

# **INSTALLATION INSTRUCTIONS**

## **SPLIT AIR CONDITIONER OUTDOOR SECTION**

### **MODELS**

<b>18ECQ2</b>	<b>31ECQ2</b>	<b>42ECQ1</b>
<b>18ECS2</b>	<b>31ECS2</b>	<b>42ECS1</b>
<b>24ECQ4</b>	<b>36ECQ5</b>	<b>48ECQ2</b>
<b>24ECS4</b>	<b>36ECS5</b>	<b>48ECS2</b>
<b>30ECQ4</b>	<b>37ECQ1</b>	<b>60ECQ1</b>
<b>30ECS4</b>	<b>37ECS1</b>	<b>60ECS1</b>

**FOR USE WITH:  
MATCHING INDOOR BLOWER  
COIL UNITS AND MATCHING  
ADD ON COIL UNITS ONLY**

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## APPLICATION AND INSTALLATION INSTRUCTIONS

### General

These instructions explain the recommended method to install the precharged air cooled remote type condensing unit, the interconnecting 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.

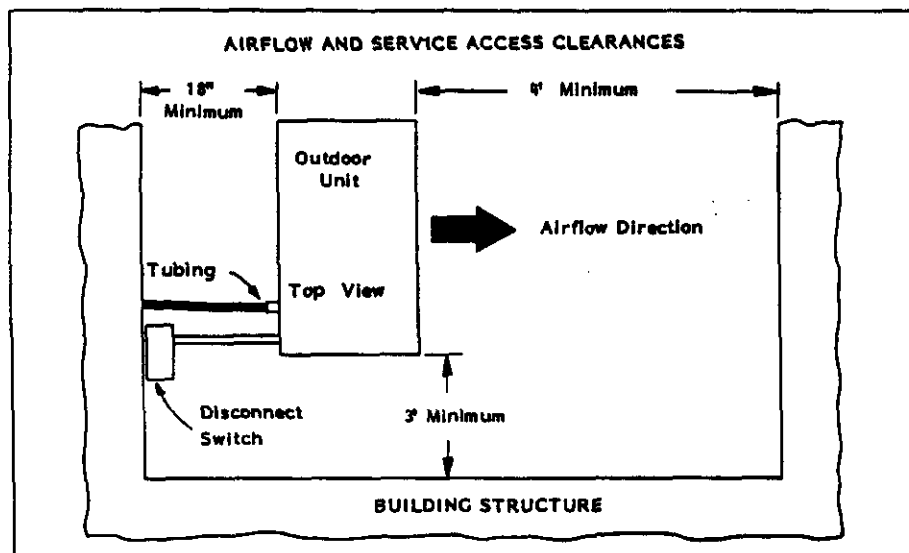
### INSTALLATION

Size of unit for a proposed installed 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 System, 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.

FIGURE 1



## 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.

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.

When matching with a B-model blower coil unit, refer to the installation instructions with that indoor unit for 24V wiring information.

## PRESSURE SERVICE PORTS

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

The pressure service ports on the split system air conditioners are located on the interconnecting tubing quick connect fittings or 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 three phase units utilize a wraparound type of crankcase heater that warms the compressor oil from the outside.

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.

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

FIGURE 2

**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.

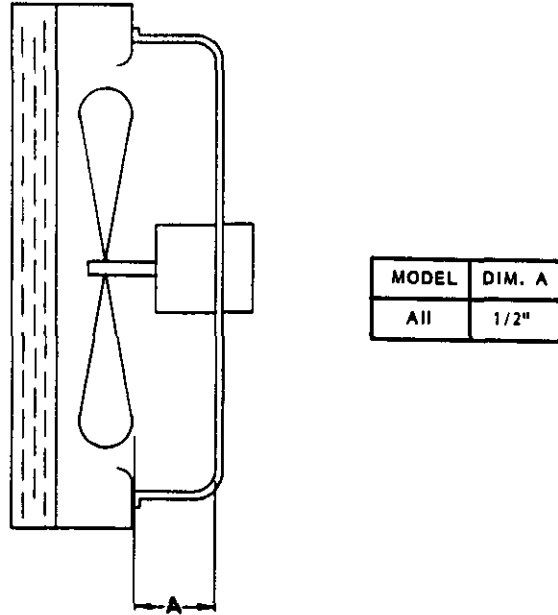
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### FAN BLADE SETTING DIMENSIONS

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.

FIGURE 3



**IMPORTANT INSTALLER NOTE**

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

TABLE 1

ELECTRICAL DATA							
Model	Electrical Rating	Operating Voltage Range	Total Unit <sup>①</sup> Amps	Minimum Circuit Ampacity	Maximum <sup>②</sup> Overcurrent Protection	60 degree C Copper Wire Size	Copper Ground Wire Size
18ECQ, S2	230/208-60-1	197-253	11.6	15	20	#14	#14
24ECQ, S4	230/208-60-1	197-253	12.1	15	25	#14	#14
30ECQ, S4	230/208-60-1	197-253	16	22	35	#10	#10
31ECQ, S2	230/208-60-1	197-253	15	20	30	#12	#12
36ECQ, S5	230/208-60-1	197-253	22	29	50	#10	#10
37ECQ, S1	230/208-60-1	197-253	19	26	40	#10	#10
	230/208-60-3	187-253	13	18	30	#12	#12
	460-60-3	414-506	7.7	15	20	#14	#14
42ECQ, S1	230/208-60-1	197-253	24.3	30	50	#10	#10
	230/208-60-3	187-253	16.8	21	30	#10	#10
	460-60-3	414-506	9.3	10	15	#14	#14
48ECQ, S2	230/208-60-1	197-253	25.8	32	50	#8	#10
	230/208-60-3	187-253	19.3	24	35	#10	#10
	460-60-3	414-506	11.3	11	15	#12	#12
60ECQ, S1	230/208-60-1	197-253	31.8	39	60	#8	#10
	230/208-60-3	187-253	22.8	28	45	#10	#10
	460-60-3	414-506	9.1	12	15	#14	#14

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

TABLE 2

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)	Rated (2) E.S.P.	Recommended Air Flow Range
18ECQ, S2	18QS3	600	.30		540 - 660
	2ACQ1	640	.20		575 - 705
	B18EHQ1	650		.30	585 - 715
	B24EHQ1	650		.30	585 - 715
24ECQ, S4	24QS1	870	.30		780 - 960
	2ACQ1	870	.30		780 - 960
	B24EHQ1	800		.10	720 - 880
	B18EHQ1	800		.10	720 - 880
30ECQ, S4	3ACQ3	1100	.28		990 - 1210
	3HCQ1	1035	.30		900 - 1150
	B36EHQ1	1050		.50 (3)	945 - 1155
	B30EHQ	800		.10	720 - 880
31ECQ, S2	3ACQ3	1050	.25		940 - 1160
	3HCQ1	1035	.30		900 - 1150
	B36EHQ1	1000		.55 (3)	900 - 1150
	B30EHQ	800		.10	720 - 880
36ECQ, S5	3ACQ3	1180	.30		1060 - 1300
	3HCQ1	1000	.30		900 - 1100
	B36EHQ1	1275		.40	1150 - 1400
37ECQ, S1	3ACQ3	1180	.30		1060 - 1300
	3HCQ1	1000	.30		900 - 1100
	B36EHQ1	1200		.50	1080 - 1320
	A36AS-A	1200	.30		1080 - 1320
42ECQ, S1	4ACQ2	1450	.25		1300 - 1600
	5ACQ1	1600	.14		1440 - 1760
	4HCQ	1500	.30		1350 - 1650
	BC48A	1575		.40	1420 - 1730
	A42AS-A	1450	.30		1300 - 1600
	A48AS-A	1450	.50		1300 - 1600
48ECQ, S2	4ACQ2	1690	.30		1520 - 1860
	5ACQ1	1800	.18		1620 - 1980
	4HCQ	1600	.30		1440 - 1760
	BC48A	1725		.30	1550 - 1900
	A48AS-A	1500	.25		1350 - 1650
	5ACQ2	1600	.15		1440 - 1760
60ECQ, S1	5ACQ1	1990	.28		1790 - 2190
	5HCQ	1650	.30		1485 - 1815
	BC48A	1625		.30	1460 - 1790
	BC60A	1800		.30	1590 - 1950
	A60AS-A	1920	.30		1720 - 2120
	5ACQ2	1900	.20		1720 - 2120

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

(2) External static pressure available for the duct system--supply and return. All blower coil models have multi-speed motors, and value shown in at recommended speed. Consult specification airflow charts for complete information as to other speeds available.

(3) Rated external static pressure on low speed.



## Refrigerant Charge

To obtain maximum rated capacity and efficiency, the system charge may have to be adjusted at installation to obtain a suction line temperature (6" from compressor) as shown in the following table.

TABLE 3

Outdoor Unit	Indoor Unit	95 degree F O.D. Temp.	82 degree F O.D. Temp.
18ECQ, S2	18QS3	55 - 57	65 - 67
	2ACQ1	48 - 50	57 - 59
	B18EHQ1	58 - 60	63 - 65
	B24EHQ1	58 - 60	62 - 64
24ECQ, S4	24QS1	50 - 52	56 - 58
	2ACQ1	44 - 46	50 - 52
	B24EHQ1	50 - 52	56 - 58
	B18EHQ1	50 - 52	56 - 58
30ECQ, S4	3ACQ3	48 - 50	60 - 62
	3HCQ1	52 - 54	64 - 66
	B36EHQ1	52 - 54	63 - 65
	B30EHQ	54 - 56	58 - 60
31ECQ, S2	3ACQ3	47 - 49	58 - 60
	3HCQ1	54 - 56	67 - 69
	B36EHQ1	50 - 52	61 - 63
	B30EHQ	46 - 48	57 - 59
36ECQ, S5	3ACQ3	52 - 54	60 - 62
	3HCQ1	56 - 58	63 - 65
	B36EHQ1	52 - 54	63 - 65
37ECQ, S1	3ACQ3	45 - 47	55 - 57
	3HCQ1	55 - 57	65 - 67
	B36EHQ1	52 - 54	63 - 65
	A36AS-A	55 - 57	61 - 63
42ECQ, S1	4ACQ2	47 - 49	59 - 61
	5ACQ1	50 - 52	53 - 55
	BC48A	51 - 53	55 - 57
	A42AS-A	46 - 48	56 - 58
	A48AS-A	47 - 49	58 - 60
48ECQ, S2	4ACQ2	52 - 54	62 - 64
	5ACQ1	50 - 52	52 - 54
	4HCQ	56 - 58	66 - 68
	BC48A	53 - 55	60 - 62
	A48AS-A	55 - 57	62 - 64
	5ACQ2	56 - 58	63 - 66
60ECQ, S1	5ACQ1	50 - 52	59 - 61
	5HCQ	49 - 51	58 - 60
	BC48A	55 - 57	63 - 65
	BC60A	48 - 50	58 - 60
	A60AS-A	54 - 56	61 - 63
	5ACQ2	56 - 58	61 - 63

The above suction line temperatures are based upon 80 degree F dry bulb/67 degree wet bulb (50% R.H.) temperature and rated airflow across the evaporator during cooling cycle.

## INSTALLING REFRIGERANT TUBING

### (Precharged--Applicable to "Q" Models)

PRECHARGED TUBING--Examine carefully the two lengths of precharged 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 unit.

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 precharged 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 precharged tubing between the condenser and the evaporator is 45 feet.

CAUTION: Prior to connecting the precharged 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 precharged 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 degree angle from a vertical up position so as to be accessible for gauge connections.

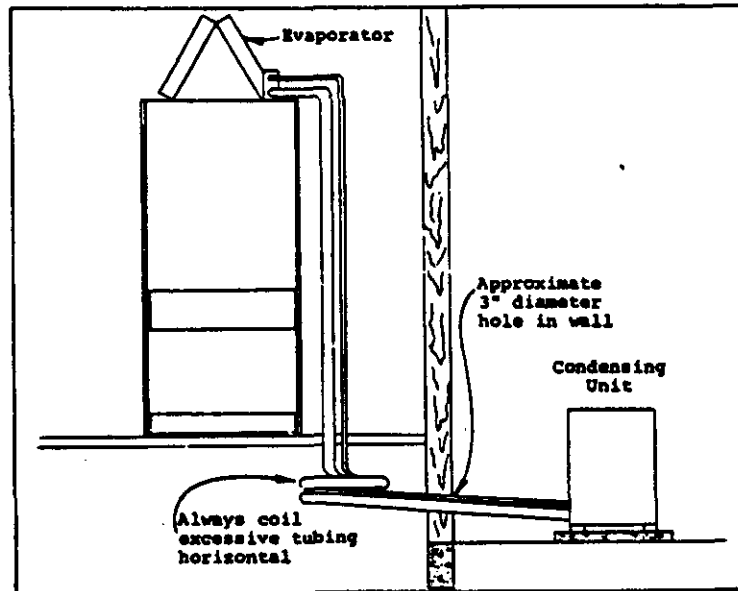
Use a wrench on the hex nut of the female fitting backing up the fitting with another wrench to keep tube from turning. Tighten the fittings together until they bottom out then tighten for an additional 1/4 turn so that coupling will seat properly.

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.

FIGURE 4



**INSTALLER NOTE:** Stamp or mark the Total System Charge on the outdoor unit serial plate. See TOTAL SYSTEM CHARGE table located on inside of outdoor unit access panel.

R22 TOTAL SYSTEM CHARGE FOR  
SPLIT AIR CONDITIONING AND HEAT PUMP SYSTEMS

The following tables are used to determine the operating charge for split air conditioning and heat pump systems. The values shown are the total amount of refrigerant received in the precharged system components, which include the outdoor unit, indoor unit, and inter-connecting tubing. This is also the amount of refrigerant required for a system recharge following any refrigeration system repairs.

Find the outdoor section and matching indoor section (Table 4) and connecting tubing set (Table 6) for system being used. Add the ounces of charge for each of the system components together. This value is the TOTAL SYSTEM CHARGE.

$$\begin{array}{r} \text{OZs} \\ \hline \text{OUTDOOR UNIT} \\ \text{(Table 6)} \end{array} + \begin{array}{r} \text{OZs} \\ \hline \text{INDOOR UNIT} \\ \text{(Table 6)} \end{array} + \begin{array}{r} \text{OZs} \\ \hline \text{TUBING SET} \\ \text{(Table 4)} \end{array} = \begin{array}{r} \text{OZs} \\ \hline \text{TOTAL SYSTEM CHARGE} \end{array}$$

To change total charge to lbs. and ozs., divide by 16.

EXAMPLE: 37ECQ1 with 3ACQ3 and CT35 tubing set.

$$\begin{array}{r} \text{OZs} \\ \hline 63 \end{array} + \begin{array}{r} \text{OZs} \\ \hline 5 \end{array} + \begin{array}{r} \text{OZs} \\ \hline 14 \end{array} = \begin{array}{r} \text{OZs} \\ \hline 82 \end{array}$$

or  $\frac{82}{16} = 5 \text{ lbs. } 2 \text{ ozs.}$

TABLE 4 CHARGED TUBING SETS				
Model	Charge	Length in Ft.	Liquid Line	Suction Line
FOR USE WITH: 18ECQ2, 24ECQ4, 18HPQ5, 24HPQ5				
CT15	2 oz.	15	1/4"	5/8"
RW25	3 oz.	25	1/4"	5/8"
RW35	7 oz.	35	1/4"	5/8"
RW45	11 oz.	45	1/4"	5/8"
FOR USE WITH: 30ECQ4, 31ECQ2, 36ECQ5, 37ECQ1, WQSD30, WQSD36, WQSD30, WQSD36				
CTO	None*	0	3/8"	3/4"
CT15	2 oz.	15	1/4"	5/8"
CT25	3 oz.	25	1/4"	3/4"
CT35	14 oz.	35	3/8"	3/4"
CT45	20 oz.	45	3/8"	3/4"
FOR USE WITH: 30HPQ6, 36HPQ7				
CTO	None*	0	3/8"	3/4"
CT15A	2 oz.	15	3/8"	5/8"
CT25A	8 oz.	25	3/8"	3/4"
CT35A	14 oz.	35	3/8"	3/4"
CT45A	20 oz.	45	3/8"	3/4"
FOR USE WITH: 42ECQ1, 48ECQ2, 60ECQ1, 42HPQ4, 48HPQ5, 60HPQ5 WQSD50, WQSD50				
CTO-12	None*	0	3/8"	7/8"
CT15-12	2 oz.	15	3/8"	7/8"
CT25-12	8 oz.	25	3/8"	7/8"
CT35-12	14 oz.	35	3/8"	7/8"
CT45-12	20 oz.	45	3/8"	7/8"

\*CTO and CTO-12 for field installed tubing. (See Table 6 for charging).

TABLE 5

TOTAL SYSTEM OPERATING CHARGE (Includes charge for the basic outdoor unit, indoor unit and 25' of inter-connecting tubing)		
Model	Indoor Section	Indoor Unit
18ECS2	18QS3	42
	2ACQ1 (1)	40
	B18EHQ1	45
	B24EHQ1	45
24ECS4	24QS1	53
	2ACQ1 (1)	53
	B18EHQ1	58
	B24EHQ1	58
30ECS4	3ACQ3	69
	3HCQ1 (1)	71
	B30EHQ	66
	B36EHQ1	72
31ECS2	3ACQ3	71
	3HCQ1 (1)	73
	B30EHQ	68
	B36EHQ1	74
36ECS5	3ACQ3 (1)	75
	3HCQ1	77
	B36EHQ1	78
37ECS1	3ACQ3	80
	3HCQ1 (1)	82
	B36EHQ1	83
	A36AS-A	84
42ECS1	4ACQ2	94.5
	4HCQ (1)	104
	5ACQ1	99
	BC48A	115
	A42AS-A	91.5
	A48AS-A	103.5
48ECS2	4ACQ2	97
	4HCQ (2)	106.5
	5ACQ1	101.5
	5ACQ2 (2)	125.5
	A48AS-A	100.5
60ECS1	5ACQ1	116
	5ACQ2 (2)	140
	5HCQ (2)	116
	BC48A	132
	BC60A	152
	A60AS-A	120.5

- (1) Has "quick-connect" fitting--requires use of 1/2 stub kit CTO-A.  
 (2) 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.

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.

TABLE 6

Model	Outdoor Unit Factory Charge	For Use With Indoor Unit	Indoor Unit Factory Charge
18ECQ2	26 oz.	18QS2	4 oz.
		2ACQ1	2 oz.
		B24EHQ1	7 oz.
		B18EHQ1	7 oz.
24ECQ4	39 oz.	24QS4	2 oz.
		2ACQ1	2 oz.
		B24EHQ1	7 oz.
		B18EHQ1	7 oz.
30ECQ4	52 oz.	3HCQ1	7 oz.
		3ACQ3	5 oz.
		B30EHQ	2 oz.
		B36EHQ1	8 oz.
31ECQ2	54 oz.	3HCQ1	7 oz.
		3ACQ3	5 oz.
		B30EHQ	2 oz.
		B36EHQ1	8 oz.
36ECQ5	58 oz.	3HCQ1	7 oz.
		3ACQ3	5 oz.
		B36EHQ1	8 oz.
37ECQ1	63 oz.	3HCQ1	7 oz.
		3ACQ3	5 oz.
		B36EHQ1	8 oz.
42ECQ2	48 oz.	4HCQ	12 oz.
		4ACQ2	2.5 oz.
		BC48A	23 oz.
48ECQ2	86.5 oz.	4HCQ	12 oz.
		4ACQ2	2.5 oz.
		5ACQ1	7 oz.
		5ACQ2	31 oz.
		BC48A	23 oz.
60ECQ1	101 oz.	5HCQ	7 oz.
		5ACQ1	7 oz.
		5ACQ2	31 oz.
		BC48A	23 oz.
		BC60A	43 oz.

In the event that the installer is running his own tubing by using a CTO kit or is modifying a precharged tubing set by adding or subtracting a few feet of tubing length, the tubing set should be evacuated and charged before being connected to the outdoor and indoor section. To determine TUBING SET ONLY charges, use the following table:

		TABLE 7 (Shows Charge in Ozs.)										
	Tubing Set Length in Ft.	10	15	20	25	30	35	40	45	50	55	60
RW Series	1/4" O.D. Liquid Line	2	2	3	3	5	7	9	11	--	--	--
CT Series	3/8" O.D. Liquid Line	2	2	5	8	11	14	17	20	23	26	29

To determine a TOTAL SYSTEM CHARGE for a system that is connected with a non-standard tubing length, the outdoor basic

## INSTALLING REFRIGERANT TUBING

(Applicable to "S" Models)

Use only refrigeration grade (dehydrated and sealed) copper tubing of the size indicated below. 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.

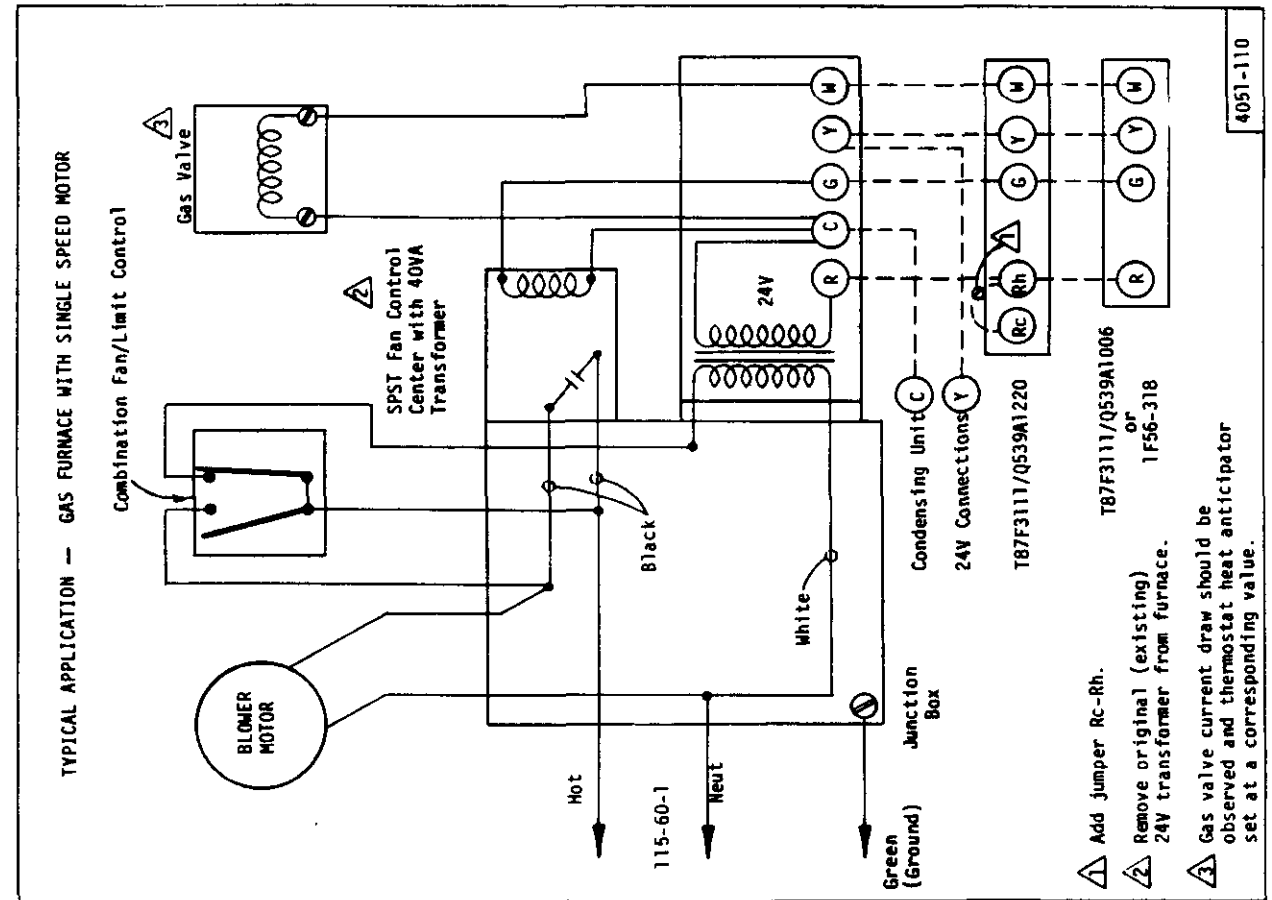
Insulate the suction line with a minimum of 3/8" Armaflex or equivalent. Install the insulation to the suction line before cutting and making connections.

When connecting to an indoor coil which has quick connect fittings, a CTO-A or CTO-12A stub kit is required. See chart on Total System Operating Charge, part No. 7960-054, located on inside of outdoor unit access panel. Total system charge should be stamped or marked on the outdoor unit serial plate.

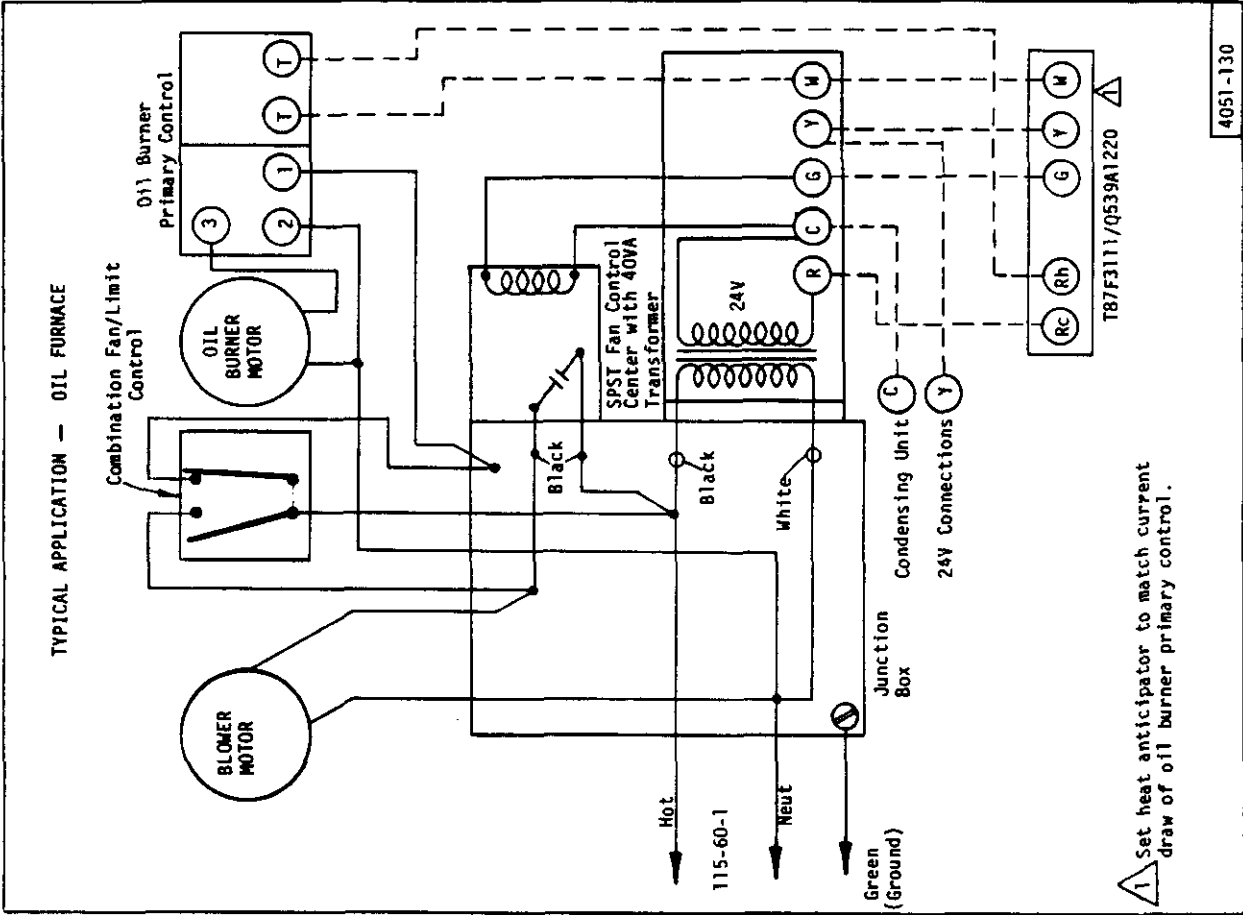
TABLE 8

Basic Condensing Unit Model	REFRIGERANT LINE LENGTH (Ft.)		
	0 - 20	21 - 60	61 - 100
	Liquid & Suction	Liquid & Suction	Liquid & Suction
18 or 24ECS	3/8 & 5/8	3/8 & 5/8	3/8 & 3/4
30ECS	3/8 & 5/8	3/8 & 3/4	3/8 & 3/4
36ECS	3/8 & 5/8	3/8 & 3/4	1/2 & 7/8
42ECS	3/8 & 3/4	3/8 & 7/8	1/2 & 7/8
48ECS	3/8 & 7/8	3/8 & 7/8	1/2 & 1-1/8
60ECS	3/8 & 7/8	3/8 & 7/8	1/2 & 1-1/8

NOTE: The outdoor unit on the "S" models has the full operating charge for the most frequently used combination of outdoor to indoor section. First, discharge the small holding charge in the indoor coil, then connect the tubing to the indoor coil and to the base valves of the outdoor unit. Leak test and evacuate the coil and tubing before opening the base valves. After operating the system, check and adjust the R-22 charge as shown under "Refrigerant Charge", Table 3.







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

Outdoor Model  
18ECQ2, 18ECS2

TABLE 9

COOLING			Air Temperature Entering Outdoor Coil Degree F								
Indoor Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
18QS3 Rated CFM 600	75 deg. DB	Low Side	59	62	65	67	70	73	75	70	81
	62 deg. WB	High Side	203	220	236	252	268	284	300	316	333
	80 deg. DB	Low Side	64	67	70	72	75	78	80	83	86
	67 deg. DB	High Side	209	225	242	258	275	292	308	325	341
	85 deg. WB	Low Side	69	72	75	78	81	84	87	90	93
	72 deg. DB	High Side	216	233	250	267	284	301	318	335	352
2ACQ1 Rated CFM 640	75 deg. DB	Low Side	71	73	74	75	76	77	78	79	81
	62 deg. WB	High Side	189	205	220	236	251	266	282	297	313
	80 deg. DB	Low Side	76	78	79	80	81	82	83	84	86
	67 deg. WB	High Side	194	210	225	241	257	273	289	304	320
	85 deg. DB	Low Side	82	84	85	86	87	88	89	90	92
	72 deg. WB	High Side	200	216	233	249	266	283	299	316	332
B18EHQ1 Rated CFM 650	75 deg. DB	Low Side	68	69	71	72	74	76	77	79	80
	62 deg. WB	High Side	195	211	226	242	257	272	288	303	319
	80 deg. DB	Low Side	73	74	76	77	79	81	82	84	85
	67 deg. WB	High Side	201	217	232	248	264	280	296	311	327
	85 deg. DB	Low Side	79	80	82	83	85	87	88	90	91
	72 deg. WB	High Side	207	223	240	256	273	290	306	323	339
B24EHQ1 Rated CFM 650	75 deg. DB	Low Side	71	73	75	77	79	81	83	85	87
	62 deg. WB	High Side	189	206	222	238	254	270	286	302	319
	80 deg. DB	Low Side	76	78	80	82	84	86	88	90	92
	67 deg. WB	High Side	195	211	228	244	261	278	294	311	327
	85 deg. DB	Low Side	82	84	86	88	90	92	94	96	98
	72 deg. WB	High Side	201	218	235	253	270	287	305	322	339

Low side pressure  $\pm$  2 PSIG (suction line @ outdoor unit quick connect)

High side pressure  $\pm$  5 PSIG (liquid line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should 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 to serial plate instructions.

Outdoor Model  
24EQ4, 24ECS4

TABLE 10

COOLING

Air Temperature Entering Outdoor Coil Degree F

Indoor Model	Return Air Temperature	Pressure	Air Temperature Entering Outdoor Coil Degree F								
			75	80	85	90	95	100	105	110	115
24QS1 Rated CFM 870	75 deg. DB	Low Side	57	59	61	64	66	68	71	73	75
	62 deg. WB	High Side	212	228	245	261	278	295	311	328	344
	80 deg. DB	Low Side	60	63	66	68	71	74	76	79	82
	67 deg. DB	High Side	217	234	251	268	285	302	319	336	353
	85 deg. WB	Low Side	65	68	71	73	76	79	81	84	87
	72 deg. DB	High Side	224	242	260	277	295	313	330	348	366
2ACQ1 Rated CFM 870	75 deg. DB	Low Side	66	67	67	68	69	70	71	71	72
	62 deg. WB	High Side	210	226	241	257	272	287	303	318	334
	80 deg. DB	Low Side	71	72	72	73	74	75	76	76	77
	67 deg. WB	High Side	216	232	247	263	279	295	311	326	342
	85 deg. DB	Low Side	76	77	77	78	79	80	81	81	82
	72 deg. WB	High Side	223	239	256	272	289	306	322	339	355
B24EHQ1 Rated CFM 800	75 deg. DB	Low Side	63	65	67	69	71	73	75	77	79
	62 deg. WB	High Side	210	228	246	264	282	300	318	336	354
	80 deg. DB	Low Side	68	70	72	74	76	78	80	82	84
	67 deg. WB	High Side	216	235	253	272	290	308	327	345	364
	85 deg. DB	Low Side	73	75	77	80	82	84	87	89	91
	72 deg. WB	High Side	223	242	261	281	300	319	338	358	377
B18EHQ1 Rated CFM 800	75 deg. DB	Low Side	60	62	64	66	68	70	72	74	76
	62 deg. WB	High Side	221	238	255	272	289	306	323	340	357
	80 deg. DB	Low Side	64	66	68	71	73	75	78	80	82
	67 deg. WB	High Side	228	245	262	280	297	314	332	349	366
	85 deg. DB	Low Side	69	71	73	76	78	80	83	85	87
	72 deg. WB	High Side	235	253	271	289	307	325	343	361	379

Low side pressure + 2 PSIG (suction line @ outdoor unit quick connect)  
High side pressure ± 5 PSIG (liquid line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should 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 to serial plate instructions.

TABLE 11

Outdoor Model  
30ECQ4, 30ECS4

COOLING			Air Temperature Entering Outdoor Coil Degree F								
Indoor Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
3ACQ3 Rated CFM 1100	75 deg. DB	Low Side	67	69	70	71	72	73	74	75	77
	62 deg. WB	High Side	192	208	223	239	255	271	287	302	318
	80 deg. DB	Low Side	72	74	75	76	77	78	79	80	82
	67 deg. DB	High Side	197	214	230	246	262	278	294	310	327
3HCQ1 Rated CFM 1035	85 deg. WB	Low Side	78	80	81	82	83	84	85	86	88
	72 deg. DB	High Side	204	221	238	255	272	289	306	323	340
	75 deg. DB	Low Side	66	67	69	70	72	74	75	77	78
	62 deg. WB	High Side	195	211	226	242	258	274	290	305	321
836EHQ1 Rated CFM 1050	80 deg. DB	Low Side	71	72	74	75	77	79	80	82	83
	67 deg. WB	High Side	200	217	233	249	265	281	297	313	330
	85 deg. DB	Low Side	75	77	79	81	83	85	87	89	91
	72 deg. WB	High Side	206	223	240	257	274	291	308	325	342
B30EHQ Rated CFM 800	75 deg. DB	Low Side	63	65	67	69	71	73	75	77	79
	62 deg. WB	High Side	189	205	220	236	252	268	284	299	315
	80 deg. DB	Low Side	68	70	72	74	76	78	80	82	84
	67 deg. WB	High Side	194	211	227	243	259	275	291	307	324
B30EHQ Rated CFM 800	85 deg. DB	Low Side	73	75	77	80	82	84	87	89	91
	72 deg. WB	High Side	200	217	234	251	268	285	302	319	336
	75 deg. DB	Low Side	63	64	66	67	69	71	72	74	75
	62 deg. WB	High Side	185	202	218	234	250	266	282	298	317
B30EHQ Rated CFM 800	80 deg. DB	Low Side	66	68	70	72	74	76	78	80	82
	67 deg. WB	High Side	191	208	224	240	256	272	288	304	321
	85 deg. DB	Low Side	71	73	75	78	80	82	85	87	89
	72 deg. WB	High Side	197	214	231	248	265	282	299	316	333

Low side pressure  $\pm$  2 PSIG (suction line @ outdoor unit quick connect)  
High side pressure  $\pm$  5 PSIG (liquid line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should 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 to serial plate instructions.

Outdoor Model  
31ECQ2, 31ECS2

TABLE 12

COOLING			Air Temperature Entering Outdoor Coil Degree F								
Indoor Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
3ACQ3 Rated CFM 1050	75 deg. DB	Low Side	67	69	71	73	75	77	79	81	83
	62 deg. WB	High Side	186	200	215	229	243	257	271	286	300
	80 deg. DB	Low Side	72	74	76	78	80	82	84	86	88
	67 deg. DB	High Side	190	205	220	235	250	265	280	295	310
	85 deg. WB	Low Side	78	80	82	84	86	88	90	92	94
	72 deg. DB	High Side	196	212	227	243	259	275	291	306	322
3HCQ1 Rated CFM 1035	75 deg. DB	Low Side	64	66	68	70	72	74	76	78	80
	62 deg. WB	High Side	197	213	228	244	259	274	290	305	321
	80 deg. DB	Low Side	69	71	73	75	77	79	81	83	85
	67 deg. WB	High Side	203	219	234	250	266	282	298	313	329
	85 deg. DB	Low Side	74	76	78	81	83	85	88	90	92
	72 deg. WB	High Side	209	225	242	258	275	292	308	325	341
B36EHQ1 Rated CFM 1000	75 deg. DB	Low Side	64	65	67	68	70	72	73	75	76
	62 deg. WB	High Side	182	198	215	231	248	265	281	298	314
	80 deg. DB	Low Side	67	69	71	73	75	77	79	81	83
	67 deg. WB	High Side	186	203	220	237	254	271	288	305	322
	85 deg. DB	Low Side	72	74	76	79	81	83	86	88	90
	72 deg. WB	High Side	193	210	227	245	262	279	297	314	331
B30EHQ Rated CFM 800	75 deg. DB	Low Side	61	62	64	66	67	69	70	72	73
	62 deg. WB	High Side	179	194	209	224	239	254	269	284	299
	80 deg. DB	Low Side	64	66	68	70	72	74	76	78	80
	67 deg. WB	High Side	183	199	214	230	245	260	276	291	307
	85 deg. DB	Low Side	69	74	73	75	77	79	81	83	85
	72 deg. WB	High Side	189	206	222	238	254	270	286	302	319

Low side pressure + 2 PSIG (suction line @ outdoor unit quick connect)

High side pressure + 5 PSIG (liquid line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should 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 to serial plate instructions.

Outdoor Model  
36EQ5, 36ECS5

TABLE 13

COOLING			Air Temperature Entering Outdoor Coil Degree F								
Indoor Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
3ACQ3 Rated CFM 1180	75 deg. DB	Low Side	55	57	59	61	63	65	67	69	71
	62 deg. WB	High Side	218	235	252	269	286	303	320	337	354
	80 deg. DB	Low Side	59	61	63	66	68	70	73	75	77
	67 deg. DB	High Side	223	241	259	276	294	312	329	347	365
	85 deg. WB	Low Side	64	66	68	71	73	75	78	80	82
	72 deg. DB	High Side	232	250	268	286	304	322	340	358	376
3RCQ1 Rated CFM 1000	75 deg. DB	Low Side	54	56	58	61	63	65	68	70	72
	62 deg. WB	High Side	214	231	248	265	282	299	316	333	350
	80 deg. DB	Low Side	58	60	62	65	67	69	72	74	76
	67 deg. WB	High Side	220	237	254	272	289	306	324	341	358
	85 deg. DB	Low Side	63	65	67	70	72	74	77	79	81
	72 deg. WB	High Side	227	245	263	281	299	317	335	353	371
B36EQ1 Rated CFM 1275	75 deg. DB	Low Side	54	56	58	61	63	65	68	70	72
	62 deg. WB	High Side	212	228	243	259	275	291	307	322	338
	80 deg. DB	Low Side	58	60	62	65	67	69	72	74	76
	67 deg. WB	High Side	217	233	250	266	283	300	316	333	349
	85 deg. DB	Low Side	57	60	63	65	68	71	73	76	79
	72 deg. WB	High Side	228	242	257	271	285	299	313	328	342

Low side pressure  $\pm$  2 PSIG (suction line @ outdoor unit quick connect)  
High side pressure  $\pm$  5 PSIG (liquid line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should 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 to serial plate instructions.

Outdoor Model  
37ECQ1, 37ECS1

TABLE 14

COOLING			Air Temperature Entering Outdoor Coil Degree F								
Indoor Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
3ACQ3 Rated CFM 1180	75 deg. DB	Low Side	60	43	63	64	65	66	67	68	70
	62 deg. WB	High Side	202	218	233	249	265	281	297	312	328
	80 deg. DB	Low Side	62	64	66	68	70	72	74	76	78
	67 deg. DB	High Side	207	224	240	256	272	288	304	320	337
	85 deg. WB	Low Side	67	69	71	73	75	77	79	81	83
	72 deg. DB	High Side	215	231	248	264	281	298	314	331	347
3HCQ1 Rated CFM 1000	75 deg. DB	Low Side	53	55	57	60	62	64	67	69	71
	62 deg. WB	High Side	194	210	225	241	256	271	287	302	318
	80 deg. DB	Low Side	57	59	61	64	66	68	71	73	75
	67 deg. WB	High Side	200	216	231	247	263	279	295	310	326
	85 deg. DB	Low Side	62	64	66	69	71	73	76	78	80
	72 deg. WB	High Side	207	224	240	256	272	288	304	320	337
B36EQ1 Rated CFM 1200	75 deg. DB	Low Side	55	57	59	62	64	66	69	71	73
	62 deg. WB	High Side	196	213	230	247	264	281	298	315	332
	80 deg. DB	Low Side	59	61	63	66	68	70	73	75	77
	67 deg. WB	High Side	202	219	236	254	271	288	306	323	340
	85 deg. DB	Low Side	64	66	68	71	73	75	78	80	82
	72 deg. WB	High Side	209	227	245	262	280	298	315	333	351
A36AS-A Rated CFM 1200	75 deg. DB	Low Side	59	62	65	67	70	73	75	78	81
	62 deg. WB	High Side	189	210	230	251	271	291	312	332	353
	80 deg. DB	Low Side	64	67	70	72	75	78	80	83	86
	67 deg. WB	High Side	195	216	236	257	278	299	320	340	361
	85 deg. DB	Low Side	69	72	75	77	80	83	85	88	91
	72 deg. WB	High Side	202	224	245	266	287	308	329	350	372

Low side pressure  $\pm$  2 PSIG (suction line @ outdoor unit quick connect)  
High side pressure  $\pm$  5 PSIG (liquid line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should 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 to serial plate instructions.

Outdoor Model  
42ECQ1, 42ECS1

TABLE 15

COOLING			Air Temperature Entering Outdoor Coil Degree F								
Indoor Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
4ACQ2 Rated CFM 1450	75 deg. DB	Low Side	63	64	66	67	69	71	72	74	75
	62 deg. WB	High Side	193	208	223	238	253	268	283	298	313
	80 deg. DB	Low Side	66	68	70	72	74	76	78	80	82
	67 deg. DB	High Side	198	214	229	245	260	275	291	306	322
	85 deg. WB	Low Side	71	73	75	77	79	81	83	85	87
	72 deg. DB	High Side	206	222	237	253	269	285	301	316	332
5ACQ1 Rated CFM 1600	75 deg. DB	Low Side	71	73	74	75	76	77	78	79	81
	62 deg. WB	High Side	178	192	207	221	236	251	265	280	294
	80 deg. DB	Low Side	76	77	79	80	82	84	85	87	88
	67 deg. WB	High Side	182	197	212	227	242	257	272	287	302
	85 deg. DB	Low Side	82	83	85	86	88	90	91	93	94
	72 deg. WB	High Side	188	204	219	235	250	265	281	296	312
4HCQ Rated CFM 1500	75 deg. DB	Low Side	63	65	67	69	71	73	75	77	79
	62 deg. WB	High Side	191	207	222	238	254	270	286	301	317
	80 deg. DB	Low Side	68	70	72	74	76	78	80	82	84
	67 deg. WB	High Side	196	213	229	245	261	277	293	309	326
	85 deg. DB	Low Side	73	75	77	80	82	84	87	89	91
	72 deg. WB	High Side	204	220	237	253	270	287	303	320	336
BC48A Rated CFM 1575	75 deg. DB	Low Side	72	74	75	76	77	78	79	80	82
	62 deg. WB	High Side	188	201	215	229	243	257	271	285	298
	80 deg. DB	Low Side	77	79	80	81	82	83	84	85	87
	67 deg. WB	High Side	192	206	221	235	250	265	279	294	308
	85 deg. DB	Low Side	83	85	86	87	88	89	90	91	93
	72 deg. WB	High Side	197	213	228	244	259	274	290	305	321
A42AS-A Rated CFM 1450	75 deg. DB	Low Side	64	65	67	68	70	72	73	75	76
	62 deg. WB	High Side	183	199	214	230	245	260	276	291	307
	80 deg. DB	Low Side	67	69	71	73	75	77	79	81	83
	67 deg. WB	High Side	189	205	220	236	251	266	282	297	313
	85 deg. DB	Low Side	72	74	76	79	81	83	86	88	90
	72 deg. WB	High Side	195	212	228	244	260	276	292	308	325
A48AS-A Rated CFM 1450	75 deg. DB	Low Side	65	67	69	71	73	75	77	79	81
	62 deg. WB	High Side	191	207	222	238	254	270	286	301	317
	80 deg. DB	Low Side	70	72	74	76	78	80	82	84	86
	67 deg. WB	High Side	196	213	229	245	261	277	293	309	326
	85 deg. DB	Low Side	75	77	79	82	84	86	89	91	93
	72 deg. WB	High Side	204	220	237	253	270	287	303	320	336

Low side pressure + 2 PSIG (suction line @ outdoor unit quick connect)  
High side pressure + 5 PSIG (liquid line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should 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 to serial plate instructions.



TABLE 16

COOLING			Air Temperature Entering Outdoor Coil Degree F								
Indoor Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
4ACQ2 Rated CFM 1690	75 deg. DB	Low Side	58	60	62	64	66	68	70	72	74
	62 deg. WB	High Side	202	218	233	249	265	281	297	312	328
	80 deg. DB	Low Side	62	64	66	69	71	73	76	78	80
	67 deg. DB	High Side	207	224	240	256	272	288	304	320	337
5ACQ1 Rated CFM 1800	85 deg. WB	Low Side	67	69	71	74	76	78	89	83	85
	72 deg. DB	High Side	215	231	248	264	281	298	314	331	347
	75 deg. DB	Low Side	66	68	70	72	74	76	78	80	82
	62 deg. WB	High Side	188	204	219	235	250	265	281	296	312
4HCQ Rated CFM 1600	80 deg. DB	Low Side	71	73	75	77	79	81	83	85	87
	67 deg. WB	High Side	192	209	225	241	257	273	289	305	322
	85 deg. DB	Low Side	77	79	81	83	85	87	89	91	93
	72 deg. WB	High Side	200	216	233	249	266	283	299	316	332
BC48A Rated CFM 1725	75 deg. DB	Low Side	58	60	62	65	67	69	72	74	76
	62 deg. WB	High Side	202	218	235	251	268	285	301	318	334
	80 deg. DB	Low Side	61	64	67	69	72	75	77	80	83
	67 deg. WB	High Side	207	224	241	258	275	292	309	326	343
A48AS-A Rated CFM 1500	85 deg. DB	Low Side	66	69	72	74	77	80	82	85	88
	72 deg. WB	High Side	214	232	250	267	285	303	320	338	356
	75 deg. DB	Low Side	69	70	72	73	75	77	78	80	81
	62 deg. WB	High Side	206	220	235	249	263	277	291	306	320
5ACQ2 Rated CFM 1600	80 deg. DB	Low Side	74	75	77	78	80	82	83	85	86
	67 deg. DB	High Side	212	226	241	255	270	285	299	314	328
	85 deg. WB	Low Side	80	81	83	84	86	88	89	91	92
	72 deg. DB	High Side	219	234	249	264	279	294	309	324	339
A48AS-A Rated CFM 1500	75 deg. DB	Low Side	66	68	69	70	71	72	73	74	76
	62 deg. WB	High Side	188	204	221	237	254	271	287	304	320
	80 deg. DB	Low Side	71	73	74	75	76	77	78	79	81
	67 deg. WB	High Side	194	210	227	243	260	277	293	310	326
5ACQ2 Rated CFM 1600	85 deg. DB	Low Side	76	77	79	80	82	84	85	87	88
	72 deg. WB	High Side	201	218	235	252	269	286	303	320	337
	75 deg. DB	Low Side	64	66	68	71	73	75	78	80	82
	62 deg. WB	High Side	196	212	227	243	259	275	291	306	322
5ACQ2 Rated CFM 1600	80 deg. DB	Low Side	69	71	73	76	78	80	83	85	87
	67 deg. WB	High Side	201	218	234	250	266	282	298	314	331
	85 deg. DB	Low Side	73	76	79	81	84	87	89	92	95
	72 deg. WB	High Side	209	225	242	258	275	292	308	325	341

Low side pressure  $\pm$  2 PSIG (suction line @ outdoor unit quick connect)  
High side pressure  $\pm$  5 PSIG (liquid line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should 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 to serial plate instructions.

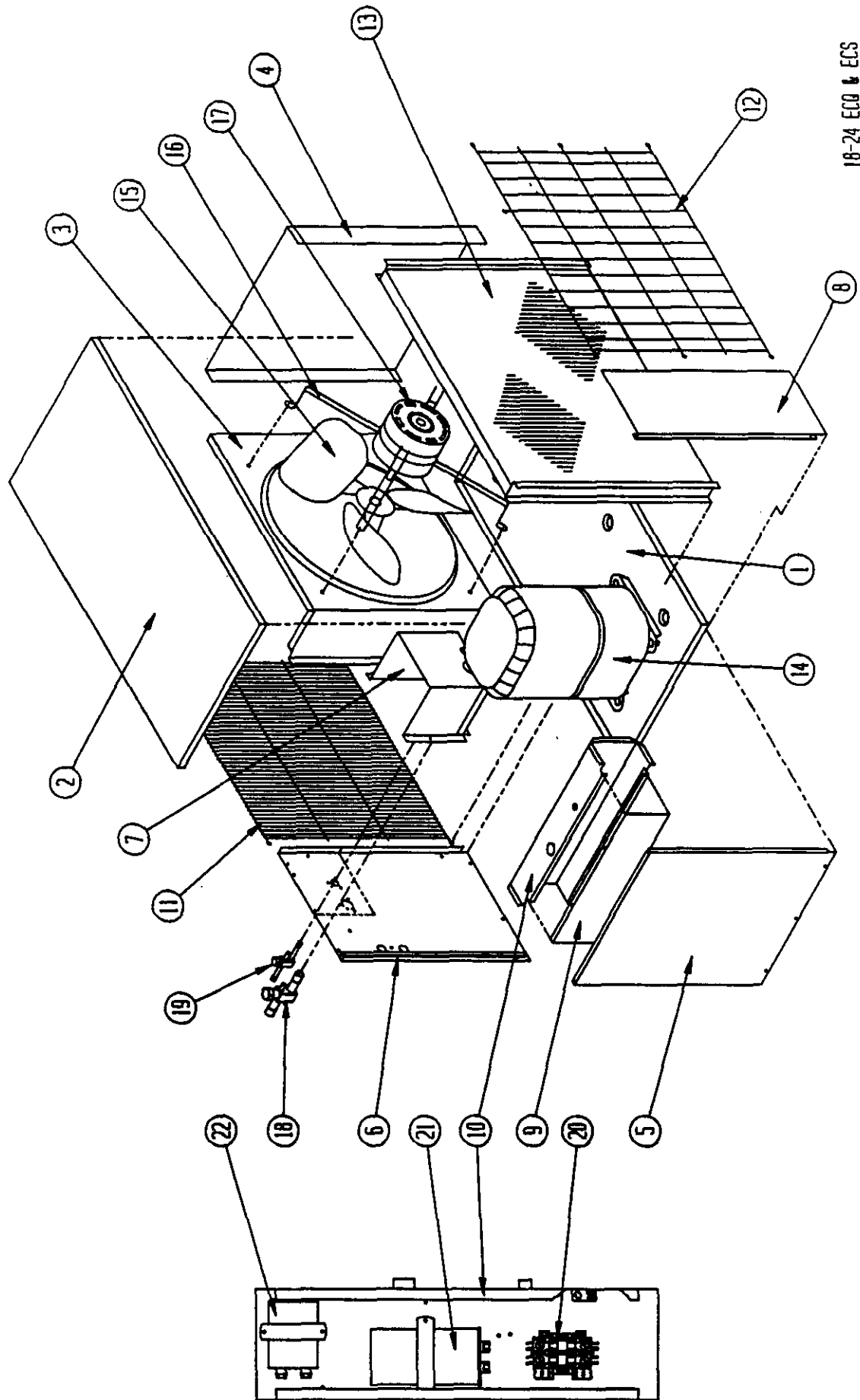
Outdoor Model  
60ECQ1, 60ECS1

TABLE 17

COOLING			Air Temperature Entering Outdoor Coil Degree F								
Indoor Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
5ACQ1 Rated CFM 1990	75 deg. DB	Low Side	66	67	69	70	72	74	75	77	78
	62 deg. WB	High Side	195	211	226	242	258	274	290	305	321
	80 deg. DB	Low Side	71	72	74	75	77	79	80	82	83
	67 deg. DB	High Side	200	217	233	249	265	281	297	313	330
	85 deg. WB	Low Side	75	77	79	81	83	85	87	89	91
	72 deg. DB	High Side	208	224	241	257	274	291	307	324	340
5RCQ Rated CFM 1650	75 deg. DB	Low Side	64	65	67	68	70	72	73	75	76
	62 deg. WB	High Side	192	208	223	239	255	271	287	302	318
	80 deg. DB	Low Side	67	69	71	73	75	77	79	81	83
	67 deg. WB	High Side	197	214	230	246	262	278	294	310	327
	85 deg. DB	Low Side	72	74	76	79	81	83	86	88	90
	72 deg. WB	High Side	205	221	238	254	271	288	304	321	337
BC48A Rated CFM 1625	75 deg. DB	Low Side	60	62	64	67	69	71	74	76	78
	62 deg. WB	High Side	190	206	221	237	253	269	285	300	316
	80 deg. DB	Low Side	65	67	69	72	74	76	79	81	83
	67 deg. WB	High Side	194	211	227	243	259	275	291	307	324
	85 deg. DB	Low Side	69	72	75	77	80	83	85	88	91
	72 deg. WB	High Side	202	218	235	251	268	285	301	318	334
BC60A Rated CFM 1800	75 deg. DB	Low Side	69	71	72	73	74	75	76	77	79
	62 deg. WB	High Side	203	218	233	248	263	278	293	308	323
	80 deg. DB	Low Side	74	76	77	78	79	80	81	82	84
	67 deg. DB	High Side	209	224	239	254	269	284	299	314	329
	85 deg. WB	Low Side	80	82	83	84	85	86	87	88	90
	72 deg. DB	High Side	216	232	247	263	278	293	309	324	340
A60AS-A Rated CFM 1920	75 deg. DB	Low Side	63	65	67	69	71	73	75	77	79
	62 deg. WB	High Side	188	202	217	231	246	261	275	290	304
	80 deg. DB	Low Side	68	70	72	74	76	78	80	82	84
	67 deg. WB	High Side	192	207	222	237	252	267	282	297	312
	85 deg. DB	Low Side	73	75	77	80	82	84	87	89	91
	72 deg. WB	High Side	198	214	229	245	261	277	293	308	324
5ACQ2 Rated CFM 1900	75 deg. DB	Low Side	63	65	67	69	71	73	75	77	79
	62 deg. WB	High Side	204	221	238	255	272	289	306	323	340
	80 deg. DB	Low Side	68	70	72	74	76	78	80	82	84
	67 deg. WB	High Side	210	227	244	262	279	296	314	331	348
	85 deg. DB	Low Side	73	75	77	80	82	84	87	89	91
	72 deg. WB	High Side	217	235	253	271	289	307	325	343	361

Low side pressure  $\pm$  2 PSIG (suction line @ outdoor unit quick connect)  
High side pressure  $\pm$  5 PSIG (liquid line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should 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 to serial plate instructions.

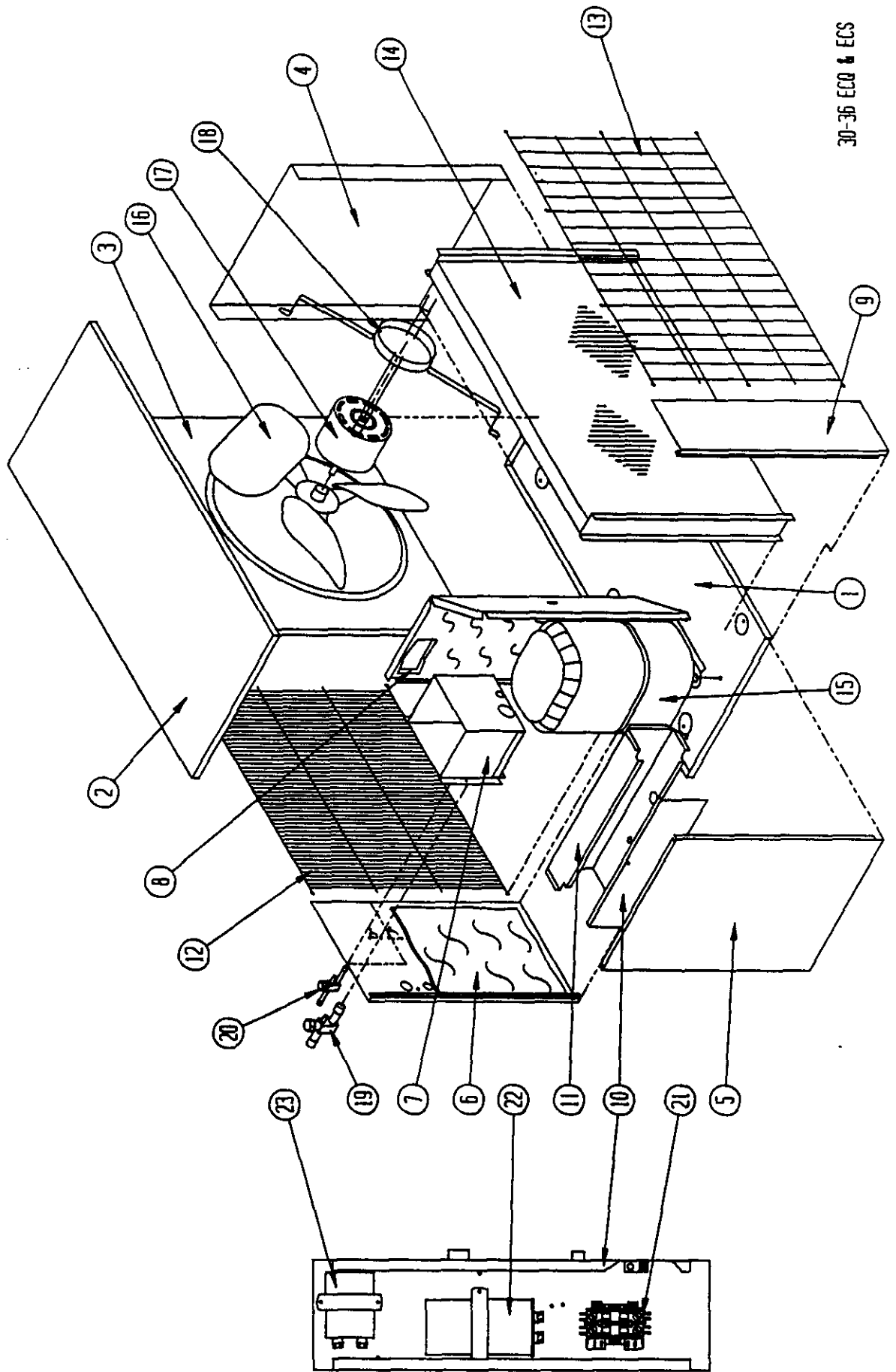


18-24 ECO & ECS

PARTS LIST  
SPLIT SYSTEM CONDENSING UNITS

Date: 11/11/88

Item No.	Part No.	Description	1	1	2	2
			8	8	4	4
			E	E	E	E
			C	C	C	C
			Q	S	Q	S
			2	2	4	4
1	127-015	Base Assembly	X	X	X	X
2	106-015	Top	X	X	X	X
3	124-005	Fan Shroud	X	X	X	X
4	100-122	Side	X	X	X	X
5	152-014	Access Door	X	X	X	X
6	148-065	Compressor Corner		X		X
6	148-025	Compressor Corner	X		X	
7	140-124	Base Valve Support		X		X
8	148-038	Coil Corner	X	X	X	X
9	132-019	Control Panel Cover	X	X	X	X
10	*	Control Panel Assembly *See Control Panel Drawing				
11	7051-010	Inlet Air Grille	X	X	X	X
12	7051-009	Condenser Grille	X	X	X	X
13	5051-011	Condenser Coil	X	X		
13	5051-013	Condenser Coil			X	X
14	8000-061	Compressor RES3-0175-PFV	X	X		
14	8000-071	Compressor AB225HT			X	X
15	5151-001	Fan Blade TF1839	X	X	X	X
16	8200-001	Motor Mount--Fan	X	X	X	X
17	8103-008	Motor--Fan 1/5 H.P.	X	X	X	X
18	5651-053	Base Valve		X		X
19	5651-051	Base Valve		X		X
20	8401-007	Contactora--Comp 25A	X	X	X	X
21	8552-044	Capacitor 15/10--370V	X	X		
21	8552-007	Capacitor 20/15--370V			X	X
22	8552-002	Capacitor 5/370V	X	X	X	X
	4021-110	Wiring Diagram	X	X	X	X

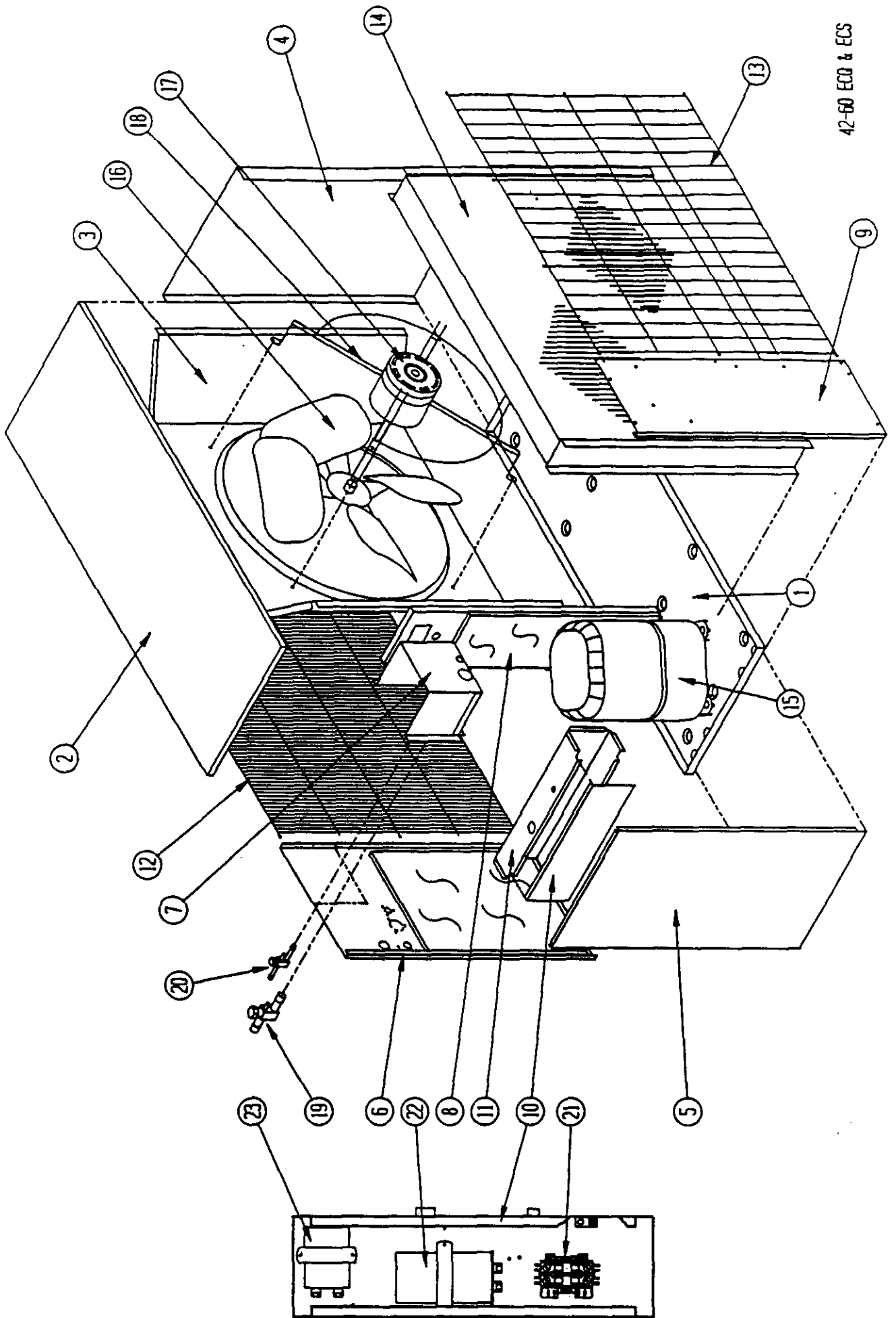


30-36 ECO & ECS

PARTS LIST  
SPLIT SYSTEM CONDENSING UNITS

Date: 11/11/88

Item No.	Part No.	Description	3	3	3	3	3	3	3	3	3	3
			0	0	1	1	6	6	7	7	7	7
			E	E	E	E	E	E	E	E	E	E
			C	C	C	C	C	C	C	C	C	C
			Q	S	Q	S	Q	S	Q	S	Q	S
			4	4	2	2	5	5	1	1	1	1
												-
												B
												C
1	127-097	Base Assembly	X	X	X	X	X	X	X	X	X	X
2	506-016	Top	X	X	X	X	X	X	X	X	X	X
3	124-009	Fan Shroud	X	X	X	X	X	X	X	X	X	X
4	100-131	Side	X	X	X	X	X	X	X	X	X	X
5	552-091	Service Door	X	X	X	X	X	X	X	X	X	X
6	548-064	Compressor Corner		X		X		X		X		X
6	548-046	Compressor Corner	X		X		X		X		X	X
7	140-124	base Valve Support		X		X		X		X		X
8	520-068	Compressor Partition	X	X	X	X	X	X	X	X	X	X
9	548-045	Coil Corner	X	X	X	X	X	X	X	X	X	X
10	132-070	Control Panel Cover	X	X	X	X	X	X	X	X	X	X
11	*	Control Panel Assembly *See Control Panel Drawing										
12	7051-003	Inlet Air Grille	X	X	X	X	X	X	X	X	X	X
13	7051-001	Condenser Grille	X	X	X	X	X	X	X	X	X	X
14	5051-034	Condenser Coil	X	X			X	X				
14	5051-035	Condenser Coil							X	X	X	X
14	5051-020	Condenser Coil			X	X						
15	8000-080	Compressor AB233FT	X	X								
15	8000-099	Compressor H23B283ABC			X	X						
15	8000-072	Compressor AV144ET					X	X				
15	8000-084	Compressor AV135ET							X	X		
15	8000-059	Compressor CRJ3-0300-TF5									X	
15	8000-060	Compressor CRJ3-0300-TFD			X							X
16	5151-007	Fan Blade TP2029	X	X	X	X	X	X	X	X	X	X
17	8103-009	Motor--Fan 1/5 H.P.	X	X	X	X	X	X	X	X	X	
17	8103-014	Motor--Fan 1/5 H.P.										X
18	8200-001	Motor Mount--Fan	X	X	X	X	X	X	X	X	X	X
19	5651-053	Base Valve		X		X		X		X		
20	5651-051	Base Valve		X		X		X		X		
21	8401-003	Contactor--Comp 30A					X	X				
21	8401-007	Contactor--Comp 25A	X	X	X	X			X	X		
21	8401-002	Contactor--Comp 25A 3 Pole									X	X
22	8552-007	Capacitor 20/15--370V	X	X								
22	8552-030	Capacitor 40/440V					X	X				
22	8552-031	Capacitor 45/440V							X	X		
22	8552-032	Capacitor 35/370V			X	X						
23	8552-002	Capacitor 5/370V	X	X	X	X	X	X	X	X	X	X
	4062-110	Wiring Diagram	X	X								
	4062-111	Wiring Diagram			X	X	X	X	X	X		
	4062-210	Wiring Diagram									X	
	4062-310	Wiring Diagram										X



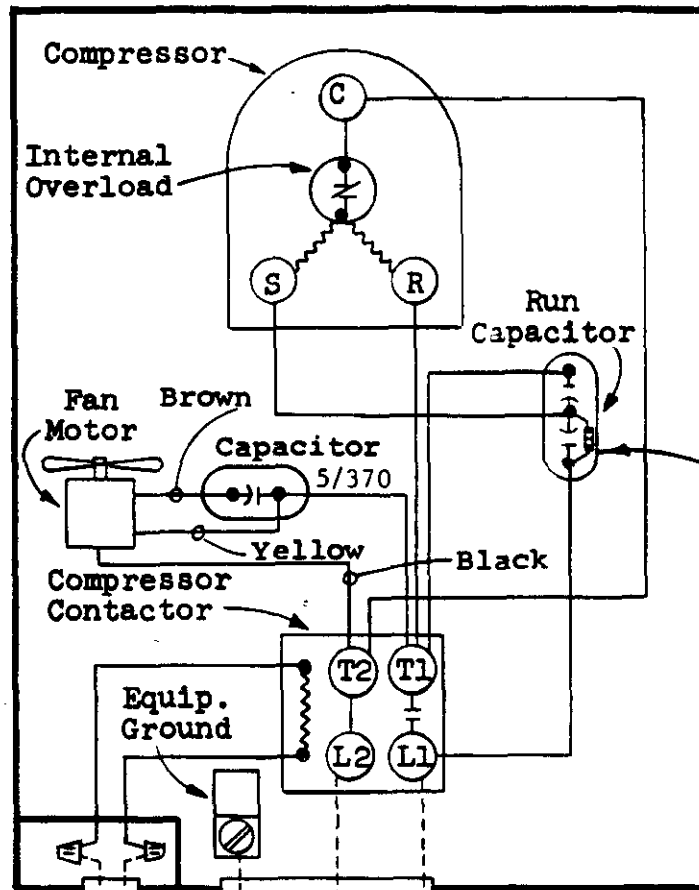
42-60 ECO & ECS

PARTS LIST  
SPLIT SYSTEM CONDENSING UNIT

Date: 11/11/88

Item No.	Part No.	Description	4	4	4	4	6	6	4	4	6	4	4	6
			2	2	8	8	0	0	2	2	0	2	8	0
			E	E	E	E	E	E	E	E	E	E	E	E
			C	C	C	C	C	C	C	C	C	C	C	C
			Q	S	Q	S	Q	S	Q	Q	Q	Q	Q	Q
			1	1	2	2	1	1	-	-	B	B	B	C
1	127-018	Base Assembly	X	X	X	X	X	X	X	X	X	X	X	X
2	506-017	Top	X	X	X	X	X	X	X	X	X	X	X	X
3	124-007	Fan Shroud	X	X	X	X	X	X	X	X	X	X	X	X
4	100-024	Side	X	X	X	X	X	X	X	X	X	X	X	X
5	552-016	Service Door	X	X	X	X	X	X	X	X	X	X	X	X
6	548-063	Compressor Corner		X		X		X						
6	548-0311	Compressor Corner	X		X		X		X	X	X	X	X	X
7	140-124	Base Valve Support		X		X		X						
8	520-019	Compressor Partition	X	X	X	X	X	X	X	X	X	X	X	
9	548-030	Coil Corner	X	X	X	X	X	X	X	X	X	X	X	
10	132-070	Control Panel Cover	X	X	X	X	X	X	X	X	X	X	X	
11	*	Control Panel *See Control Panel Drawing												
12	7051-004	Inlet Grille	X	X	X	X	X	X	X	X	X	X	X	X
13	7051-005	Condenser Grille	X	X	X	X	X	X	X	X	X	X	X	X
14	5051-009	Condenser Coil	X	X	X	X		X	X		X	X		
14	5051-024	Condenser Coil					X	X			X			X
15	8000-063	Compressor CRK3-0325-PFV	X	X										
15	8000-064	Compressor CRK3-0325-TF5							X					
15	8000-067	Compressor AG112BT			X	X								
15	8000-030	Compressor AG111RT								X				
15	8000-027	Compressor AG122BT					X	X						
15	8000-065	Compressor CRK3-0325-TFD										X		
15	8000-031	Compressor AG122RT									X			
15	8000-047	Compressor AG111UT											X	
15	8000-048	Compressor AG122UT												X
16	5151-017	Fan Blade FA2430-4B	X	X	X	X	X	X	X	X	X	X	X	X
17	8105-021	Motor--Fan 1/3 HP	X	X	X	X	X	X	X	X	X	X	X	X
18	8200-004	Motor Mount--Fan	X	X	X	X	X	X	X	X	X	X	X	X
19	5651-054	Base Valve		X		X		X						
20	5651-051	Base Valve		X		X		X						
21	8401-025	Contactor--Comp 35A	X	X	X	X	X							
21	8401-002	Contactor--Comp 25A 3 Pole							X	X	X	X	X	X
22	8552-030	Capacitor 40/440V	X	X										
22	8552-036	Capacitor 70/370V			X	X								
22	8552-031	Capacitor 45/440V					X	X						
23	8552-026	Capacitor 15/370V	X	X	X	X	X	X	X	X	X	X	X	X
	4025-120	Wiring Diagram	X	X	X	X	X							
	4025-210	Wiring Diagram							X	X	X			
	4025-310	Wiring Diagram										X	X	X





CAPACITOR	
Model	Size
18ECQ,S2	15/10-370
24ECQ,S4	20/15-370

Use Minimum Transformer Rating of 40VA

Use Copper Conductors Only

C Y  
24V

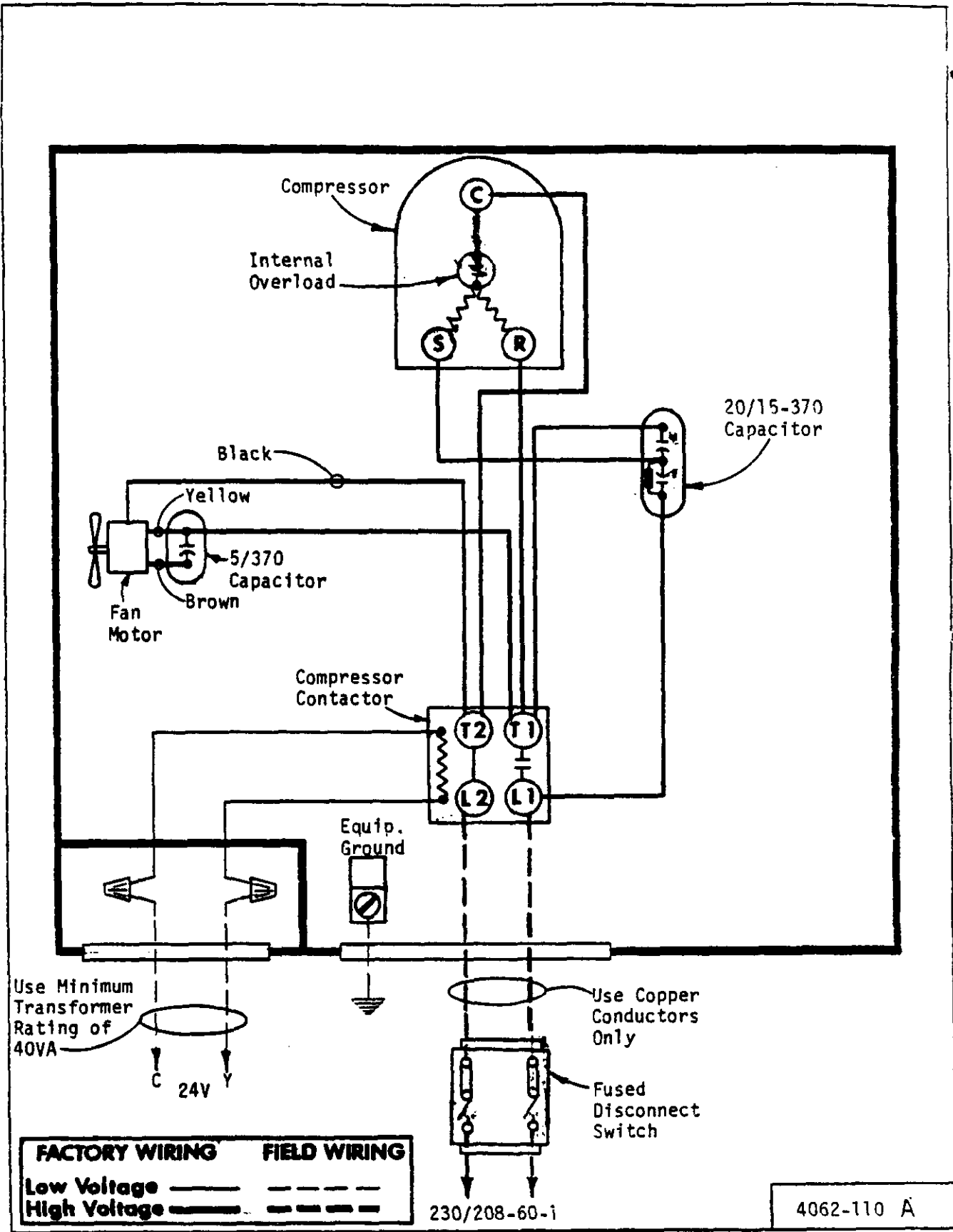
Factory Wiring

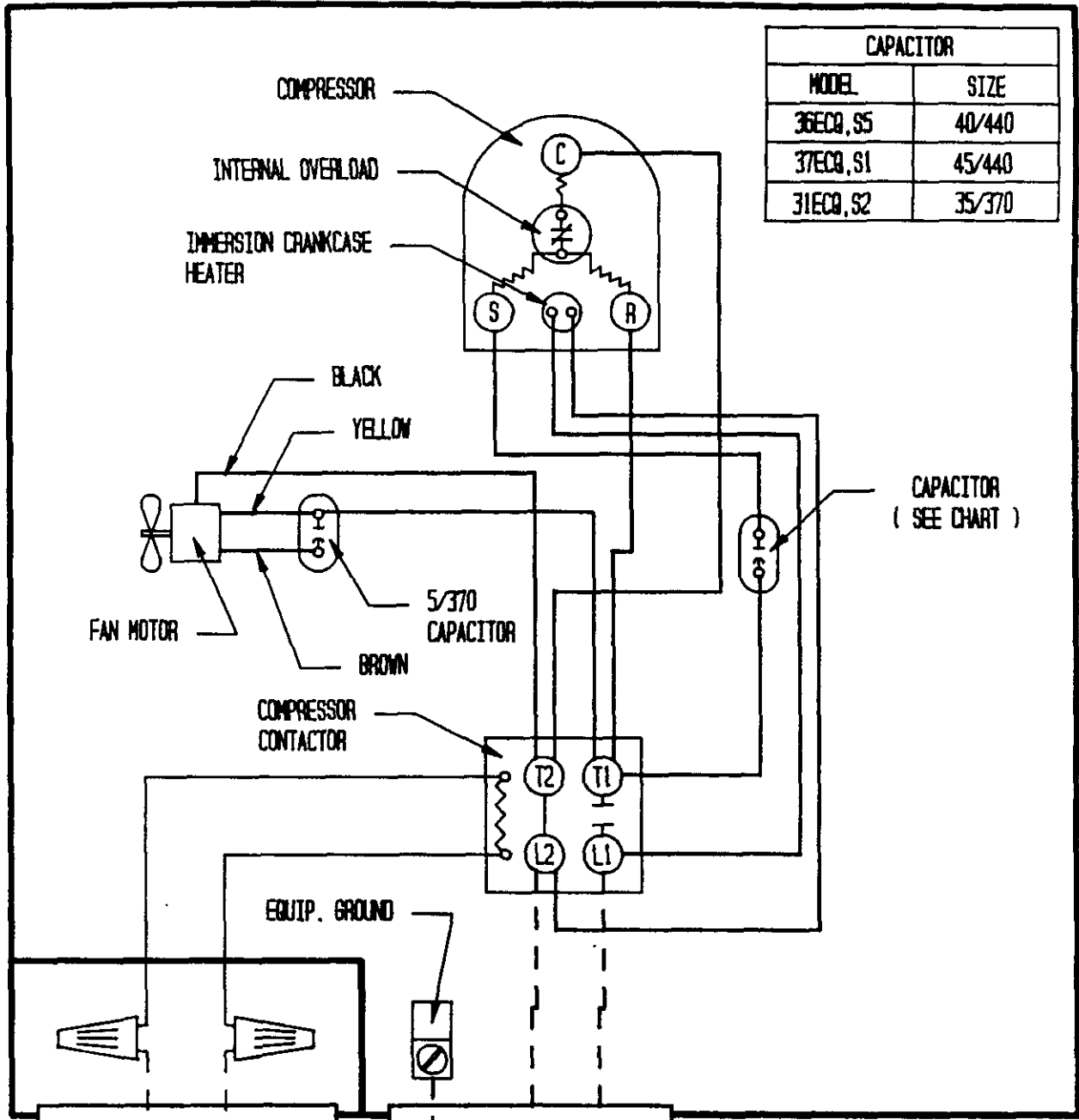
Field Wiring

Fused Disconnect Switch

230/208-60-1

4021-110E



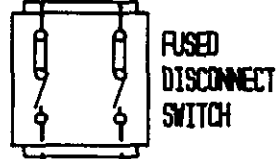


CAPACITOR	
MODEL	SIZE
36ECB, S5	40/440
37ECB, S1	45/440
31ECB, S2	35/370

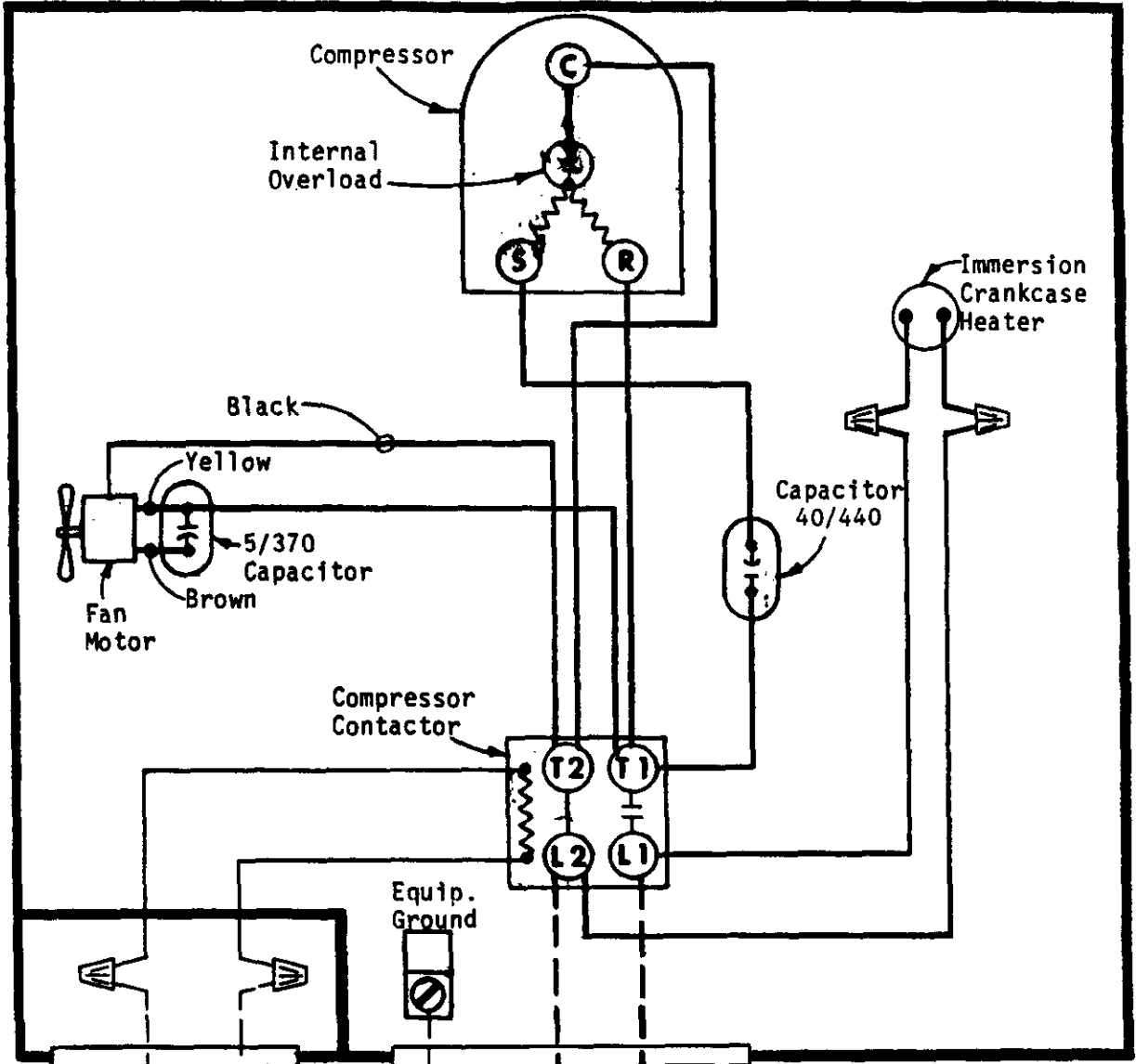
USE COPPER CONDUCTORS ONLY

	FACTORY WIRING	FIELD WIRING
Low Voltage	---	---
High Voltage	---	---

USE MINIMUM TRANSFORMER RATING OF 40VA



230/208-60-1



Use Minimum  
Transformer  
Rating of  
40VA

C 24V Y

Equip.  
Ground

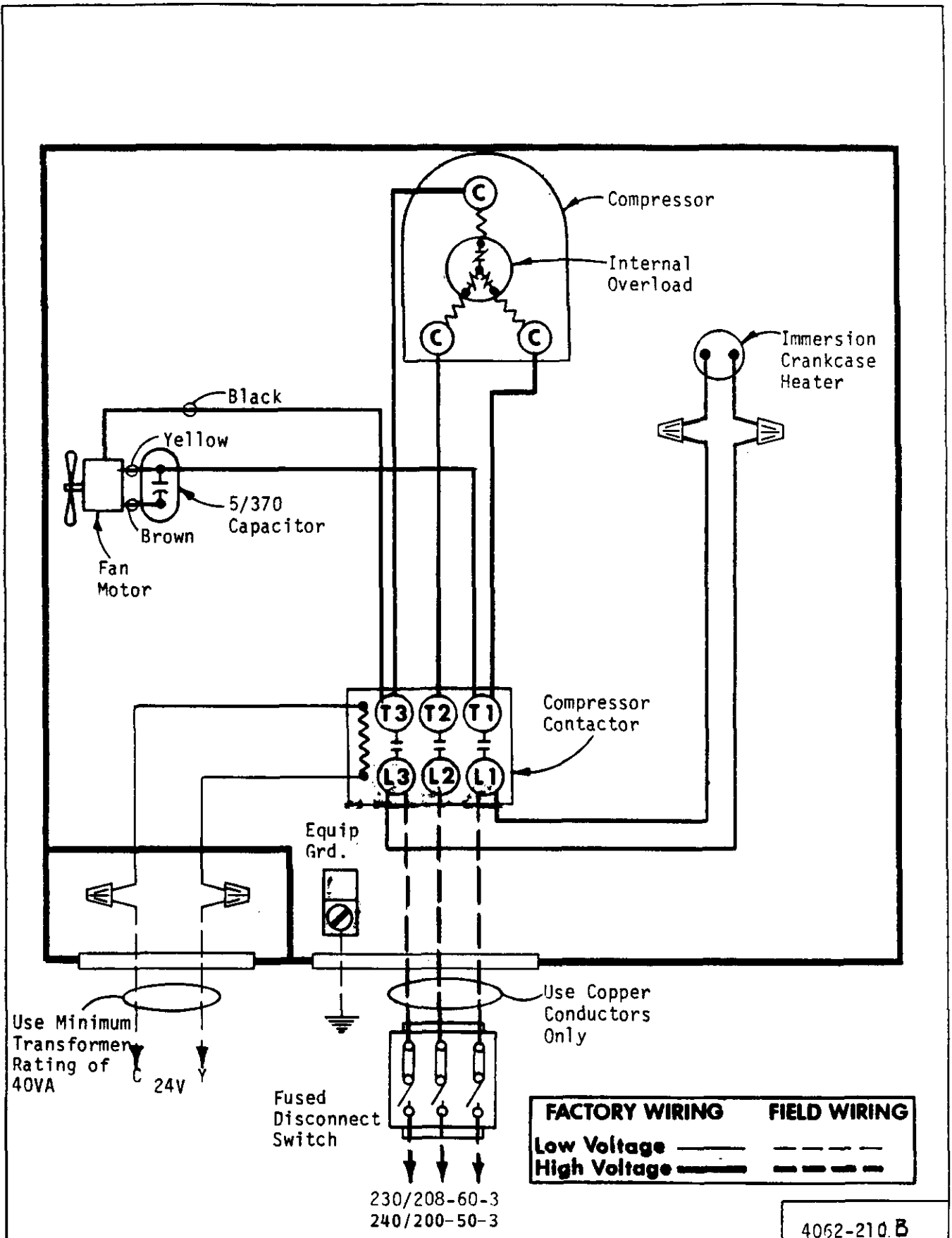
Use Copper  
Conductors  
Only

Fused  
Disconnect  
Switch

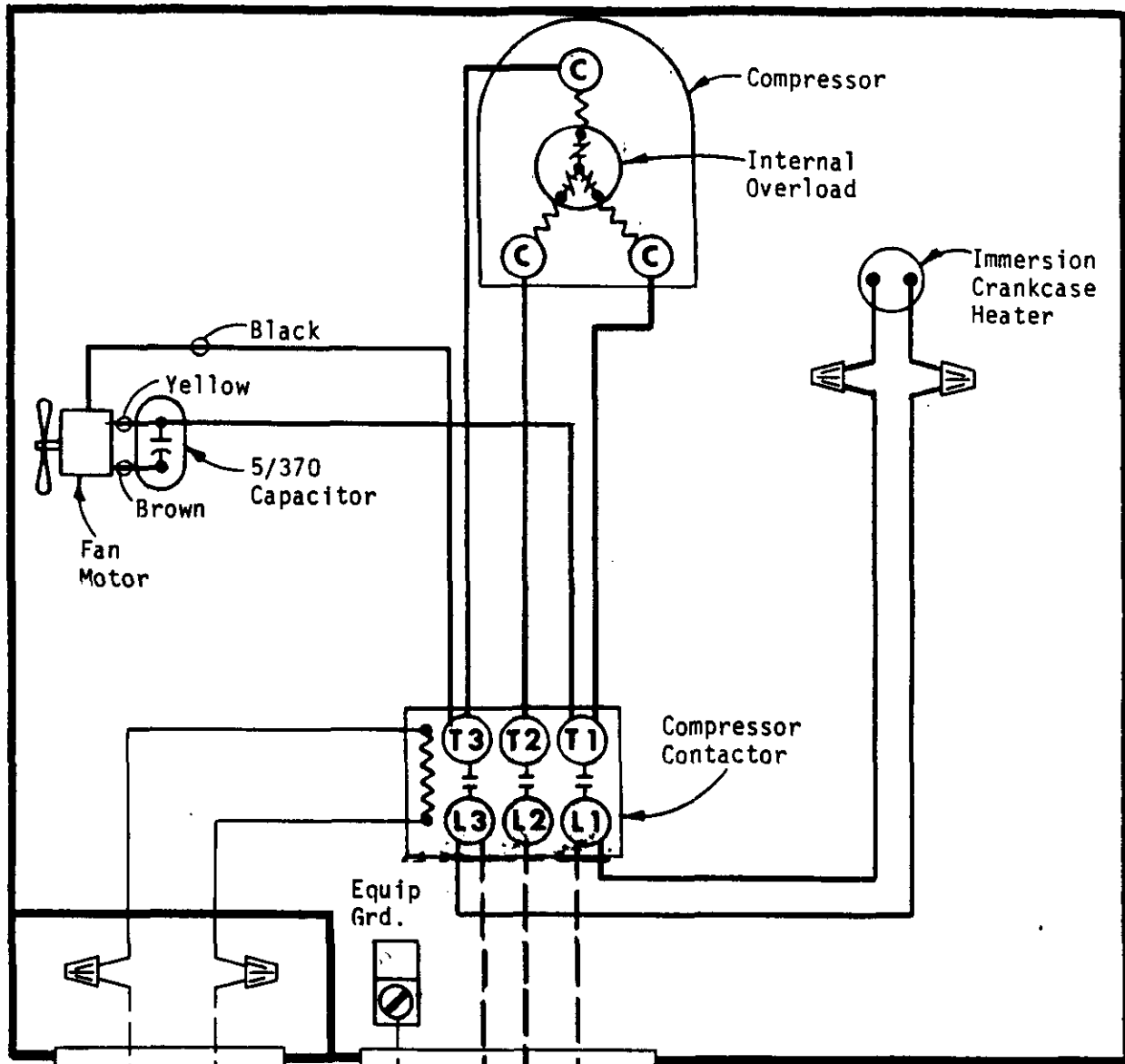
FACTORY WIRING	FIELD WIRING
Low Voltage ———	-----
High Voltage ———	-----

230/208-60-1

4062-112

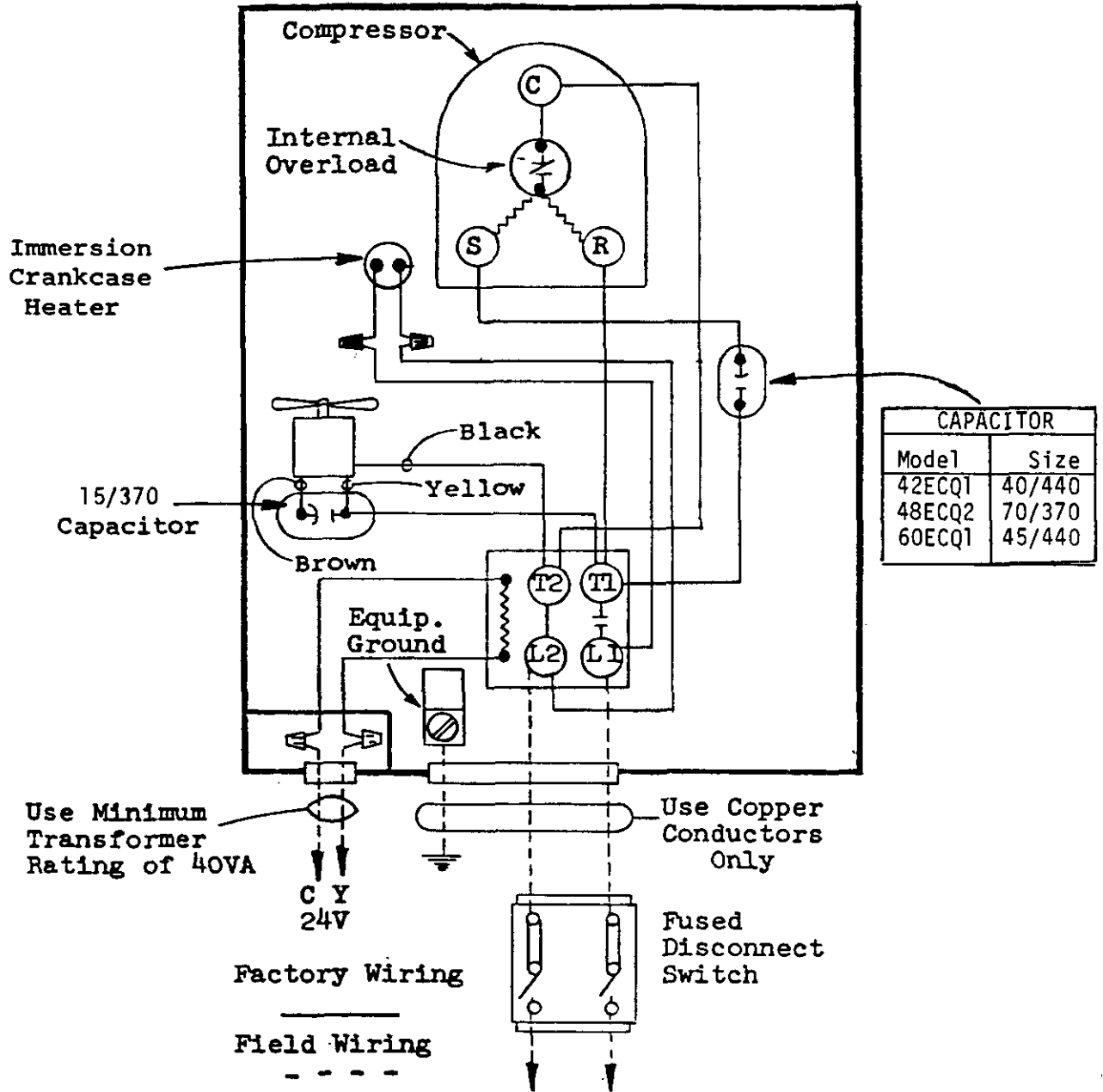


	FACTORY WIRING	FIELD WIRING
Low Voltage	————	-----
High Voltage	————	-----

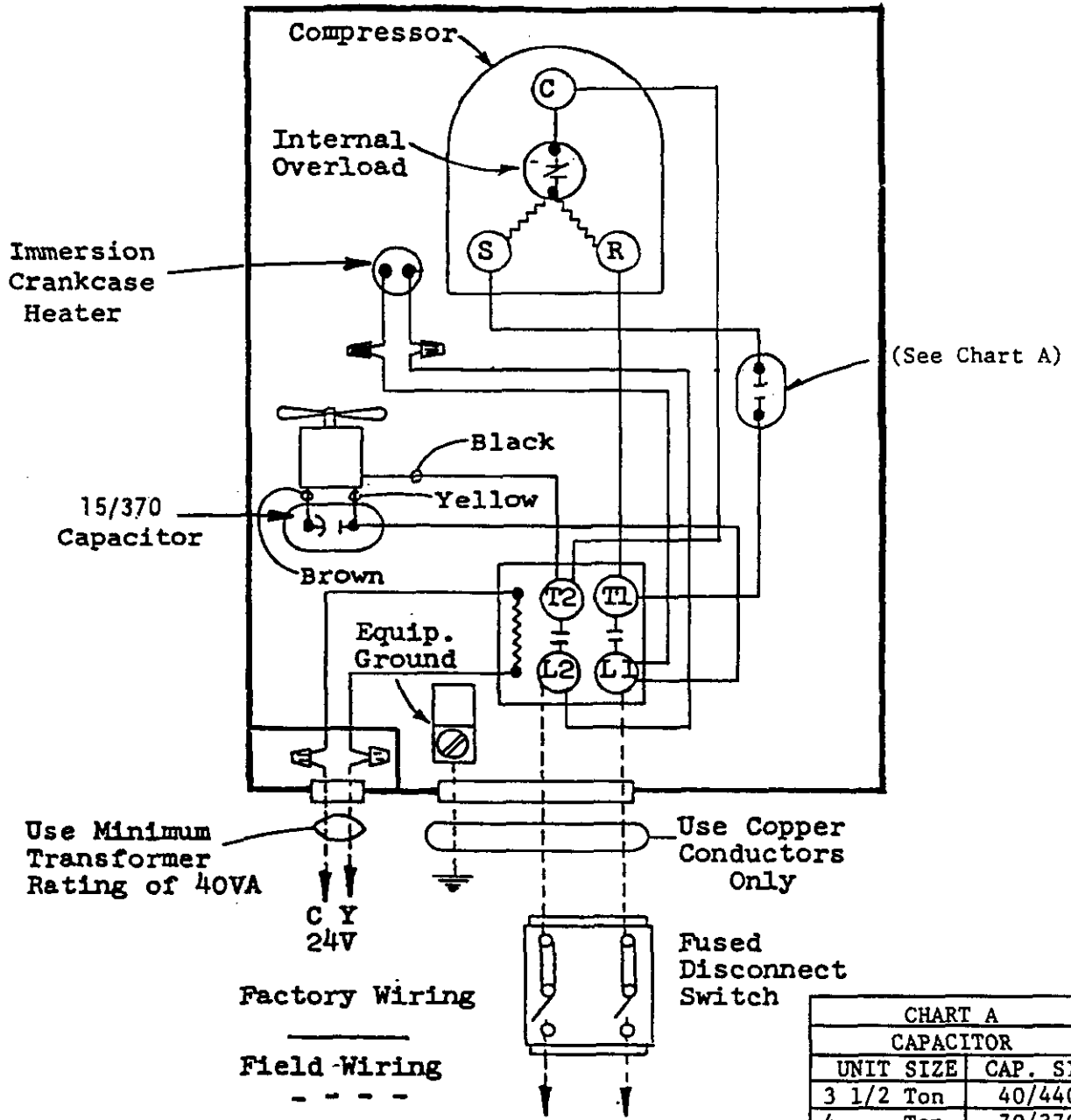


	FACTORY WIRING	FIELD WIRING
Low Voltage	————	-----
High Voltage	————	-----

4062-310B



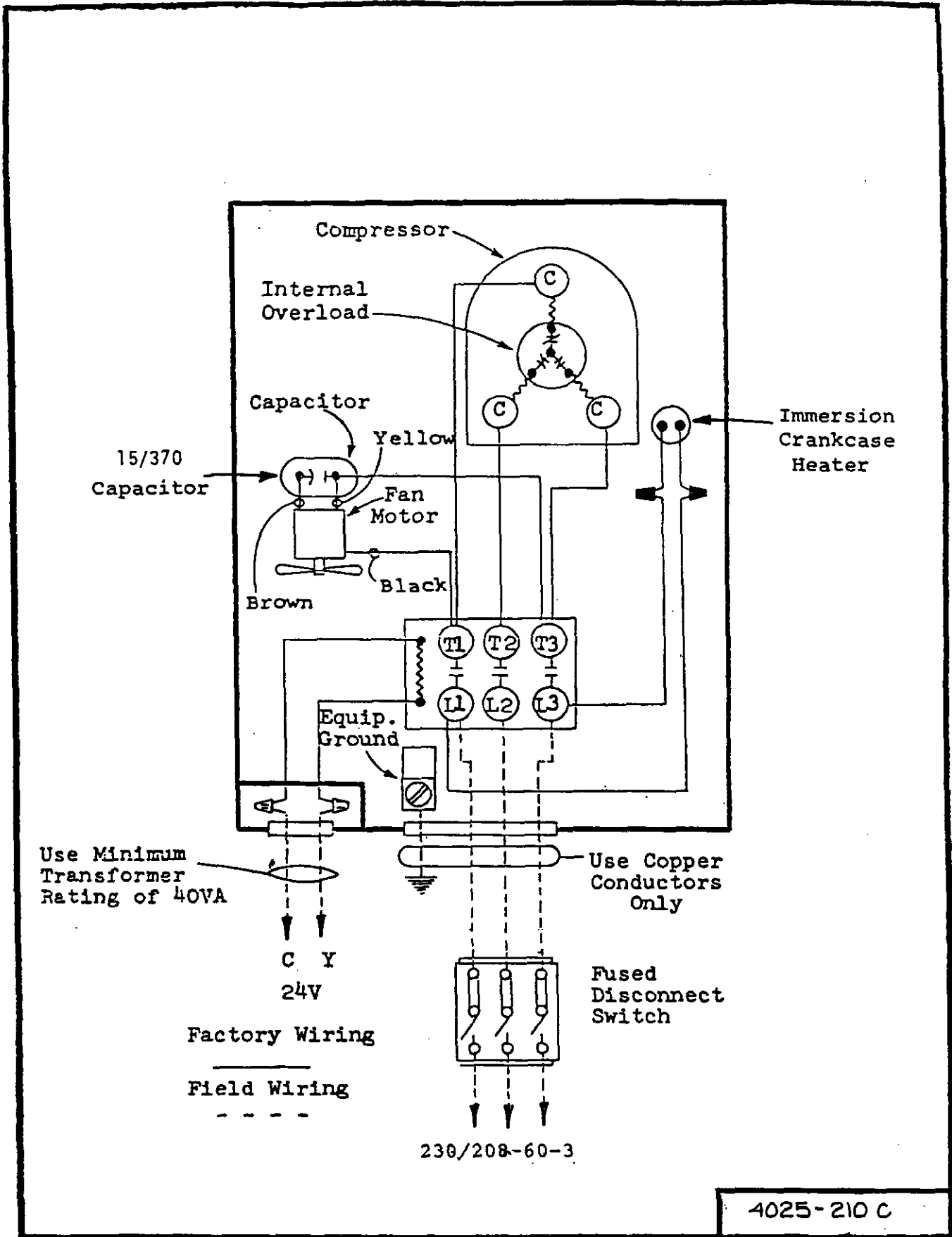
230/208-60-1

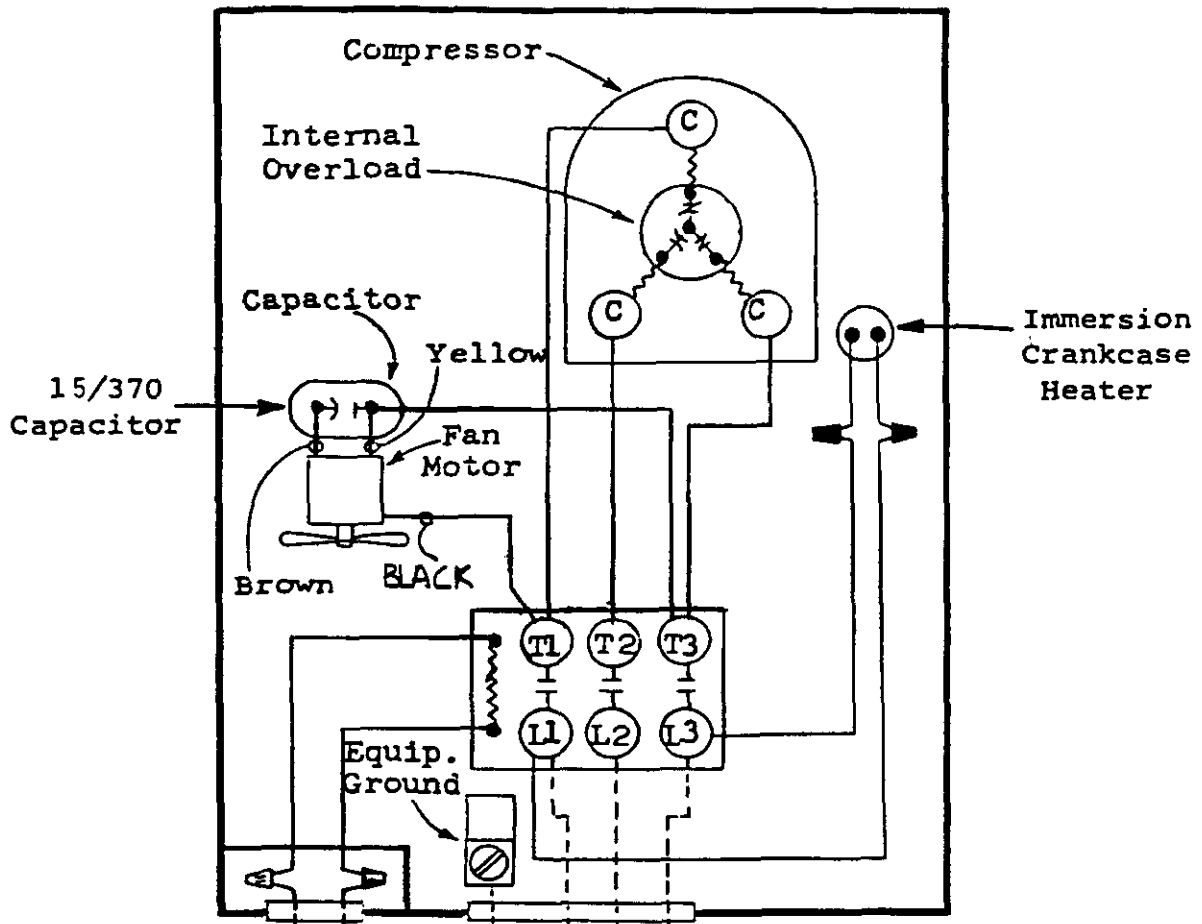


230/208-60-1

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







Use Minimum Transformer Rating of 40VA

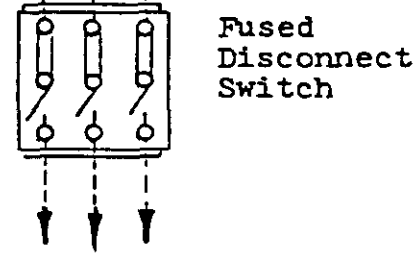
Use Copper Conductors Only

C Y  
24V

Factory Wiring

Field Wiring

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460-60-3

4025-310 D