

# EasyStart Home AC Wiring

## Installing The Micro-Air Easy Start

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## Safety and Warnings

- AC Power can be dangerous or lethal if the proper safeguards are not understood or performed.
- If you are not sure of any aspect of this installation or proper safety when working with AC line voltages, please seek installation by a qualified HVAC or electrical professional.
- Turn off all power to the air conditioning system before proceeding.
- Read all instructions before starting installation.
- Capacitors can store a charge... Power should first be removed from the system then the capacitor should be discharged by touching both terminals simultaneously with an insulated screwdriver. Three terminal caps should use the “C” terminal to short each of the other two terminals.

## Note on Inverter Driven Compressors:

Inverter driven compressors cannot use EasyStart. If your compressor is inverter driven, it will indicate that on the outdoor unit. All other systems can use EasyStart.

Note that some systems only have an inverter driven *fan*, and the compressor is a conventional compressor. EasyStart never connects to the fan and only connects electrically to the compressor motor, so EasyStart is compatible with these systems.

## Section 1: Comfort Alert and Core Sense Modules

If you have one of the modules or contactors in this section, the EasyStart power on delay must be disabled. Follow the instructions in [Appendix 1: Compressor monitoring system changes](#). If you do not have one of these modules, please move to the next section.

*Core sense modules:*



*Core sense contactors:*

NOTE: These contactors are connected like a standard mechanical contactor. For more information on operation of this contactor, please click on the included link.

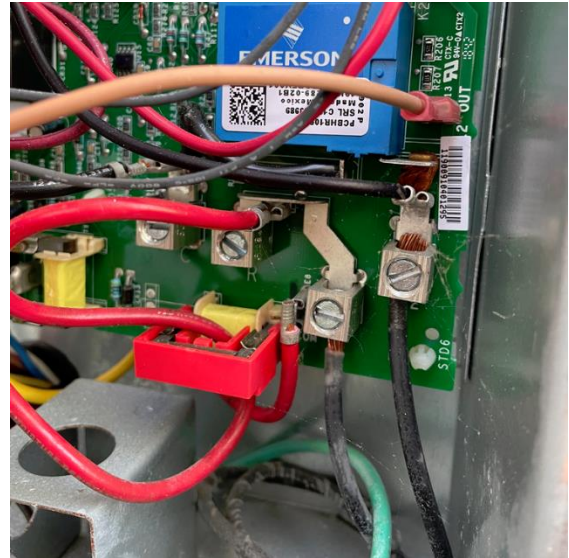


## Section 2: Comfort Alert Control Boards

**Use this section's instructions ONLY for Emerson Comfort Alert boards**

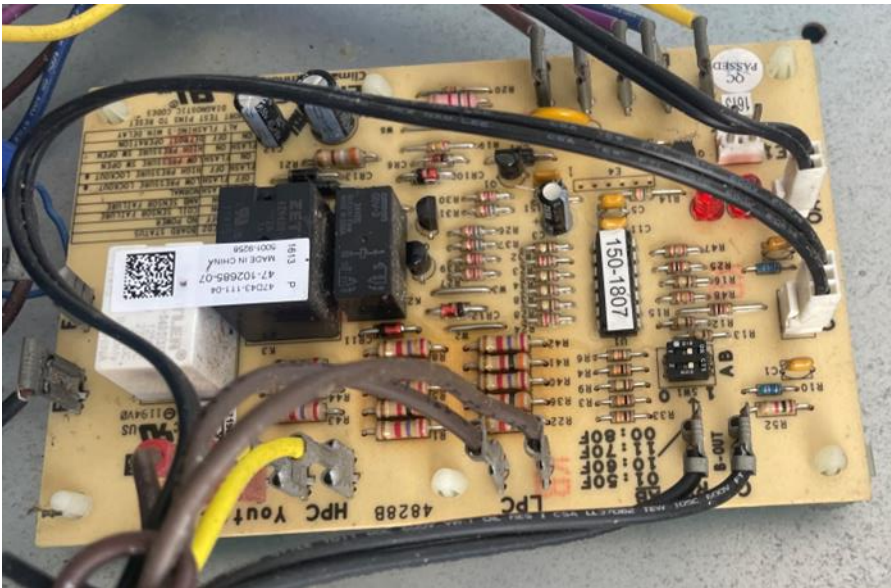
Emerson makes two styles of control board that require special instructions. If you have a comfort alert control board, it will say "Comfort Alert" on the control board. To install EasyStart, compare the boards in [Section 5](#) and [Section 6](#) with your control board.

If your system does not have a comfort alert board, or has a contactor, please proceed to the next section.



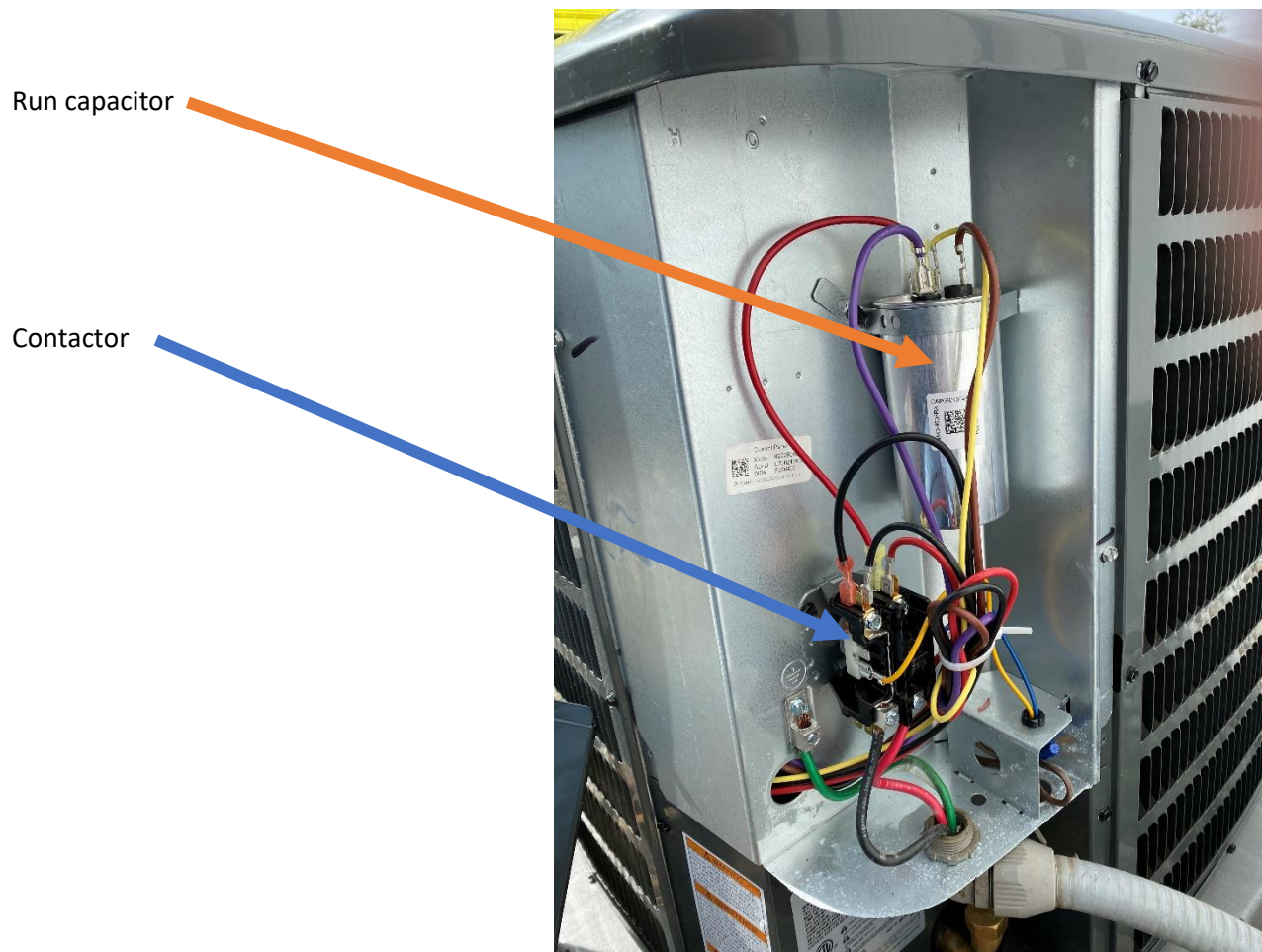
### Section 3: Control boards

The board below is an example of a defrost or control board. Boards such as this are common and do not require any changes in EasyStart installation. You can ignore this board and continue on to the next section.



## Section 4: Installing EasyStart in most systems

### Step 1: Identify the components



Run capacitor

Contactor

Figure 1

The two components shown in figure 1 will be used to connect your EasyStart. Locate these components in your air conditioner before proceeding. Some compressors will have additional components and may have a circuit board as well. Power comes in from the bottom of the contactor usually from a breaker or fuse panel on the dwelling. This must be disconnected (Turn the breaker off) before connecting EasyStart.

### Step 2: Mounting the unit

EasyStart can be mounted on any flat surface in either a horizontal or vertical position. It can also be mounted with the clear cover pointing up. **The wire entry must be facing down when EasyStart is mounted vertically.**

### Step 3: Identify the capacitor terminals

Three terminal run capacitors

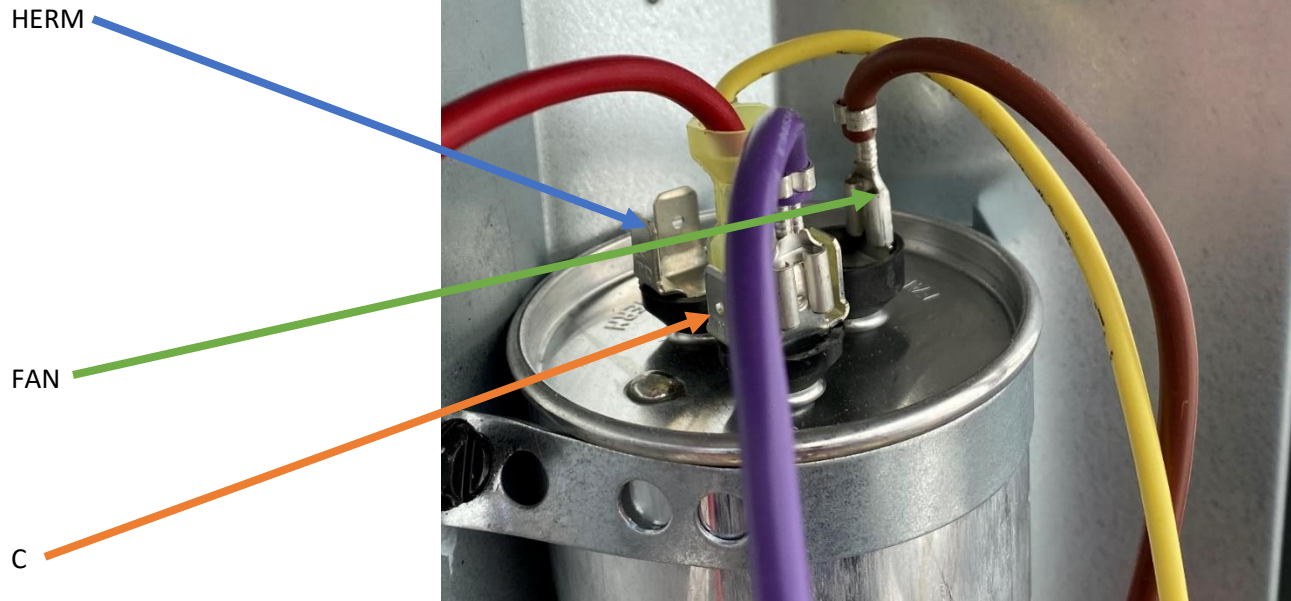


Figure 2

Many compressors have three terminal group capacitors as

shown in figure 1. These capacitors feature labels on the top as indicated by the arrows above. Use the labels on these capacitors to identify where to make connections.

### Two terminal run capacitors

Two terminal group caps are harder to identify the terminals because they are not labeled. Look for a wire that connects the contactor to the capacitor like the red one shown in figure 3. This wire is connected to the “C” terminal and will be left in place. The other unmarked terminal is the HERM terminal. For the remainder of this document, we will refer to the HERM terminal and C terminal for all types of capacitors.



Figure 3

**DO NOT REMOVE OR DISCONNECT THIS WIRE**

**The wire that is between the Run-Capacitor common (C) and the contactor.**

## Step 4: Removing start devices

HERM terminal group

There is only a single yellow wire connected to the HERM terminal in figure 4. Compressors with only one wire on the HERM terminal have no start components and can go on to the next step. **Note: your wire colors may be different.**

If you find there is more than one wire on this group, you will need to identify which of these wires, if any, goes to a start device.

One wire will always go to the compressor which you can verify using your factory wiring diagram or tracing them out. One may be a compressor monitoring wire and should be preserved and is explained in the next step. The one to remove can go to a relay, a second capacitor called a start capacitor or a PTC device which is a small disk. Remove this start assist wire from the herm terminal at both ends while leaving all the other HERM wires alone. If you have a PTC or hard start you can just remove the entire device.

Please see [Section 8: Start and Run Components](#) for additional images.

## Step 5: Connecting the ORANGE wire

Connect the EasyStart ORANGE wire to the HERM terminal.

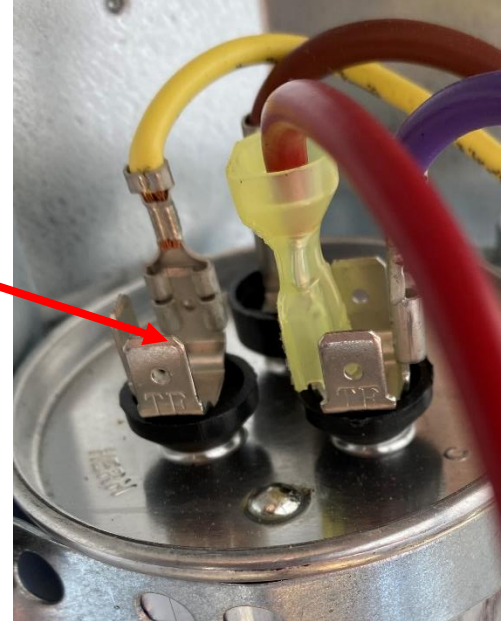


Figure 4



**NOTE: DO NOT REMOVE OR DISCONNECT THIS WIRE.** The wire that connects the Run-Capacitor common (C) and the contactor must not be changed or removed when installing EasyStart

### Step 6: Connecting the BROWN wire

Follow the wire that connects the C terminal on the run capacitor to the contactor. **Do not remove or disconnect this wire. It is identified here only to show the side of the contactor we are referencing.** Wires are arranged in a group on the contactor. The four spade terminals and the screw terminal make up one group. Locate the compressor “R” terminal wire located on this group of terminals. This wire is usually a heavy gauge wire connected to the screw part of the contactor. It may also be on a quick connect as shown in figure 5 on smaller compressors, shown by the blue arrow.

Disconnect the compressor “R” wire from the contactor and connect it to the BROWN wire from EasyStart. Connect only these two wires together and not to anything else.

Note: the fan wire often connects to another of the spade terminals. Make sure you are not connecting the fan wire to the EasyStart brown wire. If you do make this mistake, you will not damage anything, it just will not work properly.

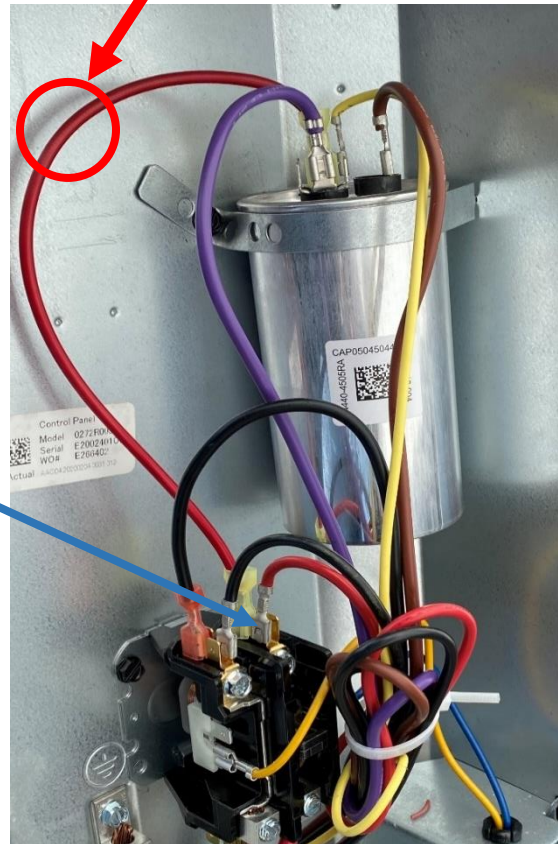


Figure 5

### Step 7: Connecting the WHITE wire

Connect the EasyStart WHITE wire to the contactor where the wire was removed from in step 6. This is typically under the screw terminal on the contactor near where the red arrow is pointing.

#### **Important Note:**

**Compressors with an RLA over 18 amps should Not use the spade connection like shown in figure 5 but should connect using a ring, fork terminal connector or direct wire connection under the screw.**

### Step 8: Connecting the BLACK wire

Contactors are “split” into two electrically separate halves with each half connected to a single voltage line of the incoming service. The red wires are both connected to one side of the contactor in the picture below and the black wires are connected on the other side of the contactor. The wire colors may be different in your installation. Connect the BLACK EasyStart wire to the side of the contactor where the EasyStart WHITE wire is NOT connected using an available connection point.

Connect here

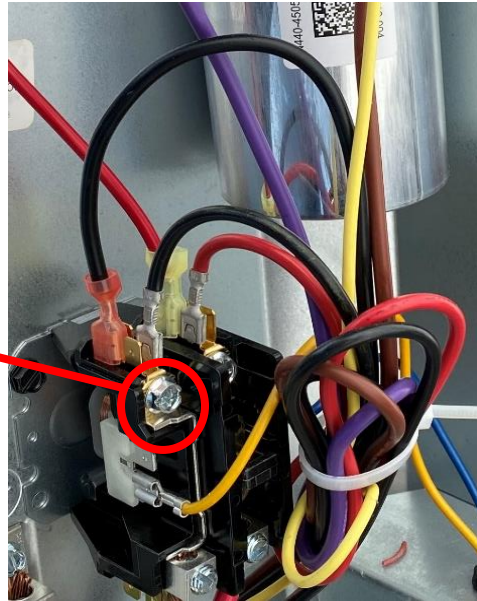


Figure 6

### Step 9: Learning

Start the air conditioner on AC mains power. The fan will come on followed shortly after by the compressor. EasyStart is now installed. The compressor can be cycled normally to complete the learning process. If you are going to test on a generator or alternate power source, be sure the compressor has started five times completing the 5 learns before starting on a generator or other power source.

## Section 5: Comfort Alert, (Late Model)

Goodman GSCZ, Rheem RARL, Goodman GSXC and possibly others

Step 1: **DISCONNECT ALL POWER**

Step 2: Disconnect the red wire pointed to by the green arrow in figure 2. Pull it back out through the transformer pointed to by the blue arrow.

Step 3: Thread the white EasyStart wire back through the transformer like the red wire that was removed and connect it to the connection terminal. It should be connected under the screw for compressors larger than three tons (36,000 BTU).

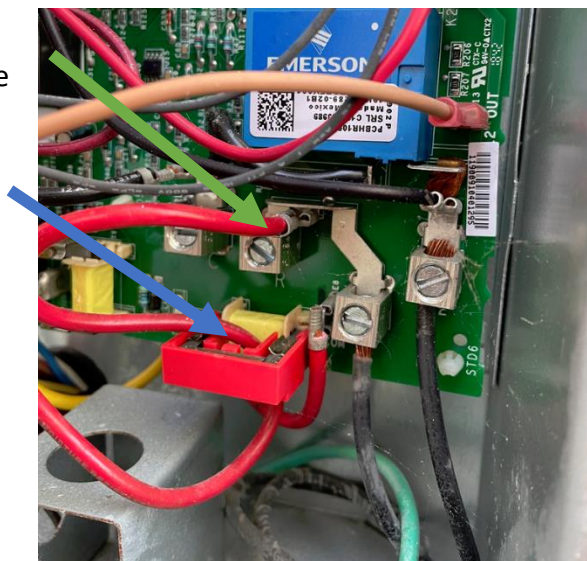


Figure 2

Step 4: Temporarily connect the black EasyStart wire to the screw terminal shown by the black arrow in figure 3. Use a piece of tape or wire nut to insulate the EasyStart brown and orange wires from touching anything else. Set the thermostat for off then turn on power.

Load the EasyStart application on a smart device and open the application. Enter “EasyStart\_” in the entry box (with the underscore but without the quotes). Press “connect”. When the connection is complete, press the releasn tab. Change the switch for “No Power Up Delay” to ON and then press “Send to EasyStart” Once you are successful you can close the app and remove power. Disconnect the black wire after power is removed.

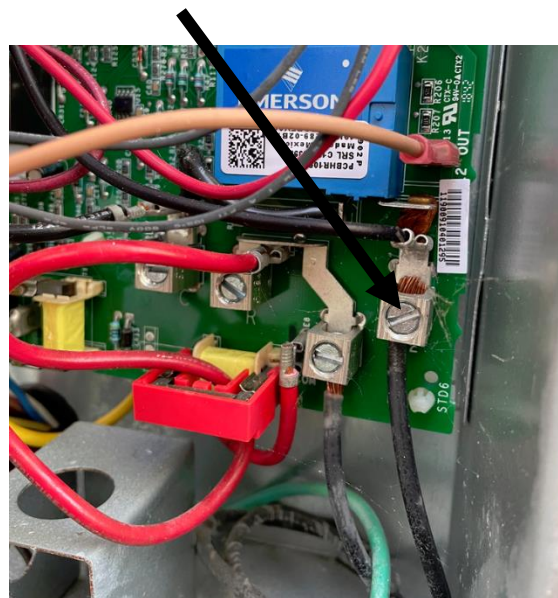


Figure 3

**Note:** if you have trouble connecting in Android, go to settings-> applications-> EasyStart-> Permissions and turn on permission for location services.

Step 4: Connect the disconnected red wire to the EasyStart brown wire using an end splice joint.

Step 5: Connect the black EasyStart wire under the screw pointed to by the yellow arrow in figure 4.

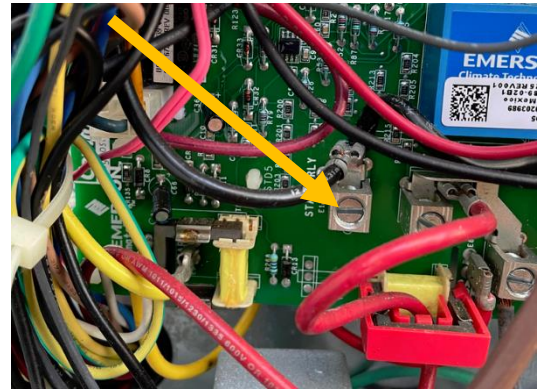


Figure 4

Step 6: Connect the orange wire to the Herm (H) terminal on the run capacitor indicated by the orange circle in figure 5.

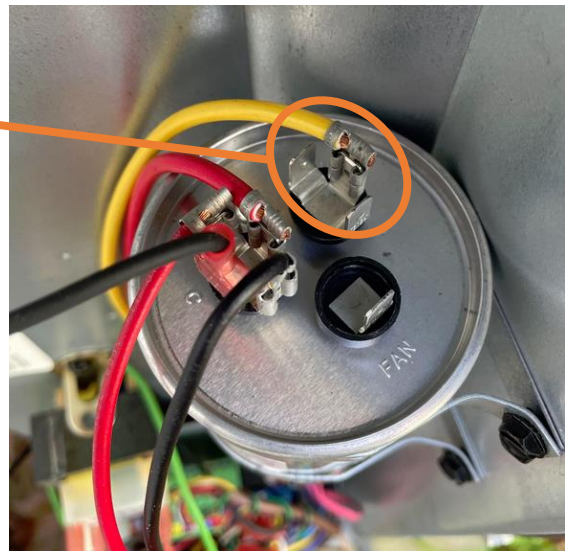
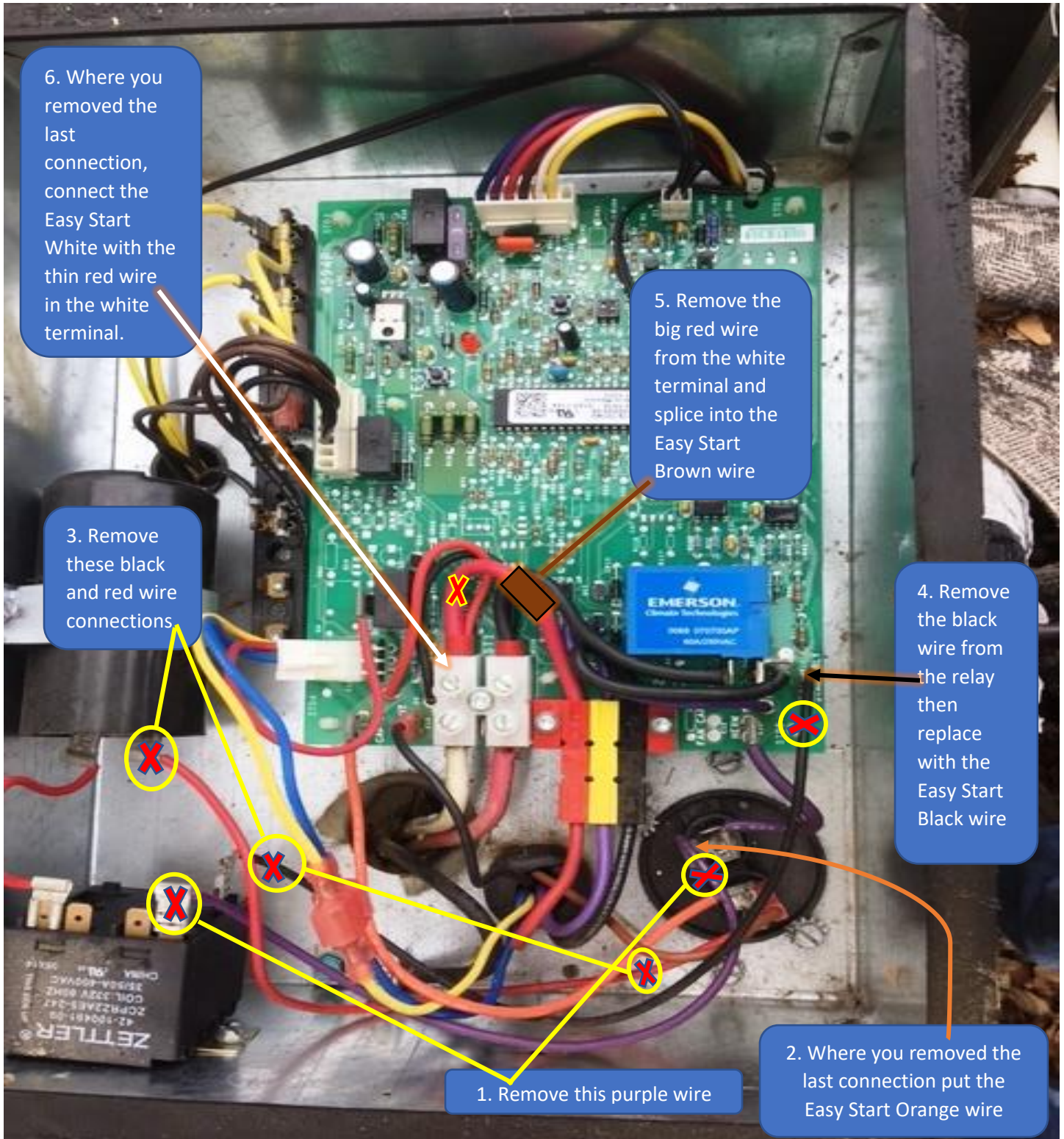


Figure 5

## Section 6: Emerson Comfort Control (Early model)



## Emerson Comfort Control (Early Model) Instructions

1. Remove the purple wire from the start relay to the run capacitor.
2. Where you just removed the run capacitor purple wire, connect the Easy Start Orange wire.
3. Remove the black wire that goes from the start relay to the circuit board & red start capacitor to run capacitor wires.
4. Where you just removed the black wire in the previous step, connect the Easy Start Black wire.
5. Remove the thick red wire from the circuit board top left white terminal and splice into the Easy Start Brown wire leaving the thin red wire in place.
6. Where you removed the last connection, put the Easy Start White wire with the thin red wire in the white terminal.

NOTE: Wherever you see the red **X**, the wire must be removed.

## Section 7: Easy Start Maintenance

The box and entry are watertight and can withstand normal rain events. The box should not be pressure washed since it is not rated for high power water jet cleaning. It can be washed with a mild soap and water solution.

## Section 8: Start and Run Components

### Identifying System Capacitors and Start Components

#### Start Components



**Start Capacitors are Commonly Black Cylinders as Seen Above**



**Start Relays Are Either Black or White and Square as Seen Above**



**A Hard Start as Seen Above**



**A Start Assist, PTCR or Similar As Seen Above**

#### Run Capacitor



**Run-Capacitors are Most Commonly Silver Canisters As Seen To The Left. Dual Run-Capacitors Have 3 Posts Common or C, Herm or H and Fan or F. 2 Post Run-Capacitors Have Common or C and Herm or H.**

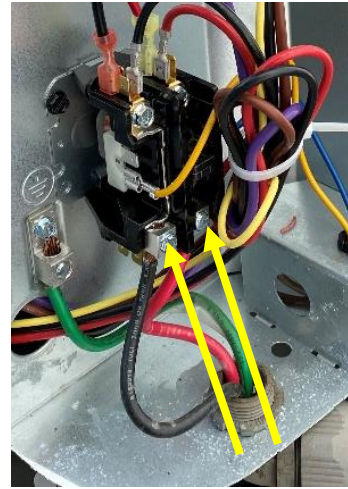
## Additional Resources

For additional information on EasyStart, troubleshooting or assistance, please visit our website at [www.Microair.net](http://www.Microair.net).

## Appendix 1: Compressor monitoring system changes

**This section details changes that should be made **ONLY** if you have a compressor monitoring system. Do not make this change unless it was recommended in a previous section.**

Bluetooth models must be connected to power to disable the starting delay before installation. Turn off the breaker to the air conditioner. Connect the black and white EasyStart wires to the line input side of the contactor indicated by the yellow arrows in figure 8. Tape or wire nut the EasyStart brown and orange wire ends so they cannot make electrical contact with anything. Turn on the breaker to the air conditioner.



Open the smart device application on an Android or Apple device. To start the connection, enter “EasyStart\_”, including the underscore (case sensitive), in the white box below “Enter EasyStart Bluetooth ID:” and press return. The “Connect to EasyStart” button will become enabled. Press the button to connect to the starter. The screen will change to show the ID of the starter.

Click the relearn tab at the bottom of the screen. On the relearn screen, slide the switch for “No pwr on delay” to “ON”. Press “send settings to EasyStart” at the bottom of the screen. Exit the app and turn off the breaker to the air conditioner. Disconnect the white and black EasyStart wires.

