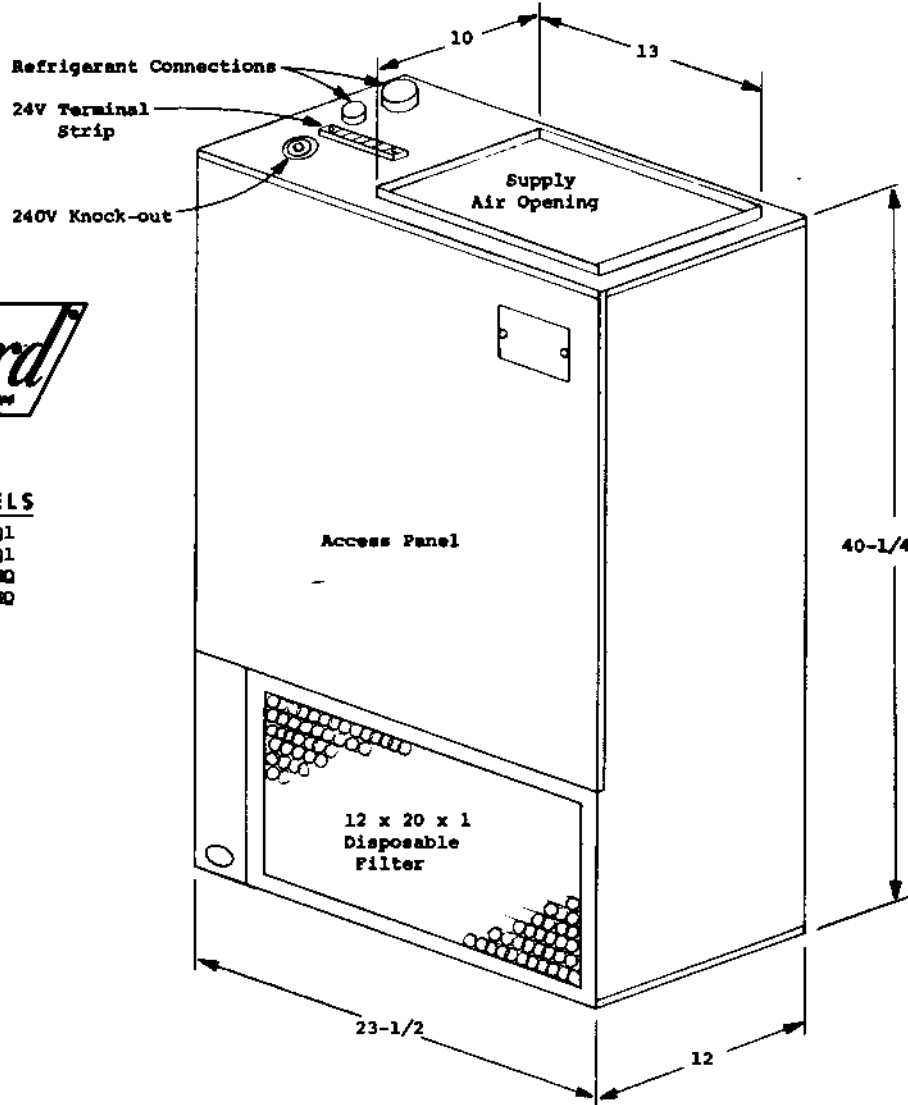


# INSTALLATION INSTRUCTIONS



**MODELS**

- B18EQ1
- B24EQ1
- B18EQ
- B24EQ



**SPECIFICATIONS**

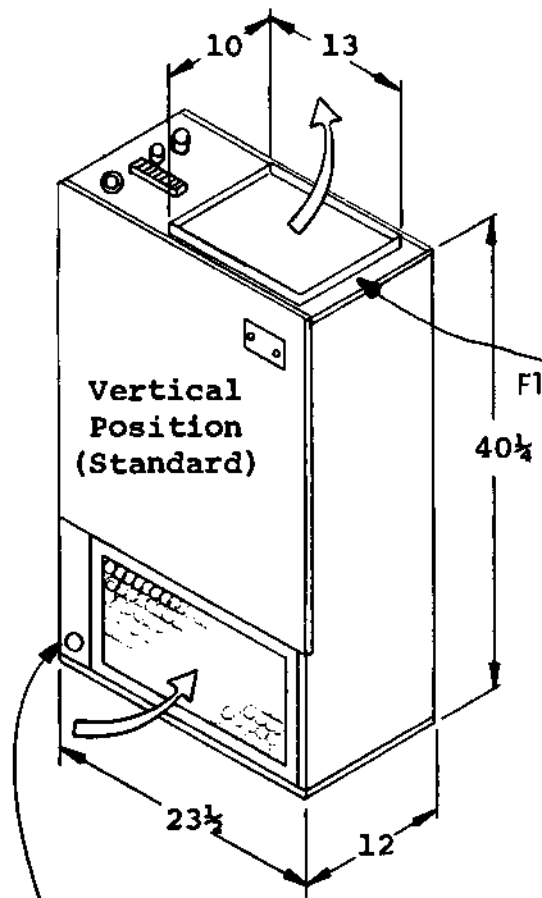
MODEL	B18EQ1 and B24EQ1	B18EQ and B24EQ
<b>ELECTRICAL</b>		
Rated Voltage	240	240
Phase	1	1
Hertz	60	60
Voltage Range	197-253	197-253
<b>MOTOR AND BLOWER</b>		
Motor H.P.	1/6	1/6
Motor Amps	1.7	1.7
Motor RPM	950	950
Blower	10x4 Direct	10x4 Direct
<b>HEAT TRANSFER COIL</b>		
Face Area, Ft <sup>2</sup>	1.56	1.78
Rows	3	3
Fins Per Inch	14	13
<b>DISPOSABLE FILTER</b>		
Size	12x20x1	12x20x1
<b>REFRIGERANT CONTROL</b>		
Type	Capillary	Capillary
R-22 Charge	7 oz. 4 oz.	7 oz. 7 oz.
<b>SHIPPING WEIGHT, LBS.</b>	90	95

**BLOWER PERFORMANCE  
ALL MODELS**

E.S.P. In. H <sub>2</sub> O	Low Speed	High Speed
.00	680	860
.10	660	840
.20	645	805
.30	630*	765**

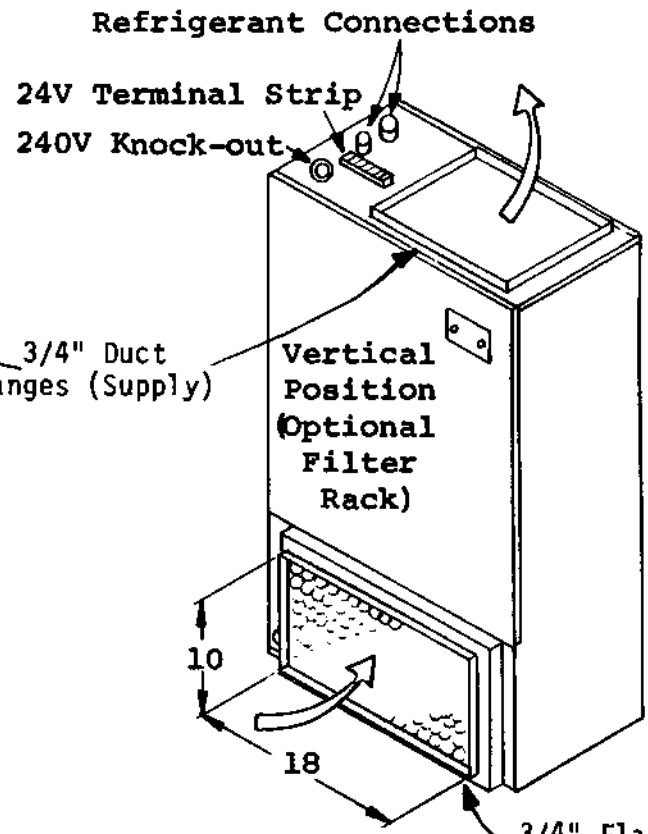
\*Minimum airflow for B18EQ1 and B18EQ  
\*\*Minimum airflow for B24EQ1 and B24EQ

**MOUNTING POSITIONS AND RETURN AIR OPTIONS**



**Vertical Position (Standard)**

**3/4" IPS Drain Connection— Vertical Position**



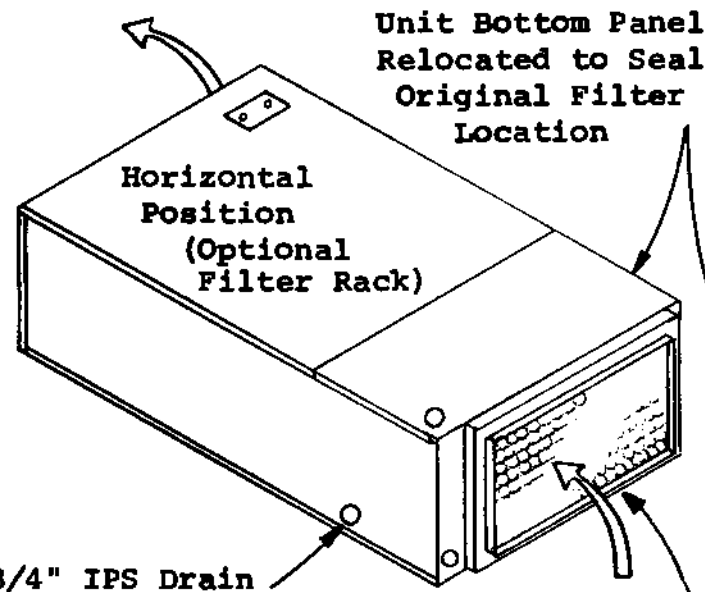
**Refrigerant Connections**

**24V Terminal Strip**

**240V Knock-out**

**Vertical Position (Optional Filter Rack)**

**3/4" Flanges For Return Air Duct**

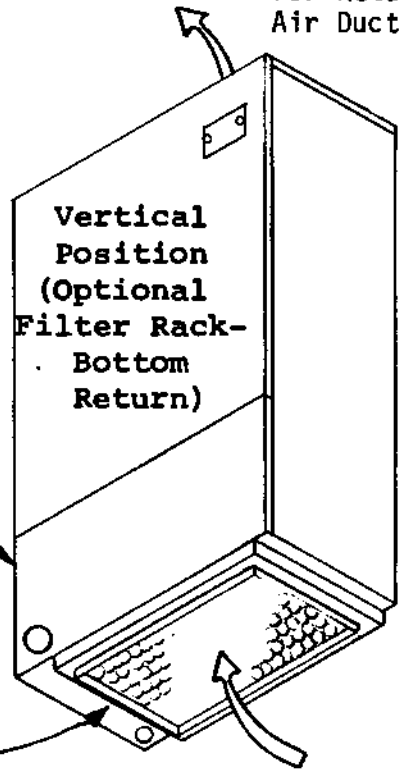


**Horizontal Position (Optional Filter Rack)**

**Unit Bottom Panel Relocated to Seal Original Filter Location**

**3/4" IPS Drain (Horizontal only)**

**3/4" Flanges For Return Air Duct**



**Vertical Position (Optional Filter Rack— Bottom Return)**

**NOTE:** If no return air duct is used, applicable installation codes may limit this cabinet to installation only in a single story structure.

## GENERAL

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

RW models require an external fuse panel, Model RFP-15, comply with installation requirements. Refer to "Electrical Specifications" and "Field Wiring Data" for complete information.

The approved matching combinations of indoor and outdoor sections are:

Type	Indoor Section	Outdoor Section
A/C	B18EQ1	18ECQ1
A/C	B24EQ1	24ECQ1
H/P	B18EHQ	18HPQ1
H/P	B24EHQ	24HPQ1

## UNPACKING

Upon receipt of equipment, carton should be checked for external signs of damage. If damage is found, request for inspection by carrier's agent should be made in writing immediately.

## 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.

## FILTER

This unit must not be operated without a filter. It comes equipped with a disposable 12x20x1 filter installed for free return application. An optional 12x20 filter rack is available for ducted return applications and can be used for both vertical and horizontal installations.

## LOCATION AND CLEARANCES

All access to the equipment is from one side, and at least 24 inches should be provided from this side for service access.

Unit casing is suitable for 0 inch clearance. The first two (2) feet of ductwork attached to the outlet (supply air) connections of the unit are to have a minimum of 1 inch clearance, with 0 inch clearance for any remaining ductwork.

Unit may be installed in utility room, closet, basement, attic, or closed crawl space in either upflow or horizontal position.

When installed horizontal in an attic installation, a platform should be made for the unit to sit on. This platform can be made from 3/4 inch plywood or boards. An auxiliary drain pan should always be used when equipment is installed over a finished living area, to provide protection from water damage in case of plugging the primary drain line from the unit condensate collection pan.

Secure four pieces of cork or live rubber, 4" x 4", of sufficient thickness to allow primary drain to clear edge of auxiliary drain pan, under each corner of the unit.

## CONDENSATE DRAIN

Determine where the drain line will run. This drain line contains cold water and must be insulated to avoid drops of water from dropping on ceiling, etc. A trap must be installed in the primary drain line below the bottom of the drain pan.

There is a separate drain connection for vertical and horizontal applications. Refer to drawings on page 2 for locations.

For horizontal installations with auxiliary drain pan, a separate drain line should be run from the auxiliary drain pan and terminated where the home owner can see it. Be certain to show the homeowner the location of the drain line and to explain its purpose. In the event of overflow of primary drain, water will collect in auxiliary pan and run out through the auxiliary drain line.

It is not recommended that any condensate drain lines be connected to a sewer main. Drain lines must be installed in accordance with local codes.

## INTERCONNECTING TUBING

It is recommended that the interconnecting tubing be the RW-series charged tubing sets. This is a precharged tubing set with an insulated suction line. Both suction and liquid line are equipped with the correct quick connect fittings for proper match up to the indoor and outdoor sections. The RW-series is available in standard tubing lengths of 15, 25, 35 and 45 feet.

## THERMOSTAT LOW-VOLTAGE WIRING

A 24V terminal block is mounted on the top (vertical position) of the unit. There is also a 24V terminal block located in the outdoor section of remote heat pumps and two tagged 24V wires in the outdoor section of remote air conditioners.

Specific control circuit wiring diagrams for the various applications are referenced in the sections titled AIR CONDITIONING WITH ELECTRIC HEAT and HEAT PUMP WITH ELECTRIC HEAT. These diagrams detail the recommended controls and wiring to allow the best possible operation of the different types of systems with respect to energy conservation while still maintaining close comfort levels for the occupant.

## TWO SPEED BLOWER MOTOR

THE BLOWER COIL is supplied with a multiple speed blower motor, using two speed taps to provide airflow variation for the different basic capacity ratings of the outdoor sections.

MOTOR SPEED IDENTIFICATION		
Common	-	Yellow
High	-	Black
Low	-	Red
Capacitor	-	Brown

The HEATING-COOLING BLOWER RELAY provides for single blower speed operation of the motor. A manual change-over can be made by changing the motor speed tap that is connected to the blower relay.

All unused speed taps must be taped securely and individually from one another so as not to short out the motor. Refer to unit wiring diagram for correct identification of relay terminals.

Models B18EQ1 and B18EHQ are shipped wired on low speed, and B24EQ1 and B24EHQ wired on high speed. Refer to "Blower Performance Data" for information in airflow capabilities at different speeds and external static pressures.

FIELD WIRING DATA																	
Model	KW	No. of Circuits	Ampacity		Power Wiring				Ground								
			Ckt. A	Ckt. B	Ckt. A		Ckt. B		Ckt. A		Ckt. B						
					CU	AL	CU	AL	CU	AL	CU	AL					
All	0 5 10 15	1 1 1 2*	15 28 54 54*		26*	14 10 6 6	12 8 4 4			10	8	14 10 10 10	12 8 8 8			10	8

\*Two (2) circuits with ampacities as shown required between blower coil unit and RFP-15 Remote Fuse Panel. Single circuit ampacity input to RFP-15 is 80. Recommended power wiring is #3 CU or #1 AL, and ground wire #8 CU or #6 AL.

BLOWER COIL ELECTRICAL SPECIFICATIONS							
Model	Rated Kw	Amps*	Ampacity		Main Fuse		
			Circuit A	Circuit B	Circuit A	Circuit B	
All	0 5 10 15	1.7 22.5 43.3 64.1	15 28 54 54***		26**	15 30 60 80***	

\*Total unit amps including blower motor.  
\*\*See above note for Field Wiring Data.  
\*\*\*Main fuse supplying RFP-15. Internal fuses of RFP-15 are 60A and 30A.

#### UNIT OPERATION

The controls in these blower coil units provide for manual/auto operation of the blower motor in addition to the staging of the installed electric heat. Staging is accomplished in basic 10Kw increments, that is, each heat contactor controls up to two 5Kw elements.

HEATER ELEMENT STAGING	
Heater Kw	Stages
5 or 10 15	1 2

Heater stage designations are as follows on the 24V terminal blocks:

Models B18EQ1 and B24EQ1 - 1st Stage, W1 - 2nd Stage, W2

Models B18EHQ and B24EHQ - 1st Stage, W2 - 2nd Stage, F

#### AIR CONDITIONING WITH ELECTRIC HEAT

Typical applications would be to use a 1-stage cool, 1-stage heat wall thermostat for 5 and 10Kw installations, and a 1-stage cool, 2-stage heat wall thermostat for 15Kw installations. Listed below are the appropriate control circuit wiring diagrams based on Kw rating.

Models B18EQ1 or B24EQ1/5 or 10Kw ABC-1

Models B18EQ1 or B24EQ1/15Kw ABC-2

#### HEAT PUMP WITH ELECTRIC HEAT

The system and its safety controls are designed in such a manner that the heat pump and up to 10Kw of the resistance electric strip heaters can operate at the same time, being brought on in stages. If there is 15Kw installed in the blower coil unit, the remaining 5Kw is utilized as heat pump "replacement" heat. The "replacement" heat is brought on automatically if the wall thermostat is switched to "Emergency Heat" position, or if the compressor is de-energized by a compressor cut-off at extreme outdoor temperatures. This allows for total heating capability in the event of a compressor shutdown for the above reasons.

Listed below are the appropriate control circuit wiring diagrams based on Kw rating.

Models B18EQ or B24EQ/5 or 10Kw HBC-1

Models B18EQ or B24EQ/15Kw HBC-2

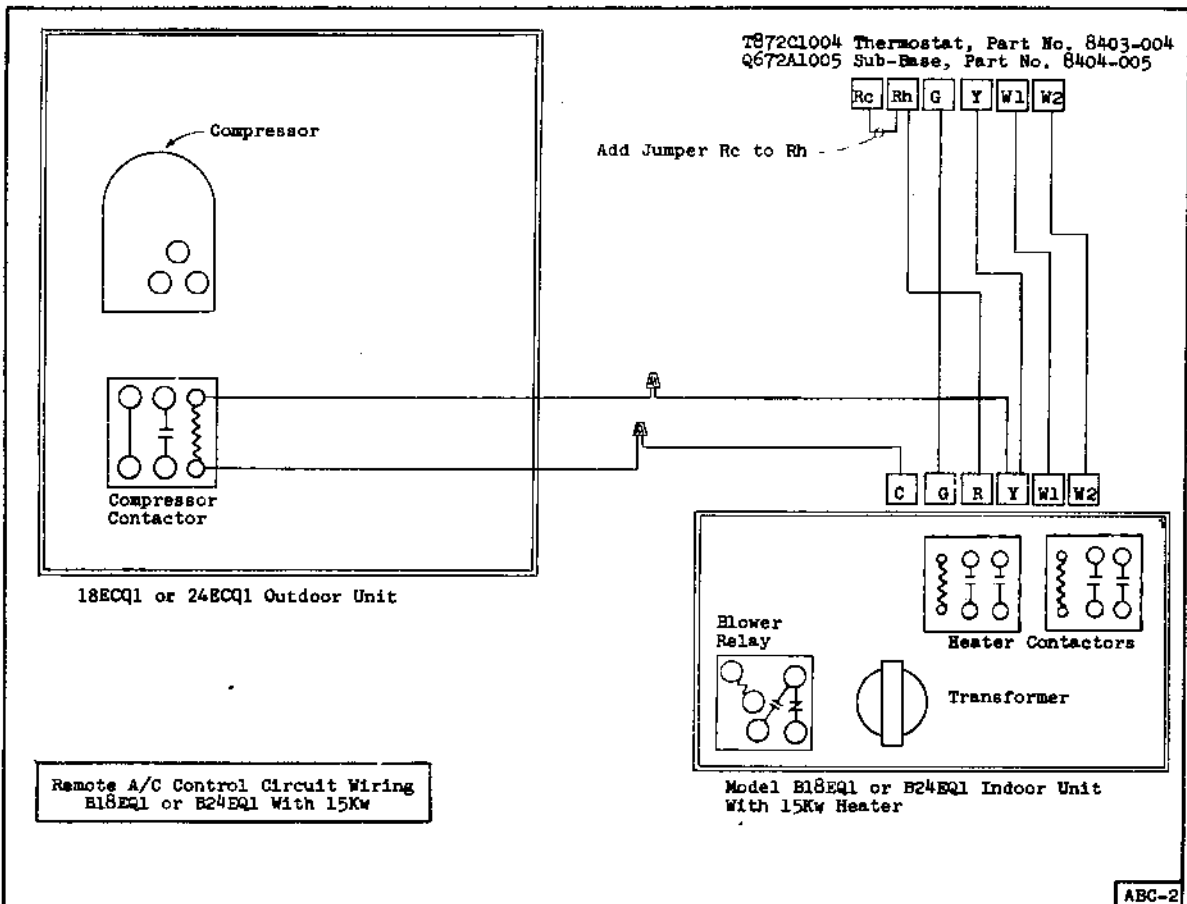
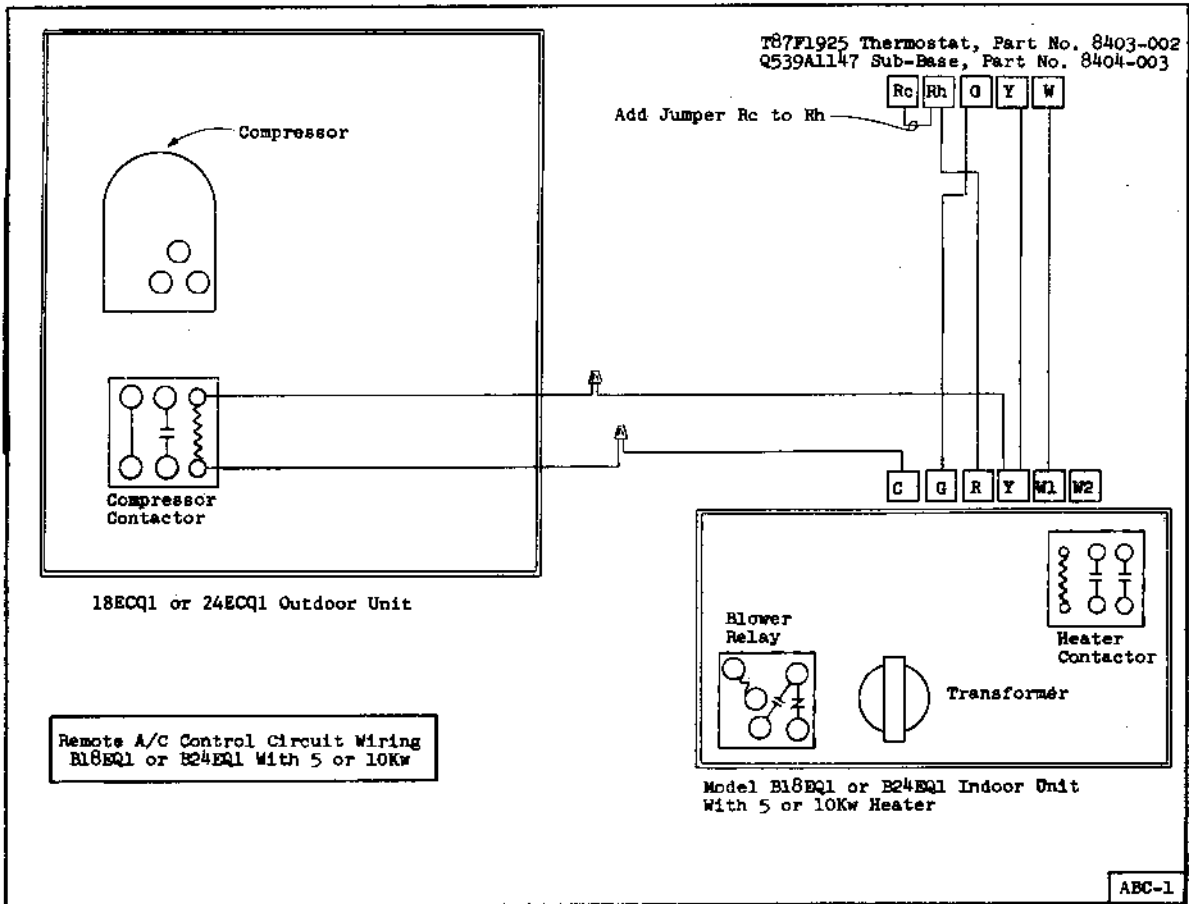
Compressor cut-off, Part Numbers 8408-001 (10-45°F Range) or 8408-005 (0-30°F Range) are shown on the above control circuit wiring diagrams and is a field installed item. In geographical areas where compressor cut-off would not be required because winter temperatures below the 0 to 10°F above range are not experienced or are of extremely short duration, disregard the compressor cut-off wiring shown on the control circuit diagrams, and DO NOT remove the factory wire between the compressor contactor coil and terminal 4 on the changeover relay as indicated.

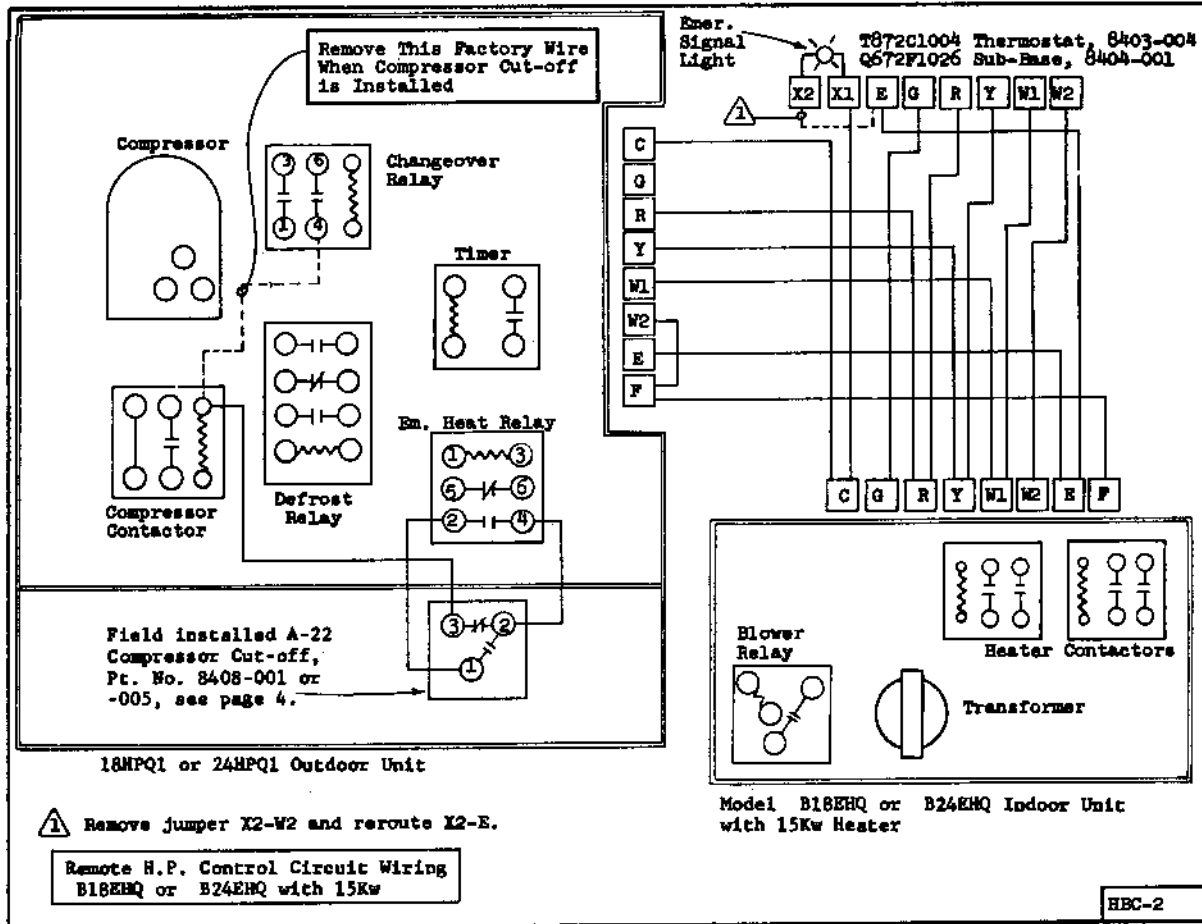
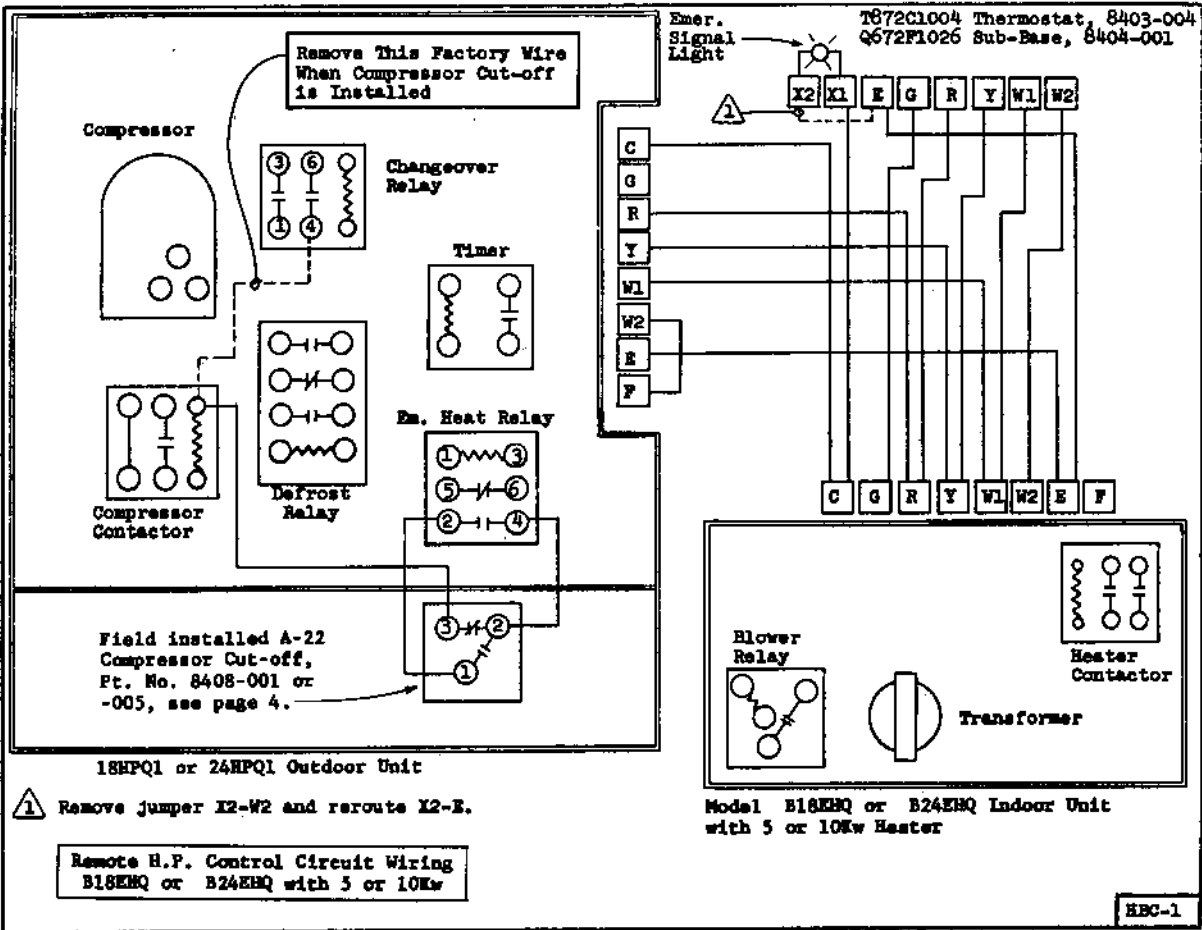
#### WALL THERMOSTATS

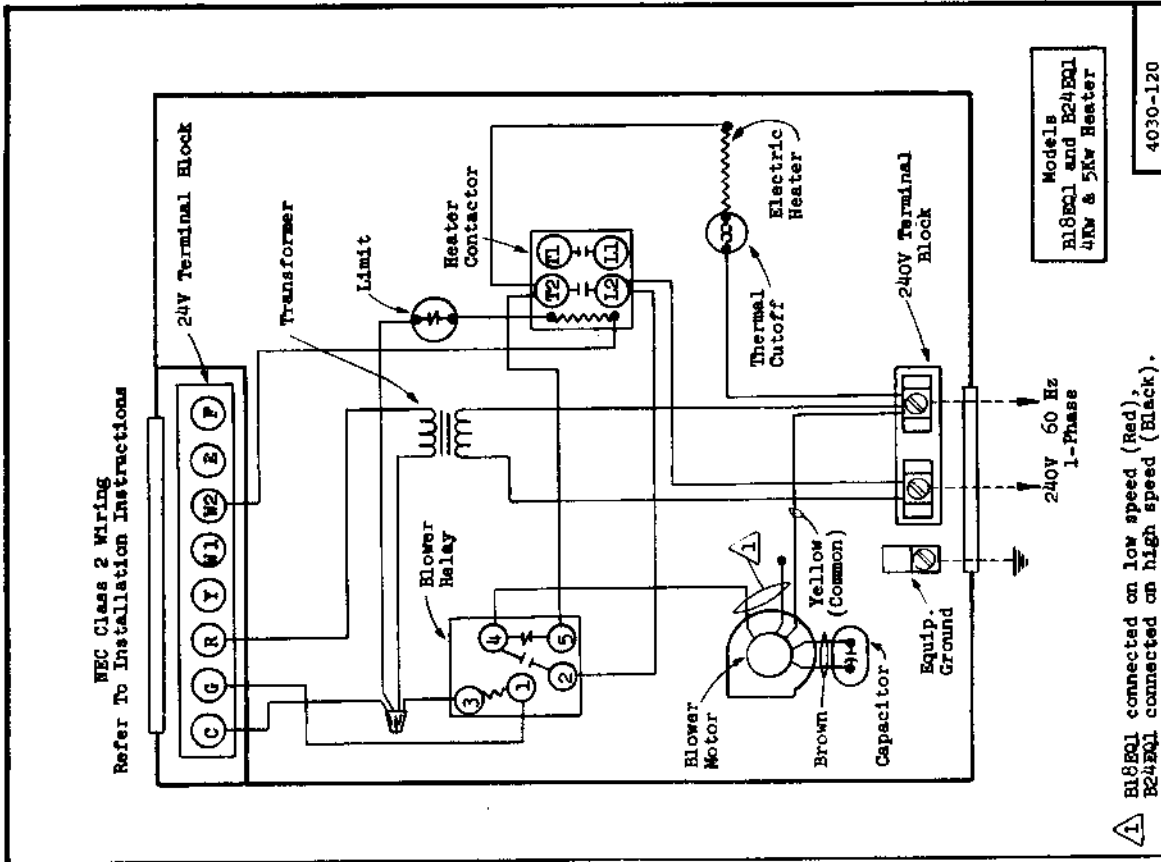
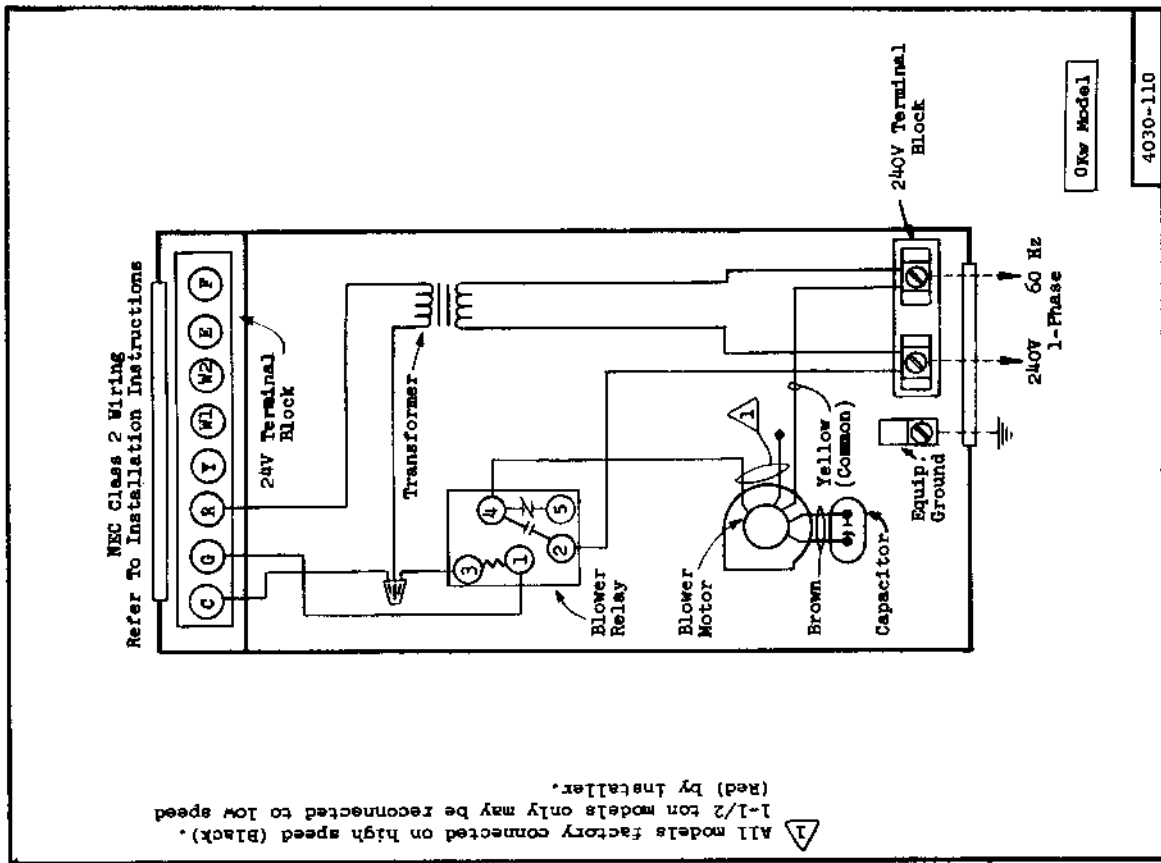
The following wall thermostats and sub-bases should be used as indicated, based upon the application.

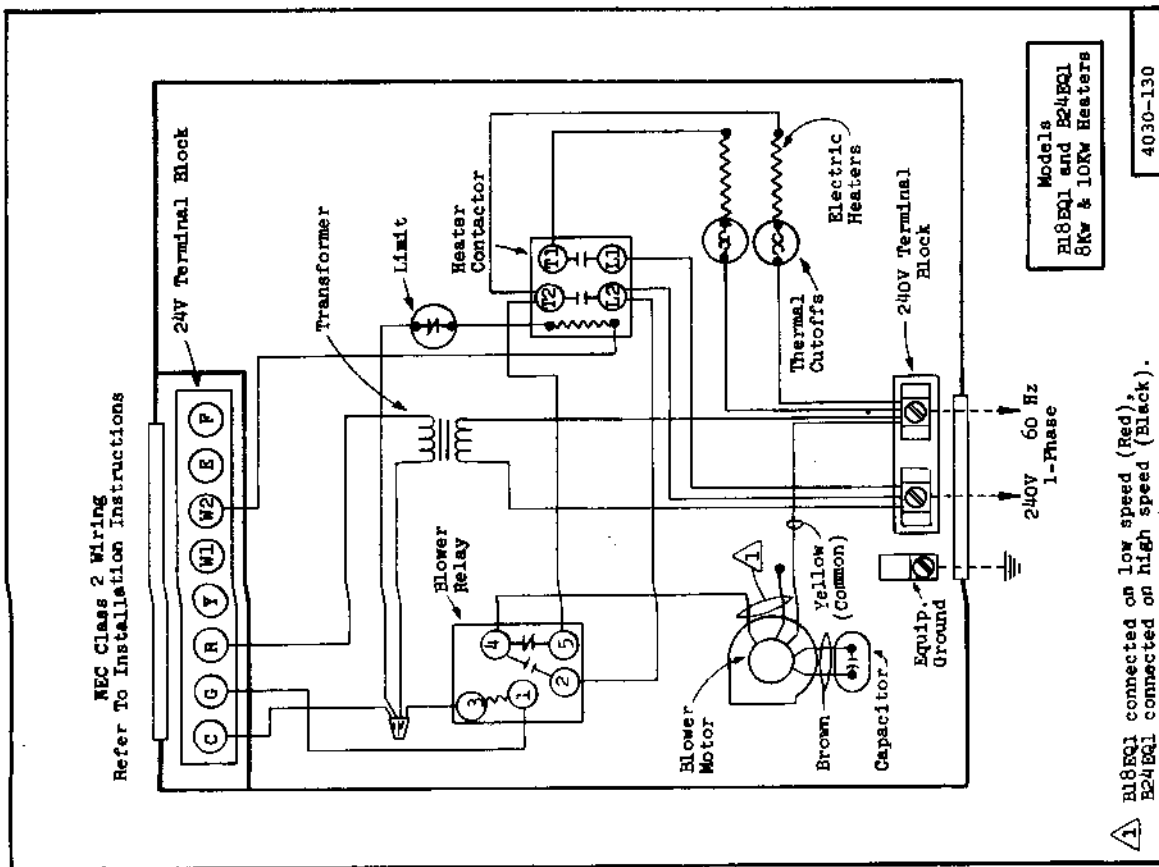
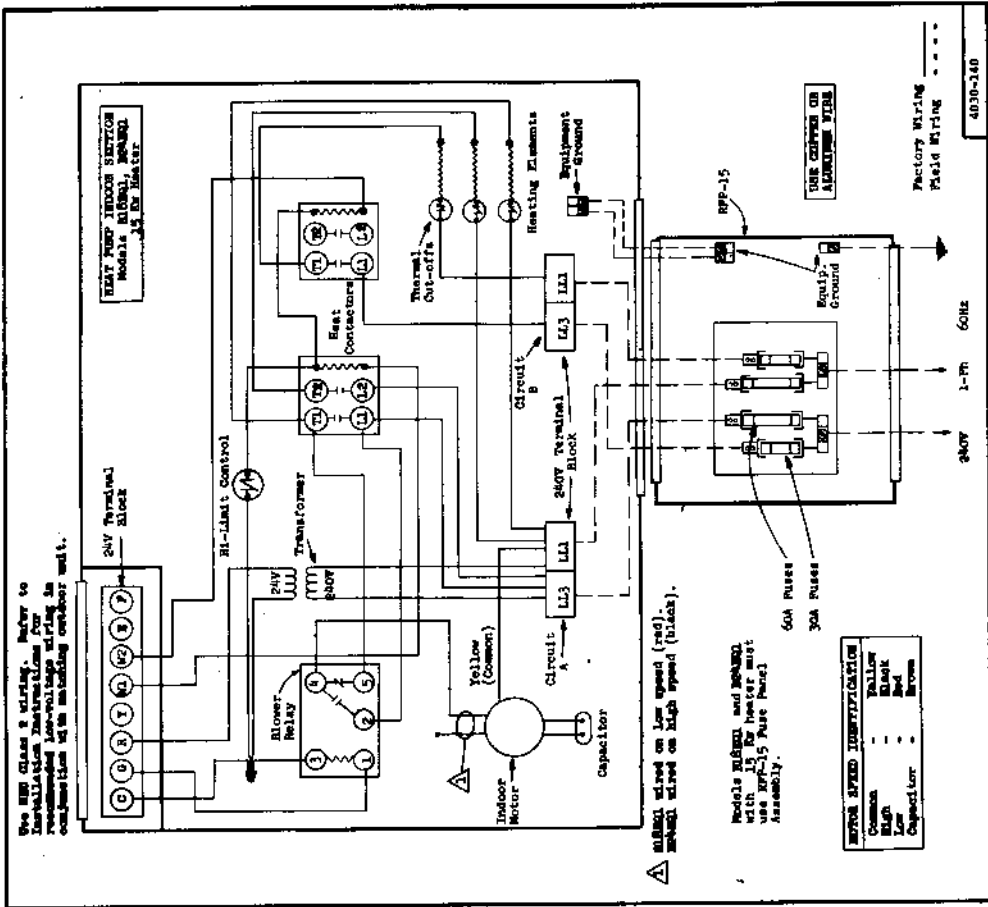
Application	KW	THERMOSTAT		SUB-BASE	
		Part No.	Description	Part No.	Description
A/C	5, 10	8403-002	T87F1925	8404-003	Q539A1147
A/C	15	8403-004	T872C1004	8404-005	Q672A1005
H/P	All	8403-004	T872C1004	8404-001	Q672F1026*

\*Replacement indicator bulb is available, order by Part No. 8611-027.

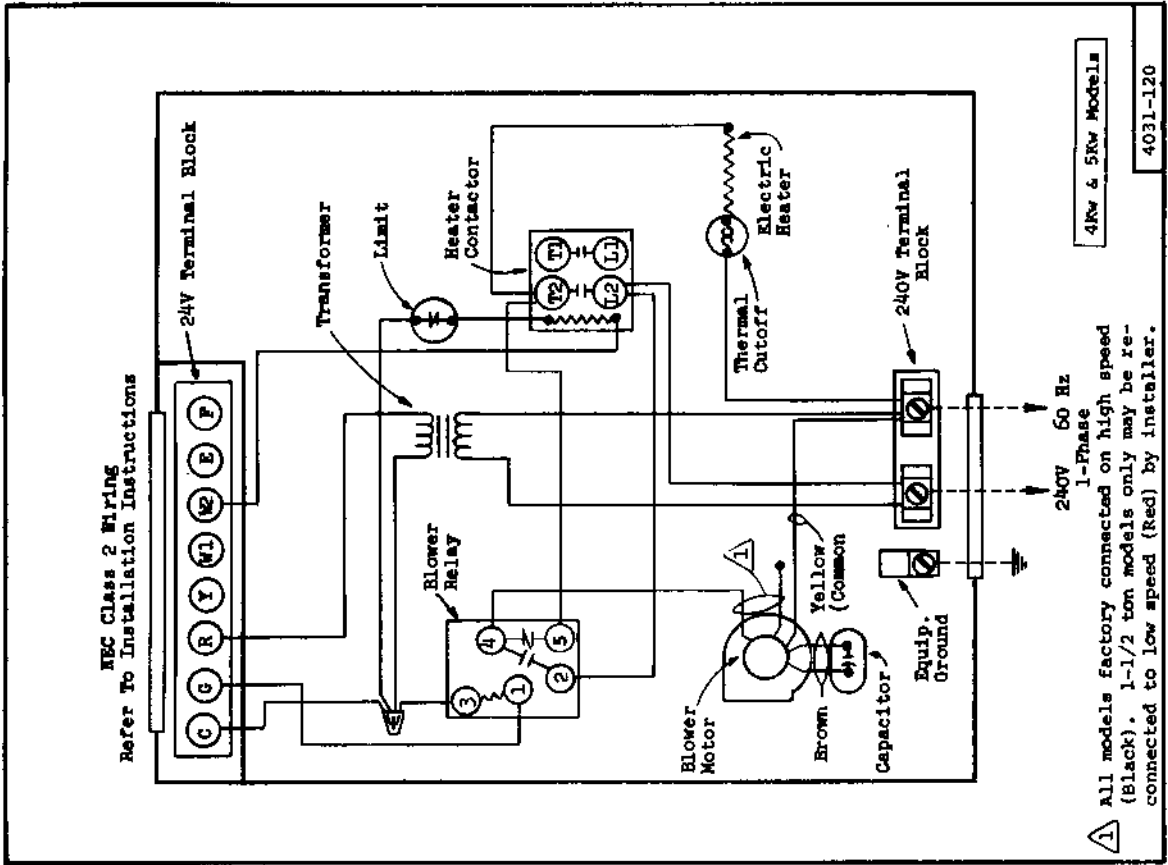
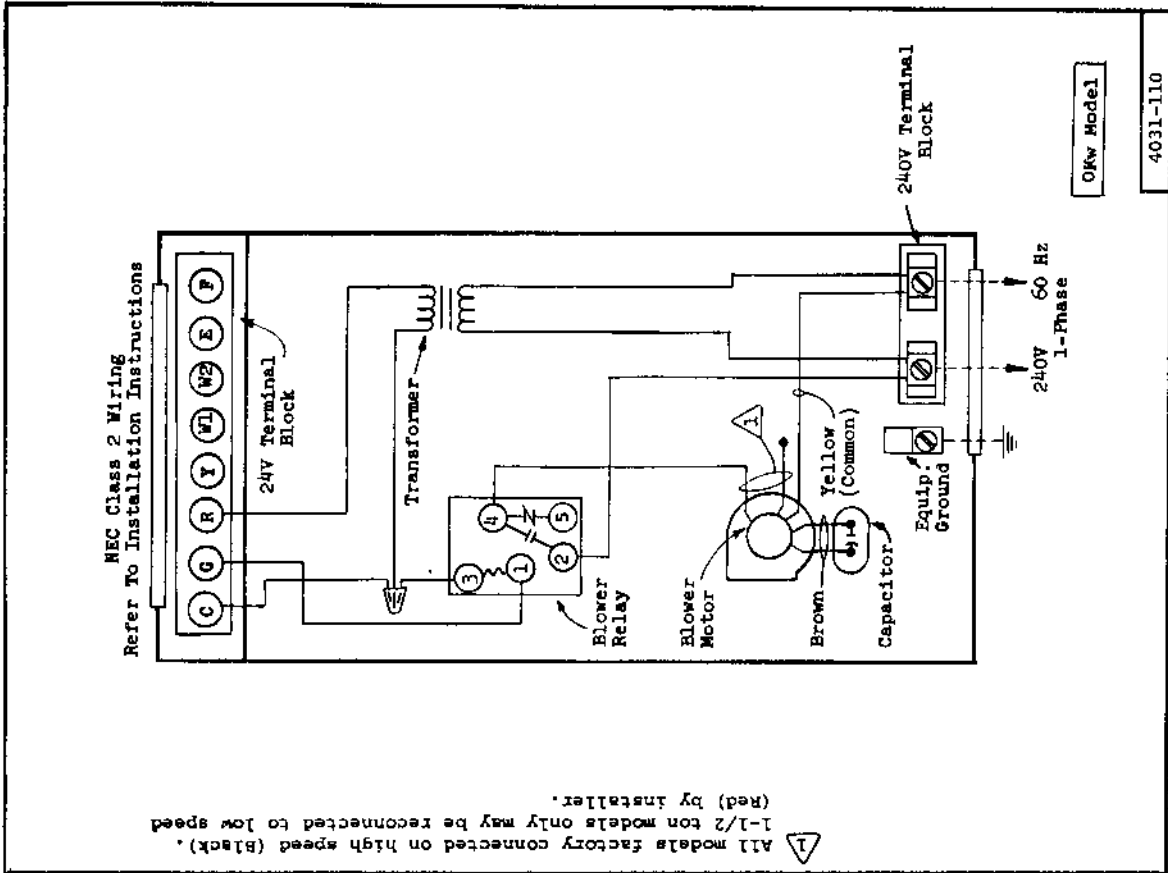














**COOLING AND HEATING ANTICIPATION  
FOR WALL THERMOSTATS**

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.

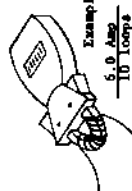
The fixed anticipators are rated for a maximum of 1.5A. The adjustable anticipators generally have a range of .2 - 1.2A, and MUST BE ADJUSTED. Failure to adjust the anticipator lever to correspond to the actual current draw passing through that stage mercury switch and anticipator will cause severe short 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 - B850B Series	.55
- B8210 Series	.40
- B8212 Series	.40
- B8216 Series	.40
- B8222 Series	.38
- B8228 Series	.38
- B8242 Series	.38
- B8243 Series	.38
RAM	
- Type 84	.12
- Type 91	.14
- Type 112	.34
- Type 143	.34
- Type 154	.26
- Type 184	.12
Elwood	
- 308020	.39
- 30C020	.39
- 30C020	.39
- 30T020	.21
- 30T030	.21
- 308030	.21

Below is a procedure which allows accurate low ampere 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.



PARTS LIST  
SPLIT SYSTEM BLOWER COILS

PART NO.	DESCRIPTION	B18EQ1	B24EQ1	B18EHQ	B24EHQ
5152-032	Blower Housing	x	x	x	x
5152-008	Blower Wheel	x	x	x	x
8552-001	Capacitor 370V	x	x	x	x
5811-004	Capillary Tube	(3)			
5811-001	Capillary Tube		(3)		
5811-016	Capillary Tube			x	
5811-002	Capillary Tube				(3)
5651-006	Check Valve			x	x
8401-006	Contactora - Heater	x	x	x	x
5060-003	Evaporator Coil	x			
5060-013	Evaporator Coil		x		
5060-017	Evaporator Coil			x	
5060-016	Evaporator Coil				x
7004-003	Filter	x	x	x	x
8604-027	Heat Strip 4Kw	x	x	x	x
8604-023	Heat Strip 5Kw	x	x	x	x
8604-026	Heat Strip 8Kw	x	x	x	x
8604-024	Heat Strip 10Kw	x	x	x	x
8604-025	Heat Strip 15Kw			x	x
8402-029	Limit Switch			x	
8402-028	Limit Switch	x	x		x
8102-004	Motor - Blower	x	x	x	x
8200-003	Motor Mount	x	x	x	x
5451-011	Motor Mounting Parts	x	x	x	x
5210-002	Strainer			x	
8201-009	Relay - Blower	x	x	x	x
5210-003	Strainer	x	x		x
8607-006	Terminal Board 24V	x	x	x	x
8607-001	Terminal Block 230V	x	x	x	x
8402-027	Thermal Cut-off	x	x	x	x
8407-007	Transformer	x	x		
8407-015	Transformer			x	x