

INSTALLATION INSTRUCTIONS

MODELS

1215-030-01151

1215-036-01151

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 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 is designed to be located outside with free and unobstructed condenser air inlet and discharge. It must also permit access for service and installation. Condenser

air enters the coil on three sides and discharges upward from the top. Refrigerant and electrical connections are made from the rear of the unit as shown in figure 1 with electrical service access on the right side. The unit can be installed with the rear of the unit "close to the wall", however, additional service clearance at the back of the unit would be desirable if practical for unit service. The compressor can be serviced through the top.

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.

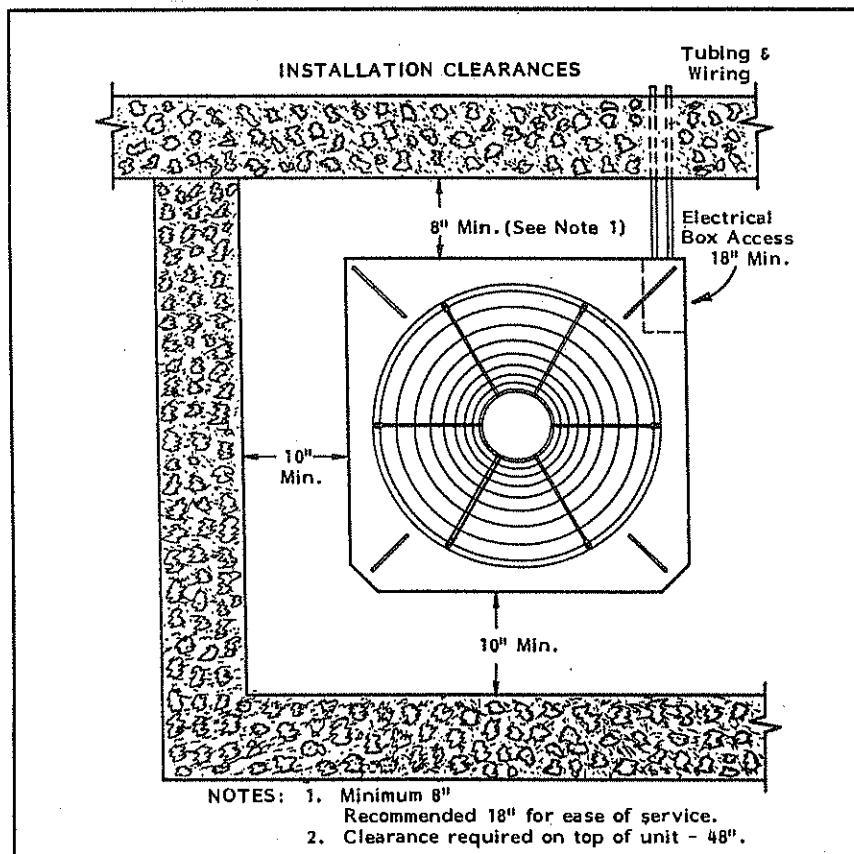
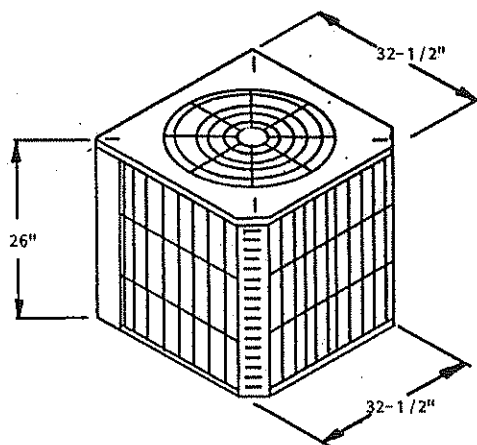


FIGURE 1.

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 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.

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.

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

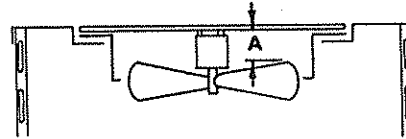
1. MAKE CERTAIN THE ROOM THERMOSTAT IS IN THE "OFF" POSITION. (THE COMPRESSOR IS NOT TO OPERATE).
2. APPLY POWER BY CLOSING THE SYSTEM DISCONNECT SWITCH. THIS ENERGIZES THE COMPRESSOR HEATER WHICH EVAPORATES THE LIQUID REFRIGERANT IN THE CRANKCASE.
3. ALLOW 4 HOURS OR 60 MINUTES PER POUND OF REFRIGERANT 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	DIMENSION A
1215-030-01151	3-1/2
1215-036-01151	

IMPORTANT INSTALLER NOTE:

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

INDOOR COIL

These units are designed to match with the "A" coils shown in Table 2 of these instructions. All "A" coils shown are produced with an interchangeable brass orifice to provide optimum matching of the refrigerant control when matching alternate sized "A" coils to the outdoor unit. A properly sized orifice for each outdoor section is packaged with this unit. See installation instructions packaged with the "A" coils for complete details.

ELECTRICAL DATA		
MODEL	1215-030-01151	1215-036-01151
ELECTRICAL RATING (60Hz/V/Ph)	230/208-1	
Operating Voltage Range	197-253	
Minimum Circuit Ampacity	19	22
+Field Wire Size	#12	#10
++Delay Fuse Max. or Ckt. Bkr.	35	40
Total Unit AMPS 230/208	11.6/12.6	15.6/17.6
COMPRESSOR		
Rated Load Amps 230/208	10.5/11.5	14.5/16.5
Branch Ckt. Selection Current	14.1	16.5
Lock Rotor Amps 230/208	66/66	75.8/75.8
FAN MOTOR & CONDENSER		
Fan Motor - HP/RPM	1/6 - 825	
Fan Motor -- AMPS	1.1	
Fan - DIA/CFM	1/6 - 825	
+60°C Copper wire size.		
++Max. time delay fuse or HACR type circuit breaker.		
* Applies to sweat and quick connect type.		

TABLE 1

RATED CFM AND AIR FLOW DATA (Wet Coil-Cooling)				
Condensing Unit Model Number	Evaporator Coil Model Number	Rated Airflow		Recommended Air Flow Range
		CFM	Pressure Drop "H ₂ O" ①	
1215-030-01151	A 30AS-A	1000	.20	850 - 1100
1215-036-01151	A 36AS-A	1200	.30	1020 - 1320

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

TABLE 2

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.
1215-030-01151	3/8 & 5/8	3/8 & 3/4	3/8 & 3/4
1215-036-01151	3/8 & 5/8	3/8 & 3/4	1/2 & 7/8

TABLE 3

ADD-ON HEAT RECOVERY HOT WATER HEATER

NOTE: THIS SECTION APPLIES ONLY IF A WATER HEATING HEAT RECOVERY DEVICE IS ADDED.

GENERAL

This high efficiency air conditioner series was designed for easy field installation of a heat recovery device for hot water heating commonly known as a desuperheater water heater. The amount of annual hot water supplied and thus additional energy cost savings will depend on the amount of hot water your family uses and the number of hours your air conditioner operates.

We recommend that a U.L. Recognized heat recovery device be used.

INSTALLATION

1. Follow all local, state and national codes applicable to the installation of heat recovery devices.
2. Follow the installation procedures you receive with the heat recovery device.
3. Connect the refrigerant lines between the heat recovery device and the heat recovery valves in the air conditioner outdoor section. Keep dirt and moisture out of the inter-connecting tubing using good refrigeration service procedures. (See figure 2). Use refrigeration grade (type L) copper tubing. The tube diameter should be the same as the valve for lengths up to 15 feet each way. For lengths between 15 and 25 feet, increase the diameter 1/8". Avoid placing the heat recovery device over 25 feet from the air conditioner.

This tubing should be insulated with 1/2" of Armaflex insulation. Tubing should be protected from abrasion and damage.

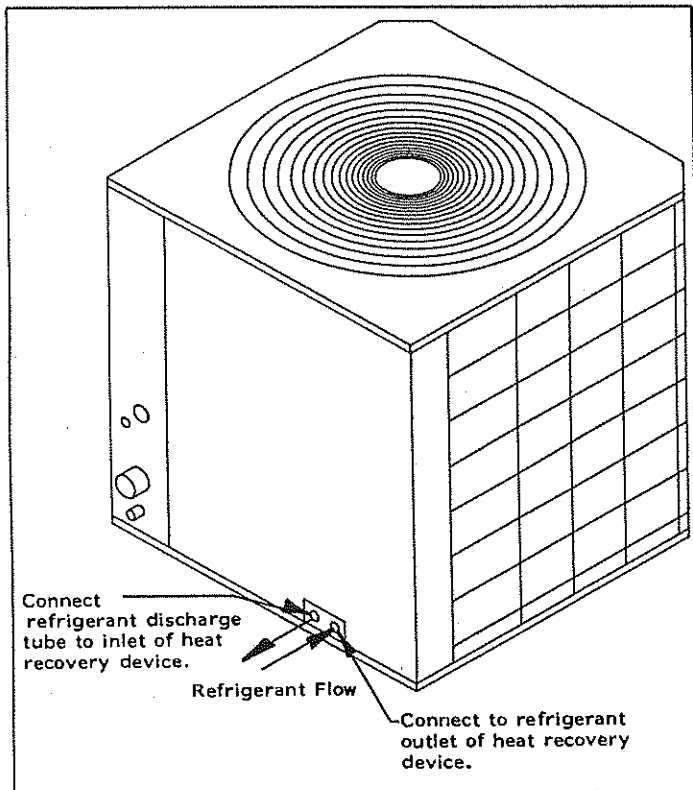


FIGURE 2

4. Evacuate the heat recovery device inter-connecting tubing and heat exchanger through the process service ports A or B shown in figure 3 and pressurize with Refrigerant 22 and perform a leak check. Release the charge used for pressurization, leak check and re-evacuate. Add 1 oz. of refrigerant for each 10 feet of additional inter-connecting tubing to the total system charge. Replace the caps and tighten.

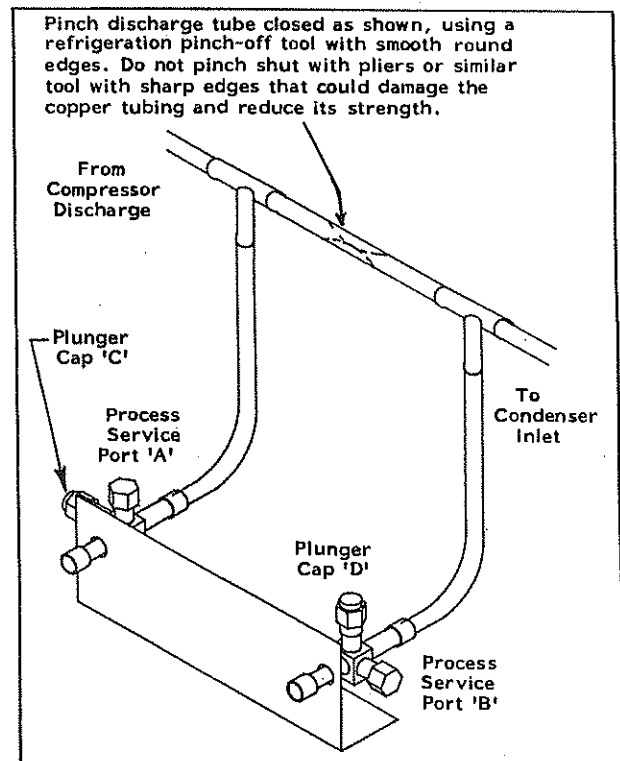


FIGURE 3

5. Tighten the plunger cap "C" and "D" shown in figure 3. This forces down a plunger which shears a frangible plug and moves it out of the refrigerant flow path. This now permits the discharge refrigerant from the compressor to flow through valve at plunger "C" (figure 3) to the heat recovery coil heat exchanger and back through the valve at plunger "D" and then to the condenser inlet.

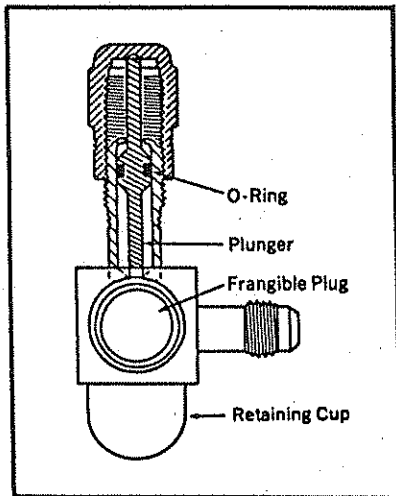
6. Wire the heat recovery device per the diagram supplied with the heat recovery unit. Turn power to the air conditioner off prior to wiring the heat recovery unit. DO NOT in any way alter any factory or safety circuits on the air conditioner.

START-UP, CHECK-OUT AND MAINTENANCE

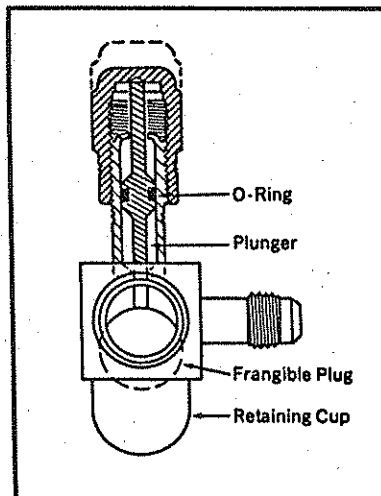
Follow the procedures supplied with the heat recovery unit.

AIR CONDITIONER SERVICE

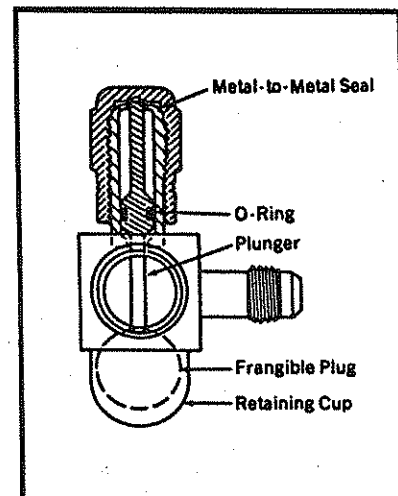
While performing any air conditioner service, disconnect the heat recovery unit for basic air conditioner service analysis as it could affect the refrigerant pressures and be misleading.



When the plunger cap is tightened, the plunger shears the frangible plug forcing it into the retaining cup. This opens the valve for flow.



The O-Ring seal on the plunger prevents leakage while the valve is being opened.



Tightening the plunger cap 1/4 turn after it bottoms results in a metal-to-metal seal.

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.

SATURATED SUCTION TEMPERATURE (R-22)	
Suction Pressure PSIG	Saturated Suction Temperature (°F)
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

TABLE 4

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 4 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 5 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.

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 5

TOTAL SYSTEM OPERATING CHARGE (Includes charge for the basic outdoor unit, indoor coil and 25' of inter-connecting tubing)		
Outdoor Section	Indoor Section	Total R-22 Charge (oz)
1215-030-01151	A30AS-A	88
1215-036-01151	A36AS-A	96

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

Liquid Line Diameter	Oz. R-22 Per Ft.
1/4"	.25
3/8"	.6
1/2"	1.2

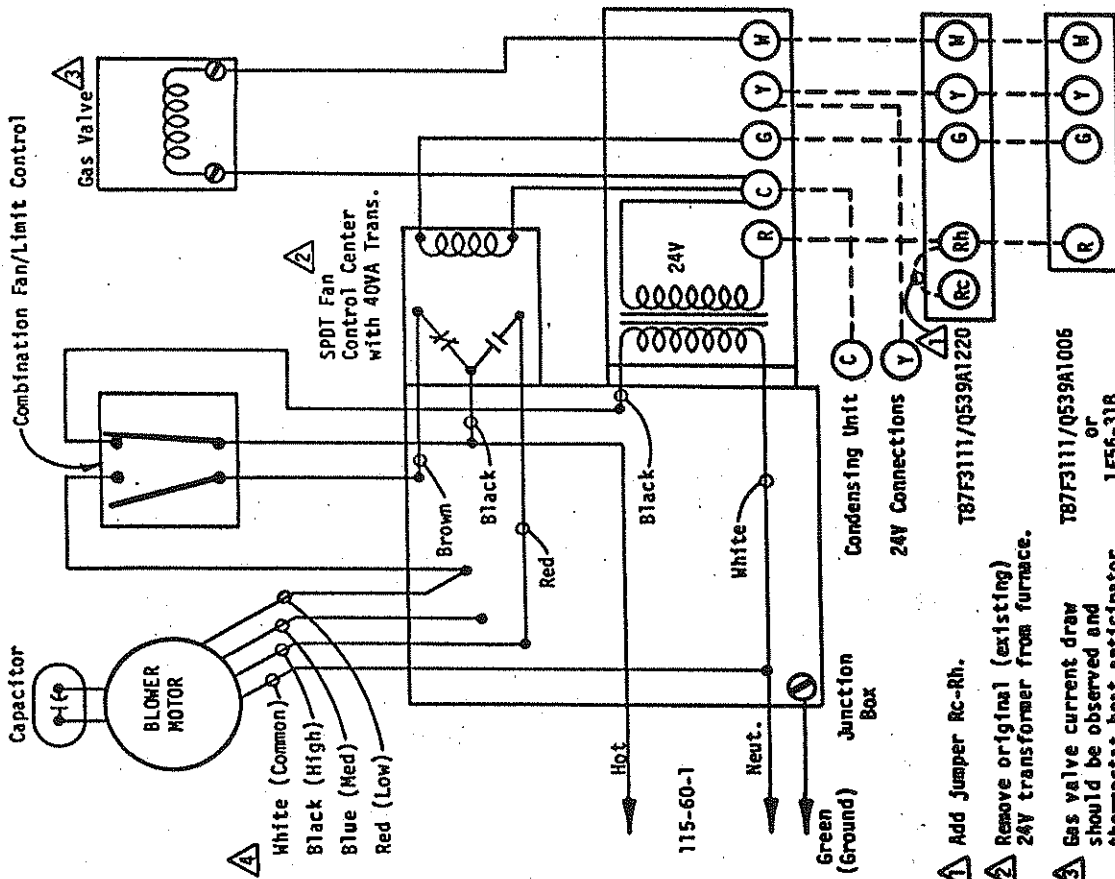
INSTALLER NOTE: Stamp or mark the final system charge determined above on the outdoor unit serial plate.

PARTS LIST
REMOTE AIR CONDITIONING

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Part No.	Description	1215-030-01151	1215-036-01151
8552-032	Capacitor 35/370V	x	
8552-035	Capacitor 40/370V		x
8552-002	Capacitor 5/370V	x	x
8000-095	Compressor 703087-06-0813	x	
8000-052	Compressor CRG3-0250-PFV		x
5051-043	Condenser Coil	x	
5051-044	Condenser Coil		x
8401-007	Contactora 1P25A	x	x
5151-035	Fan Blade	x	x
7051-018	Fan & Motor Mount Grille	x	x
7051-019	Coil Grille	x	x
5201-011	Drier	x	x
5625-063	Restrictor w/.063" orifice	x	
5625-069	Restrictor w/.069" orifice		x
5651-051	Base Valve 3/8"	x	x
5651-053	Base Valve 3/4"	x	x
5651-055	Full Flow Valve 3/8"	2	2
8102-010	Motor - fan	x	x
4080-110	Wiring Diagram	x	x

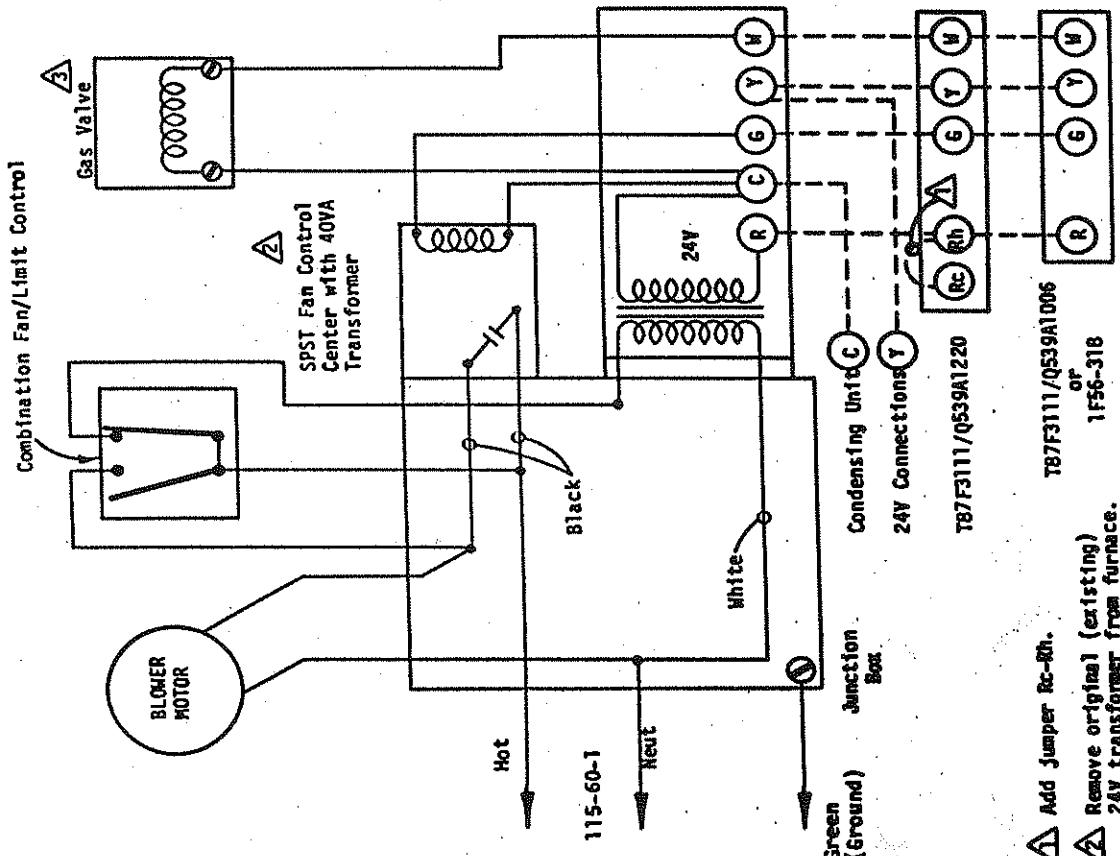
TYPICAL APPLICATION — GAS FURNACE WITH MULTI-SPEED MOTOR



- ⚠ 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.

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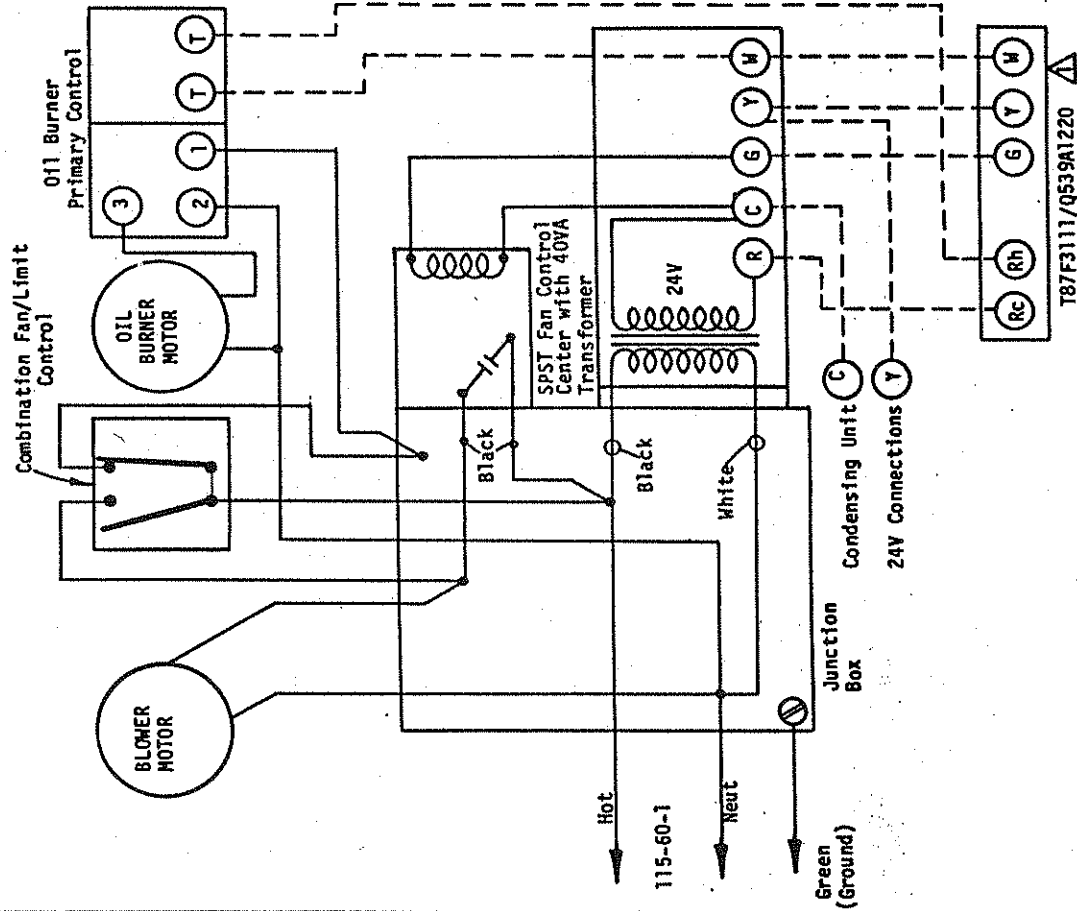
TYPICAL APPLICATION — GAS FURNACE WITH SINGLE SPEED MOTOR



- ⚠ 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.

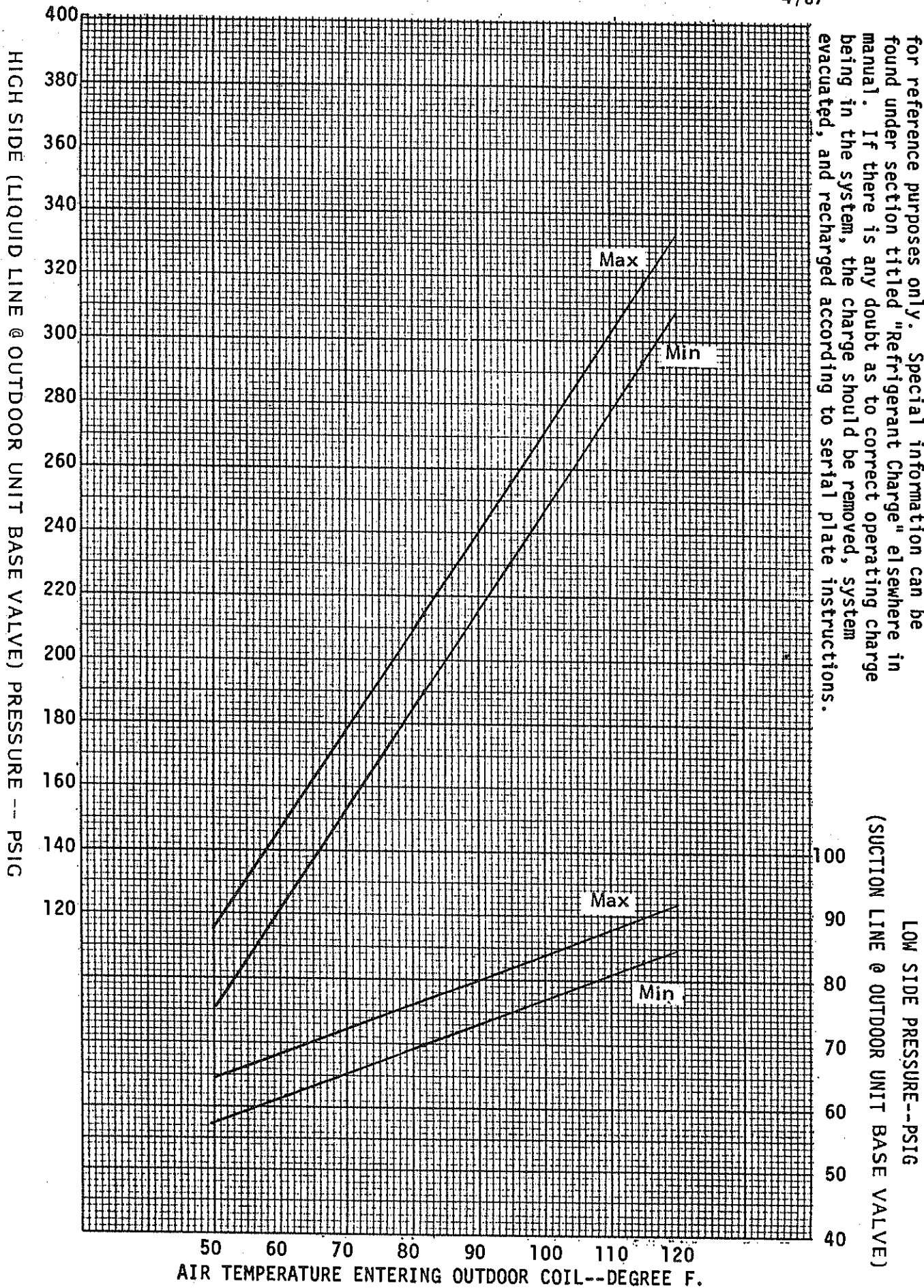
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TYPICAL APPLICATION — OIL FURNACE



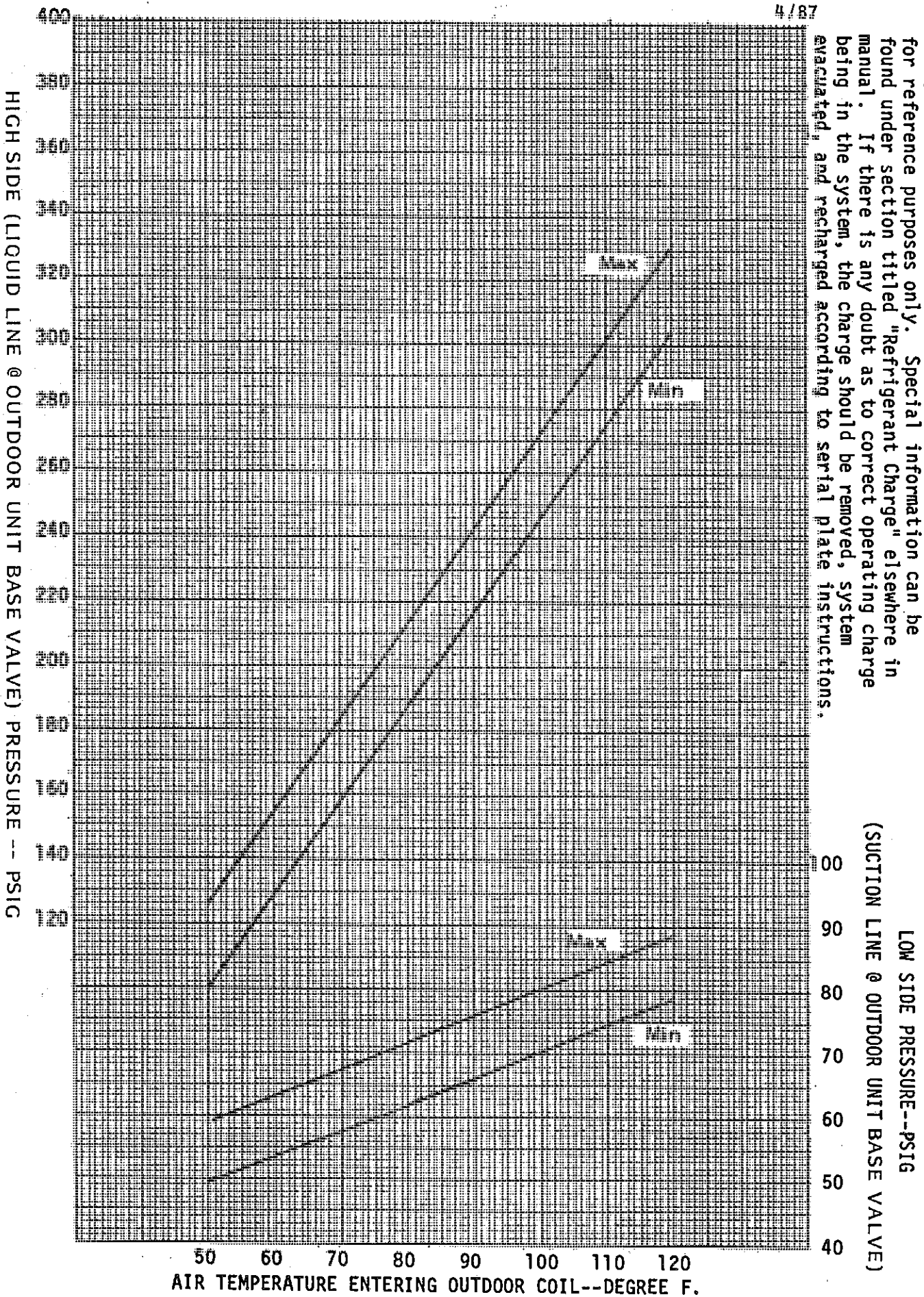
1 Set heat anticipator to match current draw of oil burner primary control.

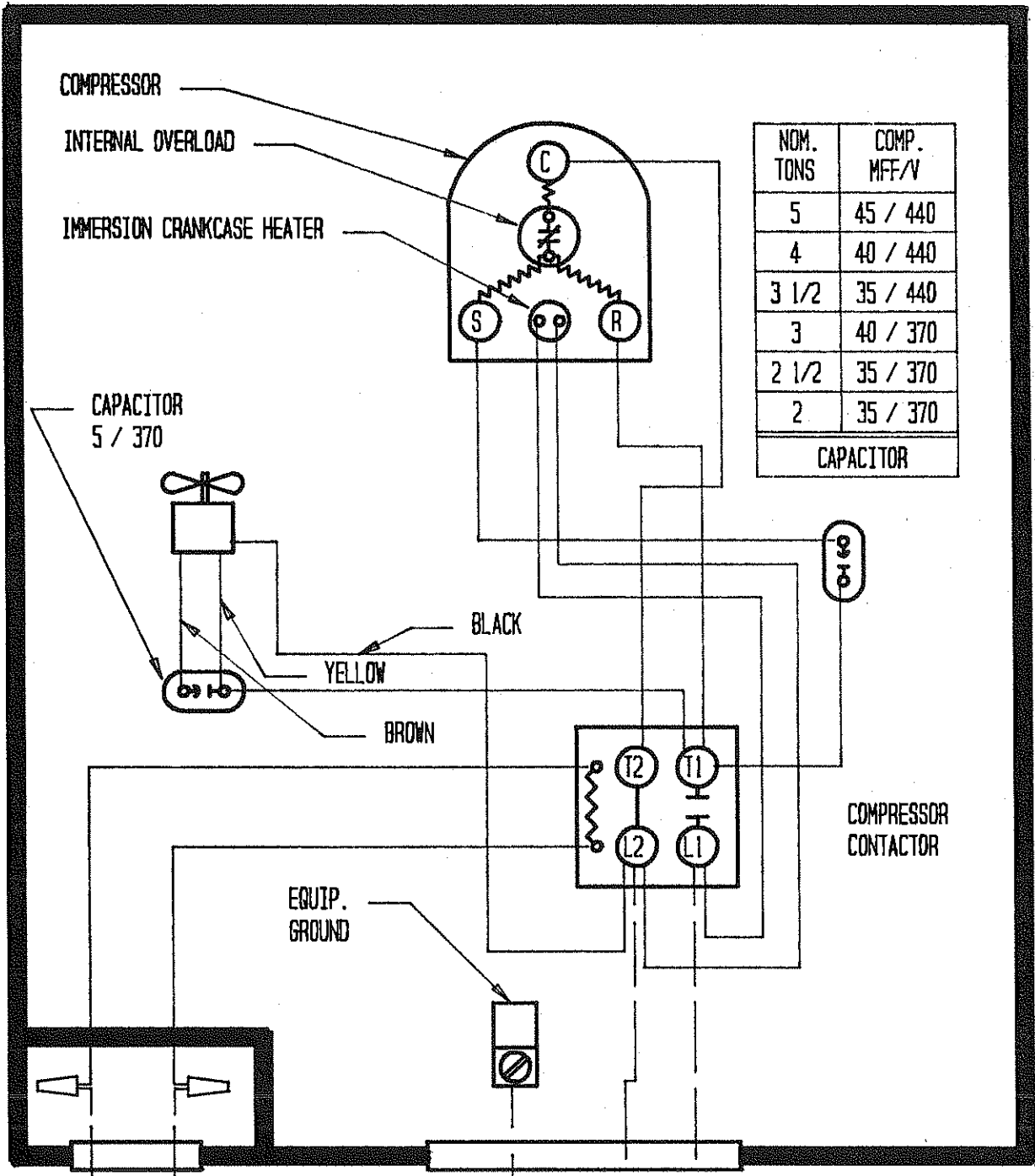
These curves are based upon 80°DB, 67°WB R.A. Temp. and Rated CFM (airflow) across the evaporator coil and should be used for reference purposes only. Special information can be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being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



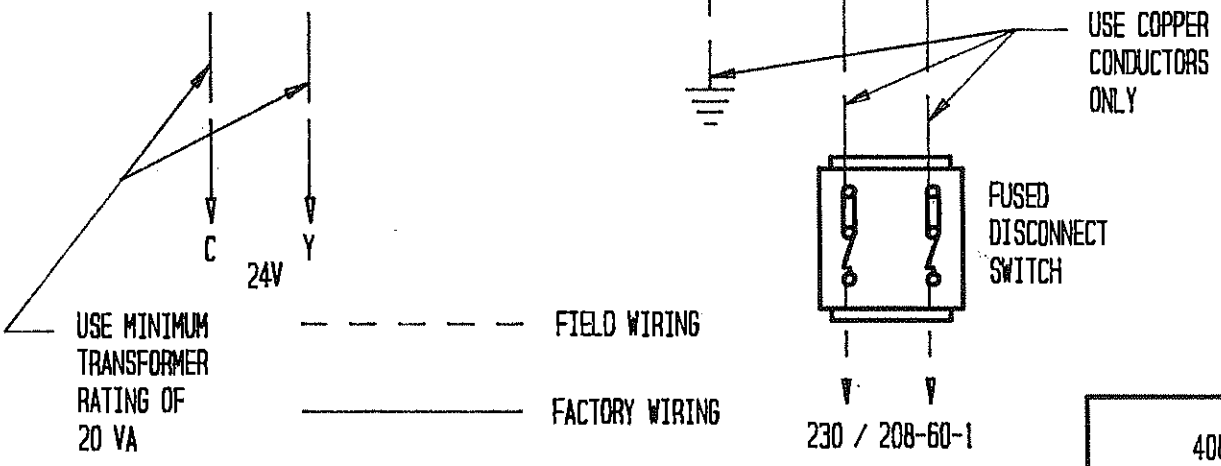
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NOM. TONS	COMP. MFF/V
5	45 / 440
4	40 / 440
3 1/2	35 / 440
3	40 / 370
2 1/2	35 / 370
2	35 / 370
CAPACITOR	



4080-1108