

ACCESSORY KIT INSTALLATION INSTRUCTIONS

2SA067* START KITS FOR AIR CONDITIONERS AND HEAT PUMPS

IMPORTANT - These instructions are intended for the use of qualified individuals specially trained and experienced in installation of this type of equipment and related system components.

Installation and service personnel are required by some states to be licensed.

Persons not qualified shall not install this equipment or interpret these instructions.

WARNING

Improper installation may damage equipment, can create a shock hazard, and will void the warranty.

NOTE: The words "Shall" or "Must" indicate a requirement which is essential to satisfactory and safe product performance.

The words "Should" or "May" indicate a recommendation or advice which is not essential and not required but which may be useful or helpful.

CONTENTS OF KIT

The compressor starting kit consists of a potential (starting) relay, screws, capacitor strap and starting capacitor with wiring leads. Kit may contain more hardware than necessary for some models and wires may be longer than required. Start kits for the various models are listed in Table 1.

IMPORTANT - Do not mis-match kits or damage will occur to the equipment.

APPLICATION

The compressor in the outdoor unit has a PSC (permanent split capacitor) motor which does not require a starting relay and capacitor, under ordinary operating conditions. The omission of these components eliminates a potential source of field problems making the system more trouble-free.

In order to take advantage of these benefits and trouble-free operation, the starting torque, or load, must be kept to a minimum. The suction and discharge pressures must be nearly equal before the compressor will start.

Because of the lower starting torque inherent in PSC motors, certain conditions such as low voltage and exceptionally high operating temperature, short thermostat cycles, etc. can affect the starting operation.

When such conditions exist, and cannot be corrected, it is recommended that the field installed compressor starting kit be used to convert the compressor motor to CSR (capacitor, capacitor run) operation.

NOTE: All Start Kits listed in these instructions are for use with outdoor units rated at 208-230V/ 1PH/ 60HZ.

WARNING

SHOCK HAZARD - *Shut off electrical supply to outdoor unit at main disconnect. One side of the contactor remains closed at all times, so main disconnect must be opened when servicing electrical components to prevent electrical shock, which could result in personal injury or death.*

START KIT MODEL NO.	OUTDOOR UNIT MODEL NUMBER			COMPRESSOR	SEE SECTION FOR INSTALLATION
2SA06701606	BRC0181BD	HABA/H1RA018	AC018X1021	(BRISTOL) H23B173ABCA	A
2SA06702306	BRCQ0181BE	--	AC018M1021	(BRISTOL) H29B15UABCA	E
2SA06701706	BRC*0241BD	HABA/H1RA024	AC024X1021	(BRISTOL) H23B223ABCA	A
2SA06706206	BRCQ0241BE	--	AC024M1021	(BRISTOL) H29B22UABCA	E
2SA06703706	BRC*0301BD	HBBA/H2RA030	AC030X1021	(BRISTOL) H23B28SABCA	A
2SA06703706	BRCQ0301BE	--	AC030M1021	(BRISTOL) H23B28SABCA	E
2SA06702106	BRC*0361BD	HBBA/H2RA036	--	(BRISTOL) H25B33EABCA	A
2SA06702006	BRC*0361BD	HBBA/H2RA036	AC036X1021	(BRISTOL) H29B33UABCA	A
2SA06703906	BRC*0421BD	HABA/H1RA042	AC042X1021	(BRISTOL) H23A383ABCA	A
2SA06703906	BRC*0481BD	HABA/H1RA048	AC048X1021	(BRISTOL) H23A423ABCA	A
2SA06701806	BRC0601BD	HBBA/H2RA060	AC060X1021	(BRISTOL) H20R583ABCA	A
2SA06701806	BRC0601BE	HCBA/H3RA060	AC060X1022	(BRISTOL) H20R583ABCA	A
2SA06702306	DRCS0181BE	HBBC/H2RC018	AC018X1222	(BRISTOL) H29B15UABCA	A
2SA06706206	DRC*0241BE	HBBC/H2RC024	AC024X1222	(BRISTOL) H25B20QABCA	A
2SA06703706	DRC*0301BE	HBBC/H2RC030	AC030X1222	(BRISTOL) H29B26UABCA	A
2SA06702006	DRC*0361BE	HBBC/H2RC036	AC036X1222	(BRISTOL) H29B30UABCA	A
2SA06714206	DRC*0421BE	HBBC/H2RC042	AC042X1221	(BRISTOL) H20C403ABCA	A
2SA06702406	DRC*0481BE	HBBC/H2RC048	AC048X1222	(BRISTOL) H29A423CBCA	A
2SA06706006	DRCS0601CD	HABC/H1RC060	AC060X1221	(COPELAND) ZR57K3--PFV	A
2SA06702506	DRCS0601BE	HBBC/H2RC060	AC060X1222	(BRISTOL) H21R583ABCA	A
2SA06706306	ERCS0421CA	HABD/H1RD042	--	(COPELAND) ZR36K3--PFV	A
2SA06706306	ERCS0481CA	HABD/H1RD048	--	(COPELAND) ZR42K3--PFV	A
2SA06706106	BRHS0181BD	EBBA/E1RA018	HP018X1021	(BRISTOL) H23B17SABCA	B
2SA06701606	BRH*0241BD	EBBA/E1RA024	HP024X1021	(BRISTOL) H2322SABCA	B
2SA06703706	BRH*0301BD	EABA/E1RA030	HP030X1021	(BRISTOL) H25B28QABCA	B
2SA06702106	BRH*0361BD	EABA/E1RA036	HP036X1021	(BRISTOL) H25B35QABCA	B
2SA06703506	BRH*0421CD	EABA/E1RA042	HP042X1021	(COPELAND) CR38K6--PFV	B
2SA06706006	BRHS0481CD	EABA/E1RA048	HP048X1021	(COPELAND) ZR46K3--PFV	B
2SA06701806	BRHQ0481BE	--	--	(BRISTOL) H20R48ABCA	B
2SA06706006	BRHS0601CD	EABA/E1RA060	HP060X1021	(COPELAND) ZR57K3--PFV	B
2SA06706106	DRHS0181BD	EABC/E1RC018	HP018X1221	(BRISTOL) H25B17QABCA	B
2SA06706206	DRH*0241BD	EABC/E1RC024	HP024X1221	(BRISTOL) H25B20QABCA	B
2SA06703606	DRH*0301BD	EABC/E1RC030	HP030X1221	(BRISTOL) H26B26QABCA	B
2SA06706106	DRH*0361BD	EABC/E1RC036	HP036X1221	(BRISTOL) H25B30QABCA	B
2SA06706306	DRH*0421CD	EABC/E1RC042	HP042X1221	(COPELAND) ZR40K3--PFV	B

START KIT MODEL NO.	OUTDOOR UNIT MODEL NUMBER			COMPRESSOR	SEE SECTION FOR INSTALLATION
2SA06701806	DRHS0481BE	EBBC/E2RC048	HP048X1221	(BRISTOL) H20R453ABCA	H
2SA06702506	DRHS0601BE	EBBC/E2RC060	HP060X1221	(BRISTOL) H21R583ABCA	H
2SA06701706	BPCH0241BA	--	--	(BRISTOL) H23B223ABCA	C
2SA06701606	BPCH0301BA	--	--	(BRISTOL) H23B263ABCA	C
2SA06703906	BPCH0361BA	--	--	(BRISTOL) H23A323ABCA	C
2SA06703906	BPCH0421BA	--	--	(BRISTOL) H23A383ABCA	C
2SA06707106	BPCH0481BA	--	--	(BRISTOL) H25A46QCBCA	C
2SA06707306	BPCH0551BA	--	--	(BRISTOL) H25A56QCBCA	C
2SA06706106	CPCH0301BA	--	--	(BRISTOL) H25B26QABCA	C
2SA06706106	CPCH0361BA	--	--	(BRISTOL) H25B30QABCA	C
2SA06707206	CPCH0421CA	--	--	(COPELAND) ZR40K1--PFV	C
2SA06706006	CPCH0481CA	--	--	(COPELAND) ZR46K3--PFV	C
2SA06701906	BPHH0241BA	--	--	(BRISTOL) H25B22QABCA	D
2SA06703706	BPHH0301BA	--	--	(BRISTOL) H25B28QABCA	D
2SA06702106	BPHH0361BA	--	--	(BRISTOL) H25B35QABCA	D
2SA06707106	BPHH0421BA	--	--	(BRISTOL) H25A42QCBCA	D
2SA06707106	BPHH0481BA	--	--	(BRISTOL) H25A46QCBCA	D
2SA06706206	PAC024H1021	--	--	(BRISTOL) H29B22UABCA	F
2SA06706106	PAC030H1021	--	--	(BRISTOL) H23B28SABCA	F
2SA06702006	PAC036H1021	--	--	(BRISTOL) H29B33UABCA	F
2SA06703906	PAC042H1021	--	--	(BRISTOL) H23A383ABCA	F
2SA06701806	PAC048H1021	--	--	(BRISTOL) H20R453ABCA	F
2SA06701806	PAC060H1021	--	--	(BRISTOL) H20R583ABCA	F
2SA06706206	PAC024H1221	--	--	(BRISTOL) H29B20UABCA	F
2SA06702206	PAC030H1221	--	--	(BRISTOL) H27B26QCBCA	F
2SA06702006	PAC036H1221	--	--	(BRISTOL) H29B33UABCA	F
2SA06706206	PAC042H1221	--	--	(BRISTOL) H20C373ABCA	F
2SA06706306	PAC048H1221	--	--	(COPELAND) ZR42K3--PFV	F
2SA06706106	PHP024H1021	--	--	(BRISTOL) H29B24UABCA	G
2SA06703706	PHP030H1021	--	--	(BRISTOL) H29B28UABCA	G
2SA06702006	PHP036H1021	--	--	(BRISTOL) H29B33UABCA	G
2SA06707106	PHP042H1021	--	--	(BRISTOL) H25A42QCBCA	G
2SA06701806	PHP048H1021	--	--	(BRISTOL) H20R453ABCA	G
2SA06701806	PHP060H1021	--	--	(BRISTOL) H20R583ABCA	G

SECTION A

BRC(S,Q), HBA, HRA, ERCS, HBD, HRD, DRC(S,Q), HBC, HRC & AC(10,12) SERIES SPLIT AIR CONDITIONERS

Pre-drilled pilot holes are provided in the control box.

1. Use the two pilot holes on the left angled side to attach start relay. See Figure 1.
2. Place the start capacitor beside the dual capacitor using one capacitor strap fastened to pilot holes provided in control box to secure both capacitors in place.
3. Attach the black lead wire from the starting kit relay #5 to T1 terminal of the contactor.
4. Attach the red lead wire from the starting kit capacitor to T2 terminal of the contactor.
5. Locate the brown wire connecting the dual capacitor "HERM" to the S (start) terminal on the compressor.
6. Attach the brown lead wire from the starting kit relay #2 to the same terminal on the dual capacitor which was located in Step 4. See Figure 2.

7. The yellow lead wire should be factory connected between starting kit relay #1 to starting kit capacitor.

NOTE: The wiring of the capacitor and relay must agree with Figure 2. Also, see diagram on control box cover.

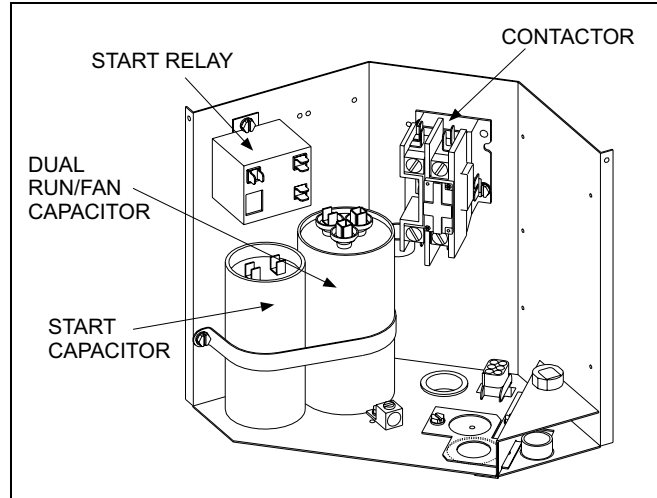


FIGURE 1

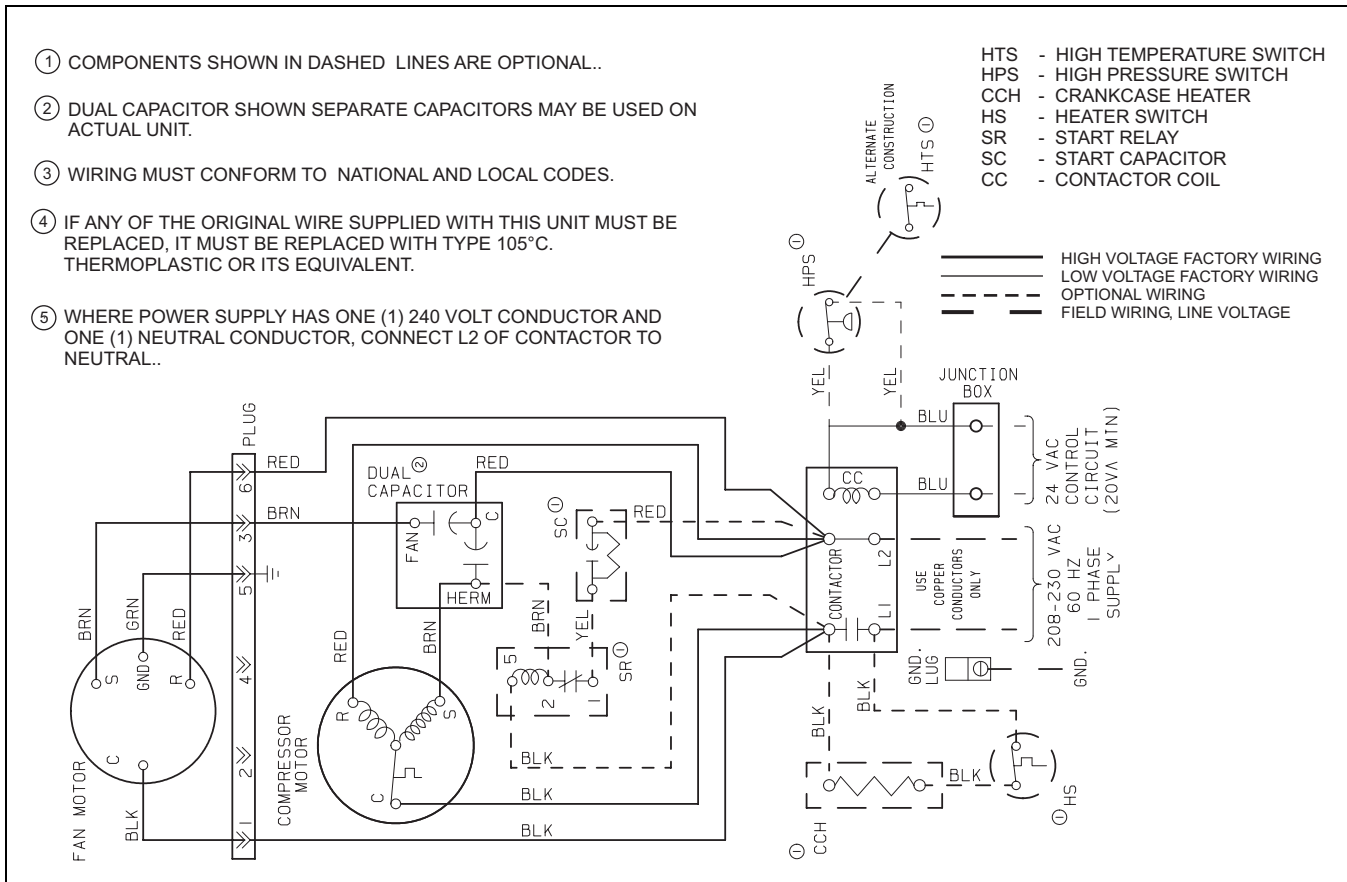


FIGURE 2

SECTION B

BRH, EBA, ERA, DRH, EBC, ERC & HP(10,12) SERIES SPLIT HEAT PUMPS

Pre-drilled pilot holes are provided in the control box.

NOTE: On units which have a solid state start device, remove the device and the red and brown wiring connections to the dual capacitor.

1. Use the two pilot holes on the left angled side to attach start relay. See Figure 3.
2. Place the start capacitor beside the dual capacitor using one capacitor strap fastened to pilot holes provided in control box to secure both capacitors in place.
3. Attach the black lead wire from the starting kit relay #5 to T1 terminal of the contactor.
4. Attach the red lead wire from the starting kit capacitor to T2 terminal of the contactor.
5. Locate the brown wire connecting the dual capacitor "HERM" to the S (start) terminal on the compressor.
6. Attach the brown lead wire from the starting kit relay #2 to the same terminal on the dual capacitor which was located in Step 4. See Figure 4.

7. The yellow lead wire should be factory connected between starting kit relay #1 to starting kit capacitor.

NOTE: The wiring of the capacitor and relay must agree with Figure 4. Also, see diagram on control box cover.

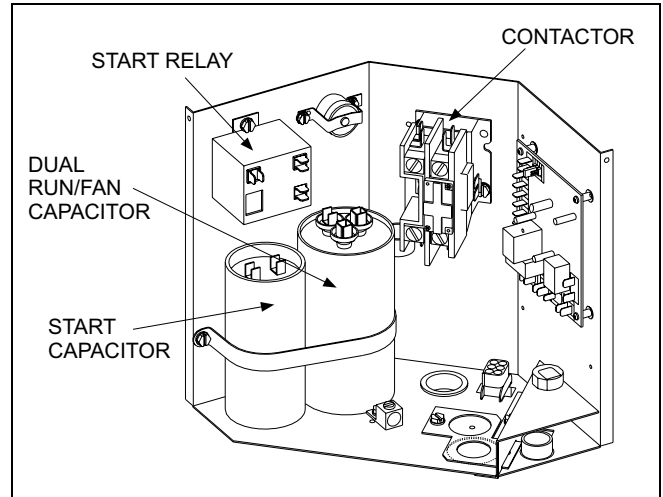


FIGURE 3

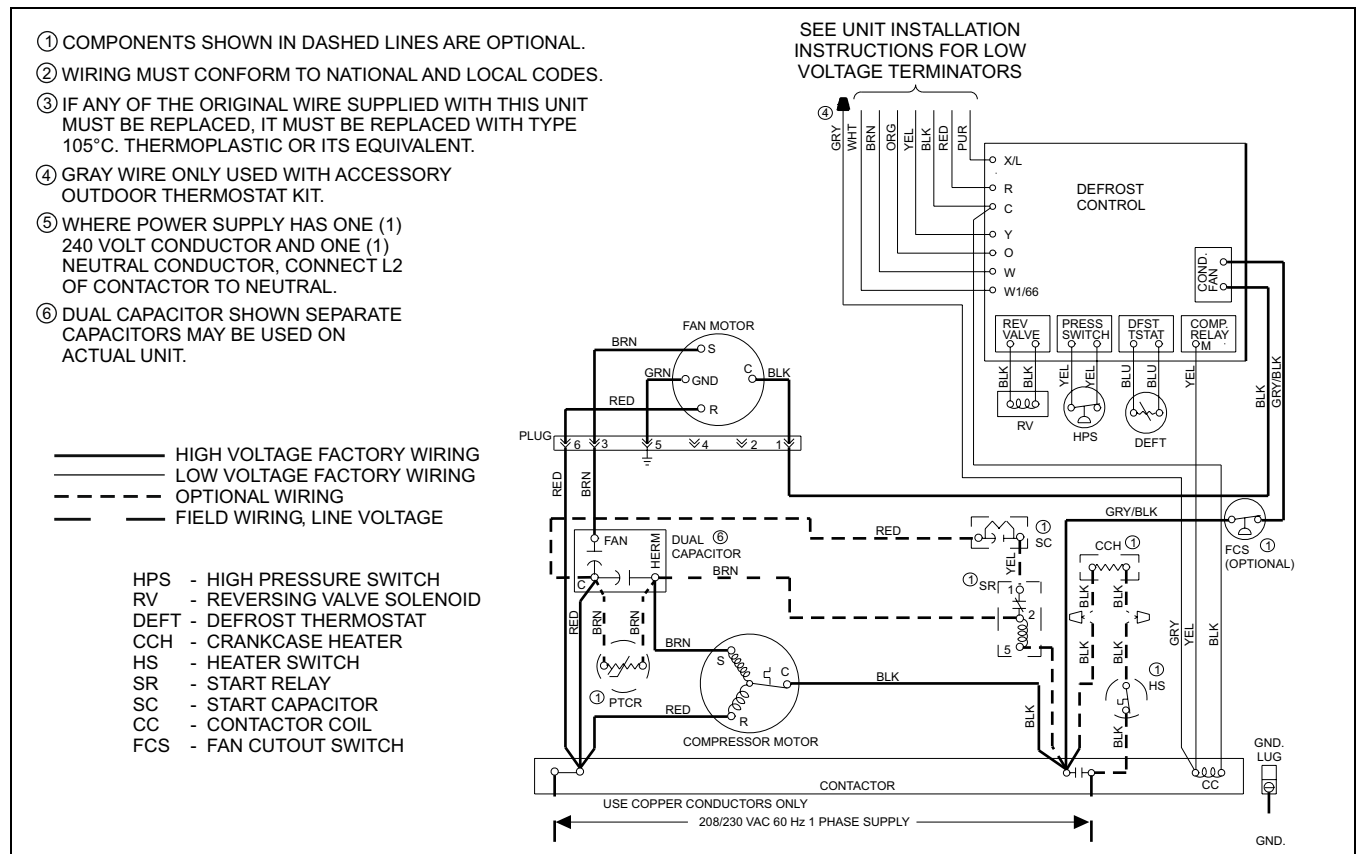


FIGURE 4

SECTION C

PAC SERIES PACKAGED AIR CONDITIONERS

Pre-drilled screw holes are provided in the control box. Using screws provided in the kit, install the start relay and start capacitor as shown in Figure 5.

NOTE: When installing kits on units, run wires through wiring clamp as shown in Figure 5.

On units which have a solid-state start device; remove solid state start device along with the red and brown wiring connections to run capacitor.

1. Attach the black lead wire from the starting kit relay #5 to T1 terminal of the contactor.
2. Attach the red lead wire from the starting kit capacitor to dual capacitor "C".
3. Locate the brown wire connecting the dual capacitor "HERM" to the S (start) terminal on the compressor.
4. Attach the brown lead wire from the starting kit relay #2 to the same terminal on the run capacitor that was located in Step 3. See Figure 6.
5. Attach the yellow wire from the starting kit relay #1 to the start capacitor.

NOTE: The wiring of the capacitor and relay must agree with Figure 6. Also, see diagram on control box cover.

All components must be fastened securely and all wires must be routed to avoid contact with high or low voltage terminals or sharp edges. Use the plastic wire tie found with the kit to insure proper wire routing.

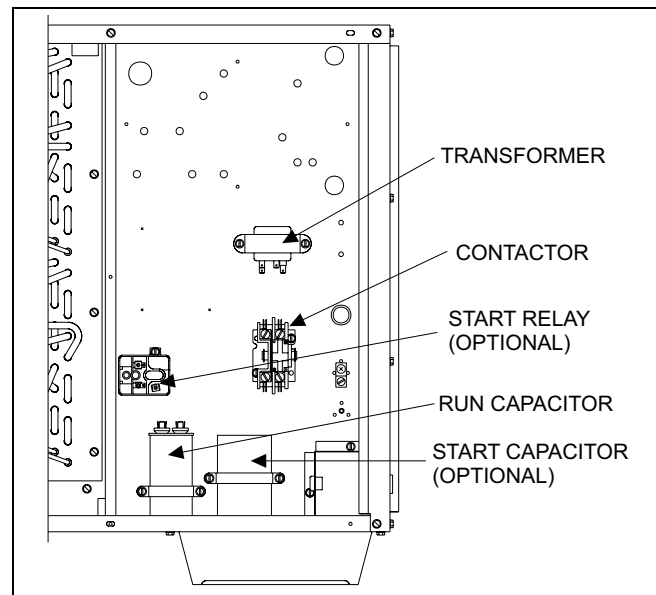


FIGURE 5

NOTE: BLOWER MOTOR IS WIRED AT FACTORY FOR OPTIMUM BLOWER PERFORMANCE. FOR FIELD ADJUSTMENT OF BLOWER SPEED, REFER TO BLOWER PERFORMANCE DATA IN INSTALLATION INSTRUCTIONS.

BLOWER MOTOR

TERMINAL	POSITION	COLOR
COM	1	ORANGE
HIGH	2	BLACK
MED HI	3	BLUE
MED LO	4	YELLOW
LOW	5	RED

- ① COMPONENTS SHOWN IN DASHED LINES ARE OPTIONAL.
- ② DUAL CAPACITOR SHOWN, SEPERATE CAPACITORS MAY BE USED ON ACTUAL UNIT.
- ③ WIRING MUST CONFORM TO NATIONAL AND LOCAL CODES.
- ④ IF ANY OF THE ORIGINAL WIRING SUPPLIED WITH THIS UNIT MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 105° THERMOPLASTIC OR ITS EQUIVALENT.
- ⑤ WHERE POWER SUPPLY HAS ONE (1) 240 VOLT CONDUCTOR AND ONE(1) NEUTRAL CONDUCTOR, CONNECT L2 OF CONTACTOR TO NEUTRAL.
- ⑥ STANDARD ON SOME UNITS.
- ⑦ FOR OPTIONAL ELECTRIC HEATER ACCESSORY USE ONLY.

- HIGH VOLTAGE FACTORY WIRING
- LOW VOLTAGE FACTORY WIRING
- - - - - OPTIONAL WIRING
- - - - - FIELD WIRING, LINE VOLTAGE

OPTIONAL COMPONENTS:
 START RELAY
 START CAPACITOR
 CRANKCASE HEATER
 PTCR

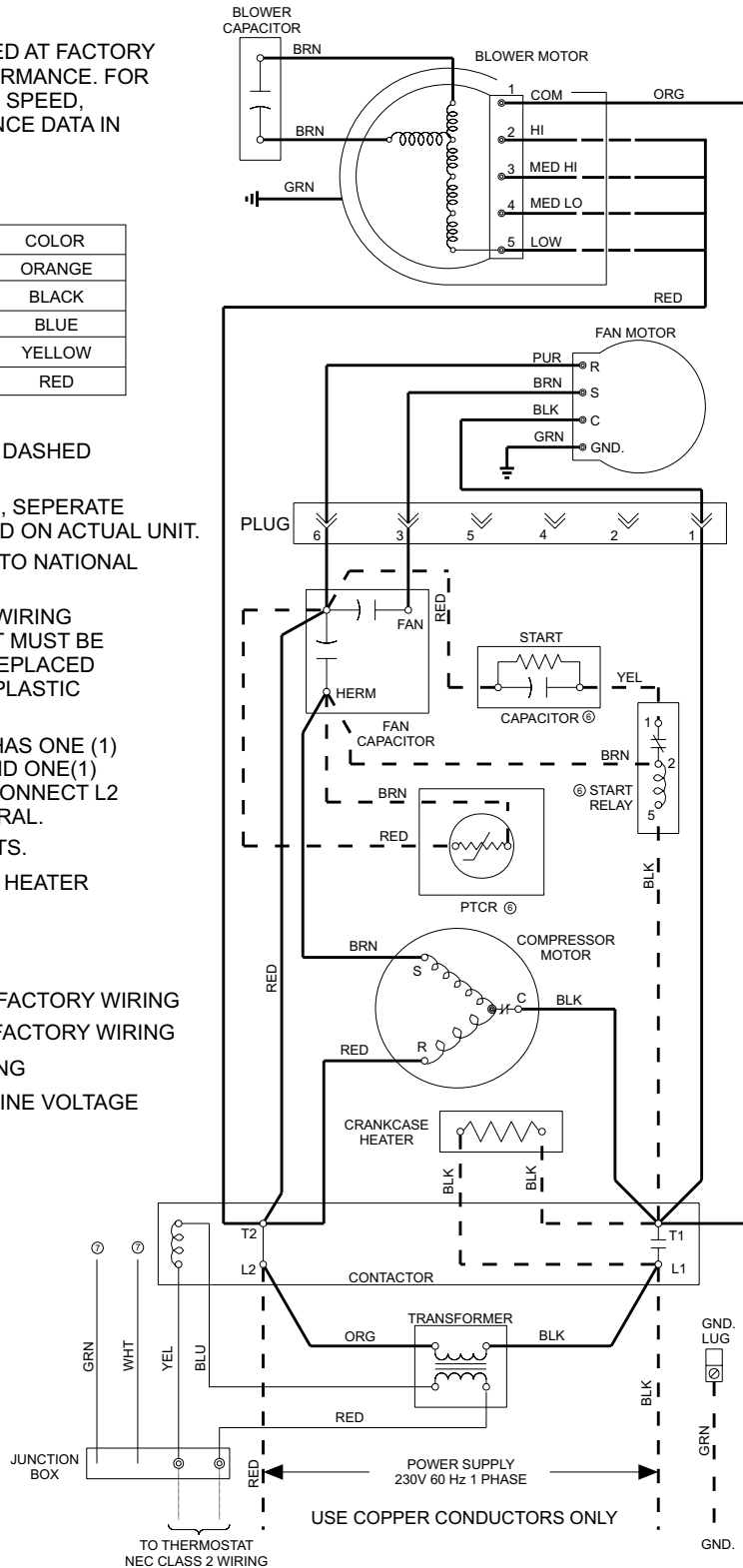


FIGURE 6

SECTION D

PHP SERIES PACKAGED HEAT PUMPS

Pre-drilled screw holes are provided in the control box. Using screws provided in the kit, install the start relay and start capacitor as shown in Figure 7.

NOTE: When installing kits on units, run wires through wiring clamp as shown in Figure 7.

On units which have a solid-state start device; remove solid state start device along with the red and brown wiring connections to run capacitor.

1. Attach the black lead wire from the starting kit relay #5 to T1 terminal of the contactor.
2. Attach the red lead wire from the starting kit capacitor to dual capacitor "C".
3. Locate the brown wire connecting the dual capacitor "HERM" to the S (start) terminal on the compressor.
4. Attach the brown lead wire from the starting kit relay #2 to the same terminal on the run capacitor that was located in Step 3. See Figure 8.
5. Attach the yellow wire from the starting kit relay #1 to the start capacitor.

NOTE: The wiring of the capacitor and relay must agree with Figure 8. Also, see diagram on control box cover.

All components must be fastened securely and all wires must be routed to avoid contact with high or low voltage terminals or sharp edges. Use the plastic wire tie found with the kit to insure proper wire routing.

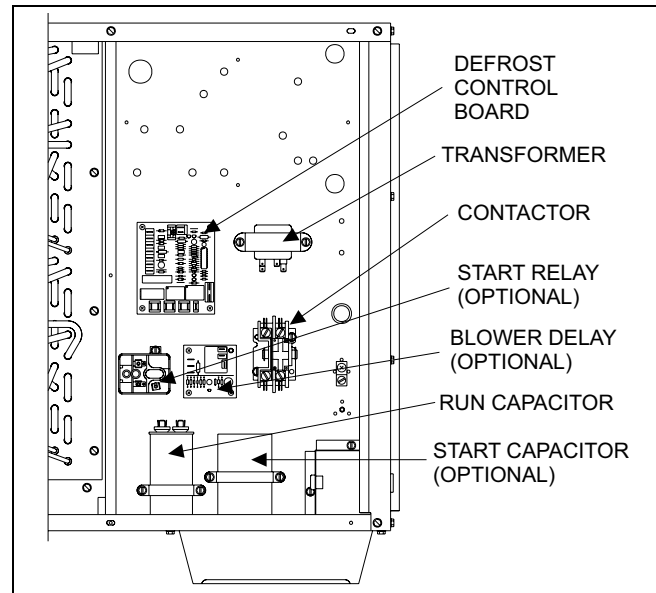


FIGURE 7

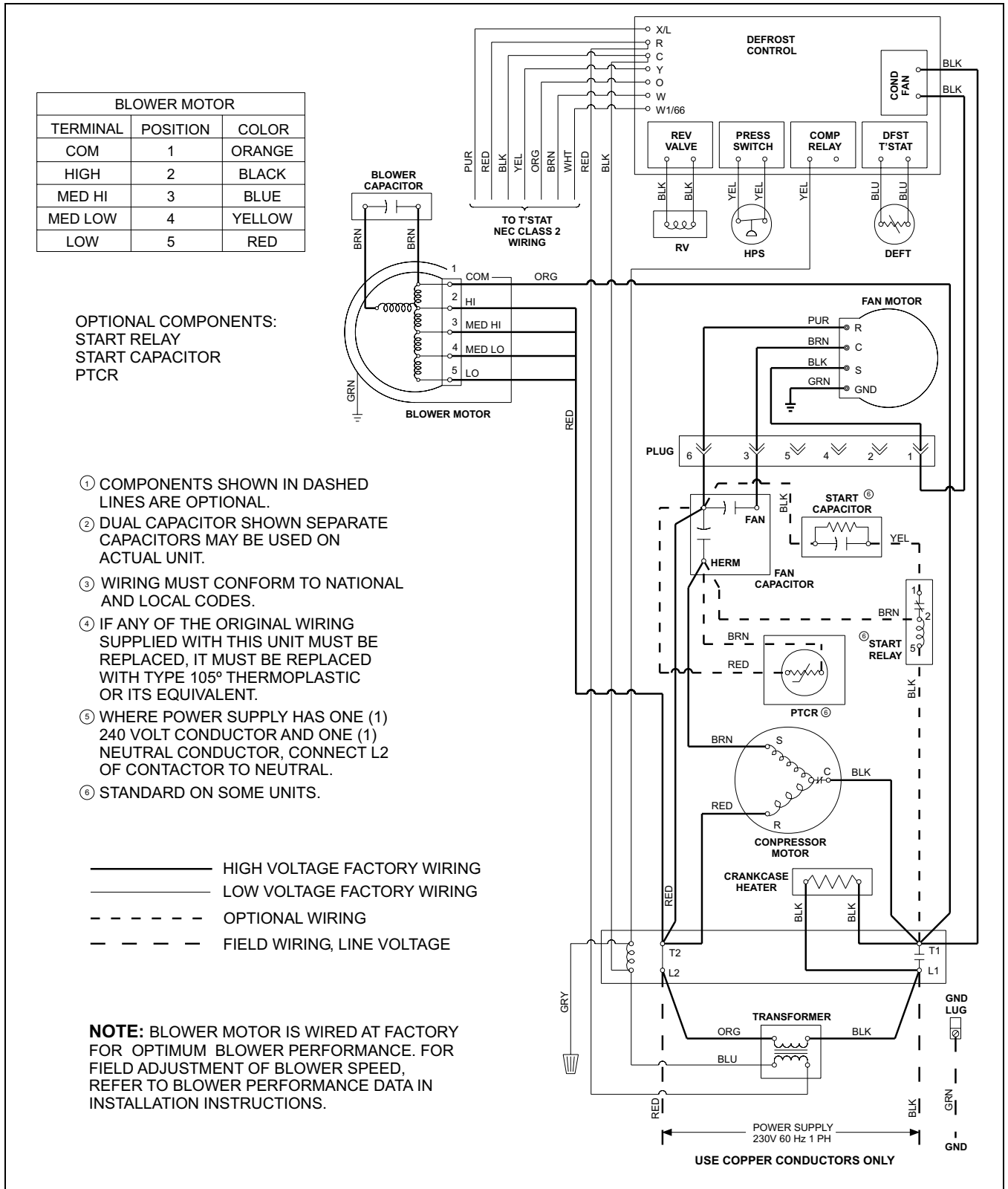


FIGURE 8

SECTION E

AC*M10 SERIES SPLIT AIR CONDITIONERS

Pre-drilled pilot holes are provided in the control box.

1. Use the two pilot holes to attach start relay. See Figure 9.
2. Place the start capacitor beside the dual capacitor using one capacitor strap fastened to pilot holes provided in control box to secure both capacitors in place.
3. Attach the black lead wire from the starting kit relay #5 to T1 terminal of the contactor.
4. Attach the red lead wire from the starting kit capacitor to T2 terminal of the contactor.
5. Locate the brown wire connecting the dual capacitor "HERM" to the S (start) terminal on the compressor.
6. Attach the brown lead wire from the starting kit relay #2 to the same terminal on the dual capacitor which was located in Step 4. See Figure 10.
7. The yellow lead wire should be factory connected between starting kit relay #1 to starting kit capacitor.

NOTE: The wiring of the capacitor and relay must agree with Figure 10. Also, see diagram on control box cover.

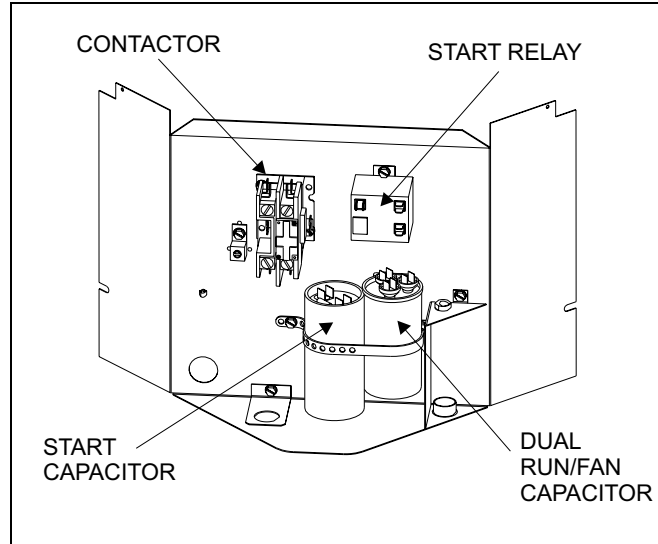


FIGURE 9

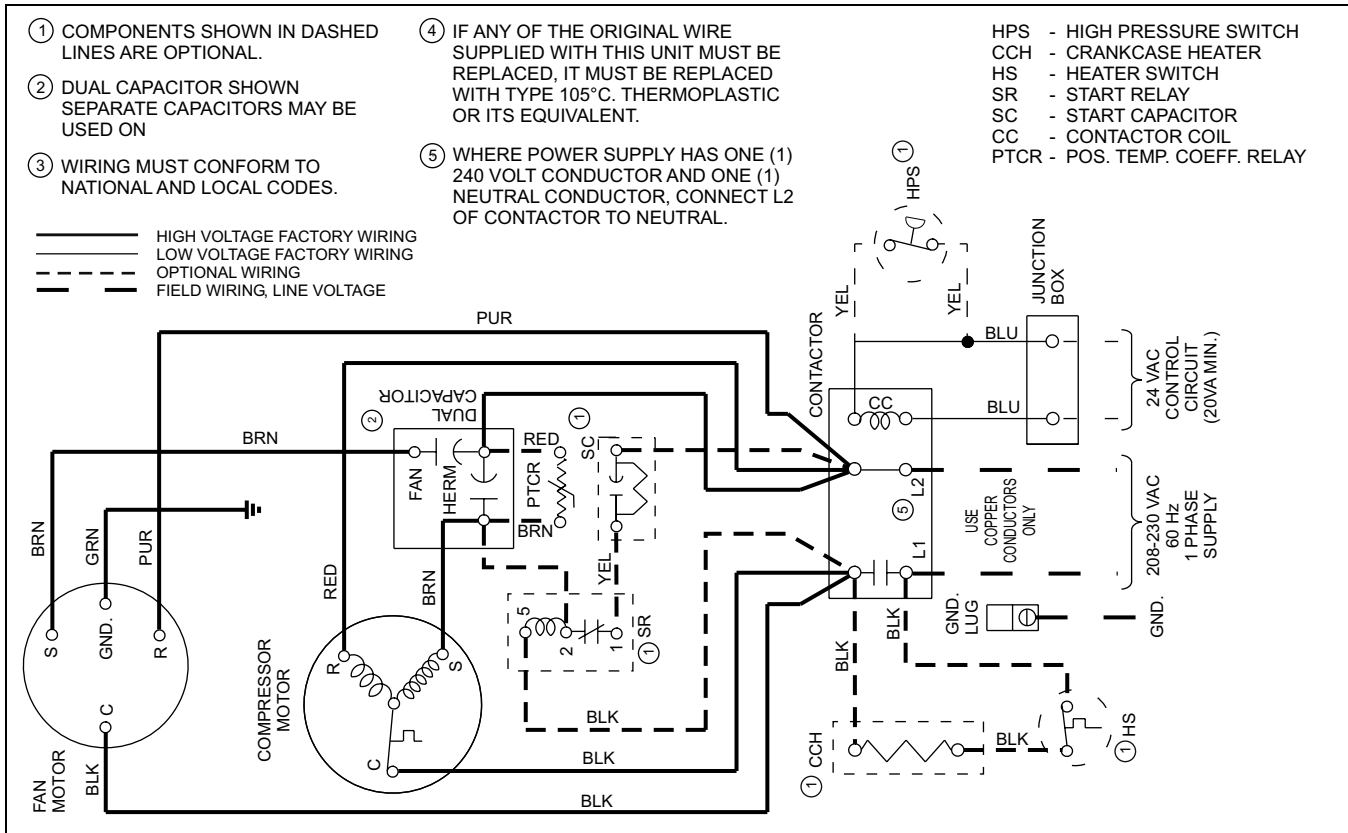


FIGURE 10

KIT NUMBER	COMPONENT RATINGS						
	START CAPACITOR RATINGS	START RELAY RATINGS					
		RATED HOT PICK-UP VOLTS		COLD PICK-UP		DROP-OUT	
				MIN.	MAX.	MIN.	MAX.
2SA06701606	88-108 MFD. 250 VAC	170	180	162	175	55	115
2SA06701706	72-88 MFD. 330 VAC	190	200	189	205	60	130
2SA06701806	88-108 MFD. 250 VA	190	200	189	205	60	130
2SA06702106	145-175 MFD. 250 VAC	160	170	152	166	40	90
2SA06703206	43-53 MFD. 330 VAC	190	200	189	205	60	130
2SA06703306	145-175 MFD. 250 VAC	240	260	223	252	75	150
2SA06703506	189-227 MFD. 330 VAC	190	200	189	205	60	130
2SA06703606	189-227 MFD. 330 VAC	170	180	162	175	55	115
2SA06703706	145-175 MFD. 250 VAC	200	220	186	215	40	90
2SA06703906	145-175 MFD. 250 VAC	260	280	239	268	60	135
2SA06706006	270-324 MFD. 330 VAC	240	260	223	252	75	150
2SA06706106	88-108 MFD. 250 VAC	160	170	152	166	40	90
2SA06706206	145-175 MFD. 250 VAC	220	240	205	234	40	90
2SA06706306	88-108 MFD. 330 VAC	170	180	162	175	40	90
2SA06707106	297-356 MFD. 250 VAC	170	180	162	175	55	115
2SA06707206	88-108 MFD. 330 VAC	240	260	223	252	75	150
2SA06707306	297-356 MFD. 250 VAC	160	170	152	166	40	90
2SA06714206	88-108 MFD. 250 VAC	190	200	180	195	60	121
2SA06702006	145-175 MFD. 250 VAC	170	180	162	175	40	90
2SA06702206	189-227 MFD. 250 VAC	180	190	171	184	40	90
2SA06702306	161-193 MFD. 250 VAC	240	260	224	252	40	90
2SA06702406	270-334 MFD. 330 VAC	170	180	162	175	40	90
2SA06702506	145-175 MFD. 330 VAC	170	180	162	175	40	90

NOTES