

# INSTALLATION INSTRUCTIONS

## MODELS

1214-030-01151

1214-042-01151

1214-036-01151

1214-048-01151

1214-060-01151

SPLIT AIR CONDITIONER  
OUTDOOR SECTION

FOR USE WITH:  
MATCHING INDOOR  
ADD ON COIL UNITS ONLY



# APPLICATION AND INSTALLATION INSTRUCTIONS

## GENERAL

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

The condensing units are to be used in conjunction with the matching evaporator coil 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 "Starting Procedure" and any tags and/or labels attached to the equipment.

While these instructions are intended as a general recommended guide, they do not supersede any national and/or local codes in any way. Authorities having jurisdiction should be consulted before the installation is made.

## SHIPPING DAMAGE

Upon receipt of equipment, the carton should be checked for external signs of shipping damage. If damage is found, the receiving party must contact the last carrier immediately, preferably in writing, requesting inspection by the carrier's agent.

## INSTALLATION

Size of unit for a proposed installation should be based on heat loss calculation made according to methods of National Warm Air Heating and Air Conditioning Association. The air duct should be installed in accordance with the Standards of the National Fire Protection Association for the Installation of Air Conditioning and Ventilating Systems of Other Than Residence Type, NFPA No. 90A, and Residence Type Warm Air Heating and Air Conditioning Systems, NFPA No. 90B. Where local regulations are at a variance with instructions, installer should adhere to local codes.

## 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 carton 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 later in the manual.

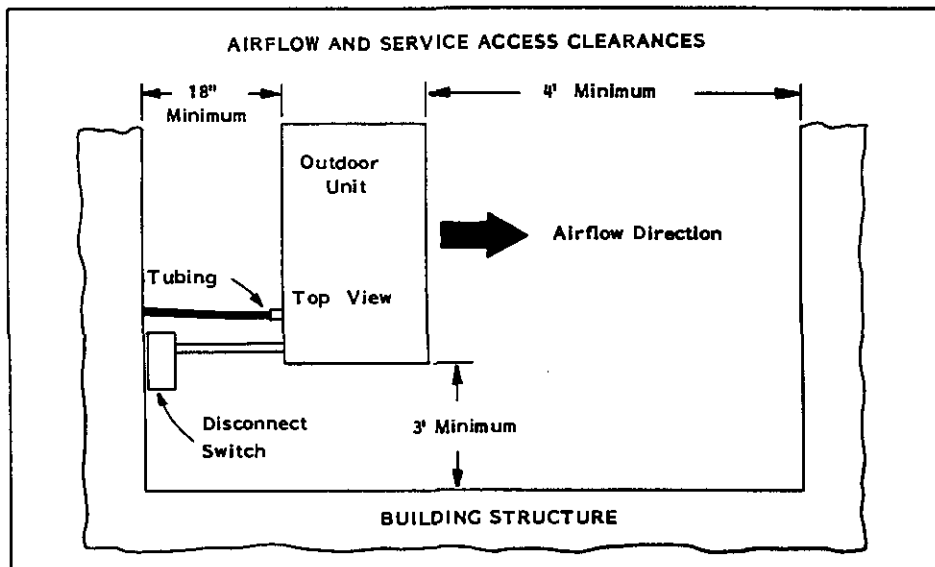


FIGURE 1.

The unit rating plate lists a "Maximum Time Delay Fuse" or "HACR Type" circuit breaker that is to be used with the equipment. The correct size must be used for proper circuit protection and also to assure that there will be no nuisance tripping due to the momentary high starting current of the compressor motor.

**PRESSURE SERVICE PORTS**

High and low pressure service ports are installed on all units so that the system operating pressures can be observed. Pressure curves can be found later in the manual covering all models. It is imperative to match the correct pressure curve to the unit by model number.

The pressure service ports on the split system air conditioners are located on the base valves.

**CRANKCASE HEATERS**

All units are provided with some form of compressor crankcase heat. Some single phase units utilize the compressor motor start winding in series with a portion of the run capacitor to generate heat within the compressor shell to prevent liquid refrigerant migration.

Some single and three phase models have an insertion well-type heater located in the lower section of the compressor housing. This is a self-regulating type heater that draws only enough power to maintain the compressor at a safe temperature.

Some form of crankcase heat is essential to prevent liquid refrigerant from migrating to the compressor, causing oil pump out on compressor start-up and possible valve failure due to compressing a liquid.

Refer to unit wiring diagram to find exact type of crankcase heater used.

The following decal is affixed to all outdoor units detailing start-up procedure. This is very important. Please read carefully.

**IMPORTANT**

**THESE PROCEDURES MUST BE FOLLOWED AT INITIAL START-UP AND AT ANY TIME POWER HAS BEEN REMOVED FOR 12 HOURS OR LONGER.**

**TO PREVENT COMPRESSOR DAMAGE WHICH MAY RESULT FROM THE PRESENCE OF LIQUID REFRIGERANT IN THE COMPRESSOR CRANKCASE**

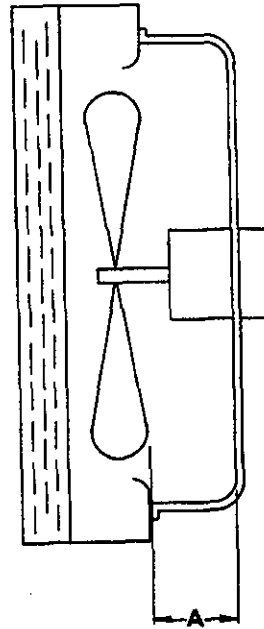
1. MAKE CERTAIN THE ROOM THERMOSTAT IS IN THE "OFF" POSITION. (THE COMPRESSOR IS NOT TO OPERATE).
2. APPLY POWER BY CLOSING THE SYSTEM DISCONNECT SWITCH THIS ENERGIZES THE COMPRESSOR HEATER WHICH EVAPORATES THE LIQUID REFRIGERANT IN THE CRANKCASE.
3. ALLOW 4 HOURS OR 60 MINUTES PER POUND OF REFRIGERANT IN THE SYSTEM AS NOTED ON THE UNIT RATING PLATE, WHICHEVER IS GREATER.
4. AFTER PROPERLY ELAPSED TIME THE THERMOSTAT MAY BE SET TO OPERATE THE COMPRESSOR.
5. EXCEPT AS REQUIRED FOR SAFETY WHILE SERVICING — DO NOT OPEN SYSTEM DISCONNECT SWITCH.

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**FAN BLADE SETTING DIMENSIONS**

Shown in the drawing below are the correct fan blade setting dimensions for proper air delivery across the outdoor coil.

Any service work requiring removal or adjustment in the fan and/or motor area will require that the dimensions below be checked and blade adjusted in or out on the motor shaft accordingly.



MODEL	DIM. A
All	1/2"

**IMPORTANT INSTALLER NOTE:**

For improved start-up performance, wash the indoor coil with a dishwasher detergent.

If this unit is operated in cooling below a 65° outdoor ambient temperature, the installation of low ambient control (LAC-1) to unit is required.

ELECTRICAL DATA							
Model	Electrical Rating	Operating Voltage Range	Total Unit ① Amps	Minimum Circuit Ampacity	Maximum ② Overcurrent Protection	60°C Copper Wire Size	Copper Ground Wire Size
1214-030-01151	230/208-60-1	197-253	16	22	35	#10	#10
1214-036-01151	230/208-60-1	197-253	22	29	50	#10	#10
1214-042-01151	230-208-60-1	197-253	24.3	30	50	#10	#10
1214-048-01151	230/208-60-1	197-253	25.8	32	50	#8	#10
1214-060-01151	230/208-60-1	197-253	31.8	39	60	#8	#10

① Compressor and outdoor motor.      ② Time delay fuse or HACR type circuit breaker.

**RATED CFM AND AIRFLOW DATA (WET COIL - COOLING)**

Outdoor Unit Model	Indoor Coil Model	Rated CFM	Pressure Drop in H <sub>2</sub> O ①	Recommended Air Flow Range
1214-030-01151	3ACQ3	1100	.28	990 - 1210
1214-036-01151	3ACQ3	1180	.30	1060 - 1300
1214-042-01151	4ACQ2	1450	.25	1300 - 1600
1214-048-01151	4ACQ2	1690	.30	1520 - 1860
1214-060-01151	5ACQ1	1990	.28	1790 - 2190

① Measured across the evaporator coil assembly, including drain pan.

**TOTAL SYSTEM OPERATING CHARGE**

(Includes charge for the outdoor unit, indoor coil, and 25' of inter-connecting tubing)

Outdoor Section	Indoor Section	Total R-22 Charge (oz)
1214-030-01151	*3ACQ3	69
1214-036-01151	*3ACQ3	75
1214-042-01151	**4ACQ2	94.5
1214-048-01151	**4ACQ2	97
1214-060-01151	**5ACQ1	116

\*Has "quick connect" fitting-requires use of 1/2 stub kit #CTO-A.  
 \*\*Has "quick connect" fitting-requires use of 1/2 stub kit #CTO-12A.

The above includes 25' of 3/8 diameter liquid line. For other than 25' and other tube sizes, adjust the total charge according to the following schedule.

<u>Liquid Line Diameter</u>	<u>Oz. R-22 Per Ft.</u>
3/8	.60
1/2	1.2

**INSTALLER NOTE:** Stamp or mark the final charge determined above on the outdoor unit serial plate.

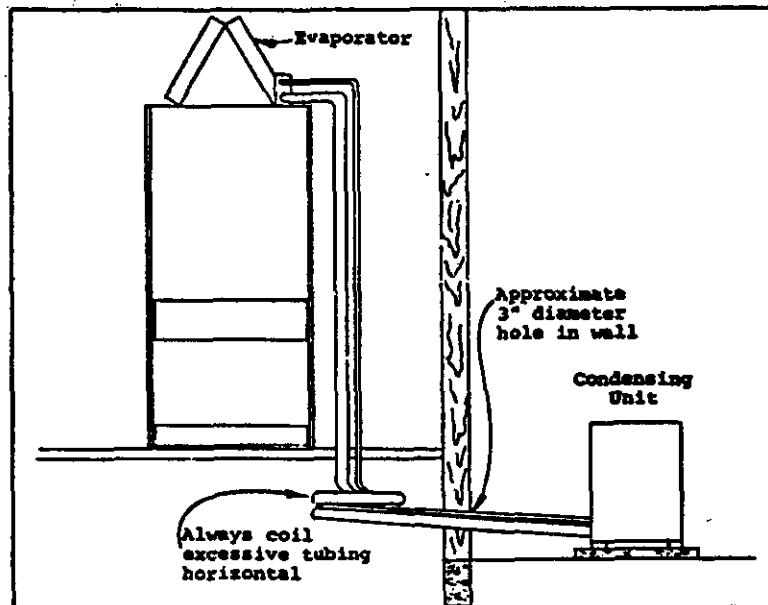
## INSTALLING REFRIGERANT TUBING

Use only refrigeration grade (dehydrated and sealed) copper tubing of the size indicated below (Table 3). Care must be taken to insure that the tubing is kept clean and dry before and during installation. DO NOT remove the plugs from the tubing ends, coil connections or base valves until the connection is ready to be made.

Insulate the suction line with a minimum of 3/8" Armaflex or equivalent. Install the insulation to the suction line before cutting and making connections.

Basic Condensing Unit Model	REFRIGERANT LINE LENGTH (Ft.)		
	0-20	21-60	61-100
	Liq. & Suct.	Liq. & Suct.	Liq. & Suct.
1214-030-01151	3/8 & 5/8	3/8 & 3/4	3/8 & 3/4
1214-036-01151	3/8 & 5/8	3/8 & 3/4	1/2 & 7/8
1214-042-01151	3/8 & 3/4	3/8 & 7/8	1/2 & 7/8
1214-048-01151	3/8 & 7/8	3/8 & 7/8	1/2 & 1-1/8
1214-060-01151	3/8 & 7/8	3/8 & 7/8	1/2 & 1-1/8

TABLE 3



REFRIGERANT CHARGE

SYSTEM START-UP

The outdoor section of the air conditioner units are shipped with a factory R-22 charge sufficient for the nominal (size for size) matching "A" coil when used with 25' of inter-connecting tubing. The units are shipped with the base valves in the closed position to contain the refrigerant charge within the unit.

1. Connect a vacuum pump to both base valve service ports.
2. Evacuate the tubing and evaporator to 500 microns or less for a minimum of 30 minutes. Close the valve to the pump and wait for 15 minutes. The vacuum should not rise above 800 microns. If it rises above 800 or if you are not able to obtain 500 micron vacuum, pressurize with R-22, leak check, repair any leaks and repeat step 2.
3. Close valve to the vacuum pump and disconnect. Break the vacuum by opening both the suction and liquid line base valves to the fully open position and connect service gauges for pressure check.
4. Close disconnect switch and set the thermostat to cool and the temperature to the highest setting.
5. Check for proper operation of the indoor fan and outdoor unit.
6. Check and adjust charge if necessary. Refer to charge checking section.

REFRIGERANT CHARGE CHECKING

1. After connecting the service gauges and allowing the unit to run for at least 10 minutes until pressures are stable, record the suction and discharge (liquid) pressure.
2. Install a thermometer on the suction line approximately 6" to 10" from the compressor.

3. Determine Superheat.

Refer to table 1 to determine the saturated suction temperature.

Suction line temperature (from step 2) \_\_\_\_\_

Minus saturated suction temperature - \_\_\_\_\_

Equals - Superheat \_\_\_\_\_

4. Measure outdoor temperature and return air dry bulb and wet bulb temperature and refer to table 2 to determine the proper superheat setting.
5. Adjust the charge to the proper superheat by adding charge to lower and removing charge to raise the superheat.
6. Check final system operating pressures by comparing to the pressure curves later in this manual.

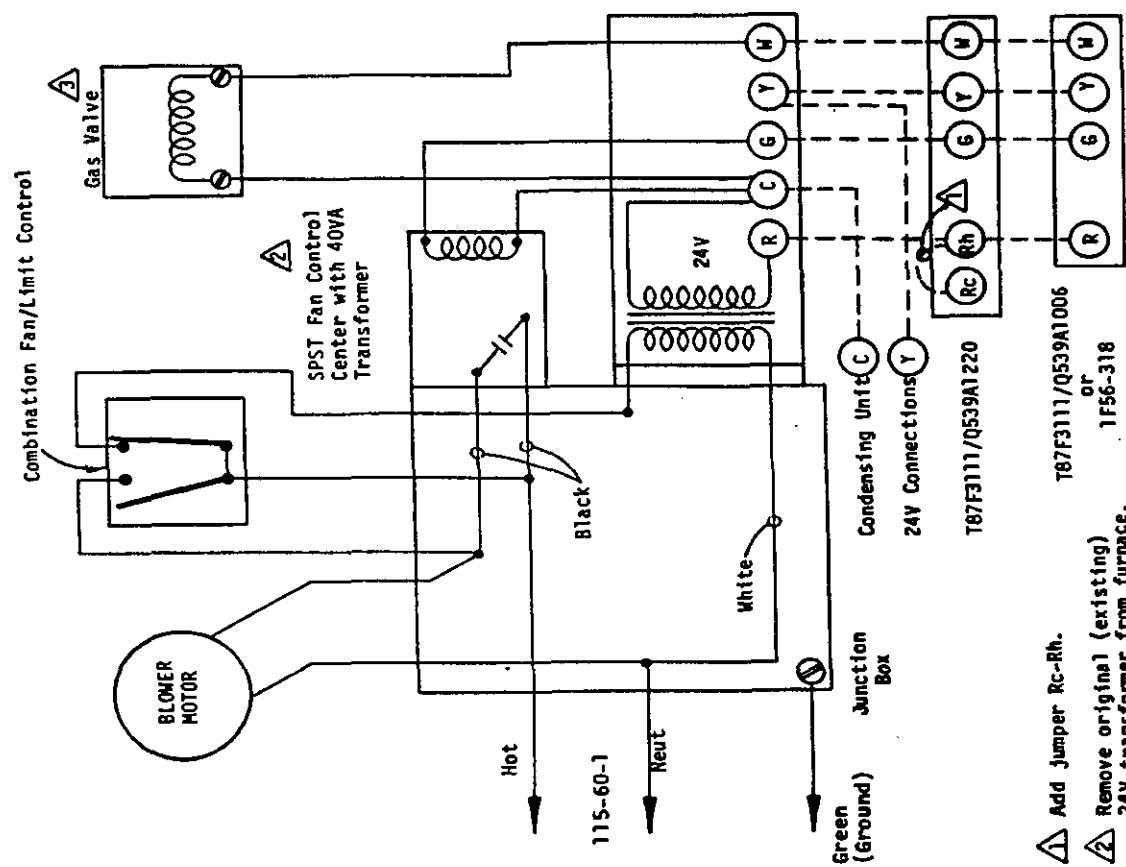
SATURATED SUCTION TEMPERATURE (R-22)	
Suction Pressure PSIC	Saturated Suction Temperature (°F)
47	23
50	26
53	28
55	30
58	32
61	34
63	36
65	38
67	39
70	41
73	43
76	45
79	47
82	49
86	51
89	53

TABLE 1

SYSTEM SUPERHEAT				
Outdoor Ambient Temperature (°F Dry Bulb)	Return Air Temperature °F - Wet Bulb			
	59	63	67	71
105	1	1	5	
95	1	3	[8]	20
90	1	7	14	26
85	3	9	19	33
80	8	14	25	39
75	10	20	30	42

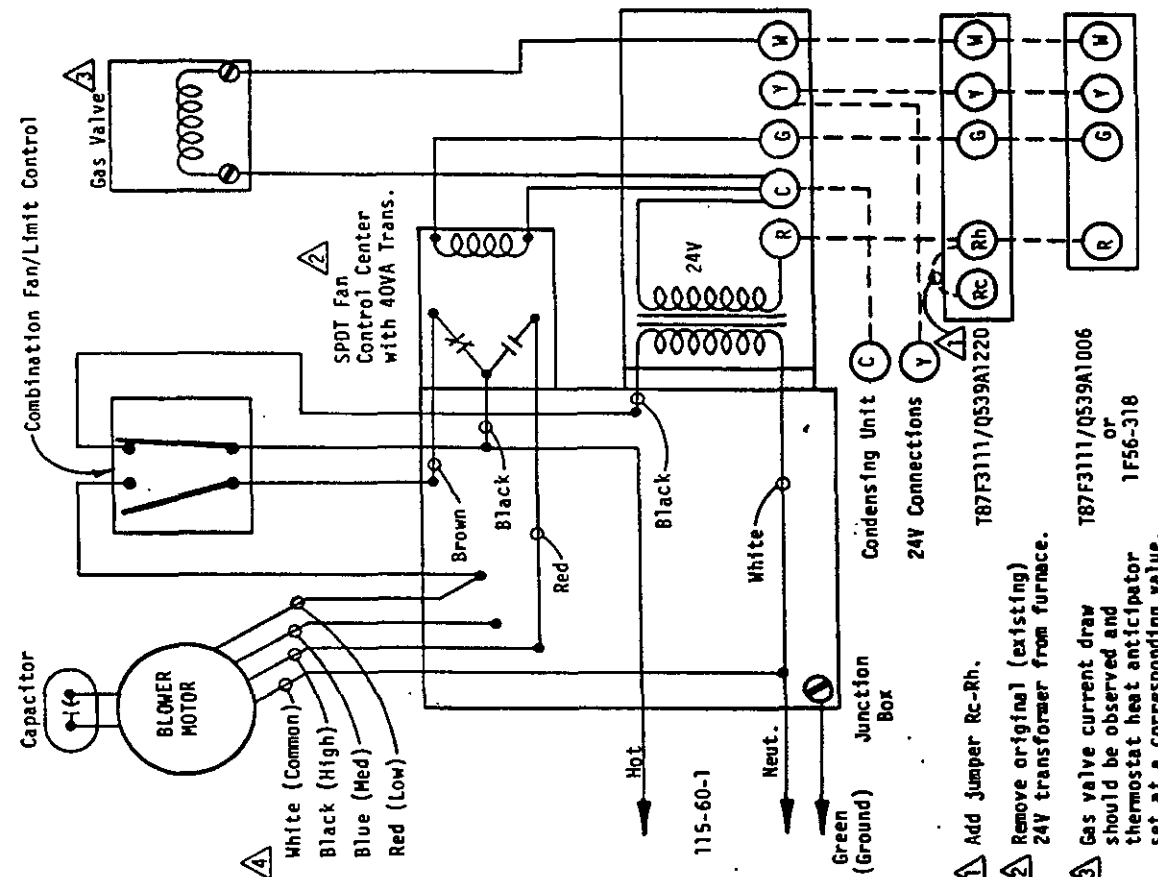
TABLE 2

TYPICAL APPLICATION — GAS FURNACE WITH SINGLE SPEED MOTOR



- ⚠ Add jumper Rc-Rh.
- ⚠ Remove original (existing) 24V transformer from furnace.
- ⚠ Gas valve current draw should be observed and thermostat heat anticipator set at a corresponding value.

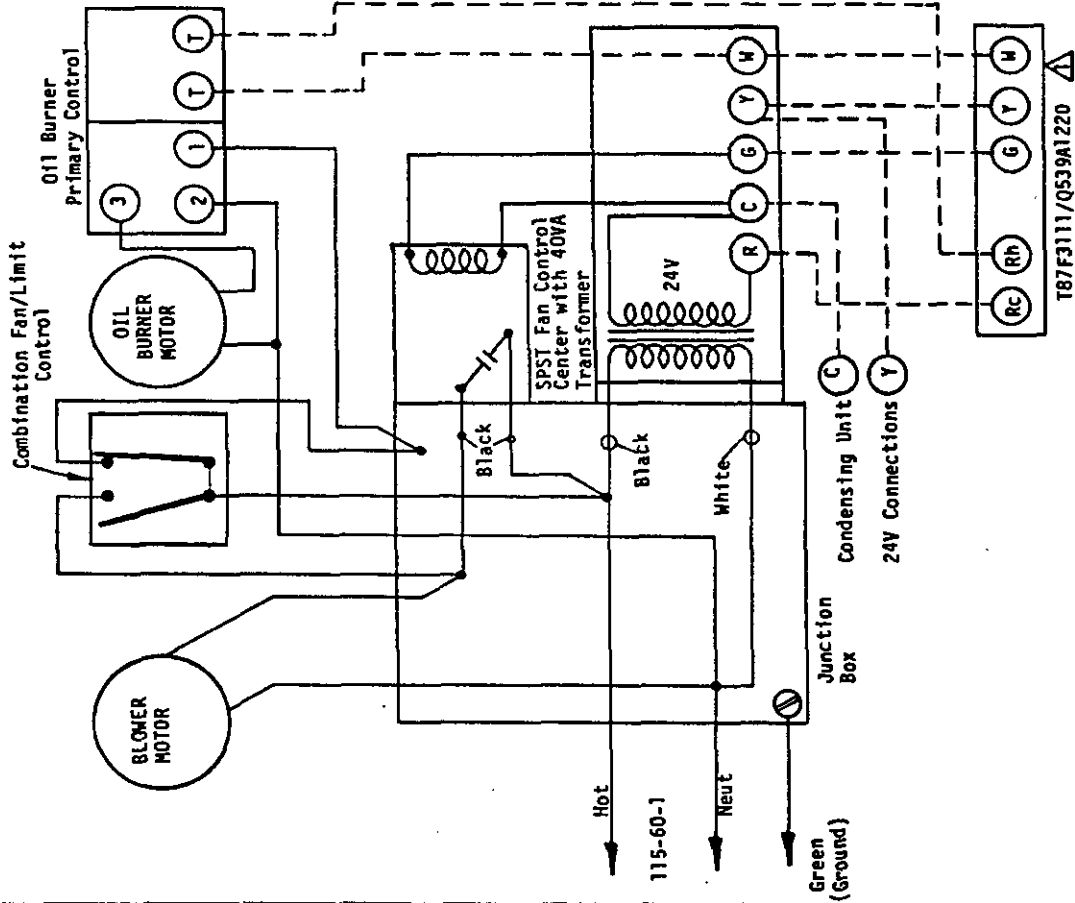
TYPICAL APPLICATION — GAS FURNACE WITH MULTI-SPEED MOTOR



- ⚠ Add jumper Rc-Rh.
- ⚠ Remove original (existing) 24V transformer from furnace.
- ⚠ Gas valve current draw should be observed and thermostat heat anticipator set at a corresponding value.
- ⚠ Any combination of speeds can be used. Be sure to connect only one speed to any one point and that all unused speeds are taped off separately.



TYPICAL APPLICATION — OIL FURNACE



⚠ Set heat anticipator to match current draw of oil burner primary control.

PARTS LIST  
SPLIT SYSTEM CONDENSING UNITS

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Part No.	Description	1214-030-01151	1214-036-01151	1214-042-01151	1214-048-01151	1214-060-01151
8552-007	Capacitor 20/15-370V	x				
8552-030	Capacitor 40/440V		x	x		
8552-036	Capacitor 70/370V				x	
8552-031	Capacitor 45/440V					x
8552-026	Capacitor 15/370V			x	x	x
8000-080	Compressor AB233FT	x				
8000-072	Compressor AV144ET		x			
8000-063	Compressor CRK3-0325-PFV			x		
8000-067	Compressor AG112ET				x	
8000-027	Compressor AG122ET					x
5051-034	Condenser Coil	x	x			
5051-009	Condenser Coil			x	x	
5051-024	Condenser Coil					x
8401-003	Contacteur - Comp. 30A		x	x	x	
8401-016	Contacteur - Comp. 35A					x
8401-007	Contacteur - Comp. 25A	x				
5151-007	Fan Blade TP2029	x	x			
5151-017	Fan Blade FA2430-4B			x	x	x
8103-009	Motor - Fan 1/5 hp	x	x			
8105-021	Motor - Fan 1/3 hp			x	x	x
8200-001	Motor Mount - Fan	x	x			
8200-004	Motor Mount - Fan			x	x	x
7051-003	Wire Grille - Inlet	x	x			
7051-001	Condenser Grille	x	x			
7051-004	Wire Grille - Inlet			x	x	x
7051-005	Condenser Grille			x	x	x
5651-051	Base Valve	x	x	x	x	x
5651-053	Base Valve	x	x			
5651-054	Base Valve			x	x	x
4062-110	Wiring Diagram	x				
4062-112	Wiring Diagram		x			
4025-120	Wiring Diagram			x	x	x
8552-002	Capacitor 5/370V	x	x			

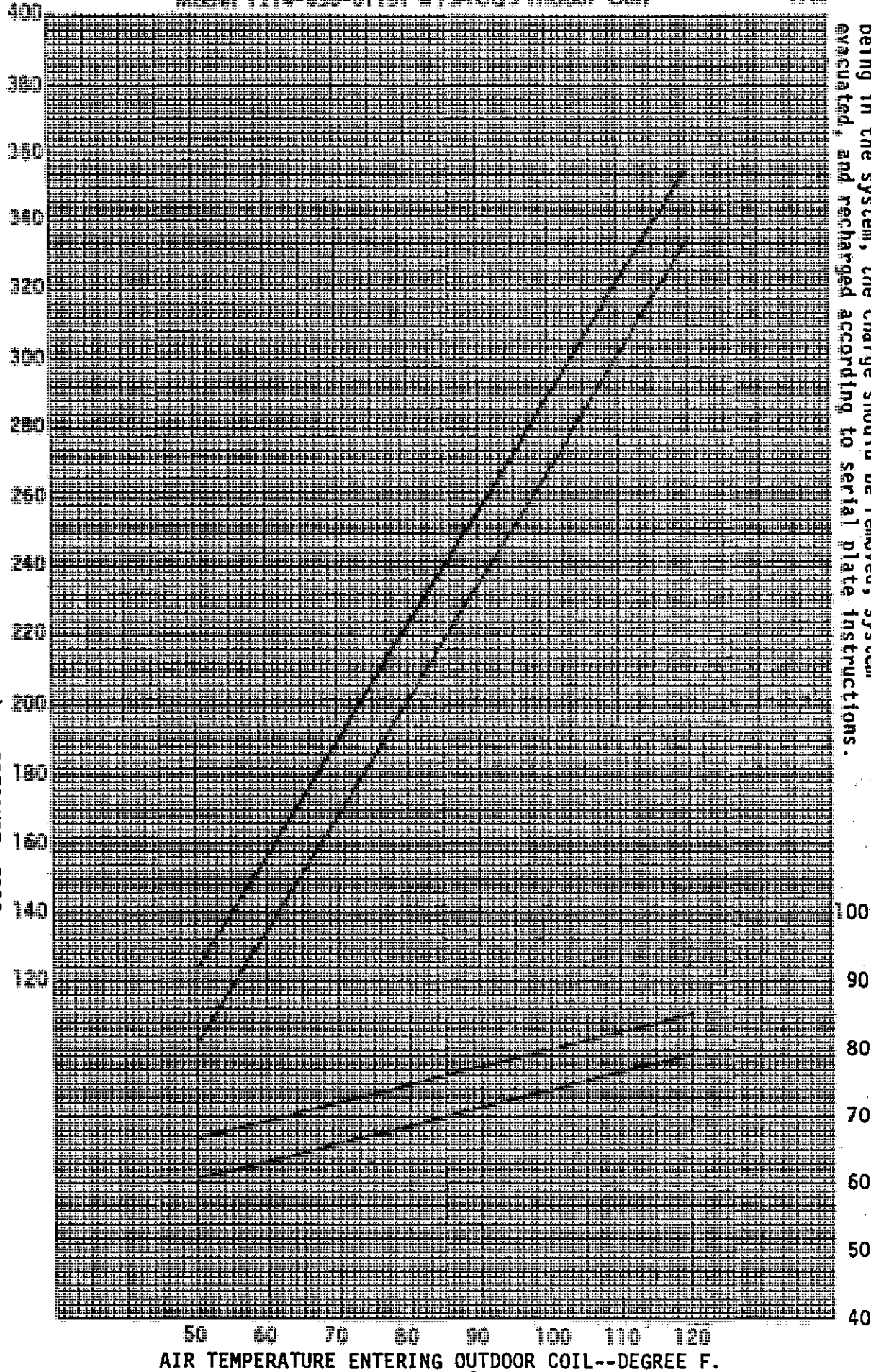
# SPLIT AIR CONDITIONER

Model 1214-020-01101 = /JACO3 Indoor Coil

These curves are based upon 80°DB, 67°WB R.A. Temp. and Rated CFM (airflow) across the evaporator coil and should be used for reference purposes only. Special information can be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged according to serial plate instructions.

LOW SIDE PRESSURE--PSIG  
(SUCTION LINE @ OUTDOOR UNIT BASE VALVE)

HIGH SIDE (LIQUID LINE @ OUTDOOR UNIT BASE VALVE)  
PRESSURE--PSIG



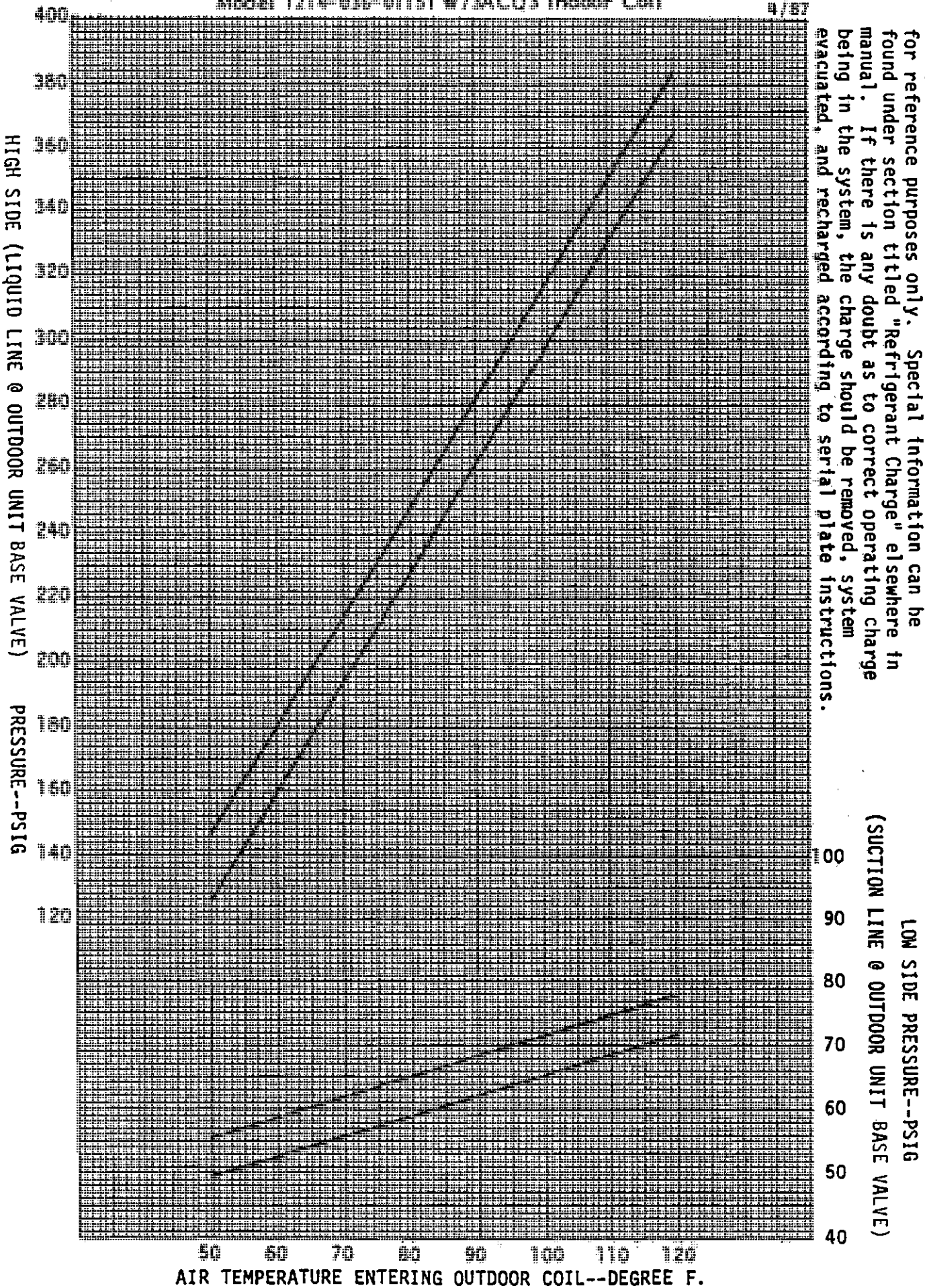
AIR TEMPERATURE ENTERING OUTDOOR COIL--DEGREE F.

# SPLIT AIR CONDITIONER

Model 1214-036-01151 w/2ACQ3 Indoor Coil

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The curves are based upon 80°DB, 67°WB R.A. Temp. a. Rated CFM (airflow) across the evaporator coil and should be used for reference purposes only. Special information can be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged according to serial plate instructions.

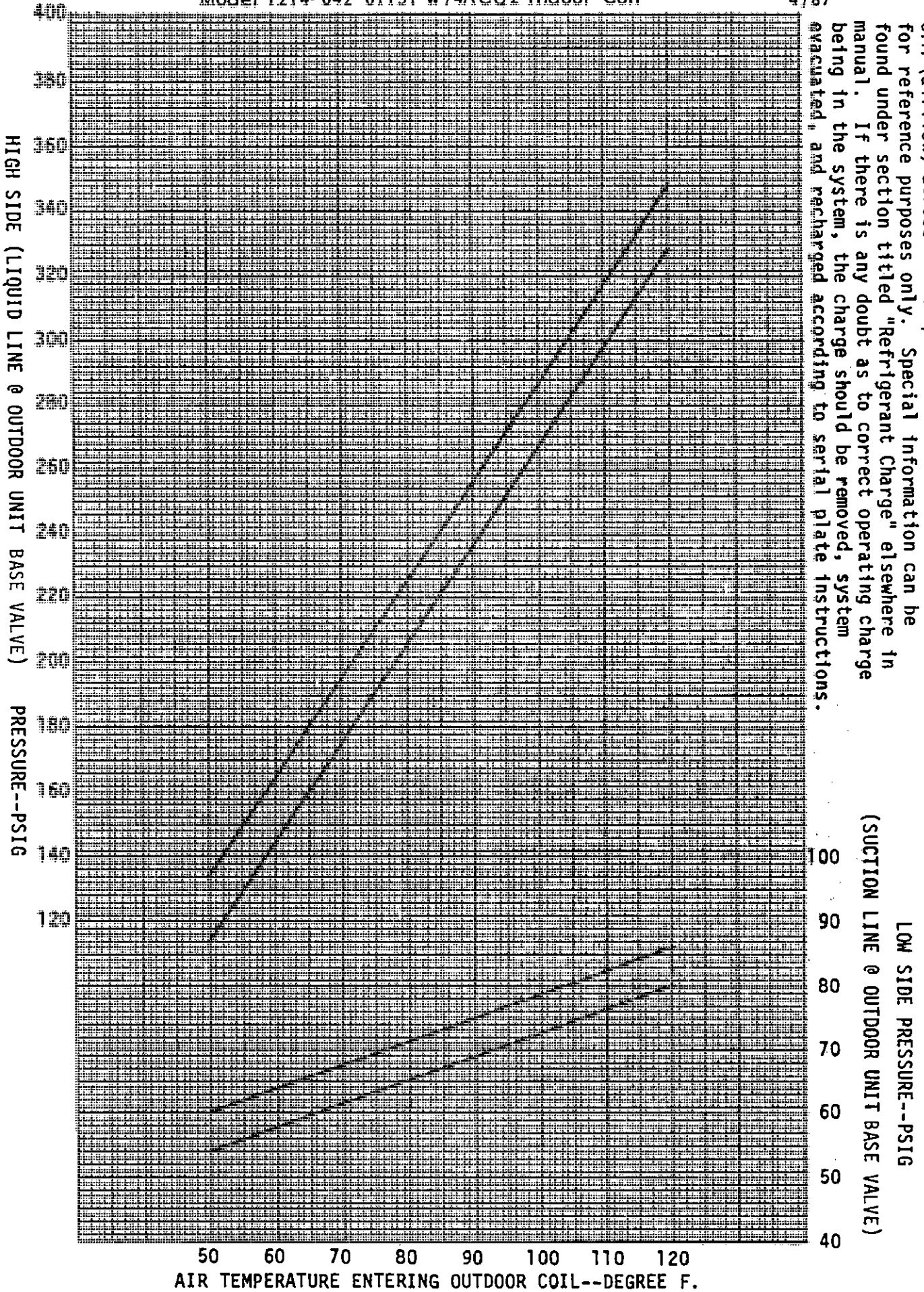


SPLIT AIR CONDITIONER

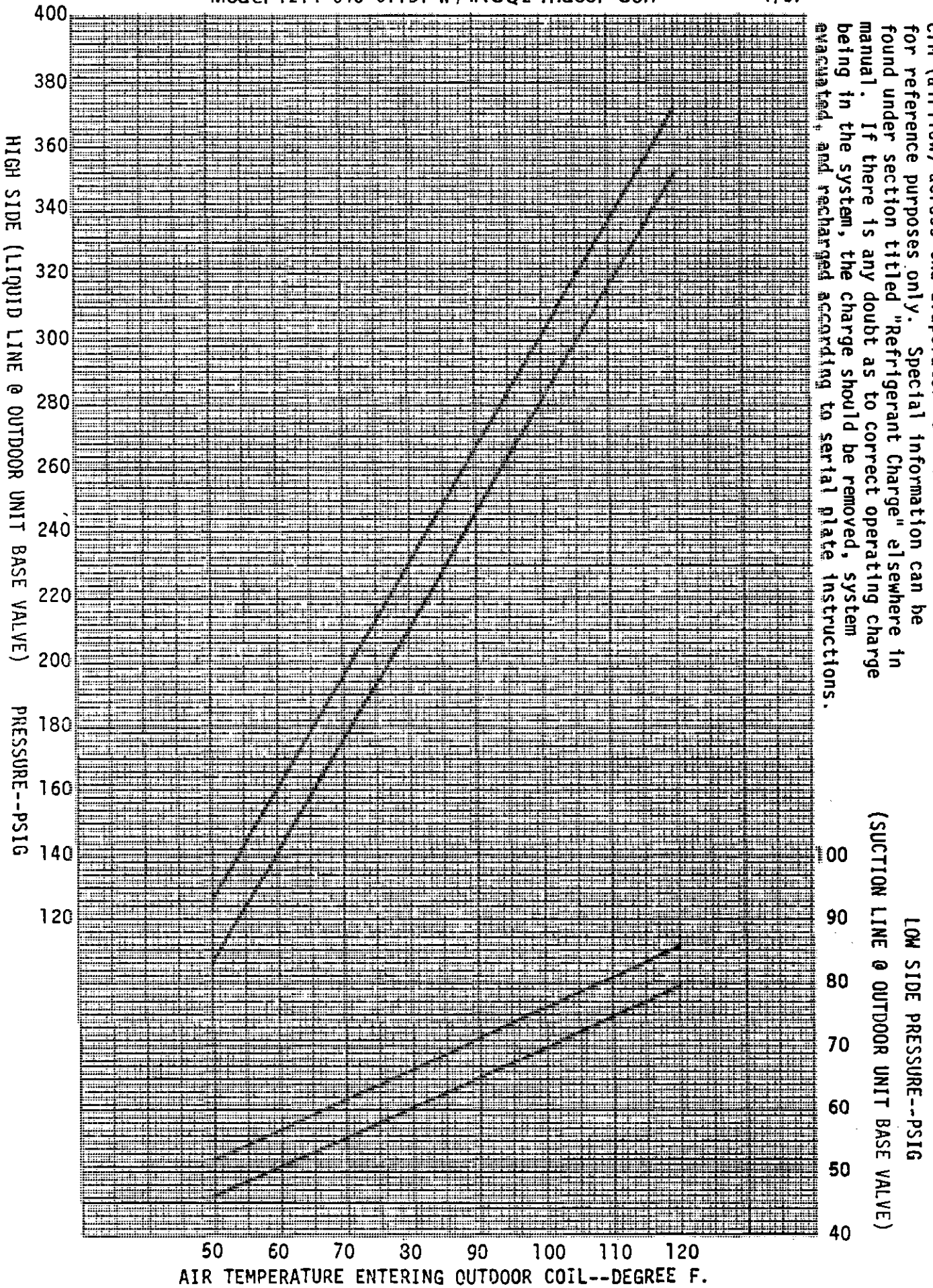
Model 1214-042-01151 w/4ACQ2 Indoor Coil

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These curves are based upon 80°DB, 67°WB R.A. Temp. and Rated CFM (airflow) across the evaporator coil and should be used for reference purposes only. Special information can be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated and recharged according to serial plate instructions.







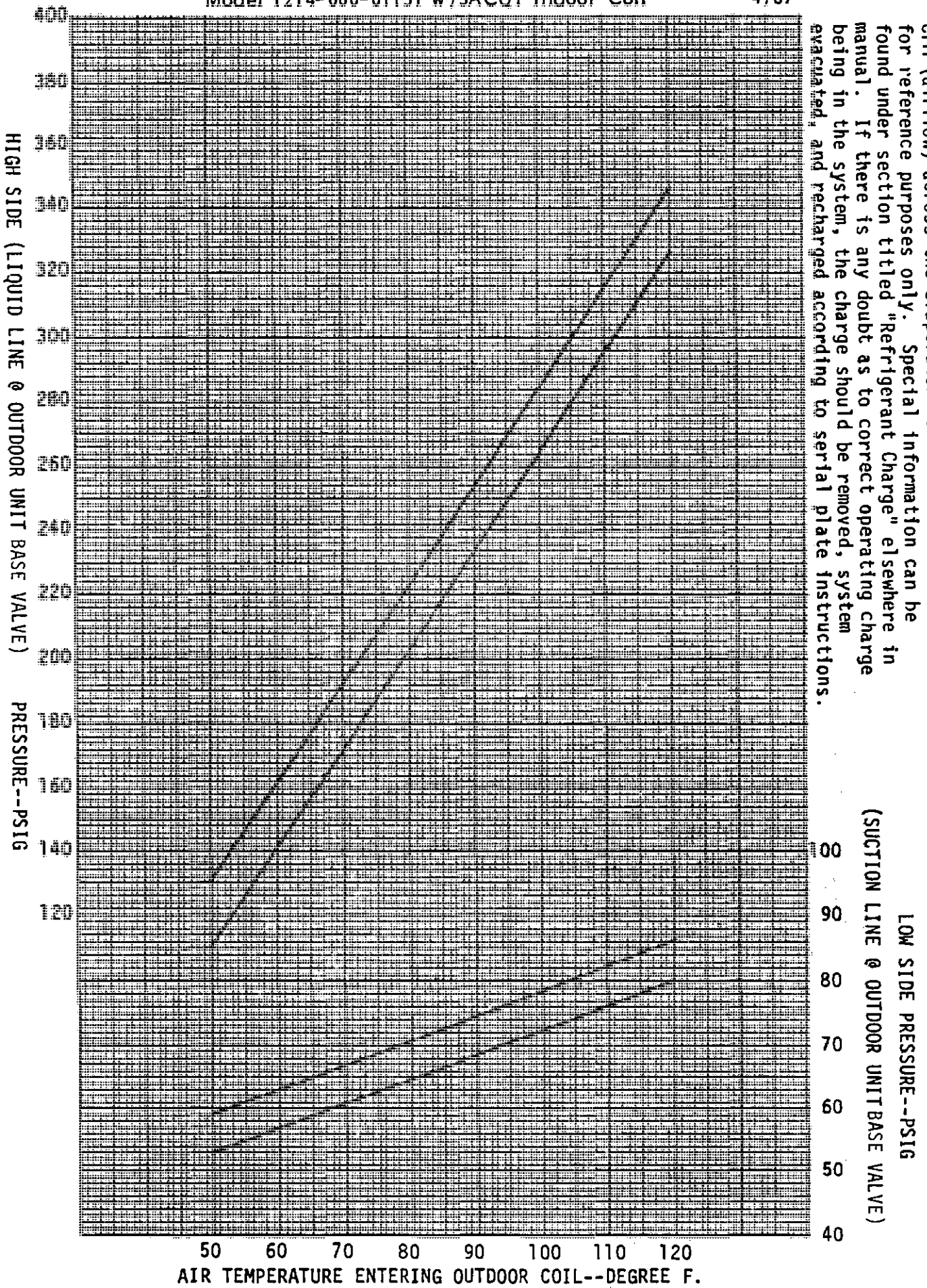
These curves are based upon 80°DB, 67°WB R.A. Temp. and Ra CFM (airflow) across the evaporator coil and should be used for reference purposes only. Special information can be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged according to serial plate instructions.

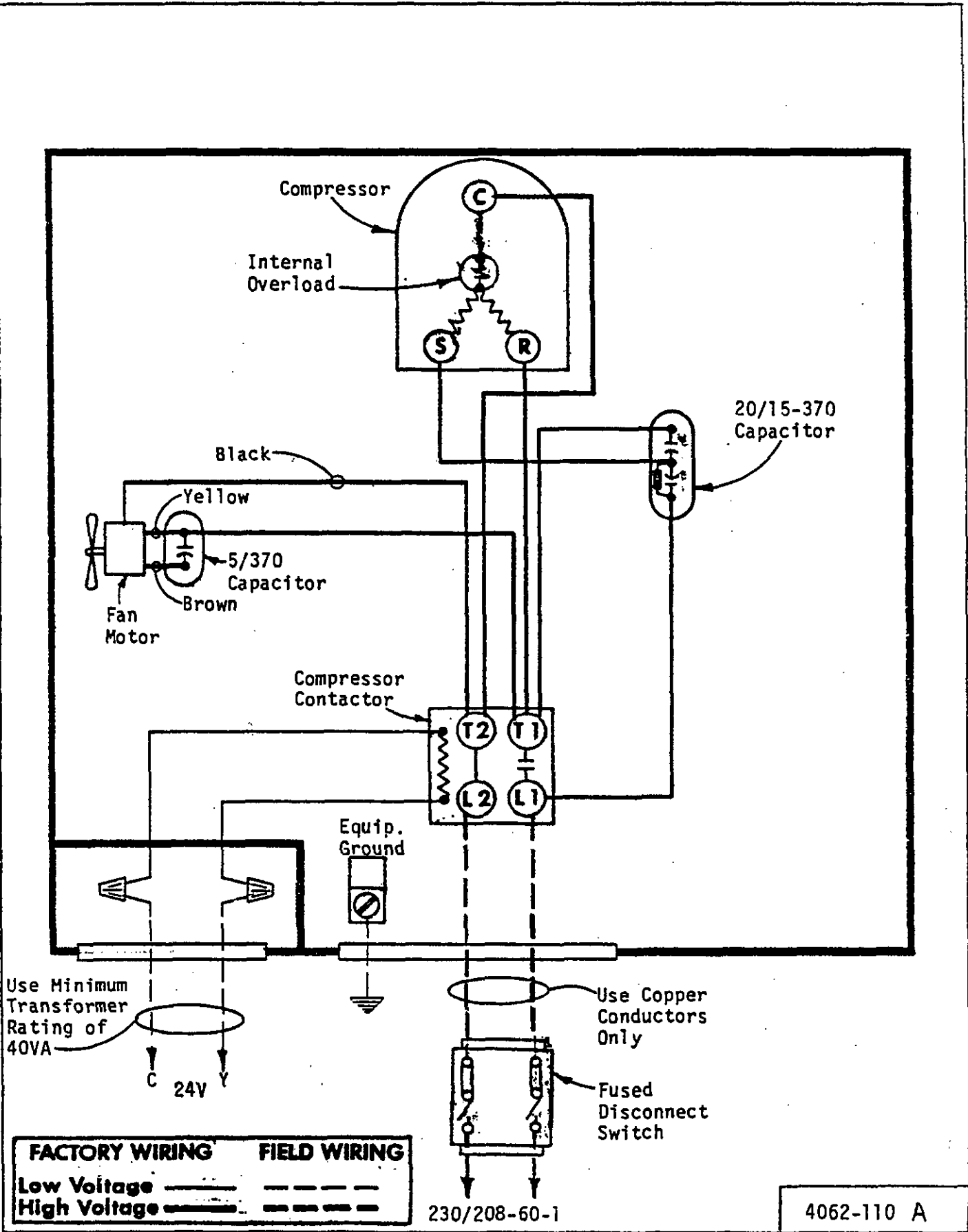
LOW SIDE PRESSURE--PSIG  
 (SUCTION LINE @ OUTDOOR UNIT BASE VALVE)

SPLIT AIR CONDITIONER  
 Model 1214-060-01151 w/5ACQ1 Indoor Coil

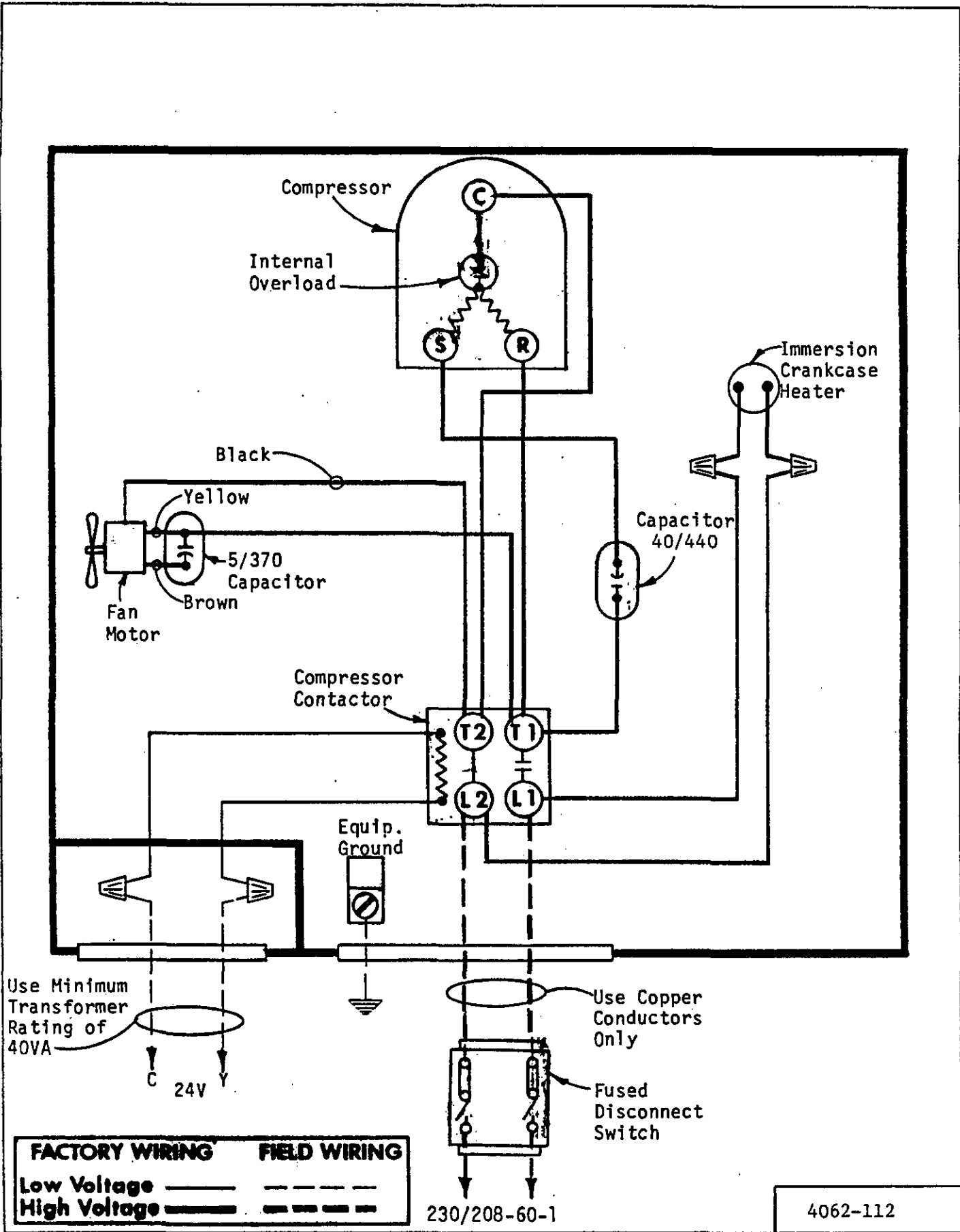
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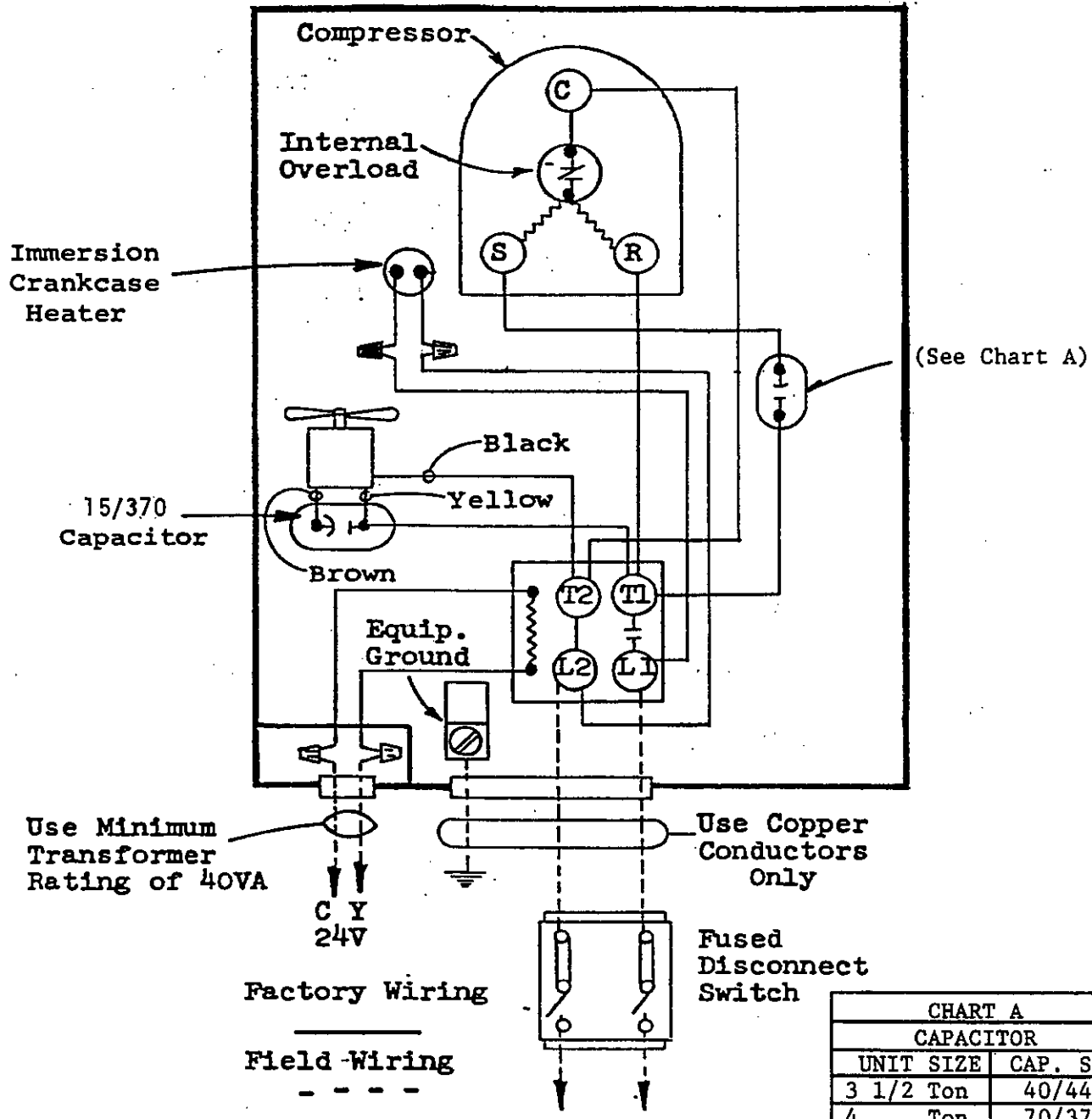
These curves are based upon 80°DB, 67°WB R.A. Temp. and Rated CFM (air-flow) across the evaporator coil and should be used for reference purposes only. Special information can be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged according to serial plate instructions.











(See Chart A)

Use Minimum  
Transformer  
Rating of 40VA

Use Copper  
Conductors  
Only

Factory Wiring

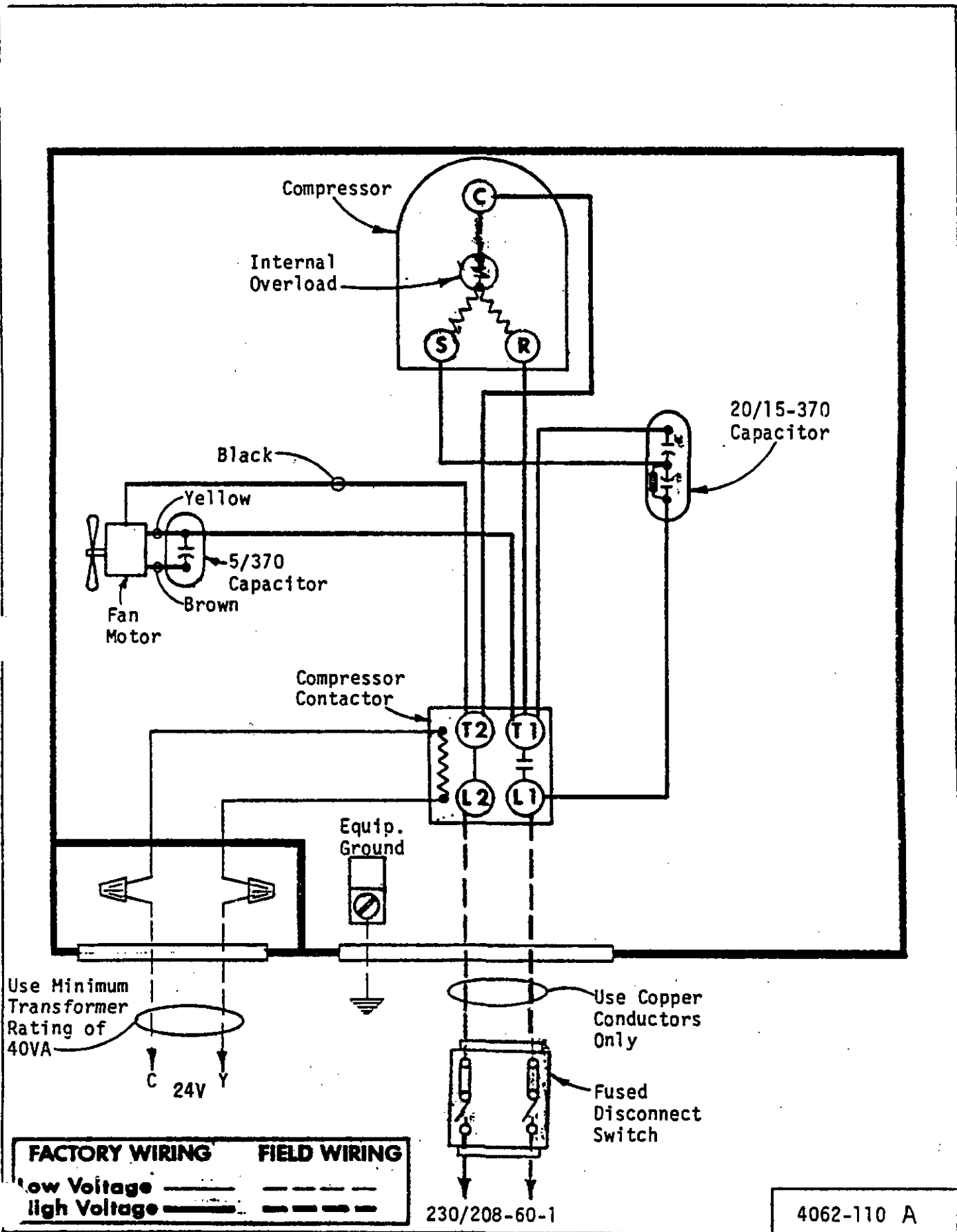
Field Wiring

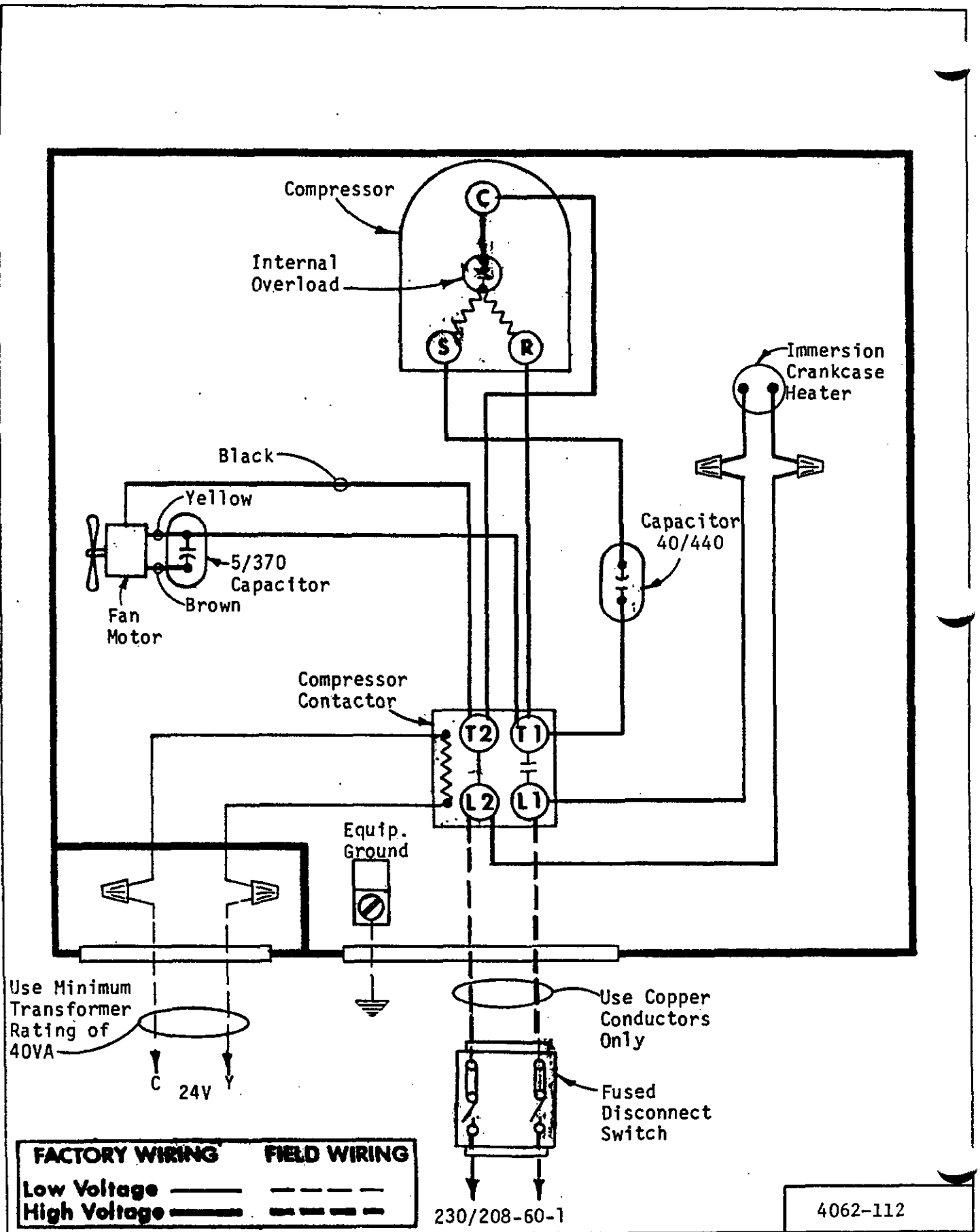
Fused  
Disconnect  
Switch

CHART A CAPACITOR	
UNIT SIZE	CAP. SIZE
3 1/2 Ton	40/440
4 Ton	70/370
5 Ton	45/440

230/208-60-1

4025-120





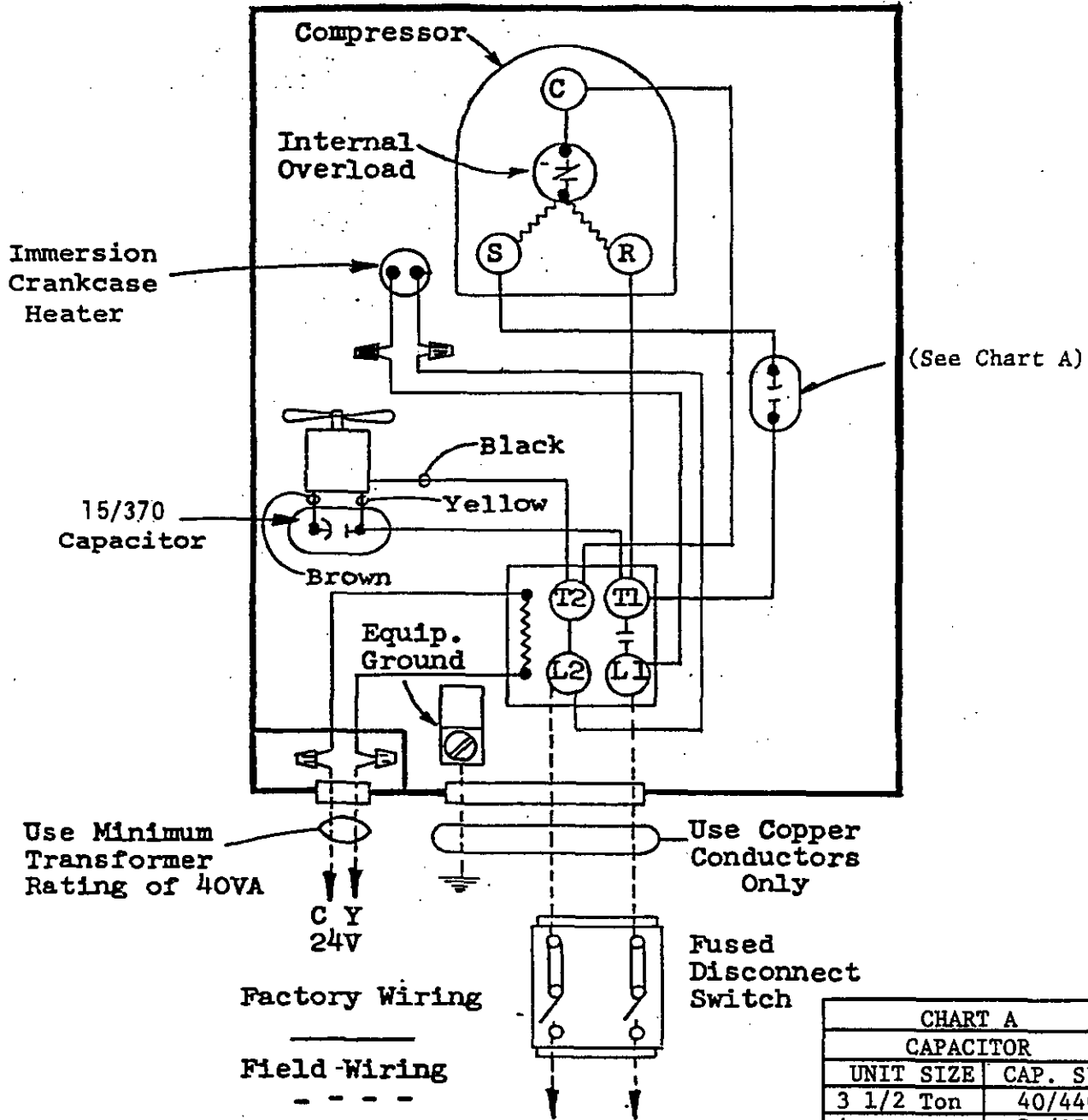


CHART A	
CAPACITOR	
UNIT SIZE	CAP. SIZE
3 1/2 Ton	40/440
4 Ton	70/370
5 Ton	45/440

230/208-60-1

4025-120

