

# INSTALLATION INSTRUCTIONS

## VIPER REMOTE CONDENSER

### SAFETY INSTRUCTIONS

#### **WARNING:**

Before starting installation, read and understand all safety label and warnings on the machine. Also review and understand all safety instructions in the owners, installation and service manuals.

**Failure to comply could result in serious injury, death or damage to the equipment.**

### QUALIFIED SERVICE PERSONNEL

#### **WARNING:**

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit.

**All wiring and plumbing must conform to national and local codes. Failure to comply could result in serious injury, death or equipment damage.**

### SAFETY PRECAUTIONS

This unit has been specifically designed to provide protection against personal injury. To ensure continued protection observe the following:

#### **WARNING:**

Disconnect power to the unit before servicing. Follow all lock out/tag out procedures established by the user. Verify all power is off to the unit before performing any work.

**Failure to comply could result in serious injury, death or damage to the equipment.**

#### **CAUTION:**

Always be sure to keep area around the unit clean and free of clutter.

**Failure to keep this area clean may result in injury or equipment damage.**

# VIPER REMOTE CONDENSER INSTALLATION INSTRUCTIONS

## KIT Included Components:

ITEM NO.	PART NUMBER	DESCRIPTION	QTY	FIGURE
1	620071972	FITG LONG ELL-90 DEG 3/8 COP- PER	1	
2	620071973	FITG LONG ELL-90 DEG 1/2 COP- PER	1	
3	620071960	STRUT CHANNEL - 1 FT	1	
4	620071961	CLAMP - STRUT MOUNT - 3/8 IN	1	
5	620071962	CLAMP - STRUT MOUNT - 1/2 IN	1	
6	620070379	HARNESS 24VAC TO JUNCTION	1	



## ADDITIONAL REQUIRED ITEMS - PURCHASED FROM MARMON FOODSERVICE TECHNOLOGIES.

1. 620067108 Cond - Remote Viper Remote Cond Unit 3,4 FL.
2. Remote Compatible Viper Unit.
3. 620071967 Line Set 3/8" OD Liq 1/2" OD Disch X 50 Ft.

## ADDITIONAL REQUIRED ITEMS - SUPPLIED BY INSTALLER

1. Mounting hardware for exterior condenser installation.
2. Roofing materials for line set and electrical connection roof penetration.
3. Nitrogen to pressurize system during brazing and leak check.
4. 15% silver brazing compound.
5. R404a Refrigerant – 16 lbs. for 4 barrel, 14.75 lbs. for 3 barrel. @ 50 ft. line length.

**NOTE: See Charging Table on Pages 6 and 7.**

6. Electrical circuit and connection to remote condenser.
7. Watertight conduit to run from remote condenser to Viper.
8. Electrical junction box to mount on wall behind Viper.
9. 14 AWG stranded wires to run from remote condenser to junction box.
10. Solenoid magnets, max 1 per barrel, if needed.

## REMOTE CONDENSER INSTALLATION

For proper operation of the Cornelius Viper Remote, the following installation guidelines must be followed. Failure to do so may result in loss of capacity, premature part failure, and may void all warranties.

Use the following for planning the placement of the remote condenser relative to the Viper.

Location Limits:

Remote condenser location must not exceed ANY of the following:

- Maximum rise from the Viper to the remote condenser is 35 physical feet.
- Maximum drop from the Viper to the remote condenser is 15 physical feet.
- Physical line set maximum length is 100 feet (INCLUDING main line set AND 6' flexible lines).

**NOTE: A 100' Line Set Must Be Cut Down By A Least 6 Feet To Comply.**

- Calculated line set length maximum is 185 equivalent feet.
- Ambient operating temperatures: -20°F (-28.9°C) to 120°F (48.9°C)
- The remote condenser must be installed with a minimum of 30 in. (76.2 cm) of clearance on both the intake and discharge of the unit. The area above the condenser should be open.
- The viper dispensing side should be installed so that there is a minimum of 8 in. (20.32 cm) of clearance at the top of the unit, and 2 in. (5.08 cm) of clearance on each side, and rear of the unit.
- Failure to maintain clearance space will reduce the capacity of the unit and may cause premature compressor failures.

## CALCULATION FORMULA:

- Drop =  $dd \times 6.6$  ( $dd$  = distance in feet)
- Rise =  $(rd \times 1.7)$  ( $rd$  = distance in feet)
- Horizontal Run =  $hd \times 1$  ( $hd$  = distance in feet)
- Calculation:  
Drop(s) + Rise (s) + Horizontal Run =  $(dd \times 6.6) + (rd \times 1.7) + hd$  = Calculated Line Length.

## DO NOT:

Route a line set that rises, then falls, then rises.  
Route a line set that falls, then rises, then falls.

## REMOTE CONDENSER LOCATION:

Limited length and routing as defined above. Condenser height is also limited to the equations above. Select the best available location, protecting the remote condenser from extremes of dirt, dust and sun. Meet all applicable building codes. Usually the services of a licensed electrician are required.

## ROOF ATTACHMENT:

1. Install and attach the remote condenser to the roof of the building, using the methods and practices of construction that conform to the local building codes, including having a roofing contractor secure the remote condenser to the roof.
2. Have an electrician connect the remote condenser fan motor relay (14 AWG) wires to the Viper, using the junction box on the wall at the back of the Viper unit.

## LINE SET ROUTING:

### CAUTION:

**DO NOT CONNECT THE TUBING UNTILL ALL ROUTING AND FORMING OF THE TUBING IS COMPLETE.**

1. Each set of tubing refrigerant lines consists of a 3/8 inch outside diameter liquid line and a 1/2 inch outside diameter discharge line. Both ends of each line must be brazed in place during installation.

**NOTE: The openings in the building ceiling or wall, listed in the next step, are the minimum sizes recommended for passing the refrigerant lines through.**

2. Have the roofing contractor cut a minimum hole for the refrigerant lines of 2.50 inch. Check local codes, a separate hole may be required for the electrical power to the condenser.

### CAUTION:

**DO NOT KINK OR CRIMP REFRIGERANT TUBING WHEN INSTALLING IT.**

3. Route the refrigerant lines through the roof opening. Follow straight line routing whenever possible. Any excess tubing **MUST** remain within the building. Lines may be cut to reduce length.
4. Spiral the excess length of tubing inside the building. Use a horizontal spiral to avoid any traps in the lines.
5. Have the roofing contractor seal the holes in the roof per local codes.
6. Position the ends of the copper line set on the wall behind the Viper, approximately 5 feet above the floor, pointing downward.
7. Secure the copper line set 6 inches above the ends (5 1/2 feet above the floor) using the strut channel and strut mount clamps.
8. Connect the copper line set to the Viper unit using 6-foot lengths of flexible line to allow movement of the unit for service. Ensure the flexible line insulation is installed prior to brazing the lines.

## LINE SET BRAZING:

1. Dry fit all connections to liquid and discharge lines.
2. Pull insulation back from any location to be brazed.
3. To prevent damage while brazing, heat sink flexible lines with a wet rag or heat sink putty.
4. Pressurize the system with nitrogen to prevent oxidation inside the lines during brazing. Failure to do this may result in premature failure of components.
5. Braze each joint using 15% silver brazing alloy.
6. Pressurize the system with nitrogen to 150 psi for 2 hours and verify pressure has remained steady as a sign of no leaks.

7. Vacuum the system to below 300 microns and hold on vacuum for a minimum of 45 minutes to ensure system is dry.
  - A. Use solenoid magnets to ensure the entire system is open during vacuuming.
  - B. If activating solenoids through the service UI, check periodically for the need to re-activate, as the UI activation is brief.
8. Charge system with R404a refrigerant per the table below.

**NOTE: TOTAL LINE LENGTH IS THE LENGTH OF THE LINE SET PLUS THE 6' FLEXIBLE LINES.**

- A. Charge through the king valve on the receiver located in the remote condenser.
  - B. Use solenoid magnets to ensure the entire system is open during charging.
  - C. If activating solenoids through the service UI, check periodically for the need to re-activate, as the UI activation is brief.
  - D. Begin charging with a full tank of refrigerant to ensure adequate pressure to deliver the required charge. See charging table below.
9. Return insulation to cover lines and tape seams securely.

**ELECTRICAL CONNECTIONS:**

1. Remote unit must be hard wired to a dedicated 15A, 230V 60Hz circuit in accordance with local codes.
2. Power must connect to terminals L1 and L2 on the contactor in the remote unit. See Figure 1 for L1 and L2 locations.

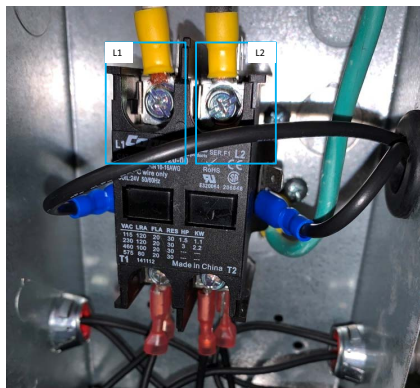


Figure 1.

3. Incoming power source must also be grounded to earth using ground lug provided.
4. Run an electrical conduit from the remote unit to a junction box on the wall behind the Viper.
5. Run two lengths of 14 AWG stranded wire from the contactor in the remote unit to the junction box.
6. Wire from the junction box to the remote must connect to terminals A1 and A2 on the sides of the contactor in the remote unit.
7. Connect wiring harness 620070379 to the junction box with a strain relief where it exits.
8. Connect the wiring harness to the connector exiting the back of the Viper.

## COMPLETING INSTALLATION:

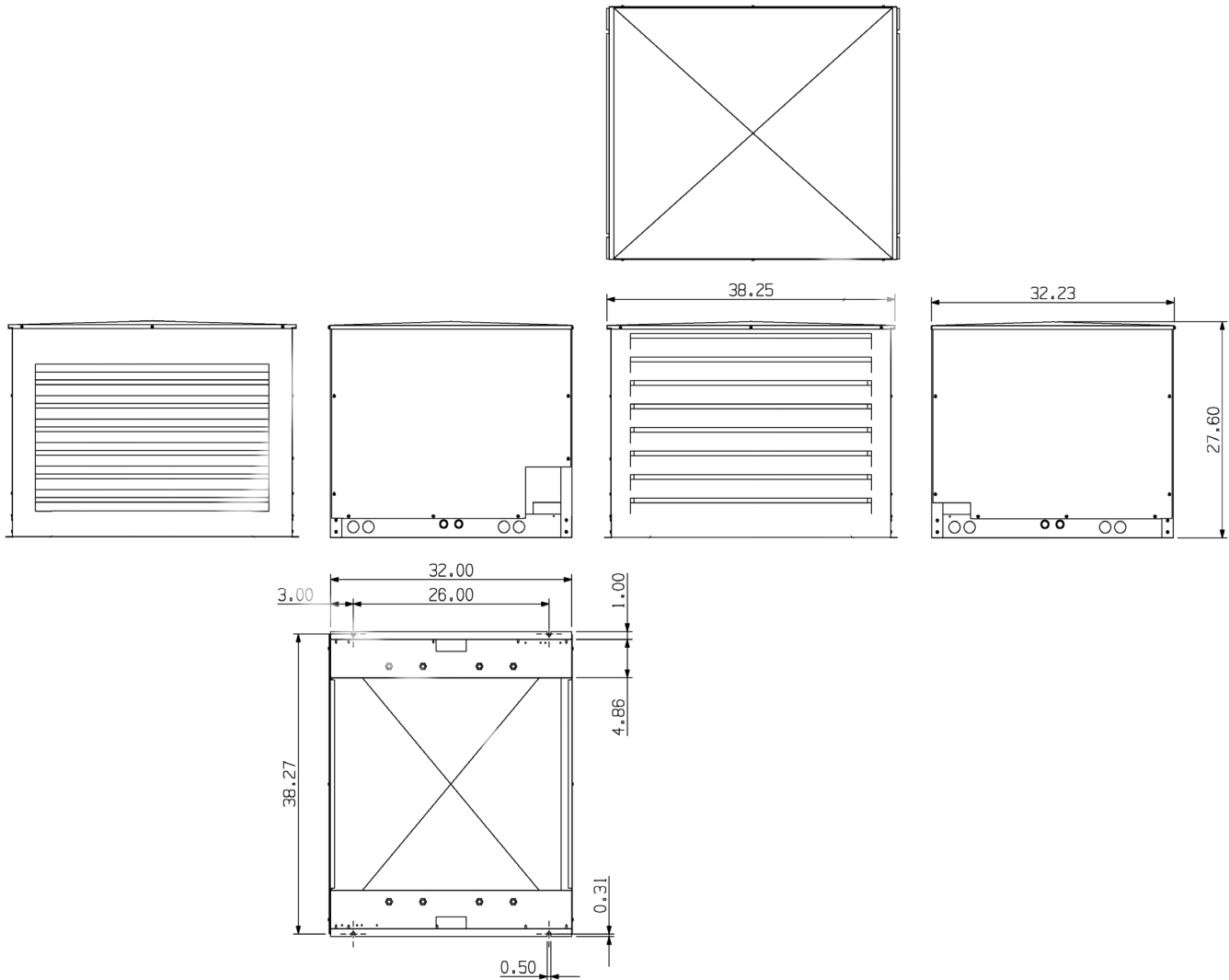
1. Continue with all standard Viper installation steps.

REFRIGERANT LINE SET LENGTH (FT)	4 FLAVOR TOTAL REFRIGERANT CHARGE	3 FLAVOR TOTAL REFRIGERANT CHARGE
10	14lb 8oz	13lb 3oz
12	14lb 9oz	13lb 5oz
14	14lb 10oz	13lb 6oz
16	14lb 11oz	13lb 7oz
18	14lb 12oz	13lb 8oz
20	14lb 14oz	13lb 9oz
22	14lb 15oz	13lb 11oz
24	15lb 0oz	13lb 12oz
26	15lb 1oz	13lb 13oz
28	15lb 3oz	13lb 14oz
30	15lb 4oz	14lb 0oz
32	15lb 5oz	14lb 1oz
34	15lb 6oz	14lb 2oz
36	15lb 7oz	14lb 3oz
38	15lb 9oz	14lb 5oz
40	15lb 10oz	14lb 6oz
42	15lb 11oz	14lb 7oz
44	15lb 12oz	14lb 8oz
46	15lb 14oz	14lb 9oz
48	15lb 15oz	14lb 11oz
50	16lb 0oz	14lb 12oz
52	16lb 1oz	14lb 13oz
54	16lb 3oz	14lb 14oz
56	16lb 4oz	15lb 0oz
58	16lb 5oz	15lb 1oz
60	16lb 6oz	15lb 2oz
62	16lb 7oz	15lb 3oz
64	16lb 9oz	15lb 5oz
66	16lb 10oz	15lb 6oz



68	16lb 11oz	15lb 7oz
70	16lb 12oz	15lb 8oz
72	16lb 14oz	15lb 9oz
74	16lb 15oz	15lb 11oz
76	17lb 0oz	15lb 12oz
78	17lb 1oz	15lb 13oz
80	17lb 2oz	15lb 14oz
82	17lb 4oz	16lb 0oz
84	17lb 5oz	16lb 1oz
86	17lb 6oz	16lb 2oz
88	17lb 7oz	16lb 3oz
90	17lb 9oz	16lb 4oz
92	17lb 10oz	16lb 6oz
94	17lb 11oz	16lb 7oz
96	17lb 12oz	16lb 8oz
98	17lb 14oz	16lb 9oz
100	17lb 15oz	16lb 11oz

## REMOTE CONDENSING UNIT DIMENSIONS



WEIGHT: 180lb

Figure 2.

### PM CHECKLIST ADDENDUM

1. No monthly filter cleaning – the internal condenser filter is not present.
2. Clean remote on roof when ice makers are cleaned – 1 or 2 times per year depending on conditions.



# REFRIGERATION SCHEMATIC

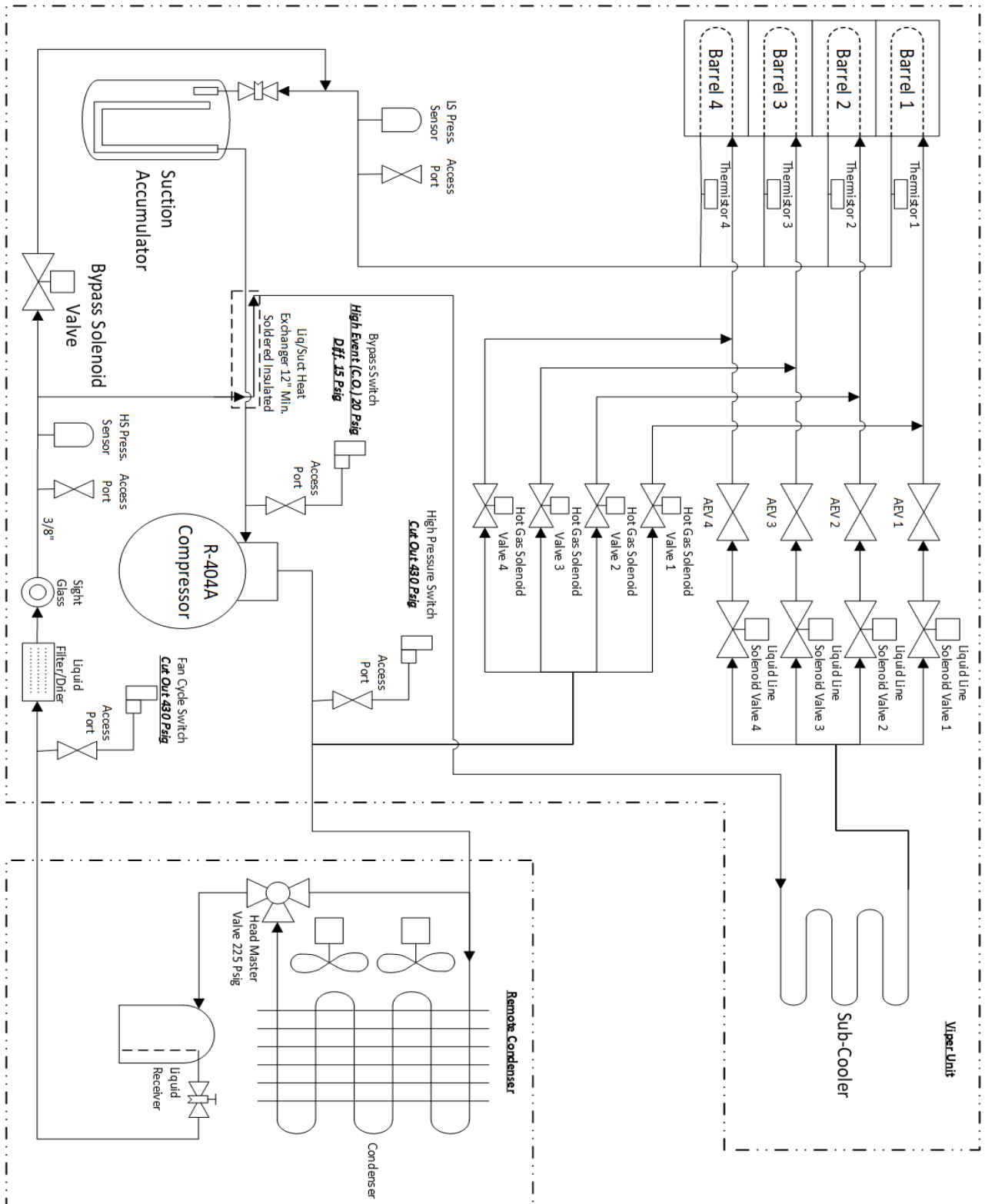


Figure 3.

# ELECTRICAL SCHEMATIC

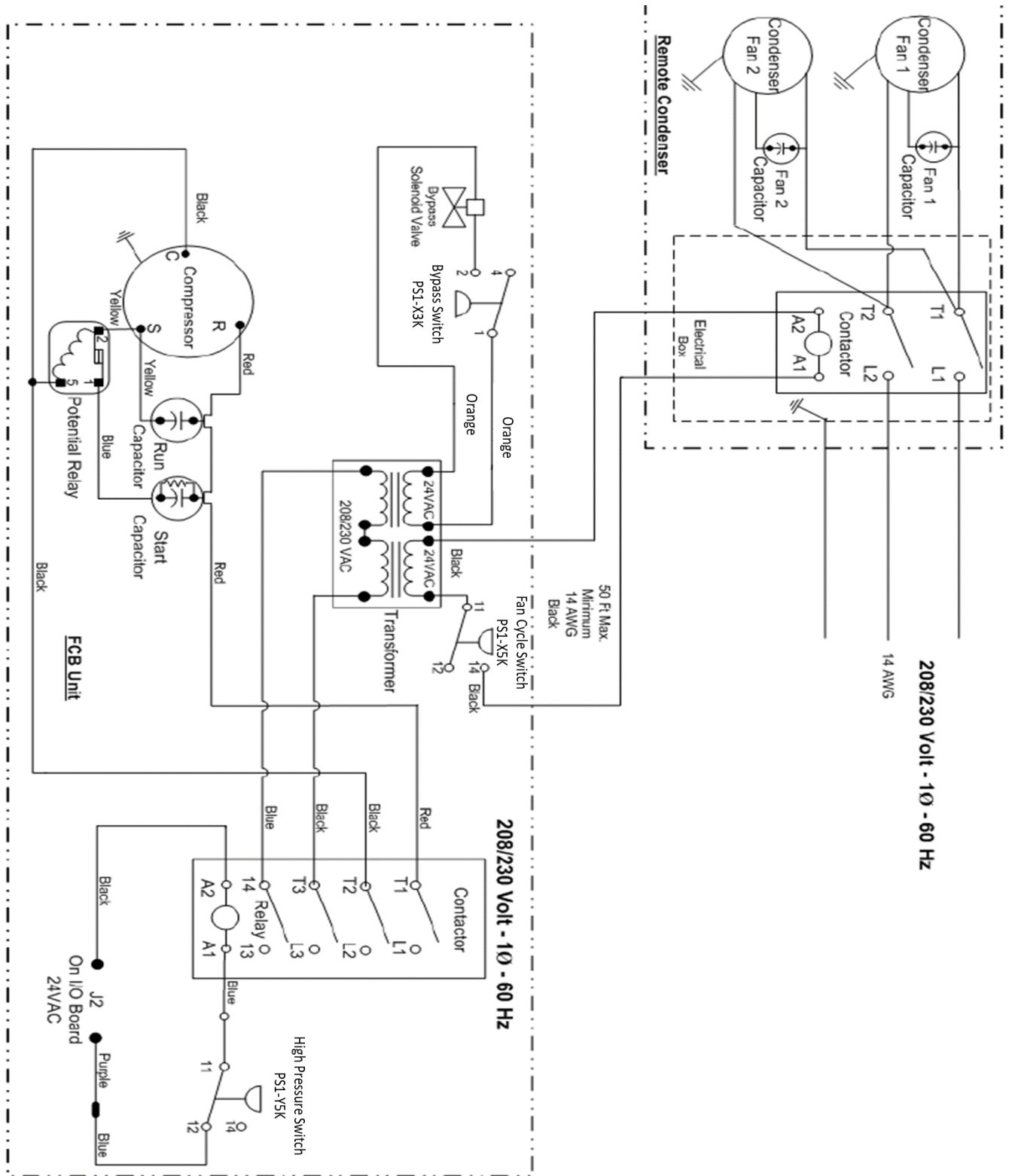


Figure 4.