



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 following all lock out/tag out procedures established by the user. Verify all of the power is off to the unit before any work is performed.

Failure to disconnect the power could result in serious injury, death or equipment damage.


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.



Included Components

ITEM	PART NO.	DESCRIPTION	QTY.	
1	620071972	FITG LONG ELL-90 DEG 3/8 COPPER	1	
2	620071973	FITG LONG ELL-90 DEG 1/2 COPPER	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 VIPER REMOTE CONDENSER
2. Remote Compatible Viper Unit
3. Line Set – Optional Length
 - a. 620071967 LINESET 3/8 LIQ 1/2 DISCH X 50 FT
 - b. 620071969 LINESET 3/8 LIQ 1/2 DISCH X 100 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 – 14.75 lbs. for 3 barrel. @ 50 ft. line length.

NOTE: See Charging Table on Page 6.

6. Electrical circuit and connection to remote condenser.
7. Watertight electrical conduit to run from remote condenser to Viper.
8. Electrical junction box to mount behind Viper.
9. 14 AWG stranded wires to run from remote condenser to junction box.
10. Solenoid magnets.

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 (10.7 m).
- Maximum drop from the Viper to the remote condenser is 15 physical feet (4.6 m).
- Physical line set maximum length is 100 feet (INCLUDING main line set AND 6' (1.6 m) flexible lines).
NOTE a 100' (30.5 m) line set must be cut down by at least 6 feet (1.8 m) to comply.
- Calculated line set length maximum is 185 equivalent feet (56.4 m).
- 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. (76.2cm) 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 x 6.6 (dd = distance)
- Rise = rd x 1.7 (rd = distance)
- Horizontal Run = hd x 1 (hd = distance)
- Calculation:
Drop(s) + Rise(s) + Horizontal Run = (dd x 6.6) + (rd x 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 at the back of the Viper.

LINE SET ROUTING:

 **CAUTION:**

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

1. Each set of tubing refrigerant lines consists of a 3/8 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 (15 cm) above the ends 5 1/2 feet (168 cm) 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 (1MPa) for 2 hours and verify pressure has remained steady as a sign of no leaks.
7. Vacuum the system to below 300 microns (40 Pa) 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.
 - 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 or 20A, 230V 50Hz circuit in accordance with local codes.
2. Power must connect to terminals L1 and L2 on the contactor in the remote unit.
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 THE INSTALLATION

1. Continue with all standard Viper installation steps.

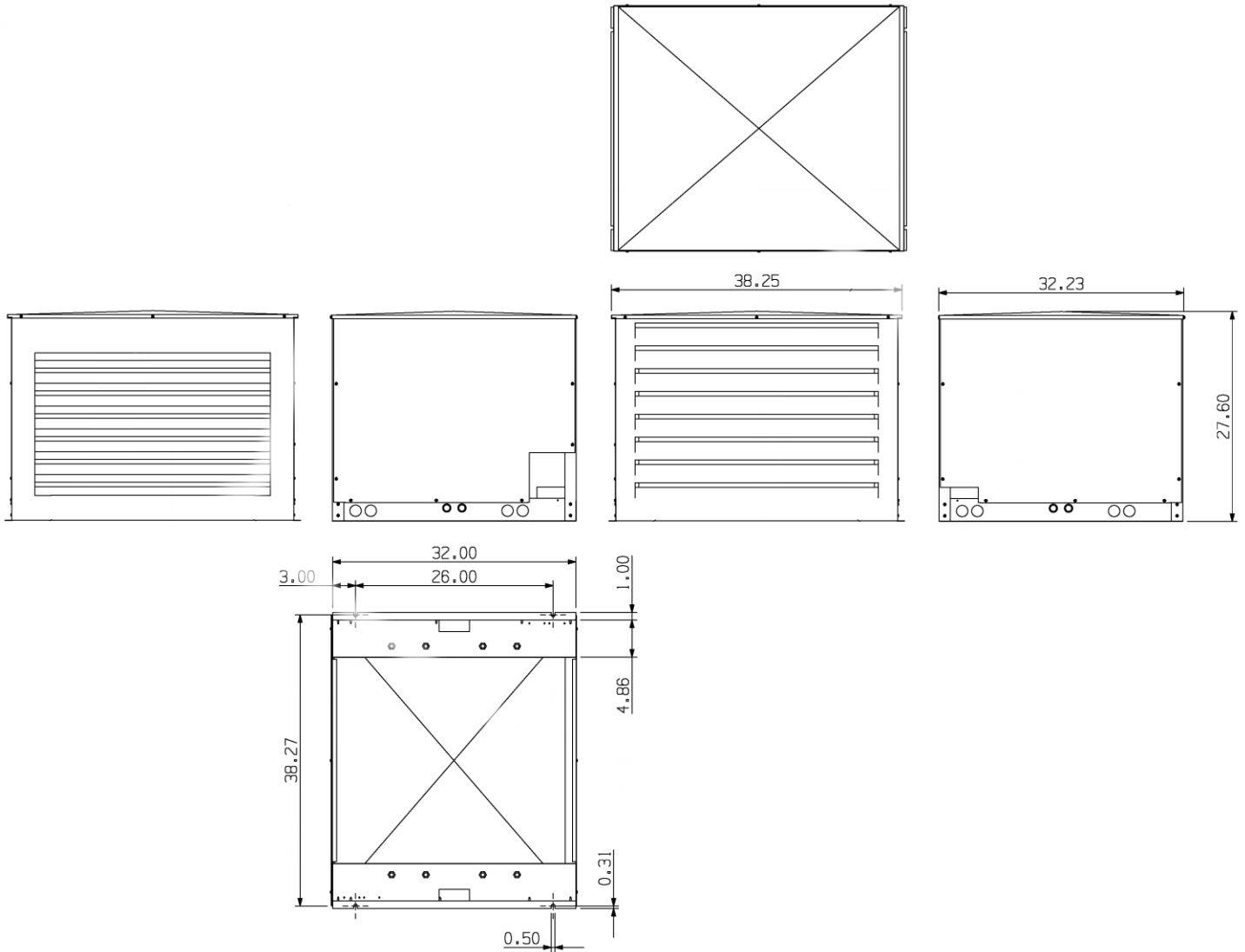


LINE SET CHARGE TABLE

Refrigerant Line	4 Flavor Total (60 Hz Only)	3 Flavor Total	Refrigerant Line	3 Flavor Total
Length (ft)	Charge (lb/oz)	Charge (lb/oz)	Length (m)	Charge (kg)
10	14lb 8oz	13lb 3oz	3.05	5.98
12	14lb 9oz	13lb 5oz	3.66	6.04
14	14lb 10oz	13lb 6oz	4.27	6.07
16	14lb 11oz	13lb 7oz	4.88	6.1
18	14lb 12oz	13lb 8oz	5.49	6.12
20	14lb 14oz	13lb 9oz	6.1	6.15
22	14lb 15oz	13lb 11oz	6.71	6.21
24	15lb 0oz	13lb 12oz	7.32	6.24
26	15lb 1oz	13lb 13oz	7.92	6.27
28	15lb 3oz	13lb 14oz	8.53	6.29
30	15lb 4oz	14lb 0oz	9.14	6.35
32	15lb 5oz	14lb 1oz	9.75	6.38
34	15lb 6oz	14lb 2oz	10.36	6.41
36	15lb 7oz	14lb 3oz	10.97	6.44
38	15lb 9oz	14lb 5oz	11.58	6.49
40	15lb 10oz	14lb 6oz	12.19	6.52
42	15lb 11oz	14lb 7oz	12.8	6.55
44	15lb 12oz	14lb 8oz	13.41	6.58
46	15lb 14oz	14lb 9oz	14.02	6.61
48	15lb 15oz	14lb 11oz	14.63	6.66
50	16lb 0oz	14lb 12oz	15.24	6.69
52	16lb 1oz	14lb 13oz	15.85	6.72
54	16lb 3oz	14lb 14oz	16.46	6.75
56	16lb 4oz	15lb 0oz	17.07	6.8
58	16lb 5oz	15lb 1oz	17.68	6.83
60	16lb 6oz	15lb 2oz	18.29	6.86
62	16lb 7oz	15lb 3oz	18.9	6.89
64	16lb 9oz	15lb 5oz	19.51	6.95
66	16lb 10oz	15lb 6oz	20.12	6.97
68	16lb 11oz	15lb 7oz	20.73	7
70	16lb 12oz	15lb 8oz	21.34	7.03
72	16lb 14oz	15lb 9oz	21.95	7.06
74	16lb 15oz	15lb 11oz	22.56	7.12
76	17lb 0oz	15lb 12oz	23.16	7.14
78	17lb 1oz	15lb 13oz	23.77	7.17
80	17lb 2oz	15lb 14oz	24.38	7.2
82	17lb 4oz	16lb 0oz	24.99	7.26
84	17lb 5oz	16lb 1oz	25.6	7.29
86	17lb 6oz	16lb 2oz	26.21	7.31
88	17lb 7oz	16lb 3oz	26.82	7.34
90	17lb 9oz	16lb 4oz	27.43	7.37
92	17lb 10oz	16lb 6oz	28.04	7.43
94	17lb 11oz	16lb 7oz	28.65	7.46
96	17lb 12oz	16lb 8oz	29.26	7.48
98	17lb 14oz	16lb 9oz	29.87	7.51



REMOTE CONDENSING UNIT DIMENSIONS



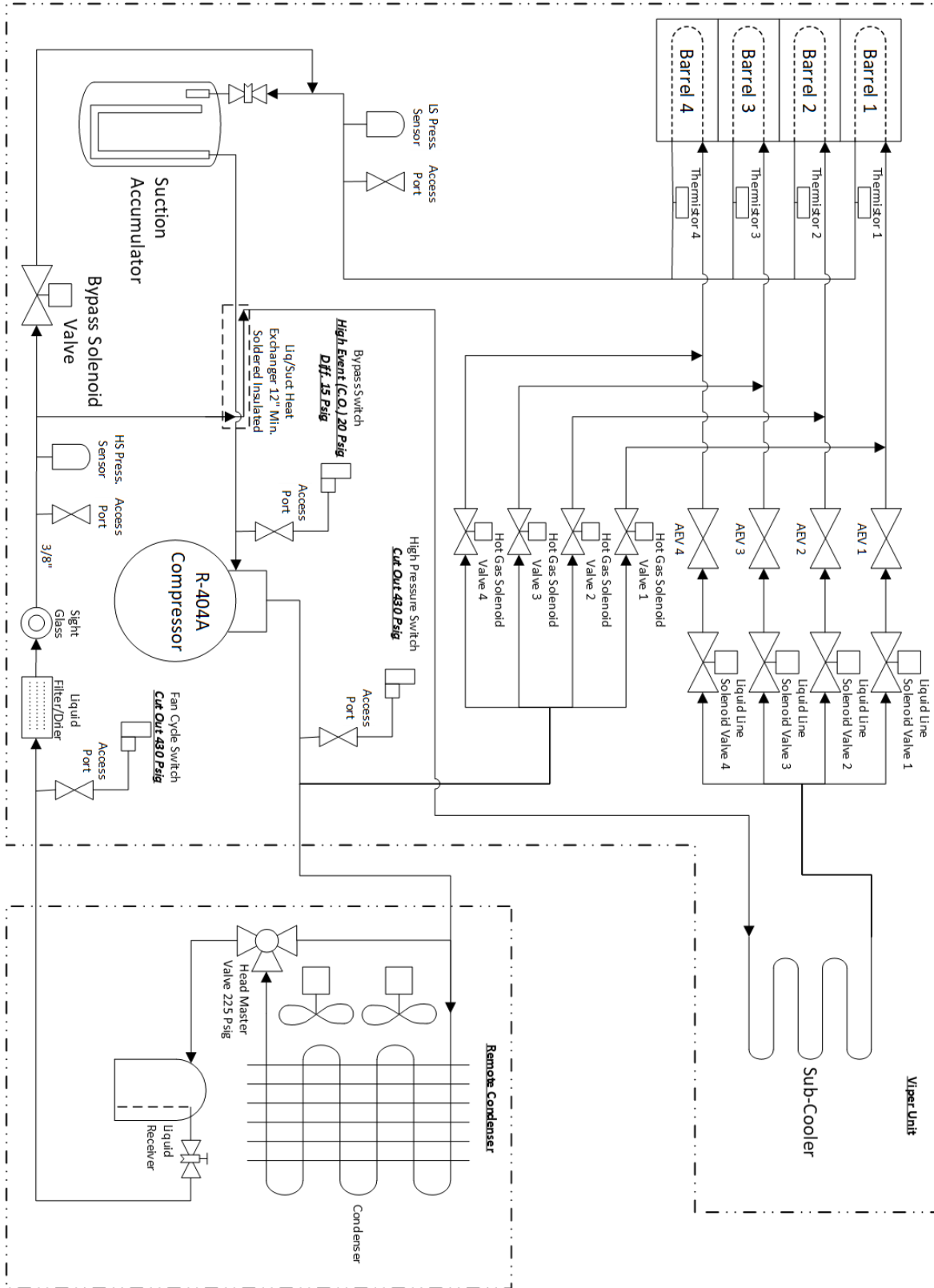
Weight: 180 lbs.

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.

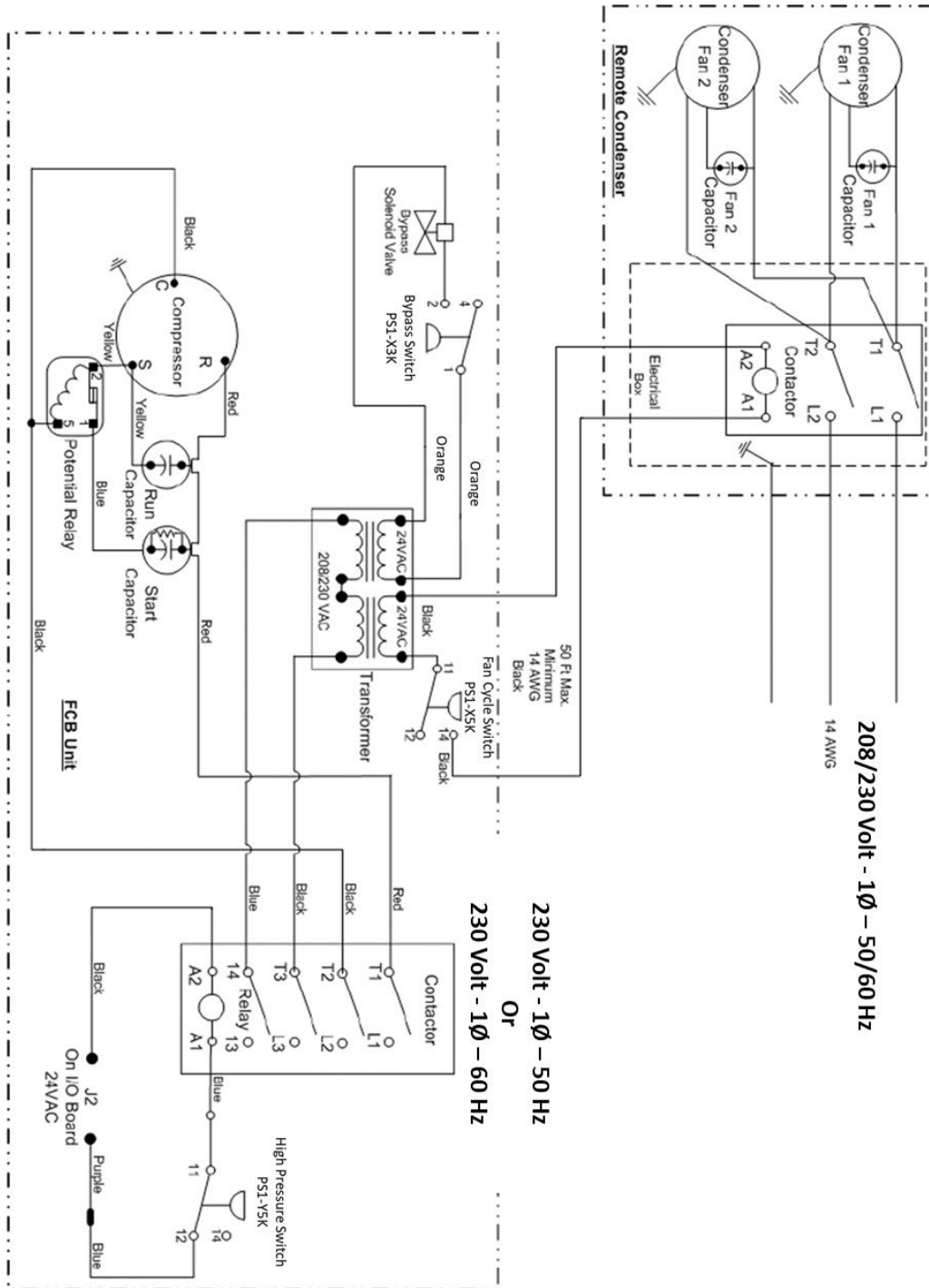


REFRIGERATION SCHEMATIC



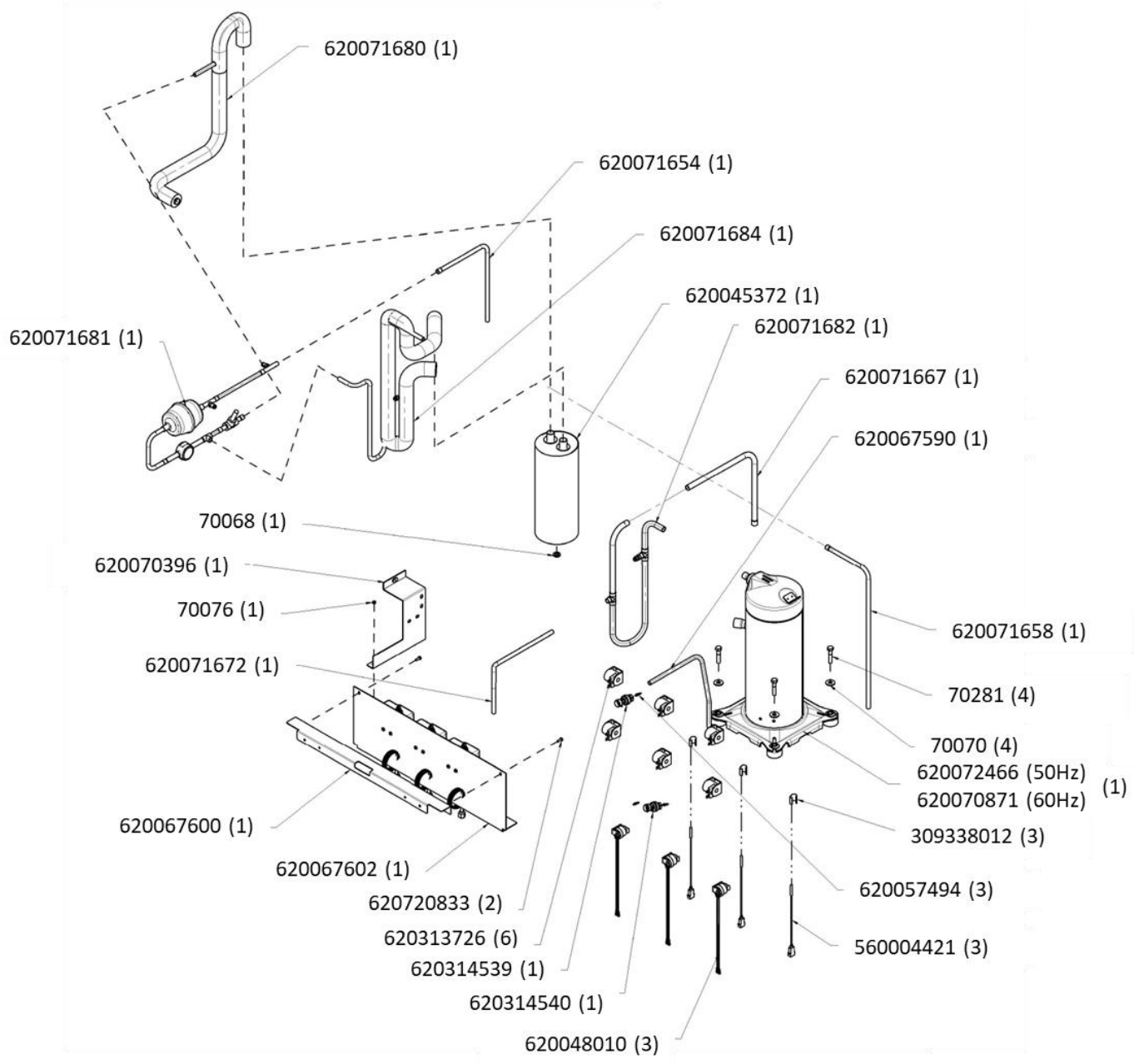


ELECTRICAL SCHEMATIC



UNIQUE COMPONENTS – REFERENCE VIPER IPL FOR BALANCE OF PARTS

REFRIGERATION COMPONENTS



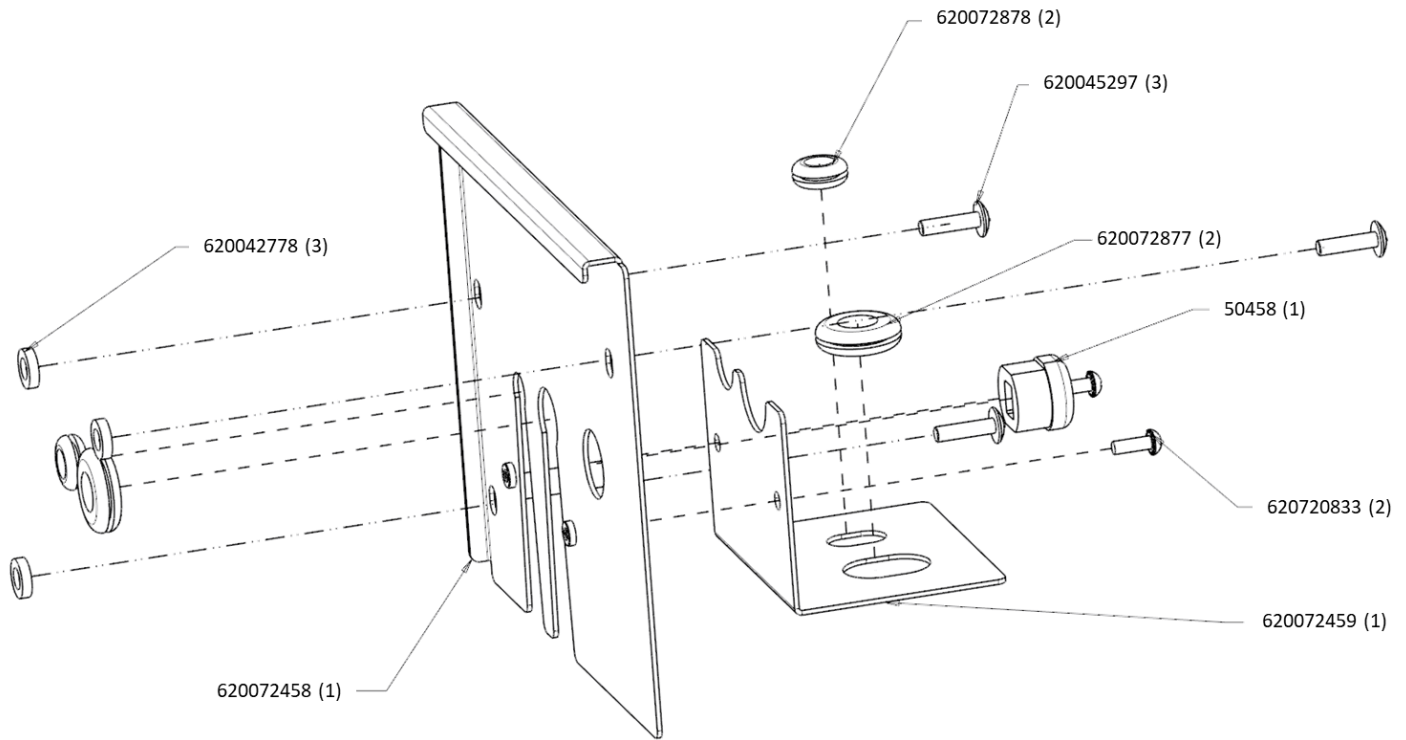


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PART NUMBER	DESCRIPTION	QTY
00995	BRAZING ALLOY 15%	0
3609	SPACER COMP MOUNT COPELAND 1"+	4
560004421	SENSOR THERMISTOR 5K OHM PC	3
620042777	CHEM REFRIGERANT OIL POE	0
620045372	ACCUM SUCTION FOAMED VIPER	1
620048010	SWITCH THERMAL CUT-OFF LEADED	3
620057494	CORE VALVE RFG 800PSI STD HNBR	3
620071963	LINE RFG FLEX- 3/8IN X 6FT	1
620071964	LINE RFG FLEX - 1/2 IN X 6FT	1
620071965	INSULATION TUBG 5/8 IN X 6FT	1
620071966	INSULATION TUBG - 3/4IN X 6FT	1
620072466	COMP ZS20KAE-PFJ R448 50Hz	1
620070871	COMP VPR ZS19KAE-PFV 60Hz	
620313726	SOLENOID COIL EVU 24VAC 50/60H	6
620314539	SENSOR TRANSDUCER 300 PSI REFR	1
620314540	SENSOR TRANSDUCER 500 PSI REFR	1
620608401	REFRIGERANT R404A	SEE TABLE
620071751	SIGHT-GLASS HERMETIC MOISTURE	1
60686	FILTER DRIER	1



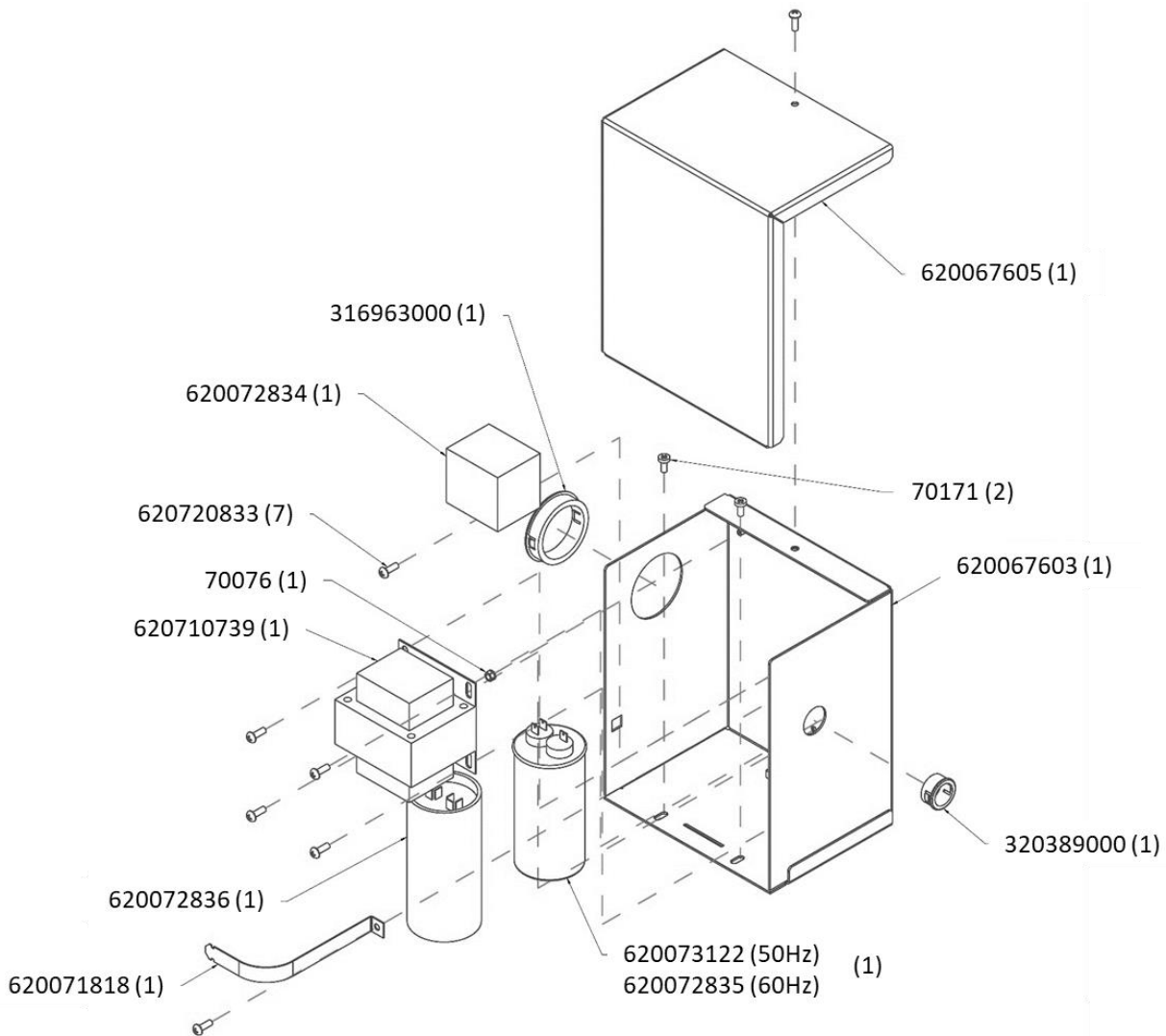
REFRIGERATION LINESET CONNECTION COMPONENTS



PART NUMBER	DESCRIPTION	QTY
50458	STRAINRELIEF	1
620042778	SPACER RETAIN 1/2" DIA #10-32	3
620045297	SCREW 10-32 X 3/4" TYPE F TRPH	3
620072458	BRKT VIPER REMOTE TUBE EXIT	1
620072459	BRKT VIPER REMOTE TUBE EXIT BE	1
620072877	GROMMET RBR 1/2"ID 1/16"GRV 13	2
620072878	GROMMET RBR 3/8"ID 1/16"GRV 1/	2
620720833	SCREW SE 08-32 PAPH 16 STZI	2



REAR E-BOX COMPONENTS



PART NUMBER	DESCRIPTION	QTY
70076	NUT HEX 08-32 STCA KEPS 1/8	1
70171	SCREW MA 08-32 TRPH 12 SS	2
316963000	BUSHING SNAP 2.0H 1.6ID SB2000	1
320389000	BUSHING SNAP 875H 687ID	1
620067603	BOX ELEC SECONDARY REMOTE VPR	1
620067605	EBOX-SECONDARY COVER	1
620071818	CAP STRAP REMOTE E-BOX	1
620072834	RELAY COMP START VPR REMOTE	1
620072836	CAPAC START VIPER REMOTE (50 Hz and 60 Hz)	1
620073122	CAPAC RUN 60µF 370VAC (50 Hz)	1
620072835	CAPAC RUN VIPER REMOTE 45µf (60 Hz)	
620710739	TRANSFRMR 60+75VA 240V:24V 50/60HZ	1
620720833	SCREW SE 08-32 PAPH 16 STZI	7



PRESSURE SWITCH LOCATION AND SETTINGS

Switches are positioned behind the e-box in this order when viewed from the back of the Viper unit.

Description	Bypass Switch	High-Pressure Switch	Fan Cycle Switch
Cornelius PN	620072829	620072828	620072827
Emerson PN	PS1-Y3K	PS1-Y5K	PS1-X5K
Cut Out	20 psig	430 psig	295 psig
Cut In	5 psig*		245 psig*
Differential	15 psig		50 psig
Internal Connection	Orange wires to 1 and 2	Grey wire to 11 Purple wire to 12	Black wires to 11 and 12

* Set by differential value

UNIQUE CLADDINIG

PART NUMBER	DESCRIPTION	QTY
620070873	PANEL TOP 3FL REMOTE VPR	1
620070429	PANEL REAR 3FL VIPER REMOTE	1