

# Reverse Engineering of Panasonic Compact Stereo System

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We disassembled a Panasonic SC-HC20, a stereo system. It was not too complicated or too simple, and it was one of the few things available. The system has a lot of cool things: a built-in FM radio and connectors for an AM radio antenna loop, and iPod connectivity.



Bottom cover removed



Main cover removed

First, we found out the only screws were on the bottom. We took those screws out and we found the iPod connections board! The circuit board is connected by a ribbon cable to the motherboard and can be retracted and extended to fit your device.

Next came the tricky part. We pondered over this over a long time because we thought the only way to get to the next part was to keep finding a way to open the bottom. Then we realized that we could pry open the panels covering the two speakers. It worked! Then, we had to unscrew the screws and push the speaker back to get the back panel out. We then found the circuit for tuning the FM radio, also the circuit for connecting the antenna from the AM loop.



Panels removed from front

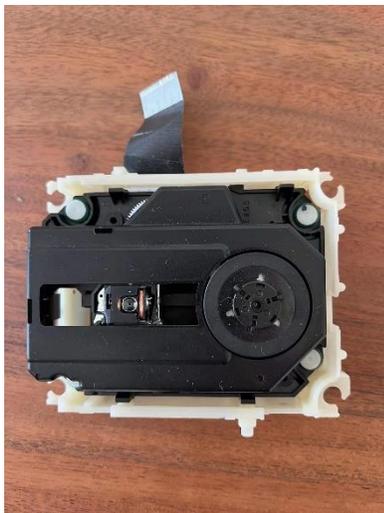


FM radio tuning circuit



AM radio loop antenna connector

It started to get trickier because there were many screws. When we removed all of them, this big motherboard still wouldn't come out because there were screws connected to the motherboard that were attached on the other side of the board. We had to pry open (again) the larger panels covering the speakers and the disk drive with a flathead screwdriver.



Disk drive removed with ribbon cable



Buttons' circuit board

After that, the motherboard was exposed and removed. We found the motor and gears for sliding out the panel covering the CD drive. Two limit switches that were

connected to the motor's control board were to prevent the cover from sliding off the rails. The two speakers were soldered to the motherboard. Also attached to the motherboard was a display screen on a circuit board with a receiver for the remote by a ribbon cable. The disk drive is connected to the motherboard via another ribbon cable.

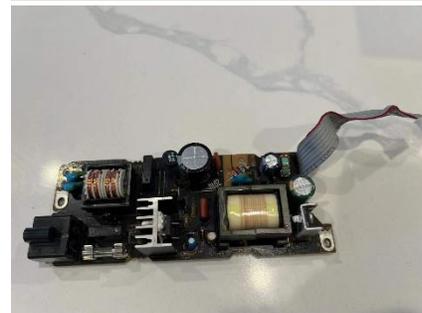
On the tuning circuit, there is a Nichicon 8uf 400V capacitor, a CapXon 1000uf 25V capacitor, and a CapXon 1000uf 10V capacitor. Also, there is a fuse, two regulators, a couple of diodes, and an inductor. On the iPod connector board, there are a lot of micro-resistors.



Mechanism for sliding out cover



Limit switches for cover



FM tuning circuit

Finally, we took everything off the plastic case, as there were some screws connecting the circuit boards to the back plastic case. We took out the circuit board for the control buttons and found a lot of switches.

During the disassembling process we discovered a lot of electrical and plastic components are needed for a commercial product. We learned how to carefully remove ribbon cables and some wire connectors.

Taking apart things and researching about components on circuit boards can be very interesting and fun. It helped us learn about capacitors, inductors, regulators, and fuses and more electronic components.