

**B6BV SERIES**

## **INSTALLATION INSTRUCTIONS**

**AIR HANDLER**



**FOR HUD APPROVED INSTALLATIONS IN MANUFACTURED HOMES AND MODULAR HOMES**

### **IMPORTANT**

#### **ATTENTION INSTALLERS:**

**It is your responsibility to know this product better than your customer. This includes being able to install the product according to strict safety guidelines and instructing the customer on how to operate and maintain the equipment for the life of the product. Safety should always be the deciding factor when installing this product and using common sense plays an important role as well. Pay attention to all safety warnings and any other special notes highlighted in the manual. Improper installation of the furnace or failure to follow safety warnings could result in serious injury, death, or property damage.**

**These instructions are primarily intended to assist qualified individuals experienced in the proper installation of this appliance. Some local codes require licensed installation/service personnel for this type of equipment. Please read all instructions carefully before starting the installation. Return these instructions to the customer's package for future reference.**

**DO NOT DESTROY. PLEASE READ CAREFULLY & KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.**

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## IMPORTANT SAFETY INFORMATION

Please read all instructions before servicing this equipment. Pay attention to all safety warnings and any other special notes highlighted in the manual.

Safety markings are used frequently throughout this manual to designate a degree or level of seriousness and should not be ignored. **WARNING** indicates a potentially hazardous situation that if not avoided, could result in personal injury or death. **CAUTION** indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury or property damage.

### **WARNING:**

#### **ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD**

**Failure to follow safety warnings exactly could result in serious injury 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 proper operation after servicing.**

## REQUIREMENTS & CODES

### **WARNING:**

**This unit must be installed in accordance with instructions outlined in this manual during the installation, service, and operation of this unit. Unqualified individuals should not attempt to interpret these instructions or install this equipment. Failure to follow safety recommendations could result in possible damage to the equipment, serious personal injury or death.**

- The installer must comply with all local codes and regulations which govern the installation of this type of equipment. Local codes and regulations take precedence over any recommendations contained in these instructions. Consult local building codes for special installation requirements.
- This equipment contains nitrogen gas. Installation or servicing should only be performed by qualified trained personnel thoroughly familiar with this type equipment.

- All electrical wiring must be completed in accordance with local, state and national codes and regulations and with the National Electric Code (ANSI/NFPA 70) or and HUD Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280. If this standard is not applicable, the installation must be comply to the Standard for Manufactured Home Installation Manufactured Home Sites, Communities and Setups (ANSI 225.1). In Canada all electrical wiring must be completed in accordance with the Canadian Electric Code Part 1 CSA C.22.1
- Installation of equipment may require brazing operations. Installer must comply with safety codes and wear appropriate safety equipment (safety glasses, work gloves, fire extinguisher, etc.) when performing brazing operations.
- Install this unit only in a location and position as specified on [page 4](#). This unit is designed only for Indoor installations and should be located with consideration of minimizing the length of the supply and return ducts. Refer to the rating plate or [Table 5 \(page 14\)](#) or [Table 6 \(page 14\)](#) for proper circulating airflow data.
- Follow all precautions in the literature, on tags, and on labels provided with the equipment. Read and thoroughly understand the instructions provided with the equipment prior to performing the installation and operational checkout of the equipment.

## GENERAL INFORMATION

### About the Air Handler

This appliance has been tested and certified by AHRI for capacity and efficiency and will provide many years of safe and dependable comfort, providing it is properly installed and maintained. Abuse, improper use, and/or improper maintenance can shorten the life of the appliance and create unsafe hazards. Please read all instructions before installing the unit.

The B6BV Series electric furnace is approved for use in HUD code manufactured homes (HUD Manufactured Home Construction and Safety Standard (Title 24, Part 3280) and other modular home applications

B6BV Series electric furnaces are supplied with factory installed electric heat. Approved NORDYNE heat-pump/air conditioning coils may be installed in the field. Unless otherwise noted in the instructions, only factory authorized kits or accessories may be used when modifying this product.

### Mounting Applications

Vertical only air handlers are factory ready for upflow applications. These units may also be applied in downflow discharge applications when applied with the appropriate field kit.

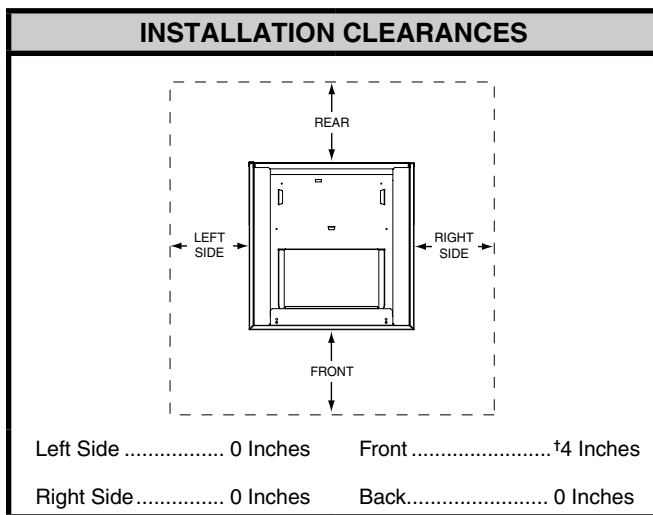
Through-the-floor installations require a 1/4" thick noncombustible resilient gasket to be used whenever the supply or return air ducts pass through the floor. The gasket should be positioned between the duct, unit, and floor.

## Before You Install this Appliance

- ✓ This equipment is securely packaged at the time of shipment and upon arrival should be carefully inspected for damage prior to installing the equipment at the job site. Claims for damage (apparent or concealed) should be filed immediately with the carrier.
- ✓ It is recommended that the heating area should be calculated and a system of the proper capacity selected.
- ✓ Check the electrical supply and verify the power supply is adequate for unit operation. The system must be wired and provided with circuit protection in accordance with local building codes. If there is any question concerning the power supply, contact the local power company.
- ✓ Verify the duct system is appropriate for the air handler being installed. Please note that when replacing an existing system with lower air-flow, the duct system may require modification.

## Locating the Air Handler

- Survey the job site to determine the best location for mounting the unit. Consideration should be given to availability of electric power, service access, and noise.
- The dimensions of the room or alcove must be able to accommodate the overall size of the unit and the installation clearances listed in [Figure 1](#). Physical dimensions for this air handler are also shown in [Figure 8 \(page 13\)](#).
- This unit should be located with consideration of minimizing the length of the supply and return ducts. Refer to the rating plate or [Table 5 \(page 14\)](#) or [Table 6 \(page 14\)](#) for proper circulating airflow data.



### †NOTES:

#### CLOSET OR ALCOVE INSTALLATIONS:

- Allow 24 in. minimum clearance from front of unit to nearest wall or partition for servicing. Recommended clearance is 36 in.
- A return air grill should be installed in the door or a partially louvered door across the opening for proper air circulation. Provide at least 235 in<sup>2</sup> free opening for return air for B-cabinet models and 300 in<sup>2</sup> for C-cabinet models. A fully louvered closet door is strongly recommended for both installation types.

**Figure 1. Minimum Unit Clearances**

## Minimum Clearances

- This appliance must be installed in accordance with clearances listed in [Figure 1](#). The air handler must be installed with ample clearance for easy access to the air filter, blower assembly, heater assembly, controls, and vent connections.
- Static pressure drop through louvered openings and through return air plenums should be considered in the overall duct design in the determination of the total external static pressure.
- All electric heater kits less than 20 kw are approved for use in air handler installations with zero-clearance to combustibles at any blower speed. For upflow configuration, B6 electric furnace equipped with 20 kw electric heater kits are approved for installation with zero clearance to combustibles at any blower speed.

## Plenums & Air Ducts

### **WARNING:**

**All return ducts must be secured to the air handler using appropriate methods. All return ducts must be adequately sealed. When return air is provided through the bottom of the unit, the joint between the air handler and the return air plenum must be air tight.**

**Return air and circulating air ducts must not be connected to any other heat producing device such as a fireplace insert, stove, etc. This may result in fire, explosion, carbon monoxide poisoning, personal injury, or property damage.**

- Plenums and air ducts should be installed in accordance with the standards of the National Fire Protection Association Standard for Installation of Air Conditioning Systems (NFPA 90A), Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems (NFPA 90B), and all applicable local codes. NFPA publications are available by writing to: National Fire Protection Association, Batterymarch Park, Quincy, ME 02269 or visit [www.NFPA.org](http://www.NFPA.org) online.
- Design the duct work according to methods described by the Air Conditioning Contractors of America (ACCA). Air ducts must be aluminum, tin plate, galvanized sheet steel, or other approved materials for outlet or return air ducts. Snap-Lock or Pittsburgh-Lock seams are preferred. All other types of seams must be made tight to prevent leakage.
- **GAS PIPING MUST NOT RUN IN OR THROUGH ANY OF THE AIR DUCT SYSTEM.**
- This unit is designed only for use with a return and supply duct. The ducts should be appropriately sized to the capacity of the air handler to ensure its proper airflow rating. Refer to the rating plate or [Table 5 \(page 14\)](#) or [Table 6 \(page 14\)](#) for proper circulating airflow data.

- Use transition fittings if the supply and/or return air openings of the unit do not match the duct openings. These transitions should be dimensioned in accordance with standard practice as specified in the ASHRAE recommendations for duct transitions.
- Flexible connectors may be used between the unit and the ductwork to prevent transmission of vibration from the unit to the structure. Heat resistant material must be used for the flexible connector at the supply air end of the unit.
- It is good practice to seal all connections and joints with industrial grade sealing tape or liquid sealant. Requirements for sealing ducts vary from region to region. Consult with local codes for requirements specific to your area.

### Return Air Connections

For each application in the USA, the home manufacturer shall comply with all of the following conditions to have acceptable return air systems for closet installed forced air heating appliances:

- Regardless of the location, the return air opening into the closet shall not be less than specified in the appliance's listing.
- Means shall be provided to prevent inadvertent closure by a flat object placed over the return air opening when it is located in the floor of the closet (versus the vertical front or side wall).
- The cross-sectional area of the return duct system leading into the closet shall not be less than 390 in<sup>2</sup>.
- The total free area of openings in the floor or ceiling registers serving the return air duct system must be at least 352 in<sup>2</sup>. At least one register should be located where it is not likely to be covered by carpeting, boxes and other objects.
- Materials located in the return duct system must have a flame spread classification of 200 or less. This includes a closet door if the air handler is in a closet.
- Test the negative pressure in the closet with the air-circulating fan operating at high speed and the closet closed. The negative pressure is to be no more negative than minus 0.05 inch water column.
- For floor return systems, the manufactured home manufacturer shall affix a prominent marking on or near the appliance where it can be easily read when the closet door is open. The marking shall read:

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 **CAUTION:**

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**HAZARD OF ASPHYXIATION: Do not cover or restrict return air opening.**

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- The return air opening can be located in a closet door or a sidewall. If the return air opening is directly adjacent to the side (or front) of the air handler, 6" minimum clearance must be provided between the side of the air handler and the return air opening. If no part of the return air opening is directly adjacent to the unit no clearance is required.

- In applications where the supply ducts carry heated air to areas outside the space where the furnace is installed, the return air must be delivered to the furnace by duct(s) secured to the furnace casing, running full size and without interruption.

### Supply Air Connections

- The supply duct system must be designed so that the static pressure measured external to the furnace does not exceed the listed static pressure shown on the furnace rating plate. The supply air must be delivered to the heated space by duct(s) secured to the furnace casing, running full length and without interruption.

### Unconditioned Spaces

All duct work passing through unconditioned space must be properly insulated to minimize duct losses and prevent condensation. Use insulation with an outer vapor barrier. Refer to local codes for insulation material requirements.

### Acoustical Duct Work

- Certain installations may require the use of acoustical lining inside the supply duct work. Acoustical insulation must be in accordance with the current revision of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) application standard for duct liners. Duct lining must be UL classified batts or blankets with a fire hazard classification of FHC-25/50 or less.
- Fiber duct work may be used in place of internal duct liners if the fiber duct work is in accordance with the current revision of the SMACNA construction standard on fibrous glass ducts. Fibrous duct work and internal acoustical lining must be NFPA Class 1 air ducts when tested per UL Standard 181 for Class 1 ducts.
- Damping ducts, flexible vibration isolators, or pleated media-style filters on the return air inlet of the air handler may be used to reduce the transmission of equipment noise emanating from the air handler. These treatments can produce a quieter installation, particularly in the heated space. However, they can increase the pressure drop in the duct system. Care must be taken to maintain the proper maximum pressure rise across the air handler, temperature rise and flow rate. This may mean increasing the duct size and/or reducing the blower speed. These treatments must be constructed and installed in accordance with NFPA and SMACNA construction standards. Consult with local codes for special requirements. For best sound performance, be sure to install all the needed gaskets and grommets around penetrations into the air handler, such as for electrical wiring.

### Air Filters

B6BV series air handlers are not supplied with an air filter when shipped from the factory. The installer must provide a high velocity filter that is appropriately sized to the return air duct opening or filter rack located in the bottom of the unit. Accessing the filter does not require tools and can be removed from the front of the unit by removing the filter door. See Unit Maintenance ([page 11](#)) for filter sizes and installation information.



## **WARNING:**

**Never operate the air handler without a filter or with doors removed. Dust and lint can build up on internal components, resulting in loss of efficiency, equipment damage, and possible fire.**

### **AIR HANDLER INSTALLATION**

These Installation procedures are suggested for typical air handler installations. Since all installations are different from each other, the sequence of these steps may differ from the actual installation. **Only qualified HVAC technicians should install this furnace.**

The B6BV series air handler is shipped ready for vertical upflow installation and is approved for attic, basement, alcove/closet or crawlspace installation with zero clearance to combustibles. See [Figure 1 \(page 4\)](#) for required installation clearances. **This appliance is approved only for indoor use.**

- Remove the shipping crate and User's Manual from the equipment.
- The unit must be leveled at installation and attached to a properly installed duct system.
- The surface that the air handler is mounted on must provide sound physical support of the unit.
- The air handler must be installed so that all electrical components are protected from water.
- If a louvered door is installed across the front of this unit, the appliance must be mounted flush or behind front edge of finished wall.

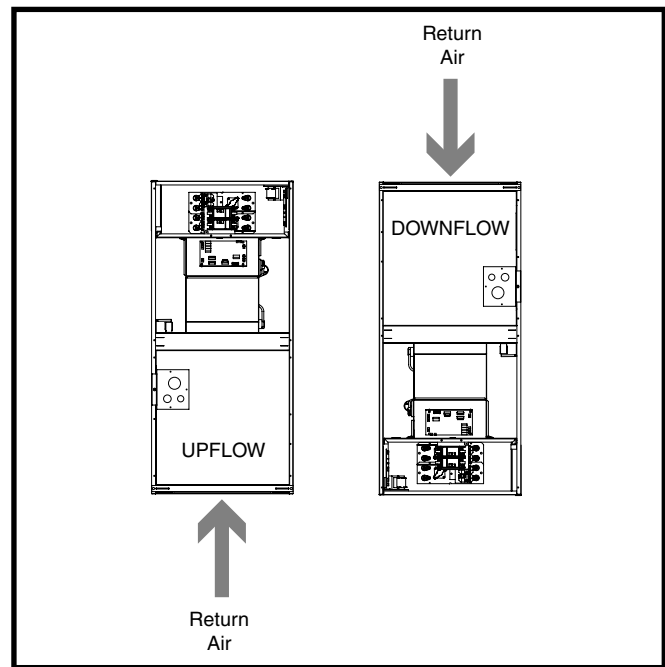
### **Upflow Installations**

All air handlers are factory shipped, ready for upflow installation. All return air must enter from the bottom of the unit when installed in the upflow configuration. A typical upflow unit is shown in [Figure 1](#).

Position the air handler on top of the return air duct and secure together with sheet metal screws. The screws must penetrate the sheet metal cabinet and duct. Tape or seal all seams if required by local code.

To attach the supply air duct to the air handler, bend the perforated flanges ([Figure 4 \(page 7\)](#)) upward 90° with a pair of wide duct pliers. Position the duct on top of the air handler and secure together with sheet metal screws. Make sure the screws penetrate the sheet metal casing and flanges. Tape or seal all seams if required by local code.

**NOTE:** If an upflow pedestal mounting stand is fabricated in the field, the stand must be constructed strong enough to support the unit with all accessories installed (approximately 130 lbs. for B-cabinet models and 200 lbs. for C-cabinet models). The construction of the pedestal stand must also allow for at least 235 in<sup>2</sup> free opening (300 in<sup>2</sup> for C-cabinet models) in the application. Field fabricated upflow pedestal mounting stands must be constructed of noncombustible materials. Position the air



**Figure 2. Installation Configurations**

handler on top of the mounting stand and secure together with sheet metal screws. The screws must penetrate the sheet metal cabinet and duct. Tape or seal all seams if required by local code.

### **Downflow Installations**

B6BV air handlers can be converted to downflow operation by flipping an upflow unit 180°. A typical installation of the unit in a downflow application is shown in [Figure 2](#).

**NOTE:** Downflow installations require the use of a plenum connector (or its equivalent) if the supply air ducts pass through the floor of the structure. This factory supplied accessory must be installed in the floor cavity and attached to the supply air duct before the downflow unit is installed. Available plenum connectors for all B6BV air Handlers are listed in [Table 1 \(page 7\)](#). All return air in downflow applications must enter through the top of the unit.

Position the air handler on top of the plenum connector and secure together with sheet metal screws. The screws must penetrate the sheet metal cabinet and plenum connector. Tape or seal all seams if required by local code.

### **Plenum Connector Installation**

The plenum connector is designed for use with trunk ducts having a minimum width of 12". If sufficient space is not available to adequately bend and secure duct tabs it may be necessary to attach the connector to the duct using sheet-metal fasteners and seal with an approved foil tape. The connector may be field constructed but must meet requirements as listed in the unit installation instructions.

1. Measure and mark the outline of the cut-out on the floor. See [Figure 3 \(page 7\)](#) for cutout dimensions.

**IMPORTANT!** Cut-outs in the floor and ductwork must be carefully located to avoid misalignment of the furnace and supply / return air ducts.

2. Cut out the floor opening.

**NOTE:** To allow some clearance for installing the plenum connector, cut the opening 1/16" larger than the actual cutout drawn.

3. Center the plenum connector in the floor opening with bottom tabs resting on top of the supply air duct.
4. Mark the cut-out area on the supply air duct by tracing around the connector tabs of the plenum connector.
5. Remove the plenum connector and cut out the marked area of the supply air duct.

**NOTE:** To allow some clearance for installing the plenum connector, cut the opening 1/4" larger the actual cutout drawn.

6. Install the duct connector back in the floor opening with the bottom tabs extending into the supply air duct. See [Figure 5](#).
7. Secure the plenum connector to the wood floor with appropriate size screws.
8. Bend the connector tabs on the bottom of the plenum connector upwards and as tight as possible against the supply air duct. See [Figure 5](#).
9. Seal all connections with industrial grade sealing tape or liquid sealant. **Requirements for sealing ductwork vary from region to region. Consult with local codes for requirements specific to your area.**

### A/C or H/P Coil Installation

Approved air conditioning and heat pump system components are listed on the unit nameplate. To install the indoor coil:

1. Remove door cover plate, door and coil close-off plate (with insulation). Discard door cover plate.
2. **Upflow Applications:** Slide the coil into the track located in the bottom of the unit.

**Downflow Applications:** The downflow adaptor must be used. See [Table 1](#). Install the downflow adaptor and coil as directed in the instructions supplied with the kit.

3. Reinstall the door and coil close-off plate (with insulation).

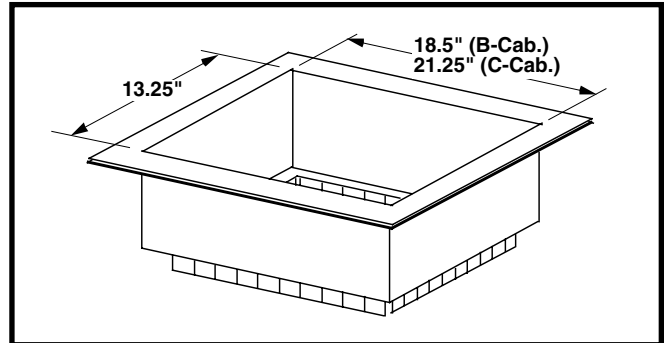
**NOTE:** In downflow applications the door is rotated 180° so that the refrigerant and condensate lines remain on the left side.

4. Install the refrigerant and condensate lines as directed in the instructions supplied with the outdoor unit.

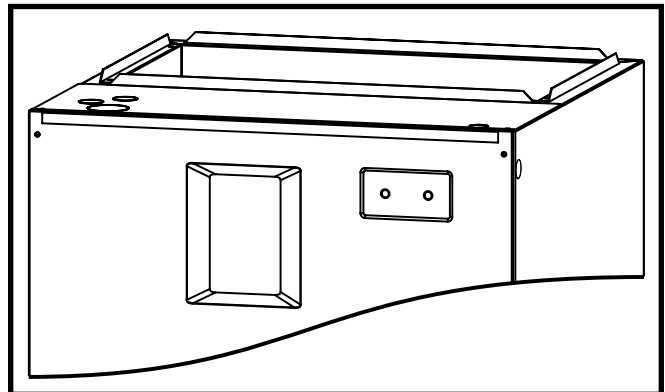
| DESCRIPTION                       | CABINET SIZE |                   |
|-----------------------------------|--------------|-------------------|
|                                   | B            | C                 |
| DOWNFLOW PLENUM CONNECTOR, 6.25"  | 913840       | 914969            |
| DOWNFLOW PLENUM CONNECTOR, 8.25"  | 913841       | 914970            |
| DOWNFLOW PLENUM CONNECTOR, 10.25" | 913842       | 914971            |
| UPFLOW PEDESTAL MOUNTING STAND    | 913872       | 913873            |
| DOWNFLOW COIL ADAPTOR             | 919321       | 919322<br>*919323 |

\* Use when installing B width coil in C width cabinet

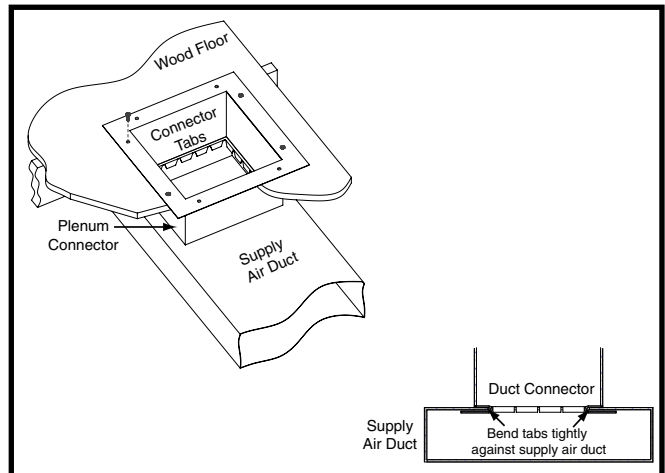
**Table 1. Optional Accessory Kits**



**Figure 3. Plenum Adapter**



**Figure 4. Perforated Flanges**



**Figure 5. Duct Connector Installed**

## ELECTRICAL CONNECTIONS

### **WARNING:**

#### **ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD**

**Failure to follow safety warnings exactly could result in serious injury 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 proper operation after servicing.**

Electrical connections must be in compliance with all applicable local codes and ordinances, and with the current revision of the National Electric Code (ANSI/NFPA 70). For Canadian installations, the electrical connections and grounding shall comply with the current Canadian Electrical Code (CSA C22.1 and/or local codes).

### **Pre-Electrical Checklist**

- ✓ Verify the voltage, frequency, and phase of the supply source match the specifications on the unit rating plate.
- ✓ Verify that the service provided by the utility is sufficient to handle the additional load imposed by this equipment. See the unit wiring label or [Table 7 \(page 15\)](#) for proper high and low voltage wiring.
- ✓ Verify factory wiring is in accordance with the unit wiring diagrams: [Figure 13 \(page 20\)](#), [Figure 14 \(page 21\)](#), [Figure 15 \(page 22\)](#), & [Figure 16 \(page 23\)](#). Verify no connections came loose during shipping or installation.

### **Line Voltage**

- **An electrical disconnect must be located within sight of and readily accessible to the unit.** This switch shall be capable of electrically de-energizing the outdoor unit. See unit data label for proper incoming field wiring. Any other wiring methods must be acceptable to authority having jurisdiction.
- It is recommended that the line voltage to the unit be supplied from a dedicated branch circuit containing the correct fuse or circuit breaker for the unit.
- The installer should become familiar with the wiring diagram/schematic before making any electrical connections to the unit. See the unit wiring label or [Figure 13 \(page 20\)](#), [Figure 14 \(page 21\)](#), [Figure 15 \(page 22\)](#), & [Figure 16 \(page 23\)](#).
- Use only copper wire for the line voltage power supply to this unit. Use proper code agency listed conduit and a conduit connector for connecting the supply wires to the unit. Aluminum supply wire may be used if a heater kit is installed.

- Provide power supply for the unit in accordance with the unit wiring diagram, and the unit rating plate. Use UL listed conduit and conduit connectors for connecting the supply wires to the unit and for proper grounding. Field supplied bushings for the power supply cables must be added to support and protect the power supply cables.
- If replacing any of the original wires supplied with the unit, the replacement wire must be copper wire consisting of the same gauge and temperature rating.
- Circuit breakers installed in the B6BV series air handler are for short-circuit protection of the internal wiring and to serve as a unit disconnect. They do not provide over-current protection of the supply wiring. Overcurrent protection must be provided at the branch circuit distribution panel and sized as shown on the unit rating label and according to applicable local codes. See the unit rating plate and [Table 7 \(page 15\)](#) for maximum circuit ampacity and maximum overcurrent protection limits.
- All 208/230 Volt units are shipped from the factory wired for 240 volt operation. For 208V operation, remove the lead from the transformer terminal marked 240V and connect it to the terminal marked 208V.

### Single Circuit Adaptor Kit

If a single circuit adaptor kit is used, it may need to be re-configured for some applications. Remove the single circuit adaptor kit cover and verify that the lugs are configured correctly for the application. If the lugs are not configured for the application, refer to the instructions included with the kit and modify the configuration.

Install the single circuit adaptor kit (if used) in the line side (“on” end) of the circuit breakers. Tighten the lugs securely (45 in-lbs recommended). Connect the supply wiring to the circuit breakers, single circuit adaptor kit, or terminal block. Tighten the lugs securely.

### Dual Supply Circuits

When using dual supply circuits verify that the supply sized for circuit “A” is connected to the circuit breaker that is connected to the top element assembly. Replace metal circuit breaker line cover. Refer to [Figure 9 \(page 15\)](#) for thermostat wiring examples.

### **Control Board**

The control board in the air handler controls the timing sequence of the elements. The board is equipped with a 3 second blower ON delay and a 15 second blower OFF delay in heating and a 40 second blower OFF delay in cooling. See [Figure 10 \(page 16\)](#) or [Figure 11 \(page 16\)](#) for control board layout and [Table 8 \(page 17\)](#) for element sequences.

### Twining

B6BM air handlers are not supplied with a built in twining capability. To connect two air handlers to a common single stage AC condensing unit or heat pump, a twining kit is available for field installation. **Please follow the instructions supplied with the kit.**

**NOTE:** Variable speed air handlers cannot be twinned.



## Thermostat Connections

- Thermostat connections shall be in accordance with the instructions supplied with the thermostat. The thermostat used with this equipment must operate in conjunction with any installed accessories. Typical AC and air handler hookups are shown in [Figure 9 \(page 15\)](#).

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### **CAUTION:**

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**Isolation must be maintained from the external Class 2 output of any transformer in a cooling circuit. Use a thermostat with isolating contacts to prevent inter-connection of Class 2 outputs.**

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- Where local codes require that the thermostat wiring must be routed through a conduit or raceway, splices can be made inside the unit; however, all wiring must be NEC Class 1 and must be separated from incoming power leads.
- The thermostat should be mounted about 5 feet above the floor on an inside wall. **DO NOT** install the thermostat on an outside wall or any other location where its operation may be adversely affected by radiant heat from fireplaces, sunlight, or lighting fixtures, and convective heat from warm air registers or electrical appliances. Refer to the thermostat manufacturer's instruction sheet for detailed mounting and installation information.
- Install the grommet, which is packed with the unit, in the hole for low-voltage wires. Properly connect the low-voltage wiring between the thermostat, outdoor unit, and control board. **NOTE:** When the low voltage wires are positioned in this grommet, the grommet will prevent chafing and/or shorting of the low voltage leads.

## Grounding

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### **WARNING:**

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**The unit cabinet must have an uninterrupted or unbroken electrical ground to minimize personal injury if an electrical fault should occur. Do not use gas piping as an electrical ground!**

---

This unit must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code (ANSI/NFPA 70) or the CSA C22.1 Electrical Code. Use the grounding lug provided in the control box for grounding the unit.

## STARTUP & ADJUSTMENTS

### Before You Start the Unit

Prior to start-up, complete the following inspections:

- ✓ Verify the unit is level and properly located with adequate clearances for servicing the unit. See [Figure 1 \(page 4\)](#).
- ✓ Check condensate drain line(s) for proper drainage (if applicable).
- ✓ Verify the surrounding area and top of the unit is free from obstructions and debris.
- ✓ Check all duct connections. Make sure the duct work is adequately sealed to prevent air leakage.
- ✓ Check all coil connections for leaks (if applicable).
- ✓ Verify that the line voltage power leads are securely connected and the unit is properly grounded. Make sure all doors are installed before restoring power to the unit.
- ✓ Verify the thermostat is wired correctly. Make sure all low voltage wires are securely connected.
- ✓ Verify the power supply branch circuit overcurrent protection is sized properly.
- ✓ Verify filter is properly and securely installed.

### Air Circulation Check

#### Running the Blower Continuously

Set the thermostat's system mode to **OFF** and the thermostat's fan mode to **ON**. The blower motor should run continuously. Check for air delivery at the register(s). Make sure that there are no obstructions at the registers or in the ducts.

**NOTE:** If blower is turning opposite of arrow direction, shut off main power to the unit and switch any two field wires at the disconnect. **DO NOT** alter unit wiring.

### System Cooling

1. Set the thermostat's system mode to **COOL** and fan mode to **AUTO**. Lower the thermostat's temperature mode below room temperature and observe that the blower energizes. Check the air being discharged at the register is cooler than room temperature. Verify unit refrigerant pressures are in order. Blower should be turning in direction indicated by arrow.

**NOTE:** DO NOT alter unit wiring. Listen for any unusual noises. Locate the source and correct as needed.

2. Allow the unit to run for several minutes and then set the thermostat's temperature above room temperature. Verify the blower cycles off with the thermostat.

### System Heating

1. Set the thermostat's system mode to **HEAT** and the fan mode to **AUTO**. Increase the thermostat's temperature above room temperature and observe that the blower energizes. Check the air being discharged at the register is warmer than room temperature.
2. Allow the unit to run for several minutes and then set the thermostat's temperature below room temperature. Verify the blower cycles off with the thermostat.

## Turning the Blower Off

Set thermostat's fan mode to **AUTO**, the blower will shut down immediately.

## Blower Configurations

### Determining Nominal System Capacity

To select the appropriate airflows for the air handler, the nominal system capacity must be known. The nominal system capacity is always the nominal capacity of the outdoor unit. However, in some situations the nominal system capacity may not be the same as the capacity rating of the air handler. Always refer to the capacity rating of the outdoor unit to determine the nominal system capacity.

### Selecting Continuous Low Speed Fan

#### Operation

The B6BV series air handler is equipped with the option of continuous low speed fan operation. When **G** is energized without **Y/Y2**, the air handler will operate using the heating speed. With **G & Y/Y2** or **Y/Y2** energized, the B6 electric furnace will operate in the selected cooling speed (including 40 sec blower-off delay). **NOTE:** To achieve continuous low speed fan operation **G** must be connected at the B6 electric furnace.

### Proper Blower Speed for Multi-Speed Units

The blower speed is preset at the factory for operation at the same speed for heating and cooling, by using the jumping terminal on the blower motor and connecting it to the desired speed with both the red and black wires connected to the jumping terminal.

#### NOTES:

- The control board is programmed with a 40 second off delay in the cooling mode for optimum system performance and efficiency.
- When using a 20 kw electric heat kit in a downflow installation, the blower must be set for high speed for both heating and cooling.

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## CAUTION:

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**To avoid personal injury or property damage, make sure the motor leads do not come into contact with any uninsulated metal components of the unit.**

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For optimum system performance and comfort, it may be necessary to change the factory set speed. Refer to [Table 5 \(page 14\)](#) or [Table 6 \(page 14\)](#) for airflow data. To change the blower speed:

1. Disconnect all electrical power to the unit and remove the upper door.
2. Remove the black and red wires from the blower motor jumping terminal. Discard the blower motor jumping terminal.
3. Connect the heating speed wire (red) and the cooling speed wire (black) to the desired blower speed marked on the terminal block of the blower motor.

Standard 4-speed motors:

- Terminal 2 = High speed
- Terminal 3 = Medium High speed
- Terminal 4 = Medium Low speed
- Terminal 5 = Low speed

4. Replace the upper door and secure it to the unit.
5. Restore power to the unit.

### High Efficiency - Fixed Speed Units

**IMPORTANT!** This air handler has been designed to give the installer maximum flexibility to optimize system performance, efficiency, and comfort. Because there are so many different ways to set up the air handler it is important to read and follow these directions carefully.

B6BV air handlers use high efficiency circulating air motors. The fixed speed motor control board ([Figure 12 \(page 17\)](#)) controls the torque output of the motor.

Before operation, the air handler must be configured to match the unit with the system, system options, and climatic conditions. When configured, the air handler responds directly to the thermostat inputs, as well as the optional humidistat (see [page 11](#)). During normal operation, the motor will gradually change speeds during start-up, shut down, when thermostat inputs change, and when the duct static pressure changes (vents closed or opened, filter clogging, etc.). The air handler is configured by setting the selector switches on the control board.

### Selecting Basic Heating Airflow

The fixed speed motor control board ([Figure 12](#)) contains a set of dip switches for setting the blower speed. Use pins 1 to 4 to set the blower speed for heating and pins 5 to 8 to set the speed for cooling. To determine the appropriate switch settings for your installation, see [Table 6 \(page 14\)](#).

**NOTE:** The minimum electric heat airflow setting may be set higher, but must never be set lower than the setting shown in [Table 6](#).

### Selecting Basic Cooling / Heat Pump Airflow

The basic cooling/heat-pump airflow is controlled by setting switches 5 - 8 on the thermostat input board (mounted on the blower). All airflows for other modes of operation (except electric heat) are determined by this basic setting. FAN ONLY would deliver 50% of the selected cooling airflow. [Table 6 \(page 14\)](#) lists the basic airflow values versus the airflow selector switch settings and ranges of basic air flow settings.

- When operating in the heat pump mode, a higher basic airflow setting will increase the energy efficiency and capacity but will also decrease the supply air temperature.
- For maximum capacity and energy efficiency, select an airflow at or near the top of the range for that nominal capacity.
- For maximum dehumidification, select an airflow near the middle or bottom of the range for that nominal capacity.

Additional information on humidity control can be found in the Humidistat and Delay Setting sections.

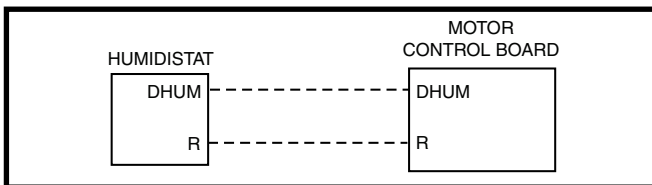
- For thermostats with a dehumidifier output, use a field supplied wire to connect the thermostat’s dehumidifier output to the terminal marked **DHUM**. The thermostat should be set so that the **DHUM** output should be high (positive) when dehumidification is needed. See also Dehumidification Options section.

**IMPORTANT!** If coil icing is observed, the basic cooling/heat-pump airflow selected may be too low. Verify the setting selected is within the range shown in [Table 6 \(page 14\)](#) and that the the system is properly charged. Please refer to the instructions supplied with the outdoor unit. If icing continues to occur, raise the selected airflow one or two steps.

### Dehumidification Options

The motor control board ([Figure 12 \(page 17\)](#)) has a **DHUM** connection that allows the system to increase the amount of humidity that is removed from the circulating air. This is accomplished by reducing the CFM and allowing the cooling coil to become colder. This will only occur when there is a call for cooling. There are many ways that this can be electrically wired.

1. If the room thermostat incorporates a humidity sensor and **DHUM** output, connect the **DHUM** on the thermostat to the **DHUM** terminal on the motor control board. [Figure 6](#).
2. If using a separate humidistat, connect the **DHUM & R** terminals on the humidistat to the **DHUM & R** terminals on the motor control board of the air handler. In this option, the **DHUM** output of the humidistat must be set to be normally open and closed when there is a call for humidification.
3. If a humidistat is not available, it is an acceptable option to connect the **R & DHUM** terminals on the motor control board together with a field supplied wire. This option causes the blower to run at a reduced CFM for 10 minutes after a call for cooling. **NOTE:** If outdoor unit is a heat pump, connect the **O** terminal to **DHUM**.



**Figure 6. DHUM Wiring Configuration**

| CABINET SIZE | FILTER SIZE |
|--------------|-------------|
| A            | 12 x 20 x 1 |
| B            | 18 x 20 x 1 |
| C            | 20 x 20 x 1 |

**Table 2. Filter Sizes**

## UNIT MAINTENANCE

Proper maintenance is most important to achieve the best performance from a air handler. Some of the components and their locations are shown in [Figure 7 \(page 12\)](#). If any component of the air handler must be replaced, use only factory authorized replacement parts specified in the Replacement Parts List provided online.

**⚠ WARNING:**

**ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD**

**Failure to follow safety warnings exactly could result in serious injury 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 proper operation after servicing.**

- These maintenance instructions are primarily intended to assist qualified technicians experienced in the proper maintenance and operation of this appliance.
- Always reinstall the doors on the air handler after servicing or cleaning/changing the filters. Do not operate the air handler without all doors and covers in place.
- Verify that the thermostat is properly installed and is not being affected by drafts or heat from lamps or other appliances.
- To achieve the best performance and minimize equipment failure, it is recommended that a yearly maintenance checkup be performed. At a minimum, this check should include the following items:

### Air Filter(s)

**⚠ WARNING:**

**Never operate the air handler without a filter in place. Dust and lint in the return air can build up on internal components, resulting in loss of efficiency, equipment damage, and possible fire.**

B6BV series air handlers are not supplied with a single air filter when shipped from the factory. It is recommended that the filter be cleaned or replaced monthly. Newly built or recently renovated homes may require more frequent changing until the construction dust has minimized. Filter sizes shown in [Table 2](#) are available at most local retailers.

Filters designed to remove smaller particles such as pollen, may require additional maintenance.

## Blower Compartment

Dirt and lint can create excessive loads on the motor resulting in higher than normal operating temperatures and shortened service life. It is recommended that the blower compartment be cleaned of dirt or lint that may have accumulated in the compartment or on the blower and motor as part of the annual inspection.

## Blower Fan Wheel

Inspect the blower wheel blades for accumulations of dirt and clean if necessary. Inspect mounting nut for tightness when done.

## Blower Motor & Assembly

Inspect the blower assembly and motor mounting brackets for tightness and corrosion. Correct deficiencies if necessary. The blower motor contains sealed bearings and under normal operating conditions, no maintenance is necessary for the life of the equipment.

| RED LED | DIAGNOSTIC               |
|---------|--------------------------|
| OFF     | CONTROL FAULT (NO POWER) |
| FLASH   | BLOWER FAULT             |
| ON      | NORMAL OPERATION         |

Table 3. Air handler Control Board Fault Conditions

## TROUBLESHOOTING

If the air handler fails to operate, check the following:

- Is the electric turned on?
- Is the thermostat operating properly?
- Are the blower compartment door(s) in place?
- Is the air handler disconnect closed?
- Has the circuit breaker tripped or the control board fuse burned open?
- Are any manual reset switches open?
- Is the filter dirty or plugged?
- Is the red LED on the air handler control board constantly ON? If not, use [Table 3](#) to determine fault condition.
- Is the green and red LED on the motor control board constantly ON? If not, use [Table 4](#) to determine fault condition.

|                   | DIAGNOSTIC                  | GREEN LED | RED LED |
|-------------------|-----------------------------|-----------|---------|
| FIXED SPEED UNITS | CONTROL FAULT (NO POWER)    | OFF       | OFF     |
|                   | NORMAL OPERATION            | ON        | ON      |
|                   | MOTOR FAULT                 | ON        | FLASH   |
|                   | TWIN FAULT (NO MOTOR FAULT) | FLASH     | ON      |
|                   | COMMUNICATIONS FAULT        | FLASH     | FLASH   |

Table 4. Motor Control Board Fault Conditions

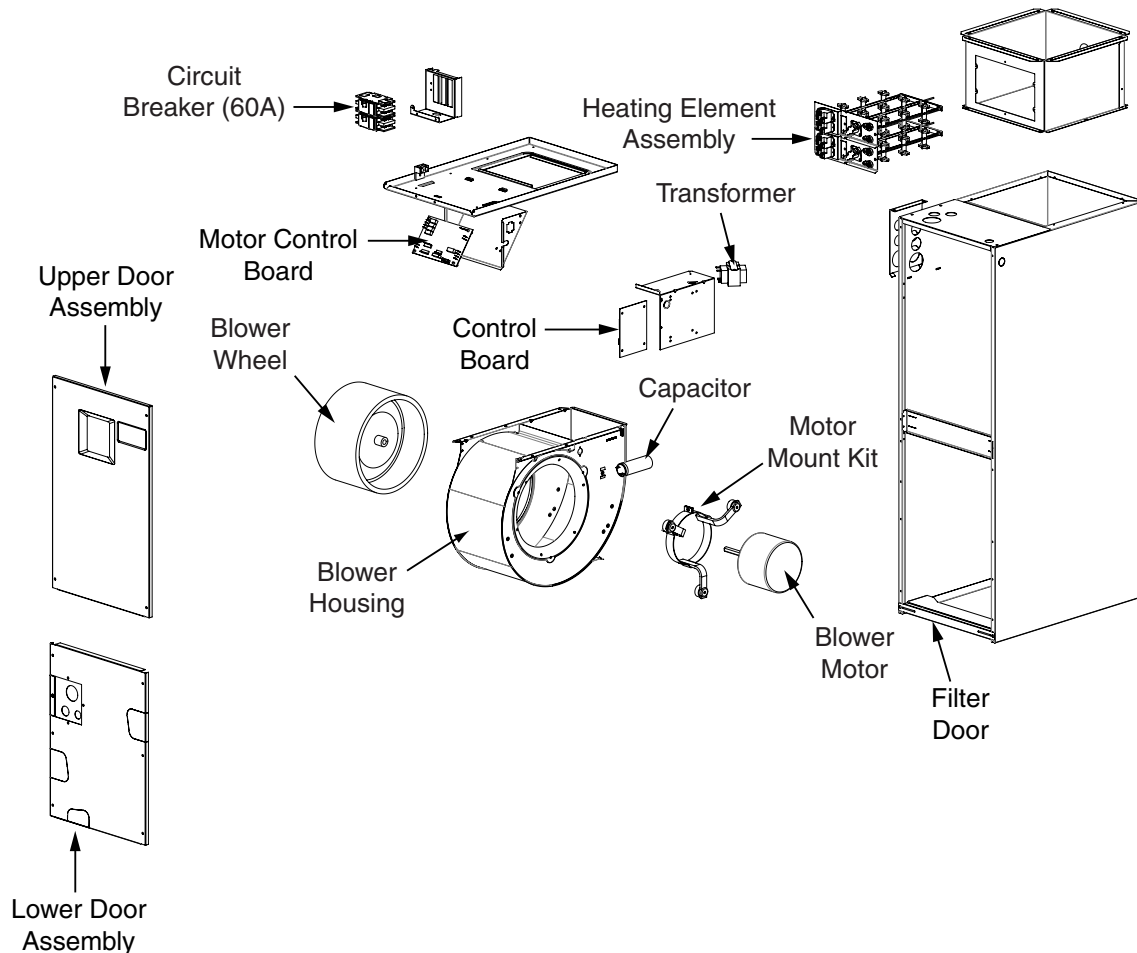
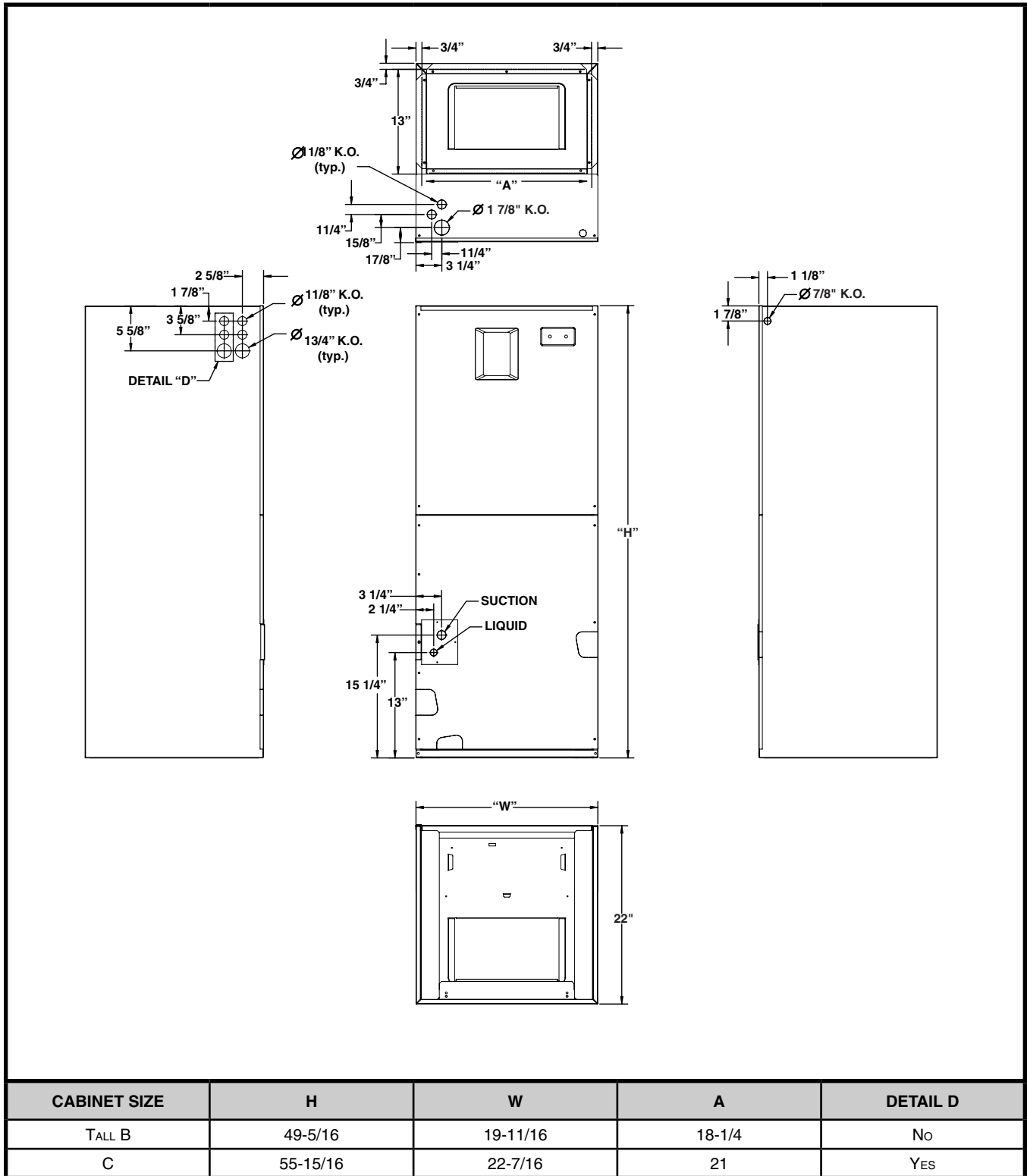


Figure 7. B6BV Series Air Handler Components

## FIGURES & TABLES



**Figure 8. B6BV Series Physical Dimensions**



## Airflow Data

| CABINET | NOMINAL ELECTIC HEAT KW |      |      |      |      |      |      |
|---------|-------------------------|------|------|------|------|------|------|
|         | 5                       | 8    | 10   | 15   | 20   | 25   | 30   |
| C       | 1000                    | 1100 | 1200 | 1400 | 1600 | 1800 | 2000 |

**Table 5. Minimum Heating Airflow Settings (in CFM)  
for B6BV (FSHE) Series Air Handlers**

| B WIDTH CABINETS                     |     |                    |                  |                                  |      |            |             |      |      |      |      |  |  |
|--------------------------------------|-----|--------------------|------------------|----------------------------------|------|------------|-------------|------|------|------|------|--|--|
| NOMINAL BLOWER SIZE                  |     | NOMINAL MOTOR SIZE | NUMBER OF SPEEDS | EXT. STATIC PRESSURE (IN W.C.)   | LOW  | MEDIUM LOW | MEDIUM HIGH | HIGH |      |      |      |  |  |
| 10 x 8                               |     | 1/3 HP             | 4-SP             | 0.1                              | 800  | 1090       | 1265        | 1405 |      |      |      |  |  |
|                                      |     |                    |                  | 0.2                              | 780  | 1080       | 1255        | 1395 |      |      |      |  |  |
|                                      |     |                    |                  | 0.3                              | 760  | 1060       | 1240        | 1375 |      |      |      |  |  |
|                                      |     |                    |                  | 0.4                              | 740  | 1095       | 1215        | 1350 |      |      |      |  |  |
|                                      |     |                    |                  | 0.5                              | 715  | 1020       | 1190        | 1310 |      |      |      |  |  |
| C WIDTH CABINETS                     |     |                    |                  |                                  |      |            |             |      |      |      |      |  |  |
| SWITCH SETTINGS<br>(0 = OFF, 1 = ON) |     |                    |                  | COOLING OR HEATING AIRFLOW (CFM) |      |            |             |      |      |      |      |  |  |
|                                      |     |                    |                  | DRY COIL ESP                     |      |            |             |      |      |      |      |  |  |
| 1/5                                  | 2/6 | 3/7                | 4/8              | 0.1                              | 0.2  | 0.3        | 0.4         | 0.5  | 0.6  | 0.7  | 0.8  |  |  |
| 0                                    | 0   | 0                  | 0                | 710                              | 580  | 395        | —           | —    | —    | —    | —    |  |  |
| 1                                    | 0   | 0                  | 0                | 830                              | 690  | 675        | 530         | 505  | —    | —    | —    |  |  |
| 0                                    | 1   | 0                  | 0                | 930                              | 875  | 710        | 665         | 560  | 530  | —    | —    |  |  |
| 1                                    | 1   | 0                  | 0                | 1065                             | 1015 | 900        | 840         | 800  | 705  | 665  | 635  |  |  |
| 0                                    | 0   | 1                  | 0                | 1185                             | 1115 | 1010       | 960         | 925  | 875  | 830  | 745  |  |  |
| 1                                    | 0   | 1                  | 0                | 1275                             | 1220 | 1175       | 1120        | 1060 | 970  | 930  | 890  |  |  |
| 0                                    | 1   | 1                  | 0                | 1365                             | 1350 | 1255       | 1200        | 1150 | 1105 | 1060 | 1025 |  |  |
| 1                                    | 1   | 1                  | 0                | 1480                             | 1430 | 1370       | 1325        | 1265 | 1225 | 1185 | 1140 |  |  |
| 0                                    | 0   | 0                  | 1                | 1560                             | 1535 | 1485       | 1430        | 1375 | 1335 | 1285 | 1240 |  |  |
| 1                                    | 0   | 0                  | 1                | 1650                             | 1600 | 1545       | 1500        | 1450 | 1405 | 1360 | 1305 |  |  |
| 0                                    | 1   | 0                  | 1                | 1730                             | 1685 | 1660       | 1610        | 1570 | 1520 | 1470 | 1420 |  |  |
| 1                                    | 1   | 0                  | 1                | 1785                             | 1740 | 1695       | 1645        | 1615 | 1545 | 1510 | 1470 |  |  |
| 0                                    | 0   | 1                  | 1                | 1865                             | 1820 | 1785       | 1750        | 1695 | 1655 | 1605 | 1560 |  |  |
| 1                                    | 0   | 1                  | 1                | 1920                             | 1890 | 1850       | 1805        | 1765 | 1715 | 1675 | 1640 |  |  |
| 0                                    | 1   | 1                  | 1                | 2010                             | 1965 | 1960       | 1900        | 1850 | 1810 | 1775 | 1730 |  |  |
| 1                                    | 1   | 1                  | 1                | 2065                             | 2020 | 1985       | 1955        | 1915 | 1880 | 1840 | 1810 |  |  |

### NOTES:

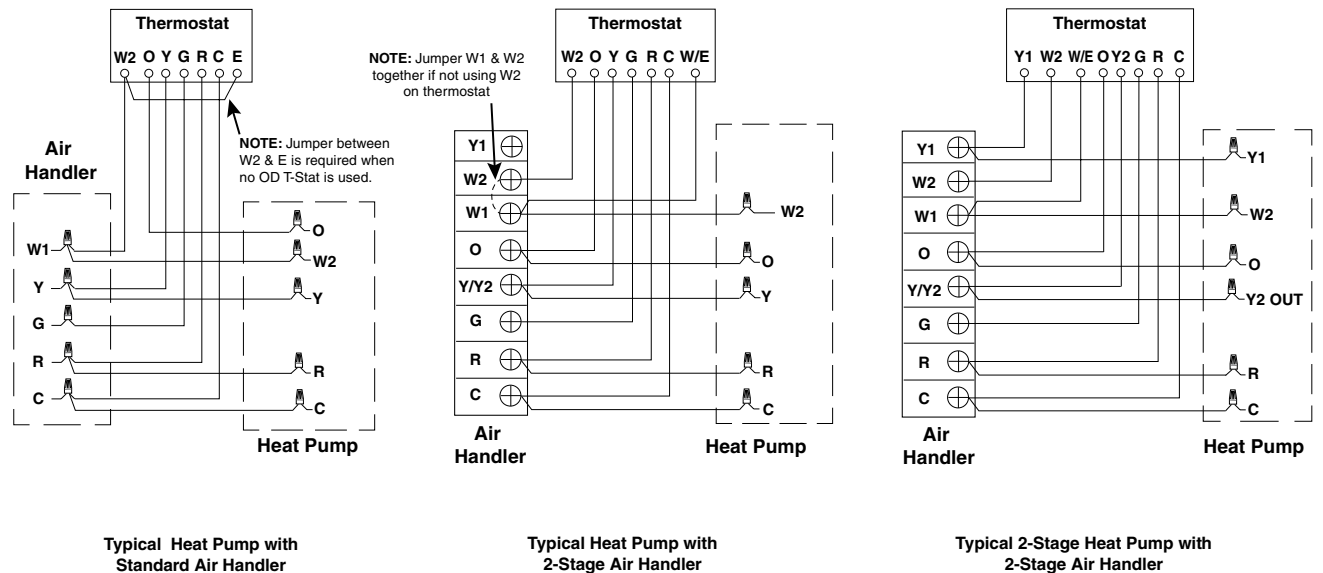
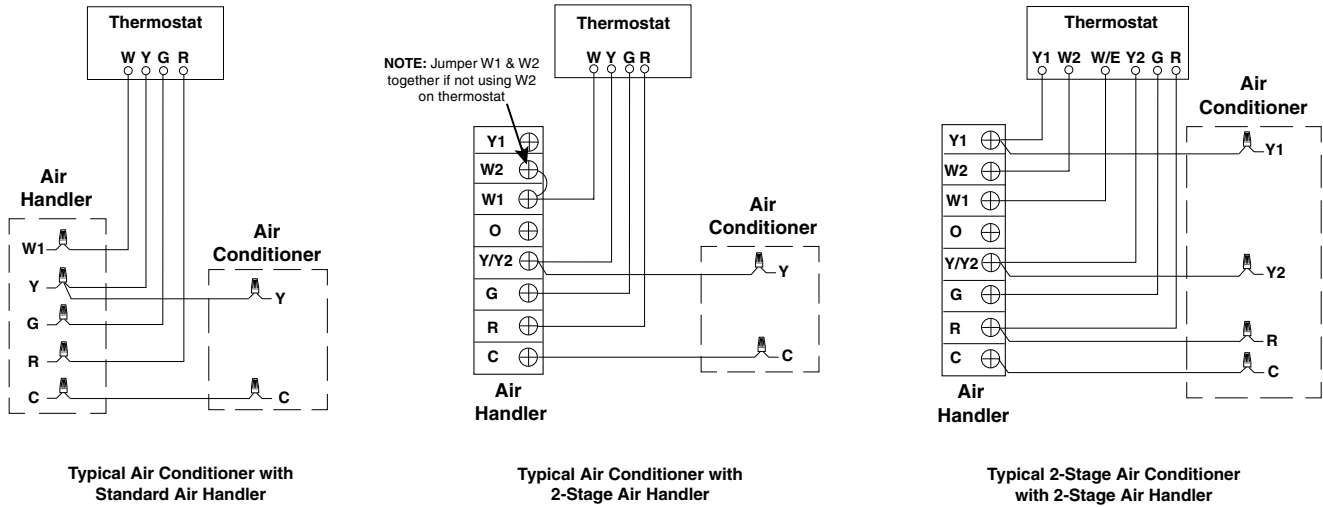
- 1) Airflow is shown in cfm, +/- 5%.
- 2) All airflows are measured without filter and with dry coil. For filter velocity of 300 ft./min. subtract .08" external static pressure. For wet coil, subtract .1" external static pressure.
- 3) See unit nameplate or installation instructions for maximum recommended external static pressure.

**Table 6. Airflow Data for B6BV Air Handlers**

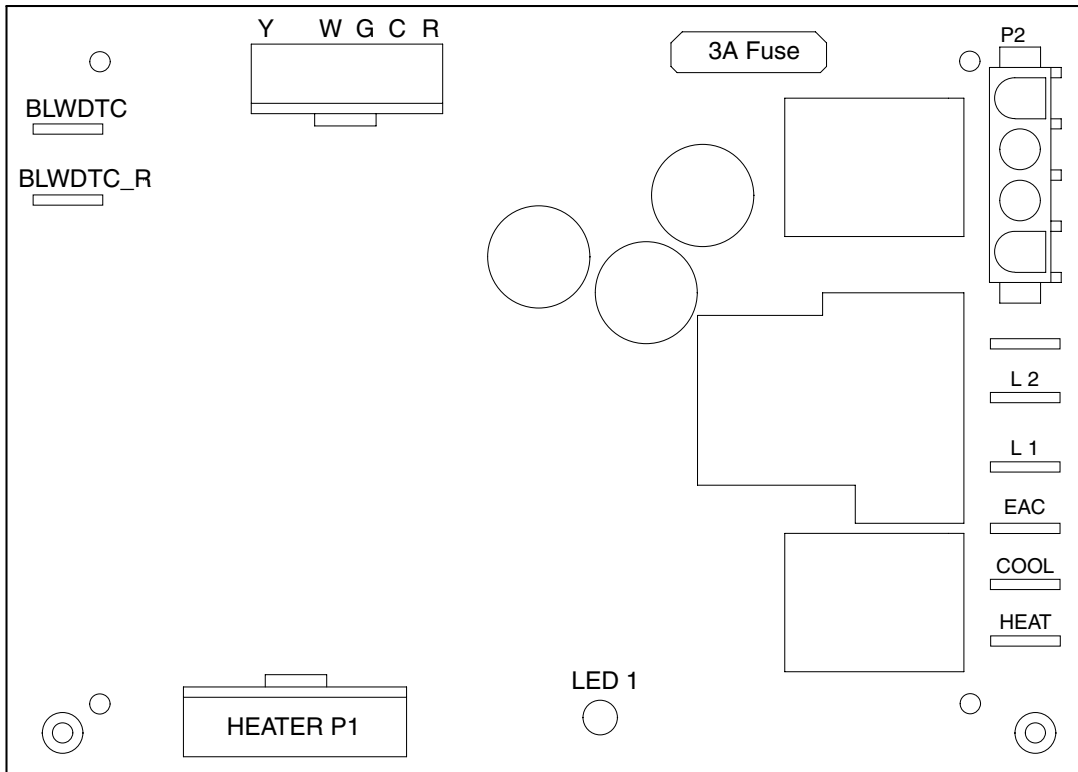
## Electrical Information

| MINIMUM CIRCUIT AMPACITY & MAXIMUM OVERCURRENT PROTECTION |          |                             |                                   |           |           |                |           |           |           |                |                                   |           |           |                |           |           |           |                |
|---|----------|-----------------------------|-----------------------------------|-----------|-----------|----------------|-----------|-----------|-----------|----------------|-----------------------------------|-----------|-----------|----------------|-----------|-----------|-----------|----------------|
| CABINET   | CAPACITY | HEAT KIT MODEL NUMBER H6HK- | 240 VAC, 50 & 60 HZ, SINGLE PHASE |           |           |                |           |           |           |                | 208 VAC, 50 & 60 HZ, SINGLE PHASE |           |           |                |           |           |           |                |
|   |          |                             | MCA                               |           |           |                | MOP       |           |           |                | MCA                               |           |           |                | MOP       |           |           |                |
|   |          |                             | CIRCUIT A                         | CIRCUIT B | CIRCUIT C | SINGLE CIRCUIT | CIRCUIT A | CIRCUIT B | CIRCUIT C | SINGLE CIRCUIT | CIRCUIT A                         | CIRCUIT B | CIRCUIT C | SINGLE CIRCUIT | CIRCUIT A | CIRCUIT B | CIRCUIT C | SINGLE CIRCUIT |
| B   | -        | 10 KW                       | 53.6                              | -         | -         | 53.6           | 60        | -         | -         | 60             | 47.0                              | -         | -         | 47.0           | 50        | -         | -         | 50             |
|   | -        | 15 KW                       | 56.6                              | 25.0      | -         | 78.6           | 60        | 30        | -         | 80             | 47.0                              | 21.7      | -         | 68.6           | 50        | 25        | -         | 70             |
| C   | -        | 10 KW                       | 56.3                              | -         | -         | 56.3           | 60        | -         | -         | 60             | 50.1                              | -         | -         | 50.1           | 60        | -         | -         | 60             |
|   | -        | 20 KW                       | 56.3                              | 50.0      | -         | 106.3          | 60        | 60        | -         | 110            | 50.1                              | 43.3      | -         | 93.4           | 60        | 45        | -         | 100            |

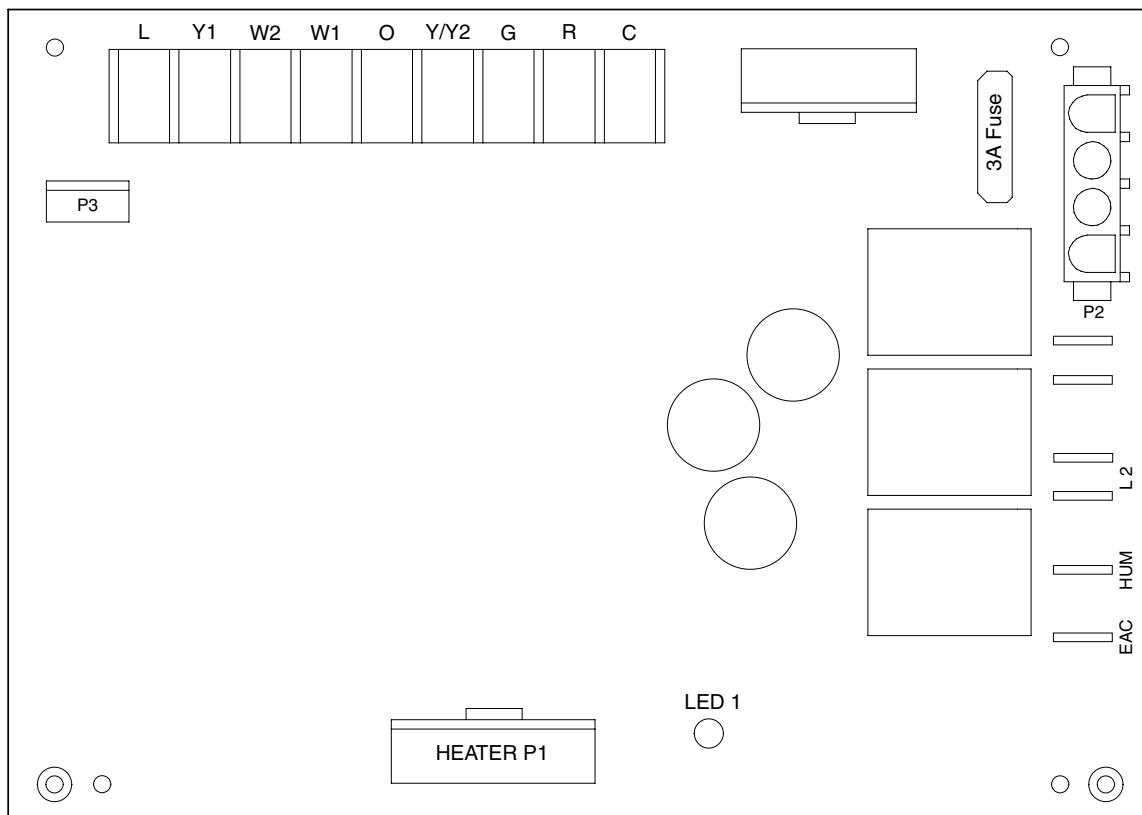
**Table 7. B6BV Electrical Data**



**Figure 9. Typical Thermostat Connections**



**Figure 10. Single Stage Control Board**



**Figure 11. Two - Stage Control Board**

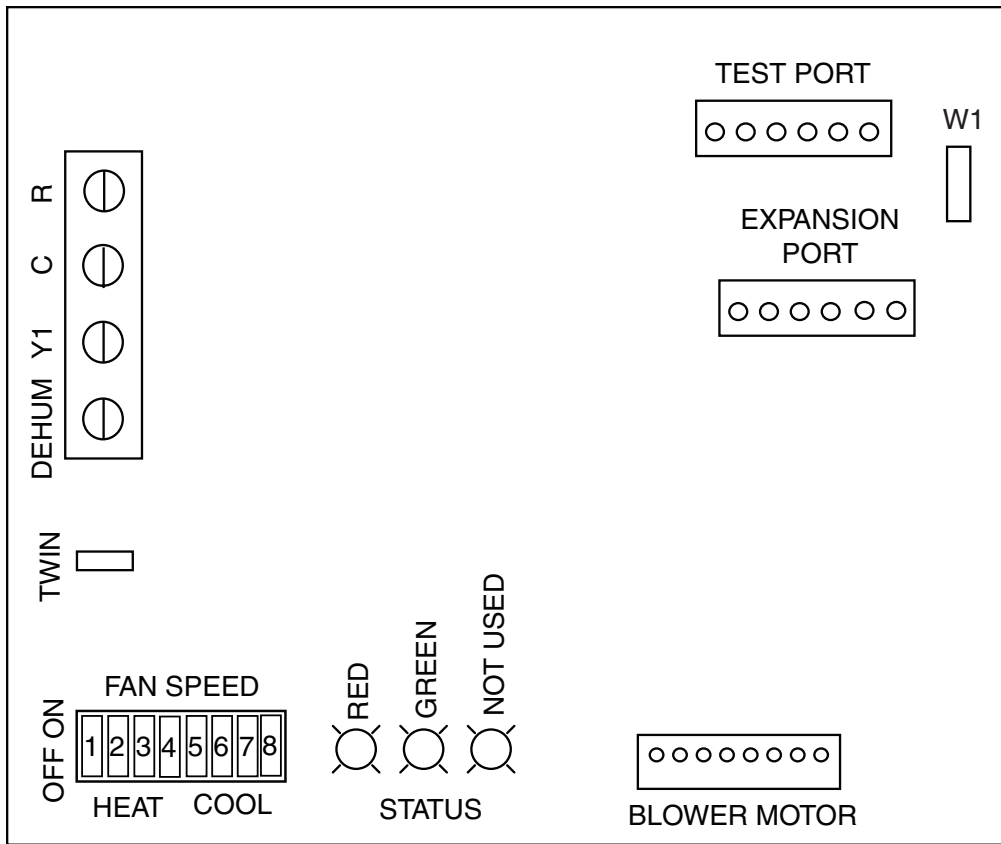


Figure 12. Two-Stage Fixed Speed Motor Control Board

| CONTROL SIGNAL & MODE                 | OPERATION                           | TOTAL KW                             | BOARD ACTION                          |
|---------------------------------------|-------------------------------------|--------------------------------------|---------------------------------------|
| W1 ONLY<br>EHEAT                      | ON                                  | 5 KW                                 | STAGE 1 HEAT ON INSTANTLY             |
|                                       |                                     |                                      | HEAT BLOWER ON AFTER 3 SECOND DELAY   |
|                                       |                                     | 10 KW                                | STAGE 1 HEAT ON INSTANTLY             |
|                                       |                                     |                                      | HEAT BLOWER ON AFTER 3 SECOND DELAY   |
|                                       |                                     | 15 KW                                | STAGE 1 HEAT ON INSTANTLY             |
|                                       |                                     |                                      | HEAT BLOWER ON AFTER 3 SECOND DELAY   |
|                                       |                                     |                                      | STAGE 2 HEAT ON AFTER 5 SECOND DELAY  |
|                                       |                                     | 20 KW                                | STAGE 1 HEAT ON INSTANTLY             |
|                                       |                                     |                                      | HEAT BLOWER ON AFTER 3 SECOND DELAY   |
|                                       |                                     |                                      | STAGE 2 HEAT ON AFTER 5 SECOND DELAY  |
|                                       |                                     | 25 KW                                | STAGE 3 HEAT ON AFTER 10 SECOND DELAY |
|                                       |                                     |                                      | STAGE 1 HEAT ON INSTANTLY             |
|                                       | HEAT BLOWER ON AFTER 3 SECOND DELAY |                                      |                                       |
|                                       | 30 KW                               | STAGE 2 HEAT ON AFTER 5 SECOND DELAY |                                       |
| STAGE 3 HEAT ON AFTER 10 SECOND DELAY |                                     |                                      |                                       |
| STAGE 4 HEAT ON AFTER 15 SECOND DELAY |                                     |                                      |                                       |
| HEAT STAGES OFF INSTANTLY             |                                     |                                      |                                       |
| OFF                                   | OFF                                 |                                      | BLOWER OFF AFTER 15 SECOND DELAY      |

Table 8. Heating Element Logic

| CONTROL SIGNAL & MODE                 | OPERATION                              | TOTAL KW | BOARD ACTION                                |
|---------------------------------------|--|----------|---|
| W1 & W2<br>EHEAT                      | ON                                     | 5 KW     | STAGE 1 HEAT ON INSTANTLY                   |
|                                       |  |          | HEAT BLOWER ON AFTER 3 SECOND DELAY         |
|                                       |  | 10 KW    | STAGE 1 HEAT ON INSTANTLY                   |
|                                       |  |          | HEAT BLOWER ON AFTER 3 SECOND DELAY         |
|                                       |  |          | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY       |
|                                       |  | 15 KW    | STAGE 1 HEAT ON INSTANTLY                   |
|                                       |  |          | HEAT BLOWER ON AFTER 3 SECOND DELAY         |
|                                       |  |          | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY       |
|                                       |  | 20 KW    | STAGE 3 HEAT ON AFTER 10 SECONDS DELAY      |
|                                       |  |          | STAGE 1 HEAT ON INSTANTLY                   |
|                                       |  |          | HEAT BLOWER ON AFTER 3 SECOND DELAY         |
|                                       |  |          | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY       |
|                                       |  | 25 KW    | STAGE 3 HEAT ON AFTER 10 SECONDS DELAY      |
|                                       |  |          | STAGE 4 HEAT ON AFTER 15 SECONDS DELAY      |
|                                       |  |          | STAGE 1 HEAT ON INSTANTLY                   |
|                                       |  |          | HEAT BLOWER ON AFTER 3 SECOND DELAY         |
|                                       |  |          | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY       |
|                                       |  | 30 KW    | STAGE 3 HEAT ON AFTER 10 SECONDS DELAY      |
|                                       | STAGE 4 HEAT ON AFTER 15 SECONDS DELAY |          |   |
|                                       | STAGE 5 HEAT ON AFTER 20 SECONDS DELAY |          |   |
| STAGE 1 HEAT ON INSTANTLY             |  |          |   |
| HEAT BLOWER ON AFTER 3 SECOND DELAY   |  |          |   |
| STAGE 2 HEAT ON AFTER 5 SECONDS DELAY |  |          |   |
| OFF                                   | HEAT STAGES OFF INSTANTLY              |          |   |
|                                       | BLOWER OFF AFTER 15 SECOND DELAY       |          |   |
| W1 & Y/Y2<br>AUX HEAT                 | ON                                     | 5 KW     | STAGE 1 HEAT ON INSTANTLY                   |
|                                       |  |          | COOL BLOWER ON AFTER 3 SECOND DELAY         |
|                                       |  | 10 KW    | STAGE 1 HEAT ON INSTANTLY                   |
|                                       |  |          | COOL BLOWER ON AFTER 3 SECOND DELAY         |
|                                       |  | 15 KW    | STAGE 1 HEAT ON INSTANTLY                   |
|                                       |  |          | COOL BLOWER ON AFTER 3 SECOND DELAY         |
|                                       |  | 20 KW    | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY       |
|                                       |  |          | STAGE 1 HEAT ON INSTANTLY                   |
|                                       |  |          | COOL BLOWER ON AFTER 3 SECOND DELAY         |
|                                       |  | 25 KW    | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY       |
|                                       |  |          | STAGE 3 HEAT ON AFTER 10 SECONDS DELAY      |
|                                       |  |          | STAGE 1 HEAT ON INSTANTLY                   |
|                                       |  | 30 KW    | COOL BLOWER ON AFTER 3 SECOND DELAY         |
|                                       |  |          | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY       |
|                                       |  |          | STAGE 3 HEAT ON AFTER 10 SECONDS DELAY      |
|                                       |  |          | STAGE 4 HEAT ON AFTER 15 SECONDS DELAY      |
|                                       |  | OFF      | HEAT STAGES OFF INSTANTLY                   |
|                                       |  |          | HEAT BLOWER TURNS OFF AFTER 40 SECOND DELAY |

**Table 8. Heating Element Logic for B6BV Air Handlers - Continued**



| CONTROL SIGNAL & MODE                  | OPERATION                              | TOTAL KW                                    | BOARD ACTION                           |
|--|--|---|--|
| W1, W2 & Y/Y2<br>AUX HEAT              | ON                                     | 5 KW  | STAGE 1 HEAT ON INSTANTLY              |
|  |  |   | COOL BLOWER ON AFTER 3 SECOND DELAY    |
|  |  | 10 KW                                       | STAGE 1 HEAT ON INSTANTLY              |
|  |  |   | COOL BLOWER ON AFTER 3 SECOND DELAY    |
|  |  |   | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY  |
|  |  | 15 KW                                       | STAGE 1 HEAT ON INSTANTLY              |
|  |  |   | COOL BLOWER ON AFTER 3 SECOND DELAY    |
|  |  |   | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY  |
|  |  | 20 KW                                       | STAGE 3 HEAT ON AFTER 30 SECONDS DELAY |
|  |  |   | STAGE 1 HEAT ON INSTANTLY              |
|  |  |   | COOL BLOWER ON AFTER 3 SECOND DELAY    |
|  |  |   | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY  |
|  |  | 25 KW                                       | STAGE 3 HEAT ON AFTER 10 SECONDS DELAY |
|  |  |   | STAGE 4 HEAT ON AFTER 15 SECONDS DELAY |
|  |  |   | STAGE 5 HEAT ON AFTER 20 SECONDS DELAY |
|  |  |   | STAGE 1 HEAT ON INSTANTLY              |
|  |  |   | COOL BLOWER ON AFTER 3 SECOND DELAY    |
|  |  | 30 KW                                       | STAGE 2 HEAT ON AFTER 5 SECONDS DELAY  |
|  | STAGE 3 HEAT ON AFTER 10 SECONDS DELAY |   |  |
|  | STAGE 4 HEAT ON AFTER 15 SECONDS DELAY |   |  |
| STAGE 5 HEAT ON AFTER 20 SECONDS DELAY |  |   |  |
| STAGE 6 HEAT ON AFTER 25 SECONDS DELAY |  |   |  |
| HEAT STAGES OFF INSTANTLY              |  |   |  |
| OFF                                    |  | HEAT BLOWER TURNS OFF AFTER 40 SECOND DELAY |  |
| G<br>FAN                               | ON                                     |   | FAN BLOWER ON AFTER 3 SECOND DELAY     |
|  | OFF                                    |   | FAN BLOWER OFF INSTANTLY               |
| Y/Y2<br>HEAT PUMP & COOL               | ON                                     |   | COOL BLOWER ON AFTER 3 SECOND DELAY    |
|  | OFF                                    |   | COOL BLOWER OFF AFTER 40 SECOND DELAY  |
| Y1<br>HEAT PUMP & COOL                 | ON                                     |   | COOL BLOWER ON AFTER 3 SECOND DELAY    |
|  | OFF                                    |   | COOL BLOWER OFF AFTER 40 SECOND DELAY  |
| Y1 & Y/Y2<br>HEAT PUMP & COOL          | ON                                     |   | COOL BLOWER ON AFTER 3 SECOND DELAY    |
|  | OFF                                    |   | COOL BLOWER OFF AFTER 40 SECOND DELAY  |

**Table 8. Heating Element Logic for B6BV Air Handlers - Continued**

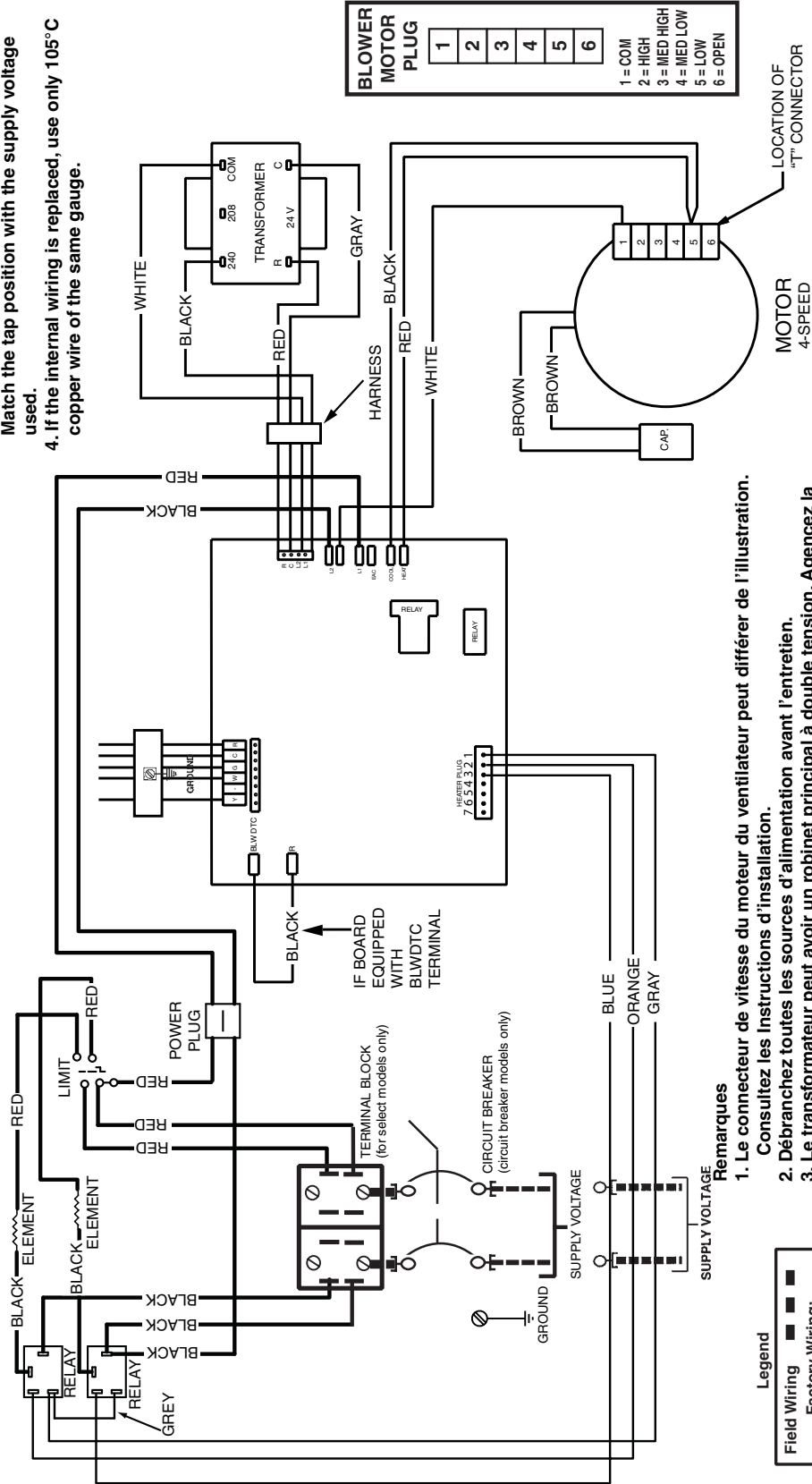
# Wiring Diagrams

## WIRING DIAGRAM

### Air Handler with Factory Installed Heat (10kW)

**NOTES:**

1. The Blower motor speed tap connection may not be as shown. See the Installation Instructions.
2. Disconnect all power before servicing.
3. Transformer may have a dual voltage primary tap. Match the tap position with the supply voltage used.
4. If the internal wiring is replaced, use only 105°C copper wire of the same gauge.



- Remarques**
1. Le connecteur de vitesse du ventilateur peut différer de l'illustration. Consultez les instructions d'installation.
  2. Débranchez toutes les sources d'alimentation avant l'entretien.
  3. Le transformateur peut avoir un robinet principal à double tension. Agencez la position du robinet au type de tension de l'installation.
  4. Si le câblage interne est remplacé, utilisez seulement un fil de cuivre 105° C du même gabarit.

Figure 13. B6BV Air Handler Equipped With PSC Motor & 10 kw Heater Kit (B Size Cabinet Only)

# WIRING DIAGRAM

## Air Handler with Factory Installed Heat (15kW)

### NOTES:

1. The blower motor speed tap connection may not be as shown. See the Installation Instructions.
2. Disconnect all power before servicing.
3. Transformer may have a dual voltage primary tap. Match the tap position with the supply voltage used.
4. If the internal wiring is replaced, use only 105°C copper wire of the same gauge.

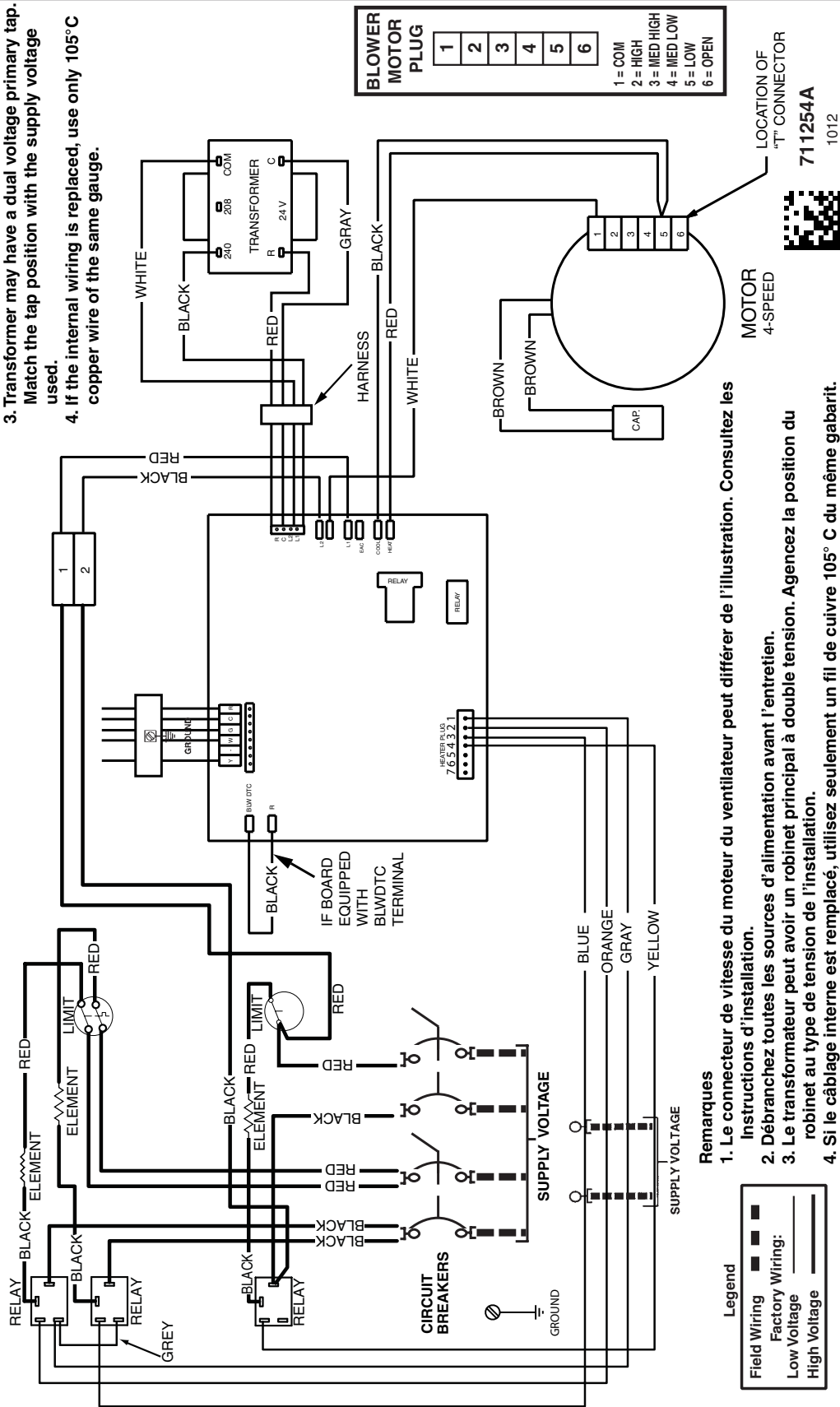
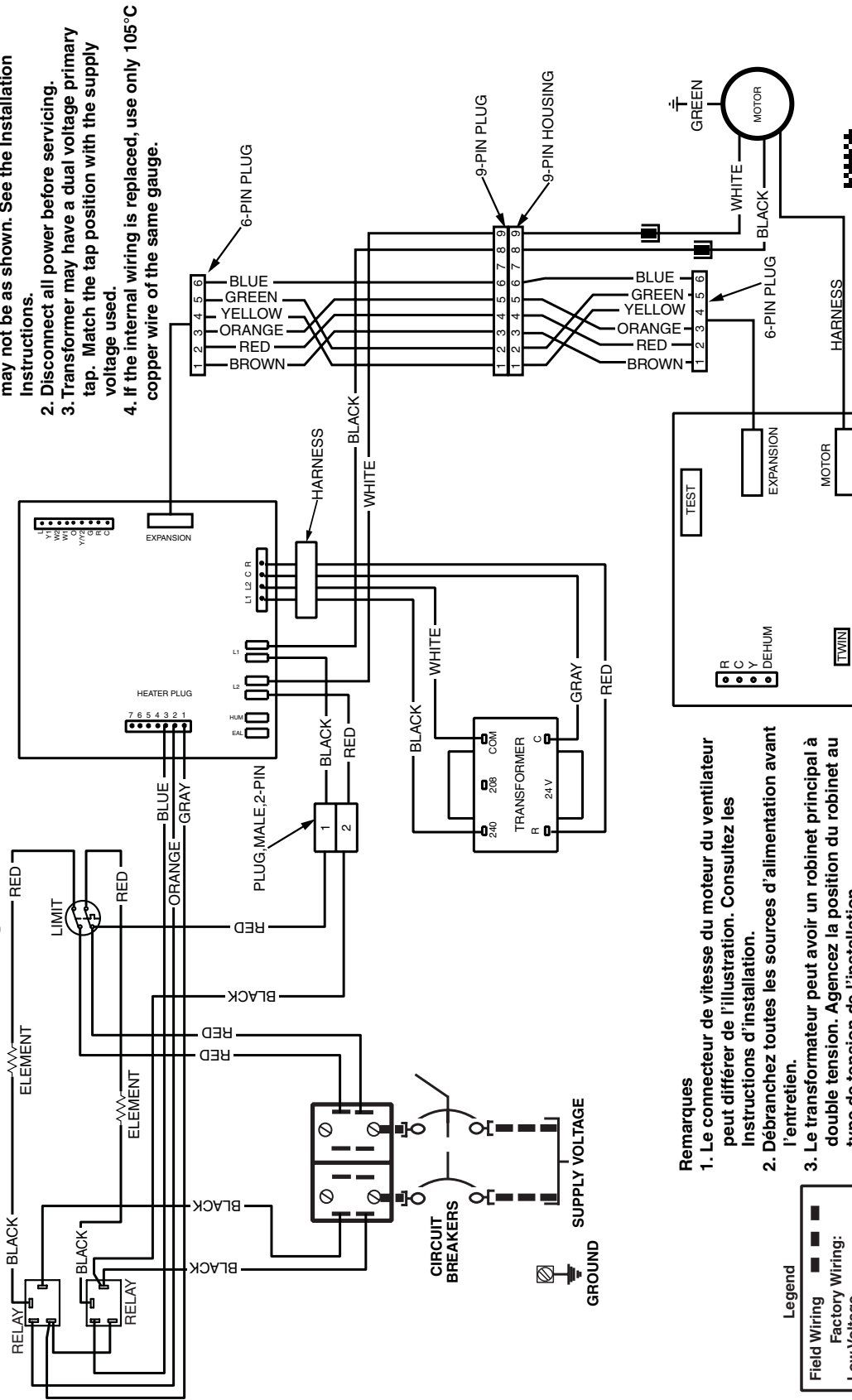


Figure 14. B6BV Air Handler Equipped With PSC Motor & 15 kw Heater Kit (B Size Cabinet Only)

# WIRING DIAGRAM

## Air Handler with Factory Installed Heat (10kW)



- NOTES:**
1. The blower motor speed tap connection may not be as shown. See the Installation Instructions.
  2. Disconnect all power before servicing.
  3. Transformer may have a dual voltage primary tap. Match the tap position with the supply voltage used.
  4. If the internal wiring is replaced, use only 105°C copper wire of the same gauge.

- Remarques**
1. Le connecteur de vitesse du moteur du ventilateur peut différer de l'illustration. Consultez les instructions d'installation.
  2. Débranchez toutes les sources d'alimentation avant l'entretien.
  3. Le transformateur peut avoir un robinet principal à double tension. Agencez la position du robinet au type de tension de l'installation.
  4. Si le câblage interne est remplacé, utilisez seulement un fil de cuivre 105° C du même gabarit.

**Legend**

|                 |   |
|-----------------|---|
| Field Wiring    | — |
| Factory Wiring: | — |
| Low Voltage     | — |
| High Voltage    | — |



Figure 15. B6BV Air Handler Equipped With FSHE Motor & 10 kw Heater Kit (C Size Cabinet Only)

# WIRING DIAGRAM

## Air Handler with Factory Installed Heat (20kW)

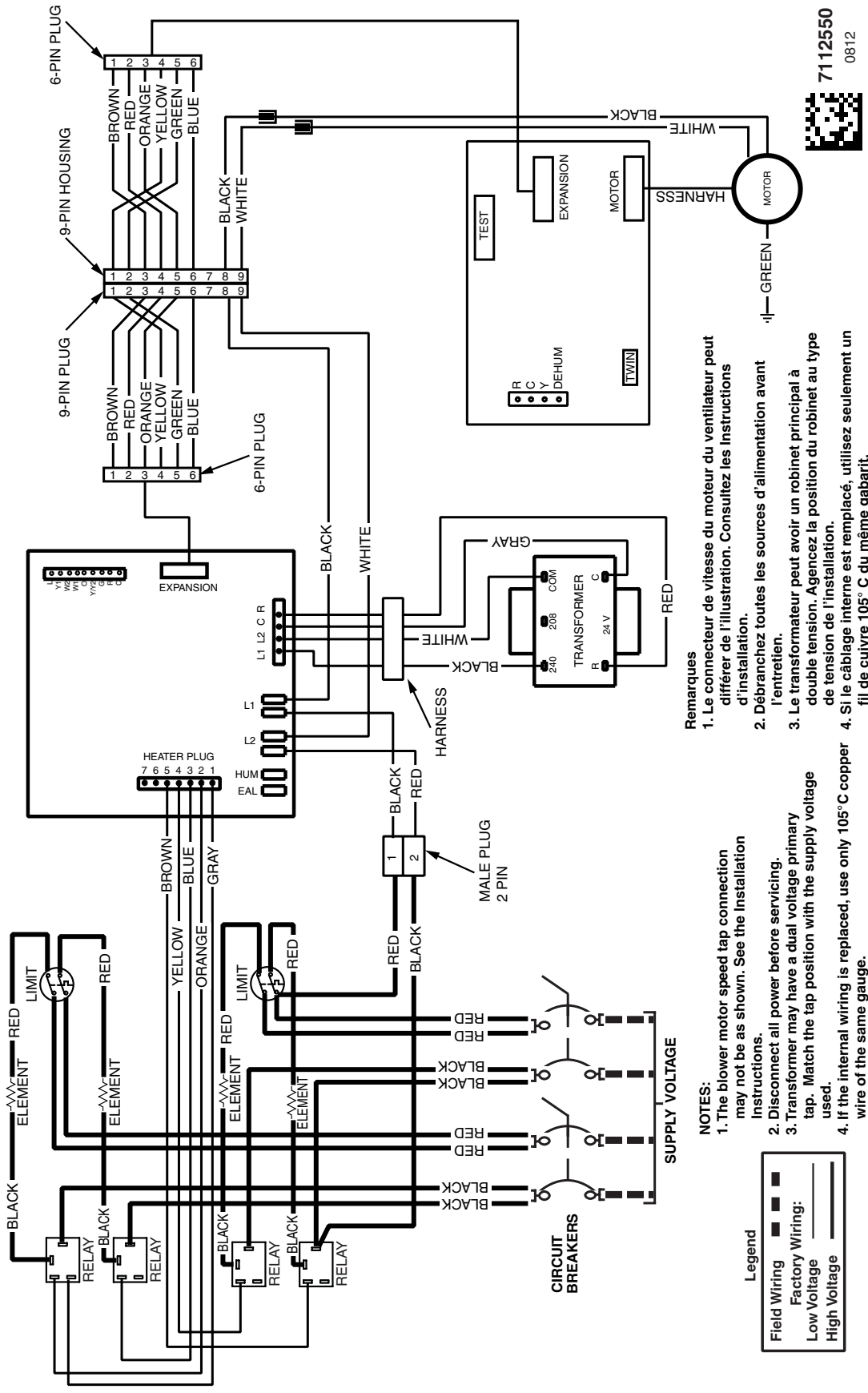


Figure 16. B6BV Air Handler Equipped With FSHE Motor & 20 kw Heater Kit (C Size Cabinet Only)



## INSTALLATION / PERFORMANCE CHECK LIST

|  |        |    |
|--|--------|----|
| <b>INSTALLER NAME:</b>   |        |    |
| CITY:  | STATE: |    |
| <b>INSTALLATION ADDRESS:</b>                                   |        |    |
| CITY:  | STATE: |    |
| UNIT MODEL #   |        |    |
| UNIT SERIAL #  |        |    |
| MINIMUM CLEARANCES PER <a href="#">page 4?</a>                 | YES    | NO |
| IS THE UNIT PROPERLY INSTALLED AND LEVELED?                    | YES    | NO |
| DOES CONDENSATE DRAIN PROPERLY IN BOTH DRAIN TUBES?            | YES    | NO |
| HAS THE OWNER'S INFORMATION BEEN REVIEWED WITH THE HOME-OWNER? | YES    | NO |
| HAS THE LITERATURE PACKAGE BEEN LEFT NEAR THE APPLIANCE?       | YES    | NO |

| ELECTRICAL SYSTEM                        |     |    |
|--|-----|----|
| ELECTRICAL CONNECTIONS TIGHT?            | YES | NO |
| LINE VOLTAGE POLARITY CORRECT?           | YES | NO |
| SUPPLY VOLTAGE:..... VOLTS               |     |    |
| HAS THE THERMOSTAT BEEN CALIBRATED?      | YES | NO |
| IS THE THERMOSTAT LEVEL?                 | YES | NO |
| IS THE HEAT ANTICIPATOR SETTING CORRECT? | YES | NO |

| VENTING SYSTEM                      |     |    |
|-------------------------------------|-----|----|
| FILTER PROPERLY INSTALLED?          | YES | NO |
| FILTER CLEAN?                       | YES | NO |
| RETURN AIR TEMPERATURE: ..... (° F) |     |    |
| SUPPLY AIR TEMPERATURE: ..... (° F) |     |    |
| TEMPERATURE RISE: ..... (° F)       |     |    |

|   |
|---|
| <b>PROPOSITION 65 WARNING:</b>  |
| <b>WARNING: This product contains chemicals known to the state of California to cause cancer.</b>                                   |
| <b>WARNING: This product contains chemicals known to the state of California to cause birth defects or other reproductive harm.</b> |



**NOTE:** HUD 3280.711 mandates that two copies of operating and installation instructions must be shipped with the appliance. This manual and 709743-0 must be supplied with each air handler when packaged. Any changes made in this document must also be made to 709743-0.

