

SERVICE MANUAL

CD PLAYER WITH PITCH CONTROL

MODEL NO. CD-100 / CD-100E

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COMPACT DISC PLAYER SPECIFICATIONS

MAIN FEATURES

1. High Precision D/A converter.
2. Includes CD Drive Unit, Main Board, Headphone Board, Control Board, LCD Display, Pitch Control Clock Board and pitch control VR board.
3. Headphone jack and independent volume adjustment is available.
4. Pitch control function are available.
5. Optional Function or Accessories also available
 - Remote controller
 - CUE effect function

GENERAL SPECIFICATIONS

• Disc Loading	.....Front Loading Type
• Optical Pick-up	.....3 Beam Laser
• Wavelength	.....760 nm - 800 nm
• Error Correction System	.....CIRC
• Focus Error	.....Astigmatic Method
• Sampling Frequency	.....44.1 kHz
• D/A Converter	.....1 Chip Dual 16 Bit D/A
• Digital Filter	.....2 f _s Digital Filter
• Pitch Control	.....± 8%

ELECTRICAL SPECIFICATIONS

• Output Level (max. )	.....2.0 V _{rms}
• Frequency Response	.....20 Hz - 20 kHz ± 1dB
• Channel Balance	.....± 1 dB
• Total Harmonic Distortion	.....< 0.07 % (1 kHz)
• Channel Separation	.....> 80 dB (1kHz)
• S/N Ratio	.....> 90 dB
• Dynamic Range	.....> 90 dB (1kHz)
• Wow and Flutter	.....Below Measurable Limits
• Power Requirement	.....120V/60Hz or 220V/50Hz, switchable voltage (for exact voltage, please pay attention to the setting voltage of the voltage selector on the back-plate). .....120V/60Hz or 220-240V/50Hz non-switchable voltage (for exact voltage, please refer to the rating information on the back-plate).

ADJUSTMENT PROCEDURES

Reference Disc for adjustments : Sony YEDS - 18

Testing Equipment

- (1) 5020 Frequency Response Analyzer (NF Electronic Instrument)
- (2) Frequency Counter (Goldstar)
- (3) PM3365A Digital Storage oscilloscope (Philips)

Adjustment of Circuit Board

(A) Pitch Control Adjustment

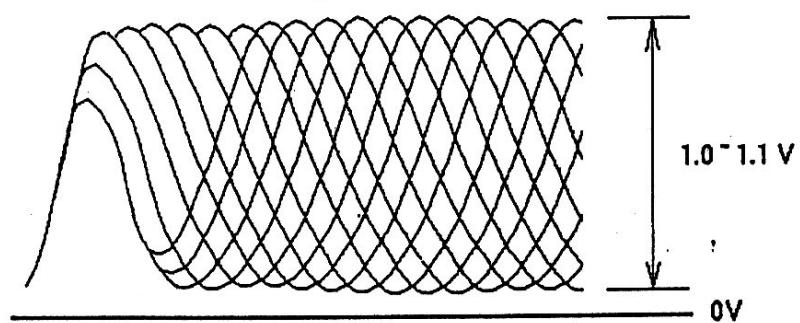
- Power on the CD player and let it under stop mode, move the pitch control knob to the most right hand side position (+8).
- Connect frequency counter to the left end of R7 on the pitch control clock board (CCA-051-01) and then set the semi-fixed VR1 (on CCA-051-01) to the center position and adjust the osc coil L1 (on CCA-051-01) to obtain a reading of 9.30 ± 0.02 MHz.
- Move the pitch control knob to the center position (0) and adjust the VR1 to fix the system clock at 8.46 ± 0.02 MHz.
- Keep the pitch control knob at the center position (0) and continue the following alignment steps.

(B) VCO Free Run Frequency Adjustment

- Connect frequency counter to TP6 and GND.
- Short the TP7 and TP8 under play mode.
- Adjust VR4 to make the VCO frequency to 4.3218MHz.

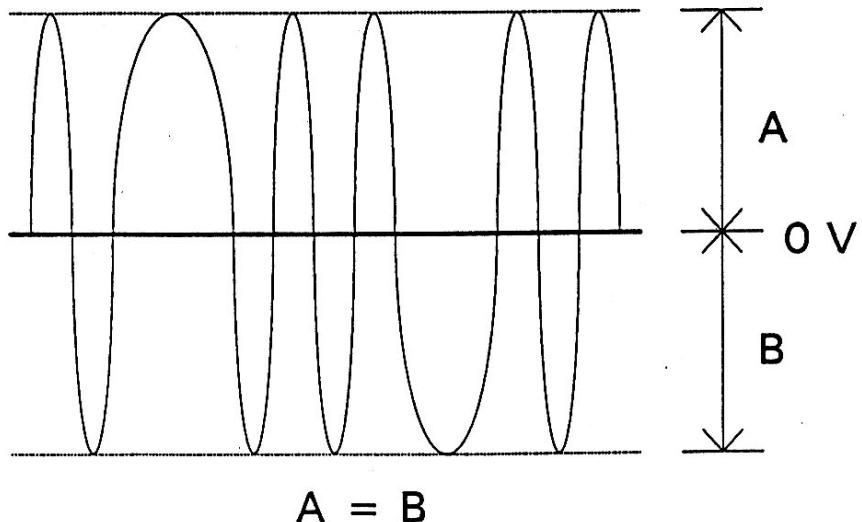
(C) Focus Adjustment

- Connect Jitter Meter between TP1 and GND, then play a CD disc.
- Adjust VR1 until Jitter Meter get the minimum point.
- Connect Oscilloscope as the same as the last step. Waveform will be read as diamond shape and voltage is about 1.1V as perfect (see the figure below).



(D) Tracking Adjustment (Adjust under Test Mode)

- Connect the test pin (pin #24 of CXP1011Q) to GND.
- Reset and start to change to Test Mode. Press STOP button, and press PLAY button. Press SKIP DOWN button and make it Tracking off.
- Connect Oscilloscope to TP2, then adjust VR5 to get symmetrical wave height ($A=B$).
- The result is shown as below :



(E) Focus Error Adjustment

- Set Servo Analyzer at 1.4KHz of frequency and 30 mV of voltage.
- Connect Servo Analyzer from TP4 to TP5 and play a CD disc.
- Adjust VR3 and make the loop-gain at 0 dB between CH1 and CH2.

(F) Tracking Error Gain Adjustment

- Set Servo Analyzer at 1.4KHz of frequency and 30 mV of voltage.
- Connect Servo Analyzer from TP2 to TP3 and play a CD disc.
- Adjust VR2 and make the loop-gain at 0 dB between CH1 and CH2.

AUDIO CHARACTERISTICS TEST PROCEDURES

Reference disc for adjustments : Sony YEDS - 18

Testing Equipments

- (1) 3346 CD Player Evaluating Filter x 2 (NF Electronic Instrument)
- (2) VP-7722A Panasonic Audio Analyzer

Equipments set-up

- The Audio output of the testing CD player are connected to the CD filter L & R inputs.
- The outputs from the filter are connected to the Audio Analyzer.
- Set the pitch control knob to the center position (0).

Procedure

(A) Check the Output Voltage

- Set the mode of the filter to ' THRU '.
- Then, the mode of Audio Analyzer is set to level.
- Select the track 2 of the test disc and run it under ' PLAY ' mode.
- The output voltage of the R & L channels are taken by pressing the respective buttons on the control panel.
- The result should be within the range of 1.8 ± 0.1 V.

(B) The Frequency Response

- The mode of the CD filter and audio analyzer are kept unchanged.
- Select the tracks 3, 4, 5 & 6 of the test disc and run it under ' PLAY ' mode.
- Check the output of the R & L channels.
- The acceptable frequency response is ± 1.0 dB tolerance to the level at 1 KHz in the range from 20 Hz to 20 KHz.

(C) Total Harmonic Distortion

- The mode of the filter is changed to ' DIST / CH-SP ' mode.
- Audio Analyzer is now set to ' DIST ' mode by pressing the suitable button on the control board.
- Set the unit of the audio analyzer to ' % ' mode.
- Select the tracks 2, 4 & 5 on the test disc and run them under ' PLAY ' mode.
- Check the % of each R & L channels.
- The display should not be greater than 0.08%.

(D) Signal to Noise Ratio

- Select the S/N mode on the filter.
- Select and play the track 2 of the test disc.
- The unit of the audio analyzer is set to dB mode.
- Press the S/N key on the control panel of the audio analyzer.
- Track 7 is now selected and played.
- Make sure the readings are greater than 90 dB.

(E) Dynamic Range

- Mode of the filter is changed to 'D - Range'.
- The mode of the audio analyzer is also set to 'DIST'.
- Run the track 17 of the test disc under 'PLAY' mode.
- If the value of the display result is 'A', the dynamic range should be calculated as $(|A| + 60)$ dB.

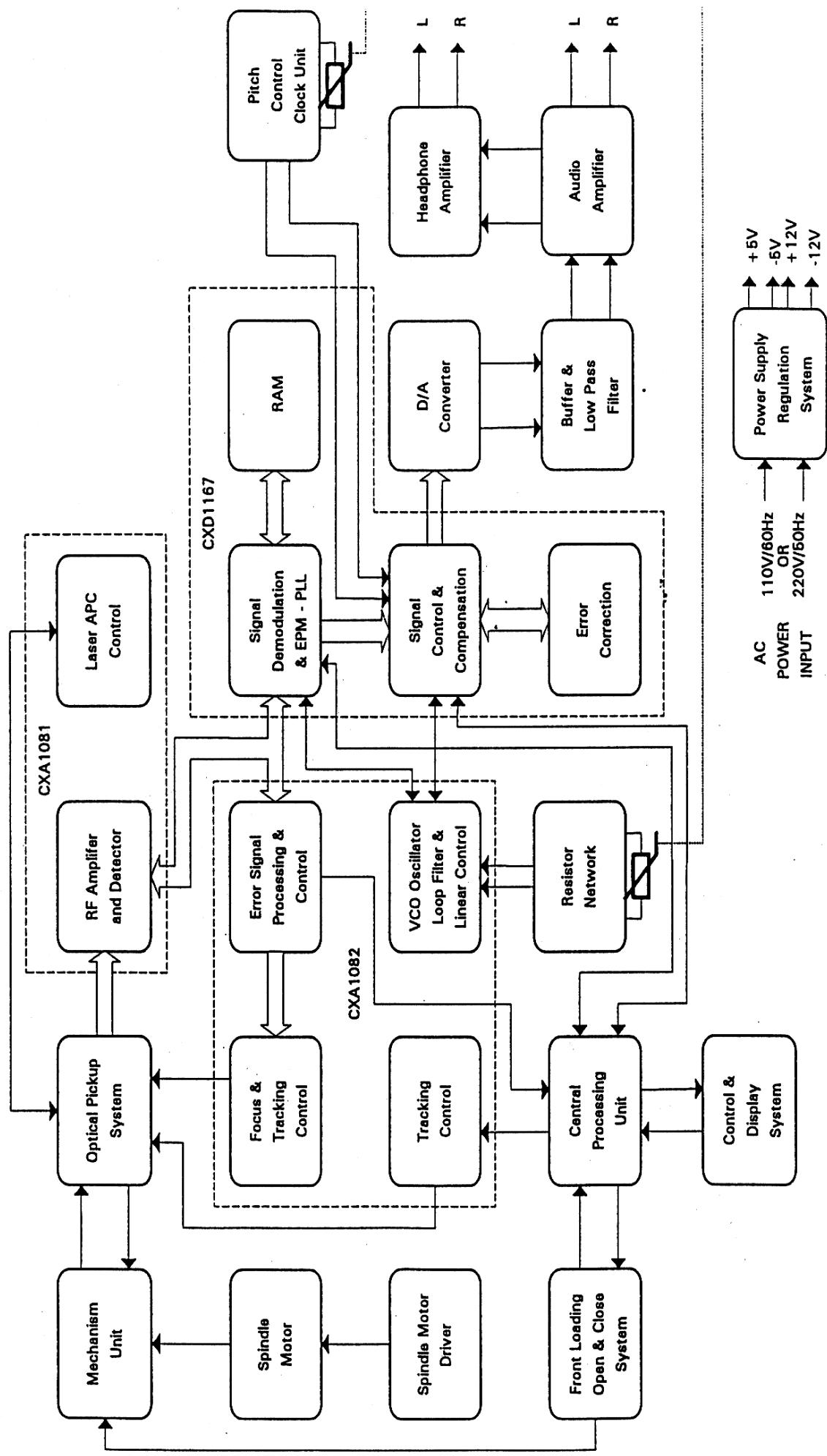
(F) Channel Separation

- Set the CD filter to mode 'CH-SP'.
- Mode of audio analyzer is changed to 'LEVEL'.
- Select the tracks 8, 9, 10 & 11 and run them under 'PLAY' mode.
- The measured results of L & R channels should be greater than 80 dB at 1 KHz and 70 dB at 10 KHz respectively.

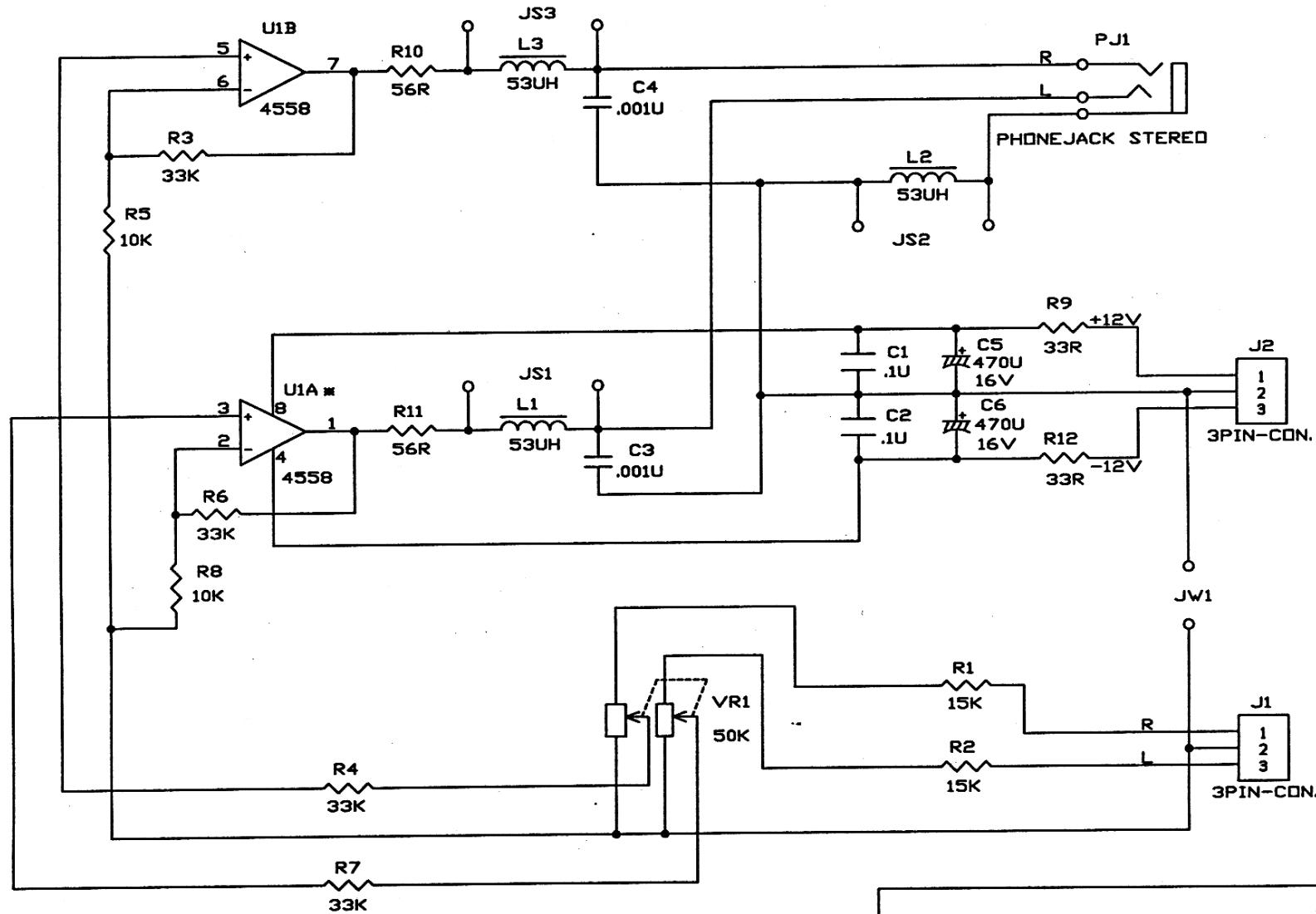
(G) De-emphasis

- Press the 'THRU' button of the CD filter.
- Play the track 2 of the test disc.
- Press the 'RELATIVE LEVEL' and make it 'ON'.
- Select the tracks 12 & 13 and measure the L & R channels value.
- The respective results should be -4.53 ± 0.5 dB and -9.048 ± 1.0 dB.

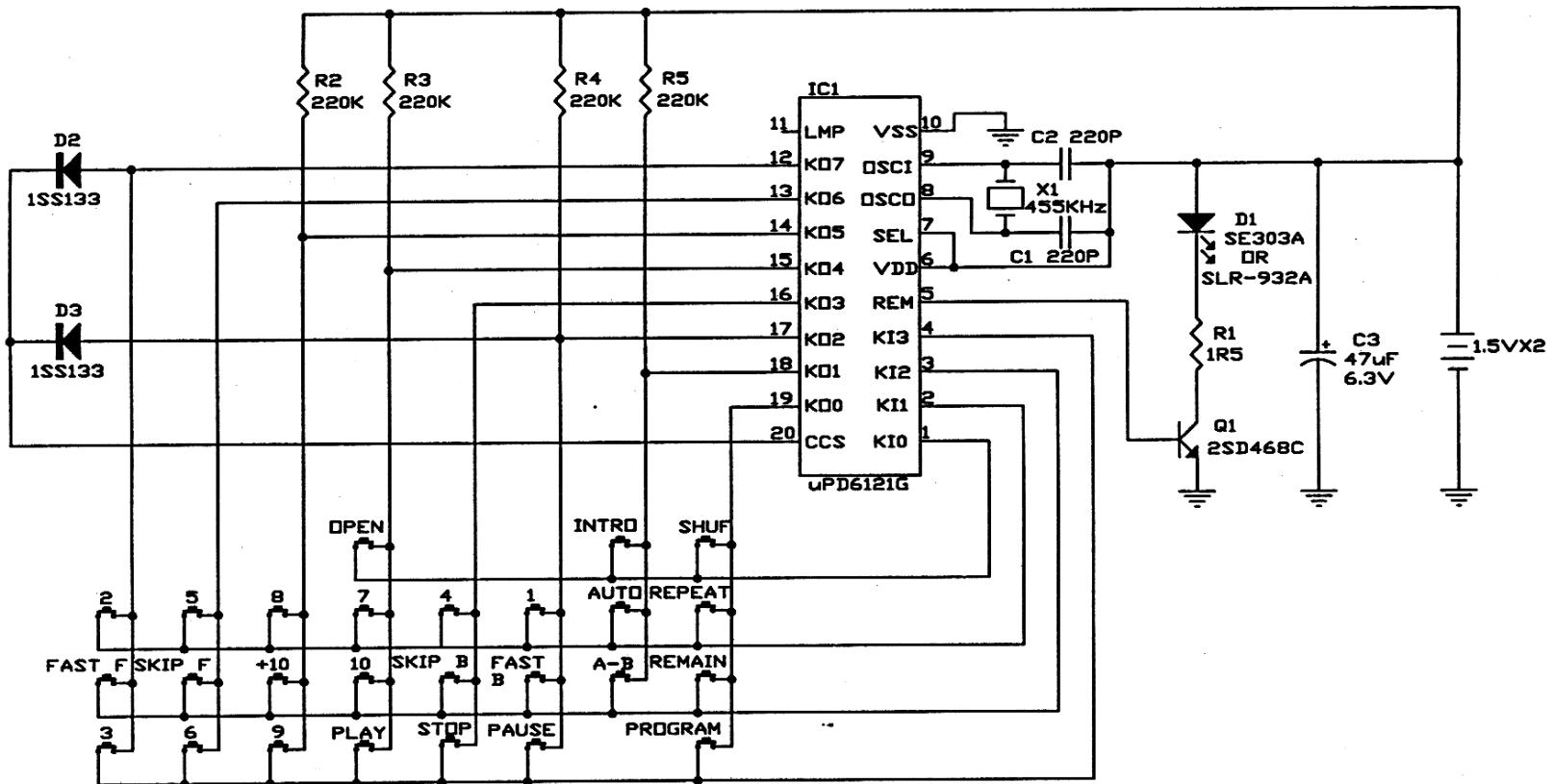
CD-100 PLAYER SYSTEM BLOCK DIAGRAM



SV0061A

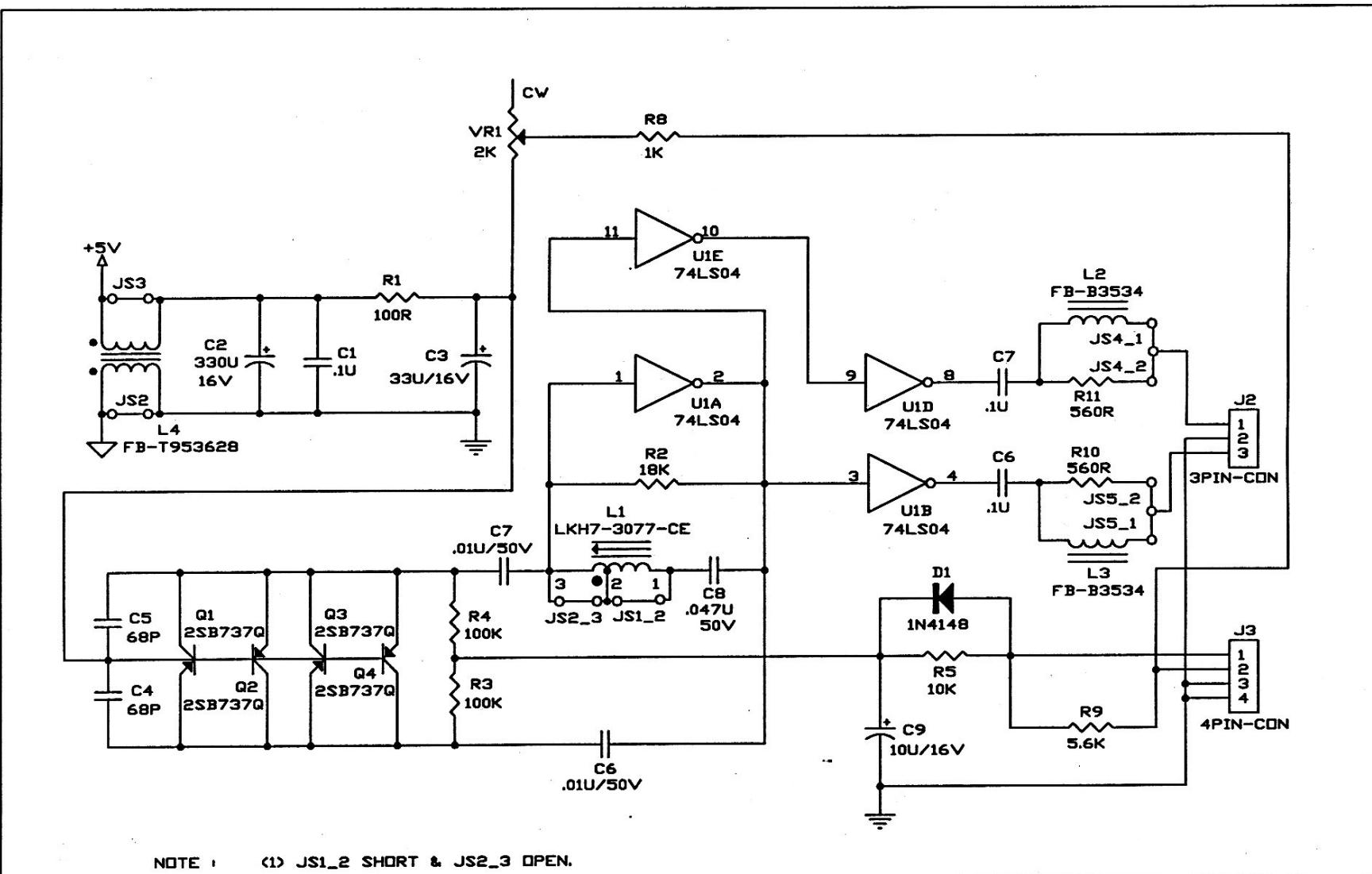


Title		HEADPHONE BOARD
Size A	Document Number CD00201A	RE A
Date: September 24, 1993	Sheet	1 of



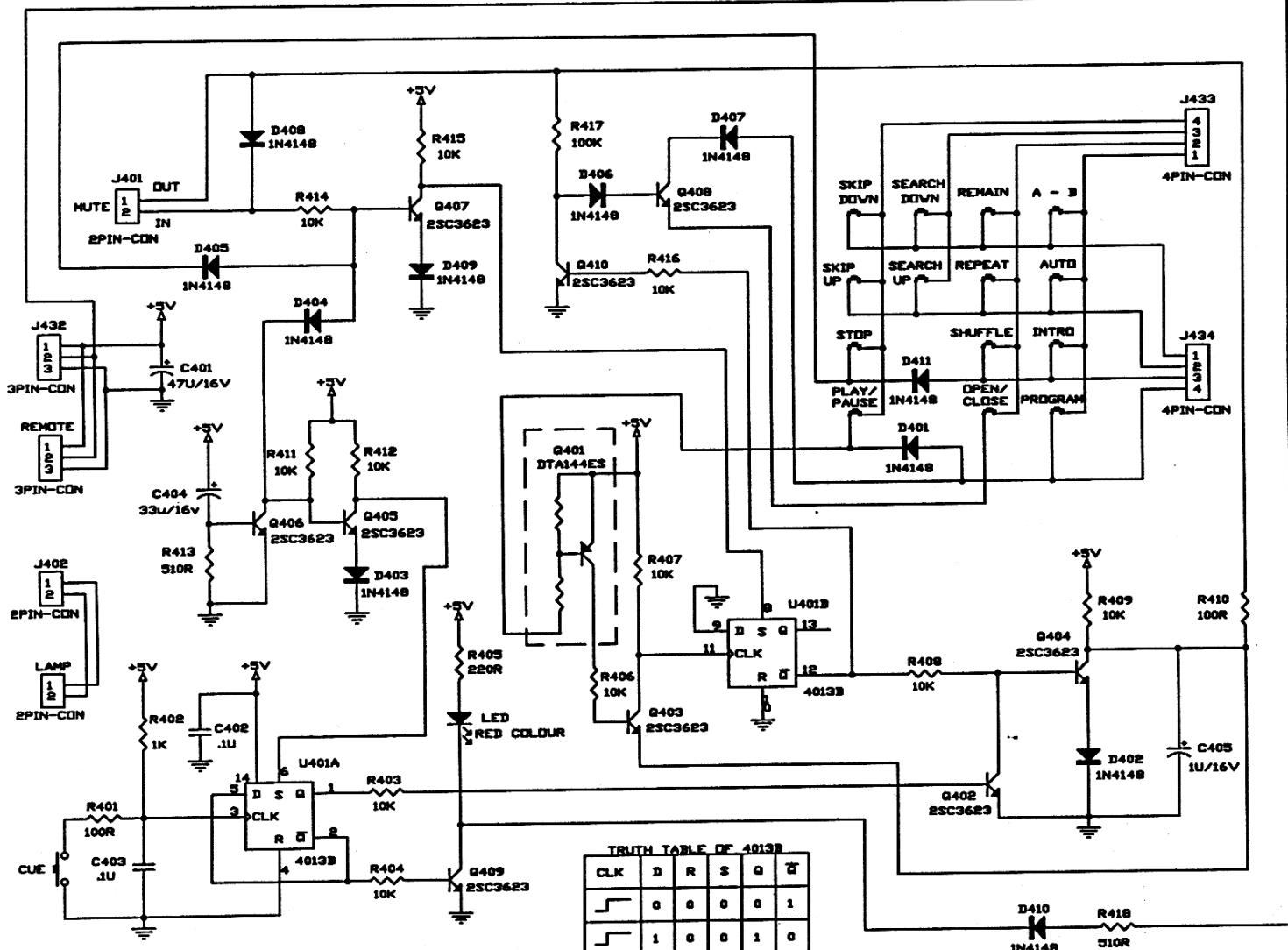
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REMOTE TRANSMITTER BOARD		
Size	Document Number	REV
A	CD00851A	A

Date: August 31, 1994 Sheet 1 of 1



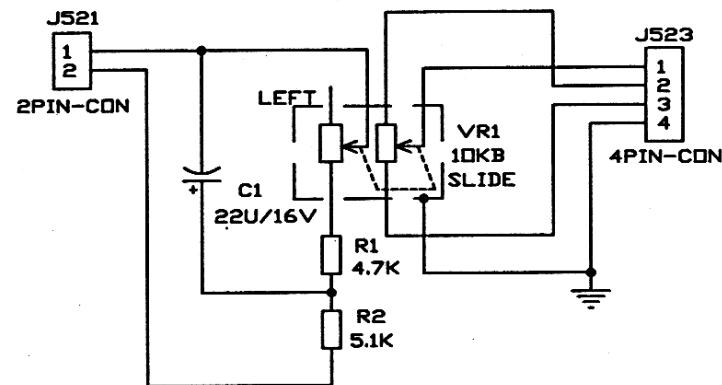
NOTE :
 (1) JS1_2 SHORT & JS2_3 OPEN.
 (2) JS2 & JS3 OPEN FOR FCC VERSION.
 (3) JS4_1 & JS5_1 SHORT,
 JS4_2 & JS5_2 OPEN FOR FCC VERSION.

Title		
Size	Document Number	REV
A	CD05102A	A
Date:	November 14, 1994	Sheet 1 of 1



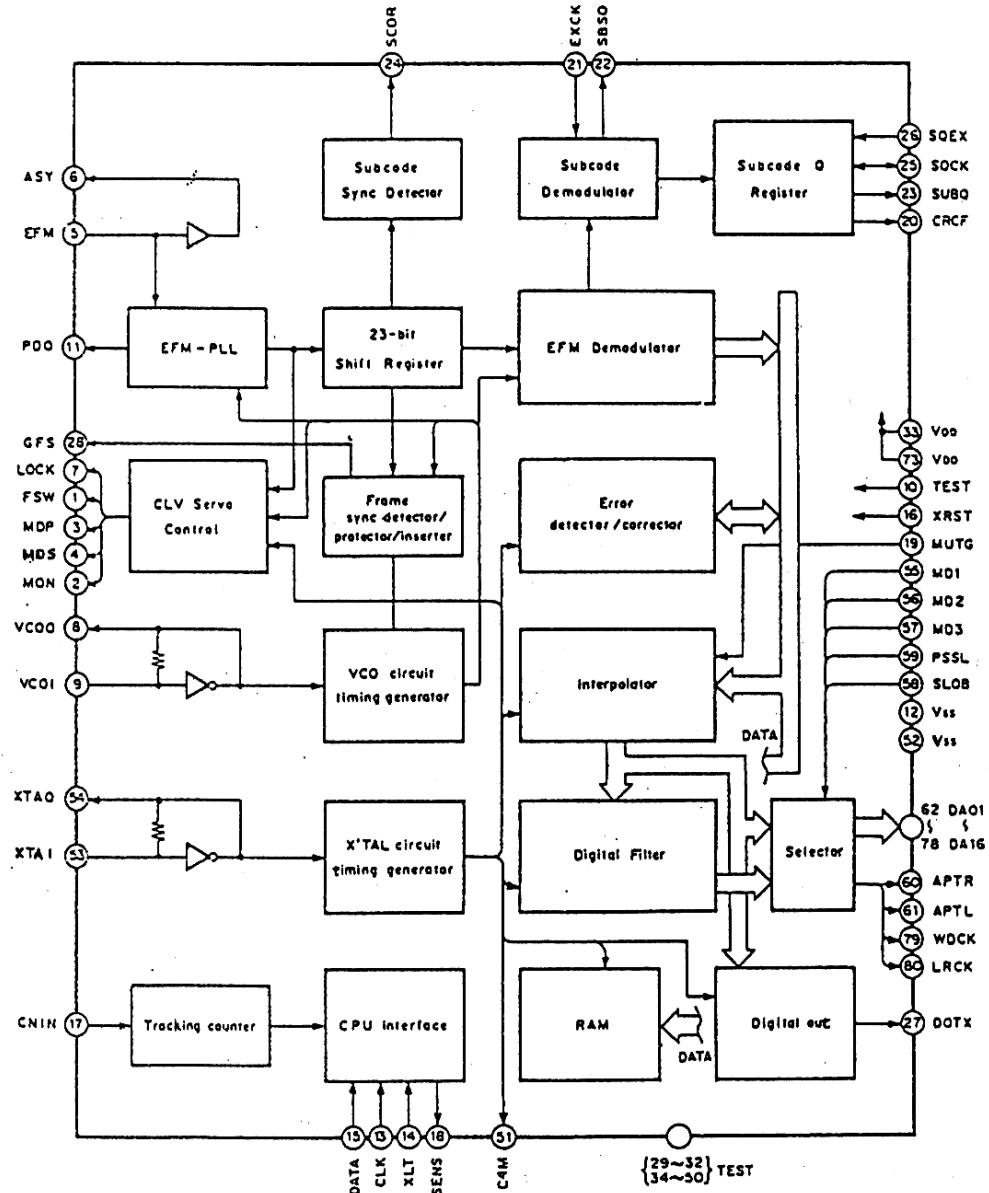
TRUTH TABLE OF 4013B						
CLK	D	R	s	a	b	
—	0	0	0	0	1	
—	1	0	0	1	0	
X	X	0	1	1	0	

Title		CONTROL BOARD (CUE FUNCTION BUILT-IN)	
Size	Document Number	RE	
B	CD00403B		
Date November 11, 1994 Sheet 1 of 1			



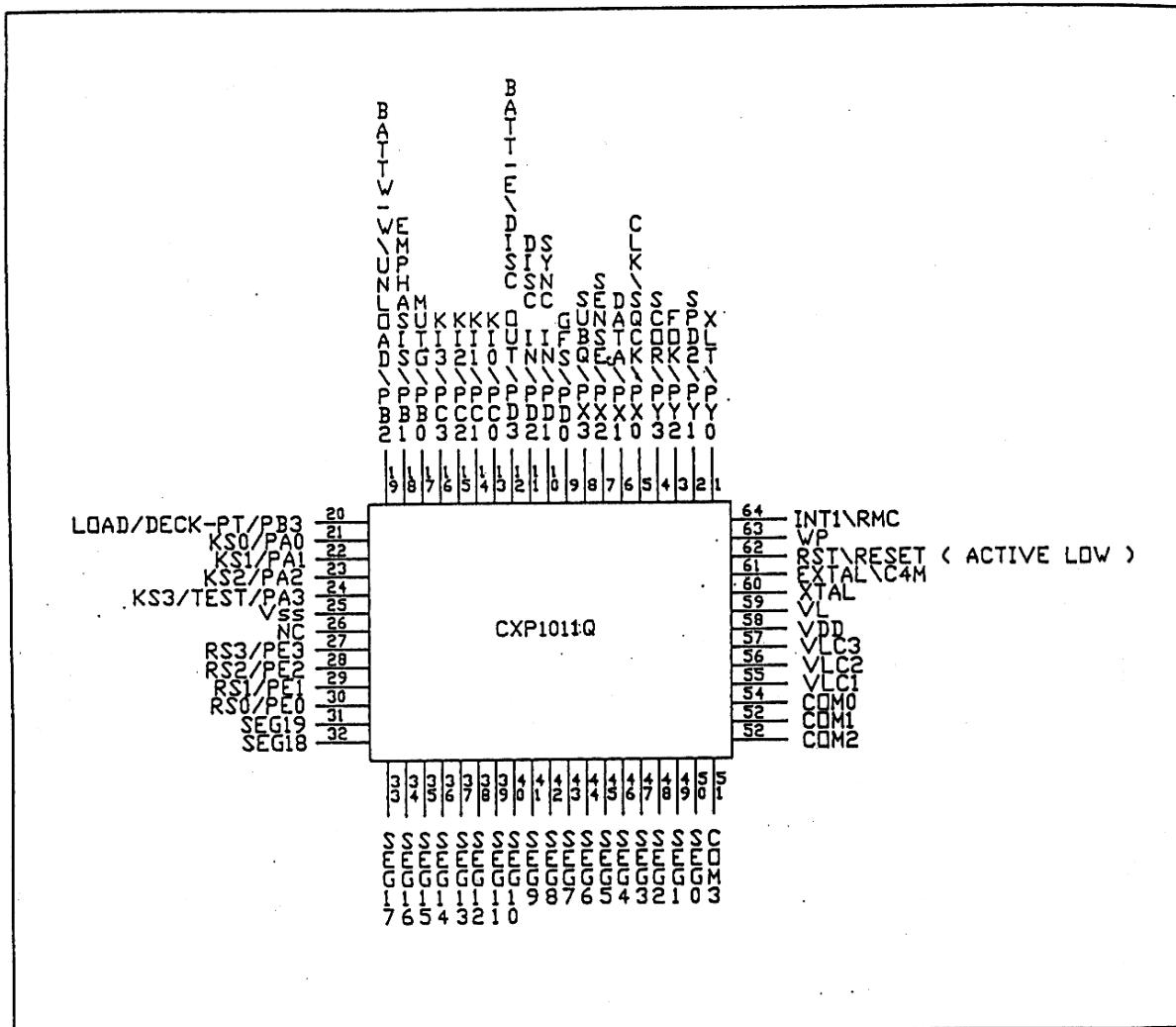
Title		
PITCH CONTROL SLIDE VR BOARD		
Size	Document Number	REV
A	CD05201A	A
Date:	June 27, 1994	Sheet 1 of 1

INTEGRATED CIRCUIT BLOCK DIAGRAM



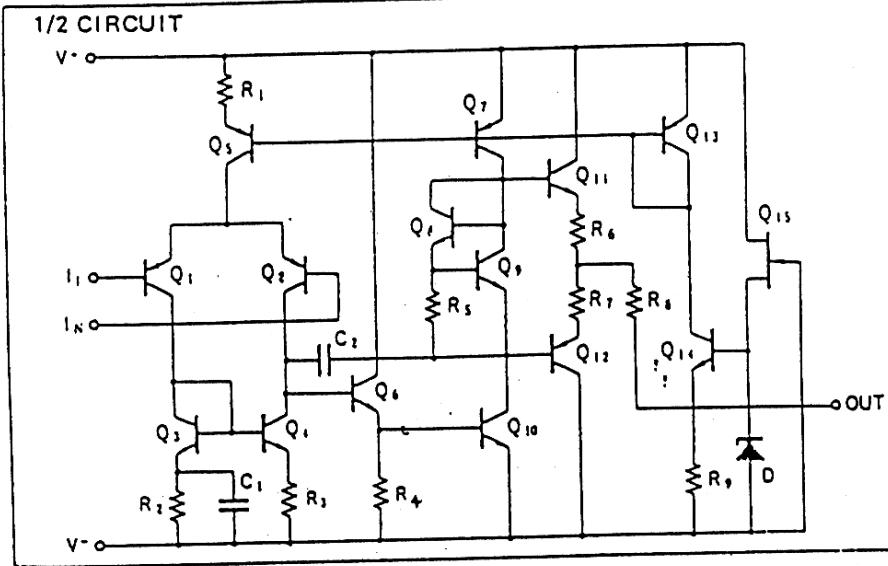
CXD1167Q/QZ

PIN DIAGRAM

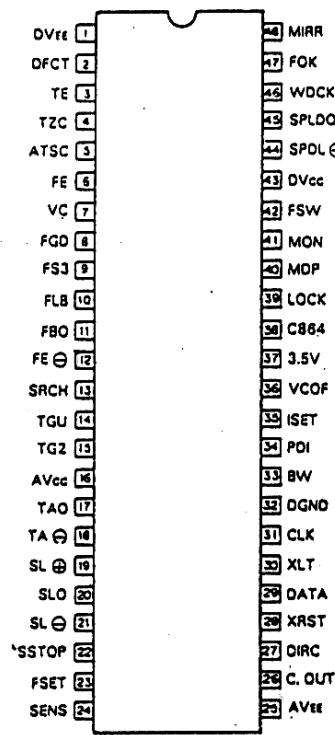


CXP1011Q

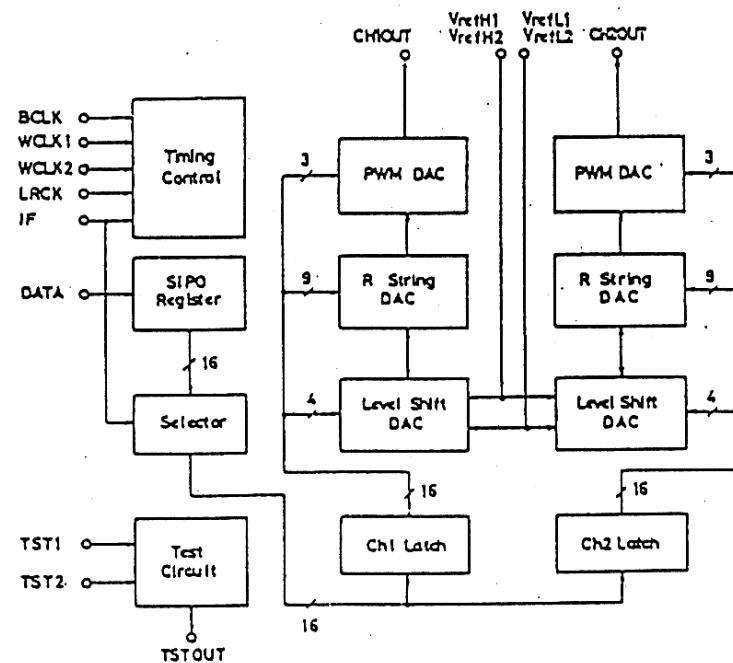
EQUIVALENT CIRCUIT



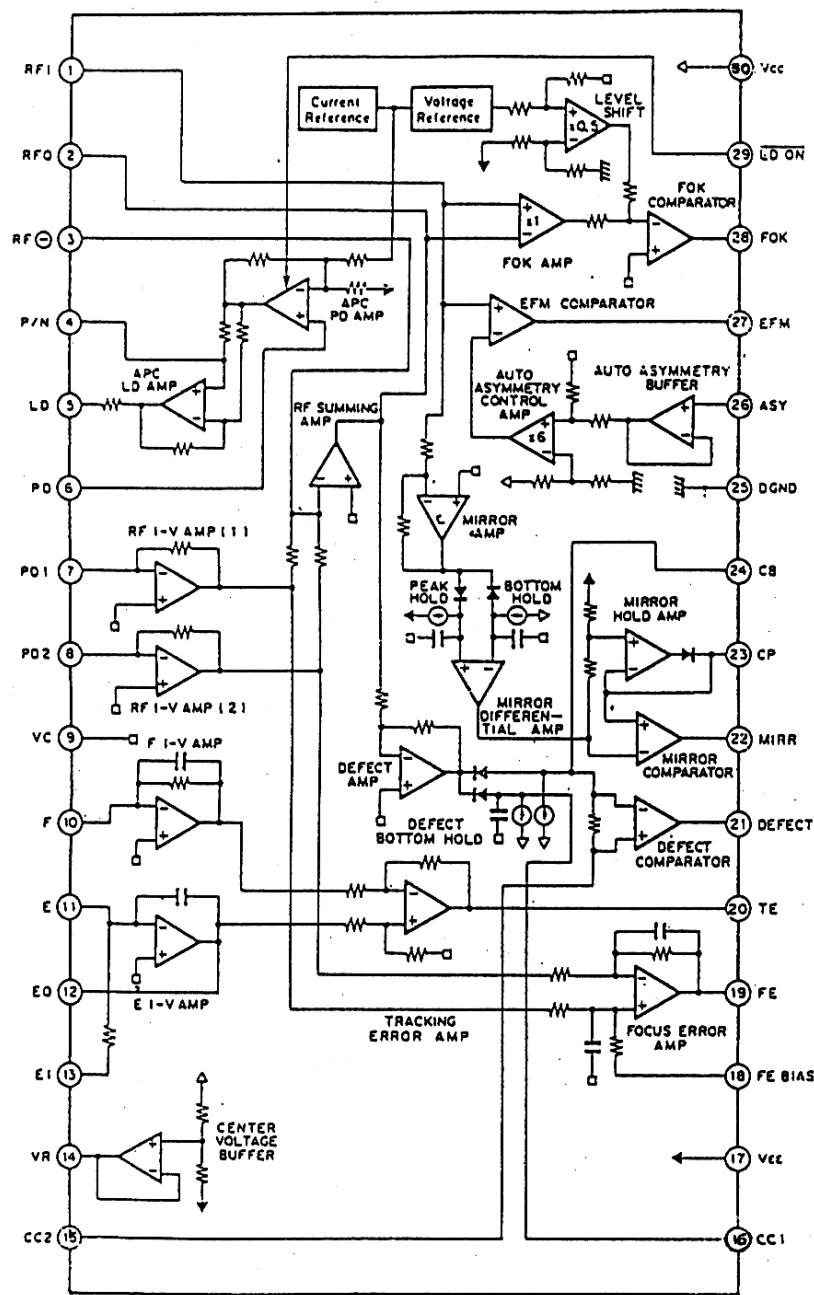
μ PC 4558



CXA1082BS

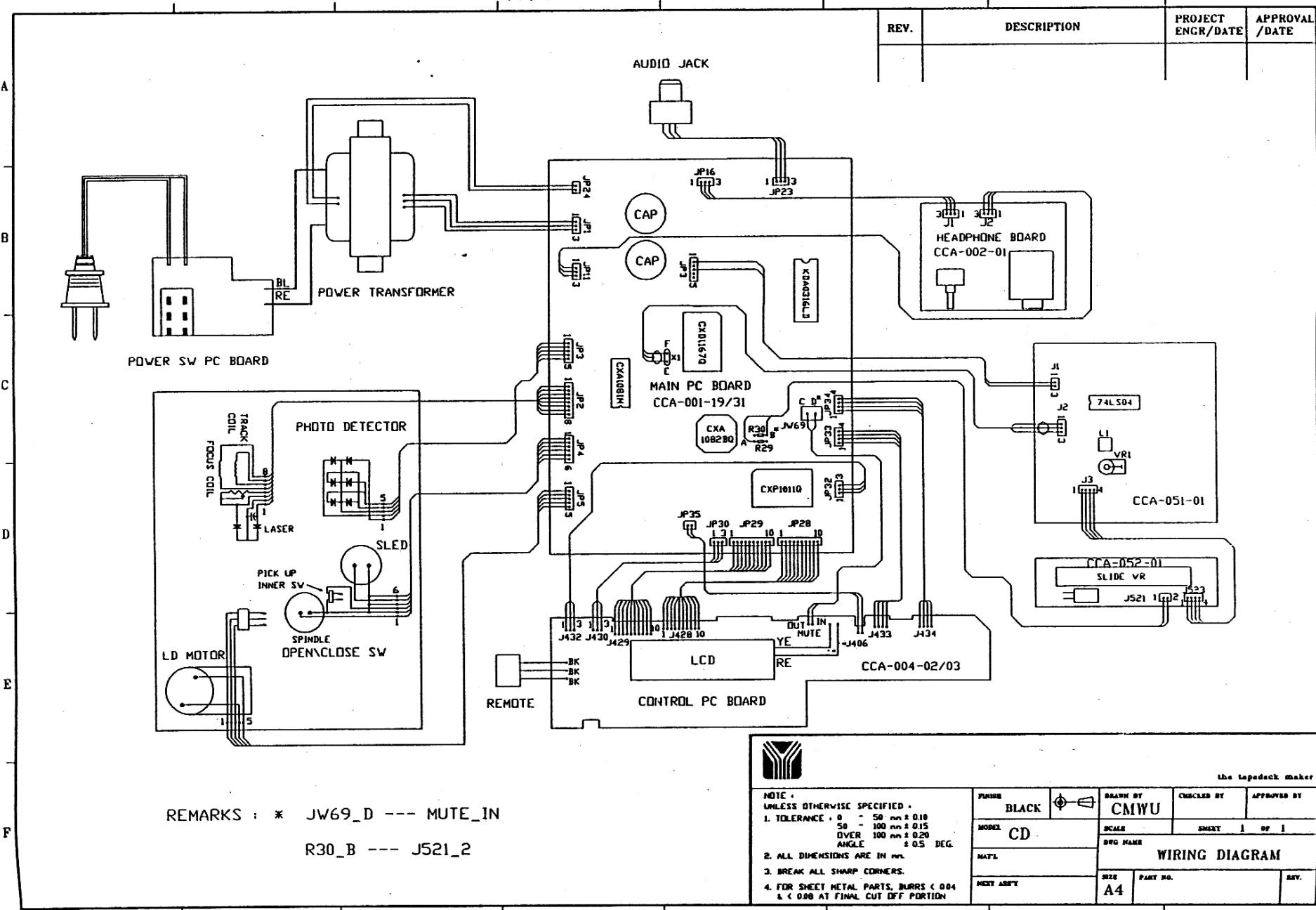


KDA0316

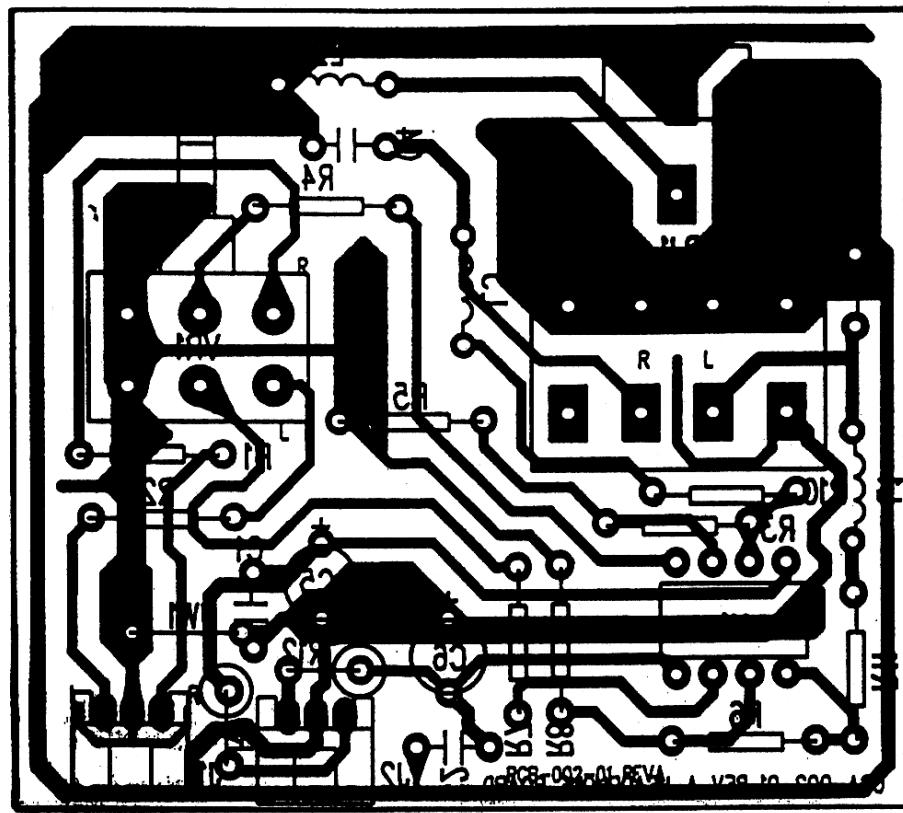


CXA1081S/M

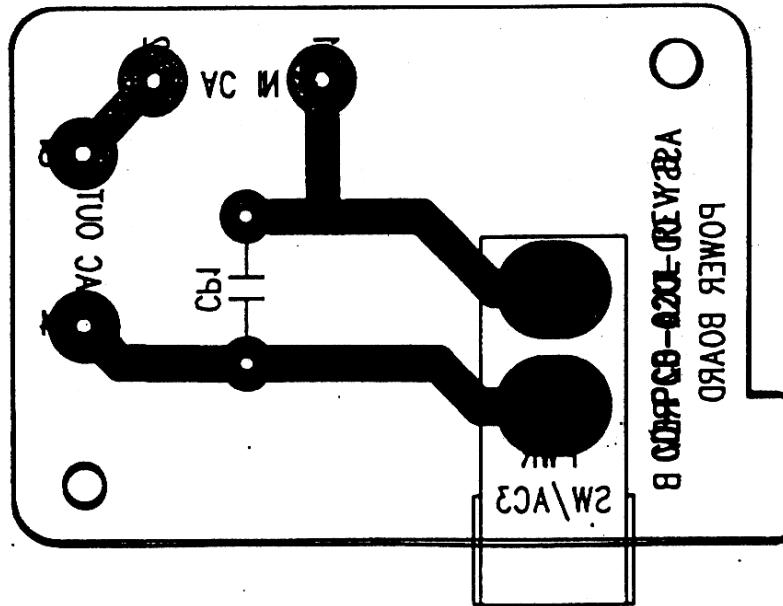
DO NOT SCALE DRAWING USE DIMENSION GIVEN



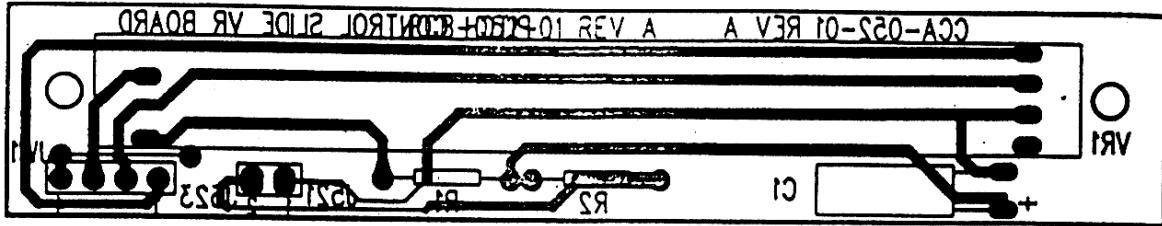
HEADPHONE BOARD (BOTTOM VIEW)



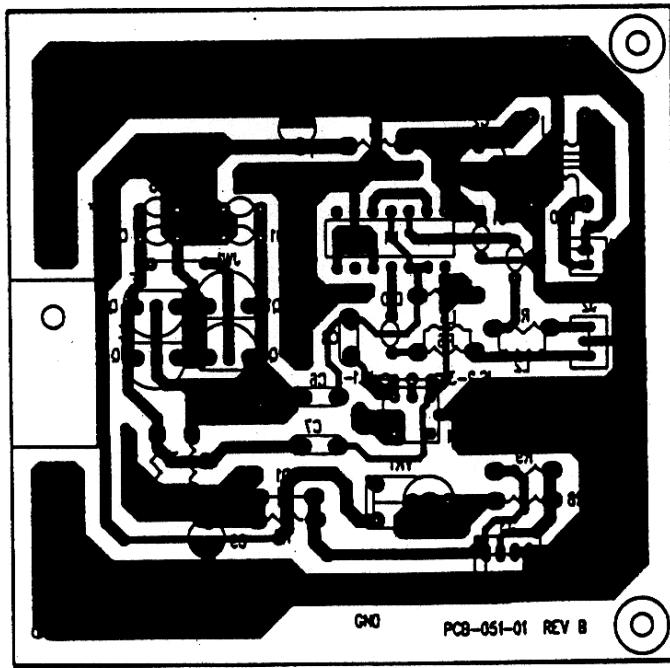
POWER BOARD (BOTTOM VIEW)



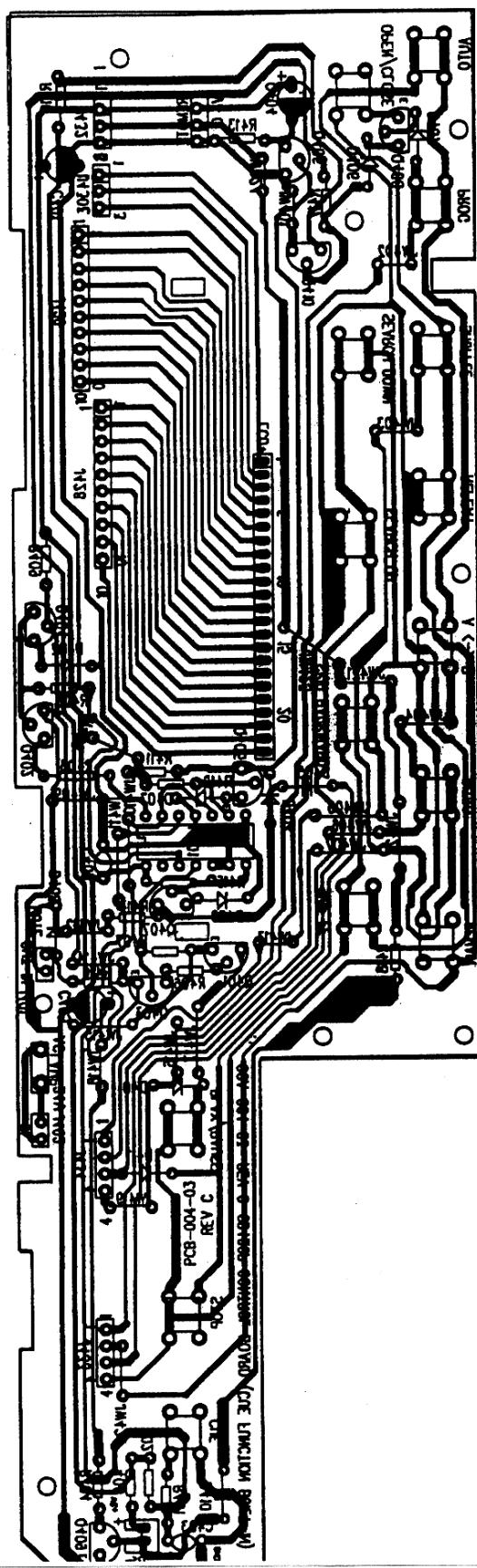
PITCH CONTROL SLIDE VR BOARD



PITCH CONTROL CLOCK BOARD

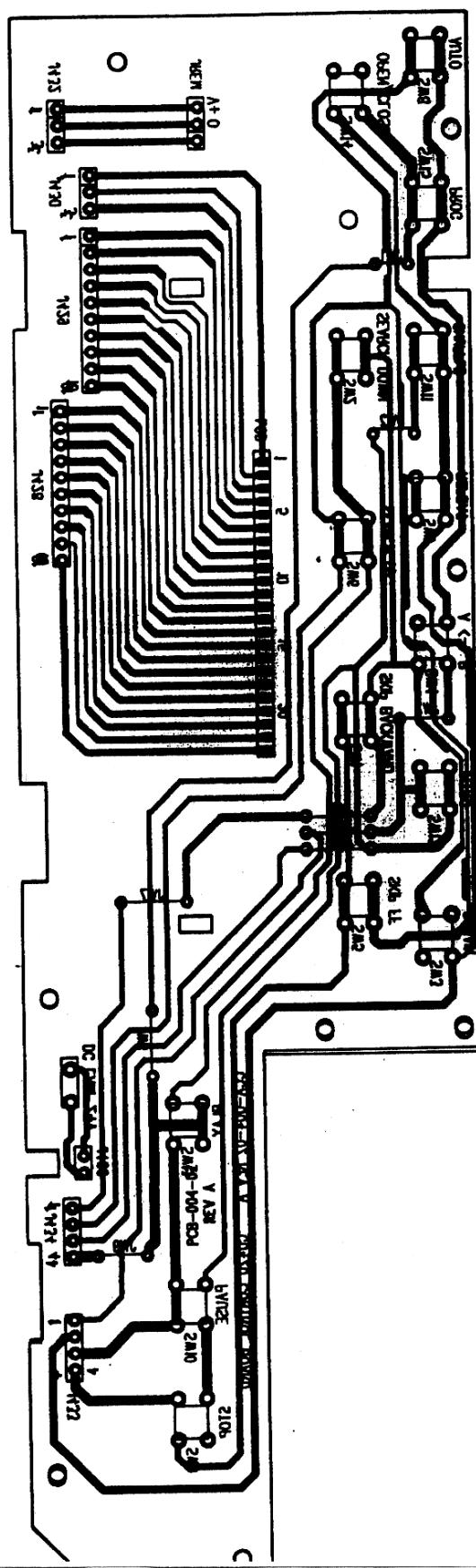


CONTROL BOARD FOR PITCH CONTROL AND CUE AVAILABLE (BOTTEM VIEW)

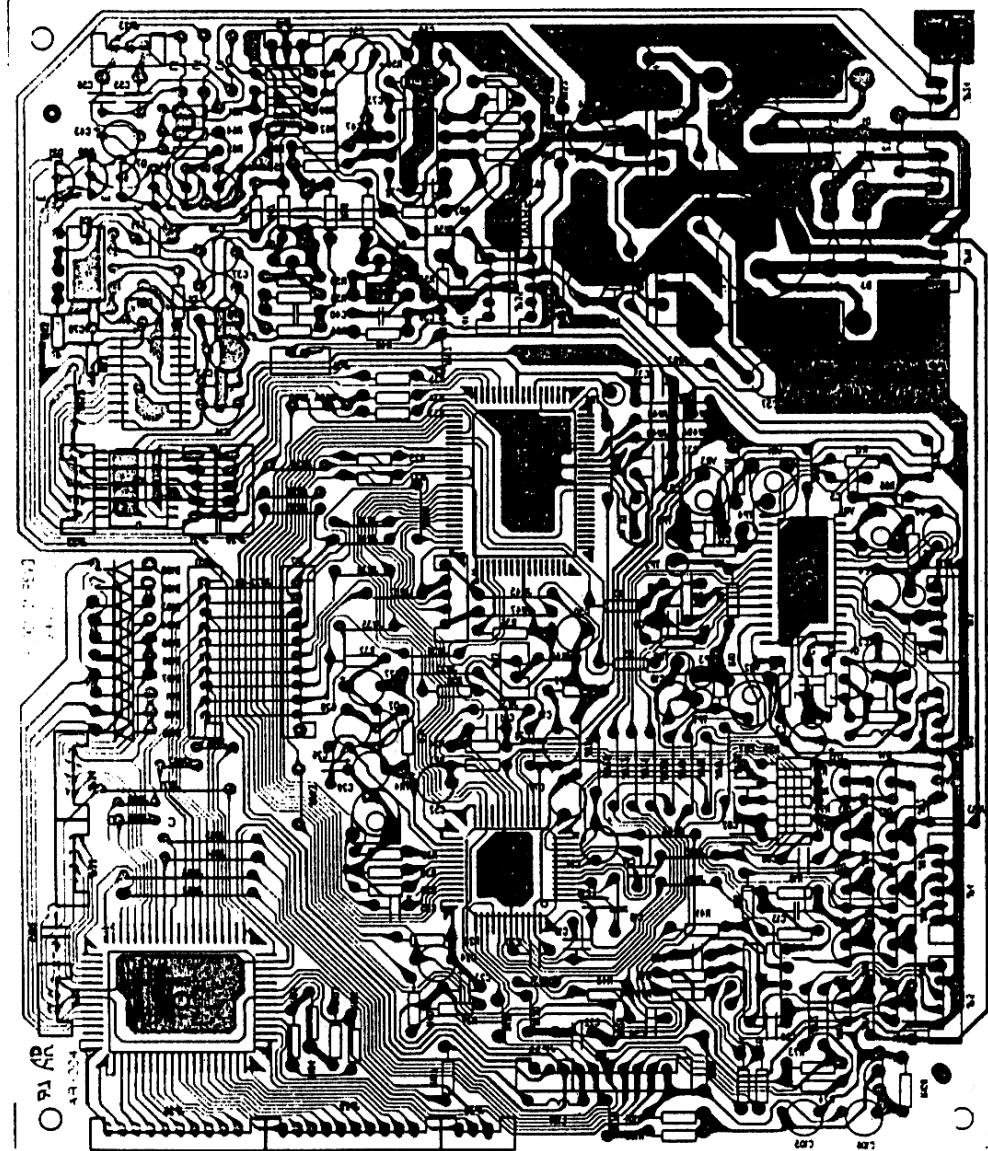


CONTROL BOARD FOR PITCH CONTROL

AVAILABLE (BOTTEM VIEW)



MAIN CIRCUIT BOARD (BOTTOM VIEW)



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