

INSTALLATION INSTRUCTION

HARD START KITS (KIT MODEL #'s SHOWN IN TABLES 1 & 2)

Supersedes: 690.35-N11V (993)

690.35-N12V (394)

**FOR USE ON: Models H*DA012 - 060 and H*MC012- 060;
H*DB012-036 and H*MD012-036; E*FB012 - 060 and E*SE018 - 060**

035-10836

GENERAL

These Hard Start Kits provide extra torque for the compressor on the start cycle and include everything required for field installation.

CONTENTS OF COOLING KITS

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	(See Table 1)	RELAY, START
2	1	(See Table 1)	CAPACITOR, START
3	1	021-15506-000	SCR., #6 x 3/8" LG. PHILLIPS HD.
4	2	021-17124-000	SCR., #8 x 1/2" LG. HEX HD.
5	1	373-04000-210	WIRE, ELECTRIC BLACK
6	1	373-04000-030	WIRE, ELECTRIC YELLOW
7	1	373-04000-411	WIRE, ELECTRIC WHITE
8	1	373-04000-032	WIRE, ELECTRIC RED
9	1	035-08381-000	LABEL, WIRING DIA.
10	1	024-23290-000	BRACKET, CAPACITOR MTG.

INSTALLATION - COOLING UNITS

To install the Hard Start Kit;

- Shut off all power to the outdoor unit, both high and 24 volt circuits.
- Remove the control box cover.
NOTE: H1DA/HAMC048, 060 units have a factory installed Start Assist Device (PTCR) in the control box. This device is not required, if the hard start kit components are installed. Remove factory installed PTCR device as follows:
 - Disconnect two wires (yellow and red) connecting the PTCR device with run capacitor terminals marked "HERM" and "C".
 - Remove mounting bracket screws holding the PTCR device to the control box.
 - Remove bracket and PTCR device.
 - Continue installation of hard start kit per instructions below.
- Check the start relay and start capacitor part number against the "Unit Model Number / Start Components" in Table 1 to make sure they are correct for the unit. A specific

start relay and start capacitor combination is required for each unit (compressor).

- Drill holes in the control box for mounting hard start components as follows:
 - At the upper rear of the box, slightly to right of center there is a dimple. Drill a .109 dia. hole in this dimple which will be used to mount the start relay. See Figure 1.
 - At the right side of the box slightly above the level of the top of the contactor are two (2) screws. These screws will be removed and discarded when installing the hard start capacitor mounting bracket with screws included in the kit.

NOTE: If you do not find two screws in this location, you will find two (2) dimples as a guide to the screw location for mounting the hard start capacitor mounting bracket. Drill a .125 dia hole in each dimple to fasten the hard start capacitor mounting bracket. See Figure 1 as needed.

CAUTION: When drilling the .125 dia. holes be careful the drill does not go through the control box and into a return bend of the condenser coil located to the rear of the control box.

Either use a "stop" to control the drill depth or pull the entire control box out from the unit before drilling the holes.

- After drilling the holes, mount the Start Relay using the #6 x 3/8" Phillips head screw included with this kit. Making sure the anti-rotation tab on the relay bracket is in the deboss of the box. Mount the relay with the "UP" arrow in the vertical position.
- Then mount the Start Capacitor Mounting Bracket using the two (2) #8 x 1/2" hex head screws.
- Refer to the wiring diagram, Figure 2. Connect the four wires of the kit as follows:
 - Yellow** wire between Start Relay terminal "2" and dual Run Capacitor terminal "HERM". This will be the terminal with another yellow wire coming from the compressor already connected.

TABLE 1 - HARD START KIT COMBINATIONS - COOLING UNITS

KIT MODEL NUMBER	COOLING UNIT MODEL NUMBER	COMPR. MODEL NUMBER	START RELAY PART NO.	START CAPACITOR PART NO.	START CAPACITOR CAP PART NO.	START CAPACITOR MFD/VOLTS
2SA06705206	H1DA/HAMC012 H9DA/HJMC012 H1DB/HAMD012	REZ3-0125 -PFV	024-25053-000	024-25052-000	024-23291-004	108-130/220
2SA06704006	H1(9)DA018, 030 HA(J)MC018, 030 H1DB/HAMD018 H1PL018, 030	H23B173 H23B263	024-25184-000	024-25191-000	024-23191-003	88-108/330
2SA06704106	H1DA/HAMC024 H9DA/HJMC024 H1DB/HAMD024 H1PL024	H23B223	024-25189-000	024-25191-000	024-23291-003	88-108/330
2SA06705906	H1DB/HAMD030	H25B26Q	024-25053-000	024-25071-000	024-23291-003	145-175/250
2SA06704206	H1PL036	CR35K6	024-25189-000	024-25215-000	024-23291-001	189-227/330
2SA06704306	H1PL042	CR42K6	024-25218-000	024-25215-000	024-23291-001	189-227/330
2SA06705506	H2DA/HBMC036 H9DA/HJMC036 H1DB/HAMD036	H25B35Q	024-25060-000	024-25071-000	024-23291-003	145-175/250
2SA06705806	H2DA/HBMC042	H24A423	024-25922-000	024-25071-000	024-23291-003	145-175/250
2SA06705606	H2DA/HBMC048	H25A46Q	024-25392-000	024-25390-000	024-23291-001	270-324/330
2SA06704406	H1DA/HAMC060	H25A62Q	024-25397-000	024-25390-000	024-23291-001	270-324/330

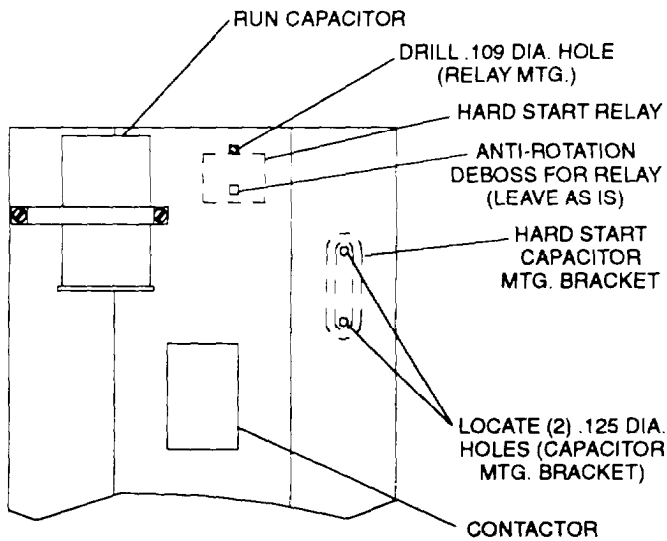


FIGURE 1 - COOLING UNIT CONTROL BOX

- b. White wire between Start Relay terminal "1" and Start Capacitor, either terminal.
- c. Red wire between Start Capacitor (other terminal from White wire connection) and Contactor terminal "T2". The end of this wire going on "T2" has a spring spade terminal for fastening under the screw of the contactor terminal.
- d. Black wire between Start Relay terminal "5" and Contactor terminal "T1". The end of this wire going on "T1" has a spring spade terminal for fastening under the screw of the contactor terminal.

NOTE: The wiring diagram shows Start Relay terminal orientation of the General Electric relay. Essex relay terminals have a different orientation but have the same number designation. Be sure to check terminal number on relay before connecting wires.

8. Put plastic cap over Start Capacitor terminals and snap the capacitor into the mounting bracket which was fastened in place in step 6 above.

NOTE: It is important that the Start Capacitor be mounted with the terminal end (cap) UP so that the capacitor vent hole is UP.

9. After Start Relay and Start Capacitor are in place and all wiring completed, bundle all loose wires together and tie using the plastic tywrap provided.

10. A NEW Wiring Diagram label is included in this kit. Place it OVER the original wiring diagram on the inside of the unit control box cover so it will be available for future reference. Replace the control box cover and any other panels removed.

11. Reconnect all power to the unit and try starting the unit at least twice with only a brief "off" time of a few seconds between starts to ensure the unit is wired correctly and will start with unequalized pressures.

CONTENTS OF HEAT PUMP KIT

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	(See Table 1)	RELAY, START
2	1	(See Table 1)	CAPACITOR, START
3	1	021-15506-000	SCR., #6 x 3/8" LG. PHILLIPS HD.
4	2	021-17124-000	SCR., #8 x 1/2" LG. HEX HD.
5	1	373-04000-210	WIRE, ELECTRIC BLACK
6	1	373-04000-030	WIRE, ELECTRIC YELLOW
7	1	373-04000-411	WIRE, ELECTRIC WHITE
8	1	373-04000-032	WIRE, ELECTRIC RED
9	1	035-09879-000	LABEL, WIRING DIA.
10	1	024-23290-000	BRACKET, CAPACITOR MTG.

INSTALLATION - HEAT PUMP

To install the Hard Start Kit;

1. Shut off all power to the outdoor unit, both high and 24 volt circuits.
2. Remove the control box cover.

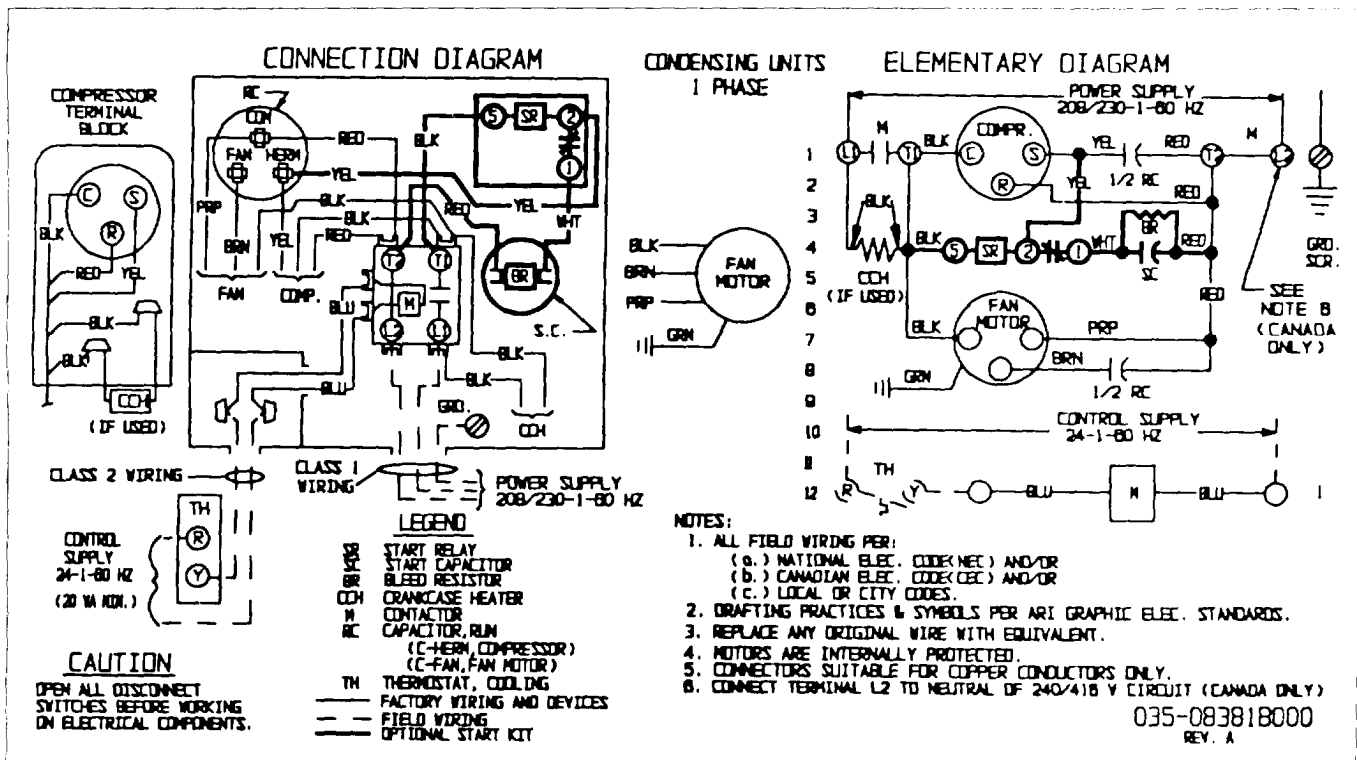


FIGURE 2 - OUTDOOR UNIT WIRING DIAGRAM - COOLING UNITS

3. Check the start relay and start capacitor part numbers against the "Unit Model Number / Start Components" in Table 2 to make sure they are correct for the unit. A specific start relay and start capacitor combination is required for each unit (compressor).
4. **START RELAY MOUNTING-** See Figure 3. Locate the screw below the defrost control and the deboss under this screw. Remove and discard the screw. Mount the start relay using the #6 x 3/8" Phillips head screw included with this kit.

Make sure the anti-rotation tab on the relay bracket is in the deboss of the control box. Mount the relay with the "UP" arrow in the vertical position.

5. **HARD START CAPACITOR BRACKET MOUNTING -**

E1FB/EASE 012-036 : Locate two screws at the right side of the control box next to the contactor. Remove and discard these screws. Mount the start capacitor bracket using the two #8 x 1/2" hex head screws.

E1FB/EASE 042-060 : Locate the start device (PTCR) and the screw at the right side of the control box next to the contactor. Disconnect two wires from the start device to the run capacitor terminals: "HERM" and "C". Remove the start device, its bracket and the screw. Mount the start capacitor bracket using two #8 x 1/2" hex head screws.

6. Connect the four wires of the kit as follows, refer to the wiring diagram (See Figure 4):
 - a. **Yellow wire** between Start Relay terminal "2" and dual Run Capacitor terminal "HERM". This will be the terminal with another yellow wire coming from the compressor already connected.
 - b. **White wire** between Start Relay terminal "1" and Start Capacitor, either terminal.
 - c. **Red wire** between Start Capacitor (other terminal from White wire connection) and Contactor terminal "T2". The end of this wire going on "T2" has a spring spade terminal for fastening under the screw of the contactor terminal.
 - d. **Black wire** between Start Relay terminal "5" and Contactor terminal "T1". The end of this wire going on "T1" has a spring spade terminal for fastening under the screw of the contactor terminal.

NOTE: The wiring diagram shows Start Relay terminal orientation of the General Electric relay. Essex relay terminals have a different orientation but have the same number designation. Be sure to check terminal number on relay before connecting wires.

7. Put plastic cap over Start Capacitor terminals and snap the capacitor into the mounting bracket which was fastened in place in step 5 above.

NOTE: It is important that the Start Capacitor be mounted with the terminal end (cap) UP so that the capacitor vent hole is UP.

8. After Start Relay and Start Capacitor are in place and all wiring completed, bundle all loose wires together and tie using the plastic tywrap provided.
9. A NEW Wiring Diagram label is included in this kit. Place it OVER the original wiring diagram on the inside of the unit control box cover so it will be available for future reference. Replace the control box cover and any other panels removed.

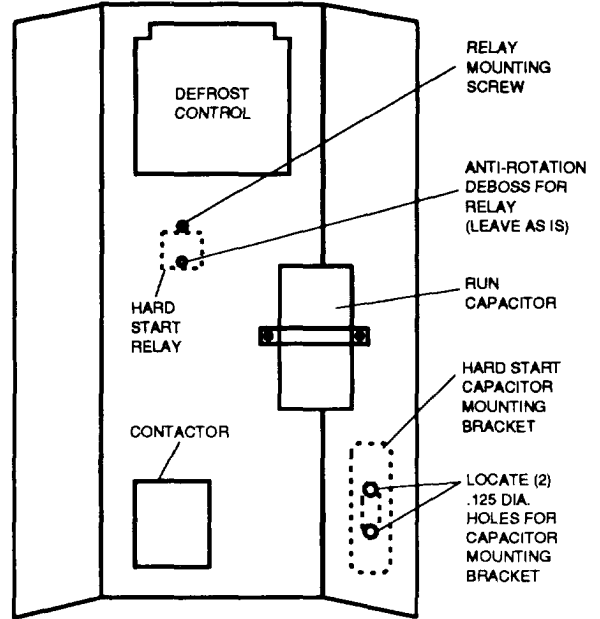


FIGURE 3 - HEAT PUMP CONTROL BOX

10. Reconnect all power to the unit and try starting the unit at least twice with only a brief "off" time of a few seconds between starts to ensure the unit is wired correctly and will start with unequalized pressures.

TABLE 2 - HARD START KIT COMBINATIONS - HEAT PUMPS

KIT MODEL NUMBER	UNIT MODEL NUMBER	COMPR. MODEL NUMBER	START RELAY PART NO.	START CAPACITOR PART NO.	START CAPACITOR CAP PART NO.	START CAPACITOR MFD/VOLTS
2SA06704506	E1FB/E9FB, 012, 018 EASE/EJSE018	H25B17Q	024-25060-000	024-25191-000	024-23291-003	88-108 / 330
2SA06705306	E1FB/E9FB, EASE/EJSE-024	H25B22Q	024-25394-000	024-25071-000	024-23291-003	145-175 / 250
2SA06705406	E1FB/E9FB, EASE/EJSE-030	H25B28Q	024-25391-000	024-25071-000	024-23291-003	145-175 / 250
2SA06705506	E1FB/E9FB, EASE/EJSE-036	H25B35Q	024-25060-000	024-25071-000	024-23291-003	145-175 / 250
2SA06705606	E1FB EASE 042, 048	H25A42Q H25A46Q	024-25392-000	024-25390-000	024-23291-001	270-324 / 330
2SA06705706	E1FB EASE 060	H25A56Q	024-25393-000	024-25390-000	024-23291-001	270-324 / 330

