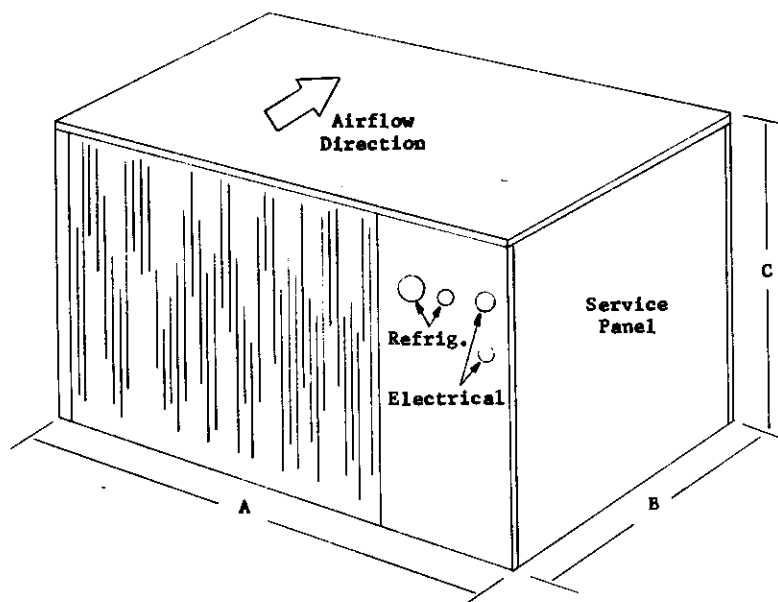


SPLIT SYSTEM AIR CONDITIONERS

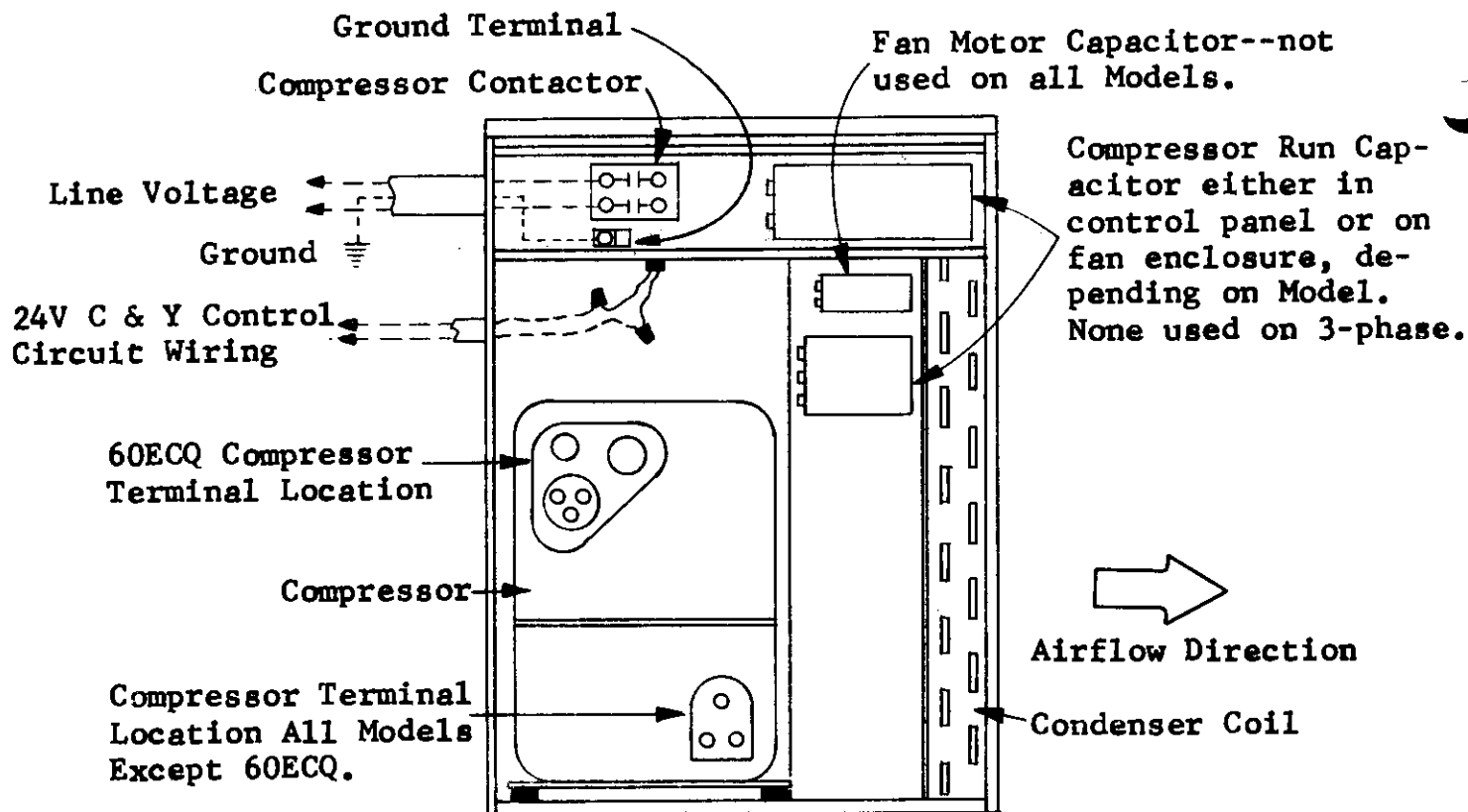
INSTALLATION INSTRUCTIONS



MODEL	18ECQ1, 24ECQ1	30ECQ2, 36ECQ4	42ECQ, 48ECQ1, 60ECQ
Dimension			
A	36	40	48
B	18	18	18
C	21	22-5/8	30-3/4

MODEL	18ECQ1	24ECQ1	30ECQ2	36ECQ4	36ECQ4	42ECQ	42ECQ	48ECQ1	48ECQ1	60ECQ	60ECQ
Electrical Rating	208/230-60-1		230-60-1		240-60-3	230-60-1	240-60-3	230-60-1	240-60-3	230-60-1	240-60-3
Operating Voltage -Minimum	197	197	207	197	187	197	187	197	187	207	187
Operating Voltage -Maximum	253	253	253	253	264	253	264	253	264	253	264
Total Unit Amps	13.5	15.5	17.6	25.6	13.8	24.6	15.6	26.6	17.6	37.6	25.6
Min. Cir. Amp.	17	19	22	32	17	30	19	33	22	46	31
60°C Copper											
Wire Size	#12	#12	#10	#8	#12	#10	#12	#8	#10	#6	#8
Ground Wire Size	#12	#12	#10	#10	#12	#10	#12	#10	#10	#10	#10
Maximum Time Delay Fuse	25	30	35	50	25	50	30	50	35	60	50
Compressor Type	PSC	PSC	PSC	PSC	3-Phase	PSC	3-Phase	PSC	3-Phase	PSC	3-Phase
Crankcase Heat Type	Internal	Internal	Internal	Internal	External	Internal	External	Internal	External	Internal	External
Fan Motor-HF/RPM	1/5 / 1050		1/5 / 1050				1/3 / 825				
Fan Motor Nameplate-F.L.A.	1.5A		1.6A				2.6A				
Fan Dia/CFM	18"/1950		20"/2280				24"/4000				
Coil Face Area, Ft ²	3.75		5.15				7.7				
Coil Rows/FPI	2/18		2/18				2/15				
Shipping Wt. Lbs.	160	180	190	220	220	280	280	280	280	325	325

BARD MANUFACTURING COMPANY • P. O. BOX 607 • BRYAN, OHIO



TYPICAL ECQ ENDVIEW
SERVICE PANEL END

CFM REQUIREMENTS FOR MATCHING INDOOR COIL SECTIONS		
Outdoor Unit Model	Indoor Coil Model	Rated CFM
18ECQ1	18QS3	650
	B18EQ1	650
24ECQ1	24QS	900
	2ACQ	900
	B24EQ1	830
30ECQ2	3ACQ3	1070
	3HCQ	950
	B36EHQ	1080
36ECQ4	3ACQ3	1260
	3HCQ	1000
	B36EHQ	1300
42ECQ	4ACQ1	1400
	4HCQ	1400
	B48HQ1	1400
48ECQ1	4ACQ1	1600
	5ACQ1	1600
	4HCQ	1600
	B48HQ1	1600
60ECQ	5ACQ1	2220
	5HCQ	1890
	B60HQ2	2000

INSTALLATION INSTRUCTIONS

GENERAL

These instructions explain the recommended method to install the pre-charged air cooled remote type condensing unit, the inter-connecting pre-charged refrigerant tubing and the electrical wiring connections to the unit.

The condensing units are to be used in conjunction with the matching pre-charged evaporator coils or pre-charged evaporator blower units for comfort cooling applications as shown in the specification sheet.

These instructions and any instructions packaged with any separate equipment required to make up the entire air conditioning system should be carefully read before beginning the installation. Note particularly "Connecting Quick-Connect Couplings, Starting Procedure" and any tags and/or labels attached to the equipment.

The installation should be made in accordance with national codes and/or local codes.

Authorities having jurisdiction should be consulted before the installation is made.

LOCATION

The condensing unit (outdoor unit) must be located in an area having good air circulation and set where the hot discharge air from the unit will not be recirculated into the condensing coil. Figure 1 illustrates the recommended clearances for unrestricted airflow and service access.

MOUNTING UNIT OUTSIDE ON SLAB

A solid level base or platform, capable to support the unit's weight, must be set at the outdoor unit predetermined location. The base should be at least two inches larger than the base dimensions of the unit and at least two inches higher than the surrounding grade level. The required unit minimum installed clearances must be maintained as called out in figure 1 when locating and setting the base.

Remove the unit from its shipping crate and position the unit on the prepared base or platform.

Do not attach the unit or its base to the building structure to avoid the transmission of noise into the occupied area.

NOTE: These units employ internally sprung compressors; therefore, it is not necessary to remove or loosen the base mounting bolts on the compressor prior to operation.

Consideration should be given to the electrical and tubing connections when placing the unit to avoid unnecessary bends or length of material.

WIRING

All wiring must be installed in accordance with the National Electrical Code and local codes. Power supply voltage must conform to the voltage shown on the unit serial plate. A wiring diagram of the unit is attached to the inside of the electrical cover. The power supply shall be sized and fused according to the specifications supplied. A ground lug is supplied in the control compartment for equipment ground.

The control circuit is a 24 volt circuit. "Typical" wiring diagrams illustrating some of the various circuits which could be encountered can be found on pages 7 and 8.

Model 30ECQ2 and 36ECQ4 when matched with B36EHQ blower coil unit should be wired according to the control circuit wiring diagrams shown in the B36EHQ installation instructions. The instructions describe which control circuit diagram should be used based upon installed Kw of electric heat. If OKW model is installed, use diagram AAH-1 and disregard the wire between W terminal at thermostat and J terminal at B36EHQ 24V terminal strip.

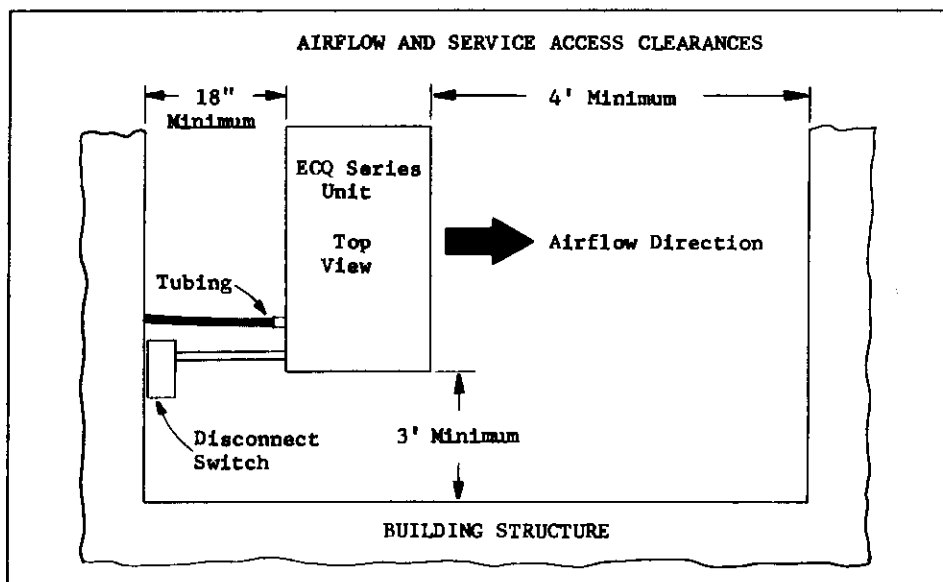
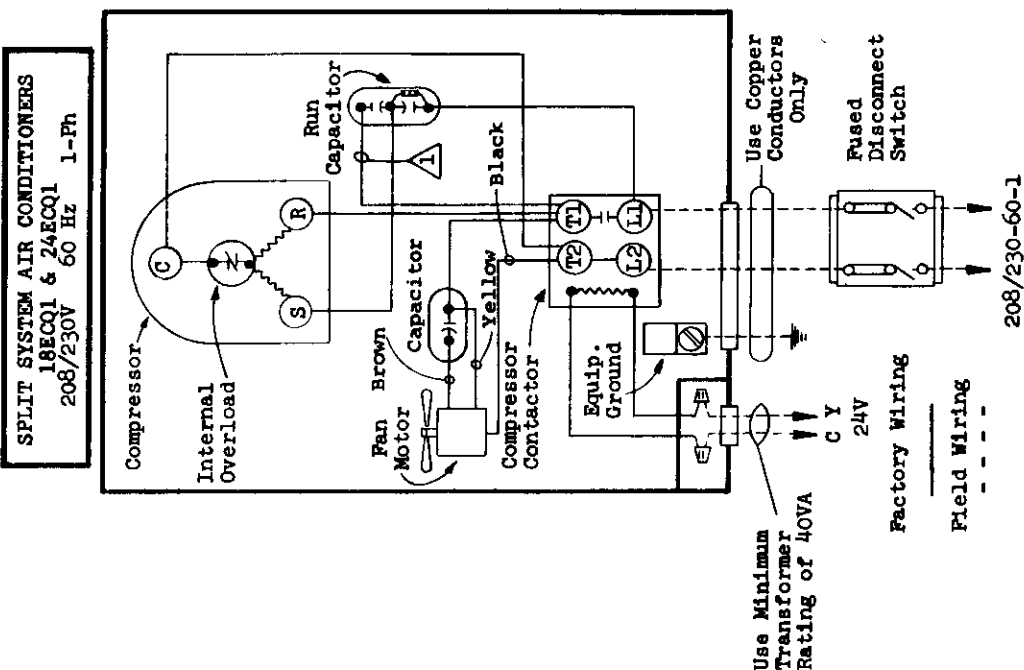
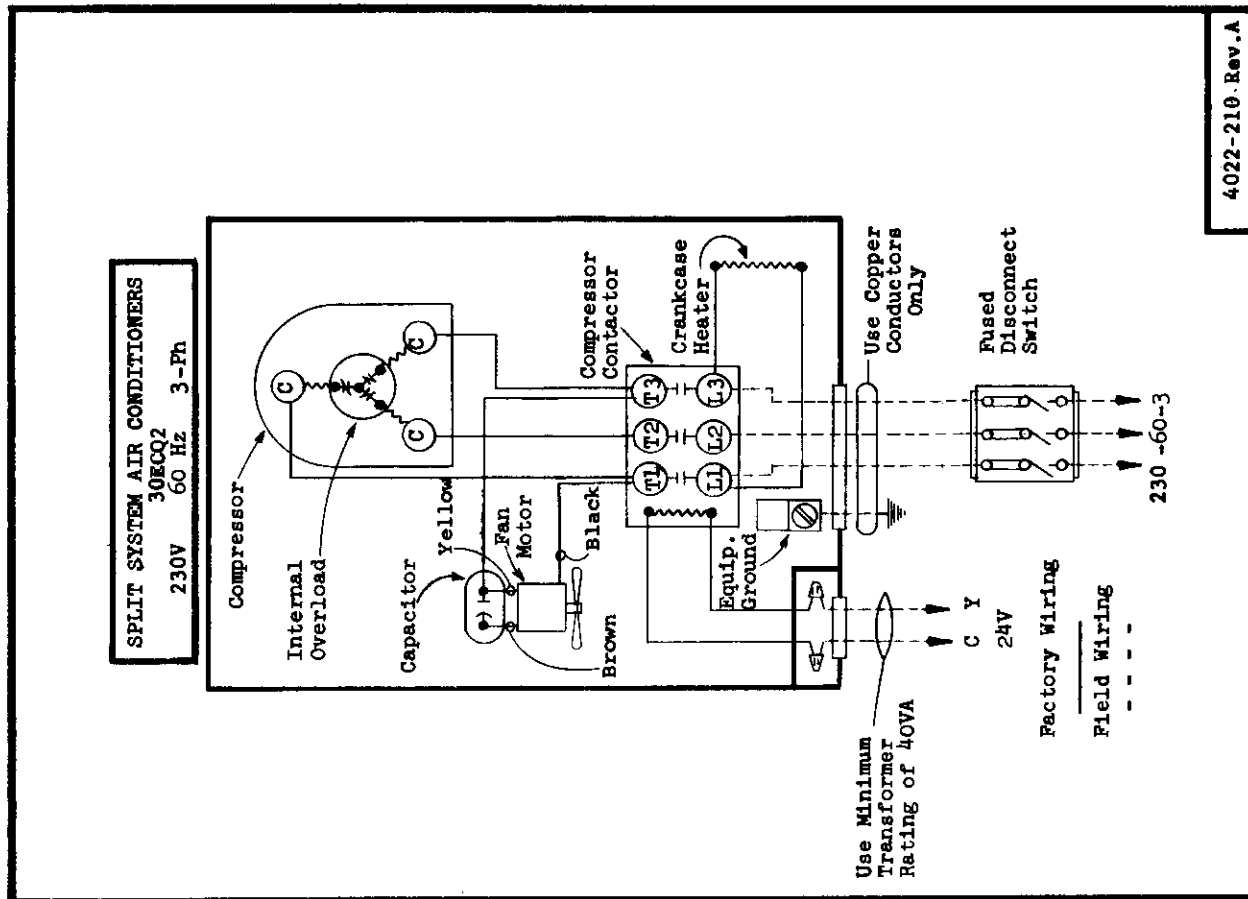


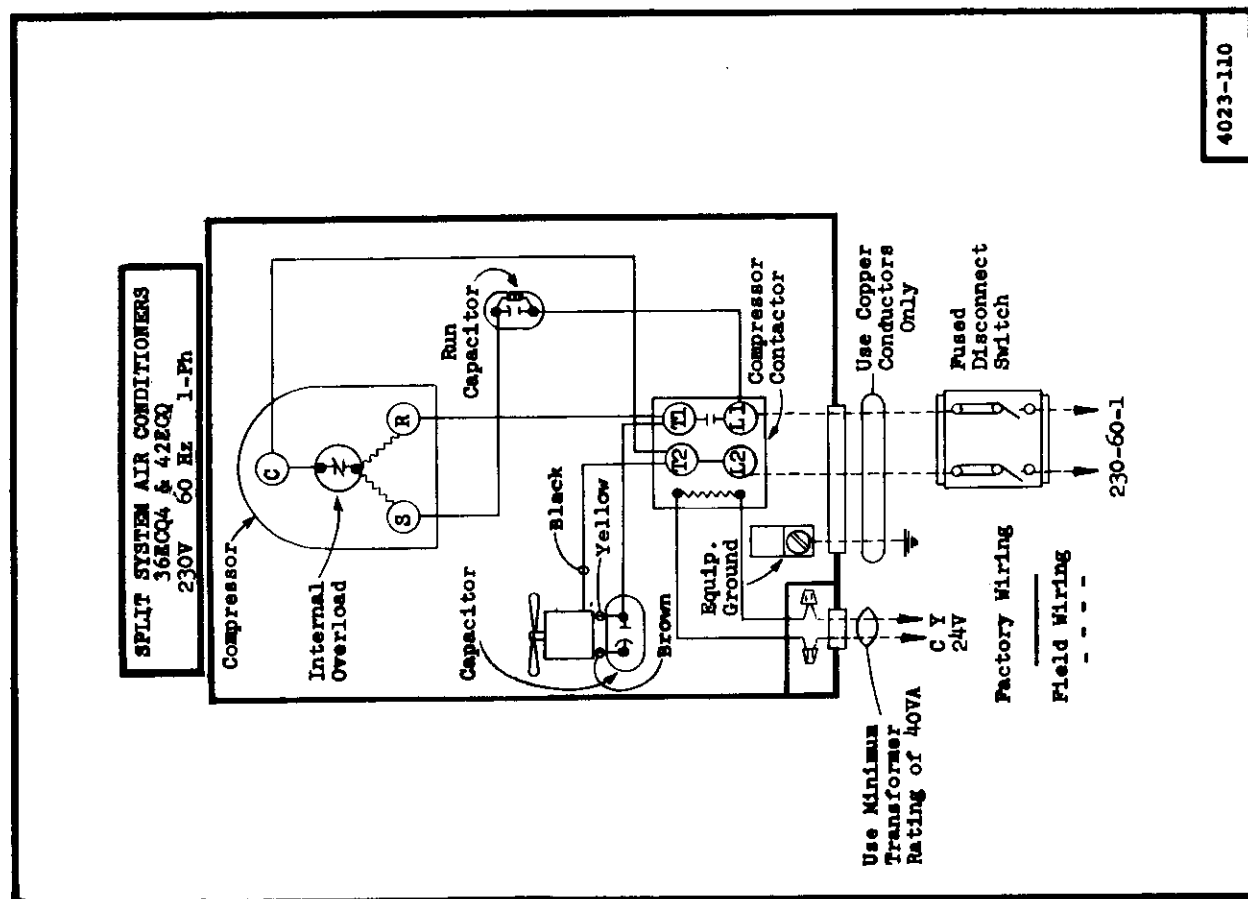
Figure 1



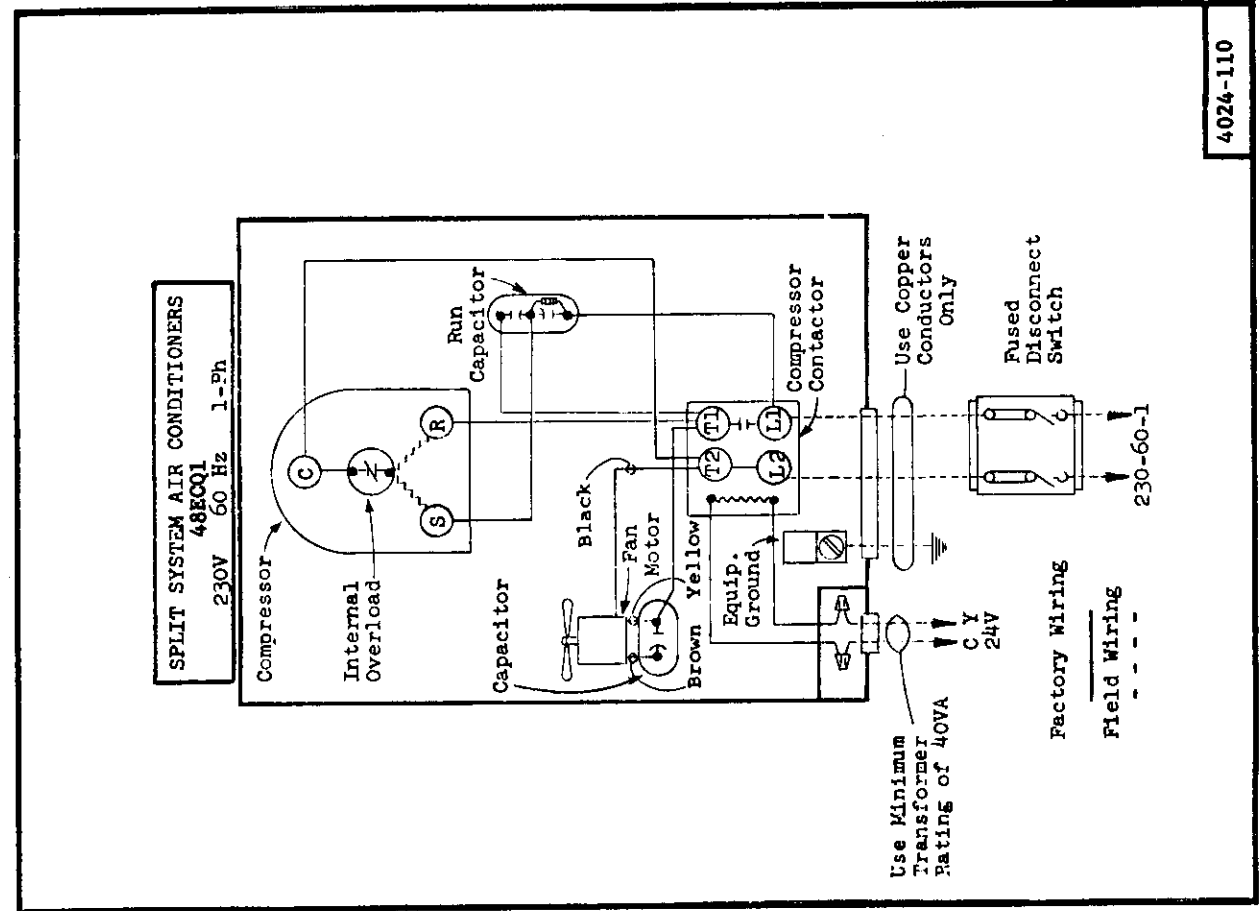
1 This wire not used on Model 18ECQ,
two terminal capacitor only.



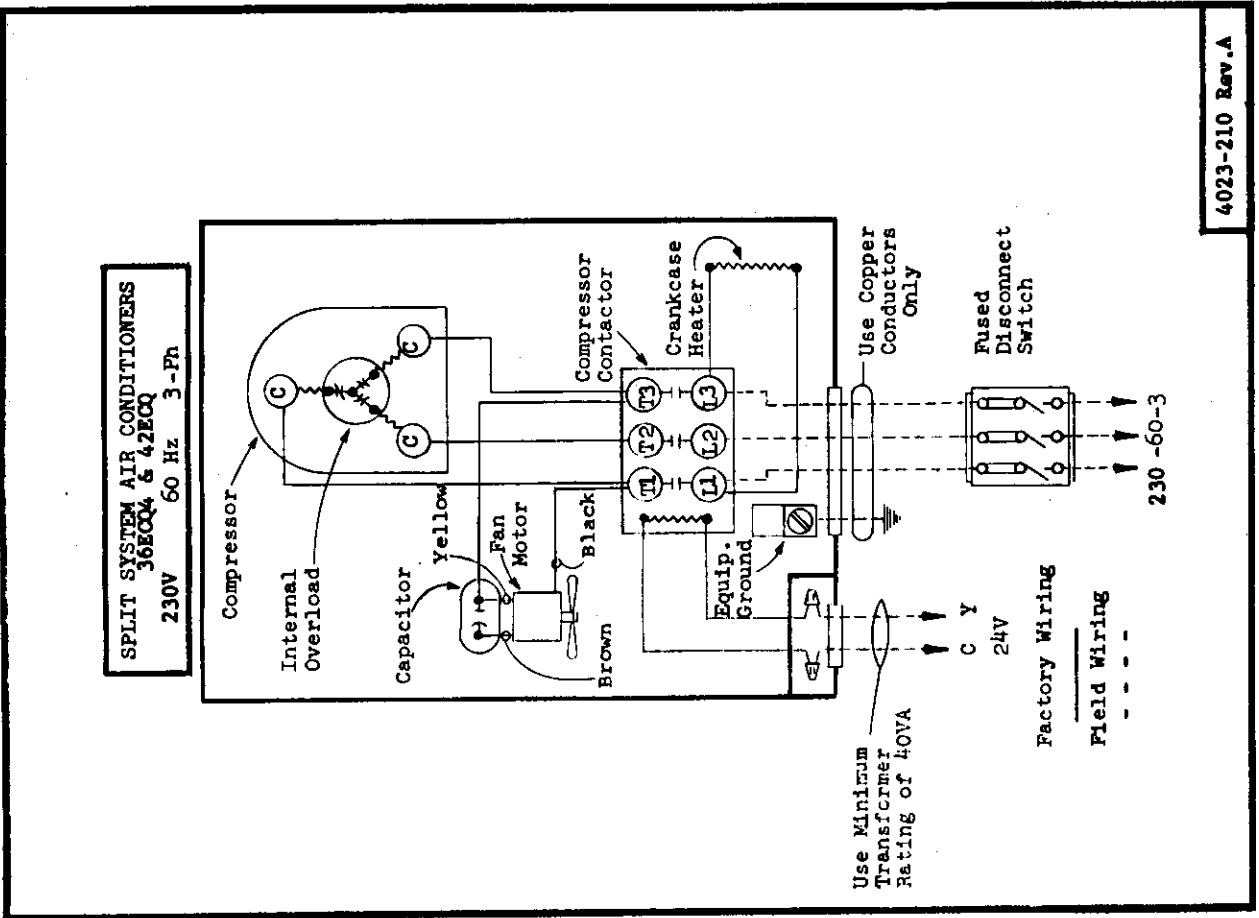
4022-210 Rev. A



4023-110



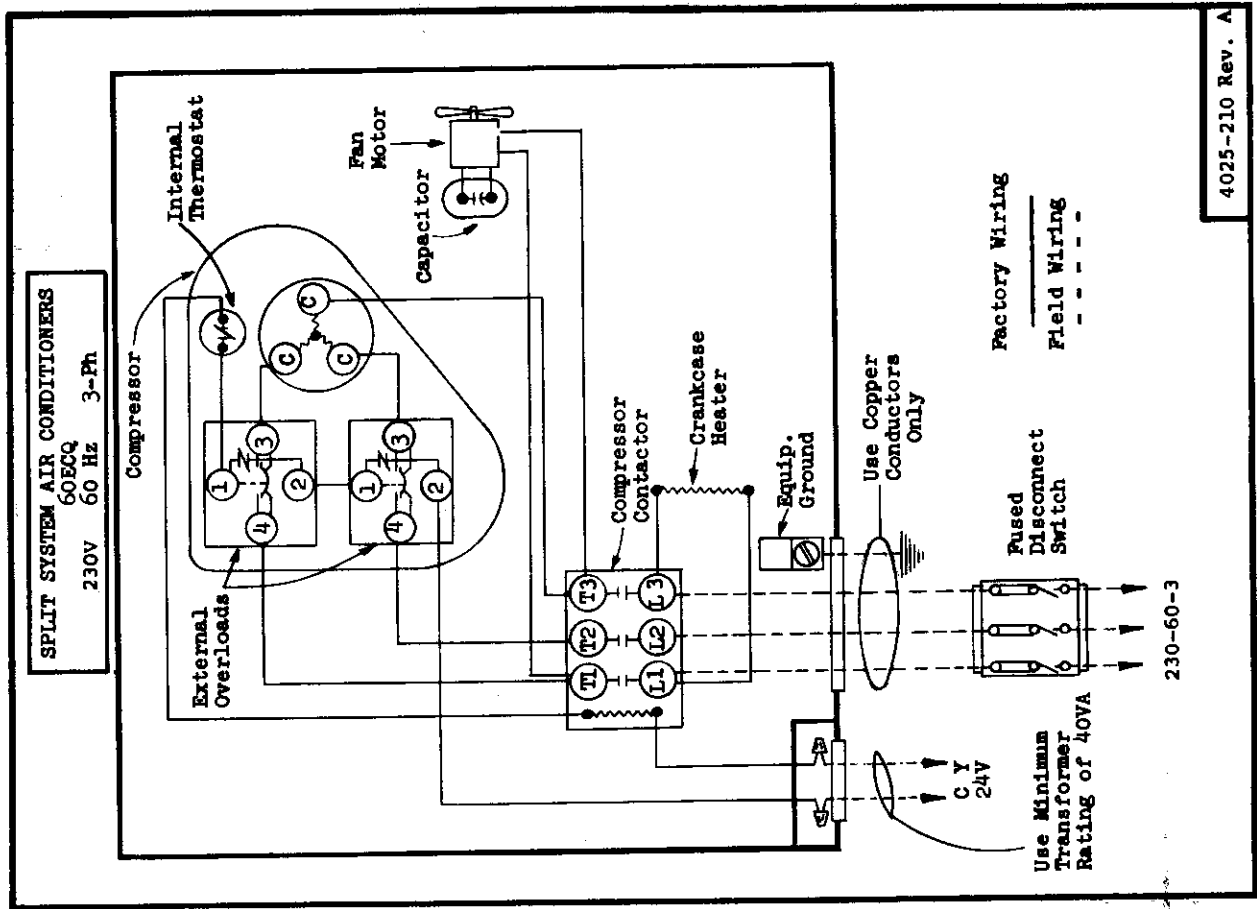
4024-110



4023-210 Rev.A

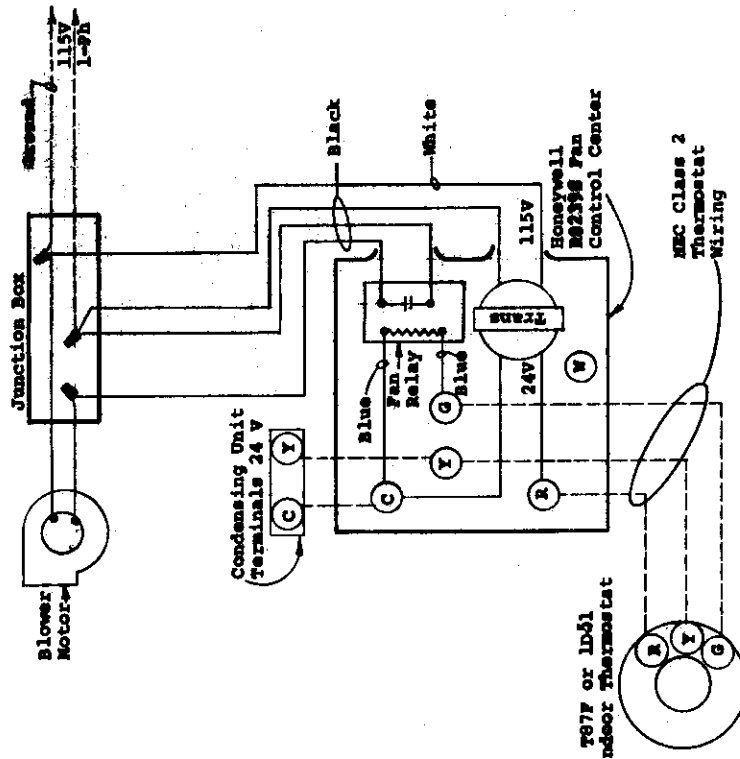
4025-110

4024-210 Rev. A



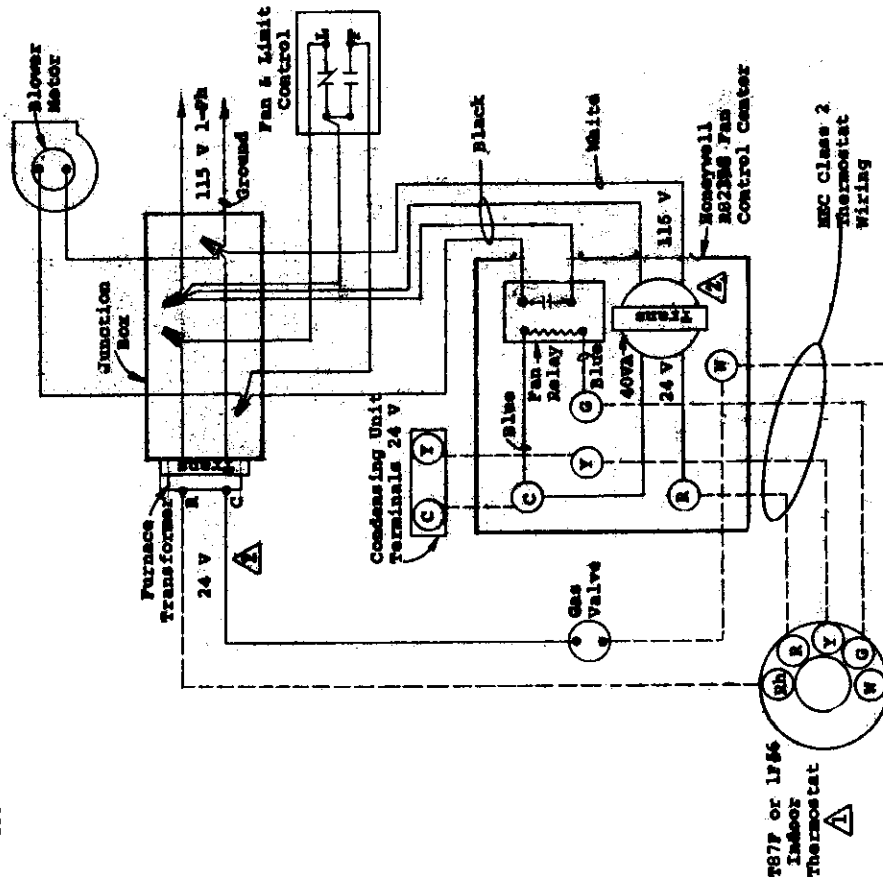
4025-210 Rev. A

**TYPICAL APPLICATION
WITH AIR HANDLER
MODELS
42ECQ, 48ECQ1, 60ECQ**

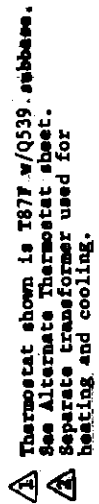
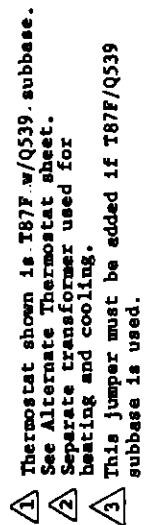


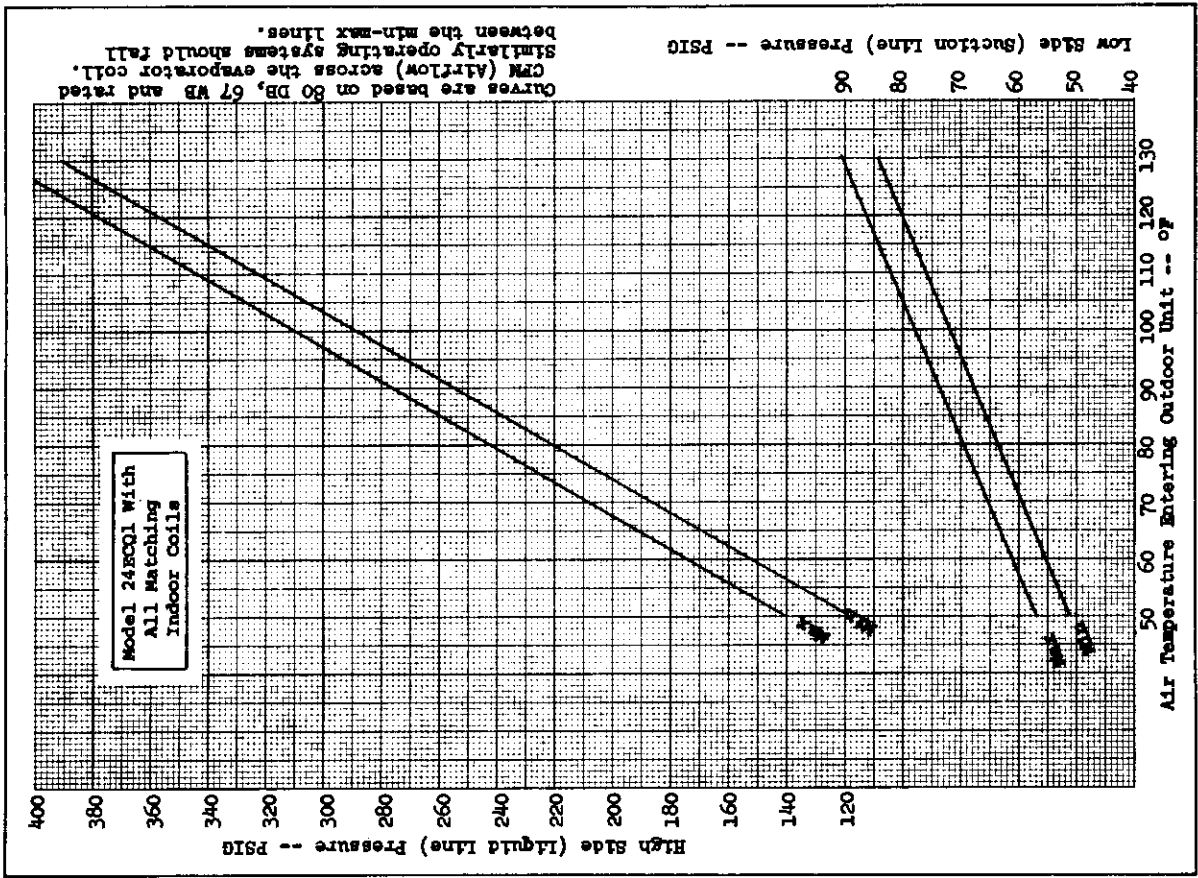
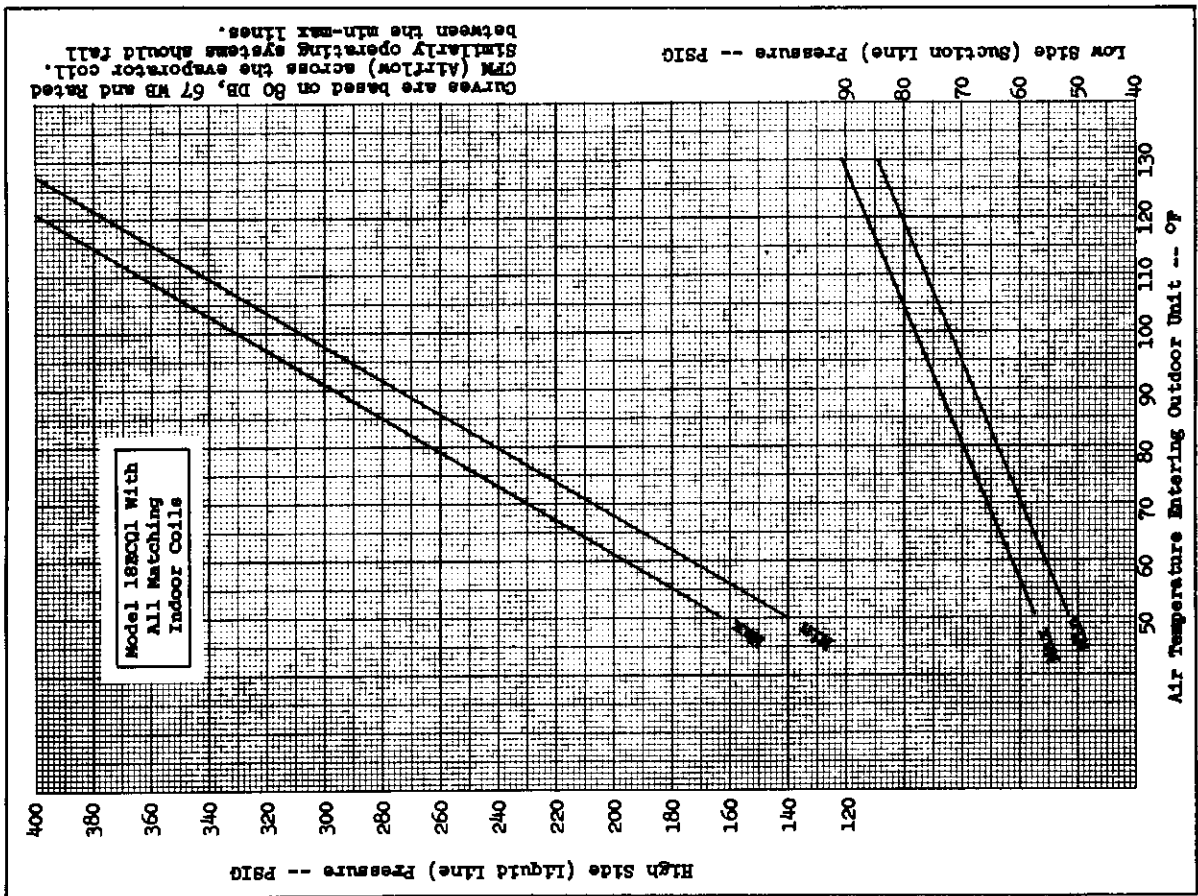
- ▲ T87F or 1D51 Indoor Thermostat
- ▲ Thermostat shown is 1D51. See alternate thermostat sheet.

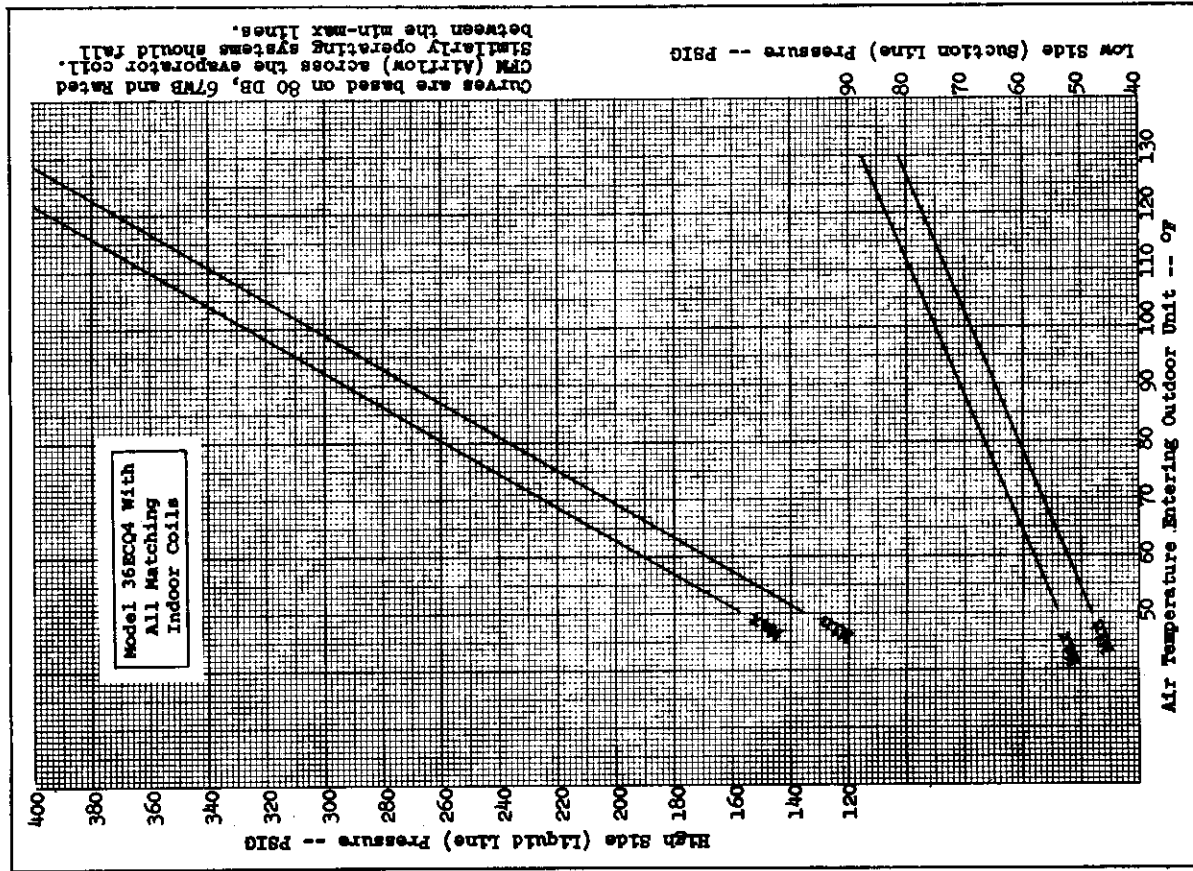
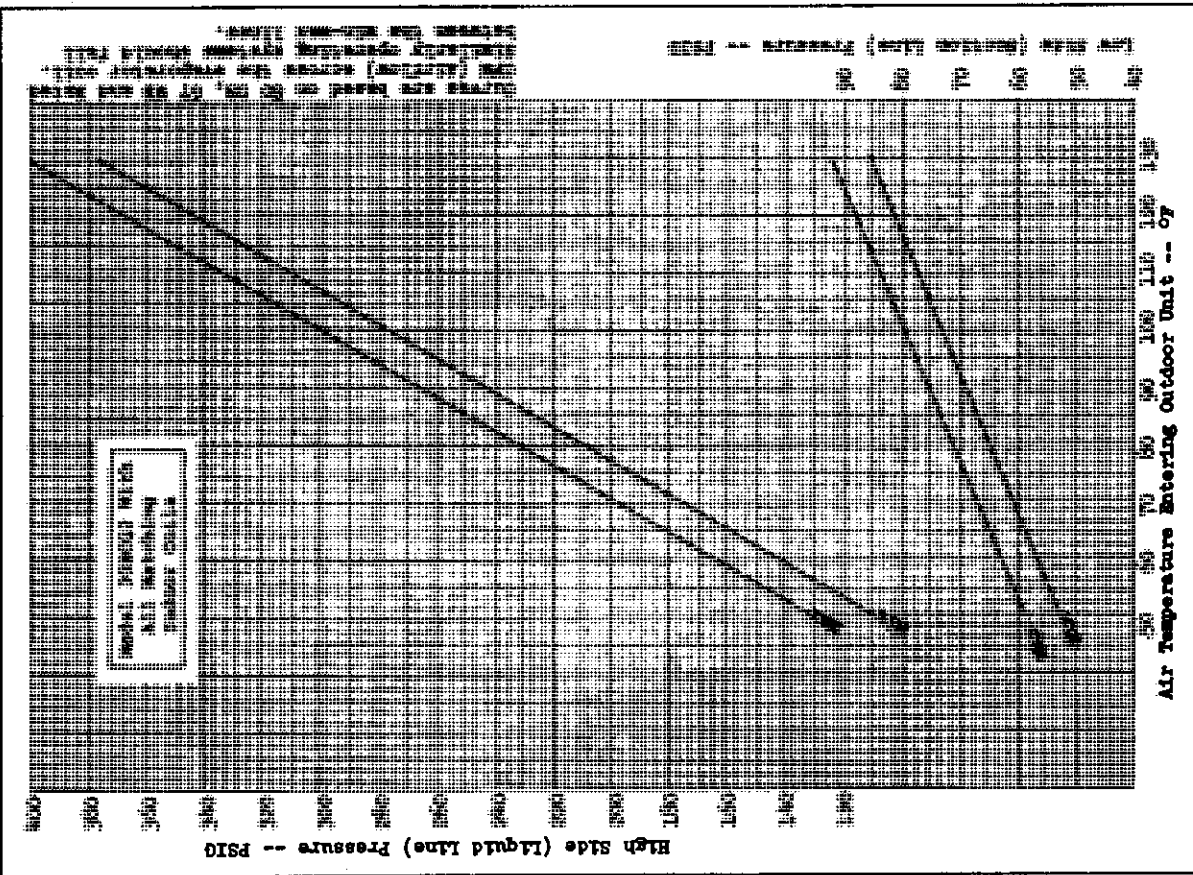
**TYPICAL APPLICATION
WITH GAS FURNACE
D183**

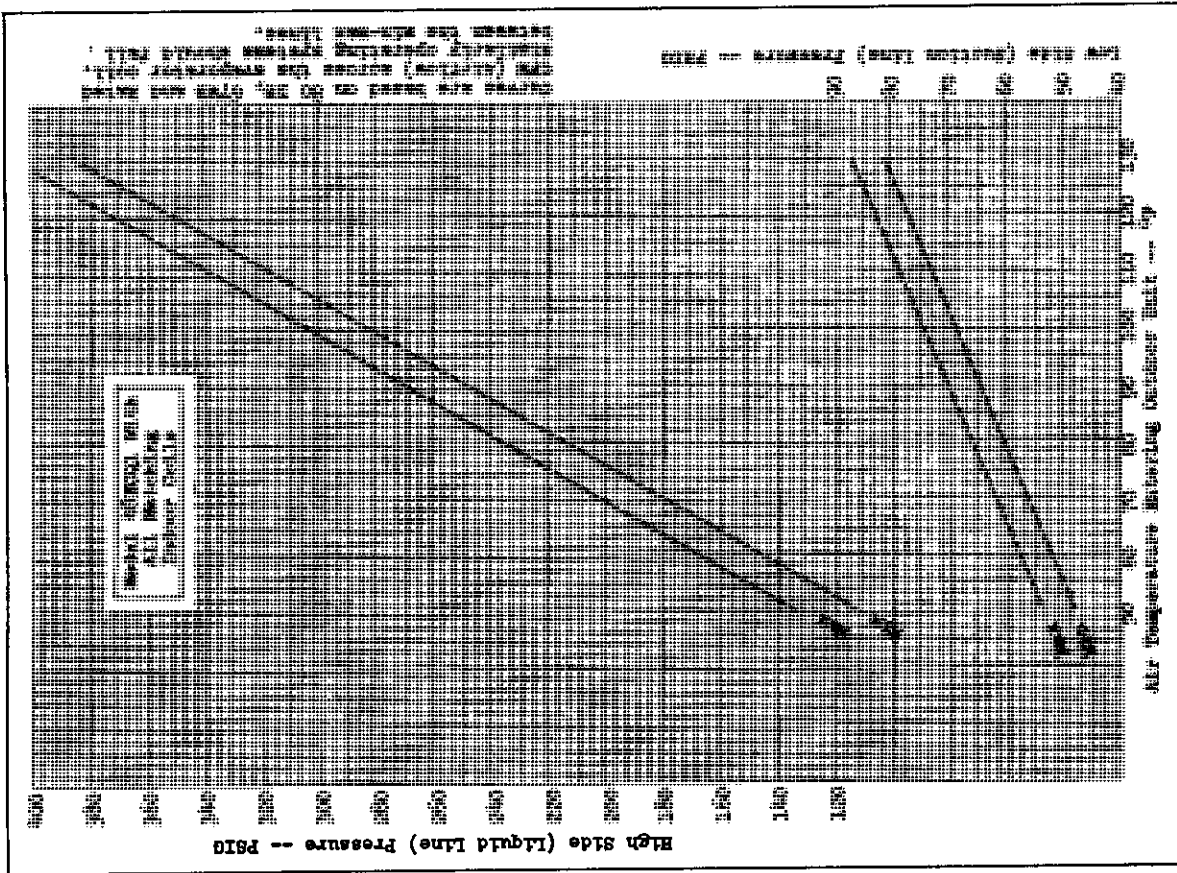
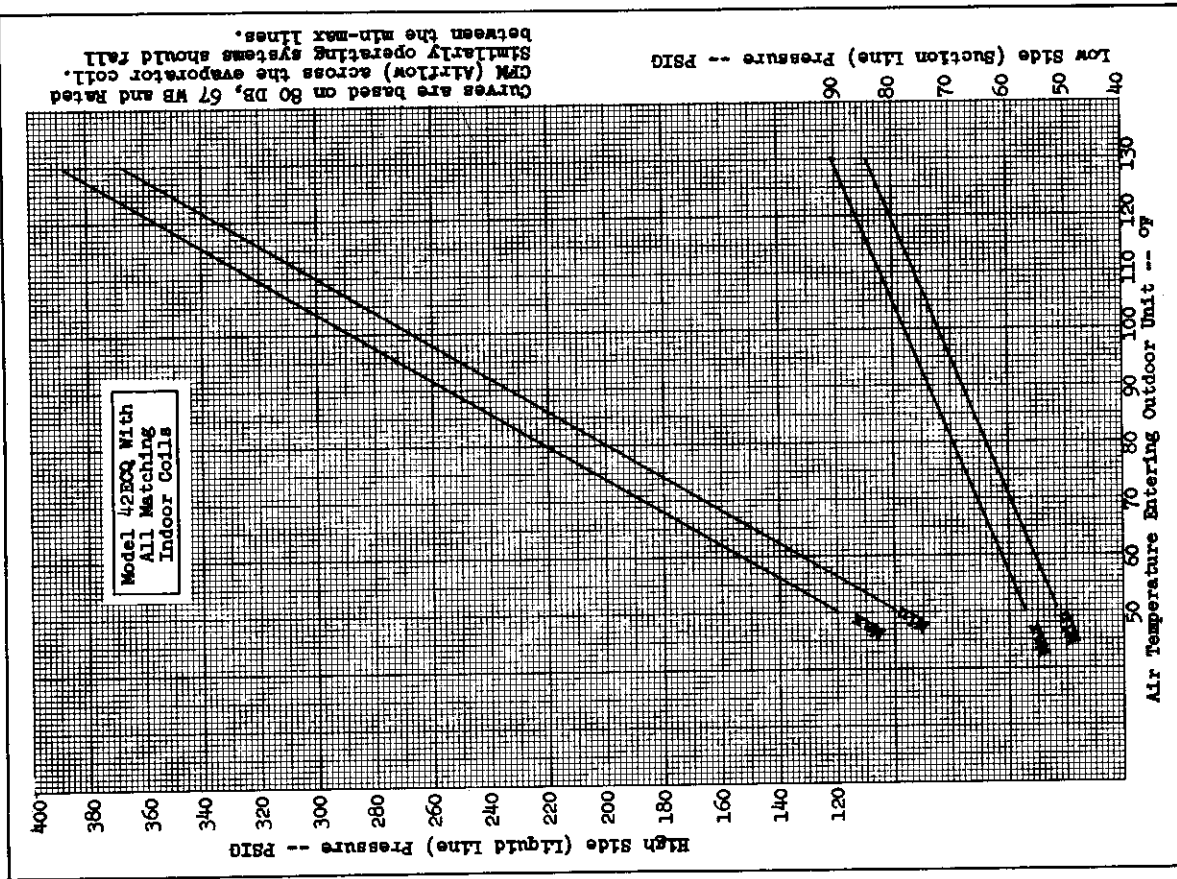


- ▲ T87F or 1F66 Indoor Thermostat
- ▲ Thermostat shown is T87F w/Q539 Subbase. See alternate thermostat sheet.
- ▲ Separate transformer used for heating and cooling.









PART NO.	DESCRIPTION	18RC01	24RC01	30RC02	36RC04	36RC04-3	42RC03	42RC03-3	48RC01	48RC01-3	60RC03	60RC03-3	36RC04-3	48RC01-3	48RC01-3	48RC01-3	48RC01-3
8552-015	Capacitor 370V	X															
8552-007	Capacitor 370V		X	X													
8552-012	Capacitor 440V																
8552-009	Capacitor 440V																
8552-021	Capacitor 440V																
8552-005	Capacitor 370V																
8000-001	Compressor 1-PH	X															
8000-002	Compressor 1-PH																
8000-006	Compressor 1-PH																
8000-008	Compressor 1-PH			X													
8000-009	Compressor 3-PH																
8000-011	Compressor 1-PH																
8000-013	Compressor 1-PH																
8000-015	Compressor 3-PH																
8000-020	Compressor 1-PH																
8000-021	Compressor 3-PH																
8000-010	Compressor 3-PH																
8000-018	Compressor 3-PH																
8000-022	Compressor 3-PH																
83672	Comp. Overload																
83684	Comp. Overload																
5051-011	Condenser Coil	X	X														
5051-013	Condenser Coil																
5051-001	Condenser Coil			X													
5051-009	Condenser Coil			X													
8401-007	Contact - Comp.		X	X													
8401-003	Contact - Comp.			X													
8401-002	Contact - Comp.			X													
8401-001	Contact - Comp.			X													
8605-001	Crankcase Heater																
8605-002	Crankcase Heater			X													
5151-001	Fan Blade		X														
5151-007	Fan Blade	X		X													
5151-017	Fan Blade			X													
8552-002	Capacitor 370V	X	X	X	X												
8406-010	High Pressure Switch																
8103-008	Motor - Fan	X	X														
8103-009	Motor - Fan		X	X													
8105-005	Motor - Fan																
8200-001	Motor Mount - Fan		X	X													
8200-004	Motor Mount - Fan			X													
8201-008	Relay - Blower			X					</								



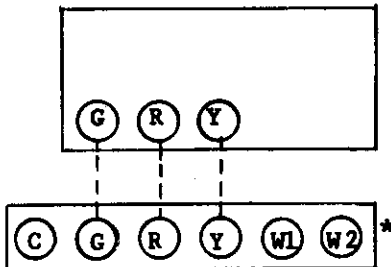
ALTERNATE THERMOSTATS

WIRING

All wiring should be done according to local and National Electrical Codes and Ordinances.

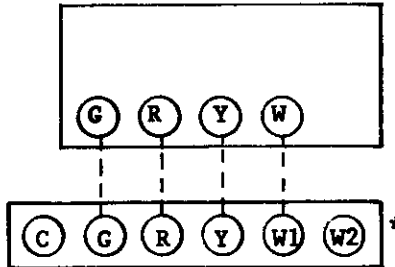
White-Rodgers
1-Stage Cool

1D51-605



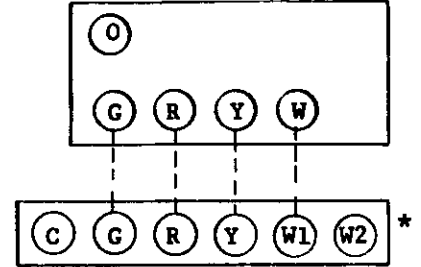
White-Rodgers
1-Stage Cool
1-Stage Heat

1F56-318



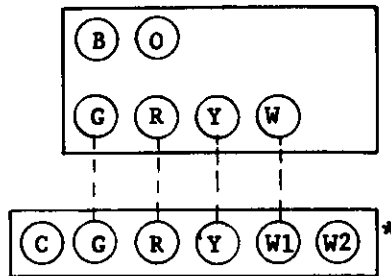
White-Rodgers
1-Stage Cool
1-Stage Heat

1F56-304



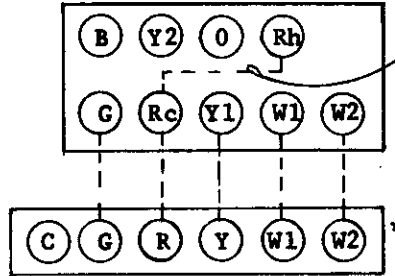
Honeywell
1-Stage Cool
1-Stage Heat

T87F/Q539A-1006



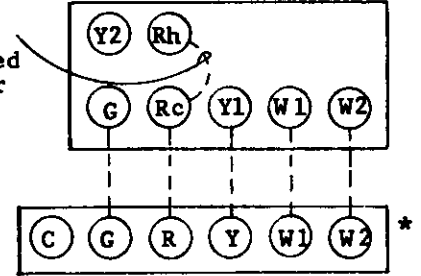
Honeywell
1-Stage Cool
2-Stage Heat

T872C/Q672A-1003



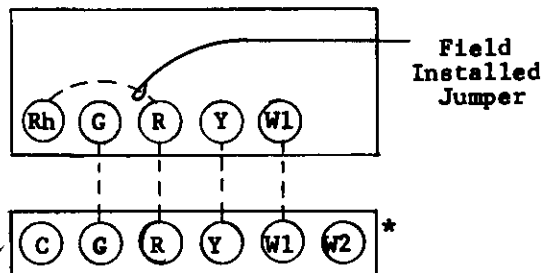
Honeywell
1-Stage Cool
2-Stage Heat

T872C/Q672A-1005

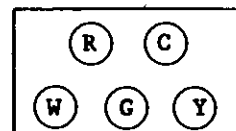


Honeywell
1-Stage Cool
1-Stage Heat

T87F/Q539A-1147



*Terminal block shown is located in Bard Self-Contained Air Conditioners, Self-Contained Heat Pumps, and Remote Heat Pumps. On those Remote Air Conditioning systems employing a fan center (combination fan relay and transformer), the terminals are marked as follows:



INSTALLING REFRIGERANT TUBING

PRE-CHARGED TUBING - Examine carefully the two lengths of pre-charged tubing furnished with the Unit. The larger is the suction line. The smaller is the liquid line. The end of the tubing with the hex nut and gauge port is to be attached to the Condensing Unit.

Unroll the tubing, being careful not to kink, and install it between the Condensing Unit and the Evaporator Coil.

CAUTION: Be careful not to tear the insulation when pushing it through holes in masonry or frame walls.

When sealing tube opening in house wall use a soft material to prevent tube damage and vibration transmission.

Before fastening either end, use a tubing bender to make any necessary bends in the tubing. (AVOID EXCESSIVE BENDING IN ANY ONE PLACE TO AVOID KINKING).

Start connecting the tubing at the Evaporator coil end, first remove the protective caps and plugs from the quick-connect fittings on the Evaporator Coil and the pre-charged tubing. Inspect fittings and clean if necessary, making sure they are clear of foreign materials. If you clean the fittings, lubricate them with refrigeration oil. Connect both tubes to the fittings on the coil and draw up by hand.

When necessary to bend the insulated tube, suction line, cut the insulation around its circumference at a distance far enough beyond the point of the bend so as to clear the tubing bender.

Slip the insulation back together and vapor seal the joint with tape.

NOTE: The maximum distance for pre-charge tubing between the Condenser and the Evaporator is 45 feet.

CAUTION: Prior to connecting the pre-charged tubing to the Evaporator Coil or Condensing Unit, be sure all bends have been made, then coil any excess tubing in a horizontal plane, with the slope of the tubing toward the Condensing Unit.

CAUTION: Be sure to hold the coupling firmly to prevent movement of the coupling and tubing. Failure to do so could tear out the diaphragm causing a blockage of the system.

CAUTION: After starting to tighten up the fitting never try to back it off or take it apart.

For connecting the tubing at the condensing unit end, first remove the protective caps and plugs from the quick-connect fittings on the condensing unit and the pre-charged tubing. Inspect fittings and clean if necessary, making sure they are clear of foreign materials. If you clean the fittings, lubricate them with refrigeration oil. Connect both tubes to the fittings on the coil and draw up by hand.

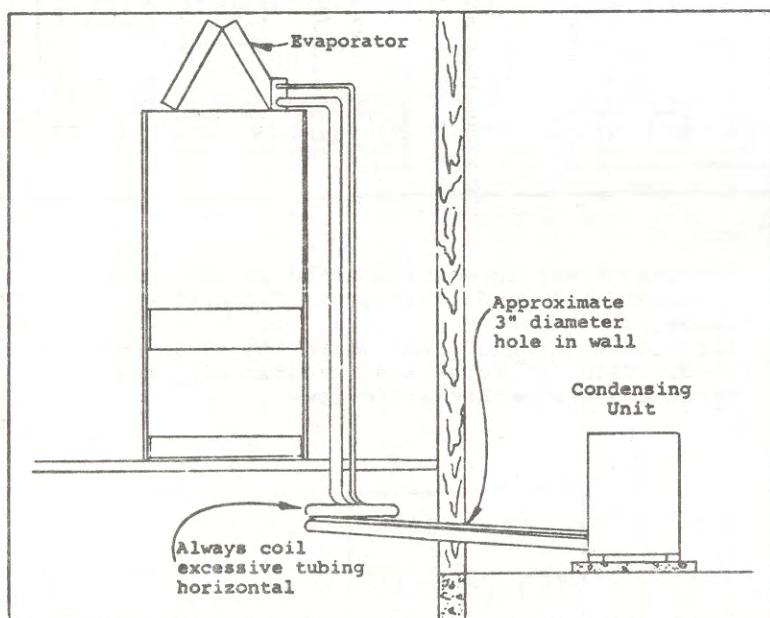
Locate the Gauge Port in a 45° angle from a vertical up position so as to be accessible for gauge connections.

Use a wrench on the hex nut of the female fitting backing up the fitting with another wrench to keep tube from turning. Tighten the fittings together until they bottom out then tighten for an additional 1/4 turn so that coupling will seat properly.

Check the gauge port cap to make sure it is tight. If loose, tighten, being careful not to tighten too much as it will damage the valve in the gauge port.

Leak test all connections using an Electronic Leak Detector or a Halide Torch.

When tubing is installed in attics or drop ceiling, insulate the quick connect fitting on the larger tube thoroughly with 3/8" wall thickness, closed cell sponge tube insulation or equivalent. Failure to insulate will result in water damage to ceiling since the fitting will "sweat" and drop water on the ceiling.



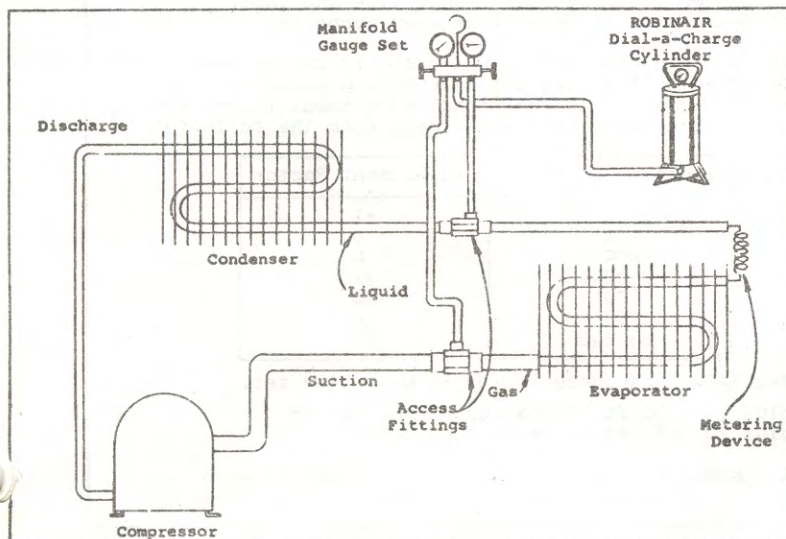
**PROCEDURE FOR
LEAK TEST - EVACUATION - CHARGING**

LEAK-TEST

1. Remove gauge port cap from suction and liquid service valve ports and attach a Manifold Suction Gauge Hose.
2. Pressurize the complete system until the pressure reaches 40 psig and further pressurize with dry nitrogen to 100 psig. Do not exceed 150 psig.
3. Check all soldered joints, including those on the evaporator coil with an Electronic Leak detector or Halide Torch. If a leak is found which requires soldering, pressure in the system must be bled off since it is impossible to solder with unit pressurized. Be sure all leaks are located and marked before bleeding pressure from circuit.
4. When leaks, if any, have been repaired, system is ready to be evacuated and charged. Relieve all pressure from the system down to 0 psig.

EVACUATION

1. Connect a manifold gauge set to the low and high gauge ports and the other hose to a high vacuum pump. Evacuate the system to 500 microns absolute pressure and continue to evacuate for 30 minutes.
2. After a vacuum of 500 microns has been obtained and holds constant for 10 minutes, close both sides of the manifold gauge set and turn pump off.
3. Disconnect charging line at vacuum pump and connect to refrigerant supply. (Dial A Charge Cylinder) Crack valve and purge charging line at center on manifold. Then close valve.
4. The system is now ready for the correct operating charge of Refrigerant 22.



CHARGING

1. **SINGLE PACKAGE UNITS** - Refer to the unit serial plate for the full operating charge.
2. **SPLIT SYSTEMS** - The condensing unit factory charge is shown on the unit serial plate. The total system charge required to recharge the system after service repairs should be marked on the serial plate under **TOTAL R-22 CHARGE**. This is normally marked by the installer and is determined from the R-22 System Charge Table located on the inside of the outdoor unit access panel. There is also a R-22 System Charge Table printed on the reverse side of this page.
3. **CTO ADAPTER KITS** - When using field tubing and CTO adapters, use the procedure outlined on the reverse side of this page to determine the correct ozs. of R-22 for the tubing only. The R-22 weight is determined by the length and size of the liquid line.
4. **FILTER-DRIER CHARGES** - If a liquid line filter-drier is used, either in conjunction with field tubing and a CTO adapter kit, or as part of procedure for system clean-up after a compressor burn-out, additional R-22 must be added to the system when recharging. This is in addition to the amount determined from the R-22 System Charge Table.

SPORLAN CATCH-ALL

R-22 WEIGHT

C-083S
C-163S

8 oz.
10 oz.

5. With manifold suction valve closed and manifold discharge valve open, open refrigerant cylinder valve and allow pressure in circuit to balance pressure of cylinder.
6. To obtain full rated capacity the R-22 refrigerant must be accurately weighed to the system using a charging cylinder.
 - (a) Check the charge against the allowable head pressure as shown in the head pressure chart and correct if needed.
7. Close refrigerant cylinder valve and allow unit to run for 30 minutes. Refer to Start-Up Procedure and Check List for further start up details.

INSTALLER NOTE: Optimum unit performance will occur with a refrigerant charge resulting in a suction line temperature (near the compressor) of 53° to 58° F with 95° F outdoor temperature and 80° F dry bulb/ 67° F wet bulb (50% R.H.) indoor temperatures and rated airflow across the indoor coil.