CAPACITOR KIT
INSTRUCTIONS FOR MODELS
400, 404, 500, 504, 600, & 680

REPLACEMENT OF CAPACITORS AND DIODES IN THE POWER SUPPLY:

The power supply is where the transformer, vacuum tube, etc, are located.

The kit is easiest to install with the drive unit removed from the machine.

The drive unit holds and spins the distributor.

Tools Required: wire snipper, soldering tool, screwdriver, ¼-inch socket, ratchet. A good de-soldering tool would be a big help, but is not necessary.

(See pictures on the pages 3-4 to aid in installation.)

1. Remove the two acorn nuts at the top of the drive unit, and the two ¼" bolts at the bottom of the drive unit.
2. Remove back panel of the machine.
3. Remove leads from the meter banks and the power lead from the bottom of the case at the power supply. Make a note of where the leads are connected for re-assembly later.
4. Remove the belt. (It can be pulled off the pulleys by hand.)
5. If your machine has a mechanical vacuum pump threaded into the drive-cone casting, remove the vacuum hose.
6. Run the RPM crank wheel in a few turns to help the drive unit come out more easily.
7. Grasp the drive unit from the front and remove from the case. Set drive unit on its side on a workbench. Remove all connections from the power supply.
8. Remove the four screws that hold the power supply. Pull power supply away from the drive unit and place on workbench.
9. Remove and DISCARD the vacuum tube. It is NO LONGER NEEDED.
10. Remove and set aside the two screws holding the vacuum tube bracket. Pull up on the vacuum tube bracket for better access.
11. Remove and discard 47 ohm resistor from the five-o-clock position.
12. Picture the back of the vacuum tube socket as a clock, with the six-o-clock position being at the bottom where the bracket is attached. Cut the yellow wire from the transformer at the five-o-clock position on the socket, and tie it off or tuck it up into the black tube holding the transformer wires.
13. The other yellow wire in the eight-o-clock position on the socket can remain in place.
14. (Note – if you are using my battery replacement circuit board for models 400, 500 & 600 you will use both yellow wires to power the meters)
15. Solder in the two diodes from the kit, one from the orange wire at the eleven-o-clock position,

and one from the red wire at the one-o-clock position, down to the five-o-clock position. Make sure the silver bands on the two diodes are facing DOWN, toward the bottom of the bracket.

16. At this time, also solder in one end of the new 47 ohm resistor at the five-o-clock position. It does not matter in which direction you solder the 47 ohm resistor. You will solder the other end of the resistor later.
17. Re-install the vacuum tube bracket in the power supply with the two screws.
18. Remove the 10mf/600 volt capacitor and strap in the center of the power supply, and discard both. Re-install the screw that held the strap. It is still needed to hold the choke bracket in place.
19. The two blue capacitors already soldered together from the kit will replace the 10mf/600 volt capacitor. Install the new capacitors where the old capacitor was. The two capacitors will be suspended and the strap is not needed. Make sure the black-capped ends of the capacitors are facing the ground connector. The arrows on the capacitors with black stripes point back to the choke.
20. Solder the blue capacitor lead, 47 ohm resistor lead, and white wire from the trigger coil to the ground connector.

    Power supply is complete. (See pictures on pages 3-4 to aid in installation.)

    Do not install the power supply yet. See Step 7 in the next section.

THE NEXT STEP IS THE THREE-CAPACITOR BOARD LOCATED UNDER THE POWER SUPPLY.

(See pictures on the pages 3-4 to aid in installation.)

1. The three-capacitor board is held down by three screws. Remove screws and rod retainer bracket and move the rod that contacts the three brass “fingers” out of the way. Note the position of the blue wire that runs under the board and up between the upright posts to reinstall later.
2. Pull the three-capacitor board out and place on workbench.
3. Remove and discard the three capacitors and clean the board. Remove solder from all holes to facilitate installing new capacitor leads.
4. Solder one lead from each new capacitor to a brass finger.
5. Solder the other lead from each new capacitor to a ground.
6. It does not matter in which direction you install the capacitors. I install them with the printing facing up.
7. Reinstall the three-capacitor board and power supply.
8. Bolt drive unit back into the case and reconnect all connections.

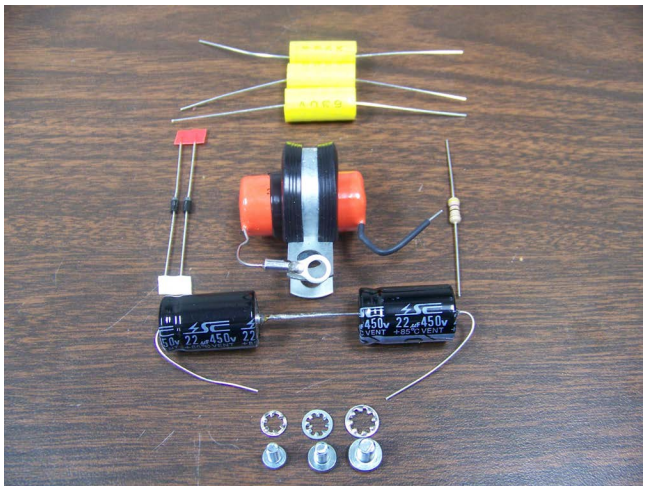
THE LAST STEP IS THE CAPACITOR UNDER THE CHUCK COVER.

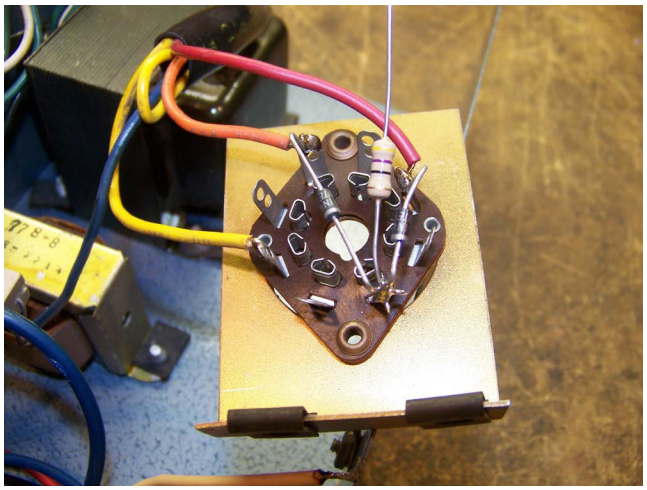
(See pictures on the pages 3-4 to aid in installation.)

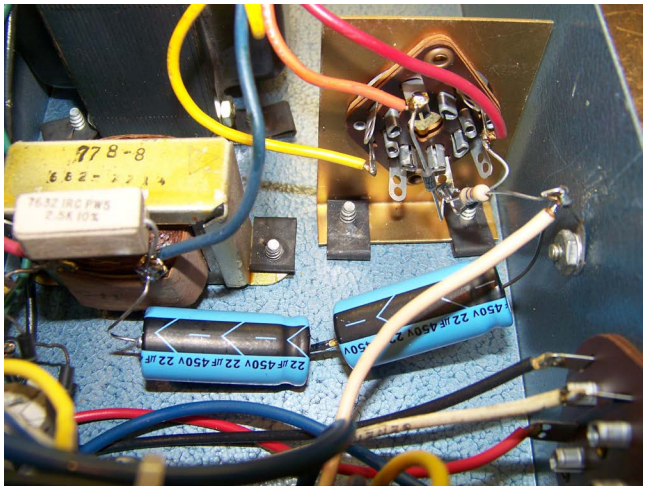
1. Remove the two ¼” bolts holding down the chuck cover. They are located under the two clamp arm rods.
2. Move the cover to the left or right. It has an attached wire, so you won’t be able to remove it totally from the machine. You are now looking at the flashtube and the capacitor that you will change.
3. Un-solder the two wires at the flashtube terminal. One comes from the capacitor and the other is the high-voltage wire from the power supply.
4. Remove and discard the old capacitor, strap and screw. Sun used three different sized screws to hold down the capacitor – 10-32, 8-32, or 6-32. Your kit contains new screws and lock-washers in all three sizes. Install the new capacitor and strap using the corresponding screw from the kit, to match the original screw size. Put the matching internal tooth lock-washer UNDER the new capacitor strap.

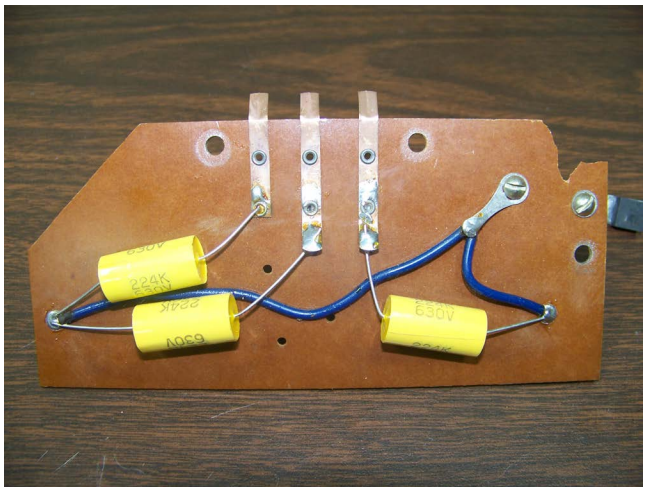
   (If you are doing an in-depth rebuild, you can drill and tap the flashtube bowl for the larger 10-32 screw. This step requires more work with additional disassembly.)
5. Re-solder the high-voltage wire and the lead from the new capacitor onto the flashtube terminal. Now would be a good time to lightly sand the brass ring under the chuck cover with 600-grit sandpaper where the two flashtube carbon brushes make contact.
6. Clean the ring, and LIGHTLY lube it with synthetic lube or equivalent.
7. Carefully set chuck cover back in place, making sure the two carbon brushes and springs are in their tubes on the flashtube.
8. Reinstall the two ¼” bolts that hold the cover on.

   Job is complete!






22 µF 450V 22 µF 450V 22 µF


224K
630V