	72.0	2	69.3	76.7	90
210 (17.5)	208-3-60	16.7	120	26.0	2.1	20.0	0.0	None	-	-	-	100.2	110
								E18	13.5	1	37.5	100.2	110
								E36	27.0	2	74.9	118.7	125
								E54	40.6	2	112.7	165.9	175
								E72	54.1	2	150.2	175.2	200
	230-3-60	16.7	120	26.0	2.1	20.0	0.0	None	-	-	-	100.2	110
								E18	18.0	1	43.3	100.2	110
								E36	36.0	2	86.6	133.3	150
								E54	54.0	2	129.9	154.9	175
								E72	72.0	2	173.2	198.2	225
	460-3-60	8.7	60	15.5	1.1	10.0	0.0	None	-	-	-	51.7	60
								E18	18.0	1	21.7	51.7	60
								E36	36.0	2	43.3	66.6	70
								E54	54.0	2	65.0	77.5	90
								E72	72.0	2	86.6	99.1	110
	575-3-60	6.7	42	10.5	0.9	8.2	0.0	None	-	-	-	40.7	45
								E18	18.0	1	17.3	40.7	45
								E36	36.0	2	34.6	53.6	60
								E54	54.0	2	52.0	62.2	70
								E72	72.0	2	69.3	79.5	90
240 (20)	208-3-60	17.9	120	28.0	3.7	15.4	0.0	None	-	-	-	106.3	110
								E18	13.5	1	37.5	106.3	110
								E36	27.0	2	74.9	112.9	125
								E54	40.6	2	112.7	160.1	175
								E72	54.1	2	150.2	169.4	200
	230-3-60	17.9	120	28.0	3.7	14.4	0.0	None	-	-	-	105.3	110
								E18	18.0	1	43.3	105.3	110
								E36	36.0	2	86.6	126.3	150
								E54	54.0	2	129.9	147.9	175
								E72	72.0	2	173.2	191.2	225
	460-3-60	9.6	70	15.0	1.9	7.2	0.0	None	-	-	-	55.6	60
								E18	18.0	1	21.7	55.6	60
								E36	36.0	2	43.3	63.1	70
								E54	54.0	2	65.0	74.0	90
								E72	72.0	2	86.6	95.6	110
	575-3-60	7.4	53	11.5	1.5	5.9	0.0	None	-	-	-	43.4	50
								E18	18.0	1	17.3	43.4	50
								E36	36.0	2	34.6	50.7	60
								E54	54.0	2	52.0	59.3	70
								E72	72.0	2	69.3	76.7	90

ZJ180-300 - High Static Drive Without Powered Convenience Outlet (Continued)

Size (Tons)	Volt	Compressors (each)			OD Fan Motors (each)	Supply Blower Motor	Pwr Conv Outlet	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		RLA	LRA	MCC	FLA	FLA	FLA	Model	kW	Stages	Amps		
300 (25)	208-3-60	23.0	160	31.5	3.7	38.6	0.0	None	-	-	-	155.1	175
								E18	13.5	1	37.5	155.1	175
								E36	27.0	2	74.9	155.1	175
								E54	40.6	2	112.7	189.1	200
								E72	54.1	2	150.2	198.4	225
	230-3-60	23.0	160	31.5	3.7	38.6	0.0	None	-	-	-	155.1	175
								E18	18.0	1	43.3	155.1	175
								E36	36.0	2	86.6	156.5	175
								E54	54.0	2	129.9	178.2	200
								E72	72.0	2	173.2	221.5	250
	460-3-60	12.2	87	17.1	1.9	19.3	0.0	None	-	-	-	80.5	90
								E18	18.0	1	21.7	80.5	90
								E36	36.0	2	43.3	80.5	90
								E54	54.0	2	65.0	89.1	100
								E72	72.0	2	86.6	110.7	125
	575-3-60	8.7	62	13.5	1.5	15.4	0.0	None	-	-	-	60.1	70
								E18	18.0	1	17.3	60.1	70
								E36	36.0	2	34.6	62.6	70
								E54	54.0	2	52.0	71.2	80
								E72	72.0	2	69.3	88.5	100

1. Minimum Circuit Ampacity.
2. Dual Element, Time Delay Type.
3. HACR type per NEC.

ZJ180-300 - High Static Drive With Powered Convenience Outlet

Size (Tons)	Volt	Compressors (each)			OD Fan Motors (each)	Supply Blower Motor	Pwr Conv Outlet	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		RLA	LRA	MCC	FLA	FLA	FLA	Model	kW	Stages	Amps		
180 (15)	208-3-60	14.7	115	23.0	2.1	15.4	10.0	None	-	-	-	96.5	110
								E18	13.5	1	37.5	96.5	110
								E36	27.0	2	74.9	125.4	150
								E54	40.6	2	112.7	172.6	175
								E72	54.1	2	150.2	181.9	200
	230-3-60	14.7	115	23.0	2.1	14.4	10.0	None	-	-	-	95.3	100
								E18	18.0	1	43.3	95.3	100
								E36	36.0	2	86.6	138.8	150
								E54	54.0	2	129.9	160.4	175
								E72	72.0	2	173.2	203.7	225
	460-3-60	7.7	50	12.0	1.1	7.2	5.0	None	-	-	-	49.3	50
								E18	18.0	1	21.7	49.3	50
								E36	36.0	2	43.3	69.4	70
								E54	54.0	2	65.0	80.2	90
								E72	72.0	2	86.6	101.9	110
	575-3-60	6.4	40	10.0	0.9	5.9	4.0	None	-	-	-	40.7	45
								E18	18.0	1	17.3	40.7	45
								E36	36.0	2	34.6	55.7	60
								E54	54.0	2	52.0	64.3	70
								E72	72.0	2	69.3	81.7	90
210 (17.5)	208-3-60	16.7	120	26.0	2.1	20.0	10.0	None	-	-	-	110.2	125
								E18	13.5	1	37.5	110.2	125
								E36	27.0	2	74.9	131.2	150
								E54	40.6	2	112.7	178.4	200
								E72	54.1	2	150.2	187.7	200
	230-3-60	16.7	120	26.0	2.1	20.0	10.0	None	-	-	-	110.2	125
								E18	18.0	1	43.3	110.2	125
								E36	36.0	2	86.6	145.8	150
								E54	54.0	2	129.9	167.4	175
								E72	72.0	2	173.2	210.7	225
	460-3-60	8.7	60	15.5	1.1	10.0	5.0	None	-	-	-	56.7	60
								E18	18.0	1	21.7	56.7	60
								E36	36.0	2	43.3	72.9	80
								E54	54.0	2	65.0	83.7	90
								E72	72.0	2	86.6	105.4	110
	575-3-60	6.7	42	10.5	0.9	8.2	4.0	None	-	-	-	44.7	50
								E18	18.0	1	17.3	44.7	50
								E36	36.0	2	34.6	58.6	60
								E54	54.0	2	52.0	67.2	70
								E72	72.0	2	69.3	84.5	90
240 (20)	208-3-60	17.9	120	28.0	3.7	15.4	10.0	None	-	-	-	116.3	125
								E18	13.5	1	37.5	116.3	125
								E36	27.0	2	74.9	125.4	150
								E54	40.6	2	112.7	172.6	175
								E72	54.1	2	150.2	181.9	200
	230-3-60	17.9	120	28.0	3.7	14.4	10.0	None	-	-	-	115.3	125
								E18	18.0	1	43.3	115.3	125
								E36	36.0	2	86.6	138.8	150
								E54	54.0	2	129.9	160.4	175
								E72	72.0	2	173.2	203.7	225
	460-3-60	9.6	70	15.0	1.9	7.2	5.0	None	-	-	-	60.6	70
								E18	18.0	1	21.7	60.6	70
								E36	36.0	2	43.3	69.4	70
								E54	54.0	2	65.0	80.2	90
								E72	72.0	2	86.6	101.9	110
	575-3-60	7.4	53	11.5	1.5	5.9	4.0	None	-	-	-	47.4	50
								E18	18.0	1	17.3	47.4	50
								E36	36.0	2	34.6	55.7	60
								E54	54.0	2	52.0	64.3	70
								E72	72.0	2	69.3	81.7	90

ZJ180-300 - High Static Drive With Powered Convenience Outlet (Continued)

Size (Tons)	Volt	Compressors (each)			OD Fan Motors (each)	Supply Blower Motor	Pwr Conv Outlet	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		RLA	LRA	MCC	FLA	FLA	FLA	Model	kW	Stages	Amps		
300 (25)	208-3-60	23.0	160	31.5	3.7	38.6	10.0	None	-	-	-	165.1	200
								E18	13.5	1	37.5	165.1	200
								E36	27.0	2	74.9	165.1	200
								E54	40.6	2	112.7	201.6	225
								E72	54.1	2	150.2	210.9	225
	230-3-60	23.0	160	31.5	3.7	38.6	10.0	None	-	-	-	165.1	200
								E18	18.0	1	43.3	165.1	200
								E36	36.0	2	86.6	169.0	200
								E54	54.0	2	129.9	190.7	225
								E72	72.0	2	173.2	234.0	250
	460-3-60	12.2	87	17.1	1.9	19.3	5.0	None	-	-	-	85.5	100
								E18	18.0	1	21.7	85.5	100
								E36	36.0	2	43.3	85.5	100
								E54	54.0	2	65.0	95.3	110
								E72	72.0	2	86.6	117.0	125
	575-3-60	8.7	62	13.5	1.5	15.4	4.0	None	-	-	-	64.1	70
								E18	18.0	1	17.3	64.1	70
								E36	36.0	2	34.6	67.6	70
								E54	54.0	2	52.0	76.2	90
								E72	72.0	2	69.3	93.5	100

1. Minimum Circuit Ampacity.
2. Dual Element, Time Delay Type.
3. HACR type per NEC.

ZJ300 - Low Static Drive Without Powered Convenience Outlet

Size (Tons)	Volt	Compressors (each)			OD Fan Motors (each)	Supply Blower Motor	Pwr Conv Outlet	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		RLA	LRA	MCC	FLA	FLA	FLA	Model	kW	Stages	Amps		
300 (25)	208-3-60	23.0	160	31.5	3.7	20.0	0.0	None	-	-	-	132.6	150
								E18	13.5	1	37.5	132.6	150
								E36	27.0	2	74.9	132.6	150
								E54	40.6	2	112.7	165.9	175
								E72	54.1	2	150.2	175.2	200
	230-3-60	23.0	160	31.5	3.7	20.0	0.0	None	-	-	-	132.6	150
								E18	18.0	1	43.3	132.6	150
								E36	36.0	2	86.6	133.3	150
								E54	54.0	2	129.9	154.9	175
								E72	72.0	2	173.2	198.2	225
	460-3-60	12.2	87	17.1	1.9	10.0	0.0	None	-	-	-	69.5	80
								E18	18.0	1	21.7	69.5	80
								E36	36.0	2	43.3	69.5	80
								E54	54.0	2	65.0	77.5	90
								E72	72.0	2	86.6	99.1	110
	575-3-60	8.7	62	13.5	1.5	8.2	0.0	None	-	-	-	51.2	60
								E18	18.0	1	17.3	51.2	60
								E36	36.0	2	34.6	53.6	60
								E54	54.0	2	52.0	62.2	70
								E72	72.0	2	69.3	79.5	90

1. Minimum Circuit Ampacity.
2. Dual Element, Time Delay Type.
3. HACR type per NEC.

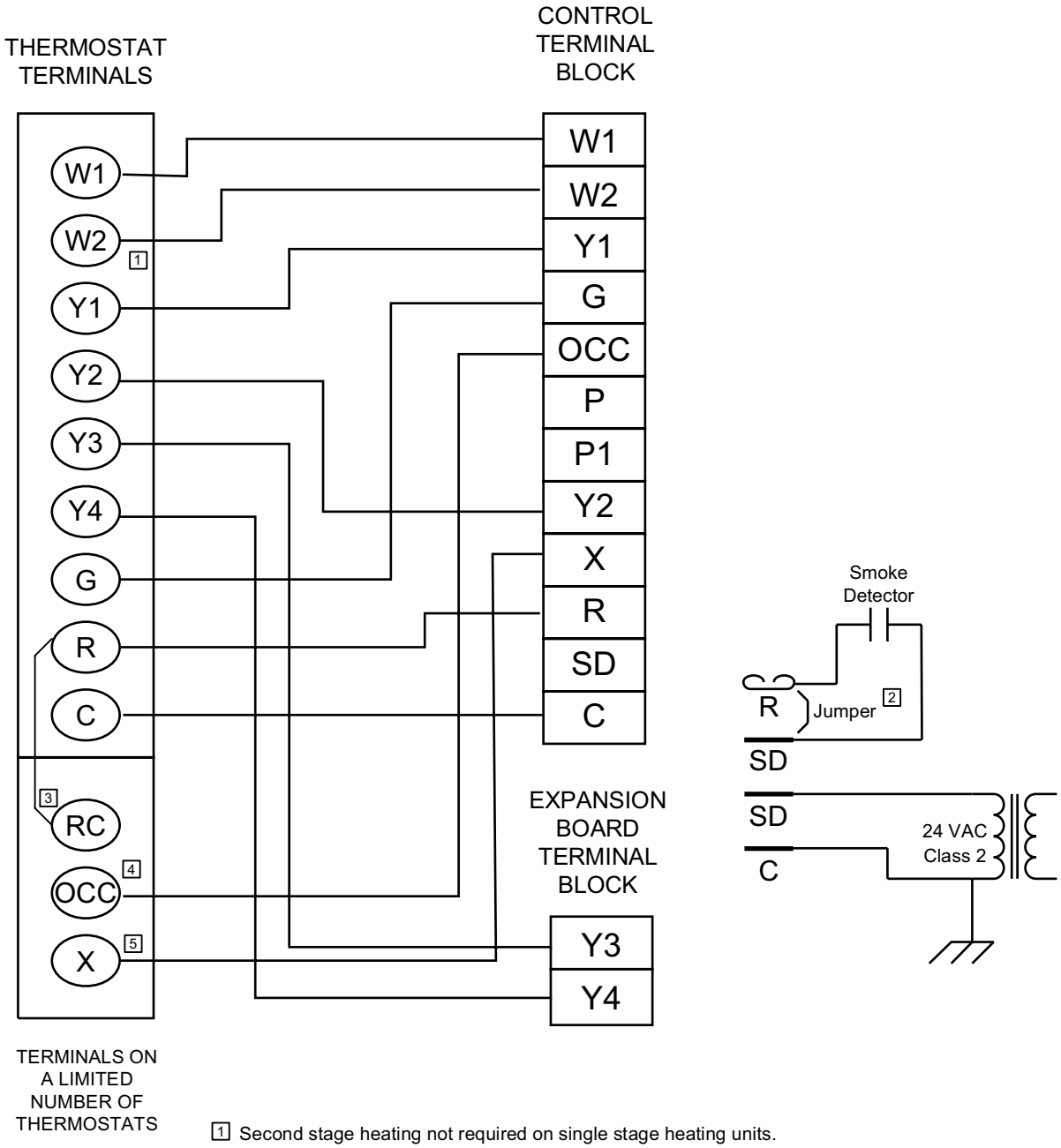
ZJ300 - Low Static Drive With Powered Convenience Outlet

Size (Tons)	Volt	Compressors (each)			OD Fan Motors (each)	Supply Blower Motor	Pwr Conv Outlet	Electric Heat Option				MCA[1] (Amps)	Max Fuse[2]/ Breaker[3] Size (Amps)
		RLA	LRA	MCC	FLA	FLA	FLA	Model	kW	Stages	Amps		
300 (25)	208-3-60	23.0	160	31.5	3.7	20.0	10.0	None	-	-	-	142.6	150
								E18	13.5	1	37.5	142.6	150
								E36	27.0	2	74.9	142.6	150
								E54	40.6	2	112.7	178.4	200
								E72	54.1	2	150.2	187.7	200
	230-3-60	23.0	160	31.5	3.7	20.0	10.0	None	-	-	-	142.6	150
								E18	18.0	1	43.3	142.6	150
								E36	36.0	2	86.6	145.8	150
								E54	54.0	2	129.9	167.4	175
								E72	72.0	2	173.2	210.7	225
	460-3-60	12.2	87	17.1	1.9	10.0	5.0	None	-	-	-	74.5	80
								E18	18.0	1	21.7	74.5	80
								E36	36.0	2	43.3	74.5	80
								E54	54.0	2	65.0	83.7	90
								E72	72.0	2	86.6	105.4	110
	575-3-60	8.7	62	13.5	1.5	8.2	4.0	None	-	-	-	55.2	60
								E18	18.0	1	17.3	55.2	60
								E36	36.0	2	34.6	58.6	60
								E54	54.0	2	52.0	67.2	70
								E72	72.0	2	69.3	84.5	90

1. Minimum Circuit Ampacity.
2. Dual Element, Time Delay Type.
3. HACR type per NEC.

ZJ/ZR/ZF180-300 Wiring Diagrams

ZJ180-300 Typical Control Diagram



1 Second stage heating not required on single stage heating units.

2 Jumper is required if there is no Smoke Detector circuit.

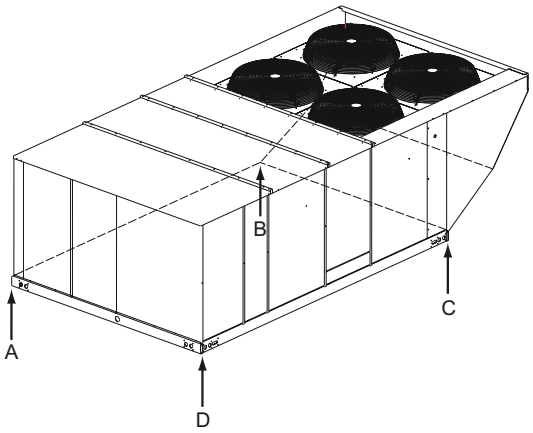
3 Jumper is required for any combination of R, RC, or RH.

4 OCC is an output from the thermostat to indicate the Occupied condition.

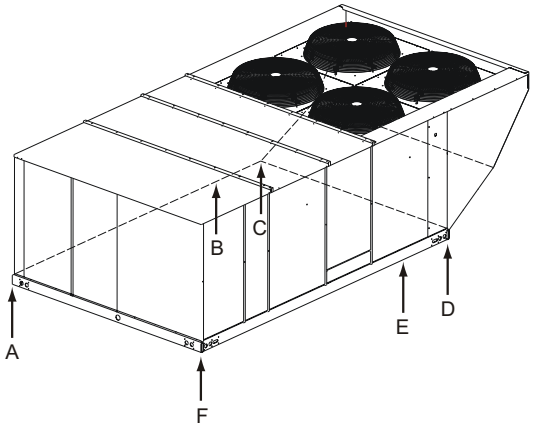
5 X is an input to the thermostat to display Error Status conditions.

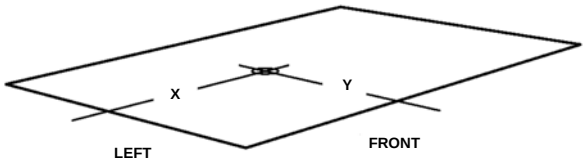
Weights and Dimensions

ZJ/ZR Unit 4 Point Load Weight

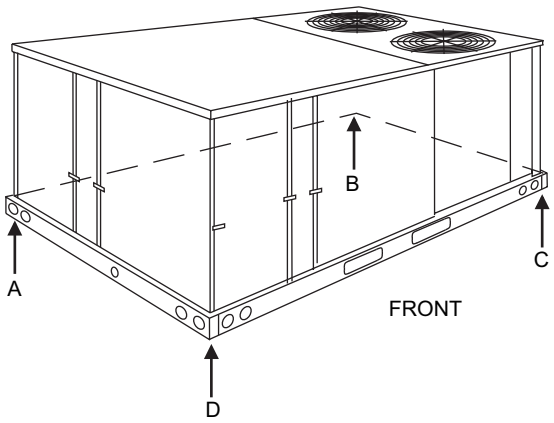


ZJ/ZR Unit 6 Point Load Weight

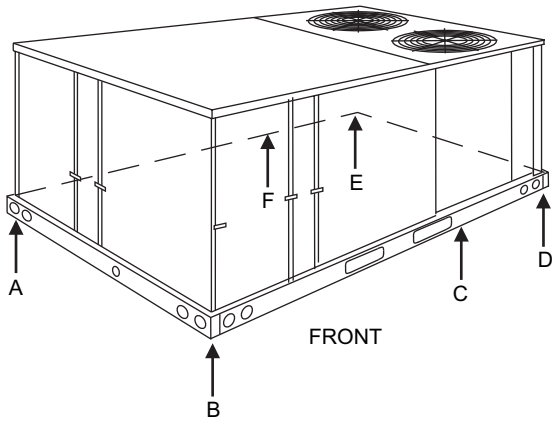




ZF Unit 4 Point Load Weight



ZF Unit 6 Point Load Weight



ZJ/ZR/ZF180-300 Unit Weights

Size (Tons)	Model	Weight (lbs.)		Center of Gravity		4 Point Load Location (lbs.)				6 Point Load Location (lbs.)					
		Shipping	Operating	X	Y	A	B	C	D	A	B	C	D	E	F
180 (15)	ZJ	2614	2609	85.25	44	467	781	852	510	287	392	568	620	428	313
210 (17.5)	ZJ	2670	2665	85.25	44	477	797	870	520	293	401	580	633	437	320
240 (20)	ZJ	2702	2697	85.05	44	485	805	878	529	298	406	585	638	443	326
300 (25)	ZJ	2788	2783	85.25	44	498	833	908	544	306	419	606	661	457	334
180 (15)	ZR	2365	2360	85.25	44	422	706	770	461	260	355	514	561	387	284
240 (20)	ZR	2665	2660	85.05	44	478	794	866	522	294	401	477	630	437	321
300 (25)	ZR	2765	2760	85.25	44	494	826	901	539	304	415	601	656	453	332
180 (15)	ZF	1875	65.26	45	438	477	498	458	288	304	322	337	318	301	1875
210 (17.5)	ZF	2538	70	44	589	622	679	643	389	404	419	457	440	425	2538
240 (20)	ZF	2011	70.98	45	470	511	534	491	309	327	346	361	341	323	2011
300 (25)	ZF	2602	70	44.5	611	645	689	652	403	418	434	464	447	431	2602

ZJ/ZR/ZF180-300 Unit Accessory Weights

Unit Accessory	Weight (lbs.)	
	Shipping	Operating
Economizer	165	160
Power Exhaust	250	245
Electric Heat[1]	40	40
Gas Heat[2]	240	240
Double Wall	260	260
Motorized Damper	150	150
Barometric Damper	50	45
Econ./Motorized Damper Rain Hood	60	55
Econ./Power Exhaust Rain Hood	95	90
Wood Skid	220	220
Roof Curb	190	185
Hot Gas Bypass	10	10
Supply Fan VFD	See Supply Fan VFD Weights	

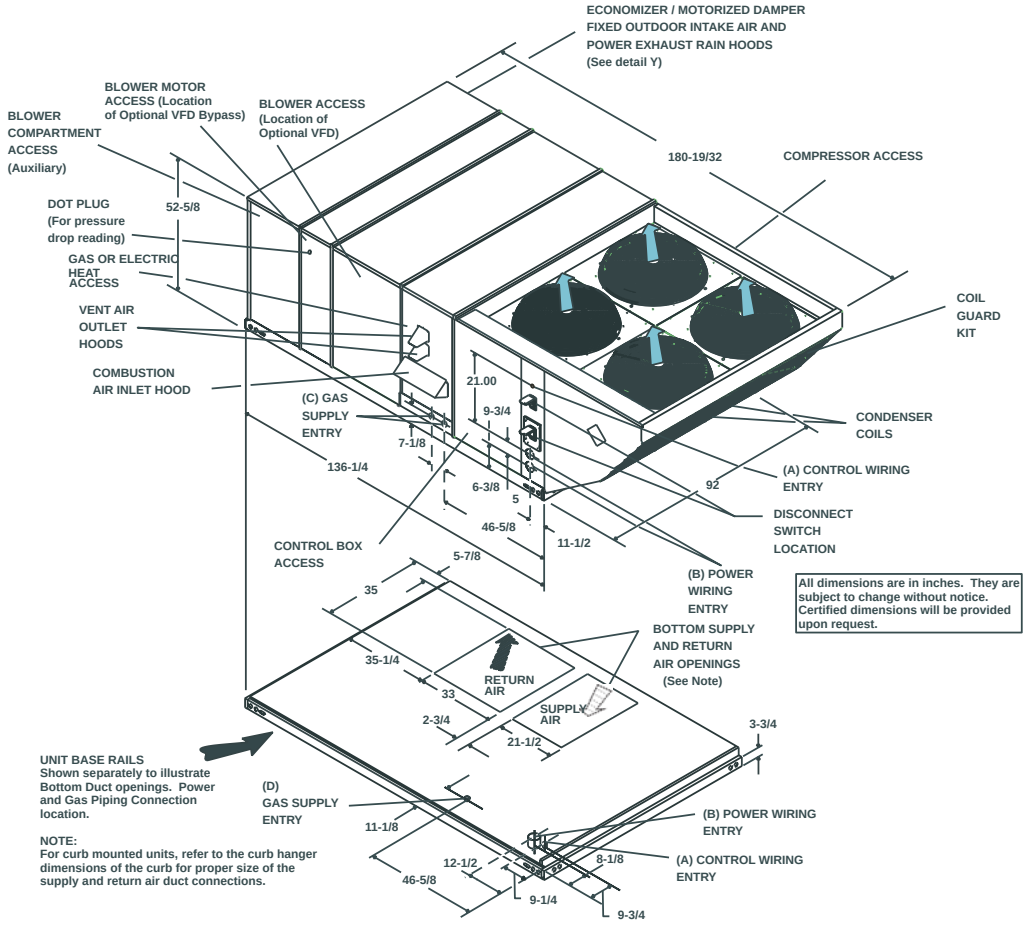
1. Weight given is for the maximum heater size available (54KW).
2. Weight given is for the maximum number of tube heat exchangers available (8 tube).

Supply Fan VFD Weights, in Lbs.

Supply Fan Motor	230V	460V	575V
W/O Manual Bypass			
5.0 hp	25	25	30
7.5 hp	30	30	30
10.0 hp	30	30	35
15.0 hp	30	30	40
W/Manual Bypass			
5.0 hp	30	30	35
7.5 hp	35	35	35
10.0 hp	35	35	40
15.0 hp	40	35	45

ZJ/ZR/ZF180-300 Unit Dimensions

ZJ/ZR Unit Dimensions Front View



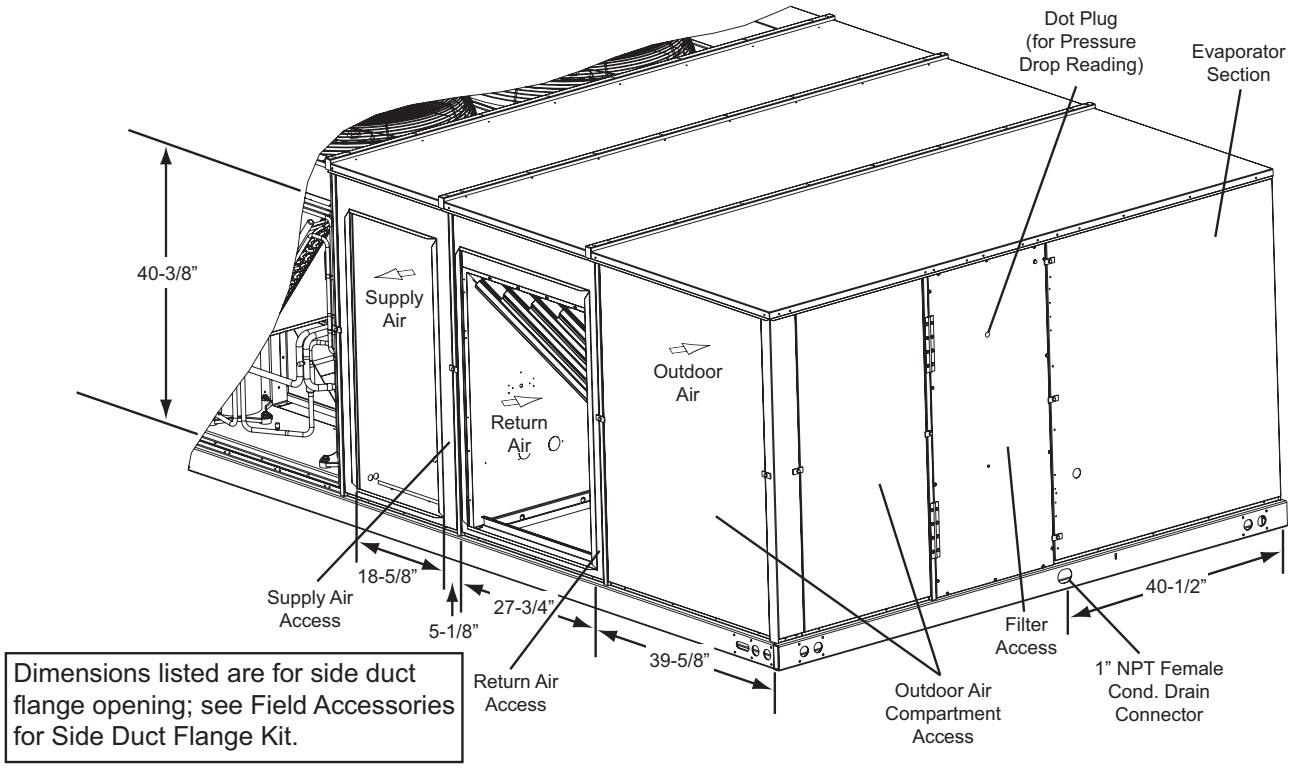
Utilities Entry

Hole	Opening Size Diameter	Used For	
A	1-1/8” KO	Control Wiring	Front
	3/4” NPS (Fem.)		Bottom
B	3-5/8” KO	Power Wiring	Front
	3” NPS (Fem.)		Bottom
C	2-3/8” KO	Gas Piping (Front)[1]	
D	1-11/16” Hole	Gas Piping (Bottom)[1,2]	

1. One-inch Gas Piping NPT Required.
2. Opening in the bottom to the unit can be located by the slice in the insulation.

NOTE: All entry holes should be field sealed to prevent rain water entry into the building.

ZJ/ZR/ZF Unit Dimensions Rear View



NOTE: Units are shipped with the bottom duct openings covered. An accessory flange kit is available for connecting side ducts.

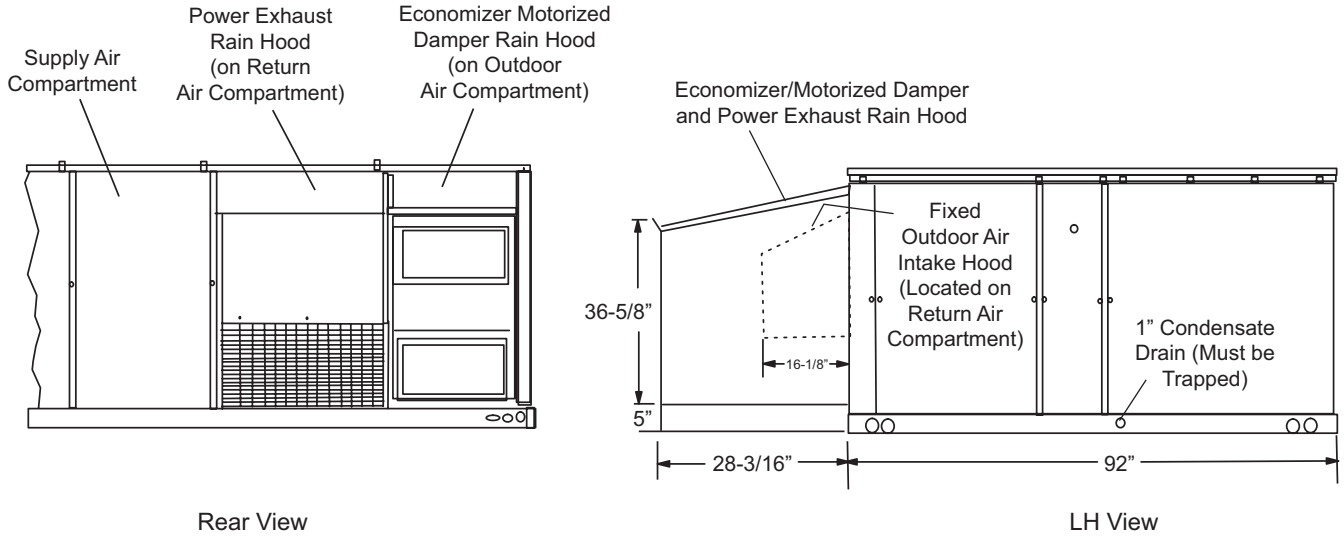
For <u>bottom</u> duct applications:

1. Remove the side panels from the supply and return air compartments to gain access to the bottom supply and return air duct covers.
2. Remove and discard the bottom duct covers. Duct openings are closed with sheet metal covers except when the unit includes a power exhaust option. The covering consists of a heavy black paper composition.
3. Replace the side supply and return air compartment panels.

For <u>side</u> duct applications:

1. Replace the side panels on the supply and return air compartments with the accessory flange kit panels.
2. Connect ductwork to the flanges on those panels.

ZJ/ZR/ZF Unit Dimensions Rain Hood



Detail "Y"
Unit with Rain Hoods

ZJ/ZR/ZF180-300 Unit Clearances

Direction	Distance (in.)	Direction	Distance (in.)
Top[1]	72 With 36 Maximum Horizontal Overhang (For Condenser Air Discharge)	Right	36
Front	36	Bottom[2]	0
Rear	24 (W/O Economizer)	Left	24 (W/O Economizer)
	49 (W/Economizer)		36 (W/Economizer)[3]

1. Units must be installed outdoors. Over hanging structure or shrubs should not obscure condenser air discharge outlet.
2. Units may be installed on combustible floors made from wood or class A, B or C roof covering materials.
3. If economizer is factory installed, the unassembled rain hood must be removed from its ride along position in front of the evaporator coil, or in the outdoor air compartment, prior to final installation.

Note: ELEC/ELEC Models: Units and ductwork are approved for zero clearance to combustible material when equipped with electric heaters.

GAS/ELEC Models: A 1" clearance must be provided between any combustible material and the supply air ductwork for a distance of 3 feet from the unit.

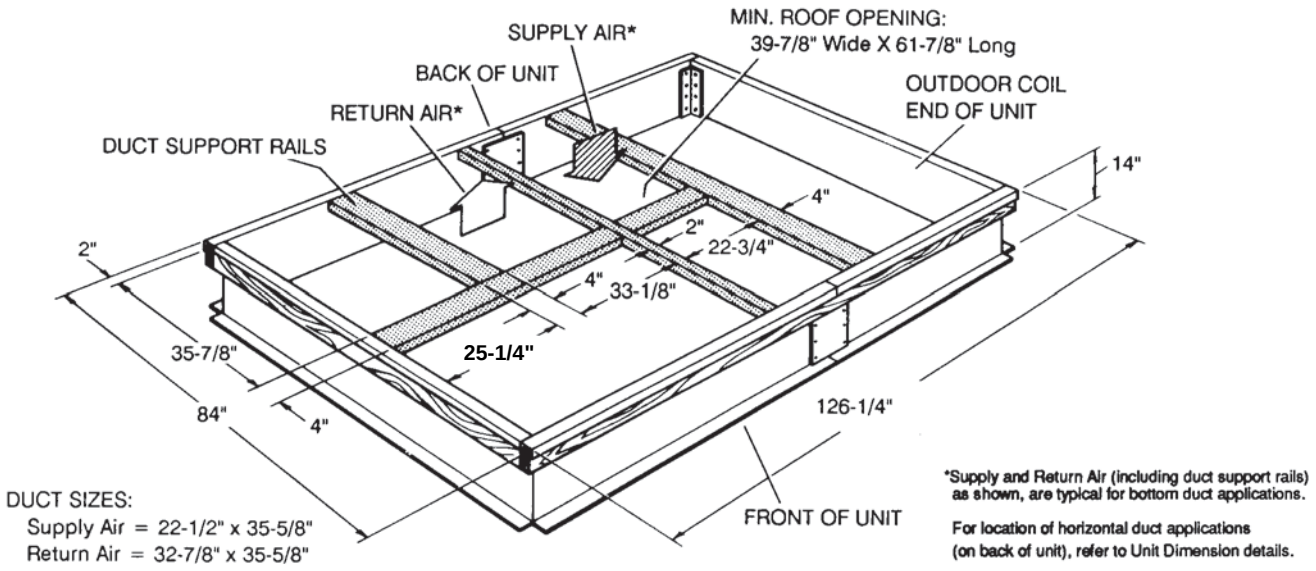
The products of combustion must not be allowed to accumulate within a confined space and recirculate.

Locate unit so that the vent air outlet hood is at least:

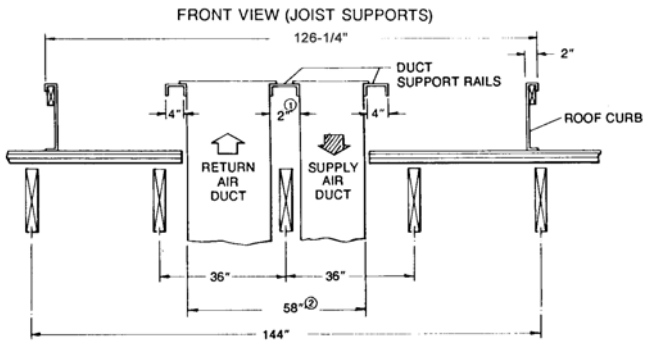
- Three (3) feet above any force air inlet located within 10 horizontal feet (excluding those integral to the unit).
- Four (4) feet below, four horizontal feet from, or one foot above any door or gravity air inlet into the building.
- Four (4) feet from electric and gas meters, regulators and relief equipment.

ZJ/ZR/ZF180-300 Unit Accessory Dimensions

ZJ/ZR/ZF180-300 Roof Curb



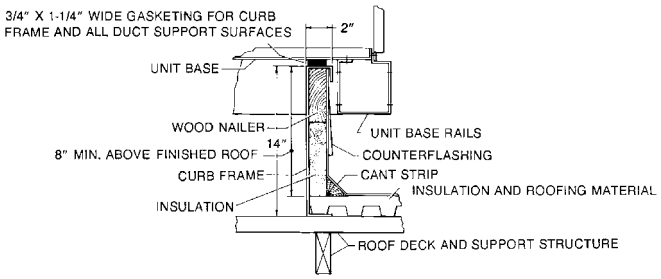
ZJ/ZR/ZF180-300 Roof Curb Duct Openings



1. The 2” space between the ducts allows for “jumping” an existing roof joist.
2. The 58-1/2” overall dimension of the ducts allows ductwork penetration between roof joists that are spaced on 72” centers.

NOTE: Ducts can be installed into the curb from the roof. All electrical and gas line connections can be made inside the curb.

ZJ/ZR/ZF180-300 Cut Away of Roof Curb



ZJ/ZR/ZF180-300 Typical Installation