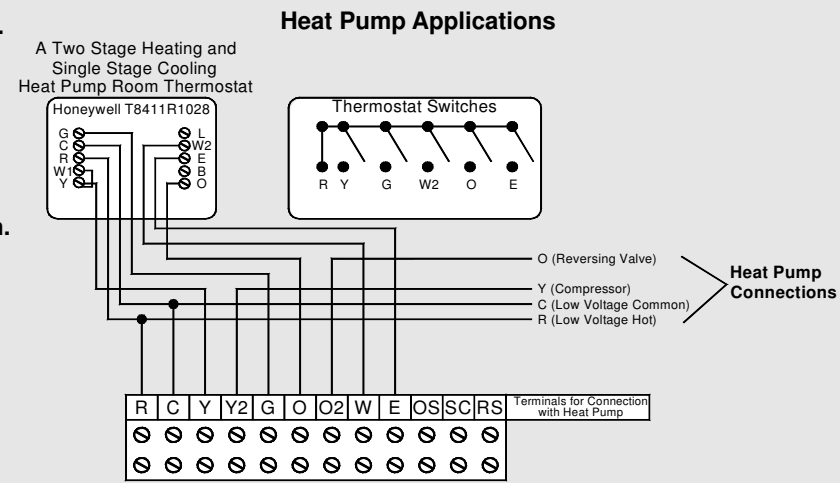


# 10 LOW VOLTAGE ROOM THERMOSTAT CONNECTIONS

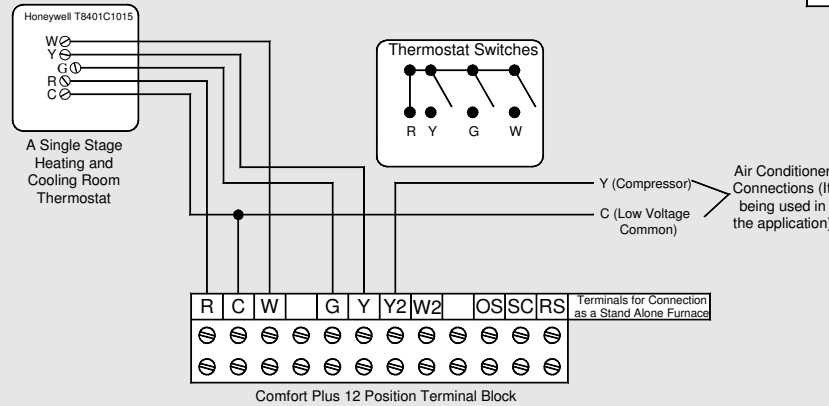
A 24 VAC thermostat must be used (digital recommended).

1. Disconnect power to the Comfort Plus system.
2. Insulate thermostat wire wall opening if necessary.
3. Attach thermostat. When using a mechanical thermostat or thermostat with anticipator, resistor kit #1190015 must be installed to ensure proper operation.
4. Route low voltage wire from thermostat into 12 position terminal block in electrical compartment of the Comfort Plus system.



### Heat Pump Applications

### Stand Alone Furnace Applications (Shown with Uncontrolled Air Conditioning System)



**12-Position Low Voltage Terminal Block Coding**

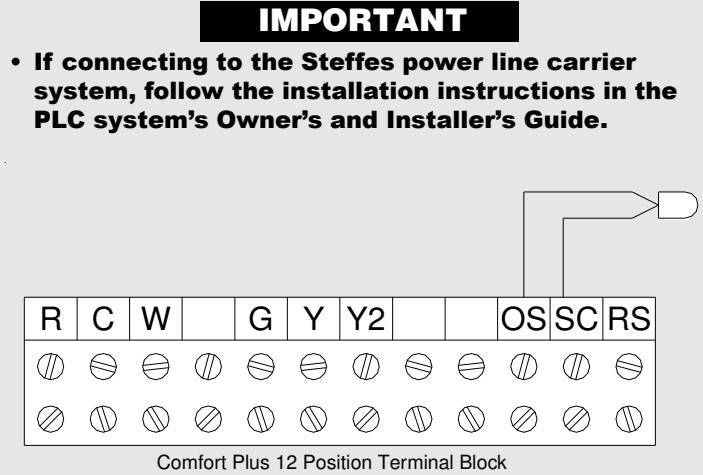
R = Low Voltage Hot	O = Reversing Valve Input
C = Low Voltage Common	O2 = Reversing Valve Output
Y = Compressor/Stage 1 Heat Call	E = Emergency Heat
W = Stage 2 Heat Call	OS = Outdoor Temperature Sensor
Y2 = Compressor Output	SC = Outdoor Temperature Sensor Common
G = Fan Call	RS = Freeze Protection Room Temperature

# 11 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, if utilized.

### 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 "OS" and "SC" positions of the 12 position low voltage terminal block.



# 12 SOFTWARE CONFIGURATION

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.



## COMFORT PLUS Centrally Ducted Heating Systems Model 3120

### Quick Reference Installation Sheet

#### 1 PLACEMENT AND CLEARANCES

**WARNING**

If area available to install Comfort Plus system is less than 100 square feet, consult factory. If installing in area with less than 400 square feet, ventilation **MUST** be provided. Temperature in area should be maintained at or below 85°F.

A Back and Bottom = Zero clearance  
 B Left Side = 4 inches  
 C Right Side = 8 inches from combustibles/Zero clearance to ducting  
 D Top = 8 inches from combustibles/Zero clearance to ducting  
 E Front = 36 inches  
 F Outer Sides of Ducts = Zero clearance

#### 2 SET-UP

1. Remove heating elements from base of system.
2. Place system in desired location.
3. Adjust leveling legs.
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.

**CAUTION**

- **DO NOT** extend leveling legs more than one inch.
- **DO** use and follow generally accepted safety practices when handling insulation material.
- **Equipment MUST** be installed by a qualified technician in accordance with all applicable local, state and national codes and regulations.
- **Reference Owner's and Installer's Manual** for complete safety, installation, and operation instructions.

#### 3 BRICK LOADING

Starting at the back of the brick core cavity, 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.

**IMPORTANT**

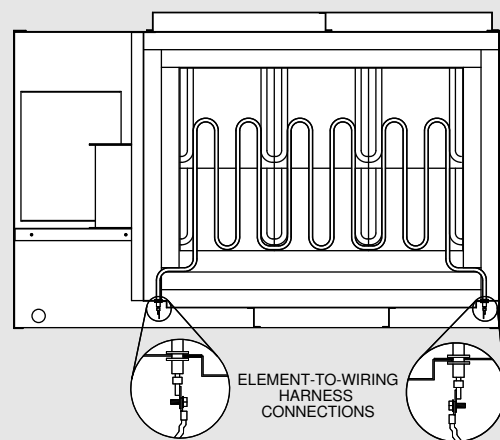
- Remove loose brick debris from brick.
- Brick rows **MUST** line up front to back and side to side.

## 4 HEATING ELEMENT INSTALLATION

### ⚠ WARNING

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

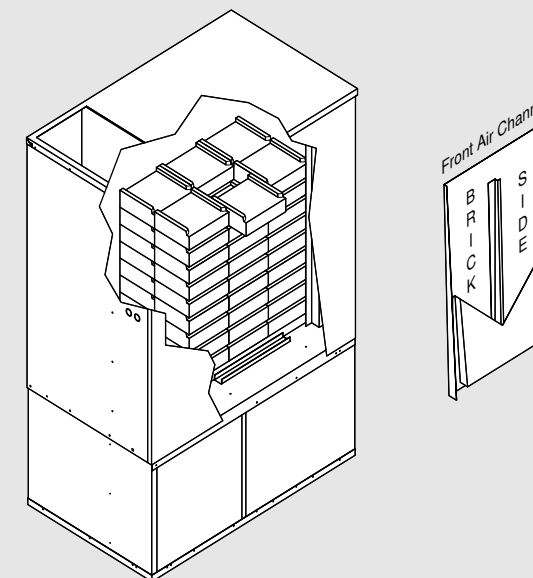
- **DO NOT** remove electrical panel cover while system is energized.
- Elements **MUST** be positioned properly to avoid short circuiting them against any surfaces within system.
- Use care when making connections to avoid element damage.



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. Remove painted panel from electrical compartment and locate the installation hardware package.
3. Connect wiring harnesses to heating elements using screws in hardware package. Install screws with heads up and threads pointing down. Tighten screws to 14 in.-lbs.

## 5 AIR CHANNEL INSTALLATION

1. 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.
2. Lower insulation blankets back into position, one at a time. Tuck sides into edges, corners and around exposed portions of heating elements.
3. Install galvanized panel. The top slides inside upper lip of top painted panel. Bottom rests on the outside of the brick cavity.
4. Check non-insulated element connections to make sure they do not come within 1/2" of any surface.
5. Install painted front panel.

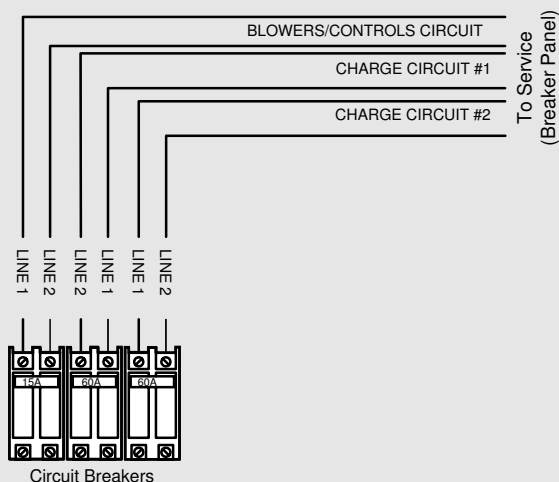


## 6 LINE VOLTAGE ELECTRICAL CONNECTIONS

### ⚠ WARNING

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

1. Remove electrical panel cover.
2. Route all line voltage wires through knockout(s) and into electrical panel.
3. Make proper field wiring connections.



### IMPORTANT

- 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 above.
- **DO NOT** install any wiring in the line voltage compartment of the Comfort Plus heating system unless it is rated for line voltage.

## 7 DUCTING

### SYSTEM AIR DELIVERY MATRIX

Standard 1/2HP Motor

SUPPLY AIR BLOWER	STATIC PRESSURE (INCHES WATER COLUMN) (External static pressure should not exceed .75 inches water column)			
	0.10	0.25	0.50	0.75
HIGH	Not Recommended	1850 CFM	1560 CFM	1350 CFM
MEDIUM HIGH	1800 CFM	1780 CFM	1470 CFM	1240 CFM
MEDIUM LOW	1610 CFM	1580 CFM	1420 CFM	Not Applicable
*LOW	1230 CFM	12050 CFM	Not Applicable	Not Applicable

\* Low Speed Maximum Pressure is .25 inches water column.

### Ducting:

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.
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 changing wiring on blower speed selection terminals.

**NOTE:** Blower speed selection is made on the Base I/O relay board inside the electrical compartment. The low speed relay controls blower speed for heating and the high speed relay controls blower speed for cooling.

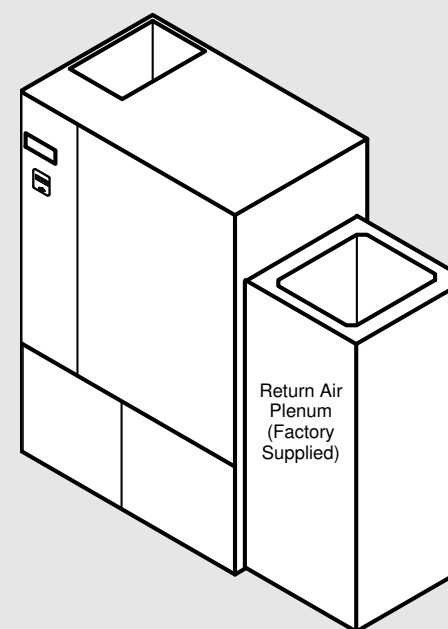
### IMPORTANT

When interfacing with a heat pump:

1. The blower speed connected to the high speed relay (black/blue wire) is used for both heating and cooling.
2. The A-Coil **MUST** be placed on the return air side.

### ⚠ WARNING

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



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

**NOTE:** If placing system into area with less than 400 square feet, a minimum 24" x 24" opening must be installed in the area where system is located. In addition, a 6" x 6" non-closing register must be cut into the return air duct. Refer to Placement and Clearance Requirements section of Owner's and Installer's Manual for more information.

## 8 AIR CONDITIONER/HEAT PUMP INTERFACE

### ⚠ WARNING

**Risk of fire. Any one ducting system MUST NOT** contain more than one air handling (blower) system. If the application requires multiple Comfort Plus heating systems or it is necessary to have multiple air handlers share the same ductwork, you **MUST** contact Steffes Corporation. There are special installation requirements that **MUST** be performed in an application such as this.

The Comfort Plus system can accommodate most heat pump or air conditioner indoor coils up to a 4-ton capacity provided the heat pump or air conditioner is sized in accordance to supply air delivery rates of the Comfort Plus. If a larger coil is required, contact Steffes Corporation.

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

## 9 LOW VOLTAGE PEAK CONTROL CONNECTIONS

RP	P	AP	COM	NC	NO
⊘	⊘	⊘	⊘	⊘	⊘
⊘	⊘	⊘	⊘	⊘	⊘

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

### 6-Position Low Voltage Terminal Block Coding

RP = Peak Control Input Common  
P = Peak Control Input  
AP = Anticipated Peak (Pre-Peak) Control Input  
COM = Peak Control Output Common  
NC = Peak Control Output (Closed for Charge)  
NO = Peak Control Output (Closed for Control)

### IMPORTANT

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