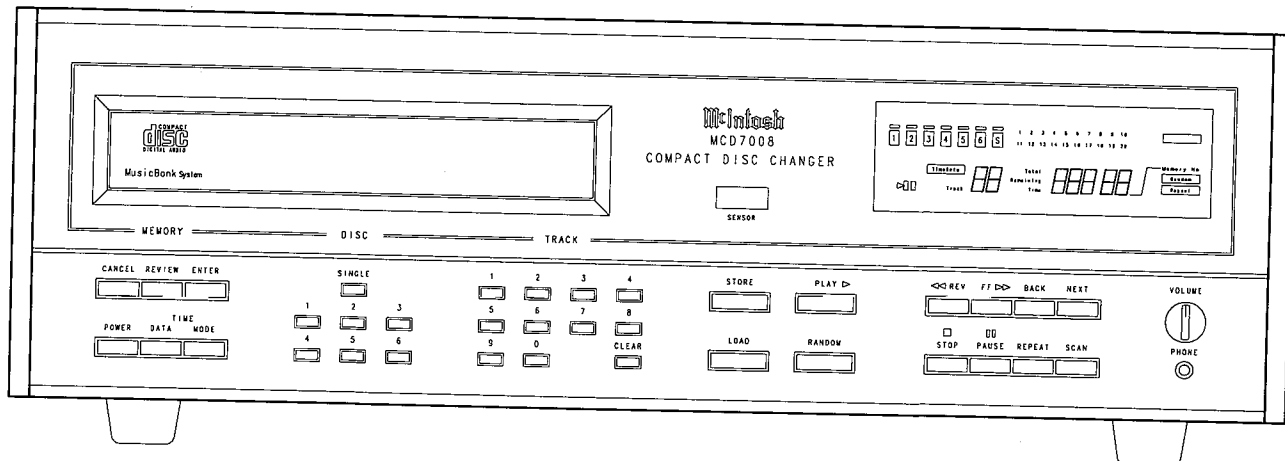


# MCD 7008

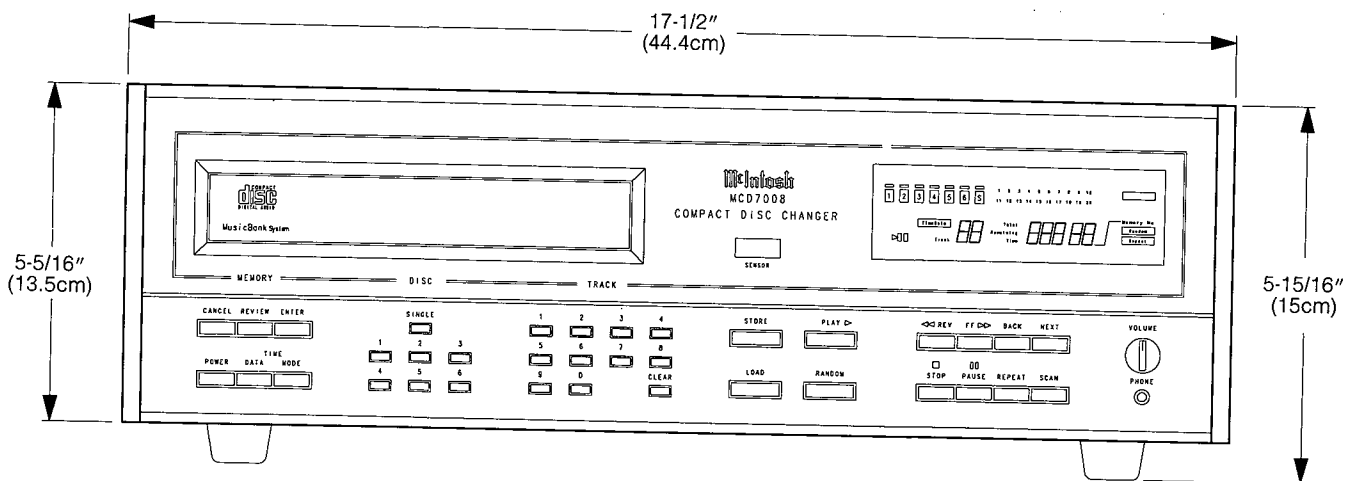
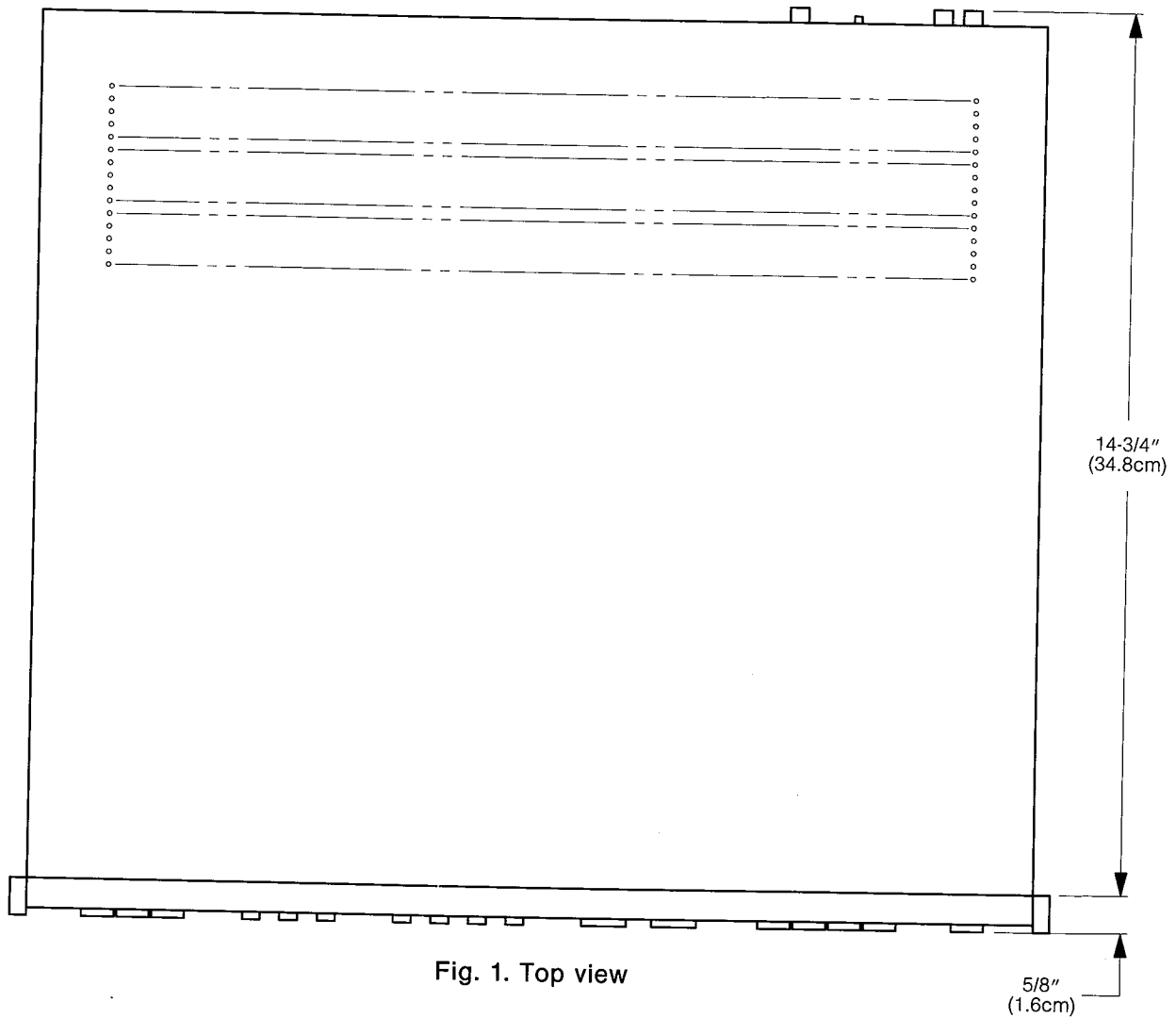
## COMPACT DISC CHANGER



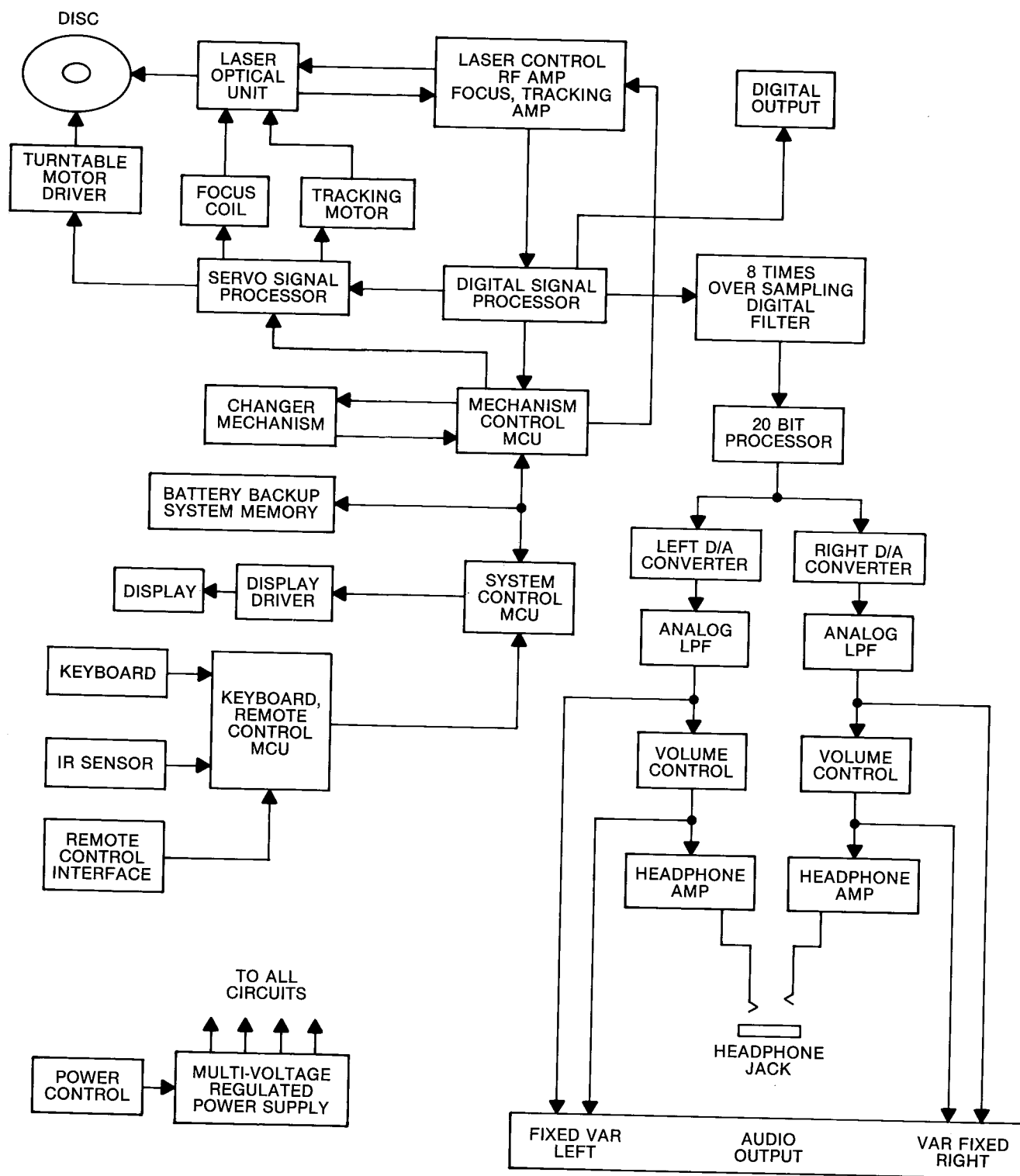
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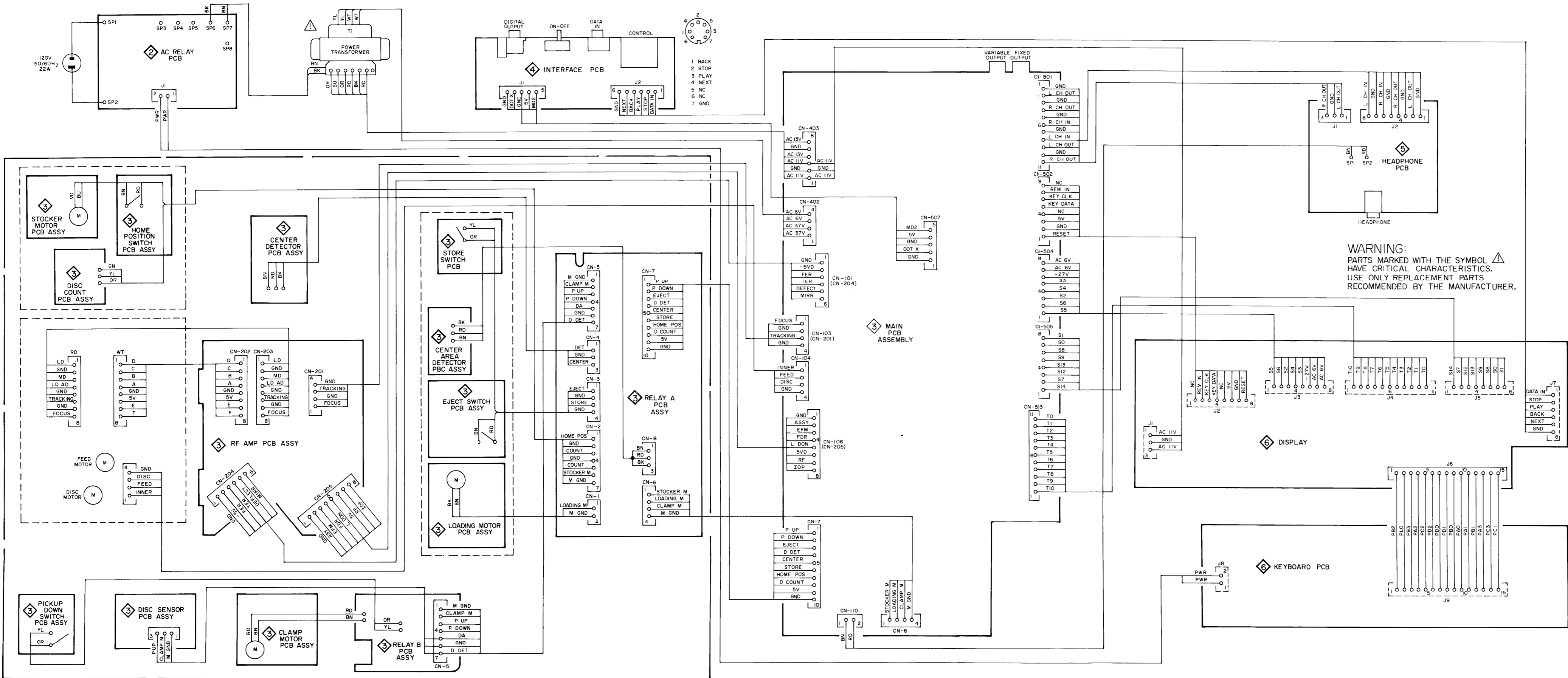
# Mechanical Views



# Block Diagram

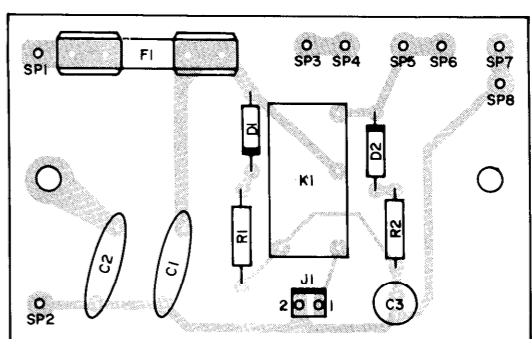
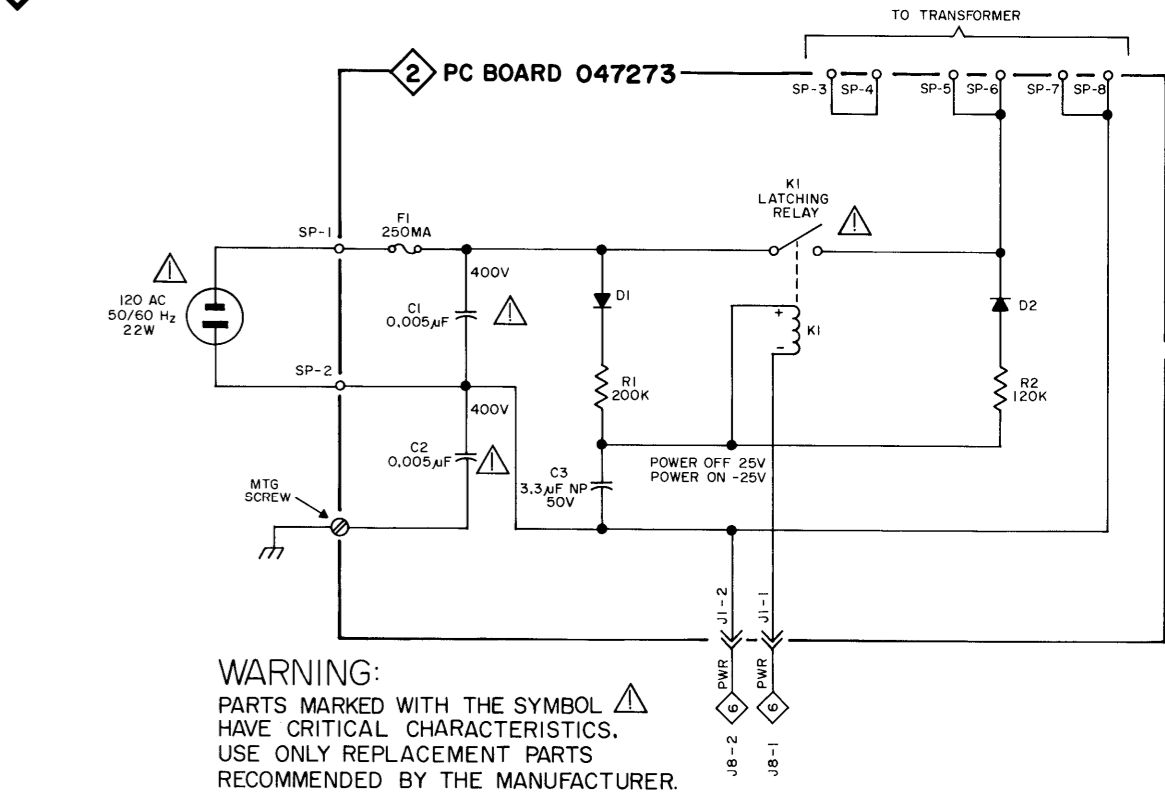


# Interconnection Diagram 1



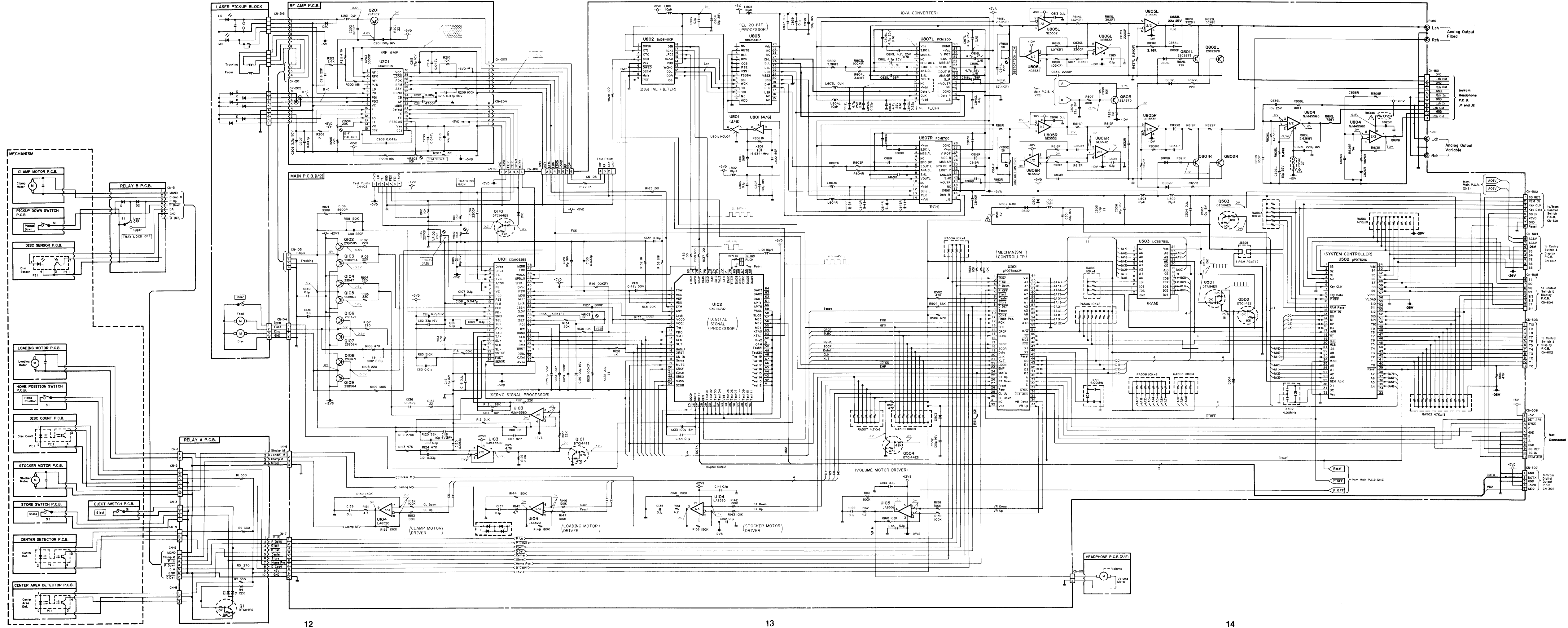
FRONT PANEL and TRIM PARTS LIST		INTERCONNECTION PARTS LIST	
Part	Description	Symbol	Part Description
047285	Front Panel, Glass		
018411	Front Panel, Top Extrusion		
018414	Front Panel, Bottom Extrusion		
018232	Front Panel, End Cap		
047286	Front Panel, Drawer Front		
310217	Volume Knob		
017482	Pushbutton, Power, Red		
017483	Pushbutton, Function (Small)		
017486	Pushbutton, Function (Large)		
107487	Pushbutton, Function (Keypad/Single)		
TRANSFORMERS		T1	320032 Power

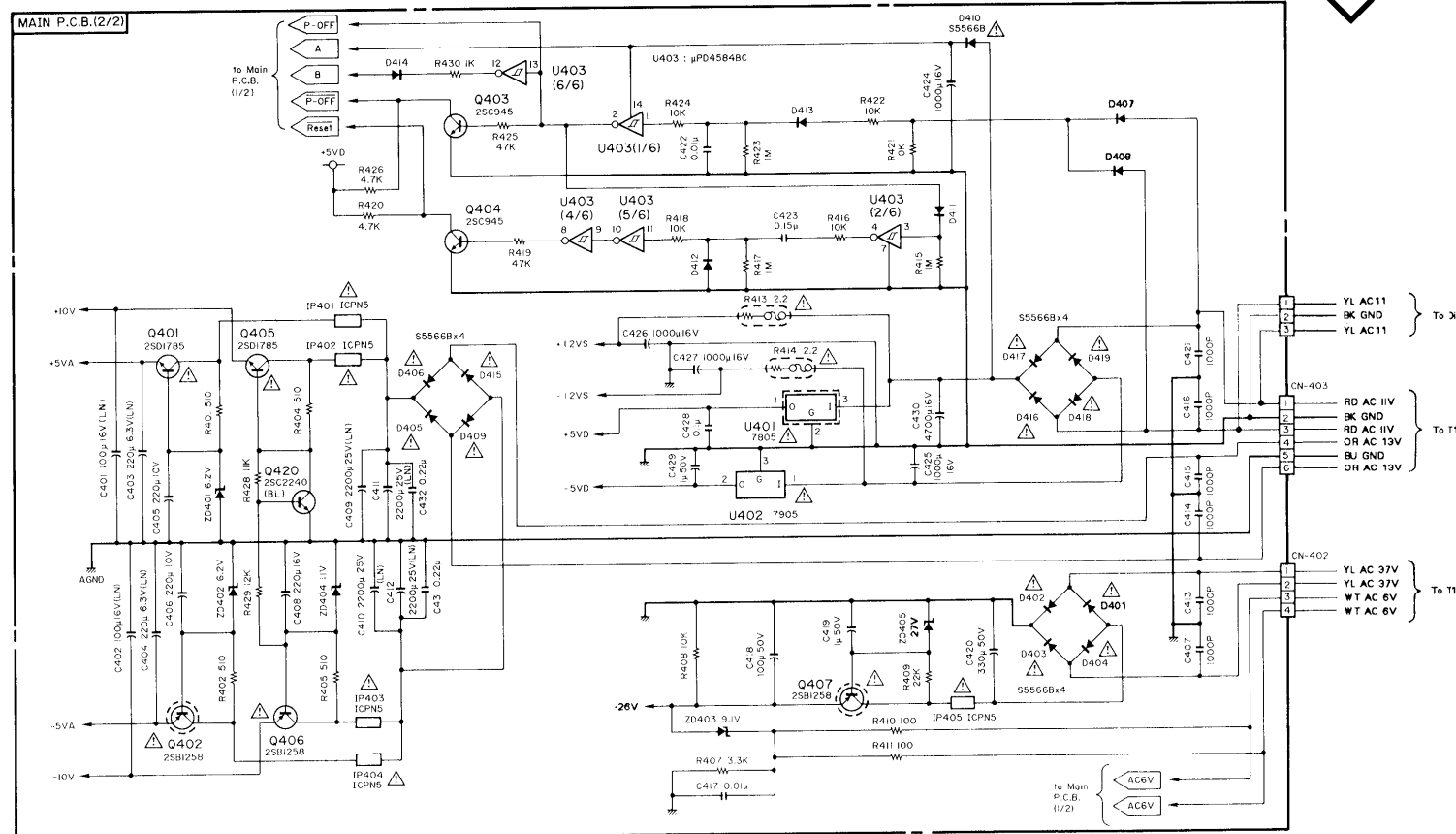
## 2 AC Relay



AC RELAY PARTS LIST		
Symbol	Part	Description
DIODES		
D1,D2	070131	RECT, 400V, 1A, 1N4004
FUSES		
F1	089059	Fuse, SB, .25A, 250V
RELAYS		
K1	087045	SPST, 12VDC, Latching

AC RELAY PCB 047273

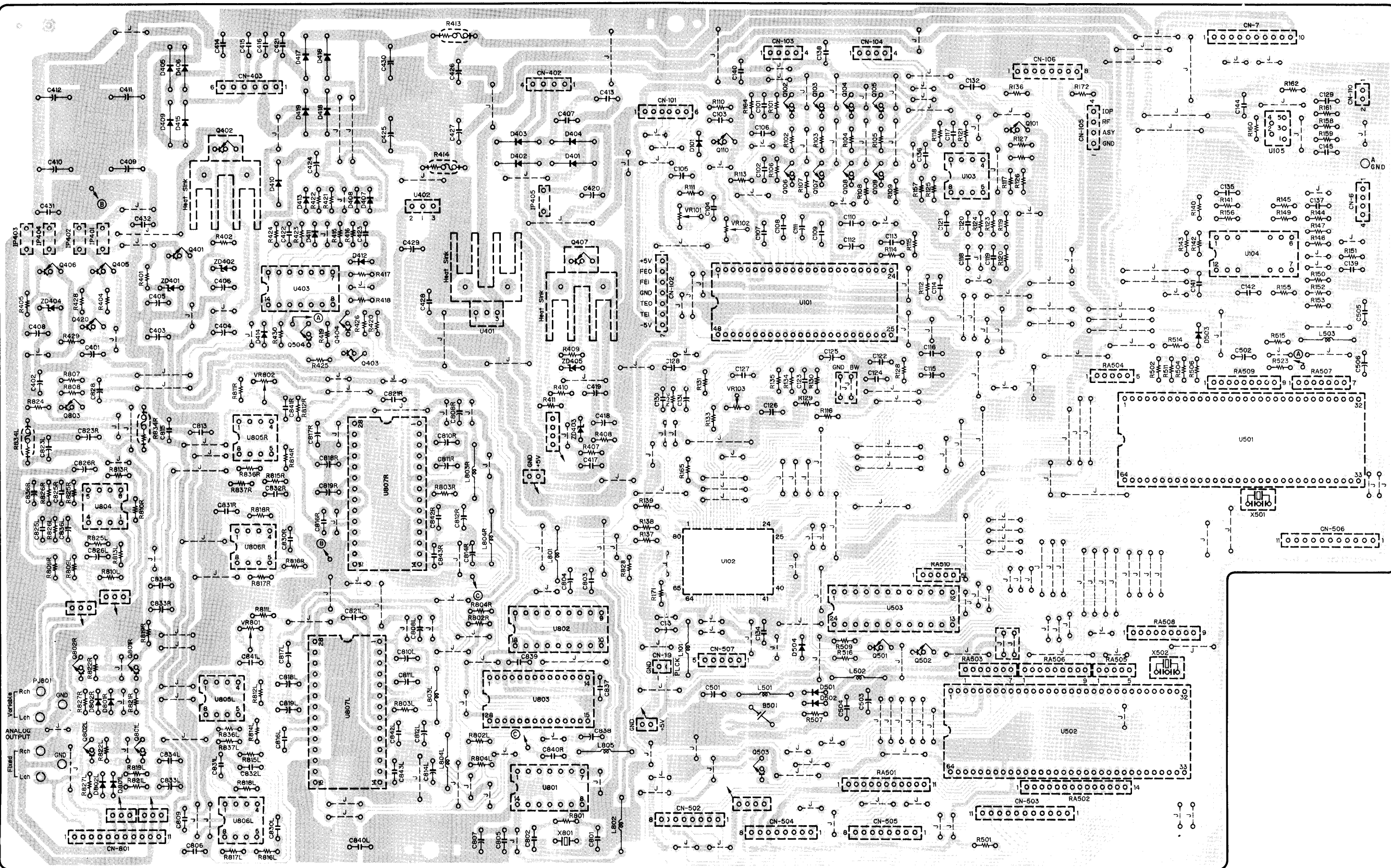




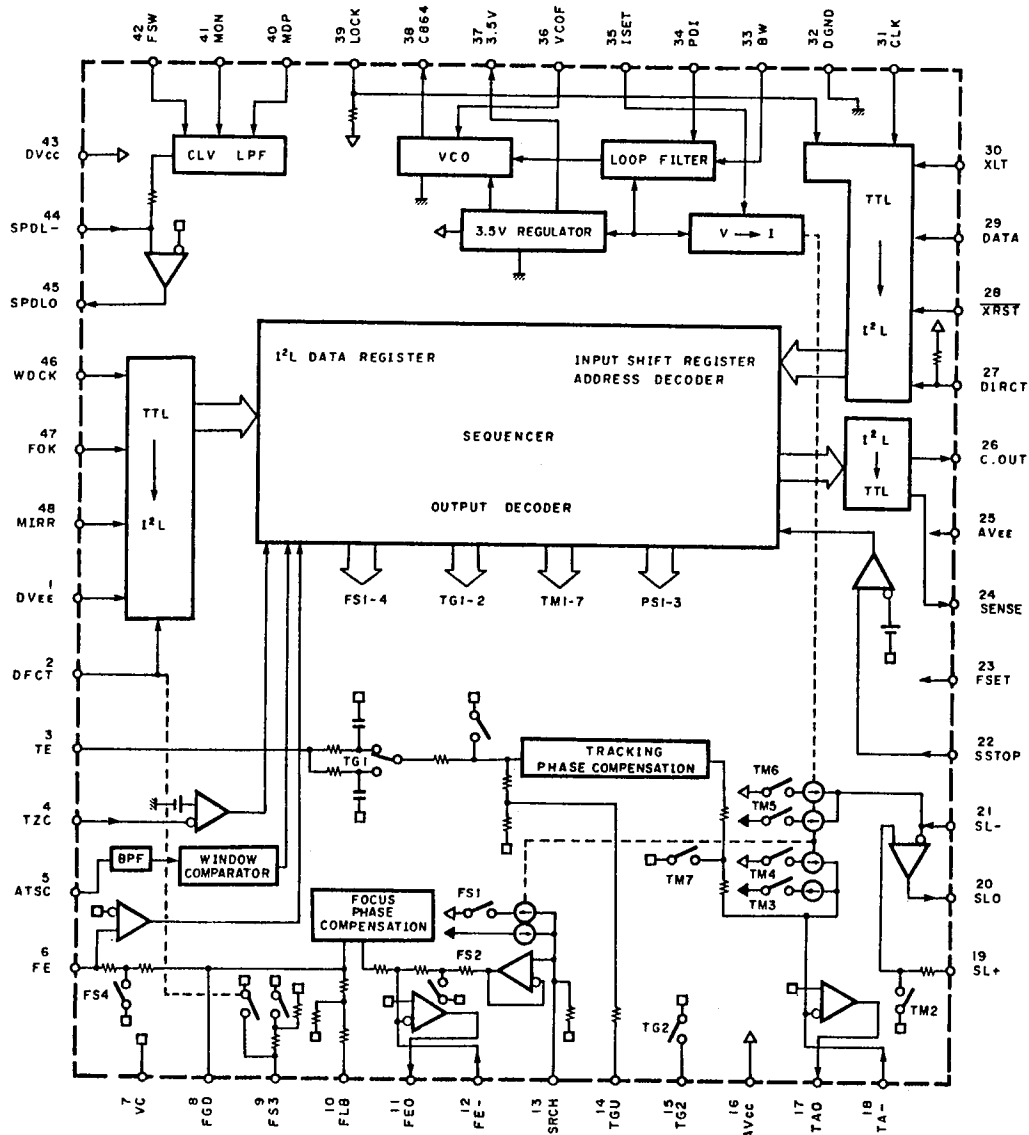
# MAIN PCB PARTS LIST

Symbol	Part	Description	Symbol	Part	Description
<b>DIODES</b>					
D101	310236	SiD 1SS176	U802	310231	IC SM5840CP
D401-D406	310237	SiD S5566B	U803	310232	IC MB623403
D407, D408	310236	SiD 1SS176	U804	310233	IC NJM4556D
D409, D410	310237	SiD S5566B	U805L, U805R	310234	IC NE5532N
D411-D414	310236	SiD 1SS176	U806L, U806R	310234	IC NE5532N
D415-D419	310237	SiD S5566B	U807L, U807R	310235	IC PCM1700P
D501-D504	310236	SiD 1SS176	<b>TRANSISTOR</b>		
D801L, D801R	310236	SiD 1SS176	Q101	310243	TR DTC144ES
D802L, D802R	310236	SiD 1SS176	Q102	310244	TR 2SD1585
<b>ZENER DIODES</b>					
ZD401, ZD402	310238	ZD 6.2V B2	Q103	310245	TR 2SB1094
ZD403	310239	ZD 9.1V B2	Q104	310246	TR 2SD471
ZD404	310240	ZD 11V B2	Q105	310247	TR 2SB564
ZD405	310241	ZD 30V B2	Q106	310246	TR 2SD471
<b>FUSES</b>					
IP401-IP405	310242	IC PROTECTOR ICP-N5	Q107	310247	TR 2SB564
<b>INTEGRATED CIRCUITS</b>					
U101	310219	IC CXA1082BS	Q108	310246	TR 2SD471
U102	310220	IC CXD1167QZ	Q109	310247	TR 2SB564
U103	310221	IC NJM4558D	Q110	310243	TR DTC144ES
U104	310222	IC LA6520	Q401	310248	TR 2SD1785
U105	310223	IC LA6521-MA	Q402	310249	TR 2SB1258
U401	310224	IC NJM7805FA	Q403, Q404	310250	TR 2SC945
U402	310225	IC NJM7905FA	Q405	310248	TR 2SD1785
U403	310226	IC TC4584BP	Q406, Q407	310249	TR 2SB1258
U501	310227	IC UPD75116CW	Q420	310251	TR 2SC2240 (BL)
U502	310228	IC UPD75216ACW	Q501	310252	TR DTA114ES
U503	310229	IC LC3517BSL-15	Q502, Q503	310252	TR DTC114ES
U801	310230	IC TC74HC04AP	Q504	310253	TR DTC144ES
			Q801L, Q801R	310254	TR 2SC2878
			Q802L, Q802R	310254	TR 2SC2878
			Q803L, Q803R	310255	TR 2SA970

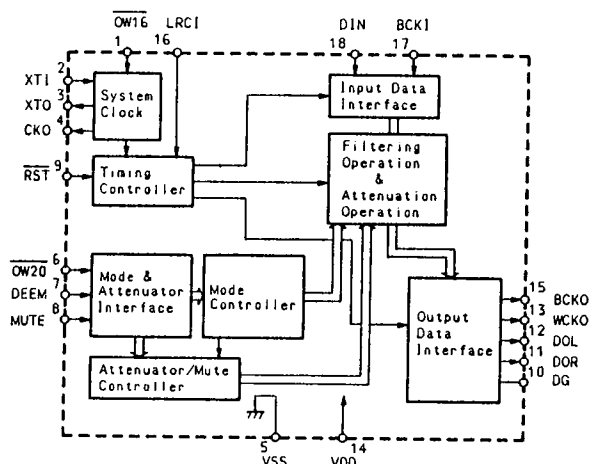
MAIN PCB







Servo Signal Processor Block Diagram



Digital Filter Block Diagram

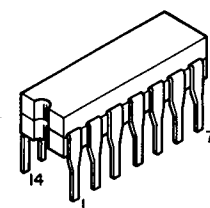
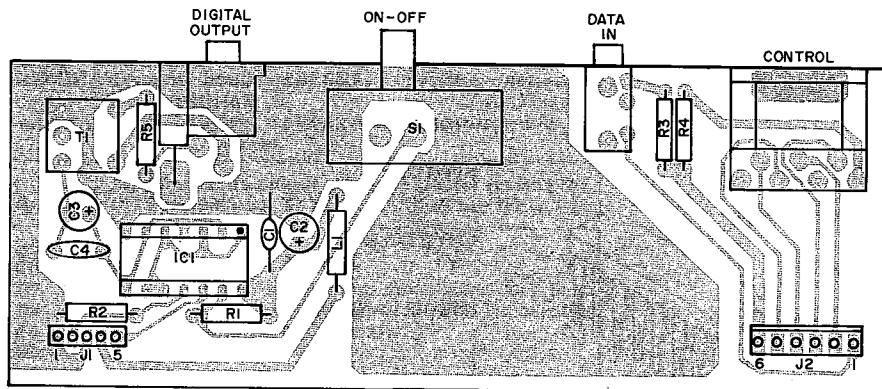
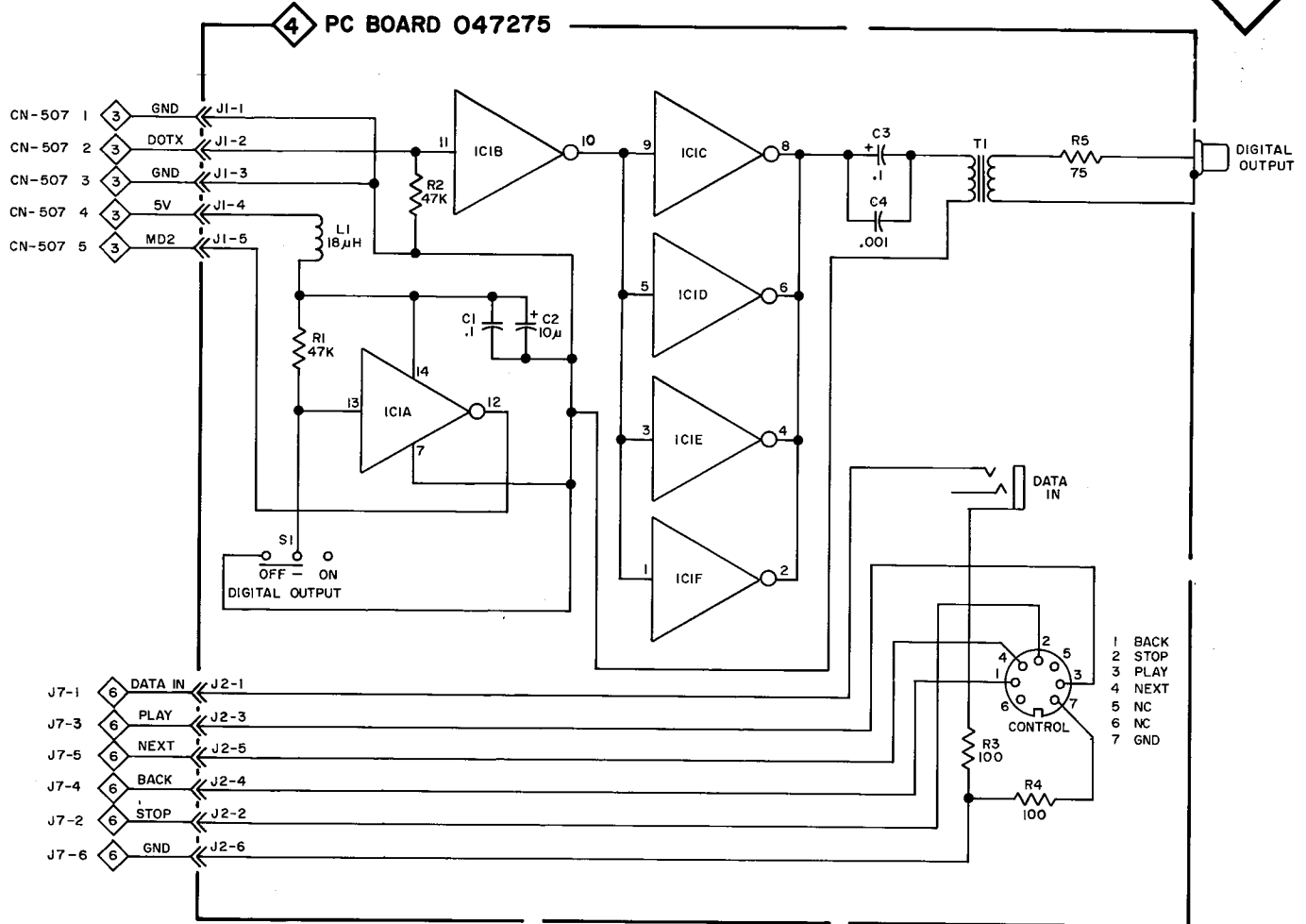
DIGITAL FILTER  
SM5840CP (U802)

Pin No.	Signal Name	I/O	Function
1	OW16	I	Frequency select input. Fixed to "H" for selecting 384 fs.
2	XTI	I	X'tal (16.9344 MHz) is connected.
3	XTO	O	
4	CKO	O	System clock output. (16.9344 MHz)
5	VSS	—	Grounded.
6	OW20	I	Not used.
7	DEEM	I	De-emphasis information signal input.
8	MUTE	I	Not used.
9	RST	I	System reset input. Active "L".
10	DG	O	Degitch output. Not used.
11	DOR	O	Rch audio data output.
12	DOL	O	Lch audio data output.
13	WCKO	O	Word clock for digitally-filtered output data.
14	VDD	I	+5V is supplied.
15	BCKO	O	Bit clock for digitally-filtered output data.
16	LRCI	I	Sampling rate clock (fs) for input data.
17	BCKI	I	Bit clock for input data.
18	DIN	I	Serial audio data input.

EL 20-BIT PROCESSOR  
MB623403 (U803)

Pin No.	Signal Name	I/O	Function
1	NC	—	—
2	MUTE	I	Fixed to "L". So mute function is disabled.
3	B18	I	Fixed to "H".
4	B20	I	Fixed to "L". Since 18-bit D/A converters are used in the next stage, "B18" is fixed to "H" and "B20" is fixed to "L".
5	COB	I	Fixed to "L". Output data to the D/A converter is of 2's complement.
6	PSE	I	Fixed to "L". Phase of output data to the D/A converter is not reversed.
7	VSS1	—	GND
8	FS384	I	Main clock input. 384fs
9	BCI	I	Bit clock input.
10	WCK	I	Word clock input.
11	DIL	I	Lch audio data input (2's complement).
12	DIR	I	Rch audio data input (2's complement).
13	NC	—	—
14	VDD	—	Supplied with +5V.
15	NC	—	—
16	NC	—	—
17	LSR	O	1 LSB output (Rch).
18	DLR	O	Rch data output (lower bits).
19	DHR	O	Rch data output (higher bits).
20	BCO	O	Bit clock for output data.
21	VSS2	—	GND
22	LEN	O	Latch enable signal for output data.
23	LSL	O	1 LSB output (Lch).
24	DLL	O	Lch data output (lower bits).
25	DHL	O	Lch data output (higher bits).
26	NC	—	—
27	NC	—	—
28	VDD	—	Supplied with +5V.

# Interface 4



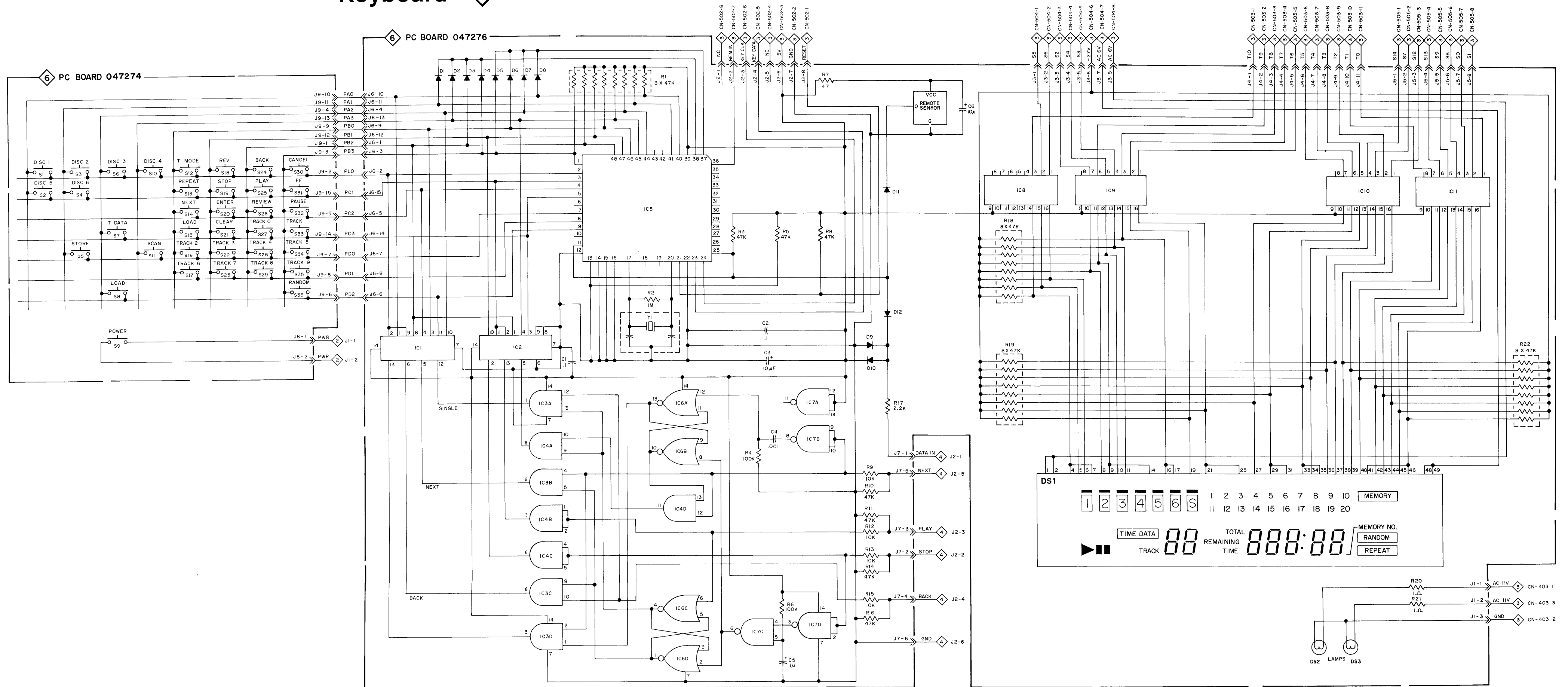
INTERFACE PCB 047275

## INTERFACE PARTS LIST

Symbol	Part	Description	Symbol	Part	Description
<b>JACKS</b>					
J3	117451	Phono Jack with ground	<b>SWITCHES</b>		
<b>INTEGRATED CIRCUITS</b>			S1	148058	Slide Switch, SPDT
IC1	133173	CMOS, Hex Inv, MC74HCU04N	<b>TRANSFORMERS</b>		
<b>COILS AND INDUCTORS</b>			T1	310214	Power
L1	122224	Choke, 18uH			

# Display and Keyboard

6



7

Service Tests and Adjustments

A. CONTROL PERFORMANCE TEST

ACTION	NORMAL RESPONSE
1. Press POWER.	<ul style="list-style-type: none"><li>1 thru 6, S, red bar over the S, Track 1 and Time light in display.</li></ul>
2. Press STORE, load six discs, Press SINGLE, Press LOAD and load DISC 5A.	<ul style="list-style-type: none"><li>1 thru 6, S, red bar over the selected disc, Track numbers of selected disc, Track 1 and Time light in display.</li></ul>
3. Press TIME DATA.	<ul style="list-style-type: none"><li>Play indicator lights and Time Data flashes.</li><li>Changer starts reading the table of contents of all discs starting from disc 1.</li><li>Track number and playing time light in display for each disc.</li><li>Time Data lights.</li></ul>
4. Press PLAY.	<ul style="list-style-type: none"><li>Play indicator lights and timer starts counting.</li></ul>
5. Press and hold FF.	<ul style="list-style-type: none"><li>Timer starts counting-up at a faster rate.</li><li>Music level is reduced by 12dB.</li></ul>
6. Press and hold REV.	<ul style="list-style-type: none"><li>Timer starts counting down at a faster rate.</li><li>Music level is reduced by 12dB.</li></ul>
7. Press PAUSE.	<ul style="list-style-type: none"><li>Pause indicator lights and timer stops counting.</li><li>Audio mutes.</li></ul>
8. Press PLAY to resume.	<ul style="list-style-type: none"><li>Play resumes.</li></ul>
9. Press Next.	<ul style="list-style-type: none"><li>Next higher Track number lights and previous calendar Track number goes off.</li><li>Timer starts counting from 0.</li></ul>
10. Press BACK.	<ul style="list-style-type: none"><li>Timer starts counting from 0 on same track.</li></ul>
11. Press BACK again.	<ul style="list-style-type: none"><li>Next lower Track number lights and current calendar Track number lights.</li><li>Timer starts counting from 0.</li></ul>
12. Press REPEAT.	<ul style="list-style-type: none"><li>Repeat lights.</li></ul>
13. Press REPEAT again to resume.	<ul style="list-style-type: none"><li>Repeat goes off.</li></ul>

14. Press TIME-MODE separately, four times to sequence through the time display modes.

15. Press STOP.

16. Press SCAN.

17. Press RANDOM.

18. Press STOP.

19. Press TIME-DATA

20. Press DISC-1.

21. Repeat this sequence for DISC-2 to DISC-SINGLE.

22. Press TRACK-1.

23. Press CLEAR.

24. Repeat this sequence for TRACK-2 to TRACK-10.

25. Press DISC-1.

26. Press TRACK-1.

27. Press ENTER.

28. Press DISC-SINGLE.

29. Press TRACK-9.

30. Press ENTER.

31. Press REVIEW.

32. Press REVIEW again.

33. Press PLAY.

34. Press NEXT.

35. Press CANCEL.

36. Press STOP.

- Press No. 1 - Displays Total elapsed time since the start of first track (Total mode).
- Press No. 2 - Displays time remaining on the disc (Remaining mode).
- Press No. 3 - Displays total number of tracks and total playing time of the disc for 5 seconds (Service mode), then switches to Time mode.
- Press No. 4 - Displays elapsed time of the current track (Time mode).

- Function stop.

- Unit plays first 10 seconds of each disc starting from disc 1.

- RANDOM lights and unit plays discs and tracks in random order.

- Functions stop.

- Displays total number of tracks and total playing time of each disc starting from disc 1.

- Red bar lights above Disc 1 indicator, mechanism selects disc 1.

- Track 1 flashes.

- Track 1 goes off.

- Mechanism selects disc 1.

- Track 1 flashes.

- MEMORY and MEMORY No. 1 light.

- Mechanism selects disc single.

- Track 9 flashes.

- Memory No. 2 lights.

- Track 1, Time and Memory No. 1 light.

- Track 9, Time and Memory No. 2 light.

- Unit starts playing track 1 of disc 1.

- Unit starts playing track 9 of disc single.

- Memory and Memory No. 2 goes off.

- Unit stops playing.

B. TRACKING AND ERROR CORRECTION TEST

- Use TEST DISC 5A and play the first 40 seconds of the track 9, track 17 and track 19.

All three tracks should play without music interruptions.

C. SERVICE ADJUSTMENTS

- MEASUREMENT INSTRUMENTS AND JIGS
  - Oscilloscope (15MHz or more, 2Channel).
  - DC Voltmeter
  - Audio Distortion Analyzer
  - Oscillator (If the distortion analyzer does not include).
  - Frequency counter
  - Phillips Test disc 5A and Phillips Audio signals disc 1.

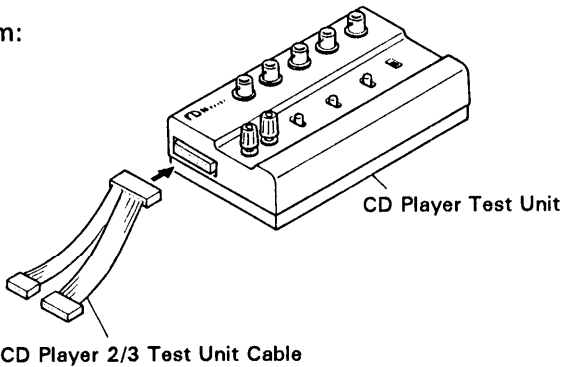
- The test disc are available from:  
NAP Consumer Electronics Product Service  
P.O. Box 555  
Old Andrew Jackson Highway  
Jefferson City, Tennessee 37760  
Tel: 1-(800)-851-8885

DISC	PART NUMBER
------	-------------

Disc 5A	4822 397 30096
Audio Signal Disc 1	4822 397 30184

- CD Player test unit set (DA09157A)

- CD player test unit set is available from:  
Nakamichi America Corporation  
19701 South Vermont Avenue  
Torrance, CA 90502  
Tel: 1-(213)-538-8150

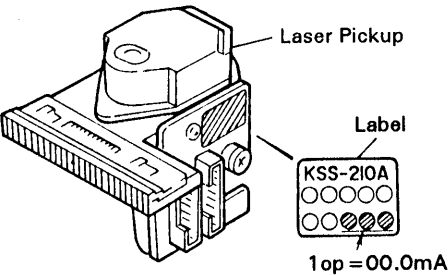


2. POWER SUPPLY VOLTAGE TEST

- Refer to the voltage measurement locations.

3. LASER CURRENT ADJUSTMENT

- Turn "POWER" switch off and connect the test unit to CN-102 and CN-105 on the Main PC board.
- Connect DC voltmeter between +5V and IOP terminals of the test unit. (+ lead to +5V, - led to IOP).
- Turn "POWER" switch on, push "LOAD" button, read the label on the laser pickup and place Test Disc 5A on the tray.
  - If the label indicates K501 then IOP = 50.1mA.
  - If the label indicates K535 then IOP = 53.5mA.
- Press "PLAY" button and measure the voltage.
  - Measured IOP = measured voltage ÷ 22.
  - Measured IOP should be IOP indicated on the label ± 10%.
- If the label indicates K501 then measured voltage should be 0.99V to 1.21V.
- Press "STOP" button and disconnect the voltmeter.

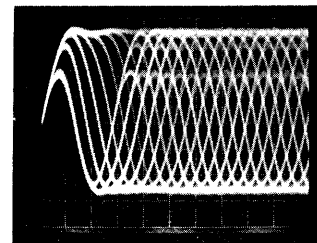
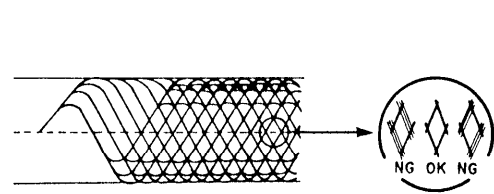


## 4. VOC FREQUENCY ADJUSTMENT

- Connect the frequency counter to CN109 on the Main PC board.
- Set SW1 of test unit to VCO.
- Adjust the VR103 to obtain 4.315 to 4.325MHz on the frequency counter if necessary.
- Set SW1 to off position and disconnect the frequency counter.

## 5. EFM SIGNAL ADJUSTMENT

- Connect the oscilloscope CH1 to RF connector of the test unit.
- Press "PLAY" button and adjust VR202 for maximum waveform amplitude.
- Waveform amplitude should be about 1.15V P-P.
- Press "STOP" button and disconnect the oscilloscope.



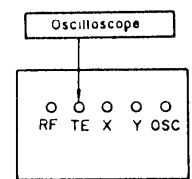
Oscilloscope Setting:  
AC Mode, 0.2 V/div, 0.5us/div

## 6. E-F BALANCE ADJUSTMENT

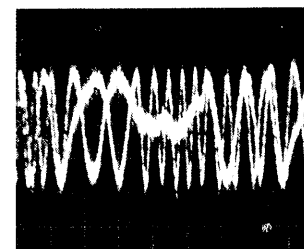
- Connect the oscilloscope CH1 to TE connector of the test unit.
- Press "PLAY" button and set SW2 of the test unit to E-F position.
- The center level of the waveform should be 0V  $\pm$  0.1VDC.
- The waveform amplitude should be about 2.2V P-P.
- Adjust VR201 on the RF amp PC board if necessary.
- The CD Changer stops playing after about 12 seconds.
- Press "PLAY" button again to re-start playing if necessary.
- Press "STOP" button and set SW2 to OFF position.

SW1: OFF  
SW2: E-F

SW3: OFF  
Filter: OUT



Connecting Diagram



Oscilloscope Setting:  
DC Mode, 1 V/div, 1 ms/div

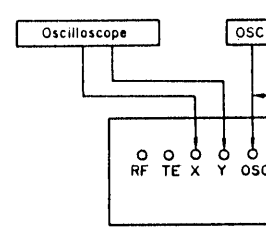
Set SW2 to OFF position.

## 7. TRACKING GAIN ADJUSTMENT

- Set the oscillator output to 900Hz, 0.1Vrms.
- Connect the oscillator output to OSC connector of the test unit.
- Connect the Oscilloscope CH1 to X and CH2 to Y of the test unit.
- Set the filter switch of the test unit to "IN" position.
- Set SW3 of the test unit to Tracking position and press "PLAY" button.
- Adjust VR101 on the Main PC board so that the amplitude of both waveforms on the oscilloscope are equal (a=b) if necessary.
- Set SW3 to OFF position and press "STOP" button.

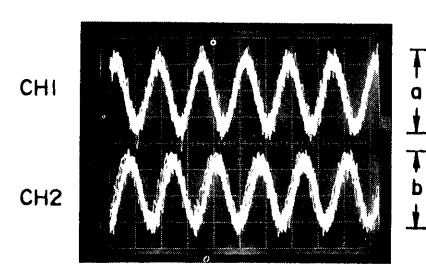
SW1: OFF  
SW2: OFF

SW3: TRACKING  
Filter: IN



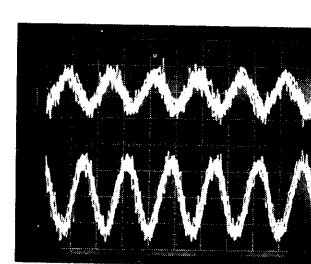
Connecting Diagram

Good waveforms



a=b

NG waveforms



Oscilloscope Setting:  
CH1, CH2: 0.2 V/div, DC Mode  
Time: 0.5 ms/div  
Mode: Auto, ALT  
Trigger: CH1

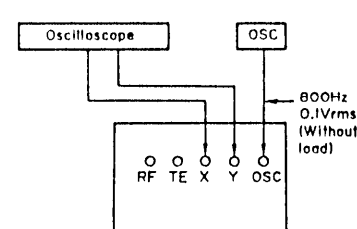
## 8. FOCUS GAIN ADJUSTMENT

- Set the oscillator output to 800Hz, 0.1Vrms.
- Set SW3 of the test unit to "Focus" position and press "PLAY" button.
- Adjust VR102 on the Main PC board so that the amplitude of both waveforms on the oscilloscope are equal (a=b) if necessary.
- Set SW3 to "OFF" position and filter switch to "OUT" position.
- Press "STOP" button.
- Disconnect the oscillator and the oscilloscope.

- Repeat 4 EFM SIGNAL ADJUSTMENT
- Turn "POWER" off and disconnect the test unit.

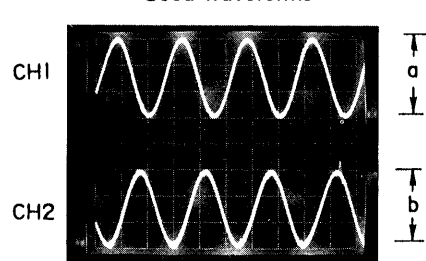
SW1: OFF  
SW2: OFF

SW3: FOCUS  
Filter: IN



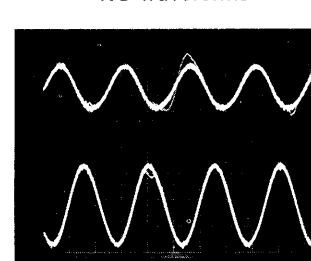
Connecting Diagram

Good waveforms



a=b

NG waveforms



Oscilloscope Setting:  
CH1, CH2: 0.2 V/div, DC Mode  
Time: 0.5 ms/div  
Mode: Auto, ALT  
Trigger: CH1

## D. AUDIO PERFORMANCE TEST

## 1. OUTPUT LEVEL AND DISTORTION MEASUREMENT

- Load the AUDIO SIGNALS DISC 1.
- Connect the distortion analyzer to fixed output of the CD changer.
- Play track 16.  
Output level should be between 2.6V and 2.7V on both channels.
- Adjust VR801 (L CH) and VR802 (R CH) on the Main PC board to obtain minimum distortion.  
The total harmonic distortion should be less than .0035% with use of the 20KHz low pass filter.

## 2. SIGNAL TO NOISE RATIO MEASUREMENT

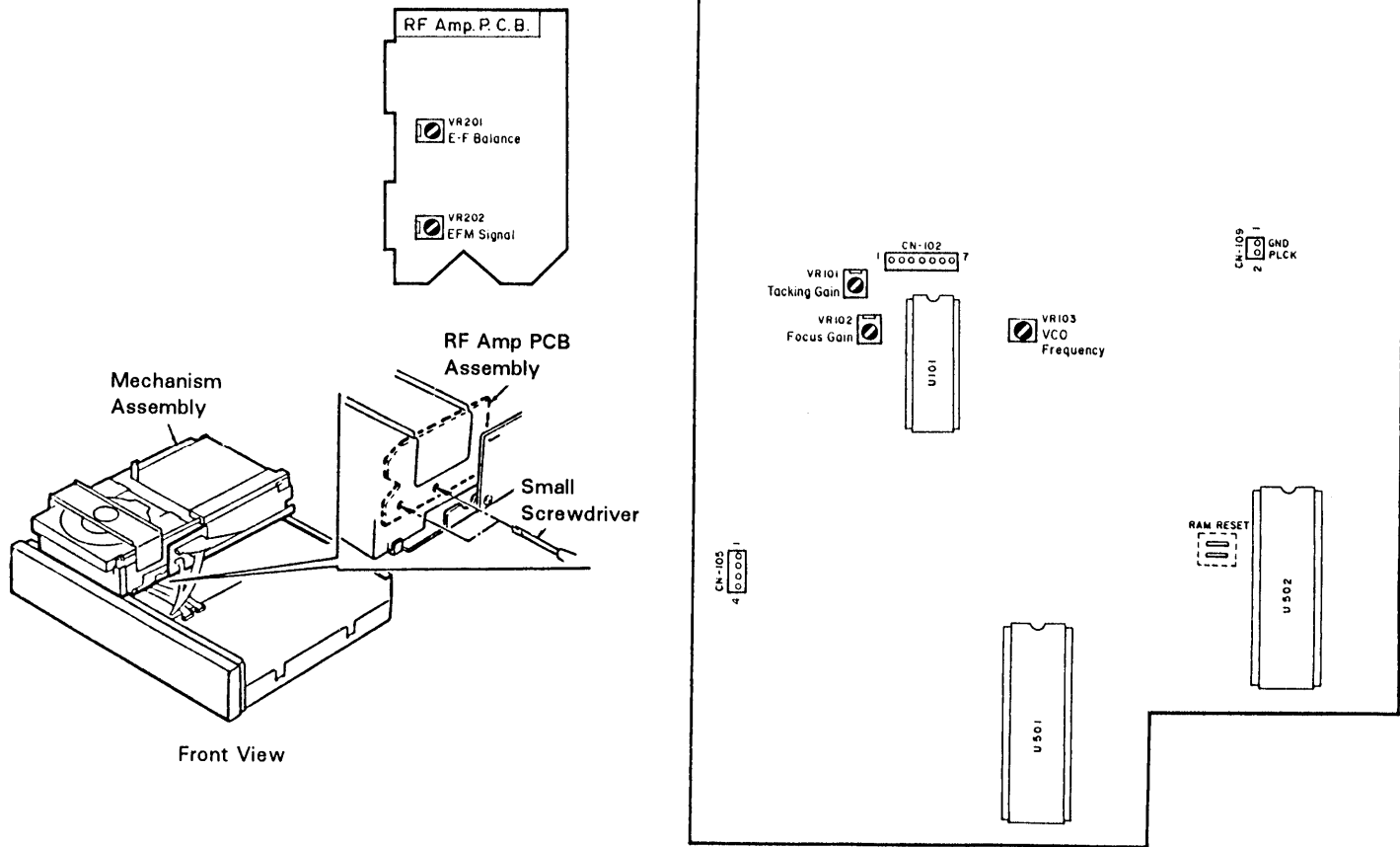
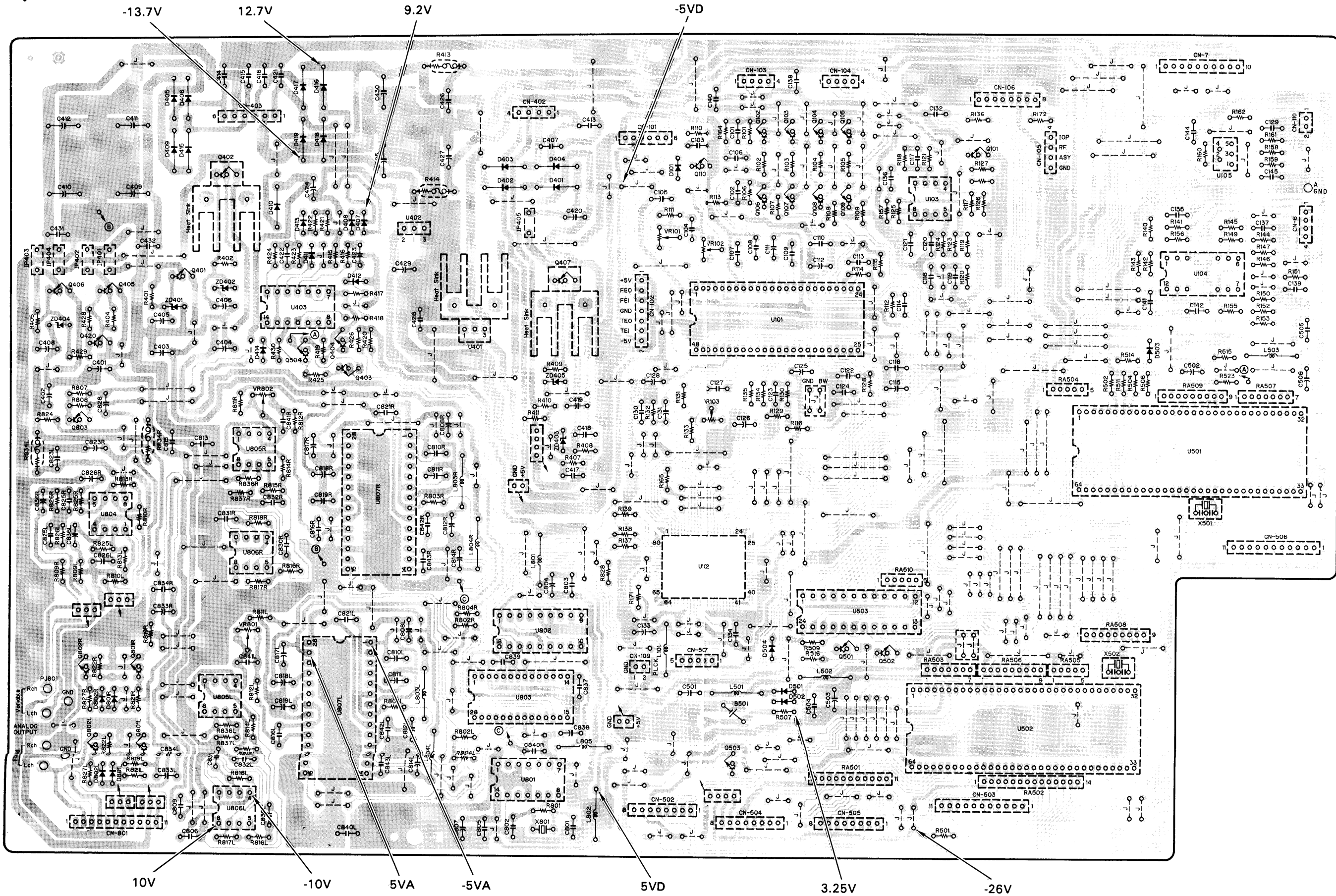
- Play track 16 and set the reference level.
- Play track 49.  
The signal to noise ratio should be better than -105dB with use of the 20KHz low pass filter.

## 3. FREQUENCY RESPONSE MEASUREMENT

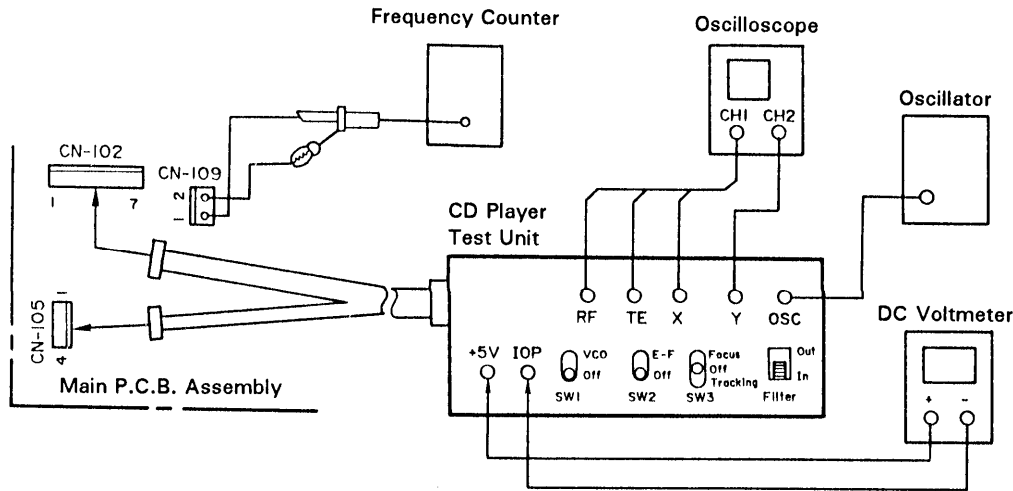
- Play track 5 (20Hz to 20KHz sweep).  
The output level should remain constant  $\pm$  0.5dB.
- Headphone output, headphone LEVEL control operation and variable output can be checked using the test signals on AUDIO SIGNALS DISC 1.

# 7 Service Tests and Adjustments

MAIN PCB VOLTAGE MEASUREMENT LOCATIONS (Solder Side View)



PARTS LOCATIONS FOR ELECTRICAL ADJUSTMENTS



TEST UNIT CONNECTING DIAGRAM

WAVEFORMS 1-15

MAIN PCB  
U101 (CXA1082BS)

PIN No.	STOP	WAVEFORM No.	PIN No.	STOP	WAVEFORM No.
PIN 2	-4.2V	Fig. 8-1	PIN 26	0.1V	Fig. 8-8
PIN 3	0V	OV	PIN 28	5V	5V
PIN 4	0V	Fig. 8-2	PIN 29	0V	Fig. 8-9
PIN 6	0.1V	OV	PIN 30	5V	Fig. 8-9
PIN 8	0V	OV	PIN 31	5V	Fig. 8-9
PIN 9	0V	OV	PIN 33	3.3V	2.6V
PIN 10	0V	OV	PIN 34	3.3V	2.6V
PIN 11	-0.6V	Fig. 8-3	PIN 35	2.2V	2.2V
PIN 12	0V	OV	PIN 36	2.3V	2.3V
PIN 13	0.5V	Fig. 8-4	PIN 37	3.5V	3.5V
PIN 14	0V	OV	PIN 38	Fig. 8-10	Fig. 8-10
PIN 15	0V	OV	PIN 39	0V	5V
PIN 17	0V	Fig. 8-5	PIN 40	0V	Fig. 8-11
PIN 18	0V	OV	PIN 41	0V	5V
PIN 19	0V	OV	PIN 42	0V	Fig. 8-12
PIN 20	0.6V	Fig. 8-6	PIN 44	0V	Fig. 8-13
PIN 21	0V	OV	PIN 45	0.5V	Fig. 8-14
PIN 22	-5V	-5V	PIN 46	Fig. 8-15	Fig. 8-15
PIN 23	-4V	-4V	PIN 47	0V	5V
PIN 24	4V	Fig. 8-7			

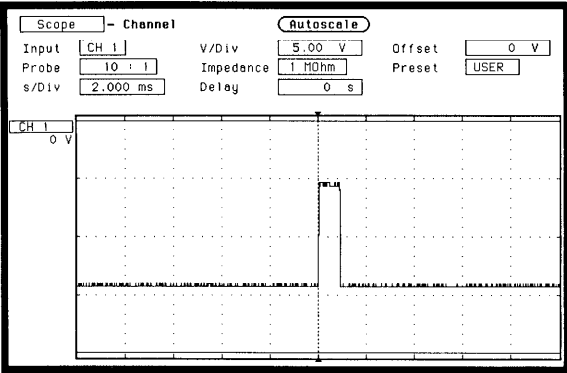


Fig. 8-1

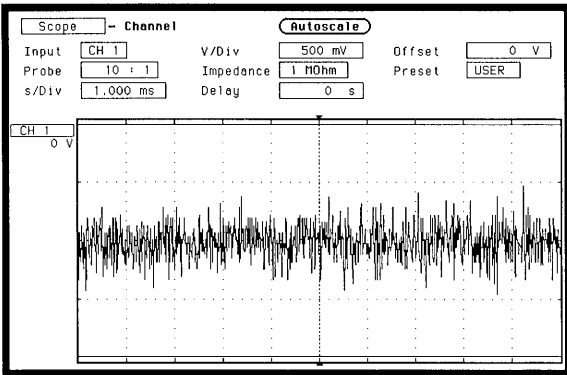


Fig. 8-2

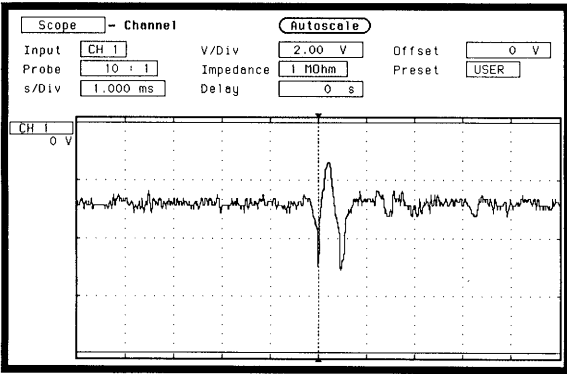


Fig. 8-3

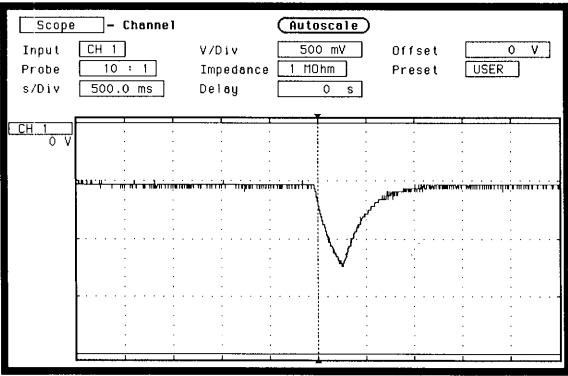


Fig. 8-4

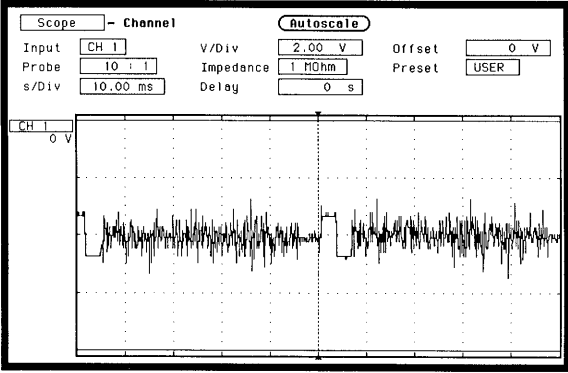


Fig. 8-5

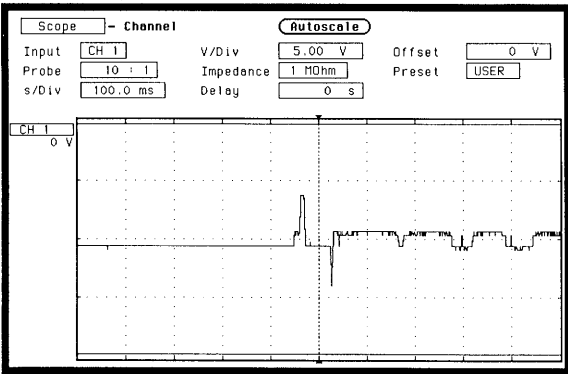


Fig. 8-6

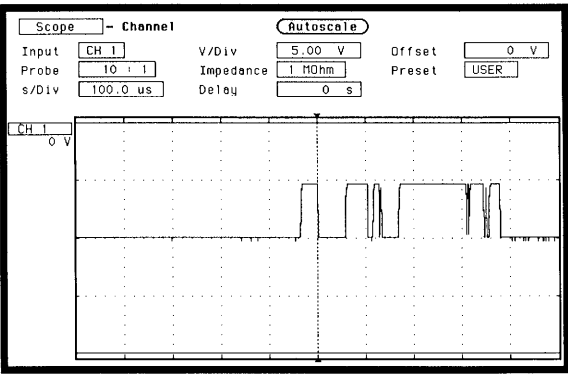


Fig. 8-7

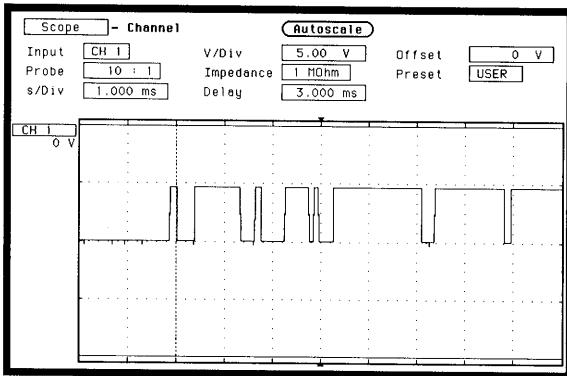


Fig. 8-8

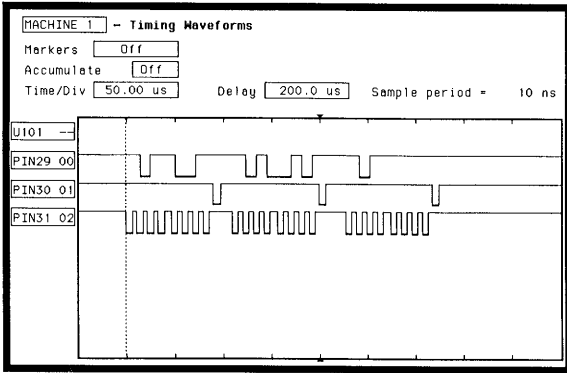


Fig. 8-9

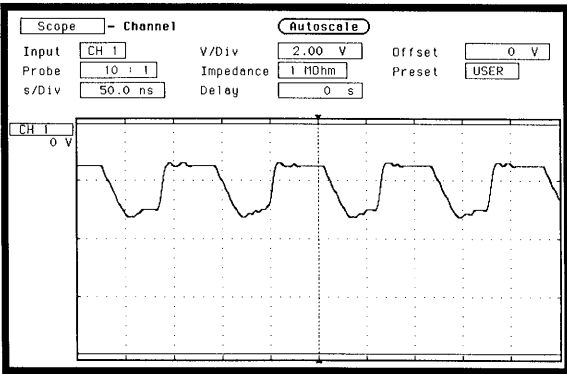


Fig. 8-10

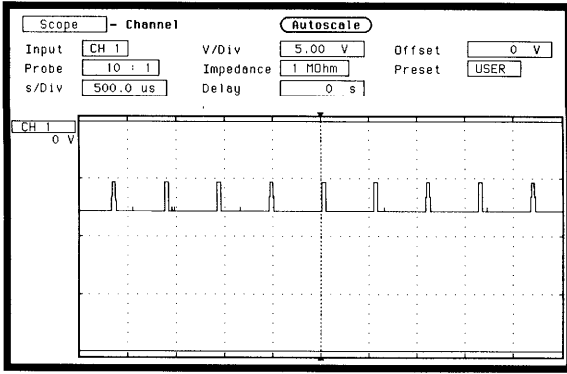


Fig. 8-11

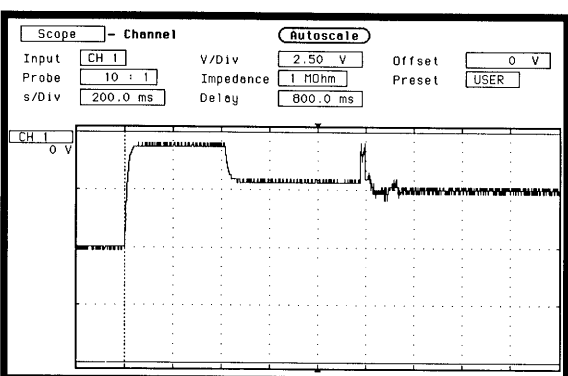


Fig. 8-12

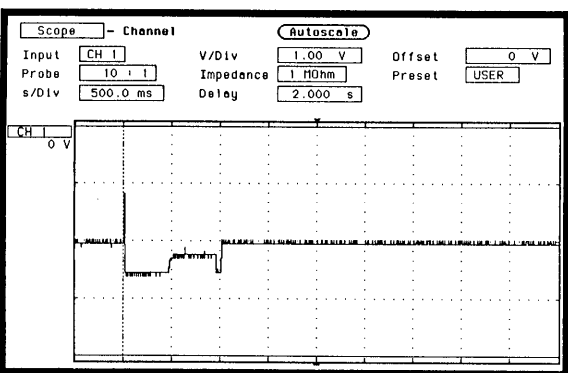


Fig. 8-13

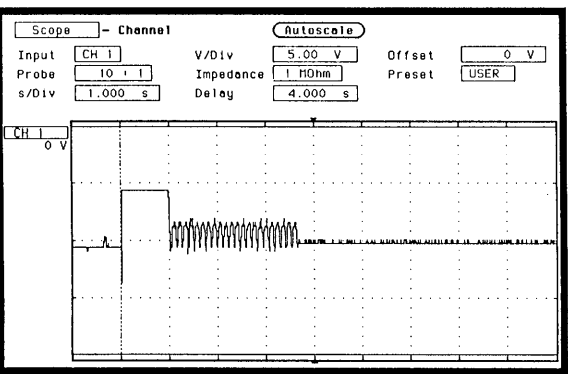


Fig. 8-14

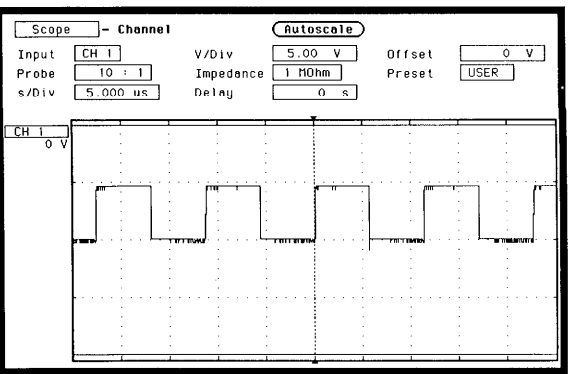


Fig. 8-15

WAVEFORMS 16-27

U102(CXD1167QZ)

PIN No.	STOP	WAVEFORM No.
PIN 4	OV	Fig. 8-16
PIN 5	2.4V	Fig. 8-17
PIN 6	2.6V	Fig. 8-18
PIN 8	Fig. 8-19	Fig. 8-19
PIN 9	Fig. 8-20	Fig. 8-20
PIN 11	3.25V	Fig. 8-21
PIN 19	3.8V	OV
PIN 20	OV	Fig. 8-22
PIN 23	OV	Fig. 8-23
PIN 24	OV	Fig. 8-32
PIN 25	5V	Fig. 8-23
PIN 26	5V	5V
PIN 27	Fig. 8-24	Fig. 8-24
PIN 28	OV	5V
PIN 53	Fig. 8-25	Fig. 8-25
PIN 56	OV	OV
PIN 70	Fig. 8-26	Fig. 8-26
PIN 76	Fig. 8-27	Fig. 8-27
PIN 78	Fig. 8-27	Fig. 8-27
PIN 80	Fig. 8-27	Fig. 8-27

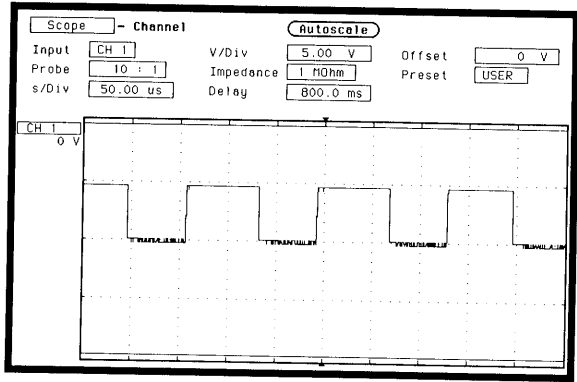


Fig. 8-16

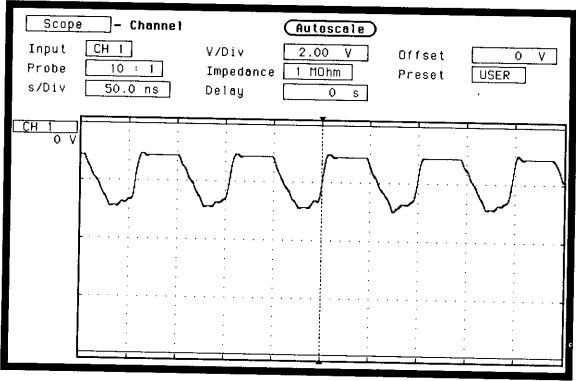


Fig. 8-20

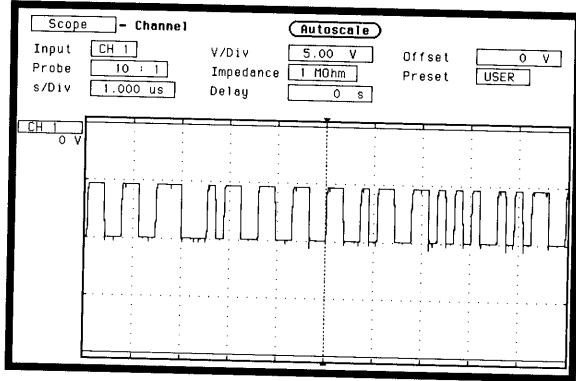


Fig. 8-24

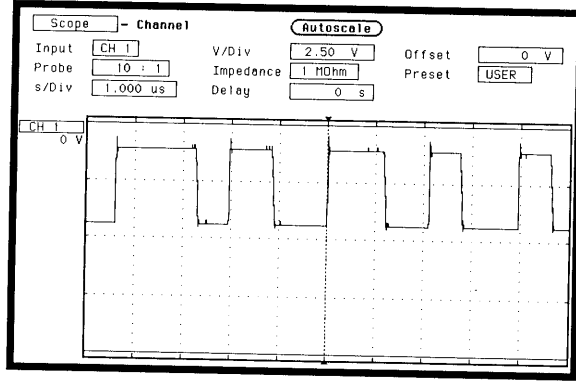


Fig. 8-17

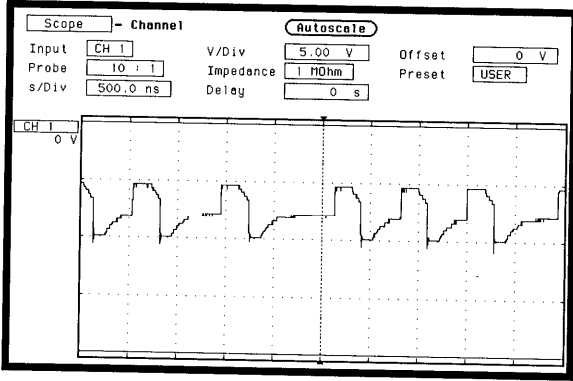


Fig. 8-21

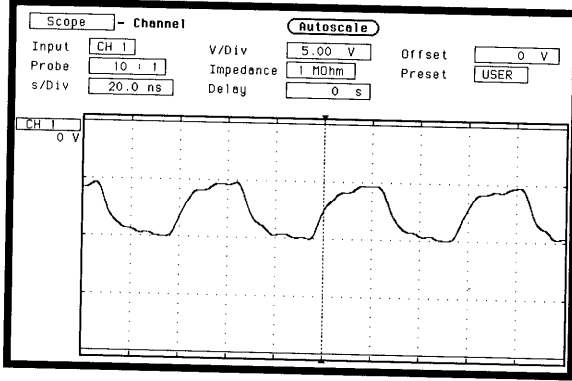


Fig. 8-25

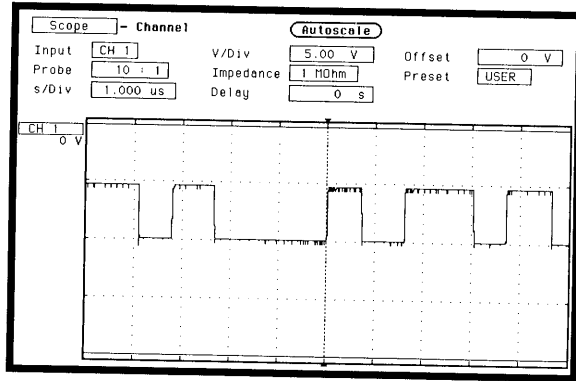


Fig. 8-18

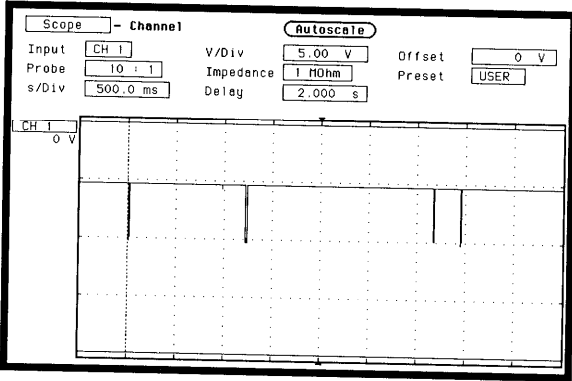


Fig. 8-22

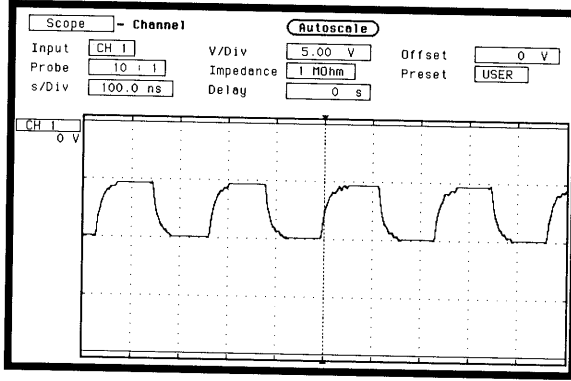


Fig. 8-26

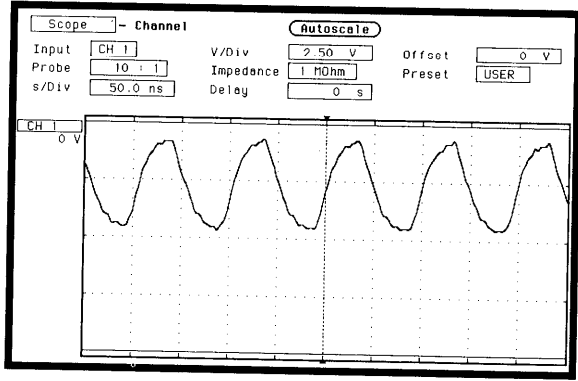
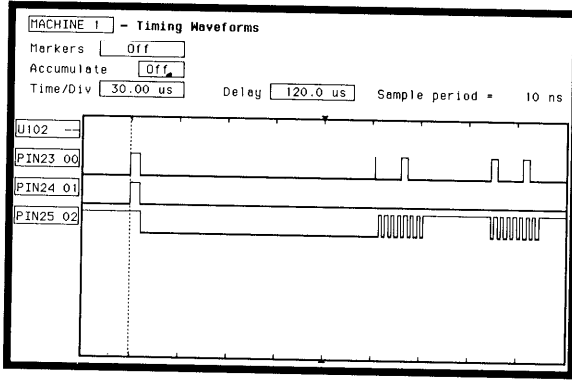


Fig. 8-19



49

Fig. 8-23

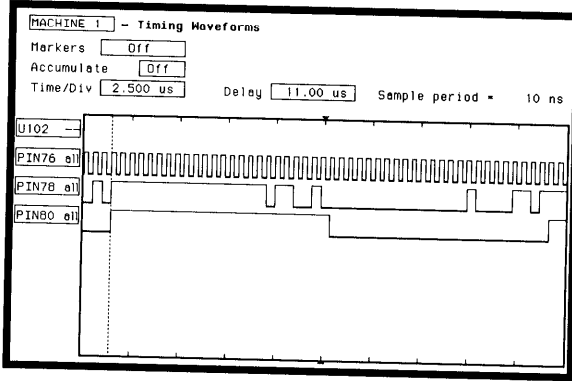


Fig. 8-27

WAVEFORMS 28-35

U501 (uPD75116CW)

PIN No.	STOP	WAVEFORM No.
PIN 1	Fig. 8-28	Fig. 8-28
PIN 2	5V (TRAY IN, TRAY OUT)	
PIN 3	5V (TRAY IN, TRAY OUT)	
PIN 4	5V (POWER ON), OV (POWER OFF)	
PIN 5	Fig. 8-29	Fig. 8-29
PIN 6	Fig. 8-30	Fig. 8-30
PIN 7	5V (TRAY OUT, DISC SELECT, STORE)	
PIN 8	4.4V (TRAY OUT), 1.2V (TRAY WITH DISC IN)	
PIN 10	Fig. 8-31	Fig. 8-31
PIN 11	OV (DISC SINGLE), 5V (DISC 1 TO 6)	
PIN 22	OV	5V
PIN 23		OV (EMP OFF) 5V (EMP ON)
PIN 25	3.3V (DISC 6 TO DISC 5-SINGLE)	
PIN 26	3.3V (DISC SINGLE TO DISC 1-6)	
PIN 27	3.3V (TRAY OPEN)	
PIN 28	3.3V (TRAY CLOSE)	
PIN 29	3.3V (TRAY CLOSE)	
PIN 30	3.3V (TRAY OPEN)	
PIN 33	5V (VOLUME UP)	
PIN 34	5V (VOLUME DOWN)	
PIN 41	Fig. 8-32	Fig. 8-32
PIN 42	Fig. 8-32	Fig. 8-32
PIN 43	Fig. 8-32	Fig. 8-32
PIN 44	Fig. 8-32	Fig. 8-32
PIN 46	Fig. 8-32	Fig. 8-33
PIN 48	Fig. 8-32	Fig. 8-34
PIN 49	Fig. 8-32	Fig. 8-35
PIN 50	Fig. 8-32	Fig. 8-32
PIN 51	Fig. 8-32	Fig. 8-32

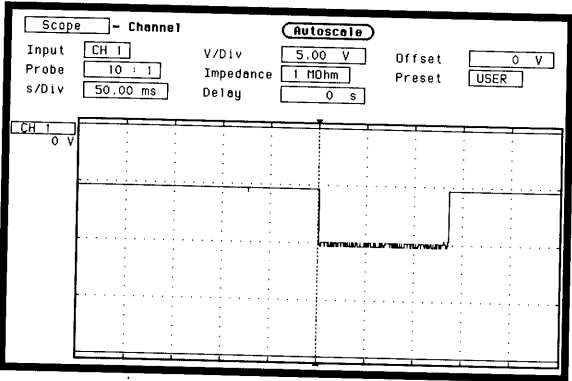


Fig. 8-28

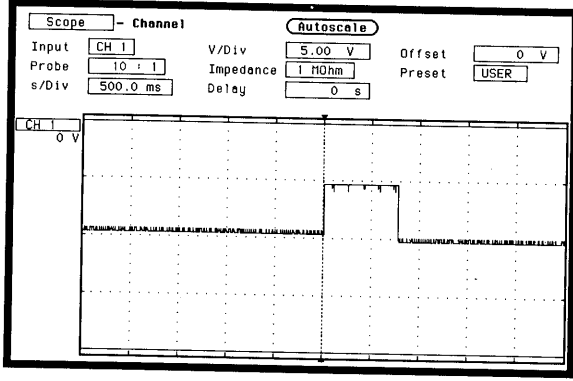


Fig. 8-29

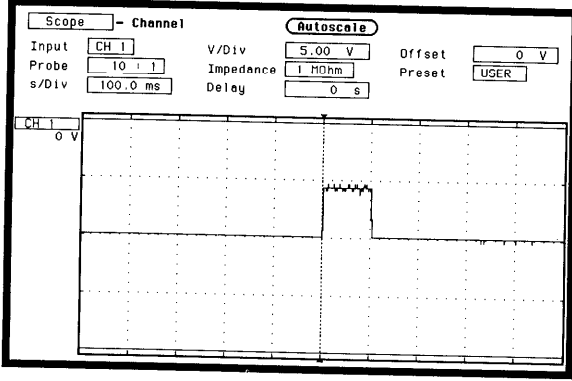


Fig. 8-30

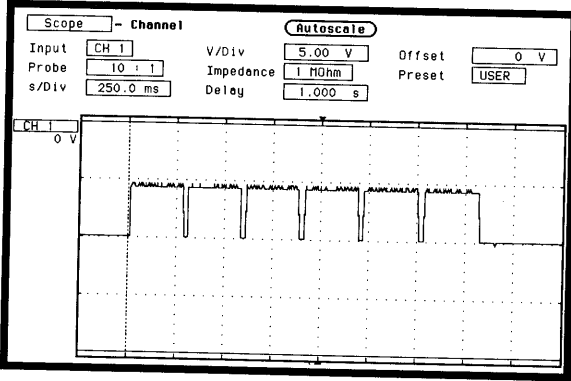


Fig. 8-31

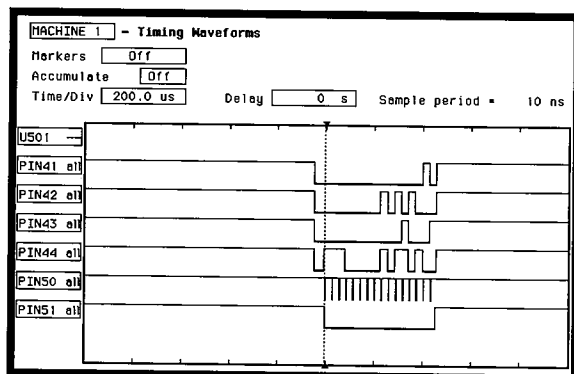


Fig. 8-32

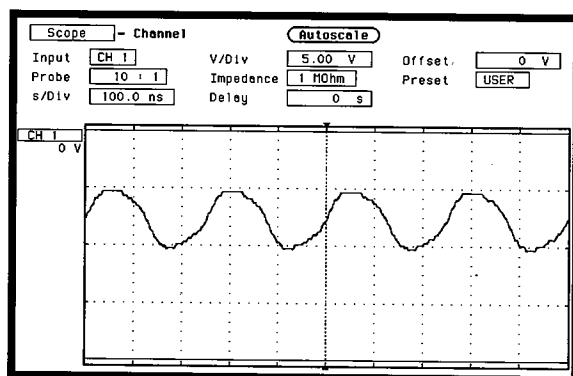


Fig. 8-33

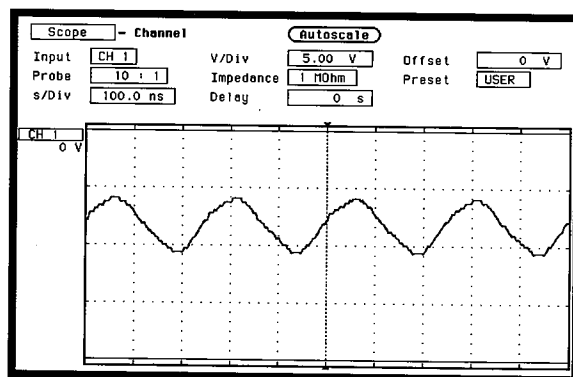


Fig. 8-34

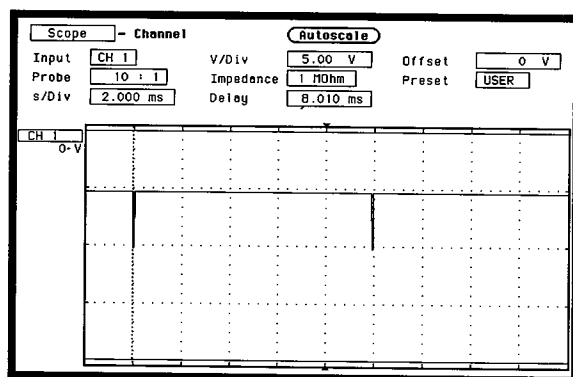


Fig. 8-35

## WAVEFORM 42

U803 (MB623403)

<u>PIN No.</u>	<u>STOP</u>	<u>WAVEFORM No.</u>
PIN 9-PIN 12	Fig. 8-42	Fig. 8-42
PIN 17-PIN 20	Fig. 8-42	Fig. 8-42
PIN 22	Fig. 8-42	Fig. 8-42

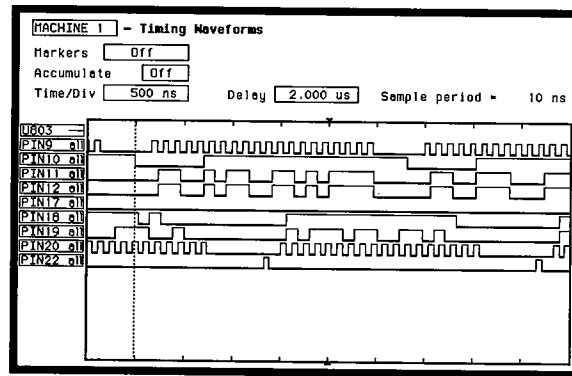


Fig. 8-42

## WAVEFORMS 43-45

DISPLAY PCB  
IC1 (LC6522H)

<u>PIN No.</u>	<u>STOP</u>	<u>WAVEFORM No.</u>
PIN 11	Fig. 8-43	Fig. 8-43
PIN 20	Fig. 8-44	Fig. 8-44
PIN 48	Fig. 8-45	Fig. 8-45

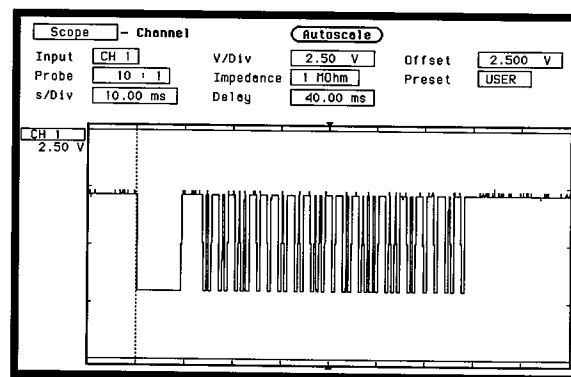


Fig. 8-43

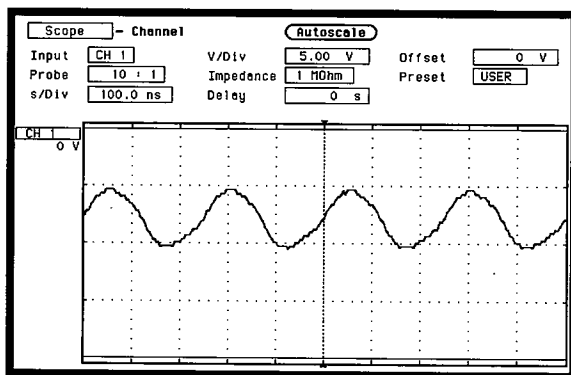


Fig. 8-44

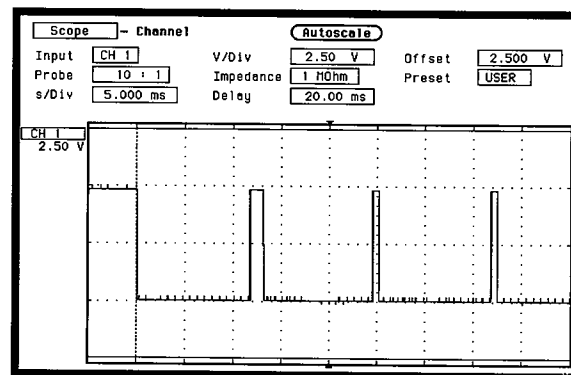


Fig. 8-45

## WAVEFORM 46

INTERFACE PCB

<u>PIN No.</u>	<u>STOP</u>	<u>WAVEFORM No.</u>
DIGITAL OUT	Fig. 8-46	Fig. 8-46

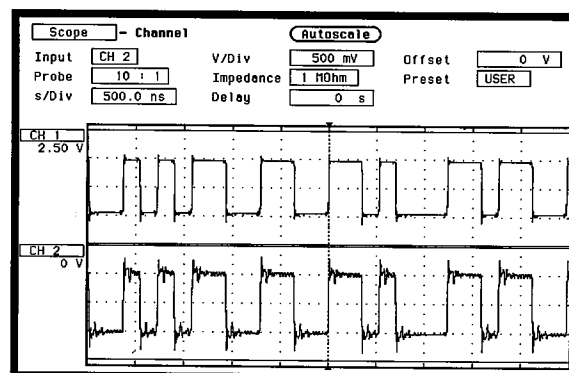


Fig. 8-46