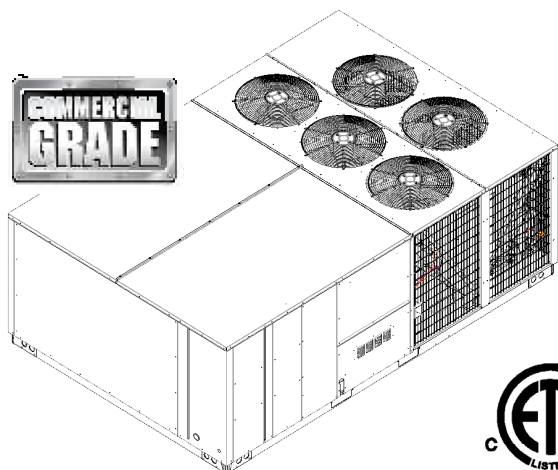


DFG SERIES

PACKAGED GAS/ELECTRIC UNIT

15 TO 25 TON



NOTE: 25 ton model shown in picture.
20 ton model has 4 fans
15 ton model has 3 fans

RECOGNIZE THIS SYMBOL AS A SAFETY PRECAUTION.

These installation instructions cover the **outdoor** installation of single package heating and cooling units. See the Specification Sheet applicable to your model for information regarding accessories.

***NOTE:** Please contact your distributor or our website for the applicable Specification Sheet referred to in this manual.

This Forced Air Central Unit Design Complies With Requirements Embodied in the American National Standard / National Standard of Canada shown below.

ANSI Z21.47•CSA-2.3 Central Furnaces



WARNING

ONLY PERSONNEL THAT HAVE BEEN TRAINED TO INSTALL, ADJUST, SERVICE, MAINTENANCE OR REPAIR (HEREINAFTER, "SERVICE") THE EQUIPMENT SPECIFIED THIS MANUAL SHOULD SERVICE THE EQUIPMENT.

THIS EQUIPMENT IS NOT INTENDED FOR USE BY PERSONS (INCLUDING CHILDREN) WITH REDUCED PHYSICAL, SENSORY OR MENTAL CAPACITIES, OR LACK OF EXPERIENCE AND KNOWLEDGE, UNLESS THEY HAVE BEEN GIVEN SUPERVISION OR INSTRUCTION CONCERNING USE OF THE APPLIANCE BY A PERSON RESPONSIBLE FOR THEIR SAFETY.

CHILDREN SHOULD BE SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE EQUIPMENT.

THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR ANY INJURY OR PROPERTY DAMAGE ARISING FROM IMPROPER SUPERVISION, SERVICE OR SERVICE PROCEDURES. IF YOU SERVICE THIS UNIT, YOU ASSUME RESPONSIBILITY FOR ANY INJURY OR PROPERTY DAMAGE WHICH MAY RESULT. IN ADDITION, IN JURISDICTIONS THAT REQUIRE ONE OR MORE LICENSES TO SERVICE THE EQUIPMENT SPECIFIED IN THIS MANUAL, ONLY LICENSED PERSONNEL SHOULD SERVICE THE EQUIPMENT. IMPROPER SUPERVISION, INSTALLATION, ADJUSTMENT, SERVICING, MAINTENANCE OR REPAIR OF THE EQUIPMENT SPECIFIED IN THIS MANUAL, OR ATTEMPTING TO INSTALL, ADJUST, SERVICE OR REPAIR THE EQUIPMENT SPECIFIED IN THIS MANUAL WITHOUT PROPER SUPERVISION OR TRAINING MAY RESULT IN PRODUCT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



WARNING

DO NOT BYPASS SAFETY DEVICES.

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Our continuing commitment to quality products may mean a change in specifications without notice.

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SAFETY INSTRUCTIONS

TO THE INSTALLER

Before installing this unit, please read this manual to familiarize yourself on the specific items which must be adhered to, including maximum external static pressure to unit, air temperature rise and minimum or maximum CFM.

Keep this literature in a safe place for future reference.



WARNING

IF THE INFORMATION IN THESE INSTRUCTIONS IS NOT FOLLOWED EXACTLY, A FIRE OR EXPLOSION MAY RESULT CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR LOSS OF LIFE.

- DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.
- WHAT TO DO IF YOU SMELL GAS:
 - DO NOT TRY TO LIGHT ANY APPLIANCE.
 - DO NOT TOUCH ANY ELECTRICAL SWITCH; DO NOT USE ANY PHONE IN YOUR BUILDING.
 - IMMEDIATELY CALL YOUR GAS SUPPLIER FROM A NEIGHBOR'S PHONE. FOLLOW THE GAS SUPPLIER'S INSTRUCTIONS.
 - IF YOU CANNOT REACH YOUR GAS SUPPLIER, CALL THE FIRE DEPARTMENT.
- INSTALLATION AND SERVICE MUST BE PERFORMED BY A QUALIFIED INSTALLER, SERVICE AGENCY OR THE GAS SUPPLIER.



WARNING

SHOULD OVERHEATING OCCUR OR THE GAS SUPPLY FAIL TO SHUT OFF, TURN OFF THE MANUAL GAS SHUTOFF VALVE EXTERNAL TO THE FURNACE BEFORE TURNING OFF THE ELECTRICAL SUPPLY.



CAUTION

SHEET METAL PARTS, SCREWS, CLIPS AND SIMILAR ITEMS INHERENTLY HAVE SHARP EDGES, AND IT IS NECESSARY THAT THE INSTALLER AND SERVICER PERSONNEL EXERCISE CAUTION.



WARNING

DO NOT CONNECT TO OR USE ANY DEVICE THAT IS NOT DESIGN CERTIFIED BY THE MANUFACTURER FOR USE WITH THIS UNIT. SERIOUS PROPERTY DAMAGE, PERSONAL INJURY, REDUCED UNIT PERFORMANCE AND/OR HAZARDOUS CONDITIONS MAY RESULT FROM THE USE OF SUCH NON-APPROVED DEVICES.



WARNING

THIS UNIT MUST NOT BE USED AS A "CONSTRUCTION HEATER" DURING THE FINISHING PHASES OF CONSTRUCTION ON A NEW STRUCTURE. THIS TYPE OF USE MAY RESULT IN PREMATURE FAILURE OF THE UNIT DUE TO EXTREMELY LOW RETURN AIR TEMPERATURES AND EXPOSURE TO CORROSIVE OR VERY DIRTY ATMOSPHERES.



WARNING

HIGH VOLTAGE

DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



WARNING

TO PREVENT THE RISK OF PROPERTY DAMAGE, PERSONAL INJURY OR DEATH, DO NOT STORE COMBUSTIBLE MATERIALS OR USE GASOLINE OR OTHER FLAMMABLE LIQUIDS OR VAPORS IN THE VICINITY OF THIS APPLIANCE.

REPLACEMENT PARTS

ORDERING PARTS

When reporting shortages or damages, or ordering repair parts, give the complete unit model and serial numbers as stamped on the unit's nameplate.

Replacement parts for this appliance are available through your contractor or local distributor. Your nearest distributor can be located online at www.daikincomfort.com or by contacting:

EQUIPMENT SUPPORT
 DAIKIN COMFORT TECHNOLOGIES MANUFACTURING, L.P.
 19001 KERMIER ROAD
 WALLER, TEXAS 77484
 855-770-5678

 DANGER

CARBON MONOXIDE POISONING HAZARD
Special Warning for Installation of Furnace or Air Handling Units in Enclosed Areas such as Garages, Utility Rooms or Parking Areas
Carbon monoxide producing devices (such as an automobile, space heater, gas water heater, etc.) should not be operated in enclosed areas such as unventilated garages, utility rooms or parking areas because of the danger of carbon monoxide (CO) poisoning resulting from the exhaust emissions. If a furnace or air handler is installed in an enclosed area such as a garage, utility room or parking area and a carbon monoxide producing device is operated therein, there must be adequate, direct outside ventilation.
This ventilation is necessary to avoid the danger of CO poisoning which can occur if a carbon monoxide producing device continues to operate in the enclosed area. Carbon monoxide emissions can be (re)circulated throughout the structure if the furnace or air handler is operating in any mode.
CO can cause serious illness including permanent brain damage or death.
B10259-216

 DANGER PELIGRO

RIESGO DE INTOXICACIÓN POR MONÓXIDO DE CARBONO
Advertencia especial para la instalación de calentadores ó manejadoras de aire en áreas cerradas como estacionamientos ó cuartos de servicio.
Los equipos ó aparatos que producen monóxido de carbono (tal como automóvil, calentador de gas, calentador de agua por medio de gas, etc) no deben ser operados en áreas cerradas debido al riesgo de envenenamiento por monóxido de carbono (CO) que resulta de las emisiones de gases de combustión. Si el equipo ó aparato se opera en dichas áreas, debe existir una adecuada ventilación directa al exterior. Esta ventilación es necesaria para evitar el peligro de envenenamiento por CO, que puede ocurrir si un dispositivo que produce monóxido de carbono sigue operando en el lugar cerrado. Las emisiones de monóxido de carbono pueden circular a través del aparato cuando se opera en cualquier modo.
El monóxido de carbono puede causar enfermedades severas como daño cerebral permanente ó muerte.
B10259-216

 DANGER

RISQUE D'EMPOISONNEMENT AU MONOXYDE DE CARBONE
Advertencia especial para la instalación de calentadores ó manejadoras de aire en áreas cerradas como estacionamientos ó cuartos de servicio.
Avertissement special au sujet de l'installation d'appareils de chauffage ou de traitement d'air dans des endroits clos, tels les garages, les locaux d'entretien et les stationnements. Evitez de mettre en marche les appareils produisant du monoxyde de carbone (tels que les automobiles, les appareils de chauffage autonome, etc.) dans des endroits non ventilés tels que les d'empoisonnement au monoxyde de carbone. Si vous devez faire fonctionner ces appareils dans un endroit clos, assurez-vous qu'il y ait une ventilation directe provenant de l'exterieur.
Cette ventilation est nécessaire pour éviter le danger d'intoxication au CO pouvant survenir si un appareil produisant du monoxyde de carbone continue de fonctionner au sein de la zone confinée.
Les émissions de monoxyde de carbone peuvent être recirculées dans les endroits clos, si l'appareil de chauffage ou de traitement d'air sont en marche.
Le monoxyde de carbone peut causer des maladies graves telles que des dommages permanents au cerveau et même la mort.
B10259-216

GENERAL INFORMATION

For complete information and installation instructions for models with DDC controls, see manual DK-DDC-TGD-XXX.

 WARNING
TO PREVENT PROPERTY DAMAGE, PERSONAL INJURY OR DEATH DUE TO FIRE, EXPLOSIONS, SMOKE, SOOT, CONDENSATION, ELECTRIC SHOCK OR CARBON MONOXIDE, THIS UNIT MUST BE PROPERLY INSTALLED, REPAIRED, OPERATED AND MAINTAINED.

This unit is approved for outdoor installation ONLY. This unit should be installed in a manner so that it is NOT accessible to the public. Rated performance is achieved after 20 hours of operation. Rated performance is delivered at the specified airflow. See outdoor unit specification sheet for split system models or product specification sheet for packaged and light commercial models. Specification sheets can be found at www.daikincomfort.com for Daikin brand products. Within the website, please select the residential or commercial products menu and then select the submenu for the type of product to be installed, such as air conditioners or heat pumps, to access a list of product pages that each contain links to that model's specification sheet.

To assure that your unit operates safely and efficiently, it must be installed, operated, and maintained in accordance with these installation and operating instructions, all local building codes and ordinances, or in their absence, with the latest edition of the National Fuel Gas Code NFPA54/ANSI Z223.1 and National Standard of Canada CAN/CSA B149 Installation Codes.

EPA REGULATIONS

IMPORTANT: THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA) HAS ISSUED VARIOUS REGULATIONS REGARDING THE INTRODUCTION AND DISPOSAL OF REFRIGERANTS IN THIS UNIT. FAILURE TO FOLLOW THESE REGULATIONS MAY HARM THE ENVIRONMENT AND CAN LEAD TO THE IMPOSITION OF SUBSTANTIAL FINES. BECAUSE REGULATIONS MAY VARY DUE TO PASSAGE OF NEW LAWS, WE SUGGEST A CERTIFIED TECHNICIAN PERFORM ANY WORK DONE ON THIS UNIT. SHOULD YOU HAVE ANY QUESTIONS PLEASE CONTACT THE LOCAL OFFICE OF THE EPA.

NATIONAL CODES

This product is designed and manufactured to permit installation in accordance with National Codes. It is the installer's responsibility to install the product in accordance with National Codes and/or prevailing local codes and regulations.

The heating and cooling capacities of the unit should be greater than or equal to the design heating and cooling loads of the area to be conditioned. The loads should be calculated by an approved method or in accordance with ASHRAE Guide or Manual J - Load Calculations published by the Air Conditioning Contractors of America.

Obtain from:

American National Standards Institute
25 West 43rd Street, 4th Floor
New York, NY 10036

System design and installation should also, where applicable, follow information presented in accepted industry guides such as the ASHRAE Handbooks. The manufacturer assumes no responsibility for equipment installed in violation of any code or regulation. The mechanical installation of the packaged roof top units consists of making final connections between the unit and building services; supply and return duct connections; and drain connections (if required). The internal systems of the unit are completely factory-installed and tested prior to shipment.

Units are generally installed on a steel roof mounting curb assembly which has been shipped to the job site for installation on the roof structure prior to the arrival of the unit. The model number shown on the unit's identification plate identifies the various components of the unit such as refrigeration tonnage, heating input and voltage.

Carefully inspect the unit for damage including damage to the cabinetry. Any bolts or screws which may have loosened in transit must be re-tightened. In the event of damage, the receiver should:

1. Make notation on delivery receipt of any visible damage to shipment or container.
2. Notify the carrier promptly and request an inspection.
3. In case of concealed damage, the carrier should be notified as soon as possible-preferably within 5 days.

4. File the claim with the following supporting documents:
 - a. Original Bill of Lading, certified copy, or indemnity bond.
 - b. Original paid freight bill or indemnity in lieu thereof.
 - c. Original invoice or certified copy thereof, showing trade and other discounts or reductions.
 - d. Copy of the inspection report issued by the carrier representative at the time damage is reported to the carrier. The carrier is responsible for making prompt inspection of damage and for a thorough investigation of each claim. The distributor or manufacturer will not accept claims from dealers for transportation damage.

NOTE: When inspecting the unit for transportation damage, remove all packaging materials. Recycle or dispose of the packaging material according to local codes. Verify that the voltage listed on the unit serial plate matches the voltage being supplied by the building utilities.

PRE-INSTALLATION CHECKS

NOTE: Verify that voltage listed on serial plate matches voltage being supplied by site.

Carefully read all instructions for the installation prior to installing unit. Ensure each step or procedure is understood and any special considerations are taken into account before starting installation. Assemble all tools, hardware and supplies needed to complete the installation. Some items may need to be purchased locally.

UNIT LOCATION



WARNING

TO PREVENT POSSIBLE EQUIPMENT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH, THE FOLLOWING MUST BE OBSERVED WHEN INSTALLING THE UNIT.

IMPORTANT NOTE: Remove wood shipping rails prior to installation of the unit. See *important note under Roof Curb Installation Only*.

ALL INSTALLATIONS:

IMPORTANT NOTE: Unit should be energized 24 hours prior to compressor start up to ensure crankcase heater has sufficiently warmed the compressors. Compressor damage may occur if this step is not followed.

NOTE: This appliance is a dedicated downflow design.

Proper installation of the unit ensures trouble-free operation. Improper installation can result in problems ranging from noisy operation to property or equipment damages, dangerous conditions that could result in injury or personal property damage. Damage or repairs due to improper installation are not covered under the warranty. Give this booklet to the user and explain its provisions. The user should retain these instructions for future reference.

- For proper flame pattern within the heat exchanger and proper condensate drainage, the unit must be mounted level.

- The flue outlet must be at least 12 inches from any opening through which flue gases could enter a building, and at least three feet above any forced air inlet located within ten feet. The economizer/manual fresh air intake/motorized fresh air intake and combustion air inlet mounted on the unit are not affected by this restriction.
- To avoid possible corrosion of the heat exchanger, do not locate the unit in an area where the outdoor air (i.e. combustion air for the unit) will be frequently contaminated by compounds containing chlorine or fluorine. Common sources of such compounds include swimming pool chemicals and chlorine bleaches, paint stripper, adhesives, paints, varnishes, sealers, waxes (which are not yet dried) and solvents used during construction and remodeling. Various commercial and industrial processes may also be sources of chlorine/fluorine compounds.
- To avoid possible illness or death of the building occupants, do NOT locate outside air intake device (economizer, manual fresh air intake, motorized fresh air intake) too close to an exhaust outlet, gas vent termination, or plumbing vent outlet. For specific distances required, consult local codes.
- Allow minimum clearances from the enclosure for fire protection, proper operation, and service access (see unit clearances). These clearances must be permanently maintained.
- The combustion air inlet and flue outlet on the unit must never be obstructed. If used, do not allow the economizer/manual fresh air damper/ motorized fresh air damper to become blocked by snow or debris. In some climates or locations, it may be necessary to elevate the unit to avoid these problems.
- When the unit is heating, the temperature of the return air entering the unit must be between 50° F and 100° F.

GROUND LEVEL INSTALLATIONS ONLY:

- When the unit is installed on the ground adjacent to the building, a level concrete (or equal) base is recommended. Prepare a base that is 3" larger than the package unit footprint and a minimum of 3" thick.
- The base should also be located where no runoff of water from higher ground can collect in the unit.

ROOF TOP INSTALLATIONS ONLY:

- To avoid possible property damage or personal injury, the roof must have sufficient structural strength to carry the weight of the unit(s) and snow or water loads as required by local codes. Consult a structural engineer to determine the weight capabilities of the roof.
- The unit may be installed directly on wood floors or on Class A, Class B, or Class C roof covering material.
- To avoid possible personal injury, a safe, flat surface for service personnel should be provided.
- As indicated on the unit data plate, a minimum clearance of 36" to any combustible material is required on the furnace access side of the unit. All combustible materials must be kept out of this area.

- This 36" clearance must also be maintained to insure proper combustion air and flue gas flow. The combustion air intake and furnace flue discharge must not be blocked for any reason, including blockage by snow.
- Adequate clearances from the furnace flue discharge to any adjacent public walkways, adjacent buildings, building openings or openable windows must be maintained in accordance with the latest edition of the National Fuel Gas Code (ANSI Z223.1)
- Minimum horizontal clearance of 48" from the furnace flue discharge to any electric meters, gas meters, regulators and relief equipment is required.

UNIT PRECAUTIONS

- Do not stand or walk on the unit.
- Except for holes in the wiring entrances (see Figure below), do not drill holes anywhere in panels or in the base frame of the unit. Unit access panels provide structural support.
- Do not remove any access panels until unit has been installed on roof curb or field supplied structure.
- Do not roll unit across finished roof without prior approval of owner or architect.
- Do not skid or slide on any surface as this may damage unit base. The unit must be stored on a flat, level surface. Protect the condenser coil because it is easily damaged.

ROOF CURB INSTALLATIONS ONLY:

Before installing this unit...

IMPORTANT NOTE: This unit has been equipped with a shipping brace under the compressor section that **MUST BE REMOVED** before installing the unit on a roof curb.

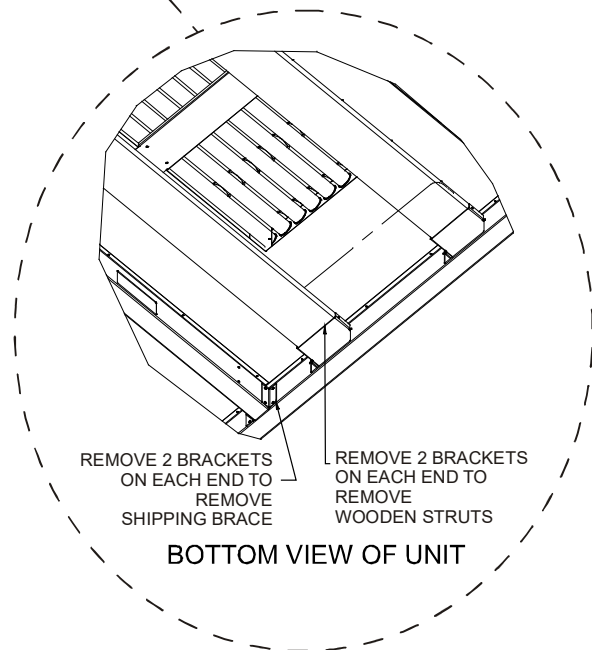
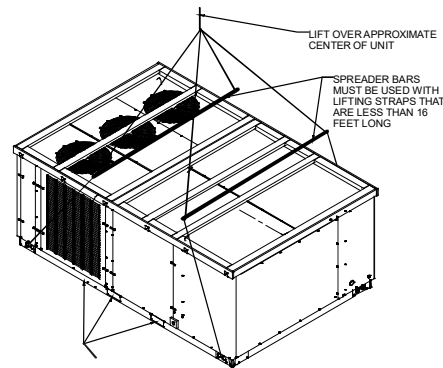
Please follow the instructions below to remove brace.



CAUTION

WHEN UNIT IS SUSPENDED, BOARDS AND SHIPPING BRACE WILL DROP WHEN SCREWS ARE REMOVED. TO PREVENT PERSONAL INJURY, STAND CLEAR. REMOVE FORK HOLE BRACKETS, BOARDS AND SHIPPING BRACE FROM BOTTOM OF UNIT BEFORE PLACING UNITS ONTO CURB.

1. Remove wooden struts and shipping brace per installation instructions. *The struts are located in the fork holes and are used to protect the unit from damage while lifting with forks. The shipping brace is located under the unit (under compressor).* Also remove the fork hole brackets as shown in the following figure.
2. Locate and remove the end brackets as shown in the following figure.



3. Lift unit per the "Rigging Details" section of this manual, observing all warnings and cautions. When unit is lifted, boards and shipping brace will drop if screws have been removed. To avoid injury, **STAND CLEAR**.
4. Dispose of the boards and brace appropriately.

Curb installations must comply with local codes and should be done in accordance with the established guidelines of the National Roofing Contractors Association.

Proper unit installation requires that the roof curb be firmly and permanently attached to the roof structure. Check for adequate fastening method prior to setting the unit on the curb.

Full perimeter roof curbs are available from the factory and are shipped unassembled. Field assembly, squaring, leveling and mounting on the roof structure are the responsibility of the installing contractor. All required hardware necessary for the assembly of the sheet metal curb is included in the curb accessory.



WARNING

TO PREVENT POSSIBLE EQUIPMENT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH, THE FOLLOWING BULLET POINTS MUST BE OBSERVED WHEN INSTALLING THE UNIT.

- Sufficient structural support must be determined prior to locating and mounting the curb and package unit.

- Ductwork must be constructed using industry guidelines. The duct work must be placed into the roof curb before mounting the package unit. Our full perimeter curbs include duct connection frames to be assembled with the curb. Cantilevered type curbs are not available from the factory.
- Curb insulation, cant strips, flashing and general roofing material are furnished by the contractor.
- The curbs must be supported on parallel sides by roof members. The roof members must not penetrate supply and return duct opening areas as damage to the unit might occur.

NOTE: The unit and curb accessories are designed to allow vertical duct installation before unit placement. Duct installation after unit placement is not recommended.

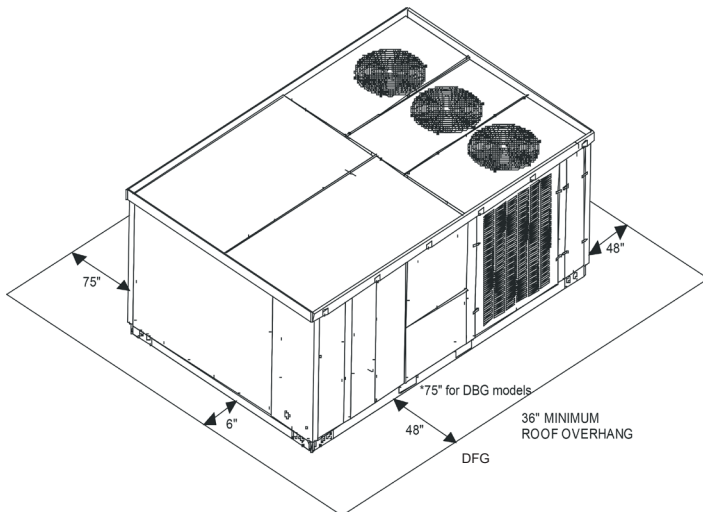


CAUTION

ALL CURBS LOOK SIMILAR. TO AVOID INCORRECT CURB POSITIONING, CHECK JOB PLANS CAREFULLY AND VERIFY MARKINGS ON CURB ASSEMBLY. INSTRUCTIONS MAY VARY IN CURB STYLES AND SUPERCEDE INFORMATION SHOWN.

See the manual shipped with the roof curb for assembly and installation instructions.

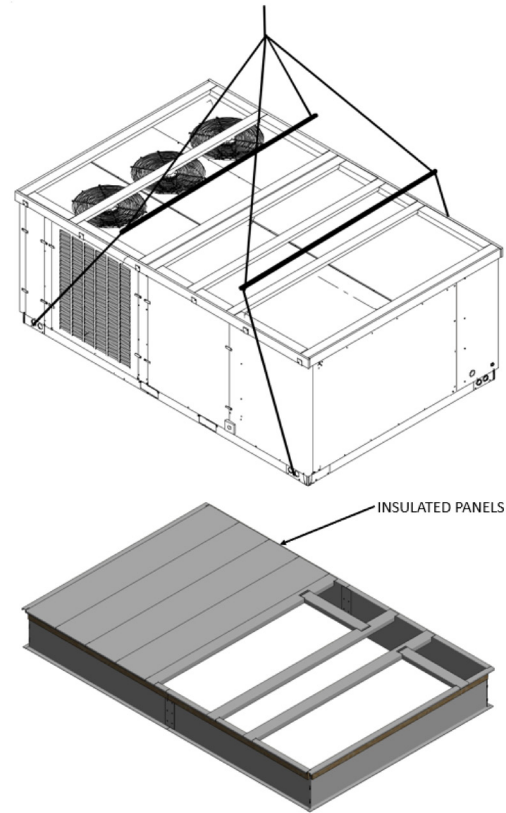
CLEARANCES



UNIT CLEARANCES

Adequate clearance around the unit should be kept for safety, service, maintenance, and proper unit operation. A 75" clearance on the non-service side of the unit is required to facilitate possible blower assembly, shaft, wheel replacement and coil removal. *DFG ONLY - A 75" clearance on the service is required for removal of the gas heat exchanger. This unit must not be installed beneath any obstruction. This unit should be installed remote from all building exhausts to inhibit ingestion of exhaust air into the unit's fresh air intake.

NOTE: If the 48" minimum is used on the control panel side of a DFG unit, a flue extension (220-DK-014) needs be to installed to prevent flue gas recirculation.



ROOF CURB INSTALLATION

ROOF CURB POST-INSTALLATION CHECKS

After installation, check the top of the curb, duct connection frame and duct flanges to make sure gasket has been applied properly. Gasket should be firmly applied to the top of the curb perimeter, duct flanges and any exposed duct connection frame. If gasket is loose, re-apply using strong weather resistant adhesive.

PROTRUSION

Inspect curb to ensure that none of the utility services (electric) routed through the curb protrude above the curb.

NOTE: If the duct is to be fasten to the curb the screw should be installed horizontally into the flanges of the duct openings of the curb.



CAUTION

IF PROTRUSIONS EXIST, DO NOT ATTEMPT TO SET UNIT ON CURB. INFORMATION SHOWN.

ROOF TOP DUCT CONNECTIONS

Install all duct connections on the unit before placing the unit on rooftop.

RIGGING DETAILS



WARNING

TO PREVENT PROPERTY DAMAGE, THE UNIT SHOULD REMAIN IN AN UPRIGHT POSITION DURING ALL RIGGING AND MOVING OPERATIONS. TO FACILITATE LIFTING AND MOVING WHEN A CRANE IS USED, PLACE THE UNIT IN AN ADEQUATE CABLE SLING.



CAUTION

DO NOT LIFT UNITS TWO AT A TIME. PROVISIONS FOR FORKS HAVE BEEN INCLUDED IN THE UNIT BASE FRAME. MINIMUM FORK LENGTH IS 72" TO PREVENT DAMAGE TO THE UNIT.

Provisions for forks have been included in the unit base frame. No other fork locations are approved.



WARNING

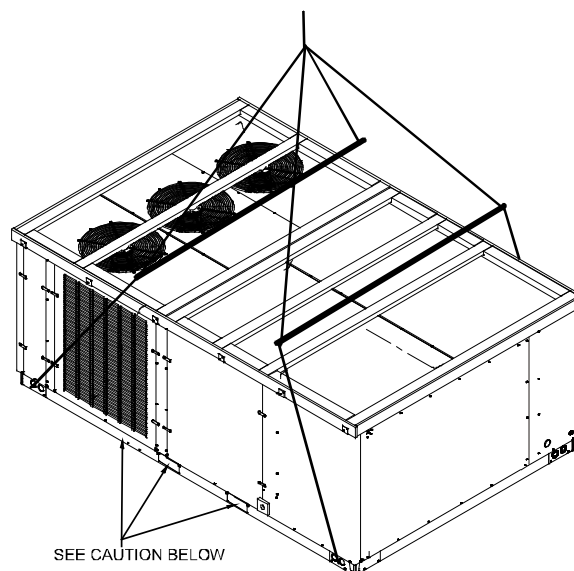
TO PREVENT POSSIBLE EQUIPMENT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH, THE FOLLOWING BULLET POINTS MUST BE OBSERVED WHEN INSTALLING THE UNIT.

- Unit must be lifted by the four lifting holes located at the base frame corners.
- Lifting cables should be attached to the unit with shackles.
- The distance between the crane hook and the top of the unit must not be less than 60".
- Two spreader bars must span over the unit to prevent damage to the cabinet by the lift cables. Spreader bars must be of sufficient length so that cables do not come in contact with the unit during transport. Remove wood struts mounted beneath unit base frame before setting unit on roof curb. These struts are intended to protect unit base frame from fork lift damage. Removal is accomplished by extracting the sheet metal retainers and pulling the struts through the base of the unit. Refer to rigging label on the unit.

IMPORTANT: If using with roof curb, ductwork should be attached to the curb prior to installing the unit. Ductwork dimensions are shown in Roof Curb Installation Instructions.

Refer to the Roof Curb Installation Instructions for proper curb installation. Curbing must be installed in compliance with the National Roofing Contractors Association Manual.

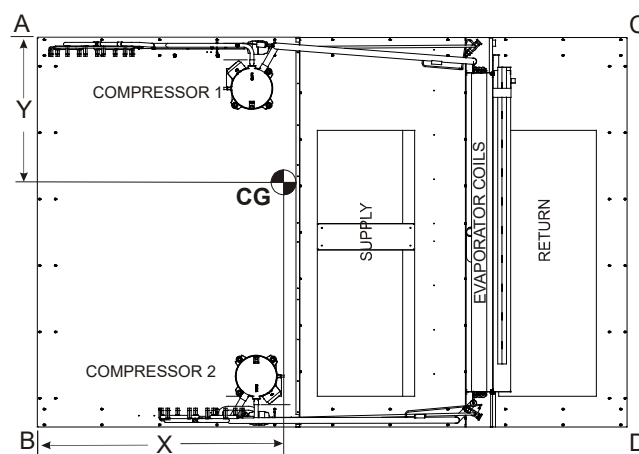
Lower unit carefully onto roof mounting curb. While rigging unit, center of gravity will cause condenser end to be lower than supply air end.



CAUTION

WHEN UNIT IS SUSPENDED, BOARDS AND SHIPPING BRACE WILL DROP WHEN SCREWS ARE REMOVED. TO PREVENT PERSONAL INJURY, STAND CLEAR. REMOVE FORK HOLE BRACKETS, BOARDS AND SHIPPING BRACE FROM BOTTOM OF UNIT BEFORE PLACING UNITS ONTO CURB.

To assist in determining rigging requirements, unit weights are shown in table below.



CORNER & CENTER OF GRAVITY LOCATIONS

DATA	DFG Weights (lbs)		
	15T	20T	25T
Corner Weight - A	455	549	415
Corner Weight - B	520	490	609
Corner Weight - C	532	574	758
Corner Weight - D	403	566	487
Unit Shipping Weight	2025	2294	2385
Unit Operating Weight	1910	2179	2270
X (Inches)	68.07	63.59	60.18
Y (Inches)	42.58	42.70	42.56

NOTE: THESE WEIGHTS ARE WITHOUT ACCESSORIES INSTALLED.



CAUTION

TO PREVENT SEVERE DAMAGE TO THE BOTTOM OF THE UNIT, DO NOT FORK LIFT UNIT AFTER WOOD STRUTS HAVE BEEN REMOVED.

Bring condenser end of unit into alignment with the curb. With condenser end of the unit resting on curb member and using curb as a fulcrum, lower opposite end of the unit until entire unit is seated on the curb. When a rectangular cantilever curb is used, care should be taken to center the unit. Check for proper alignment and orientation of supply and return openings with duct.

RIGGING REMOVAL



CAUTION

TO PREVENT DAMAGE TO THE UNIT, DO NOT ALLOW CRANE HOOKS AND SPREADER BARS TO REST ON THE ROOF OF THE UNIT.

Remove spreader bars, lifting cables and other rigging equipment.

ELECTRICAL WIRING



WARNING

HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



WARNING

HIGH VOLTAGE
TO AVOID PROPERTY DAMAGE, PERSONAL INJURY OR DEATH DUE TO ELECTRICAL SHOCK, DO NOT TAMPER WITH FACTORY WIRING. THE INTERNAL POWER AND CONTROL WIRING OF THESE UNITS ARE FACTORY-INSTALLED AND HAVE BEEN THOROUGHLY TESTED PRIOR TO SHIPMENT. CONTACT YOUR LOCAL REPRESENTATIVE IF ASSISTANCE IS REQUIRED.



CAUTION

TO PREVENT DAMAGE TO THE WIRING, PROTECT WIRING FROM SHARP EDGES. FOLLOW NATIONAL ELECTRICAL CODE AND ALL LOCAL CODES AND ORDINANCES. DO NOT ROUTE WIRES THROUGH REMOVABLE ACCESS PANELS.



CAUTION

CONDUIT AND FITTINGS MUST BE WEATHER-TIGHT TO PREVENT WATER ENTRY INTO THE BUILDING.

For unit protection, use a fuse or HACR circuit breaker that is in excess of the circuit ampacity, but less than or equal to the maximum overcurrent protection device. **DO NOT EXCEED THE MAXIMUM OVERCURRENT DEVICE SIZE SHOWN ON UNIT DATA PLATE.**

All line voltage connections must be made through weatherproof fittings. All exterior power supply and ground wiring must be in approved weatherproof conduit.

The main power supply wiring to the unit and low voltage wiring to accessory controls must be done in accordance with these instructions, the latest edition of the National Electrical Code (ANSI/NFPA 70), and all local codes and ordinances.

The main power supply shall be three-phase, three wire. The unit is factory wired for the voltage shown on the unit's data plate.

NOTE: If supply voltage is 208V, all leads on primary of transformer(s) must be moved from the 230V to the 208V tap.

Main power wiring should be sized for the minimum circuit ampacity shown on the unit's database. Size wires in accordance with the ampacity tables in Article 310 of the National Electrical Code. If long wires are required, it may be necessary to increase the wire size to prevent excessive voltage drop. Wires should be sized for a maximum of 3% voltage drop.



CAUTION

TO AVOID PROPERTY DAMAGE OR PERSONAL INJURY DUE TO FIRE, USE ONLY COPPER CONDUCTORS.



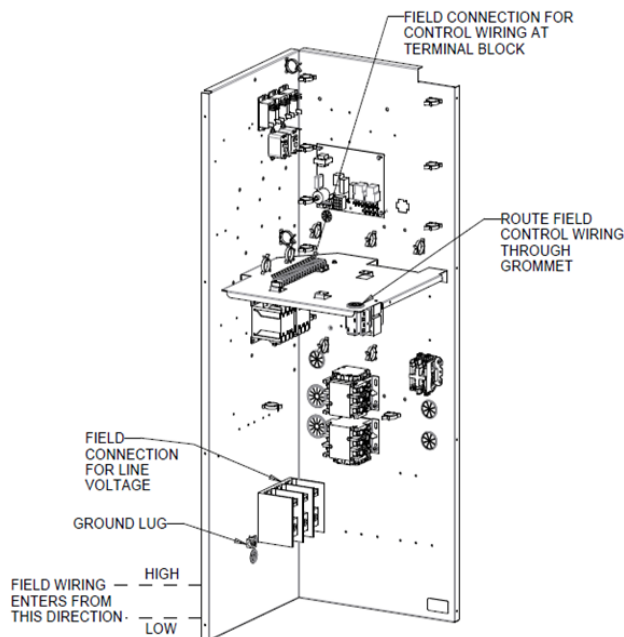
CAUTION

TO PREVENT IMPROPER AND DANGEROUS OPERATION DUE TO WIRING ERRORS, LABEL ALL WIRES PRIOR TO DISCONNECTION WHEN SERVICING CONTROLS. VERIFY PROPER OPERATION AFTER SERVICING.

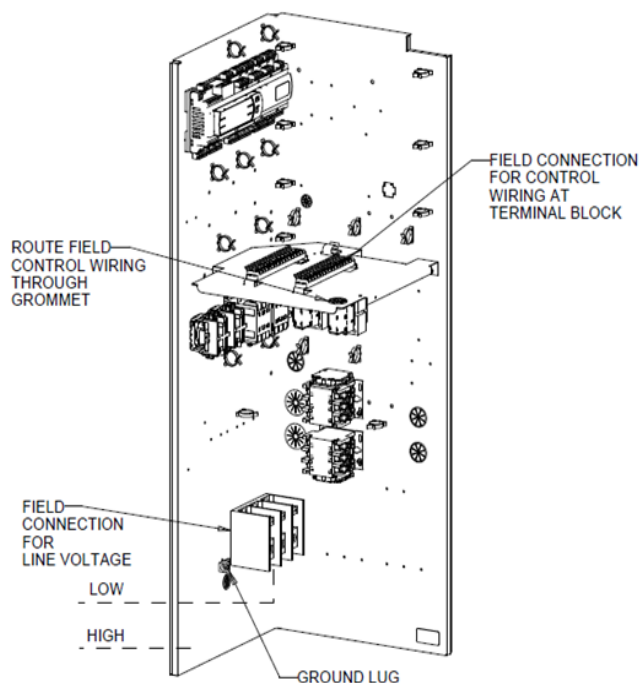
NOTE: A weather-tight disconnect switch, properly sized for the unit total load, must be field or factory installed. An external field supplied disconnect may be mounted on the exterior panel. Switch shall be provided to ensure all-pole disconnection from the supply mains.

Ensure the data plate is not covered by the field-supplied disconnect switch.

- Some disconnect switches are not fused. Protect the power leads at the point of distribution in accordance with the unit data plate.
- The unit must be electrically grounded in accordance with local codes or, in the absence of local codes, with the latest edition of the National Electrical Code (ANSI-NFPA 70). A ground lug is provided for this purpose. Size grounding conductor in accordance with Table 250-95 of the National Electrical Code. Do not use the ground lug for connecting a neutral conductor.
- Connect power wiring to the middle contactor within the main control box or power block, if equipped.



15-25 TON TSTAT POWER AND LOW VOLTAGE TERMINAL LOCATIONS



15-25 TON DDC POWER AND LOW VOLTAGE TERMINAL LOCATIONS

NOTE: Depending on the options installed, the location of the components may vary in some models.



WARNING

FAILURE OF UNIT DUE TO OPERATION ON IMPROPER LINE VOLTAGE OR WITH EXCESSIVE PHASE UNBALANCE CONSTITUTES PRODUCT ABUSE AND IS NOT COVERED BY THE WARRANTY. IT MAY CAUSE SEVERE DAMAGE TO THE UNIT ELECTRICAL COMPONENTS.

AREAS WITHOUT CONVENIENCE OUTLET

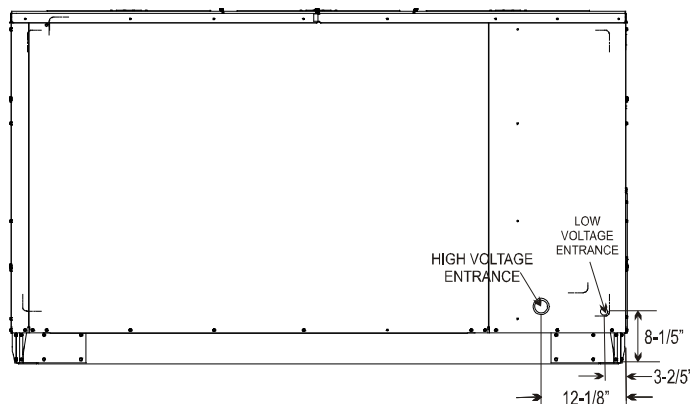
It is recommended that an independent 115V power source be brought to the vicinity of the roof top unit for portable lights and tools used by the service mechanic.

NOTE: Refer to local codes for requirements. These outlets can also be factory installed.

UNITS INSTALLED ON ROOF TOPS

Main power and low voltage wiring may enter the unit through the side or through the roof curb. If connections need to be made through the roof curb, a through the base kit (TTBCK03) will need to be used. Install conduit connectors at the designated entrance locations. External connectors must be weatherproof. All holes in the unit base must be sealed (including those around conduit nuts) to prevent water leakage into building. All required conduit and fittings are to be field supplied.

Supply voltage to roof top unit must not vary by more than 10% of the value indicated on the unit data plate. Phase voltage unbalance must not exceed 2%. Contact your local power company for correction of improper voltage or phase unbalance.



ELECTRICAL ENTRANCE LOCATIONS

Unit is equipped with a Low Voltage Terminal Block and has Single Point wiring to the contactor (Above Image).

LOW VOLTAGE CONTROL WIRING

NOTE: For models equipped with the DDC controls option, refer to the supplemental DDC literature supplied with the unit for additional information.

1. A 24V thermostat must be installed for unit operation. It may be purchased with the unit or field -supplied. Thermostats may be programmable or electromechanical as required.
2. Locate thermostat or remote sensor in the conditioned space where it will sense average temperature. Do not locate the device where it may be directly exposed to supply air, sunlight or other sources of heat. Follow installation instructions packaged with the thermostat.
3. Use #18 AWG wire for 24V control wiring runs not exceeding 75 feet. Use #16 AWG wire for 24V control wiring runs not exceeding 125 feet. Use #14 AWG wire for 24V control wiring runs not exceeding 200 feet. Low voltage wiring may be National Electrical Code (NEC) Class 2 where permitted by local codes.

- Route thermostat wires from sub-base terminals to the unit. Control wiring should enter through the duct panel (dimple marks entrance location) or through the approved base pan location. Connect thermostat and any accessory wiring to low voltage terminal block TB1 in the main control box.

NOTE: Field-supplied conduit may need to be installed depending on unit/curb configuration. Use #18 AWG solid conductor wire whenever connecting thermostat wires to terminals on sub-base. DO NOT use larger than #18 AWG wire. A transition to #18 AWG wire may be required before entering thermostat sub-base.

NOTE: Refer to unit wiring diagrams for thermostat hookups.

GAS SUPPLY PIPING



WARNING

TO PREVENT PERSONAL INJURY OR DEATH DUE TO IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE, REFER TO THIS MANUAL. FOR ADDITIONAL ASSISTANCE OR INFORMATION, CONSULT A QUALIFIED INSTALLER, SERVICE AGENCY OR THE GAS SUPPLIER.

IMPORTANT NOTE: This unit is factory set to operate on natural gas at the altitudes shown on the rating plate.



WARNING

TO PREVENT PROPERTY DAMAGE, PERSONAL INJURY OR DEATH WHEN EITHER USING PROPANE GAS ALONE OR AT HIGHER ALTITUDES, OBTAIN AND INSTALL THE PROPER CONVERSION KIT(S). FAILURE TO DO SO CAN RESULT IN UNSATISFACTORY OPERATION AND/OR EQUIPMENT DAMAGE. HIGH ALTITUDE KITS ARE FOR U.S. INSTALLATIONS ONLY AND ARE NOT APPROVED FOR USE IN CANADA.

The rating plate is stamped with the model number, type of gas and gas input rating. Make sure the unit is equipped to operate on the type of gas available. Conversion to propane (LP) gas is permitted with the use of the factory authorized conversion kit (see the unit Technical Manual for the appropriate kit). For High Altitude derates, refer to the latest edition of the National Fuel Gas Code NFPA 54/ANSI Z223.1.

INLET GAS PRESSURE	
NATURAL	Min. 5.0" W.C., Max. 10.0" W.C.
PROPANE	Min. 11.0" W.C., Max. 14.0" W.C.

Inlet Gas Pressure Must Not Exceed the Maximum Value Shown in Table Above.

The minimum supply pressure should not vary from that shown in the table above because this could prevent the unit from having dependable ignition. In addition, gas input to the burners must not exceed the rated input shown on the rating plate. Overfiring of the unit could result in premature heat exchanger failure.

PIPING

IMPORTANT NOTE: To avoid possible unsatisfactory operation or equipment damage due to under firing of equipment, do not undersize the natural/propane gas piping from the meter/tank to the unit. When sizing a trunk line, include all appliances on that line that could be operated simultaneously.

The rating plate is stamped with the model number, type of gas and gas input rating. Make sure the unit is equipped to operate on the type of gas available. The gas line installation must comply with local codes, or in the absence of local codes, with the latest edition of the National Fuel Gas Code NFPA 54/ANSI Z223.1.

NATURAL GAS CONNECTION

Natural Gas Capacity of Pipe in Cubic Feet of Gas Per Hour (CFH)					
Length of Pipe in Feet	Nominal Black Pipe Size (inches)				
	1/2	3/4	1	1 1/4	1 1/2
10	132	278	520	1050	1600
20	92	190	350	730	1100
30	73	152	285	590	980
40	63	130	245	500	760
50	56	115	215	440	670
60	50	105	195	400	610
70	46	96	180	370	560
80	43	90	170	350	530
90	40	84	160	320	490
100	38	79	150	305	460

Pressure= .50 PSIG or less and Pressure Drop of 0.3" W.C.

(Based on 0.60 Specific Gravity Gas)

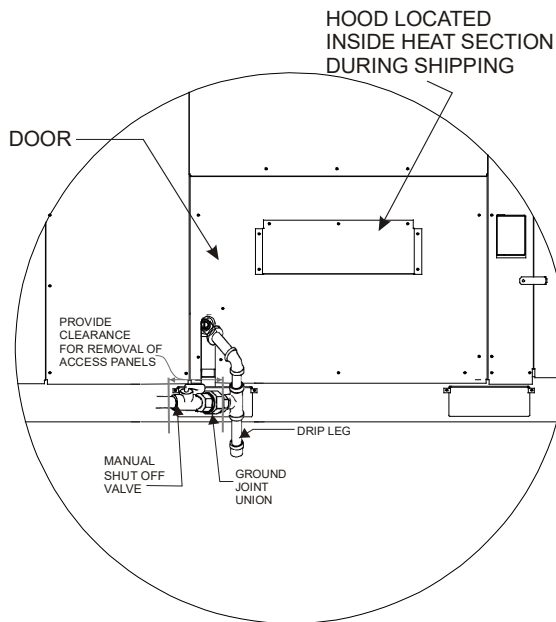
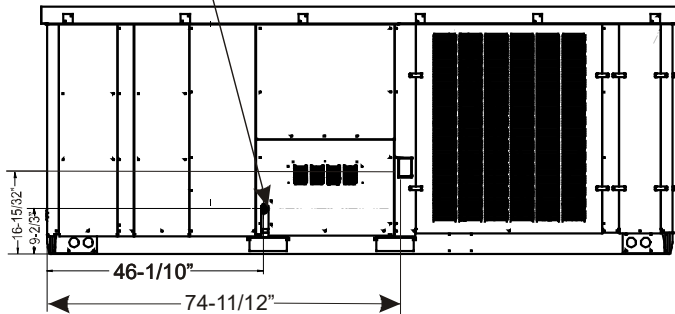
$$CFH = \frac{BTUH \text{ Furnace Input}}{\text{Heating Value of Gas (BTU/Cubic Foot)}}$$

Refer to the Proper Piping Practice drawing for the general layout at the unit. The following rules apply:

- Use black iron pipe and fittings for the supply piping. The use of a flex connector and/or copper piping is permitted as long as it is in agreement with local codes.
- Use pipe joint compound on male threads only. Pipe joint compound must be resistant to the action of the fuel used.
- Use ground joint unions.
- Install a drip leg to trap dirt and moisture before it can enter the gas valve. The drip leg must be a minimum of three inches long.
- Use two pipe wrenches when making connection to the gas valve to keep it from turning.
- Install a manual shut-off valve in a convenient location (within six feet of unit) between the meter and the unit.
- Tighten all joints securely.
- The unit must be connected to the building piping by one of the following methods:
 - Rigid metallic pipe and fittings
 - Semirigid metallic tubing and metallic fittings (Aluminum alloy tubing must not be used in exterior locations)

- Listed gas appliance connectors used in accordance with the terms of their listing that are completely in the same room as the equipment
- In the prior two methods above the connector or tubing must be protected from physical and thermal damage. Aluminum alloy tubing and connectors must be coated to protect against external corrosion when in contact with masonry, plaster or insulation or are subject to repeated wettings by liquids (water - not rain water, detergents or sewage).

GAS INLET LOCATION (3/4" NPT)



PROPER PIPING PRACTICE

NOTE: The unit gas supply entrance is factory sealed with plugs. Keep plugs in place until gas supply is ready to be installed. Once ready, replace the plugs with the supplied grommets and install gas supply line.

GAS PIPING CHECKS



CAUTION

TO PREVENT PROPERTY DAMAGE OR PERSONAL INJURY DUE TO FIRE, THE FOLLOWING INSTRUCTIONS MUST BE PERFORMED REGARDING GAS CONNECTIONS AND PRESSURE TESTING:

- THE UNIT AND ITS GAS CONNECTIONS MUST BE LEAK TESTED BEFORE PLACING IN OPERATION. BECAUSE OF THE DANGER OF EXPLOSION OR FIRE, NEVER USE A MATCH OR OPEN FLAME TO TEST FOR LEAKS. NEVER EXCEED SPECIFIED PRESSURES FOR TESTING. HIGHER PRESSURE MAY DAMAGE GAS VALVE AND CAUSE OVERFIRING WHICH MAY RESULT IN PREMATURE HEAT EXCHANGER FAILURE.
- THIS UNIT AND ITS SHUT-OFF VALVE MUST BE DISCONNECTED FROM THE GAS SUPPLY DURING ANY PRESSURE TESTING OF THAT SYSTEM AT TEST PRESSURES IN EXCESS OF 1/2 PSIG (3.48 kPa).
- THIS UNIT MUST BE ISOLATED FROM THE GAS SUPPLY SYSTEM BY CLOSING ITS MANUAL SHUT-OFF VALVE DURING ANY PRESSURE TESTING OF THE GAS SUPPLY PIPING SYSTEM AT TEST PRESSURES EQUAL TO OR LESS THAN 1/2 PSIG (3.48 kPa).



WARNING

TO AVOID PROPERTY DAMAGE OR PERSONAL INJURY, BE SURE THAT IS NO OPEN FLAME IN THE VICINITY DURING AIR BLEEDING.

There will be air in the gas supply line after testing for leaks on a new installation. Therefore, the air must be bled from the line by loosening the ground joint union until pure gas is expelled. Tighten union and wait for five minutes until all gas has been dissipated in the air. Be certain there is no open flame in the vicinity during air bleeding procedure. The unit is placed in operation by closing the main electrical disconnect switch for the unit.

PROPANE GAS INSTALLATIONS



WARNING

TO AVOID PROPERTY DAMAGE, PERSONAL INJURY OR DEATH DUE TO FIRE OR EXPLOSION CAUSED BY A PROPANE GAS LEAK, INSTALL A GAS DETECTING WARNING DEVICE. SINCE RUST CAN REDUCE THE LEVEL OF ODORANT IN PROPANE GAS, A GAS DETECTING WARNING DEVICE IS THE ONLY RELIABLE WAY TO DETECT A PROPANE GAS LEAK. CONTACT A LOCAL PROPANE GAS SUPPLIER ABOUT INSTALLING A GAS DETECTING WARNING DEVICE.

IMPORTANT NOTE: Propane gas conversion kits must be installed to convert units to propane gas.

All propane gas equipment must conform to the safety standards of the National Board of Fire Underwriters (See NBFU Manual 58). Line pressure 11.3 - 14" w.c.

For satisfactory operation, propane gas manifold pressure must be within 9.7 - 10.3 inches w.c. for high fire and within 6.7 - 7.3 inches w.c. low fire at the manifold with all gas appliances in operation. Maintaining proper gas pressure depends on three main factors:

1. Vaporization rate, which depends on (a) temperature of the liquid, and (b) wetted surface area of the container or containers.
2. Proper pressure regulation.

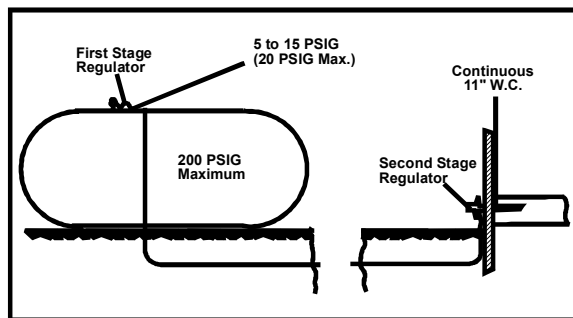
3. Pressure drop in lines between regulators, and between second stage regulator and the appliance. Pipe size required will depend on length of pipe run and total load of all appliances.

TANKS AND PIPING

Complete information regarding tank sizing for vaporization, recommended regulator settings and pipe sizing is available from most regulator manufacturers and propane gas suppliers.

Since propane gas will quickly dissolve white lead or most standard commercial compounds, special pipe dope must be used. Shellac base compounds resistant to the actions of liquefied petroleum gases such as Gasolac®, Stalactic®, Clyde's® or John Crane® are satisfactory.

See following figure for typical propane gas piping.



TYPICAL PROPANE GAS PIPING

ROOF TOP LOCATION AND INSTALLATION

The gas supply piping location and installation for roof top units must be in accordance with local codes or, in the absence of local codes, with ordinances of the latest edition of the National Fuel Gas Code (ANSI Z223.1).

A manual gas shut off valve must be field installed external to the roof top unit. In addition, a drip leg must be installed near the inlet connection. A ground joint union connection is required between the external shut off valve and the unit connection to the gas valve to permit removal of the burner assembly for servicing.

1. Route gas piping to unit so that it does not interfere with the removal of access panels. Support and align piping to prevent strains or misalignment of the manifold assembly.
2. All units are furnished with standard female NPT pipe connections. Connection pipe size is 3/4" NPT. The size of the gas supply piping to the unit must be based on length of run, number of units on the system, gas characteristics, BTU requirement and available supply pressure. All piping must be done in accordance with local codes or, in the absence of local codes, with the latest edition of the National Fuel Gas Code (ANSI Z223.1).

NOTE: The gas connection size at the unit does NOT establish the size of the supply line.

3. These units are designed for either natural or propane (LP) gas and are specifically constructed at the factory for only natural gas fuel. The fuels are NOT interchangeable. However, the furnace can be converted in the field from natural gas to LP gas with the appropriate factory kit (see unit Technical Manual for the appropriate kit). Only

a qualified contractor, experienced with natural and propane gas systems, should attempt conversion. Kit instructions must be followed closely to assure safe and reliable unit operation.

4. With all units on a common line operating under full fire, natural gas main supply pressure should be adjusted to approximately 7.0" w.c., measured at the unit gas valve. If the gas pressure at the unit is greater than 10.5" w.c., the contractor must furnish and install an external type positive shut off service pressure regulator. The unit will not function satisfactorily if supply gas pressure is less than 5.5" w.c. or greater than 10.5" w.c..

NOTE: A minimum horizontal distance of 48" between the regulator and the furnace flue discharge is required.

5. With all units on a common line operating under full LP gas main supply pressure should be at least 11.0" w.c. and must be no greater than 14.0" w.c., measured at the unit gas valve. Unit will not function satisfactorily if supply gas pressure is less than 11.0" w.c. or greater than 14.0" w.c.
6. All pipe connections should be sealed with a pipe thread compound, which is resistant to the fuel used with the furnace. A soapy water solution should be used to check all joints for leaks. A 1/8" NPT plugged tap is located on the entering side of the gas valve for test gauge connection to measure supply (main) gas pressure. Another 1/8" tap is provided on the side of the manifold for checking manifold pressure.



WARNING

THIS UNIT AND ITS INDIVIDUAL SHUTOFF VALVE MUST BE DISCONNECTED FROM THE GAS SUPPLY SYSTEM DURING ANY PRESSURE TESTING OF THAT SYSTEM AT TEST PRESSURES IN EXCESS OF 1/2 PSIG (13.8" w.c.).



CAUTION

THIS UNIT MUST BE ISOLATED FROM THE GAS SUPPLY PIPING SYSTEM BY CLOSING ITS INDIVIDUAL MANUAL SHUTOFF VALVE DURING ANY PRESSURE TESTING EQUAL TO OR LESS THAN 1/2 PSIG.

7. There must be no obstruction to prevent the flow of combustion and ventilating air. A vent stack is not required and must never be used. The power ventor will supply an adequate amount of combustion air as long as the air passageways are kept free of any obstructions and the recommended external unit clearances are maintained.

CIRCULATING AIR AND FILTERS

DUCTWORK

The supply duct should be provided with an access panel large enough to inspect the air chamber downstream of the heat exchanger. A cover should be tightly attached to prevent air leaks.

Ductwork dimensions are shown in the roof curb installation manual.

If desired, supply and return duct connections to the unit may be made with flexible connections to reduce possible unit operating sound transmission.

VENTING

NOTE: Venting is self-contained.

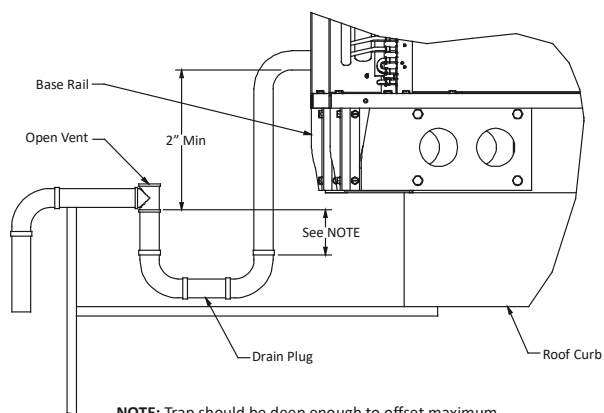
CONDENSATE DRAIN CONNECTION

CONDENSATE DRAIN CONNECTION

A 1" female NPT drain connection is supplied on the end of the condensate pan, with an alternative connection on the bottom of the pan. An external trap must be installed for proper condensate drainage.



DRAIN PAN (SIDE VIEW)



NOTE: Trap should be deep enough to offset maximum unit static difference. A minimum 4" trap is recommended.

DRAIN CONNECTION

Install condensate drain trap as shown. Use 1" drain line and fittings or larger. Do not operate without trap.

NOTE: All threaded connection should be seal with a thread sealer.

HORIZONTAL DRAIN

Drainage of condensate directly onto the roof may be acceptable; (refer to local code). It is recommended that a small drip pad of either stone, mortar, wood or metal be provided to prevent any possible damage to the roof. When using the horizontal drain connection, check the drain plug in bottom connection to ensure it is tight.

CLEANING

Due to the fact that drain pans in any air conditioning unit will have some moisture in them, algae and fungus will grow due to airborne bacteria and spores. Periodic cleaning is necessary to prevent this build-up from plugging the drain.

STARTUP, ADJUSTMENTS, AND CHECKS



WARNING

HIGH VOLTAGE

TO AVOID PERSONAL INJURY OR DEATH DUE TO ELECTRICAL SHOCK, BOND THE FRAME OF THIS UNIT TO THE BUILDING ELECTRICAL GROUND BY USE OF THE GROUNDING TERMINAL PROVIDED OR OTHER ACCEPTABLE MEANS. DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT.



CAUTION

TO PREVENT PROPERTY DAMAGE OR PERSONAL INJURY, Do NOT START THE UNIT UNTIL ALL NECESSARY PRE-CHECKS AND TEST HAVE BEEN PERFORMED.



WARNING

MOVING MACHINERY HAZARD!

TO PREVENT POSSIBLE PERSONAL INJURY OR DEATH, DISCONNECT POWER TO THE UNIT AND PADLOCK IN THE "OFF" POSITION BEFORE SERVICING FANS.

This unit is equipped with an electronic ignition device to automatically light the main burners. It also has a power vent blower to exhaust combustion products.

On new installations, or if a major component has been replaced, the operation of the unit must be checked.

Check unit operation as outlined in the following instructions. If any sparking, odors, or unusual sounds are encountered, shut off electrical power and recheck for wiring errors, or obstructions in or near the blower motors.

The Startup, Adjustments, and Checks procedure provides a step-by-step sequence which, if followed, will assure the proper start-up of the equipment in the minimum amount of time. Air balancing of duct system is not considered part of this procedure. However, it is an important phase of any air conditioning system startup and should be performed upon completion of the Startup, Adjustments, and Checks procedure. The Startup, Adjustments, and Checks procedure at outside ambients below 55°F should be limited to a readiness check of the refrigeration system with the required final check and calibration left to be completed when the outside ambient rises above 55°F.

TEMPORARY HEATING OR COOLING

If the unit is to be used for temporary heating or cooling, a "Start-up, Adjustments, and Checks" must first be performed in accordance with this manual. Damage or repairs due to failure to comply with these requirements are not covered under the warranty. After the machines are used for temporary heating or cooling, inspect the coils, fans, and motors for unacceptable levels of construction dust and dirt and install new filters.

CONTRACTOR RESPONSIBILITY

The installing contractor must be certain that:

- All supply and return air ductwork is in place, properly sealed, and corresponds with installation instructions.
- All thermostats are mounted and wired in accordance with installation instructions.
- All electric power, all gas, hot water or steam line connections, and the condensate drain installation have been made to each unit on the job. These main supply lines must be functional and capable of operating all units simultaneously.
- Requirements are met for venting and combustion air.
- Air filters are in place.
- Input rate and temperature rise are adjusted per rating plate.

ROOF CURB INSTALLATION CHECK

Inspect the roof curb for correct installation. The unit and curb assembly should be level. Inspect the flashing of the roof mounting curb to the roof, especially at the corners, for good workmanship. Also check for leaks around gaskets. Note any deficiencies in a separate report and forward to the contractor.

OBSTRUCTIONS, FAN CLEARANCE AND WIRING

Remove any extraneous construction and shipping materials that may be found during this procedure. Rotate all fans manually to check for proper clearances and that they rotate freely. Check for bolts and screws that may have jarred loose during shipment to the job site. Re-tighten if necessary. Re-tighten all electrical connections.

FIELD DUCT CONNECTIONS

Verify that all duct connections are tight and that there is no air bypass between supply and return.

FILTER SECTION CHECK

Remove filter section access panels and check that filters are properly installed. Note airflow arrows on filter frames.

PRE-STARTUP PRECAUTIONS

It is important to your safety that the unit has been properly grounded during installation. Check ground lug connection in main control box for tightness prior to closing circuit breaker or disconnect switch. Verify that supply voltage on line side of disconnect agrees with voltage on unit identification plate and is within the utilization voltage range as indicated in Appendix C Electrical Data.

System Voltage - That nominal voltage value assigned to a circuit or system for the purpose of designating its voltage class.

Nameplate Voltage - That voltage assigned to a piece of equipment for the purpose of designating its voltage class and for the purpose of defining the minimum and maximum voltage at which the equipment will operate.

Utilization Voltage - The voltage of the line terminals of the equipment at which the equipment must give fully satisfactory performance. Once it is established that supply voltage will be maintained within the utilization range under all system conditions, check and calculate if an unbalanced condition exists between phases. Calculate percent voltage unbalance as follows:

THREE PHASE MODELS

$$3) \text{ PERCENT VOLTAGE UNBALANCE} = 100 \times \frac{2) \text{ MAXIMUM VOLTAGE DEVIATIONS FROM AVERAGE VOLTAGE}}{1) \text{ AVERAGE VOLTAGE}}$$

HOW TO USE THE FORMULA:

EXAMPLE: With voltage of 220, 216, and 213

1) Average Voltage = $220+216+213=649 / 3 = 216$

2) Maximum Voltage Deviations from Average Voltage = $220 - 216 = 4$

$$3) \text{ Percent Voltage Unbalance} = 100 \times \frac{4}{216} = \frac{400}{216} = 1.8\%$$

Percent voltage unbalance MUST NOT exceed 2%.

CONTROL VOLTAGE CHECK

Close the disconnect switch to energize control transformer. Check primary and secondary (24V) of control transformer.

AIR FLOW ADJUSTMENTS

When the final adjustments are complete, the current draw of the motor should be checked and compared to the full load current rating of the motor. The amperage must not exceed the service factor stamped on the motor nameplate. The total airflow must not be less than that required for operation of the electric heaters or the furnace.

If an economizer is installed, check the unit operating balance with the economizer at full outside air and at minimum outside air.

NOTE: High Stage Airflow setting below 300 CFM/Ton is not recommended, as evaporator freezing or poor unit performance is possible.

- The unit has one set of taps for cooling (T1-T5) and a second set of taps for heating (T6-T10).
- When Heat is called TB1-W1 will also call TB1-DH activating the second set of taps T6-T10.
- If cooling and heating is called at the same time heating will take priority and T6-T10 will be chosen by default.
- Taps T1 and T2 are for low cool operation (cooling stage 1) and Taps T3 to T5 are for high cool operation (cooling stage 2).
- Taps T6 and T7 are for low heat operation (heating stage 1) and taps T8 to T10 are for high heat operation (heating stage 2).

Taps are selected by changing the position of the low voltage leads on the terminal block TB1. Refer to Appendix A for blower performance at each speed tap.

Fan speed for G (GR) is fixed at TB1-T1 and cannot be moved.

Low Cool Y1, Yellow (YL) is movable and set to TB1-T1.

Low Heat W1, White (WH) is movable and set to TB1-T6.

High Cool Y2, Purple (PU) is movable and set to TB1-T3.

High Heat W2, Brown (BR) is movable and set to TB1-T8.

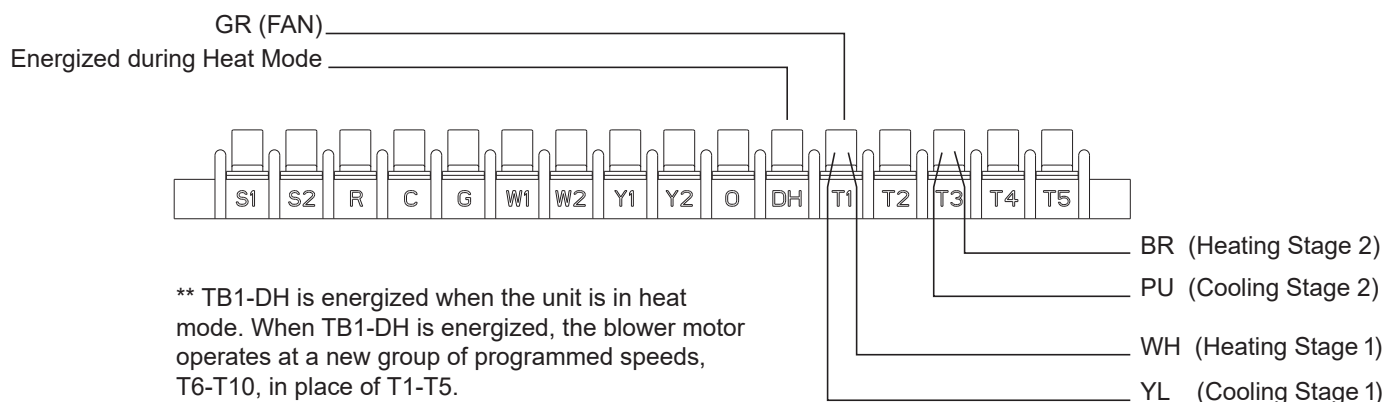
These wires can be moved together or separately and placed on any unoccupied terminal.

NOTE: YL can be moved to tap T3 as long as YL does not share the tap with PU. WH can be moved to tap T7 as long as WH does not share the tap with BR.

If high cool operation is set at Tap T4 or T5, low cool operation must be set at T2.

If high heat operation is set at T9 or T10, low heat operation must be set at T7.

NOTE: On units with DDC controls installed, air flow adjustments are made through settings in the DDC controller and speed tap adjustments are not required. Refer to the DDC User Manual for details on making airflow adjustments. Individual settings are available for Fan Only, Low Stage Cooling, High Stage Cooling, Low Stage Heating, and High Stage Heating which can be adjusted as needed to meet airflow requirements.



- Move YELLOW (YL) wire from TB1-T1 to T2 to change blower speed during cooling stage 1 operation. (Do not move wires YL and PU to the same taps)
- Move WHITE (WH) wire from TB1-T6 to T7 to change blower speed during heating stage 1 operation. (Do not move wires WH and BR to the same taps)
- Move PURPLE (PU) wire from TB1-T3 to T4 or T5 to change blower speed during cooling stage 2 operation. (Do not move wires YL and PU to the same taps)
- Move BROWN (BR) wire from TB1-T8 to T9 or T10 to change blower speed during heating stage 2 operation. (Do not move wires WH and BR to the same taps)

DFC/DFG OPERATION and WIRE RANGE CHART

DFC/DFG OPERATION							WIRE RANGE									
AC	G	Y1	Y2	W1	W2	DH	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Fan Only	X						GR									
Cooling Mode LO	X	X					● →									
Cooling Mode HI	X	X	X						● →							
Heating Mode Lo	X			X								● →				
Heating Mode HI	X			X	X									● →		

X= 24V Signal

● → = Range of AVAILABLE TAPS

For wire color information and placement, view DFC/DFG Model Wiring

ELECTRICAL INPUT CHECK

Make preliminary check of evaporator fan ampere draw and verify that motor nameplate amps are not exceeded. A final check of amp draw should be made upon completion of air balancing of the duct system (see Appendix B).

GAS SYSTEM CHECK

PRE-OPERATION CHECKS

NOTE: For models equipped with the DDC controls option, refer to the supplemental DDC literature supplied with the unit for additional information.

1. Close the manual gas valve external to the unit.
2. Turn off the electrical power supply to the unit.
3. Set the room thermostat to its lowest possible setting.
4. Remove the heat exchanger door on the side of the unit by removing screws.
5. This unit is equipped with an ignition device which automatically lights the main burner. DO NOT try to light burner by any other method.
6. Move the gas control valve switch to the OFF position. Do not force.
7. Wait five minutes to clear out any gas.
8. Smell for gas, including near the ground. This is important because some types of gas are heavier than air. If you have waited five minutes and you do smell gas, immediately follow the warnings on page 3 of this manual. If having waited for five minutes and no gas smell is noted, move the gas control valve switch to the ON position.
9. Replace the heat exchanger door on the side of the unit.
10. Open the manual gas valve external to the unit.
11. Turn on the electrical power supply to the unit.
12. Set the thermostat to desired setting.

GAS SUPPLY PRESSURES & REGULATOR ADJUSTMENTS



WARNING

SHOULD OVERHEATING OCCUR OR THE GAS SUPPLY FAIL TO SHUT OFF, TURN OFF THE MANUAL GAS SHUTOFF VALVE EXTERNAL TO THE UNIT BEFORE TURNING OFF THE ELECTRICAL SUPPLY.



WARNING

TO AVOID PROPERTY DAMAGE, PERSONAL INJURY OR DEATH, DO NOT FIRE GAS UNIT WITH THE FLUE BOX COVER REMOVED.

IMPORTANT NOTE: This unit is factory set to operate on natural gas at the altitudes shown on the rating plate.



WARNING

TO AVOID PROPERTY DAMAGE, PERSONAL INJURY OR DEATH WHEN EITHER USING PROPANE GAS ALONE OR AT HIGHER ALTITUDES, OBTAIN AND INSTALL THE PROPER CONVERSION KIT(S). FAILURE TO DO SO CAN RESULT IN UNSATISFACTORY OPERATION AND/OR EQUIPMENT DAMAGE. HIGH ALTITUDE KITS ARE FOR U.S. INSTALLATIONS ONLY AND ARE NOT APPROVED FOR USE IN CANADA.

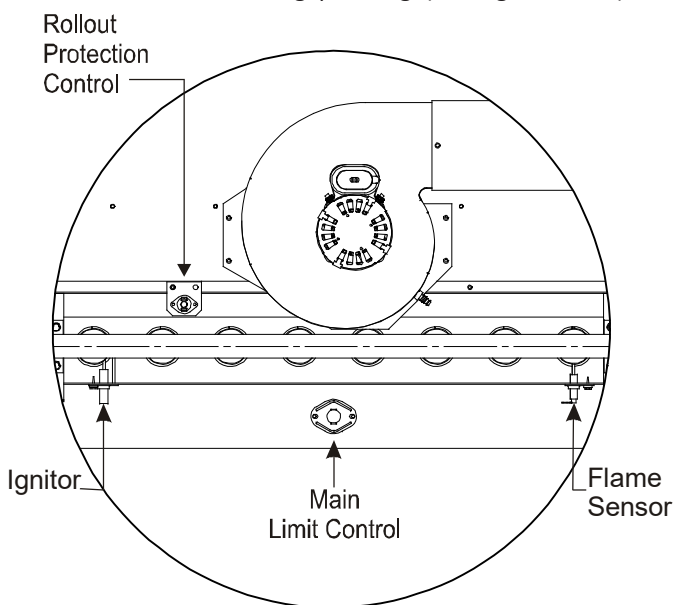
NOTE: Gas appliances located more than 2000 feet above sea level must be derated 4% per 1000 feet of total elevation and that variance in gas heating value and specific gravity require change in manifold pressure to obtain rating, it is mandatory that the input be adjusted at the installation site. All installations should be made as outlined.

NOTE: Except during brief periods when gas pressures are being measured by qualified service personnel, the furnace access panel must always be secured in place when the furnace is in operation. An inspection port in the access panel is provided to monitor the flame.

The first step in checking out the gas-fired furnace is to test the gas supply piping to the unit for tightness and purge the system of air using methods outlined in the latest edition of the National Fuel Gas Code ANSI Z223.1. Verify that the disconnect switch is in the "OFF" position. A soapy water solution should be used to check for gas leaks. Since the unit is subject to considerable jarring during shipment, it is extremely important that all gas connections and joints be tested for tightness. Gas piping downstream from the unit inlet should be checked for leaks during the subsequent sequence check.

The supply gas pressure should be adjusted to 7.0" w.c. on natural gas and 11.0" on LP gas with the gas burners operating. If there is more than one unit on a common gas line, the pressures should be checked with all units under full fire. A supply pressure tap is provided on the upstream side of the gas valve. A manifold pressure tap is provided on the manifold. The normal manifold pressure for full input is 3.5" w.c. on natural gas and 10.0" w.c. for propane gas. Minimum gas supply pressure is 5.5" w.c. for natural gas and 11.0" for propane gas. In order to obtain rating, gas supply pressure must be 11.0" w.c. for propane gas.

The pressure regulator on LP gas models is adjusted for 10.0" w.c. manifold pressure and is intended to prevent over-firing only. Do not attempt adjustment of the built-in pressure regulator unless the supply pressure is at least 7.0" w.c. on natural gas or 14.0" w.c. on propane gas. Check the location of the ignition electrode and the flame sensor for correct gap setting. (See Figure below)



MAXIMUM INPUT (BTUH)	NUMBER of BURNERS	MAXIMUM BTUH/BURNER	GAS ORIFICES	
			NATURAL	PROPANE (LP)
350,000	7	50,000	#30	#48
400,000	8	50,000	#30	#48

HEAT EXCHANGER AND BURNER ORIFICE SPECIFICATIONS

NOTE: Gas appliances located more than 2000 feet above sea level must be derated 4% per 1000 feet of total elevation and that variance in gas heating value and specific gravity require change in manifold pressure to obtain rating, it is mandatory that the input be adjusted at the installation site. All installations should be made as outlined in the latest edition of the National Fuel Gas Code ANSI Z223.1, section "Procedures To Be Followed To Place An Appliance in Operation". Refer also to the "User's Information Manual" supplied with the unit for additional information on the gas furnace.

GAS SUPPLY AND MANIFOLD CHECK

Gas supply pressure and manifold pressure with the burners operating must be as specified on the rating plate.

GAS INLET PRESSURE CHECK

Gas inlet pressure must be checked and adjusted in accordance to the type of fuel being consumed.

WITH POWER AND GAS OFF:

1. Connect a water manometer or adequate gauge to the inlet pressure tap of the gas valve.
Inlet gas pressure can also be measured by removing the cap from the dripleg and installing a predrilled cap with a hose fitting.

WITH POWER AND GAS ON:

2. Put unit into heating cycle and turn on all other gas consuming appliances.

INLET GAS PRESSURE	
NATURAL	Min. 5.0" W.C., Max. 10.0" W.C.
PROPANE	Min. 11.0" W.C., Max. 14.0" W.C.

NOTE: Inlet Gas Pressure Must Not Exceed the Maximum Value Shown.

If operating pressures differ from above, make necessary pressure regulator adjustments, check piping size, etc., and/or consult with local utility.

MANIFOLD PRESSURE CHECK

The gas valve has a tapped opening to facilitate measurement of the manifold pressure. A "U" Tube manometer having a scale range from 0 to 12 inches of water should be used for this measurement. The manifold pressure must be measured with the burners operating.

To adjust the pressure regulator, remove the adjustment screw or cover on the gas valve. Turn out (counterclockwise) to decrease pressure, turn in (clockwise) to increase pressure. Only small variations in gas flow should be made by means of the pressure reg-

ulator adjustment. In no case should the final manifold pressure vary more than plus or minus 0.3 inches water column from the specified nominal pressure. Any major changes in flow should be made by changing the size of the burner orifices. The measured input rate to the furnace must not exceed the rating specified on the unit rating plate.

For natural gas, the manifold pressure must be between 3.2 and 3.8 inches w.c. (3.5 nominal) for high fire and between 1.7 and 2.3 inches w.c. (2.0 nominal) for low fire.

For propane gas, the manifold pressure must be between 9.7 and 10.3 inches w.c. (10.0 nominal) for high fire and between 6.7 and 7.3 inches w.c. (7.0 nominal) for low fire.

GAS INPUT (NATURAL GAS ONLY) CHECK

It is the responsibility of the contractor to adjust the gas input to the unit.

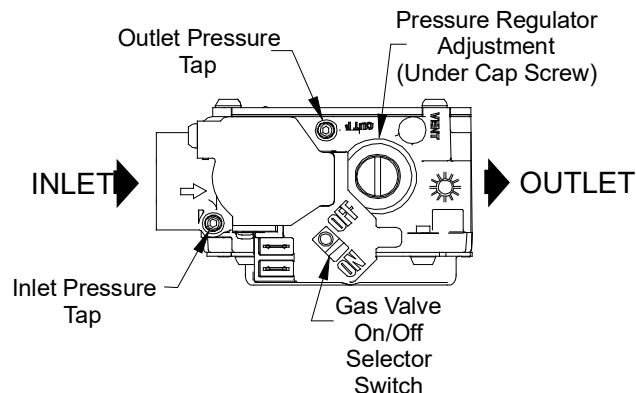
To measure the gas input use a gas meter and proceed as follows:

1. Turn off gas supply to all other appliances except the unit.
2. With the unit operating, time the smallest dial on the meter for one complete revolution. If this is a 2 cubic foot dial, divide the seconds by 2; if it is a 1 cubic foot dial, use the seconds as is. This gives the seconds per cubic foot of gas being delivered to the unit.
3. $INPUT = GAS\ HTG\ VALUE \times 3600 / SEC.\ PER\ CUBIC\ FOOT$

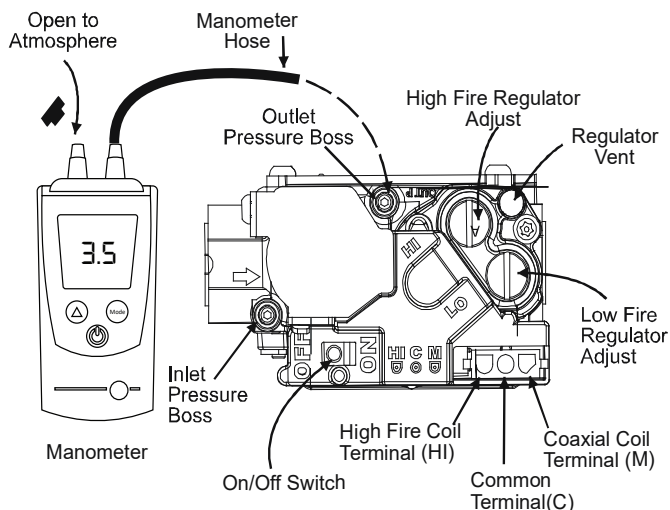
Example: Natural gas with a heating value of 1000 BTU per cubic foot and 34 seconds per cubic foot as determined by Step 2, then:

Input = $1000 \times 3600 / 34 = 106,000$ BTU per Hour. **NOTE:** BTU content of the gas should be obtained from the gas supplier. This measured input must not be greater than shown on the unit rating plate.

Adjust input rate by varying the adjustment of the gas pressure regulator on the gas valve. All adjustments must be made with furnace operating at high fire and at normal operating temperature. A manometer should be connected to the gas valve to verify pressure is within the specified range (see following figures for manometer connections). Clockwise rotation of the pressure regulator screw increases pressure and gas flow rate. Turn screw counterclockwise to decrease pressure and gas flow rate. After adjustment the furnace temperature rise must be within the range specified on the unit data plate. **NOTE:** Thermal efficiency of the furnace is a product efficiency rating determined under continuous operating conditions independent of any installed system.



WHITE-RODGERS 36G22 - SINGLE STAGE



WHITE-RODGERS 36G54 (2-STAGE) CONNECTED TO MANOMETER PRESSURE ADJUSTMENTS

TO CONNECT MANOMETER TO GAS VALVE:

1. Back outlet pressure test screw (inlet/outlet pressure boss) out one turn (counterclockwise, not more than one turn).
2. Attach a hose and manometer to the outlet pressure boss of the valve. (See image above)

TO REMOVE MANOMETER FROM GAS VALVE:

1. Remove manometer hose from outlet pressure boss.
2. Turn outlet pressure test screw in to seal pressure port (clockwise, 7 in-lb. minimum).
3. Turn on electrical power and gas supply to the system.
4. Turn on system power and energize valve.
5. Using a leak detection solution or soap suds, check for leaks at pressure boss screw. Bubbles forming indicate a leak. SHUT OFF GAS AND FIX ALL LEAKS IMMEDIATELY.



CAUTION

TO PREVENT UNRELIABLE OPERATION OR EQUIPMENT DAMAGE, THE GAS MANIFOLD PRESSURE MUST BE AS SPECIFIED ON THE UNIT RATING PLATE. ONLY MINOR ADJUSTMENTS SHOULD BE MADE BY ADJUSTING THE GAS VALVE PRESSURE REGULATOR.

6. Relight all other appliances turned off in step 1. Be sure all pilot burners are operating.

MAIN BURNER FLAME CHECK

Flames should be stable, soft and blue (dust may cause orange tips but they must not be yellow) and extending directly outward from the burner without curling, floating or lifting off.

TEMPERATURE RISE CHECK

Check the temperature rise through the unit by placing thermometers in supply and return air registers as close to the unit as possible. Thermometers must not be able to sample temperature directly from the unit heat exchangers, or false readings could be obtained.

1. All registers must be open; all duct dampers must be in their final (fully or partially open) position and the unit operated for 15 minutes on HIGH FIRE before taking readings.
2. The temperature rise must be within the range specified on the rating plate.

NOTE: Air temperature rise is the temperature difference between supply and return air.

With a properly designed system, the proper amount of temperature rise will normally be obtained when the unit is operated at rated input with the recommended blower speed.

If the correct amount of temperature rise is not obtained, it may be necessary to change the blower speed. A higher blower speed will lower the temperature rise. A slower blower speed will increase the temperature rise.

NOTE: Blower speed **MUST** be set to give the correct air temperature rise through the unit as marked on the rating plate.

NORMAL SEQUENCE OF OPERATION - HEATING

This unit has one (RS) Manual Reset Limit Control Switch. Check the limit to make sure it has not tripped. The limit may arrive at the job site tripped as a result of shipping shock.

If the vent motor comes on, but the unit does not attempt ignition, check if the ALS (Automatic Reset High Limit Control Switch) requires resetting.

1. With electricity and gas turned on, the system switch in the "HEAT" or "AUTO" position and the fan switch in the "AUTO" position, the thermostat will close the circuit between unit terminals R and W (R-W) when the temperature falls below the thermostat setting.
2. D1 on IIC energizes relay VMR.
3. Relay VMR energizes the vent motor.
4. Operation of the vent motor closes the pressure switch PS located in the burner compartment. The control then initiates a 15-second pre-purge time delay. During this period, the vent motor will clear the combustion chamber of any residual gas.
5. After the pre-purge period, the ignition control energizes the WI-C gas valve and simultaneously initiates a "three (3)-try" spark ignition sequence.
6. When the burners are ignited, a minimum four (4) micro-amp DC current will flow through the flame between the sensor electrode and the grounded burner.
7. When the controller proves that the flame has been established, it will keep the gas valve energized and discontinue the ignition spark. First stage manifold pressure will be approximately 2.0" w.c. for natural gas and 7.0" w.c. for propane (LP).
8. If the control is unable to ignite the burners after its initial attempt, it will initiate another purge and spark sequence. A third purge and spark sequence will be initiated if the second attempt is unsuccessful. If the third attempt is unsuccessful, the controller will close the gas valve and lock itself out. It may be reset by momentarily interrupting power. This may be accomplished by briefly lowering the room thermostat set-point below room temperature, or by shutting off the main power to the unit. (See TP-105 for more details.)



WARNING

TO AVOID PROPERTY DAMAGE, PERSONAL INJURY OR DEATH DUE TO FIRE OR EXPLOSION, A QUALIFIED SERVICER MUST INVESTIGATE THE REASON FOR THE ROLLOUT PROTECTION DEVICE TO OPEN BEFORE MANUALLY RESETTING THE ROLLOUT PROTECTION DEVICE.

9. Integrated ignition control will close its normally open contacts after a delay of approximately 30 seconds. This action energizes contactor BC and starts the supply fan motor. Operation of the supply fan circulates air across the heat exchanger and delivers heated air to the conditioned space.
10. When the space temperature rises, the thermostat will open R-W. Opening R-W will cause the gas valve to close, and the furnace to shut down.
11. The furnace has three high temperature limit controls, which can shut down the burner. They do not shut down the vent motor.

UNIT SHUTDOWN

1. Set the thermostat to lowest setting.
2. Turn off the electrical power supply to the unit.
3. Remove the heat exchanger door on the side of the unit by removing screws.
4. Move the gas control valve switch to the OFF position. Do not force.
5. Close manual gas shut off valve external to the unit.
6. Replace the heat exchanger door on the unit.
7. If cooling and/or air circulation will be desired, turn ON the electrical power.

AUTOMATIC RESET HIGH LIMIT CONTROL (LS)

Located in the burner compartment on the heat exchanger, its sensing element projects through the blower section bulkhead and senses the temperature at the rear of the furnace. It will cycle the furnace off if the temperature exceeds 100°F plus maximum rise.

AUXILIARY RESET HIGH LIMIT CONTROL (ALS)

Located in the blower compartment on the blower housing, it senses air temperature within the blower compartment and protects the filters from excessive temperature. It will shut down the furnace if it senses excessive temperatures.

Elevated temperatures at the control are normally caused by blower failure. The reason for the opening should be determined and repaired prior to resetting.

MANUAL RESET FLAME ROLLOUT CONTROL (RS)

Located in the burner compartment at the top of the burner assembly, it senses high temperature that could occur if the heat exchanger tubes were plugged and the flame was rolling out instead of entering the tubes. It has a manual push-button reset that cannot be actuated until the limit control has cooled.

The reason for elevated temperatures at the control should be determined and repaired prior to resetting this manual reset control.

REFRIGERATION SYSTEM

The unit is equipped with a thermal expansion valve as a metering device.

Ensure the hold-down bolts on the compressor are secure and have not vibrated loose during shipment. Check that vibration grommets have been installed. Visually check all piping for damage and leaks; repair if necessary. The entire system has been factory charged and tested, making it unnecessary to field charge. Factory charges are shown on the unit's nameplate. To confirm charge levels or, if a leak occurs and charge needs to be added to the system, it is recommended to evacuate the system and recharge refrigerant to unit nameplate specifications.

This unit has been rated in the cooling mode at the AHRI rated conditions of: Indoor (80°db / 67°wb) and outdoor (95°db).

While operating at this condition, the superheat and subcool for each circuit for each unit should fall within the values listed in the table below. The superheat is measured at the suction service port located near the compressor. The subcool is measured at the liquid line service port.

SUPERHEAT AND SUBCOOLING

CHECKING SUBCOOLING

NOTE: Units with a TXV should be charged to Subcooling only. Make sure the air flow is correct before making any adjustments.

EXAMPLE:

- a. Liquid Line Pressure = 417 PSI
- b. Corresponding Temp. = 120°F
- c. Thermometer on Liquid line = 109°F.

To obtain the amount of subcooling, subtract 109°F from 120°F. The difference is 11° subcooling. See the specification sheet or technical information manual for the design subcooling range for your unit.

SUBCOOLING FORMULA = SATURATED LIQUID LINE TEMPERATURE - LIQUID LINE TEMPERATURE

CHECKING SUPERHEAT

EXAMPLE:

- a. Suction Pressure = 143 PSI
- b. Corresponding Temp. = 50°F
- c. Thermometer on Suction Line = 59°F

To obtain the degrees temperature of superheat, subtract 50.0 from 59.0°F. The difference is 9° Superheat. The 9° Superheat would fall in the ± range of allowable superheat.

SUPERHEAT = SUCTION LINE TEMP - SAT. SUCTION TEMP.

SUPERHEAT ADJUSTMENT

NOTE: Superheat adjustments should not be made until indoor ambient conditions have stabilized. This could take up to 24 hours depending on indoor temperature and humidity. Before checking superheat, run the unit in cooling for 15-20 minutes or until refrigerant pressures stabilize. Use the following guidelines and methods to check unit operation and ensure that the refrigerant charge is within limits.

For TXV systems, to adjust superheat, unscrew the cover from the expansion valve, locate the adjustment screw, and turn it clockwise (in) to increase superheat or counterclockwise (out) to decrease superheat. It is recommended to make small adjustments at a time, 1/8-1/4 turn increments. Replace adjustment cap. Wait a minimum of 15 minutes between adjustments to allow time for the TXV and pressures to stabilize.

REFRIGERANT CHARGE CHECK

NOTE: For optimal performance, follow charging instructions below.

Units with Fixed Orifice Devices

All package units with fixed orifice devices are charged using the superheat method at the compressor suction line. To increase super heat, remove charge and to decrease super heat, add charge. After superheat is adjusted, it is recommended to check unit subcooling at the condenser coil liquid line. See Figure 14: DESIGN SUPERHEAT AND SUBCOOLING table for targets on each model.

UNITS WITH EXPANSION VALVE (TXV)

Single Stage Cooling Application: Refer to the Design Superheat & Subcooling table.

Two-Stage Cooling Application: Run unit on Low Stage cooling and refer to Design Superheat & Subcooling table.

1. Purge gauge lines. Connect service gauge manifold to access fittings. Run system at least 10 minutes to allow pressure to stabilize.
2. Temporarily install thermometer on liquid (small) line near liquid line access fitting with adequate contact and insulate for best possible reading.
3. Check subcooling and superheat. System should have a subcooling and superheat within the range listed on the Design Superheat and Subcooling table.
 - a. If subcooling and superheat are low, adjust TXV superheat, then check subcooling.

NOTE: To adjust superheat, turn the valve stem clockwise to increase and counterclockwise to decrease.
 - b. If subcooling is low and superheat is high, add charge to raise subcooling then check superheat.
 - c. If subcooling and superheat are high, adjust TXV valve superheat, then check subcooling.
 - d. If subcooling is high and superheat is low, adjust TXV valve superheat and remove charge to lower the subcooling.

NOTE: Do NOT adjust the charge based on suction pressure unless there is a gross undercharge. If an under charge is suspected recover the charge, re-evacuate the system and recharge per data plate. No adjustments should be made if suspecting a charge issue.

5. Disconnect manifold set, installation is complete.

Design Superheat & Subcooling					
Model	Circuit	Superheat ± 2°F	Subcooling ± 1°F	Expansion Device	Outdoor Ambient (°F)
DFG180	1	8	14	TXV	95
DFG180	2	8	12	TXV	95
DFG240	1	8	9	TXV	95
DFG240	2	8	6	TXV	95
DFG300	1	10	7	TXV	95
DFG300	2	10	7	TXV	95

START-UP PROCEDURE AND CHECKLIST

Begin with power turned on at all disconnects.

AIR CONDITIONING START-UP PROCEDURE

1. Ensure the thermostat is set to OFF and Fan is set to Auto. On units with DDC controls installed, use Test/ Balance Menu to force the unit to Off Mode.
2. Inspect all registers and set them to the normal open position.
3. Turn on the electrical supply at the disconnect.
4. Turn the fan switch to the "ON" position. The blower should operate after a 7 second delay. On units with DDC controls installed, use Test/Balance Menu to force the unit to Vent Mode. This test bypasses internal delays.
5. Turn the fan switch to "Auto" position. The blower should stop after a 65 second delay. On units with DDC controls installed, use Test/Balance Menu to force the unit to Off Mode. This test bypasses internal delays.
6. Set the thermostat to Cool mode and lower the cooling until the unit is running both stage of cooling. The compressors, blowers, and condenser fans should now be operating. Allow the unit to run 10 minutes, make sure cool air is being supplied by the unit. On units with DDC controls installed, use Test/Balance Menu to force the unit to High Cool Mode. This test bypasses internal delays.
7. Check that both compressors are operating correctly. The scroll compressors in these units MUST operate in the proper rotation. To ensure the compressors are operating in the correct direction, check that the temperature of the compressor discharge line increases when the compressor turns on. If this does not occur and the compressor is producing an exceptional amount of noise, this indicates that there is a phasing issue. Perform the following to correct:

- 7.1 Turn power to the unit OFF.
- 7.2 Switch any two leads of power supply at unit Single Point Power Block.
- 7.3 Turn power to the unit ON.
- 7.4 Perform step 7 again.
8. Turn the temperature setting to the highest position, stopping the unit. The indoor blower will continue to run for 60 seconds. On units with DDC controls installed, use Test/Balance Menu to force the unit to Vent Mode. This test bypasses internal delays.
9. Turn the thermostat system switch to "OFF". On units with DDC controls installed, use Test/Balance Menu to disable Force Mode operation and allow the unit to return to normal operation.

FINAL SYSTEM CHECKS

10. Check to see if all supply and return air grilles are adjusted and the air distribution system is balanced for the best compromise between heating and cooling.
11. Check for air leaks in the ductwork. See Sections on Air Flow Adjustments.
12. Make sure the unit free of "rattles", and the tubing in the unit is free from excessive vibration. Also make sure tubes or lines are not rubbing against each other or sheet metal surfaces or edges. If so, correct the trouble.
13. Set the thermostat at the appropriate setting for cooling and heating or automatic changeover for normal use.
14. Be sure the Owner is instructed on the unit operation, filter, servicing, correct thermostat operation, ect.

REFRIGERATION PERFORMANCE CHECK

Check that compressor RLA corresponds to values shown in Appendix B. RLA draw can be much lower than values listed at low load conditions and low ambient condensing temperatures. Values in Appendix B can slightly exceed at high load conditions and high ambient condensing temperatures.

 <b style="font-size: 1.2em;">WARNING
HIGH VOLTAGE DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH. 

NORMAL SEQUENCE OF OPERATION - COOLING

REFRIGERATION SEQUENCE CHECK

With the disconnect switch open, remove the field connected thermostat wire from terminal R on TB1 terminal block. Place a jumper across terminals R and G, and across R and Y on TB1 terminal block. Close the disconnect switch. The following operational sequence should be observed.

1. Current through primary winding of transformer TRANS1 energizes the 24-volt control circuit.
2. To simulate a mechanical call for cooling from the wall thermostat, place a jumper across terminals R and Y1 of terminal block TB1.
3. UNIT WITH ECONOMIZER OPTION: The compressor circuit is interlocked through terminals 3 and 4 of the economizer module. If the outdoor air enthalpy (temperature and humidity) is not suitable for cooling, the economizer terminals will be closed permitting compressor to be energized.
4. The blower contactor closes its contacts L1, L2 and L3 to T1, T2 and T3 to provide power to the supply fan motor.
5. Compressor contactor closes its contacts L1, L2 and L3 to T1, T2 and T3 to provide power to the compressor motor COMP 1; COMP 2, if conditions are correct. In addition, contactor C1 closes its contact L3 to T3 , energizing the condenser fan motor.



WARNING

BURN HAZARD!
DO NOT TOUCH! DISCHARGE LINE MAY BE HOT!

6. Check that each compressor is operating correctly. The scroll compressors in these units MUST operate in the proper rotation. To ensure the compressors are operating in the correct direction, check the compressor discharge line pressure or temperature after each compressor is started.

The discharge pressure and discharge line temperature should increase. If this does not occur and the compressor is producing an exceptional amount of noise, perform the following checks.

- Ensure all compressors are operating in the proper direction. If a single motor is operating backwards, check the power wiring for that motor and correct any leads that have been interchanged at the contactor or at the motor.
7. With all safety devices closed, the system will continue cooling operation until the thermostat is satisfied.
 8. Disconnecting the jumper wire between R and Y1 and Y2 and between R and G on TB1 terminal block will simulate a satisfied thermostat. The compressors will cycle off and IIC (pin 12) will initiate its time delay cycle. The compressor and the supply fan will cycle off.
 9. After a time delay of approximately 3 minutes, the compressor control circuits will be ready to respond to a subsequent call for cooling from the wall thermostat.
 10. Open disconnect switch. Reconnect the field thermostat wire at terminal R on terminal block TB1.

MAINTENANCE



WARNING

ELECTRIC SHOCK, FIRE OR EXPLOSION HAZARD
FAILURE TO FOLLOW SAFETY WARNINGS EXACTLY COULD RESULT IN DANGEROUS OPERATION, SERIOUS INJURY, DEATH OR PROPERTY DAMAGE. IMPROPER SERVICING COULD RESULT IN DANGEROUS OPERATION, SERIOUS INJURY, DEATH OR PROPERTY DAMAGE.

- BEFORE SERVICING, DISCONNECT ALL ELECTRICAL POWER TO FURNACE.
- WHEN SERVICING CONTROLS, LABEL ALL WIRES PRIOR TO DISCONNECTING. RECONNECT WIRES CORRECTLY.
- VERIFY PROPERTY OPERATION AFTER SERVICING.



WARNING

HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



WARNING

TO PREVENT PERSONAL INJURY OR DEATH DUE TO IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE, REFER TO THIS MANUAL. FOR ADDITIONAL ASSISTANCE OR INFORMATION, CONSULT A QUALIFIED INSTALLER, SERVICE AGENCY OR THE GAS SUPPLIER.



CAUTION

SHEET METAL PARTS, SCREWS, CLIPS AND SIMILAR ITEMS INHERENTLY HAVE SHARP EDGES, AND IT IS NECESSARY THAT THE INSTALLER AND SERVICE PERSONNEL EXERCISE CAUTION.



CAUTION

THIS UNIT MUST BE ISOLATED FROM THE GAS SUPPLY PIPING SYSTEM BY CLOSING ITS INDIVIDUAL MANUAL SHUTOFF VALVE DURING ANY PRESSURE TESTING EQUAL TO OR LESS THAN 1/2 PSIG.

Preventive maintenance is the best way to avoid unnecessary expense and inconvenience. Have this system inspected at regular intervals by qualified service personnel, at least twice a year. Routine maintenance should cover the following items:

1. Tighten, set screws, and wire connections.
2. Clean evaporator mechanically or with cold water, if necessary. Usually any fouling is only matted on the entering air face of the coil and can be removed by brushing.
3. Replace filters as needed (see below).
4. Check for blockage of condensate drain.
5. Check power and control voltages.
6. Check running amperage.
7. Check operating temperatures and pressures.
8. Check and adjust temperature and pressure controls.
9. Check and adjust damper linkages.

10. Check operation of all safety controls.
11. Examine gas furnaces (see below and the User's Information Manual).
12. Check condenser fans and tighten set screws.

FILTERS



CAUTION

TO PREVENT PROPERTY DAMAGE DUE TO FIRE AND LOSS OF EQUIPMENT EFFICIENCY OR EQUIPMENT DAMAGE DUE TO DUST AND LINT BUILD UP ON INTERNAL PARTS, NEVER OPERATE UNIT WITHOUT AN AIR FILTER INSTALLED IN THE RETURN AIR SYSTEM.

Every application may require a different frequency of replacement of dirty filters. Filters must be replaced at least every three (3) months during operating seasons.

Dirty filters are the most common cause of inadequate heating or cooling performance. Filter inspection should be made at least every two months; more often if necessary because of local conditions and usage.

Dirty throwaway filters should be discarded and replaced with a new, clean filter.

Disposable return air filters are supplied with this unit. See the unit Specification Sheet or Technical Manual for the correct size and part number. To remove the filters, remove the filter access panel on return side of the unit.

CABINET FINISH MAINTENANCE

Use a fine grade automotive wax on the cabinet finish to maintain the finish's original high luster. This is especially important in installations with extended periods of direct sunlight.

CONDENSER AND INDUCED DRAFT MOTORS

Bearings on the condenser fan motors and the combustion fan motor are permanently lubricated. No additional oiling is required.

LUBRICATION

The fan shaft bearings and the supply fan motor have grease fittings that should be lubricated during normal maintenance checks.

CLEAN OUTSIDE COIL

The coil with the outside air flowing over it should be inspected annually and cleaned as frequently as necessary to keep the finned areas free of lint, hair and debris. **NOTE:** clean the coil in the opposite direction of air flow.

MAINTENANCE OF MICROCHANNEL HEAT EXCHANGERS (MCHE)

Frequent servicing is essential to maintaining the required MCHE performance. For every installed Danfoss MCHE, service records must be documented.



CAUTION

PRIOR TO SERVICING MCHE, BE SURE TO DISCONNECT THE POWER SUPPLY AND USE LOCK-OUT METHODS TO PREVENT THE POWER FROM ACCIDENTALLY BEING TURNED ON.

SHUT DOWN PERIODS

During periods when the MCHE is not operated for longer than a week, the MCHE must be completely cleaned following the cleaning procedure. This practice must also be performed during short shut-down periods where corrosive deposits accumulate on the MCHE.

CLEANING PROCEDURE

Relative to tube & fin heat exchangers, MicroChannel heat exchanger coils tend to accumulate more dirt on the surface of the coil and less dirt inside the coil, making them easier to clean. Follow the steps below for proper cleaning:

STEP 1: REMOVE SURFACE DEBRIS

Remove surface dirt, leaves, fibers, etc. with a vacuum cleaner (preferably with a brush or other soft attachment rather than a metal tube), compressed air blown from the inside out, and/or a soft bristle (not wire!) brush. Do not impact or scrape the coil with the vacuum tube, air nozzle, etc.

STEP 2: RINSE

Rinse the coil by following procedure:

1. Rinse the coil by approved MCHE cleaner first, or rinsing by water directly;
2. Waiting for 5 minutes;
3. Wash the coil by water;

Adjust the angle of gimbaled nozzle and insert it through fans. Using an extension rod if the nozzle cannot reach the bottom side. Preferably cleaning the coils from the inside-out and top to bottom (see figure 1), running the water through every fin passage until it comes out clean. The fins of MicroChannel coils are stronger than traditional tube & fin coil fins but still need to be handled with care. Do not hit the coil with the hose. We recommend placing your thumb over the end of the hose to obtain a gentler spray and reduce the possibility of impact damage. Please **PAY MORE ATTENTION** when using a pressure cleaning equipment to prevent damage.

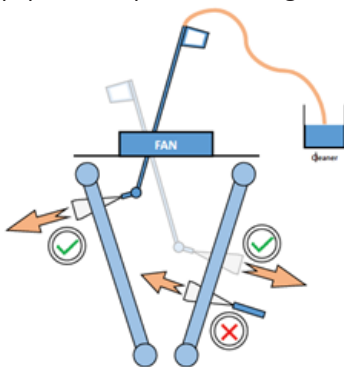


FIGURE 1

Highest pressure of cleaning equipment shall not exceed 15 bar, and tentatively move the cleaning equipment from far to near to prevent damage.

- KEEP the outlet of washer away from coil for at least 4in (see figure 2);
- KEEP the water gun perpendicular to the coil surface and the angle error shall less than 20°, or $\pm 40^\circ$ if the distance from washer to coil is more than 12in (see figure 2);
- Water outlet angle for high pressure cleaning equipment shall over 15° (see figure 3).

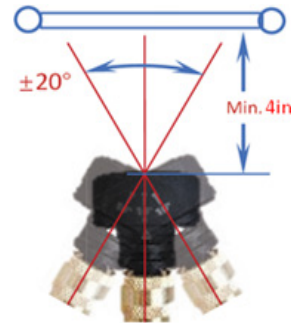


FIGURE 2



FIGURE 3

Warranty claims related to cleaning damage, especially for incorrect pressure washing operation, or corrosion resulting from applying non-recommended cleaners, will NOT be honored.

STEP 3: REMOVE SURFACE DEBRIS

Depending on the installation and fin geometry, MicroChannel heat exchangers could possibly retain more water compared to traditional tube & fin coils. It is advised to blow off or vacuum out the residual water from the coil to speed up drying and prevent pooling. Daikin recommends a quarterly cleaning of the coils, as the minimum. The cleaning frequency should be increased depending on the level of dirt/dust accumulation and the environment (e.g., coastal areas with chlorides and salts) or industrial areas with aggressive substances.



WARNING

FIELD APPLIED COATINGS ARE NOT RECOMMENDED FOR BRAZED ALUMINUM MICROCHANNEL HEAT EXCHANGERS. MICROCHANNEL HEAT EXCHANGERS MUST NOT BE COATED USING ANY OTHER COATING, COATING OF A COIL USING A SUPPLIER OR COATING PROCESS IS NOT APPROVED AND IS NOT COVERED BY THE PRODUCT WARRANTY. IT MAY ALSO REDUCE THE LIFETIME AND/OR THE PERFORMANCE OF THE MICROCHANNEL HEAT EXCHANGER.

FLAME SENSOR (QUALIFIED SERVICER ONLY)

A drop in the flame current can be caused by a nearly invisible coating on the flame sensor. This coating, created by the fuel or combustion air supply, can be removed by carefully cleaning the flame sensor with steel wool.

NOTE: After cleaning, the microamp signal should be stable and in the range of 4 - 6 microamps DC.

FLUE PASSAGES (QUALIFIED SERVICER ONLY)

At the start of each heating season, inspect and, if necessary, clean the unit flue passage.

INSPECTION & CLEANING

All flue product carrying areas of the furnace, its vent system, and main burners should be examined by a qualified service agency before the start of each heating season. This examination is necessary for continued safe operation. Particular attention should be given to deterioration from corrosion or other sources. This examination is accomplished in the following manner.

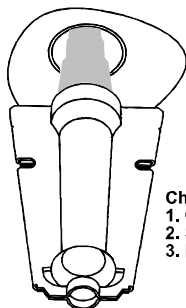
1. Disconnect power to the unit lock and tag out and remove furnace section access panel.
2. Remove burner assembly:
 - a. Disconnect the three wires from the gas valve after noting which wires are connected to each terminal.
 - b. Disconnect wires from the flame rod and ignition electrode.
 - c. Disconnect the gas piping at the union.
 - d. The entire burner assembly can now be removed from the unit.

NOTE: Use all screws that were removed; they are necessary for safe and proper operation of the unit.

3. Inspect and periodically clean the vent outlet (bird screen) on the access panel.

NOTE: Periodic observation of the flame and a log of CO₂ measurements are recommended. This will aid in determining whether the furnace is operating efficiently or if the furnace requires cleaning.

Flames should be stable, soft and blue (dust may cause orange tips but must not be yellow). The flames must extend directly outward from the burner without curling, floating or lifting off.



BURNER FLAME



WARNING

TO AVOID PERSONAL INJURY OR DEATH DUE TO ELECTRICAL SHOCK, DO NOT REMOVE ANY INTERNAL COMPARTMENT COVERS OR ATTEMPT ANY ADJUSTMENT. CONTACT A QUALIFIED SERVICER AT ONCE IF AN ABNORMAL FLAME SHOULD DEVELOP.

At least once a year, prior to or during the heating season, make a visual check of the burner flames.

NOTE: This will involve removing and reinstalling the heat exchanger door on the unit, which is held by two screws. If you are uncertain about your ability to do this, contact a qualified servicer.

If a strong wind is blowing, it may alter the airflow pattern within the unit enough that an inspection of the burner flames is not possible.

FUNCTIONAL PARTS

Refer to the unit Parts Catalog for a list of functional parts. Parts are available from your distributor.

TROUBLESHOOTING

IGNITION CONTROL ERROR CODES

The following presents probable causes of questionable unit operation. Refer to *Diagnostic Indicator Chart* for an interpretation of the signal and to this section for an explanation.

Remove the control box access panel and note the number of diagnostic LED flashes. Refer to *Diagnostic Indicator Chart* for an interpretation of the signal and to this section for an explanation.

INTERNAL CONTROL FAILURE

If the integrated ignition control in this unit encounters an internal fault, it will go into a "hard" lockout and turn off the diagnostic LED. If diagnostic LED indicates an internal fault, check power supply to unit for proper voltage, check all fuses, circuit breakers and wiring. Disconnect electric power for five seconds. If LED remains off after restoring power, replace control.

ABNORMAL OPERATION - HEATING CODES

EXTERNAL LOCKOUT (1 FLASH CODE)

An external lockout occurs if the integrated ignition control determines that a measurable combustion cannot be established within three (3) consecutive ignition attempts. If flame is not established within the seven (7) second trial for ignition, the gas valve is deenergized, 15 second inter-purge cycle is completed, and ignition is reattempted. The control will repeat this routine three times if a measurable combustion is not established. The control will then shut off the induced draft blower and go into a lockout state.

If flame is established but lost, the control will energize the circulator blower at the heat speed and then begin a new ignition sequence. If flame is established then lost on subsequent attempts, the control will recycle for four (4) consecutive ignition attempts (five attempts total) before locking out.

The diagnostic fault code is 1 flash for a lockout due to failed ignition attempts or flame dropouts. The integrated control will automatically reset after one hour, or it can be reset by removing the thermostat signal or disconnecting the electrical power supply for over five seconds. If the diagnostic LED indicates an external lockout, perform the following checks:

- *Check the supply and manifold pressures*
- *Check the gas orifices for debris*
- *Check gas valve for proper operation*
- *Check secondary limit*

A dirty filter, excessive duct static, insufficient air flow, a faulty limit, or a failed circulator blower can cause this limit to open. Check filters, total external duct static, circulator blower motor, blower motor speed tap (see wiring diagram), and limit. An interruption in electrical power during a heating cycle may also cause the auxiliary limit to open. The automatic reset secondary limit is located on top of the circulator blower assembly.

- *Check rollout limit*

If the burner flames are not properly drawn into the heat exchanger, the flame rollout protection device will open. Possible causes are restricted or blocked flue passages, blocked or cracked heat exchanger, a failed induced draft blower, or insufficient combustion air. The rollout protection device is a manual reset limit located on the burner bracket. The cause of the flame rollout must be determined and corrected before resetting the limit.

- *Check flame sensor*

A drop in flame signal can be caused by nearly invisible coating on the sensor. Remove the sensor and carefully clean with steel wool.

- *Check wiring*

Check wiring for opens/shorts and miswiring.

IMPORTANT: If you have to frequently reset your gas/electric package unit, it means that a problem exists that should be corrected. Contact a qualified servicer for further information.

PRESSURE SWITCH STUCK OPEN (2 FLASH CODE)

A pressure switch stuck open can be caused by a faulty pressure switch, faulty wiring, a disconnected or damaged hose, a blocked or restricted flue, or a faulty induced draft blower.

If the control senses an open pressure switch during the pre-purge cycle, the induced draft blower only will be energized. If the pressure switch opens after ignition has begun the gas valve is deenergized, the circulator blower heat off cycle begins, and the induced draft blower remains on. The diagnostic fault code is two flashes.

PRESSURE SWITCH STUCK CLOSED (3 FLASH CODE)

A stuck closed pressure switch can be caused by a faulty pressure switch or faulty wiring. If the control encounters a pressure switch stuck closed, the induced draft blower remains off. The diagnostic LED code for this fault is three (3) flashes.

OPEN THERMAL PROTECTION DEVICE (4 FLASH CODE)

If the primary limit switch opens, the gas valve is immediately deenergized, the induced draft and air circulating blowers are energized. The induced draft and air circulator blowers remain energized until the limit switch recloses. The diagnostic fault code for an open limit is four (4) flashes.

A primary limit will open due to excessive supply air temperatures. This can be caused by a dirty filter, excessive duct static, insufficient air flow, or a faulty limit. Check filters, total external duct static, blower motor, blower motor speed tap (see wiring diagram), and limit. This limit will automatically reset once the temperature falls below a preset level.

FLAME DETECTED WITH GAS VALVE CLOSED (5 FLASH CODE)

If flame is detected with the gas valve deenergized, the combustion and air circulator blowers are energized. The diagnostic fault code is five (5) flashes for this condition. The control can be reset by removing the power supply to the unit or it will automatically reset after one hour. Miswiring is the probable cause for this fault.

ABNORMAL OPERATION - COOLING CODES

SHORT CYCLE COMPRESSOR DELAY (6 FLASH CODE)

The automatic ignition control has a built-in feature that prevents damage to the compressor in short cycling situations. In the event of intermittent power losses or intermittent thermostat operation, the ignition control will delay output to the compressor contactor for three minutes from the time power is restored. (Compressor is off a total of three minutes). The diagnostic LED will flash six (6) times to indicate the compressor contactor output is being delayed.

NOTE: Some electronic thermostats also have a built-in compressor short cycle timer that may be longer than the three minute delay given above. If you are using an electronic thermostat and the compressor has not started after three minutes, wait an additional five minutes to allow the thermostat to complete its short cycle delay time.



CAUTION

TO PREVENT UNRELIABLE OPERATION OR EQUIPMENT DAMAGE, THE GAS MANIFOLD PRESSURE MUST BE AS SPECIFIED ON THE UNIT RATING PLATE. ONLY MINOR ADJUSTMENTS SHOULD BE MADE BY ADJUSTING THE GAS VALVE PRESSURE REGULATOR.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - STANDARD

DFG1803DL Standard Static						
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	3187	485	421	0.19	0.16
	0.4	2666	529	519	0.20	0.20
	0.6	2272	590	583	0.23	0.22
	0.8	1702	652	679	0.25	0.26
	1	1079	719	729	0.28	0.28
	1.2	594	778	765	0.30	0.29
T2	0.2	4513	592	510	0.44	0.38
	0.4	4092	633	587	0.47	0.44
	0.6	3748	684	644	0.51	0.48
	0.8	3281	735	722	0.55	0.54
	1	2793	789	771	0.59	0.58
	1.2	2371	839	815	0.63	0.61
T3	0.2	5076	638	548	0.58	0.50
	0.4	4695	677	616	0.62	0.57
	0.6	4372	724	671	0.66	0.62
	0.8	3948	771	742	0.71	0.68
	1	3514	820	789	0.75	0.72
	1.2	3117	866	837	0.79	0.77
T4	0.2	7074	804	684	1.31	1.11
	0.4	6813	838	728	1.36	1.19
	0.6	6560	872	771	1.42	1.26
	0.8	6276	905	819	1.47	1.33
	1	6014	938	862	1.53	1.40
	1.2	5710	971	915	1.58	1.49
T5	0.2	8071	891	755	1.87	1.59
	0.4	7848	921	789	1.94	1.66
	0.6	7625	951	828	2.00	1.74
	0.8	7400	979	866	2.06	1.82
	1	7199	1005	905	2.11	1.90
	1.2	6942	1033	955	2.17	2.01
T6	0.2	5689	688	589	0.77	0.66
	0.4	5349	726	649	0.81	0.72
	0.6	5048	769	701	0.86	0.78
	0.8	4669	811	764	0.90	0.85
	1	4292	855	811	0.95	0.90
	1.2	3924	896	861	1.00	0.96
T7	0.2	5961	711	608	0.86	0.73
	0.4	5639	748	664	0.90	0.80
	0.6	5348	789	714	0.95	0.86
	0.8	4988	829	774	1.00	0.93
	1	4636	870	820	1.05	0.99
	1.2	4280	910	871	1.10	1.05
T8	0.2	5689	688	589	0.77	0.66
	0.4	5349	726	649	0.81	0.72
	0.6	5048	769	701	0.86	0.78
	0.8	4669	811	764	0.90	0.85
	1	4292	855	811	0.95	0.90
	1.2	3924	896	861	1.00	0.96
T9	0.2	7063	803	684	1.30	1.11
	0.4	6802	837	727	1.36	1.18
	0.6	6548	871	771	1.42	1.25
	0.8	6263	905	819	1.47	1.33
	1	6000	937	862	1.52	1.40
	1.2	5696	970	915	1.58	1.49
T10	0.2	8046	888	753	1.86	1.57
	0.4	7822	919	787	1.92	1.64
	0.6	7598	949	826	1.98	1.73
	0.8	7371	977	865	2.04	1.81
	1	7170	1003	904	2.10	1.89
	1.2	6911	1031	954	2.15	1.99

DFG1803DM Standard Static						
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	3187	485	421	0.19	0.16
	0.4	2666	529	519	0.20	0.20
	0.6	2272	590	583	0.23	0.22
	0.8	1702	652	679	0.25	0.26
	1	1079	719	729	0.28	0.28
	1.2	594	778	765	0.30	0.29
T2	0.2	4513	592	510	0.44	0.38
	0.4	4092	633	587	0.47	0.44
	0.6	3748	684	644	0.51	0.48
	0.8	3281	735	722	0.55	0.54
	1	2793	789	771	0.59	0.58
	1.2	2371	839	815	0.63	0.61
T3	0.2	5076	638	548	0.58	0.50
	0.4	4695	677	616	0.62	0.57
	0.6	4372	724	671	0.66	0.62
	0.8	3948	771	742	0.71	0.68
	1	3514	820	789	0.75	0.72
	1.2	3117	866	837	0.79	0.77
T4	0.2	7074	804	684	1.31	1.11
	0.4	6813	838	728	1.36	1.19
	0.6	6560	872	771	1.42	1.26
	0.8	6276	905	819	1.47	1.33
	1	6014	938	862	1.53	1.40
	1.2	5710	971	915	1.58	1.49
T5	0.2	8071	891	755	1.87	1.59
	0.4	7848	921	789	1.94	1.66
	0.6	7625	951	828	2.00	1.74
	0.8	7400	979	866	2.06	1.82
	1	7199	1005	905	2.11	1.90
	1.2	6942	1033	955	2.17	2.01
T6	0.2	7063	803	684	1.30	1.11
	0.4	6802	837	727	1.36	1.18
	0.6	6548	871	771	1.42	1.25
	0.8	6263	905	819	1.47	1.33
	1	6000	937	862	1.52	1.40
	1.2	5696	970	915	1.58	1.49
T7	0.2	7384	831	706	1.47	1.25
	0.4	7138	863	746	1.52	1.32
	0.6	6894	896	788	1.58	1.39
	0.8	6630	928	833	1.64	1.47
	1	6389	958	875	1.69	1.54
	1.2	6100	989	927	1.74	1.64
T8	0.2	7063	803	684	1.30	1.11
	0.4	6802	837	727	1.36	1.18
	0.6	6548	871	771	1.42	1.25
	0.8	6263	905	819	1.47	1.33
	1	6000	937	862	1.52	1.40
	1.2	5696	970	915	1.58	1.49
T9	0.2	7778	865	734	1.69	1.43
	0.4	7546	896	770	1.75	1.50
	0.6	7314	927	810	1.81	1.58
	0.8	7073	956	852	1.86	1.66
	1	6857	984	892	1.92	1.74
	1.2	6586	1014	943	1.98	1.84
T10	0.2	8046	888	753	1.86	1.57
	0.4	7822	919	787	1.92	1.64
	0.6	7598	949	826	1.98	1.73
	0.8	7371	977	865	2.04	1.81
	1	7170	1003	904	2.10	1.89
	1.2	6911	1031	954	2.15	1.99

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - STANDARD

DFG1803DH Standard Static						
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	3187	485	421	0.19	0.16
	0.4	2666	529	519	0.20	0.20
	0.6	2272	590	583	0.23	0.22
	0.8	1702	652	679	0.25	0.26
	1	1079	719	729	0.28	0.28
	1.2	594	778	765	0.30	0.29
T2	0.2	4513	592	510	0.44	0.38
	0.4	4092	633	587	0.47	0.44
	0.6	3748	684	644	0.51	0.48
	0.8	3281	735	722	0.55	0.54
	1	2793	789	771	0.59	0.58
	1.2	2371	839	815	0.63	0.61
T3	0.2	5076	638	548	0.58	0.50
	0.4	4695	677	616	0.62	0.57
	0.6	4372	724	671	0.66	0.62
	0.8	3948	771	742	0.71	0.68
	1	3514	820	789	0.75	0.72
	1.2	3117	866	837	0.79	0.77
T4	0.2	7074	804	684	1.31	1.11
	0.4	6813	838	728	1.36	1.19
	0.6	6560	872	771	1.42	1.26
	0.8	6276	905	819	1.47	1.33
	1	6014	938	862	1.53	1.40
	1.2	5710	971	915	1.58	1.49
T5	0.2	8071	891	755	1.87	1.59
	0.4	7848	921	789	1.94	1.66
	0.6	7625	951	828	2.00	1.74
	0.8	7400	979	866	2.06	1.82
	1	7199	1005	905	2.11	1.90
	1.2	6942	1033	955	2.17	2.01
T6	0.2	7384	831	706	1.47	1.25
	0.4	7138	863	746	1.52	1.32
	0.6	6894	896	788	1.58	1.39
	0.8	6630	928	833	1.64	1.47
	1	6389	958	875	1.69	1.54
	1.2	6100	989	927	1.74	1.64
T7	0.2	7778	865	734	1.69	1.43
	0.4	7546	896	770	1.75	1.50
	0.6	7314	927	810	1.81	1.58
	0.8	7073	956	852	1.86	1.66
	1	6857	984	892	1.92	1.74
	1.2	6586	1014	943	1.98	1.84
T8	0.2	7384	831	706	1.47	1.25
	0.4	7138	863	746	1.52	1.32
	0.6	6894	896	788	1.58	1.39
	0.8	6630	928	833	1.64	1.47
	1	6389	958	875	1.69	1.54
	1.2	6100	989	927	1.74	1.64
T9	0.2	7959	881	747	1.80	1.52
	0.4	7733	912	782	1.86	1.60
	0.6	7506	942	821	1.92	1.68
	0.8	7275	970	861	1.98	1.76
	1	7069	997	900	2.04	1.84
	1.2	6807	1026	951	2.09	1.94
T10	0.2	8291	910	771	2.03	1.72
	0.4	8072	940	804	2.09	1.79
	0.6	7854	969	841	2.16	1.87
	0.8	7641	996	878	2.22	1.96
	1	7450	1021	916	2.28	2.04
	1.2	7203	1049	965	2.34	2.15

DFG2403DL Standard Static						
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	4070	567.36	513.99	0.33	0.30
	0.4	3699	617.86	574.64	0.36	0.33
	0.6	3288	671.17	635.76	0.39	0.37
	0.8	2826	717.95	702.08	0.41	0.40
	1	2294	761.50	749.12	0.44	0.43
	1.2	1910	797.18	785.83	0.46	0.45
T2	0.2	5717	725.19	649.02	0.79	0.71
	0.4	5423	762.74	693.33	0.84	0.76
	0.6	5133	801.53	739.11	0.88	0.81
	0.8	4818	837.38	785.70	0.92	0.86
	1	4475	872.15	825.70	0.96	0.90
	1.2	4177	905.90	861.97	0.99	0.94
T3	0.2	6782	825.82	735.86	1.22	1.09
	0.4	6525	856.44	771.60	1.27	1.14
	0.6	6298	887.46	808.94	1.31	1.20
	0.8	6058	917.32	845.16	1.36	1.25
	1	5813	947.18	880.77	1.40	1.30
	1.2	5561	978.93	915.84	1.45	1.36
T4	0.2	8737	1005.28	893.57	2.38	2.12
	0.4	8506	1028.63	921.07	2.44	2.18
	0.6	8331	1051.42	948.42	2.49	2.25
	0.8	8157	1074.31	974.48	2.55	2.31
	1	7994	1098.04	1002.70	2.60	2.38
	1.2	7794	1123.23	1032.13	2.66	2.45
T5	0.2	8955	1024.55	910.91	2.56	2.27
	0.4	8720	1047.85	938.55	2.62	2.34
	0.6	8542	1070.58	965.56	2.67	2.41
	0.8	8366	1093.26	991.75	2.73	2.48
	1	8199	1116.71	1019.23	2.79	2.54
	1.2	8000	1140.77	1047.54	2.85	2.62
T6	0.2	7146	859.83	765.40	1.40	1.24
	0.4	6899	888.46	798.72	1.44	1.30
	0.6	6688	917.22	833.54	1.49	1.35
	0.8	6470	945.31	866.81	1.54	1.41
	1	6251	973.69	900.97	1.58	1.46
	1.2	6013	1004.55	935.41	1.63	1.52
T7	0.2	8097	947.59	842.27	1.94	1.72
	0.4	7866	972.21	870.94	1.99	1.78
	0.6	7686	996.45	900.43	2.03	1.84
	0.8	7506	1020.80	927.99	2.08	1.90
	1	7336	1045.95	958.50	2.14	1.96
	1.2	7126	1073.87	990.48	2.19	2.02
T8	0.2	7146	859.83	765.40	1.40	1.24
	0.4	6899	888.46	798.72	1.44	1.30
	0.6	6688	917.22	833.54	1.49	1.35
	0.8	6470	945.31	866.81	1.54	1.41
	1	6251	973.69	900.97	1.58	1.46
	1.2	6013	1004.55	935.41	1.63	1.52
T9	0.2	8729	1004.54	892.91	2.38	2.11
	0.4	8497	1027.89	920.40	2.43	2.18
	0.6	8322	1050.69	947.77	2.49	2.24
	0.8	8149	1073.59	973.84	2.54	2.31
	1	7986	1097.34	1002.08	2.60	2.37
	1.2	7786	1122.57	1031.55	2.66	2.44
T10	0.2	8971	1025.91	912.15	2.57	2.29
	0.4	8736	1049.22	939.81	2.63	2.36
	0.6	8557	1071.96	966.81	2.69	2.42
	0.8	8380	1094.63	993.02	2.74	2.49
	1	8213	1118.07	1020.45	2.80	2.56
	1.2	8014	1142.04	1048.68	2.86	2.63

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - STANDARD

DFG2403DM Standard Static						
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	4070	567.36	513.99	0.33	0.30
	0.4	3699	617.86	574.64	0.36	0.33
	0.6	3288	671.17	635.76	0.39	0.37
	0.8	2826	717.95	702.08	0.41	0.40
	1	2294	761.50	749.12	0.44	0.43
	1.2	1910	797.18	785.83	0.46	0.45
T2	0.2	5717	725.19	649.02	0.79	0.71
	0.4	5423	762.74	693.33	0.84	0.76
	0.6	5133	801.53	739.11	0.88	0.81
	0.8	4818	837.38	785.70	0.92	0.86
	1	4475	872.15	825.70	0.96	0.90
	1.2	4177	905.90	861.97	0.99	0.94
T3	0.2	6782	825.82	735.86	1.22	1.09
	0.4	6525	856.44	771.60	1.27	1.14
	0.6	6298	887.46	808.94	1.31	1.20
	0.8	6058	917.32	845.16	1.36	1.25
	1	5813	947.18	880.77	1.40	1.30
	1.2	5561	978.93	915.84	1.45	1.36
T4	0.2	8737	1005.28	893.57	2.38	2.12
	0.4	8506	1028.63	921.07	2.44	2.18
	0.6	8331	1051.42	948.42	2.49	2.25
	0.8	8157	1074.31	974.48	2.55	2.31
	1	7994	1098.04	1002.70	2.60	2.38
	1.2	7794	1123.23	1032.13	2.66	2.45
T5	0.2	8955	1024.55	910.91	2.56	2.27
	0.4	8720	1047.85	938.55	2.62	2.34
	0.6	8542	1070.58	965.56	2.67	2.41
	0.8	8366	1093.26	991.75	2.73	2.48
	1	8199	1116.71	1019.23	2.79	2.54
	1.2	8000	1140.77	1047.54	2.85	2.62
T6	0.2	7899	929.50	826.34	1.81	1.61
	0.4	7666	954.78	855.73	1.86	1.67
	0.6	7482	979.77	886.15	1.91	1.73
	0.8	7296	1004.77	914.62	1.96	1.78
	1	7119	1030.50	945.86	2.01	1.84
	1.2	6904	1059.12	978.46	2.06	1.91
T7	0.2	8287	964.87	857.56	2.06	1.83
	0.4	8057	988.96	885.67	2.11	1.89
	0.6	7881	1012.61	914.37	2.16	1.95
	0.8	7704	1036.42	941.25	2.21	2.01
	1	7539	1061.06	971.06	2.27	2.07
	1.2	7333	1088.25	1002.37	2.32	2.14
T8	0.2	7899	929.50	826.34	1.81	1.61
	0.4	7666	954.78	855.73	1.86	1.67
	0.6	7482	979.77	886.15	1.91	1.73
	0.8	7296	1004.77	914.62	1.96	1.78
	1	7119	1030.50	945.86	2.01	1.84
	1.2	6904	1059.12	978.46	2.06	1.91
T9	0.2	8729	1004.54	892.91	2.38	2.11
	0.4	8497	1027.89	920.40	2.43	2.18
	0.6	8322	1050.69	947.77	2.49	2.24
	0.8	8149	1073.59	973.84	2.54	2.31
	1	7986	1097.34	1002.08	2.60	2.37
	1.2	7786	1122.57	1031.55	2.66	2.44
T10	0.2	8971	1025.91	912.15	2.57	2.29
	0.4	8736	1049.22	939.81	2.63	2.36
	0.6	8557	1071.96	966.81	2.69	2.42
	0.8	8380	1094.63	993.02	2.74	2.49
	1	8213	1118.07	1020.45	2.80	2.56
	1.2	8014	1142.04	1048.68	2.86	2.63

DFG2403DH Standard Static						
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	4070	567.36	513.99	0.33	0.30
	0.4	3699	617.86	574.64	0.36	0.33
	0.6	3288	671.17	635.76	0.39	0.37
	0.8	2826	717.95	702.08	0.41	0.40
	1	2294	761.50	749.12	0.44	0.43
	1.2	1910	797.18	785.83	0.46	0.45
T2	0.2	5717	725.19	649.02	0.79	0.71
	0.4	5423	762.74	693.33	0.84	0.76
	0.6	5133	801.53	739.11	0.88	0.81
	0.8	4818	837.38	785.70	0.92	0.86
	1	4475	872.15	825.70	0.96	0.90
	1.2	4177	905.90	861.97	0.99	0.94
T3	0.2	6782	825.82	735.86	1.22	1.09
	0.4	6525	856.44	771.60	1.27	1.14
	0.6	6298	887.46	808.94	1.31	1.20
	0.8	6058	917.32	845.16	1.36	1.25
	1	5813	947.18	880.77	1.40	1.30
	1.2	5561	978.93	915.84	1.45	1.36
T4	0.2	8737	1005.28	893.57	2.38	2.12
	0.4	8506	1028.63	921.07	2.44	2.18
	0.6	8331	1051.42	948.42	2.49	2.25
	0.8	8157	1074.31	974.48	2.55	2.31
	1	7994	1098.04	1002.70	2.60	2.38
	1.2	7794	1123.23	1032.13	2.66	2.45
T5	0.2	8955	1024.55	910.91	2.56	2.27
	0.4	8720	1047.85	938.55	2.62	2.34
	0.6	8542	1070.58	965.56	2.67	2.41
	0.8	8366	1093.26	991.75	2.73	2.48
	1	8199	1116.71	1019.23	2.79	2.54
	1.2	8000	1140.77	1047.54	2.85	2.62
T6	0.2	8097	947.59	842.27	1.94	1.72
	0.4	7866	972.21	870.94	1.99	1.78
	0.6	7686	996.45	900.43	2.03	1.84
	0.8	7506	1020.80	927.99	2.08	1.90
	1	7336	1045.95	958.50	2.14	1.96
	1.2	7126	1073.87	990.48	2.19	2.02
T7	0.2	8287	964.87	857.56	2.06	1.83
	0.4	8057	988.96	885.67	2.11	1.89
	0.6	7881	1012.61	914.37	2.16	1.95
	0.8	7704	1036.42	941.25	2.21	2.01
	1	7539	1061.06	971.06	2.27	2.07
	1.2	7333	1088.25	1002.37	2.32	2.14
T8	0.2	8097	947.59	842.27	1.94	1.72
	0.4	7866	972.21	870.94	1.99	1.78
	0.6	7686	996.45	900.43	2.03	1.84
	0.8	7506	1020.80	927.99	2.08	1.90
	1	7336	1045.95	958.50	2.14	1.96
	1.2	7126	1073.87	990.48	2.19	2.02
T9	0.2	8729	1004.54	892.91	2.38	2.11
	0.4	8497	1027.89	920.40	2.43	2.18
	0.6	8322	1050.69	947.77	2.49	2.24
	0.8	8149	1073.59	973.84	2.54	2.31
	1	7986	1097.34	1002.08	2.60	2.37
	1.2	7786	1122.57	1031.55	2.66	2.44
T10	0.2	8971	1025.91	912.15	2.57	2.29
	0.4	8736	1049.22	939.81	2.63	2.36
	0.6	8557	1071.96	966.81	2.69	2.42
	0.8	8380	1094.63	993.02	2.74	2.49
	1	8213	1118.07	1020.45	2.80	2.56
	1.2	8014	1142.04	1048.68	2.86	2.63

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - STANDARD

DFG3003DL Standard Static						
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	5761	705.19	636.84	0.67	0.60
	0.4	5491	745.05	682.80	0.71	0.65
	0.6	5161	783.49	736.74	0.74	0.70
	0.8	4806	822.31	785.90	0.78	0.75
	1	4447	864.00	830.28	0.82	0.79
	1.2	4092	905.07	877.59	0.86	0.83
T2	0.2	6955	814.73	733.18	1.08	0.97
	0.4	6710	850.82	773.50	1.12	1.02
	0.6	6434	886.42	818.77	1.17	1.08
	0.8	6140	921.12	861.92	1.22	1.14
	1	5840	957.16	902.34	1.26	1.19
	1.2	5537	993.48	946.37	1.31	1.25
T3	0.2	8982	998.27	895.68	2.05	1.84
	0.4	8772	1028.08	927.15	2.11	1.91
	0.6	8571	1058.57	959.63	2.18	1.97
	0.8	8363	1086.46	992.95	2.23	2.04
	1	8151	1113.89	1026.48	2.29	2.11
	1.2	7927	1142.39	1063.86	2.35	2.19
T4	0.2	10701	1149.61	1031.67	3.30	2.96
	0.4	10508	1174.28	1056.89	3.37	3.03
	0.6	10342	1199.96	1081.99	3.44	3.10
	0.8	10174	1222.34	1107.66	3.51	3.18
	1	10017	1244.32	1135.05	3.57	3.26
	1.2	9842	1266.63	1164.86	3.63	3.34
T5	0.2	10862	1163.39	1044.23	3.45	3.09
	0.4	10669	1187.60	1068.97	3.52	3.17
	0.6	10504	1212.78	1093.68	3.59	3.24
	0.8	10337	1234.67	1118.69	3.66	3.31
	1	10183	1256.30	1145.49	3.72	3.39
	1.2	10011	1278.07	1174.42	3.78	3.48
T6	0.2	6310	755.69	681.21	0.84	0.76
	0.4	6052	793.81	724.55	0.89	0.81
	0.6	5747	830.95	774.42	0.93	0.86
	0.8	5422	867.87	820.80	0.97	0.92
	1	5090	906.92	863.36	1.01	0.96
	1.2	4759	945.80	909.20	1.06	1.01
T7	0.2	8681	971.24	871.63	1.88	1.69
	0.4	8466	1001.97	904.34	1.94	1.75
	0.6	8255	1033.25	938.52	2.00	1.82
	0.8	8037	1062.13	973.26	2.06	1.88
	1	7813	1090.74	1007.84	2.11	1.95
	1.2	7578	1120.38	1046.32	2.17	2.03
T8	0.2	6310	755.69	681.21	0.84	0.76
	0.4	6052	793.81	724.55	0.89	0.81
	0.6	5747	830.95	774.42	0.93	0.86
	0.8	5422	867.87	820.80	0.97	0.92
	1	5090	906.92	863.36	1.01	0.96
	1.2	4759	945.80	909.20	1.06	1.01
T9	0.2	10683	1148.04	1030.24	3.28	2.95
	0.4	10490	1172.76	1055.52	3.35	3.02
	0.6	10324	1198.49	1080.66	3.43	3.09
	0.8	10156	1220.93	1106.41	3.49	3.16
	1	9998	1242.95	1133.87	3.55	3.24
	1.2	9822	1265.33	1163.78	3.62	3.33
T10	0.2	10862	1163.39	1044.23	3.45	3.09
	0.4	10669	1187.60	1068.97	3.52	3.17
	0.6	10504	1212.78	1093.68	3.59	3.24
	0.8	10337	1234.67	1118.69	3.66	3.31
	1	10183	1256.30	1145.49	3.72	3.39
	1.2	10011	1278.07	1174.42	3.78	3.48

DFG3003DM Standard Static						
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	5761	705	637	0.67	0.60
	0.4	5491	745	683	0.71	0.65
	0.6	5161	783	737	0.74	0.70
	0.8	4806	822	786	0.78	0.75
	1	4447	864	830	0.82	0.79
	1.2	4092	905	878	0.86	0.83
T2	0.2	6955	815	733	1.08	0.97
	0.4	6710	851	774	1.12	1.02
	0.6	6434	886	819	1.17	1.08
	0.8	6140	921	862	1.22	1.14
	1	5840	957	902	1.26	1.19
	1.2	5537	993	946	1.31	1.25
T3	0.2	8982	998	896	2.05	1.84
	0.4	8772	1028	927	2.11	1.91
	0.6	8571	1059	960	2.18	1.97
	0.8	8363	1086	993	2.23	2.04
	1	8151	1114	1026	2.29	2.11
	1.2	7927	1142	1064	2.35	2.19
T4	0.2	10701	1150	1032	3.30	2.96
	0.4	10508	1174	1057	3.37	3.03
	0.6	10342	1200	1082	3.44	3.10
	0.8	10174	1222	1108	3.51	3.18
	1	10017	1244	1135	3.57	3.26
	1.2	9842	1267	1165	3.63	3.34
T5	0.2	10862	1163	1044	3.45	3.09
	0.4	10669	1188	1069	3.52	3.17
	0.6	10504	1213	1094	3.59	3.24
	0.8	10337	1235	1119	3.66	3.31
	1	10183	1256	1145	3.72	3.39
	1.2	10011	1278	1174	3.78	3.48
T6	0.2	6475	771	694	0.90	0.81
	0.4	6220	808	737	0.94	0.86
	0.6	5923	845	786	0.99	0.92
	0.8	5605	881	831	1.03	0.97
	1	5282	920	873	1.07	1.02
	1.2	4958	958	919	1.12	1.07
T7	0.2	8681	971	872	1.88	1.69
	0.4	8466	1002	904	1.94	1.75
	0.6	8255	1033	939	2.00	1.82
	0.8	8037	1062	973	2.06	1.88
	1	7813	1091	1008	2.11	1.95
	1.2	7578	1120	1046	2.17	2.03
T8	0.2	9308	1027	922	2.25	2.02
	0.4	9101	1056	952	2.32	2.09
	0.6	8910	1086	983	2.38	2.15
	0.8	8713	1113	1014	2.44	2.22
	1	8513	1139	1047	2.50	2.30
	1.2	8300	1166	1083	2.56	2.37
T9	0.2	10683	1148	1030	3.28	2.95
	0.4	10490	1173	1056	3.35	3.02
	0.6	10324	1198	1081	3.43	3.09
	0.8	10156	1221	1106	3.49	3.16
	1	9998	1243	1134	3.55	3.24
	1.2	9822	1265	1164	3.62	3.33
T10	0.2	10862	1163	1044	3.45	3.09
	0.4	10669	1188	1069	3.52	3.17
	0.6	10504	1213	1094	3.59	3.24
	0.8	10337	1235	1119	3.66	3.31
	1	10183	1256	1145	3.72	3.39
	1.2	10011	1278	1174	3.78	3.48

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - STANDARD

DFG3003DH Standard Static						
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	5761	705	637	0.67	0.60
	0.4	5491	745	683	0.71	0.65
	0.6	5161	783	737	0.74	0.70
	0.8	4806	822	786	0.78	0.75
	1	4447	864	830	0.82	0.79
	1.2	4092	905	878	0.86	0.83
T2	0.2	6955	815	733	1.08	0.97
	0.4	6710	851	774	1.12	1.02
	0.6	6434	886	819	1.17	1.08
	0.8	6140	921	862	1.22	1.14
	1	5840	957	902	1.26	1.19
	1.2	5537	993	946	1.31	1.25
T3	0.2	8982	998	896	2.05	1.84
	0.4	8772	1028	927	2.11	1.91
	0.6	8571	1059	960	2.18	1.97
	0.8	8363	1086	993	2.23	2.04
	1	8151	1114	1026	2.29	2.11
	1.2	7927	1142	1064	2.35	2.19
T4	0.2	10701	1150	1032	3.30	2.96
	0.4	10508	1174	1057	3.37	3.03
	0.6	10342	1200	1082	3.44	3.10
	0.8	10174	1222	1108	3.51	3.18
	1	10017	1244	1135	3.57	3.26
	1.2	9842	1267	1165	3.63	3.34
T5	0.2	10862	1163	1044	3.45	3.09
	0.4	10669	1188	1069	3.52	3.17
	0.6	10504	1213	1094	3.59	3.24
	0.8	10337	1235	1119	3.66	3.31
	1	10183	1256	1145	3.72	3.39
	1.2	10011	1278	1174	3.78	3.48
T6	0.2	9658	1058	949	2.48	2.23
	0.4	9456	1086	978	2.55	2.30
	0.6	9273	1115	1007	2.62	2.36
	0.8	9086	1141	1037	2.68	2.43
	1	8899	1166	1069	2.73	2.51
	1.2	8697	1192	1103	2.80	2.59
T7	0.2	8681	971	872	1.88	1.69
	0.4	8466	1002	904	1.94	1.75
	0.6	8255	1033	939	2.00	1.82
	0.8	8037	1062	973	2.06	1.88
	1	7813	1091	1008	2.11	1.95
	1.2	7578	1120	1046	2.17	2.03
T8	0.2	9658	1058	949	2.48	2.23
	0.4	9456	1086	978	2.55	2.30
	0.6	9273	1115	1007	2.62	2.36
	0.8	9086	1141	1037	2.68	2.43
	1	8899	1166	1069	2.73	2.51
	1.2	8697	1192	1103	2.80	2.59
T9	0.2	10683	1148	1030	3.28	2.95
	0.4	10490	1173	1056	3.35	3.02
	0.6	10324	1198	1081	3.43	3.09
	0.8	10156	1221	1106	3.49	3.16
	1	9998	1243	1134	3.55	3.24
	1.2	9822	1265	1164	3.62	3.33
T10	0.2	10862	1163	1044	3.45	3.09
	0.4	10669	1188	1069	3.52	3.17
	0.6	10504	1213	1094	3.59	3.24
	0.8	10337	1235	1119	3.66	3.31
	1	10183	1256	1145	3.72	3.39
	1.2	10011	1278	1174	3.78	3.48

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - HIGH STATIC

DFG1803WL High Static													
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2	Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	6185	707	657	0.28	0.26	T6	0.2	8228	932	859	1.37	1.27
	0.4	5843	739	689	0.29	0.27		0.4	7969	959	886	1.42	1.31
	0.6	5497	771	727	0.31	0.29		0.6	7712	985	919	1.45	1.36
	0.8	5171	801	766	0.32	0.31		0.8	7471	1012	950	1.49	1.40
	1	4824	833	807	0.33	0.32		1	7220	1039	981	1.53	1.45
	1.2	4426	873	861	0.35	0.34		1.2	6971	1066	1015	1.57	1.50
	1.4	3973	912	915	0.36	0.36		1.4	6708	1096	1051	1.62	1.55
	1.6	3501	969	958	0.39	0.38		1.6	6436	1127	1086	1.66	1.60
	1.8	2945	1018	1004	0.41	0.40		1.8	6129	1158	1121	1.71	1.65
	2	2487	1059	1030	0.42	0.41		2	5863	1188	1151	1.75	1.70
T2	2.2	1700	1096	1109	0.44	0.44		2.2	5509	1218	1192	1.80	1.76
	0.2	6185	707	657	0.28	0.26	T7	0.2	9400	1036	957	2.22	2.05
	0.4	5843	739	689	0.29	0.27		0.4	9171	1061	981	2.27	2.10
	0.6	5497	771	727	0.31	0.29		0.6	8952	1085	1010	2.32	2.16
	0.8	5171	801	766	0.32	0.31		0.8	8743	1110	1037	2.38	2.22
	1	4824	833	807	0.33	0.32		1	8532	1135	1065	2.43	2.28
	1.2	4426	873	861	0.35	0.34		1.2	8334	1158	1091	2.48	2.34
	1.4	3973	912	915	0.36	0.36		1.4	8136	1182	1120	2.53	2.40
	1.6	3501	969	958	0.39	0.38		1.6	7931	1206	1151	2.58	2.46
	1.8	2945	1018	1004	0.41	0.40		1.8	7714	1230	1181	2.63	2.53
	2	2487	1059	1030	0.42	0.41		2	7513	1257	1210	2.69	2.59
T3	2.2	1700	1096	1109	0.44	0.44		2.2	7297	1284	1238	2.75	2.65
	0.2	7692	877	810	1.04	0.96	T8	0.2	8228	932	859	1.37	1.27
	0.4	7414	906	838	1.07	0.99		0.4	7969	959	886	1.42	1.31
	0.6	7137	934	872	1.10	1.03		0.6	7712	985	919	1.45	1.36
	0.8	6877	962	905	1.14	1.07		0.8	7471	1012	950	1.49	1.40
	1	6603	989	939	1.17	1.11		1	7220	1039	981	1.53	1.45
	1.2	6322	1019	977	1.21	1.16		1.2	6971	1066	1015	1.57	1.50
	1.4	6018	1051	1017	1.24	1.20		1.4	6708	1096	1051	1.62	1.55
	1.6	5703	1087	1054	1.29	1.25		1.6	6436	1127	1086	1.66	1.60
	1.8	5341	1123	1092	1.33	1.29		1.8	6129	1158	1121	1.71	1.65
	2	5034	1155	1122	1.37	1.33		2	5863	1188	1151	1.75	1.70
T4	2.2	4588	1187	1170	1.40	1.38		2.2	5509	1218	1192	1.80	1.76
	0.2	8135	922	851	1.31	1.21	T9	0.2	9573	1050	971	2.36	2.18
	0.4	7873	950	878	1.35	1.25		0.4	9349	1074	994	2.41	2.23
	0.6	7613	977	911	1.39	1.30		0.6	9134	1098	1022	2.46	2.29
	0.8	7368	1004	942	1.43	1.34		0.8	8928	1123	1049	2.52	2.35
	1	7114	1031	974	1.47	1.39		1	8722	1147	1076	2.57	2.42
	1.2	6859	1058	1008	1.51	1.44		1.2	8530	1170	1102	2.62	2.47
	1.4	6590	1088	1045	1.55	1.49		1.4	8337	1194	1130	2.68	2.54
	1.6	6311	1120	1080	1.59	1.54		1.6	8139	1217	1160	2.73	2.60
	1.8	5995	1152	1116	1.64	1.59		1.8	7931	1240	1189	2.78	2.67
	2	5723	1182	1146	1.68	1.63		2	7736	1267	1218	2.84	2.73
T5	2.2	5354	1213	1188	1.73	1.69		2.2	7533	1293	1245	2.90	2.79
	0.2	8596	967	892	1.62	1.50	T10	0.2	9745	1063	983	2.49	2.31
	0.4	8348	994	918	1.67	1.54		0.4	9524	1087	1006	2.55	2.36
	0.6	8104	1019	949	1.71	1.59		0.6	9314	1111	1034	2.61	2.43
	0.8	7874	1045	979	1.76	1.64		0.8	9110	1135	1060	2.66	2.49
	1	7638	1071	1009	1.80	1.70		1	8909	1159	1087	2.72	2.55
	1.2	7408	1097	1040	1.84	1.75		1.2	8721	1181	1112	2.77	2.61
	1.4	7169	1124	1073	1.89	1.80		1.4	8534	1205	1140	2.83	2.67
	1.6	6922	1153	1107	1.94	1.86		1.6	8341	1228	1169	2.88	2.74
	1.8	6648	1181	1141	1.98	1.92		1.8	8142	1250	1197	2.93	2.81
	2	6407	1210	1171	2.03	1.97		2	7952	1277	1226	3.00	2.88
T5	2.2	6106	1239	1206	2.08	2.03		2.2	7759	1302	1252	3.06	2.94

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - HIGH STATIC

DFG1803WM High Static													
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2	Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	6185	707	657	0.28	0.26	T6	0.2	8958	999	922	2.45	2.26
	0.4	5843	739	689	0.29	0.27		0.4	8719	1025	947	2.51	2.32
	0.6	5497	771	727	0.31	0.29		0.6	8487	1050	977	2.56	2.38
	0.8	5171	801	766	0.32	0.31		0.8	8267	1075	1006	2.62	2.45
	1	4824	833	807	0.33	0.32		1	8043	1101	1035	2.68	2.51
	1.2	4426	873	861	0.35	0.34		1.2	7829	1125	1064	2.73	2.57
	1.4	3973	912	915	0.36	0.36		1.4	7611	1151	1095	2.79	2.64
	1.6	3501	969	958	0.39	0.38		1.6	7385	1177	1127	2.84	2.71
	1.8	2945	1018	1004	0.41	0.40		1.8	7139	1204	1159	2.90	2.78
	2	2487	1059	1030	0.42	0.41		2	6918	1232	1189	2.96	2.85
T2	2.2	1700	1096	1109	0.44	0.44		2.2	6661	1259	1221	3.02	2.91
	0.2	6185	707	657	0.28	0.26	T7	0.2	9745	1063	983	2.60	2.41
	0.4	5843	739	689	0.29	0.27		0.4	9524	1087	1006	2.66	2.46
	0.6	5497	771	727	0.31	0.29		0.6	9314	1111	1034	2.72	2.53
	0.8	5171	801	766	0.32	0.31		0.8	9110	1135	1060	2.78	2.60
	1	4824	833	807	0.33	0.32		1	8909	1159	1087	2.84	2.66
	1.2	4426	873	861	0.35	0.34		1.2	8721	1181	1112	2.89	2.72
	1.4	3973	912	915	0.36	0.36		1.4	8534	1205	1140	2.95	2.79
	1.6	3501	969	958	0.39	0.38		1.6	8341	1228	1169	3.01	2.86
	1.8	2945	1018	1004	0.41	0.40		1.8	8142	1250	1197	3.06	2.93
	2	2487	1059	1030	0.42	0.41		2	7952	1277	1226	3.13	3.00
T3	2.2	1700	1096	1109	0.44	0.44		2.2	7759	1302	1252	3.19	3.06
	0.2	7692	877	810	1.04	0.96	T8	0.2	8958	999	922	2.45	2.26
	0.4	7414	906	838	1.07	0.99		0.4	8719	1025	947	2.51	2.32
	0.6	7137	934	872	1.10	1.03		0.6	8487	1050	977	2.56	2.38
	0.8	6877	962	905	1.14	1.07		0.8	8267	1075	1006	2.62	2.45
	1	6603	989	939	1.17	1.11		1	8043	1101	1035	2.68	2.51
	1.2	6322	1019	977	1.21	1.16		1.2	7829	1125	1064	2.73	2.57
	1.4	6018	1051	1017	1.24	1.20		1.4	7611	1151	1095	2.79	2.64
	1.6	5703	1087	1054	1.29	1.25		1.6	7385	1177	1127	2.84	2.71
	1.8	5341	1123	1092	1.33	1.29		1.8	7139	1204	1159	2.90	2.78
	2	5034	1155	1122	1.37	1.33		2	6918	1232	1189	2.96	2.85
T4	2.2	4588	1187	1170	1.40	1.38		2.2	6661	1259	1221	3.02	2.91
	0.2	8135	922	851	1.31	1.21	T9	0.2	9745	1063	983	2.60	2.41
	0.4	7873	950	878	1.35	1.25		0.4	9524	1087	1006	2.66	2.46
	0.6	7613	977	911	1.39	1.30		0.6	9314	1111	1034	2.72	2.53
	0.8	7368	1004	942	1.43	1.34		0.8	9110	1135	1060	2.78	2.60
	1	7114	1031	974	1.47	1.39		1	8909	1159	1087	2.84	2.66
	1.2	6859	1058	1008	1.51	1.44		1.2	8721	1181	1112	2.89	2.72
	1.4	6590	1088	1045	1.55	1.49		1.4	8534	1205	1140	2.95	2.79
	1.6	6311	1120	1080	1.59	1.54		1.6	8341	1228	1169	3.01	2.86
	1.8	5995	1152	1116	1.64	1.59		1.8	8142	1250	1197	3.06	2.93
	2	5723	1182	1146	1.68	1.63		2	7952	1277	1226	3.13	3.00
T5	2.2	5354	1213	1188	1.73	1.69		2.2	7759	1302	1252	3.19	3.06
	0.2	8596	967	892	1.62	1.50	T10	0.2	9916	1076	996	2.74	2.54
	0.4	8348	994	918	1.67	1.54		0.4	9697	1099	1018	2.80	2.60
	0.6	8104	1019	949	1.71	1.59		0.6	9491	1122	1045	2.86	2.67
	0.8	7874	1045	979	1.76	1.64		0.8	9290	1147	1071	2.93	2.73
	1	7638	1071	1009	1.80	1.70		1	9093	1170	1098	2.99	2.80
	1.2	7408	1097	1040	1.84	1.75		1.2	8909	1193	1122	3.04	2.86
	1.4	7169	1124	1073	1.89	1.80		1.4	8726	1216	1149	3.10	2.93
	1.6	6922	1153	1107	1.94	1.86		1.6	8537	1238	1177	3.16	3.00
	1.8	6648	1181	1141	1.98	1.92		1.8	8345	1260	1205	3.21	3.07
	2	6407	1210	1171	2.03	1.97		2	8160	1287	1233	3.28	3.15
T6	2.2	6106	1239	1206	2.08	2.03		2.2	7974	1311	1258	3.35	3.21

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - HIGH STATIC

DFG1803WH High Static													
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2	Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	6185	707	657	0.28	0.26	T6	0.2	9745	1063	983	2.49	2.31
	0.4	5843	739	689	0.29	0.27		0.4	9524	1087	1006	2.55	2.36
	0.6	5497	771	727	0.31	0.29		0.6	9314	1111	1034	2.61	2.43
	0.8	5171	801	766	0.32	0.31		0.8	9110	1135	1060	2.66	2.49
	1	4824	833	807	0.33	0.32		1	8909	1159	1087	2.72	2.55
	1.2	4426	873	861	0.35	0.34		1.2	8721	1181	1112	2.77	2.61
	1.4	3973	912	915	0.36	0.36		1.4	8534	1205	1140	2.83	2.67
	1.6	3501	969	958	0.39	0.38		1.6	8341	1228	1169	2.88	2.74
	1.8	2945	1018	1004	0.41	0.40		1.8	8142	1250	1197	2.93	2.81
	2	2487	1059	1030	0.42	0.41		2	7952	1277	1226	3.00	2.88
T2	2.2	1700	1096	1109	0.44	0.44	T7	2.2	7759	1302	1252	3.06	2.94
	0.2	6185	707	657	0.28	0.26		0.2	9916	1076	996	2.63	2.44
	0.4	5843	739	689	0.29	0.27		0.4	9697	1099	1018	2.69	2.49
	0.6	5497	771	727	0.31	0.29		0.6	9491	1122	1045	2.75	2.56
	0.8	5171	801	766	0.32	0.31		0.8	9290	1147	1071	2.81	2.62
	1	4824	833	807	0.33	0.32		1	9093	1170	1098	2.87	2.69
	1.2	4426	873	861	0.35	0.34		1.2	8909	1193	1122	2.92	2.75
	1.4	3973	912	915	0.36	0.36		1.4	8726	1216	1149	2.98	2.81
	1.6	3501	969	958	0.39	0.38		1.6	8537	1238	1177	3.03	2.88
	1.8	2945	1018	1004	0.41	0.40		1.8	8345	1260	1205	3.09	2.95
T3	2	2487	1059	1030	0.42	0.41		2	8160	1287	1233	3.15	3.02
	2.2	1700	1096	1109	0.44	0.44	T8	2.2	7974	1311	1258	3.21	3.08
	0.2	7692	877	810	1.04	0.96		0.2	9745	1063	983	2.49	2.31
	0.4	7414	906	838	1.07	0.99		0.4	9524	1087	1006	2.55	2.36
	0.6	7137	934	872	1.10	1.03		0.6	9314	1111	1034	2.61	2.43
	0.8	6877	962	905	1.14	1.07		0.8	9110	1135	1060	2.66	2.49
	1	6603	989	939	1.17	1.11		1	8909	1159	1087	2.72	2.55
	1.2	6322	1019	977	1.21	1.16		1.2	8721	1181	1112	2.77	2.61
	1.4	6018	1051	1017	1.24	1.20		1.4	8534	1205	1140	2.83	2.67
	1.6	5703	1087	1054	1.29	1.25		1.6	8341	1228	1169	2.88	2.74
	1.8	5341	1123	1092	1.33	1.29		1.8	8142	1250	1197	2.93	2.81
T4	2	5034	1155	1122	1.37	1.33	T9	2	7952	1277	1226	3.00	2.88
	2.2	4588	1187	1170	1.40	1.38		2.2	7759	1302	1252	3.06	2.94
	0.2	8135	922	851	1.31	1.21		0.2	9916	1076	996	2.63	2.44
	0.4	7873	950	878	1.35	1.25		0.4	9697	1099	1018	2.69	2.49
	0.6	7613	977	911	1.39	1.30		0.6	9491	1122	1045	2.75	2.56
	0.8	7368	1004	942	1.43	1.34		0.8	9290	1147	1071	2.81	2.62
	1	7114	1031	974	1.47	1.39		1	9093	1170	1098	2.87	2.69
	1.2	6859	1058	1008	1.51	1.44		1.2	8909	1193	1122	2.92	2.75
	1.4	6590	1088	1045	1.55	1.49		1.4	8726	1216	1149	2.98	2.81
	1.6	6311	1120	1080	1.59	1.54		1.6	8537	1238	1177	3.03	2.88
T5	1.8	5995	1152	1116	1.64	1.59	T10	1.8	8345	1260	1205	3.09	2.95
	2	5723	1182	1146	1.68	1.63		2	8160	1287	1233	3.15	3.02
	2.2	5354	1213	1188	1.73	1.69		2.2	7974	1311	1258	3.21	3.08
	0.2	8596	967	892	1.62	1.50		0.2	10084	1088	1007	2.77	2.57
	0.4	8348	994	918	1.67	1.54		0.4	9868	1111	1029	2.83	2.63
	0.6	8104	1019	949	1.71	1.59		0.6	9666	1134	1056	2.89	2.69
	0.8	7874	1045	979	1.76	1.64		0.8	9467	1158	1081	2.95	2.76
	1	7638	1071	1009	1.80	1.70		1	9274	1181	1107	3.01	2.83
	1.2	7408	1097	1040	1.84	1.75		1.2	9093	1203	1132	3.07	2.89
	1.4	7169	1124	1073	1.89	1.80		1.4	8913	1226	1158	3.13	2.95
	1.6	6922	1153	1107	1.94	1.86		1.6	8728	1248	1186	3.18	3.03
	1.8	6648	1181	1141	1.98	1.92		1.8	8542	1269	1213	3.24	3.09
	2	6407	1210	1171	2.03	1.97		2	8360	1296	1240	3.31	3.16
	2.2	6106	1239	1206	2.08	2.03		2.2	8179	1320	1265	3.37	3.23

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - HIGH STATIC

DFG2403WL High Static													
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2	Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	6244	749.60	675.85	0.82	0.74	T6	0.2	6475	770.77	694.47	0.90	0.81
	0.4	5984	787.93	719.50	0.86	0.79		0.4	6220	808.38	737.04	0.94	0.86
	0.6	5677	825.23	769.86	0.90	0.84		0.6	5923	845.12	785.72	0.99	0.92
	0.8	5348	862.38	816.57	0.94	0.89		0.8	5605	881.48	831.26	1.03	0.97
	1	5012	901.74	859.36	0.99	0.94		1	5282	919.75	873.29	1.07	1.02
	1.2	4679	940.88	905.38	1.03	0.99		1.2	4958	957.97	918.68	1.12	1.07
	1.4	4327	976.47	953.22	1.07	1.04		1.4	4619	992.96	965.37	1.16	1.13
	1.6	3965	1010.17	993.54	1.11	1.09		1.6	4270	1026.39	1005.26	1.20	1.17
	1.8	3607	1042.34	1032.89	1.14	1.13		1.8	3927	1058.44	1044.13	1.24	1.22
	2	3294	1070.82	1062.01	1.17	1.16		2	3620	1086.95	1073.69	1.27	1.25
T2	2.2	3008	1101.19	1090.72	1.21	1.20	T7	2.2	3337	1117.14	1103.14	1.30	1.29
	0.2	6540	776.75	699.73	0.92	0.83		0.2	8681	971.24	871.63	1.88	1.69
	0.4	6287	814.14	741.98	0.97	0.88		0.4	8466	1001.97	904.34	1.94	1.75
	0.6	5992	850.74	790.20	1.01	0.94		0.6	8255	1033.25	938.52	2.00	1.82
	0.8	5678	886.87	835.42	1.05	0.99		0.8	8037	1062.13	973.26	2.06	1.88
	1	5357	924.83	877.22	1.10	1.04		1	7813	1090.74	1007.84	2.11	1.95
	1.2	5037	962.79	922.43	1.14	1.10		1.2	7578	1120.38	1046.32	2.17	2.03
	1.4	4702	997.61	968.80	1.19	1.15		1.4	7349	1149.42	1082.21	2.23	2.10
	1.6	4356	1030.96	1008.57	1.22	1.20		1.6	7111	1179.32	1117.25	2.28	2.16
	1.8	4016	1062.98	1047.30	1.26	1.24		1.8	6884	1209.25	1150.90	2.34	2.23
T3	2	3712	1091.50	1076.98	1.30	1.28	T8	2	6636	1237.03	1183.12	2.40	2.29
	2.2	3430	1121.62	1106.63	1.33	1.31		2.2	6386	1264.66	1217.47	2.45	2.36
	0.2	9235	1020.88	915.84	2.26	2.03		0.2	7712	883.70	794.05	1.39	1.25
	0.4	9028	1049.92	946.29	2.32	2.09		0.4	7481	917.43	830.94	1.45	1.31
	0.6	8835	1079.74	977.42	2.39	2.16		0.6	7236	951.16	871.10	1.50	1.37
	0.8	8635	1106.79	1009.56	2.45	2.23		0.8	6977	983.29	910.51	1.55	1.44
	1	8433	1133.28	1042.21	2.51	2.31		1	6712	1015.94	948.39	1.60	1.50
	1.2	8217	1160.84	1078.63	2.57	2.39		1.2	6440	1049.29	990.12	1.66	1.56
	1.4	8009	1188.28	1111.88	2.63	2.46		1.4	6168	1081.01	1030.70	1.71	1.63
	1.6	7793	1216.95	1145.41	2.69	2.53		1.6	5884	1112.69	1068.07	1.76	1.68
T4	1.8	7590	1245.96	1177.47	2.76	2.61	T9	1.8	5610	1143.81	1104.19	1.80	1.74
	2	7356	1273.15	1209.76	2.82	2.68		2	5337	1172.19	1135.63	1.85	1.79
	2.2	7115	1299.83	1244.52	2.88	2.75		2.2	5072	1201.13	1168.38	1.89	1.84
	0.2	9578	1051.33	943.06	2.43	2.18		0.2	9543	1048.26	940.31	2.41	2.16
	0.4	9375	1079.33	972.17	2.49	2.25		0.4	9340	1076.36	969.56	2.47	2.23
	0.6	9190	1108.22	1001.59	2.56	2.31		0.6	9155	1105.36	999.14	2.54	2.29
	0.8	9001	1134.16	1032.15	2.62	2.38		0.8	8964	1131.40	1029.87	2.60	2.36
	1	8811	1159.44	1063.61	2.68	2.46		1	8773	1156.80	1061.44	2.66	2.44
	1.2	8606	1185.73	1098.65	2.74	2.54		1.2	8567	1183.22	1096.63	2.72	2.52
	1.4	8409	1212.16	1130.30	2.80	2.61		1.4	8369	1209.75	1128.44	2.78	2.59
T5	1.6	8205	1239.96	1162.80	2.86	2.69	T10	1.6	8164	1237.65	1161.04	2.84	2.66
	1.8	8016	1268.28	1193.81	2.93	2.76		1.8	7973	1266.04	1192.16	2.91	2.74
	2	7790	1294.99	1225.98	2.99	2.83		2	7746	1292.80	1224.35	2.97	2.81
	2.2	7554	1321.01	1260.74	3.05	2.91		2.2	7510	1318.89	1259.12	3.03	2.89
	0.2	9934	1082.83	971.31	2.68	2.40		0.2	9988	1087.55	975.56	2.72	2.44
	0.4	9735	1109.75	999.10	2.75	2.47		0.4	9790	1114.32	1003.15	2.79	2.51
	0.6	9559	1137.66	1026.90	2.82	2.54		0.6	9614	1142.08	1030.73	2.86	2.58
	0.8	9379	1162.45	1055.87	2.88	2.61		0.8	9435	1166.69	1059.45	2.92	2.65
	1	9201	1186.55	1086.05	2.94	2.69		1	9259	1190.63	1089.45	2.98	2.72
	1.2	9006	1211.55	1119.57	3.00	2.77		1.2	9066	1215.43	1122.73	3.04	2.81
	1.4	8818	1236.90	1149.57	3.06	2.84		1.4	8879	1240.61	1152.48	3.10	2.88
	1.6	8626	1263.70	1180.92	3.13	2.92		1.6	8688	1267.25	1183.65	3.17	2.96
	1.8	8449	1291.20	1210.75	3.20	3.00		1.8	8513	1294.62	1213.30	3.24	3.03
	2	8230	1317.28	1242.62	3.26	3.07		2	8295	1320.59	1245.10	3.30	3.11
	2.2	8000	1342.52	1277.14	3.32	3.16		2.2	8066	1345.71	1279.57	3.36	3.20

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - HIGH STATIC

DFG2403WM High Static													
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2	Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	6244	749.60	675.85	0.82	0.74	T6	0.2	9426	1037.90	931.05	2.33	2.09
	0.4	5984	787.93	719.50	0.86	0.79		0.4	9222	1066.36	960.74	2.39	2.16
	0.6	5677	825.23	769.86	0.90	0.84		0.6	9034	1095.67	990.90	2.46	2.22
	0.8	5348	862.38	816.57	0.94	0.89		0.8	8840	1122.09	1022.16	2.52	2.29
	1	5012	901.74	859.36	0.99	0.94		1	8645	1147.90	1054.14	2.58	2.37
	1.2	4679	940.88	905.38	1.03	0.99		1.2	8435	1174.75	1089.80	2.64	2.45
	1.4	4327	976.47	953.22	1.07	1.04		1.4	8233	1201.63	1122.16	2.70	2.52
	1.6	3965	1010.17	993.54	1.11	1.09		1.6	8024	1229.82	1155.12	2.76	2.59
	1.8	3607	1042.34	1032.89	1.14	1.13		1.8	7829	1258.46	1186.60	2.82	2.66
	2	3294	1070.82	1062.01	1.17	1.16		2	7599	1285.39	1218.84	2.88	2.73
T2	2.2	3008	1101.19	1090.72	1.21	1.20	T7	2.2	7361	1311.71	1253.62	2.94	2.81
	0.2	6540	776.75	699.73	0.92	0.83		0.2	9658	1058.41	949.40	2.48	2.23
	0.4	6287	814.14	741.98	0.97	0.88		0.4	9456	1086.16	978.21	2.55	2.30
	0.6	5992	850.74	790.20	1.01	0.94		0.6	9273	1114.84	1007.25	2.62	2.36
	0.8	5678	886.87	835.42	1.05	0.99		0.8	9086	1140.52	1037.45	2.68	2.43
	1	5357	924.83	877.22	1.10	1.04		1	8899	1165.52	1068.62	2.73	2.51
	1.2	5037	962.79	922.43	1.14	1.10		1.2	8697	1191.53	1103.33	2.80	2.59
	1.4	4702	997.61	968.80	1.19	1.15		1.4	8501	1217.71	1134.61	2.86	2.66
	1.6	4356	1030.96	1008.57	1.22	1.20		1.6	8300	1245.30	1166.86	2.92	2.74
	1.8	4016	1062.98	1047.30	1.26	1.24		1.8	8114	1273.45	1197.61	2.99	2.81
T3	2	3712	1091.50	1076.98	1.30	1.28	T8	2	7889	1300.02	1229.73	3.05	2.89
	2.2	3430	1121.62	1106.63	1.33	1.31		2.2	7655	1325.88	1264.46	3.11	2.97
	0.2	9235	1020.88	915.84	2.26	2.03		0.2	9426	1037.90	931.05	2.33	2.09
	0.4	9028	1049.92	946.29	2.32	2.09		0.4	9222	1066.36	960.74	2.39	2.16
	0.6	8835	1079.74	977.42	2.39	2.16		0.6	9034	1095.67	990.90	2.46	2.22
	0.8	8635	1106.79	1009.56	2.45	2.23		0.8	8840	1122.09	1022.16	2.52	2.29
	1	8433	1133.28	1042.21	2.51	2.31		1	8645	1147.90	1054.14	2.58	2.37
	1.2	8217	1160.84	1078.63	2.57	2.39		1.2	8435	1174.75	1089.80	2.64	2.45
	1.4	8009	1188.28	1111.88	2.63	2.46		1.4	8233	1201.63	1122.16	2.70	2.52
	1.6	7793	1216.95	1145.41	2.69	2.53		1.6	8024	1229.82	1155.12	2.76	2.59
T4	1.8	7590	1245.96	1177.47	2.76	2.61	T9	1.8	7829	1258.46	1186.60	2.82	2.66
	2	7356	1273.15	1209.76	2.82	2.68		2	7599	1285.39	1218.84	2.88	2.73
	2.2	7115	1299.83	1244.52	2.88	2.75		2.2	7361	1311.71	1253.62	2.94	2.81
	0.2	9578	1051.33	943.06	2.43	2.18		0.2	9658	1058.41	949.40	2.48	2.23
	0.4	9375	1079.33	972.17	2.49	2.25		0.4	9456	1086.16	978.21	2.55	2.30
	0.6	9190	1108.22	1001.59	2.56	2.31		0.6	9273	1114.84	1007.25	2.62	2.36
	0.8	9001	1134.16	1032.15	2.62	2.38		0.8	9086	1140.52	1037.45	2.68	2.43
	1	8811	1159.44	1063.61	2.68	2.46		1	8899	1165.52	1068.62	2.73	2.51
	1.2	8606	1185.73	1098.65	2.74	2.54		1.2	8697	1191.53	1103.33	2.80	2.59
	1.4	8409	1212.16	1130.30	2.80	2.61		1.4	8501	1217.71	1134.61	2.86	2.66
T5	1.6	8205	1239.96	1162.80	2.86	2.69	T10	1.6	8300	1245.30	1166.86	2.92	2.74
	1.8	8016	1268.28	1193.81	2.93	2.76		1.8	8114	1273.45	1197.61	2.99	2.81
	2	7790	1294.99	1225.98	2.99	2.83		2	7889	1300.02	1229.73	3.05	2.89
	2.2	7554	1321.01	1260.74	3.05	2.91		2.2	7655	1325.88	1264.46	3.11	2.97
	0.2	9934	1082.83	971.31	2.68	2.40		0.2	10094	1096.84	983.92	2.80	2.51
	0.4	9735	1109.75	999.10	2.75	2.47		0.4	9896	1123.29	1011.13	2.87	2.58
	0.6	9559	1137.66	1026.90	2.82	2.54		0.6	9723	1150.75	1038.28	2.94	2.65
	0.8	9379	1162.45	1055.87	2.88	2.61		0.8	9546	1175.03	1066.54	3.00	2.72
	1	9201	1186.55	1086.05	2.94	2.69		1	9373	1198.64	1096.15	3.06	2.80
	1.2	9006	1211.55	1119.57	3.00	2.77		1.2	9183	1223.06	1128.95	3.12	2.88
T5	1.4	8818	1236.90	1149.57	3.06	2.84		1.4	8998	1247.91	1158.22	3.18	2.96
	1.6	8626	1263.70	1180.92	3.13	2.92		1.6	8810	1274.23	1189.02	3.25	3.03
	1.8	8449	1291.20	1210.75	3.20	3.00		1.8	8638	1301.32	1218.30	3.32	3.11
	2	8230	1317.28	1242.62	3.26	3.07		2	8423	1327.07	1249.97	3.39	3.19
	2.2	8000	1342.52	1277.14	3.32	3.16		2.2	8195	1351.94	1284.30	3.45	3.28

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - HIGH STATIC

DFG2403WH High Static													
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2	Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	6244	749.60	675.85	0.82	0.74	T6	0.2	9880	1078.05	967.02	2.64	2.37
	0.4	5984	787.93	719.50	0.86	0.79		0.4	9681	1105.14	995.00	2.71	2.44
	0.6	5677	825.23	769.86	0.90	0.84		0.6	9503	1133.20	1023.04	2.78	2.51
	0.8	5348	862.38	816.57	0.94	0.89		0.8	9321	1158.16	1052.25	2.84	2.58
	1	5012	901.74	859.36	0.99	0.94		1	9142	1182.44	1082.63	2.90	2.65
	1.2	4679	940.88	905.38	1.03	0.99		1.2	8946	1207.63	1116.38	2.96	2.73
	1.4	4327	976.47	953.22	1.07	1.04		1.4	8756	1233.14	1146.63	3.02	2.81
	1.6	3965	1010.17	993.54	1.11	1.09		1.6	8562	1260.10	1178.16	3.09	2.89
	1.8	3607	1042.34	1032.89	1.14	1.13		1.8	8384	1287.74	1208.18	3.15	2.96
	2	3294	1070.82	1062.01	1.17	1.16		2	8164	1313.92	1240.10	3.22	3.04
T2	2.2	3008	1101.19	1090.72	1.21	1.20	T7	2.2	7933	1339.29	1274.68	3.28	3.12
	0.2	6540	776.75	699.73	0.92	0.83		0.2	10094	1096.84	983.92	2.80	2.51
	0.4	6287	814.14	741.98	0.97	0.88		0.4	9896	1123.29	1011.13	2.87	2.58
	0.6	5992	850.74	790.20	1.01	0.94		0.6	9723	1150.75	1038.28	2.94	2.65
	0.8	5678	886.87	835.42	1.05	0.99		0.8	9546	1175.03	1066.54	3.00	2.72
	1	5357	924.83	877.22	1.10	1.04		1	9373	1198.64	1096.15	3.06	2.80
	1.2	5037	962.79	922.43	1.14	1.10		1.2	9183	1223.06	1128.95	3.12	2.88
	1.4	4702	997.61	968.80	1.19	1.15		1.4	8998	1247.91	1158.22	3.18	2.96
	1.6	4356	1030.96	1008.57	1.22	1.20		1.6	8810	1274.23	1189.02	3.25	3.03
	1.8	4016	1062.98	1047.30	1.26	1.24		1.8	8638	1301.32	1218.30	3.32	3.11
T3	2	3712	1091.50	1076.98	1.30	1.28	T8	2	8423	1327.07	1249.97	3.39	3.19
	2.2	3430	1121.62	1106.63	1.33	1.31		2.2	8195	1351.94	1284.30	3.45	3.28
	0.2	9235	1020.88	915.84	2.26	2.03		0.2	9880	1078.05	967.02	2.64	2.37
	0.4	9028	1049.92	946.29	2.32	2.09		0.4	9681	1105.14	995.00	2.71	2.44
	0.6	8835	1079.74	977.42	2.39	2.16		0.6	9503	1133.20	1023.04	2.78	2.51
	0.8	8635	1106.79	1009.56	2.45	2.23		0.8	9321	1158.16	1052.25	2.84	2.58
	1	8433	1133.28	1042.21	2.51	2.31		1	9142	1182.44	1082.63	2.90	2.65
	1.2	8217	1160.84	1078.63	2.57	2.39		1.2	8946	1207.63	1116.38	2.96	2.73
	1.4	8009	1188.28	1111.88	2.63	2.46		1.4	8756	1233.14	1146.63	3.02	2.81
	1.6	7793	1216.95	1145.41	2.69	2.53		1.6	8562	1260.10	1178.16	3.09	2.89
T4	1.8	7590	1245.96	1177.47	2.76	2.61	T9	1.8	8384	1287.74	1208.18	3.15	2.96
	2	7356	1273.15	1209.76	2.82	2.68		2	8164	1313.92	1240.10	3.22	3.04
	2.2	7115	1299.83	1244.52	2.88	2.75		2.2	7933	1339.29	1274.68	3.28	3.12
	0.2	9578	1051.33	943.06	2.43	2.18		0.2	10094	1096.84	983.92	2.80	2.51
	0.4	9375	1079.33	972.17	2.49	2.25		0.4	9896	1123.29	1011.13	2.87	2.58
	0.6	9190	1108.22	1001.59	2.56	2.31		0.6	9723	1150.75	1038.28	2.94	2.65
	0.8	9001	1134.16	1032.15	2.62	2.38		0.8	9546	1175.03	1066.54	3.00	2.72
	1	8811	1159.44	1063.61	2.68	2.46		1	9373	1198.64	1096.15	3.06	2.80
	1.2	8606	1185.73	1098.65	2.74	2.54		1.2	9183	1223.06	1128.95	3.12	2.88
	1.4	8409	1212.16	1130.30	2.80	2.61		1.4	8998	1247.91	1158.22	3.18	2.96
T5	1.6	8205	1239.96	1162.80	2.86	2.69	T10	1.6	8810	1274.23	1189.02	3.25	3.03
	1.8	8016	1268.28	1193.81	2.93	2.76		1.8	8638	1301.32	1218.30	3.32	3.11
	2	7790	1294.99	1225.98	2.99	2.83		2	8423	1327.07	1249.97	3.39	3.19
	2.2	7554	1321.01	1260.74	3.05	2.91		2.2	8195	1351.94	1284.30	3.45	3.28
	0.2	9934	1082.83	971.31	2.68	2.40		0.2	10398	1123.40	1007.90	3.04	2.73
	0.4	9735	1109.75	999.10	2.75	2.47		0.4	10203	1148.96	1034.08	3.11	2.80
	0.6	9559	1137.66	1026.90	2.82	2.54		0.6	10034	1175.54	1060.09	3.18	2.87
	0.8	9379	1162.45	1055.87	2.88	2.61		0.8	9863	1198.86	1087.04	3.24	2.94
	1	9201	1186.55	1086.05	2.94	2.69		1	9698	1221.60	1115.55	3.30	3.02
	1.2	9006	1211.55	1119.57	3.00	2.77		1.2	9516	1244.95	1146.91	3.37	3.10
T5	1.4	8818	1236.90	1149.57	3.06	2.84	T10	1.4	9336	1268.83	1174.80	3.43	3.18
	1.6	8626	1263.70	1180.92	3.13	2.92		1.6	9156	1294.15	1204.49	3.50	3.26
	1.8	8449	1291.20	1210.75	3.20	3.00		1.8	8992	1320.36	1232.65	3.57	3.33
	2	8230	1317.28	1242.62	3.26	3.07		2	8783	1345.41	1263.81	3.64	3.42
	2.2	8000	1342.52	1277.14	3.32	3.16		2.2	8560	1369.49	1297.58	3.70	3.51

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - HIGH STATIC

DFG3003WL High Static													
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2	Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	7461	860.85	773.86	1.28	1.15	T6	0.2	7565	870.34	782.24	1.33	1.19
	0.4	7225	895.36	811.88	1.33	1.21		0.4	7331	904.52	819.79	1.38	1.25
	0.6	6970	929.72	853.70	1.39	1.27		0.6	7080	938.62	860.91	1.43	1.31
	0.8	6700	962.70	894.34	1.43	1.33		0.8	6815	971.25	901.04	1.48	1.38
	1	6423	996.45	933.07	1.49	1.39		1	6543	1004.54	939.42	1.53	1.43
	1.2	6141	1030.79	975.58	1.54	1.45		1.2	6265	1038.47	981.61	1.59	1.50
	1.4	5856	1063.18	1017.40	1.58	1.52		1.4	5986	1070.58	1022.91	1.63	1.56
	1.6	5560	1095.26	1055.31	1.63	1.57		1.6	5695	1102.50	1060.60	1.68	1.62
	1.8	5272	1126.62	1092.02	1.68	1.63		1.8	5412	1133.76	1097.07	1.73	1.67
	2	4993	1155.07	1123.15	1.72	1.67		2	5136	1162.18	1128.33	1.77	1.72
T2	2.2	4724	1184.30	1155.33	1.77	1.72	T7	2.2	4869	1191.29	1160.75	1.82	1.77
	0.2	7698	882.38	792.88	1.39	1.25		0.2	9308	1027.33	921.60	2.25	2.02
	0.4	7466	916.15	829.83	1.44	1.30		0.4	9101	1056.14	951.76	2.32	2.09
	0.6	7220	949.92	870.09	1.49	1.37		0.6	8910	1085.77	982.52	2.38	2.15
	0.8	6961	982.10	909.56	1.54	1.43		0.8	8713	1112.59	1014.32	2.44	2.22
	1	6695	1014.81	947.49	1.60	1.49		1	8513	1138.82	1046.72	2.50	2.30
	1.2	6423	1048.22	989.27	1.65	1.56		1.2	8300	1166.11	1082.85	2.56	2.37
	1.4	6150	1079.98	1029.93	1.70	1.62		1.4	8094	1193.34	1115.77	2.62	2.45
	1.6	5865	1111.68	1067.33	1.75	1.68		1.6	7881	1221.83	1149.08	2.68	2.52
	1.8	5590	1142.82	1103.48	1.80	1.74		1.8	7681	1250.70	1180.93	2.74	2.59
T3	2	5317	1171.19	1134.90	1.84	1.78	T8	2	7448	1277.79	1213.21	2.80	2.66
	2.2	5052	1200.15	1167.62	1.89	1.84		2.2	7208	1304.34	1247.98	2.86	2.74
	0.2	11015	1176.47	1056.20	3.59	3.23		0.2	7565	870.34	782.24	1.33	1.19
	0.4	10823	1200.24	1080.52	3.67	3.30		0.4	7331	904.52	819.79	1.38	1.25
	0.6	10659	1224.94	1104.92	3.74	3.37		0.6	7080	938.62	860.91	1.43	1.31
	0.8	10492	1246.37	1129.32	3.81	3.45		0.8	6815	971.25	901.04	1.48	1.38
	1	10340	1267.70	1155.54	3.87	3.53		1	6543	1004.54	939.42	1.53	1.43
	1.2	10171	1288.96	1183.59	3.94	3.61		1.2	6265	1038.47	981.61	1.59	1.50
	1.4	9992	1310.77	1208.79	4.00	3.69		1.4	5986	1070.58	1022.91	1.63	1.56
	1.6	9821	1333.65	1235.88	4.07	3.77		1.6	5695	1102.50	1060.60	1.68	1.62
T4	1.8	9668	1357.66	1261.48	4.15	3.85	T9	1.8	5412	1133.76	1097.07	1.73	1.67
	2	9469	1380.80	1290.92	4.22	3.94		2	5136	1162.18	1128.33	1.77	1.72
	2.2	9257	1402.95	1322.62	4.28	4.04		2.2	4869	1191.29	1160.75	1.82	1.77
	0.2	11354	1204.90	1082.40	3.94	3.54		0.2	11346	1204.29	1081.83	3.94	3.54
	0.4	11162	1227.72	1105.90	4.02	3.62		0.4	11154	1227.13	1105.34	4.01	3.61
	0.6	10994	1251.32	1129.95	4.10	3.70		0.6	10987	1250.75	1129.40	4.09	3.69
	0.8	10825	1271.75	1153.07	4.16	3.78		0.8	10818	1271.20	1152.54	4.16	3.77
	1	10677	1292.59	1177.98	4.23	3.86		1	10670	1292.05	1177.48	4.22	3.85
	1.2	10512	1312.78	1203.92	4.30	3.94		1.2	10505	1312.26	1203.47	4.29	3.93
	1.4	10328	1333.36	1227.71	4.37	4.02		1.4	10321	1332.87	1227.29	4.36	4.01
T5	1.6	10157	1354.59	1253.10	4.44	4.10	T10	1.6	10150	1354.14	1252.73	4.43	4.10
	1.8	10005	1377.03	1277.06	4.51	4.18		1.8	9998	1376.61	1276.72	4.50	4.17
	2	9811	1398.76	1305.01	4.58	4.27		2	9804	1398.38	1304.71	4.57	4.27
	2.2	9604	1419.58	1334.83	4.65	4.37		2.2	9597	1419.23	1334.58	4.64	4.36
	0.2	11801	1241.29	1116.53	4.49	4.04		0.2	11813	1242.23	1117.42	4.51	4.05
	0.4	11605	1262.92	1139.29	4.57	4.12		0.4	11617	1263.82	1140.17	4.58	4.14
	0.6	11427	1284.91	1163.84	4.65	4.21		0.6	11438	1285.78	1164.76	4.66	4.23
	0.8	11245	1304.11	1185.45	4.72	4.29		0.8	11256	1304.94	1186.33	4.73	4.30
	1	11097	1324.81	1208.55	4.79	4.37		1	11107	1325.65	1209.38	4.81	4.39
	1.2	10933	1343.70	1231.17	4.86	4.45		1.2	10943	1344.50	1231.90	4.88	4.47
	1.4	10730	1362.49	1253.21	4.93	4.53		1.4	10740	1363.24	1253.90	4.95	4.55
	1.6	10551	1380.97	1275.89	5.00	4.62		1.6	10560	1381.64	1276.49	5.01	4.63
	1.8	10391	1400.71	1297.23	5.07	4.69		1.8	10400	1401.30	1297.76	5.08	4.71
	2	10201	1419.91	1322.27	5.14	4.78		2	10210	1420.41	1322.70	5.15	4.80
	2.2	10003	1438.50	1348.24	5.20	4.88		2.2	10012	1438.93	1348.53	5.22	4.89

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - HIGH STATIC

DFG3003WM High Static													
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2	Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	7461	861	774	1.28	1.15	T6	0.2	9308	1027	922	2.25	2.02
	0.4	7225	895	812	1.33	1.21		0.4	9101	1056	952	2.32	2.09
	0.6	6970	930	854	1.39	1.27		0.6	8910	1086	983	2.38	2.15
	0.8	6700	963	894	1.43	1.33		0.8	8713	1113	1014	2.44	2.22
	1	6423	996	933	1.49	1.39		1	8513	1139	1047	2.50	2.30
	1.2	6141	1031	976	1.54	1.45		1.2	8300	1166	1083	2.56	2.37
	1.4	5856	1063	1017	1.58	1.52		1.4	8094	1193	1116	2.62	2.45
	1.6	5560	1095	1055	1.63	1.57		1.6	7881	1222	1149	2.68	2.52
	1.8	5272	1127	1092	1.68	1.63		1.8	7681	1251	1181	2.74	2.59
	2	4993	1155	1123	1.72	1.67		2	7448	1278	1213	2.80	2.66
T2	2.2	4724	1184	1155	1.77	1.72	T7	2.2	7208	1304	1248	2.86	2.74
	0.2	7698	882	793	1.39	1.25		0.2	10862	1163	1044	3.45	3.09
	0.4	7466	916	830	1.44	1.30		0.4	10669	1188	1069	3.52	3.17
	0.6	7220	950	870	1.49	1.37		0.6	10504	1213	1094	3.59	3.24
	0.8	6961	982	910	1.54	1.43		0.8	10337	1235	1119	3.66	3.31
	1	6695	1015	947	1.60	1.49		1	10183	1256	1145	3.72	3.39
	1.2	6423	1048	989	1.65	1.56		1.2	10011	1278	1174	3.78	3.48
	1.4	6150	1080	1030	1.70	1.62		1.4	9833	1300	1200	3.85	3.55
	1.6	5865	1112	1067	1.75	1.68		1.6	9661	1324	1228	3.92	3.64
	1.8	5590	1143	1103	1.80	1.74		1.8	9506	1349	1254	3.99	3.71
T3	2	5317	1171	1135	1.84	1.78	T8	2	9305	1372	1284	4.06	3.80
	2.2	5052	1200	1168	1.89	1.84		2.2	9090	1395	1317	4.13	3.90
	0.2	11015	1176	1056	3.59	3.23		0.2	9308	1027	922	1.91	1.72
	0.4	10823	1200	1081	3.67	3.30		0.4	9101	1056	952	1.98	1.80
	0.6	10659	1225	1105	3.74	3.37		0.6	8910	1086	983	2.06	1.89
	0.8	10492	1246	1129	3.81	3.45		0.8	8713	1113	1014	2.13	1.98
	1	10340	1268	1156	3.87	3.53		1	8513	1139	1047	2.20	2.06
	1.2	10171	1289	1184	3.94	3.61		1.2	8300	1166	1083	2.28	2.15
	1.4	9992	1311	1209	4.00	3.69		1.4	8094	1193	1116	2.35	2.24
	1.6	9821	1334	1236	4.07	3.77		1.6	7881	1222	1149	2.42	2.33
T4	1.8	9668	1358	1261	4.15	3.85	T9	1.8	7681	1251	1181	2.49	2.41
	2	9469	1381	1291	4.22	3.94		2	7448	1278	1213	2.55	2.47
	2.2	9257	1403	1323	4.28	4.04		2.2	7208	1304	1248	2.61	2.55
	0.2	11354	1205	1082	3.94	3.54		0.2	11346	1204	1082	3.94	3.54
	0.4	11162	1228	1106	4.02	3.62		0.4	11154	1227	1105	4.01	3.61
	0.6	10994	1251	1130	4.10	3.70		0.6	10987	1251	1129	4.09	3.69
	0.8	10825	1272	1153	4.16	3.78		0.8	10818	1271	1153	4.16	3.77
	1	10677	1293	1178	4.23	3.86		1	10670	1292	1177	4.22	3.85
	1.2	10512	1313	1204	4.30	3.94		1.2	10505	1312	1203	4.29	3.93
	1.4	10328	1333	1228	4.37	4.02		1.4	10321	1333	1227	4.36	4.01
T5	1.6	10157	1355	1253	4.44	4.10	T10	1.6	10150	1354	1253	4.43	4.10
	1.8	10005	1377	1277	4.51	4.18		1.8	9998	1377	1277	4.50	4.17
	2	9811	1399	1305	4.58	4.27		2	9804	1398	1305	4.57	4.27
	2.2	9604	1420	1335	4.65	4.37		2.2	9597	1419	1335	4.64	4.36
	0.2	11801	1241	1117	4.49	4.04		0.2	11813	1242	1117	4.51	4.05
	0.4	11605	1263	1139	4.57	4.12		0.4	11617	1264	1140	4.58	4.14
	0.6	11427	1285	1164	4.65	4.21		0.6	11438	1286	1165	4.66	4.23
	0.8	11245	1304	1185	4.72	4.29		0.8	11256	1305	1186	4.73	4.30
	1	11097	1325	1209	4.79	4.37		1	11107	1326	1209	4.81	4.39
	1.2	10933	1344	1231	4.86	4.45		1.2	10943	1345	1232	4.88	4.47
	1.4	10730	1362	1253	4.93	4.53		1.4	10740	1363	1254	4.95	4.55
	1.6	10551	1381	1276	5.00	4.62		1.6	10560	1382	1276	5.01	4.63
	1.8	10391	1401	1297	5.07	4.69		1.8	10400	1401	1298	5.08	4.71
	2	10201	1420	1322	5.14	4.78		2	10210	1420	1323	5.15	4.80
	2.2	10003	1438	1348	5.20	4.88		2.2	10012	1439	1349	5.22	4.89

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

DIRECT DRIVE - HIGH STATIC

DFG3003WH High Static													
Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2	Speed Tap	Static	Airflow	RPM 1	RPM 2	BHP 1	BHP 2
T1	0.2	7461	861	774	1.28	1.15	T6	0.2	9880	1078	967	2.64	2.37
	0.4	7225	895	812	1.33	1.21		0.4	9681	1105	995	2.71	2.44
	0.6	6970	930	854	1.39	1.27		0.6	9503	1133	1023	2.78	2.51
	0.8	6700	963	894	1.43	1.33		0.8	9321	1158	1052	2.84	2.58
	1	6423	996	933	1.49	1.39		1	9142	1182	1083	2.90	2.65
	1.2	6141	1031	976	1.54	1.45		1.2	8946	1208	1116	2.96	2.73
	1.4	5856	1063	1017	1.58	1.52		1.4	8756	1233	1147	3.02	2.81
	1.6	5560	1095	1055	1.63	1.57		1.6	8562	1260	1178	3.09	2.89
	1.8	5272	1127	1092	1.68	1.63		1.8	8384	1288	1208	3.15	2.96
	2	4993	1155	1123	1.72	1.67		2	8164	1314	1240	3.22	3.04
T2	2.2	4724	1184	1155	1.77	1.72		2.2	7933	1339	1275	3.28	3.12
	0.2	7698	882	793	1.39	1.25	T7	0.2	10862	1163	1044	3.45	3.09
	0.4	7466	916	830	1.44	1.30		0.4	10669	1188	1069	3.52	3.17
	0.6	7220	950	870	1.49	1.37		0.6	10504	1213	1094	3.59	3.24
	0.8	6961	982	910	1.54	1.43		0.8	10337	1235	1119	3.66	3.31
	1	6695	1015	947	1.60	1.49		1	10183	1256	1145	3.72	3.39
	1.2	6423	1048	989	1.65	1.56		1.2	10011	1278	1174	3.78	3.48
	1.4	6150	1080	1030	1.70	1.62		1.4	9833	1300	1200	3.85	3.55
	1.6	5865	1112	1067	1.75	1.68		1.6	9661	1324	1228	3.92	3.64
	1.8	5590	1143	1103	1.80	1.74		1.8	9506	1349	1254	3.99	3.71
	2	5317	1171	1135	1.84	1.78		2	9305	1372	1284	4.06	3.80
T3	2.2	5052	1200	1168	1.89	1.84		2.2	9090	1395	1317	4.13	3.90
	0.2	11015	1176	1056	3.59	3.23	T8	0.2	9880	1078	967	2.64	2.37
	0.4	10823	1200	1081	3.67	3.30		0.4	9681	1105	995	2.71	2.44
	0.6	10659	1225	1105	3.74	3.37		0.6	9503	1133	1023	2.78	2.51
	0.8	10492	1246	1129	3.81	3.45		0.8	9321	1158	1052	2.84	2.58
	1	10340	1268	1156	3.87	3.53		1	9142	1182	1083	2.90	2.65
	1.2	10171	1289	1184	3.94	3.61		1.2	8946	1208	1116	2.96	2.73
	1.4	9992	1311	1209	4.00	3.69		1.4	8756	1233	1147	3.02	2.81
	1.6	9821	1334	1236	4.07	3.77		1.6	8562	1260	1178	3.09	2.89
	1.8	9668	1358	1261	4.15	3.85		1.8	8384	1288	1208	3.15	2.96
	2	9469	1381	1291	4.22	3.94		2	8164	1314	1240	3.22	3.04
T4	2.2	9257	1403	1323	4.28	4.04		2.2	7933	1339	1275	3.28	3.12
	0.2	11354	1205	1082	3.94	3.54	T9	0.2	11346	1204	1082	3.94	3.54
	0.4	11162	1228	1106	4.02	3.62		0.4	11154	1227	1105	4.01	3.61
	0.6	10994	1251	1130	4.10	3.70		0.6	10987	1251	1129	4.09	3.69
	0.8	10825	1272	1153	4.16	3.78		0.8	10818	1271	1153	4.16	3.77
	1	10677	1293	1178	4.23	3.86		1	10670	1292	1177	4.22	3.85
	1.2	10512	1313	1204	4.30	3.94		1.2	10505	1312	1203	4.29	3.93
	1.4	10328	1333	1228	4.37	4.02		1.4	10321	1333	1227	4.36	4.01
	1.6	10157	1355	1253	4.44	4.10		1.6	10150	1354	1253	4.43	4.10
	1.8	10005	1377	1277	4.51	4.18		1.8	9998	1377	1277	4.50	4.17
	2	9811	1399	1305	4.58	4.27		2	9804	1398	1305	4.57	4.27
T5	2.2	9604	1420	1335	4.65	4.37		2.2	9597	1419	1335	4.64	4.36
	0.2	11801	1241	1117	4.49	4.04	T10	0.2	11813	1242	1117	4.51	4.05
	0.4	11605	1263	1139	4.57	4.12		0.4	11617	1264	1140	4.58	4.14
	0.6	11427	1285	1164	4.65	4.21		0.6	11438	1286	1165	4.66	4.23
	0.8	11245	1304	1185	4.72	4.29		0.8	11256	1305	1186	4.73	4.30
	1	11097	1325	1209	4.79	4.37		1	11107	1326	1209	4.81	4.39
	1.2	10933	1344	1231	4.86	4.45		1.2	10943	1345	1232	4.88	4.47
	1.4	10730	1362	1253	4.93	4.53		1.4	10740	1363	1254	4.95	4.55
	1.6	10551	1381	1276	5.00	4.62		1.6	10560	1382	1276	5.01	4.63
	1.8	10391	1401	1297	5.07	4.69		1.8	10400	1401	1298	5.08	4.71
	2	10201	1420	1322	5.14	4.78		2	10210	1420	1323	5.15	4.80
T6	2.2	10003	1438	1348	5.20	4.88		2.2	10012	1439	1349	5.22	4.89

NOTES:

High static airflow requires installation of high static kit.

Air flow tables represent dry coil with filters installed; SCFM correction factor for wet coil is 4%.

APPENDIX A BLOWER PERFORMANCE DATA

MODELS: DFG3003DL, DFG3004DL, DFG3007DL
STANDARD STATIC TO 5HP (0.2 ~1.2 ESP)

CFM	0.2					0.4					0.6				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
7000	819	736	38	1.06	0.95	874	793	39	1.20	1.09	928	848	41	1.35	1.23
7500	864	775	41	1.27	1.14	916	829	43	1.42	1.29	967	879	44	1.58	1.44
8000	908	815	45	1.51	1.35	958	866	46	1.67	1.51	1007	912	48	1.85	1.68
8500	953	854	49	1.78	1.60	1001	903	50	1.96	1.77	1047	946	52	2.15	1.94
9000	998	894	53	2.08	1.87	1044	941	54	2.28	2.05	1088	982	56	2.47	2.24
9500	1042	934	57	2.42	2.17	1087	979	59	2.62	2.37	1130	1019	61	2.83	2.56
10000	1087	975	62	2.78	2.50	1130	1018	64	3.01	2.71	1172	1057	65	3.22	2.91
10500	1131	1015	67	3.18	2.86	1174	1057	69	3.42	3.08	1214	1097	71	3.65	3.30
11000	1176	1056	72	3.61	3.24	1217	1096	74	3.86	3.48	1257	1138	76	4.10	3.71
CFM	0.8					1					1.2				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
5600	976	901	42	1.50	1.38	1023	955	44	1.66	1.55	1070	1013	46	1.85	1.75
6000	1012	930	46	1.74	1.60	1057	982	48	1.92	1.78	1102	1039	49	2.11	1.98
6400	1050	960	50	2.02	1.85	1092	1010	51	2.20	2.03	1135	1065	53	2.40	2.24
6800	1088	992	54	2.33	2.12	1128	1040	55	2.52	2.32	1170	1092	57	2.72	2.53
7200	1128	1026	58	2.67	2.43	1166	1071	60	2.86	2.63	1206	1119	61	3.07	2.84
7600	1168	1061	62	3.04	2.76	1206	1104	64	3.24	2.96	1244	1147	66	3.45	3.17
8000	1210	1098	67	3.44	3.13	1246	1138	69	3.65	3.33	1283	1177	71	3.86	3.53
8400	1252	1137	73	3.88	3.52	1288	1173	74	4.09	3.72	1324	1206	76	4.29	3.92
8800	1296	1177	78	4.34	3.94	1332	1209	80	4.56	4.14	1366	1237	81	4.76	4.33

MODELS: DFG3003WL, DFG3004WL, DFG3007WL
STANDARD STATIC TO 5HP (0.8 ~2.2 ESP)

CFM	0.8					1					1.2					1.4				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
7000	976	901	42	1.50	1.38	1023	955	44	1.66	1.55	1070	1013	46	1.85	1.75	1116	1059	48	2.03	1.93
7500	1012	930	46	1.74	1.60	1057	982	48	1.92	1.78	1102	1039	49	2.11	1.98	1146	1082	51	2.30	2.17
8000	1050	960	50	2.02	1.85	1092	1010	51	2.20	2.03	1135	1065	53	2.40	2.24	1178	1106	55	2.60	2.44
8500	1088	992	54	2.33	2.12	1128	1040	55	2.52	2.32	1170	1092	57	2.72	2.53	1211	1132	59	2.93	2.73
9000	1128	1026	58	2.67	2.43	1166	1071	60	2.86	2.63	1206	1119	61	3.07	2.84	1245	1158	63	3.28	3.05
9500	1168	1061	62	3.04	2.76	1206	1104	64	3.24	2.96	1244	1147	66	3.45	3.17	1281	1185	68	3.67	3.39
10000	1210	1098	67	3.44	3.13	1246	1138	69	3.65	3.33	1283	1177	71	3.86	3.53	1319	1214	72	4.07	3.75
10500	1252	1137	73	3.88	3.52	1288	1173	74	4.09	3.72	1324	1206	76	4.29	3.92	1358	1243	77	4.51	4.14
11000	1296	1177	78	4.34	3.94	1332	1209	80	4.56	4.14	1366	1237	81	4.76	4.33					
CFM	1.6					1.8					2					2.2				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
7000	1163	1106	49	2.23	2.12	1208	1151	51	2.41	2.29	1253	1195	53	2.61	2.49	1294	1238	54	2.81	2.69
7500	1192	1127	53	2.50	2.37	1235	1171	54	2.69	2.55	1279	1214	56	2.90	2.75	1319	1257	58	3.11	2.97
8000	1222	1150	57	2.81	2.64	1263	1191	58	3.00	2.83	1305	1234	60	3.21	3.04	1343	1276	62	3.43	3.26
8500	1253	1173	61	3.14	2.94	1292	1213	62	3.34	3.13	1331	1253	64	3.55	3.34	1367	1294	66	3.76	3.56
9000	1285	1198	65	3.49	3.25	1322	1235	66	3.69	3.44	1358	1273	68	3.91	3.66	1391	1313	70	4.12	3.89
9500	1318	1223	69	3.88	3.59	1352	1257	71	4.07	3.78	1385	1293	73	4.29	4.00	1415	1332	74	4.50	4.24
10000	1352	1249	74	4.28	3.96	1383	1280	75	4.48	4.14	1412	1314	77	4.69	4.36	1439	1351	79	4.90	4.60
10500	1388	1277	79	4.71	4.34	1415	1304	80	4.91	4.53										
11000																				

APPENDIX A BLOWER PERFORMANCE DATA

MODELS: DFG3003DM, DFG3003DH, DFG3004DM, DFG3004DH, DFG3007DM, DFG3007DH
STANDARD STATIC TO 5HP (0.2 ~1.2 ESP)

CFM	0.2					0.4					0.6				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
7000	819	736	38	1.06	0.95	874	793	39	1.20	1.09	928	848	41	1.35	1.23
7500	864	775	41	1.27	1.14	916	829	43	1.42	1.29	967	879	44	1.58	1.44
8000	908	815	45	1.51	1.35	958	866	46	1.67	1.51	1007	912	48	1.85	1.68
8500	953	854	49	1.78	1.60	1001	903	50	1.96	1.77	1047	946	52	2.15	1.94
9000	998	894	53	2.08	1.87	1044	941	54	2.28	2.05	1088	982	56	2.47	2.24
9500	1042	934	57	2.42	2.17	1087	979	59	2.62	2.37	1130	1019	61	2.83	2.56
10000	1087	975	62	2.78	2.50	1130	1018	64	3.01	2.71	1172	1057	65	3.22	2.91
10500	1131	1015	67	3.18	2.86	1174	1057	69	3.42	3.08	1214	1097	71	3.65	3.30
11000	1176	1056	72	3.61	3.24	1217	1096	74	3.86	3.48	1257	1138	76	4.10	3.71
CFM	0.8					1					1.2				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
5600	976	901	42	1.50	1.38	1023	955	44	1.66	1.55	1070	1013	46	1.85	1.75
6000	1012	930	46	1.74	1.60	1057	982	48	1.92	1.78	1102	1039	49	2.11	1.98
6400	1050	960	50	2.02	1.85	1092	1010	51	2.20	2.03	1135	1065	53	2.40	2.24
6800	1088	992	54	2.33	2.12	1128	1040	55	2.52	2.32	1170	1092	57	2.72	2.53
7200	1128	1026	58	2.67	2.43	1166	1071	60	2.86	2.63	1206	1119	61	3.07	2.84
7600	1168	1061	62	3.04	2.76	1206	1104	64	3.24	2.96	1244	1147	66	3.45	3.17
8000	1210	1098	67	3.44	3.13	1246	1138	69	3.65	3.33	1283	1177	71	3.86	3.53
8400	1252	1137	73	3.88	3.52	1288	1173	74	4.09	3.72	1324	1206	76	4.29	3.92
8800	1296	1177	78	4.34	3.94	1332	1209	80	4.56	4.14	1366	1237	81	4.76	4.33

MODELS: DFG3003WM, DFG3003WH, DFG3004WM, DFG3004WH, DFG3007WM, DFG3007WH
STANDARD STATIC TO 5HP (0.8 ~2.2 ESP)

CFM	0.8					1					1.2					1.4				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
7000	976	901	42	1.50	1.38	1023	955	44	1.66	1.55	1070	1013	46	1.85	1.75	1116	1059	48	2.03	1.93
7500	1012	930	46	1.74	1.60	1057	982	48	1.92	1.78	1102	1039	49	2.11	1.98	1146	1082	51	2.30	2.17
8000	1050	960	50	2.02	1.85	1092	1010	51	2.20	2.03	1135	1065	53	2.40	2.24	1178	1106	55	2.60	2.44
8500	1088	992	54	2.33	2.12	1128	1040	55	2.52	2.32	1170	1092	57	2.72	2.53	1211	1132	59	2.93	2.73
9000	1128	1026	58	2.67	2.43	1166	1071	60	2.86	2.63	1206	1119	61	3.07	2.84	1245	1158	63	3.28	3.05
9500	1168	1061	62	3.04	2.76	1206	1104	64	3.24	2.96	1244	1147	66	3.45	3.17	1281	1185	68	3.67	3.39
10000	1210	1098	67	3.44	3.13	1246	1138	69	3.65	3.33	1283	1177	71	3.86	3.53	1319	1214	72	4.07	3.75
10500	1252	1137	73	3.88	3.52	1288	1173	74	4.09	3.72	1324	1206	76	4.29	3.92	1358	1243	77	4.51	4.14
11000	1296	1177	78	4.34	3.94	1332	1209	80	4.56	4.14	1366	1237	81	4.76	4.33					
CFM	1.6					1.8					2					2.2				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
7000	1163	1106	49	2.23	2.12	1208	1151	51	2.41	2.29	1253	1195	53	2.61	2.49	1294	1238	54	2.81	2.69
7500	1192	1127	53	2.50	2.37	1235	1171	54	2.69	2.55	1279	1214	56	2.90	2.75	1319	1257	58	3.11	2.97
8000	1222	1150	57	2.81	2.64	1263	1191	58	3.00	2.83	1305	1234	60	3.21	3.04	1343	1276	62	3.43	3.26
8500	1253	1173	61	3.14	2.94	1292	1213	62	3.34	3.13	1331	1253	64	3.55	3.34	1367	1294	66	3.76	3.56
9000	1285	1198	65	3.49	3.25	1322	1235	66	3.69	3.44	1358	1273	68	3.91	3.66	1391	1313	70	4.12	3.89
9500	1318	1223	69	3.88	3.59	1352	1257	71	4.07	3.78	1385	1293	73	4.29	4.00	1415	1332	74	4.50	4.24
10000	1352	1249	74	4.28	3.96	1383	1280	75	4.48	4.14	1412	1314	77	4.69	4.36	1439	1351	79	4.90	4.60
10500	1388	1277	79	4.71	4.34	1415	1304	80	4.91	4.53										
11000																				

APPENDIX A BLOWER PERFORMANCE DATA

MODELS: DFC3003D, DFC3004D, DFC3007D
STANDARD STATIC TO 5HP (0.2 ~1.2 ESP)

CFM	0.2					0.4					0.6				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
7000	648	629	25	0.76	0.75	715	699	28	0.93	0.91	781	767	31	1.13	1.11
7500	680	656	29	0.92	0.89	748	726	33	1.12	1.09	816	792	36	1.35	1.32
8000	719	689	35	1.13	1.09	788	760	38	1.37	1.32	857	823	42	1.62	1.56
8500	765	730	40	1.40	1.33	835	800	44	1.66	1.59	904	859	48	1.94	1.84
9000	819	777	47	1.72	1.63	889	847	51	2.01	1.91	957	902	54	2.29	2.17
9500	880	830	54	2.10	1.97	950	899	58	2.41	2.27	1015	952	61	2.70	2.53
10000	949	891	61	2.53	2.37	1018	958	65	2.86	2.68	1079	1007	68	3.14	2.93
10500	1025	958	69	3.01	2.81	1093	1023	73	3.36	3.14	1149	1069	76	3.63	3.38
11000	1109	1032	77	3.55	3.30	1175	1094	82	3.91	3.64	1225	1137	84	4.16	3.86
CFM	0.8					1					1.2				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
7000	840	831	34	1.30	1.29	894	908	36	1.48	1.50	947	972	39	1.69	1.73
7500	874	856	39	1.54	1.51	925	933	41	1.73	1.74	979	996	44	1.96	1.98
8000	914	886	44	1.82	1.77	963	961	47	2.03	2.01	1018	1024	50	2.27	2.26
8500	959	922	50	2.15	2.06	1007	993	53	2.37	2.31	1062	1053	56	2.62	2.57
9000	1010	963	57	2.52	2.39	1058	1029	59	2.75	2.65	1112	1086	62	3.01	2.91
9500	1067	1009	64	2.93	2.76	1115	1069	66	3.18	3.02	1168	1121	69	3.44	3.28
10000	1129	1061	71	3.38	3.17	1179	1113	74	3.65	3.43	1230	1159	77	3.91	3.68
10500	1197	1118	79	3.88	3.62	1250	1161	82	4.16	3.88	1298	1200	84	4.41	4.11
11000	1270	1181	87	4.42	4.11	1328	1213	90	4.71	4.36					

MODELS: DFC3003W, DFC3004W, DFC3007W
STANDARD STATIC TO 5HP (0.8 ~2.2 ESP)

CFM	0.8					1					1.2					1.4				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
7000	840	831	34	1.30	1.29	894	908	36	1.48	1.50	947	972	39	1.69	1.73	1003	1041	42	1.93	2.00
7500	874	856	39	1.54	1.51	925	933	41	1.73	1.74	979	996	44	1.96	1.98	1036	1064	48	2.21	2.26
8000	914	886	44	1.82	1.77	963	961	47	2.03	2.01	1018	1024	50	2.27	2.26	1074	1090	53	2.54	2.54
8500	959	922	50	2.15	2.06	1007	993	53	2.37	2.31	1062	1053	56	2.62	2.57	1117	1117	59	2.90	2.86
9000	1010	963	57	2.52	2.39	1058	1029	59	2.75	2.65	1112	1086	62	3.01	2.91	1165	1146	66	3.29	3.20
9500	1067	1009	64	2.93	2.76	1115	1069	66	3.18	3.02	1168	1121	69	3.44	3.28	1218	1177	73	3.72	3.57
10000	1129	1061	71	3.38	3.17	1179	1113	74	3.65	3.43	1230	1159	77	3.91	3.68	1276	1209	80	4.18	3.96
10500	1197	1118	79	3.88	3.62	1250	1161	82	4.16	3.88	1298	1200	84	4.41	4.11	1340	1244	88	4.68	4.38
11000	1270	1181	87	4.42	4.11	1328	1213	90	4.71	4.36										
CFM	1.6					1.8					2					2.2				
	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2	RPM1	RPM2	DDC%	BHP1	BHP2
7000	1072	1099	46	2.20	2.26	1128	1142	49	2.44	2.47	1179	1183	51	2.65	2.66	1229	1225	54	2.90	2.88
7500	1102	1122	51	2.50	2.52	1157	1164	54	2.74	2.74	1206	1203	56	2.96	2.94	1256	1243	59	3.21	3.16
8000	1137	1146	57	2.82	2.82	1189	1186	60	3.06	3.03	1237	1225	62	3.29	3.24	1285	1262	65	3.55	3.46
8500	1175	1171	63	3.18	3.13	1224	1210	65	3.42	3.35	1270	1247	68	3.65	3.56	1316	1282	71	3.90	3.78
9000	1218	1197	69	3.56	3.47	1262	1234	72	3.80	3.68	1306	1270	74	4.03	3.90	1350	1302	77	4.28	4.11
9500	1265	1224	76	3.98	3.83	1303	1260	78	4.21	4.04	1344	1294	81	4.45	4.26	1386	1323	83	4.69	4.46
10000	1316	1252	83	4.43	4.21	1348	1286	85	4.64	4.42	1386	1318	87	4.88	4.63	1424	1343	89	5.11	4.83
10500																				
11000																				

APPENDIX A ECONOMIZER PRESSURE DROP

Airflow Pressure Drop of Downflow Economizer for 15 to 25 Ton Rooftop Units (100% Return Air)												
SCFM	4500	5000	5500	6000	6500	7000	7500	8000	8500	9000	9500	10000
(In WG)	0.15	0.18	0.22	0.27	0.32	0.37	0.42	0.48	0.55	0.61	0.69	0.76

APPENDIX B ELECTRICAL DATA

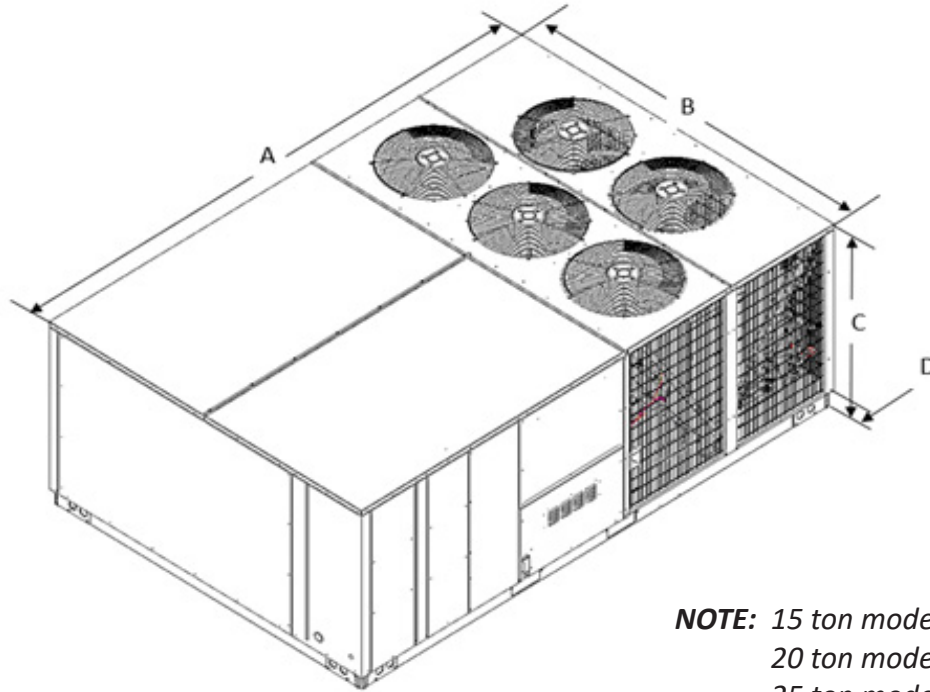
Model Number	Electrical Rating	Compressor			Outdoor Fan Motor			Indoor Fan Motor			Optional Powered Convenience Outlet	Optional Power Exhaust	Optional Power Exhaust (Modulating)	Power Supply	
		QTY	RLA	LRA	QTY	HP	FLA	QTY	HP	FLA	FLA	FLA	FLA	MCA	MOP
DFG1803D	208/230/3/60	2	25	164	3	0.33	2	2	3.5	10.9	-	-	-	84.0/84.0	100/100
											-	4.8	-	88.8/88.8	110/110
											-	-	13.9	97.9/97.9	110/110
											9.6/8.7	-	-	93.6/92.7	110/110
											9.6/8.7	4.8	-	98.4/97.5	110/110
											9.6/8.7	-	13.9	108/107	125/125
DFG1803W	208/230/3/60	2	25	164	3	0.33	2	2	5	14.5	-	-	-	91.2/91.2	110/110
											-	4.8	-	96.0/96.0	110/110
											-	-	13.9	105/105	125/125
											9.6/8.7	-	-	101/99.9	125/110
											9.6/8.7	4.8	-	106/105	125/125
											9.6/8.7	-	13.9	115/114	125/125
DFG1804D	460/3/60	2	12.2	100	3	0.33	0.85	2	3.5	7.2	-	-	-	44.4	50
											-	2.4	-	46.8	50
											-	-	8.1	52.5	60
											4.3	-	-	48.7	60
											4.3	2.4	-	51.1	60
											4.3	-	8.1	56.8	60
DFG1804W	460/3/60	2	12.2	100	3	0.33	0.85	2	5	10.6	-	-	-	51.2	60
											-	2.4	-	53.6	60
											-	-	8.1	59.3	70
											4.3	-	-	55.5	60
											4.3	2.4	-	57.9	70
											4.3	-	8.1	63.6	70
DFG1807D	575/3/60	2	9	78	3	0.33	0.67	2	3.5	5	-	-	-	32.2	40
											-	2	-	34.2	40
											-	-	8.3	40.5	45
											3.5	-	-	35.7	40
											3.5	2	-	37.7	45
											3.5	-	8.3	44.0	50
DFG1807W	575/3/60	2	9	78	3	0.33	0.67	2	5	7.2	-	-	-	36.6	45
											-	2	-	38.6	45
											-	-	8.3	44.9	50
											3.5	-	-	40.1	45
											3.5	2	-	42.1	50
											3.5	-	8.3	48.4	50
DFG2403D	208/230/3/60	2	28.2	240	4	0.5	2.7	2	3.5	10.9	-	-	-	96.1/96.1	110/110
											-	4.8	-	101/101	125/125
											-	-	13.9	110/110	125/125
											9.6/8.7	-	-	106/105	125/125
											9.6/8.7	4.8	-	110/110	125/125
											9.6/8.7	-	13.9	120/119	125/125
DFG2403W	208/230/3/60	2	28.2	240	4	0.5	2.7	2	5	14.5	-	-	-	103/103	125/125
											-	4.8	-	108/108	125/125
											-	-	13.9	117/117	125/125
											9.6/8.7	-	-	113/112	125/125
											9.6/8.7	4.8	-	118/117	125/125
											9.6/8.7	-	13.9	127/126	150/150
DFG2404D	460/3/60	2	14.7	130	4	0.5	1.4	2	3.5	7.2	-	-	-	53.2	60
											-	2.4	-	55.6	70
											-	-	8.1	61.3	70
											4.3	-	-	57.5	70
											4.3	2.4	-	59.9	70
											4.3	-	8.1	65.6	80
DFG2404W	460/3/60	2	14.7	130	4	0.5	1.4	2	5	10.6	-	-	-	60.0	70
											-	2.4	-	62.4	70
											-	-	8.1	68.1	80
											4.3	-	-	64.3	70
											4.3	2.4	-	66.7	80
											4.3	-	8.1	72.4	80
DFG2407D	575/3/60	2	11.3	93.7	4	0.5	1	2	3.5	5	-	-	-	39.4	50
											-	2	-	41.4	50
											-	-	8.3	47.7	50
											3.5	-	-	42.9	50
											3.5	2	-	44.9	50
											3.5	-	8.3	51.2	60
DFG2407W	575/3/60	2	11.3	93.7	4	0.5	1	2	5	7.2	-	-	-	43.8	50
											-	2	-	45.8	50
											-	-	8.3	52.1	60
											3.5	-	-	47.3	50
											3.5	2	-	49.3	60
											3.5	-	8.3	55.6	60

APPENDIX B ELECTRICAL DATA

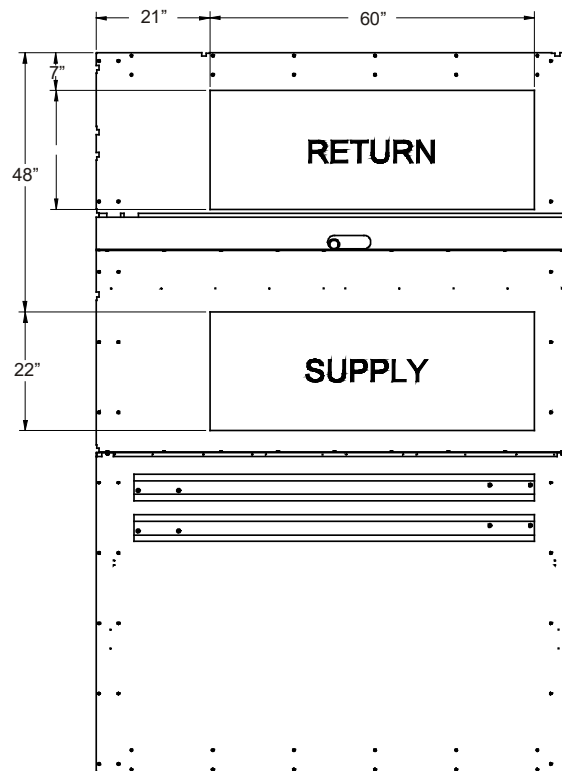
Model Number	Electrical Rating	Compressor			Outdoor Fan Motor			Indoor Fan Motor			Optional Powered Convenience Outlet	Optional Power Exhaust	Optional Power Exhaust (Modulating)	Power Supply	
		QTY	RLA	LRA	QTY	HP	FLA	QTY	HP	FLA	FLA	FLA	FLA	MCA	MOP
DFG3003D	208/230/3/60	2	48.1	245	5	0.5	2.7	2	5	14.5	-	-	-	151/151	175/175
											-	4.8	-	155/155	200/200
											-	-	13.9	165/165	200/200
											9.6/8.7	-	-	160/159	200/200
											9.6/8.7	4.8	-	165/164	200/200
											9.6/8.7	-	13.9	174/173	200/200
DFG3003W	208/230/3/60	2	48.1	245	5	0.5	2.7	2	5	14.5	-	-	-	151/151	175/175
											-	4.8	-	155/155	200/200
											-	-	13.9	165/165	200/200
											9.6/8.7	-	-	160/159	200/200
											9.6/8.7	4.8	-	165/164	200/200
											9.6/8.7	-	13.9	174/173	200/200
DFG3004D	460/3/60	2	18.6	125	5	0.5	1.4	2	5	10.6	-	-	-	70.0	80
											-	2.4	-	72.4	90
											-	-	8.1	78.1	90
											4.3	-	-	74.3	90
											4.3	2.4	-	76.7	90
											4.3	-	8.1	82.4	100
DFG3004W	460/3/60	2	18.6	125	5	0.5	1.4	2	5	10.6	-	-	-	70.0	80
											-	2.4	-	72.4	90
											-	-	8.1	78.1	90
											4.3	-	-	74.3	90
											4.3	2.4	-	76.7	90
											4.3	-	8.1	82.4	100
DFG3007D	575/3/60	2	14.7	100	5	0.5	1	2	5	7.2	-	-	-	52.6	60
											-	2	-	54.6	60
											-	-	8.3	60.9	70
											3.5	-	-	56.1	70
											3.5	2	-	58.1	70
											3.5	-	8.3	64.4	70
DFG3007W	575/3/60	2	14.7	100	5	0.5	1	2	5	7.2	-	-	-	52.6	60
											-	2	-	54.6	60
											-	-	8.3	60.9	70
											3.5	-	-	56.1	70
											3.5	2	-	58.1	70
											3.5	-	8.3	64.4	70

APPENDIX C UNIT DIMENSIONS

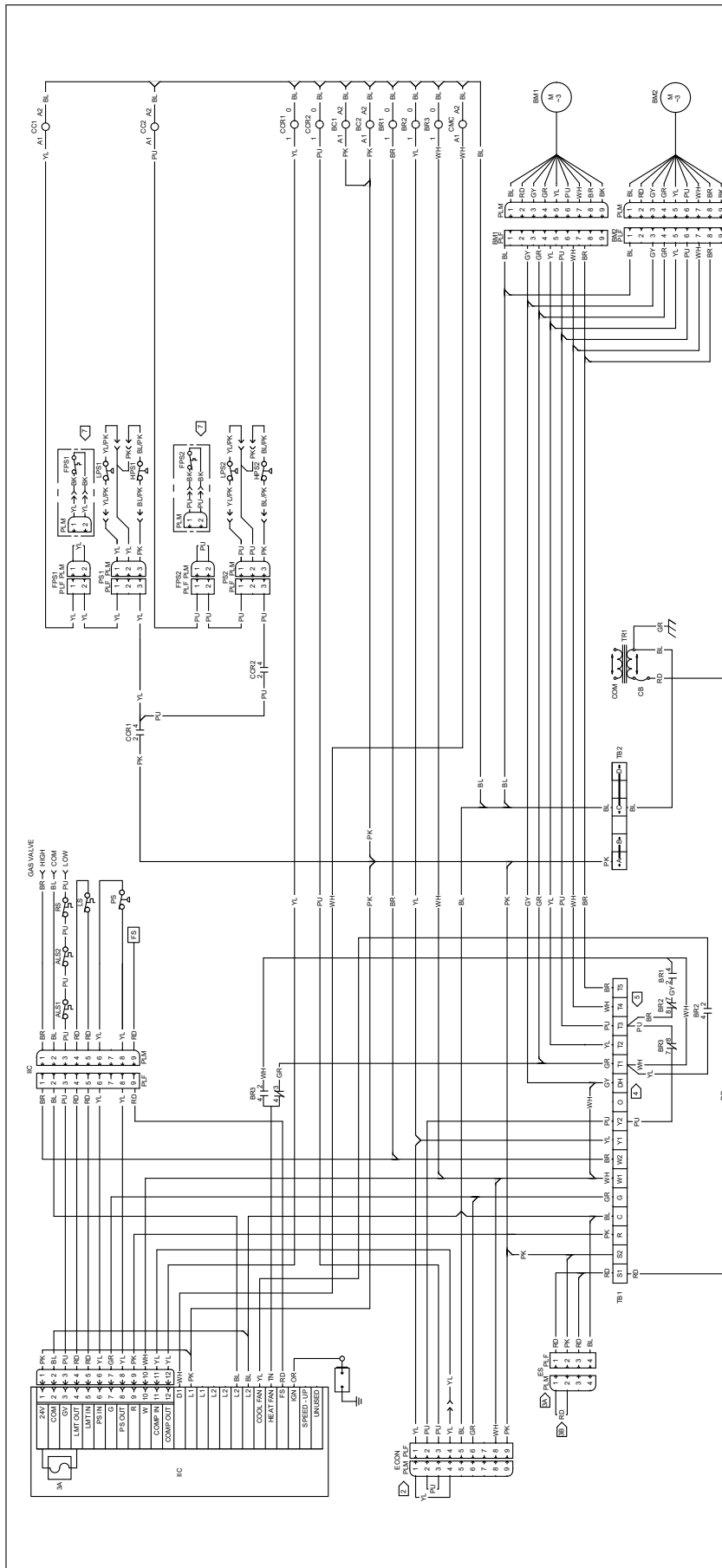
Model	A	B	C	D
15 Ton	133 - 7/8"	88 - 1/2"	51 - 11/16"	5 - 5/32"
20 Ton 25 Ton	133 - 7/8"	88 - 1/2"	51	5 - 5/32"



NOTE: 15 ton models have 3 fans.
 20 ton models have 4 fans
 25 ton models have 5 fans



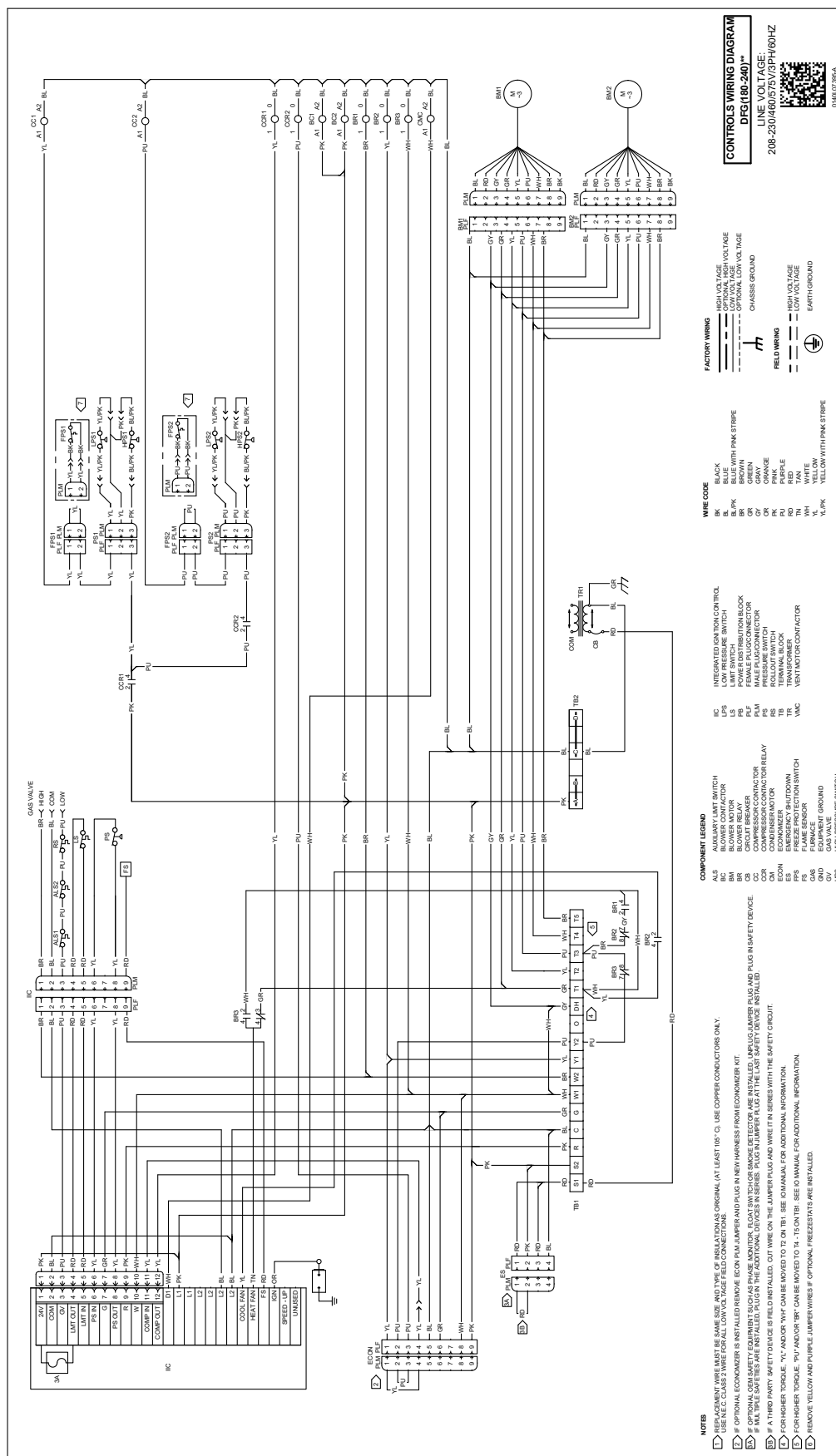
Vertical Discharge (Top View)



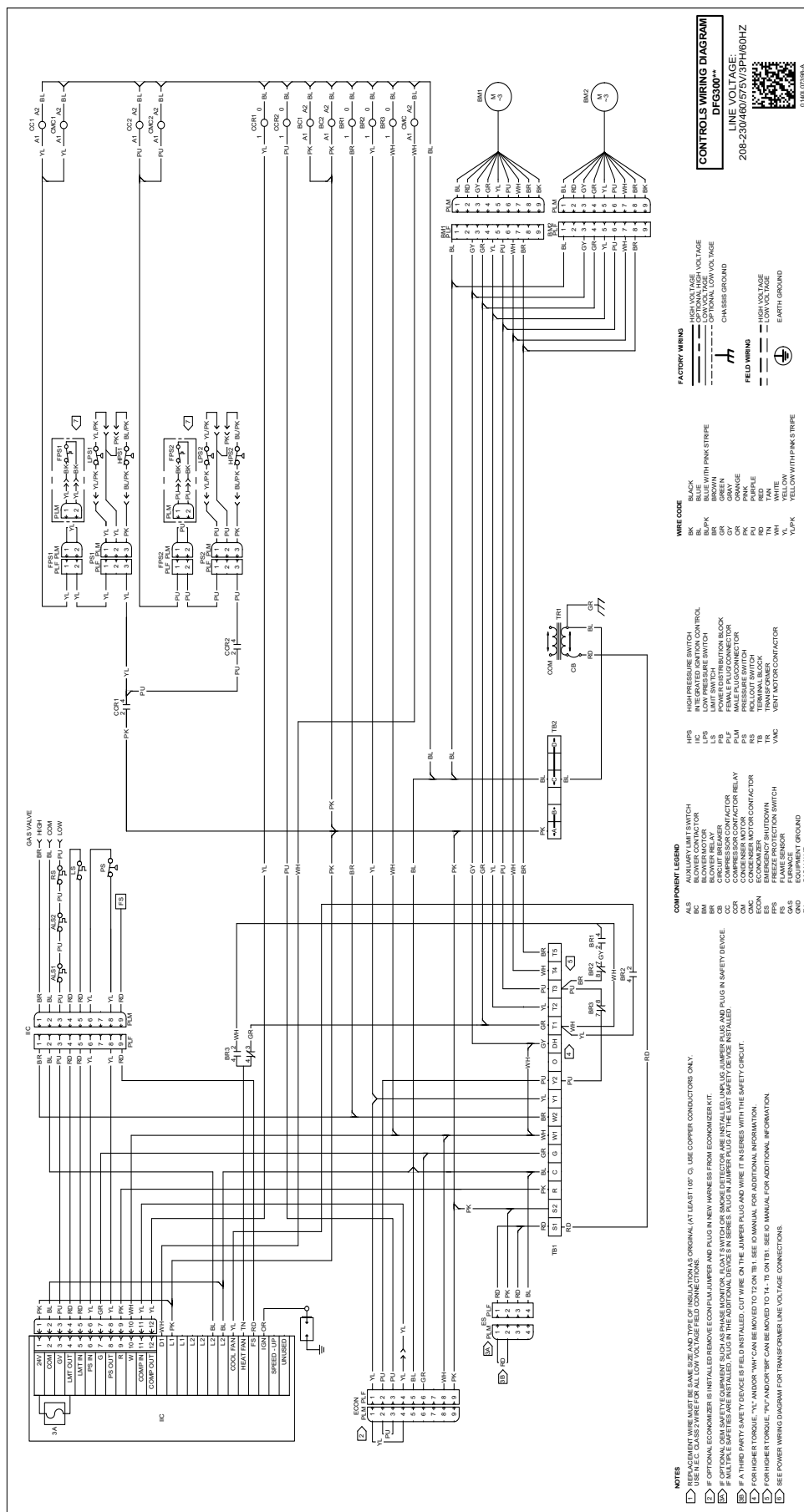
Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

WARNING **HIGH VOLTAGE!** DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

[illegible]



Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.



WARNING

HIGH VOLTAGE!

DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

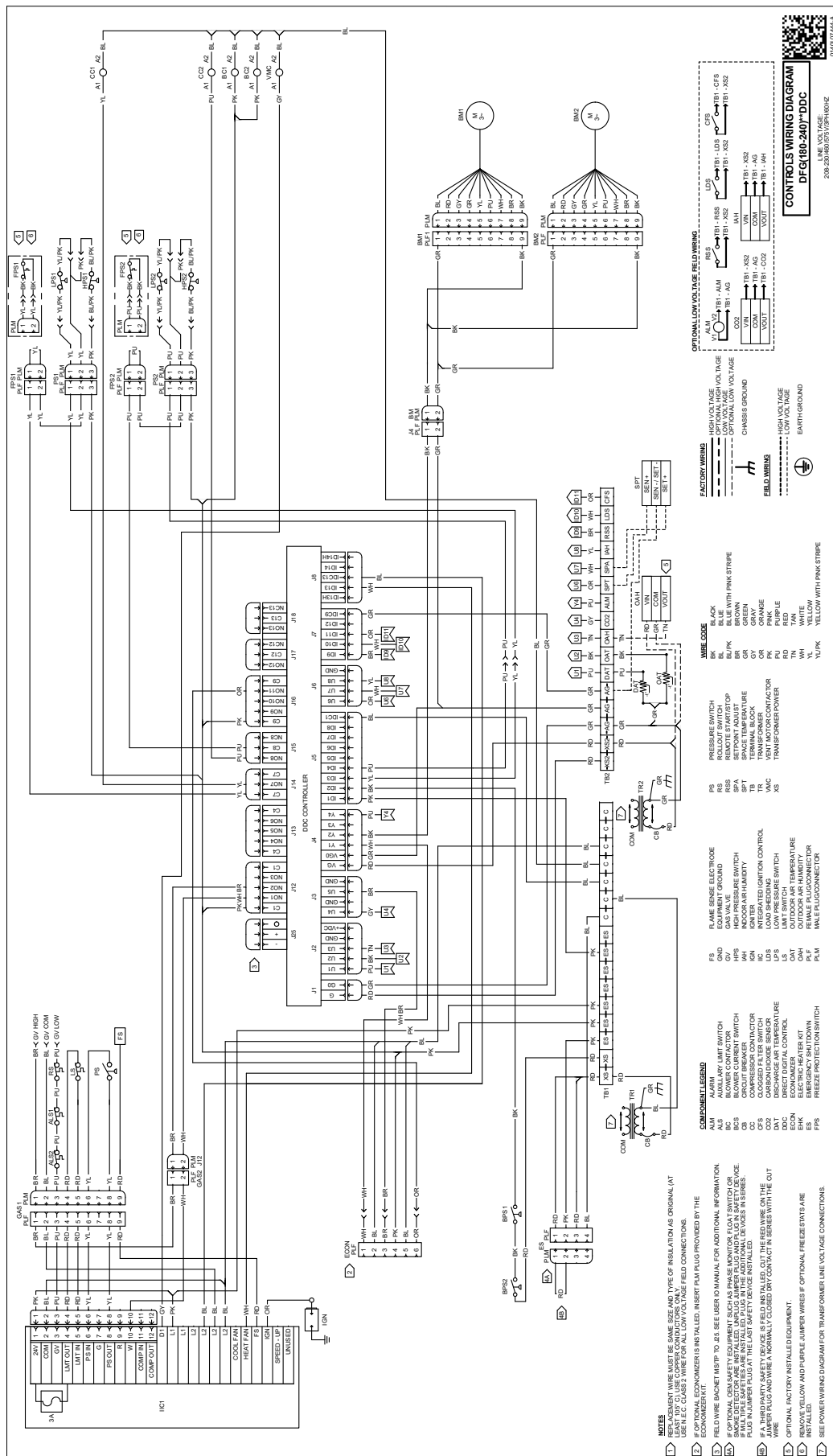
[illegible]

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HIGH VOLTAGE!
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

WARNING



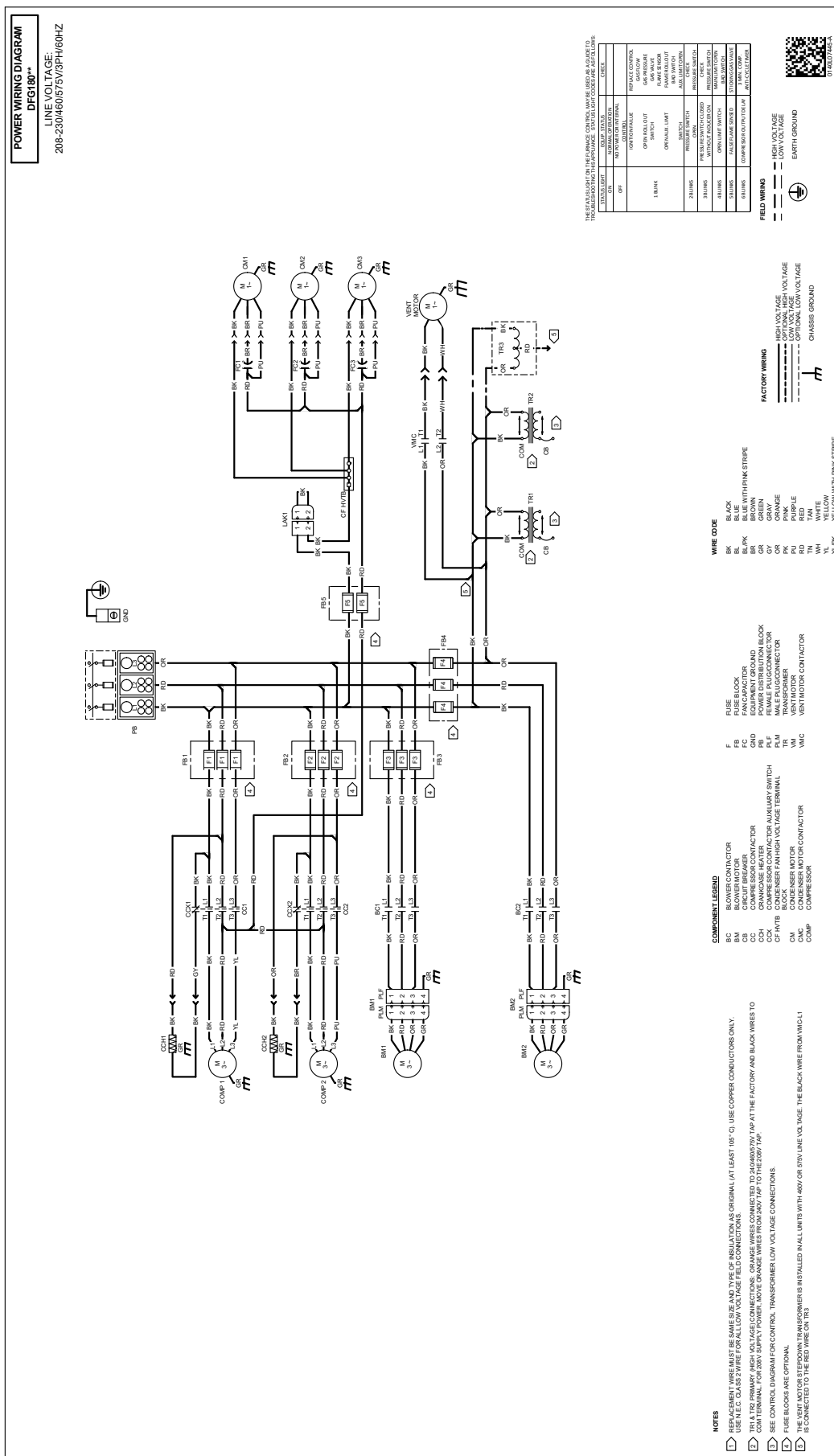
Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

WARNING

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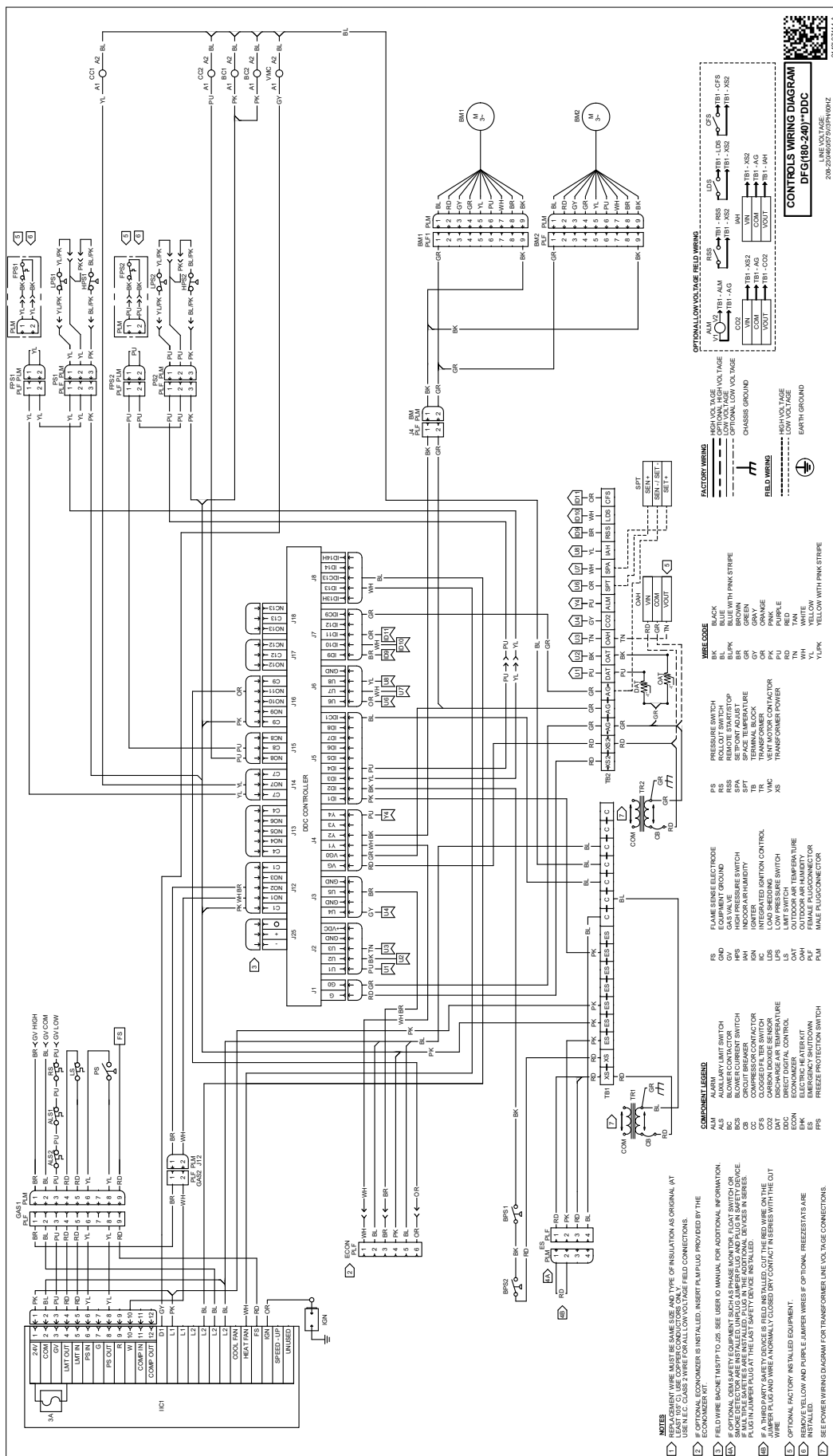


WARNING

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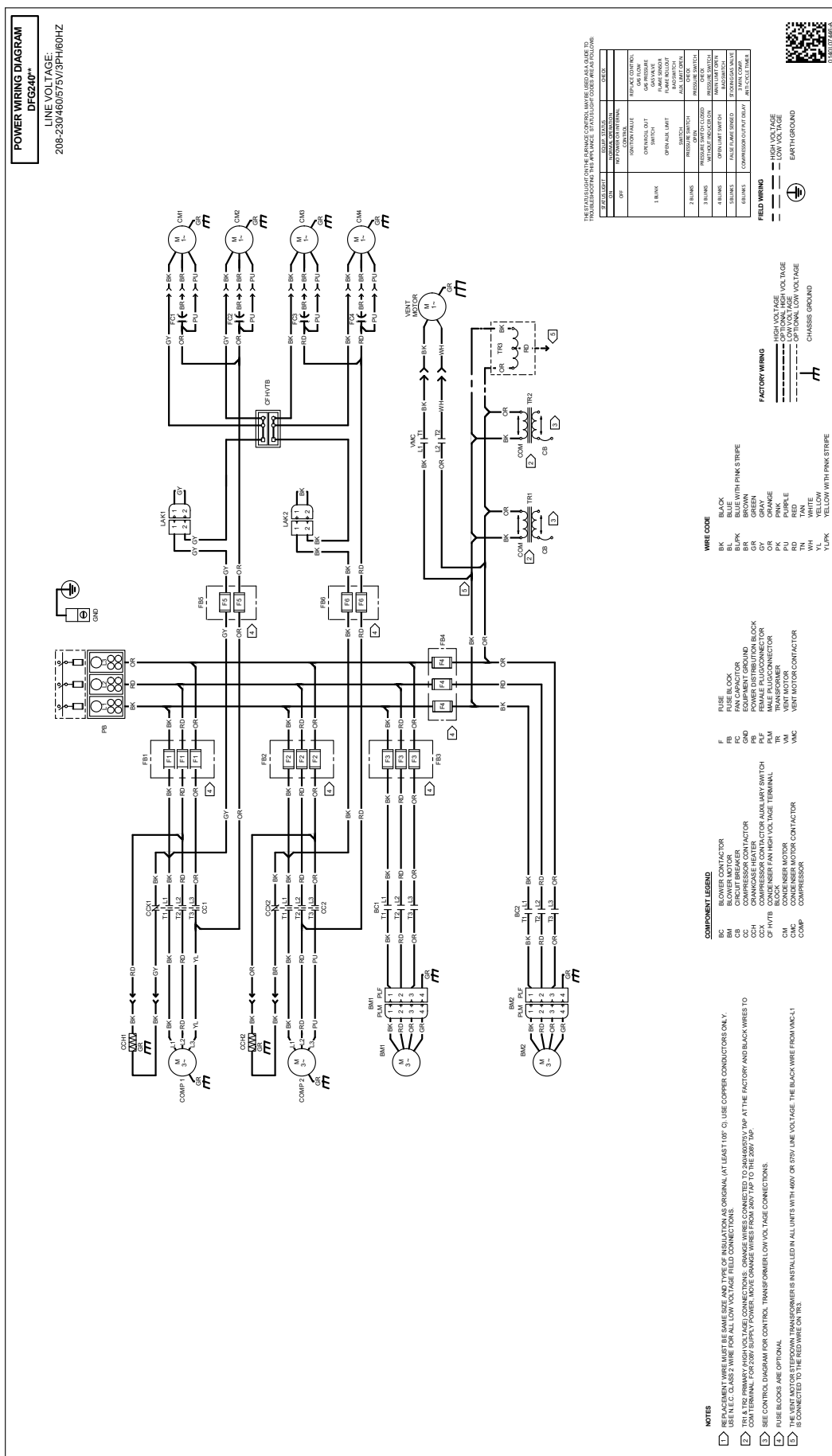
CONTROLS WIRING DIAGRAM
DFG(180-240)DDC**



Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

WARNING

HIGH VOLTAGE!
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

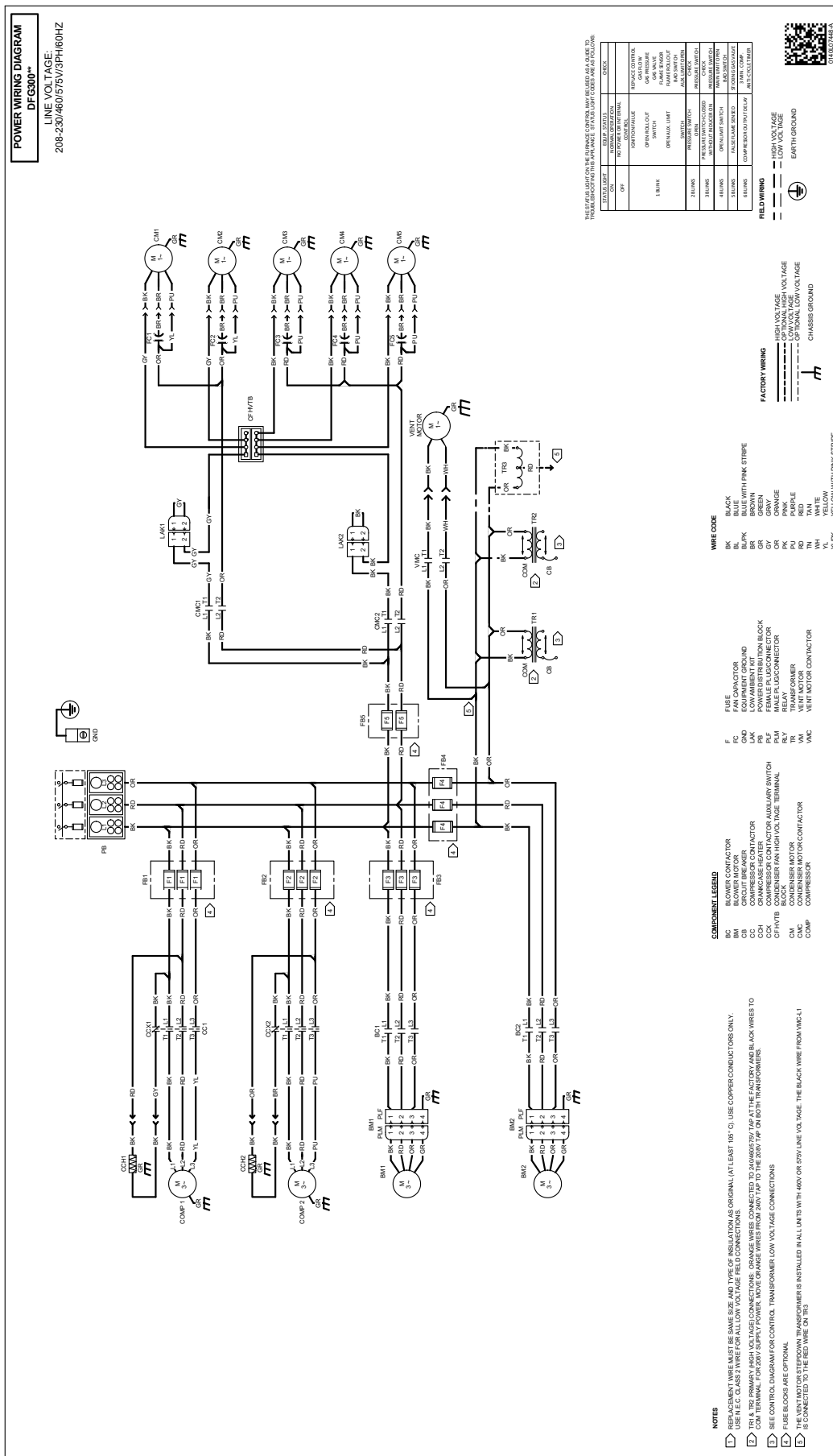


WARNING

HIGH VOLTAGE!

DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

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Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.



Start-up Checklist

**Store in job file*

Date: _____ Location: _____
Model Number: _____
Serial Number: _____
Technician: _____ Unit #: _____

Pre Start-Up

(Check each item as completed)

- ☐ Verify all packaging material has been removed.
- ☐ Remove all shipping brackets per installation instructions.
- ☐ Verify the job site voltage agrees with the unit serial plate.
- ☐ Verify condensate connection is installed per installation instructions.
- ☐ Verify proper clearance around the unit for safety, service, maintenance and proper unit operation.
- ☐ Verify proper weatherproofing of all ductwork, roof curbs and electrical connections.
- ☐ Check that the flue screen is in place.
- ☐ Check gas piping for leaks.
- ☐ Verify gas pressure to the unit is within the range specified on the serial plate.
- ☐ Check to ensure that all fans, pulleys and wheels are secure.
- ☐ Check for proper belt tension and alignment per installation instructions.
- ☐ Check refrigerant piping for rubbing and leaks. *Repair if necessary.*
- ☐ Check unit wiring to ensure it is not in contact with refrigerant piping or sharp metal edges.
- ☐ Check all electrical connections and terminals. *Tighten as needed.*
- ☐ Verify that the crankcase heaters have been energized for 24 hours.
- ☐ Verify the scroll compressor(s) are rotating in the right direction.
- ☐ Verify all accessories are installed and operating correctly.
- ☐ Check filters and replace if necessary.
- ☐ Verify the installation of the thermostat.



Start-up Checklist

Start-Up

(Insert the values as each item is completed.)

ELECTRICAL

Supply Voltage	L1 - L2	_____	L2 - L3	_____	L3 - L1	_____
Circuit 1 Compressor Amps	L1	_____	L2	_____	L3	_____
Circuit 2 Compressor Amps	L1	_____	L2	_____	L3	_____
Blower Amps	L1	_____	L2	_____	L3	_____
Condenser Fan Amps	Fan 1	_____	Fan 2	_____	Fan 3	_____

BLOWER EXTERNAL STATIC PRESSURE

Return Air Static Pressure	_____	IN. W.C.
Supply Air Static Pressure	_____	IN. W.C.
Total External Static Pressure	_____	IN. W.C.
Blower Wheel RPM	_____	RPM

TEMPERATURES

Outdoor Air Temperature	_____	DB	_____	WB
Return Air Temperature	_____	DB	_____	WB
Cooling Supply Air Temperature	_____	DB	_____	WB
Heating Supply Air Temperature	_____	DB	_____	

PRESSURES

Gas Inlet Pressure	_____	IN. W.C.		
Gas Manifold Pressure	_____	IN. W.C. (Low Fire)	_____	IN. W.C. (High Fire)
Suction Circuit 1	_____	PSIG	_____	°F
Superheat (Orifice System)			_____	°F
Suction Circuit 2	_____	PSIG	_____	°F
Superheat (Orifice System)			_____	°F
Discharge Circuit 1	_____	PSIG	_____	°F
Subcooling (TXV System)			_____	°F
Discharge Circuit 2	_____	PSIG	_____	°F
Subcooling (TXV System)			_____	°F

(HEAT PUMP ONLY)

Suction Circuit 1	_____	PSIG	_____	°F
Suction Circuit 2	_____	PSIG	_____	°F
Discharge Circuit 1	_____	PSIG	_____	°F
Discharge Circuit 2	_____	PSIG	_____	°F

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CUSTOMER FEEDBACK

Daikin Comfort Technologies is very interested in all product comments.

Please fill out the feedback form on the following link:

<https://daikincomfort.com/contact-us>

You can also scan the QR code on the right to be directed to the feedback page.



Our continuing commitment to quality products may mean a change in specifications without notice.

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