

MANUAL 2100-014E

# INSTALLATION INSTRUCTIONS



Datasheet Live

## WALL MOUNTED AIR CONDITIONERS

### MODELS

18WA1

20WA

24WA1

30WA1

36WA3

48WA3

507819

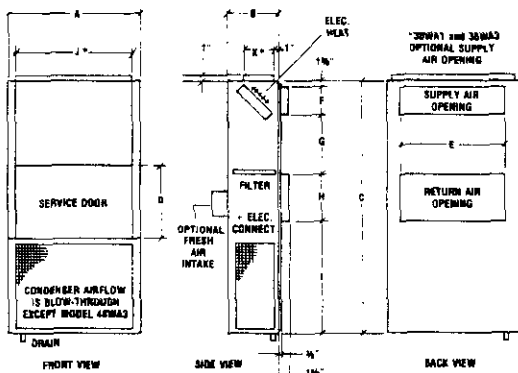
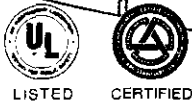
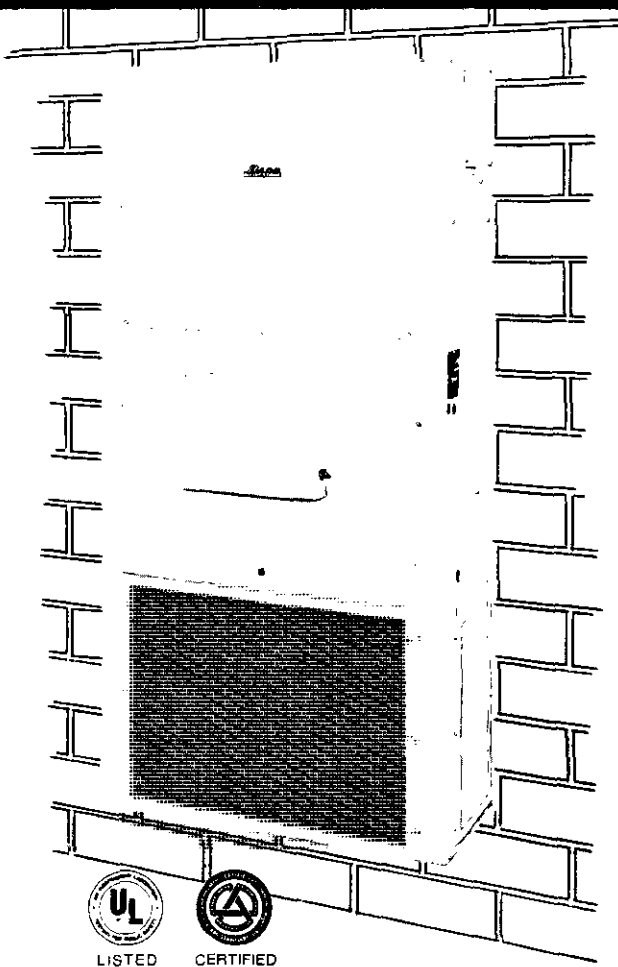
BARD MANUFACTURING CO. • BRYAN, OHIO 43506

*Dependable quality home equipment... since 1914*



# HI-BOY AIR CONDITIONERS

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



\*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%         | 15x30 3/8x1   |
| 48WA3            | 16 | 26 1/4 | N/A | N/A | 0 to 50%         | (2) 16x16x1   |

\*Dimensions and filter sizes are in inches.

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 hand-somely 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.



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 Ampacity              | 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. 10AWG |
| Delay Fuse — Max                   | 30A                           | 25A         | 30A         | 50A         | 50A         | 35A         | 80A         | 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          | 18.5        |
| 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                   | 1.6                           | 1.6         | 1.6         | 1.6         | 1.6         | 1.6         | 3.9         | 3.9         |
| Fan — OAA/CFM                      | 18"/1450                      | 18"/1450    | 18"/1450    | 20"/1900    | 20"/1900    | 20"/1900    | 30"/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     | 15x30 3/8x1 | 15x30 3/8x1 | 15x30 3/8x1 | (2) 16x16x1 | (2) 16x16x1 |
| Refrigerant — 22                   | 32 oz.                        | 40 oz.      | 41 oz.      | 40 oz.      | 49 oz.      | 49 oz.      | 83 oz.      | 83 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. \*\*\*Deduct 500 Btu for 208V operation.

Specifications subject to change without notice.

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| 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                            |           | 56                    |           | 4                  |           | 10                             |
|                 |                 |                         | 15               | 65.9           | 1                        | 60                  | 30        | 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                            |           | 56                    |           | 4                  |           | 10                             |
|                 |                 |                         | 15               | 65.9           | 1                        | 60                  | 30        | 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                        |                     |           | 50                            |           | 50                    |           | 6                  |           | 10                             |
|                 |                 |                         | 18               | 47.5           | 3                        | 60                  | 60        | 60                            | 60        | 57                    | 52        | 3                  | 4         | 10/10                          |

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

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

| INDOOR BLOWER PERFORMANCE<br>*CFM — DRY COIL |                        |                |       |
|--|------------------------|----------------|-------|
| E.S.P. in H <sub>2</sub> O                   | 18WA1<br>20WA<br>24WA1 | 30WA1<br>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.

### 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<br>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 |

Specifications subject to change without notice.

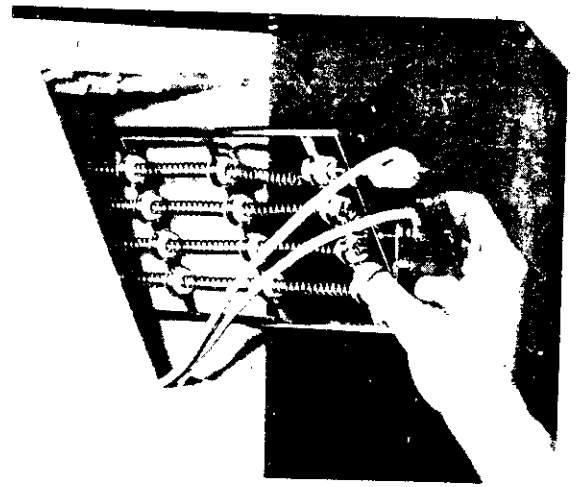
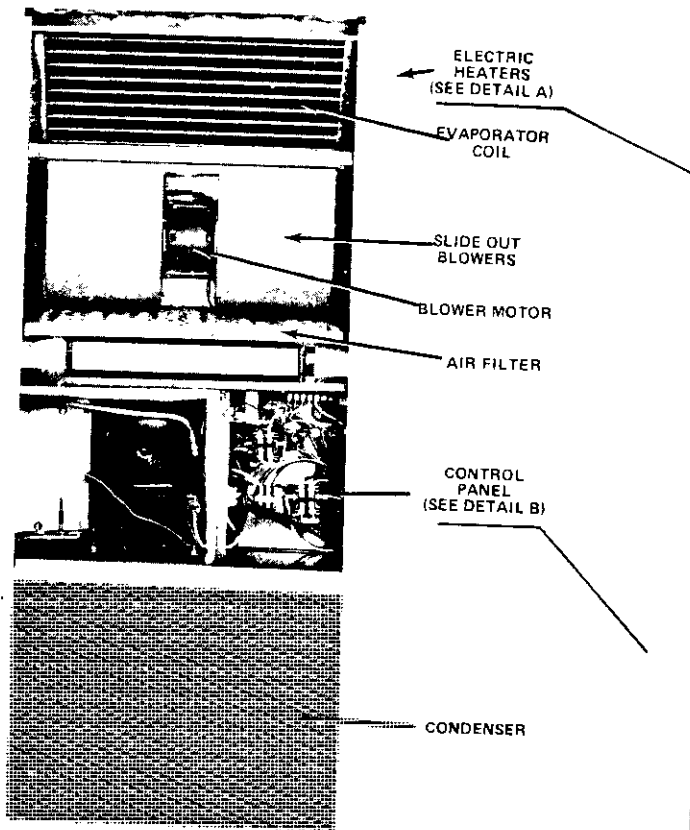
| APPLICATION RATINGS |      | OUTDOOR TEMPERATURES °F* |        |        |        |        |        |        |        |        |        |        |        |        |
|---------------------|------|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 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.

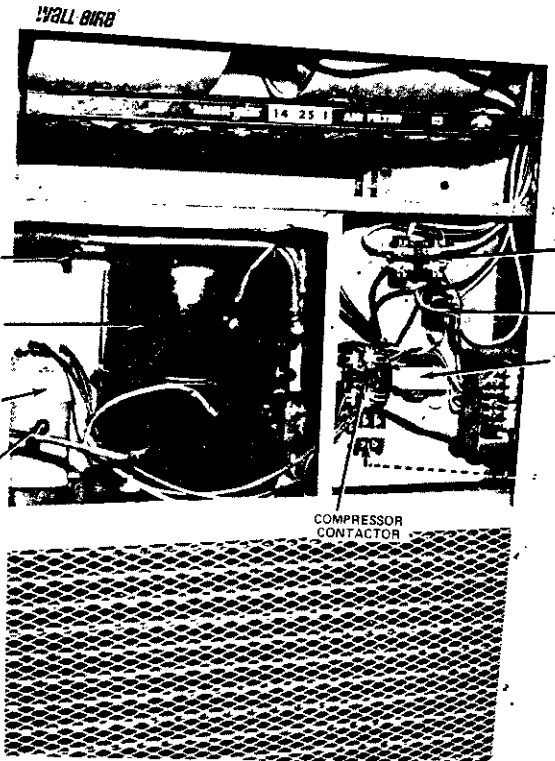


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Dependable equipment since 1914

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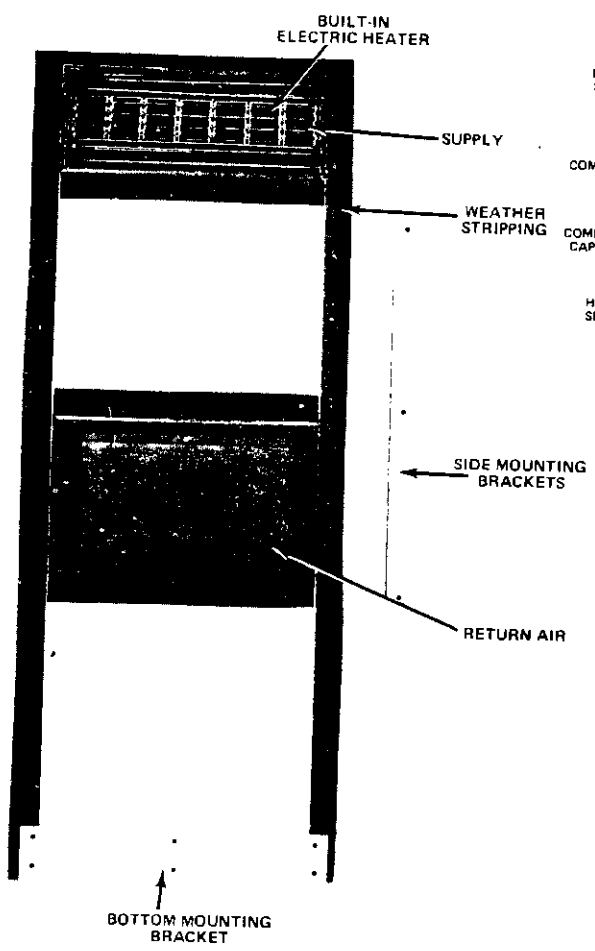


DETAIL A



DETAIL B

NOTE:  
BEFORE FASTENING  
SIDE MOUNTING  
BRACKETS  
CHECK INSIDE  
FOR CLEARANCE



BACK SIDE OF UNIT

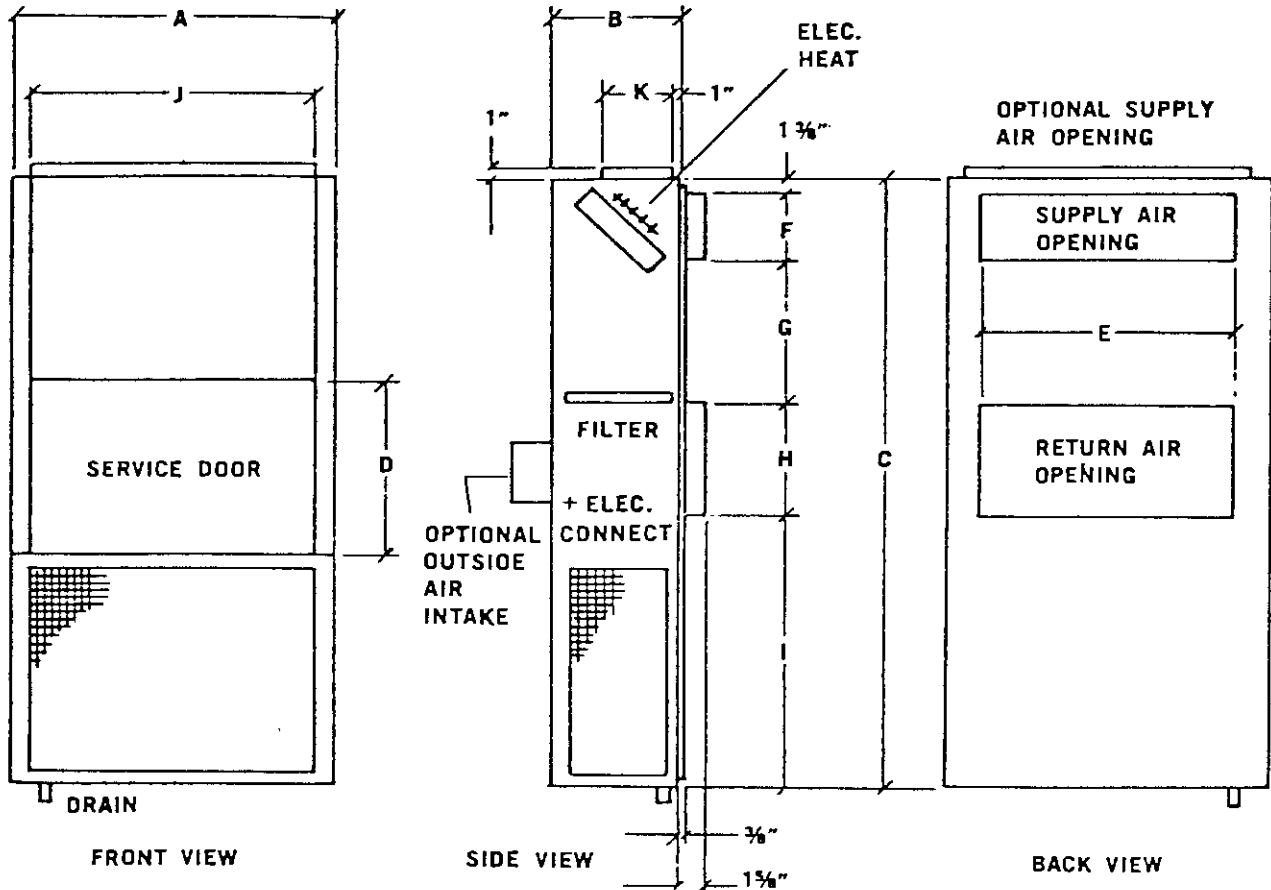
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# DIMENSIONS \*

... for architect and installation requirements

| MODEL            | A                | B                | C                | D                | E  | F  | G                | H  | I                | J  | K | FILTER SIZES* |
|------------------|------------------|------------------|------------------|------------------|----|----|------------------|----|------------------|----|---|---------------|
| 18WA1-20WA-24WA1 | 32 $\frac{1}{4}$ | 13 $\frac{1}{2}$ | 67 $\frac{1}{2}$ | 20               | 20 | 8  | 20 $\frac{1}{2}$ | 12 | 25 $\frac{3}{8}$ |    |   | 14 x 25       |
| 30WA1-36WA3      | 38 $\frac{1}{4}$ | 15 $\frac{1}{4}$ | 74               | 22 $\frac{1}{2}$ | 28 | 8  | 18               | 14 | 32 $\frac{3}{8}$ | 32 | 8 | 15 x 30-5/8   |
| 48WA3            | 38 $\frac{1}{4}$ | 18               | 84               | 32 $\frac{1}{2}$ | 30 | 10 | 30               | 16 | 26 $\frac{3}{8}$ |    |   | (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.

50883

| 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.

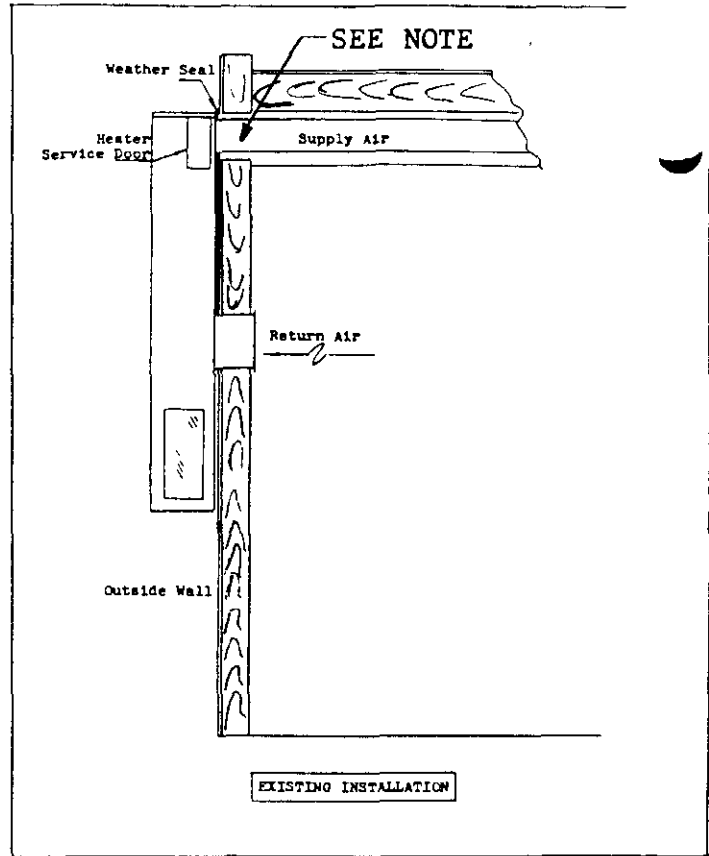
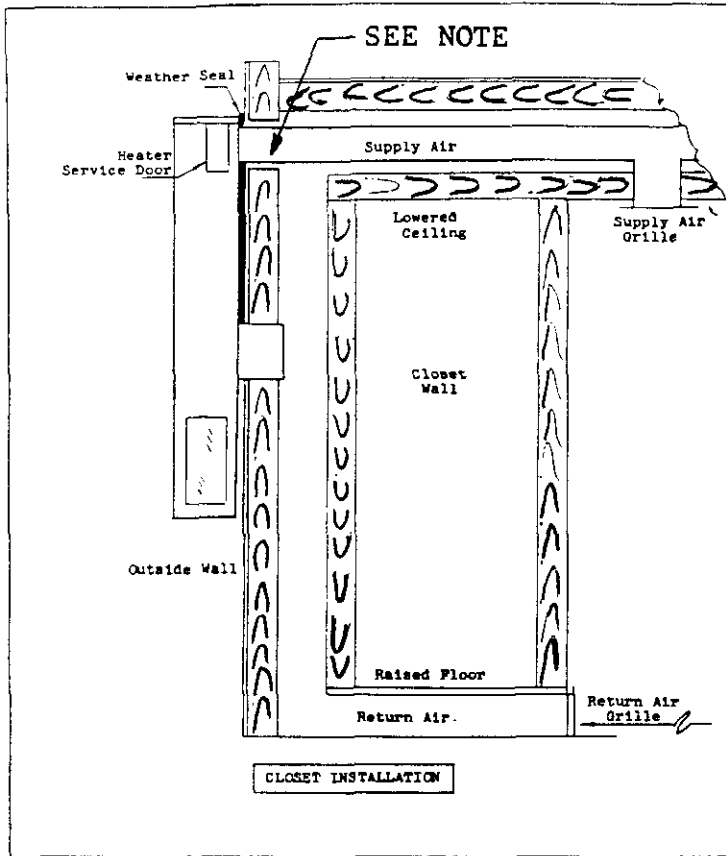
### WIRING - 230V

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.

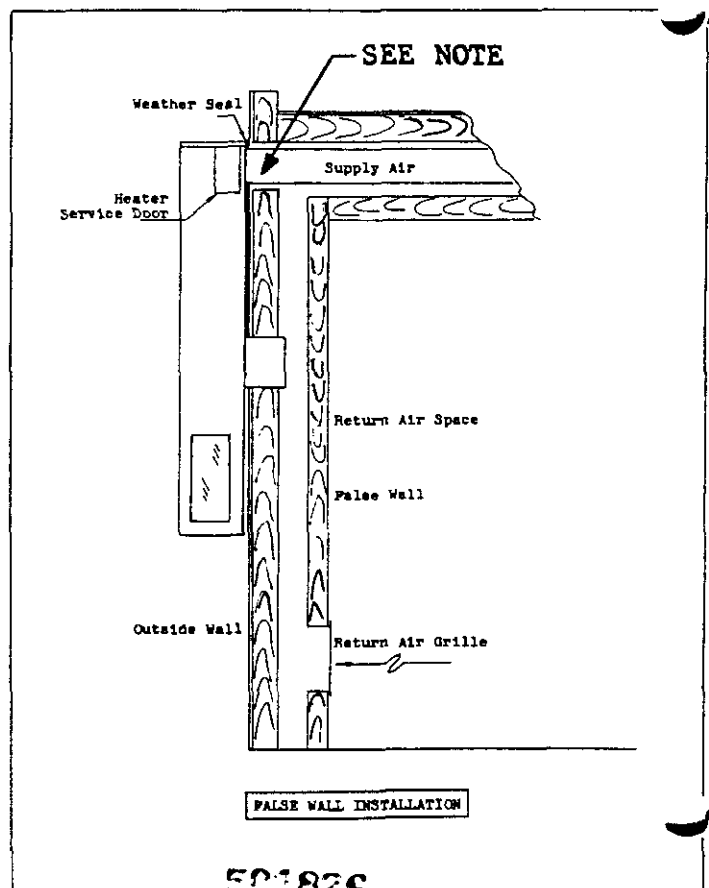
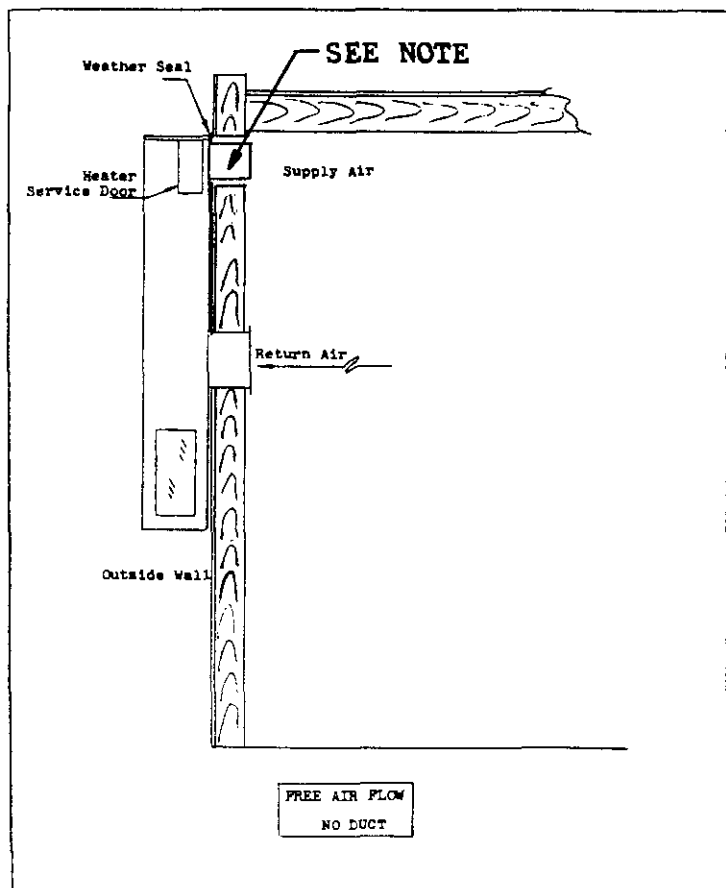
### CONDENSATE DRAIN

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.**





# 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    |       |      |       |       |       |       |         |         |      |         |
| 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   |       |      |       |       |       |       |         |         |      |         |
| 8000-045 | Compressor 1-Ph   |       |      |       |       |       |       |         |         |      |         |
| 8000-046 | Compressor 3-Ph   |       |      |       |       |       |       |         |         |      |         |
| 8000-010 | Compressor 3-Ph   |       |      |       |       |       |       |         |         |      |         |
| 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 | 36WA3-3 | 48WA3-3 | 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              |       |      |       |       |       |         |       |         |         |      |         |
| 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       |
| 8604-042 | 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       |
| 8604-043 | Heat Strip 8Kw      | X     | X    | X     | X     | X     | X       | X     | X       | X       | X    | X       |
| 8604-044 | Heat Strip 10Kw     | 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         | X     | X    | X     | X     | X     | X       | X     | X       | X       | X    | X       |
| 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.

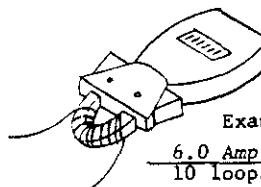
The fixed anticipators are rated for a maximum of 1.5A. The adjustable anticipators generally have a range of .2 - 1.2A, and MUST BE ADJUSTED. Failure to adjust the anticipator lever to correspond to the actual current draw passing through that stage mercury switch and anticipator will cause severe short 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.

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.

| 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                    |
| - 30EO30                 | .21                    |

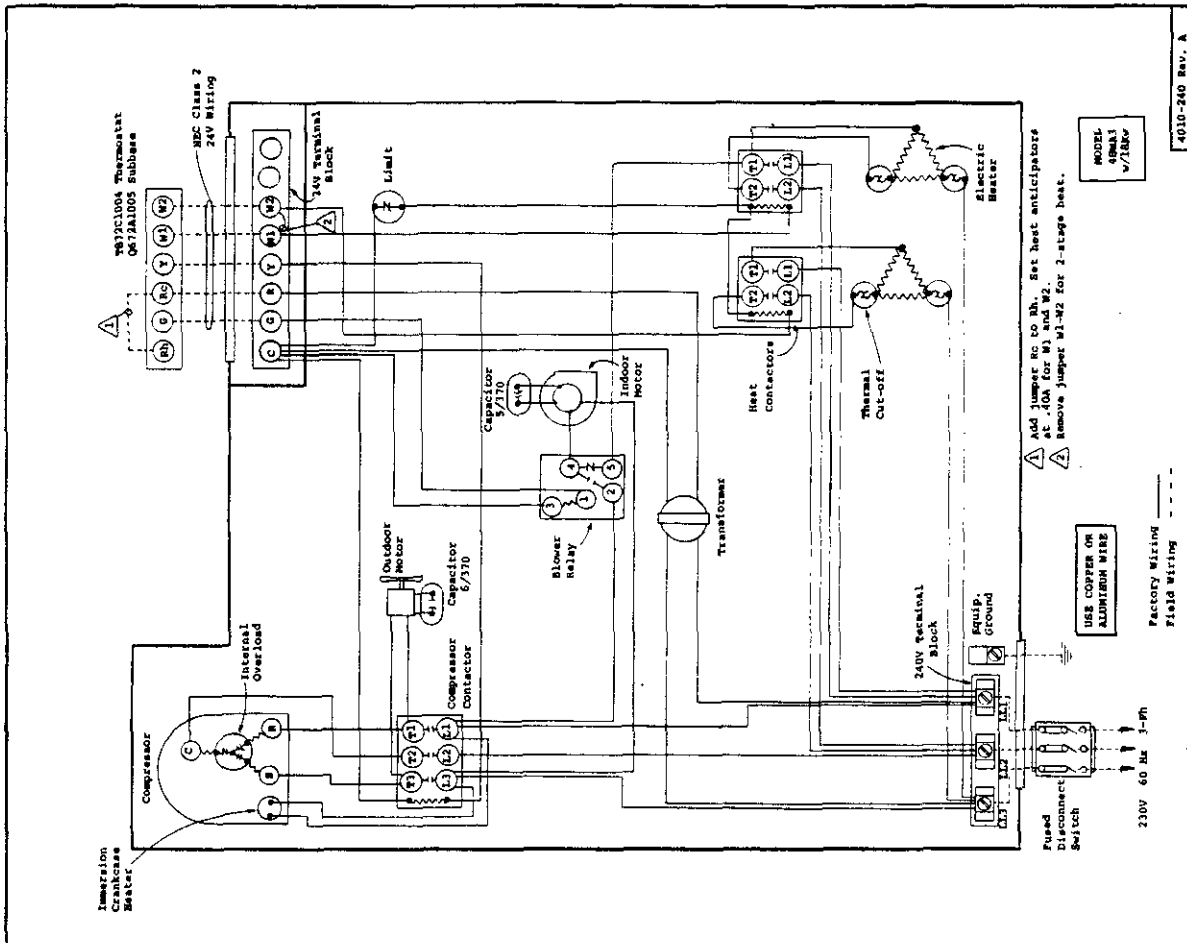
1. Wrap exactly 10 loops of thermostat wire (W1) around the prongs of an Amprobe.
2. Let the heating system operate for one minute before reading the W1 or W2 current draw.
3. Divide the reading obtained in Step 2 by 10.
4. Use the value calculated in step 3 to set the heat anticipator.
5. Repeat the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

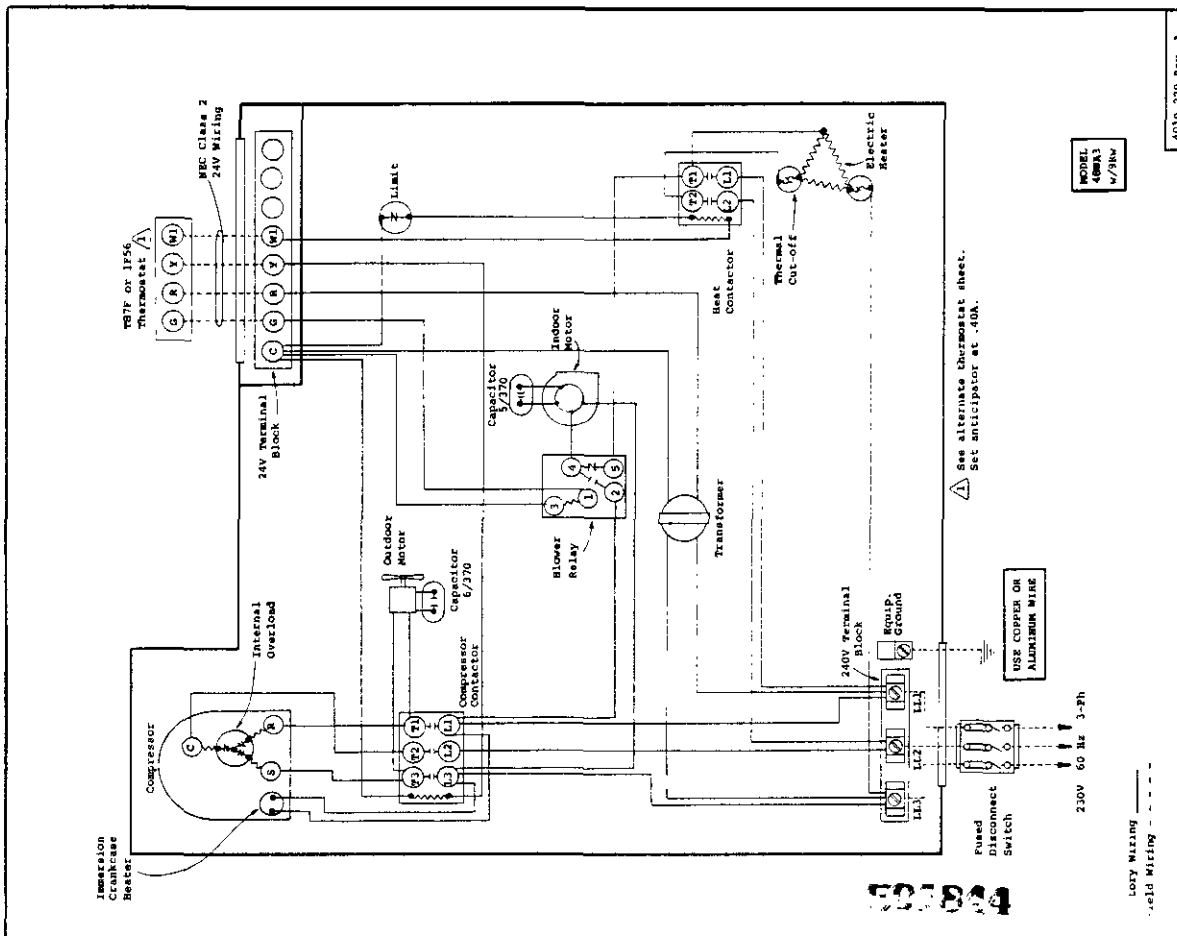
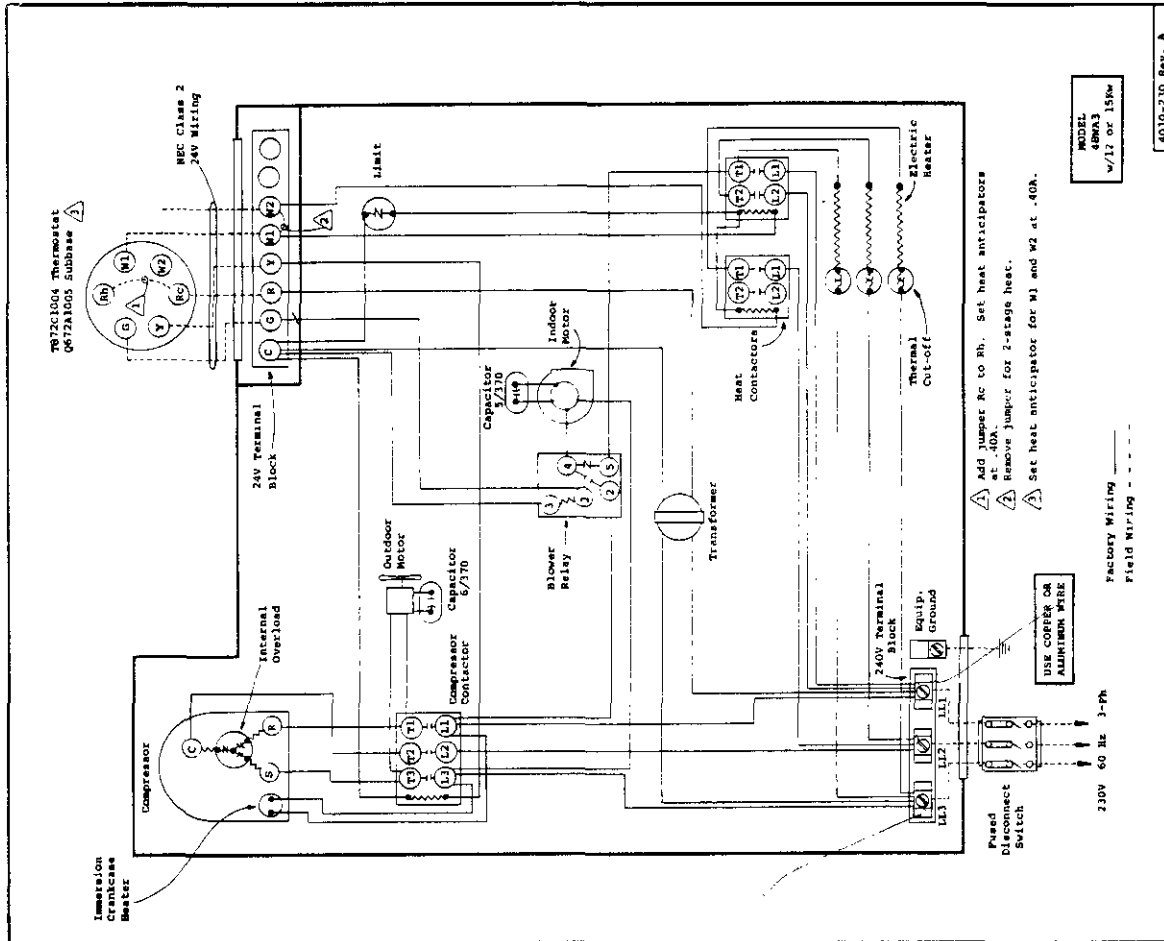


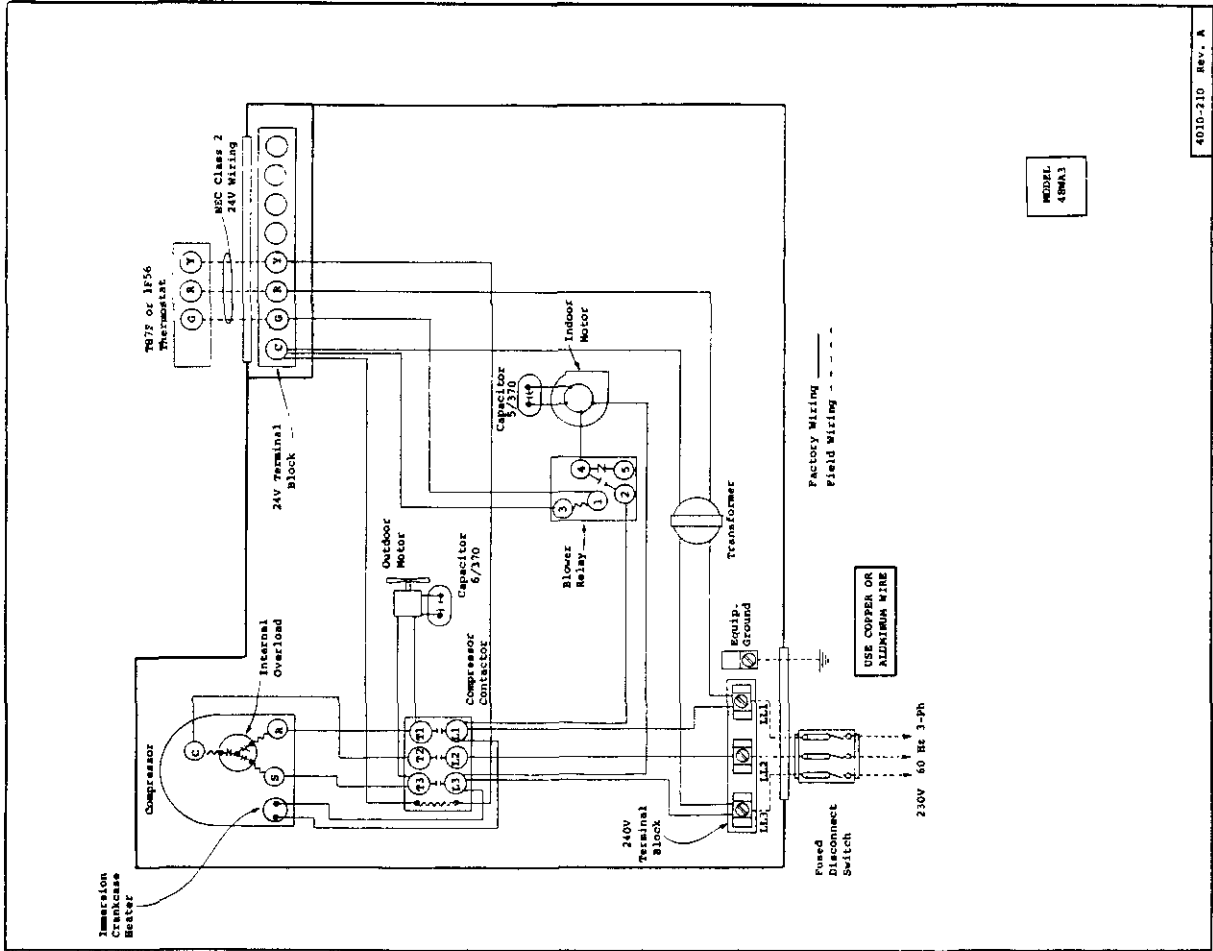
Example:

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

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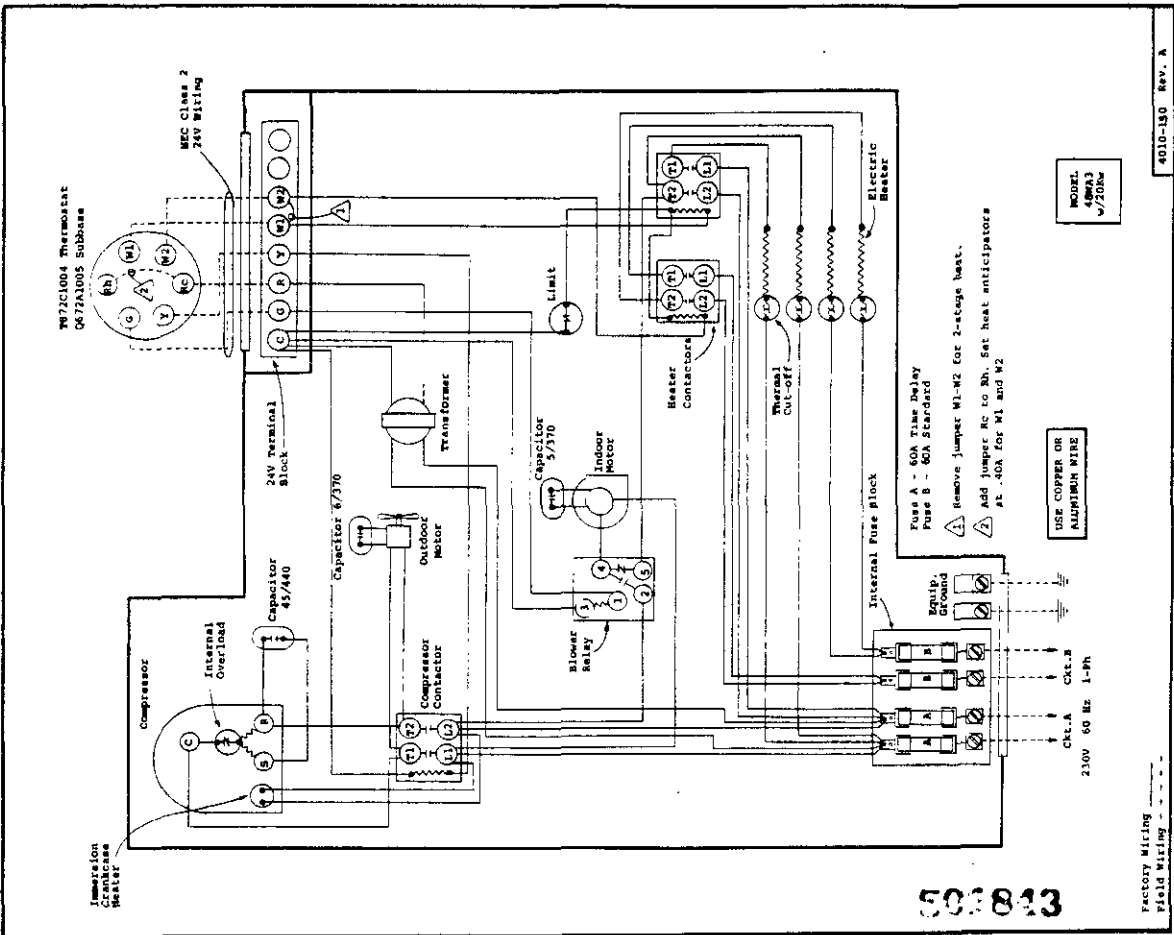






4010-210 Rev. A

MODEL 48NA3



4010-130 Rev. A

MODEL 49NA3 v/200a

500843

Factory Wiring Field Wiring

