CAC Retro Control Board Installation

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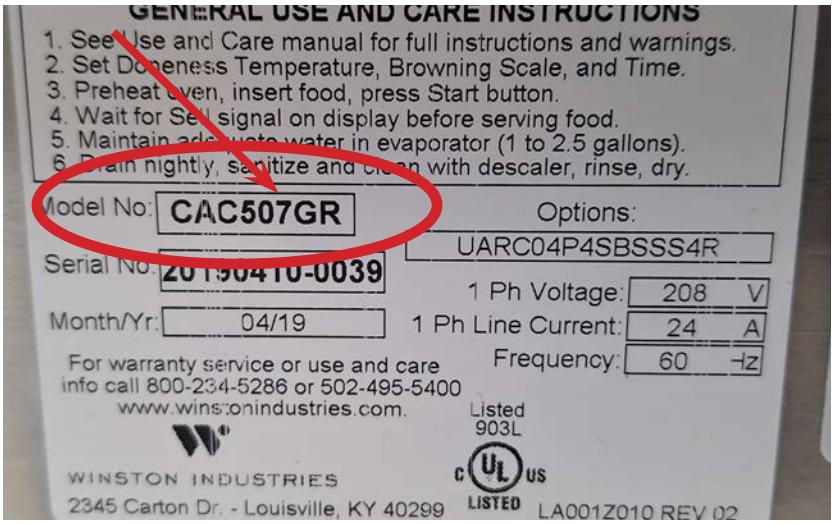
CAC Retro Control Board Installation

Tools Required:

Phillips Screwdriver	Hammer
Flat-tipped Screwdriver	Needle-nosed Pliers
3/8" Nut driver	9/16" Wrench
3/8" Wrench	SV1203Kit

This instruction guide covers the retro contol board installation for CAC & CA85 series CVaps. Refer to the serial tag for model information.



Do not plug the new control board into the unit until the new relay panel is installed. The new control board runs on 24V and the line voltage will cause damage to new control board.

****The air probe, water probe, and float must be replaced. The new control board will not operate correctly with the old probes and float.**

****The existing relays must be replaced.****

CAC Retro Control Board Installation

1. Power the unit off and disconnect from power source. (Fig.1-2)

Fig.1

Fig.2

Air Probe Replacement

2. Locate the air probe access panel on the right side of the cabinet. Using a Phillips screwdriver, remove the panel. (Fig.3-4)

Fig.3

Fig.4

3. Locate the two pin molex connection and disconnect the two pin connection. (Fig.5-6)

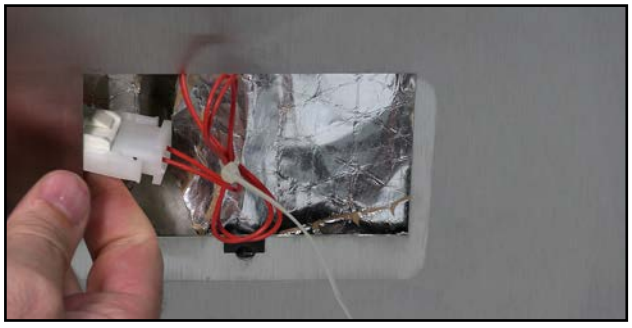


Fig.5

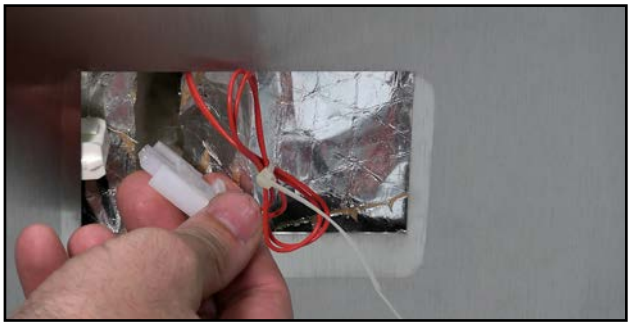


Fig.6

CAC Retro Control Board Installation

4. Pull back the insulation and locate the air probe. Using a 3/8" nutdriver, remove the two retaining nuts. (Fig.7-8)

Fig.7

Fig.8

5. Pull retaining bracket up and off of the mounting studs. Next remove the air probe, back retainer, and orange washer. (Fig.9-10)

Fig.9

Fig.10

6. Locate the replacement air probe in the kit. Thread the mounting bracket, followed by the back bracket, and finally the orange washer. (Fig.11-12)

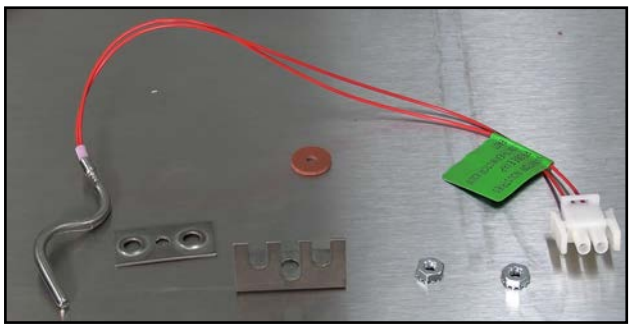


Fig.11

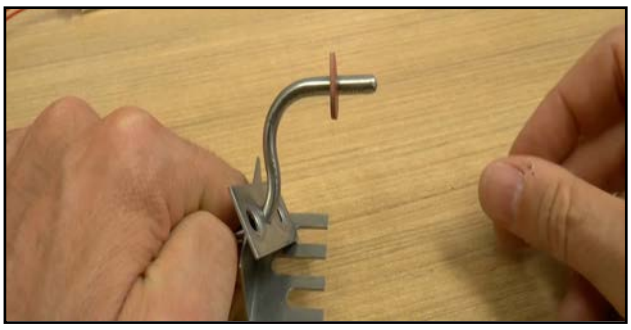


Fig.12

CAC Retro Control Board Installation

7. Insert air probe into opening and rotate until probe tip inside the unit is pointing down. (Fig.13-14)

Fig.13

Fig.14

8. Start the two retaining nuts and tighten them using a 3/8" nut driver or socket. (Fig.15-16)

Fig.15

Fig.16

9. Reconnect the Molex connection and using a Phillips screwdriver or screw gun, replace the access panel. (Fig.17-18)

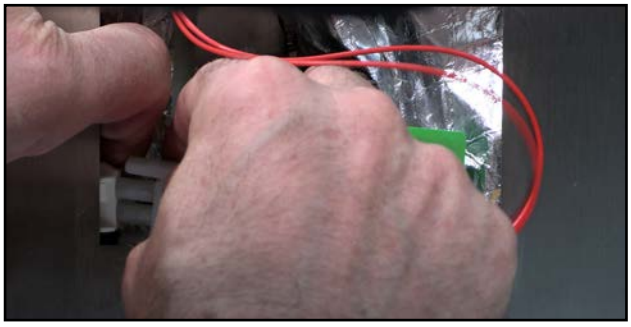


Fig.17

Fig.18

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Water Probe Replacement

10. Drain the water from the unit. Using a Phillips screwdriver or screw gun, remove the lower access panel on the right side.(Fig.19-20)

Fig.19

Fig.20

11. Locate the water probe connection. And disconnect the probe wire.(Fig.21-22)

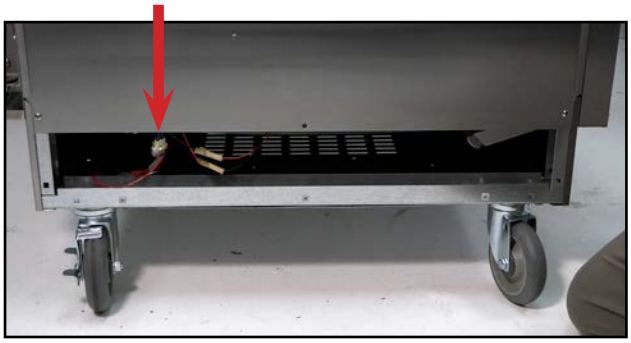

Fig.21

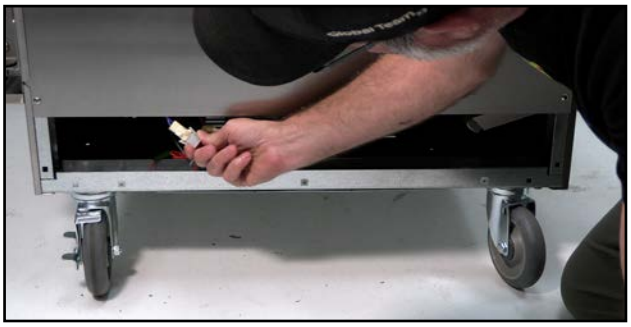

Fig.22

12. Locate the water probe compression nut. Using a 9/16" wrench loosen and remove the water probe compression nut. (Fig.23-24)

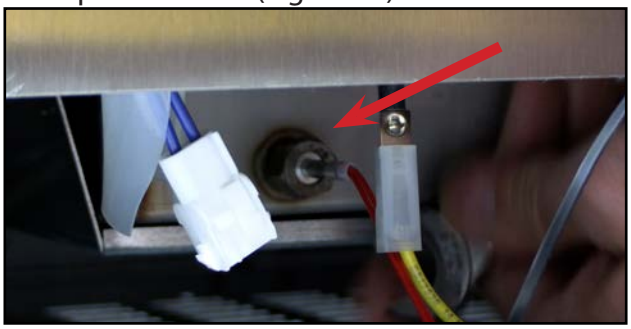

Fig.23

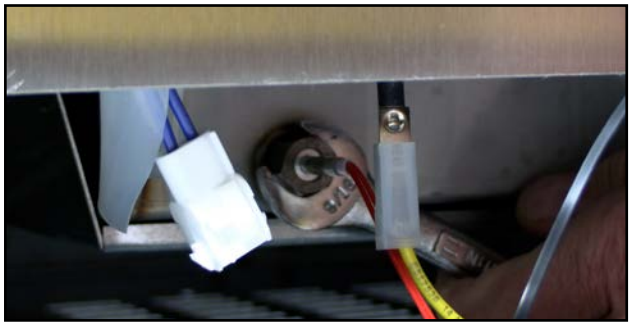

Fig.24

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13. Gently tap the water probe with a hammer, then ,using pliers pull the water probe out of the water pan. (Fig.25-26)

Fig.25

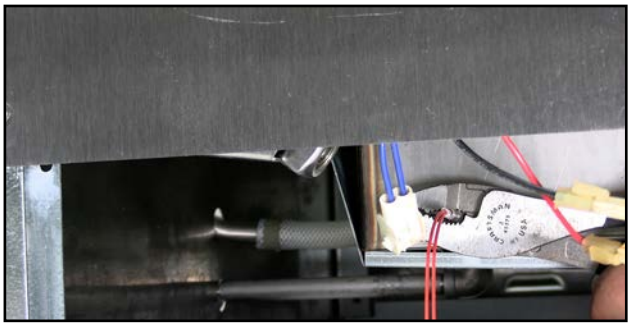

Fig.26

14. Locate the new water probe in the kit and thread on the compression nut and ferrule. The ferrule needs to be 2-1/4" from the probe tip.(Fig.27-28)

Fig.27

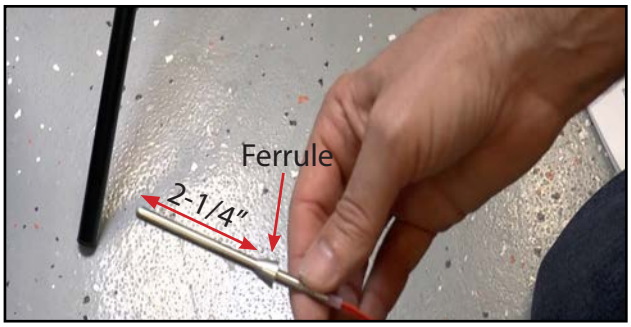

Fig.28

15 Insert the water probe into the probe opening. Thread the compression nut on and tighten the compression nut using a 9/16" wrench. Tighten the compression nut until the probe will no longer slide in or out. Reconnect the two pin molex connection.(Fig.29-30)

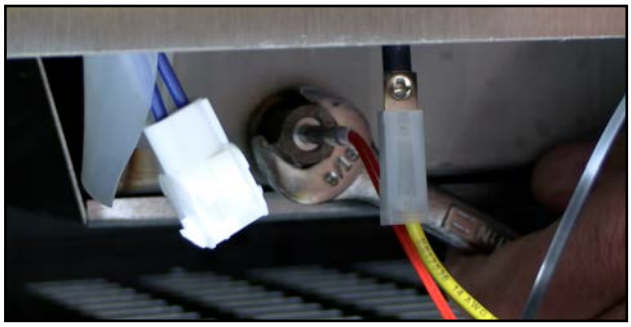

Fig.29

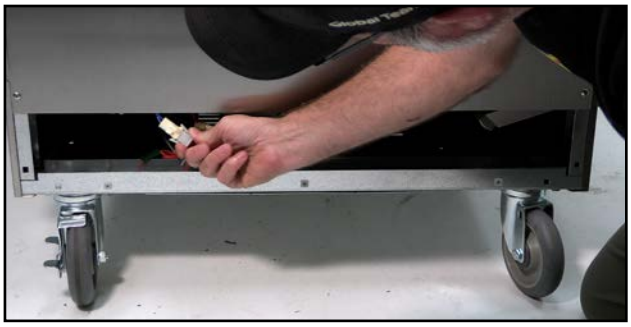

Fig.30

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Float Replacement

16. Locate the red and black float wires near the water probe connection. Disconnect both wires.(Fig.31-32)

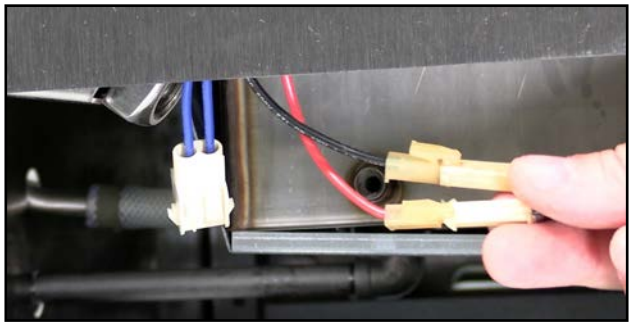


Fig.31

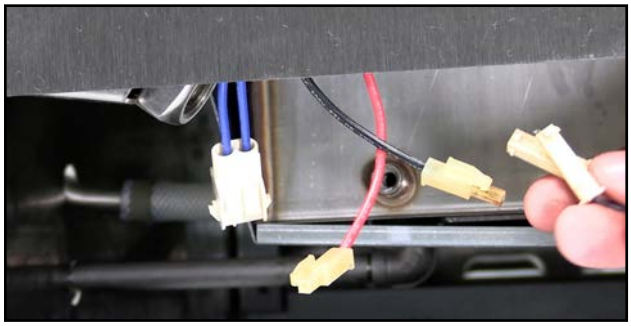


Fig.32

17. Locate the float retaining nut in the center of the evaporator pan. Using an adjustable wrench, loosen the nut. (Fig.33-34)

Fig.33

Fig.34

18. Remove the retaining nut and washer. Pull the float and wires out through the inside of the evaporator pan. (Fig.35-36)

Fig.35

Fig.36

CAC Retro Control Board Installation

19. Locate the seven pieces of the water sensor in the kit. Slide the rubber gasket onto the threaded fitting.(Fig.37-38)

Fig.37

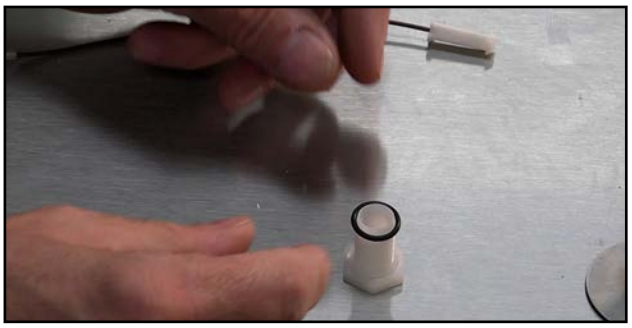


Fig.38

20. Insert water sensor fitting into float opening. Place washer on outside threads. (Fig.39-40)

Fig.39

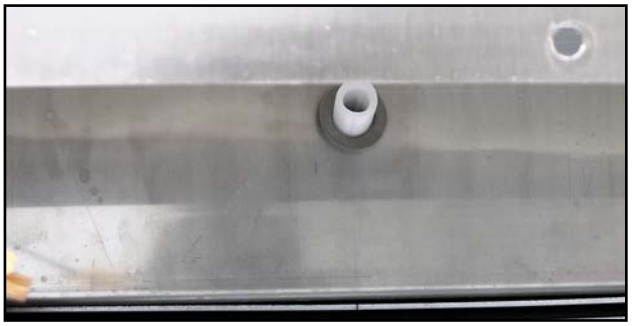


Fig.40

21. Place sensor nut onto threads and tighten with a 3/4" wrench. A 3/4" wrench will have to be used on the inside as well. (Fig.41-42)

Fig.41

Fig.42

CAC Retro Control Board Installation

22. Insert the water sensor into the fitting. Ensure that there is 1/4" between the sensor and the fitting. (Fig.43-44)

Fig.43

Fig.44

23. Thread the plastic compression nut onto the threaded fitting and tighten until the sensor doesn't slide forwards or backwards.(Fig.45-46)

Fig.45

Fig.46

24. Connect the brown wire in the kit to the water sensor. Connect the brown wire to the existing sensor black wire.(Fig.47-48)

Fig.47

Fig.48

CAC Retro Control Board Installation

Relay Panel Installation

25. Using a Phillips screwdriver or screw gun, remove the six top retaining screws. Remove the unit top.(Fig.49-50)

Fig.49

Fig.50

26. Locate the relay-transformer panel in the kit. The panel will mount in the front right corner. (Fig.51-52)

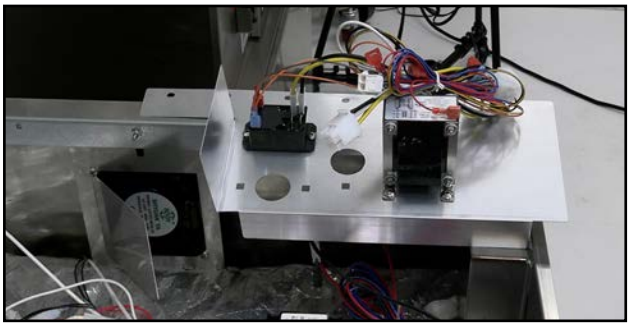


Fig.51

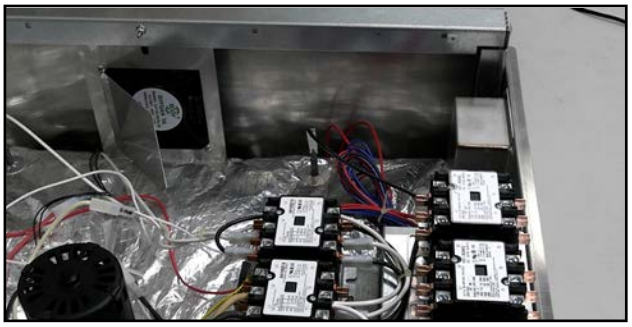


Fig.52

27. Using a 3/8" nutdriver, remove the fan retaining nut. Place the relay panel over the fan screw and reattach the retaining nut. (Fig.53-54)

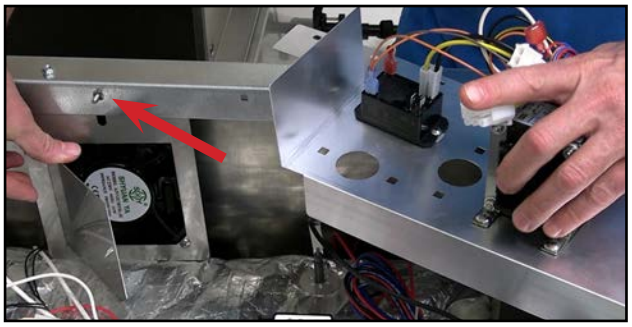


Fig.53

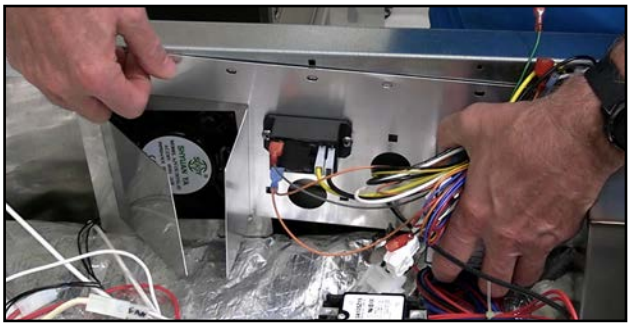


Fig.54

CAC Retro Control Board Installation

28. Locate the machine screw in the kit and mount the front half of the relay panel with it. (Fig.55-56)

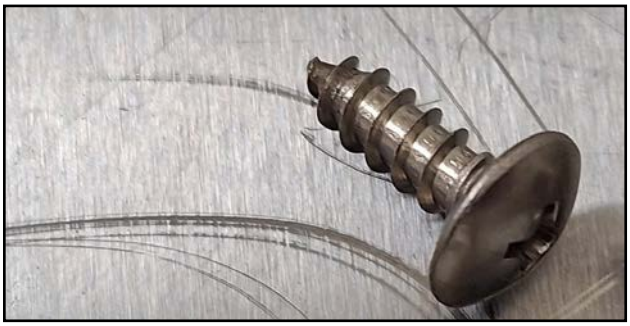


Fig.55

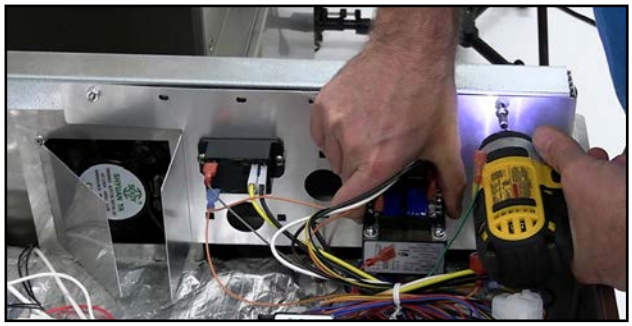


Fig.56

Control Board Wiring

29. Using a Phillips screwdriver or screw gun, remove the control board retaining screws. Pull the control board away from the opening.(Fig.57-58)

Fig.57

Fig.58

30. Disconnect the nine pin and the six pin Molex connections and remove the control board. (Fig.59-60)

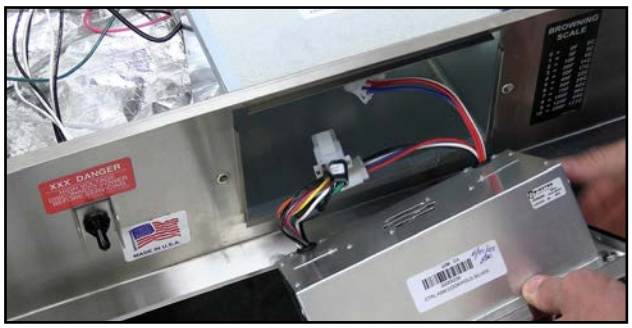


Fig.59

Fig.60

CAC Retro Control Board Installation

31. Using a flat tip screwdriver, depress the tabs on the control housing female nine pin Molex connection. Push the connection back into the cabinet top. (Fig.61-62)

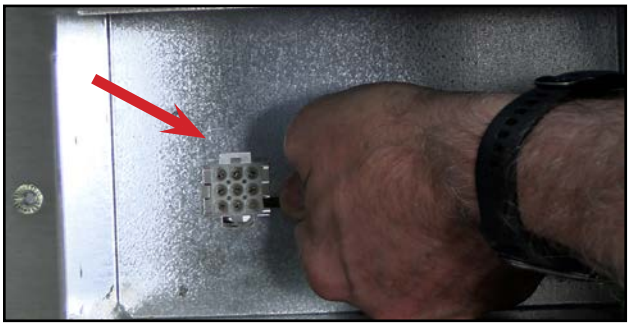


Fig.61

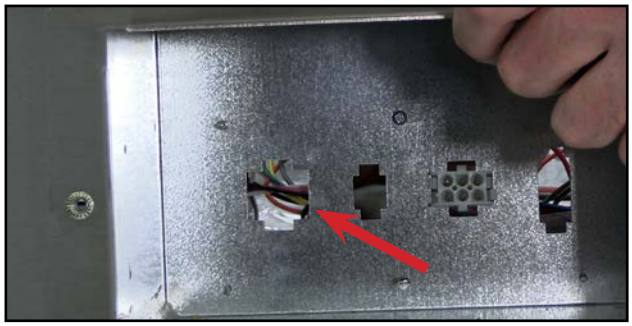


Fig.62

32. Locate the male nine pin Molex relay wires (thicker) that are coming from the relay panel. Connect to the female nine pin Molex connection that was pushed in through the housing. (Fig.63-64)

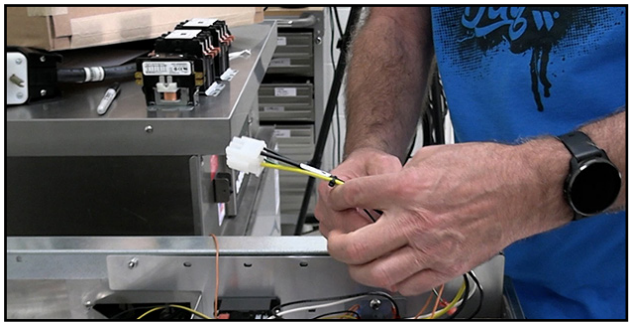


Fig.63

Fig.64

33. Route the signal wire nine pin Molex connection (thinner wires), from the relay panel to the opening where the female wires were pushed through and insert into the opening.(Fig.65-66)

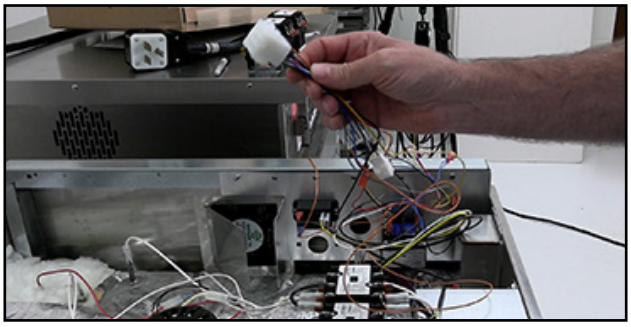


Fig.65

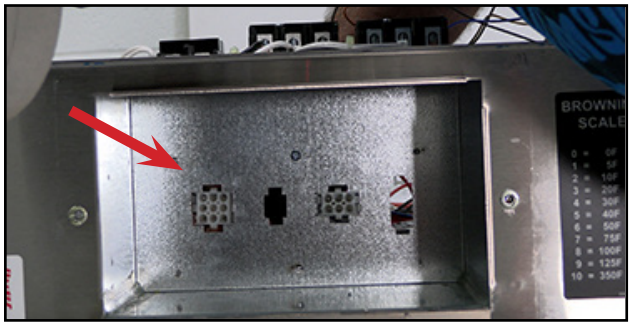


Fig.66

CAC Retro Control Board Installation

34. Locate the green wire connection coming from the signal wire nine pin and locate the green wire connection coming from the thicker nine pin. Connect the two grounding wires.(Fig.67-68)

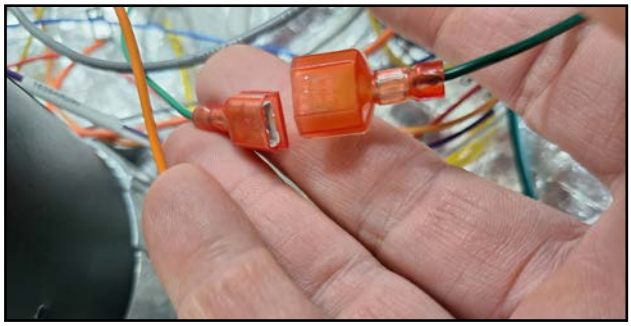


Fig.67

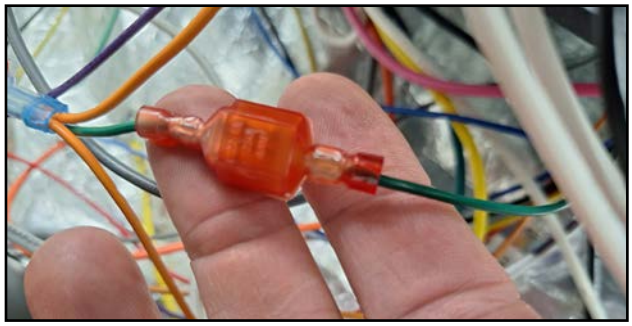


Fig.68

Control Board Wiring

1. Locate the three contactors and the secondary wiring harness in the kit. (Fig.69-70)

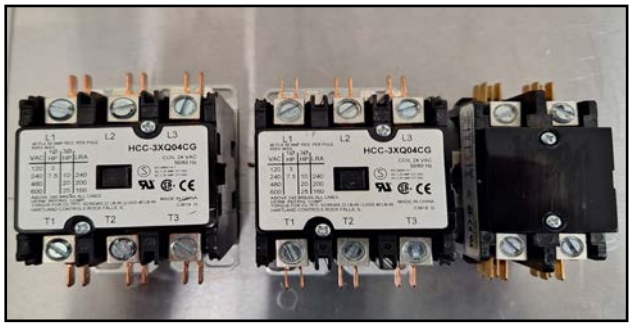


Fig.69

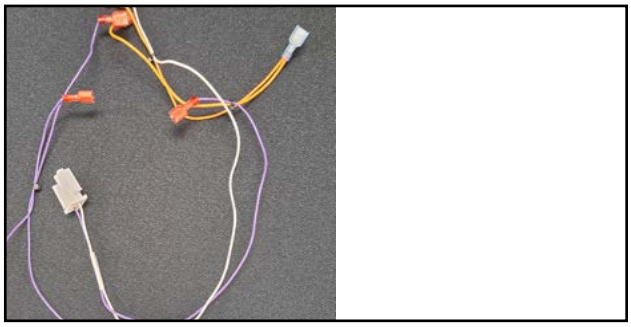


Fig.70

2. The three existing relays must be swapped out with the 24V relays in the kits. ****The existing relays will not operate with the new control board.**** (Fig.71)

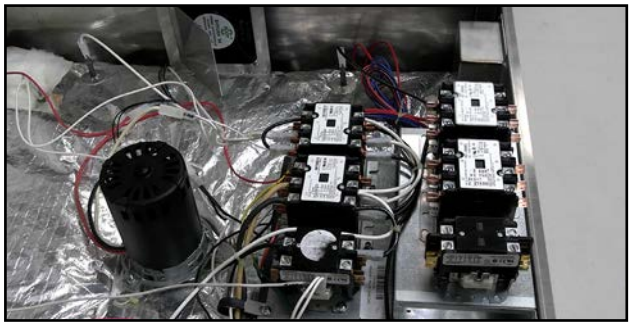


Fig.71

CAC Retro Control Board Installation

3. Starting with the air heater relay(Right side 3-pole). Remove the black wire on T1 and the white wire on T2.(Fig.72-73)

Fig.72

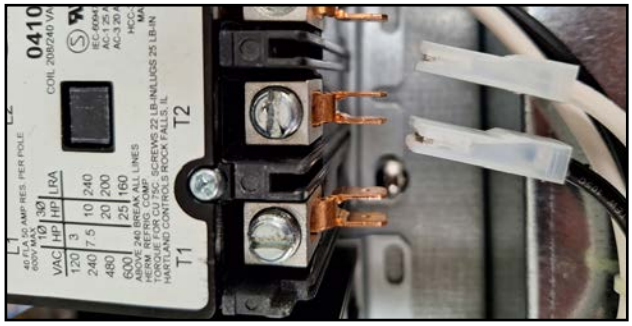


Fig.73

4. Remove the black wire from L1 and the white wire from L2. Remove the white and yellow relay coil wires. (Fig.74-75)

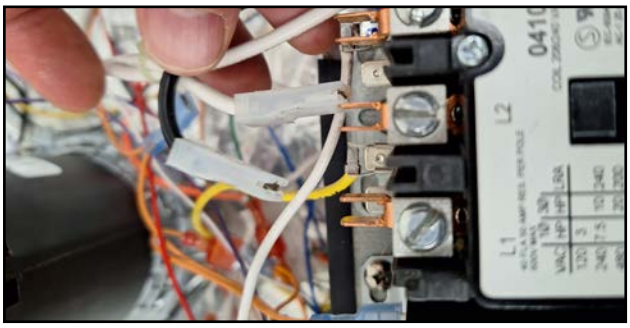


Fig.74

Fig.75

5. Using a Phillips screwdriver, remove the two relay retaining screws. Then remove the relay.(Fig.76-77)

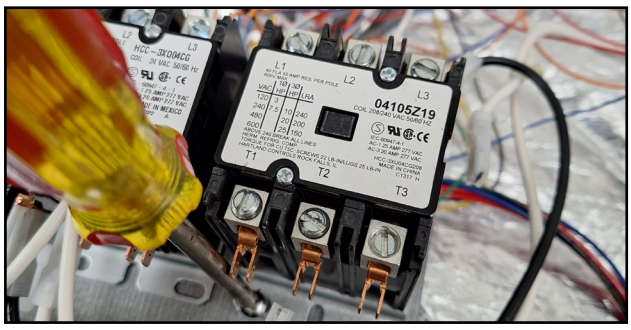


Fig.76

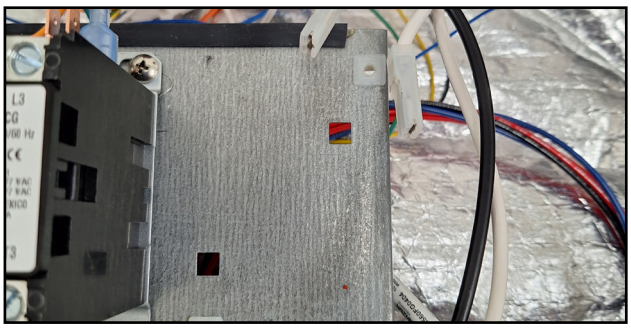


Fig.77

CAC Retro Control Board Installation

6. Locate one of the 3-pole 24V relays in the kit. Using a Phillips screwdriver, mount the relay in the place of the removed air relay. (Fig. 78-79)

Fig.78

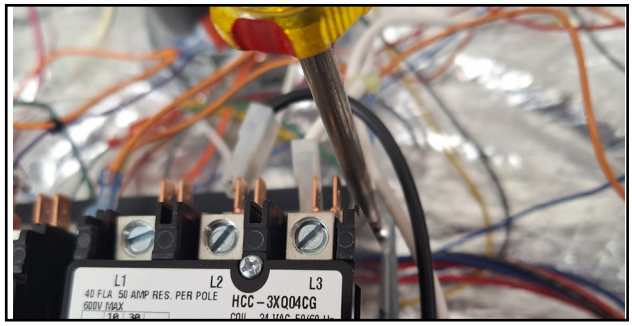


Fig.79

7. Reconnect the black wire to L1 and the white wire to L2. (Fig.80-81)

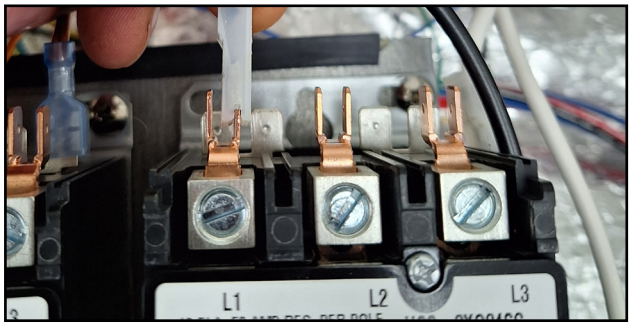


Fig.80

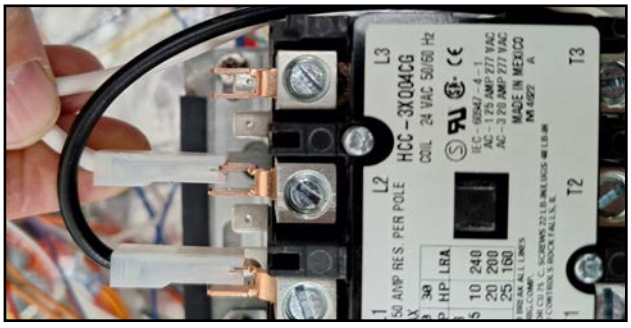


Fig.81

8. Reconnect the black wire to T1 and the white wire to T2. (Fig.82-83)

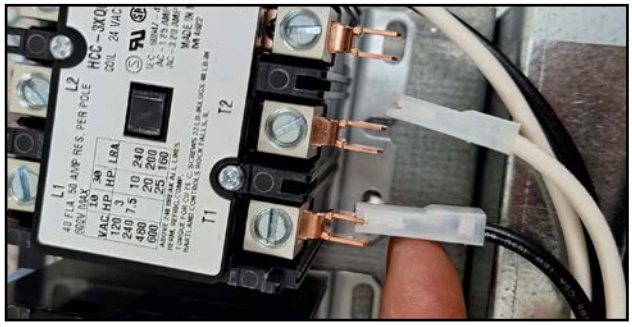


Fig.82

Fig.83

CAC Retro Control Board Installation

9. Locate the set of orange wire connections coming from the new relay panel. Connect the first connector (closest to relay panel) to the air relay coil. (In place of white coil wire).(Fig.84-85)

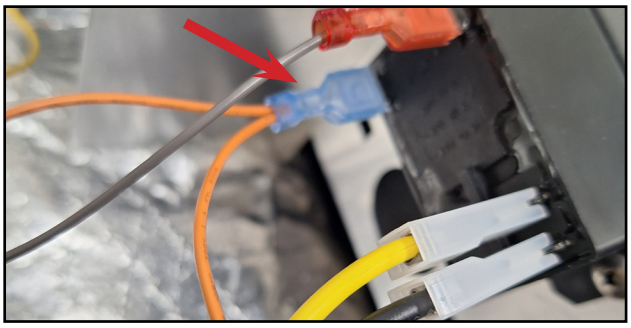


Fig.84

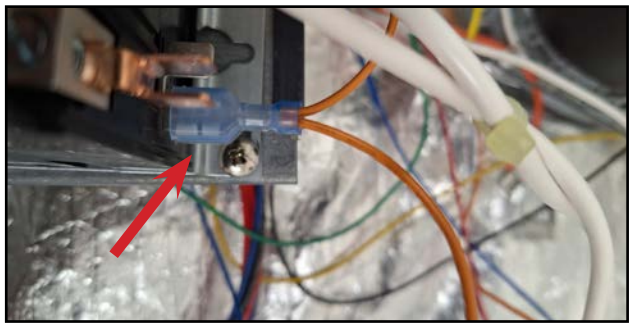


Fig.85

10. Locate the red wire connection coming from signal wire molex connection. Plug the red connection into the left side coil connection on the air relay (In place of the yellow coil connection).(Fig.86-87)

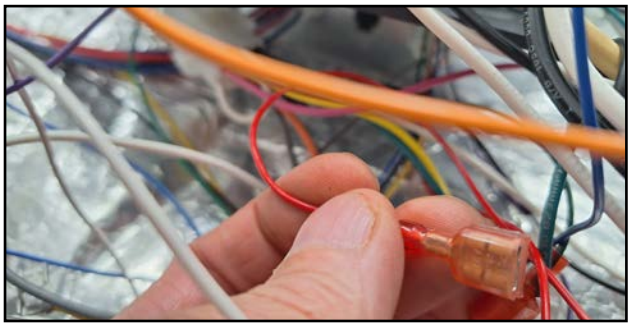


Fig.86

Fig.87

11. Remove the red coil wire from the existing center(Main)relay. Then remove the other end of the red wire from the high limit and discard.(Fig.88-89)

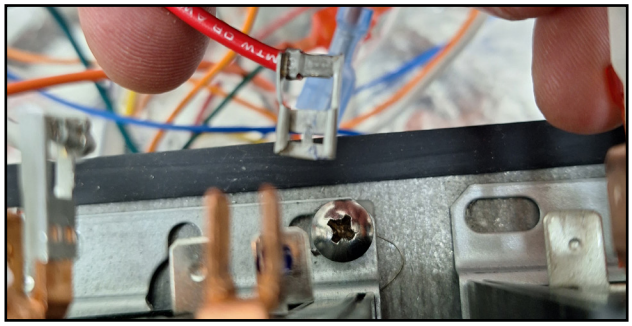


Fig.88

Fig.89

CAC Retro Control Board Installation

12. Remove the power cord white wire from L2 and the power cord black wire from L1. (Fig.90-91)
If the Unit is three phase, remove the red wire from L3.

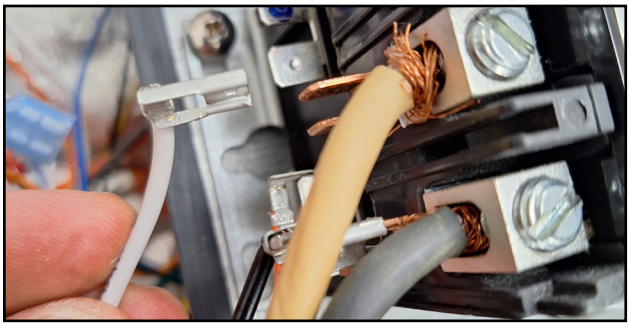


Fig.90

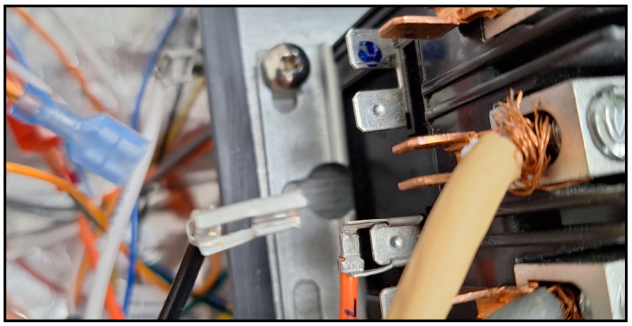


Fig.91

13. Remove the orange coil wire from the main relay. (Fig.92)

Fig.92

14. Using a flat tip screwdriver, remove the white power cord wire from L2 and the black power cord wire from L1. *** If unit is 3-phase, remove red power cord wire from L3.***(Fig.93-94)

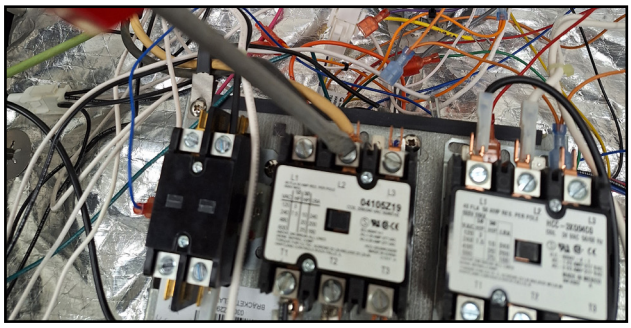


Fig.93

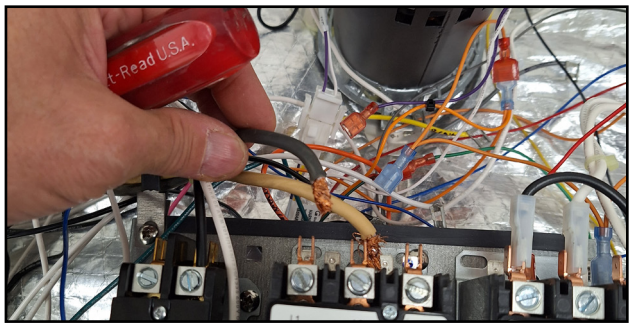


Fig.94

CAC Retro Control Board Installation

15. Using a flat tip screwdriver, remove the black wire from T1 and the white wires from T2.(Fig.95-96)

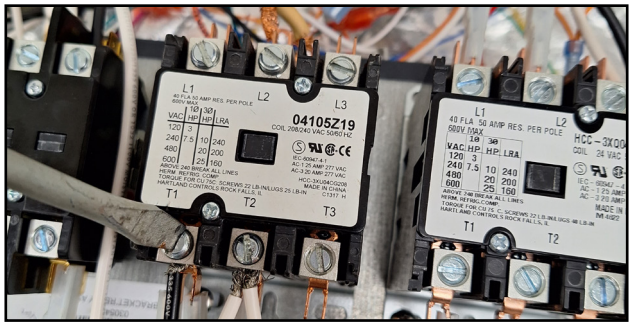


Fig.95

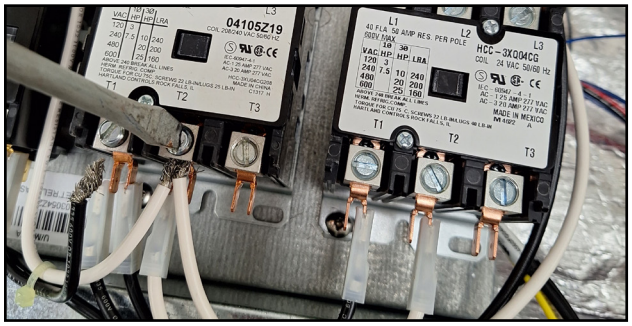


Fig.96

16. Remove the black wires from T1 and the white wire from T2. (Fig.97-98)
*** If the unit is 3-phase, remove the black and white wire from T3.***

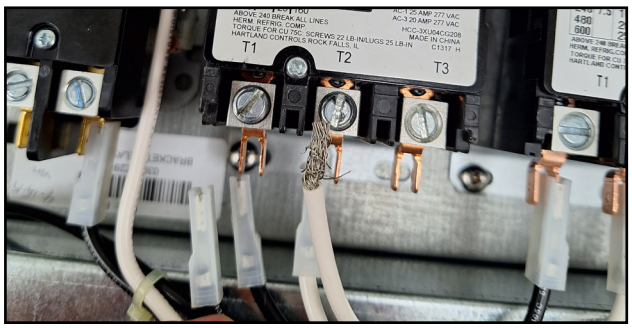


Fig.97

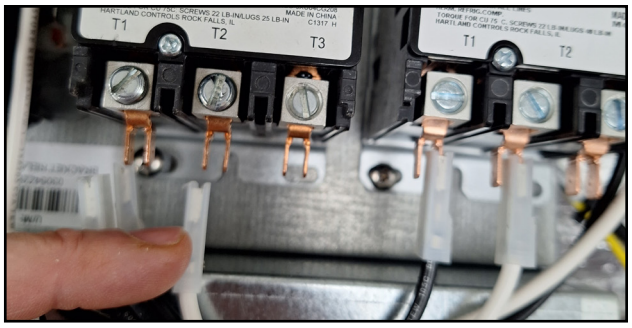


Fig.98

17. Using a Phillips screwdriver, remove the two relay retaining screws and then remove the relay. (Fig.99-100)

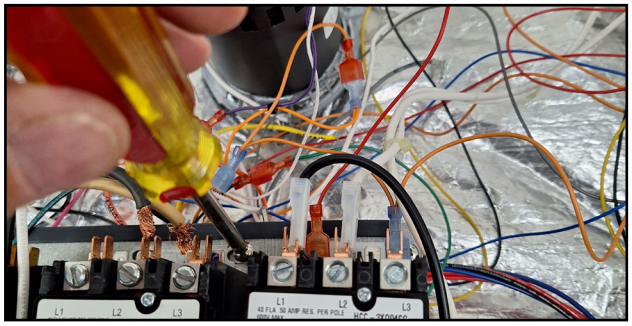


Fig.99

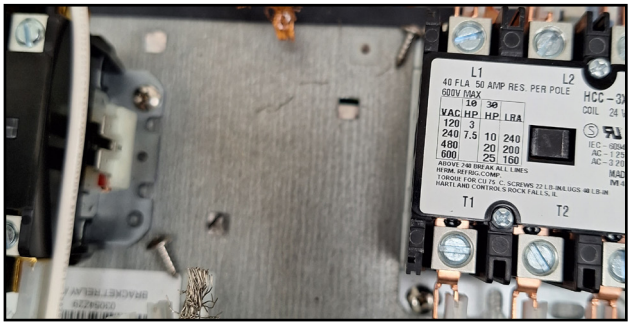


Fig.100

CAC Retro Control Board Installation

18. Locate the 24v 3-pole relay in the kit and mount using a Phillips screwdriver. (Fig.101-102)

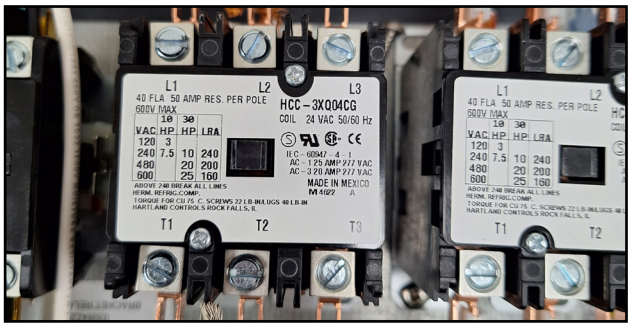


Fig.101

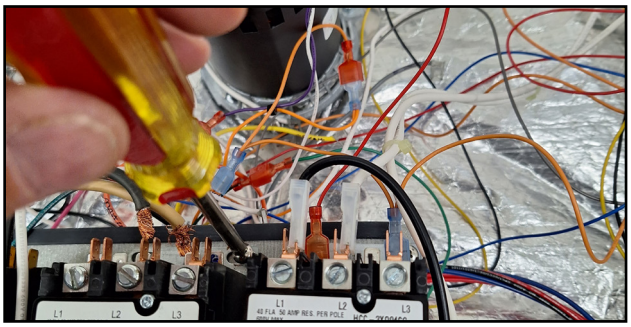


Fig.102

19. Reconnect the two black wires to T1 and then reconnect the white wire to T2.(Fig.103-104)
*** If the unit is 3-phase, reconnect the black and white wire to T3.***

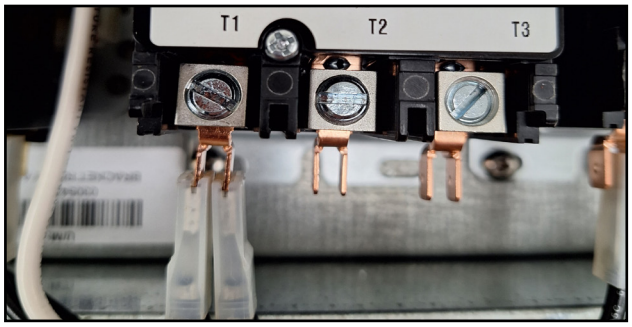


Fig.103

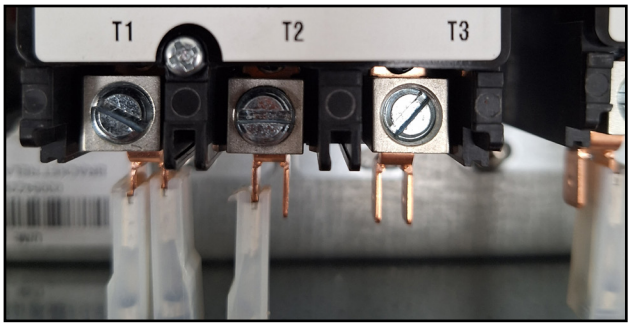


Fig.104

20. Using a flat tip screwdriver, reconnect the two white wires to the lug on T2 and the black wire unto the lug at T1.(Fig.105-106)

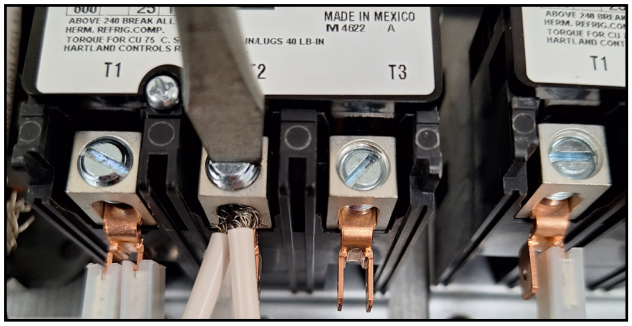


Fig.105

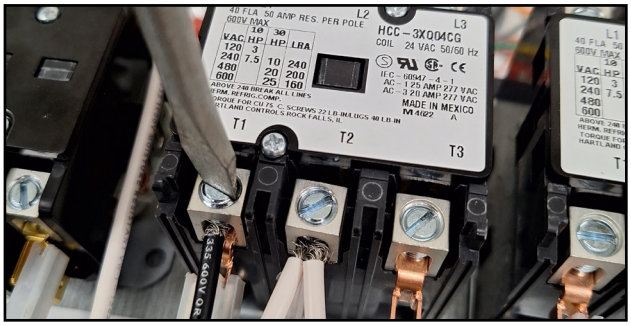


Fig.106

CAC Retro Control Board Installation

21. Connect the second orange connection coming from the relay panel to the right side coil of the main (middle) relay. Locate the purple, white, and orange wire harness in the kit.(Fig.107-108)

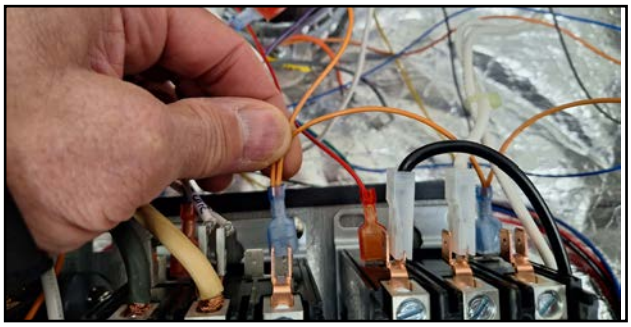


Fig.107

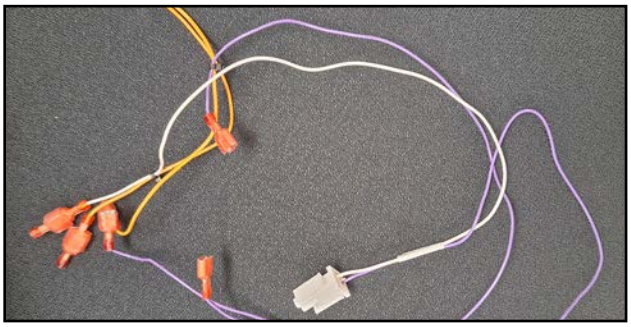


Fig.108

22. Connect the purple/white two pin Molex connection on the harness to the purple/white 2-pin Molex coming from the control board Molex. Connect the female orange connection on the harness to the third orange male connection coming from the relay panel. (Fig.109-110)

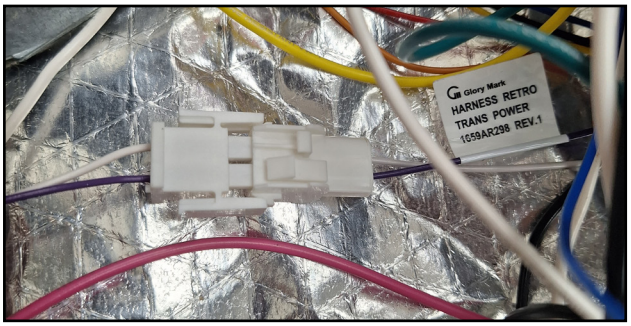


Fig.109

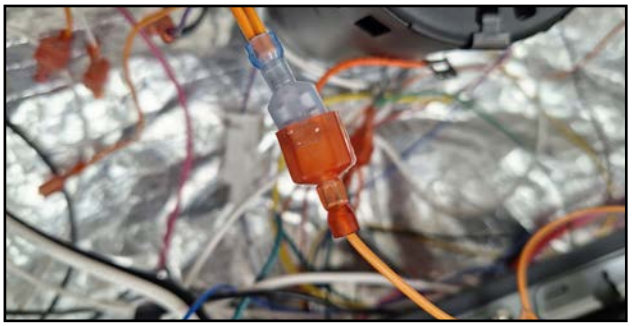


Fig.110

23. Connect the purple female wire ziptied to the orange wires on the harness to the. left side coil on the main(middle) relay. (Fig.111)

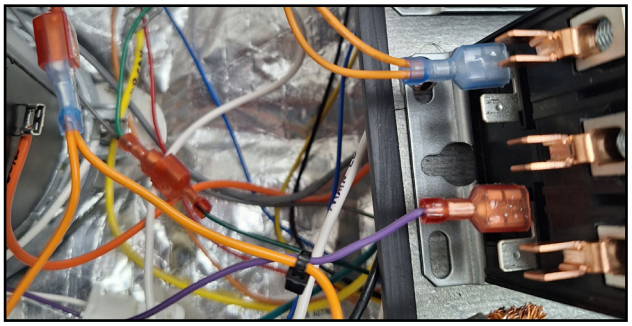


Fig.111

CAC Retro Control Board Installation

24. Reconnet the white wire on L2 and the black wire on L1. (Fig.112-113)

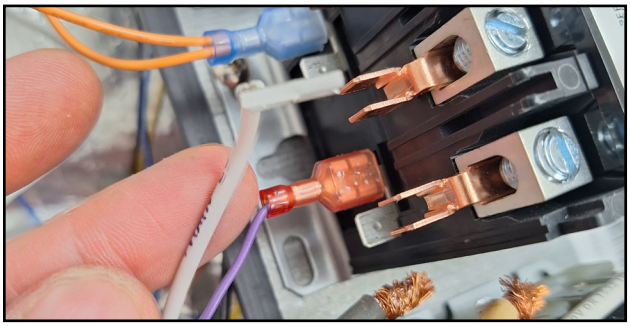


Fig.112

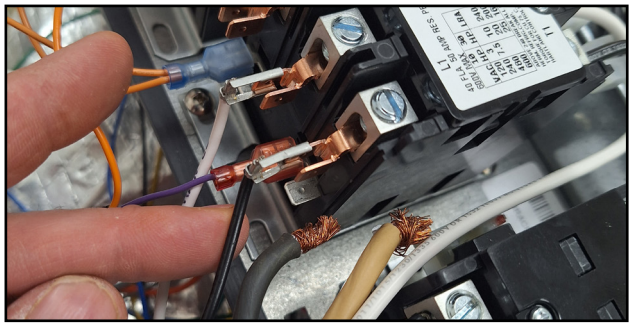


Fig.113

25. Remove the white wire from the left side coil of the evap 2-pole relay and connect it to the L2 connection on the main(middle) relay.(Fig.114-115)

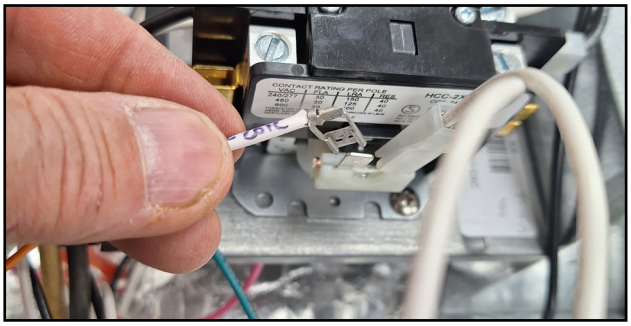


Fig.114

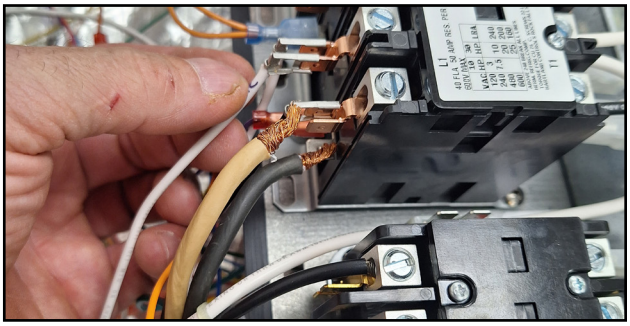


Fig.115

26. Using a flat tip screwdriver, reconnect the black powercord wire to L1, and the white power cord wire to L2. *** If unit is 3-phase, reconnect the red power cord wire to L3.*** (Fig.116-117)

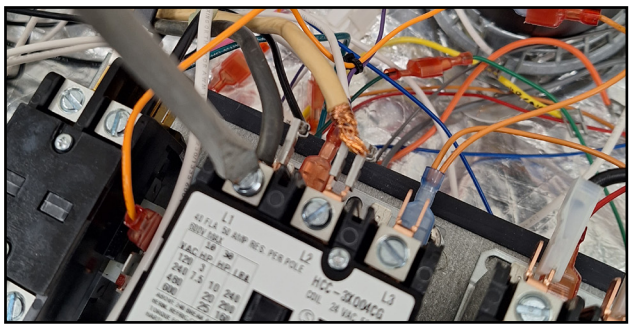


Fig.116

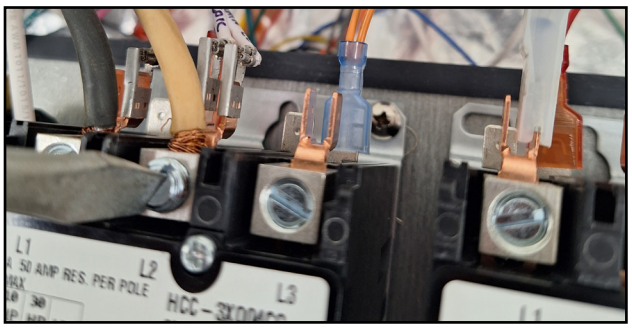


Fig.117

CAC Retro Control Board Installation

27. Remove the black wire from T2 on the evap relay(2-pole).Using a flat tip screwdriver remove the black wire from L2 on the evap relay. (Fig.118-119)

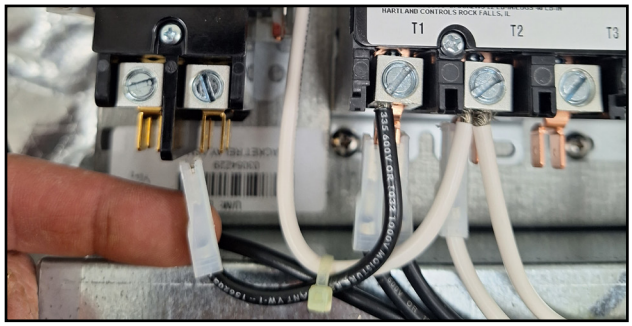


Fig.118

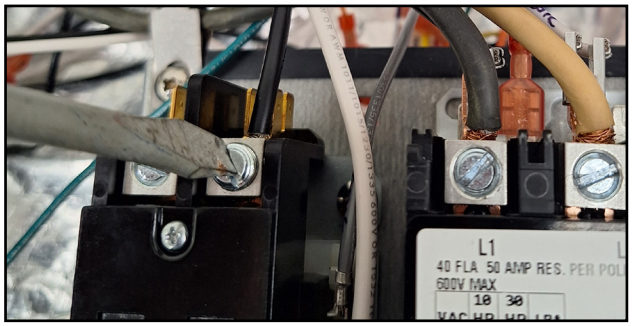


Fig.119

28. Remove the gray wire from the right side coil of the evap relay. Remove the double white wire from the left side coil. (Fig.120-121)

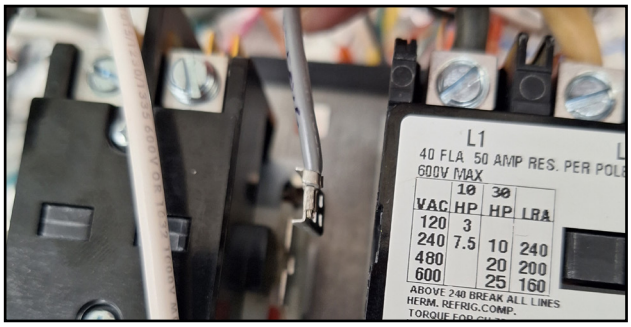


Fig.120

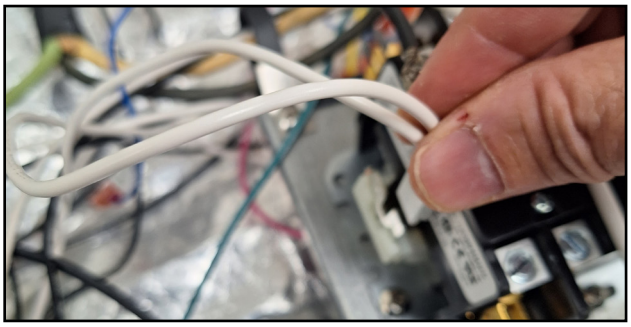


Fig.121

29. Using a Phillips screwdriver, remove the two relay retaining screws and remove the relay. (Fig.122-123)

Fig.122

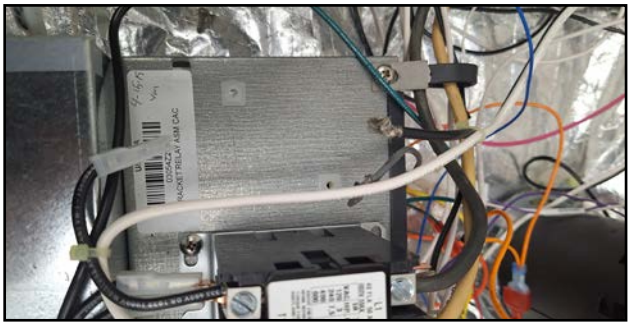


Fig.123

CAC Retro Control Board Installation

30. Locate the 24V two pole relay in the kit. Using a Phillips screwdriver, mount the relay using the two retaining screws. (Fig.124-125)

Fig.124

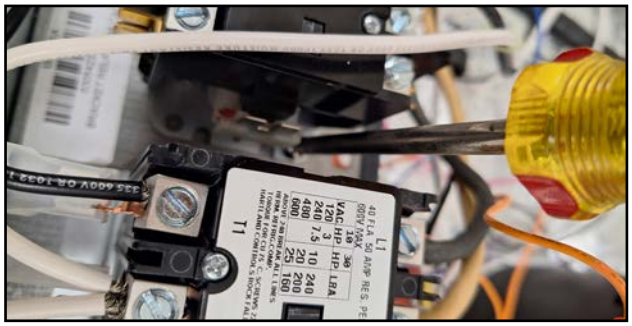


Fig.125

31. Locate the orange female connection ziptied to the purple wire and connect to the right side coil of the evap relay. Locate the blue female connection coming from the control board 9-pin Molex and connect to the left side coil of evap relay. (Fig.126-127)

Fig.126

Fig.127

32. Using a flat tip screwdriver, reconnect the black wire to L2. Reconnect the black wire to T2. (Fig.128-129)

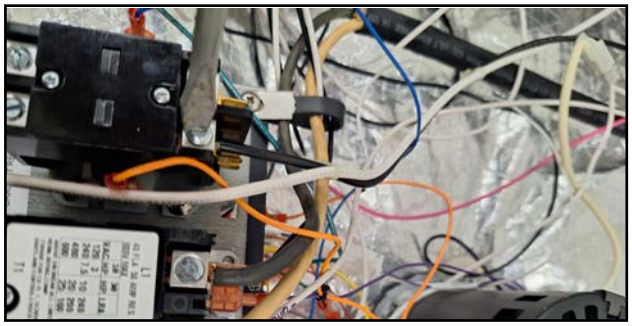


Fig.128

Fig.129

CAC Retro Control Board Installation

33. Disconnect the double white wire from the top right side of the power switch. Connect the double white wire that was removed from the evap coil to the top right side of the power switch. (Fig.130-131)

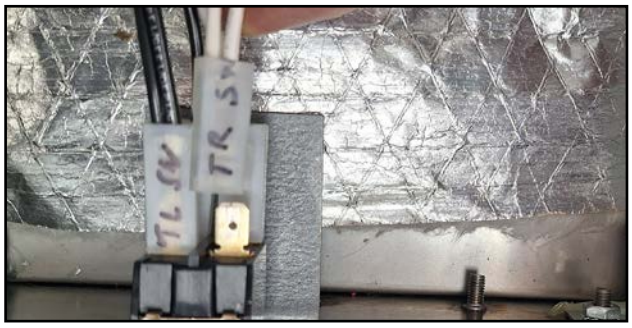


Fig.130

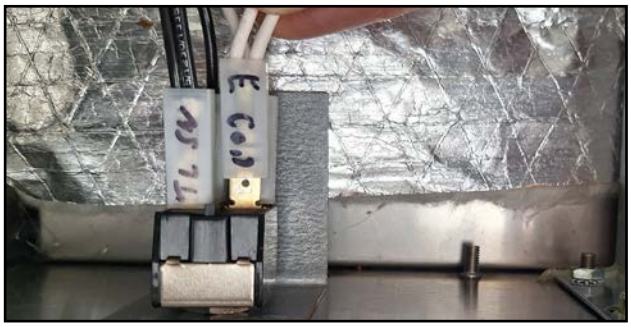


Fig.131

34. Locate the white wire coming from the circulating fan and disconnect the double white wire. Connect the double white wire that was removed from the power switch to the fan. (Fig.132-133)

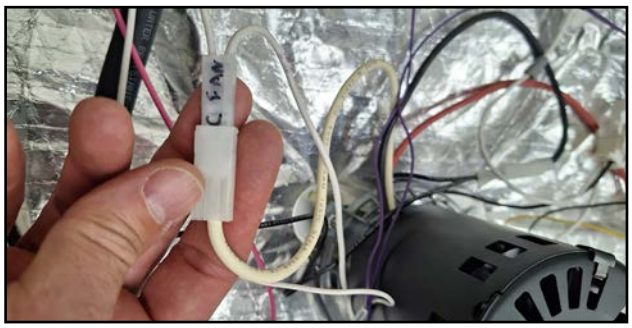


Fig.132

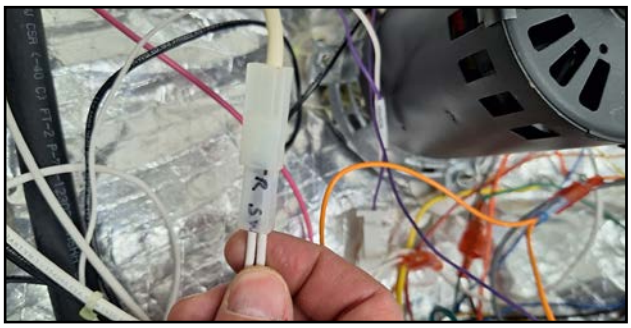


Fig.133

35. Remove the double white wire from the high limit. Locate the unit right ride cooling fan connection. (Fig.134-135)

Fig.134

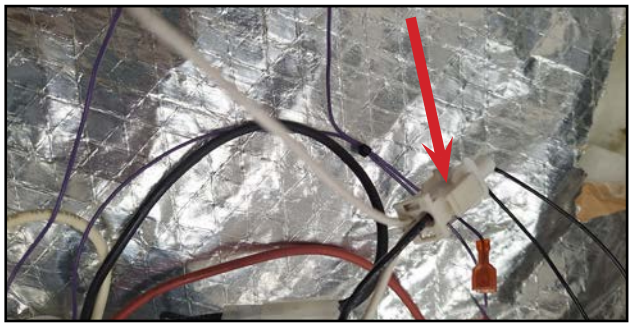


Fig.135

CAC Retro Control Board Installation

36. Locate the white wire on the cooling fan connection. Using wire cutters, cut the white wire about 6" above the connection and put the provided wire nut on the connection side of the wire. (Fig.136-137)

Fig.136

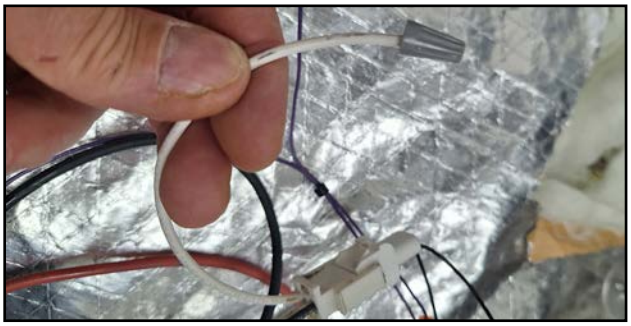


Fig.137

37. Remove the cut section of white wires from the unit. (Fig.138)

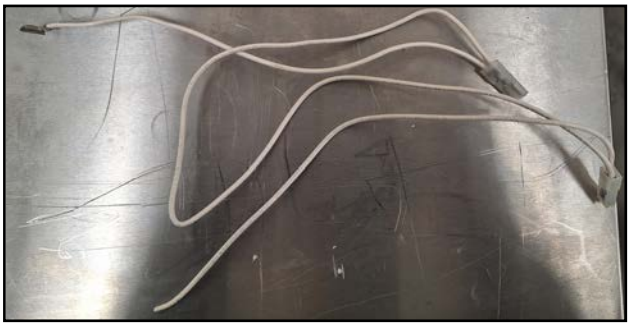


Fig.138

38 Locate the two purple wire female connections. Connect the wires to the high limit terminals.(Fig.139-140)

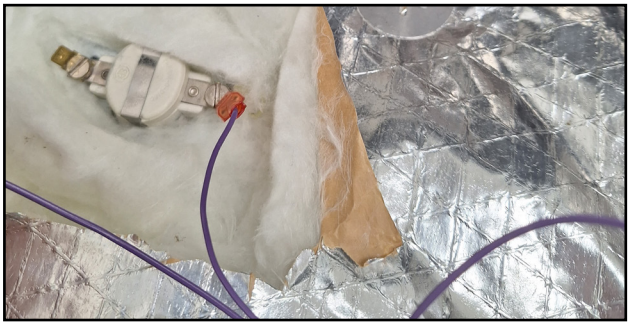


Fig.139

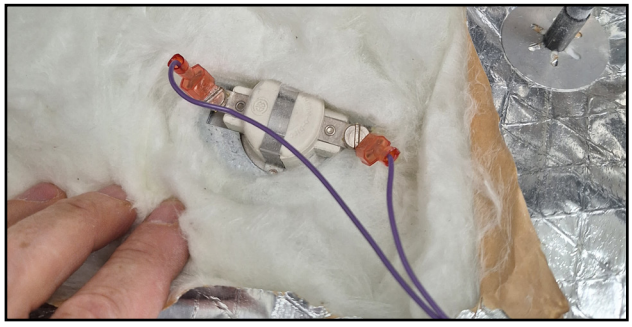


Fig.140

CAC Retro Control Board Installation

39. Locate the unit serial tag and determine the unit voltage. If the unit is 240V, move the black wire on the transformer from the number 4 terminal to the number 6 terminal. (Fig.141-142)

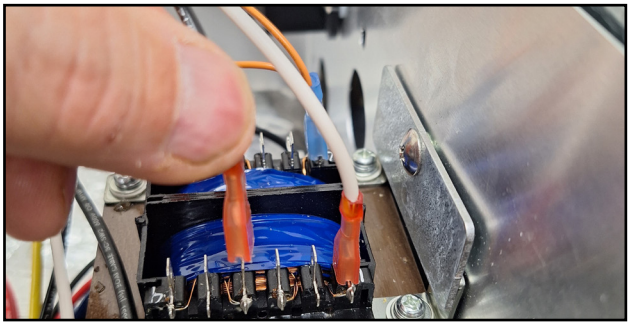


Fig.141

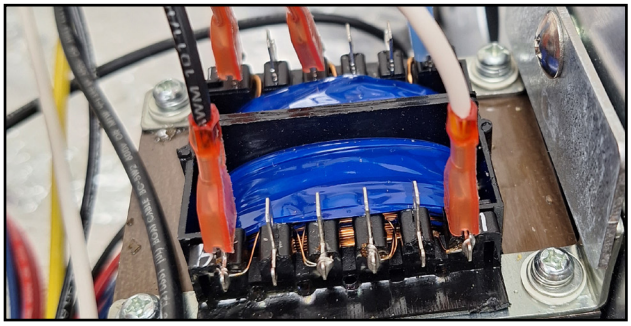


Fig.142

Control Board Mounting

40. Locate the control board mounting adapter in the kit. Using the existing control board mounting screws, attach the control board adapter plate.(Fig.143-144)

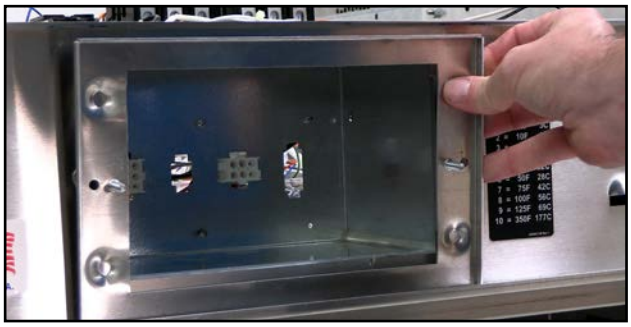


Fig.143

Fig.144

41. Locate the new control board in the kit. Connect the 6-pin Molex connection and the 9-pin Molex connection.(Fig.145-146)

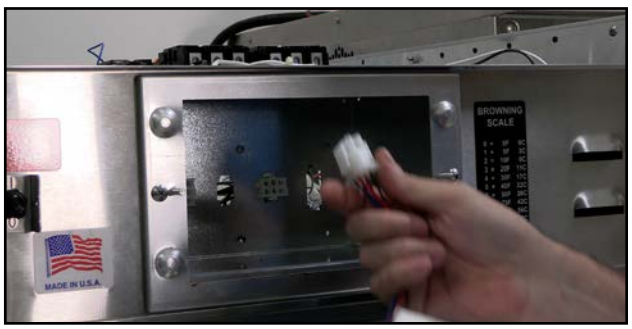


Fig.145

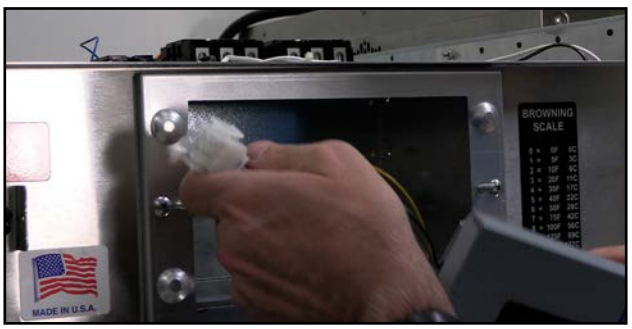


Fig.146

CAC Retro Control Board Installation

42. Slide the control board into the opening and attach using the provide acorn nuts and a 3/8" nutdriver. (Fig.147-148)

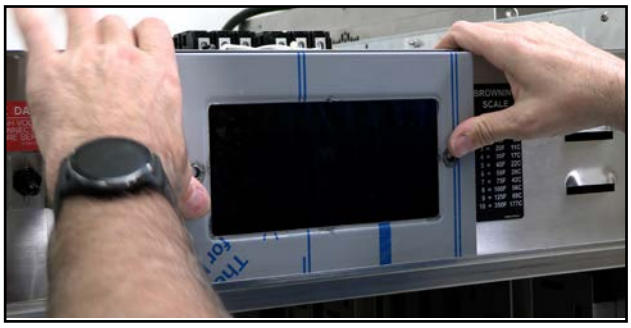


Fig.147

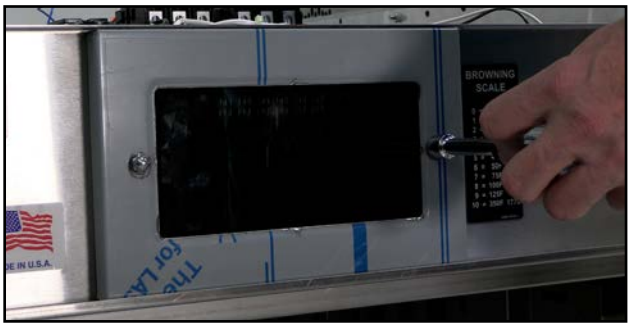


Fig.148

Final Assembly & Test

43. Replace the unit top and attach with the six existing top screws. (Fig.149-150)

Fig.149

Fig.150

44. Fill the evaporator pan with water and check around the water probe and the water sensor for leaks.(Fig.151-152)

Fig.151

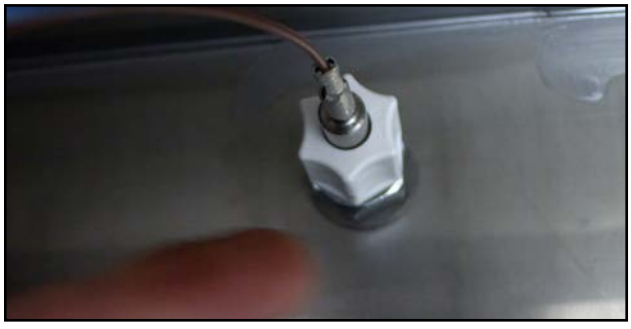


Fig.152

CAC Retro Control Board Installation

45. If no leaks are detected, replace the lower access panel and seciure with the four retaining screws. (Fig.153-154)

Fig.153

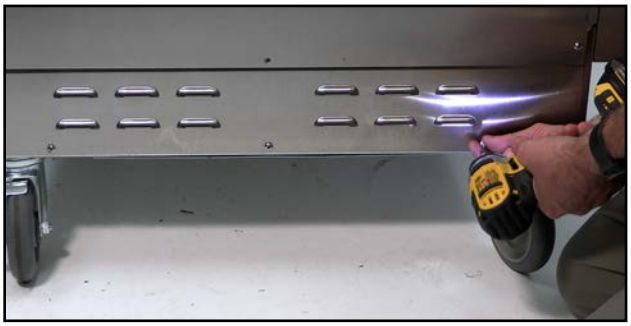


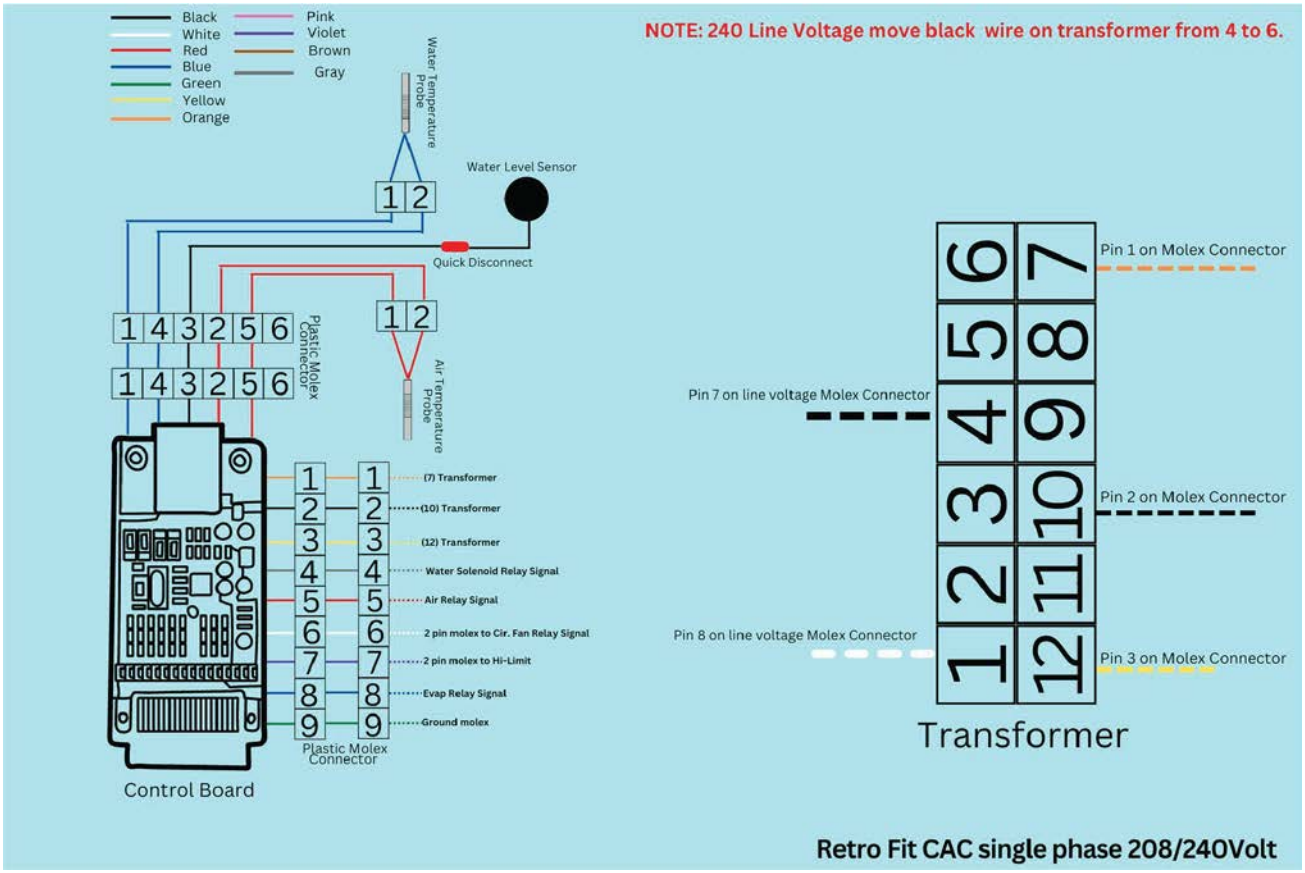
Fig.154

46. Plug the unit in and power the unit on. Verify that the unit is operating correctly. (Fig.155-156)

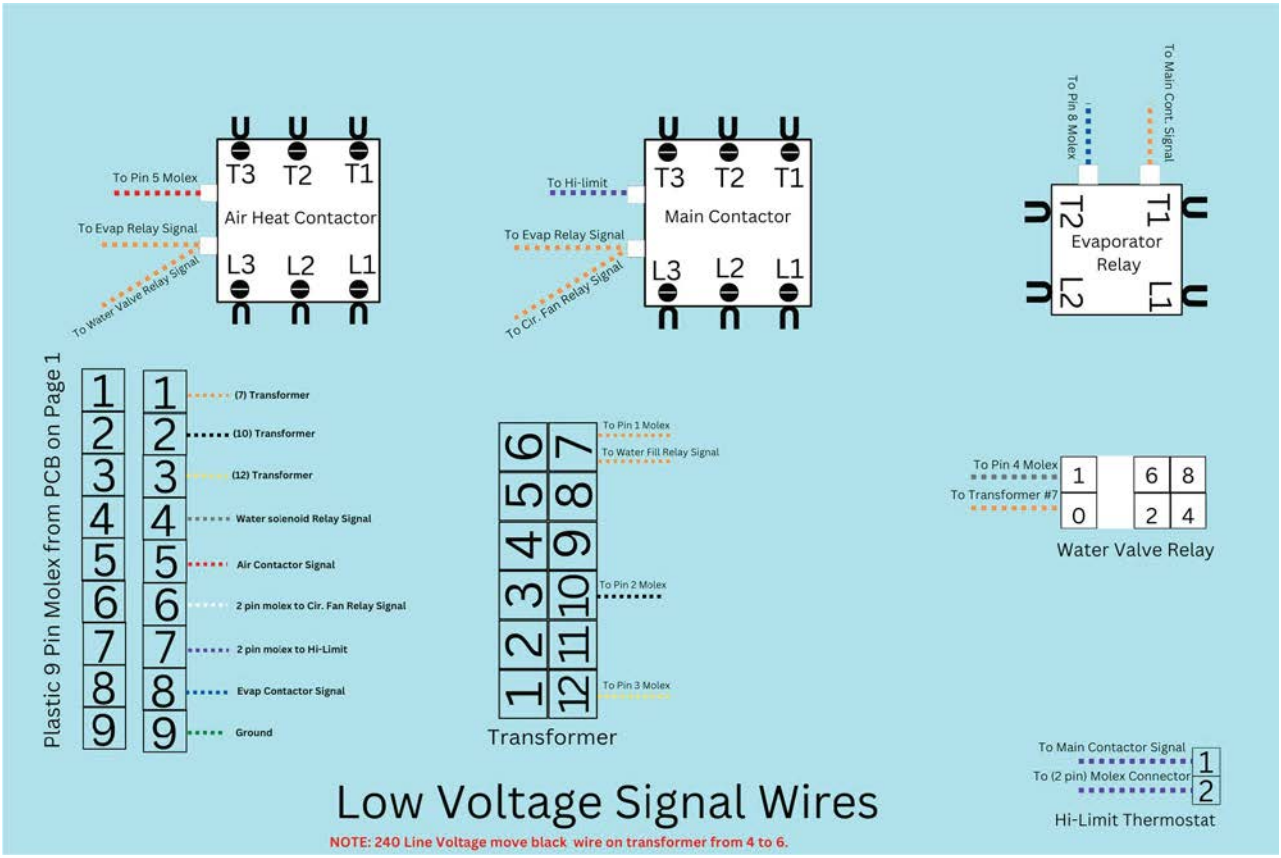
Fig.155

Fig.156

Wiring Diagrams



Wiring Diagrams



Wiring Diagrams