LEAVE THIS MANUAL WITH THE HOME OWNER

INSTALLATION MANUAL

for

STEWART-WARNER

AIR COOLED

REMOTE

Air Conditioning Condensing Units

MODELS

RC-A-Q-2
RC-A-Q-3
RC-A-Q-4
RC-A-Q-5

RC-A-Q-2-QC
RC-A-Q-3-QC

STEWART-WARNER CORPORATION
HEATING AND AIR CONDITIONING DIVISION
LEBANON, INDIANA

AC-3000-A 4-64

PRINTED IN U.S.A.

SPECIFICATIONS

GENERAL

Models	RC-A-Q-2	RC-A-Q-3		RC-A-Q-4		RC-A-Q-5	
Phase	1	1	3	1	3	1	3
Horse Power Comp.	2	3	3	4	4	5	5
Condensing Media	Air	Air	Air	Air	Air	Air	Air
Cooling Capacity 95°F DB Outside 80°F DB 67° WB Inside	24,000	36,000	36,000	48,000	48,000	60,000	60,000
Compressor Mod. No.	BO2A	CL31Y	CL31Y	CL41Z	CL41Z	CL51Z	CL51Z
Condenser Fan Diameter	16 In.	16 In.	16 In.	2-16 In.	2-16 In.	2-16 In.	2-16 In.
Condenser Fan Motor	¼ HP	¼ HP	¼ HP	2¼ HP	2¼ HP	2¼ HP	2¼ HP
Refrigerant	R-22	R-22	R-22	R-22	R-22	R-22	R-22
Coil Face Area	3.7 Sq. Ft.	3.7 Sq. Ft.	3.7 Sq. Ft.	6.1 Sq. Ft.	6.1 Sq. Ft.	6.1 Sq. Ft.	6.1 Sq. Ft.
Overall Dimension	42½ Lx30⅝ W x 23¼ H	42½ Lx30⅝ W x 23¼ H	42½ Lx30⅝ W x 23¼ H	55 11/16 Lx32⅝ W x 29H	55 11/16 Lx32⅝ W x 29H	55 11/16 Lx32⅝ W x 29H	55 11/16 Lx32⅝ W x 29H

ELECTRICAL

Voltage (Compressor)	230V	230/208V	240/208V	230/208V	240/208V	230/208V	240/208V
Voltage (Condenser Fan Motor)	230V	230V	230V	230V	230V	230V	230V
Locked Rotor Amp (Comp.)	55	92.5	66	135	110	135	110
Full Load Amp (Comp.)	12.6	21.9	13.8	35	22	35	22
Full Load Amp (Condenser Fan)	1.8A	1.8A	1.8A	3.6A	3.6A	3.6A	3.6A
Wire Size 50′ or Less	#12	#10	#10	#8	#10	#6	#8
Recommended Fuse Size (Time Delay)	30A	40A	40A	60A	50A	70A	60A

NOTICE: Models RC-A-Q-2-QC and RC-A-Q-3-QC have the same specifications as RC-A-Q-2 and RC-A-Q-3 above except that all models using the suffix "QC" are equipped with quick connect fittings for the suction and liquid lines. Units equipped with quick connect fittings are factory charged and they must be used with pre-charged suction and liquid lines. It is not necessary to evacuate and charge QC type units as outlined in the charging section of this manual.

IMPORTANT:

Any damage or shortage should be reported immediately to the transportation company. Material in this shipment has been inspected before it left the factory. Claims for errors, shortages or damaged material must be noted on the packing list, which must accompany claim.

GENERAL:

The Stewart-Warner remote condensing units are for use with Stewart-Warner evaporator units to make a complete summer air conditioner. When used with heating equipment, they supply year-round air conditioning. Complete summer-winter control panels are standard equipment with each condensing unit and the choice of a straight cooling or heating-cooling combination thermostat is optional.

CONDENSING UNIT DATA:

The RC-A-Q series remote condensing unit is designed to operate with either an expansion valve or a capillary tube evaporator. The lower portion of the condenser coil is used as a receiver. The charging procedure outlined in this manual must be followed very carefully in all cases except where an RC-A-Q-2-QC or an RC-A-Q-3-QC unit is being used. All RC-A-Q-2-QC and RC-A-Q-3-QC units are factory charged and are equipped with quick connect fittings. These are for use with precharged lines.

The 2 and 3 Ton—Single Phase Units

The compressor used on the 2 and 3 ton single phase units are PSC (Permanent Split Capacitor) type. Because of the increased motor winding the starting capacitor and starting relay is not required. The compressor will not start if an unbalanced load exists between the high and low sides. Therefore, do not stop the compressor and immediately attempt to re-start it. The compressor overload protection will prevent the machine from running until the pressure in the system is equalized. Capillary tube type evaporators are constructed in such a way that pressure will equalize within 3 or 4 minutes. If a thermal expansion valve evaporator is used it must be of a type which has an internal bleed device to allow pressure to equalize. Modern Stewart-Warner evaporators have this feature. Other types of expansion valve evaporators must not be used.

The 4 and 5 Ton—Single Phase Units

A starting capacitor and a starting relay is used on all 4 and 5 ton single phase condensing units.

The 3, 4 and 5 Ton—Three Phase Units

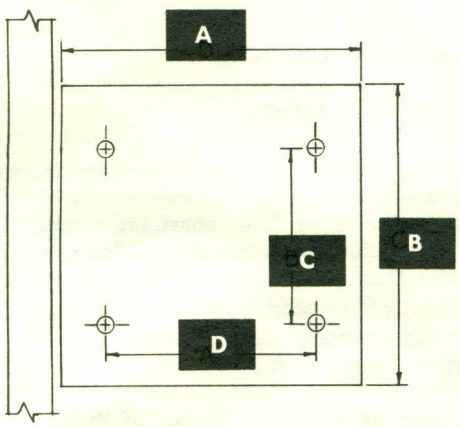
No starting components are used on three phase units.

TOOLS:

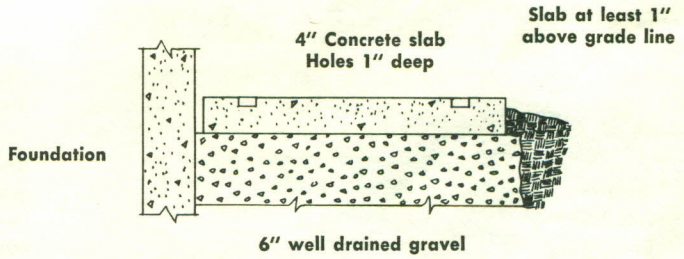
The following is a list of basic refrigeration tools that are needed to install and service air conditioning equipment. These tools or their equal can be purchased at your local refrigeration supply house.

Testing manifold (Mueller A-12427) or equal
Charging lines (3) (Mueller A-15215) or equal
Gauge (Marsh 1DP 0#400# No. 5764) or equal
Gauge (Marsh 3DP 30" -0#-250# No. 5803) or equal
Ratchet wrench (Bonney RF-45) or equal
Ratchet wrench (Bonney RF-23) or equal
Tube cutter (Imperial 312F) or equal
Flaring and swedging tool (Imperial 275SF) or equal
Inner and outer reamer (Imperial 208F) or equal
Tube bender (Holsclaw B4-12-¾" O.D.) or equal
Leak detector (Turner LP 700) or equal
Adjustable wrench (2) 15"
*Ampmeter (Amprobe No. 300) or equal
*Volt-ohm meter (Phaostron Multitester #555A) or equal

***Note:** Required for electrical service only.



Slab may be set at any distance from foundation. If set close to foundation, allow for expansion joint.



	A	B	C	D
RC-A-Q-2 and 3	36	30	19 1/16	26 3/4
RC-A-Q-4 and 5	48	36	28 3/4	35 7/8

To position unit, provide 4 holes, 1½" round or square, 1" deep, or similar means*. Holes (or similar) must be positioned as shown so that air flow through condenser will be parallel to foundation of building.

Slab must be so located that length of vapor line and liquid line will not exceed 50'.

*NOTE: Similar means might be substituting ½" bolts or ½" rods imbedded in concrete. These would slide into 1" pipe legs of remote compressor unit. Also, 2" pipe in place of bolts might be used. 1" pipe legs would then slide into 2" pipe.

CONCRETE SLAB DIMENSIONS

Fig. 1

In addition to the above tools a good vacuum pump and good set of scales will be needed. These items are necessary to charge a capillary tube system in the field. Scale (Triner platform scale 50# by 1 oz. graduations) Vacuum pump (Beach-Russ Model O, single-stage). The vacuum pump and scale are available at the Stewart-Warner factory in Lebanon, Ind.

LOCATION OF CONDENSING UNIT:

The unit must be located outside or in a well ventilated place, such as a carport. Under no circumstances should it be located in the space being cooled or in a confined area where the heat rejected by the unit can cause a temperature rise in the space in which the unit is located. Prevailing summer wind should blow into the condenser, thereby aiding the fan. If possible a shady location is best, such as under an overhang, on the north or east side of the house, or under a tree.

It is recommended that a minimum clearance of two feet from the furthest projection on the unit be maintained on the inlet air side, and four feet on the discharge side of the condensing unit.

MOUNTING ON CONCRETE SLAB:

Dimensions of the slab are shown in Fig. 1. The unit should be raised off the slab 6". This is to minimize dirt, grass, leaves, etc. from entering the unit and at the same time eliminate the vibration that may occur if longer legs are used. On the four corners of the base of the unit are 1" threaded pipe holes where the legs may be screwed in.

TIPPING BACK REMOTE CONDENSING UNIT COVER ASSEMBLY:

The design of this unit allows the installer or serviceman to simply and easily tip the cover assembly back without completely removing it from the unit. This feature eliminates the labor of lifting the cover assembly off, but still allows free access to the unit for installing or servicing. The procedure for tipping this cover back is as follows: (See Fig. 2).

1. Remove bolt on top of unit.
2. Remove the two bolts on bottom edge of cover assembly on the compressor end of the unit.
3. Cover may then be tipped back on the two remaining bolts.

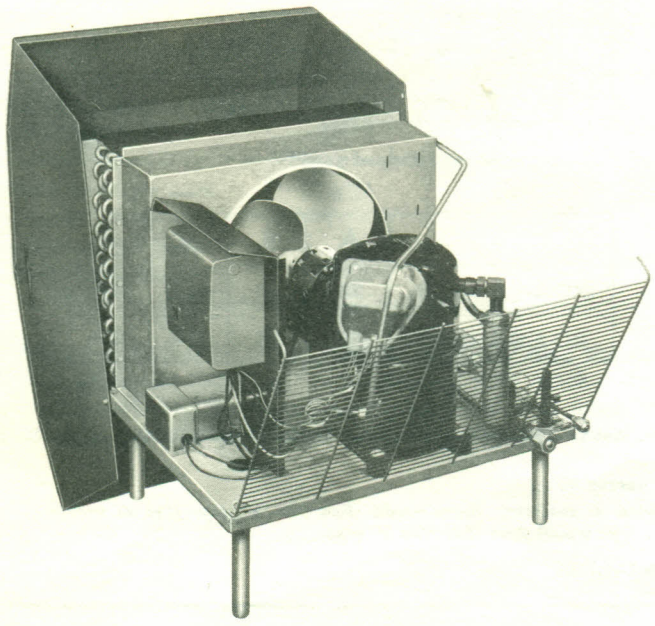


Fig. 2

CAUTION: When it is necessary to completely remove this cover assembly from the unit, it should be removed and replaced with great care. Improper handling can result in damage to condenser coil. The procedure is as follows:

REMOVING COVER ASSEMBLY:

1. Tip cover back as outlined above.
2. Remove remaining two bolts and slide cover back from unit.

REPLACING COVER ASSEMBLY:

1. Slide cover assembly up to unit in the tipped position.
2. Replace two bolts on condenser coil end of unit.
3. Carefully tip cover assembly down over the unit and replace remaining bolts.

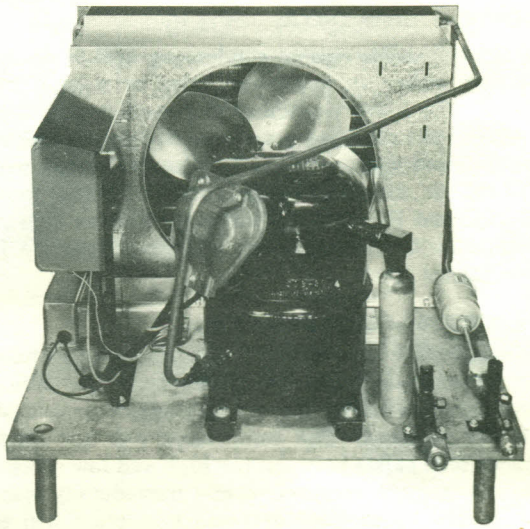


Fig. 3

RUNNING REFRIGERANT TUBING:

The tubing used should be refrigeration grade which is cleaned, dehydrated and sealed. The tubing should be left sealed until after it is run and ready to connect. Then the tubing should be cut, flared and the joint immediately made. Any left over tubing should be sealed for future use.

Two refrigerant lines must be run between the condensing unit and evaporator section. A maximum of 50' of the line size shown on the "Line Size" chart for a specific unit can be run. If the distance between the condensing unit and the coil is greater than 50 feet, increase the line size by one size larger for each additional 100 feet.

All refrigerant piping should conform to local regulations and American Standard Safety Code for Mechanical Refrigeration ASA B9.1-1953 ASRE Standard 15-53 UDS 621.56: 614.8 published by American Society of Refrigerating Engineers, 234 Fifth Avenue, New York 1, New York.

Extreme care should be exercised in running the refrigeration tubing. Great care has been taken in manufacturing a clean and dehydrated unit, but the final cleanliness and moisture content of the complete system is the responsibility of the installer. Dirt or foreign matter entering the system will cause excessive wear of the compressor and plug strainers in the system. The smallest amount of moisture will combine with the oil and form acids and sludges which will corrode the internal working parts, and cause plugged capillary tubes and strainers, common causes of refrigeration equipment failure.

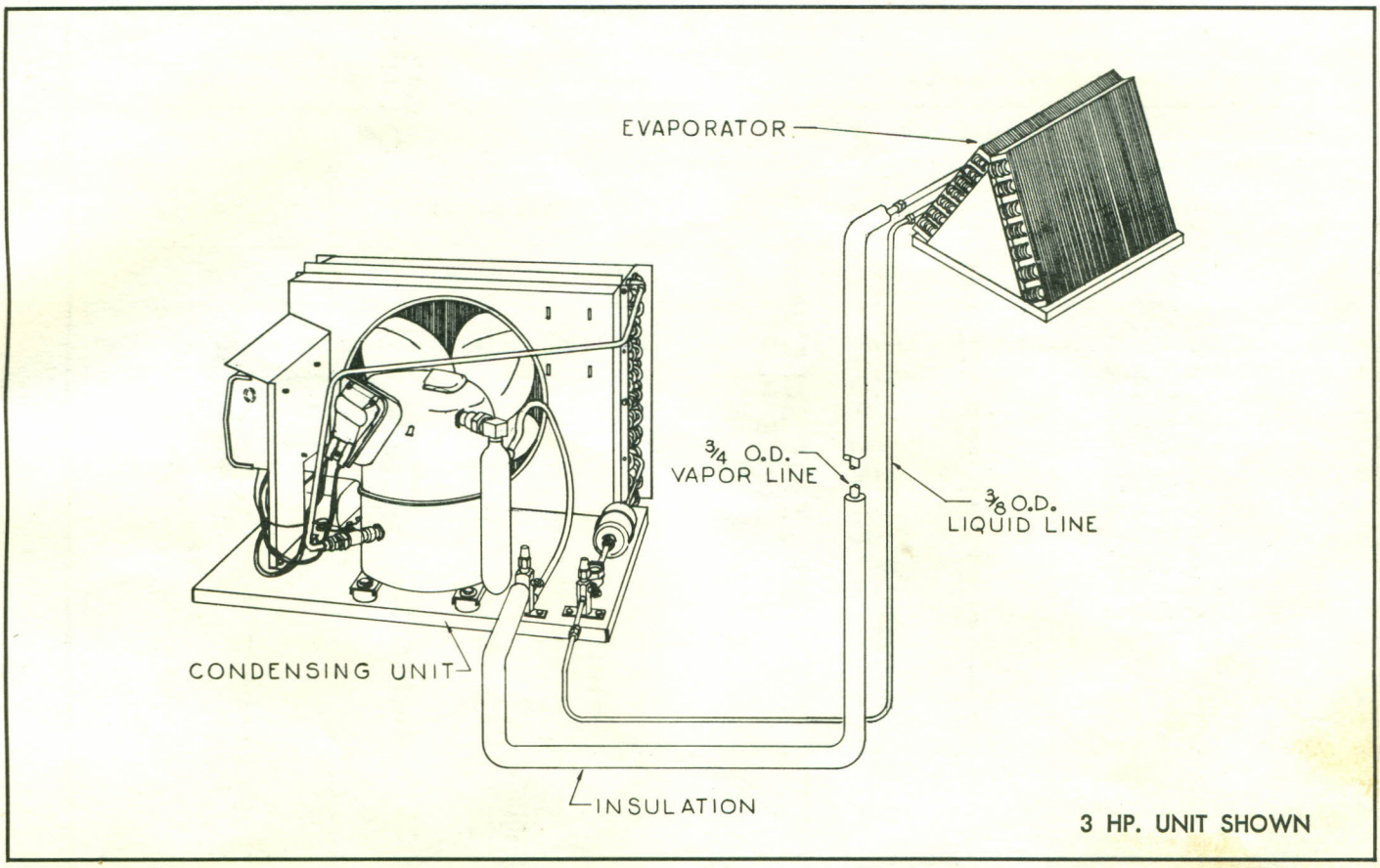


Fig. 4

Do not install the evaporator over 15′ above or below the condensing unit. Suction lines must be pitched down toward the condensing unit ½" in 10.

The suction and liquid lines may be run separately or together. In either case the suction line should be insulated by itself as shown in Fig. 4.

LINE SIZES (O.D.)

Unit	2 Ton	3 Ton	4 Ton	5 Ton
Liquid Line	5/16	3/8	½	½
Suction Line	5/8	¾	7/8	1⅛*

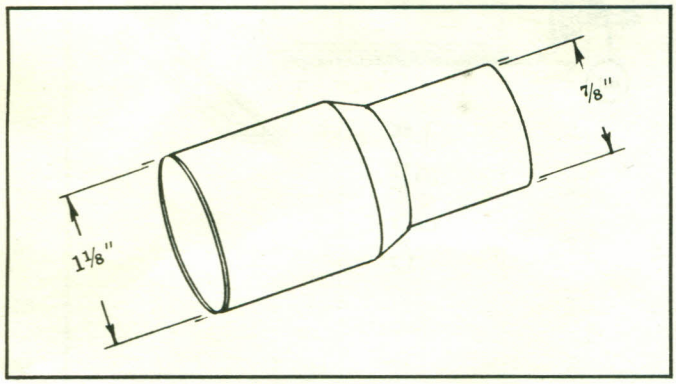


Fig. 4A

Adapter Assembly

***NOTICE:** The suction line connection on the 5-ton evaporator and condenser is 7/8" O.D.; however, the interconnecting tubing must be 1⅛" O.D. Two adapters are shipped with each 5-ton condensing unit. Attach one of the adapters on the condenser suction fitting and the other on the evaporator suction fitting. Be sure to solder the adapters and interconnecting tubing carefully. **Avoid overheating the adapter once one solder connection has been made.**

On 2, 3 and 4 ton units four joints are required to connect both liquid and suction lines. These joints are shown in Fig. 4. The joints on the RC-A-Q-2 and 3 are flare joints and no heating or brazing need be done. Good, tight, leakproof joints are absolutely necessary. They cannot be made carelessly or with poor tools. THIS IS IMPORTANT.

A good flare is made by cutting the tube evenly with a tube cutter in good condition and by not applying too much pressure on the wheel. The tubing should be de-burred, being careful not to get shavings inside the tube. Before making the flare, place a drop of oil on the flaring tool. After the flare is made, it should be inspected for a bright, smooth surface with no cracks and should be large enought to fit closely. to the threaded portion of the flare nut.

Before closing the joint, place a drop of oil on both sides of the flare. The flare nut should be tightened exceptionally tight to insure a perfect joint. THIS IS A HIGH PRESSURE SYSTEM.

Use silver solder or Silfos to make the sweat connection on the 4 and 5 ton units. Do not use soft solder. The connection should be made with the base valves in the "as shipped" position. The valves are front seated; the service ports are open.

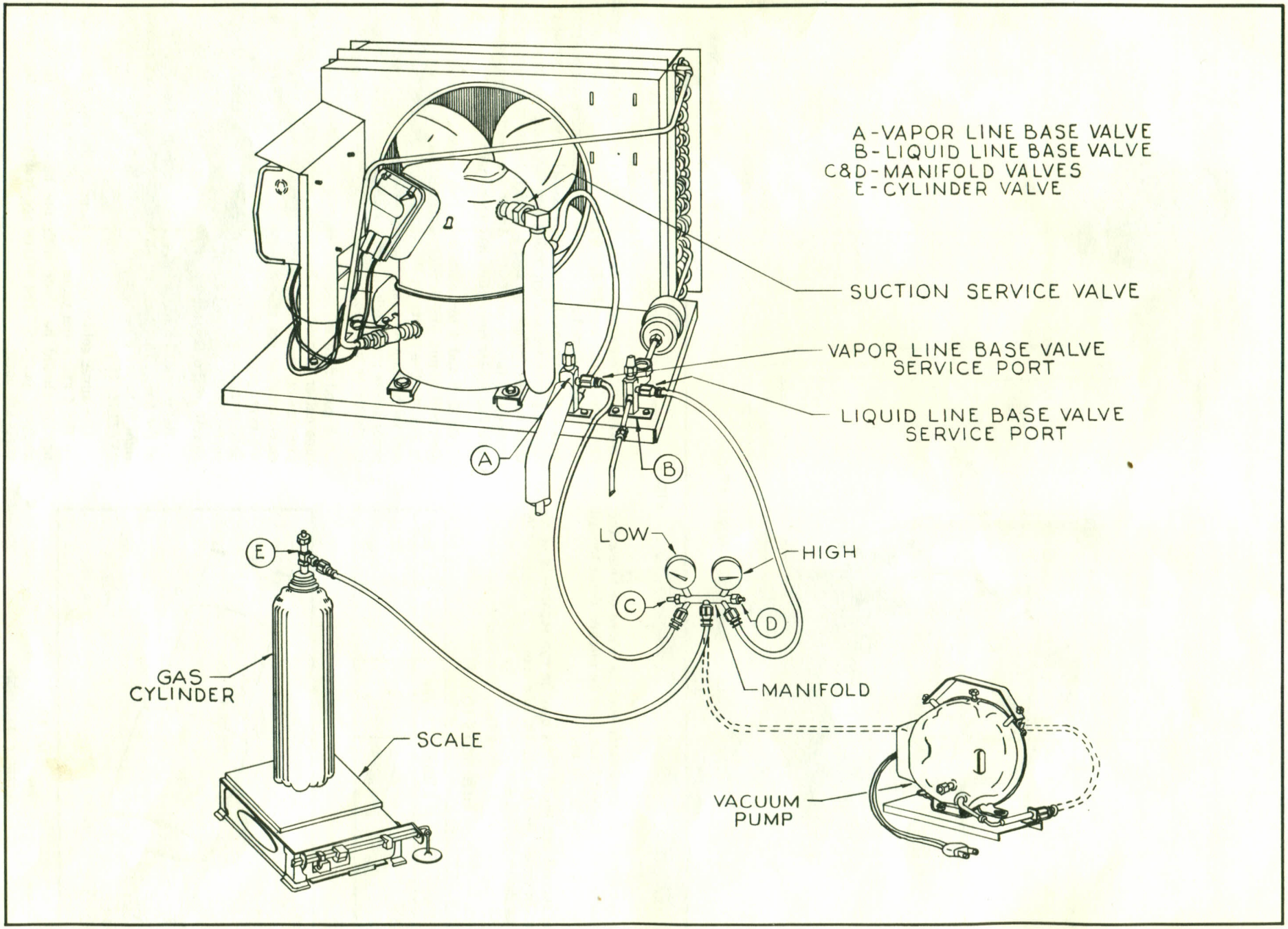

A-VAPOR LINE BASE VALVE
B-LIQUID LINE BASE VALVE
C&D-MANIFOLD VALVES
E-CYLINDER VALVE
SUCTION SERVICE VALVE
VAPOR LINE BASE VALVE SERVICE PORT
LIQUID LINE BASE VALVE SERVICE PORT
A
B
LOW
HIGH
C
D
E
GAS CYLINDER
SCALE
MANIFOLD
VACUUM PUMP

Fig. 5

CHARGE TABLE

UNIT MODEL NO.	RC-A-Q-2	RC-A-Q-3	RC-A-Q-4	RC-A-Q-5
BASIC CHARGE	3 lb. 11 oz.	4 lb. 15 oz.	7 lb. 5 oz.	9 lb.

	Liquid Line			Suction Line					Liquid Line				Suction Line			
Ft.	5/16	3/8	1/2	5/8	3/4	7/8	1 1/8	Ft.	5/16	3/8	1/2		5/8	3/4	7/8	1 1/8
	Lb. Oz.	Lb. Oz.	Lb. Oz.	Lb. Oz.	Lb. Oz.	Lb. Oz.	Lb. Oz.		Lb. Oz.	Lb. Oz.	Lb. Oz.		Lb. Oz.	Lb. Oz.	Lb. Oz.	Lb. Oz.
1	1	1	1	0	0	0	0	26	9	15	1	13	1	2	2	4
2	1	1	2	0	0	0	0	27	10	15	1	14	1	2	2	4
3	1	2	3	0	0	0	0	28	10	1	1	15	1	2	2	4
4	1	2	4	0	0	0	1	29	10	1	2		1	2	2	4
5	2	3	6	0	0	0	1	30	11	1	1	2 1	1	2	2	4
6	2	3	7	0	0	0	1	31	11	1	2	2 2	1	2	3	4
7	3	4	8	0	0	1	1	32	12	1	2	2 4	1	2	3	4
8	3	5	9	0	0	1	1	33	12	1	3	2 5	1	2	3	5
9	3	5	10	0	1	1	1	34	12	1	3	2 6	1	2	3	5
10	4	6	11	0	1	1	1	35	13	1	4	2 7	1	2	3	5
11	4	6	12	0	1	1	2	36	13	1	4	2 8	1	2	3	5
12	4	7	13	0	1	1	2	37	13	1	5	2 9	1	2	3	5
13	5	7	14	0	1	1	2	38	14	1	6	2 10	2	2	3	5
14	5	8	1	0	1	1	2	39	14	1	6	2 11	2	2	3	5
15	5	8	1 1	0	1	1	2	40	14	1	7	2 13	2	2	3	6
16	6	9	1 2	1	1	1	2	41	15	1	7	2 14	2	3	3	6
17	6	10	1 3	1	1	1	2	42	15	1	8	2 15	2	3	3	6
18	7	10	1 4	1	1	1	3	43	1	1	8	3	2	3	4	6
19	7	11	1 5	1	1	2	3	44	1	1	9	3 1	2	3	4	6
20	7	11	1 6	1	1	2	3	45	1	1	9	3 2	2	3	4	6
21	8	12	1 7	1	1	2	3	46	1 1	1	10	3 3	2	3	4	6
22	8	12	1 8	1	1	2	3	47	1 1	1	11	3 4	2	3	4	7
23	8	13	1 10	1	1	2	3	48	1 1	1	11	3 5	2	3	4	7
24	9	14	1 11	1	1	2	3	49	1 2	1	12	3 7	2	3	4	7
25	9	14	1 12	1	2	2	3	50	1 2	1	12	3 8	2	3	4	7

INSULATION OF REFRIGERANT LINES:

Good insulating materials are on the market and are stocked by local wholesale houses. Some of these are:

1. Arma Flex — Armstrong Insulation Division, Lancaster, Pa.
2. Closed Cell Tubing—Jarrow Products, 420 N. LaSalle, Chicago, Ill.
3. Snap-On—Gustin-Bacon Mfg. Co., Kansas City, Mo.
4. Presstite Insulating Tape — Virginia Smelting Co., West Norfolk, Va.

Any insulation should be ⅜" thick and have a vapor barrier on the outside. The insulating materials listed above can all be purchased with vapor barrier qualities so that no additional barrier need be applied.

WIRING:

The air conditioner must be wired according to the diagram. Although all electrical connections were inspected before the unit left the factory there is a possibility of the connections working loose in shipping. Therefore, all connections, both factory and field installed, should be checked to make sure they are tight. A loose connection can cause voltage drops and in time may cause shorts. The final wiring should be checked against the correct wiring diagram to be certain all wiring has been completed and is correct. A final check should be made to be sure the proper size fuses have been installed. The propr size fuse for each unit is given in the electrical specifications.

DUCT WORK:

The duct work and insulation are not supplied or guaranteed by the factory. It is the responsibility of the heating contractor to make certain for his own protection that all insulation and duct work is installed according to approved practices. Duct work should be sized for .20" static maximum. All duct work should be sized to the cooling load according to National Warm Air Manual 9, or other acceptable methods.

EVACUATING THE UNIT:

Before the system can be charged it must be evacuated to remove all air and moisture. This is very important as air in the system will cause very poor operation and moisture can eventually cause a complete unit breakdown. The following procedure must also be followed whenever a system has been opened to the atmosphere for service. Refer to Fig. 5.

1. Check to be sure all joints are tight.
2. Connect the low pressure charging line of the manifold to the suction service port and connect the high pressure charging line of the manifold to the high side service port.
3. Open the two valves on the charging manifold.
4. Connect the center service line of the manifold to the vacuum pump. Start the pump and permit it to run until a minimum vacuum of 28" is obtained.
5. Close both valves on manifold and disconnect center service line from vacuum pump.
6. Connect center service line of manifold to a cylinder of R-22.
7. Open valve on cylinder of R-22 and purge air from center service line of manifold by loosening fitting on service line at manifold. Then open both valves on manifold and allow Refrigerant to flow into the system. Permit it to flow until full cylinder pressure is placed on the system. Shut off valve on refrigerant cylinder.
8. Test for leaks on all joints in the system with a Halide leak tester.
9. Disconnect center service line of manifold from the refrigerant cylinder and allow the refrigerant to escape to the atmosphere. (The purpose of adding the refrigerant is to help remove the moisture from the system. Since refrigerant is a good moisture absorbing agent it will bring out the moisture as it is discharged from the system.)
10. Repeat steps 4, 5, and 6.
11. Follow the same procedure as in Step 7 and again allow freon to flow into the system until 30 p.s.i. is read on the gauge when the cylinder is shut off.
12. Allow gas to escape to the atmosphere. If the evacuating is being done because of service allow the gas to escape to the atmosphere and at the same time change the filter drier.
13. Again, attach vacuum pump and allow it to run a minimum of 2 hours.
14. Disconnect the vacuum pump and fully charge the unit in the manner outlined under charging in this manual.

CHARGING THE UNIT:

Since this unit can be used with an expansion valve evaporator unit or a capillary unit, two charging procedures are given. If this unit is used with an expansion valve evaporator, the sight glass may be used to charge the unit. If this unit is used with a capillary tube evaporator the unit must be charged with a very exact amount. The easiest method to charge a system in the field with an exact amount of refrigerant is to weigh it in with a scale. The scale must be capable of accuracy within one ounce. A scale of this type is listed in the tool section of this manual and is available from the Stewart-Warner factory in Lebanon, Indiana.

STEP BY STEP CHARGING PROCEDURE FOR THE EXPANSION VALVE SYSTEM:

The unit should be charged immediately following the evacuation procedure; therefore the charging procedure will be a continuation of the evacuating procedure.

1. With the liquid line valve backseated (or opened all the way), the suction valve 2 turns in from backseated and both charging manifold valves closed, remove the vacuum pump and attach a cylinder of refrigerant 22 to the center line of the charging manifold.
2. Purge the center line with Refrigerant.
3. Pressurize air conditioning system by opening cylinder valve and valve on low pressure side of charging manifold.
4. Charge the unit to a full sight glass and no more. (Outside temp. at a min. 60°F).
5. Backseat suction valve, close cylinder valve and manifold valves. Remove charging equipment.
6. Replace all valve caps.

CHARGING PROCEDURE:

The unit should be charged immediately following the evacuation procedure. Therefore, the charging procedure will be a continuation of the evacuating procedure. Caution: Always use a cylinder with sufficient amount of refrigerant to fully charge the unit. Should the cylinder be emptied

before the charging is complete, it will be necessary to lose the gas and start the procedure from the beginning.

1. Determine the amount of charge to be used as outlined.
2. The manifold should be connected to the unit and evacuating pump should be running as outlined in the last step of the evacuating procedure. Backseat both base valves and close both valves on the manifold.
3. Turn off the vacuum pump.
4. Disconnect the center service of the manifold from the vacuum pump and connect it to the refrigerant cylinder.
5. Open valve on the cylinder slightly and loosen the fitting on the center service line at the manifold to purge the air from the line.
6. Place scale close to the unit on a level flat base. Scale must have all four legs on solid base and be level to weigh properly.
7. Place cylinder of refrigerant on scale and secure manifold to cylinder with a piece of wire or tape.
8. Open low side valve on manifold and valve on the cylinder (after opening these valves the service lines, cylinder or manifold should not be moved until the charging is complete).
9. Weigh cylinder and charging manifold exactly.
10. Subtract the amount of charge needed (previously determined in Step 1) from the total weight Step 9. Example: The total weight of cylinder and manifold is 35 lbs. 2 oz. and the necessary charge is 8 lbs. 8 oz. Subtracting 8 lbs. 8 oz. from 35 lbs. 2 oz. would give 26 lbs. 10 oz. Set the weight on the scale to this amount. In the example the scale would be set 26 lbs. 10 oz. This will be the final weight of the cylinder and manifold after the correct charge has been added to the system.
11. Turn the vapor line base valve about 2 turns off the backseat and allow the gas to equalize in the system and the cylinder.
12. Start the unit to operate on cooling cycle.
13. Allow the unit to run until lever arm on the scale balances in the opening. At the same time the lever arm centers in the opening, backseat the vapor line base valve.
14. Close the valve on the refrigerant cylinder and valve on the manifold. Disconnect the service line and replace service port caps.
15. Either stamp the amount of charge required for the unit on the nameplate or place a tag with this information on the service valve.

PROCEDURE FOR DETERMINING CHARGE:

The amount of charge needed for each installation will be determined by the type of equipment and the length of refrigerant tubing used. Therefore, the correct amount of charge has to be figured for each installation. To make this possible we have given in Table 1, the necessary charge for each component. The total amount of charge necessary is the sum of the amounts needed for each component. An example of how to figure the charge would be as follows:

Determine the components to be used and the number of feet of tubing to be used.

COMPONENT	Amount Needed Lb.	Oz.
RC-A-Q-2	3 lb.	11 oz.
27 ft. Suction Line	0 lb.	1 oz.
26 ft. Liquid Line	0 lb.	10 oz.
Total Charge needed for system	3 lb.	22 oz.
or	4 lb.	6 oz.

TO BE FILLED IN ON JOB:	Amount Needed Lb.	Oz.
Condensing Unit		
used with Evaporator Unit		
Ft. Suction Line		
Ft. Liquid Line		
Total Charge needed for system		

NORMAL YEARLY MAINTENANCE:

Normal yearly maintenance consists only of cleaning the face of the condenser of foreign matter at the beginning of each cooling season.

INSTRUCTIONS TO THE HOME OWNER:

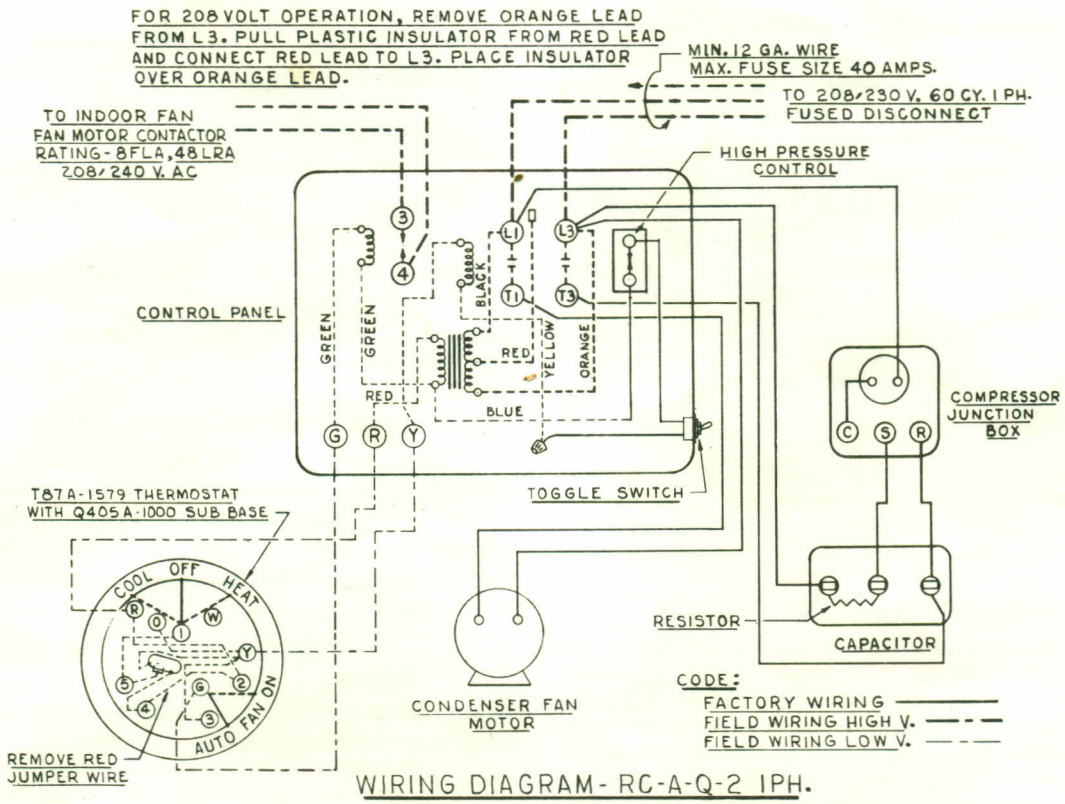
Proper instructions to the home owner at the time the installation is completed may eliminate needless calls in the future. The following points should be covered with the customer:

1. How to set the thermostat and what the thermostat does.
2. Give the customer a brief idea on how the system operates.
3. Point out that he should not stop the unit and immediately attempt to restart it as it will only cycle on overload because an unbalanced pressure exists between the high and low side. Refer to condensing unit characteristic for further explanation.
4. That the unit should remain on and the thermostat should remain at the same setting day and night. This will eliminate a big pickup load during the day, therefore, giving more comfort and more efficient operation.
5. Instruct the customer concerning necessary maintenance to the entire system, including changing filters, oiling motors if there are any, and cleaning the face of the condenser coil.
6. Point out location of main disconnect and proper fuse size.
7. That he should not plant or place any object within five feet of the discharge end and within two feet of the intake end of the condensing unit.
8. Point out that the compressor has a very slight hum when off, which is normal.
9. The power should be left turned on to the condensing unit at all times, as this insures the continuation of power to the compressor anti-slug circuit.

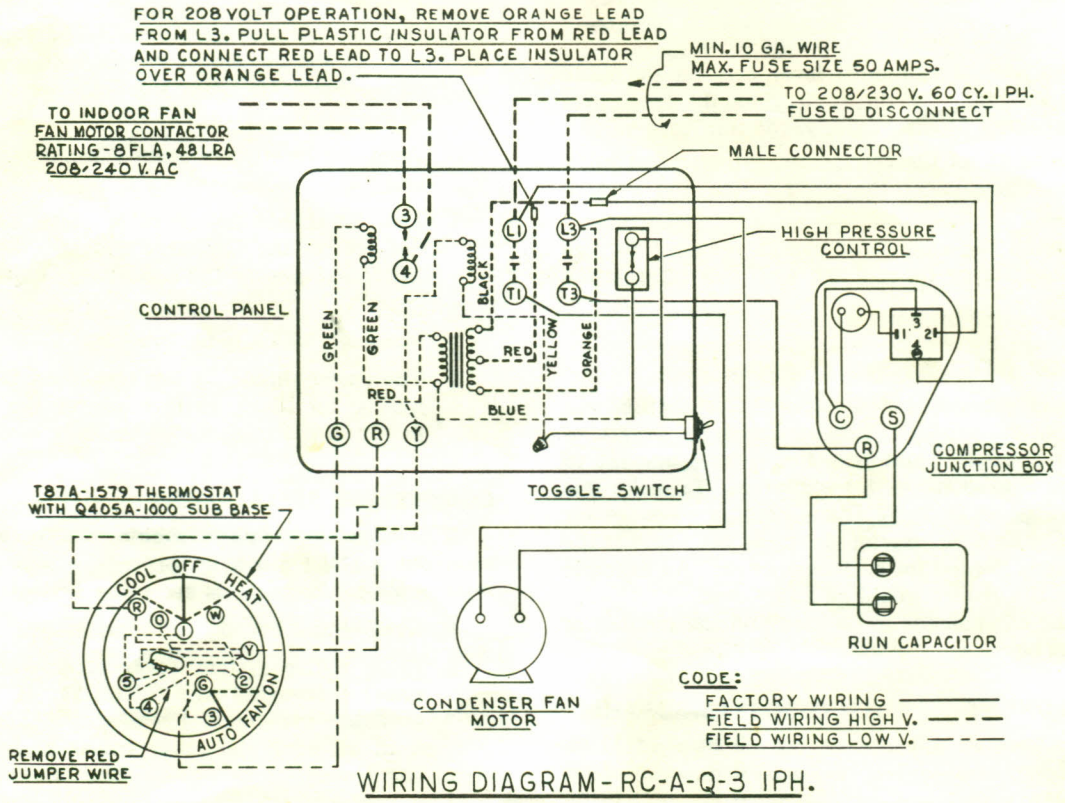
COMPRESSOR REPLACEMENT

If a compressor failure should ever occur due to motor burn out a strict clean up procedure must be followed to remove all contaminations from the system.

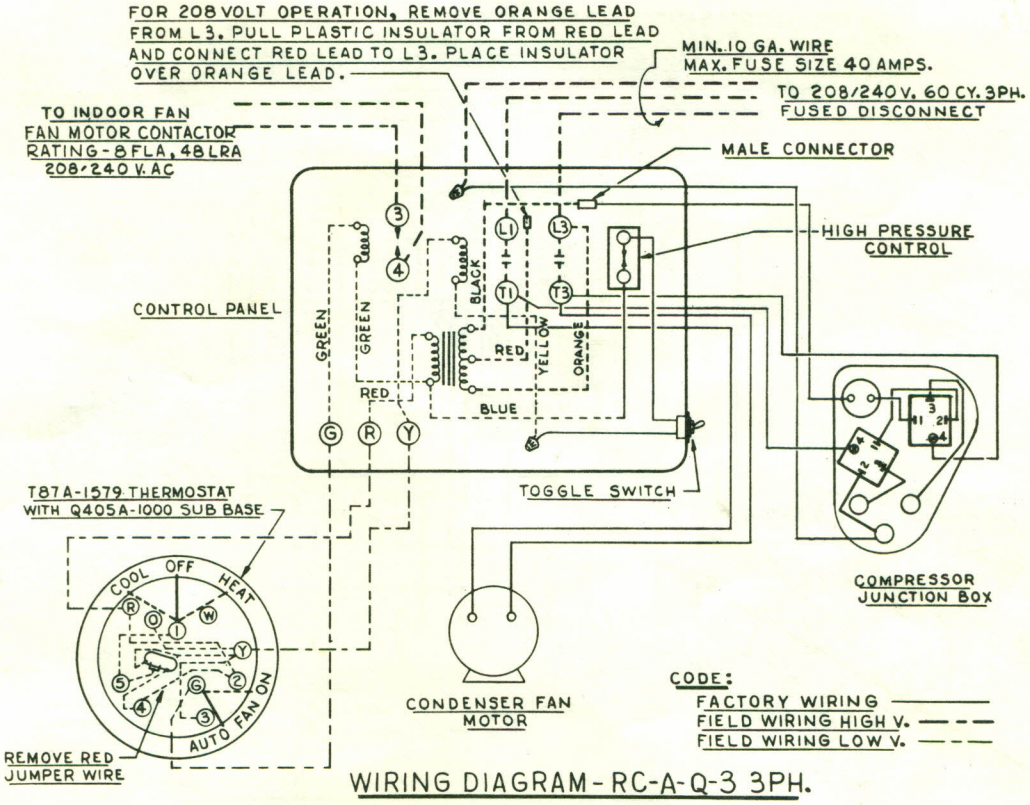
1. Remove the burned out compressor.
2. Flush entire system (evaporator, condenser and all lines) **thoroughly** with Freon 11. If Freon 11 is not available use liquid Freon 22. Repeat this cleaning until all odor and other traces of burned insulation is removed.
3. Install the new compressor and the filter drier.
4. Evacuate, purge and charge the system.



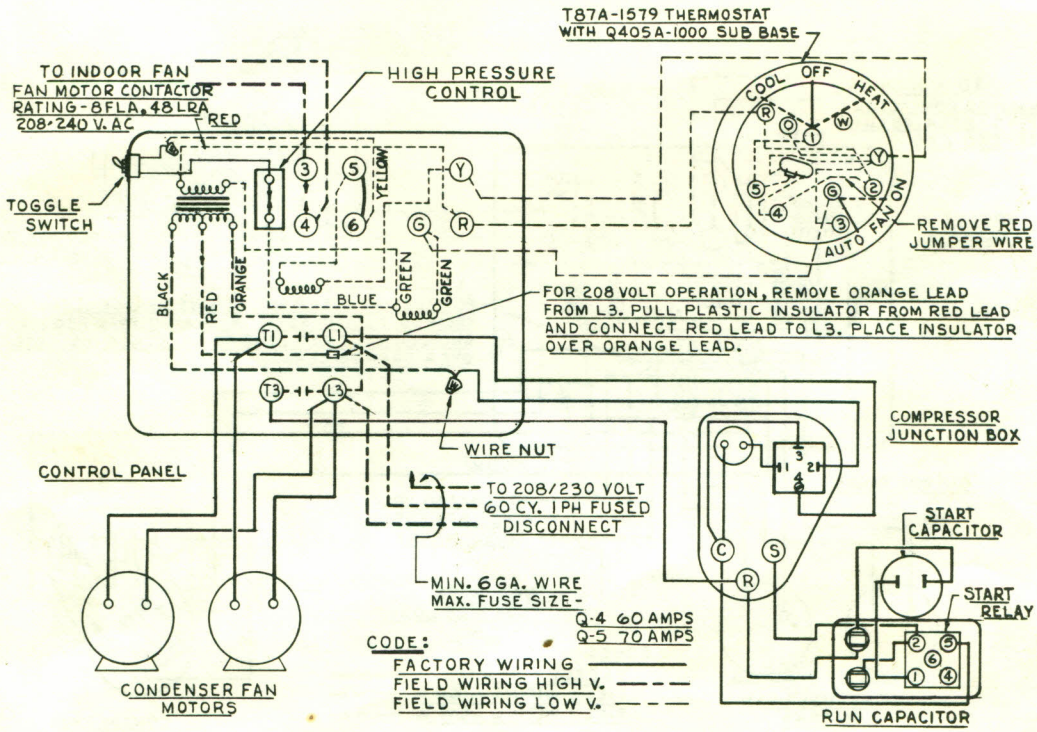
WIRING DIAGRAM - RC-A-Q-2 1PH.



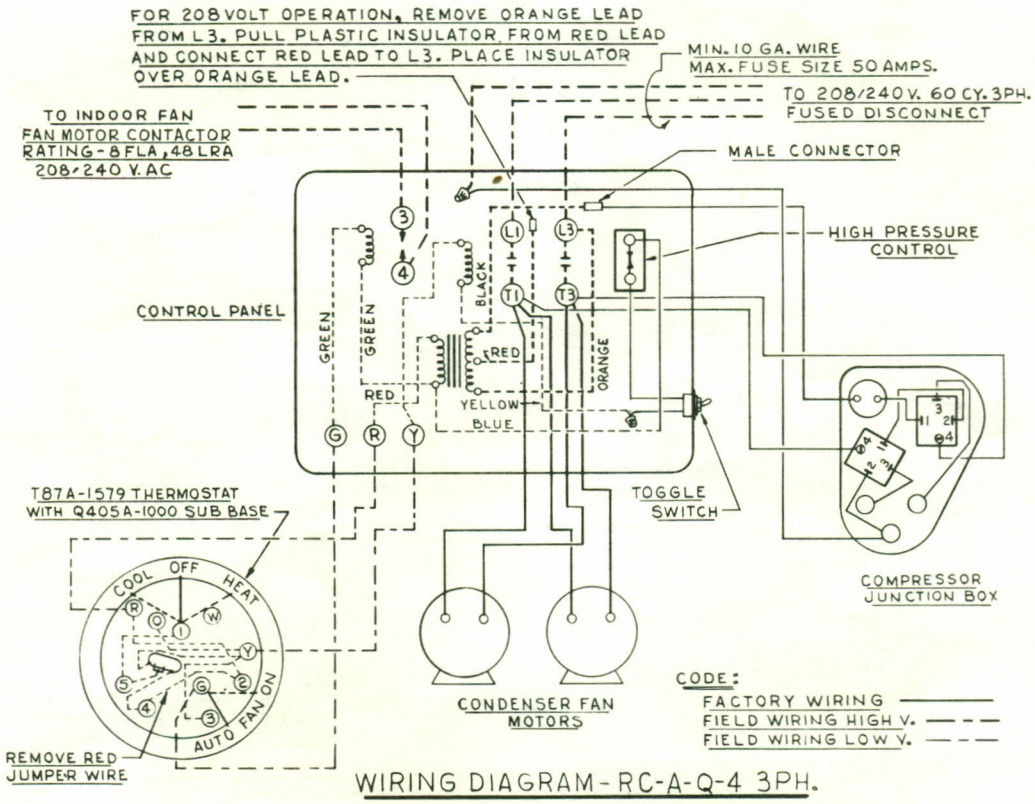
WIRING DIAGRAM - RC-A-Q-3 1PH.



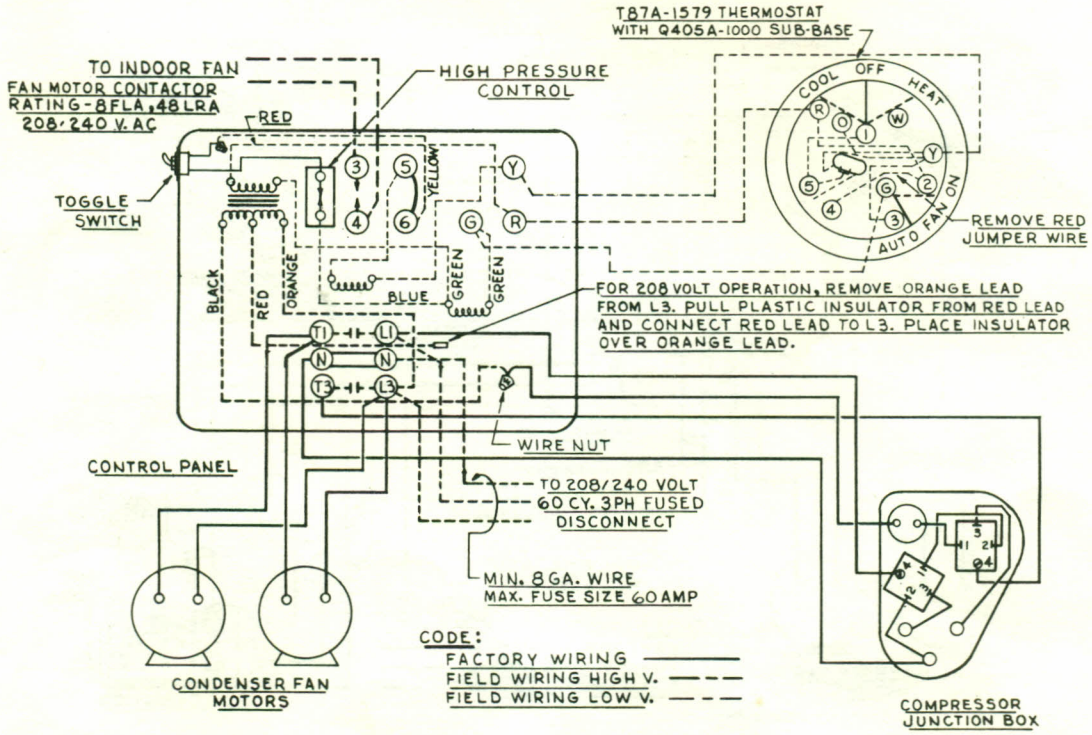
WIRING DIAGRAM - RC-A-Q-3 3PH.



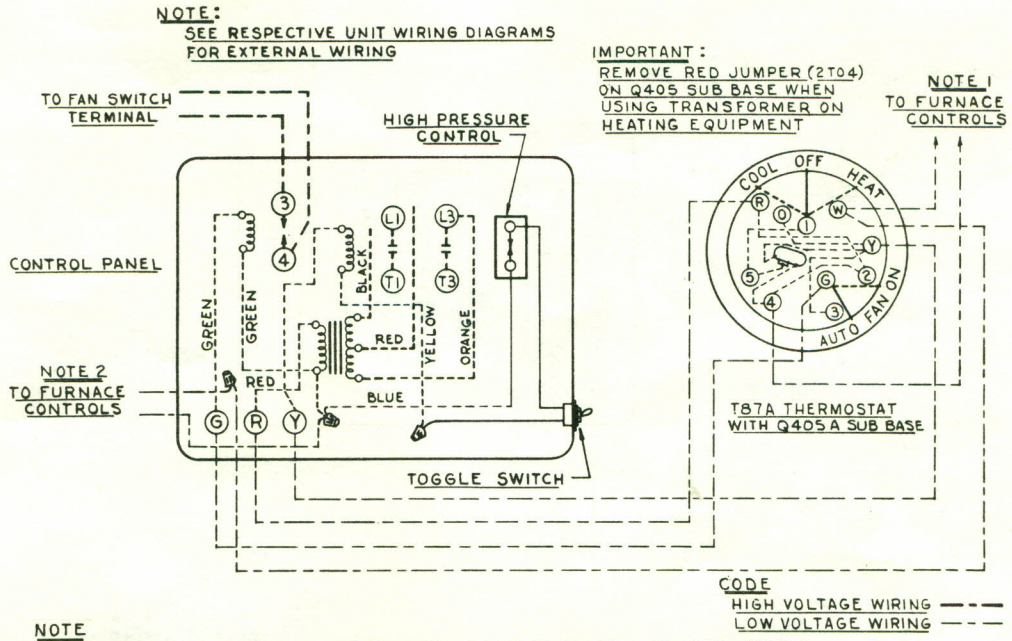
WIRING DIAGRAM - RC-A-Q-4 & RC-A-Q-5 1PH.



WIRING DIAGRAM - RC-A-Q-4 3PH.



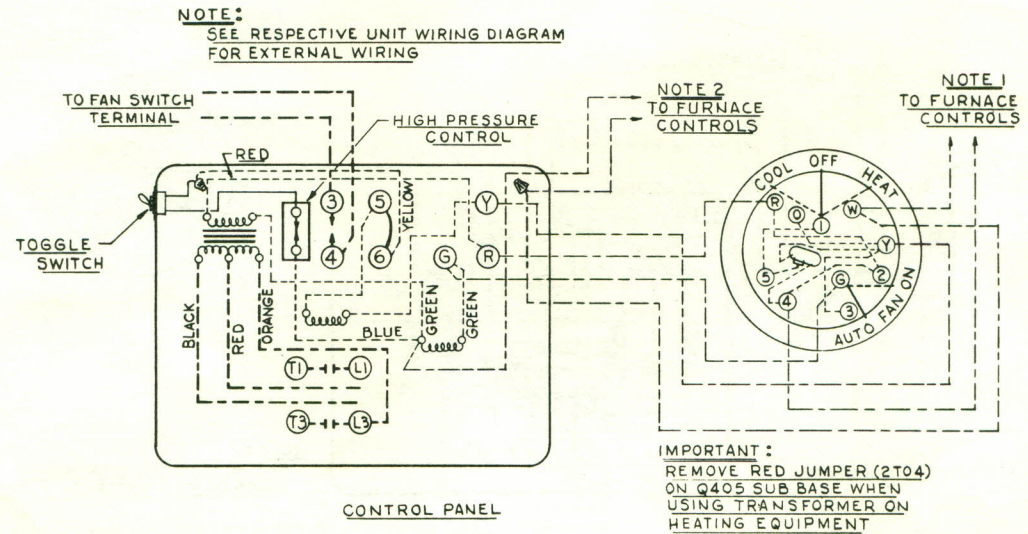
WIRING DIAGRAM - RC-A-Q-5-3PH.



NOTE
1 TRANSFORMER LOCATED ON HEATING EQUIPMENT TO POWER HEATING CONTROLS
2 TRANSFORMER LOCATED IN CONTROL PANEL TO POWER HEATING CONTROLS
3 NOT SUITABLE FOR POWER PILE APPLICATION. CONTROL PANEL INCLUDING HEATING RELAY MUST BE ORDERED SPECIAL

WIRING DIAGRAM-ALL RC-A-Q-2 / RC-A-Q-3 & RC-A-Q-4 3PH.

CONTROL PANEL USED IN CONJUNCTION WITH HEATING SYSTEM



NOTE
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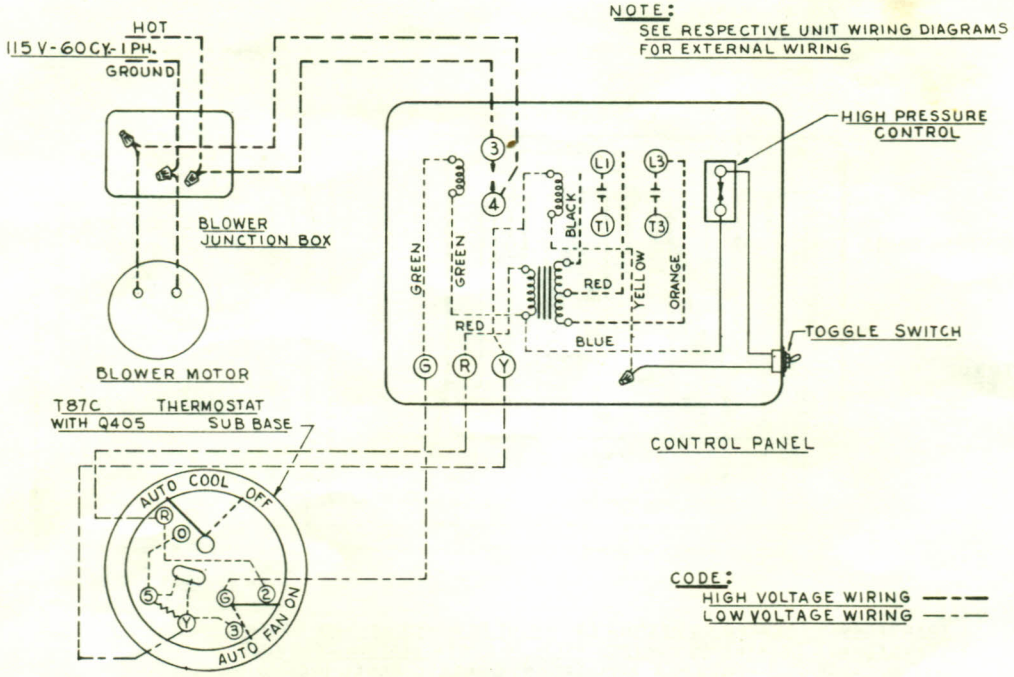
CODE
HIGH VOLTAGE WIRING
LOW VOLTAGE WIRING

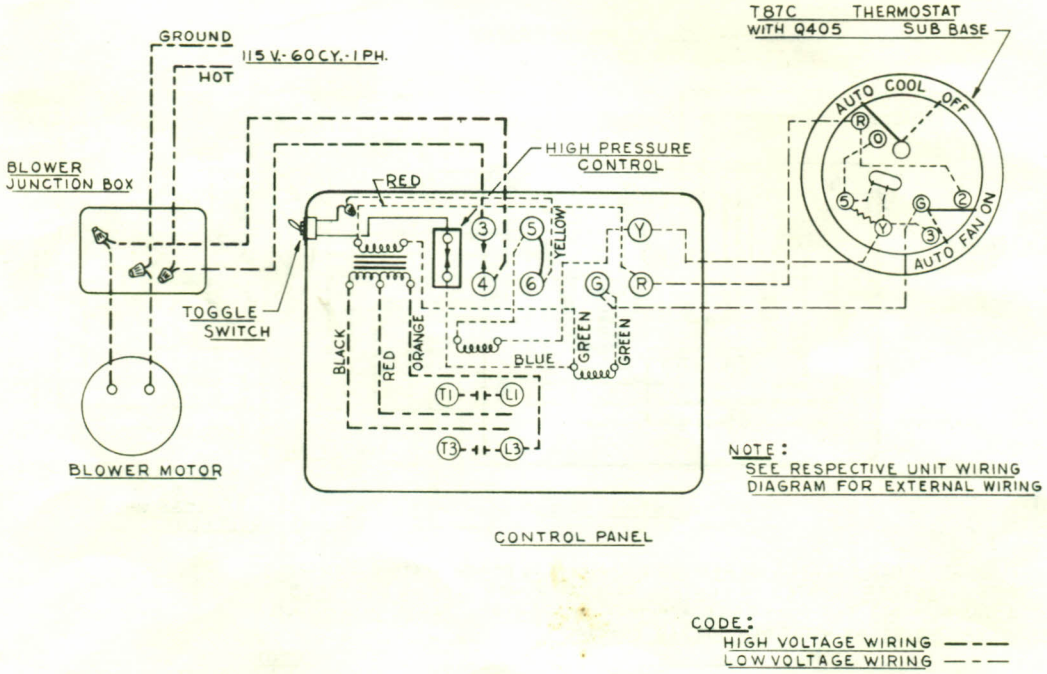
WIRING DIAGRAM-RC-A-Q-4 1PH.

CONTROL PANEL USED IN CONJUNCTION WITH HEATING SYSTEM



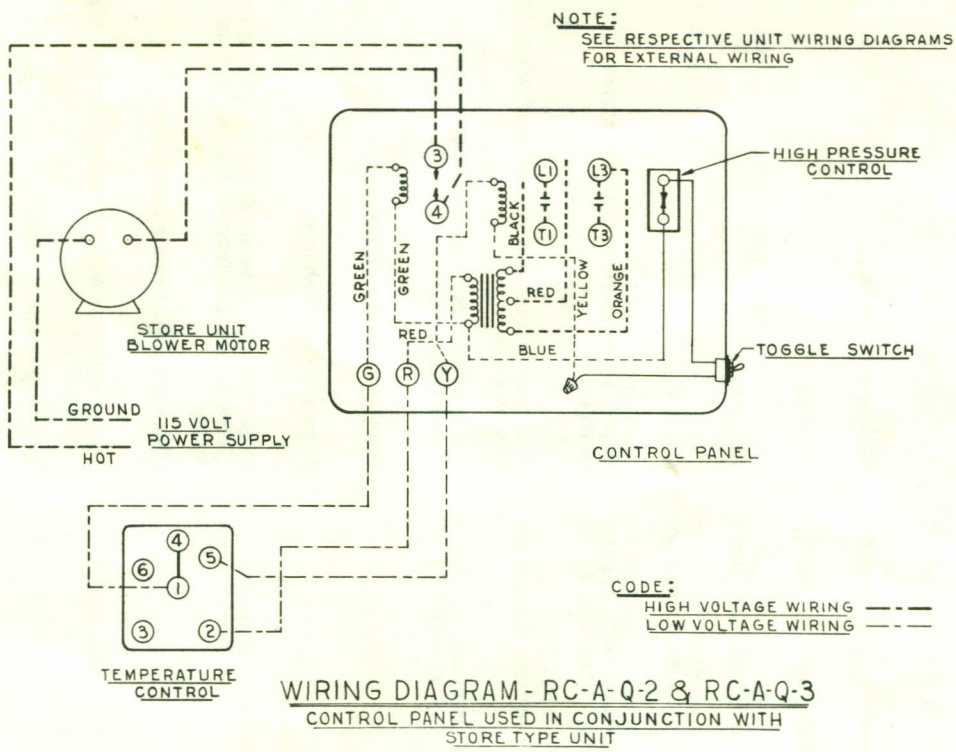
WIRING DIAGRAM-ALL RC-A-Q-2 / RC-A-Q-3 & RC-A-Q-4 3PH.

CONTROL PANEL USED IN CONJUNCTION WITH BLOWER UNIT

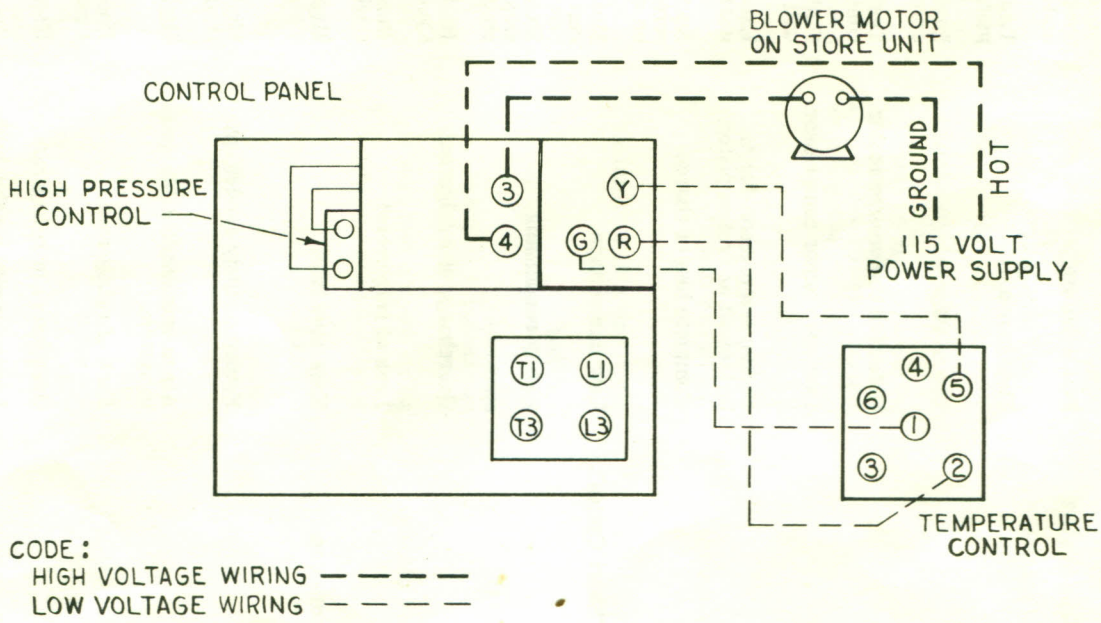


WIRING DIAGRAM - RC-A-Q-4 1PH.

CONTROL PANEL USED IN CONJUNCTION WITH BLOWER UNIT



WIRING DIAGRAM - RC-A-Q-2 & RC-A-Q-3
CONTROL PANEL USED IN CONJUNCTION WITH STORE TYPE UNIT



CONTROL PANEL USED WITH RC-A-Q-5 1PH. & 3PH.
IN CONJUNCTION WITH STORE UNIT

SERVICE HINTS

COMPLAINT	POSSIBLE CAUSE	SYMPTOMS	RECOMMENDED ACTION
Compressor fails to start.	Power failure.	Test lamp shows no voltage on line side of motor starter.	Check for blown line fuse, loose or broken lead. Open line switch.
	Fuse blown.	Test shows voltage on line side but not on motor side of fuse.	Replace fuse. Check load on motor.
	Low voltage.	Test at meter and line shows less than required.	Call power company.
	Defective compressor motor starter.	Test for defective holding coil or broken contact.	Replace.
	Defective motor compressor.	Full voltage at motor terminals but motor will not run.	Replace.
	Frozen compressor due to lack of oil or broken piston.	Excessive load as indicated by ampmeter-wattmeter.	Replace.
	Complete loss of charge.	Suction and head pressure will register zero. Sight glass empty. Unit will go off on over load.	Repair leak and recharge with proper charge.
Compressor "Short Cycles".	Low line voltage.	Motor overheats and overload breaks circuit.	Call power company. Check lead wires for correct size.
	Faulty condensing.	Excessively high head pressure. Frequent stop and start on overload or will lock off on high pressure control.	Clean condenser. Check blower speed. Check duct size.
	Overcharge of refrigerant.	High head pressure. Cycle on current overload.	Purge or remove excess.
	Leak of refrigerant.	Bubbles in sight glass. Cycle on inherent overload.	Repair leak and charge.
Compressor runs continuously.	Excessive load.	High temperature in conditioned space.	Check for excessive fresh air or infiltration. Check space insulation. Check duct insulation.
	Fouled or dirty condenser.	High head pressure. High suction pressure.	Clean air cooled condenser surface.
	Air or non-condensible gases in system.	High head pressure.	Purge system. Attach vacuum pump. Recharge system.
	Lack of refrigerant.	Bubbles in sight glass. Low suction pressure.	Repair leak and charge.
	Overcharge of refrigerant.	High head pressure.	Purge or remove excess.
	Loose expansion valve bulb.	Excessively cold suction line. Flooding of the evaporator coil.	Provide good contact between bulb and suction line.

SERVICE HINTS *(Continued)*

COMPLAINT	POSSIBLE CAUSE	SYMPTOMS	RECOMMENDED ACTION
Compressor is noisy.	Short cycling.	Too frequent starting and stopping of compressor.	See items under "Compressor Short Cycles".
	Liquid slugging back to compressor.	Excessively cold suction. Noisy compressor operation.	Check thermal bulb contact.
	Shortage of refrigerant.	Bubbles in sight glass.	Repair leak and charge.
	Broken compressor valves.	Compressor knocks. Suction pressure rises fast after units shut down.	Replace compressor.
	Worn or scored bearings in compressor.	Compressor knocks.	Replace compressor.
	Expansion valve stuck in open position.	Abnormally cold suction line. Compressor may knock.	Replace expansion valve.
	Excessive head pressure.	Compressor will knock.	Reduce head pressure.
System short of capacity.	Flash gas in liquid line.	Expansion valve hisses.	Add refrigerant.
	Expansion valve stuck or obstructed. Cap tube obstructed.	Short cycling or continuous running.	Replace valve.
	Strainer-drier partially plugged.	Short cycling or abnormally low suction pressure. Cycling on inherent overload.	Feel strainer-drier for difference in temperature between top and bottom. If colder on discharge side, replace.
	Dirty and iced evaporator.	Reduced air flow. Low suction pressure.	Clean or defrost. Check suction temperture. Check blower speed and belt. Check duct size.
High head pressure.	Air or non-condensible gas in system.	Condenser temperature higher than normal. Compressor motor overloaded.	Purge and recharge.
	Unit undersized for application.	Evaporator air discharge temperature high.	Figure heat load and duct sizes. Install duct insulation. Replace with correct size.
	Condenser air restricted or too hot. Condenser blower running too slow. Condenser fouled with dirt or dust.	Condenser air discharge temperature high.	Clean condenser. Check for short cycling of air.
	Overcharge of refrigerant.	Top of condenser excessively warm. Short cycling on thermal overload or cut out on high pressure control.	Purge to that point where a few bubbles appear in liquid sight glass. Then recharge correctly.
Head pressure too low.	Low on refrigerant.	Bubbles in sight glass.	Repair leak and charge.
	Broken or leaky compressor valves.	Suction pressure rises faster than 2 lbs. per minute after shutdown.	Replace compressor.

SERVICE HINTS *(Continued)*

COMPLAINT	POSSIBLE CAUSE	SYMPTOMS	RECOMMENDED ACTION
Suction pressure too high.	Excessive load on evaporator.	Compressor runs continuously.	Check building heat gain. Check duct insulation.
	Expansion valve stuck in open position.	Abnormally cold suction line.	Replace.
	Broken suction valves in compressor.	Noisy compressor.	Replace.
	Condenser air restricted.	Both head pressure and suction pressure high, capacity reduced.	Clean condenser.
Suction pressure too low.	Light load on evaporator.	Low suction pressure.	Check duct size and increase speed of evaporator blower.
	Refrigerant shortage.	Expansion valve hisses and bubbles show in liquid sight glass.	Repair leak and charge.
	Clogged strainer.	Liquid line cold on discharge side of strainer.	Replace.
	Obstructed expansion valve or cap tube.	Loss of capacity.	Replace.
	Expansion valve lost charge.	Eratic valve action.	Replace.
	Broken belt or inoperative evaporator blower.	Frost on evaporator coil.	Replace or repair.
	Dirty filters.	Frosted evaporator coil.	Replace or clean.

STEWART-WARNER CORPORATION
HEATING AND AIR CONDITIONING DIVISION
LEBANON, INDIANA