

# MAGNETO OPTICAL DRIVE



SERVICE MANUAL



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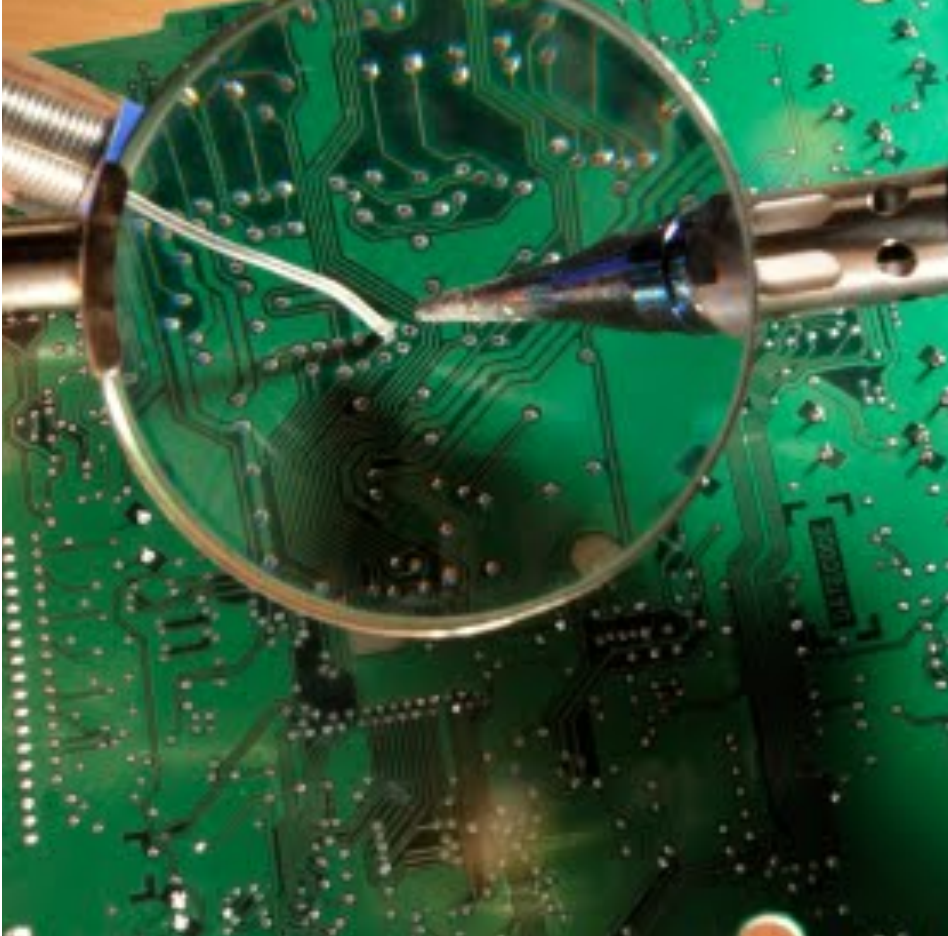
-Karim Khashoggi [nextmo@khashoggi.com](mailto:nextmo@khashoggi.com)

Most recent version of this document can be found at: <http://bit.ly/1aY0CO9>

Most recent schematics can be found at: <http://bit.ly/18awSLL>

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# Repair Procedures



*Approximately 29 aged Electrolytic capacitors must be replaced, depending on Motor Board revision.*

## **Capacitor replacement**

After approximately 10-15-20 years Electrolytic capacitors begin to leak their internal electrolyte. The electrolyte is corrosive and can damage the circuit board by dissolving the metal connection traces. As the capacitor ages it begins to lose its capacitance and at a certain point causes the circuit it is involved with to fail.

## **NeXT Drive Capacitor replacements**

Capacitors age quicker when subjected to heat. The NeXT Magneto Optical drive runs hot and puts stress on the capacitors. Due to age and

heat it is imperative all Electrolytic capacitors in the drive be replaced. Once replacement is completed there is a high likelihood of the drive functioning normally. This manual has an advanced section for further troubleshooting if capacitor replacement does not fix the drive. A partially complete schematic set is also included to further diagnosis.

## **First step**

Due to various revisions of the Motor Board, it will be necessary to follow the disassembly instructions in this manual to look at the board to find

which revision you have. Once you have determined the revision of Motor Board you can purchase the correct capacitor replacements.

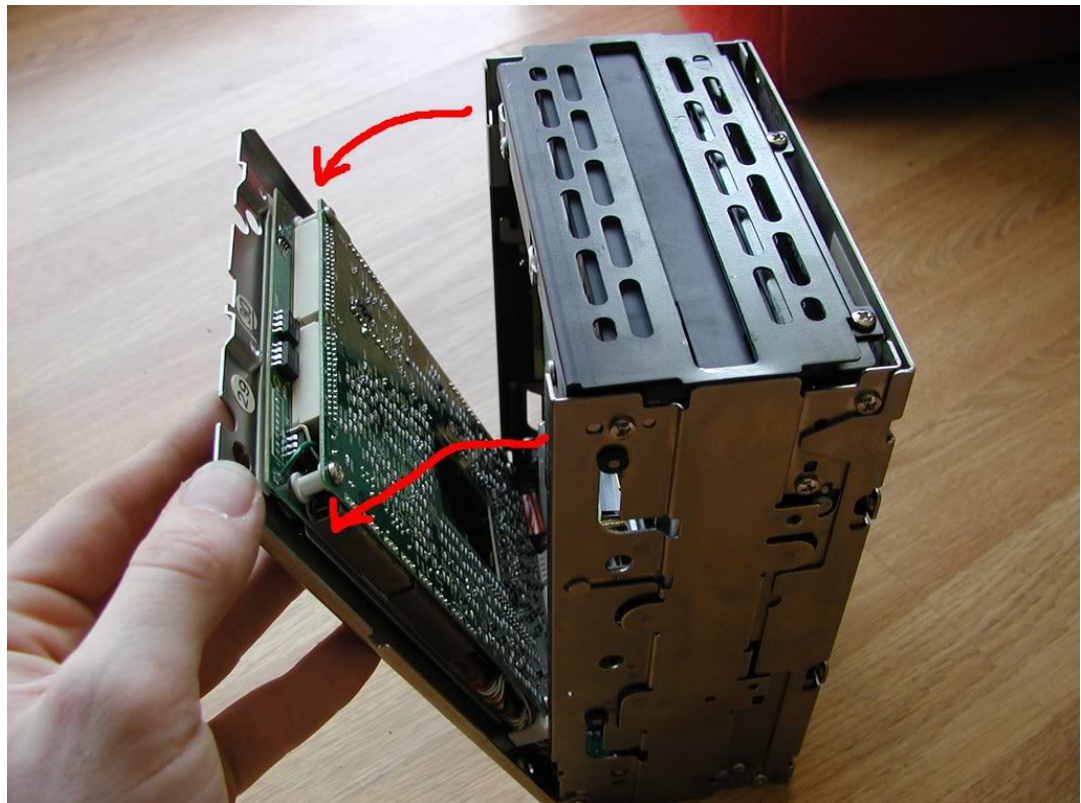
Look at the capacitor BOM list in this manual to determine which are needed to replace the Electrolytic capacitors located on the three boards: Digital Board, Analog Board, and Motor Board. Replacing the other types of capacitors is not necessary unless they are clearly damaged.

Soldering and de-soldering skills of through-hole components are required to complete the capacitor replacements.

# Drive Disassembly

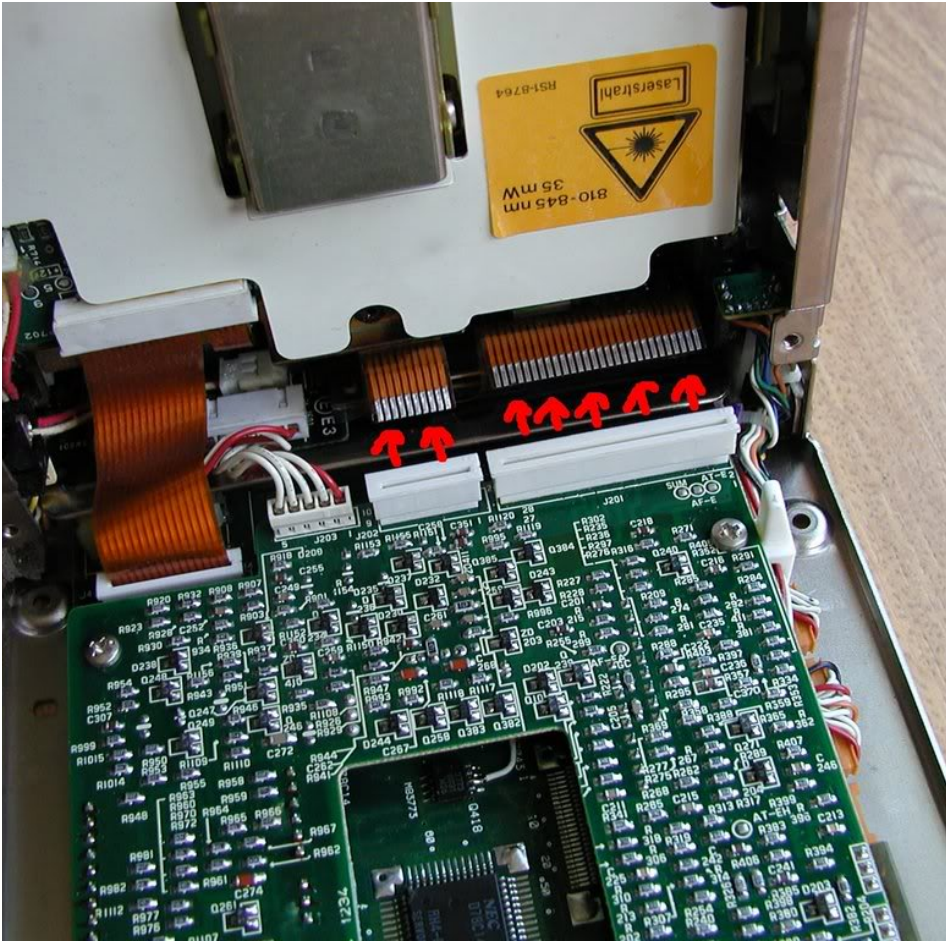


*First off, take these four screws out.*

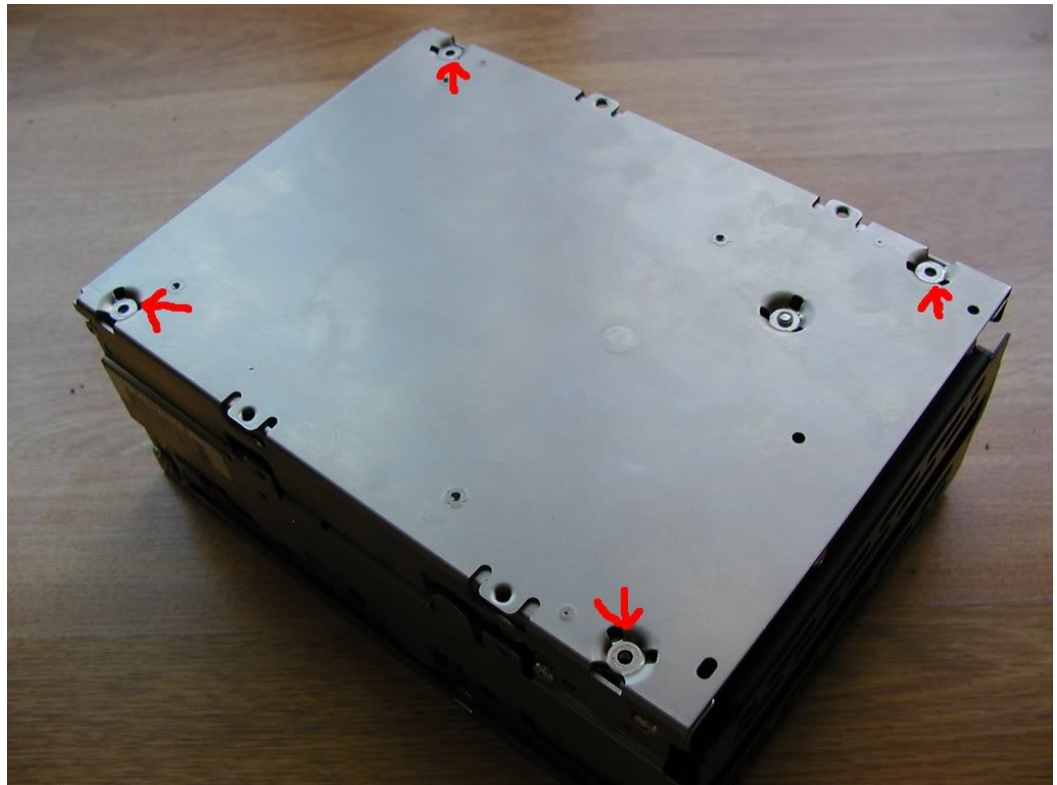


*NeXT, put the drive up on its end and gently pull at the top.*

*The top cover on the drive will swing down.*

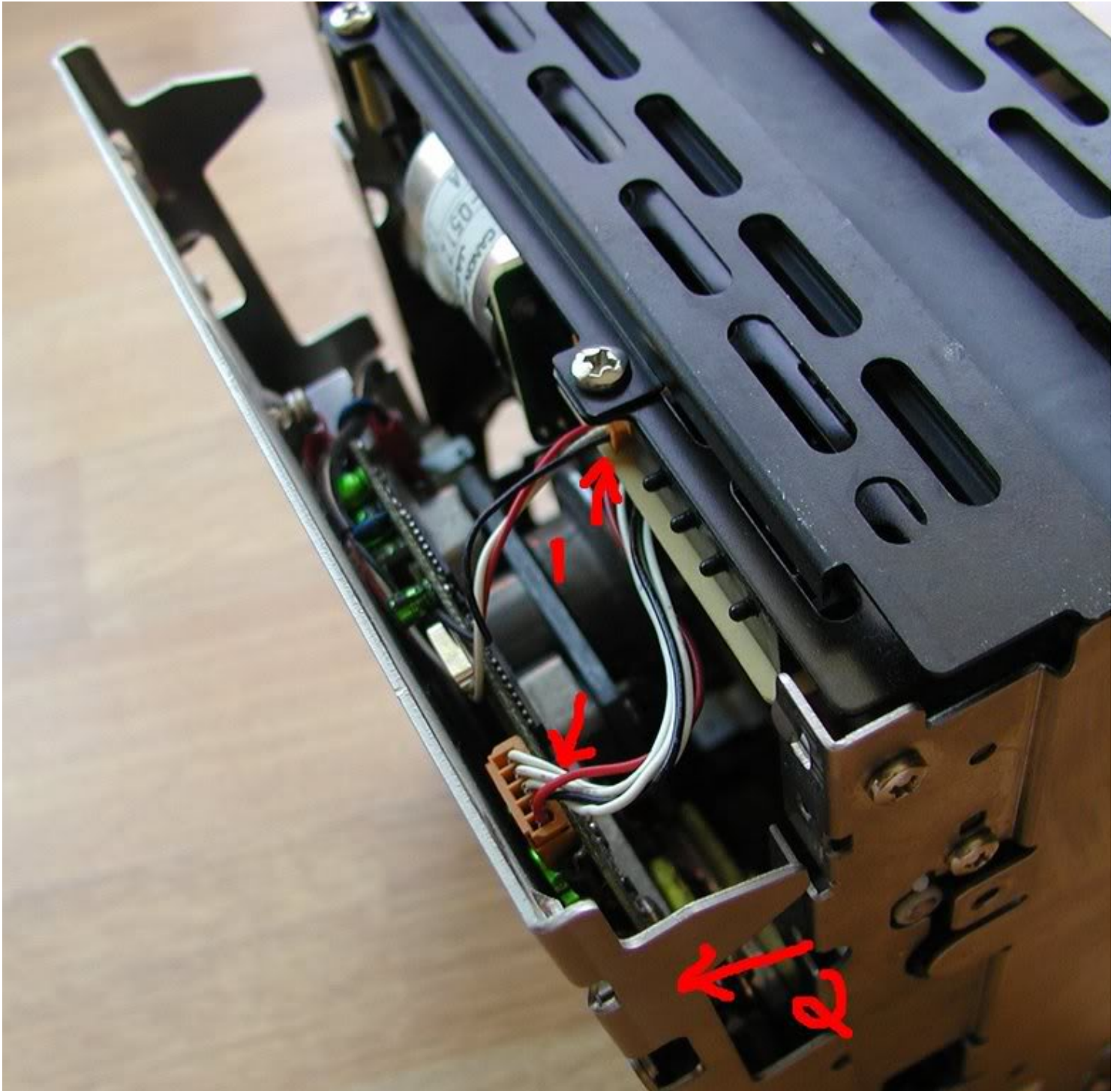


*NeXT, disconnect these two ribbon cables.*



*Now swing the top closed again,  
and flip the drive over and remove  
four more screws.*

*Now put the drive back up on its end and gently pull at the top of the other side of the drive. After you disconnect these two wires, pull the bottom outwards to separate the laser assembly from the drive.*

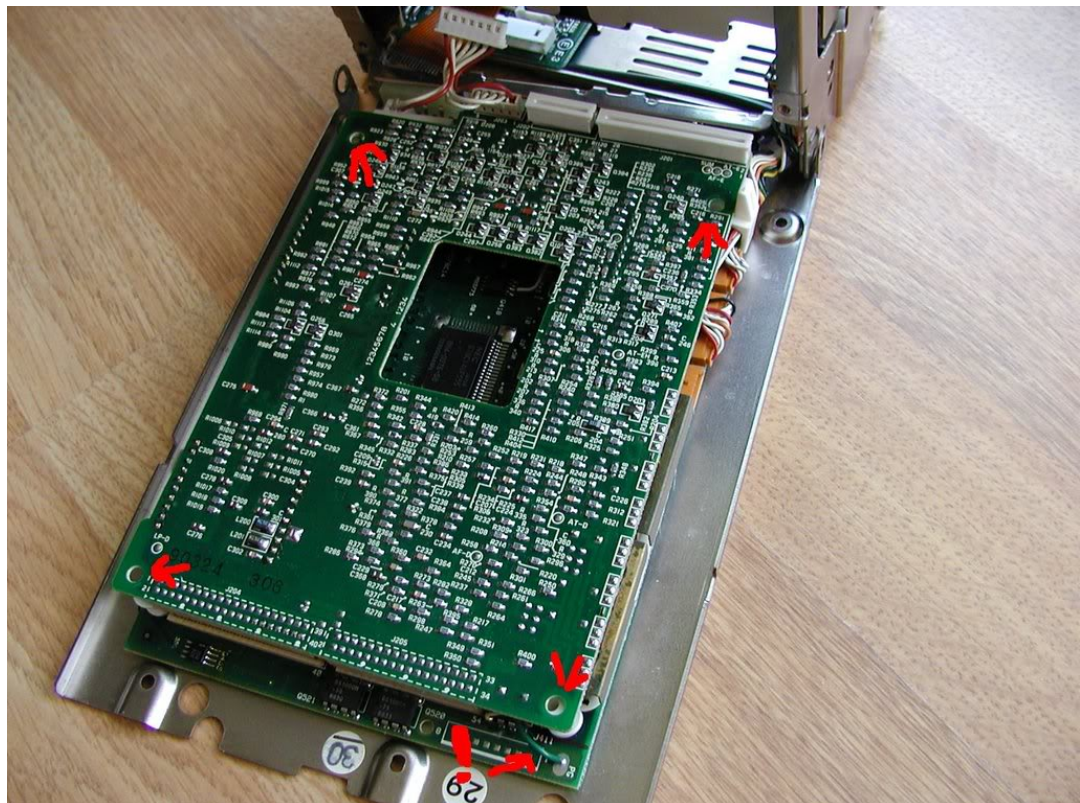


To remove the Analog and Digital PCB Board assemblies unplug the other ribbon cable and the wires marked by the arrows.





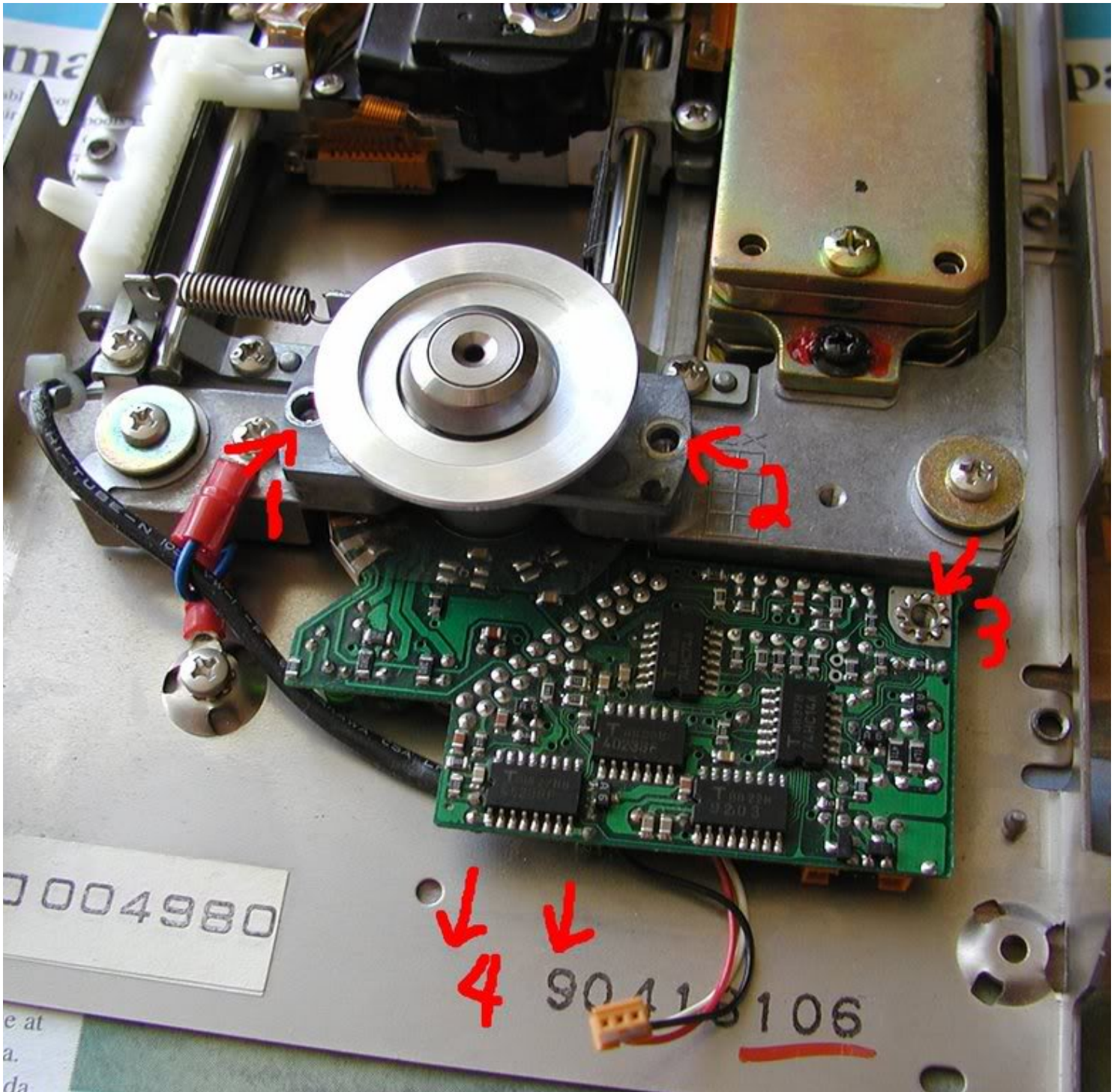
Remove these two screws that act as hinges for the PCB assembly.



Remove the four screws indicated to separate the Analog and Digital boards apart.

NOTE: There may be a green wire connecting the two boards together. Gently pull the green wire off the Analog board post.

NeXT for the Motor Board remove the three screws indicated and then slide the motor board out towards you as shown in step 4.

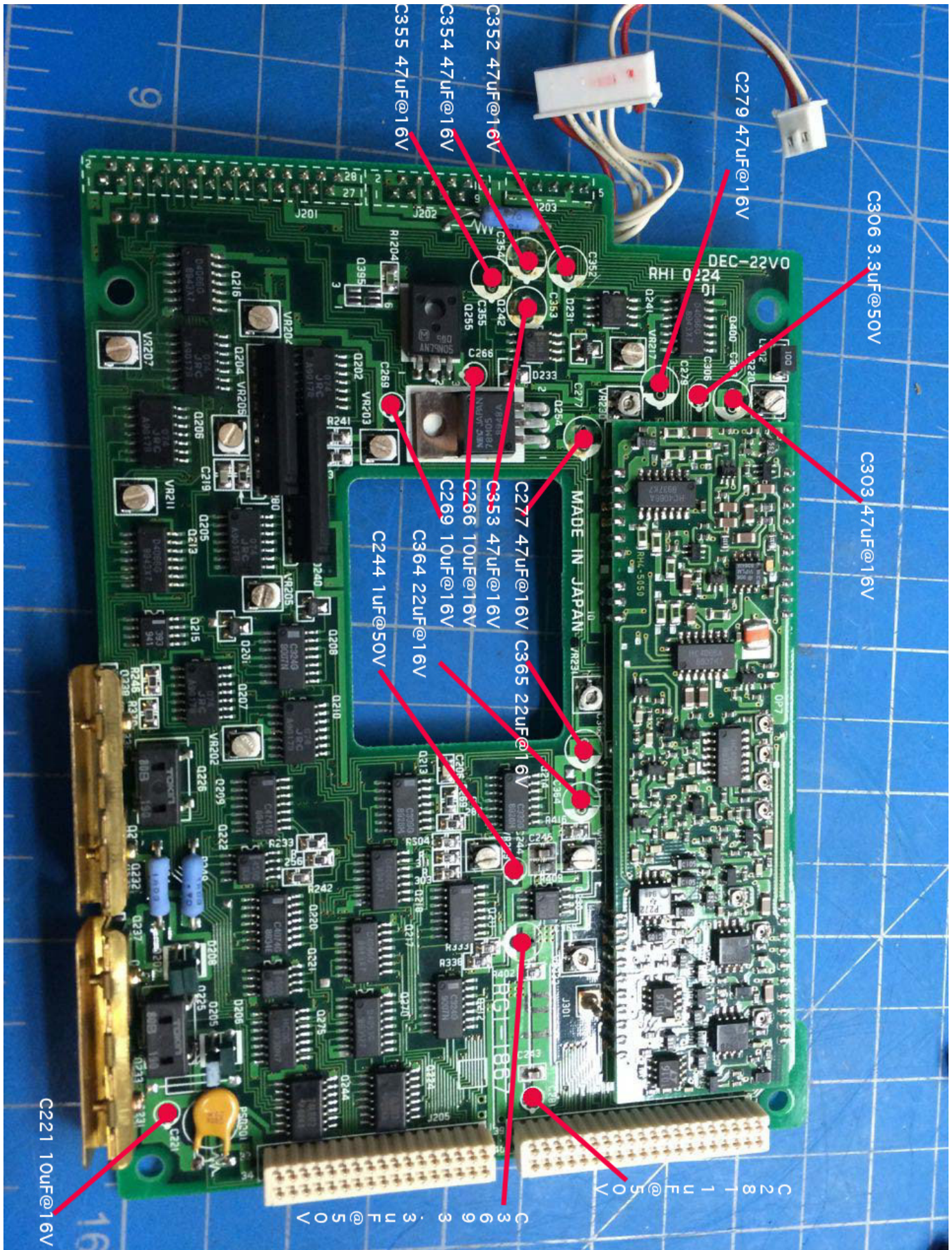


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# Digital Board A Recap

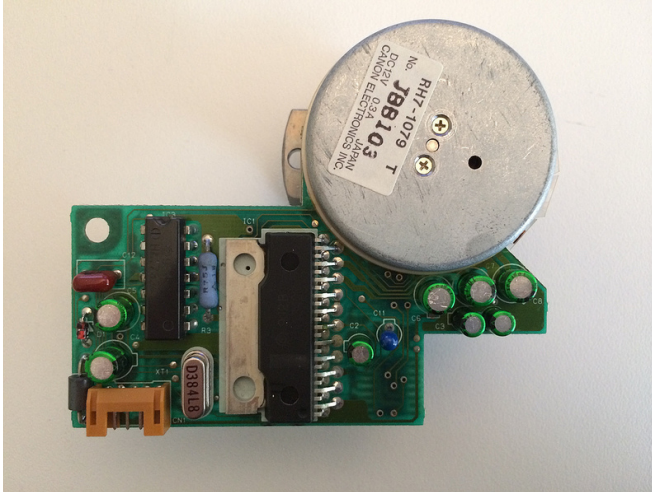
**PLACEHOLDER for picture**

# Analog Board A Recap

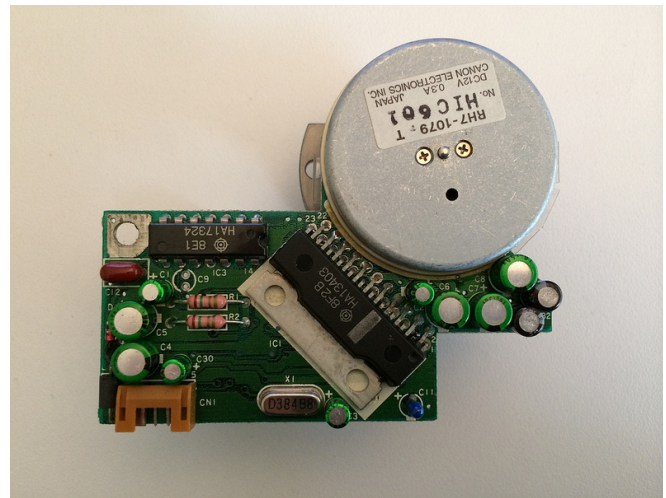


# Motor Board Revision ID

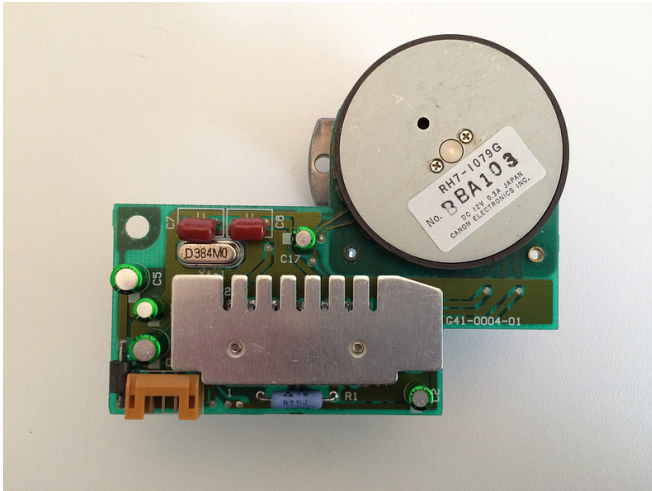
MOTOR BOARD REV A



MOTOR BOARD REV B



MOTOR BOARD REV C



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# Motor Board Rev A Recap

**PLACEHOLDER for picture**

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# Motor Board Rev B Recap

**PLACEHOLDER** for picture

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# Motor Board Rev C Recap

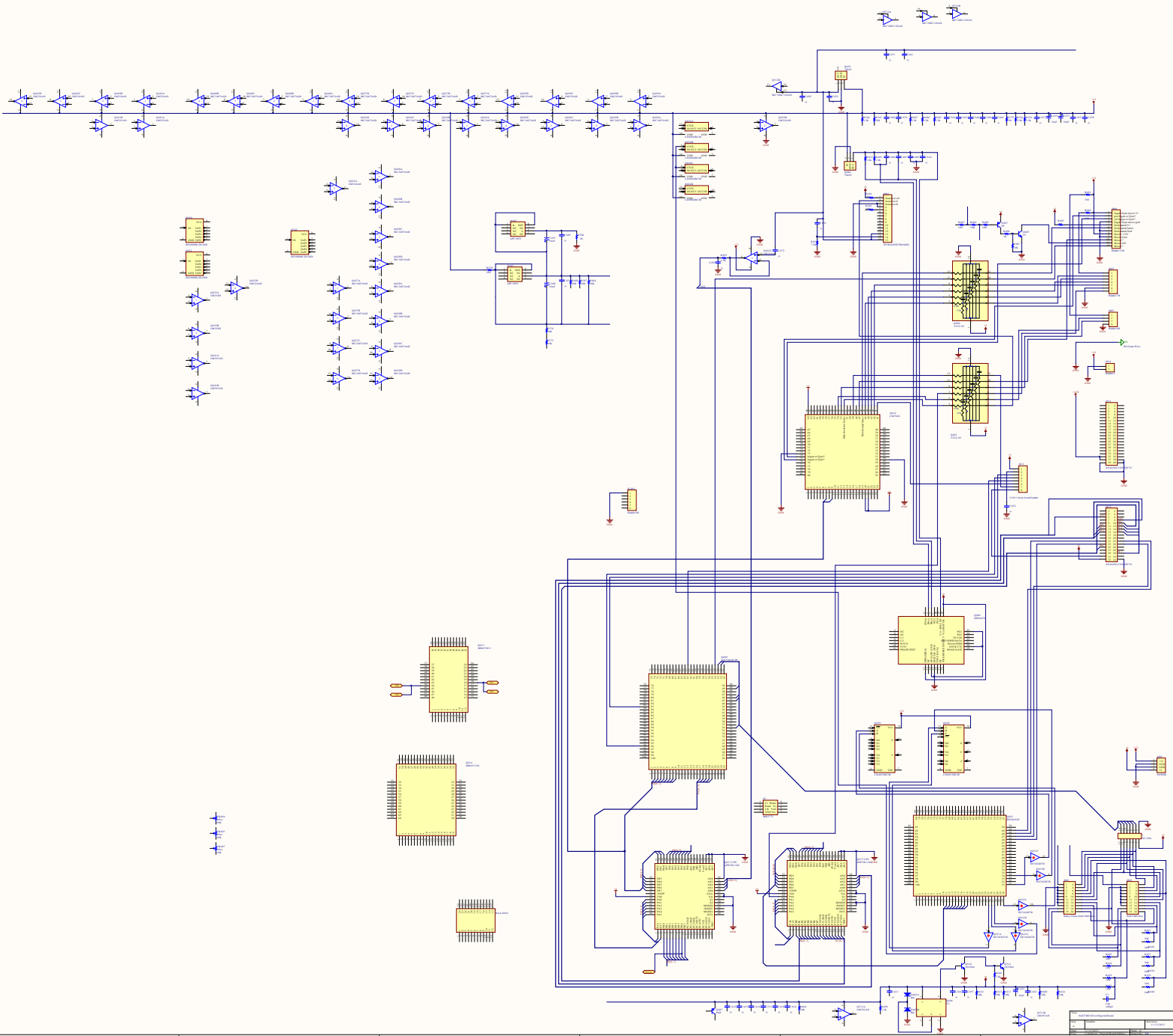
**PLACEHOLDER** for picture

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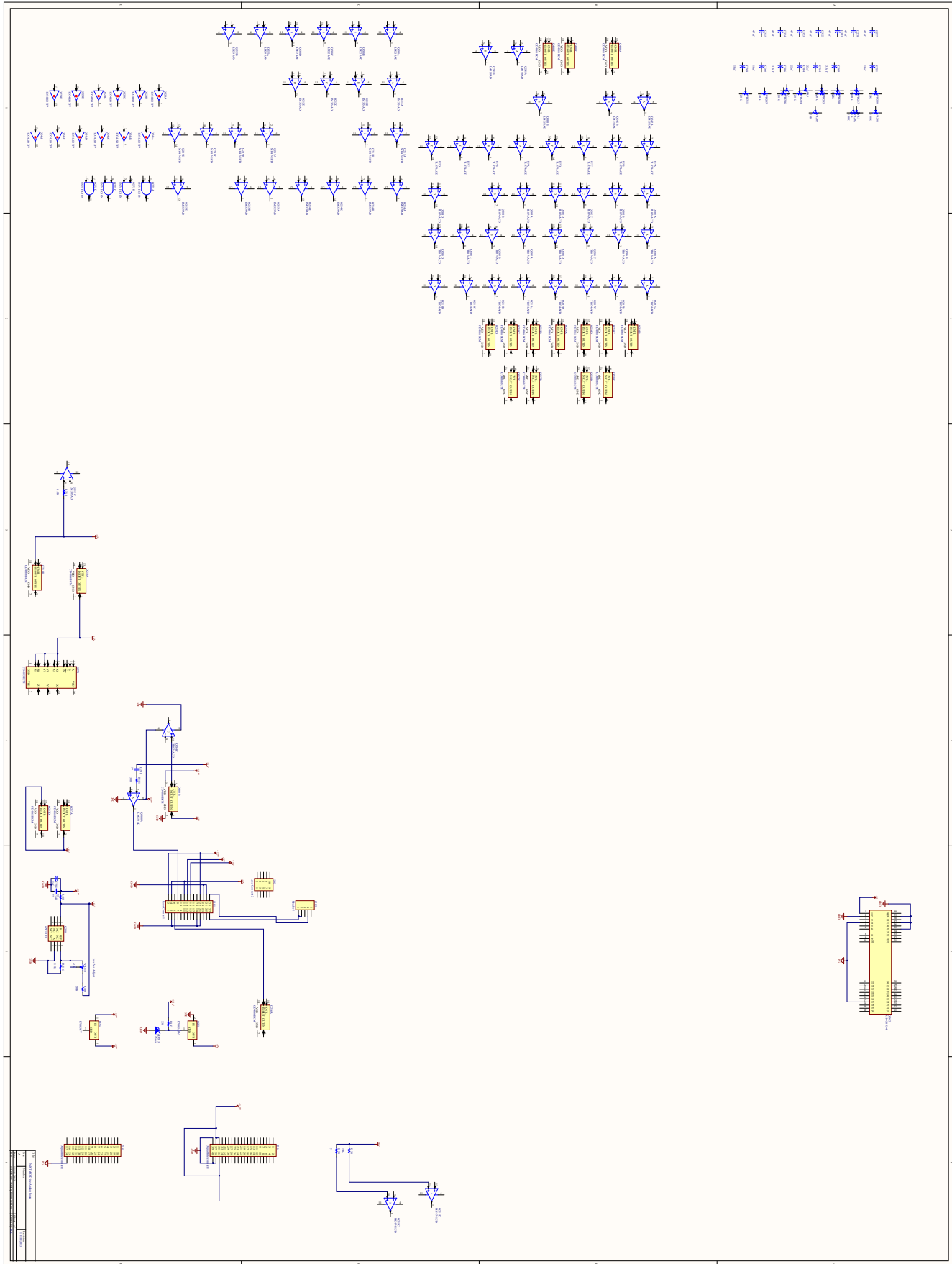
# Advanced Troubleshooting

**PLACEHOLDER**

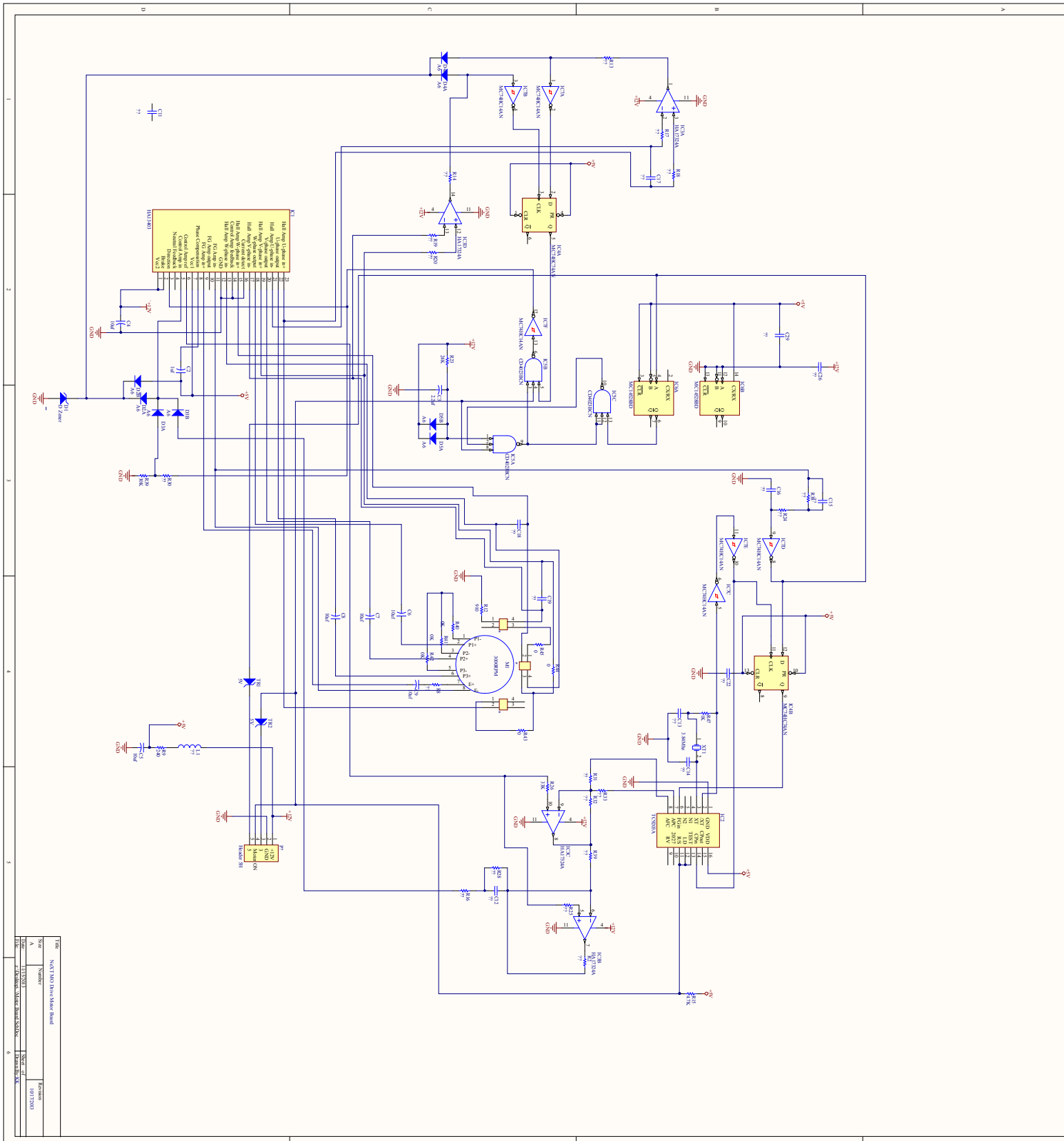
# Schematics - Digital Board A



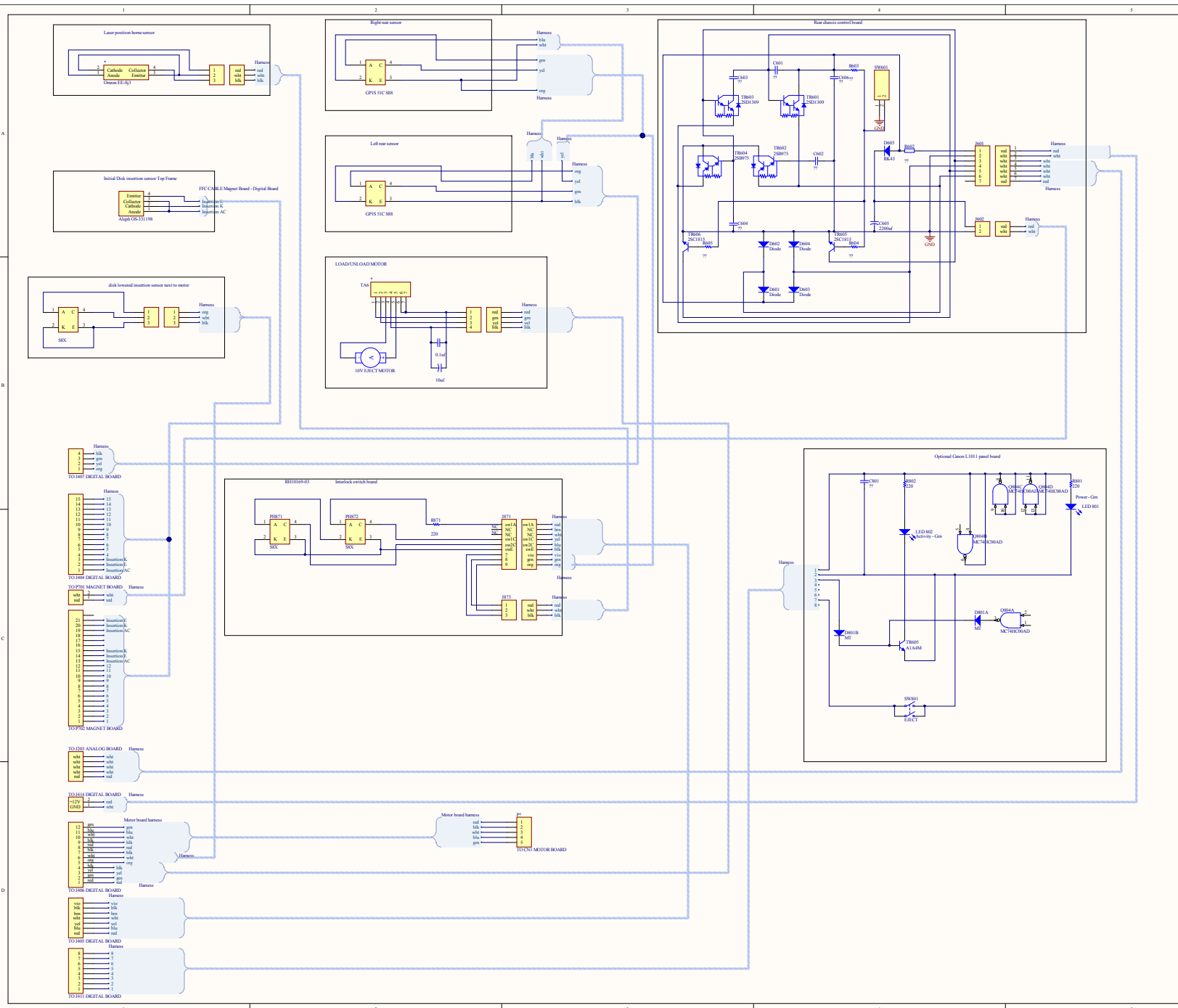
# Schematics - Analog Board A



# Schematics - Motor Board A



# Schematics - Chassis A



# Capacitor BOM Order List

NeXT MO Drive Capacitor Ordersheet							
Board	Cap ID	Cap $\mu$ F	Cap V Rating	Cap Temp Rating °C	Cap Size WxH (mm)	Ideal Part	Substitute* Part for availability
Digital A	C421	10	16	105	4 x 6	?	Nichicon UMA1C100MDD
Digital A	C433	10	16	105	4 x 6	?	Nichicon UMA1C100MDD
Digital A	C447	10	16	105	4 x 6	?	Nichicon UMA1C100MDD
Digital A	C448	10	16	105	4 x 6	?	Nichicon UMA1C100MDD
Digital A	C477	10	16	105	4 x 6	?	Nichicon UMA1C100MDD
Analog A	C221	10	16	105	4 X 6	?	Nichicon UMA1C100MDD
Analog A	C244	1	50	105	4 x 6	Nichicon UMT1H010MDD1TP	
Analog A	C266	10	16	105	4 x 6	?	Nichicon UMA1C100MDD
Analog A	C269	10	16	105	4 x 6	?	Nichicon UMA1C100MDD
Analog A	C277	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog A	C279	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog A	C281	1	50	105	4 x 6	Nichicon UMT1H010MDD1TP	
Analog A	C303	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog A	C306	3.3	50	105	5 X 6	Nichicon UMV1H3R3MFD	
Analog A	C352	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog A	C353	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog A	C354	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog A	C355	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog A	C364	22	16	105	5 X 6	United Chemi BSRE160ETC220MF05D	Panasonic ECE-A1CKS220
Analog A	C365	22	16	105	5 X 6	United Chemi BSRE160ETC220MF05D	Panasonic ECE-A1CKS220
Analog A	C369	3.3	50	105	5 X 6	Nichicon UMV1H3R3MFD	
Analog B	C221	10	16	105	4 X 6	?	Nichicon UMA1C100MDD
Analog B	C244	10	16	105	4 X 6	?	Nichicon UMA1C100MDD
Analog B	C266	10	16	105	4 X 6	?	Nichicon UMA1C100MDD
Analog B	C269	10	16	105	4 X 6	?	Nichicon UMA1C100MDD
Analog B	C277	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog B	C279	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog B	C281	1	50	105	4 x 6	Nichicon UMT1H010MDD1TP	
Analog B	C303	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog B	C306	3.3	50	105	5 X 6	Nichicon UMV1H3R3MFD	
Analog B	C352	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog B	C353	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog B	C354	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog B	C355	47	16	105	6.3 x 6	Nichicon UMV1C470MFD	
Analog B	C364	10	16	105	4 X 6	?	Nichicon UMA1C100MDD
Analog B	C365	10	16	105	4 X 6	?	Nichicon UMA1C100MDD
Analog B	C369	3.3	50	105	5 X 6	Nichicon UMV1H3R3MFD	

# Capacitor BOM Order List

Motor A	C2	1	50	105	4 x 6	Nichicon UMT1H010MDD1TP	
Motor A	C3	2.2	50	105	4 x 6	Nichicon UMT1H2R2MDD	Nichicon UMA1H2R2MDD
Motor A	C4	10	35	105	5 X 6	Nichicon UMT1H2R2MDD	Panasonic ECE-A1VKS100
Motor A	C5	10	35	105	5 X 6	Nichicon UMT1H2R2MDD	Panasonic ECE-A1VKS100
Motor A	C6	10	35	105	5 X 6	Nichicon UMT1H2R2MDD	Panasonic ECE-A1VKS100
Motor A	C7	10	35	105	5 X 6	Nichicon UMT1H2R2MDD	Panasonic ECE-A1VKS100
Motor A	C8	10	35	105	5 X 6	Nichicon UMT1H2R2MDD	Panasonic ECE-A1VKS100
Motor A	C9	10	16	105	4 X 6	?	Nichicon UMA1C100MDD
Motor B	C1	1	50	105	4 x 6	Nichicon UMT1H010MDD1TP	
Motor B	C2	1	50	105	4 x 6	Nichicon UMT1H010MDD1TP	
Motor B	C3	2.2	50	105	4 x 6	Nichicon UMT1H2R2MDD	Nichicon UMA1H2R2MDD
Motor B	C4	10	50	105	6.3 x 5	Nichicon UMT1H100MDD	
Motor B	C5	10	50	105	6.3 x 5	Nichicon UMT1H100MDD	
Motor B	C6	10	50	105	6.3 x 5	Nichicon UMT1H100MDD	
Motor B	C7	10	50	105	6.3 x 5	Nichicon UMT1H100MDD	
Motor B	C8	10	50	105	6.3 x 5	Nichicon UMT1H100MDD	
Motor B	C30	1	50	105	4 x 6	Nichicon UMT1H010MDD1TP	
Motor B	C31	22	10	105	5 x 5	Nichicon UMT1H010MDD1TP	
Motor B	C32	22	10	105	5 x 5	Nichicon UMT1H010MDD1TP	
Motor C	C2	2.2	50	105	4 x 6	Nichicon UMT1H2R2MDD	Nichicon UMA1H2R2MDD
Motor C	C3	2.2	50	105	4 x 6	Nichicon UMT1H2R2MDD	Nichicon UMA1H2R2MDD
Motor C	C4	4.7	50	105	5 x 5	Nichicon UMT1H2R2MDD	
Motor C	C5	10	35	105	5 X 6	Nichicon UMT1H2R2MDD	Panasonic ECE-A1VKS100
Motor C	C17	10	16	105	4 X 6	?	Nichicon UMA1C100MDD
* Substitute part lowers Temp Rating from 105C to 85C for better parts availability.							
* 105C Capacitor will have 2000 hours lifetime and 85C will have 1000 hours lifetime.							
<b>NOTE 1: All capacitors radial type and 20% tolerance.</b>							
<b>NOTE 2: It is OK to go up in volts if necessary for availability, but do not change capacitance.</b>							
<b>NOTE 3: It is OK to go lower in height if necessary for availability, but don't change other dimensions.</b>							
<b>NOTE 4: Schematics are based on Rev A boards</b>							