

DEVOLUTION OF THE JVC KD-S580 CAR RADIO

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For my Reverse Engineering Online Challenge, I chose a car radio and CD player my dad had in the garage. I chose it because it is old and was something different than a computer, smartphone, or another newer piece of technology. I also wanted to learn more about how radios work. My uncle gave me a ham radio a few years ago and I found it interesting.



Figure 1: Exterior of a car radio and CD player.

This car radio has a lot of parts and inner workings. There is a motherboard, springs, rubber connectors, a small motor, a larger motor, a spiral gear, a bunch of different gears, a disc scanner, a plastic sheet, metal walls, and a front cover.



Figure 2: The motherboard with two connecting screws.

Motherboard: The motherboard is the most important part of the radio unit. All the programming is inside of it. The motherboard is what allows the radio to operate. There are forty-eight capacitors, one battery, five diodes, seven integrated circuits, one transistor, and one inductor. (See Figure 2.)

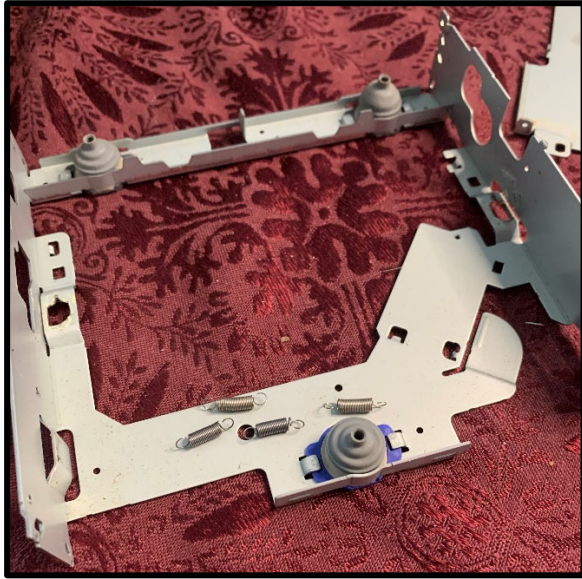
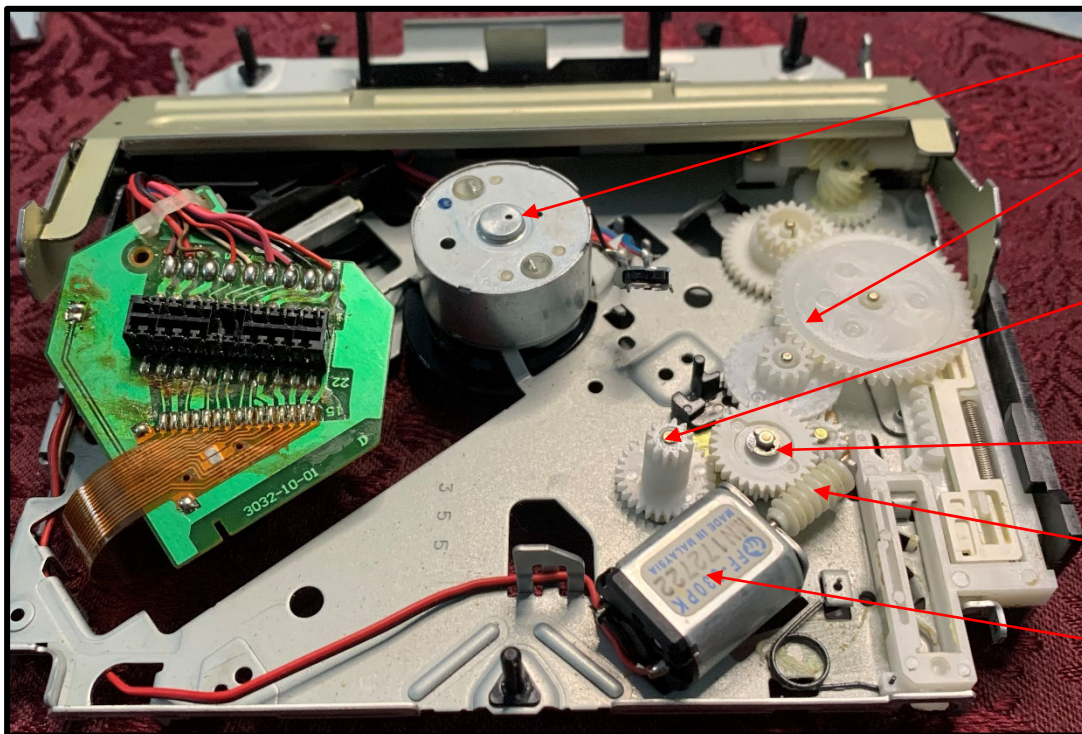


Figure 3: Four hooked springs and three rubber connectors.

Springs and Rubber Connectors: There are four hooked springs and three rubber connectors for three plastic pegs. These help secure the CD assembly to the metal plates. (See Figure 3.)

Small and Large Motors: The smaller motor allows the CD to lock in place and for the disc scanner to move. The larger motor allows the CD to spin. (See Figure 4.)

Gears: The spiral gear is connected to a shifting gear that first drives several other gears. Being spun by the shifting gear, other gears are what lock the CD in place. Afterwards, the shifting gear shifts over to scanner's drive gear and is what allows the scanner to move back and forth, reading the CD. (See Figure 4.)



LARGER MOTOR

OTHER GEARS

DISC
SCANNER
DRIVE GEAR

SHIFTING GEAR

SPIRAL GEAR

SMALL MOTOR

Figure 4: CD assembly containing set of gears (right side), larger motor (closer to top middle), small motor (bottom right), and the spiral gear (on the small motor).

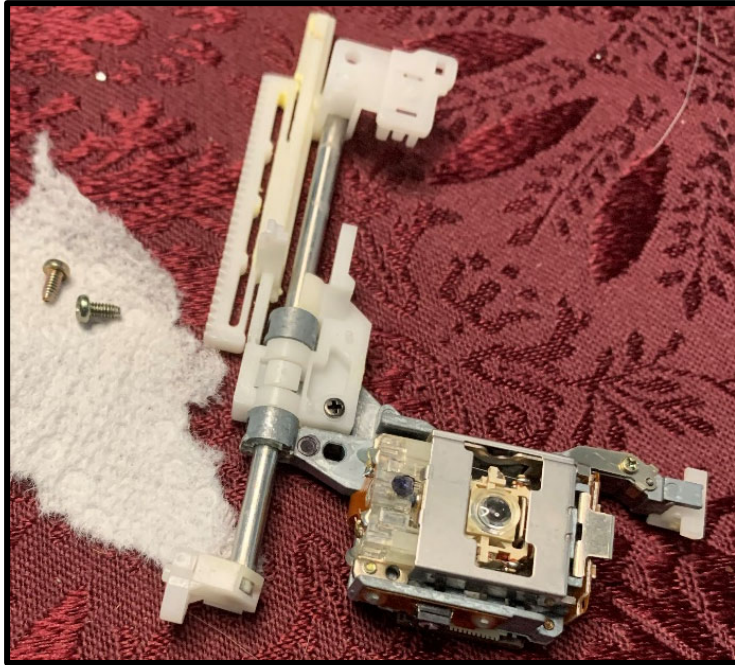


Figure 5: The disc scanner with two connecting screws.

Disc Scanner: The disc scanner is driven by the side gear rack connected to the and goes back and forth to scan a CD. (See Figure 5.)

Plastic Sheet: The plastic sheet goes between the motherboard and part of the metal frame walls. This helps prevent the motherboard from scratching the metal and getting destroyed. (See Figure 6.)

Metal Frame Walls: These are what keep everything inside. They are basically the shell of the radio. (See Figures 6, 7, 8, 9, 10, and 11.)



Figure 6: The plastic sheet is down on the metal. The green is the bottom of the motherboard. The metal is part of the metal frame walls



Figure 7: The other part of the CD assembly, but closer to the outside.



Figure 8: One of the outside walls with three connecting screws.



Figure 9: The outside wall on the opposite side of the radio panel, with eight screws.

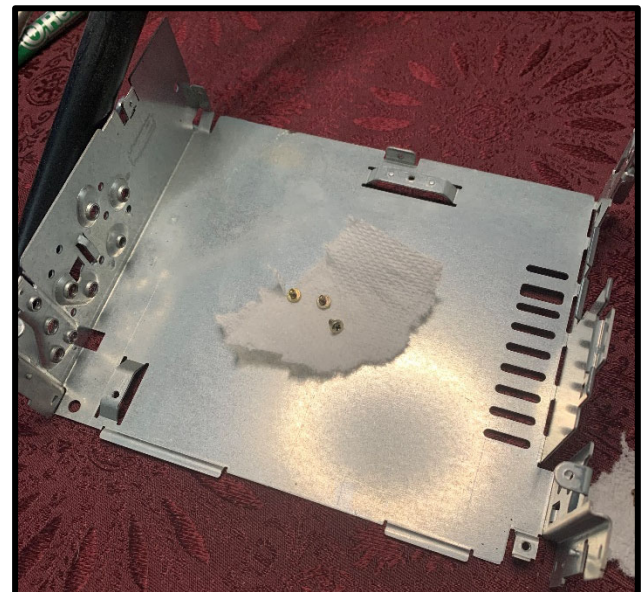


Figure 10: Exterior wall on the top opposite to the motherboard's wall, with three connecting screws



Figure 11: Exterior of the CD assembly where figure 7 rests, with five connecting screws

Front Cover Radio With Buttons:

This is what allows you to control the radio. These can be replaced with other ones if they break, so you don't have to replace the entire thing. (See Figures 12 and 13.)

Different Sized Screws:

There are a total of twenty-three (23) main screws that keep everything together. This does not include the other screws that keep the different parts, like the disc scanner, together.



Figure 12: This is the front of the radio and is the part that sticks out. You can control the music and change the radio channel.

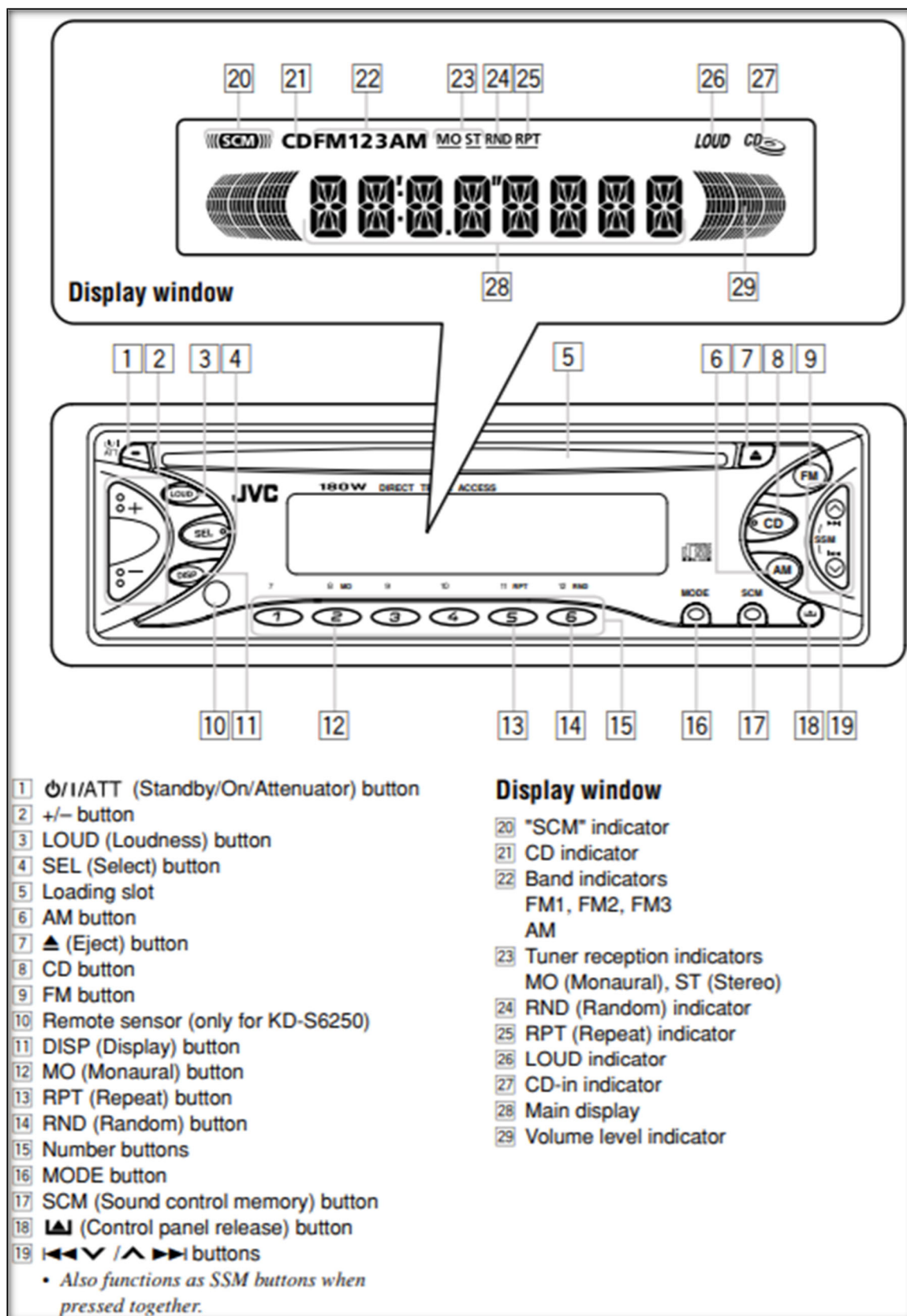


Figure 13: The buttons on the radio and what they do

RESOURCES:

<https://www.tempoautomation.com/blog/how-the-electronics-component-list-can-make-or-break-pcb-development/>

<http://resources.jvc.com/Resources/00/00/97/49666Bien.pdf>