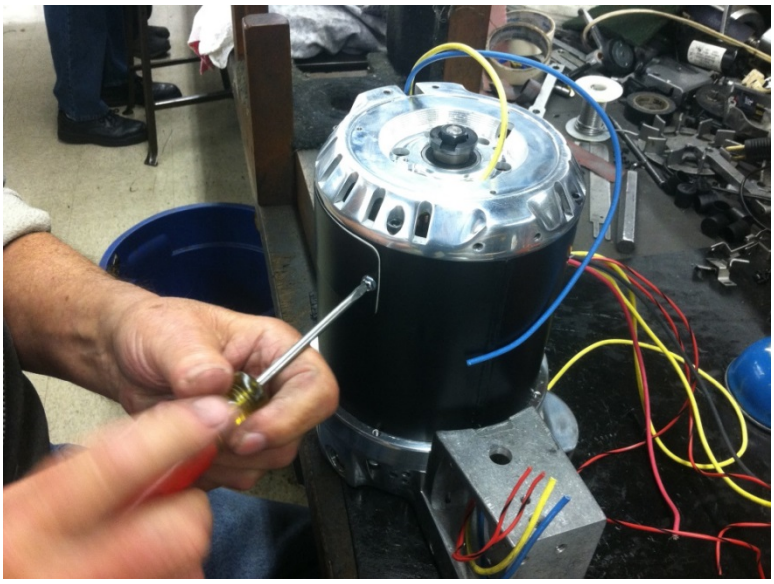
Eastman Machine Company

Job Instructions:
Variable Speed Straight Knife

Revised on 12/9/2015

NOTE: Begin by removing the motor from its packaging and strip all of the wires back a small amount, and hi pot at 1250 each wire to see if anything is grounded to the motor body, the Small red with black stripe wires have a tendency to chafe and ground out.

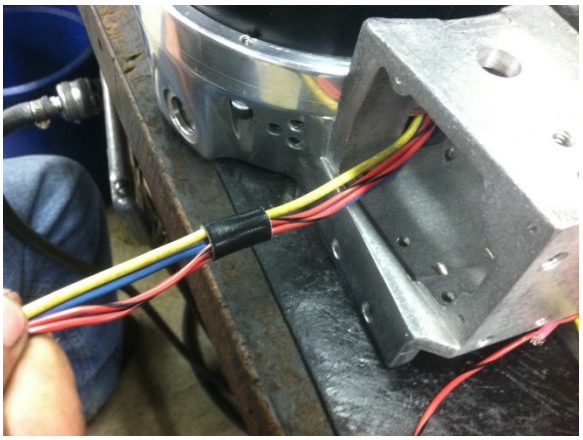


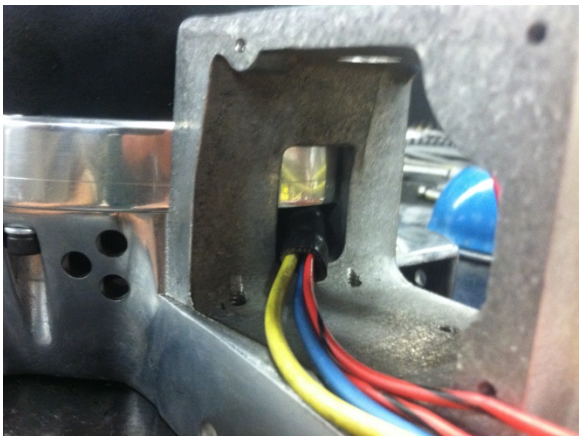
1. Start with a pre-assembled motor from Leeson (576C1-___) complete with front and rear bearing housings. Ensure the front housing has holes in it for ventilation. Remove the brush cover (53C11-156) and the brush insulator (8c15-9).
2. Check that the motor has been assembled correctly. The width of the band should measure 5 3/16”

3. Trim down the brush insulator so that none of it is showing from behind the cover when fully assembled.

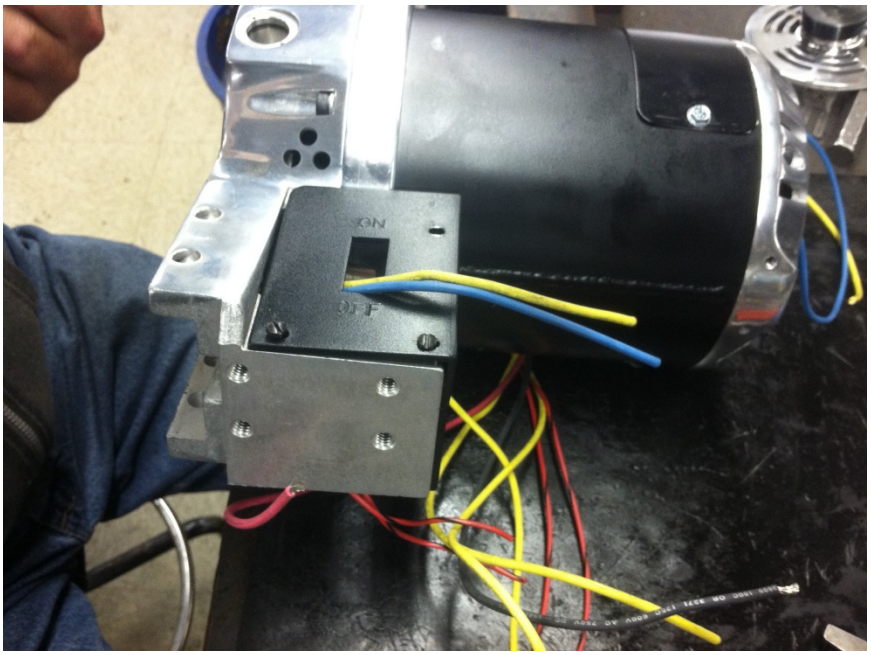
4. Remove the rotor shaft locknut (4C1-145) and tighten the Clutch nut (4C2-87) with chisel tool and hammer. This is a left hand thread, when the sound changes from a “tink” sound to a “thunk” sound the nut is properly tightened. Reinstall the locknut and tighten it as well.
5. Assemble the Rear cover (53C7-44) with spring (34C1-51), Turn Knob (13C1-9), and Snap ring (18C6-16) as done on the straight knife line.

6. Place a piece of insulation on the blue and yellow wires that are coming out of the rear housing and push it down into the rear housing to prevent chafing of the wires.

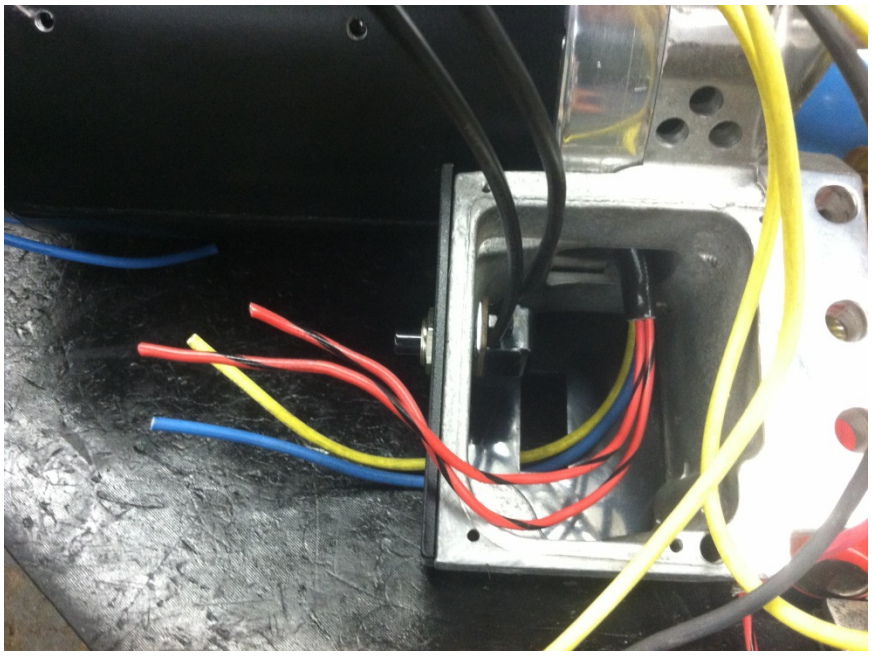




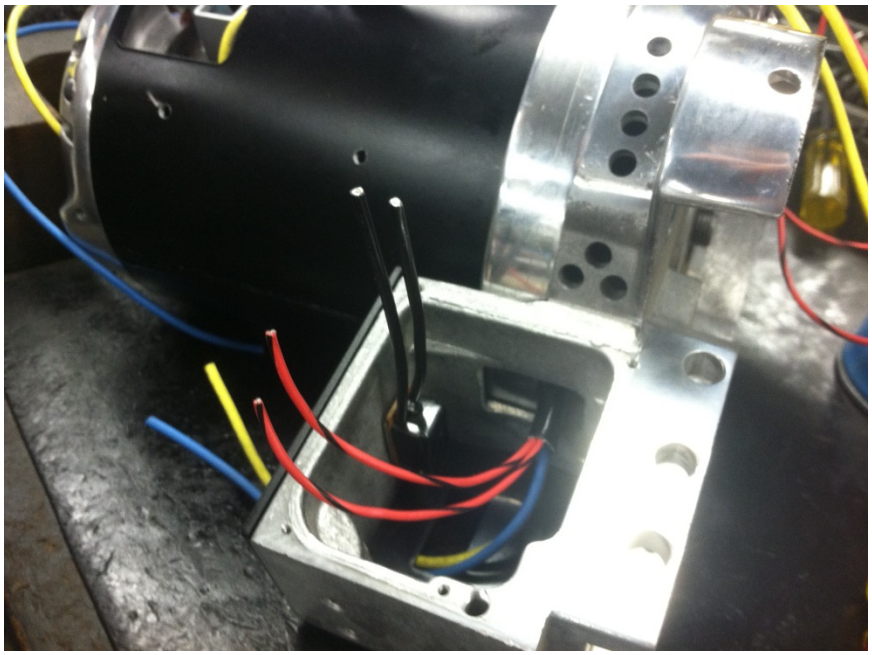
7. Place insulation over the four wires coming out of the front bearing housing and push it into the housing to prevent chafing of the wires.



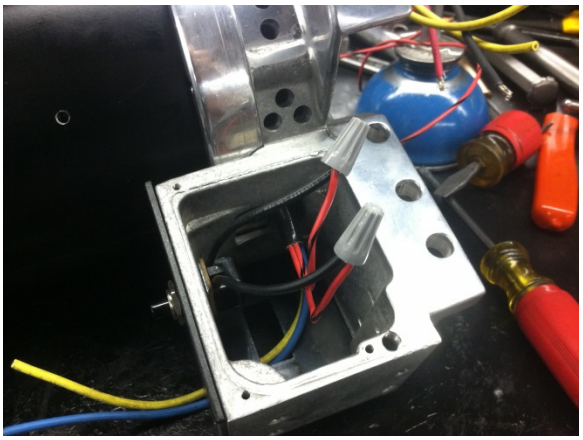
8. Install the switch base cover (53C5-237) with 3 screws (305C8-1) and feed the yellow and blue wires thru the switch opening and the two red w/black stripe wires out the other side of the front bearing housing.

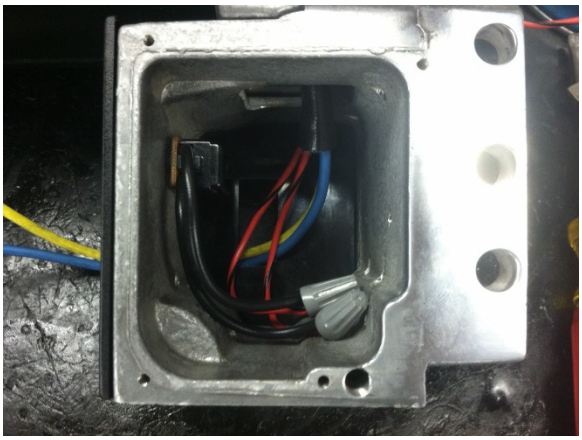


9. Remove the retaining nut from the momentary on switch (580C1-93) and install it into the back side of the front bearing housing as shown with the two wires coming out of the open side.

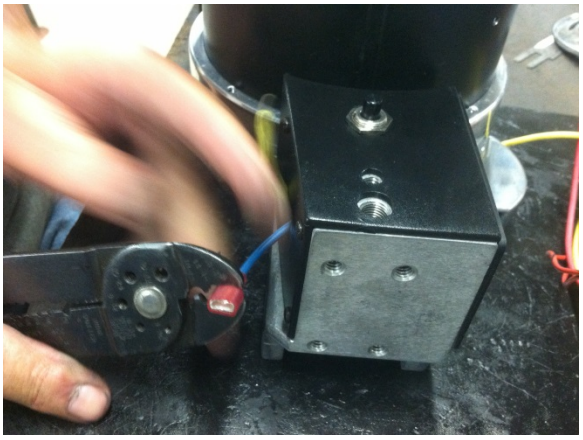


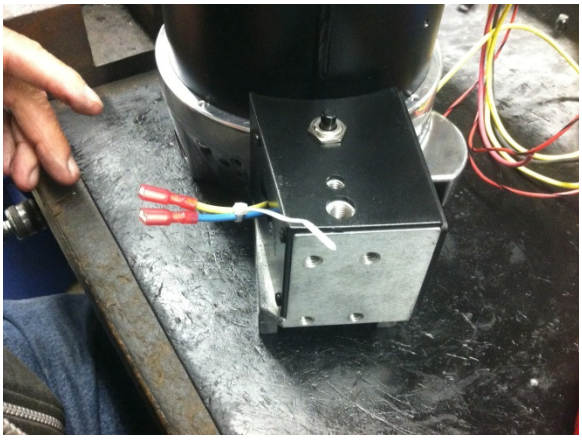
10. Trim the two wires from the momentary on switch and the two red w/black stripe wires and strip them all back.



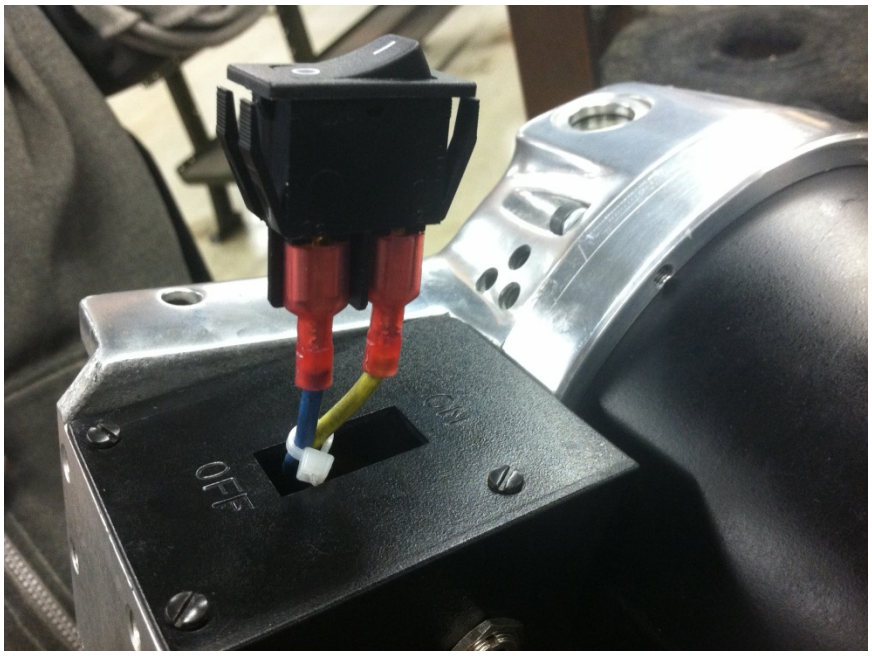


11. Connect one of the black wires to one of the red w/black stripe wires with a Small Grey 71b wire nut (3384-10). Do the same to the other two as well.
12. Stuff the wires into the bottom of the cavity as shown.

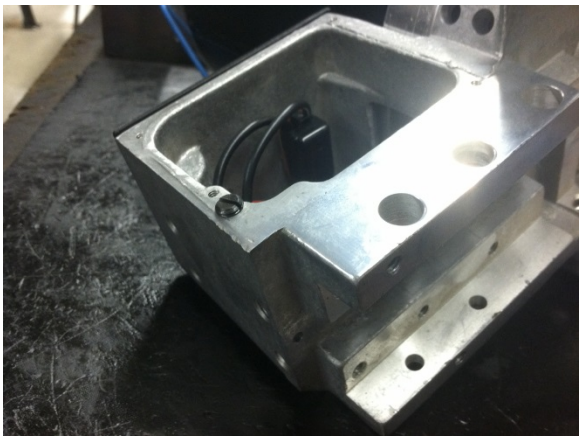


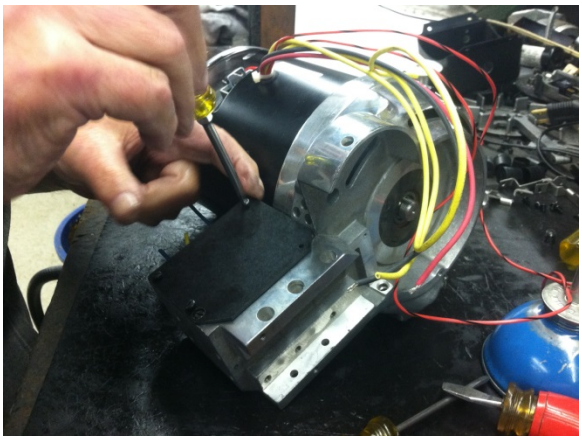


13. Strip the yellow and blue wires that are thru the switch opening and place a terminal end (47C4-79) on each wire. Zip tie (254C1) the two wires together as shown.

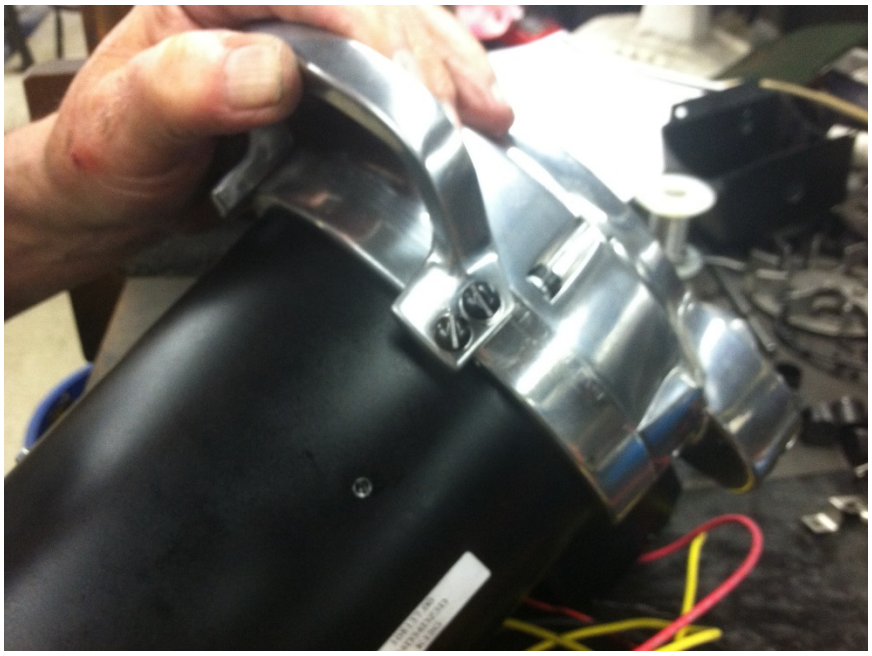


14. Connect the yellow and blue wires to the switch (580C1-198) as shown, and then push the switch into the switch cover.



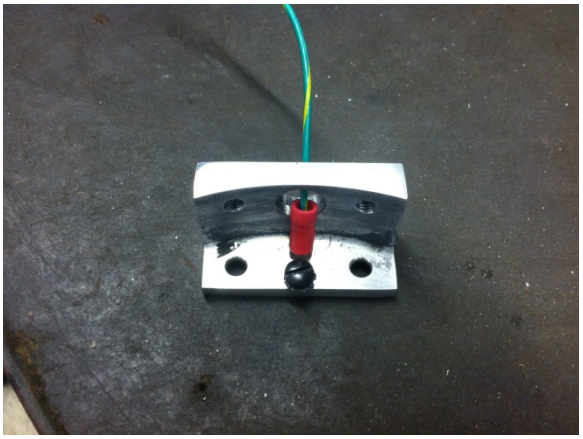


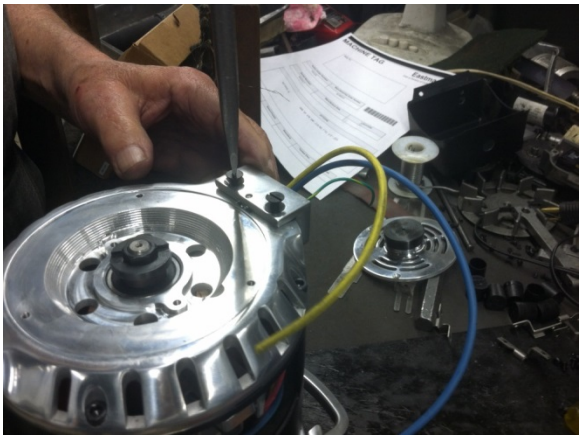
15. Insert the plug screw (20C12-62) into the bottom of the front bearing housing.
16. Install the switch cover (53C2-111) plate with 4 screws (305C8-1) to the front bearing housing.



17. Attach the carrying handle (22C1-40) to the motor adaptor (29C6-165) with two #10-32 X 5/8" screws (300C14-6).

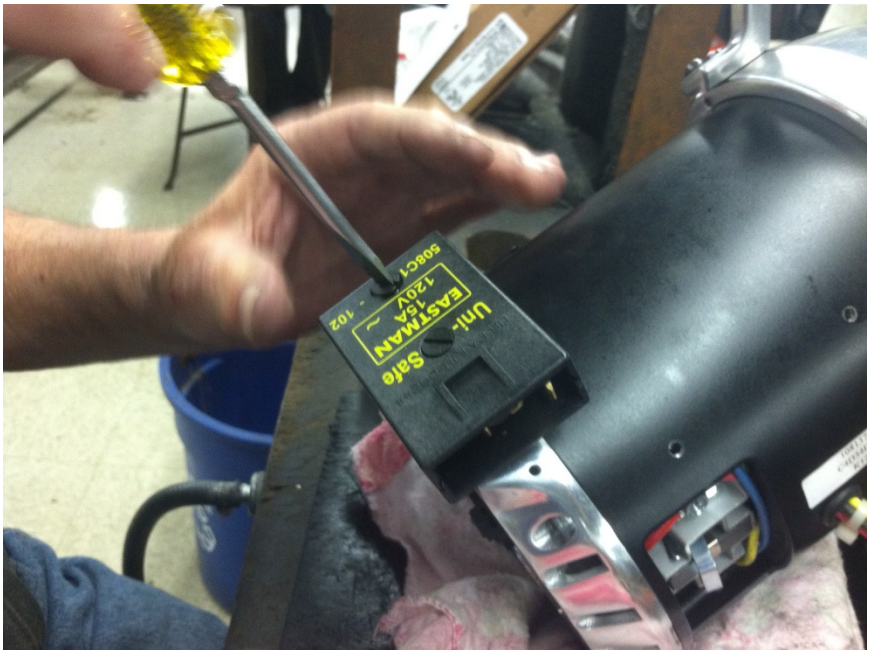
NOTE: These are not the same screws as a typical machine.





18. Attach a ground wire to the Terminal Block Bracket (62C10-83) with a 6-32 X ¼" Grounding Screw (305C10-1) and a Lock Washer (12C1-32).
19. Feed the wires thru the Terminal Block Bracket. Than attach the Terminal Block Bracket (62C10-83) to the Rear Bearing Housing (90C1-166) with two 10-32 X ½" Flat Head Screws (302C15-3).

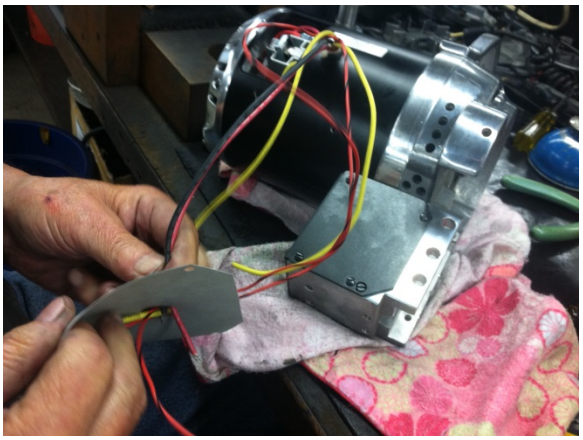
20. Trim the wires and strip them back.
21. Loosen the screws in the terminal block. Feed the wires thru the bottom of the terminal block and connect the wires as required per the back of the variable speed parts manual (C-1506).

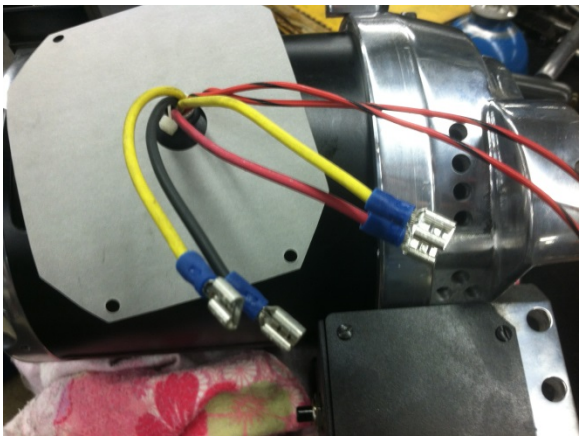


22. Attach the Terminal Block to the Terminal Block Bracket with two 10-32 X 1 1/8” Flat Head screws (302C15-8) ensure the terminal block is facing the right side of the machine.
23. Check Terminal Block with high pot at 1000 V, ground is the only one that should make a noise.

NOTE: At this point the guides should be installed and the cross head Lapped in. The Oiling Device should also be installed. The connecting Rod and Crank should be left off for the time being.

24. Trim sheet of insulation so that it is hidden when speed control cover is placed on the machine.

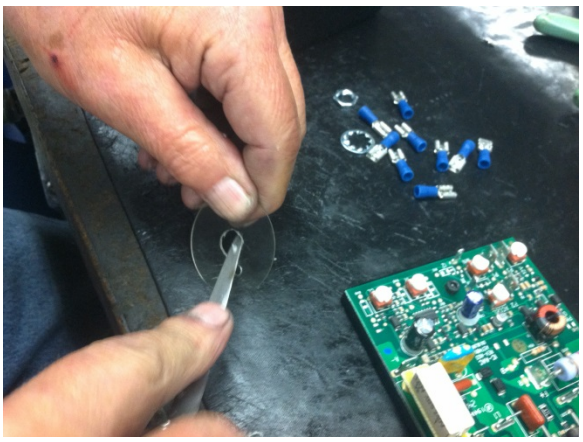


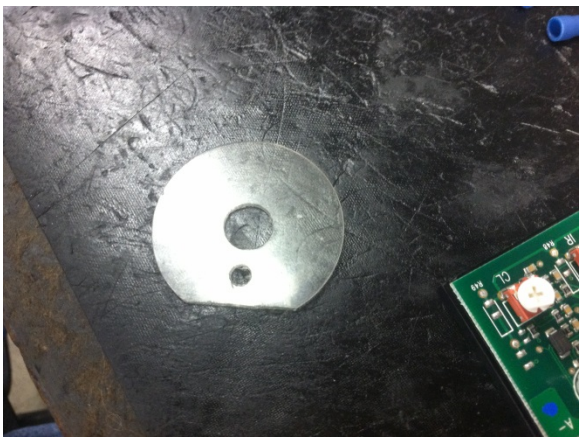


25. Feed all the wires from the side of the machine thru the hole in the piece of insulation.
26. Trim the two red w/Black stripe wires to roughly 6” and strip them back. Trim down the two yellow, one black, and one red wire from the motor to roughly 4”. Strip them back and add blade connectors on wires as shown.

NOTE: Keep one of the pieces of yellow wire for later.

27. Begin assembly of speed control box.

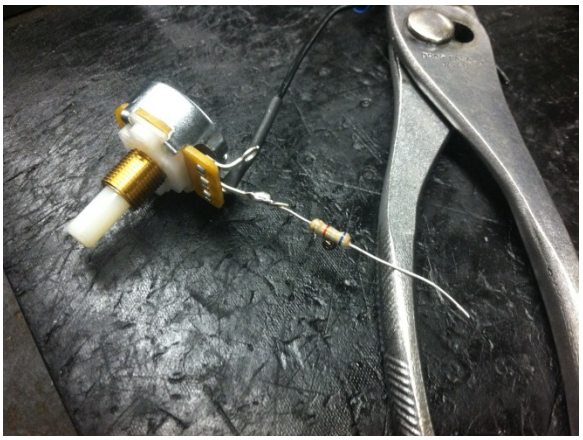


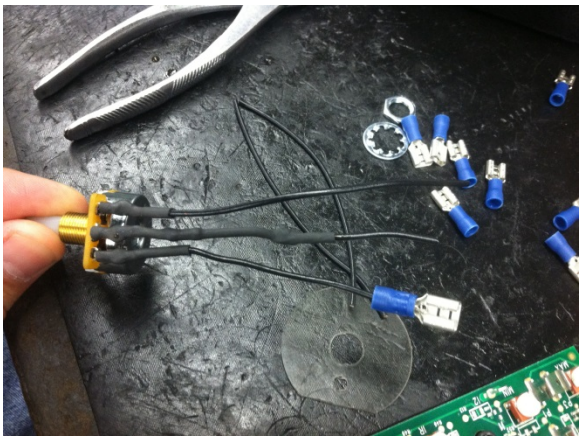


28. Modify the clear plastic insulator piece by opening up the center and index hole to allow it to fit onto the Potentiometer . Cut the insulator as shown to allow it to fit inside the speed control cover.
29. Cut four pieces of #18 wire to roughly 4” and one piece to roughly 1 ½”

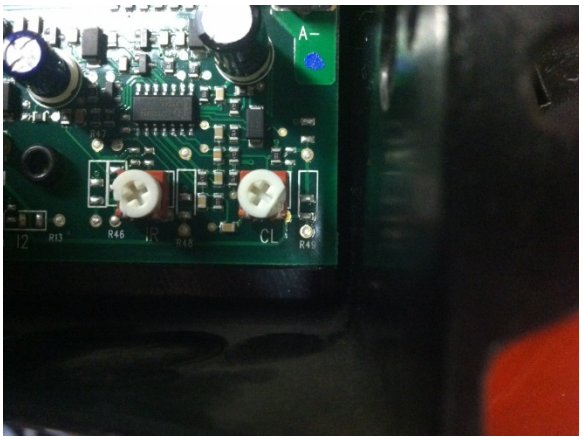
NOTE: Be sure to add a length of heat shrink to the wire before soldering.

30. Strip both ends of a 4” piece of #18 wire. Place a blade connector at one end and solder the other end to the potentiometer as shown.





31. Solder a ½ watt 6.8K OHM resistor (234C1-109) to the center connector of the potentiometer and then add the 1 ½” piece of wire to the other end of the resistor with both ends striped as shown.
32. Cover the resistor and the splice to the wire with heat shrink as shown.
33. Solder a third piece of #18 wire that has both ends striped to the potentiometer and cover the connection with a piece of heat shrink as shown.
34. Bend the connectors of the potentiometer down at a 90^{O} angle as shown.
35. Set the Speed Control Board (830C1-__(73=110V 75=220V))to its initial settings.



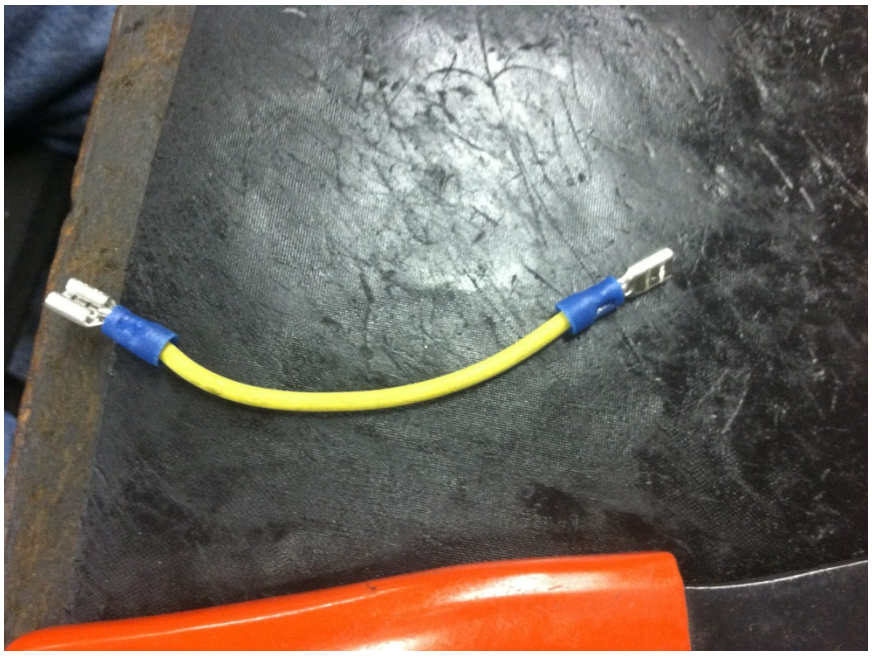
36. Set “CL” all the way to the right and Set “IR” all the way to the left as shown.

37. Set “ACCEL” to the 7 O’clock position and set “MAX” to the 1 O’clock position as shown.

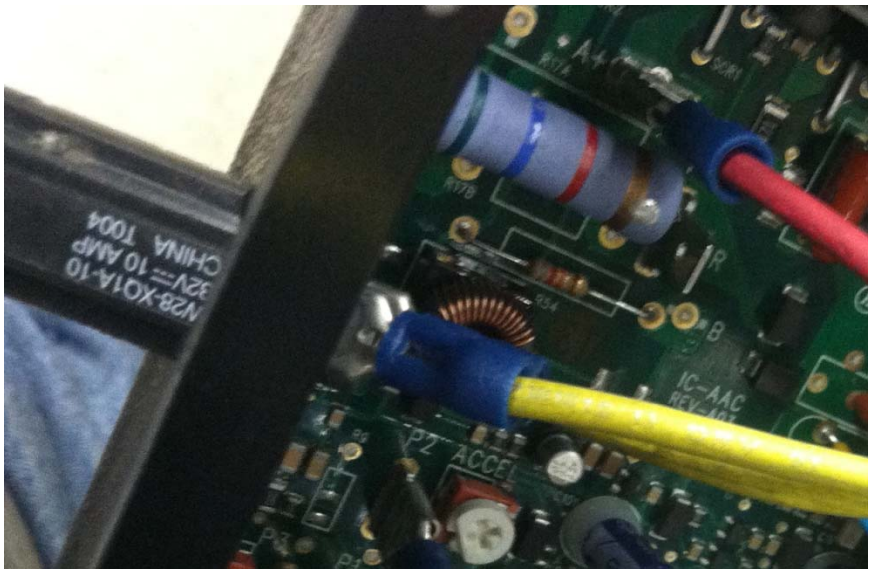
38. Set “MIN” to the 2 O’clock position as shown.
39. Install the Speed Control Board (830C1-__) into the Speed Control Cover (53C11-158) with three 10-32 x ¼” round head screws (20C12-178).

40. Install the potentiometer with the modified clear plastic insulator into the cover, and secure it with the supplied lock washer and nut.
41. Turn the potentiometer so that the speed is as low as possible. Look at the knob to determine which way to turn it, this will ensure that the motor is turned on at the slowest speed.
42. Strip the both end of the two remaining #18 wires, and place a blade connector on one end of the wires.

43. Connect these two wires to P2 and P3 on the speed control board as shown. And connect the only wire from the potentiometer with a blade connector to P1.

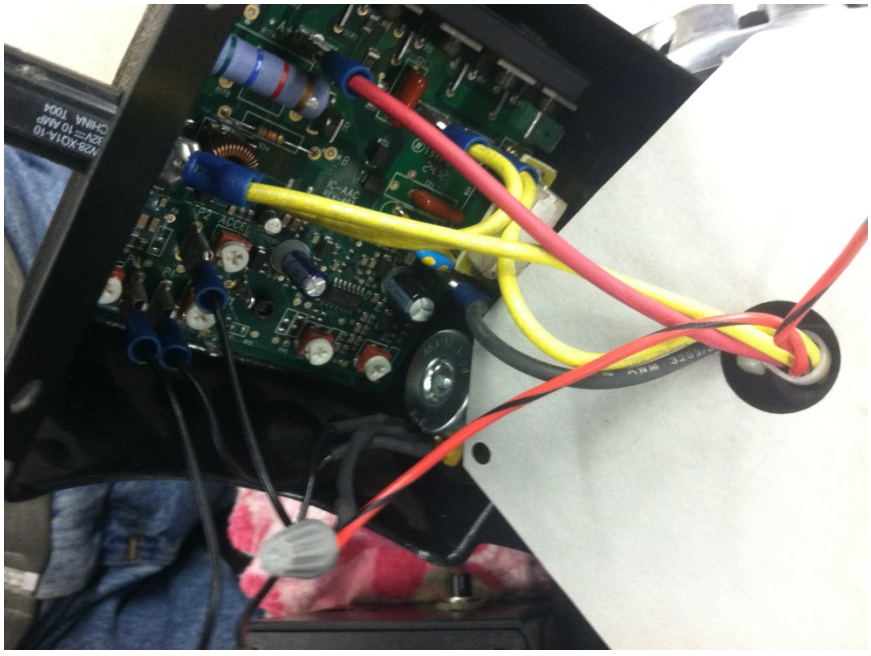


44. With a length of yellow wire roughly 3” strip both ends and attach two blade connectors as shown.



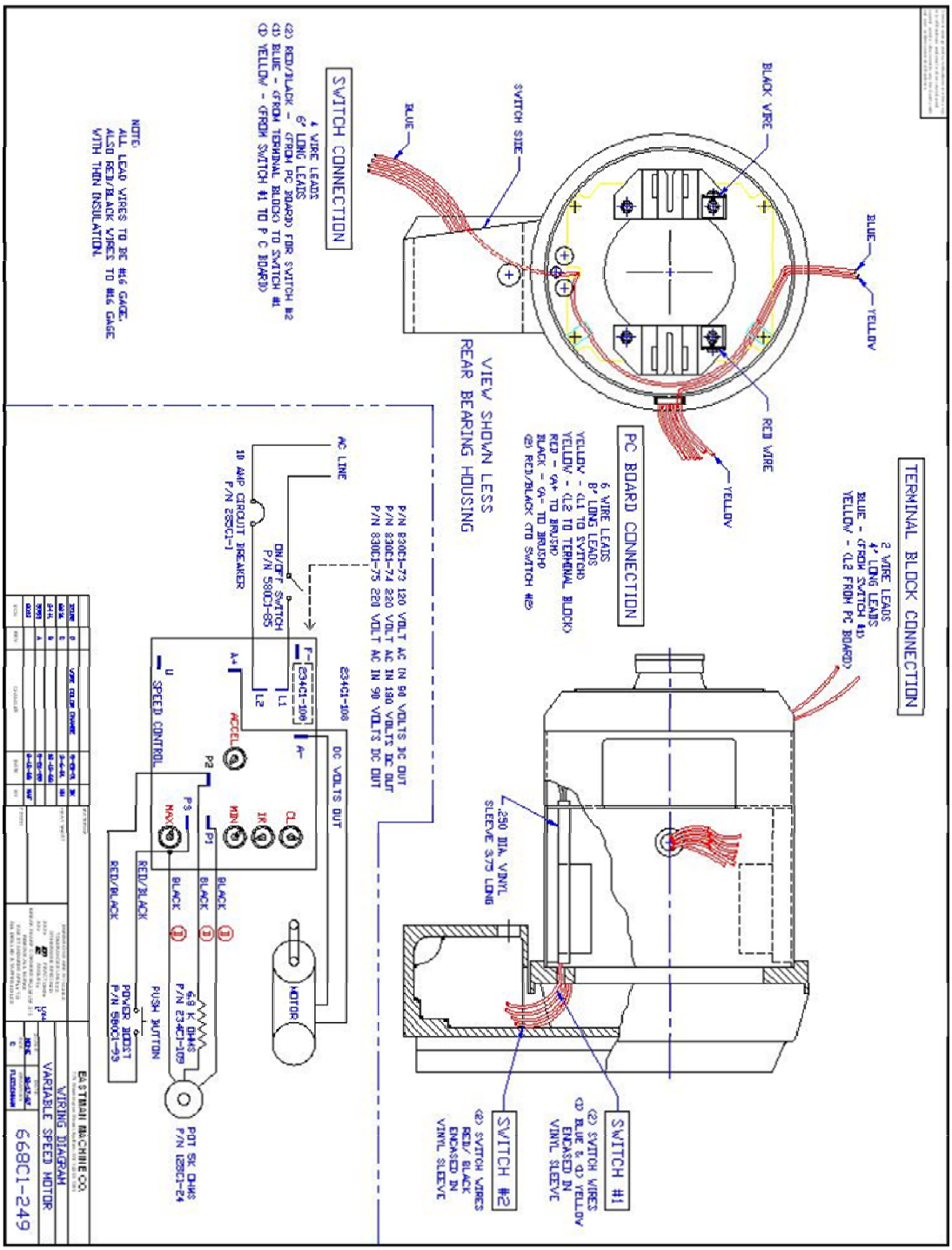
45. Insert the short yellow wire into the 10 amp circuit breaker (285C1-1) and the other end into L2 on the speed control board.

46. The two yellow wires from the motor body are to be connected to L1 on the speed control board and the other one to the Circuit Breaker. It does not matter which one goes where. Connect the red wire to A+ and the black wire to A- on the speed control board.

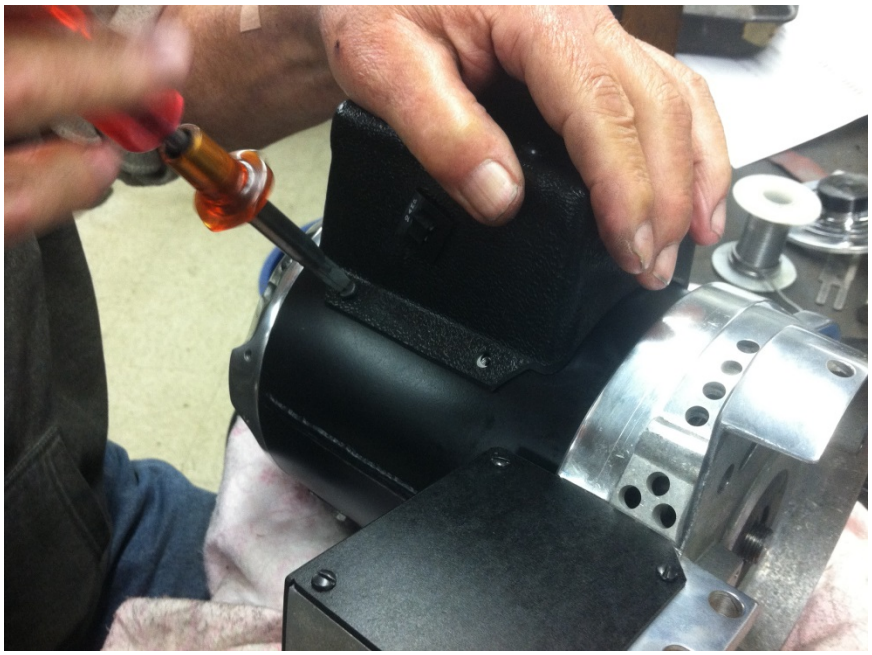


47. Connect the P2 pig tail wire, the center wire on the potentiometer and one of the red with black stripe wires together. Place a Small Grey 71b wire nut (3384-10) over all three.
48. Connect the P3 pig tail wire, the remaining wire from the potentiometer and the other red with black stripe wire together. Place a Small Grey 71b wire nut (3384-10) over all three.

49. With all connections made re-test the motor with the High pot at 500 V to ensure all connections are secure and not grounding out.
50. For wiring reference see drawing 668C1-249.



51. Connect the machine to the power and turn it on. Check the speed of the motor with a handheld tachometer. Adjust the min and max speeds to be as follows:
    a. Min = 730-750RPM
    b. Max = 3450RPM
52. Also adjust the accelerator control so that when the button is pushed the max speed is achieved.



53. Remove the self-tapping threads from the four Thread Forming Screws (20C12-173). Place the speed control cover (53C11-158) on to the motor with the four screws.

54. Install the Dial Indicator (104C1-6) onto the potentiometer and tighten the set screw, ensure that the “0” faces to the outside of the machine.

55. Tap two #4-40 holes on the motor for the name plate (79C1-159) to be attached with two #4-40 x 1/8” screws (300C7-1).

56. Install the Handle Bracket (62C1-140) with the Handle Bracket Screw (20C12-79) than install the Cushion Grip Handle (531C1-76) to the Handle Bracket.

57. Assemble the Rear Cover (53C7-44) with the turning Knob (13C1-9), Spring (34C1-51), and Snap Ring (18C6-16)

NOTE: Once the machine has been fully tested and sent thru T.A.R. and the rpm's have been set. Install the Rear Cover with three 6-32X½" Flat Head Screws (302C10-4)

58. Install and adjust the Crank and connecting rod like normal.

NOTE: the motor will not spin as freely as a standard straight knife due to the motors brushes.

59. Install and adjust the standard, base plate, sharpener housing and lower gear bracket as normal.
60. Run the machine in for roughly two hours; allow it to cool down and then T.A.R. the machine.