

# Vacuum Tube Tesla Coil Assembly and Operation

## Assembly:

1. Unpack all items and inspect for damage.
2. Place the secondary coil inside the primary coil form; the side with the ¼" quick-connect is the bottom. Push the ¼" ground connector through the larger hole.
3. Connect the ¼" ground connector from the secondary base to the free quick-connect on the red wire.
4. Insert the ¼" nylon bolt through the bottom of the top board and tighten the secondary coil in place. Check that the wire leaving the base of the secondary coil does not touch any of the coil windings above it. If necessary, gently pull the wire from below to remove any slack.
5. Place the toroid over the nylon bolt at the top of the secondary coil.
6. Screw the brass/tungsten tip onto the nylon bolt to secure the toroid.
7. Plug the vacuum tubes into the white sockets. The tubes can only be installed in one orientation since two of the base pins are larger than the other two. Note which way the tubes should be inserted before trying to force them into the sockets.
8. Cut the wire tie holding the white caps and plug the white caps onto the tops of the vacuum tubes.

## Operation:

1. Check that both toggle switches are in the off (downward) position.
2. Plug the power cord into a 120V, 15A outlet.
3. Move the control box several feet from the Tesla Coil. Do not allow the cord to rest on top of any of the Tesla Coil components. Rotate the control knob fully counterclockwise to reduce the output to zero.
4. Turn on the smaller toggle switch to power the filaments.
5. Turn on the larger toggle switch to power the high voltage transformer.
6. Rotate the knob on the control box until the desired output level is obtained. The white dot on the top of the control box is the maximum recommended operating level for the included vacuum tubes. Watch for excessive heating of the vacuum tube plates when operating at or beyond the maximum recommended operating level. The vacuum tube plates may heat to dull red during operation without damage. If they become bright red or orange, power should be reduced, otherwise permanent tube damage may occur.
7. Reduce the voltage control back to zero and turn off both toggle switches to end operation.

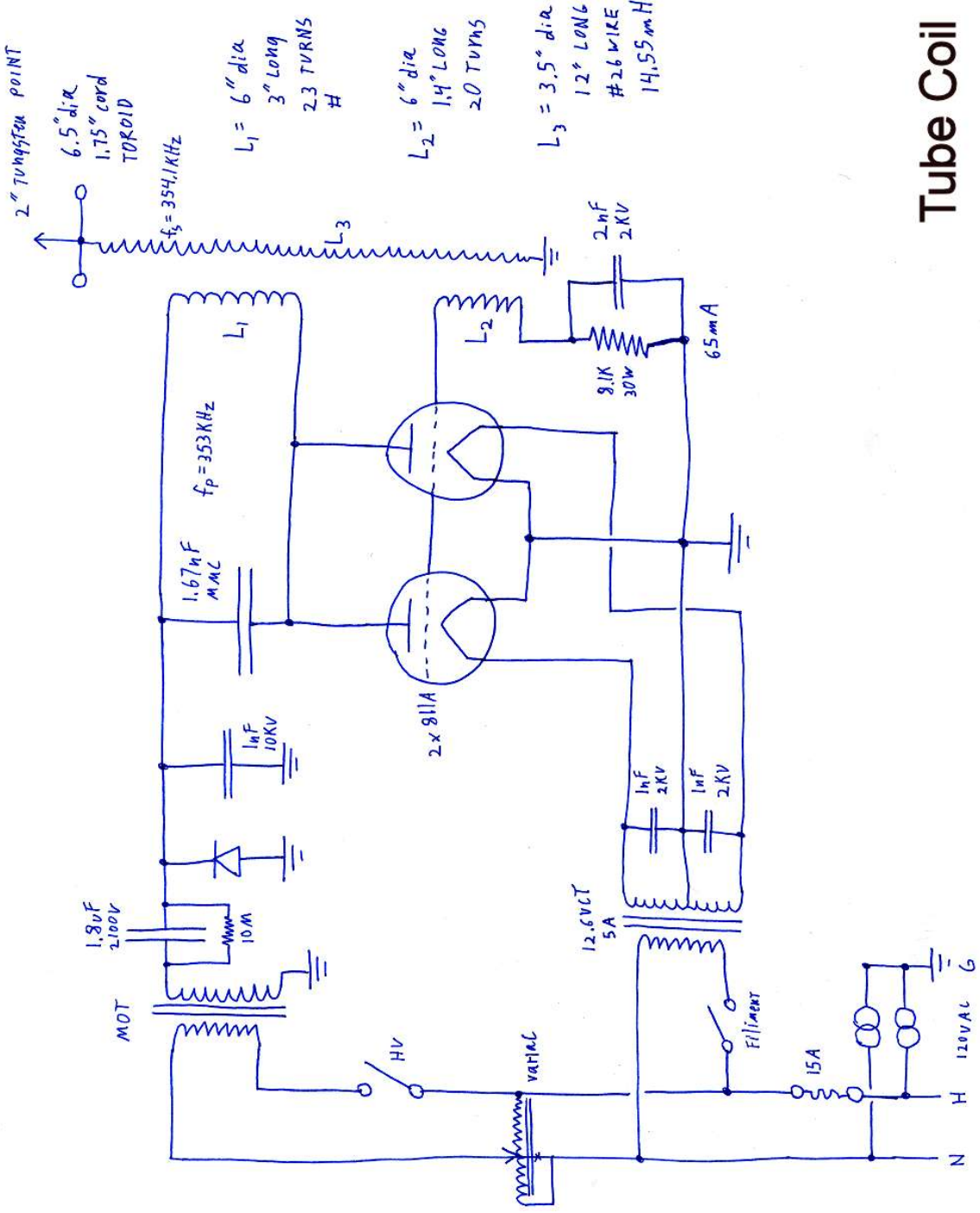
**Warning:** Many of the Tesla Coil components, including all of exposed coils, operate at lethal voltages. Stay clear of all components anytime the system is connected to a power outlet.

**Caution:** It is not recommended that the Tesla Coil be operated without the discharge spike or be allowed to strike grounded objects. Doing so may result in

internal arcing within the vacuum tubes, possibly damaging or destroying the vacuum tubes or other components.

The Tesla Coil was designed for intermittent operation. It is not recommended that it be operated continuously for more than 20 sec. intervals at maximum power.

You can increase the output of the Tesla Coil by replacing the included 811A vacuum tubes with higher power vacuum tubes. The 572B is a drop-in replacement for the 811A, but can dissipate much more power and is rated for higher plate voltages. If 572B tubes are used, the voltage control could be increased to maximum output giving a spark length of approximately 20". If this upgrade is made, the included 15A fuse should be replaced with a 20A fuse and the grid leak resistance may need to be adjusted slightly for optimum performance.



# Tube Coil