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Replacing MS300 Switch - Read Everything First

Tools Needed:

5/16" Nutdriver	Phillips Head Screwdriver	Soldering Iron*
Solder*	De-solder tool*	solder braid* or solder sucker*

*(Available at Radio Shack)

NOTE: UNIT MUST BE UNPLUGGED FOR THIS REPAIR

**Whenever the unit is face down, it should be on a soft padded surface with a hole or cavity for the power switch, so there is no pressure on the switches or the chart front.

1) With the unit face up, pull blue & white caps off of switches.
2) Put unit on it's front, protected by as indicated above.
   - VERY IMPORTANT - Do Not allow ANY pressure against Power switch or others or you might crack the chart front and it is NOT replaceable.
3) Turn the unit over and take back off Neuropatholator but keep wires connected.
   - Remove the screws around the perimeter of the hard-board back.
   - DO NOT REMOVE screws holding the transformer grill to hard-board back and screws holding transformer to grill.
   - Separate back and transformer from main chart cabinet by pulling the plug in the transformer bundle.
4) Pull off all blue and white buttons
   - Unscrew all switch nuts, but leave the top and bottom ones on temporarily.
   - Locate the 6 soldered terminals that correspond to the one(s) you are replacing.
   - Using a de-soldering tool, soldering braid, or solder sucker, AND soldering iron, heat switch prongs on circuit board to pull solder out of switch holes. There are 6 prongs per switch. I recommend desoldering all 6 terminals of each switch before removing the switch/PCB assembly from the front of the chart. The desoldering operation is best if the board is not loose.
   - * If you have a solder sucker I highly recommend that as your first step or you could use solder braid. I usually recommend solder braid as a final step in both circumstances.
5) Remove nuts off of switches, using a 5/16" nut driver.
   *Note: Pliers may scratch the front of unit.
6) GENTLY push on switches until circuit board is out of holes.
   - Now unscrew the last two switch nuts and pull the printed circuit board away from the chart.
   - BE VERY CAREFUL to not wiggle vigorously, as pulling the switches out or pushing back in could cause a crack in the front. Again, NOT replaceable.
7) Heat the tiny bit of solder remaining around each terminal as you slowly wiggle the switch back and forth to work it out of the board.

   DANGER - IMPORTANT the inside of each hole is lined with a VERY thin copper lining that often transfers the circuit from one side of the board to the other. If you pull the switch while the terminal is still attached and cold, it will tear the lining out of the hole and may start to pull the circuit away from the board. This greatly complicates the repair.

8) Replace broken switch with new switch. **Make sure that new switch is facing the correct way.** (Words on the switch should face the bottom of the circuit board toward the electronic components. See other switches for orientation. It is best not to assume that the metal wasn't put on backwards. We've seen about one instance in every 5000 switches. I recommend using a continuity meter to confirm that the center pole of each row is normally on at rest or when activated as printed on the metal.)

9) Using soldering iron and solder, melt a very small amount of solder into **ONLY ONE** switch hole, For now a light 'tack' of solder is all that's necessary.We want the switch to wiggle. By soldering only one terminal the switch can be repositioned slightly to be coming out of the front straight.

10) After solder is cooled, place circuit board back into Neuropatholator front, by lining up the switch ends to the holes in the front. Press GENTLY, but firmly on circuit board until the switches are in place. (PUSHING TOO HARD ON THE SWITCH AND PRINTED CIRCUIT BOARD FROM BEHIND CAN CRACK THE FRONT!)

11) Make sure that no wires or light sockets are wedged or in the way of the circuit board.

12) Once circuit board is seated completely, **solder the other 5 switch holes** and reheat and fill the one you originally soldered.

- A good solder joint is made when both the terminal and the ring of the hole are brought to the same temperature and the electronic solder is melted by touching the other side of the terminal and fed into the switch and terminal and PCB hole.

13) Carefully flip the unit face up.

14) Put nuts back on switches using a nut driver. Tighten until just "snug".
Note: TOO MUCH TIGHTENING COULD CRACK THE FRONT OF THE UNIT.

15) Replace switch caps on switches.

16) Plug in ANS unit and test.
REMEMBER - once power cord is plugged in - the power switch and some terminals of the transformer have 110 volts. CAREFUL.

16) Make sure that no wires or light sockets are wedged or in the way of the circuit board.

17) Carefully put Neuropatholator face down.

18) Attach the back securely.

Visual Odyssey, Inc is not responsible for any damage incurred to the Neuropatholator Wall Chart while being repaired by a non-approved Visual Odyssey technician.