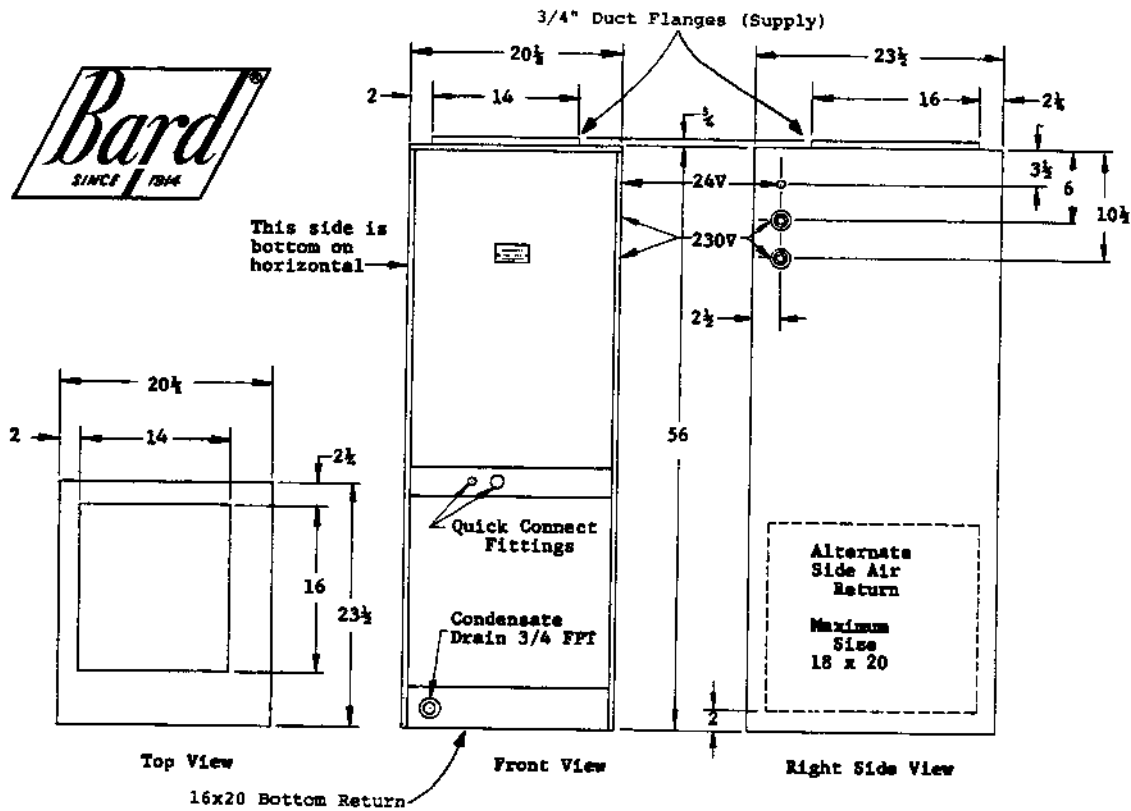


B36EHQ BLOWER COIL INSTALLATION INSTRUCTIONS

DIMENSIONS for architects and installation requirements



RETURN AIR DUCT CONNECTIONS

Flange return air duct and secure to either bottom or side return, depending on installation requirements.

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

B36EHQ SPECIFICATIONS	
Electrical	
Rated Voltage	240
Phase	1
Hertz	60
Voltage Range	197-253
Motor and Blower	
Motor H.P.	1/3
Motor Amps	2.5
Motor RPM	1075/3 Sp
Blower	10x9 Direct
Heat Transfer Coil	
Face Area	3.17
Rows	3
Fins Per In.	14
Permanent Filter	
Size	20 x 22-1/2
Refrigerant Control	
Capillary Tube	
R-22 Charge	8 oz.
Shipping Weight lbs.	150

AIRFLOW PERFORMANCE DATA

MAXIMUM E.S.P. OPERATION INFORMATION*				
Type of Application	Rating of Electric Heaters**	Blower Motor Speed		
		Low	Medium	High
Heat Pump	20Kw	--	--	.35
Heat Pump	15Kw	.20	.35	.45
Heat Pump	10Kw	.45	.50	.55
Heat Pump	5Kw	.50	.55	.60
Air Cond.	30Kw	.40	.45	.50
Air Cond.	25Kw	.45	.50	.55
Air Cond.	20Kw	.50	.55	.60
Air Cond.	15Kw	.55	.60	.65
Air Cond.	0, 5, 10Kw	.60	.65	.70

*Values shown are for standard bottom return air opening.
 For alternate side return air opening, add .05 to values shown.
 **Maximum of 20Kw to be energized with heat pump. See "Heat Pump With Electric Heat," Page 4 for complete details.

B36EHQ BLOWER PERFORMANCE			
E.S.P. Inches H₂O	CFM - DRY COIL WITH FILTER		
	Low Speed	Medium Speed	High Speed
.00	1070	1175	1375
.10	1050	1150	1335
.20	1020	1120	1295
.30	995	1070	1235
.40	960	1035	1175
.50	915	970	1105
.60	825	895	1045
.70	685	745	925
.80	580	625	680

RECOMMENDED AIRFLOW RANGE BASED ON OUTDOOR UNIT SIZE

30ECQ2, 31ECQ or 30HPQ3 800-1075 Cfm
 36ECQ4, 37ECQ or 36HPQ3 975-1275 Cfm

GENERAL

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

The same B36EHQ air handler, with its various Kw electric heat options, is suitable for use with the following air conditioner and heat pump outdoor sections. It can be used both as an air conditioning system with electric heat and as a heat pump with electric heat. Refer to sections titled, Air Conditioning With Electric Heat and Heat Pump With Electric Heat for complete information.

APPROVED OUTDOOR UNITS

AIR CONDITIONERS

30ECQ2, 31ECQ
36ECQ4, 37ECQ

HEAT PUMPS

30HPQ3
36HPQ3

The B36EHQ is provided with a 45VA transformer and a heating-cooling blower relay. All models manufactured with 15Kw or more resistance heating also are supplied with fused, sub-divided circuits. Refer to electrical specifications and field wiring data for complete information.

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.

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 of 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.

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 home owner 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 CT-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 CT-series is available in standard tubing lengths of 15, 25, 35 and 45 feet.

FILTER

This unit must not be operated without a filter. It comes equipped with a permanent type filter that slides in and out through the filter access opening. It is so located that no changes are required if the optional side return air opening is selected to be used. The filter should be cleaned periodically throughout the year, as this is a heating and cooling system and operates year round. Permanent filters can be cleaned by washing in warm soapy water and rinsing clean.

THERMOSTAT LOW-VOLTAGE WIRING

A 24V terminal block is mounted on the inside 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.

THREE SPEED BLOWER MOTOR

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

MOTOR SPEED IDENTIFICATION

Common	-	Yellow
High	-	Black
Medium	-	Blue
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.

All B36EHQ's are shipped wired on high speed. Refer to B36EHQ specification sheet for airflow performance chart on different motor speeds.

The "Maximum E.S.P. Operation Information" details the available maximum static pressure for the various applications depending on Kw and motor speed.

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
B36EHQ	0	1	15		14	12			14	12		
B36EHQ	5	1	29		10	8			10	8		
B36EHQ	10	1	55		6	4			10	8		
B36EHQ	15	1	81		2	1			8	6		
B36EHQ	20	2	55	52	6	4	6	4	10	8	10	8
B36EHQ	25	2	55	78	6	4	3	1	10	8	8	6
B36EHQ	30	2	55	104	6	4	2	1/0	10	8	6	4

*Note - Table based upon the assumption that 60°C (140°F) wire will be used if the required ampacity is 100 amperes or less and that 75°C (167°F) wire will be used if the required ampacity is more than 100 amperes.

CU - Copper Wire

AL - Aluminum Wire

BLOWER COIL ELECTRICAL SPECIFICATIONS						
Model	Rated KW	Amps *	Ampacity		Main Fuse	
			Circuit A	Circuit B	Circuit A	Circuit B
B36EHQ	0	2.5	15		15	
B36EHQ	5	23.3	29		30	
B36EHQ	10	44.1	55		60	
B36EHQ	15	64.9	81		90	
B36EHQ	20	85.7	55	52	60	60
B36EHQ	25	106.5	55	78	60	80
B36EHQ	30	127.3	55	104	60	110

*Total Unit Amps including blower motor.

ALL FIELD WIRING MUST COMPLY WITH THE "NATIONAL ELECTRICAL CODE" AND ALL LOCAL ORDINANCES.

UNIT OPERATION

The controls in the B36EHQ provide for manual/auto fan control in addition to the staging of the installed electric heat. Staging is accomplished in basic 10Kw increments, that is, each two (2) heating elements are controlled by one heat relay.

HEATER ELEMENT STAGING	
Heater Kw	Stages
5, 10	1
15, 20	2
25, 30	3

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

J - 1st Stage
K - 2nd Stage
L - 3rd Stage

AIR CONDITIONING WITH ELECTRIC HEAT

Typical situations would be to utilize a 1-stage cool, 1-stage heat wall thermostat for 5 and 10Kw applications, and a 1-stage cool/2-stage heat thermostat for 15 and 20Kw applications. The 25 and 30Kw applications can be wired using an outdoor thermostat to control the 3rd stage heat relay. Listed below are the appropriate control circuit wiring diagrams based upon Kw rating and also the number of field installed A-22 outdoor thermostats, Bard Part No. 8408-001, required for each application:

B36EHQ Kw Rating	Control Circuit Diagram	Quantity of A-22's
5, 10	AAH-1	0
15, 20	AAH-2	0
25, 30	AAH-3	1

HEAT PUMP WITH ELECTRIC HEAT

The system and its safety controls are designed in such a manner that the heat pump and up to 20Kw of the resistance strip heaters can operate at the same time, being brought on in stages. This does not rule out the possibility of there being a total installed Kw of 30Kw in the B36EHQ; 20Kw of which can be operated in conjunction with the heat pump, and the remaining 10Kw (L - 3rd Stage Heat Contactor) being utilized as heat pump "replacement" heat. This feature of "replacement" heat is normally used in the colder northern climates where emergency heat switches and compressor cut-offs are considered required equipment. This allows for total heating capability for the structure in case of a malfunction in the outdoor heat pump unit.

Listed below are the appropriate control circuit wiring diagrams based on Kw rating, and also the number of field installed A-22 outdoor thermostats, Bard Part No. 8408-001 (10°-45°F Range), or 8408-005 (0-30°F Range), recommended for each application:

B36EHQ Kw Rating	Control Circuit Diagram	Quantity of A-22's
5, 10	HAR-1	1
15, 20	HAR-2	1*
25, 30	HAR-3	2

*Installer Option: If it is desired to have the 2nd bank of electric heat (Stage K) operate as 3rd stage heat, in conjunction with the heat pump, instead of coming on ONLY in place of the heat pump (by means of emergency heat relay or compressor cut-off) use two A-22's and wire by the 3rd stage outdoor thermostat as shown by note 2 on HAR-2 control circuit diagram on the top of page 7.

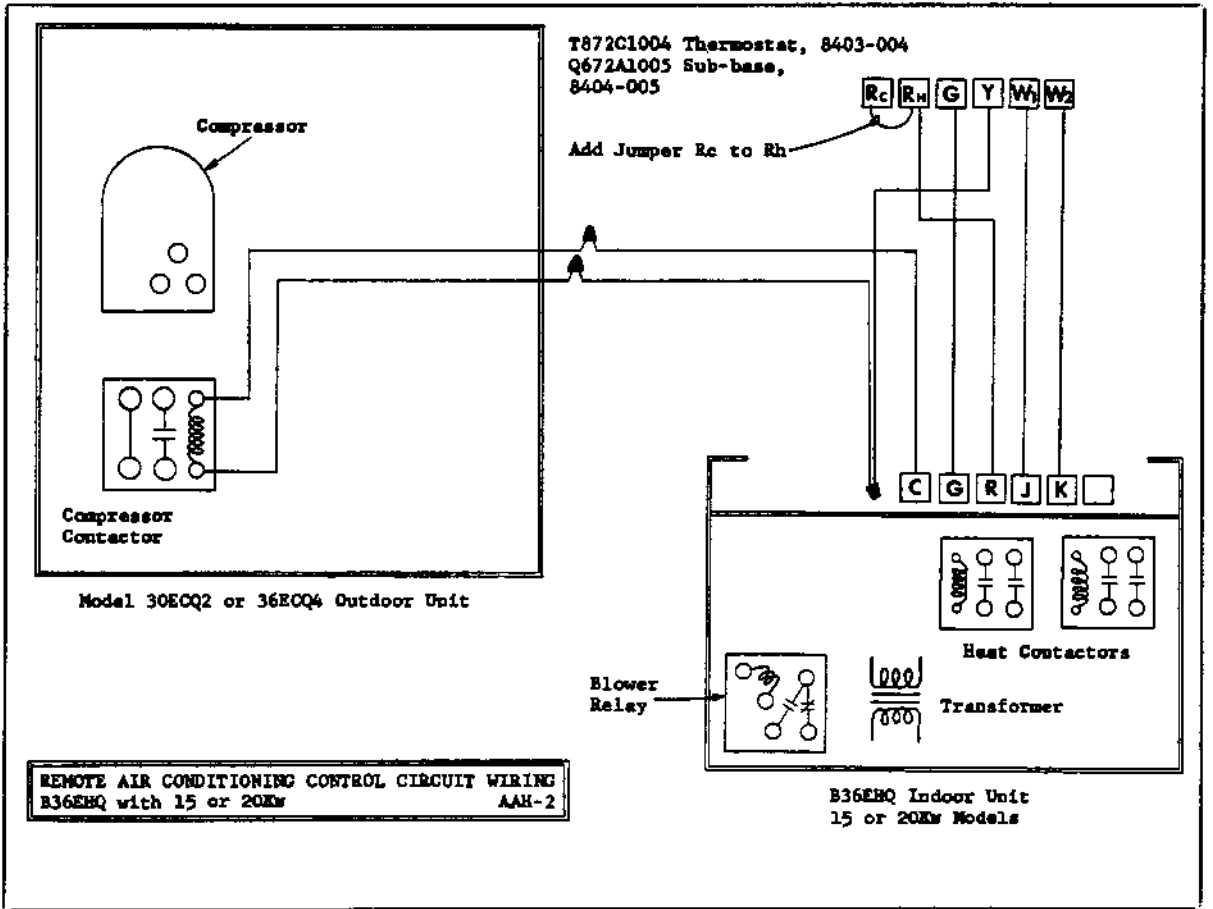
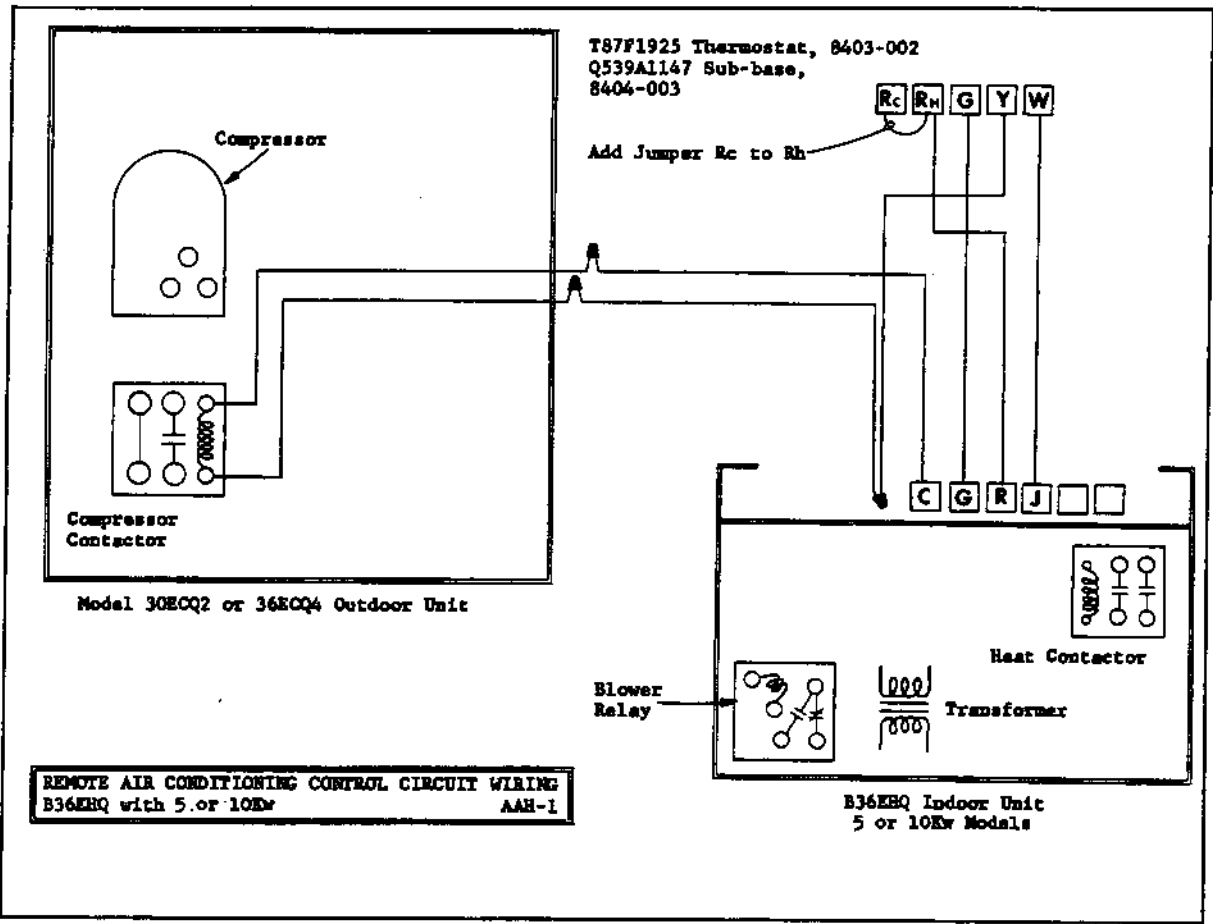
In geographical areas where compressor cut-off would not be required because winter temperatures below 10°F are never experienced, disregard the compressor cut-off wiring shown on the control circuit diagrams, and DO NOT remove the factory wire between the compressor contactor coil and terminal 4 on the changeover relay as indicated.

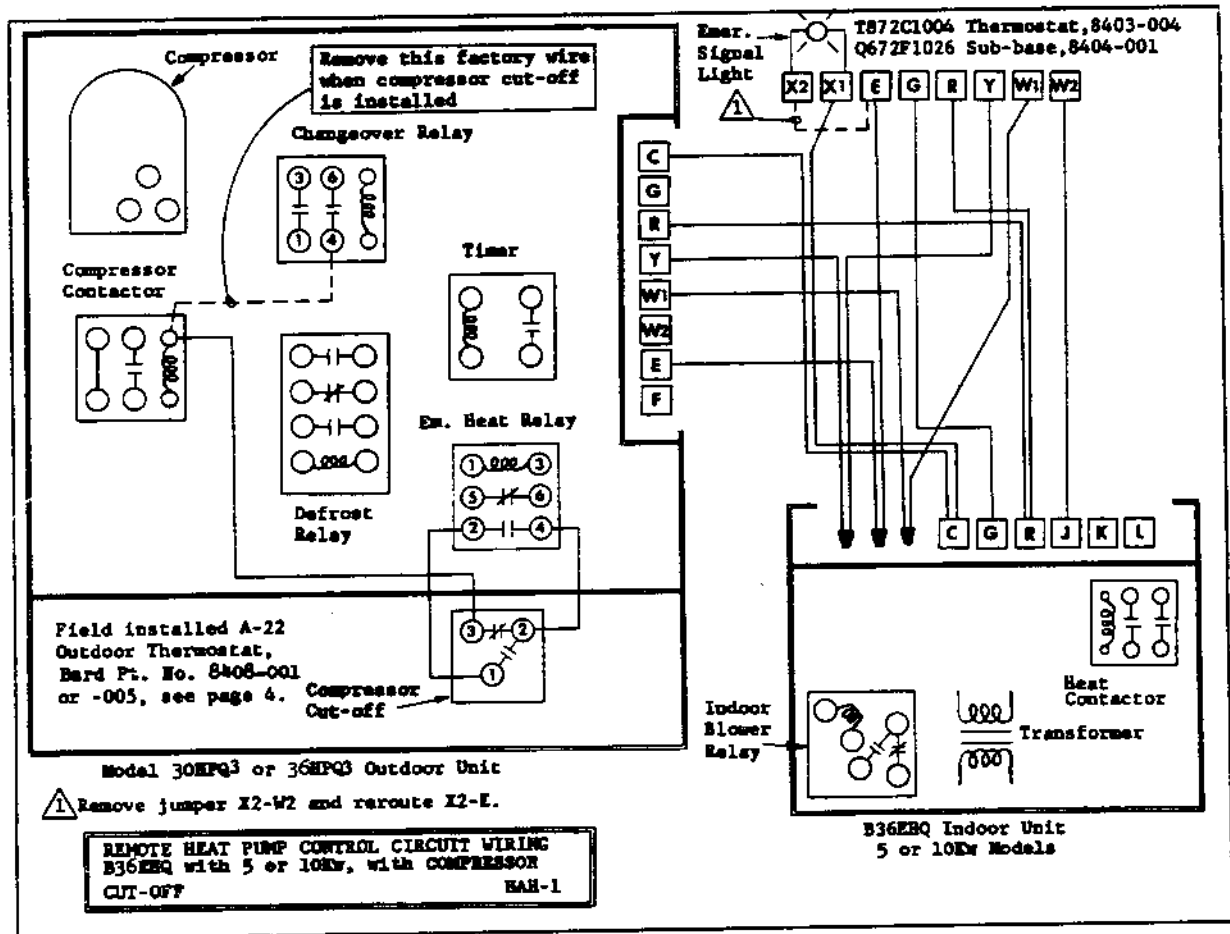
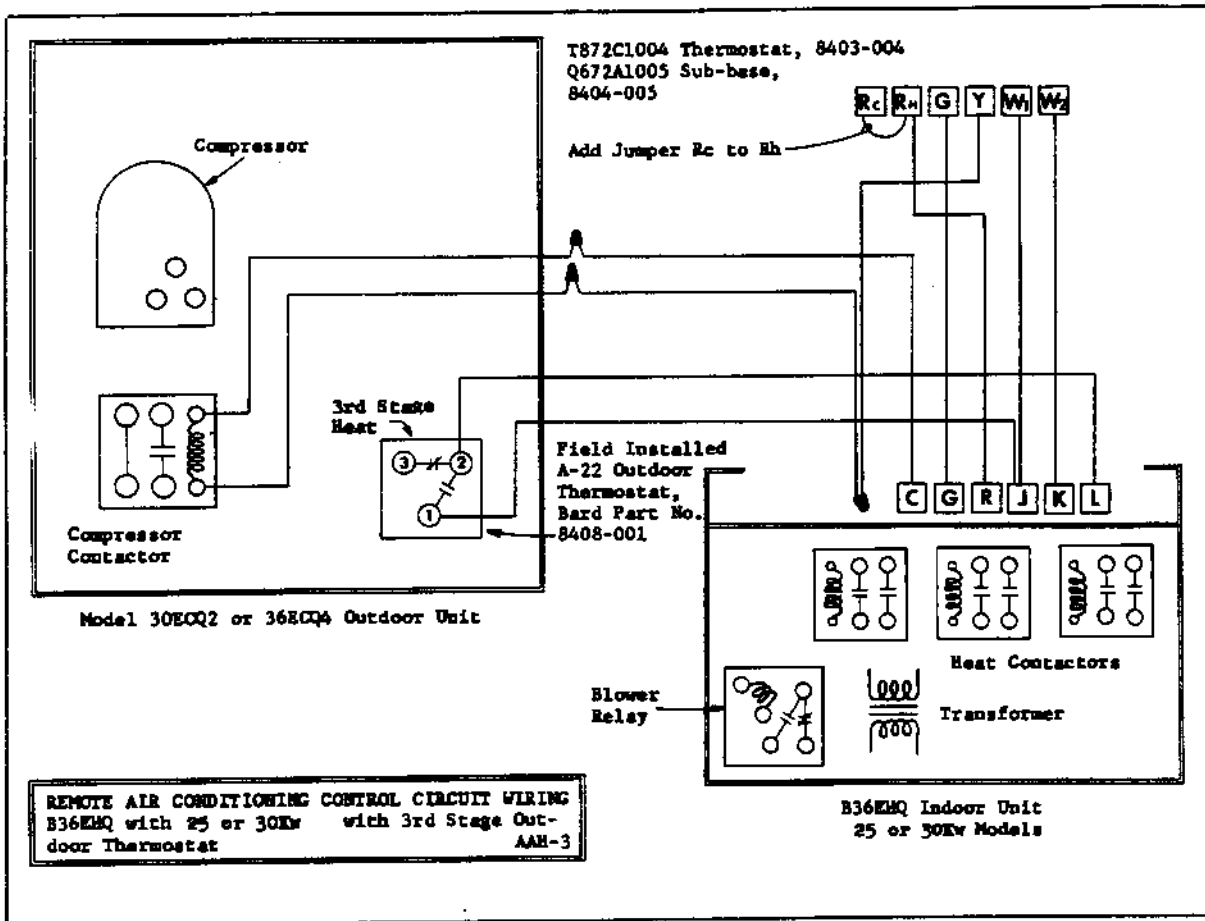
WALL THERMOSTATS

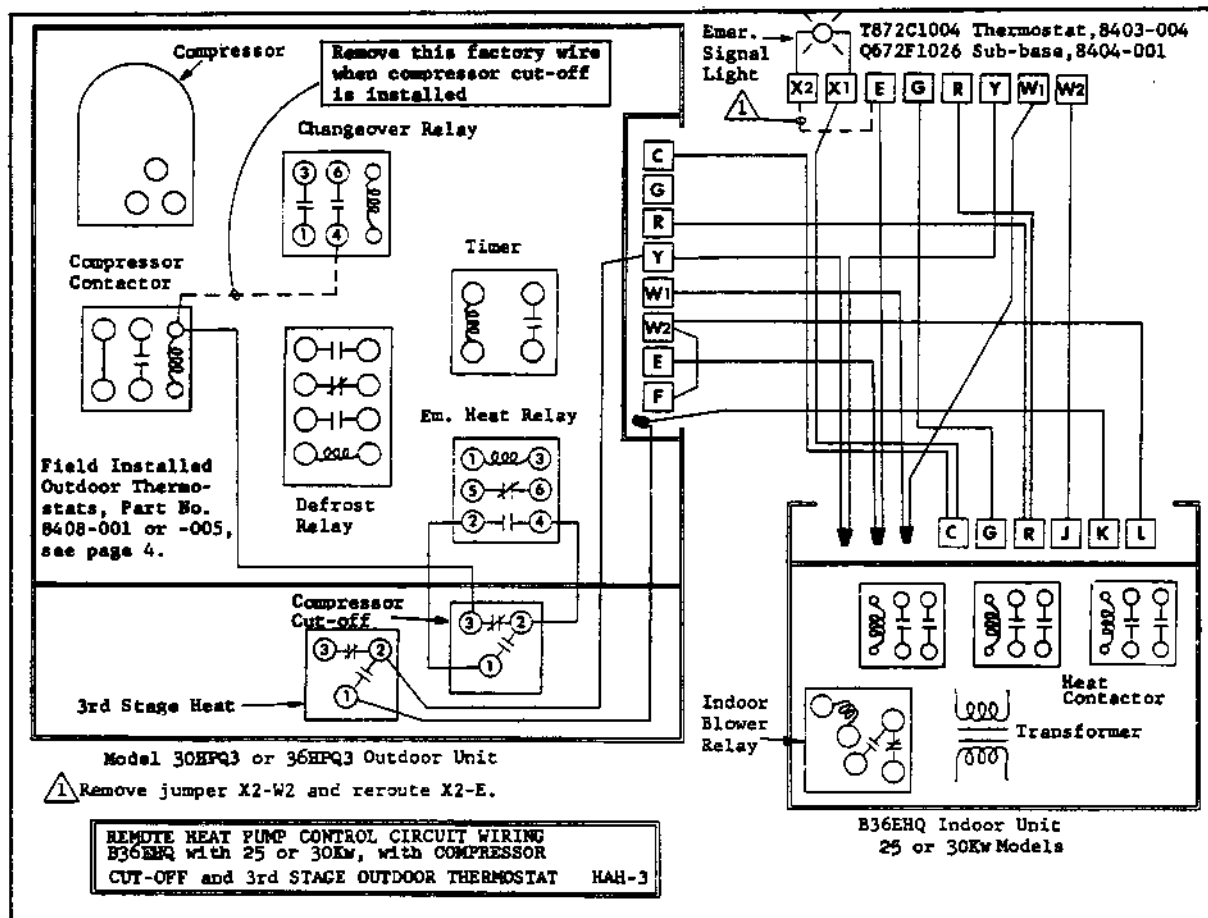
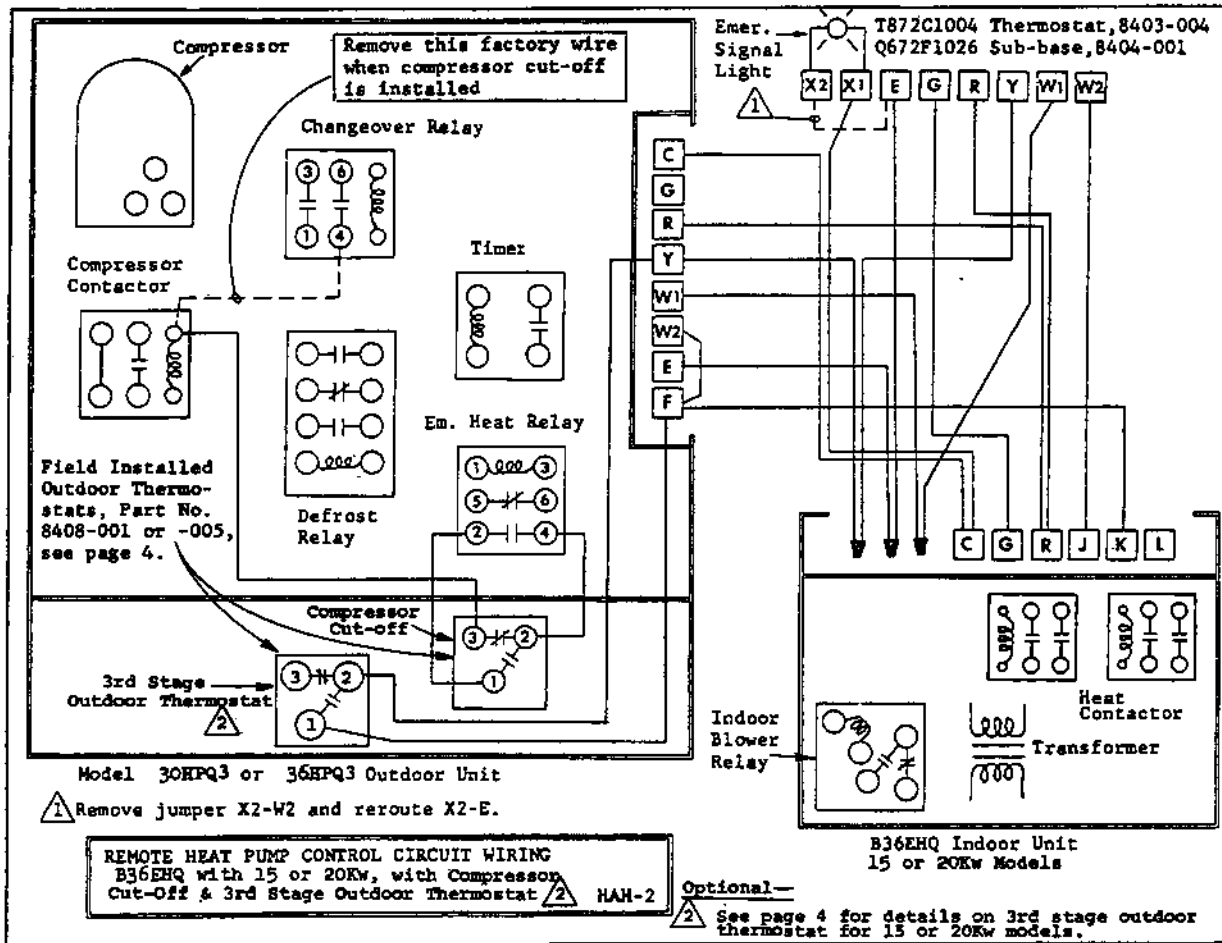
The following wall thermostats and sub-bases should be used as indicated, depending on the application.

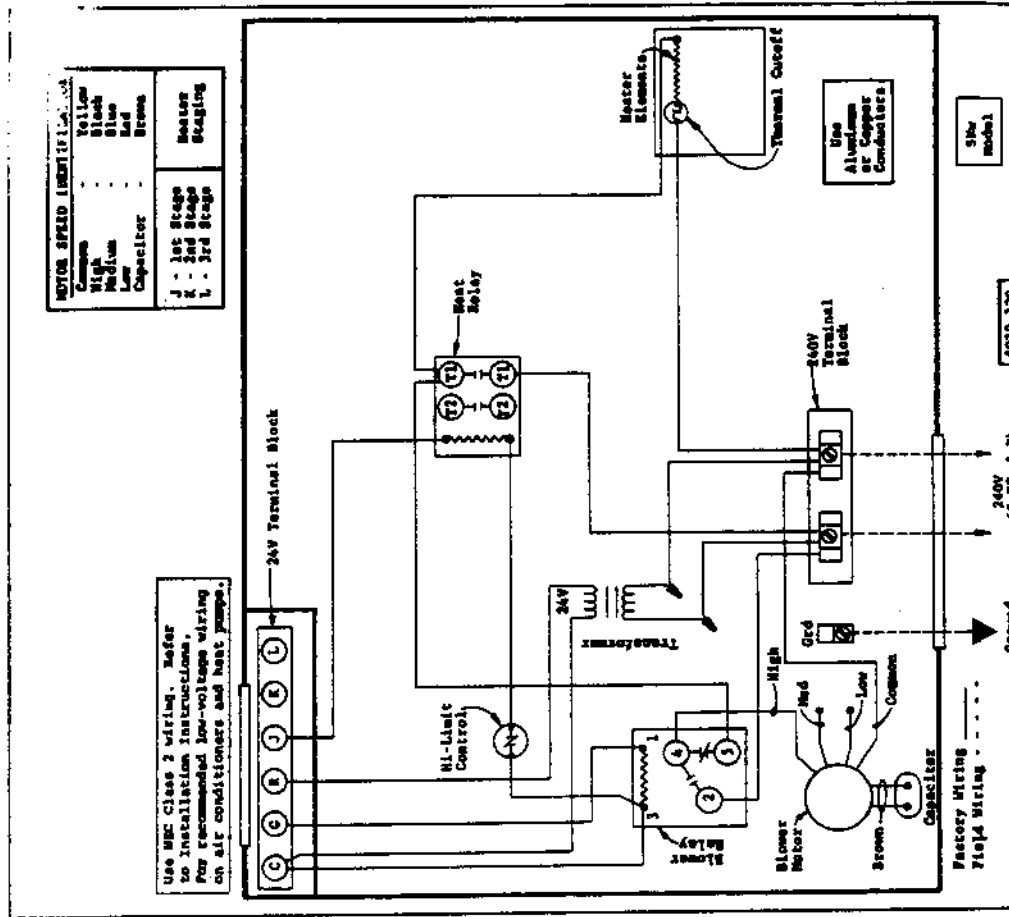
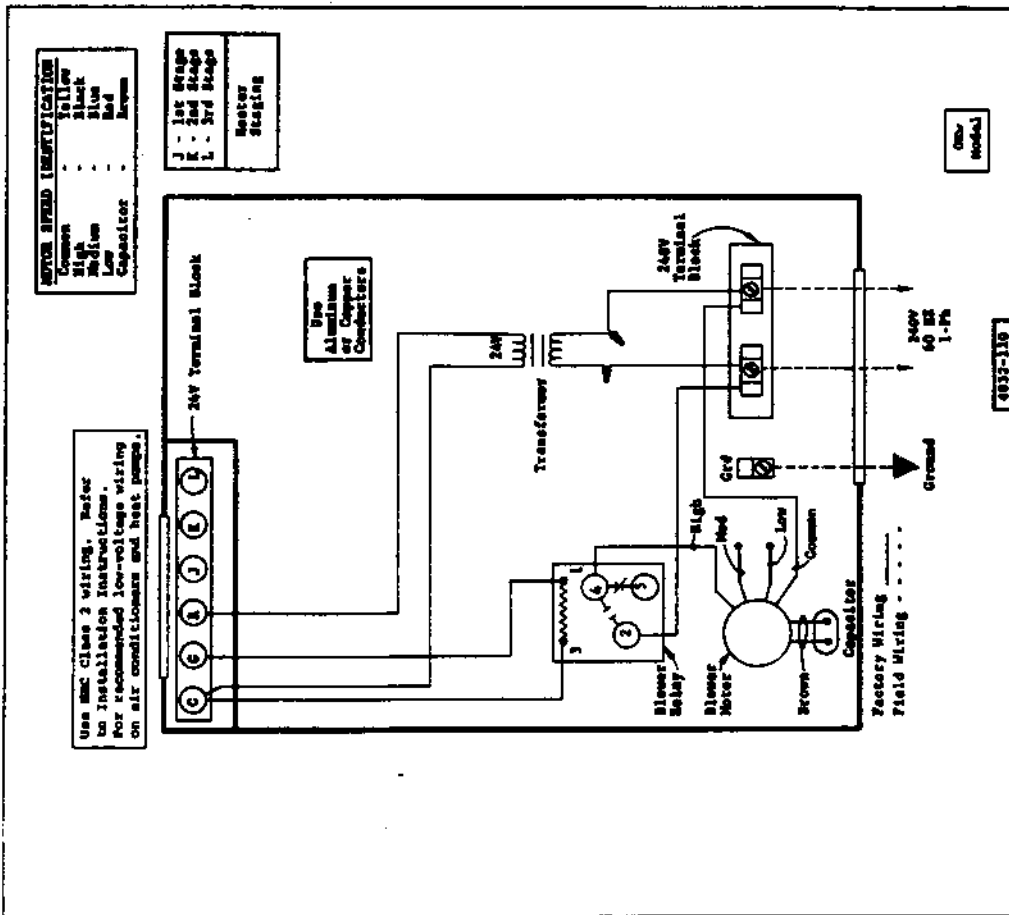
Application	KW	THERMOSTAT		SUB-BASE	
		Bard Part No.	Description	Bard Part No.	Description
A/C	5, 10	8403-002	T87F1925	8404-003	Q539A1147
A/C	15, 20	8403-004	T872C1004	8404-005	Q672A1005
A/C	25, 30	8403-004	T872C1004	8404-005	Q672A1005
H/P	All	8403-004	T872C1004	8404-001	Q672F1026*

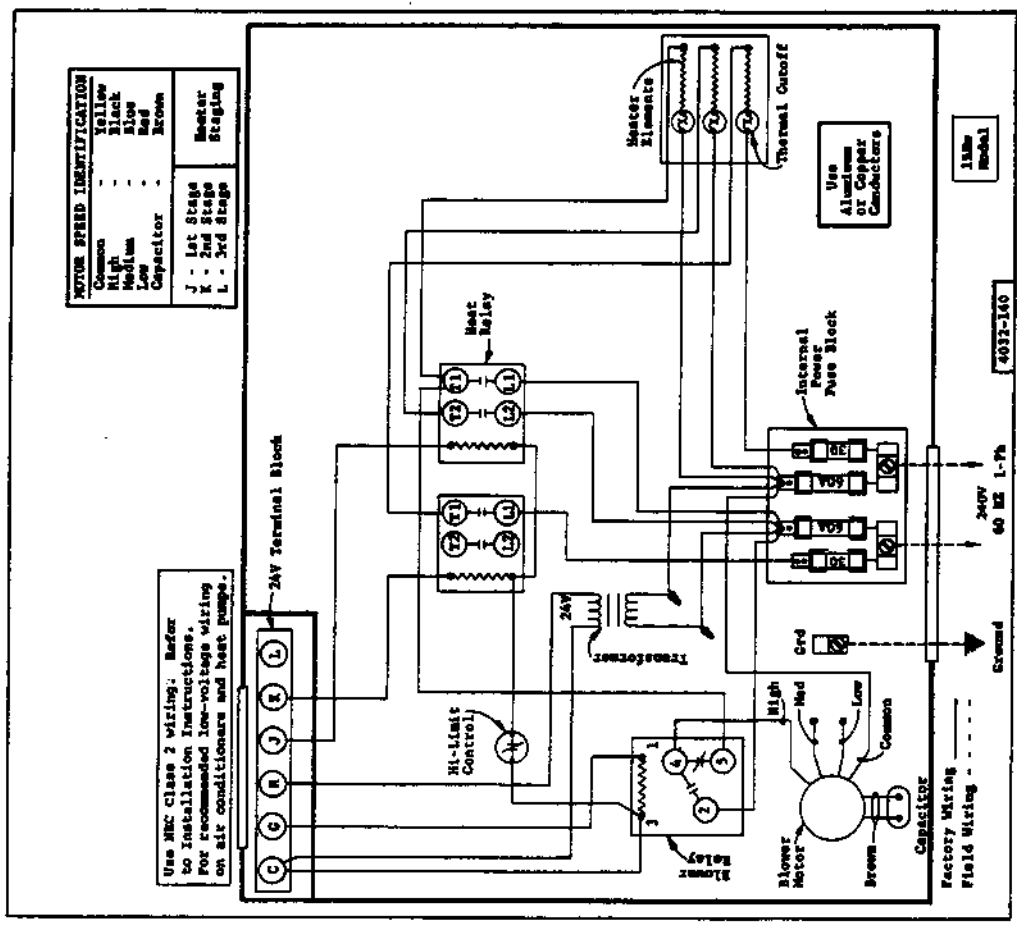
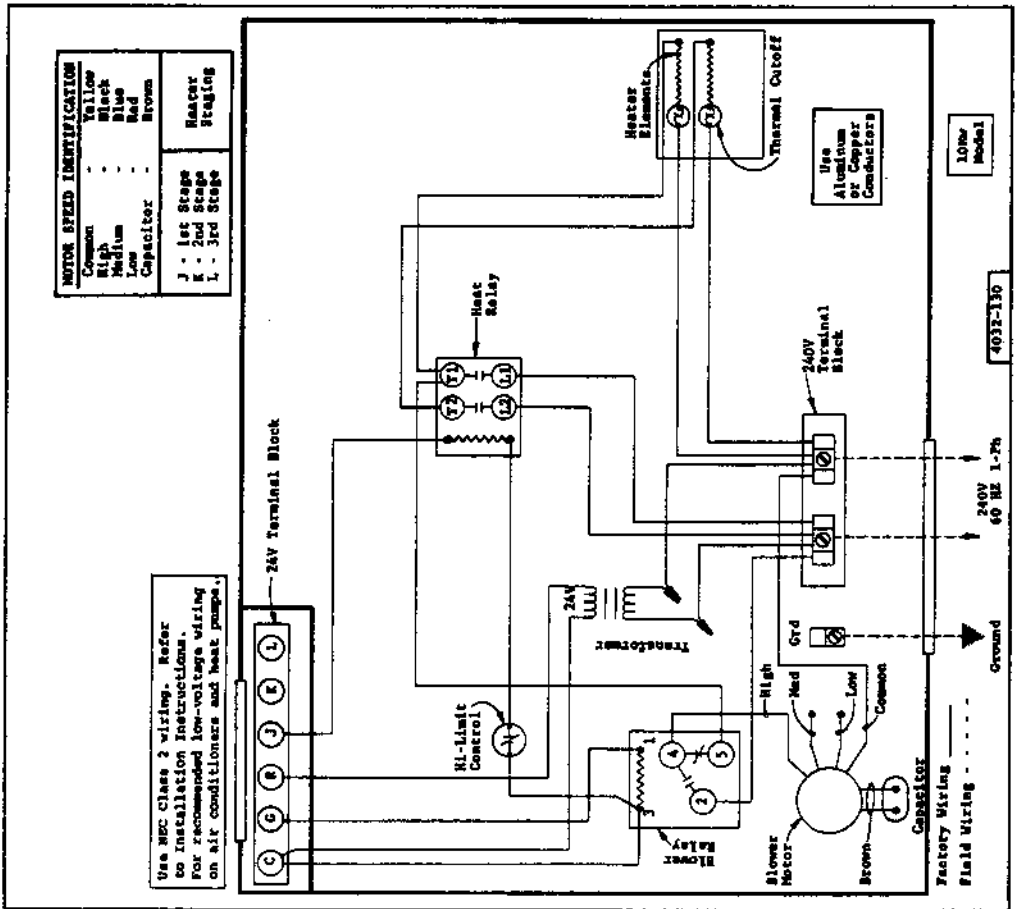
*Replacement indicator bulb is available, order from Bard Manufacturing Co. by Part No. 8611-027.

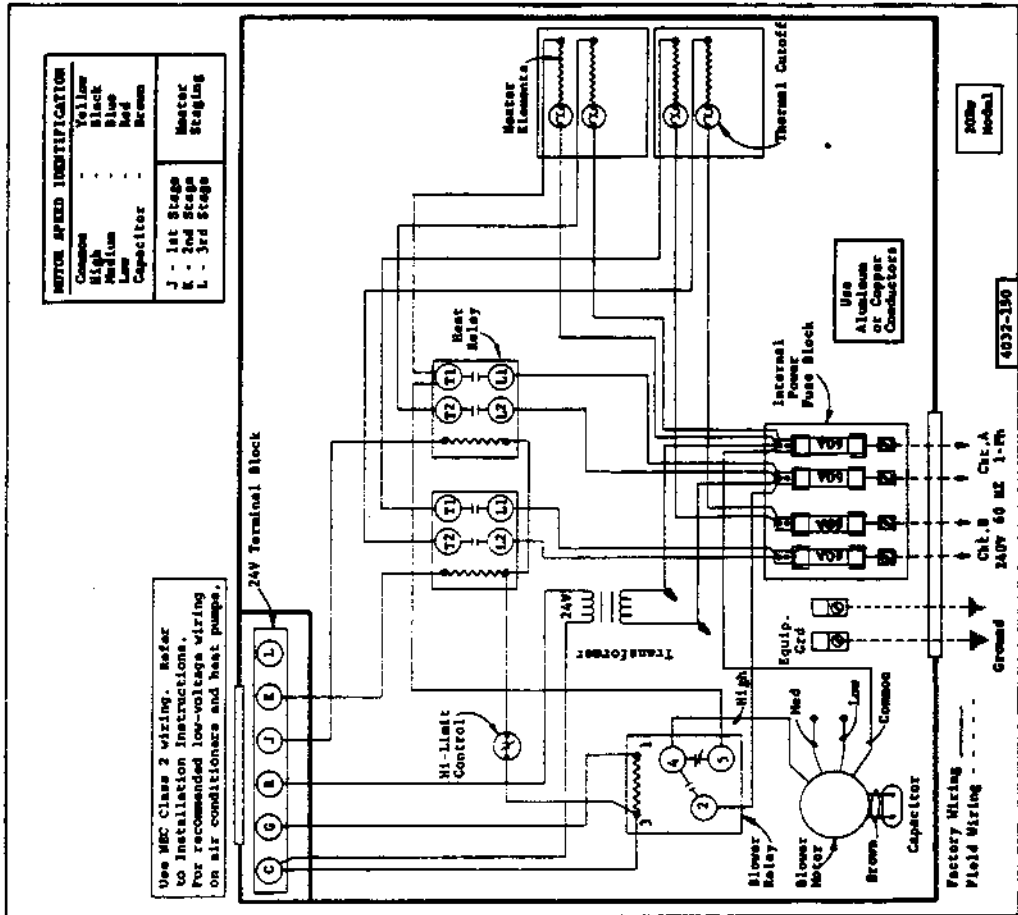
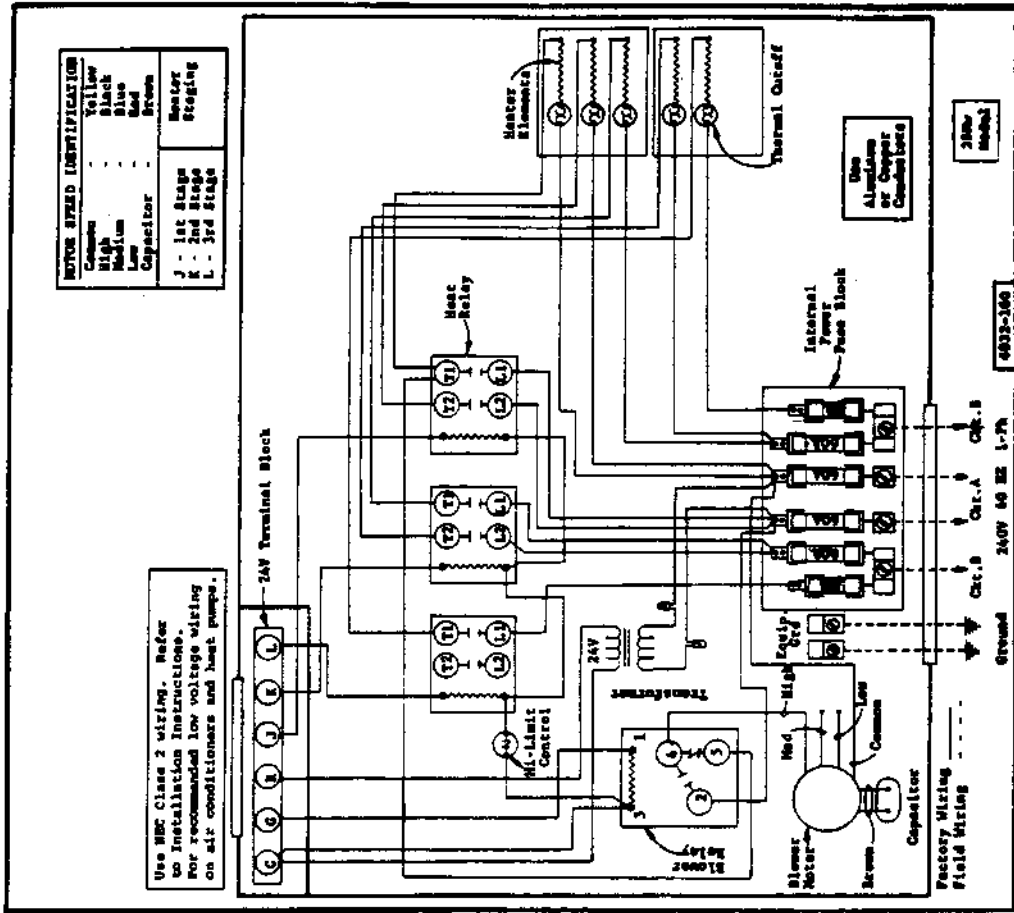












**COOLING AND HEATING ANTICIPATOR
FOR WALL THERMOSTATS**

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.

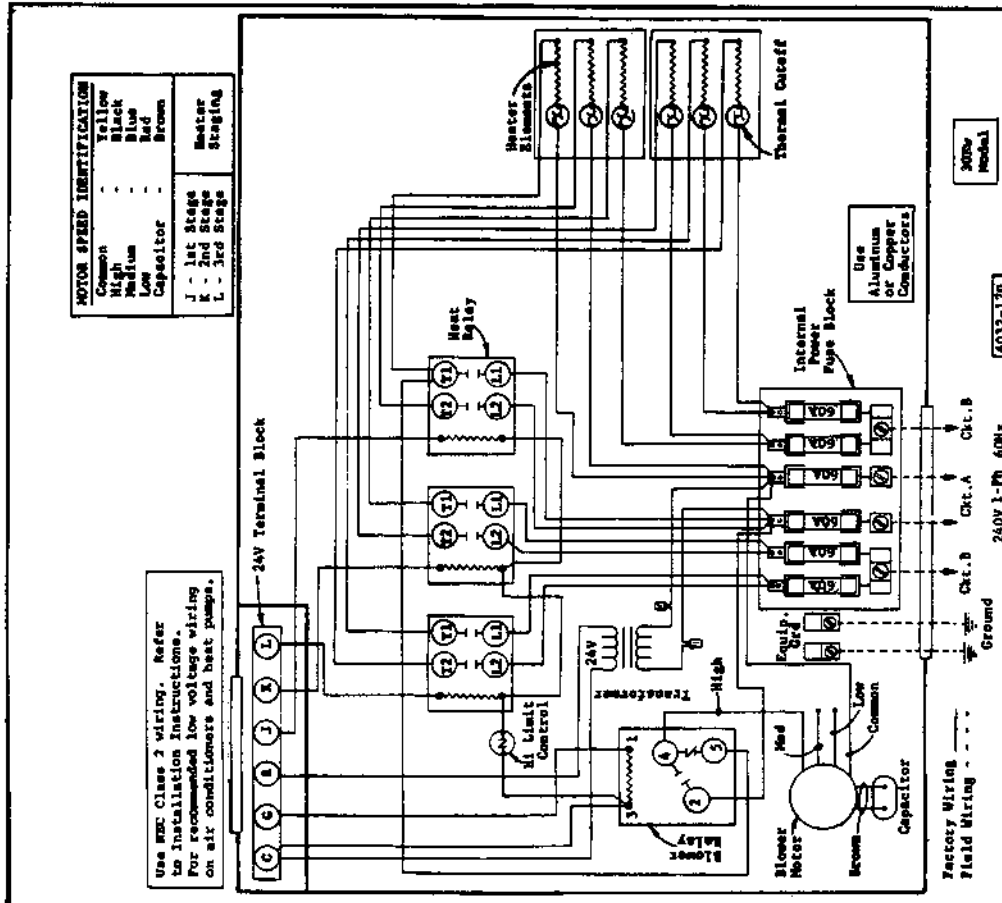
The fixed anticipators are rated for a maximum of 1.5A. The adjustable anticipators generally have a range of .2 - 1.2A, and MUST BE ADJUSTED. Failure to adjust the anticipator lever to correspond to the actual current draw passing through that stage mercury switch and anticipator will cause severe short 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 - R3508 Series	.55
- R3210 Series	.60
- R3212 Series	.60
- R3214 Series	.60
- R3222 Series	.38
- R3228 Series	.38
- R3242 Series	.38
- R3243 Series	.38
ABB	
- Type 81	.12
- Type 111	.14
- Type 112	.14
- Type 143	.14
- Type 154	.12
- Type 184	.12
Blawwood	
- 308020	.39
- 30C020	.39
- 30C020	.39
- 30D030	.41
- 30D030	.41
- 30D030	.41

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 (#1) around the prongs of an Amprobe.
2. Let the heating system operate for one minute before reading the #1 or #2 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 (#2) if 2-stage heat.



**PARTS LIST
SPLIT SYSTEM BLOWER COIL**

PART NO.	DESCRIPTION	B36EQ
5152-034	Blower Housing	x
5152-014	Blower Wheel	x
8552-002	Capacitor 370V	x
5811-010	Capillary Tube	(3)
5651-006	Check Valve	x
8401-006	Contactator - Heater	x
5060-012	Evaporator Coil	x
7003-006	Filter	x
8614-006	Fuse - Heater	x
8614-007	Fuse - Heater	x
8614-017	Fuse Block	x
8614-013	Fuse Block	x
8614-014	Fuse Block	x
8614-019	Fuse Block	x
8604-023	Heat Strip 5Kw	x
8604-024	Heat Strip 10Kw	x
8604-025	Heat Strip 15Kw	x
8402-022	Limit Switch	x
8105-010	Motor - Blower	x
8200-003	Motor Mount	x
5451-011	Motor Mounting Parts	x
8201-009	Relay - Blower	x
5210-003	Strainer	x
8607-005	Terminal Board 24V	x
8607-001	Terminal Block 230V	x
8402-025	Thermal Cut-off	x
8407-015	Transformer	x