



# STEFFES

## Heating Systems

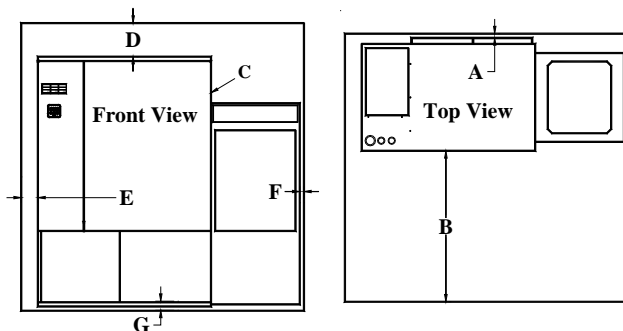
*"Manufactured in North America"*

## COMFORT PLUS Model 3120

with ECM Variable Speed  
Blower System

### Quick Reference Installation Guide

#### 1 PLACEMENT AND CLEARANCES



##### **⚠ WARNING**

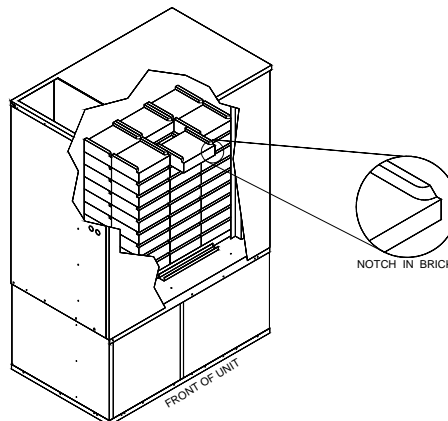
The area in which the Comfort Plus is installed must remain free of debris and room air should be maintained at less than 85°F.

- A Back = zero clearance
- B Front = 36 inches (for servicing)
- C Right Side = 8 inches (from combustible material)
- D Top = 8 inches (from combustible material)
- E Left Side = 4 inches
- F Outer Sides of Return and Supply Ducts = zero clearance
- G Bottom = zero clearance

#### 3 BRICK LOADING

Starting at the back of the brick core, load bricks one row at a time using left side, right side, center pattern. Place bricks with grooved side facing up, notch facing forward, and ridges on left and right.

- Remove loose brick debris from brick.
- Brick rows MUST line up front to back and side to side.



#### 2 SET-UP

1. Remove heating elements from base of system.
2. Place system in desired location.
3. Adjust leveling legs to prevent rocking.
4. Remove painted front panel of brick storage cabinet.
5. Position element wiring harnesses to avoid damage during brick loading.
6. Remove galvanized front panel.
7. Starting at bottom, lift and drape insulation blankets over top of system.
8. Remove front air channel by pulling out at bottom.
9. Remove the electrical panel cover and locate element screw kit and outdoor sensor.

##### **⚠ WARNING**

- DO remove the Comfort Plus system from its shipping pallet before installing.
- DO NOT extend leveling legs more than one inch.
- DO use and follow generally accepted safety practices when handling insulation material.
- DO have equipment installed by a qualified technician in compliance with all applicable local, state and national codes and regulations.
- Reference Owner's and Installer's Manual for complete safety, installation, and operation instructions.

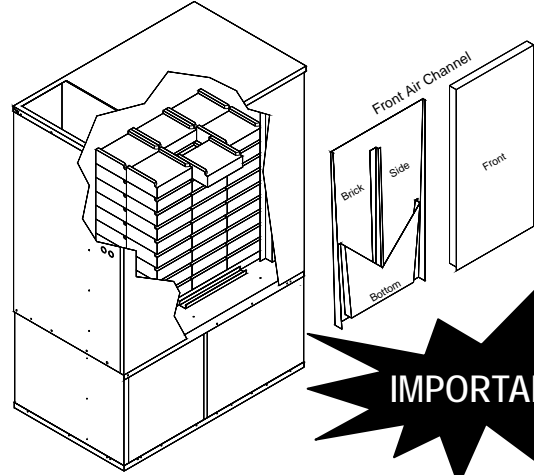
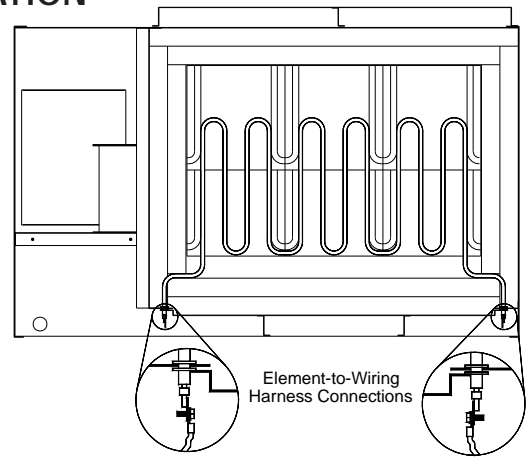
## 4 HEATING ELEMENT AND AIR CHANNEL INSTALLATION

### ⚠ WARNING

**HAZARDOUS VOLTAGE:** Risk of electric shock. Can cause injury or death.

- DO NOT remove electrical panel cover while system is energized.
- Elements MUST be positioned properly to avoid short circuiting them against any surfaces within system.
- Use care when making connections to avoid element damage.

1. Insert heating elements between brick layers until element ends embed into side cutouts of brick cavity. The threaded screw tabs on wire connection terminals should point forward.
2. Install air channel with air deflectors (arrow shaped pieces) facing inward and narrow ends of deflectors pointing up. Place top of air channel in first.
3. Lower insulation blankets back into position, one at a time. Tuck sides into edges, corners and around exposed portions of heating elements.
4. Install galvanized panel. Slide the top inside the upper lip of top painted panel. Bottom rests on the outside of the brick cavity.
5. Connect wiring harnesses to heating elements using screws in element screw kit. Install screws with heads up and threads pointing down. Tighten screws to 14 in-lbs.
6. Check non-insulated element connections to make sure they do not come within 1/2" of any surface.
7. Install painted front panel.



## 5 DUCTING

### ⚠ WARNING

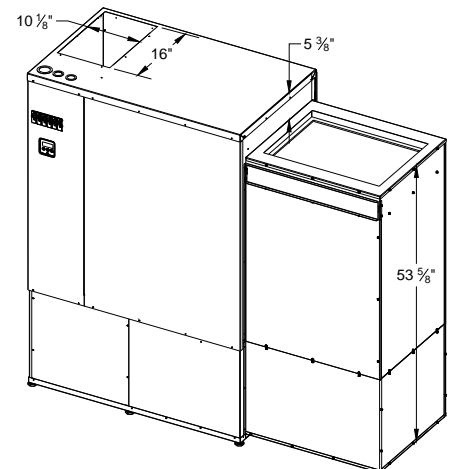
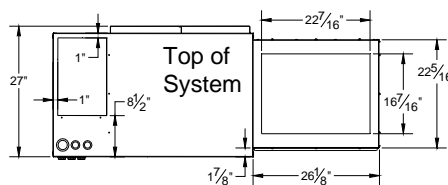
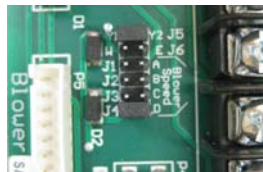
**HAZARDOUS VOLTAGE:** Risk of electric shock. Can cause injury or death. DO NOT operate the Comfort Plus heating system without ducting installed to both the air inlet and outlet.

1. Assemble factory supplied return air plenum per the instructions provided with the plenum.
2. Once assembled, set plenum on right side of the system with air filter and indoor coil access covers facing forward. Line up predrilled holes on system with holes in flanges of plenum and attach using screws provided in plenum's hardware package.

*NOTE: The 3100 series is factory configured for a right-to-left airflow.*

3. Insert air filter into filter rack.
4. Connect return air duct to top of plenum.
5. Connect supply air duct in structure directly to system's air outlet.
6. If necessary, adjust supply air blower speed by using the chart below.
7. The W/E jumper MUST be in the ON position or the blower will not operate with an E call from the thermostat.

Jumper	1/2 HP Variable Speed CFM
A	1000
B	1200
C	1400
D	1600



- When interfacing with a heat pump, the A-Coil MUST be placed on the return air side.
- To maintain a room temperature of 85°F or less in the mechanical room, a 24" x 24" opening can be installed in the area or a 6" x 6" non-closing register can be cut into the return air duct. Refer to Placement and Clearance Requirements section of Owner's and Installer's Manual for more information.

External static pressure should not exceed .75 inches water column.

## 6 AIR CONDITIONER/HEAT PUMP INTERFACE

When interfacing a heat pump with the Comfort Plus, the A-coil **MUST** be placed in the return air plenum.

### WARNING

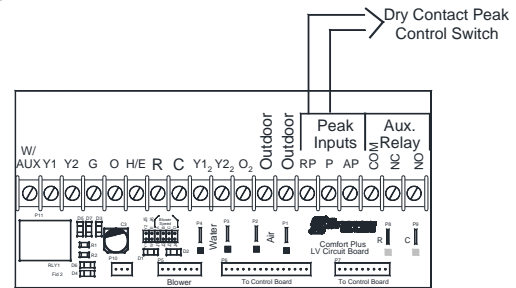
Risk of fire. Any one ducting system **MUST NOT** contain more than one air handling (blower) system.

The 3120 Comfort Plus heating system can accommodate most heat pump or air conditioner indoor coils up to a 3 1/2 ton capacity provided the heat pump or air conditioner is sized in accordance to supply air delivery rates of the Comfort Plus.

The maximum coil size the factory supplied return air plenum can accommodate through the front access is 25.5" (W) x 22" (D) x 30" (H). The inner dimensions of the coil area are 26" (W) x 22" (D) x 31" (H).

## 7 LOW VOLTAGE PEAK CONTROL CONNECTIONS

1. Route low voltage wire from load control device to terminal block.
2. Connect field wiring to "RP" and "P" positions.



If utilizing a Steffes Time Clock Module or Power Line Carrier control, refer to the instructions shipped with that device for installation information.

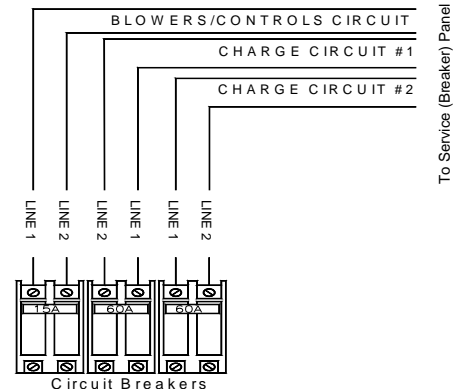
## 8 LINE VOLTAGE ELECTRICAL CONNECTIONS

### WARNING

**HAZARDOUS VOLTAGE:** Risk of electric shock. Can cause injury or death. Do not energize the Comfort Plus heating system until installation is complete.

1. Route all line voltage wires through knockout(s) and into electrical panel.
2. Make proper field wiring connections, phasing circuits as shown. Reference the Unit Identification label for circuit information.

- To ensure proper operation and safety, all line voltage circuits must be segregated from low voltage wiring.
- To reduce electromagnetic fields associated with electrical circuits and to avoid induced voltage on sensors and electronic devices, the circuit phases **MUST** be alternated as shown.
- **DO NOT** install any wiring in the line voltage compartment of the Comfort Plus heating system unless it is rated for line voltage.



### Full Load Current

Show n for 240VAC only. Circuit deration not included.

Model	Control Crct	Chrg Crct #1	Chrg Crct #2
3120 - 14.0kW	6.00	29.17	29.17
3120 - 17.0kW	6.00	36.46	36.46
3120 - 21.6kW	6.00	45.00	45.00

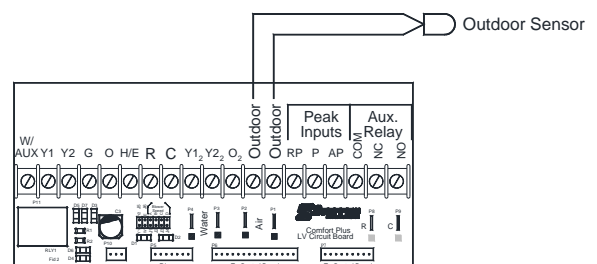
## 9 LOW VOLTAGE OUTDOOR SENSOR CONNECTIONS

The outdoor temperature sensor can be installed by wiring it directly to the system or to the Steffes power line carrier (PLC) system.

### Direct Wired:

1. Mount outdoor sensor in a location where it can accurately sense outdoor temperature.
2. Route low voltage wire from outdoor sensor to electrical compartment:
  - Outdoor sensor wire **MUST NOT** be combined with other control wiring in a multi-conductor cable.
  - Seal external wall openings.
  - Outdoor sensor lead can be extended to 250 ft.
  - Unshielded Class II (thermostat) wire can be used provided it is segregated from any line voltage wiring.
3. Connect outdoor sensor wires to the two "OUTDOOR" positions of the low voltage terminal block.

If connecting to the Steffes power line carrier system, follow the installation instructions in the PLC system's Owner's and Installer's Guide.



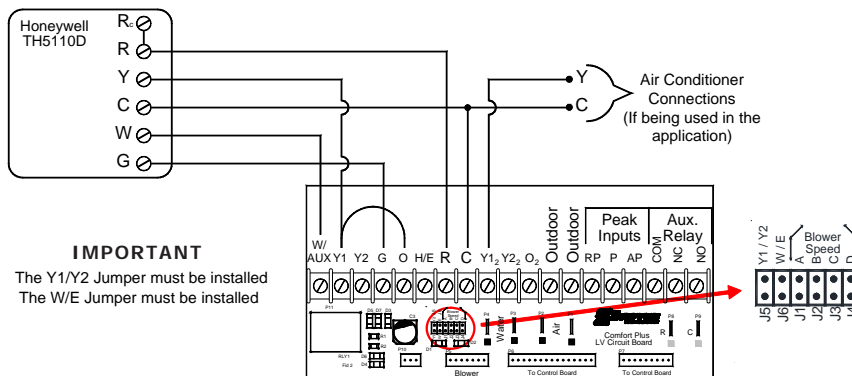
# 10 LOW VOLTAGE ROOM THERMOSTAT CONNECTIONS

A 24 VAC thermostat must be used (digital recommended).

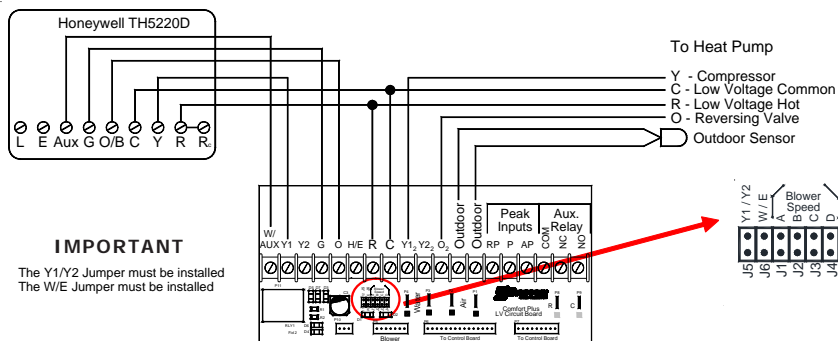
1. Disconnect power to the Comfort Plus system.
2. Route low voltage wires from the thermostat to the Comfort Plus System.
3. Insulate thermostat wire wall opening if necessary and attach thermostat to the wall. When using a mechanical thermostat or thermostat with anticipator, resistor kit #1190015 must be installed to ensure proper operation.
4. Connect low voltage wires from thermostat into terminal block as shown.

**NOTE:** For detailed heat call information, reference the Owner's and Installer's Manual.

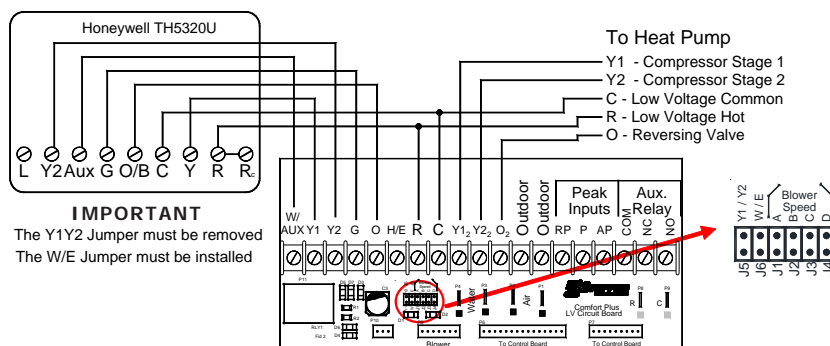
## Stand Alone Furnace Application with Uncontrolled Air Conditioning



## Single Stage Heat Pump Application



## Two Stage Heat Pump Application



# 11 SOFTWARE CONFIGURATION AND INSTALLERS FINAL CHECKOUT

To ensure proper operation, the system software must be configured for the application. Refer to the Configuration Menu in the Owner's and Installer's Manual or to the Configuration Guide provided by your local power company. Also, complete the Installer's Final Checkout Procedure found in the Owner's and Installer's Manual.