

Service Manual

PCM Digital Piano

SX-PR40/PR60

(EN), (EI), (EH), (EB), (EF), (EZ), (EW), (EP), (EK), (MC), (XT), (XL), (XR), (XS), (XD), (X), (XM), (XX), (XV)

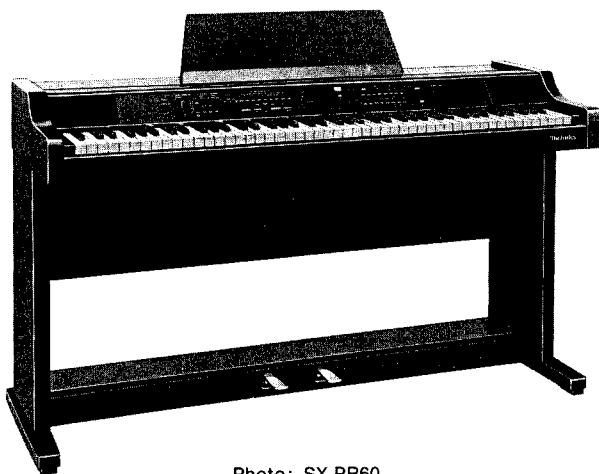
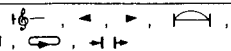


Photo: SX-PR60

AREAS

(EN): Norway, Sweden, Denmark, Finland	(XL): New Zealand
(EI): Italy	(XR): Australia
(EH): Holland	(XS): Malaysia, Singapore, South Africa
(EB): Belgium	(XD): Saudi Arabia
(EF): France, Austria	(X): the Middle East, Indonesia, Hong Kong, the Philippines
(EZ): Germany	(XM): Mexico
(EW): Switzerland	(XX): Peru, Chile
(EP): Spain	(XV): Venezuela, Ecuador, Panama, Colombia
(EK): the United Kingdom	
(MC): Canada	
(XT): Taiwan	

Specifications

	SX-PR40	SX-PR60
KEYBOARD	76 KEYS	88 KEYS
KEY SPLIT	○ (G2, C3, C4)	
FULLBAND SETTING COMPUTER	FSC, RECORD*	
PLAY SEQUENCER	BASS, ACCOMP, LEFT, RIGHT, RECORD*	
LEFT SELECT	○ (L, R)	
TONES	PIANO I, II, ELECTRIC PIANO, HARPSICHORD, CLAVI, GUITAR, JAZZ GUITAR, VIBETONE, PIPE ORGAN, JAZZ ORGAN, STRING, SAXOPHONE R... TROMBONE, TRUMPET, FLUTE, SYNTHÉ L... ACOUSTIC BASS, ELECTRIC BASS, CHOPPER BASS, SYNTHÉ BASS	
OCTAVE SHIFT	○ (-2, -1, +1, +2)	
SUSTAIN PEDAL	○	
CHORUS	○	
TRANPOSE	CONTROL (G ~ C ~ F#)	
RHYTHM (selectors)	MARCH, SHUFFLE, SWING, SWING ROCK, 8 BEAT, FUNK ROCK, 16 BEAT, BALLAD, DISCO I, II, RHUMBA, CHA-CHA, BOSSA NOVA, TANGO, SAMBA, JAZZ WALTZ, WALTZ	
(controls)	SYNCHRO START, START/STOP, DRUMS VOLUME, TEMPO CONTROL, BEAT INDICATOR	
FILL IN & INTRO	○	
ENDING	○	
ONE TOUCH PLAY	○	
AUTO PLAY CHORD	CANCEL, ADVANCED, BASIC, BASS & ACCOMP I~IV, BASS VOLUME, ACCOMP VOULME	
PROGRAM CHORD COMPUTER	PROGRAM CHORD COMPUTER, RECORD*, 	
MODE SET	MODE SET, RECORD* (MIDI)	START/STOP, MIDI CLOCK, SONG SELECT, FSC ENABLE, PART SILE CT, P. CHANGE, LOCAL CONTROL (SEQ TO EXT, MAN TO EXT, BOTH TO EXT)
(OTHERS)		FOOT FILL IN, MEDLEY, TUNE MODE, MINIMUM RANGE
OTHERS	POWER SWITCH, MAIN VOLUME, MEMORY CARD SLOT, LINE OUT TERMINALS (R R+ U U), PEDAL IN TERMINALS (SUSTAIN, SOFT), MIDI TERMINALS (OUT, IN), TUNE, EXT I/O (FD), HEADPHONE JACK, AC CORD INPUT, INITIAL KEY	

	SX-PR40	SX-PR60
OUTPUT	20 W × 2	25 W × 2
SPEAKERS	16 cm (6-5/16") × 2, 8 cm (3-5/32") × 2	
POWER REQUIREMENT	100 W	
	AC 120/220/240V 50/60 Hz, AC 120V 60 Hz (NORTH AMERICA)	
DIMENSIONS (W×H×D) (without stand)	119.4 cm × 18.2 cm × 47.6 cm (47" × 7-5/32" × 18-3/4")	135.9 cm × 18.2 cm × 47.6 cm (53-1/2" × 7-5/32" × 18-3/4")
NET WEIGHT (without stand)	33 kg (72.8 lbs)	36 kg (79.4 lbs)
ACCESSORIES	STAND, MUSIC RACK, DUST COVER, AC CORD	

- *Common **RECORD** button is used for these buttons.
- Specifications are subject to change without notice for further improvement.

STAND

	SZ-S70W	SZ-S80W
DIMENSIONS (W × H × D)	122.2 cm × 64.3 cm × 42.2 cm (48-1/8" × 25-5/16" × 16-5/8")	138.7 cm × 64.3 cm × 42.2 cm (54-19/32" × 25-5/16" × 16-5/8")
WEIGHT	21 kg (46.3 lbs)	23 kg (50.7 lbs)

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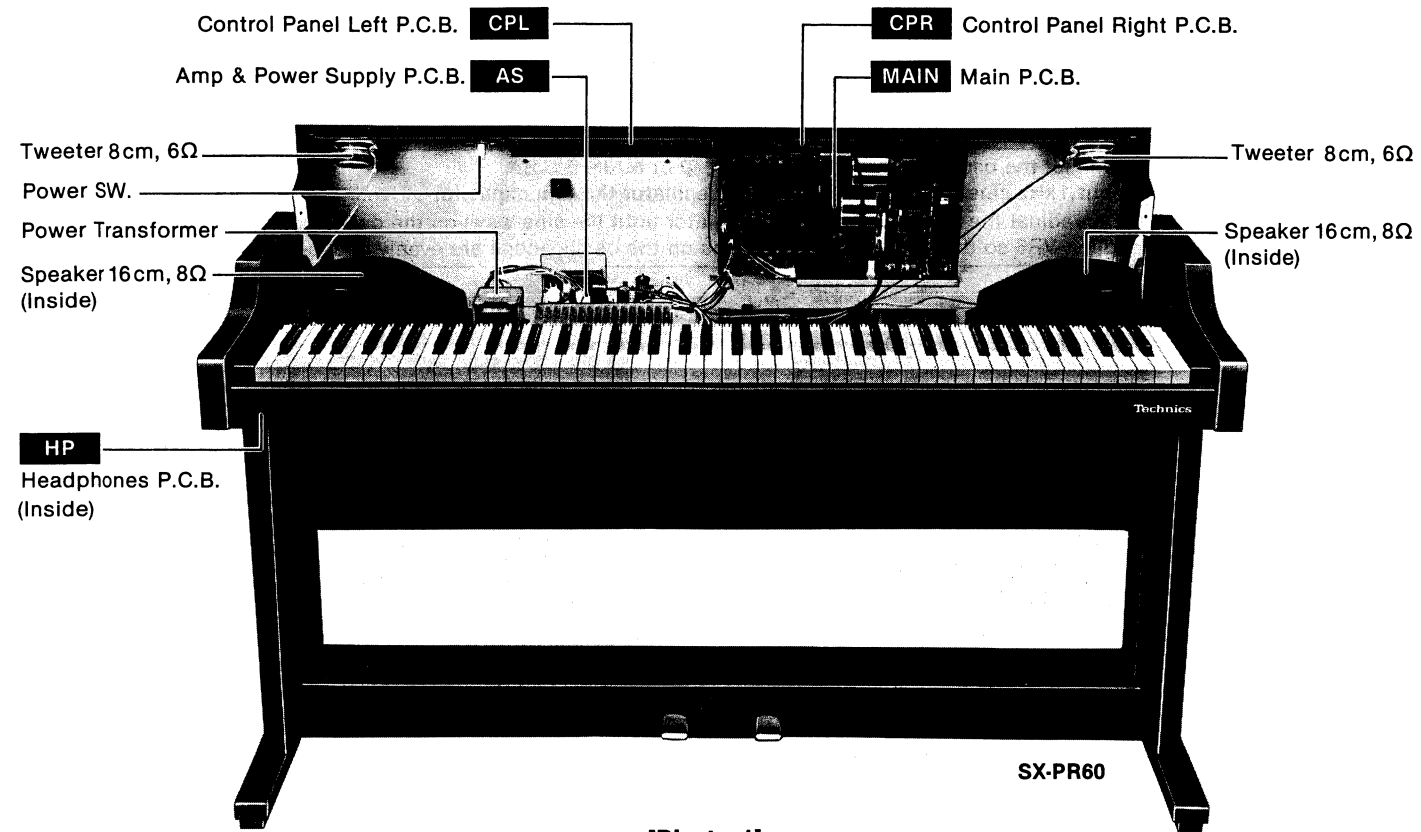
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■ EXPLODED VIEWS & REPLACEMENT PARTS LIST

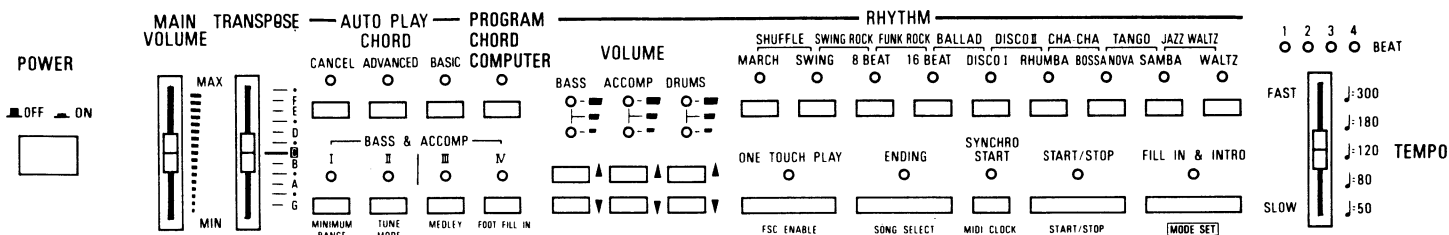
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PARTS LOCATION

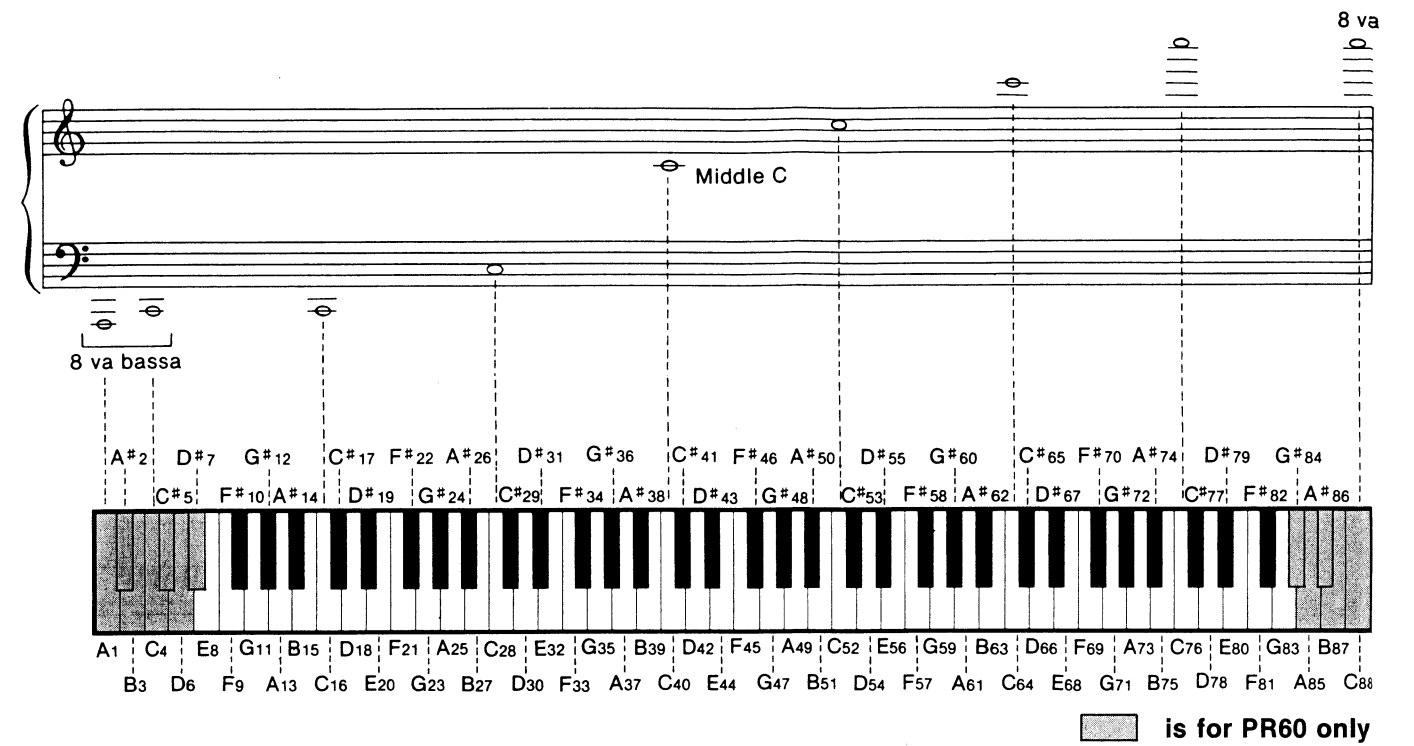


[Photo-1]

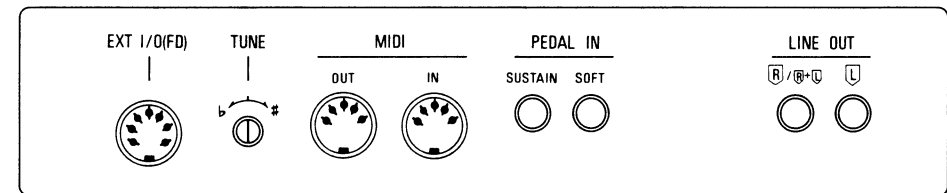
ARRANGEMENT OF CONTROL PANEL



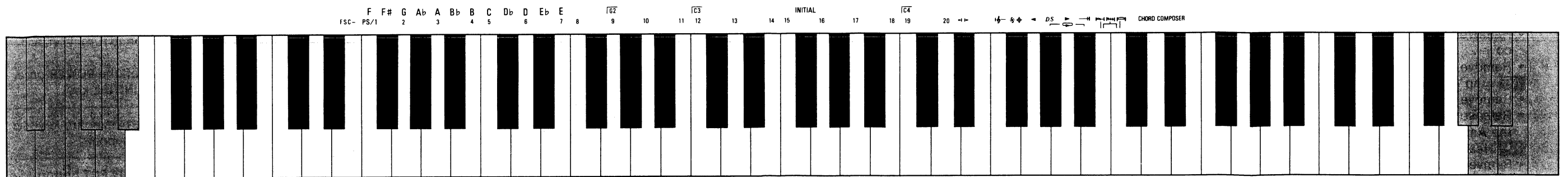
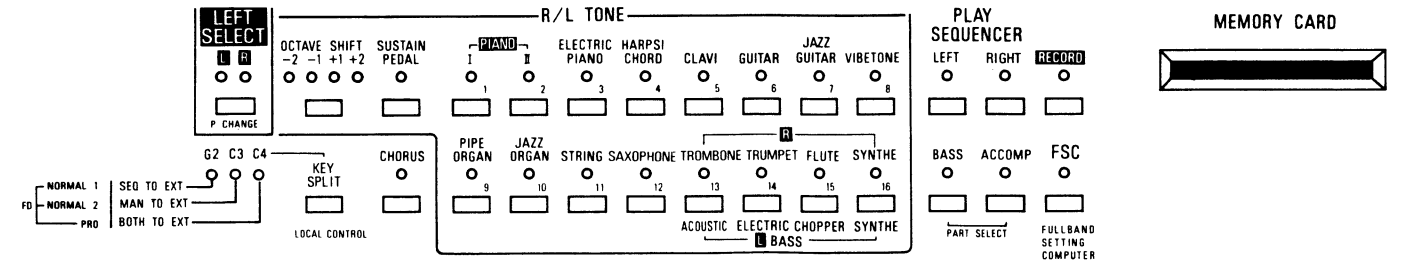
KEYBOARD RANGES



is for PR60 only



Rear accessory panel



is for PR60 only

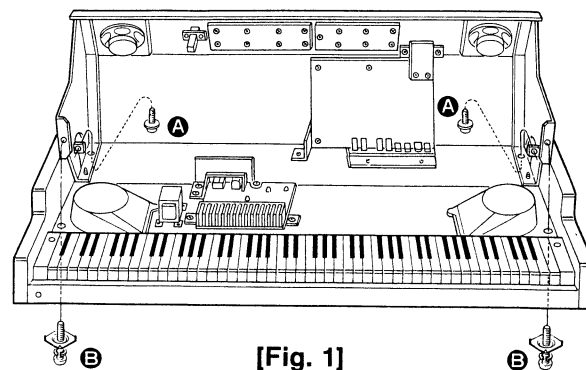
DISASSEMBLY PROCEDURE

1 How to remove the music rack

- 1 Music rack can be removed upward.

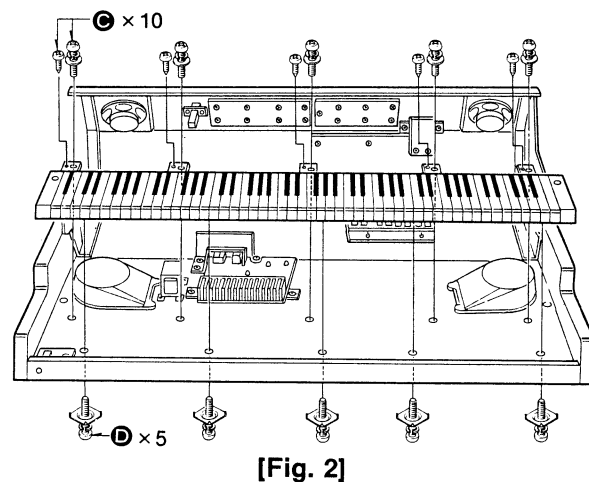
2 How to remove the top cover

- 1 Remove the 2 screws **A** and 2 screws **B** which fasten the top cover located under the shelf board.
- 2 The top cover can be opened by lifting.



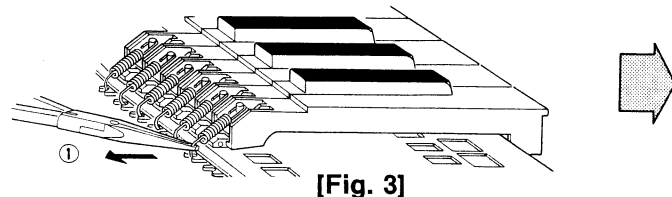
3 How to remove the keyboard

- Open the top cover according to procedure 2.
- 1 Remove the 10 screws **C** and 5 screws **D** which fasten the keyboard.
 - 2 The keyboard can be removed.



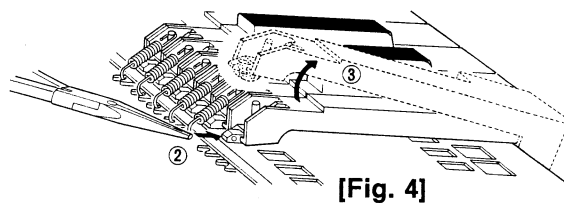
4 How to remove the keys

- Remove the keyboard according to procedure 3.
- 1 Remove the spring from the key as shown Fig. 3.
 - 2 Pushing friction piece of key as shown Fig. 4. Key can be removed from chassis.
 - 3 Lift up the key and take it out from chassis.



Note:

In the case of disassembly black key remove the right and left white key at first and after that black key can be removed.



5 How to remove the printed circuit boards

* Open the top cover and pull out the connector of printed circuit boards.

CPL CPR Control panel P.C.B.

- Remove the 8 screws **E** and 7 screws **F** on the control panel P.C.B.

MAIN Main P.C.B.

- Remove the 3 screws **G** on the back of the top cover.

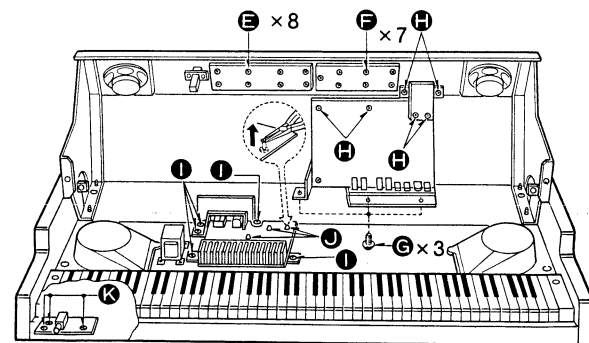
- Remove the 6 screws **H** on the main P.C.B.

AS Amp & Power Supply P.C.B.

- Remove the 5 screws **I** which fasten the amp unit.
- Release the 3 claws **J** of P.C.B. holder to remove the Amp & power supply P.C.B.

HP Headphones P.C.B.

- Remove the 3 screws **K** on the headphones P.C.B.

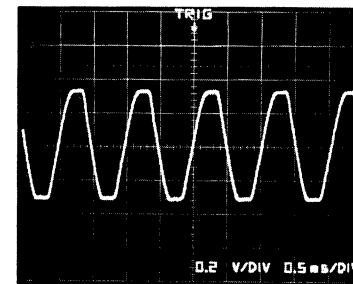


ADJUSTMENT PROCEDURE

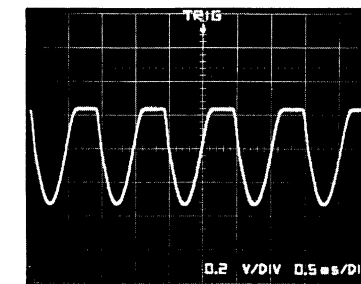
ADJUSTMENT	MEASURING CONDITIONS	EQUIPMENT	ADJUSTMENT CIRCUIT BOARD	ADJ. POINT	CONNECT METER TO	METER READING
BBD bias	Any position	Oscilloscope and Oscillator	MAIN P.C.B.	VR6	Check point ②	Photo-2
<ol style="list-style-type: none"> 1. Connect the oscilloscope to check point ② of MAIN P.C.B. 2. Input 1kHz sine wave to IC56-④ pin by oscillator through capacitor of less than 50V 1μF. Then adjust the output level of the oscillator until the sine wave on the oscilloscope is clipped. 3. Adjust VR6 so that the output waveforms on the oscilloscope are evenly clipped at top and bottom. 						

BBD bias adjustment

○ : Good



× : Fault



PRECAUTIONS BEFORE SERVICING

■ Precautions for the measurement:

1. The waveform was measured by "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may somewhat change due to variation of timing of measure.
2. The voltage shown in the photo is 1/10 of the actual value. However, the actual voltage is 10 times of as shown in this photo.
3. Measuring conditions of output waveforms
Please set the initial mode before measurement.
 - Initial mode: Press the FSC button to turn it on, and then press the INITIAL key on the keyboard.
 - Tune Center position
 - Transpose "C" position
 - Main volume "Max" position
 - Octave shift OFF (Normal position)
 - Key position C₅₂
 - Key split C₃
4. The tone signal output varies with the level of key pressing force.
In this measurement, the waveform obtained with maximum key pressing force is shown.
However, the output level and waveform may vary, depending on the timing and measuring instrument and other conditions in the measurement.

■ Important safety notice:


Components identified by Δ mark have special characteristics for safety.

When replacing any of these components, use only manufacturer's specified parts.

■ Symptoms which appear to be signs of trouble

The following changes in performance may occur in the Technics digital piano but do not indicate trouble:

Phenomenon	Remedy
The buttons, keys, etc. malfunction.	<ul style="list-style-type: none"> • Press the FSC (FULLBAND SETTING COMPUTER) button to turn it on, and then press the INITIAL key on the keyboard. • If the buttons and keys do not return to normal, turn off the POWER once, then on again. Turn on the FSC button and press the INITIAL key.
The keys on the left keyboard do not sound.	When no TONE indicator is lit for the left section, the left keyboard keys do not sound. Select and press a TONE button for the left keyboard.
The tone of the left keyboard does not change.	To select a tone for the left section, first press the LEFT SELECT button, and while the \square indicator is lit, choose the TONE button.

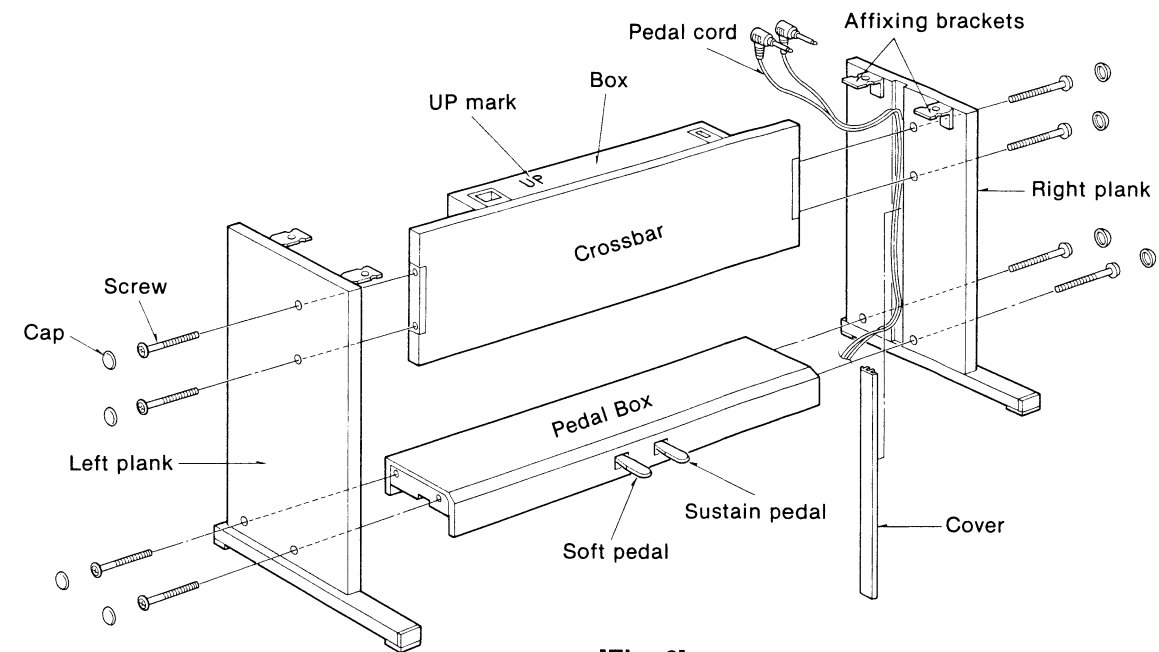
Phenomenon	Remedy
When many keys are pressed at the same time, not all of them sound.	When in the CANCEL mode, the maximum number of notes which can sound simultaneously in the right and left sections combined is 12. In the AUTO PLAY CHORD mode, the maximum is 8 notes. When two TONE buttons are selected for the right section, pressing a key on the right keyboard counts as two notes, etc..
When keys on the outer part of the keyboard are played, the notes of the next higher or lower octave sound.	Normally, the leftmost keys for PIPE ORGAN , TROMBONE and SAXOPHONE produce notes in the next higher octave. Especially when TRANPOSE or OCTAVE SHIFT is used, the range in which the next higher octave is repeated in the lower keys becomes wider. A similar repetition also occurs with some other tones. With the FLUTE tone of the PR60, the rightmost key sounds one octave lower.
Sustain does not work, even when the sustain pedal is pressed.	Sustain is set separately for the right and left sections. Turn the SUSTAIN PEDAL button on for either or both parts.
The rhythm does not start.	<ul style="list-style-type: none"> When the PLAY SEQUENCER button is on and a song without any rhythm is stored, the rhythm does not start. When the clock mode is set to MIDI, the rhythm does not start if no MIDI clock signal is received from another instrument. When using only the piano, return the clock mode to the internal clock, for example by turning off the POWER once.
The rhythm, ACCOMP or BASS does not sound.	There are VOLUME buttons for each part; when the VOLUME indicator is off, no sound is produced for that part. Push the ▲ button.
Nothing is stored in the PROGRAM CHORD COMPUTER or PLAY SEQUENCER .	Selections must be made within 5 seconds after the RECORD button is pressed. After 5 seconds the RECORD button turns off and no further storage is possible.
Nothing is stored in the PROGRAM CHORD COMPUTER .	When storing chords, press a measure key () while holding down the chord. Be sure that the chord is not released until after the measure key is pressed.
When playing back the PROGRAM CHORD COMPUTER , the accompaniment is not performed.	In the CANCEL mode, the BASS and ACCOMP do not sound; only the rhythm changes are performed. To play back the accompaniment, select an AUTO PLAY CHORD mode (BASIC or ADVANCED).
The RECORD and PLAY SEQUENCER buttons are flashing slowly, but storage is not performed.	<ul style="list-style-type: none"> Storage is not possible when the FSC button is on. Turn it off before storing. If any PLAY SEQUENCER button is lit, press the START/STOP button for automatic performance of the stored part. Another part can then be stored.
When playing back the PLAY SEQUENCER , a fast rhythm tempo becomes slower.	This may happen when an extremely large number of notes are programmed to be played at one time. Slow down the tempo, or decrease the number of notes to be played at one time.
When the operation to play back from the optional memory card is performed, the contents of the piano's internal memory are erased.	When performing the playback operation from a memory card, the piano's internal memory changes to that stored in the memory card. To preserve a song in the piano's memory, store it in a memory card.
Noise from a radio or TV can be heard.	This sometimes occurs when electrical equipment such as a radio or TV is used near the piano. Try moving such electrical equipment further away from the piano.
The cabinet becomes warm during use.	The piano has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble.

STAND (SZ-S70W/SZ-S80W)

- SZ-S70W ... PR40
- SZ-S80W ... PR60

ASSEMBLY

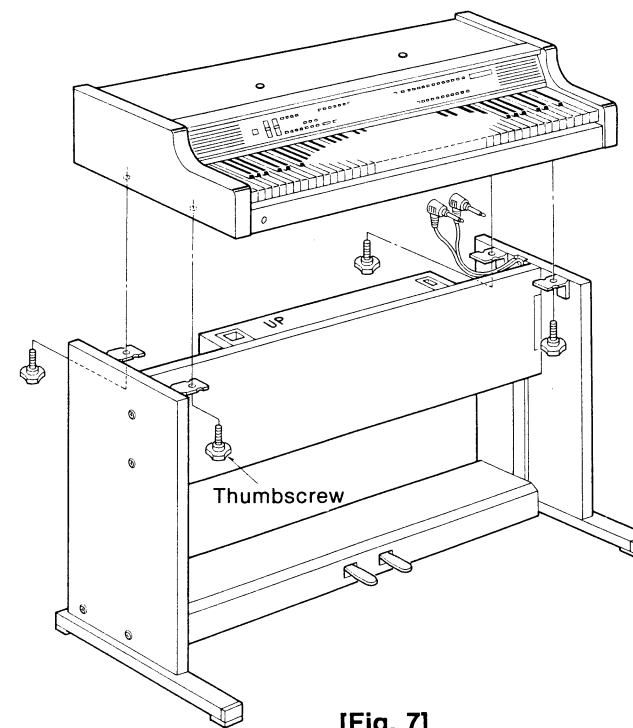
- Before assembling, remove the cover from the right plank.
- Position the crossbar between the side planks so that the box is to the rear and the UP mark is facing up.
- Place the pedal cords coming out of the pedal box so that they lie in the groove on the right side plank. Fit the cover in place over the groove.
- After assembling, put the caps on the screw heads.



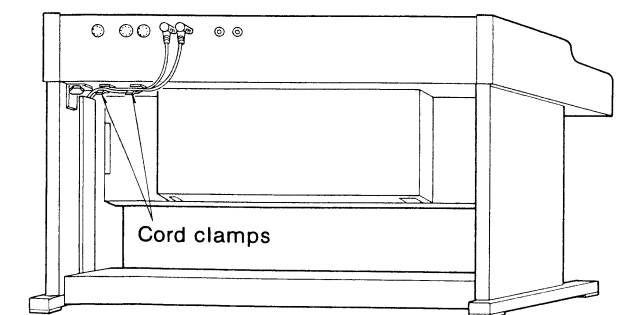
[Fig. 6]

INSTALLATION AND CONNECTION

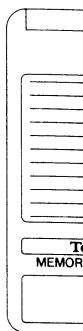
- Secure the musical instrument to the stand with the 4 thumbscrews.
- Insert the GRAY plug of the pedal cords into the SUSTAIN terminal on the rear of the musical instrument, and the BLACK plug into the SOFT terminal.
 - Use the cord clamps to secure the pedal cords as shown in the figure.



[Fig. 7]



[Fig. 8]



Precautions

- The...
- The...
- Wh...

Battery Cautions

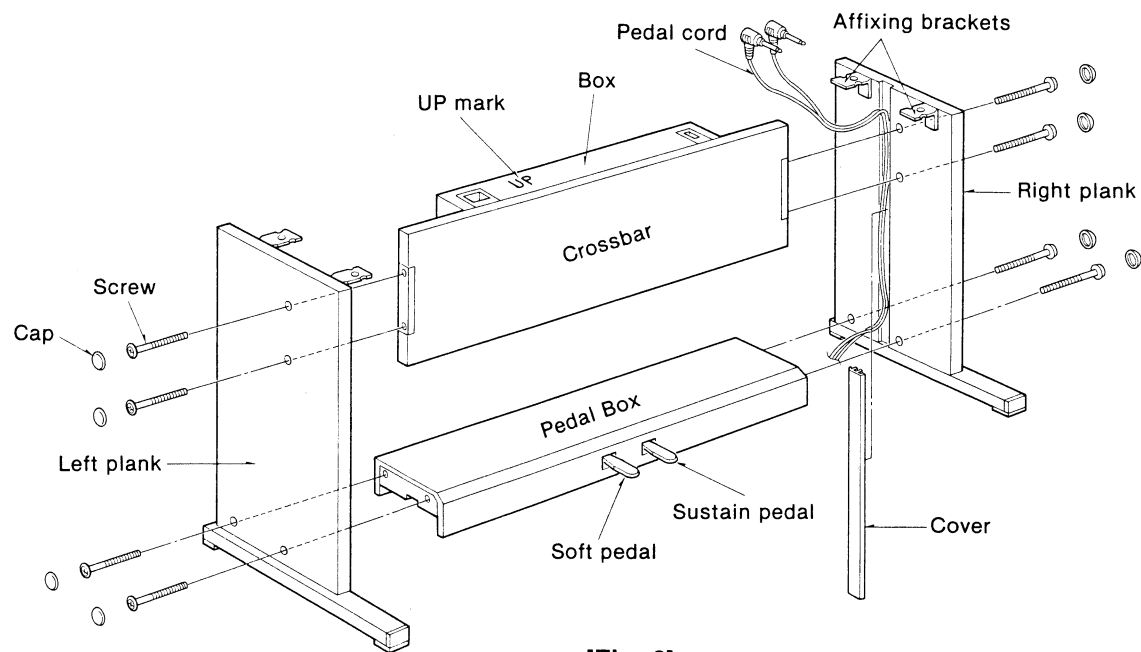
- Re...
- Pul...
- Wh...
- Wh...

STAND (SZ-S70W/SZ-S80W)

- SZ-S70W...PR40
- SZ-S80W...PR60

ASSEMBLY

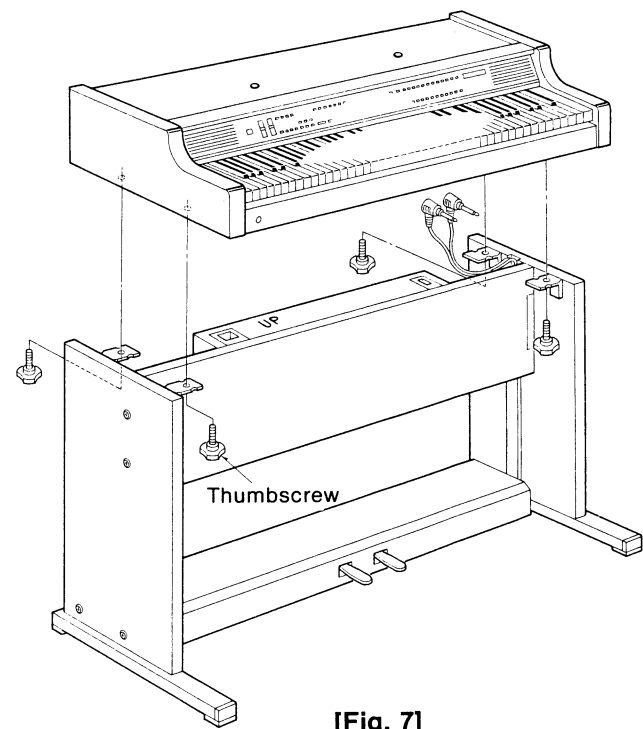
- Before assembling, remove the cover from the right plank.
- Position the crossbar between the side planks so that the box is to the rear and the UP mark is facing up.
- Place the pedal cords coming out of the pedal box so that they lie in the groove on the right side plank. Fit the cover in place over the groove.
- After assembling, put the caps on the screw heads.



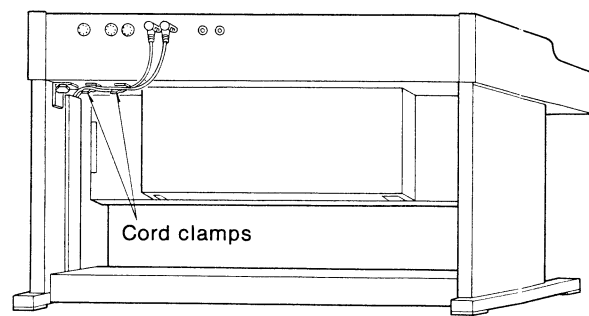
[Fig. 6]

INSTALLATION AND CONNECTION

1. Secure the musical instrument to the stand with the 4 thumbscrews.
2. Insert the GRAY plug of the pedal cords into the SUSTAIN terminal on the rear of the musical instrument, and the BLACK plug into the SOFT terminal.
 - Use the cord clamps to secure the pedal cords as shown in the figure.



[Fig. 7]

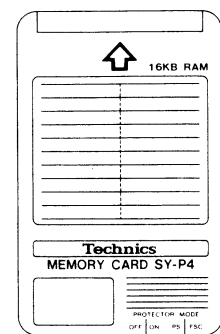


[Fig. 8]

MEMORY CARD (SY-P4)

STORAGE

PS mode	One PLAY SEQUENCER performance (same storage capacity as the piano's internal memory)
FSC mode	20 performances worth of registrations not including PLAY SEQUENCER data.



MODE switch

PROTECTOR switch
Set to **ON** to avoid accidental erasure of stored data.

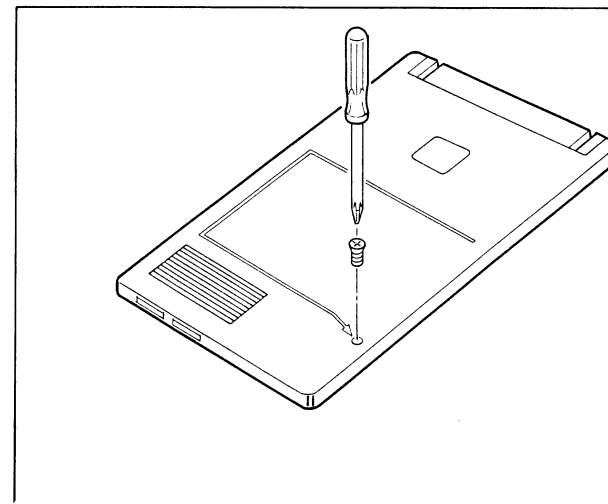
Precautions when using the memory card

1. The life of battery is about 3 years when used at normal temperatures.
2. The memory entries will be erased when the internal battery is used up, and new entries cannot be made.
3. When storing the memory entries, copy them before replacing the battery.

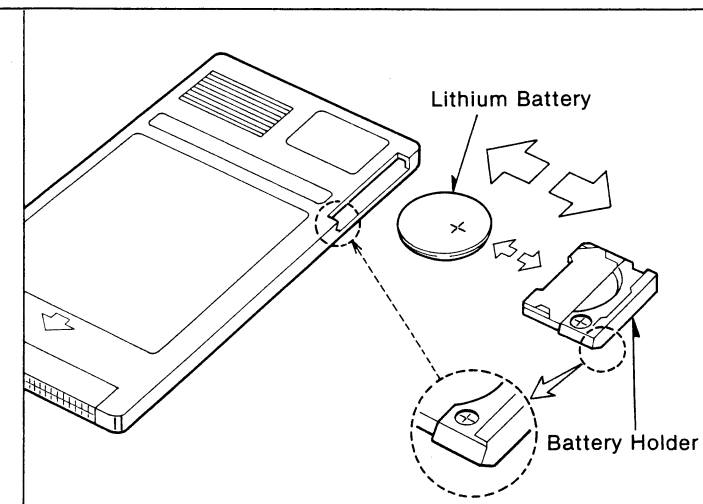
Battery replacing method

Caution: Before replacing the battery, be sure to explain the user that the memory entries will be erased. When storing the memory entries, copy them before replacing the battery.

1. Remove one screw on the back of memory card.
2. Pull out the battery holder as in Fig. 10.
3. When setting the battery, check the plus (+) mark of battery and the (+) mark of battery holder, and set it in correct polarity.
4. When setting the battery holder on the main body of memory card, be sure to set it in correct position.

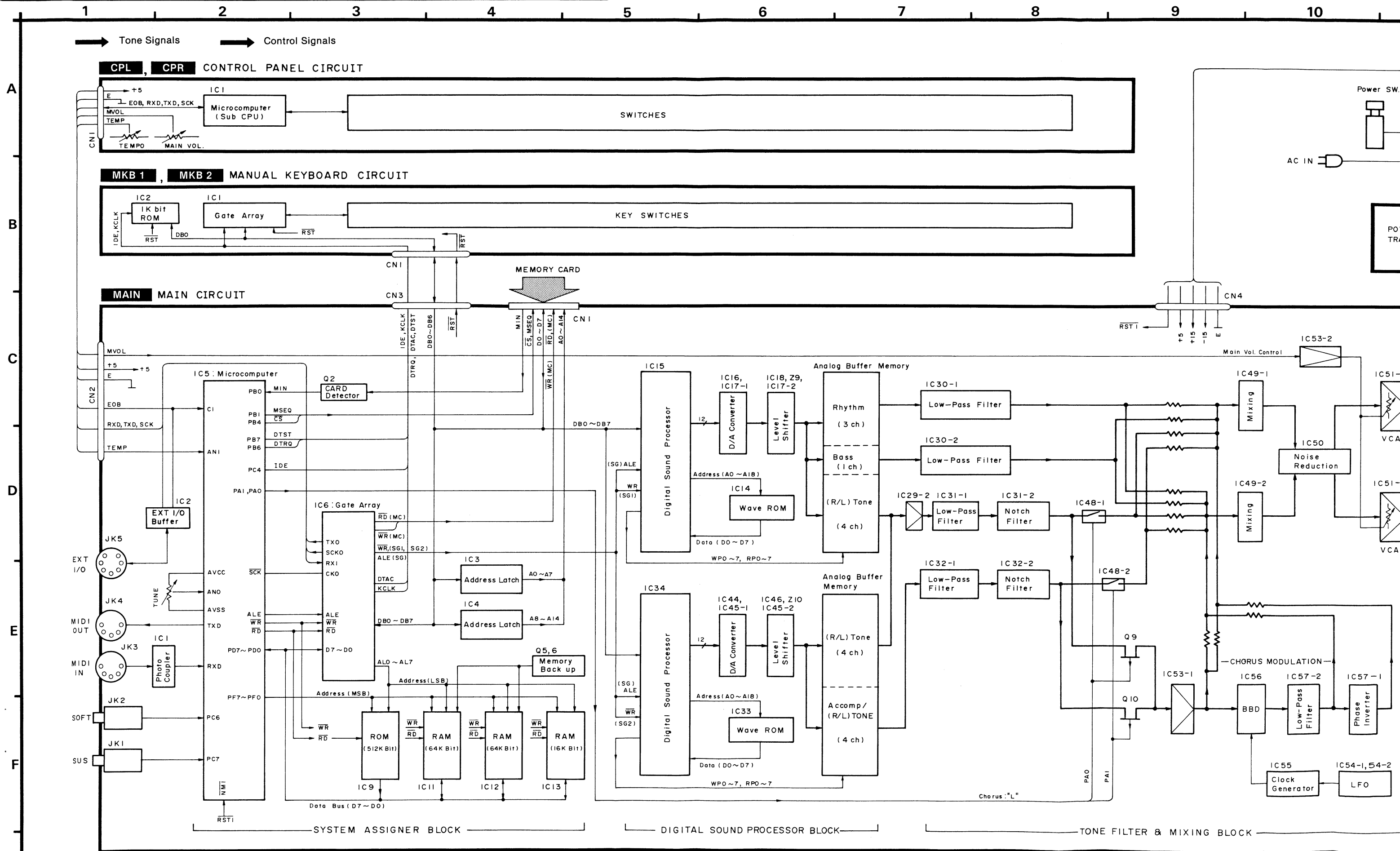


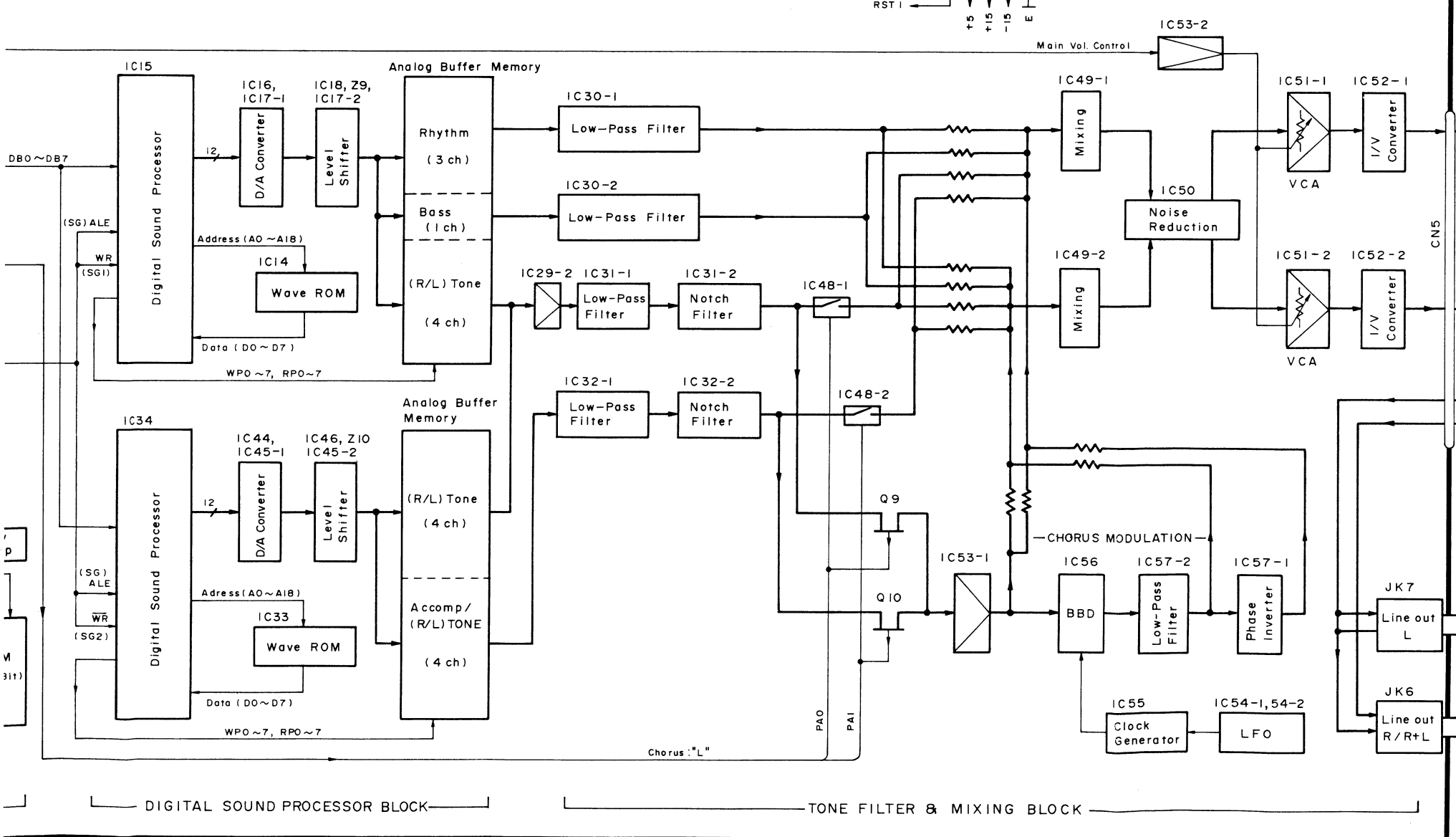
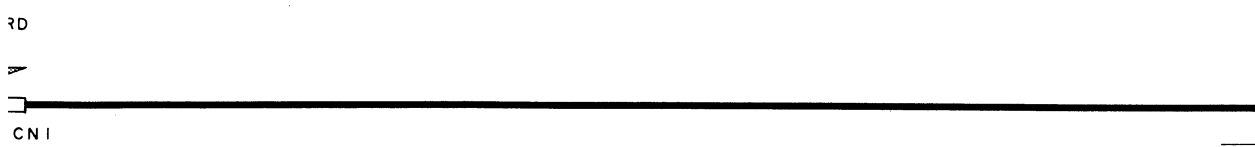
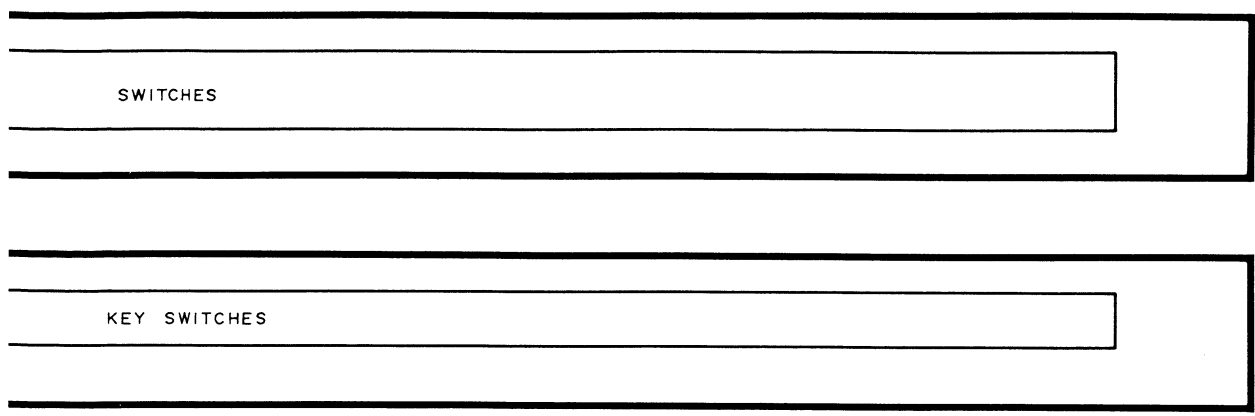
[Fig. 9]



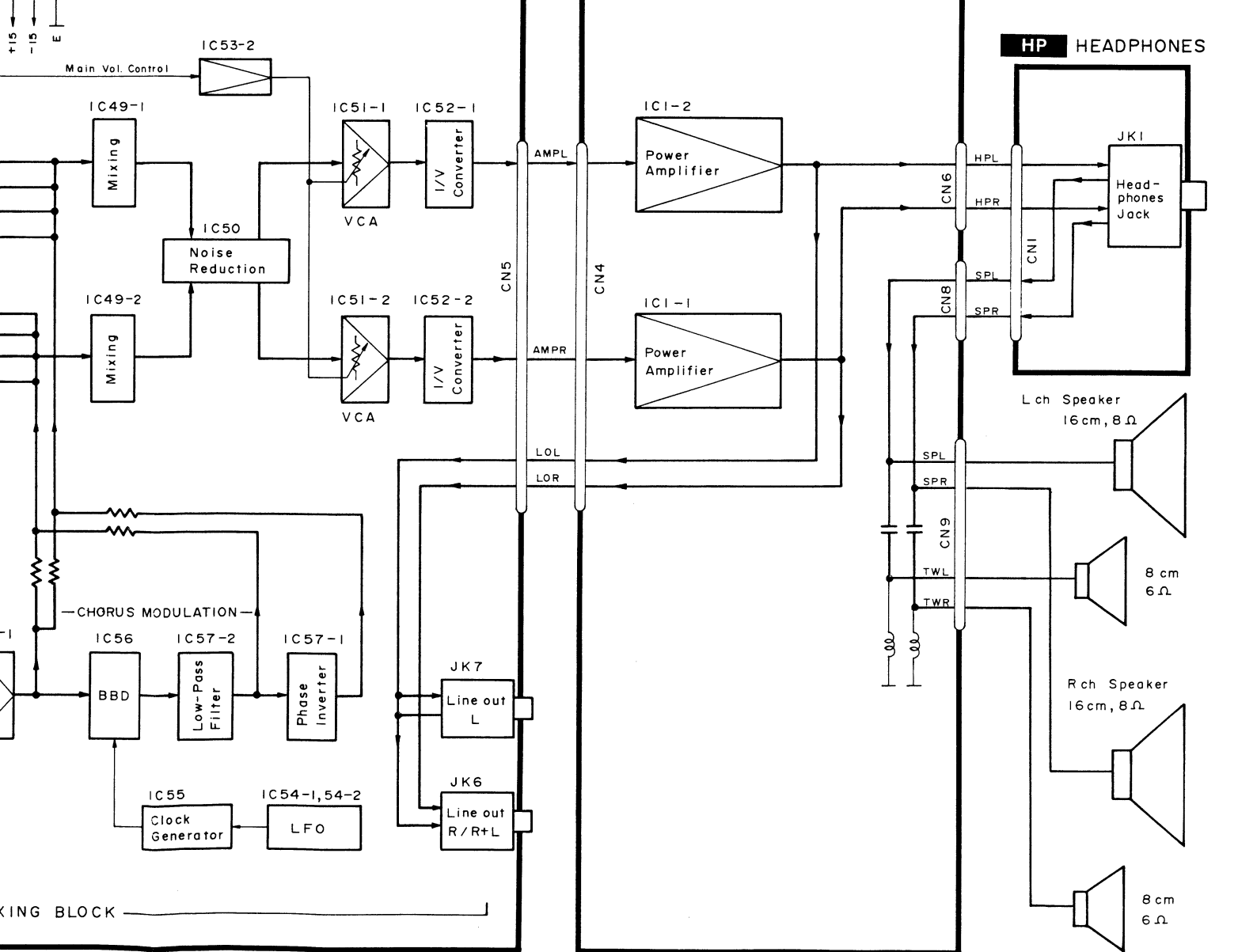
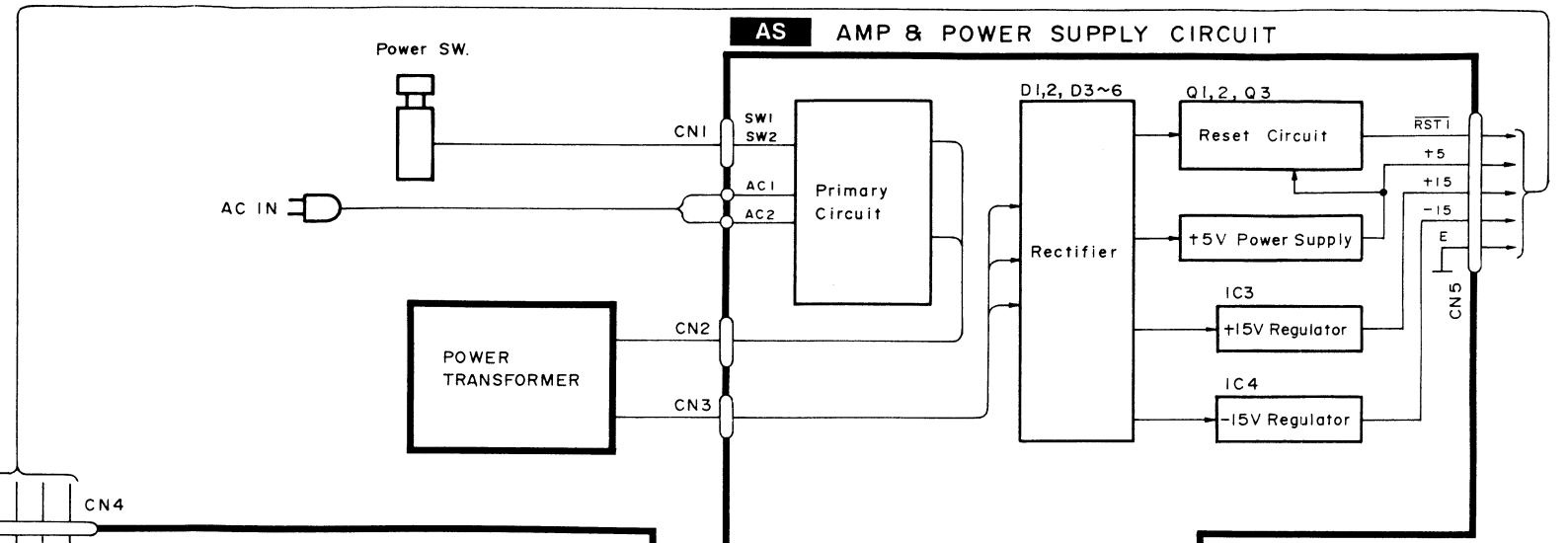
[Fig. 10]

BLOCK DIAGRAM



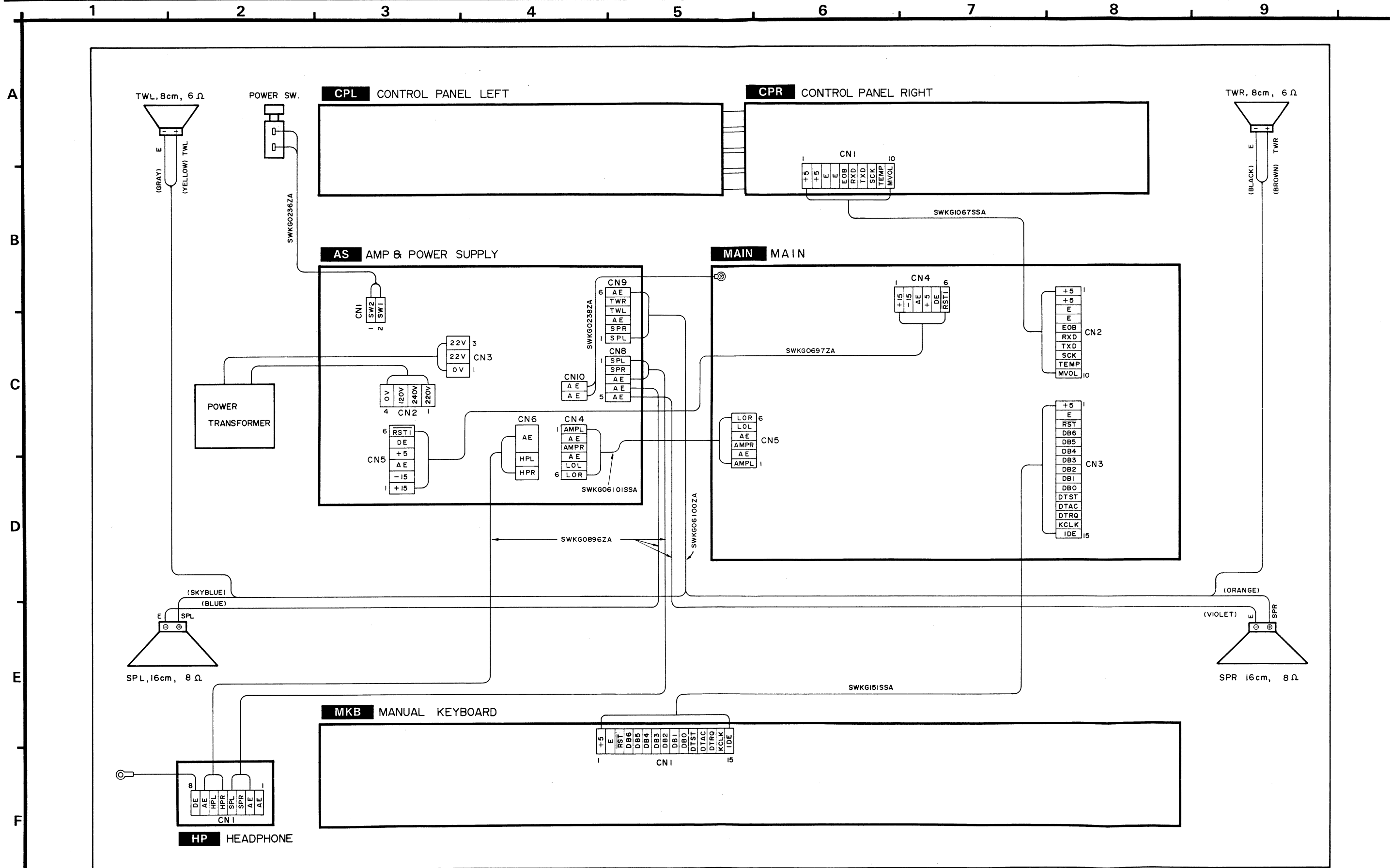


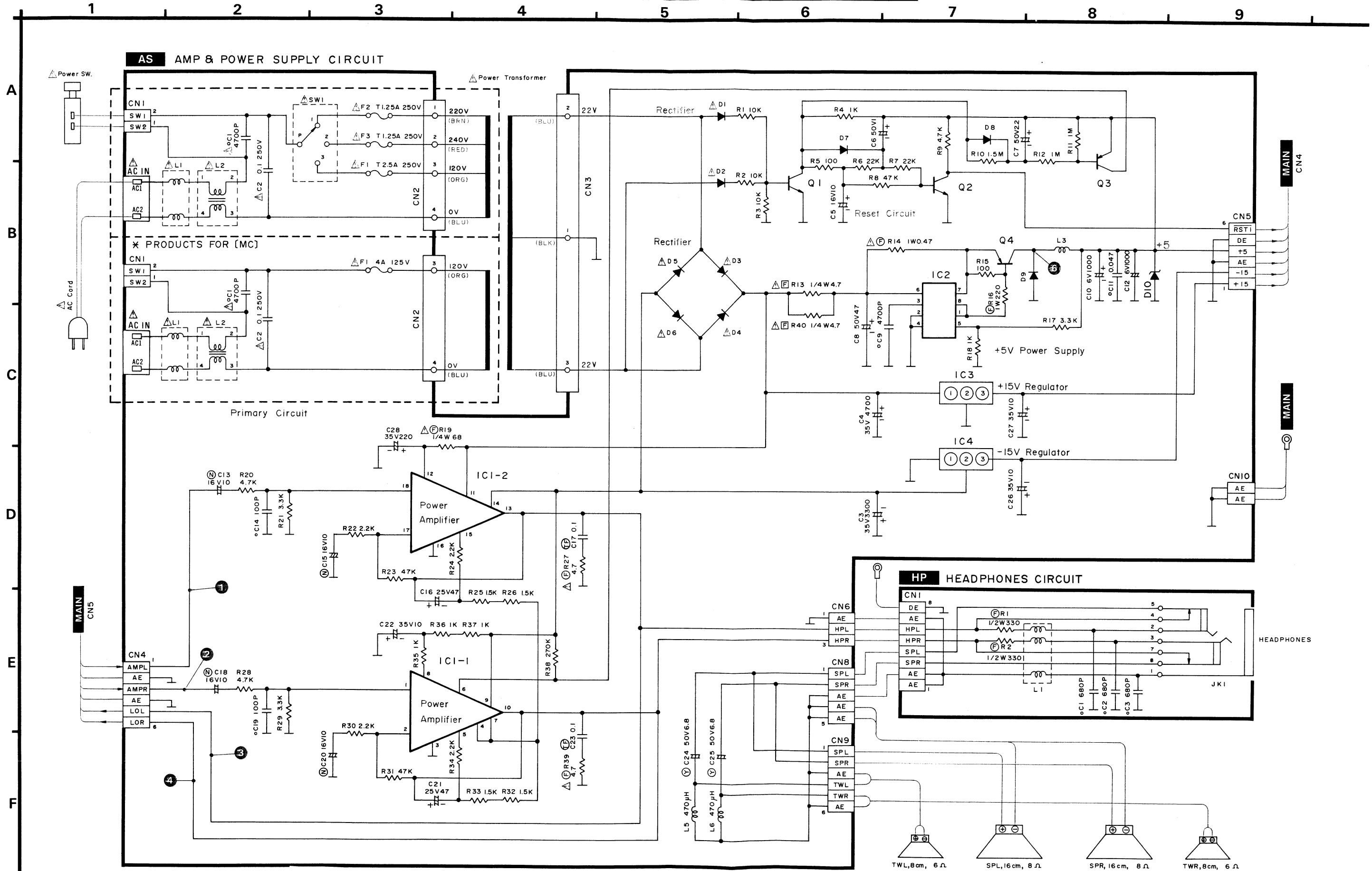
II-2



II-3

WIRING CONNECTION DIAGRAM



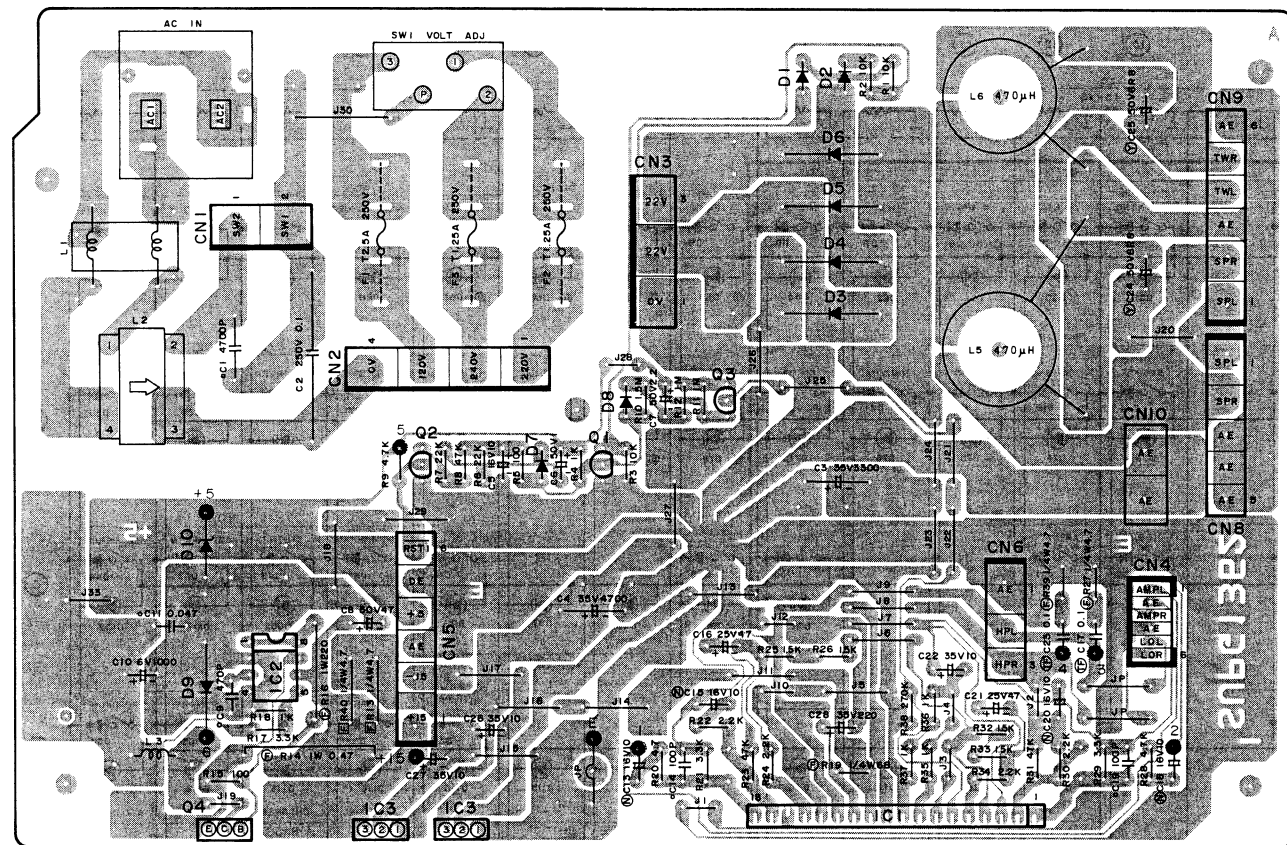


• Products for (XL) and (XR)

SXPG136221

• Other areas

SXPG136211



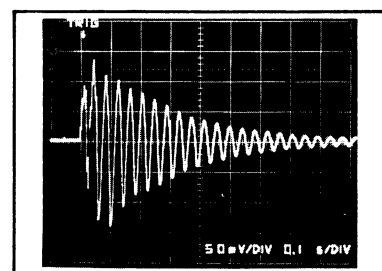
NOTES:

- IC'S
 - IC1: SVIGS4132M2M
 - IC2: SVIGM5291P
 - IC3: SVIGM5F7815
 - IC4: SVIGM5F7915
- DIODES
 - D1, 2: SVDGERA1502Y
 - D3~6: SVDS3V20
 - D7, 8: MA165TA5
 - D9: SVDGRK14
 - D10: MA2062LF
- TRANSISTORS
 - Q1, 2: 2SC2320LFG
 - Q3: 2SA1015-GR
 - Q4: 2SB953AQP
- FUSES
 - F1: XBA2C25TB0
 - F2, 3: XBA2C12TB0

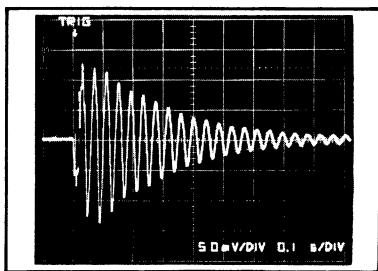
■ Measuring Conditions

- Tone Piano I
- Octave Shift OFF
- Keyboard C₅₂
- Main Volume Max.

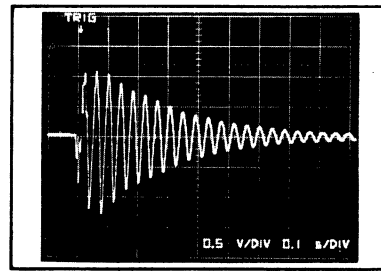
① L ch



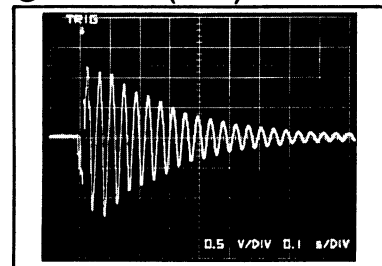
② R ch



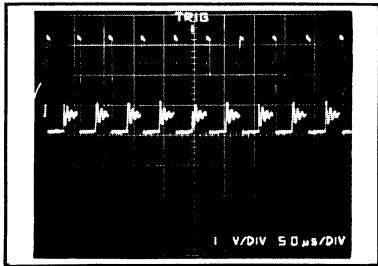
③ Line Out (L ch)



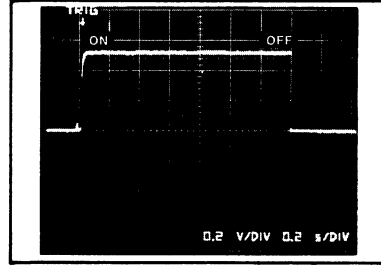
④ Line Out (R ch)



⑤



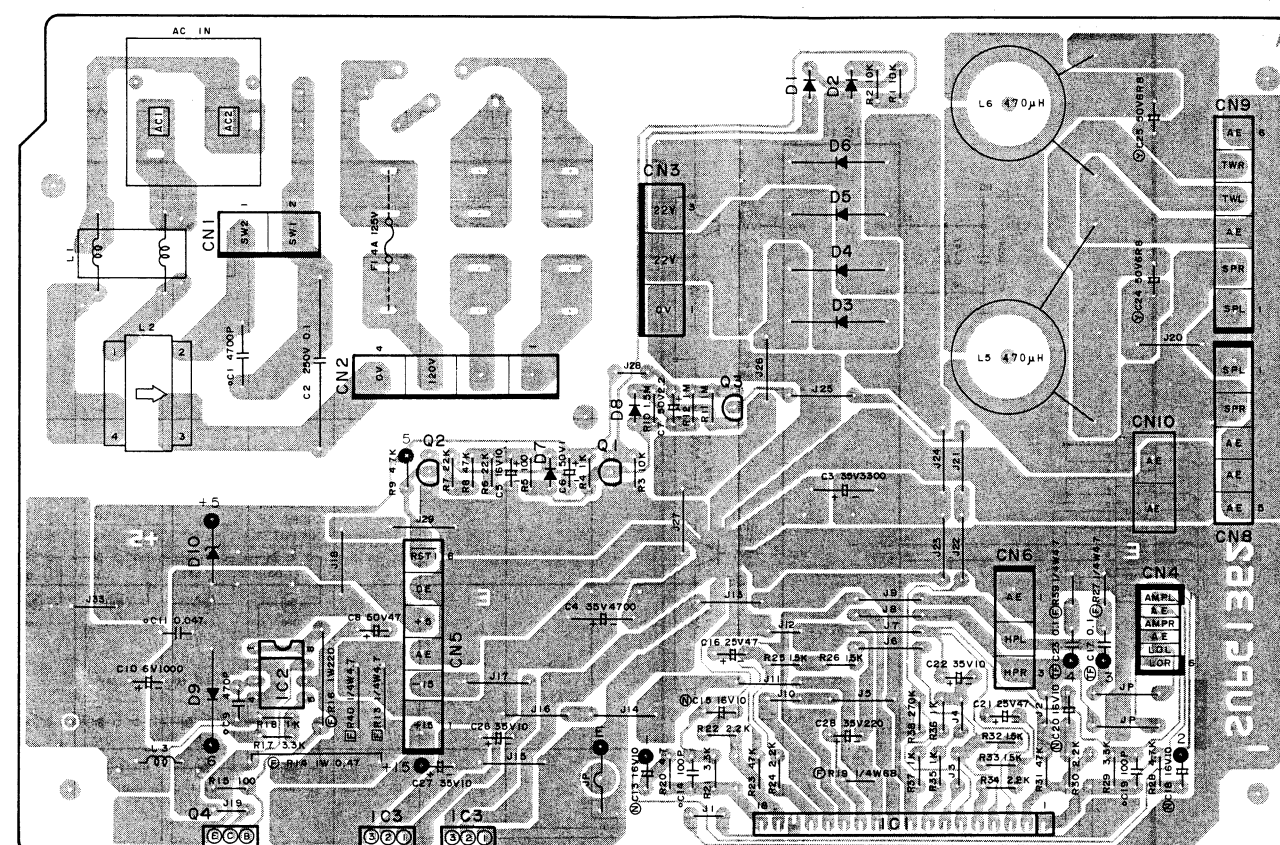
⑥ Q2 Collector (RST 1)



• Power SW ON - OFF

• Products for (MC)

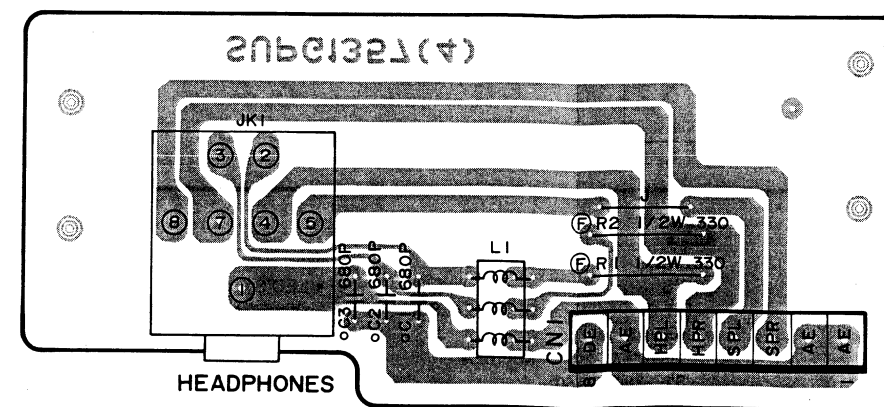
SXPG136231

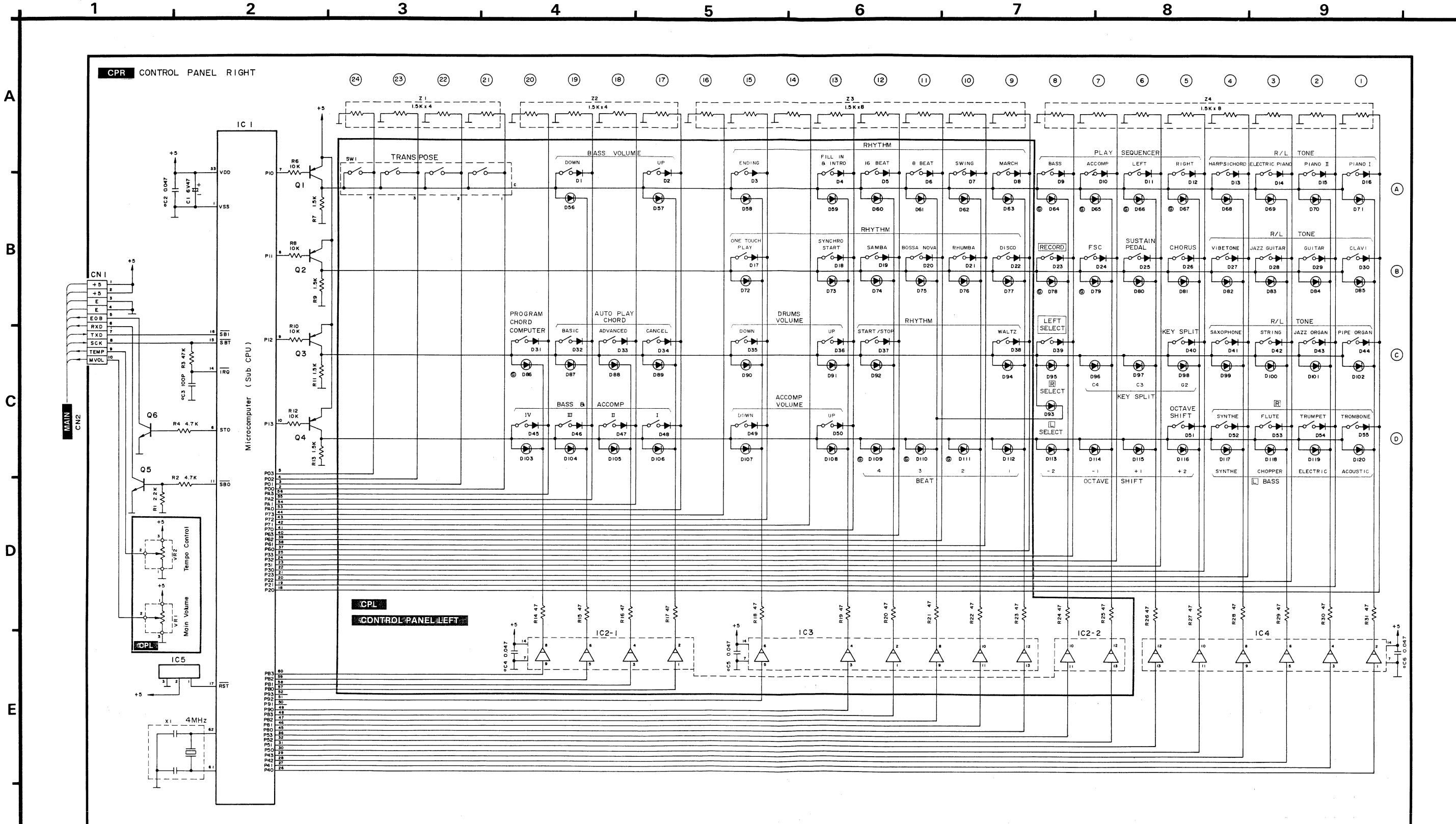


NOTES:

- IC'S
 - IC1: SVIGS4132M2M
 - IC2: SVIGM5291P
 - IC3: SVIGM5F7815
 - IC4: SVIGM5F7915
- DIODES
 - D1, 2: SVDGERA1502Y
 - D3~6: SVDS3V20
 - D7, 8: MA165TA5
 - D9: SVDGRK14
 - D10: MA2062LF
- TRANSISTORS
 - Q1, 2: 2SC2320LFG
 - Q3: 2SA1015-GR
 - Q4: 2SB953AQP
- FUSE
 - F1: XBA1F40NU100

SXPG135711





CPL

NOTES:

- IC'S
IC2, 3: SVIGM74LS07
- DIODES
D1~8, 17~22, MA162A
31~38, 45~50:

- LED'S
D56~63, 72~77, LN221RPX (red)
87~92, 94,
103~108, 112:
D86, 109~111: LN321GPX (green)

CPR

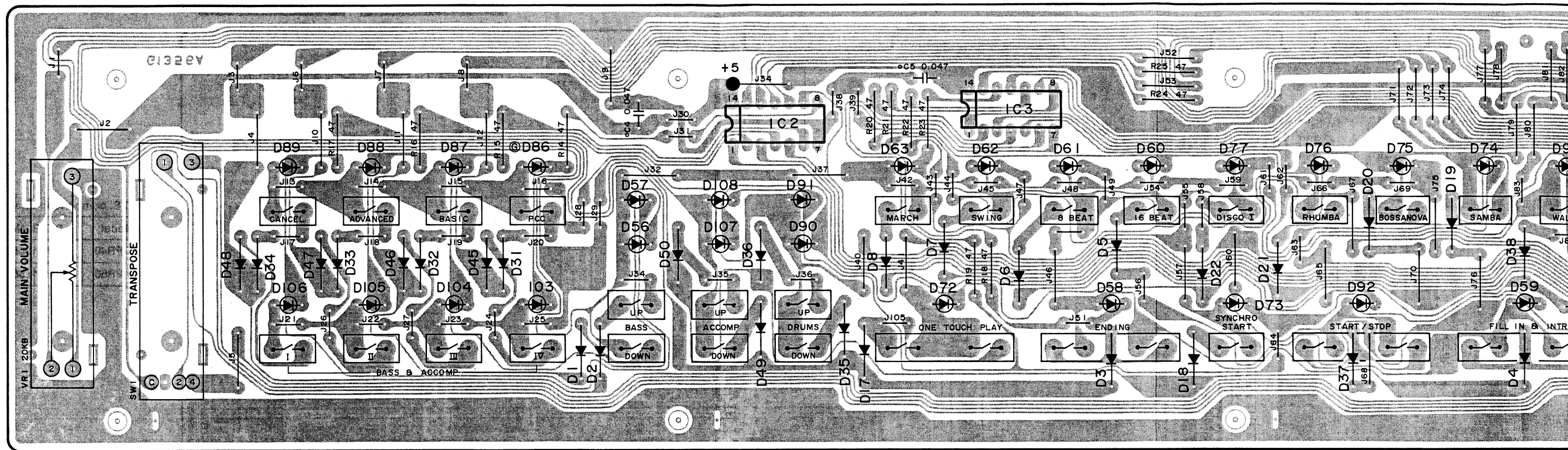
NOTES:

- IC'S
IC1: MN15524PGP
IC4: SVIGM74LS07
IC5: MN1280R
- TRANSISTORS
Q1~4: 2SA830B
Q5, 6: 2SC1047C

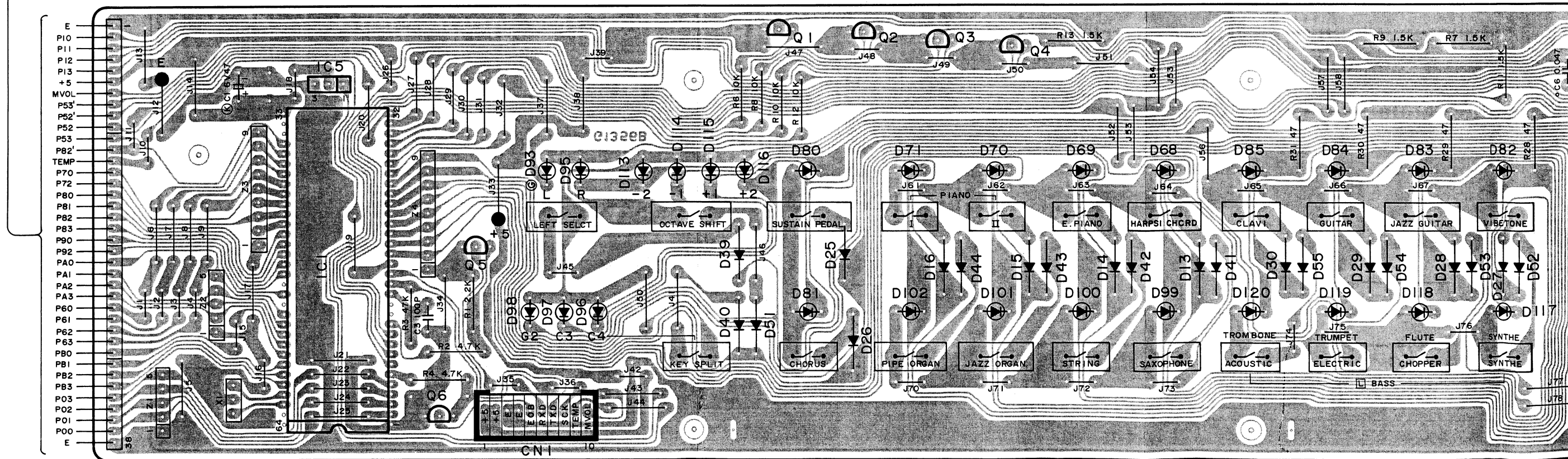
- DIODES
D9~16, 23~30, MA162A
39~44, 51~55:
- LED'S
D68~71, 80~85, 93, LN221RPX (red)
95~102, 113~120:
D64~67, 78, 79: LN321GPX (green)

1 2 3 4 5 6 7 8 9 10

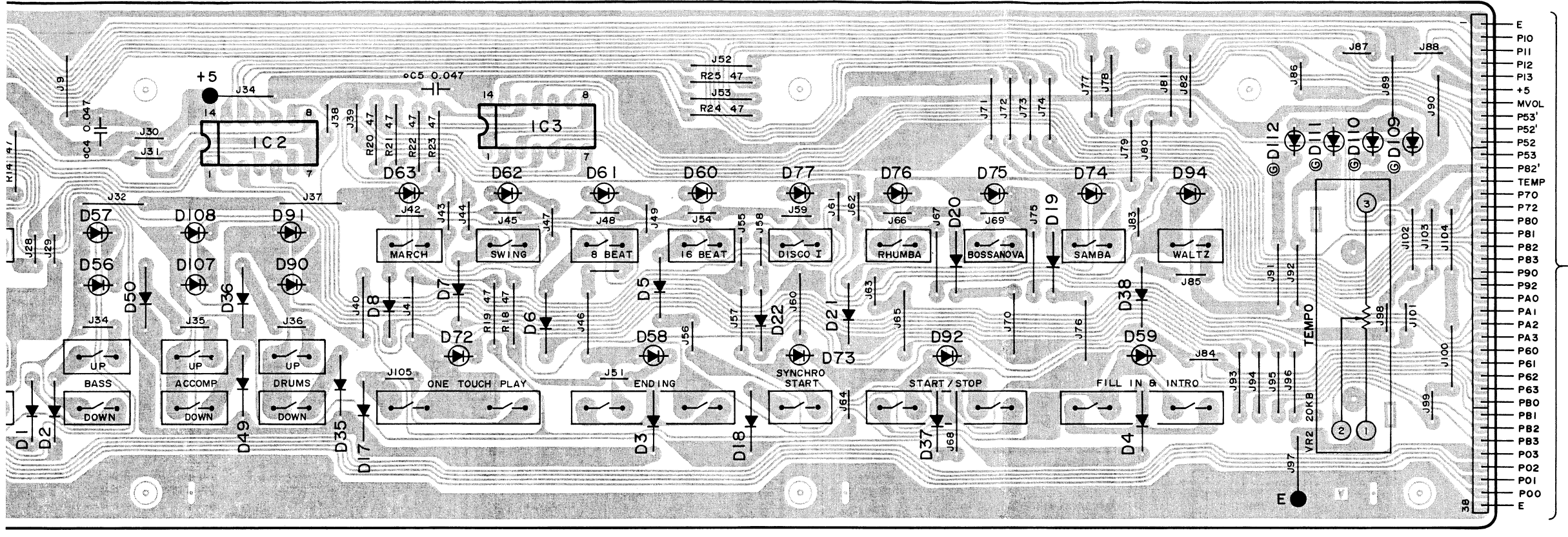
CPL CONTROL PANEL LEFT CIRCUIT BOARD



CPR CONTROL PANEL RIGHT CIRCUIT BOARD

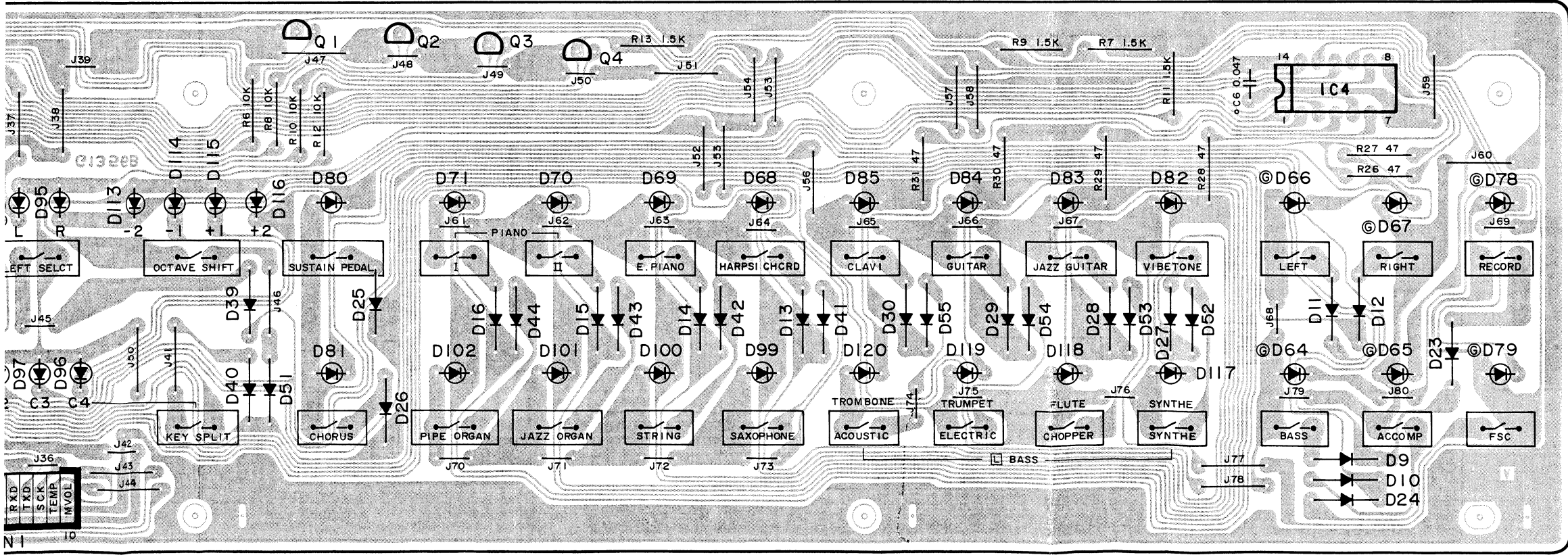


SXPG135611A



- NOTES:**
- IC'S
IC2, 3: SVIGM74LS07
 - DIODES
D1~8, 17~22, MA162A
31~38, 45~50:
 - LED'S
D56~63, 72~77, LN221RPX (red)
87~92, 94,
103~108, 112:
D86, 109~111: LN321GPX (green)

SXPG135611B



- NOTES:**
- IC'S
IC1: MN15524PGP
IC4: SVIGM74LS07
IC5: MN1280R
 - TRANSISTORS
Q1~4: 2SA830B
Q5, 6: 2SC1047C
 - DIODES
D9~16, 23~30, MA162A
39~44, 51~55:
 - LED'S
D68~71, 80~85, 93, LN221RPX (red)
95~102, 113~120:
D64~67, 78, 79: LN321GPX (green)

1 2 3 4 5 6 7 8 9 10

Measuring conditions of output waveforms

Please set the initial mode before measurement.

- Initial mode: Press the FSC button to turn it on, and then press the INITIAL key on the keyboard.
- Tune Center
- Transpose C
- Octave Shift OFF (Normal)
- Key Split C3

[Note]
The output waveforms are obtained when the key pressing force is maximum.

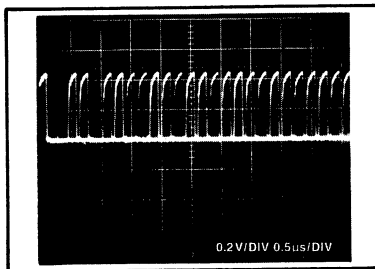
1 TUNE

- Tune
- b 0V
- center +2.5V
- # +5V

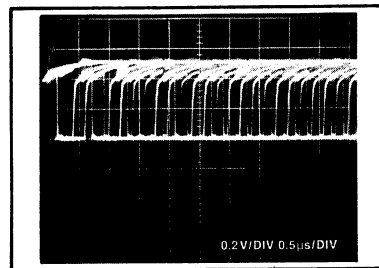
2 Tempo Control

- J = 50 0V
- J = 300 +5V

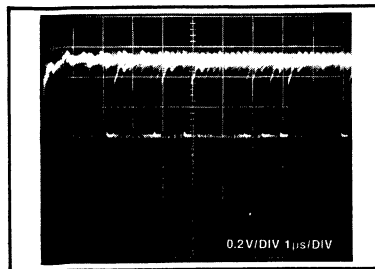
3 ALE



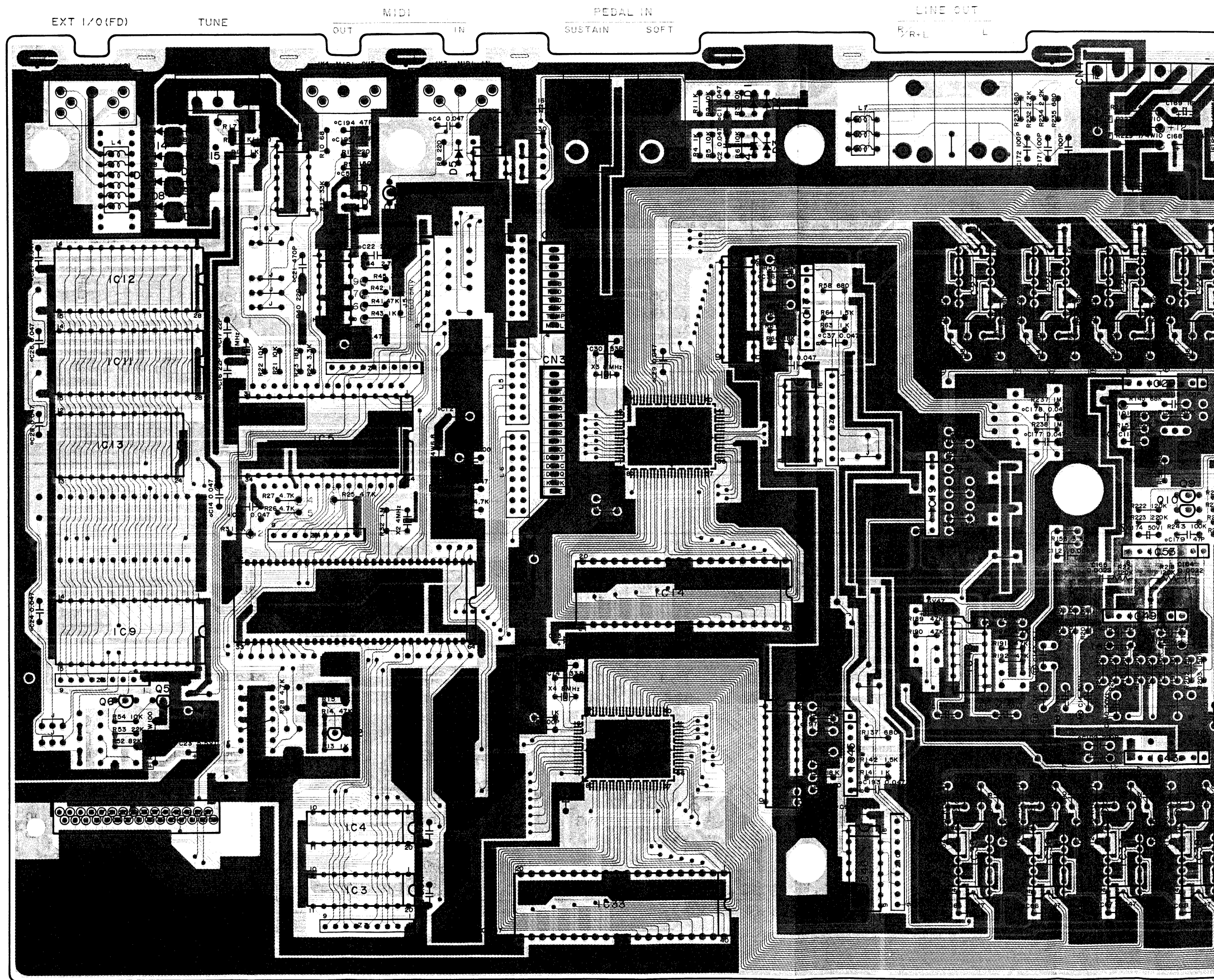
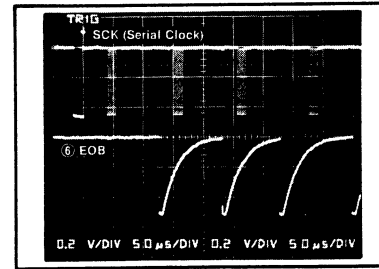
4 RD



5 WR



6 EOB

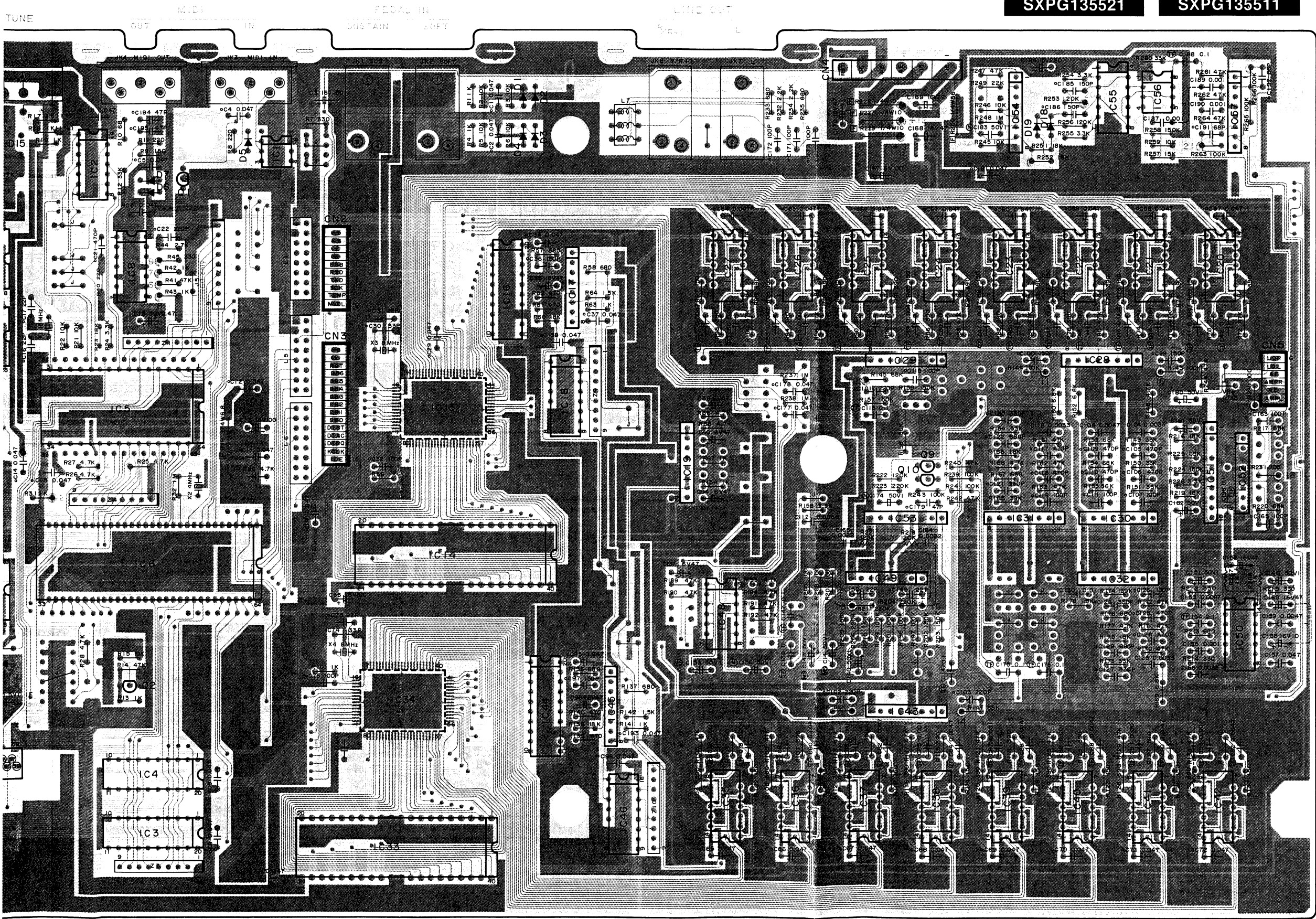


SX-PR40

SXPG135521

SX-PR60

SXPG135511



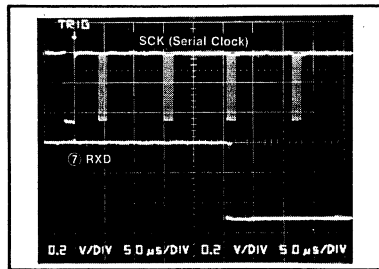
• P.C.B. comparison chart

Model	P.C.B. No.	J5
SX-PR40	SXPG135521	x
SX-PR60	SXPG135511	○ (used)

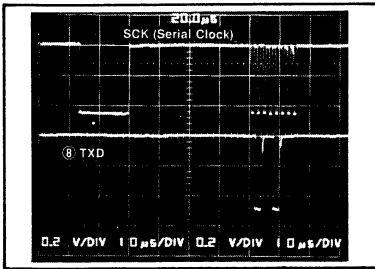
NOTES:

- IC'S
- IC1: SVIGPC900
- IC2: SVIGM74LS07
- IC3, 4: SVIGTC40H374
- IC5: SVIG7810H
- IC6: SVIGM603A114
- IC8: SVIGM74LS05
- IC9: SVIG05PR60-A
- IC11, 12: SVIGD446415L
- IC13: SVIGD446C25
- IC14, 33: IC1: SVIG2000C180
- IC2: SVIG2000C181
- IC15, 34: SVIGUPD6312
- IC16, 44: SVIGBA9221
- IC17, 45: SVIGM5238L
- IC18, 46: MN74HC4051
- IC19, 28~32, 43, 49, 52~54, 57: SVIGM5218L
- IC20~27, 35~42: MN74HC4066
- IC48: SVIGUPD4066B
- IC50: SVIGLM1894N
- IC51: SVIGM5241L
- IC55: SVIGMSM4011
- IC56: MN3009
- TRANSISTORS
- Q1, 2, 5: 2SA1015-GR
- Q6: 2SC2320LFG
- Q9, 10: 2SJ40CD
- DIODES
- D1~15, 17~19: MA165TA5

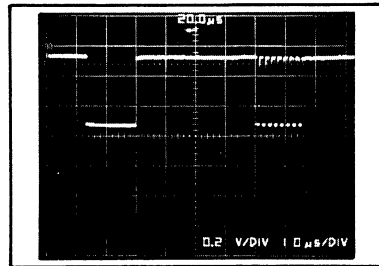
7 RXD



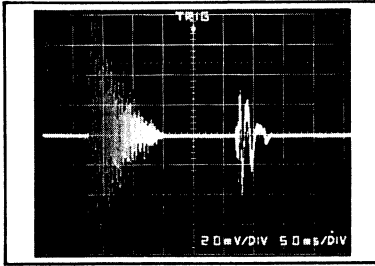
8 TXD



9 SCK

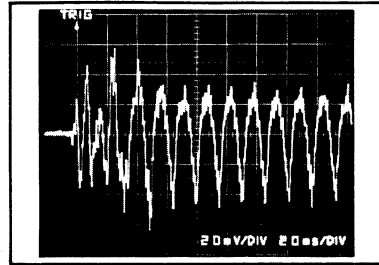


10 Rhythm



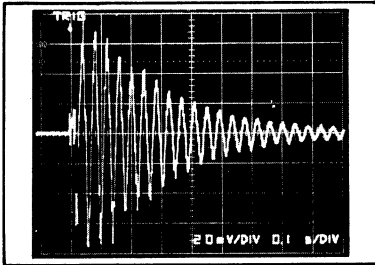
- Rhythm8 beat
- Tempo J = 120
- Drums Volumestep 3

11 Bass



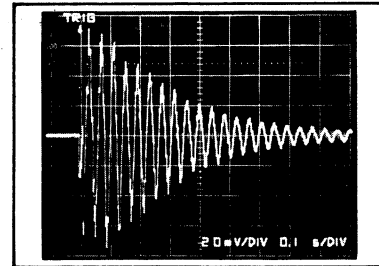
- Auto Play ChordBasic
- Key SplitC3
- Bass Volumestep 3
- KeyboardC28

12 R/L Tone



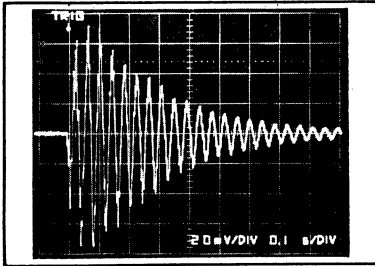
- [R] TonePiano I
- Octave ShiftOFF
- KeyboardC52

13 R/L Tone



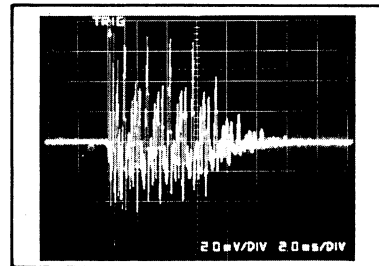
- [R] TonePiano I
- Octave ShiftOFF
- KeyboardC52

14 R/L Tone

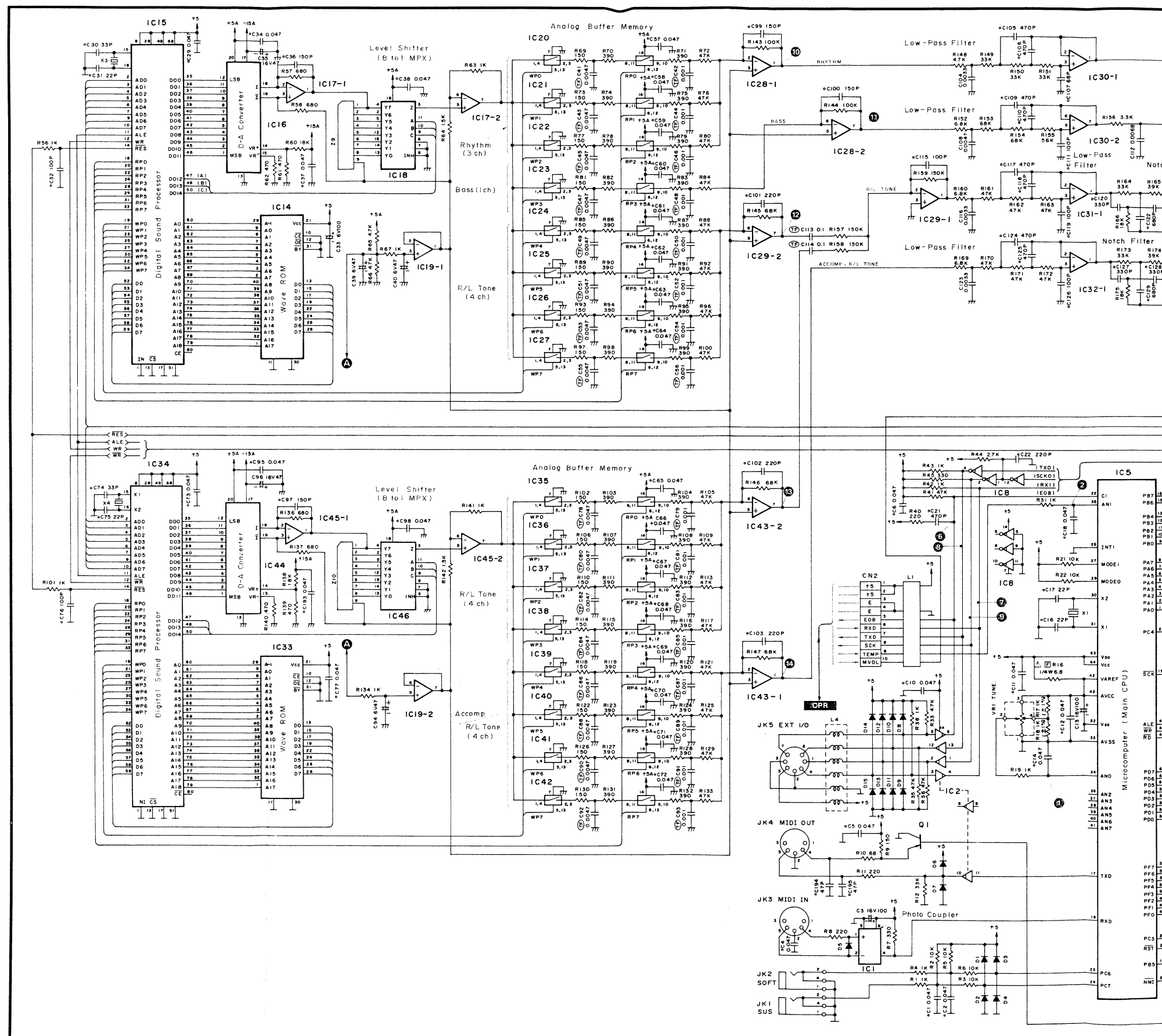


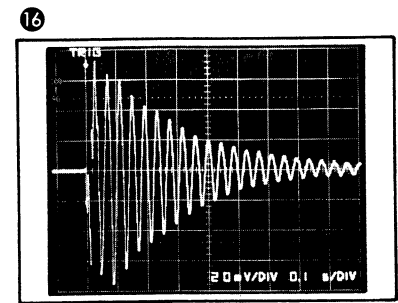
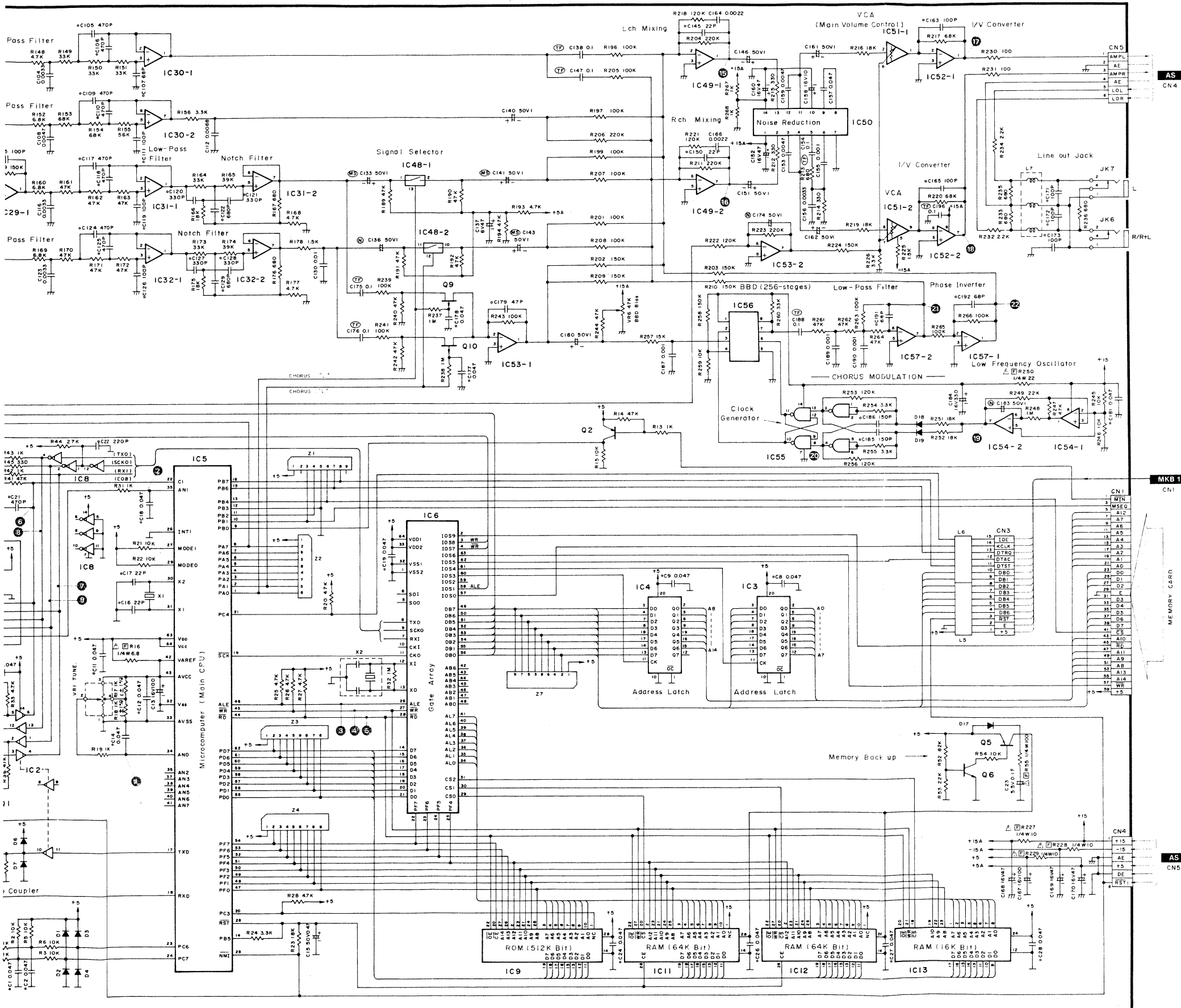
- [R] TonePiano I
- Octave ShiftOFF
- KeyboardC52

15 Accompaniment

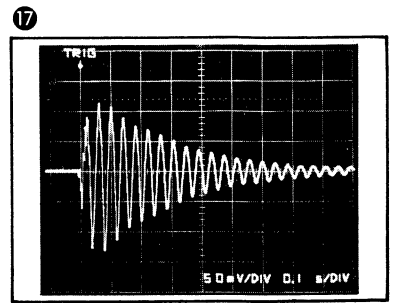


- Rhythm8 beat
- Auto Play ChordBasic
- Accomp PatternIV
- Accomp Volumestep 3
- Tempo... J = 120 • C Key...ON

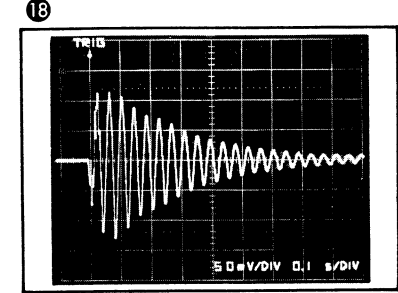




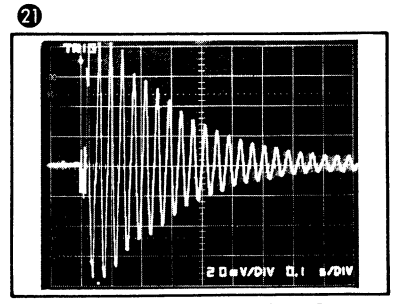
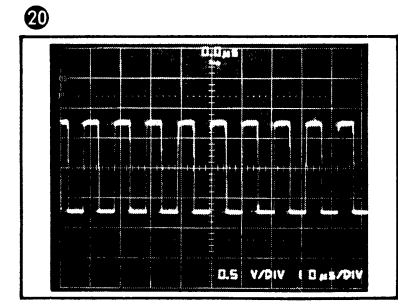
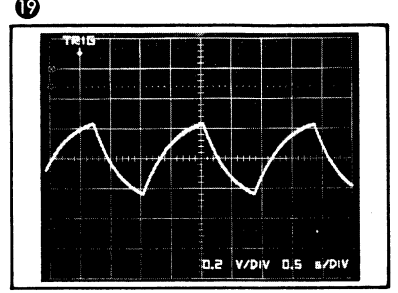
• Tone Piano I
 • Octave Shift OFF
 • Keyboard C₅₂



• Tone Piano I
 • Octave Shift OFF
 • Keyboard C₅₂ • Main Vol...Max



• Tone Piano I
 • Octave Shift OFF
 • Keyboard...C₅₂ • Main Vol...Max



• Tone Piano I
 • Octave Shift OFF
 • Chorus ON
 • Keyboard C₅₂

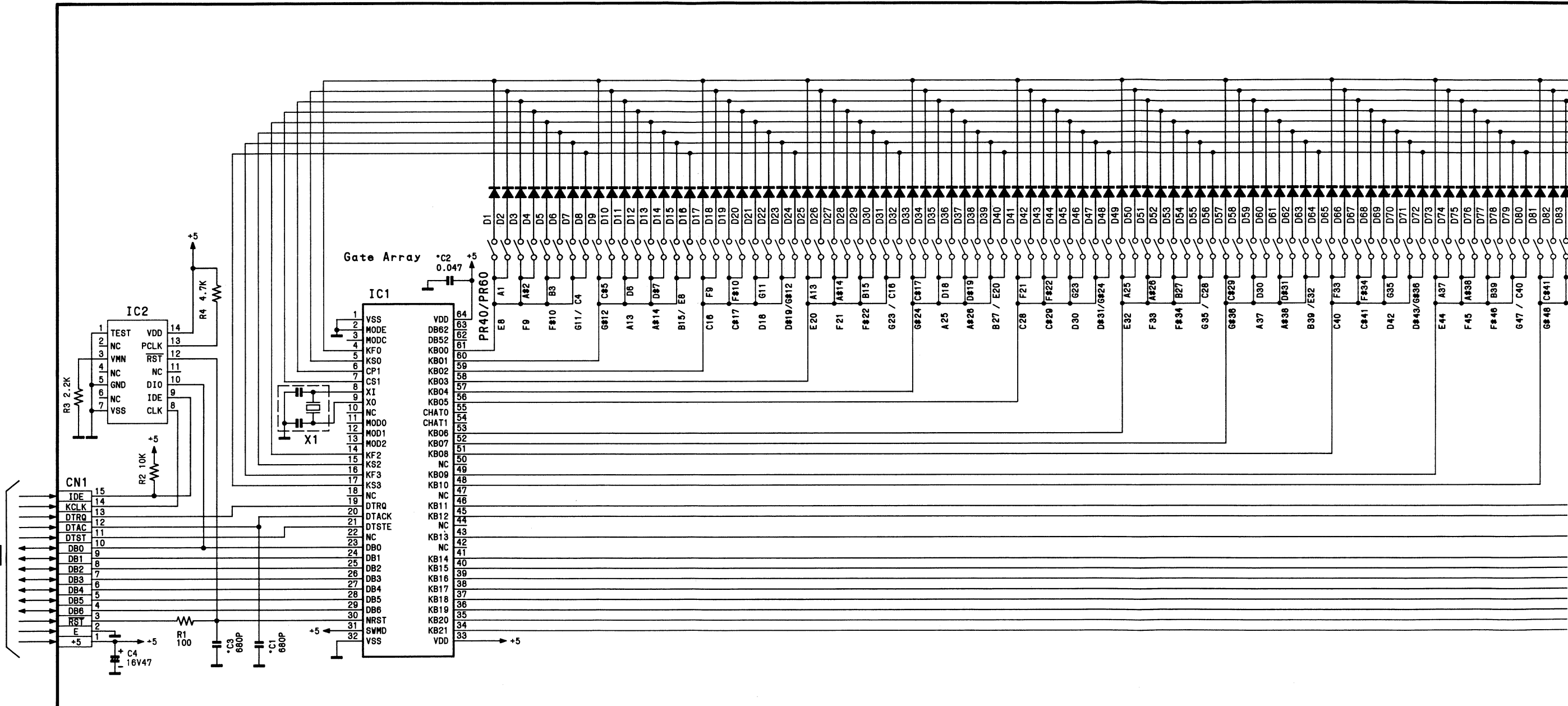
NOTES:

- IC'S
- IC1: SVIGPC900
- IC2: SVIGM74LS07
- IC3, 4: SVIGTC40H374
- IC5: SVIG7810H
- IC6: SVIGM603A114
- IC8: SVIGM74LS05
- IC9: SVIG05PR60-A
- IC11, 12: SVIGD446415L
- IC13: SVIGD446C25
- IC14, 33: IC1: SVIG2000C180
IC2: SVIG2000C181
- IC15, 34: SVIGUPD6312
- IC16, 44: SVIGBA9221
- IC17, 45: SVIGM5238L
- IC18, 46: MN74HC4051
- IC19, 28~32, 43, 49, 52~54, 57: SVIGM5218L
- IC20~27, 35~42: MN74HC4066
- IC48: SVIGUPD4066B
- IC50: SVIGLM1894N
- IC51: SVIGM5241L
- IC55: SVIGMSM4011
- IC56: MN3009
- TRANSISTORS
- Q1, 2, 5: 2SA1015-GR
- Q6: 2SC2320LFG
- Q9, 10: 2SJ40CD
- DIODES
- D1~15, 17~19: MA165TA5

1 2 3 4 5 6 7 8 9 10

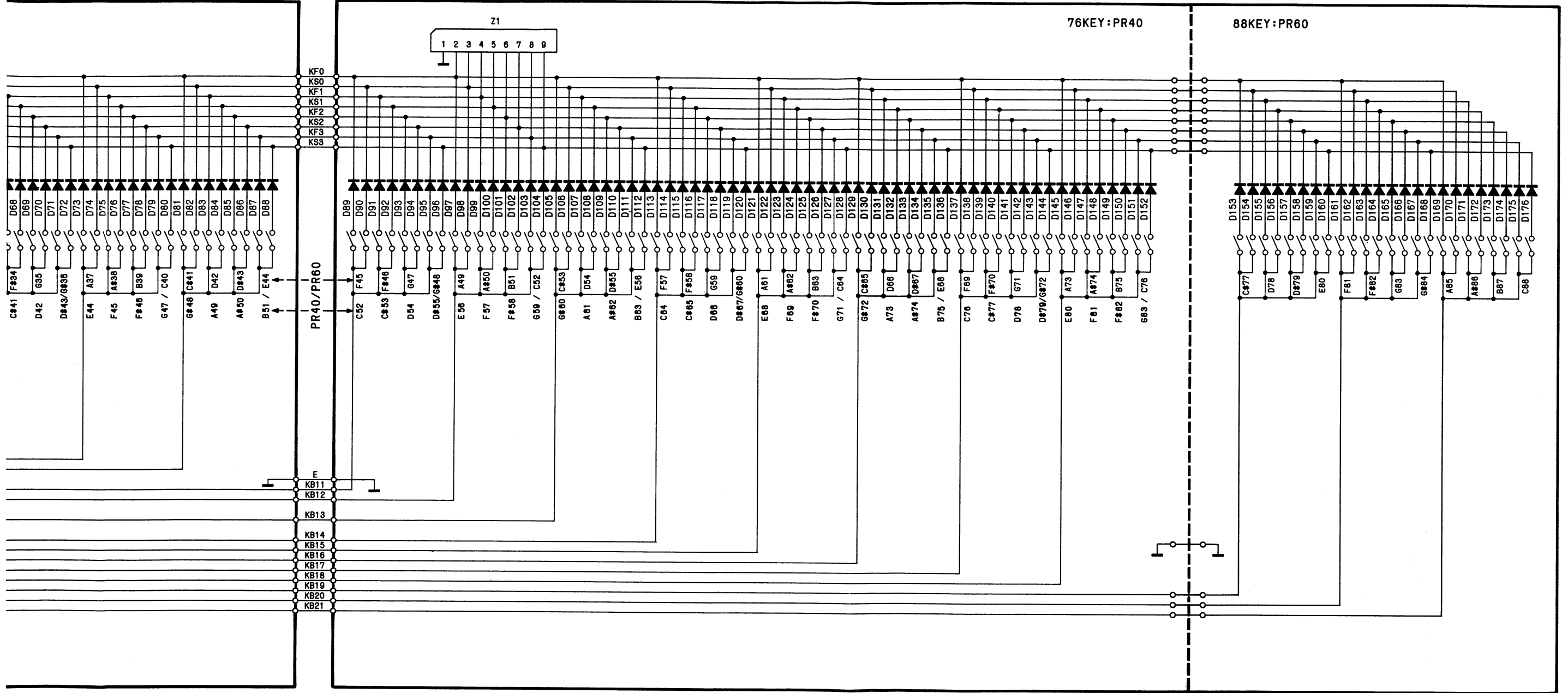
A
B
C
D
E
F

MKB 1

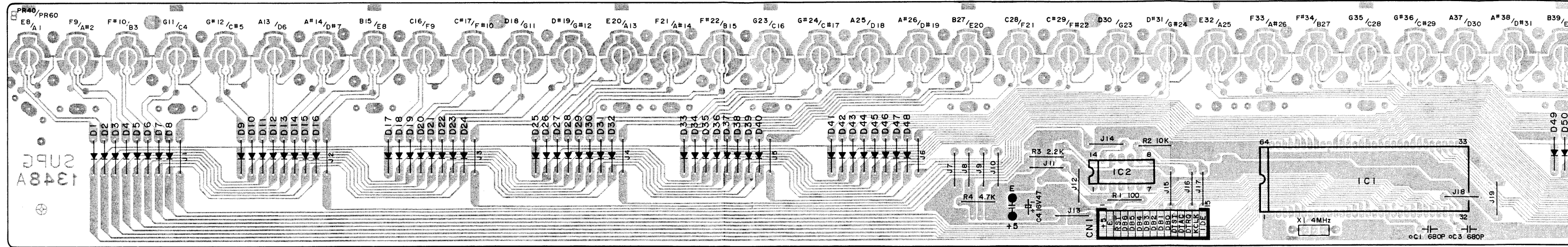


NOTES:
 • IC'S
 IC1: MN50020PGV
 IC2: MN1231
 • DIODES
 D1~176: MA162A

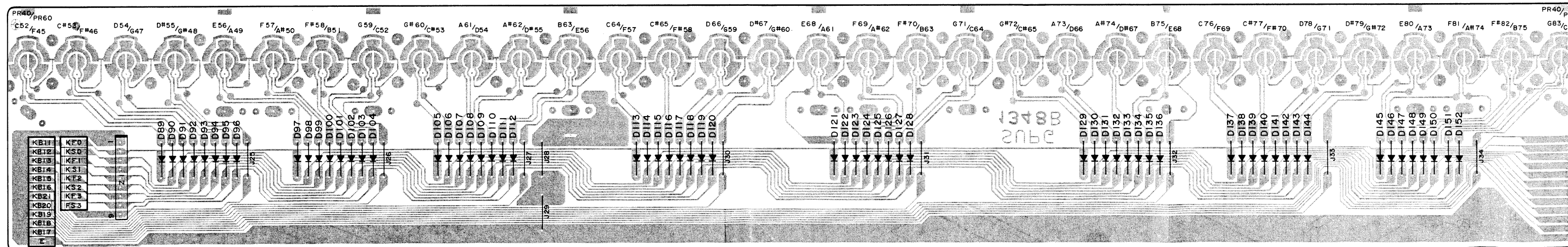
MKB 2



MKB 1 MANUAL KEYBOARD 1 CIRCUIT BOARD



MKB 2 MANUAL KEYBOARD 2 CIRCUIT BOARD



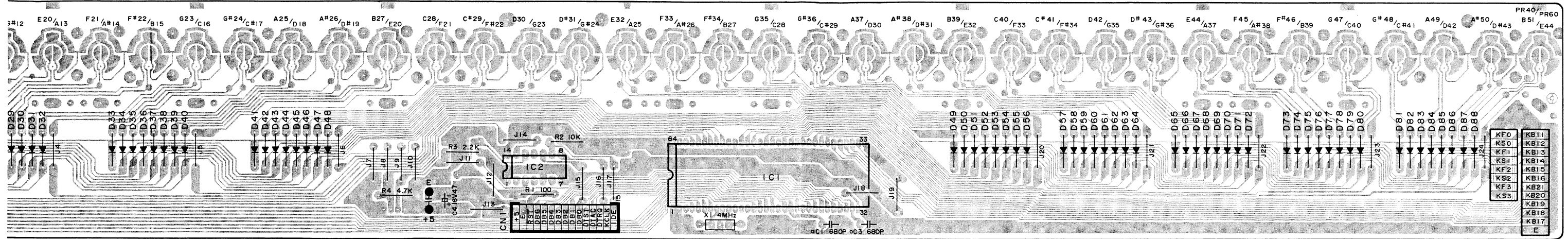
• SX-PR40

SXPG134821B

NOTES:

- IC'S
- IC1: MN50020PGV
- IC2: MN1231
- DIODES
- D1~176: MA162A

SXPG134811A

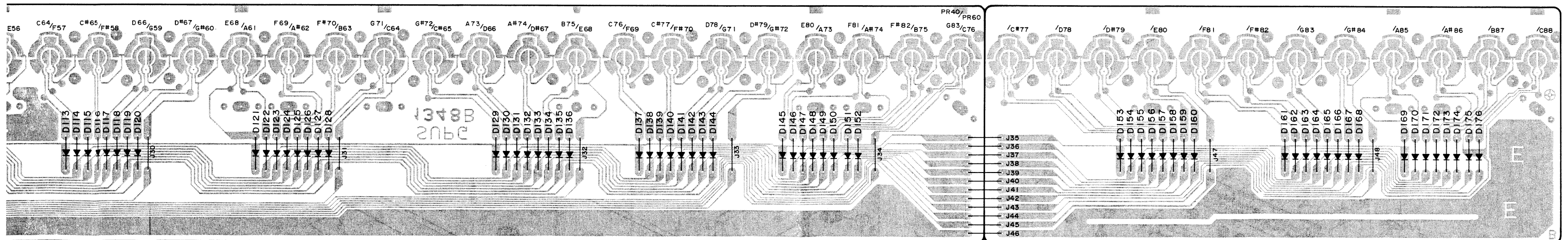


• SX-PR40

SXPG134821B

• SX-PR60

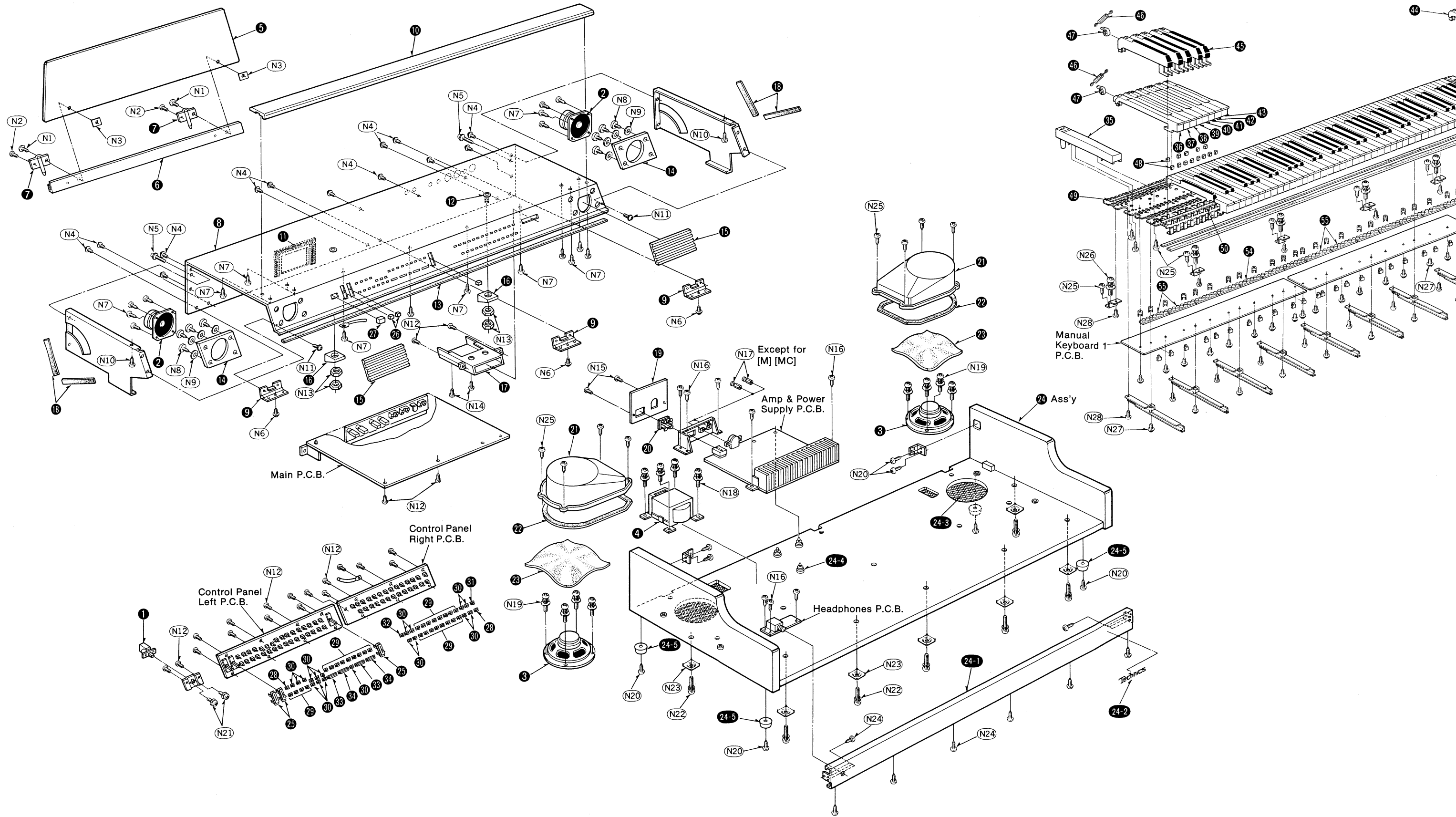
SXPG134811B

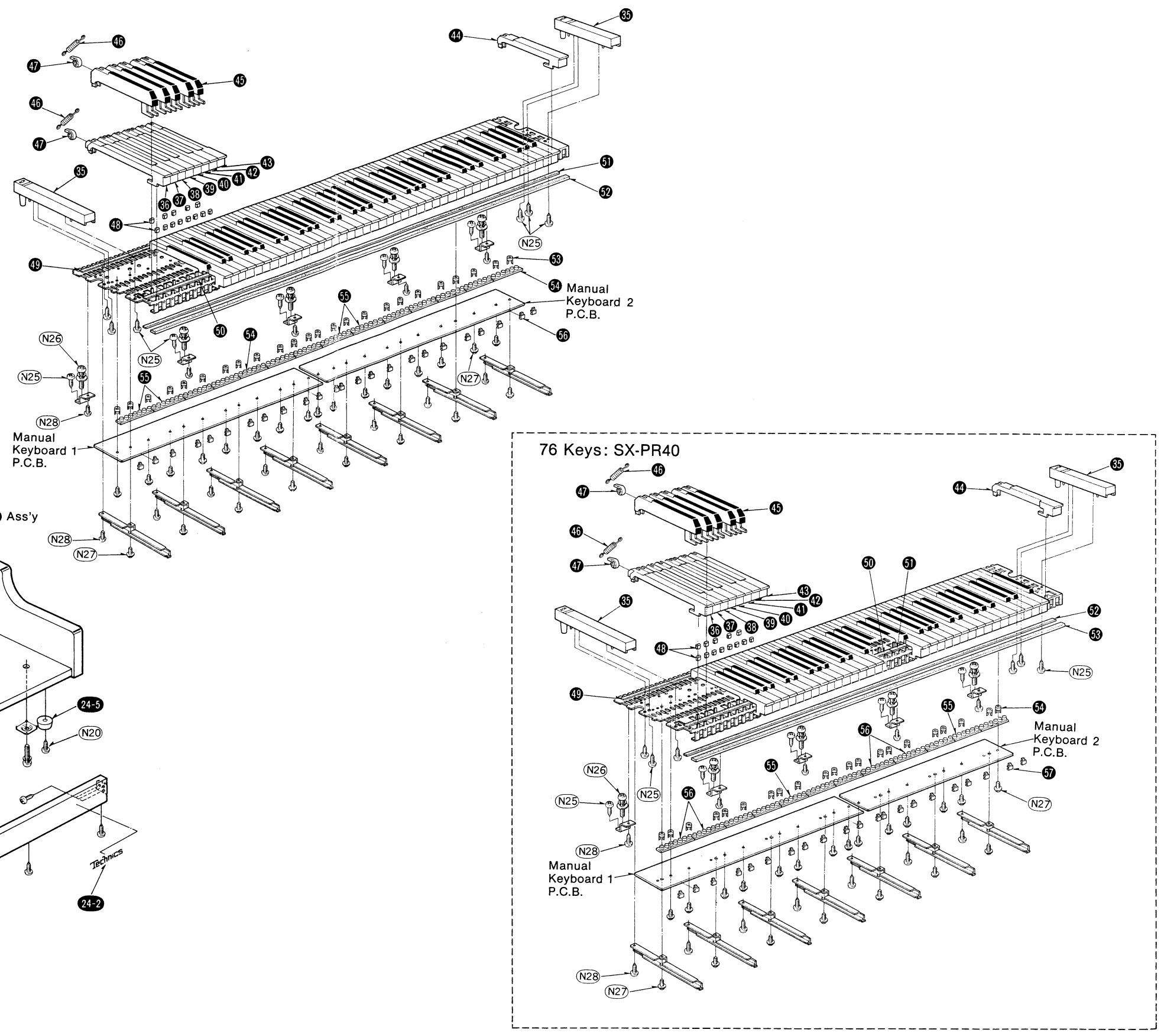
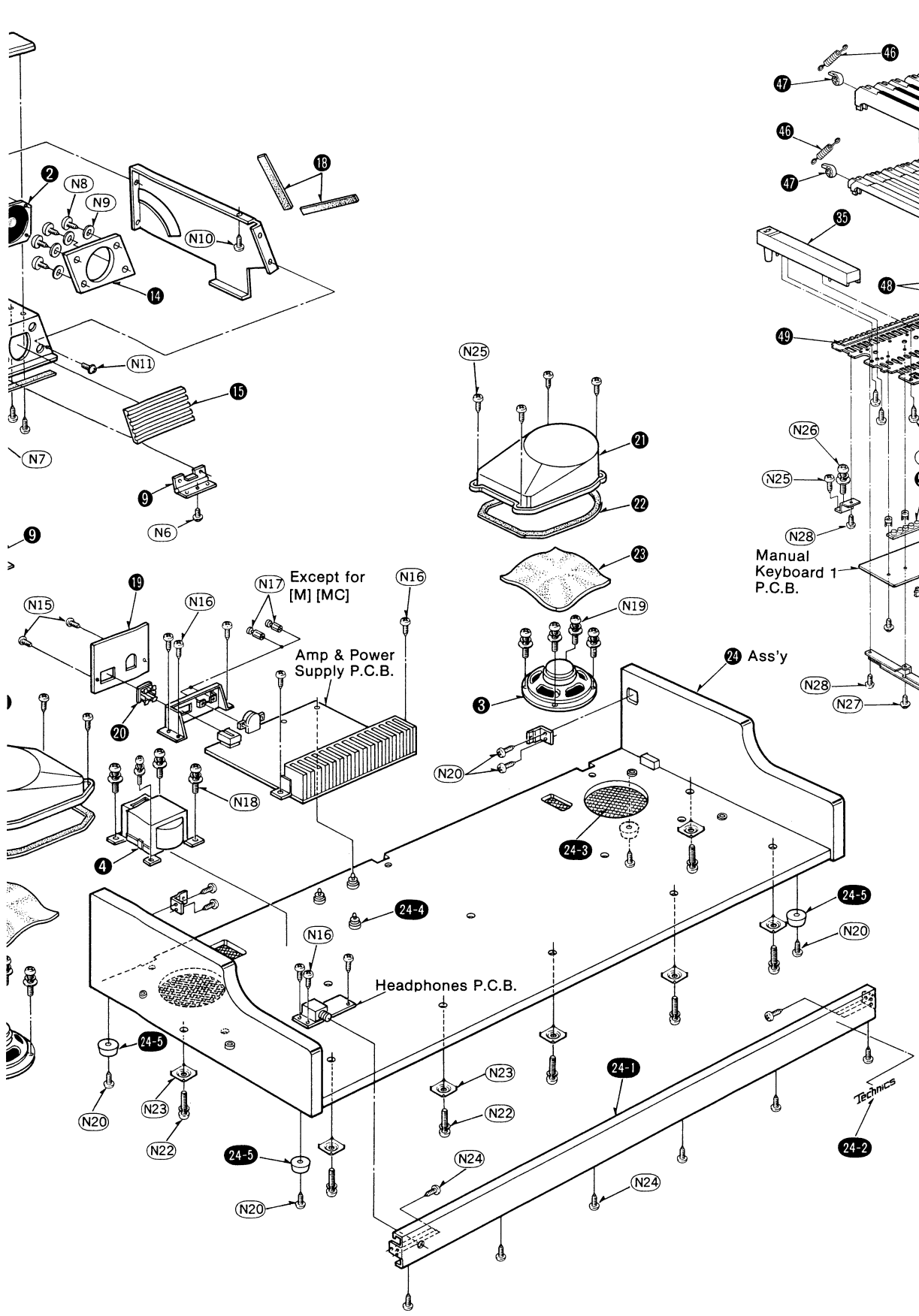


NOTES:

- IC'S
- IC1: MN50020PGV
- IC2: MN1231
- DIODES
- D1~176: MA162A

EXPLODED VIEWS OF CABINET





REPLACEMENT PARTS LIST Mechanical Parts

Notes:

1. Important safety notice

Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

2. \circ mark are new parts.

3. For part No. with area mark, check the area when placing an order.

■ CABINET & CHASSIS PARTS **SX-PR60**

Ref. No.	Part No.	Description	Per/Set
SWITCH			
1	Δ ESB8213V	Power Switch	1
SPEAKERS			
\circ 2	EAS8PM139B	8cm, 6 Ω	2
\circ 3	EAS16PL403A	16cm, 8 Ω	2
TRANSFORMERS			
\circ 4	Δ SLTG5M30	Power Transformer	1
\circ 4	MC Δ SLTG5M31	Power Transformer, [MC] only	1
CABINET PARTS			
\circ 5	SKGG1B103A	Clear Panel	1
\circ 6	SGXG2361A	Ornament	1
7	SBLG230A	Stay	2
\circ 8	SGWG1780A	Top Cover	1
\circ 9	SBHG180A	Hinge	3
\circ 10	SGXG2420A	Top Cover Ornament	1
\circ 11	SHSG3100A	Felt	1
\circ 12	SHRG9790A	Sleeve	2
\circ 13	SHSG3061A	Felt	1
\circ 14	SKZG4640A	Speaker Board	2
\circ 15	SYWG6070A	Speaker Grille	2
\circ 16	SHRG9800A	Spacer	2
\circ 17	SKEG7510A	Receptacle, for Memory Card	1
\circ 18	SHSG3090A	Felt	4
\circ 19	SMKG3050A	AC Panel	1
\circ 19	MC SMKG3051A	AC Panel, [MC] only	1
20	SJS9231A	AC Inlet Cover	1
20	XL XR SJS9334A	AC Inlet Cover, [XL][XR] only	1
\circ 21	SHRG8290A	Speaker Cover	2
\circ 22	SHRG7900A	Sponge	2
23	SHSG9140A	Sound Absorbing Material	2
\circ 24	SKMG1550A	Cabinet Ass'y	1
\circ 24-1	SGXG2400A	Ornament	1
\circ 24-2	SGBG140A	Technics Badge	1
\circ 24-3	SGMG190A	Net	2
24-4	SHRG9510A	P.C.B. Holder	3
24-5	SKL247-1	Foot	4
\circ 25	SGEG260A	Ornament, Sliding Volume	3
\circ 26	SBNG7050A	Knob, Sliding Volume	3
27	SBCG110B	Button, Power Switch	1
\circ 28	SBCG250A	Push Button (Small), light grey	2
\circ 29	SBCG250B	Push Button (Small), dark grey	29
\circ 30	SBCG250C	Push Button (Small), black	18
\circ 31	SBCG250D	Push Button (Small), red	1
\circ 32	SBCG250E	Push Button (Small), dark green	1
\circ 33	SBCG240A	Push Button (Big), light grey	2
\circ 34	SBCG240B	Push Button (Big), dark grey	2
\circ 35	SGWG2200A	End Cover Panel	2

■ CABINET & CHASSIS PARTS **SX-PR40**

Ref. No.	Part No.	Description	Per/Set
SWITCH			
1	Δ ESB8213V	Power Switch	1
SPEAKERS			
\circ 2	EAS8PM139B	8cm, 6 Ω	2
\circ 3	EAS16PL403A	16cm, 8 Ω	2
TRANSFORMERS			
\circ 4	Δ SLTG5M30	Power Transformer	1
\circ 4	MC Δ SLTG5M31	Power Transformer, [MC] only	1
CABINET PARTS			
\circ 5	SKGG1B103A	Clear Panel	1
\circ 6	SGXG2361A	Ornament	1
7	SBLG230A	Stay	2
\circ 8	SGWG1790A	Top Cover	1
\circ 9	SBHG180A	Hinge	3
\circ 10	SGXG2421A	Top Cover Ornament	1
\circ 11	SHSG3100A	Felt	1
\circ 12	SHRG9790A	Sleeve	2
\circ 13	SHSG3070A	Felt	1
\circ 14	SKZG4640A	Speaker Board	2
\circ 15	SYWG6070A	Speaker Grille	2
\circ 16	SHRG9800A	Spacer	2
\circ 17	SKEG7510A	Receptacle, for Memory Card	1
\circ 18	SHSG3090A	Felt	4
\circ 19	SMKG3050A	AC Panel	1
\circ 19	MC SMKG3051A	AC Panel, [MC] only	1
20	SJS9231A	AC Inlet Cover	1
20	XL XR SJS9334A	AC Inlet Cover, [XL][XR] only	1
\circ 21	SHRG8290A	Speaker Cover	2
\circ 22	SHRG7900A	Sponge	2
23	SHSG9140A	Sound Absorbing Material	2
\circ 24	SKMG1570A	Cabinet Ass'y	1
\circ 24-1	SGXG2410A	Ornament	1
\circ 24-2	SGBG140A	Technics Badge	1
\circ 24-3	SGMG190A	Net	2
24-4	SHRG9510A	P.C.B. Holder	3
24-5	SKL247-1	Foot	4
\circ 25	SGEG260A	Ornament, Sliding Volume	3
\circ 26	SBNG7050A	Knob, Sliding Volume	3
27	SBCG110B	Button, Power Switch	1
\circ 28	SBCG250A	Push Button (Small), light grey	2
\circ 29	SBCG250B	Push Button (Small), dark grey	29
\circ 30	SBCG250C	Push Button (Small), black	18
\circ 31	SBCG250D	Push Button (Small), red	1
\circ 32	SBCG250E	Push Button (Small), dark green	1
\circ 33	SBCG240A	Push Button (Big), light grey	2
\circ 34	SBCG240B	Push Button (Big), dark grey	2
\circ 35	SGWG2200A	End Cover Panel	2

ACCESSORIES

Ref. No.	Part No.	Description	Per/Set
SCREWS & WASHERS (PR60, PR40)			
N1	XSB4+8FZ	Screw	2
N2	XTB3+8JFZ	Screw	2
N3	SNEG260B	Nut	2
N4	XTW3+8LFZ	Screw	13
N5	XYN4+F10FZ	Screw, with Washer	2
N6	XYN3+F12FZ	Screw, with Washer	3
N7	XTB35+8A	Screw	20
N8	XTT4+12A	Screw	8
N9	XWG4G16	Washer	8
N10	XTB3+5C	Screw	2
N11	XTS3+8F	Screw	2
N12	XTV3+8C	Screw	21
N13	XNG8DF	Nut	4
N14	XTW3+16J	Screw	2
N15	XTW3+8JFZ	Screw	2
N16	XTB35+12A	Screw	8
N17	SNEG1700A	Nylon Latch, Except for [MC]	2
N18	XYN4+F14	Screw, with Washer	4
N19	XYN3+F20	Screw, with Washer	8
N20	XTB35+16A	Screw	8
N21	XYN3+F10FZ	Screw, with Washer	2
N22	SNEG1800A	Screw, with Washer	7
N23	SNEG150A	Washer	7
N24	XTB35+12AFZ	Screw	12
N25	XTB4+12A	Screw	19
N26	XYN5+F14	Screw, with Washer	5

Ref. No.	Part No.	Description	Per/Set			
○	△	SJAG41	AC Cord	1		
■EK	■XS	△	SJAG39	AC Cord, [EK][XS] only	1	
■XL	■XR	△	SJAG61	AC Cord, [XL][XR] only	1	
■MC	■XT	△	SJAG62	AC Cord, [MC][XT][XV] only	1	
	■XV					
	■XT	■X	△	SJP5213-1	Attachment Plug, [XT][X][XX][XV] only	1
	■XX	■XV				
○		SQFGA460	Instruction Book	1		
○	■EN	■EL	SQFGA480	Instruction Book, [EN][EL] only	1	
○	■PR60	SQCG271A	Dust Cover	1		
○	■PR40	SQCG280A	Dust Cover	1		

MEMORY CARD (SY-P4)

Ref. No.	Part No.	Description	Per/Set
	BR2016	3V, Lithium Battery	1

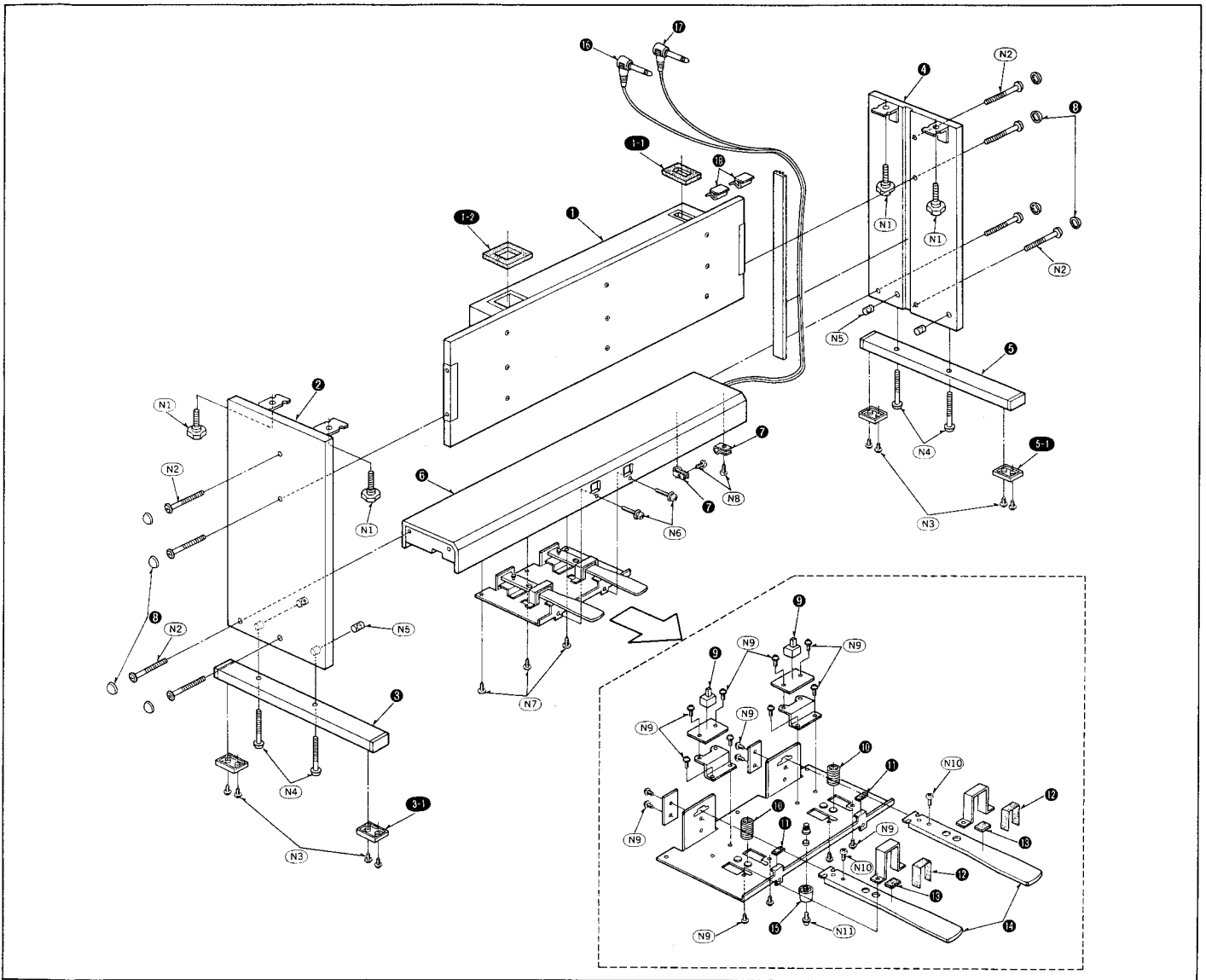
MANUAL KEYBOARD SX-PR60

Ref. No.	Part No.	Description	Per/Set
○ 36	STBG1932A	White Key (First octave A Key)	1
○ 37	STBG1942A	White Key (B Key)	8
○ 38	STBG1952A	White Key (C Key)	7
○ 39	STBG1962A	White Key (D Key)	7
○ 40	STBG1972A	White Key (E Key)	7
○ 41	STBG1982A	White Key (F Key)	7
○ 42	STBG1992A	White Key (G Key)	7
○ 43	STBGA1012A	White Key (A Key)	7
○ 44	STBGA1022A	White Key (Top octave C Key)	1
○ 45	STBG2912A	Black Key	36
○ 46	SUSG480A	Spring	88
47	STBG9180A	Fulcrum	88
48	SHGG9090A	Key Guide Rubber	88
49	SHRG7770A	Sponge	1
○ 50	SHSG2653A	Felt	2
51	SHSG2660A	Felt	1
52	SHSG2670A	Felt	1
○ 53	SHRG9760A	P.C.B. Holder	24
○ 54	SSPG6002A	Rubber Switch (6 continuous)	10
○ 55	SSPG7002A	Rubber Switch (7 continuous)	4
○ 56	SHRG9750A	P.C.B. Holder	24
○ N27	XTW3+10T	Screw	24
○ N28	XTV3+8C	Screw	13

MANUAL KEYBOARD SX-PR40

Ref. No.	Part No.	Description	Per/Set
○ 36	STBGA1032A	White Key (First octave E Key)	1
○ 37	STBG1982A	White Key (F Key)	7
○ 38	STBG1992A	White Key (G Key)	6
○ 39	STBGA1012A	White Key (A Key)	6
○ 40	STBG1942A	White Key (B Key)	6
○ 41	STBG1952A	White Key (C Key)	6
○ 42	STBG1962A	White Key (D Key)	6
○ 43	STBG1972A	White Key (E Key)	6
○ 44	STBGA1042A	White Key (Top octave G Key)	1
○ 45	STBG2912A	Black Key	31
○ 46	SUSG480A	Spring	76
47	STBG9180A	Fulcrum	76
48	SHGG9090A	Key Guide Rubber	76
49	SHRG7780A	Sponge	1
○ 50	SHSG2653A	Felt	1
○ 51	SHSG2683A	Felt	1
○ 52	SHSG2690A	Felt	1
53	SHSG2700A	Felt	1
○ 54	SHRG9760A	P.C.B. Holder	21
○ 55	SSPG6002A	Rubber Switch (6 continuous)	8
○ 56	SSPG7002A	Rubber Switch (7 continuous)	4
○ 57	SHRG9750A	P.C.B. Holder	21
○ N27	XTW3+10T	Screw	21
○ N28	XTV3+8C	Screw	12

EXPLODED VIEWS OF STAND



STAND • SZ-S80W ...SX-PR60 • SZ-S70W ...SX-PR40

Ref. No.	Part No.	Description	Per/Set
○ 1	S80W SKZG7660B	Horn Loaded Cabinet Ass'y	1
○ 1	S70W SKZG7670B	Horn Loaded Cabinet Ass'y	1
○ 1-1	[SHRG7891A	Sponge (small)	1
○ 1-2	[SHRG7881A	Sponge (big)	1
○ 2	SKSG1790A	Left Plank	1
○ 3	SGXG9200A	Leg	1
○ 3-1	[SHRG2171A	Foot	2
○ 4	SKSG1810A	Right Plank	1
○ 4-1	[SGXG2460A	Cord Cover	1
○ 5	SGXG9210A	Leg	1
○ 5-1	[SHRG2171A	Foot	2
○ 6	S80W SKZGD130A	Pedal Box	1
○ 6	S70W SKZGD150A	Pedal Box	1
○ 7	SHRG1070A	Cord Clammer	2
○ 8	SNEG1760A	Cap	8
○ 9	SSHG1034A	Push Switch	2
○ 10	SUSG440A	Spring	2
○ 11	SHSG2790A	Felt	2
○ 12	SHSG2750A	Felt	2
○ 13	SHSG2770A	Felt	2
○ 14	STBG3100A	Pedal	2
○ 15	SKLG160A	Foot	1
○ 16	SWPG60A	Pedal Cord (black)	1

Ref. No.	Part No.	Description	Per/Set
○ 17	SWPG70A	Pedal Cord (gray)	1
○ 18	SHRG9620A	Cord Clammer	2
SCREWS & WASHERS			
N1	SNEG1750A	Thumb Screw	4
N2	SNEG1720A	Bolt	8
N3	XTW3+16JFZ	Screw	8
N4	SNEG1720A	Bolt	4
N5	SNEG1710A	Nut	4
N6	XYN3+F14FZ	Screw, with Washer	2
N7	XTB35+14A	Screw	3
N8	XTT4+10A	Screw	2
N9	XTW3+8C	Screw	16
N10	SNEG1570A	Screw	2
N11	XYN4+C25	Screw, with Washer	1
ACCESSORIES			
○ (8, 18, N1, N2)	SPBG3200A	Screw Kit	1
○	SQFGA20780	Instruction Sheet	1
PACKING			
○	S80W SPNGS80WEA	Packing Parts Assembly	1
○	S70W SPNGS70WEA	Packing Parts Assembly	1

REPLACEMENT PARTS LIST Electrical Parts

Notes:

- Printed circuit boards are supplied only during the period of production.
- Important safety notice
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- The "S" mark is service standard parts and may differ from production parts.
- \bigcirc mark are new parts.
- For part No. with area mark, check the area when placing an order.

■ Numbering System of Resistor

- All resistors are 1/4 WATT, $\pm 5\%$ TOLERANCE unless otherwise designated in the schematic diagram.
- Resistors with $\text{\textcircled{C}}$ symbolic mark are Flame-Proof resistors.
- Resistors with $\text{\textcircled{F}}$ symbolic mark are fuse type Flame-Proof resistors.

Resistor Type	Wattage	Tolerance
ERD : Carbon	S2 : 1/4W	F : $\pm 1\%$
ERD-F : Carbon, Flame-Proof	2 : 1/4W	G : $\pm 2\%$
ERO : Metal Film	25 : 1/4W	J : $\pm 5\%$
ERG : Metal Oxide	50 : 1/2W	
ERX : Metal Film	1 : 1W	

Example:

Carbon: $\frac{\text{ERD}}{\text{Type}} \frac{\text{S2}}{\text{Wattage}} \frac{\text{T}}{\text{Shape}} \frac{\text{J}}{\text{Tolerance}} \frac{\text{101}}{\text{Value}}$

Carbon Flame-Proof: $\frac{\text{ERD}}{\text{Type}} \frac{\text{2}}{\text{Wattage}} \frac{\text{F}}{\text{Flame-Proof}} \frac{\text{C}}{\text{Fuse Type}} \frac{\text{G}}{\text{Tolerance}} \frac{\text{101}}{\text{Value}}$

Metal Film: $\frac{\text{ERO}}{\text{Type}} \frac{\text{S2}}{\text{Wattage}} \frac{\text{T}}{\text{Shape}} \frac{\text{K}}{\text{Peculiarity use}} \frac{\text{F}}{\text{Tolerance}} \frac{\text{1001}}{\text{Value}}$

Metal Oxide (Metal Film): $\frac{\text{ERG(X)}}{\text{Type}} \frac{\text{1}}{\text{Wattage}} \frac{\text{AN}}{\text{Shape}} \frac{\text{J}}{\text{Tolerance}} \frac{\text{221}}{\text{Value}}$

■ Numbering System of Capacitor

- All capacitors are microfarads unless otherwise specified in the schematic diagram.

Capacitor Type	Symbol Mark	Voltage		Tolerance
		ECEA Type	Others	
ECEA(T) : Electrolytic		0J : 6.3V	1H : 50V	ECEA Type : $\pm 20\%$
ECEA-N : Non-Polar Electrolytic	$\text{\textcircled{N}}$	1C : 16V	1E : 25V	J : $\pm 5\%$
ECEA-Y : Non-Polar Electrolytic	$\text{\textcircled{Y}}$	1E : 25V		K : $\pm 10\%$
ECEA-M : Electrolytic, MSR Series	$\text{\textcircled{MS}}$	1V : 35V		Z : $\pm 20\%$
ECEA-K : Electrolytic, miniature type	$\text{\textcircled{K}}$	1H : 50V		
ECQV : TF Capacitor	$\text{\textcircled{TF}}$	35 : 35V		
ECQB : Polyester	$\text{\textcircled{B}}$			
ECQM(G) : Polyester	$\text{\textcircled{G}}$			
ECC : Ceramic	\bigcirc			
ECK : Ceramic	\bigcirc			

Example:

Electrolytic: $\frac{\text{ECEA(T)}}{\text{Type}} \frac{\text{0J}}{\text{Voltage}} \frac{\text{U(R)}}{\text{Peculiarity use}} \frac{\text{470}}{\text{Value}}$

MSR Series: $\frac{\text{ECEA}}{\text{Type}} \frac{\text{50}}{\text{Voltage}} \frac{\text{M}}{\text{Peculiarity use}} \frac{\text{1}}{\text{Value}} \frac{\text{R}}{\text{Special use}}$

TF, Polyester: $\frac{\text{ECQV}}{\text{Type}} \frac{\text{1H}}{\text{Voltage}} \frac{\text{104}}{\text{Value}} \frac{\text{J}}{\text{Tolerance}}$

Ceramic: $\frac{\text{ECC}}{\text{Type}} \frac{\text{R}}{\text{Shape}} \frac{\text{1H}}{\text{Voltage}} \frac{\text{220}}{\text{Value}} \frac{\text{J}}{\text{Tolerance}}$

Ceramic: $\frac{\text{ECK}}{\text{Type}} \frac{\text{R}}{\text{Shape}} \frac{\text{1E}}{\text{Voltage}} \frac{\text{473}}{\text{Value}} \frac{\text{Z}}{\text{Tolerance}} \frac{\text{V}}{\text{Peculiarity use}}$

■ PRINTED CIRCUIT BOARD

Ref. No.	Part No.	Description	Per/Set
SX-PR60			
\bigcirc	XL XR SXPG136211	Amp & Power Supply	1
\bigcirc	MC SXPG136221	Amp & Power Supply	1
\bigcirc	SXPG136231	Amp & Power Supply	1
\bigcirc	SXPG135711	Headphones	1
\bigcirc	SXPG135611A	Control Panel Left	1
\bigcirc	SXPG135611B	Control Panel Right	1
\bigcirc	SXPG135511	Main	1
\bigcirc	SXPG134811A	Manual Keyboard 1	1
\bigcirc	SXPG134811B	Manual Keyboard 2	1
SX-PR40			
\bigcirc	XL XR SXPG136211	Amp & Power Supply	1
\bigcirc	MC SXPG136221	Amp & Power Supply	1
\bigcirc	SXPG136231	Amp & Power Supply	1
\bigcirc	SXPG135711	Headphones	1
\bigcirc	SXPG135611A	Control Panel Left	1
\bigcirc	SXPG135611B	Control Panel Right	1
\bigcirc	SXPG135521	Main	1
\bigcirc	SXPG134811A	Manual Keyboard 1	1
\bigcirc	SXPG134821B	Manual Keyboard 2	1

■ AS AMP & POWER SUPPLY CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
\bigcirc IC1	SVIGS4132M2M	Power Amplifier	1
\bigcirc IC2	SVIGM5291P	Switching Regulator	1
\bigcirc IC3	SVIGM5F7815	Control Voltage Regulator	1
\bigcirc IC4	SVIGM5F7915	Voltage Regulator	1
TRANSISTORS			
S Q1, 2	2SC2320LFG	2SC1310FG	2
S Q3	2SA1015-GR	2SA933STRS	1
Q4	2SB953AQP		1
DIODES			
\bigcirc D1, 2	Δ SVDGERA1502Y	Rectifier	2
D3~6	Δ SVDS3V20	Rectifier	4
D7, 8	MA165TA5		2
D9	SVDGRK14		1
D10	MA2062LF	Zener	1

Ref. No.	Part No.	Description	Per/Set
COILS & LINE FILTER			
L1	△ SLQG10W2D1	10μH	1
L2	△ SLTGLF3	Line Filter	1
L3	SLCGR8121D		1
L5, 6	SLCSC471KU	470μH	2
SWITCH			
○ SW1	△ SSRG100A	Voltage Selector, Except for [MC]	1
JACK			
	△ SJVD0203B	AC Inlet	1
FUSES			
F1	△ XBA2C25TB0	T 2.5A, 250V	1
F1	MC △ XBA1F40NU100	4A, 125V	1
F2, 3	△ XBA2C12TB0	T 1.25A, 250V	2
RESISTORS			
R1~3	ERDS2TJ103	10KΩ	3
R4	ERDS2TJ102	1KΩ	1
R5	ERDS2TJ101	100Ω	1
R6, 7	ERDS2TJ223	22KΩ	2
R8	ERDS2TJ473	47KΩ	1
R9	ERDS2TJ472	4.7KΩ	1
R10	ERDS2TJ155	1.5MΩ	1
R11, 12	ERDS2TJ105	1MΩ	2
Ⓛ R13	△ ERD25FVJ4R7	4.7Ω, 1/4W, Fuse Type	1
Ⓛ R14	△ ERX1ANJR47	0.47Ω, 1W	1
R15	ERDS2TJ101	100Ω	1
Ⓛ R16	△ ERG1ANJ221	220Ω, 1W	1
R17	ERDS2TJ332	3.3KΩ	1
R18	ERDS2TJ102	1KΩ	1
Ⓛ R19	△ ERD25FVJ680	68Ω, 1/4W	1
R20	ERDS2TJ472	4.7KΩ	1
R21	ERDS2TJ332	3.3KΩ	1
R22	ERDS2TJ222	2.2KΩ	1
R23	ERDS2TJ473	47KΩ	1
R24	ERDS2TJ222	2.2KΩ	1
R25, 26	ERDS2TJ152	1.5KΩ	2
Ⓛ R27	△ ERD2FCJ4R7	4.7Ω, 1/4W	1
R28	ERDS2TJ472	4.7KΩ	1
R29	ERDS2TJ332	3.3KΩ	1
R30	ERDS2TJ222	2.2KΩ	1
R31	ERDS2TJ473	47KΩ	1
R32, 33	ERDS2TJ152	1.5KΩ	2
R34	ERDS2TJ222	2.2KΩ	1
R35~37	ERDS2TJ102	1KΩ	3
R38	ERDS2TJ274	270KΩ	1
Ⓛ R39	△ ERD2FCJ4R7	4.7Ω, 1/4W	1
Ⓛ R40	△ ERD25FVJ4R7	4.7Ω, 1/4W, Fuse Type	1
CAPACITORS			
○ C1	△ ECKCVA1472MF	4700PF, Line Capacitor	1
C2	△ ECQU2A104MN	0.1μF, 250V, Across-the-line Capacitor	1
C3	ECEA1VU332	3300μF, 35V	1
C4	ECET35R472SW	4700μF, 35V	1
C5	ECEA1CU100	10μF, 16V	1
C6	ECEA1HU010	1μF, 50V	1
C7	ECEA1HU2R2	2.2μF, 50V	1
C8	ECEA1HU470	47μF, 50V	1
○ C9	ECCR1H471J	470PF	1

Ref. No.	Part No.	Description	Per/Set
C10	ECEA0JU102	1000μF, 6.3V	1
○ C11	ECKR1E473ZV	0.047μF	1
Ⓛ C13	ECEA1CN100S	10μF, 16V	1
○ C14	ECCR1H101J	100PF	1
Ⓛ C15	ECEA1CN100S	10μF, 16V	1
C16	ECEA1EU470	47μF, 25V	1
Ⓛ C17	ECQV1H104JZ	0.1μF	1
Ⓛ C18	ECEA1CN100S	10μF, 16V	1
○ C19	ECCR1H101J	100PF	1
Ⓛ C20	ECEA1CN100S	10μF, 16V	1
C21	ECEA1EU470	47μF, 25V	1
C22	ECEA1VU100	10μF, 35V	1
Ⓛ C23	ECQV1H104JZ	0.1μF	1
Ⓛ C24, 25	ECEA50Y6R8	6.8μF, 50V	2
C26, 27	ECEA1VU100	10μF, 35V	2
C28	ECEA1VU221	220μF, 35V	1

HP HEADPHONES CIRCUIT

Ref. No.	Part No.	Description	Per/Set
COIL			
○ L1	SLQG15W33AP		1
JACK			
JK1	SJJG100A	Headphones	1
RESISTORS			
Ⓛ R1, 2	△ ERD50FJ331	330Ω, 1/2W	2
CAPACITORS			
○ C1~3	ECCR1H681J	680PF	1

CPL CONTROL PANEL LEFT CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
○ IC2, 3	SVIGM74LS07	Hex Buffer O.C.	2
DIODES			
S D1~8, 17~22, 31~38, 45~50	MA162A	MA1501R	28
○ D56~63, 72~77, 87~92, 94, 103~108, 112	LN221RPX	LED (red)	28
○ D86, 109~111	LN321GPX	LED (green)	4
SWITCHES			
○ SW1	SSSG1011A	Transpose	1
○	SSHG1044A	Push Switch	32

Ref. No.	Part No.	Description	Per/Set
VARIABLE RESISTORS			
○ VR1, 2	EVD06510B24G	20 KΩ B, Main Volume, Tempo Control	2
RESISTORS			
R14~25	ERDS2TJ470	47Ω	12
CAPACITORS			
○ C4, 5	ECKR1E473ZV	0.047μF	2

CPR CONTROL PANEL RIGHT CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
○ IC1	MN15524PGP	1 chip 4 bit Microcomputer	1
○ IC4	SVIGM74LS07	Hex Buffer O.C.	1
IC5	MN1280R	Reset IC	1
TRANSISTORS			
Q1~4	2SA830B		4
Q5, 6	2SC1047C		2
DIODES			
S D9~16, 23~30, 39~44, 51~55	MA162A	MA1501R	27
○ D64~67, 78, 79	LN321GPX	LED (green)	7
○ D68~71, 80~85, 93, 95~102, 113~120	LN221RPX	LED (red)	26
CERAMIC OSCILLATOR			
X1	EF0FC4004A3	4MHz	1
COMPONENT COMBINATIONS			
○ Z1, 2	EXBP84152MM	1.5 KΩ × 4	2
Z3, 4	EXBP88152MM	1.5 KΩ × 8	2
SWITCHES			
○	SSHG1044A	Push Switch	27
RESISTORS			
R1	ERDS2TJ222	2.2 KΩ	1
R2	ERDS2TJ472	4.7 KΩ	1
R3	ERDS2TJ473	47 KΩ	1
R4	ERDS2TJ472	4.7 KΩ	1
R6	ERDS2TJ103	10 KΩ	1
R7	ERDS2TJ152	1.5 KΩ	1
R8	ERDS2TJ103	10 KΩ	1
R9	ERDS2TJ152	1.5 KΩ	1
R10	ERDS2TJ103	10 KΩ	1
R11	ERDS2TJ152	1.5 KΩ	1
R12	ERDS2TJ103	10 KΩ	1
R13	ERDS2TJ152	1.5 KΩ	1
R26~31	ERDS2TJ470	47Ω	6

Ref. No.	Part No.	Description	Per/Set
CAPACITORS			
⊕ C1	ECEA0JK470	47μF, 6.3V	1
○ C3	ECCR1H101J	100PF	1
○ C6	ECKR1E473ZV	0.047μF	1

MAIN MAIN CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
○ IC1	SVIGPC900	Photo Coupler	1
○ IC2	SVIGM74LS07	Hex Buffer O.C.	1
IC3, 4	SVIGTC40H374	Address Latch	2
IC5	SVIG7810H	1 chip 8 bit Microcomputer	1
○ IC6	SVIGM603A114	Gate Array	1
IC8	SVIGM74LS05	Hex Inverter O.C.	1
○ IC9	SVIG05PR60-A	512K bit EP ROM	1
IC11, 12	SVIGD446415L	64K bit Static RAM	1
○ IC13	SVIGD446C25	16K bit Static RAM	1
○ IC14, 33	SVIG2000C180	2M bit Mask ROM	2
○ IC14, 33	SVIG2000C181	2M bit Mask ROM	2
IC15, 34	SVIGUPD6312	Digital Sound Processor	2
IC16, 44	SVIGBA9221	12 bit D-A Converter	2
IC17, 45	SVIGM5238L	Operational Amplifier	2
IC18, 46	MN74HC4051	8-channel Multiplexer	2
IC19, 28~32, 43, 49, 52~54, 57	SVIGM5218L	Operational Amplifier	12
IC20~27, 35~42	MN74HC4066	Quadruple Bilateral Switch	16
IC48	SVIGUPD4066B	Quadruple Bilateral Switch	1
IC50	SVIGLM1894N	Noise Reduction	1
IC51	SVIGM5241L	Dual VCF	1
IC55	SVIGMSM4011	Quadruple NAND Gate	1
IC56	MN3009	BBD (256-stage)	1
TRANSISTORS			
S Q1, 2, 5	2SA1015-GR	2SA933STRS	3
S Q6	2SC2320LFG	2SC1310FG	1
Q9, 10	2SJ40CD	FET	2
DIODES			
D1~15, 17~19	MA165TA5		18
OSCILLATORS			
X1	SVQG43U1500A	15MHz, Quartz Oscillator	1
X2	EF0FC4004A3	4MHz, Ceramic Oscillator	1
X3, 4	SVQG43U8000T	8MHz, Quartz Oscillator	2
COMPONENT COMBINATIONS			
Z1~4, 7	EXBP88472MM	4.7 KΩ × 8	5
Z9, 10	EXKS14Z2073	1K/2KΩ, Ladder Network	2
COILS			
L1, 5, 6	SLCG163307B8		3
○ L4	SLQG13W6D1P	13μH	1
○ L7	SLQG15W33AP	15μH	1

Ref. No.	Part No.	Description	Per/Set
JACKS			
○ JK1	SJJG400B	Sustain	1
JK2, 6, 7	SJJG400A	Soft, Line Out (R/R+L, L)	3
JK3, 4	SJJG1370A	MIDI (In, out)	2
JK5	SJJG490A	EXT I/O (FD)	1
SOCKET			
○ CN1	SJPG8DU300A	Memory Card Socket	1
VARIABLE RESISTOR			
VR1	EVA06215B55G	500KΩ B, Tune	1
SEMI-FIXED RESISTOR			
VR6	EVSG0E1B473A	47KΩ B	1
RESISTORS			
R1	ERDS2TJ102	1KΩ	1
R2, 3	ERDS2TJ103	10KΩ	2
R4	ERDS2TJ102	1KΩ	1
R5, 6	ERDS2TJ103	10KΩ	2
R7	ERDS2TJ331	330Ω	1
R8	ERDS2TJ221	220Ω	1
R9	ERDS2TJ151	150Ω	1
R10	ERDS2TJ680	68Ω	1
R11	ERDS2TJ221	220Ω	1
R12	ERDS2TJ333	33KΩ	1
R13	ERDS2TJ102	1KΩ	1
R14	ERDS2TJ473	47KΩ	1
R15	ERDS2TJ103	10KΩ	1
☐ R16 △	ERD2FCJ6R8	6.8Ω, 1/4W, Fuse Type	1
R17, 18	EROS2TKF1001	1KΩ, ±1%	2
R19	ERDS2TJ102	1KΩ	1
R20	ERDS2TJ472	4.7KΩ	1
R21, 22	ERDS2TJ103	10KΩ	2
R23	ERDS2TJ183	18KΩ	1
R24	ERDS2TJ332	3.3KΩ	1
R25~28	ERDS2TJ472	4.7KΩ	4
R31	ERDS2TJ102	1KΩ	1
R32	ERDS2TJ105	1MΩ	1
R33	ERDS2TJ472	4.7KΩ	1
R35, 36	ERDS2TJ473	47KΩ	2
R38	ERDS2TJ102	1KΩ	1
R40	ERDS2TJ221	220Ω	1
R41	ERDS2TJ473	47KΩ	1
R42, 43	ERDS2TJ102	1KΩ	2
R44	ERDS2TJ272	2.7KΩ	1
R45	ERDS2TJ331	330Ω	1
R52	ERDS2TJ823	82KΩ	1
R53	ERDS2TJ223	22KΩ	1
R54	ERDS2TJ103	10KΩ	1
☐ R55 △	ERD2FCG101	100Ω, 1/4W, Fuse Type	1
R56	ERDS2TJ102	1KΩ	1
R57, 58	ERDS2TJ681	680Ω	2
R60	ERDS2TJ183	18KΩ	1
R61, 62	ERDS2TJ471	470Ω	2
R63	ERDS2TJ102	1KΩ	1
R64	ERDS2TJ152	1.5KΩ	1
R65, 66	ERDS2TJ472	4.7KΩ	2
R67	ERDS2TJ102	1KΩ	1
R69	ERDS2TJ151	150Ω	1
R70, 71	ERDS2TJ391	390Ω	2
R72	ERDS2TJ473	47KΩ	1
R73	ERDS2TJ151	150Ω	1
R74, 75	ERDS2TJ391	390Ω	2

Ref. No.	Part No.	Description	Per/Set
R76	ERDS2TJ473	47KΩ	1
R77	ERDS2TJ151	150Ω	1
R78, 79	ERDS2TJ391	390Ω	2
R80	ERDS2TJ473	47KΩ	1
R81	ERDS2TJ151	150Ω	1
R82, 83	ERDS2TJ391	390Ω	2
R84	ERDS2TJ473	47KΩ	1
R85	ERDS2TJ151	150Ω	1
R86, 87	ERDS2TJ391	390Ω	2
R88	ERDS2TJ473	47KΩ	1
R89	ERDS2TJ151	150Ω	1
R90, 91	ERDS2TJ391	390Ω	2
R92	ERDS2TJ473	47KΩ	1
R93	ERDS2TJ151	150Ω	1
R94, 95	ERDS2TJ391	390Ω	2
R96	ERDS2TJ473	47KΩ	1
R97	ERDS2TJ151	150Ω	1
R98, 99	ERDS2TJ391	390Ω	2
R100	ERDS2TJ473	47KΩ	1
R101	ERDS2TJ102	1KΩ	1
R102	ERDS2TJ151	150Ω	1
R103, 104	ERDS2TJ391	390Ω	2
R105	ERDS2TJ473	47KΩ	1
R106	ERDS2TJ151	150Ω	1
R107, 108	ERDS2TJ391	390Ω	2
R109	ERDS2TJ473	47KΩ	1
R110	ERDS2TJ151	150Ω	1
R111, 112	ERDS2TJ391	390Ω	2
R113	ERDS2TJ473	47KΩ	1
R114	ERDS2TJ151	150Ω	1
R115, 116	ERDS2TJ391	390Ω	2
R117	ERDS2TJ473	47KΩ	1
R118	ERDS2TJ151	150Ω	1
R119, 120	ERDS2TJ391	390Ω	2
R121	ERDS2TJ473	47KΩ	1
R122	ERDS2TJ151	150Ω	1
R123, 124	ERDS2TJ391	390Ω	2
R125	ERDS2TJ473	47KΩ	1
R126	ERDS2TJ151	150Ω	1
R127, 128	ERDS2TJ391	390Ω	2
R129	ERDS2TJ473	47KΩ	1
R130	ERDS2TJ151	150Ω	1
R131, 132	ERDS2TJ391	390Ω	2
R133	ERDS2TJ473	47KΩ	1
R134	ERDS2TJ102	1KΩ	1
R136, 137	ERDS2TJ681	680Ω	2
R138	ERDS2TJ183	18KΩ	1
R139, 140	ERDS2TJ471	470Ω	2
R141	ERDS2TJ102	1KΩ	1
R142	ERDS2TJ152	1.5KΩ	1
R143, 144	ERDS2TJ104	100KΩ	2
R145~147	ERDS2TJ683	68KΩ	3
R148	ERDS2TJ472	4.7KΩ	1
R149~151	ERDS2TJ333	33KΩ	3
R152	ERDS2TJ682	6.8KΩ	1
R153, 154	ERDS2TJ683	68KΩ	2
R155	ERDS2TJ563	56KΩ	1
R156	ERDS2TJ332	3.3KΩ	1
R157~159	ERDS2TJ154	150KΩ	3
R160	ERDS2TJ682	6.8KΩ	1
R161~163	ERDS2TJ473	47KΩ	3
R164	ERDS2TJ333	33KΩ	1
R165	ERDS2TJ393	39KΩ	1
R166	ERDS2TJ183	18KΩ	1
R167	ERDS2TJ681	680Ω	1
R168	ERDS2TJ472	4.7KΩ	1
R169	ERDS2TJ682	6.8KΩ	1
R170~172	ERDS2TJ473	47KΩ	3

Ref. No.	Part No.	Description	Per/Set	Ref. No.	Part No.	Description	Per/Set
R173	ERDS2TJ333	33KΩ	1	○ C4~6	ECKR1E473ZV	0.047μF	3
R174	ERDS2TJ393	39KΩ	1	○ C8~12	ECKR1E473ZV	0.047μF	5
R175	ERDS2TJ183	18KΩ	1	C13	ECEA1CU101	100μF, 16V	1
R176	ERDS2TJ681	680Ω	1	○ C14	ECKR1E473ZV	0.047μF	1
R177	ERDS2TJ472	4.7KΩ	1	C15	ECEA1HUR47	0.47μF, 50V	1
R178	ERDS2TJ152	1.5KΩ	1	○ C16, 17	ECCR1H220J	22PF	2
R189~192	ERDS2TJ473	47KΩ	4	○ C18, 19	ECKR1E473ZV	0.047μF	2
R193, 194	ERDS2TJ472	4.7KΩ	2	○ C21	ECCR1H471J	470PF	1
R196, 197	ERDS2TJ104	100KΩ	2	○ C22	ECCR1H221J	220PF	1
R199	ERDS2TJ104	100KΩ	1	○ C23	EECF5R5U104	0.1F, 5.5V, Liquid Electrolyte Double Layer	1
R201	ERDS2TJ104	100KΩ	1	○ C24	ECKR1E473ZV	0.047μF	1
R202, 203	ERDS2TJ154	150KΩ	2	○ C26~29	ECKR1E473ZV	0.047μF	4
R204	ERDS2TJ224	220KΩ	1	○ C30	ECCR1H330J	33PF	1
R205	ERDS2TJ104	100KΩ	1	○ C31	ECCR1H220J	22PF	1
R206	ERDS2TJ224	220KΩ	1	○ C32	ECCR1H101J	100PF	1
R207, 208	ERDS2TJ104	100KΩ	2	C33	ECEA0JU101	100μF, 6.3V	1
R209, 210	ERDS2TJ154	150KΩ	2	○ C34	ECKR1E473ZV	0.047μF	1
R211	ERDS2TJ224	220KΩ	1	C35	ECEA1CU470	47μF, 16V	1
R212	ERDS2TJ331	330Ω	1	○ C36	ECCR1H151J	150PF	1
R213	ERDS2TJ681	680Ω	1	○ C37, 38	ECKR1E472	0.047μF	2
R214, 215	ERDS2TJ331	330Ω	2	C39, 40	ECEA0JU470	47μF, 6.3V	2
R216	ERDS2TJ183	18KΩ	1	Ⓣ C41	ECQB1H472JZ	0.0047μF	1
R217	ERDS2TJ683	68KΩ	1	Ⓣ C42	ECQB1H102JZ	0.001μF	1
R218	ERDS2TJ124	120KΩ	1	Ⓣ C43	ECQB1H472JZ	0.0047μF	1
R219	ERDS2TJ183	18KΩ	1	Ⓣ C44	ECQB1H102JZ	0.001μF	1
R220	ERDS2TJ683	68KΩ	1	Ⓣ C45	ECQB1H472JZ	0.0047μF	1
R221, 222	ERDS2TJ124	120KΩ	2	Ⓣ C46	ECQB1H102JZ	0.001μF	1
R223	ERDS2TJ224	220KΩ	1	Ⓣ C47	ECQB1H472JZ	0.0047μF	1
R224	ERDS2TJ154	150KΩ	1	Ⓣ C48	ECQB1H102JZ	0.001μF	1
R225	ERDS2TJ152	1.5KΩ	1	Ⓣ C49	ECQB1H472JZ	0.0047μF	1
R226	ERDS2TJ332	3.3KΩ	1	Ⓣ C50	ECQB1H102JZ	0.001μF	1
Ⓣ R227 Δ	ERD2FCG100	10Ω, 1/4W, Fuse Type	3	Ⓣ C51	ECQB1H472JZ	0.0047μF	1
~229				Ⓣ C52	ECQB1H102JZ	0.001μF	1
R230, 231	ERDS2TJ101	100Ω	2	Ⓣ C53	ECQB1H472JZ	0.0047μF	1
R232	ERDS2TJ222	2.2KΩ	1	Ⓣ C54	ECQB1H102JZ	0.001μF	1
R233	ERDS2TJ681	680Ω	1	Ⓣ C55	ECQB1H472JZ	0.0047μF	1
R234	ERDS2TJ222	2.2KΩ	1	Ⓣ C56	ECQB1H102JZ	0.001μF	1
R235, 236	ERDS2TJ681	680Ω	2	○ C57~73	ECKR1E473ZV	0.047μF	7
R237, 238	ERDS2TJ105	1MΩ	2	○ C74	ECCR1H330J	33PF	1
R239	ERDS2TJ104	100KΩ	1	○ C75	ECCR1H220J	22PF	1
R240	ERDS2TJ473	47KΩ	1	○ C76	ECCR1H101J	100PF	1
R241	ERDS2TJ104	100KΩ	1	○ C77	ECKR1E473ZV	0.047μF	1
R242	ERDS2TJ473	47KΩ	1	Ⓣ C78	ECQB1H472JZ	0.0047μF	1
R243	ERDS2TJ104	100KΩ	1	Ⓣ C79	ECQB1H102JZ	0.001μF	1
R244	ERDS2TJ473	47KΩ	1	Ⓣ C80	ECQB1H472JZ	0.0047μF	1
R245, 246	ERDS2TJ103	10KΩ	2	Ⓣ C81	ECQB1H102JZ	0.001μF	1
R247	ERDS2TJ473	47KΩ	1	Ⓣ C82	ECQB1H472JZ	0.0047μF	1
R248	ERDS2TJ105	1MΩ	1	Ⓣ C83	ECQB1H102JZ	0.001μF	1
R249	ERDS2TJ223	22KΩ	1	Ⓣ C84	ECQB1H472JZ	0.0047μF	1
○ Ⓣ R250 Δ	ERD2FCG560	56Ω, 1/4W, Fuse Type	1	Ⓣ C85	ECQB1H102JZ	0.001μF	1
R251, 252	ERDS2TJ183	18KΩ	2	Ⓣ C86	ECQB1H472JZ	0.0047μF	1
R253	ERDS2TJ124	120KΩ	1	Ⓣ C87	ECQB1H102JZ	0.001μF	1
R254, 255	ERDS2TJ332	3.3KΩ	2	Ⓣ C88	ECQB1H472JZ	0.0047μF	1
R256	ERDS2TJ124	120KΩ	1	Ⓣ C89	ECQB1H102JZ	0.001μF	1
R257	ERDS2TJ153	15KΩ	1	Ⓣ C90	ECQB1H472JZ	0.0047μF	1
R258	ERDS2TJ154	150KΩ	1	Ⓣ C91	ECQB1H102JZ	0.001μF	1
R259	ERDS2TJ103	10KΩ	1	Ⓣ C92	ECQB1H472JZ	0.0047μF	1
R260	ERDS2TJ333	33KΩ	1	Ⓣ C93	ECQB1H102JZ	0.001μF	1
R261, 262	ERDS2TJ473	47KΩ	2	C94	ECEA0JU470	47μF, 6.3V	1
R263	ERDS2TJ104	100KΩ	1	○ C95	ECKR1E473ZV	0.047μF	1
R264	ERDS2TJ473	47KΩ	1	C96	ECEA1CU470	47μF, 16V	1
R265, 266	ERDS2TJ104	100KΩ	2	○ C97	ECCR1H151J	150PF	1
R267, 268	ERDS2TJ102	1KΩ	2	○ C98	ECKR1E473ZV	0.047μF	1
CAPACITORS				○ C99, 100	ECCR1H151J	150PF	2
○ C1, 2	ECKR1E473ZV	0.047μF	2	○ C101~103	ECCR1H221J	220PF	3
C3	ECEA1CU101	100μF, 16V	1	C104	ECQG1H332KZ	0.0033μF	1
				○ C105, 106	ECCR1H471J	470PF	2

MKB 1 MANUAL KEYBOARD 1 CIRCUIT

Ref. No.	Part No.	Description	Per/Set
○ C107	ECCR1H101J	100 PF	1
C108	ECQG1H472KZ	0.0047μF	1
○ C109, 110	ECCR1H471J	470 PF	2
○ C111	ECCR1H101J	100 PF	1
C112	ECQB1H682KZ	0.0068μF	1
Ⓣ C113, 114	ECQV1H104JZ	0.1μF	2
○ C115	ECCR1H101J	100 PF	1
C116	ECQG1H332KZ	0.0033μF	1
○ C117, 118	ECCR1H471J	470 PF	2
○ C119	ECCR1H101J	100 PF	1
○ C120, 121	ECCR1H331J	330 PF	2
○ C122	ECCR1H681J	680 PF	1
C123	ECQG1H332KZ	0.0033μF	1
○ C124, 125	ECCR1H471J	470 PF	2
○ C126	ECCR1H101J	100 PF	1
○ C127, 128	ECCR1H331J	330 PF	2
○ C129	ECCR1H681J	680 PF	1
C130	ECQM1H103KV	0.01μF	1
Ⓜ C133	ECEA50M1R	1μF, 50V	1
Ⓝ C136	ECEA1HN010S	1μF, 50V	1
C137	ECEA0JU470	47μF, 6.3V	1
Ⓣ C138	ECQV1H104JZ	0.1μF	1
C140	ECEA1HU010	1μF, 50V	1
Ⓜ C141	ECEA50M1R	1μF, 50V	1
Ⓜ C143	ECEA50M1R	1μF, 50V	1
○ C145	ECCR1H220J	22 PF	1
C146	ECEA1HU010	1μF, 50V	1
Ⓣ C147	ECQV1H104JZ	0.1μF	1
○ C150	ECCR1H220J	22 PF	1
C151	ECEA1HU010	1μF, 50V	1
C152	ECEA1CU470	47μF, 16V	1
C153	ECQG1H472KZ	0.0047μF	1
Ⓣ C154	ECQV1H104JZ	0.1μF	1
C155	ECQG1H102KZ	0.001μF	1
C156	ECQG1H332KZ	0.0033μF	1
C157	ECQM1H473KV	0.047μF	1
C158	ECEA1CU100	10μF, 16V	1
C159	ECQG1H472KZ	0.0047μF	1
C160	ECEA1CU470	47μF, 16V	1
C161, 162	ECEA1HU010	1μF, 50V	2
○ C163	ECCR1H101J	100 PF	1
C164	ECQG1H222KZ	0.0022μF	1
○ C165	ECCR1H101J	100 PF	1
C166	ECQG1H222KZ	0.0022μF	1
C167	ECEA0JU101	100μF, 6.3V	1
C168	ECEA1CU470	47μF, 16V	1
C169	ECEA1CU221	220μF, 16V	1
C170	ECEA1CU470	47μF, 16V	1
○ C171~173	ECCR1H101J	100 PF	3
Ⓝ C174	ECEA1HN010S	1μF, 50V	1
Ⓣ C175, 176	ECQV1H104JZ	0.1μF	2
○ C177, 178	ECKR1E473ZV	0.047μF	2
○ C179	ECCR1H470J	47 PF	1
C180	ECEA1HU010	1μF, 50V	1
C181	ECQM1H473KV	0.047μF	1
Ⓝ C183	ECEA1HN010S	1μF, 50V	1
C184	ECEA1CU221	220μF, 16V	1
○ C185, 186	ECCR1H151J	150 PF	2
C187	ECQG1H102KZ	0.001μF	1
Ⓣ C188	ECQV1H104JZ	0.1μF	1
C189, 190	ECQG1H102KZ	0.001μF	2
○ C191, 192	ECCR1H680J	68 PF	2
○ C193	ECKR1E473ZV	0.047μF	1
○ C194, 195	ECCR1H470J	47 PF	2
Ⓣ C196	ECQV1H104JZ	0.1μF	1

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
○ IC1	MN50020PGV	Gate Array	1
○ IC2	MN1231	1K bit ROM	1
DIODES			
S D1~88	MA162A	MA1501R	88
CERAMIC OSCILLATOR			
X1	EF0FC4004A3	4MHz	1
SWITCHES			
○	SSPG6002A	Rubber Switch (6 continuous, dual type)	5
○	SSPG7002A	Rubber Switch (7 continuous, dual type)	2
RESISTORS			
R1	ERDS2TJ101	100Ω	1
R2	ERDS2TJ103	10KΩ	1
R3	ERDS2TJ222	2.2KΩ	1
R4	ERDS2TJ472	4.7KΩ	1
CAPACITORS			
○ C1	ECCR1H681J	680 PF	1
○ C2	ECKR1E473ZV	0.047μF	1
○ C3	ECCR1H681J	680 PF	1
C4	ECEA1CU470	47μF, 16V	1

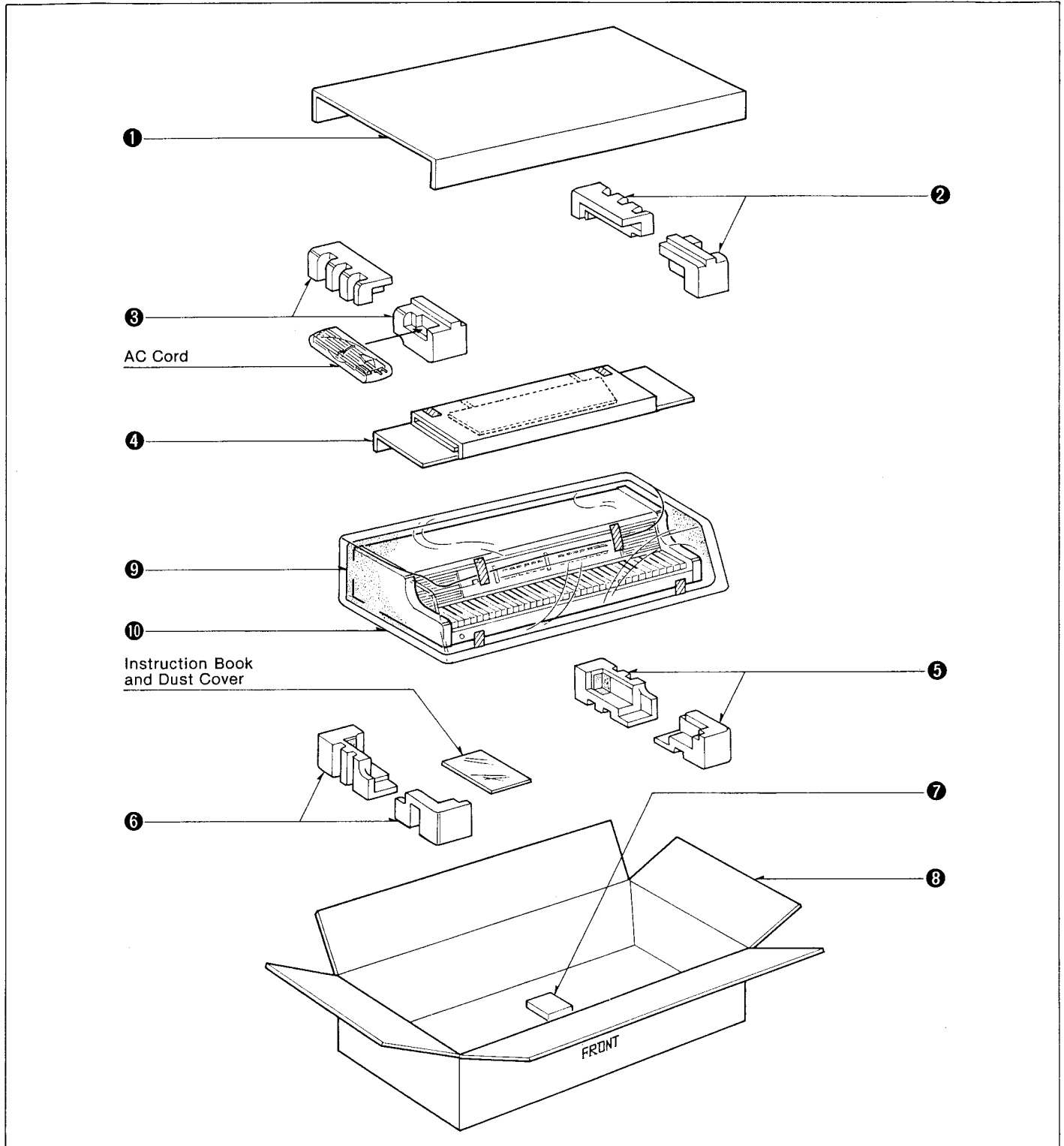
MKB 2 MANUAL KEYBOARD 2 CIRCUIT

Ref. No.	Part No.	Description	Per/Set
DIODES			
S D89~176	MA162A	MA1501R	88(64)
COMPONENT COMBINATION			
Z1	EXBP88332M	3.3KΩ × 8	1
SWITCHES			
○	SSPG6002A	Rubber Switch (6 continuous, dual type)	5(3)
○	SSPG7002A	Rubber Switch (7 continuous, dual type)	2

WIRING PARTS

Ref. No.	Part No.	Description	Per/Set
○	SWKG0236ZA		1
○	SWKG0238ZA		1
○	SWKG0697ZA		1
○	SWKG06100ZA		1
○	SWKG06101SSA		1
○	SWKG0896ZA		1
○	SWKG1067SSA		1
○	SWKG151SSA		1

PACKING



PACKING PARTS

Ref. No.	Part No.	Description	Per/Set	Ref. No.	Part No.	Description	Per/Set	
○	PR60	SPNGPR60EA	Packing Parts Ass'y	○	5	SPNG5630A	Pad, Bottom Right Side (1)	
○	PR40	SPNGPR40EA	Packing Parts Ass'y	○	6	SPNG5629A	Pad, Bottom Left Side (1)	
○	PR60	SPNG1749A	Pad, Top Cover (1)	○	7	SPNG5643A	Spacer (1)	
○	PR40		Pad, Top Cover (1)	○	8	PR60	SPNG1745A	Carton Box (1)
○	2	SPNG5639A	Pad, Upper Right Side (1)	○	8	PR40	SPNG1746A	Carton Box (1)
○	3	SPNG5638A	Pad, Upper Left Side (1)	9	SPHG1320A	Sheet, Cabinet	1	
○	PR60	SPNG1747A	Packing Parts, Music Rack (1)	10	SPHG1110A	Polyethylene Bag	1	
○	PR40	SPNG1748A	Packing Parts, Music Rack (1)					