

MANUAL 2100-014E

# INSTALLATION INSTRUCTIONS



## WALL MOUNTED AIR CONDITIONERS

### MODELS

18WA1

20WA

24WA1

30WA1

36WA3

48WA3

503819

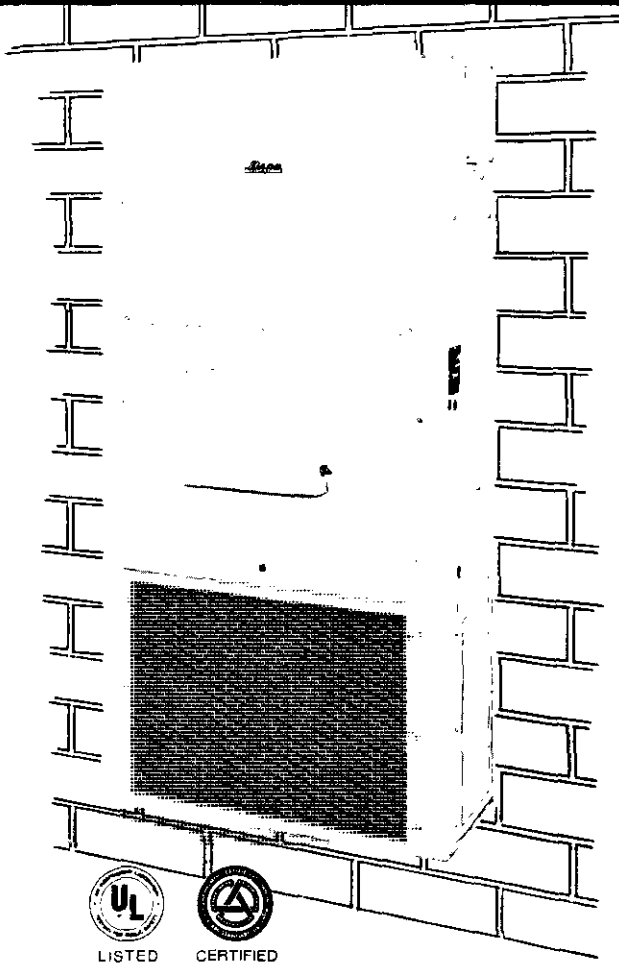
**BARD MANUFACTURING CO. • BRYAN, OHIO 43506**

*Dependable quality home equipment... since 1914*



# HI-BOY AIR CONDITIONERS

EIGHT MODELS • Cooling Capacities: 16,500 to 45,000



Practical outside wallmount installation provides versatile applications for:

- HOME IMPROVEMENT PROJECTS
- NEW CONSTRUCTION ● APARTMENTS
- MODULAR FACILITIES ● OFFICES
- SCHOOLS



Electric Heat Strips with automatic limit and thermo cut-off are available as a built-in option. Accessible from top or side outlet without removing unit from wall.

Aluminum Finned Copper Coil surfaces provide maximum transfer.

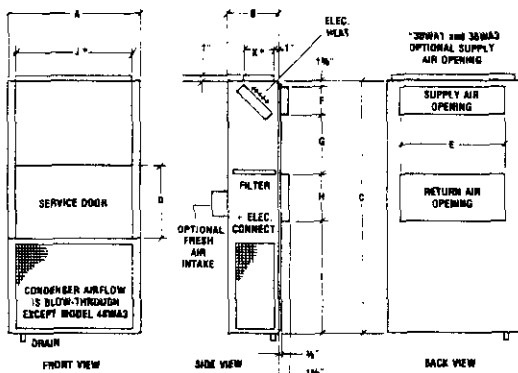
Twin Blowers move air quietly. Extra built-in capacity provides maximum air delivery. Motor overload protection is standard on all models.

Totally Enclosed Compressor operates quieter than others. Equipped with crankcase heater and is protected with internal overload, pressure relief valve and anti-slug device.

Galvanized Steel Cabinet is handsomely finished with baked-on polyester enamel.

Electrical Components are easily accessible for routine inspection and maintenance through service panel opening.

Air Filters are standard equipment. Replacement filters are easy to install.



\*Must be installed at factory. Openings J and K cannot be properly made in the field.

Dimensions for architectural and installation requirements (Nominal)

MODEL	A	B	C	D	E	F	G
18WA1-20WA-24WA1	32 1/4	13 1/2	67 1/2	20	20	8	20 1/2
30WA1-36WA3	38 1/4	15 1/4	74	22 1/2	28	8	18
48WA3	38 1/4	18	84	32 1/2	30	10	30

MODEL	H	I	J	K	Fresh Air Intake	Filter Sizes*
18WA1-20WA-24WA1	12	25 1/2	N/A	N/A	0 to 25%	14x25x1
30WA1-36WA3	14	32 1/2	32	8	0 to 25%	15x30x1
48WA3	16	26 1/4	N/A	N/A	0 to 50%	(2) 16x16x1

\*Dimensions and filter sizes are in inches.

SPECIFICATIONS — Hi-Boy Air Conditioners

MODEL	18WA1	20WA	24WA1	30WA1	36WA3**	36WA3***	48WA3	48WA3
Cooling Capacity BTU	16,500	20,000	23,000	30,000	36,500	36,500	45,000	45,000
Hi-Temp. Heating BTU*	SEE ELECTRIC HEAT TABLE NO. 1							
Low-Temp. Heating BTU*	SEE ELECTRIC HEAT TABLE NO. 1							
Electrical — Low KW	1-PH 60Hz	1-PH 60Hz	1-PH 60Hz	1-PH 60Hz	1-PH 60Hz	3-PH 60Hz	1-PH 60Hz	3-PH 60Hz
Cooling Watts	2700	2800	3200	4200	5000	4850	6400	6200
Operating Voltage Range	197-253V	197-253V	197-253V	207-253V	197-253V	187-264V	197-253V	187-264V
Min. Circuit Amperacity	20	18	20	30	35	23	41	29
Field Wire Supply**	2 No. 12AWG	2 No. 12AWG	2 No. 12AWG	2 No. 10AWG	2 No. 8AWG	2 No. 10AWG	2 No. 6AWG	2 No. 4AWG
Delay Fuse — Max	30A	25A	30A	50A	50A	35A	60A	45A
Total Unit Amps	16.3	14.8	16.3	25	29	19.5	34	24.5
Compressor — Circuit A								
Volts	230/208	230/208	230/208	230	230/208	230/208	230/208	230/208
Name Plate Amps	13.5	12	13.5	20	24	14.5	26	16.5
Lock Rotor Amps	53	53	60	76	110	74	115	33
Fan Motor & Condenser								
Fan Motor — HP/RPM	1/5/1050	1/5/1050	1/5/1050	1/5/1050	1/5/1050	1.5/1050	1.2/1075	1.2/1075
Fan Motor — AMPS	1.5	1.6	1.6	1.6	1.6	1.6	3.9	3.9
Fan — OAA/CFM	18"/1430	18"/1451	18"/1450	20"/1900	20"/1900	20"/1900	20"/2400	24"/2400
Face Area Sq. Ft./Row/Fins per in.	3.75/2.12	3.75/2.15	3.75/2.15	5.04/2.18	5.04/2.18	5.04/2.18	5.15/3.14	5.15/3.14
Motor & Evaporator								
Blower Motor — HP/RPM	1/6/1050	1/6/1050	1/6/1050	1/3/1050	1/3/1050	1/3/1050	1.2/1050	1.2/1050
Blower Motor — AMPS	1.2	1.2	1.2	3.4	3.4	3.4	4.1	4.1
CFM Cooling								
w/Filter (Rated)	635 @ 32	750 @ 22	810 @ 10	1120 @ 32	1275 @ 15	1275 @ 15	1600 @ 2	1600 @ 2
Face Area Sq. Ft./Row/Fins per in.	2.08/2.14	2.08/2.12	2.08/3.12	3.21/3.13	3.21/3.13	3.21/3.13	4.04/3.12	4.04/3.12
Filter Sizes (Inches)	14x25x1	14x25x1	14x25x1	15x30x1	15x30x1	15x30x1	(2) 16x16x1	(2) 16x16x1
Refrigerant — lb.	32 oz.	40 oz.	41 oz.	40 oz.	49 oz.	49 oz.	83 oz.	93 oz.
Shipping Weight Lbs.	310	315	318	380	385	385	456	496

NOTE: \*\*For additional heating capacity add the KW from Table No. 1. See also electrical data table. \*\*\*50°C Cooper Wire Size, basic unit only. See electrical data for models with electric heat. \*\*\*\*Deduct 500 Btu for 208V operation.

Specifications subject to change without notice.

50820

ELECTRICAL DATA						WIRING INFORMATION*								
MODEL	Rated Vols & Ph	Operating Voltage Range	Heater Kw @ 240V	Max. Unit Amps	No. Field Power Circuits	Internal Fuses		Req'd. Maximum External Fuses		Min. Circuit Ampacity		Field Power Wiring		Ground Wire Size** Circuit A/B
						Circuit A	Circuit B	Circuit A	Circuit B	Circuit A	Circuit B	Circuit A	Circuit B	
18WA1	230/1	197-253	0	16.3	1			30		20		12		12
			5	22	1			30		28		10		10
			8	34.5	1			45		43		6		10
			10	42.8	1			60		54		6		10
20WA	230/1	197-253	0	14.8	1			25		18		12		12
			5	22	1			30		28		10		10
			8	34.5	1			45		43		6		10
			10	42.8	1			60		54		6		10
24WA1	230/1	197-253	0	16.3	1			30		20		12		12
			5	22	1			30		28		10		10
			8	34.5	1			45		43		6		10
			10	42.8	1			60		54		6		10
30WA1	230/1	207-253	0	25	1			50		30		10		10
			5	25	1			50		30		10		10
			10	45	1	60	30	60		56		4		10
			15	65.9	1			90		82		2		8
36WA3	208/230/1	197-253	0	29	1			50		35		8		10
			5	29	1			50		35		8		10
			10	45	1	60	30	60		56		4		10
			15	65.9	1			90		82		2		8
36WA3	208/230/3	187-253	0	19.5	3			35		23		10		10
			9	25.1	3			35		31		8		10
			12	32.3	3			40		40		8		10
			15	39.6	3			50		50		6		10
48WA3	208/230/1	197-253	10	34	1			60		41		6		10
			5	34	1			60		41		6		10
			10	45.7	1			60		57		4		10
			15	66.6	1	60	30	90		83		2		8
48WA3	208/230/3	187-253	0	24.5	3			45		29		10		10
			9	25.8	3			45		32		8		10
			15	40.3	3	60	60	60	60	57	52	3	4	10/10
			18	47.5	3			60		59		4		10

\*Based upon the use of 60° copper wiring material.

\*\*Based upon Table 250-95 of N.E.C., 1978.

INDOOR BLOWER PERFORMANCE *CFM — DRY COIL			
E.S.P. in H <sub>2</sub> O	18WA1 20WA 24WA1	30WA1 36WA3	48WA3
0	940	1485	2000
.10	870	1395	1870
.20	800	1280	1740
.30	715	1170	1600
.40	630	1025	1490
.50	520	855	1360

\*Filter included. See specifications for Unit CFM Rating.

Specifications subject to change without notice.

### IMPORTANT:

While the above data is presented as a guide, it is important to electrically connect, properly size fuses and conductor wires in accordance with the National Electrical Code and all existing local codes.

Underwriters' Listed  
for outdoor installation.



CERTIFIED



LISTED

ELECTRIC HEAT TABLE NO. 1 AT 240V		
MODEL	BTU	AMP
4Kw	13650	16.7
5Kw	17065	20.8
8Kw	27304	33.3
9Kw 3-ph	30600	21.7
10Kw	34130	41.7
15Kw	51195	62.5
15Kw 3-ph	51195	36.2
18Kw	61434	75.0
18Kw 3-ph	61200	43.4
20Kw	68260	83.4

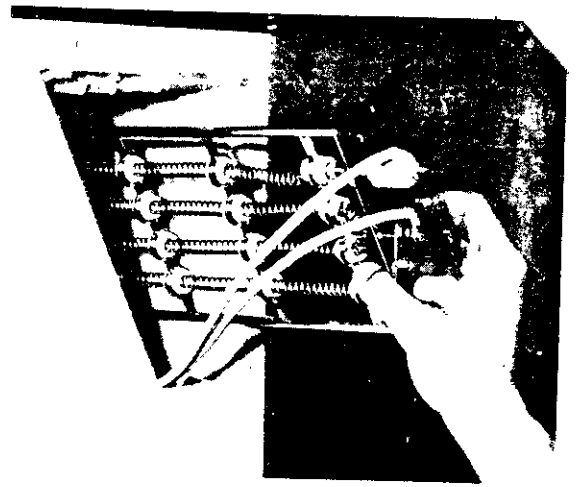
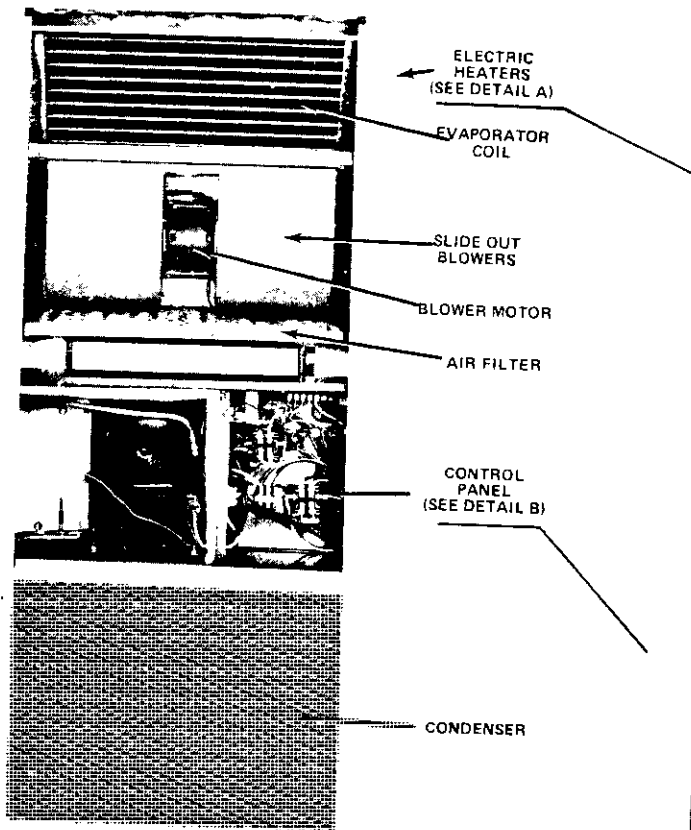
APPLICATION RATINGS		OUTDOOR TEMPERATURES °F*												
MODEL		67°	72°	77°	82°	87°	92°	95°	97°	102°	107°	112°	117°	122°
18WA1	Btuh	19,305	18,975	18,480	17,985	17,490	16,830	16,500	16,170	15,510	14,685	13,695	12,870	11,715
	Kw	2.27	2.35	2.43	2.48	2.57	2.65	2.70	2.73	2.81	2.89	2.94	3.02	3.11
	EER	8.5	8.1	7.6	7.3	6.8	6.4	6.1	5.9	5.5	5.1	4.7	4.3	3.8
20WA	Btuh	23,400	23,000	22,400	21,800	21,200	20,400	20,000	19,600	18,800	17,800	16,600	15,600	14,200
	Kw	2.35	2.44	2.52	2.58	2.66	2.74	2.80	2.83	2.91	3.0	3.05	3.14	3.22
	EER	10.0	9.4	8.9	8.4	8.0	7.4	7.1	6.9	6.5	5.9	5.4	5.0	4.4
24WA1	Btuh	26,910	26,450	25,760	25,070	24,380	23,460	23,000	22,540	21,620	20,470	19,090	17,940	16,330
	Kw	2.69	2.78	2.89	2.94	3.04	3.14	3.20	3.23	3.33	3.42	3.49	3.58	3.68
	EER	10.0	9.5	8.9	8.5	8.0	7.5	7.2	7.0	6.5	6.0	5.5	5.0	4.4
30WA1	Btuh	35,100	34,500	33,600	32,700	31,800	30,600	30,000	29,400	28,200	26,700	24,900	23,400	21,300
	Kw	3.53	3.65	3.78	3.86	3.99	4.12	4.20	4.24	4.37	4.49	4.58	4.70	4.83
	EER	9.9	9.5	8.9	8.5	8.0	7.4	7.1	6.9	6.5	5.9	5.4	5.0	4.4
36WA3	Btuh	42,705	41,975	40,880	39,785	38,690	37,230	36,500	35,770	34,310	32,485	30,295	28,470	25,915
	Kw	4.20	4.35	4.50	4.60	4.75	4.90	5.00	5.05	5.20	5.35	5.45	5.60	5.75
	EER	10.2	9.6	9.1	8.6	8.1	7.6	7.3	7.1	6.6	6.1	5.6	5.1	4.5
48WA3	Btuh	52,650	51,750	50,400	49,050	47,700	45,900	45,000	44,100	42,300	40,050	37,350	35,100	31,950
	Kw	5.38	5.57	5.76	5.89	6.08	6.27	6.40	6.46	6.66	6.85	6.98	7.20	7.36
	EER	9.8	9.3	8.8	8.3	7.8	7.3	7.0	6.8	6.4	5.8	5.4	4.9	4.3

\*All values based on 80DB/67WB Return Air and Rated Evaporator Airflow — ARI Standard 210.



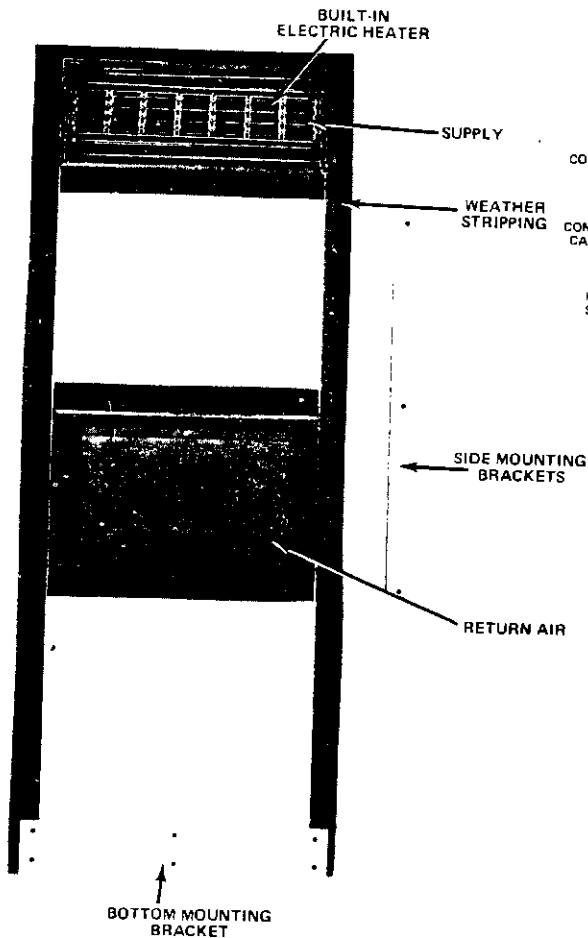
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Dependable equipment since 1914

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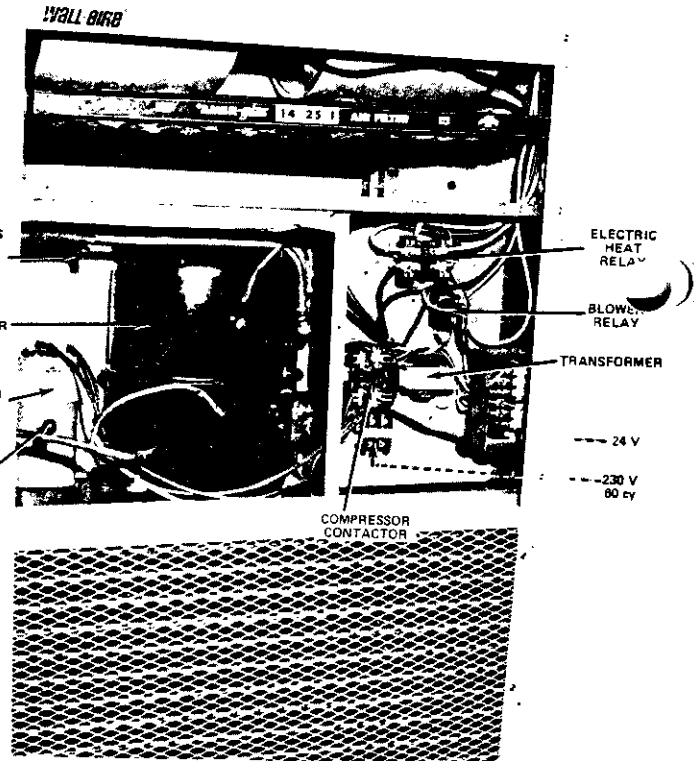


DETAIL A

NOTE:  
BEFORE FASTENING  
SIDE MOUNTING  
BRACKETS  
CHECK INSIDE  
FOR CLEARANCE



BACK SIDE OF UNIT



DETAIL B

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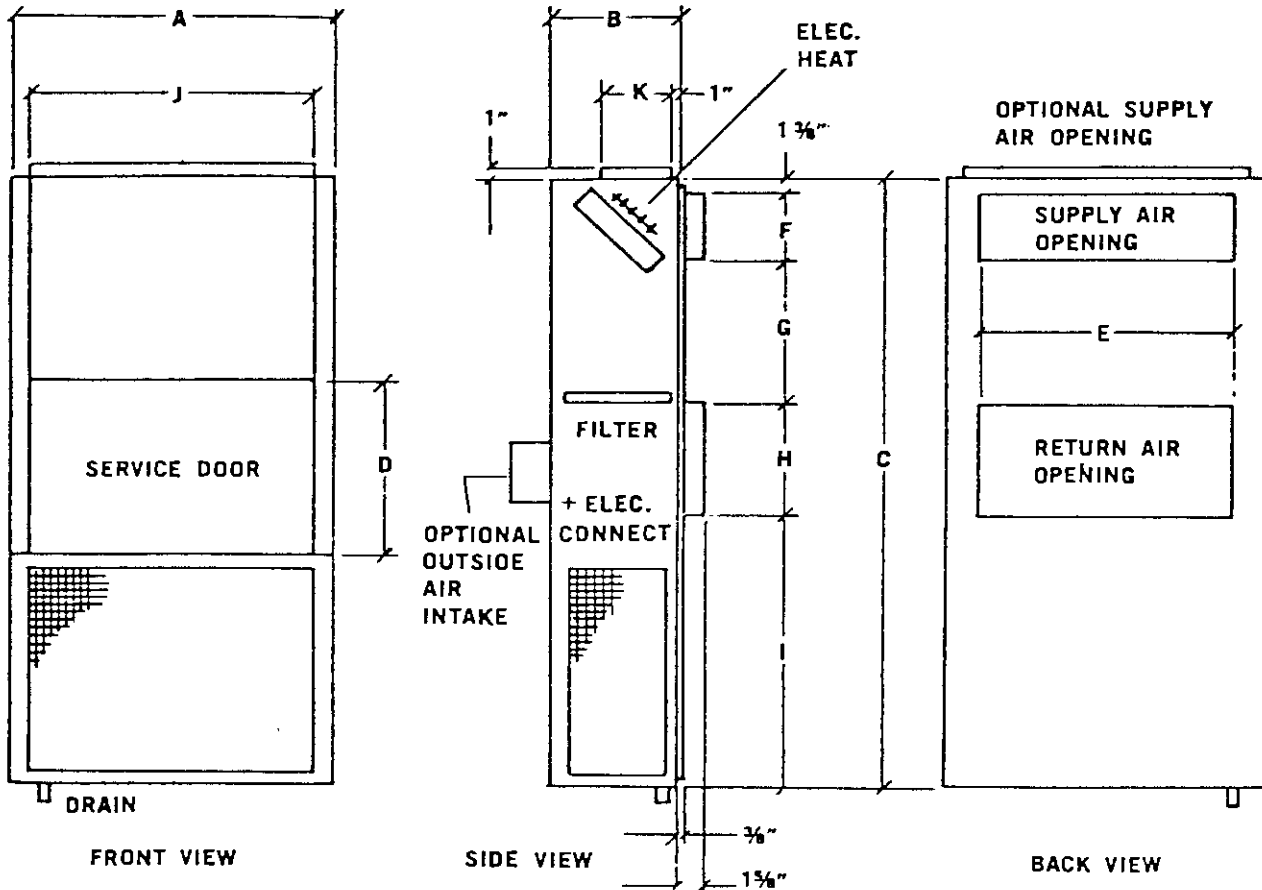
# DIMENSIONS \*

... for architect and installation requirements

MODEL	A	B	C	D	E	F	G	H	I	J	K
18WA1-20WA-24WA1	32¼	13½	67½	20	20	8	20½	12	25¾		
30WA1-36WA3	38¼	15¼	74	22½	28	8	18	14	32¾	32	8
48WA3	38¼	18	84	32½	30	10	30	16	26¾		

FILTER SIZES*
14 x 25
15 x 30-5/8
(2) 16 x 16

\* Dimensions and filter sizes are in inches.



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

**502823**

ELECTRICAL INFORMATION										WIRING INFORMATION			
Model	Volts/Ph	Heater Kw @ 240V	Max. Unit Amps	No. Field Power Circuits	Internal Fuses		Req'd. Maximum External Fuses Ckt. A/B	Min. Ckt. Ampacity Ckt. A/B	Field Power Wiring Ckt. A/B	Ground Wire Size Ckt. A/B	Wiring Diagram No.		
					Ckt. A	Ckt. B							
18WA1	230/1	0	16.3	1			30	20	12	12	4007-110		
18WA1	230/1	4	17.9	1			30	22	10	10	-120		
18WA1	230/1	5	22	1			30	28	10	10	-120		
18WA1	230/1	8	34.5	1			45	43	6	10	-130		
18WA1	230/1	10	42.8	1			60	54	6	10	-130		
20WA	230/1	0	14.8	1			25	18	12	12	4007-110		
20WA	230/1	4	17.9	1			25	22	10	10	-120		
20WA	230/1	5	22	1			30	28	10	10	-120		
20WA	230/1	8	34.5	1			45	43	6	10	-130		
20WA	230/1	10	42.8	1			60	54	6	10	-130		
24WA1	230/1	0	16.3	1			30	20	12	12	4007-110		
24WA1	230/1	4	17.9	1			30	22	10	10	-120		
24WA1	230/1	5	22	1			30	28	10	10	-120		
24WA1	230/1	8	34.5	1			45	43	6	10	-130		
24WA1	230/1	10	42.8	1			60	54	6	10	-130		
30WA1	230/1	0	25	1			50	30	10	10	4008-110		
30WA1	230/1	5	25	1			50	30	10	10	-120		
30WA1	230/1	10	45	1			60	56	4	10	-130		
30WA1	230/1	15	65.9	1	60	30	90	82	2	8	-140		
36WA3	208-230/1	0	29	1			50	35	8	10	4009-110 Rev. A		
36WA3	208-230/1	5	29	1			50	35	8	10	-120 A		
36WA3	208-230/1	10	45	1			60	56	4	10	-130 A		
36WA3	208-230/1	15	65.9	1	60	30	90	82	2	8	-140 A		
36WA3	208-230/3	0	19.5	3			35	23	10	10	-210 A		
36WA3	208-230/3	6	19.5	3			35	23	10	10	-220 A		
36WA3	208-230/3	9	25.1	3			35	31	8	10	-220 A		
36WA3	208-230/3	12	32.3	3			40	40	8	10	-230 A		
36WA3	208-230/3	15	39.6	3			50	50	6	10	-230 A		
48WA3	208-230/1	0	34	1			60	41	6	10	4010-110 Rev. A		
48WA3	208-230/1	5	34	1			60	41	6	10	-120 A		
48WA3	208-230/1	10	45.7	1			60	57	4	10	-130 A		
48WA3	208-230/1	15	66.6	1	60	30	90	83	2	8	-140 A		
48WA3	208-230/1	20	87.3	1	60	60	60/60	57/52	3/4	10/10	-150 A		
48WA3	208-230/3	0	24.5	3			45	29	10	10	-210 A		
48WA3	208-230/3	9	25.8	3			45	32	8	10	-220 A		
48WA3	208-230/3	12	33	3			45	41	6	10	-230 A		
48WA3	208-230/3	15	40.3	3			50	50	6	10	-230 A		
48WA3	208-230/3	18	47.5	3			60	59	4	10	-240 A		

Based upon the use of 600 copper wiring material.

Based upon Table 250-95 of N.E.C., 1975.



## APPLICATION AND INSTALLATION INSTRUCTIONS

### GENERAL

Units are shipped completely assembled and internally wired, requiring only duct connections, thermostat wiring and external 220-240 volt AC power supply. The refrigerant system is completely assembled and charged.

These instructions and any instructions packaged with any separate equipment should be carefully read before beginning the installation. Note particularly 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.

### DUCTWORK

Design the ductwork according to methods given by the National Warm Air Heating and Air Conditioning Association. When duct runs through unheated spaces, it should be insulated with a minimum of two inches of insulation. Use insulation with a vapor barrier on the outside of the insulation. Flexible joints should be used to connect the ductwork to the equipment in order to keep the noise transmission to a minimum.

NOTE: All models are U.L. approved with 1" clearance to combustible materials for the first 3 feet of duct attached to the outlet duct flange. The cabinet is approved for 0" clearance.

Refer to Figure 1-8 for additional information.

### WALL MOUNTING

1. Two holes, the size of the supply and return air openings must be cut through the wall as shown in Fig. 1, 2, 3, 4, 5 and 6.
2. On wood-frame walls, the wall construction must be strong and rigid enough to carry the weight of the unit without transmitting any unit vibration.
3. Concrete block walls must be thoroughly inspected to insure that they are capable of carrying the weight of the installing unit.
4. Ducts through the walls must be insulated and all joints taped or sealed to prevent air or moisture entering the wall cavity.
5. Some installations may not require any return air duct. It is recommended that on this type of installation that a filter grille be located in the wall. Filters must be of sufficient size to allow a maximum velocity of 400 FPM.

### FILTER

A 1" throw away filter is supplied with each unit. The filter slides into position making it easy to service. The filter can be serviced from the outside by removing the service door.

### FRESH AIR INTAKE

All units are made with a fresh air inlet hole punched in the service panel. If not ordered originally, a fresh air cover with shut-off damper may be ordered from the factory. The fresh air cover is so positioned that all fresh air intake is filtered by the internal unit filter.

### WIRING - 24V

A low voltage terminal block is provided for connection of 24V wires from wall thermostat. Refer to unit wiring diagram for specific wiring information.

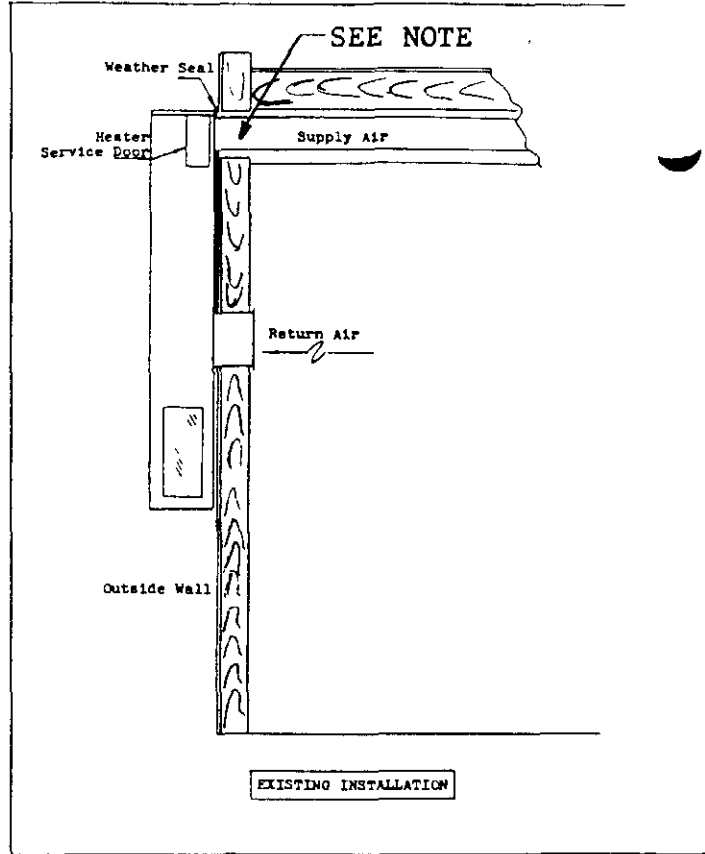
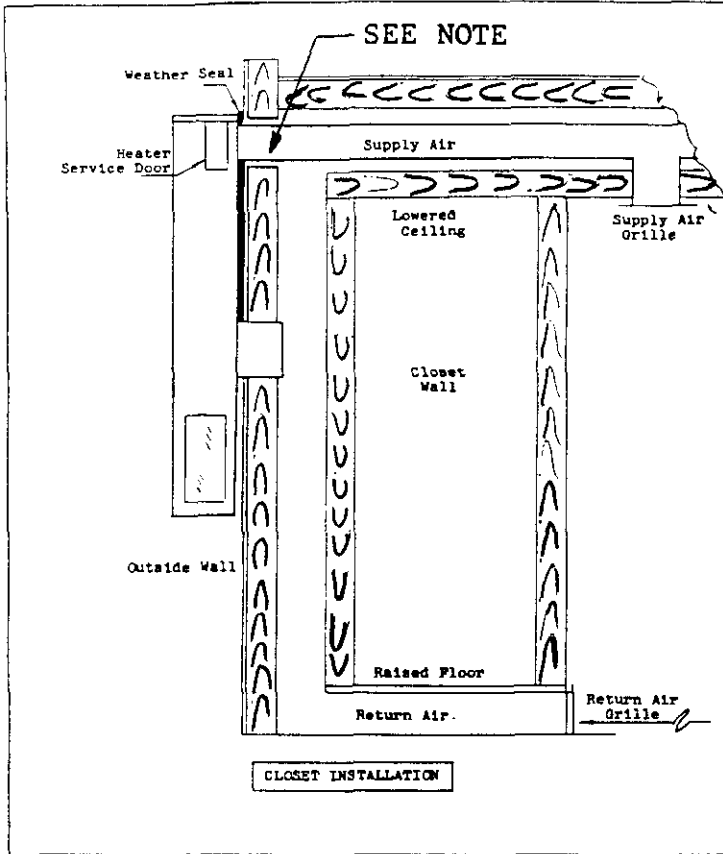
### WIRING - 230V

On all models that are not built at the factory with electric heat installed, the field wiring connections are made directly at the compressor contactor. All other models built with electric heat have either a terminal block or a fuse panel for the field wiring connections. Refer to the unit wiring diagram for complete wiring information.

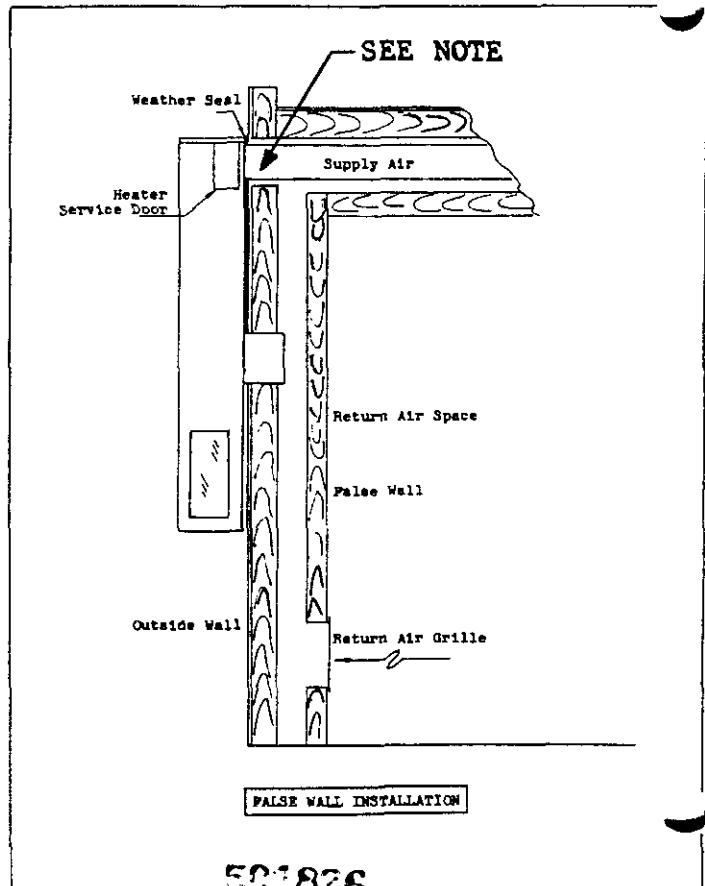
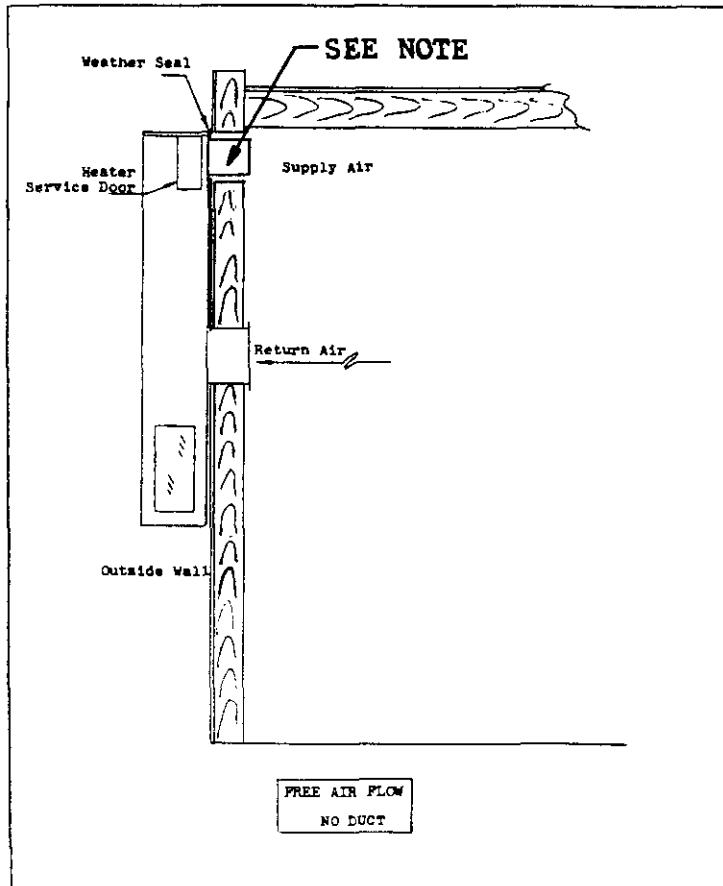
### CONDENSATE DRAIN

A plastic drain hose extends from the drain pan at the top of the unit down to the unit base. There are openings in the unit base for the drain hose to pass through. In the event the drain hose is connected to a drain system of some type, it must be an open or vented type system to assure proper drainage.

501875



**NOTE: 1" clearance to combustable materials required for first 3 feet of supply air duct system.**



501826



# ALPHABETICAL PARTS LIST SINGLE PACKAGE AIR CONDITIONERS

PART NO.	DESCRIPTION	18WA1	20WA	24WA1	30WA1	36WA3	48WA3	48WA3-3	36WA3-3	460V	48WA3-3
5152-030	Blower Housing	X	X	X	X	X	X	X	X	X	X
5152-026	Blower Housing	X	X	X	X	X	X	X	X	X	X
5152-028	Blower Wheel	X	X	X	X	X	X	X	X	X	X
5152-029	Blower Wheel	X	X	X	X	X	X	X	X	X	X
5152-011	Blower Wheel cw										
5152-012	Blower Wheel ccw										
8552-015	Capacitor 370V	X	X	X	X	X	X	X	X	X	X
8552-007	Capacitor 370V										
8552-020	Capacitor 440V										
8552-017	Capacitor 440V										
8552-001	Capacitor 370V	X	X	X	X	X	X	X	X	X	X
8552-002	Capacitor 370V	X	X	X	X	X	X	X	X	X	X
8552-003	Capacitor 370V	X	X	X	X	X	X	X	X	X	X
5811-021	Cap Tube - Cool	X	X	X	X	X	X	X	X	X	X
5811-022	Cap Tube - Cool										
5811-008	Cap Tube - Cool										
8000-001	Compressor 1-Ph	X	X	X	X	X	X	X	X	X	X
8000-002	Compressor 1-Ph										
8000-006	Compressor 1-Ph	X	X	X	X	X	X	X	X	X	X
8000-045	Compressor 1-Ph										
8000-046	Compressor 3-Ph										
8000-010	Compressor 3-Ph	X	X	X	X	X	X	X	X	X	X
8000-026	Compressor 1-Ph										
8000-030	Compressor 3-Ph										
8000-047	Compressor 3-Ph										
83494	Compressor O'Load										
83493	Compressor O'Load										
5051-007	Condenser Coil	X	X	X	X	X	X	X	X	X	X
5051-006	Condenser Coil										
5051-001	Condenser Coil										
5051-016	Condenser Coil										
8401-007	Contact - Comp.	X	X	X	X	X	X	X	X	X	X
8401-003	Contact - Comp.										
8401-002	Contact - Comp.										
8401-001	Contact - Comp.										
8401-006	Contact - Heater	X	X	X	X	X	X	X	X	X	X
8605-001	Crankcase Heater										
8605-002	Crankcase Heater										
5060-007	Evaporator Coil	X	X	X	X	X	X	X	X	X	X
5060-005	Evaporator Coil										
5060-006	Evaporator Coil										
5060-001	Evaporator Coil										
5051-020	Condenser Coil										
8552-022	Capacitor 370V										

PART NO.	DESCRIPTION	18WA1	20WA	24WA1	30WA1	36WA3	48WA3-3	48WA3	48WA3-3	36WA3-3	460V	48WA3-3
5151-002	Fan Blade	X	X	X	X	X	X	X	X	X	X	X
5151-004	Fan Blade											
5151-014	Fan Blade	X	X	X	X	X	X	X	X	X	X	X
7004-006	Filter	X	X	X	X	X	X	X	X	X	X	X
7004-008	Filter											
7004-009	Filter											
8614-006	Fuse - Heater											
8614-022	Fuse - Compressor	X	X	X	X	X	X	X	X	X	X	X
8614-017	Fuse Block	X	X	X	X	X	X	X	X	X	X	X
8604-041	Heat Strip 4Kw	X	X	X	X	X	X	X	X	X	X	X
8604-043	Heat Strip 5Kw	X	X	X	X	X	X	X	X	X	X	X
8604-049	Heat Strip 6Kw	X	X	X	X	X	X	X	X	X	X	X
8604-044	Heat Strip 8Kw	X	X	X	X	X	X	X	X	X	X	X
8604-048	Heat Strip 9Kw	X	X	X	X	X	X	X	X	X	X	X
8604-046	Heat Strip 12Kw	X	X	X	X	X	X	X	X	X	X	X
8604-047	Heat Strip 15Kw	X	X	X	X	X	X	X	X	X	X	X
8604-050	Heat Strip 9Kw	X	X	X	X	X	X	X	X	X	X	X
8604-051	Heat Strip 12Kw	X	X	X	X	X	X	X	X	X	X	X
8604-052	Heat Strip 15Kw	X	X	X	X	X	X	X	X	X	X	X
8406-010	Hi Pressure Switch											
8402-029	Limit Switch	X	X	X	X	X	X	X	X	X	X	X
8402-031	Limit Switch											
8402-028	Limit Switch											
8102-002	Motor - Blower	X	X	X	X	X	X	X	X	X	X	X
8105-003	Motor - Blower											
8106-005	Motor - Blower											
8103-009	Motor - Fan	X	X	X	X	X	X	X	X	X	X	X
8106-006	Motor - Fan											
8200-001	Motor Mount - Fan	X	X	X	X	X	X	X	X	X	X	X
8201-009	Relay - Blower	X	X	X	X	X	X	X	X	X	X	X
8201-008	Relay - Blower											
8551-001	Start Capacitor											
8201-020	Start Relay											
5210-002	Strainer	X	X	X	X	X	X	X	X	X	X	X
5210-004	Strainer											
5210-003	Strainer											
8607-006	Terminal Board 24V	X	X	X	X	X	X	X	X	X	X	X
8607-001	Terminal Block 230V	X	X	X	X	X	X	X	X	X	X	X
8607-002	Terminal Block	X	X	X	X	X	X	X	X	X	X	X
8607-007	Terminal Board											
8402-030	Thermal Cut off	X	X	X	X	X	X	X	X	X	X	X
8402-032	Thermal Cut off											
8407-007	Transformer	X	X	X	X	X	X	X	X	X	X	X
8407-015	Transformer											
8407-003	Trans. - Stepdown											
8407-004	Trans. - Stepdown											
8607-005	Terminal Board											

101847

IMPORTANT

PURCHASER'S RESPONSIBILITIES

Below are the responsibilities of the purchaser and these items cannot be considered as defects in workmanship or material.

1. Air filter cleaning or replacement.
2. Failure to operate due to improper air distribution over indoor and outdoor equipment sections.
3. Failure to start due to voltage conditions, blown fuses or other damage due to inadequacy or interruption of electrical service.
4. Damage caused directly or indirectly by improper installation.
5. Damage due to lack of proper and periodic maintenance.
6. Damage resulting from transportation, moving or storage of unit.
7. Unit must be readily accessible for servicing and/or repair at all times.
8. Any adjustment or service to the unit should be made by qualified service personnel.
9. Misapplication of product.

MODEL NO. \_\_\_\_\_ SERIAL NO. \_\_\_\_\_ DATE  
INSTALLED \_\_\_\_\_

INSTALLER: Please fill in above blanks and leave  
this manual with equipment owner/operator.

501848

COOLING AND HEATING ANTICIPATION  
FOR WALL THERMOSTATS

All 24V wall thermostats are built with both cooling and heating anticipators. The purpose of these anticipators is to compensate the thermostat for various system controls and allow the best possible cycle rates.

The cooling anticipator for all thermostats, and the heating anticipator on a limited number, are fixed and require no adjustment. Most heating anticipators are adjustable and DO REQUIRE ADJUSTMENT to match the current rating of the relay, contactor or other control being cycled by that heating stage. In the case of a two stage heating thermostat there will be an anticipator for each stage, either both adjustable, one fixed and one adjustable, or both fixed.

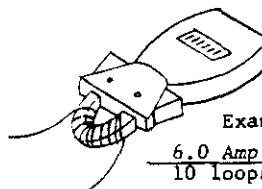
The fixed anticipators are rated for a maximum of 1.5A. The adjustable anticipators generally have a range of .2 - 1.2A, and MUST BE ADJUSTED. Failure to adjust the anticipator lever to correspond to the actual current draw passing through that stage mercury switch and anticipator will cause severe short cycling conditions if set too low and room temperature may never attain the thermostat set point, and if set too high, will cause room temperature over-shoot.

While oil burner primary controls and gas valves are normally marked with the nominal current rating, the contactors and relays installed in air conditioners and heat pumps are not. Listed below are some of the more popularly used controls and their nominal current ratings.

Contactor or Relay	Nominal Current Rating
Honeywell - R850B Series	.55
- R8210 Series	.40
- R8212 Series	.40
- R8214 Series	.40
- R8222 Series	.38
- R8228 Series	.38
- R8242 Series	.38
- R8243 Series	.38
RBM - Type 84	.12
- Type 91	.34
- Type 112	.34
- Type 143	.34
- Type 154	.26
- Type 184	.12
Elmwood - 30B020	.39
- 30C020	.39
- 30CD020	.39
- 30FO20	.21
- 30DO30	.21
- 30E030	.21

Below is a procedure which allows accurate low amperage current measurements with a standard clamp-on ammeter with a 0-6A range. It is actually recommended that this measurement always be taken, since variations in voltage, thermostat wire length, etc. can all cause some change in current draw.

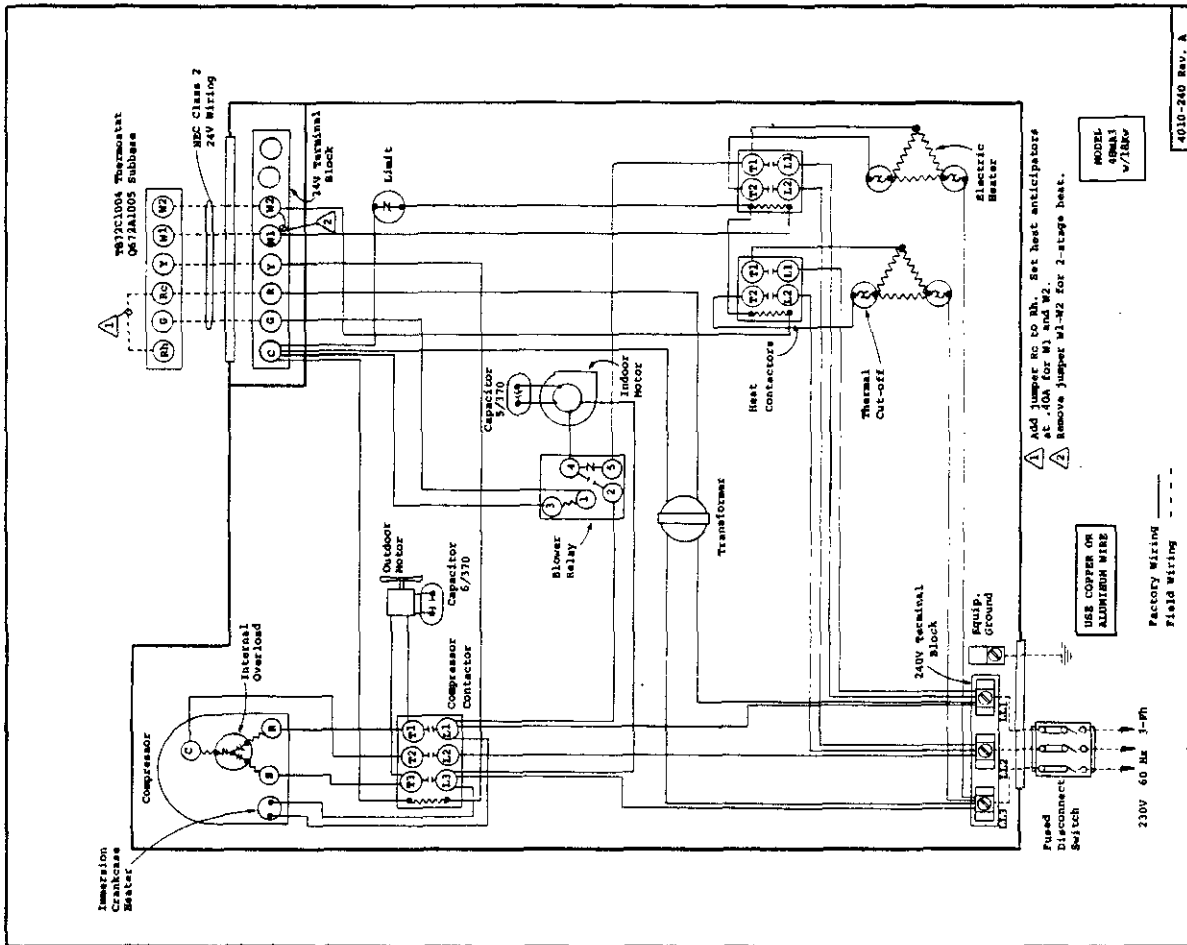
1. Wrap exactly 10 loops of thermostat wire (W1) around the prongs of an Amprobe.
2. Let the heating system operate for one minute before reading the W1 or W2 current draw.
3. Divide the reading obtained in Step 2 by 10.
4. Use the value calculated in step 3 to set the heat anticipator.
5. Repeat the procedure for (W2) if 2-stage heat.

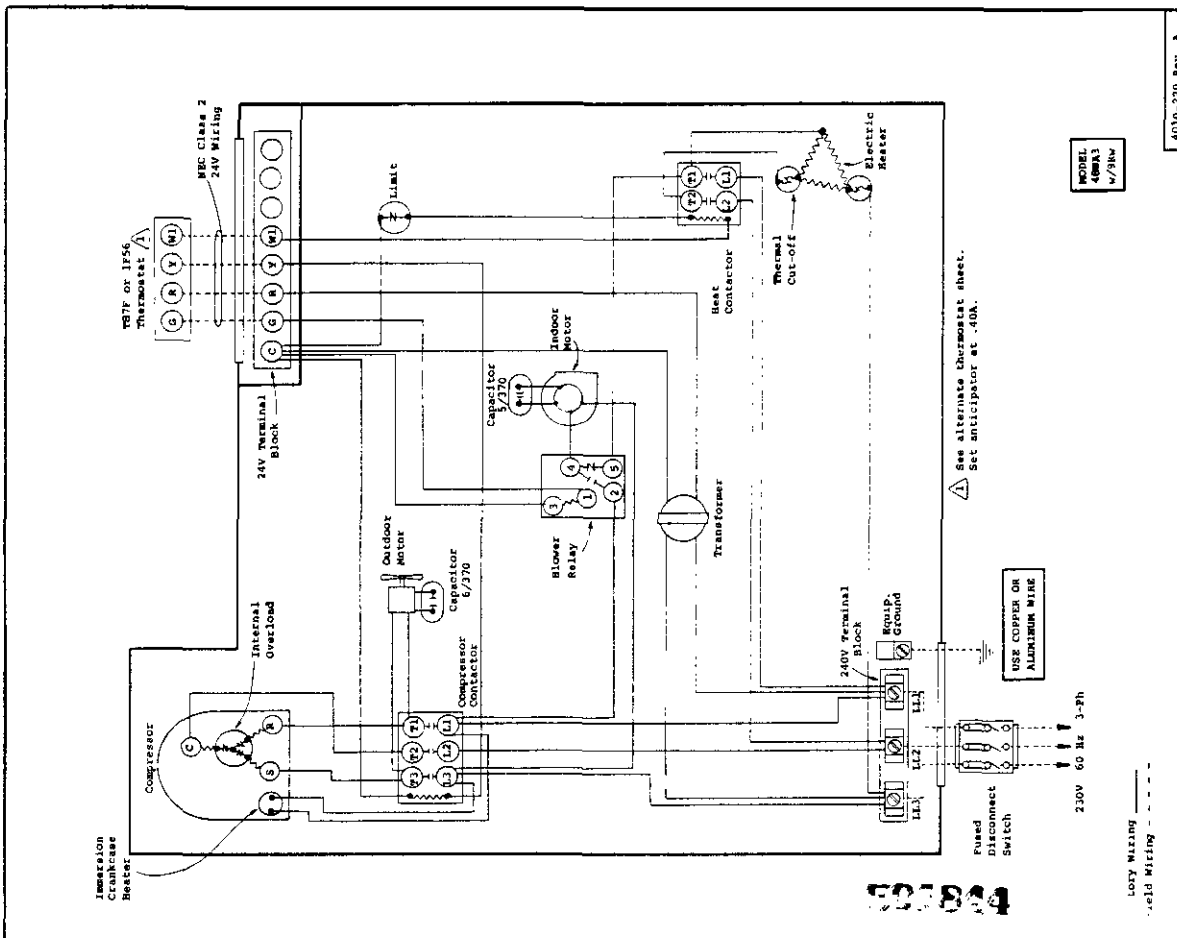
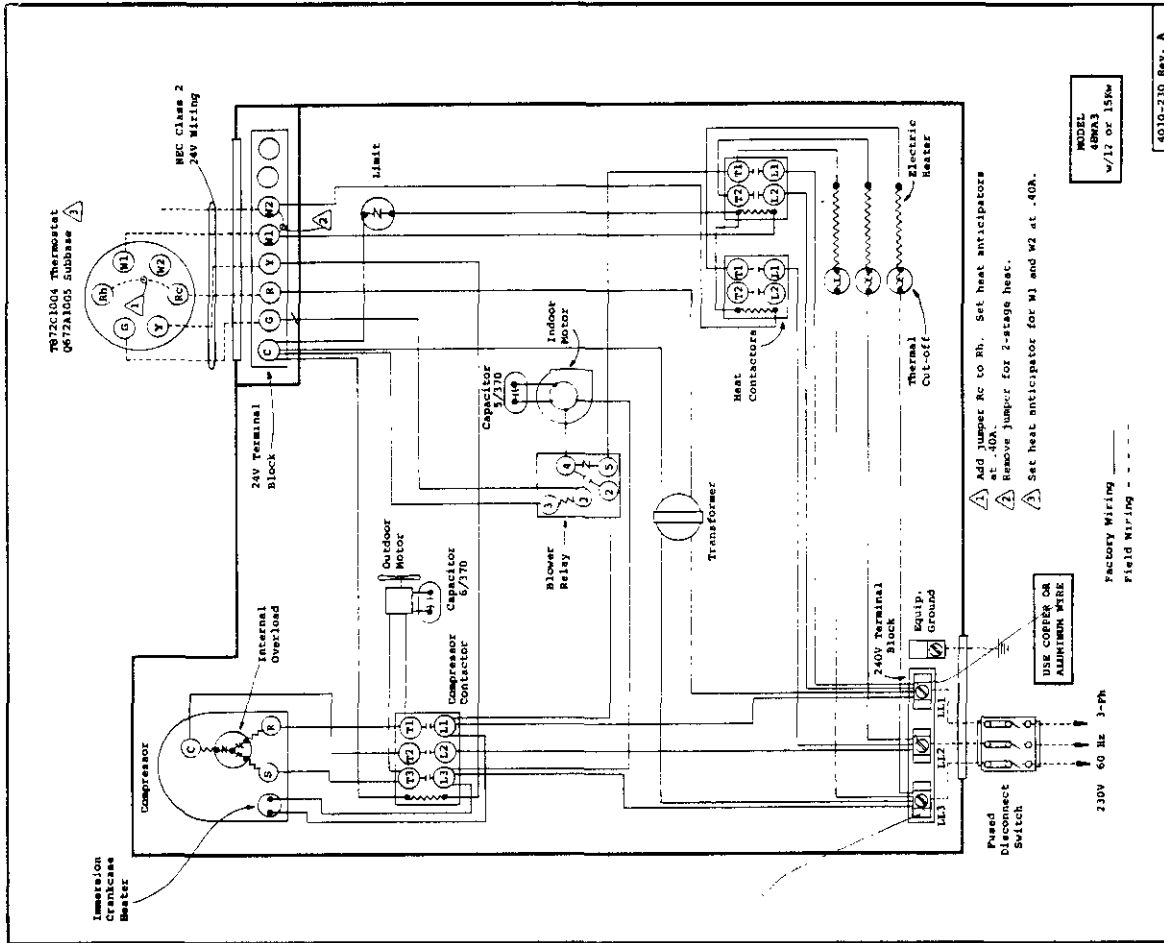


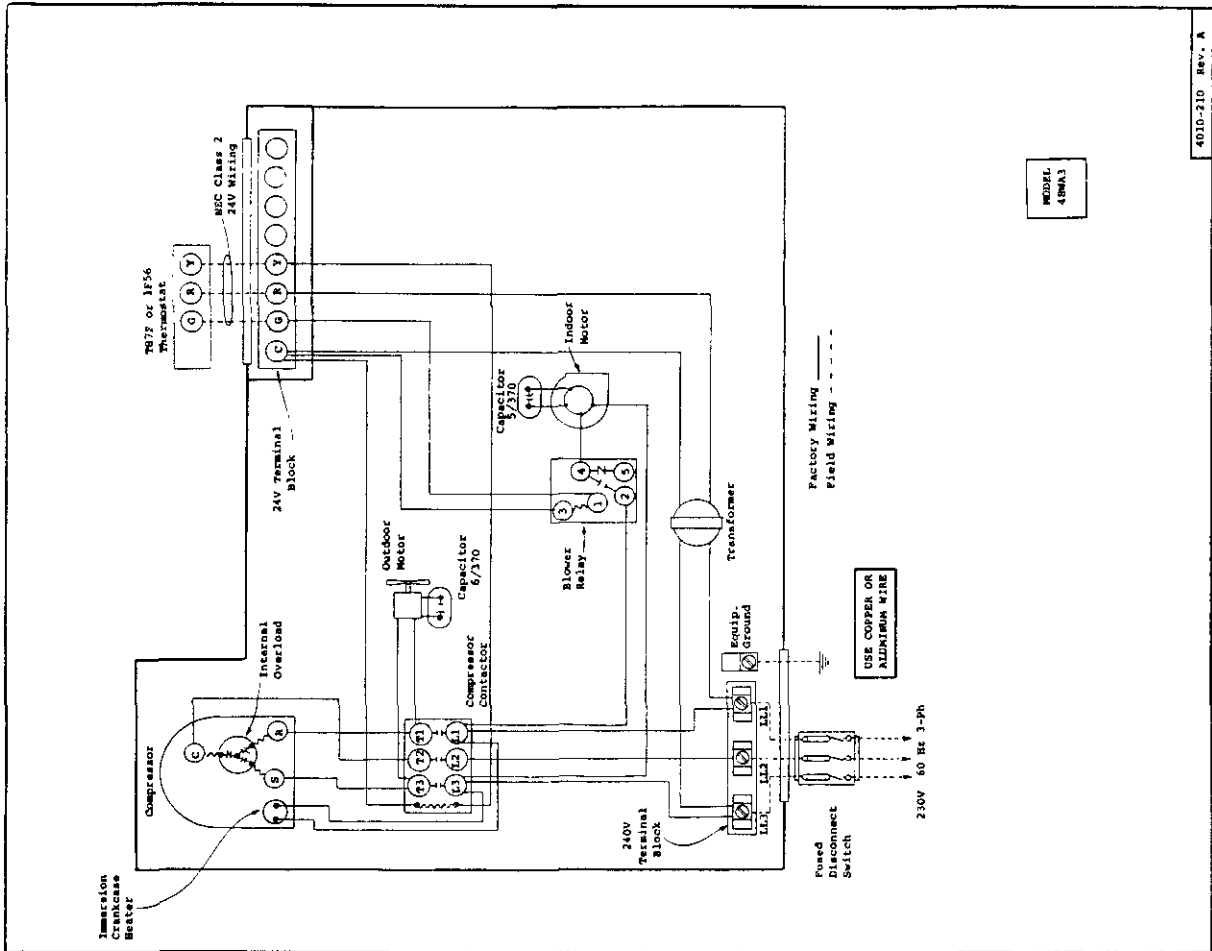
Example:

$$\frac{6.0 \text{ Amp}}{10 \text{ loops}} = .6A$$

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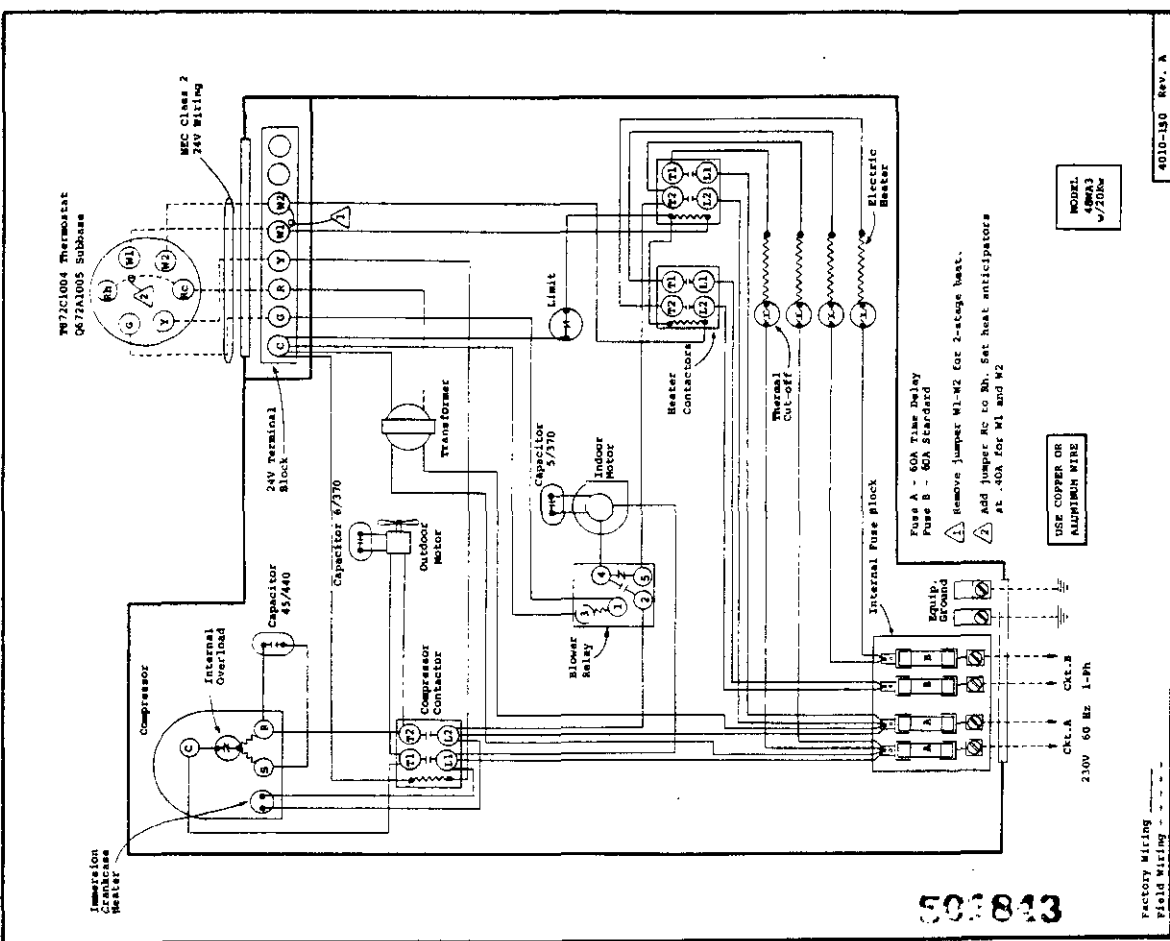






4010-210 Rev. A

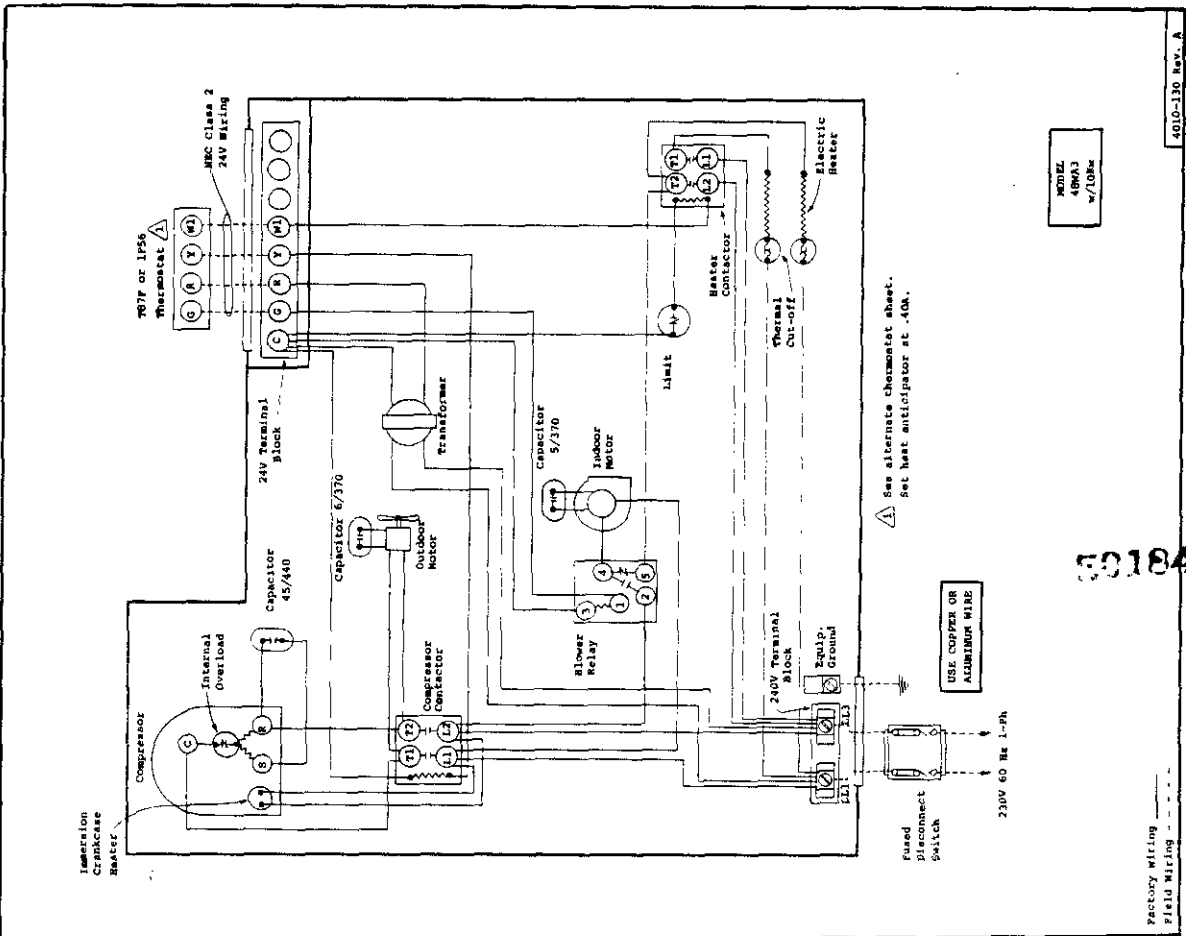
MODEL 48NA3



4010-140 Rev. A

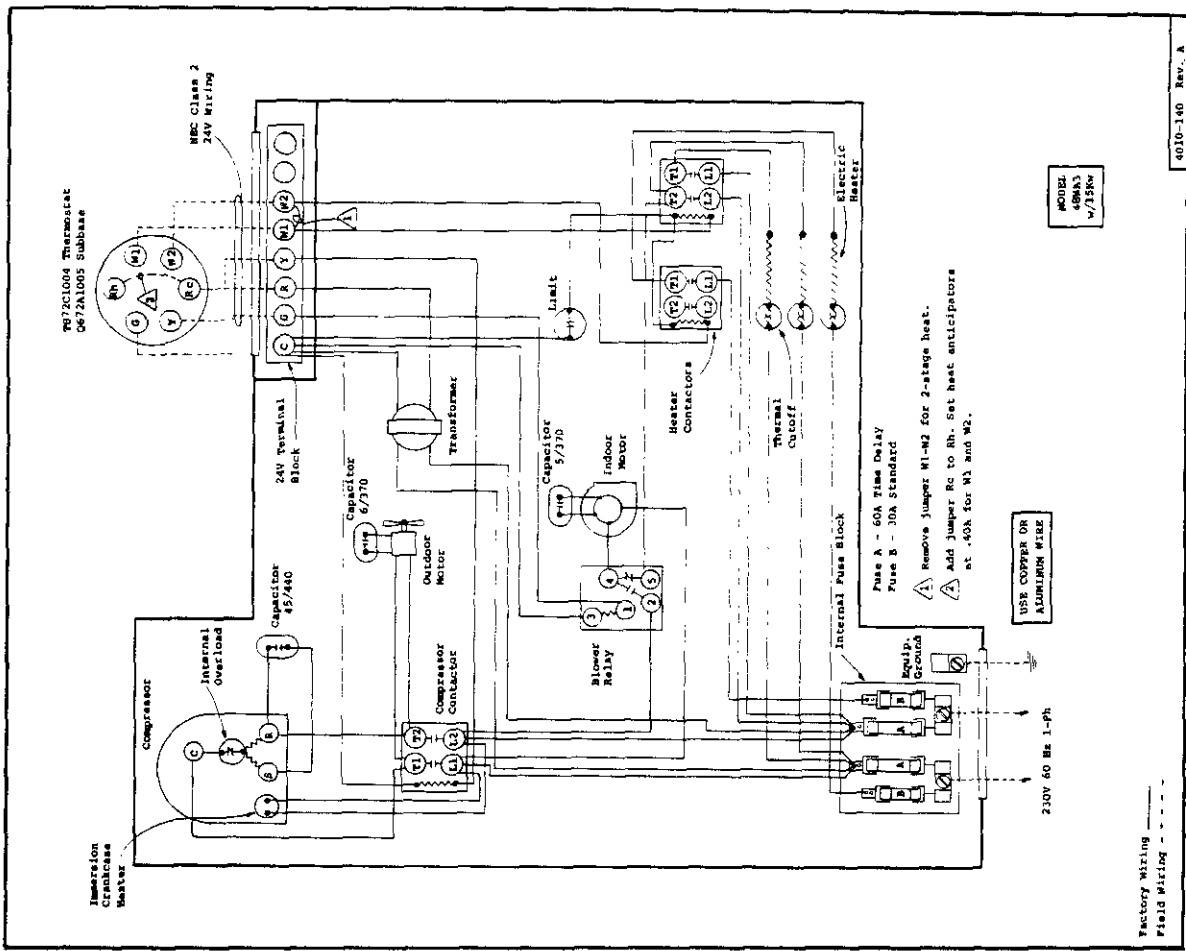
MODEL 48NA3 v/2006

501843



MODEL 48W43 w/108kw

Factory Wiring - - - - -  
Field Wiring - - - - -  
4010-130 Rev. A



MODEL 48W43 w/138kw

Factory Wiring - - - - -  
Field Wiring - - - - -  
4010-140 Rev. A

