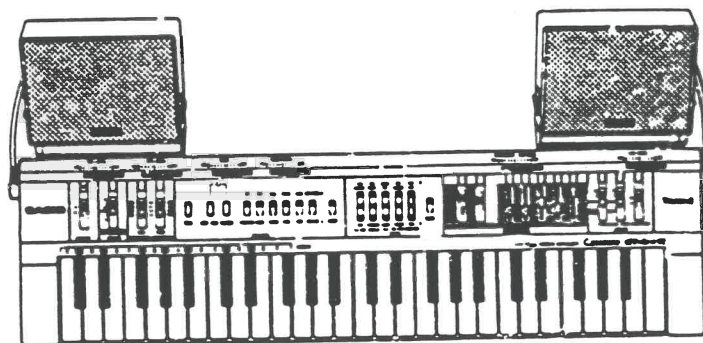


SERVICE MANUAL & PARTS LIST

ELECTRONIC KEYBOARD

MT-400V (MX-85)

CT-410V (MX-87)

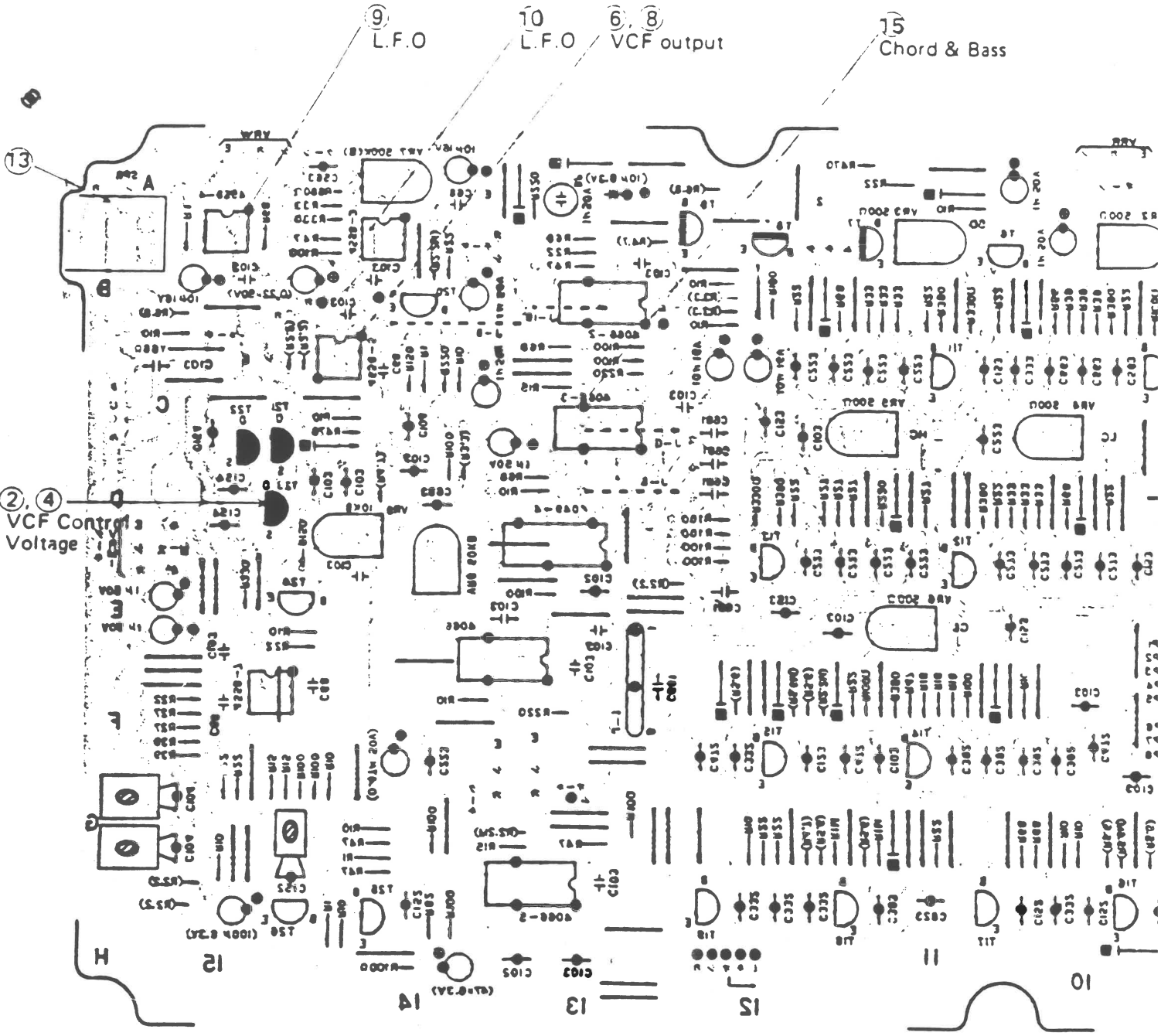


The circuits for the CT-410V are the same
as the MT-400V.

CASIO.

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9 L.F.O

10 L.F.O

6, 8 VCF output

15 Chord & Bass

13

2, 4 VCF Control Voltage

H

12

14

13

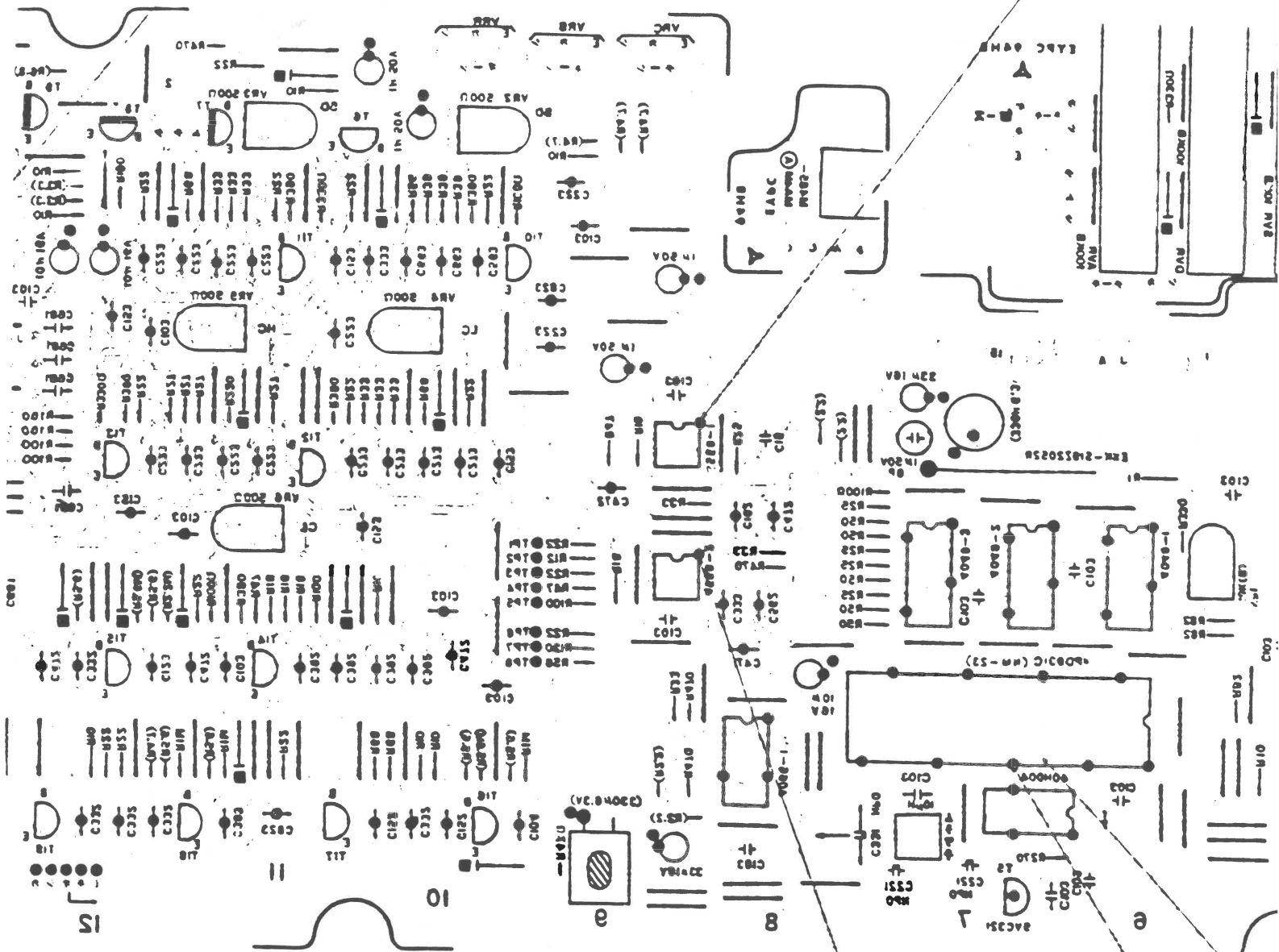
15

10

output

15 Chord & Bass

11 D/A Converter output



12, 14 Filter output

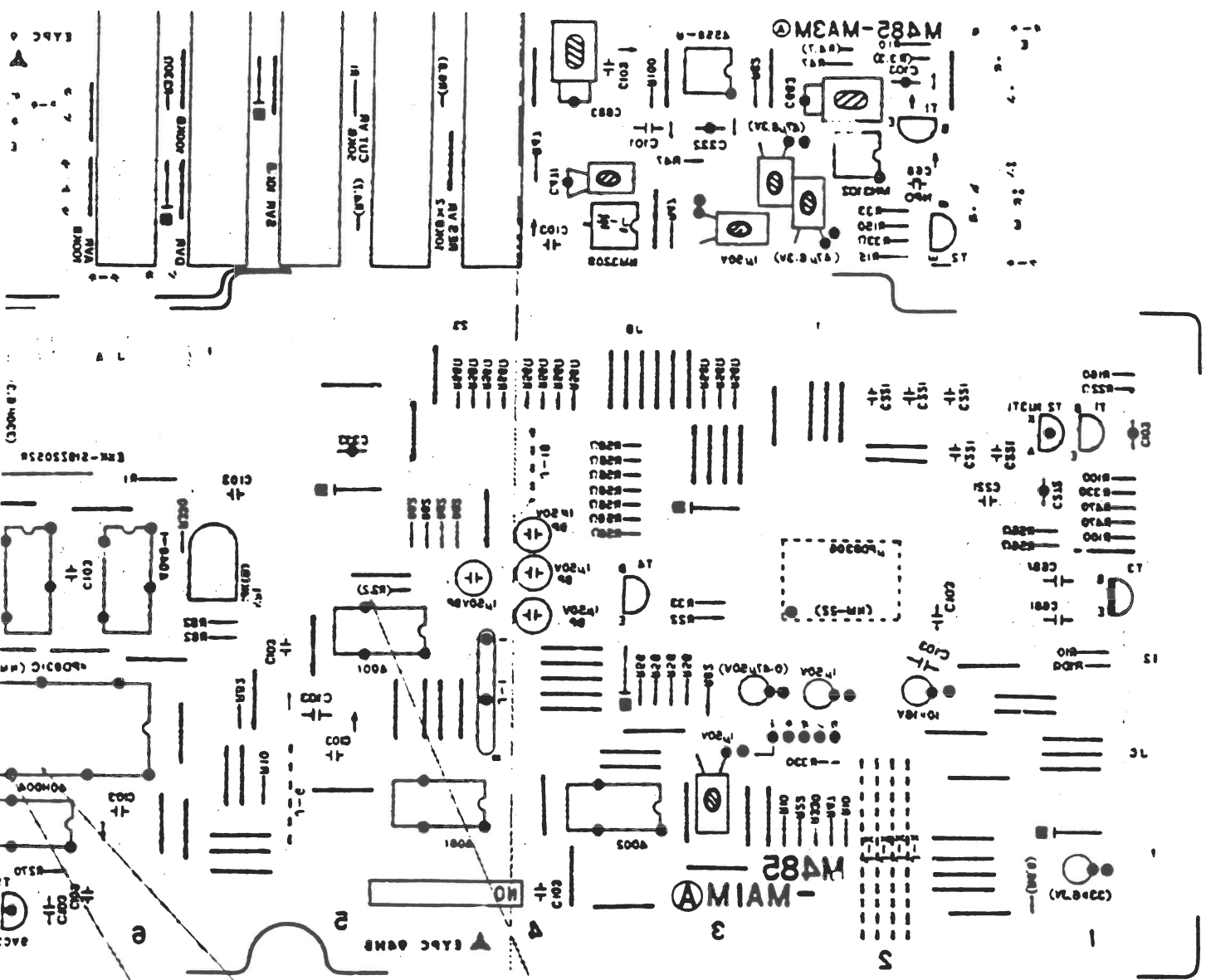
16 Clck

17 CLK 3 (1/3 of)

-11-12-

11 D/A Converter output

0000000000

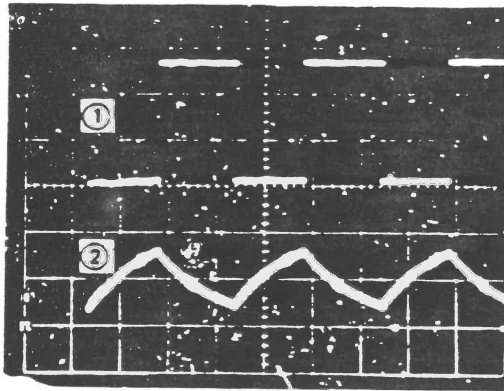


16 Clock pulse

17 CLK 3 (1/3 of 16)

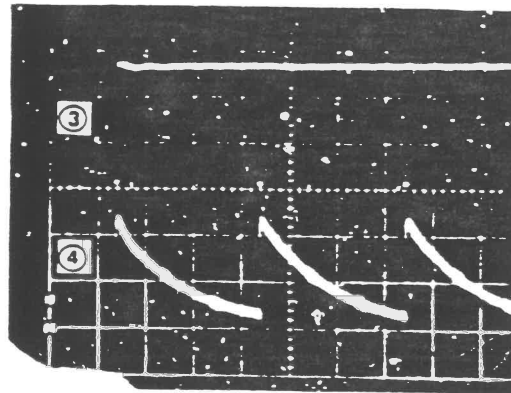
1, 3, 5, 7 VCF trigger

3. MAJOR WAVEFORMS



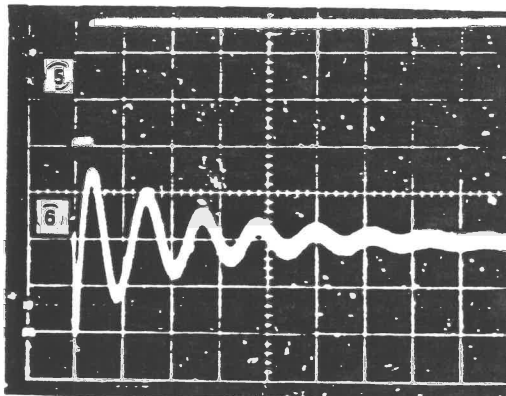
Source: Rhythm
Rhythm: Waltz, Tempo: Middle
All filter controls: Middle

- ① VCF trigger pulse MN4011 pin 11, 2 V/div, 0.2 sec/div.
- ② VCF control voltage, Gate of T22, 100 mV/div., 0.2 sec./div.



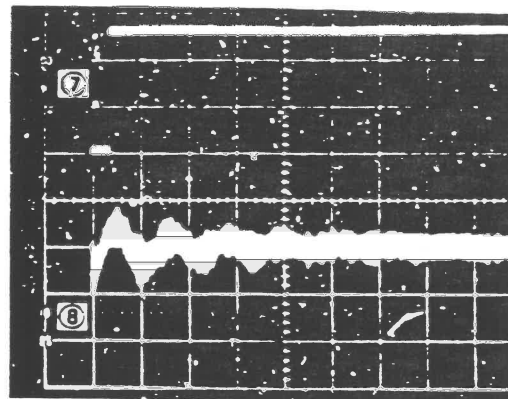
Source: Rhythm
Rhythm: Waltz, Tempo: Middle
Attack: Min., Decay: Max., Sustain: Min.,
Cutoff: Middle

- ③ VCF trigger pulse, MN4011 pin 11, 2 V/div., 0.2 sec./div.
- ④ VCF control voltage, Gate of T22, 100 mV/div., 0.2 sec./div.



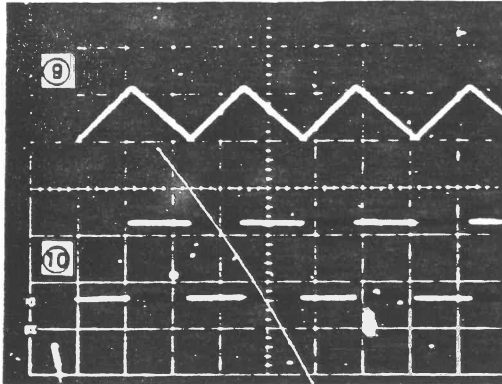
Source: Rhythm
Rhythm: Waltz, Tempo: Middle
Attack: Min., Decay: Max., Sustain: Min.
Cutoff: Middle, Resonance: Min.

- ⑤ VCF trigger pulse, MN4011 pin 11, 2 V/div., 10 milliseconds/div.
- ⑥ VCF output, NJM4558-5 pin 1, 100 mV/div., 10 milliseconds/div.



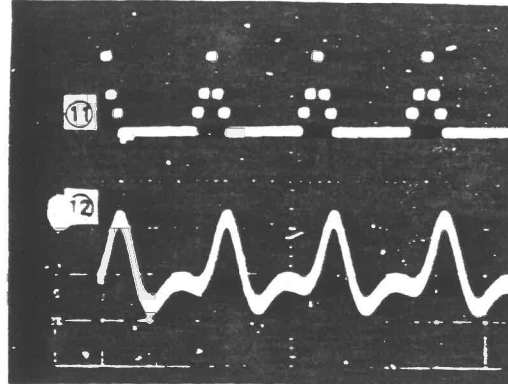
Source: Rhythm
Rhythm: Waltz, Tempo: Middle
Attack, Decay, Sustain, Cutoff—Same as at left,
Resonance: Max.

- ⑦ VCF trigger pulse, MN4011 pin 11, 2 V/div., 10 milliseconds/div.
- ⑧ VCF output, NJM4558-5 pin 1, 100mV/div., 10 milliseconds/div.



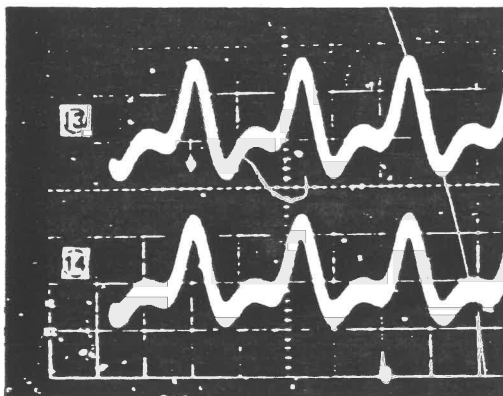
Wav/Stereo Chorus Speed Control: Middle

- ⑨ LFO output, NJM4558-3 pin 7, 2 V/div., 50 milliseconds/div.
- ⑩ LFO input, NJM4558-4 pin 1, 2 V/div., 50 milliseconds/div.



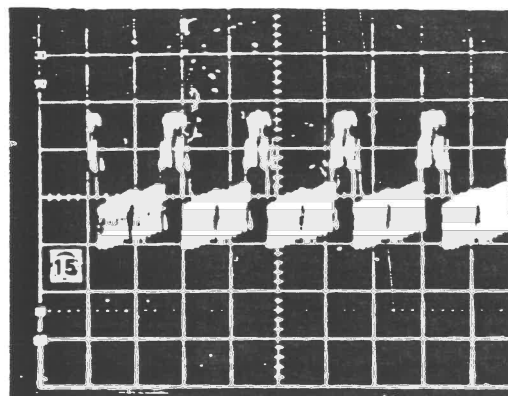
Tone: Horn, Key: A4

- ⑪ D/A converter output, NJM4558-1 pin 1, 200 mV/div., 1 millisecond/div., AC range through 22 Kohm resistor
- ⑫ Filter output, NJM4558-2 pin 1, 200mV/div., 1 millisecond/div., AC range



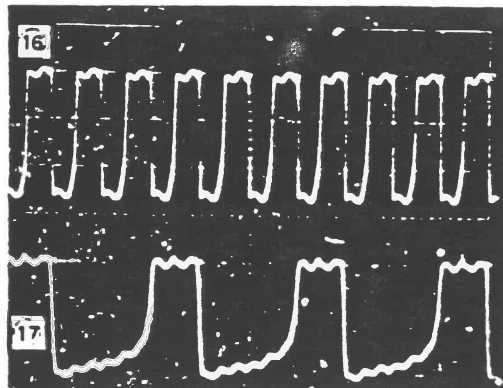
Tone: Horn, Key: A4

- ⑬ Line Out (Volume Max.) 0.5 V/div., 1 millisecond/div., AC range
- ⑭ Same as ⑫



Chord: Fingered, Bass: I, Chord: III
Rhythm: Rock, Start/Stop: Stop, Key: A2

- ⑮ Chord & Bass output, TC4066-3 pin 11, 100mV/div., 5 milliseconds/div., AC range through 22 Kohm resistor.
- ⑯ Clock pulse μ PD931 pin 9, 2V/div., 0.2 microsecond/div.
- ⑰ CLK3 (1/3 of clock pulse) μ PD931 pin 10, 2V/div., 0.2 microsecond/div.



5. KEYBOARD MATRIX

	K11	K12	K13	K14	K15	K16	K17	K18
KC1	C2	C#2	D2	D#2	E2	F2		
KC2	F#2	G2	G#2	A2	A#2	B2		
KC3	C3	C#3	D3	D#3	E3	F3	Casto Chord	Fingered
KC4	F#3	G3	G#3	A3	A#3	B3		
KC5	C4	C#4	D4	D#4	E4	F4		
KC6	F#4	G4	G#4	A4	A#4	B4		
KC7	C5	C#5	D5	D#5	E5	F5		
KC8	F#5	G5	G#5	A5	A#5	B5		
KC9	C6	Synchro Start	Start/Stop	Fill In			Tone Select	Rhythm Select
KC10	Organ/ Pipe Organ	Flute/ Clarinet	Trumpet/ Horn	Oboe/ Accordion	Violin Cello			
	Piano/ Elec. Piano	Harpichord Vibraphone	Celesta/ Harp	Mandolin/ Elec. Guitar	Funny/ Cosmic Tone			
KC19	Bass II	Bass III	Chord II	Chord III	Sustain	Vibrato	Delayed Vibrato	Reverb
KC20	Rock/ Bossa Nova	Pop/ Samba	Disc/ Geguine	16 beat/ Tango	Swing/ Waltz	Latin Swing /Slow Rock		

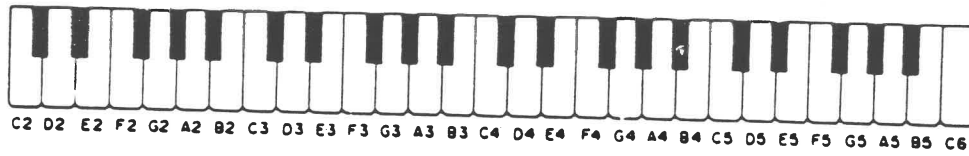


Fig. 4-1 Names of Keys

6. CPU (μ PD930G-011)

The CPU (Central Processing Unit) generates bass, chord signals and trigger pulses for the percussions and sends melody data to Melody Source microprocessor μ PD931C.

Pin functions of the CPU

Pin No.	Signal Name	Function
1 ~ 4	034 ~ 037	Chord pitch outputs. 037 outputs only at 7th chord.
5	038	Bass pitch signal output.
7	040	Chord envelope signal output.
11	044	Bass envelope signal output.
13	046	Bass drum trigger signal output.
14	047	Snare drum trigger pulse output.
16	048	Low conga trigger pulse output.
17	049	High conga trigger pulse output.
18	050	Claves trigger pulse output.
19	051	High hat trigger pulse output.
20	052	Cymbal trigger pulse output.
22, 23	054, 055	White noise outputs.
28	11	Reset signal (to initialize the LSI at power on) input.
29	025	Auto power off control signal output. At power on, it stays "H" but when the instrument is not operated for five minutes, signal 025 drops to "L" to cut the power consumption.
32	18	Clock pulse-generated in the Melody Source-output.
34, 35	026, 027	Timing pulses-to send data to the Melody Source-outputs.
36 ~ 39	028 ~ 031	4-bit data bus to the Melody Source.
43	12	Rhythm tempo clock pulse input.
44 ~ 51	K18 ~ K11	Key and switch input terminals.
52 ~ 61	KC1 ~ KC10	Common signals for keys and switches inputs.
70, 71	022, 021	Common signals for switches (KC19, KC20).
73	020	Tempo indicator LED drive signal output.
80	013	Bass volume control terminal. When "L", bass sounds become louder.

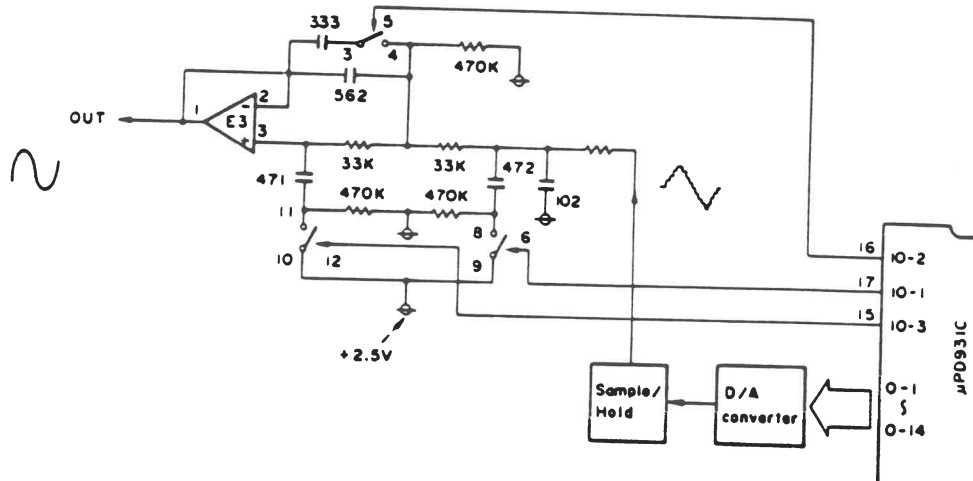
7. MELODY SOURCE (μ PD931C)

Receiving data from the CPU, this LSI chip outputs a 14-bit digital melody signal.

Pin functions of the LSI

Pin No.	Signal Name	Function
1 ~ 4	DB4 ~ DB1	4-bit data inputs.
6, 7	I1, I2	Data reading timing signal inputs.
8, 9	OSC1, OSC2	4.9-MHz clock pulse inputs.
10	CLK3	1.6-MHz (1/3 of 4.9 MHz) clock pulse output.
12	SCH1	Reset pulse input.
15 ~ 17	I03 ~ I01	Filter's cutoff frequency change-over signals outputs.
23	I07	Sampling and holding control pulse output.
28 ~ 41	O14 ~ O1	14-bit digital melody signal outputs.

8. FILTER BLOCK



The block is low-pass filter that smoothes the stepped waveform of the D/A converter output and cuts unnecessary high frequencies. The cutoff frequency of the filter is set by setting the analog switches.

In accordance with the selected tone, signals I0-1, I0-2, and I0-3 turn on or off the switches so that the appropriate cutoff frequency is selected.

The following table shows the voltage levels of signals 10-1, 10-2, and 10-3 in each tone.

Tone	10-1	10-2	10-3	Tone	10-1	10-2	10-3
Pipe organ	L	L	L	Piano	H	H	H
Organ	L	L	H	Elec. piano	L	L	H
Flute	H	L	H	Celesta	L	L	L
Clarinet	L	L	H	Vibraphone	H	H	H
Trumpet	H	H	L	Mandolin	L	H	L
Horn	H	H	H	Elec. guitar	L	L	H
Oboe	H	L	H	Harpsichord	L	L	L
Violin	L	H	L	Harp	H	L	H
Cello	H	H	L	Funny	L	L	L
Accordion	L	L	L	Cosmic tone	L	L	L

9. VCF (Voltage-Controlled Filter)

9-1. Operating Principles

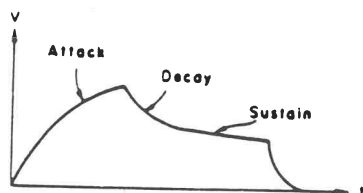


Fig. 9-1

Fig. 9-1 shows the "envelope" of a sound. The curve of the envelope shows how the sound volume changes with time. However, the VCF generates the sound attack, decay, sustain, cutoff, and resonance thereby varying the cutoff frequency of the low-pass filter.

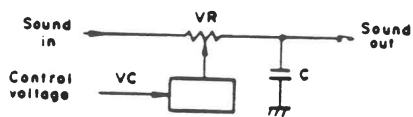


Fig. 9-2

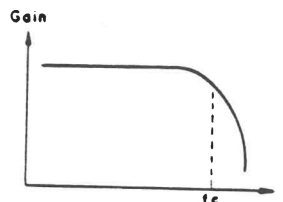


Fig. 9-3

Fig. 9-2 is a RC low-pass filter. The cutoff frequency (f_c) is determined by the resistance (R) and the capacitance (C).

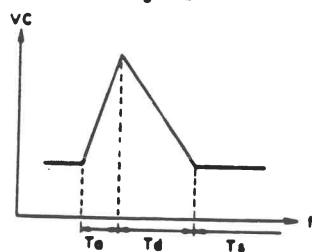


Fig. 9-4

If the resistance is varied by control voltage VC (when VC rises, the resistance decreases), the cutoff point of the filter (f_c) varies in accordance with VC.

When the voltage shown Fig. 9-4 is applied to the filter at the time a sound starts,

During period T_a As VC rises, VR decreases causing the frequency range of the filter to widen. Since the frequency range is extended at the beginning of the sound, an attack is given to the sound.

During period T_d VC decreases causing the frequency range of the filter to narrow. A decay is given to the sound.

During period T_s VC stays at a certain voltage, so a sustain is given to the sound.

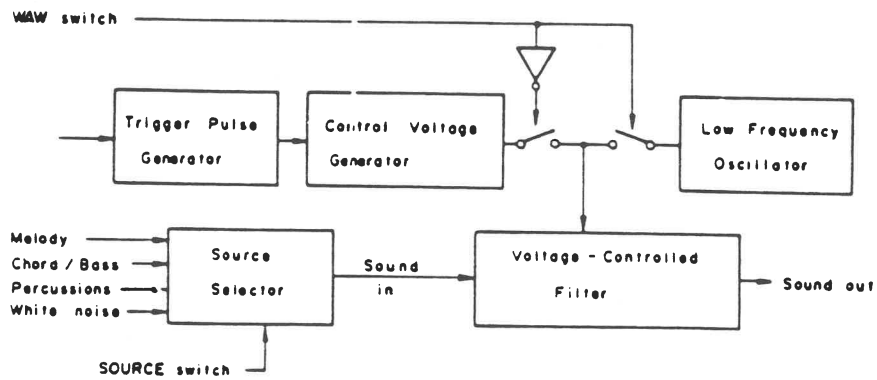


Fig. 9-5 VCF Block Diagram

9.2. Trigger Pulse Generator

The trigger pulse generator produces a trigger pulse to set the flip-flop (composed of NOR gates) in the Control Voltage Generator.

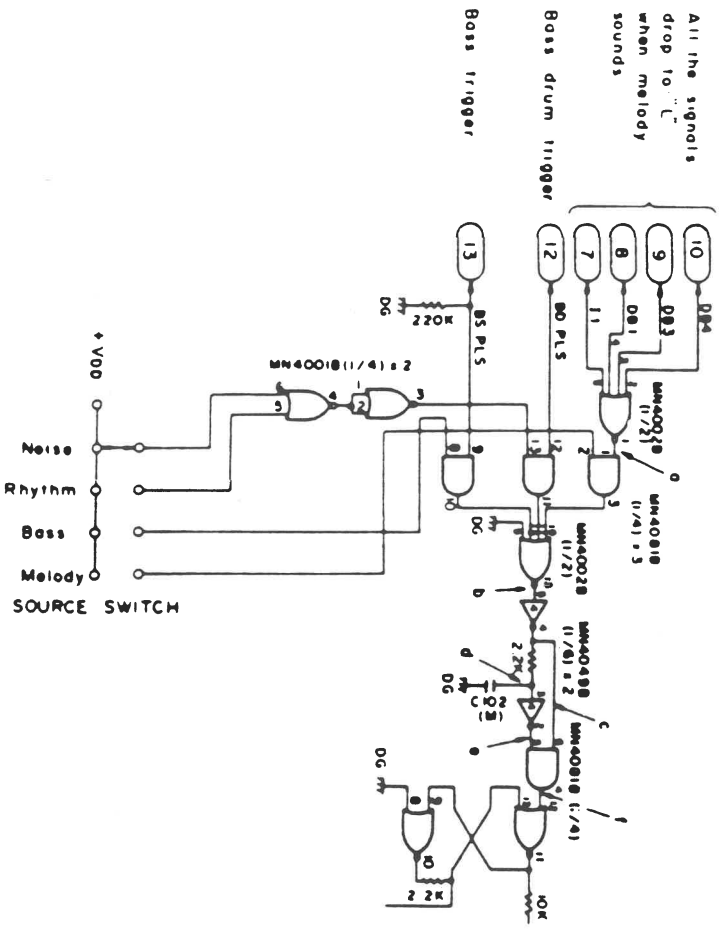


Fig. 9-6

9.3. Control Voltage Generator

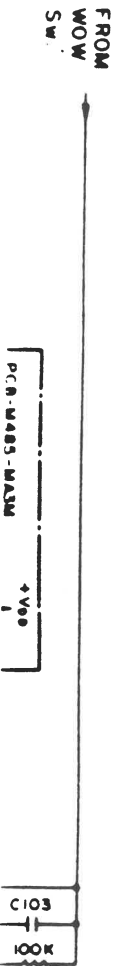
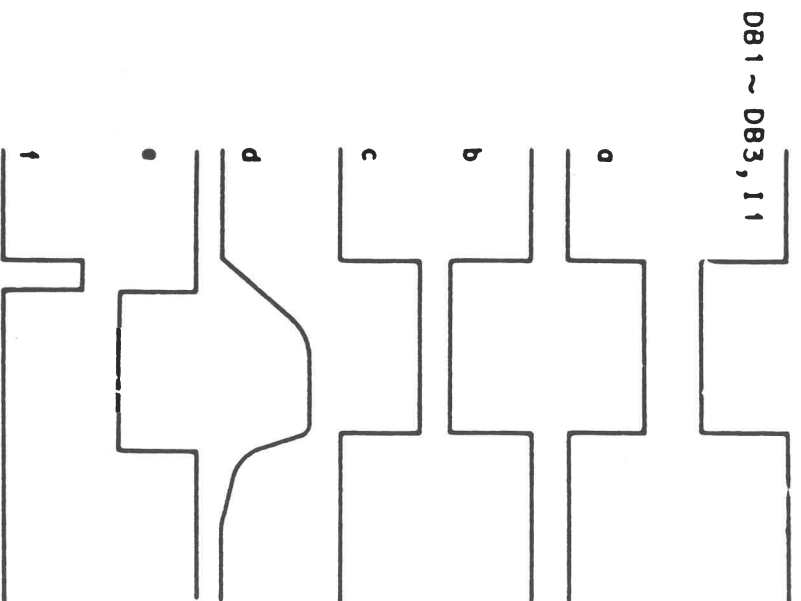


Fig. 9-7



The circuit generates control voltage VC for the VCF unit. When a trigger pulse is applied to the flip flop, point a of the above circuit drops from "H" to "L" turning on transistor T7.

Voltage +VDD is applied to point b via the ATTACK VR. However, as the voltage charges capacitor C, the voltage of point b rises gradually. At this time, the resistance across the ATTACK VR determines the attack (large resistance: weak attack; small resistance: strong attack).

This control voltage is applied to the VCF unit through breath controller (optional) jack, transistor T24, and the CUTOFF VR.

On the other hand, the voltage at point b is applied to the emitter of transistor T9.

When the voltage of point b becomes higher than the base voltage of T9, T9 turns on, turning on transistor T6. Point C of the flip flop drops to "L" resetting the flip flop. As point a rises to "H", transistors T7 and T8 turn off and on, respectively

When T8 comes on capacitor, C1 begins to discharge through the DECAY VR.

After the decay, the SUSTAIN VR supplies a set voltage to give a sound sustain. The CUTOFF control determines the emitter voltage of T24 to set the initial voltage level of the control voltage.

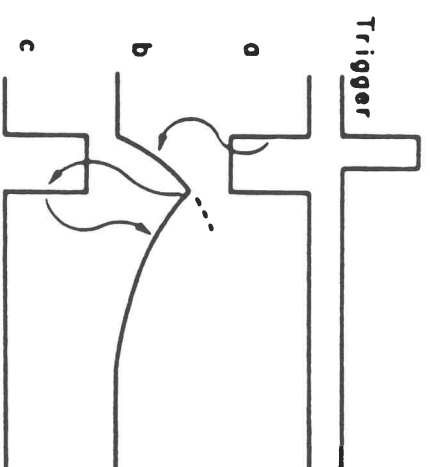


Fig. 9-9

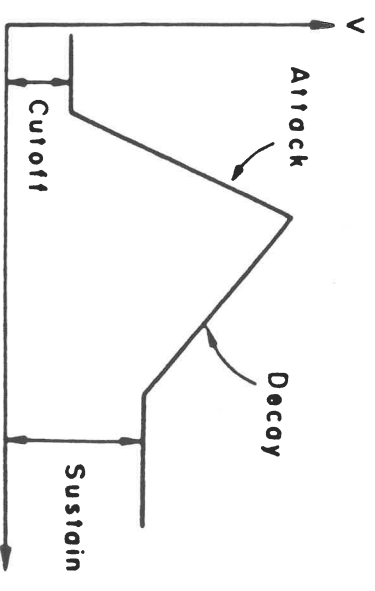


Fig. 9-10

Resonance is given by changing the gain and shoulder characteristic of the filter.

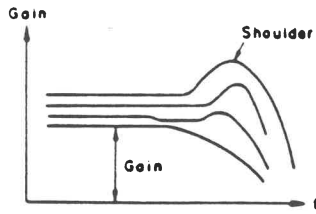


Fig. 9-13

In the circuit of Fig. 9-12, VR-1 controls the gain while VR2 determines this size of the shoulder of the filter (the characteristic is determined by the amount of feedback current).

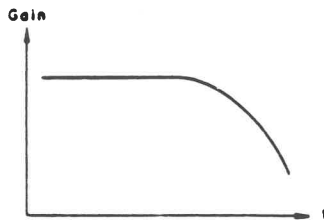


Fig. 9-14 When the RESONANCE VR is set to the minimum.

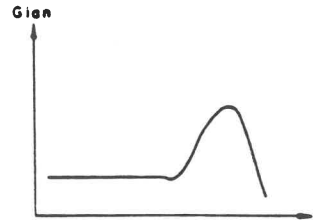


Fig. 9-15 When the RESONANCE VR is set to the maximum.

Thus, when the RESONANCE VR is at its maximum, the most limited frequency range is heard.

9-5. Source Selector

The circuit chooses a sound which is selected by the SOURCE switch and inputs the sound to the VCF unit.

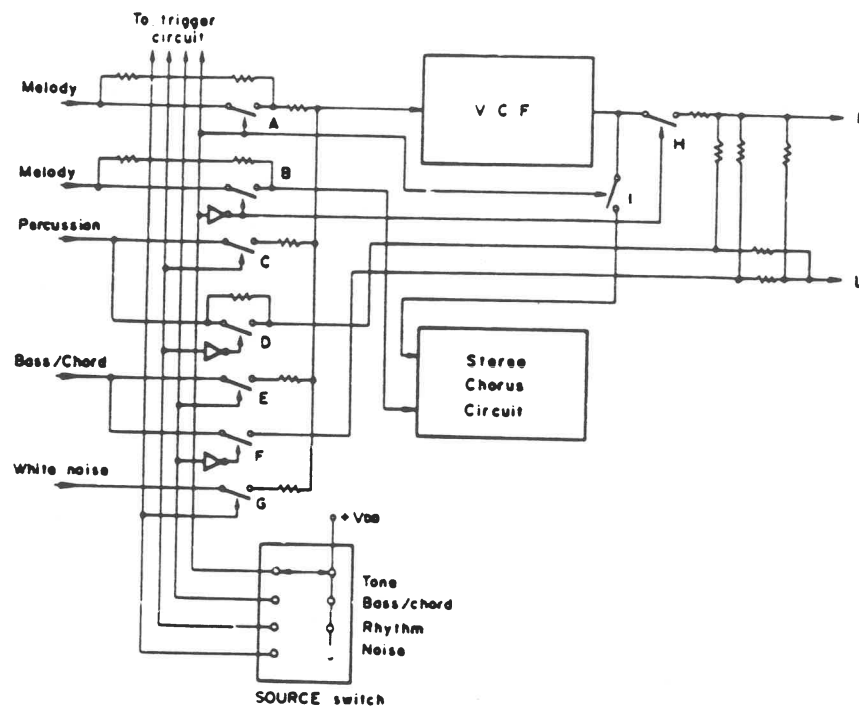


Fig. 9-16

Status of the analog switches in each position of SOURCE switch.

SOURCE	A	B	C	D	E	F	G	H	I
OFF	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
TONE	ON	OFF	OFF	ON	OFF	ON	OFF	OFF	ON
RHYTHM	OFF	ON	ON	OFF	OFF	ON	OFF	ON	OFF
BASS/CHORD	OFF	ON	OFF	ON	ON	OFF	OFF	ON	OFF
NOISE	OFF	ON	OFF	ON	OFF	ON	ON	ON	OFF

Function of each analog switch.

A	Sends D/A converter output of melody to the VCF unit.
B	Sends filter output of melody to the Stereo Chorus Circuit.
C	Sends percussion sounds to the VCF unit.
D	Sends percussion sounds to the mixer amp.
E	Sends bass and chord sounds to the VCF unit.
F	Sends bass and chord sounds to the mixer amp.
G	Sends white noise to the VCF unit.
H	Sends VCF output to the mixer amp.
I	Sends VCF output to the Stereo Chorus Circuit.

9-6. WAW Change-Over Circuit

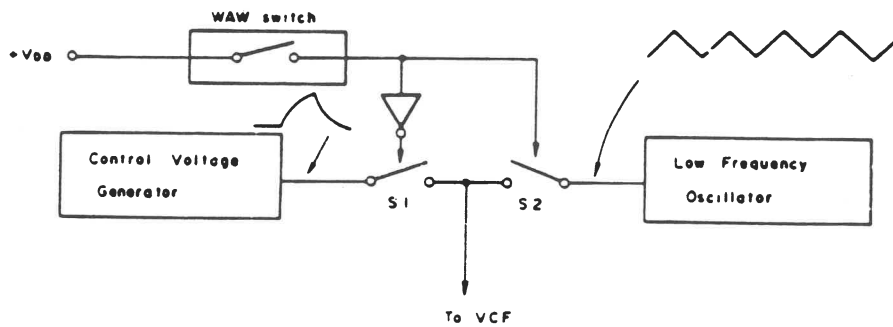


Fig. 9-17

When the WAW switch is turned on, analog switches S1 and S2 turn off and on respectively.

Therefore instead of VC, generated in the Control Voltage Generator block, a low-frequency sawtooth signal is applied to the VCF block and waw effect is given to a sound.

10. MUTING CIRCUIT

The circuit cuts the output of VCF when it is not generating sounds in order to shut the noise.

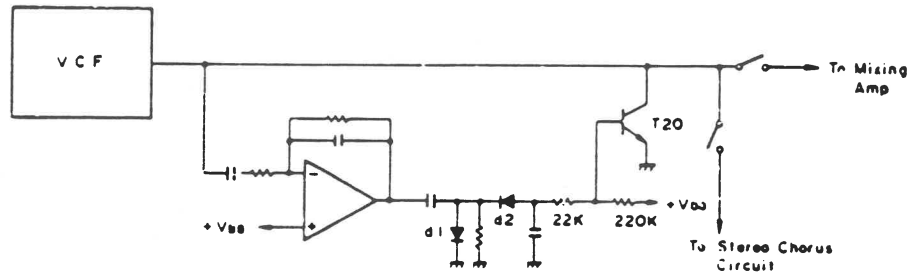
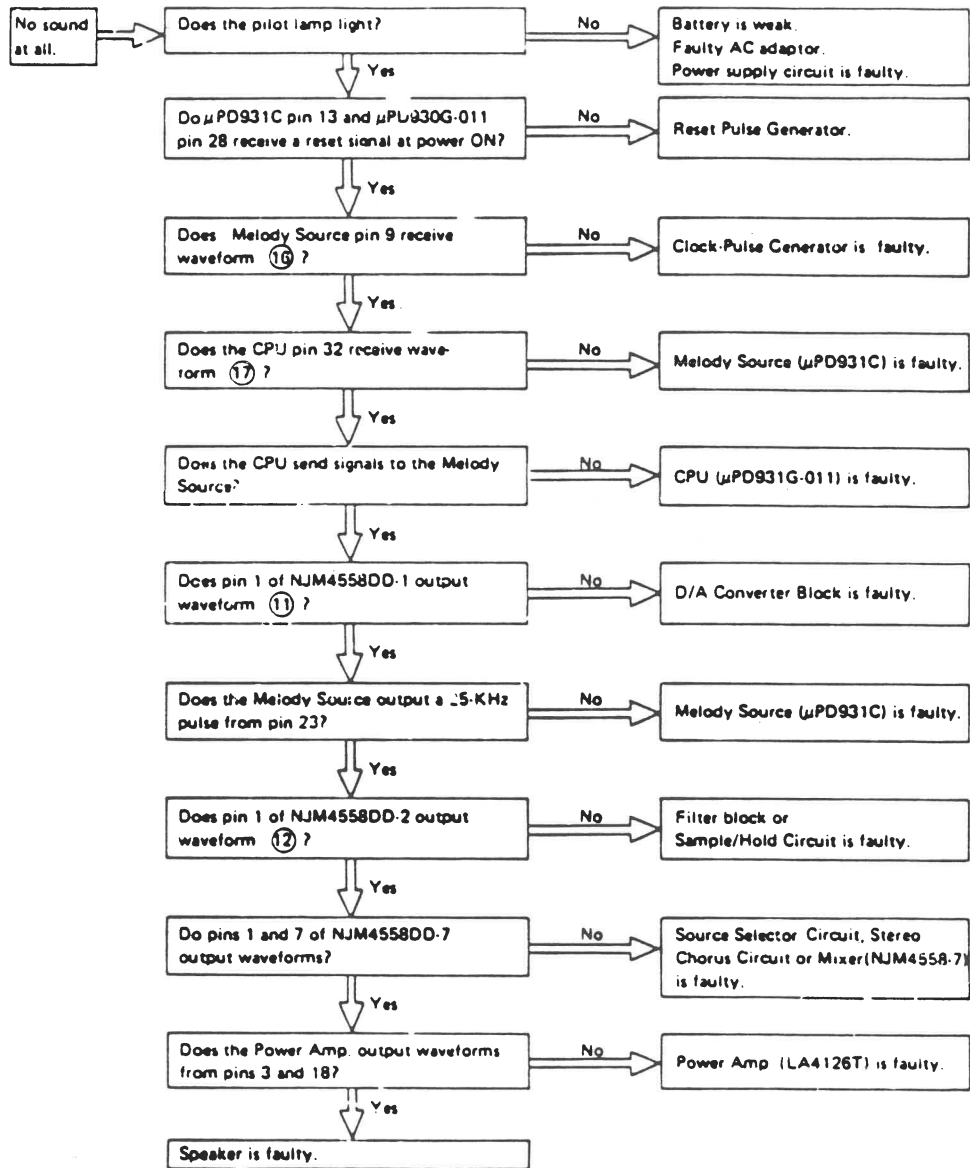


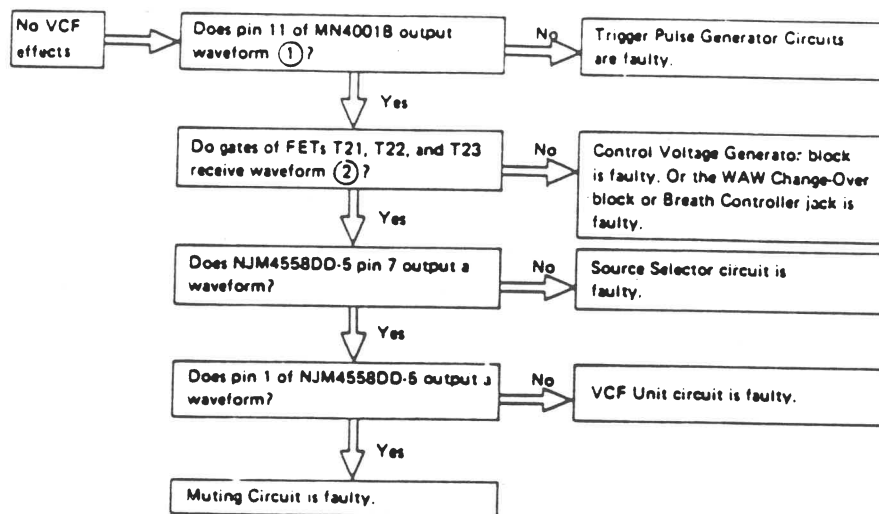
Fig. 10-1

When VCF generates sound, the output signal from the VCF is applied to the inverting (-) input of the OP amp., and the VCF output is amplified and inverted. The negative voltage of this inverted signal is detected by diodes d1 and d2. Transistor T20 is turned off thereby applying a negative voltage to the base. Thus VCF output sound is sent to either the mixing amp. or the Stereo Chorus Circuit.

When the VCF does not generate any sound, there is no output from the OP amp., and +VDD is applied to the base of T20 through a 220-Kohm resistor. T20 turns on, causing the output (noise) of the VCF to drain to the ground.

11. TROUBLESHOOTING





12. ADJUSTMENT

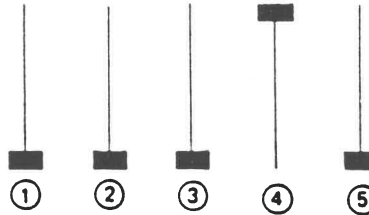
12-1. Adjusting cutoff

Variable resistor (adjustment): VR9

Checkpoint: T20 collector

Controls:

- ① AttackMinimum
- ② DecayMinimum
- ③ SustainMinimum
- ④ CutoffMaximum
- ⑤ ResonanceMinimum
- ⑥ SourceTone
- ⑦ Auto chordOff
- ⑧ ToneTrumpet



Necessary tool: Millivoltmeter

Method:

- ① Set the controls as shown above.
- ② Connect the millivoltmeter between the checkpoint and the ground.
- ③ Pressing key C2, adjust VR9 so that the millivoltmeter shows 2 to 3 millivolts.

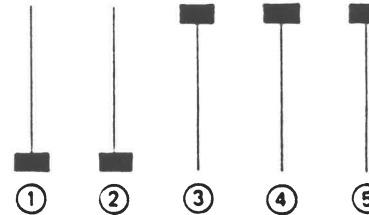
12-2. Adjusting resonance

Variable resistor (adjustment): VR8

Checkpoint: T20 collector

Controls:

- ① AttackMinimum
- ② DecayMinimum
- ③ SustainMaximum
- ④ CutoffMaximum
- ⑤ ResonanceMaximum
- ⑥ SourceTone
- ⑦ Auto chordOn



Necessary tool: Oscilloscope

Method:

- ① Set the controls as shown above.
- ② Pressing key C2, observe the waveform of the checkpoint with an oscilloscope.
- ③ Turn VR8 all the way counterclockwise so that T20 oscillates.
- ④ Turn VR8 gradually clockwise and stop when the oscillation stops.
- ⑤ Slide the cutoff control to the minimum then to the maximum, and confirm that T20 does not oscillate. If it oscillates, turn VR8 clockwise until the oscillation stops.

- ⑥ Slide the resonance control to the minimum then to the maximum, and make sure that T20 does not oscillate.
If oscillation starts, repeat step 4 .
- ⑦ Turn VR8 clockwise 0.2 to 0.4 millimeter.

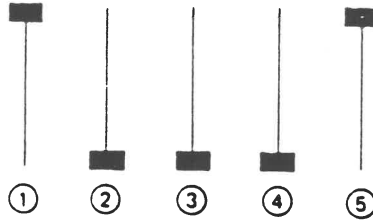
12-3. Adjusting Low Frequency Oscillator Speed

Variable resistor (adjustment): VR7

Checkpoint: NJM4558DD-3 pin 7

Controls:

- ① AttackMaximum
- ② DecayMinimum
- ③ SustainMinimum
- ④ CutoffMinimum
- ⑤ ResonanceMaximum
- ⑥ Main volumeMaximum
- ⑦ SourceTone
- ⑧ WawOn
- ⑨ ToneTrumpet
- ⑩ Stereo Chorus/Waw Speed Slowest



Necessary Tools: Stopwatch, Oscilloscope

Method:

- ① With the controls set as shown above, press key C2.
- ② With a stopwatch, adjust VR7 so that one waw cycle is five seconds.
- ③ Observing the waveform at the checkpoint with an oscilloscope, make sure that one waw cycle is less than 142 milliseconds.

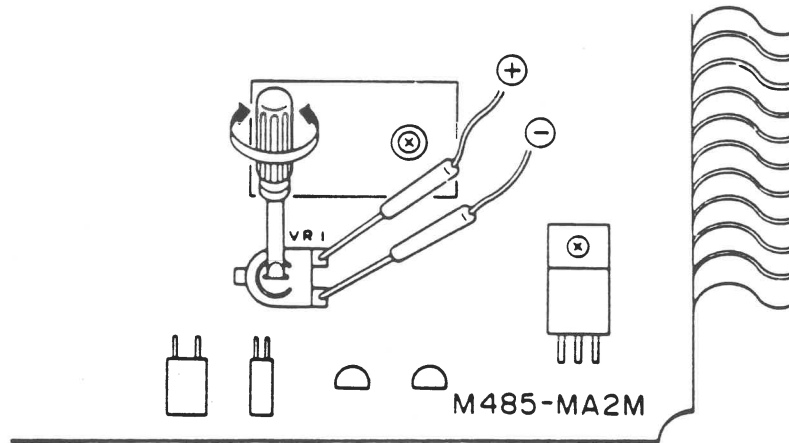
12-4. Auto Power Off Control Voltage

Variable resistor (adjustment): VR1 on MA2M PCB

Checkpoints: Terminals of the VR1

Necessary Tool: Voltmeter

Method: Adjust VR1 so that 5V is measured between the VR terminals.



PARTS LIST

Ref. MPL-027

MT-400V (MX-85)

Notes: 1. Prices and specifications are subject to change without notice.
2. Refer to current Technical News bulletins for Price Code Values.

Item	Code No.	Part Name	Specification	Q'ty	Rank	Price Code
		1. UPPER CASE UNIT				
		A) MAIN-PCB ASS'Y				
	2001 2001	LSI	UPD930G-011	1	B	BK
	2001 2043	LSI	UPD931C	1	B	BD
	2100 3255	MOS IC	TC40498P (= MN40498)	4	A	AG
	2100 3549	MOS IC	TC40668P (= HD140668P)	5	A	AF
	2100 3786	CMOS IC	TC40H004P	1	A	AE
	2100 3271	CMOS IC	TC40018P (= MN40018)	1	A	AE
	2100 3379	CMOS IC	TC40818P (= MN40818)	1	A	AE
	2100 3280	CMOS IC	TC40028P (= MN40028)	1	A	AE
	21 210013	OP amp	NJM45580D (= BA4558DX)	8	A	AD
	22009010	Transistor	2SC933	4	A	AD
	22203401	"	2SC1815	3	A	AD
	22209035	"	2SC1740	14	A	AD
	2240 1238	FET	2SK163M	3	A	AD
	2240 6019	PUT	N13T1	1	A	AD
	2301 3002	Diode	DS-442	18	C	AA
	2340 0022	Vari-cap	SVC321	1	X	AE
	2600 7313	Carbon film resistor	R-25-10K-J	23	X	N/A
	2600 9715	Carbon film resistor	R-25-100K-J	19		
	2600 7712	Carbon film resistor	R-25-15K-J	4		
	2600 7919	Carbon film resistor	R-25-12K-J	4		
	2600 8514	Carbon film resistor	R-25-33K-J	11		
	2601 0918	Carbon film resistor	R-25-330K-J	6		
	2600 8719	Carbon film resistor	R-25-39K-J	5		
	2600 6716	Carbon film resistor	R-25-5.6K-J	6		
	2600 9111	Carbon film resistor	R-25-56K-J	6		
	2600 6911	Carbon film resistor	R-25-6.8K-J	3		
	2600 2516	Carbon film resistor	R-25-100-J	4		
	2600 3717	Carbon film resistor	R-25-330-J	2		
	2600 4918	Carbon film resistor	R-25-1K-J	5		
	2601 2112	Carbon film resistor	R-25-1M-J	3		
	2600 5710	Carbon film resistor	R-25-2.2K-J	10		
	2600 8115	Carbon film resistor	R-25-22K-J	23		
	2601 0519	Carbon film resistor	R-25-220K-J	5		
	2600 8310	Carbon film resistor	R-25-27K-J	6		
	2600 6112	Carbon film resistor	R-25-3.3K-J	3		
	2601 1118	Carbon film resistor	R-25-390K-J	5		
	2600 8913	Carbon film resistor	R-25-47K-J	9		

Notes: * - New parts
Q'ty - Q'ty used per unit

Rank: A - Essential
B - Stock recommended
C - Other
X - No stock recommended

MT-400V Parts List

Item	Code No.	Part Name	Specification	Qty	Rank	Price Code
	2600 9318	Carbon film resistor	R-25-68K-J	8	X	N/A
	2600 1714	Carbon film resistor	R-25-47-J	1		
	2600 7518	Carbon film resistor	R-25-12K-J	1		
	2600 9910	Carbon film resistor	R-25-120K-J	1		
	2601 0110	Carbon film resistor	R-25-150K-J	2		
	2601 0713	Carbon film resistor	R-25-270K-J	1		
	2600 6511	Carbon film resistor	R-25-4.7K-J	6		
	2600 4519	Carbon film resistor	R-25-680-J	1		
	2601 8111	Carbon film resistor	R-25-2.2M-J	3		
	2601 1311	Carbon film resistor	R-25-470K-J	7		
	2600 1919	Carbon film resistor	R-25-56-J	20		
	2600 9511	Carbon film resistor	R-25-82K-J	9		
	2600 0912	Carbon film resistor	R-25-22-J	1		
	2601 6231	Carbon film resistor	R-25-25K-J	5		
	2601 5111	Carbon film resistor	R-25-50K-J	5		
	2601 2911	Carbon film resistor	R-25-10-J	1		
	2614 1117	Carbon film resistor	R-25-160K-J-T24-T	1		
	2601 6550	Carbon film resistor	R-25-5.6M-J	2		
	2620 2116	Carbon film resistor	R-50X-68-J	1		
	2760 2011	Trimmer VR	V8K4-18500	5	X	AB
	2760 2029	Trimmer VR	V8K4-1810K	2		AB
	2760 2037	Trimmer VR	V8K4-1850K	1		AB
	2760 2100	Trimmer VR	V8K4-18500K	1		AB
	2804 4925	Electrolytic capacitor	50RE1	11		N/A
	2804 5061	Electrolytic capacitor	16RE10	6		
	2804 9374	Electrolytic capacitor	6.3RE100	1		
	2804 9386	Electrolytic capacitor	6.3RE33	3		
	2804 9358	Electrolytic capacitor	6.3RE47	1		
	2804 9013	Electrolytic capacitor	50RN88P1	6		
	2804 5191	Electrolytic capacitor	50RER47	2		
o	2807 0829	Electrolytic capacitor	50RER22-T2-T	1		
	2804 5581	Electrolytic capacitor	6.3RE330	2		
	2818 0055	Ceramic capacitor	HE40SJY8221K	6		
	2818 0101	Ceramic capacitor	HE40SJY8681K	7		
	2818 2040	Ceramic capacitor	HE70SJYF 1032	28		
	0002 8168	Ceramic capacitor	HE40TJSL150K	1		
	2918 3259	Ceramic capacitor	HE11SJCH221J	2		
	2818 6045	Ceramic capacitor	HE40SJSL680K	4		

Notes: o - New parts
 Q'ty - Q'ty used per unit

Rank: A - Essential
 B - Stock recommended
 C - Other
 X - No stock recommended

MT-400V Parts List

Item	Code No.	Part Name	Specification	Q'ty	Rank	Price Code
	2600 8614	Carbon film resistor	R-25-33K-J	2	X	N/A
	2600 8911	Carbon film resistor	R-25-6.8K-J	2		
	2600 2518	Carbon film resistor	R-25-100-J	1		
	2600 8115	Carbon film resistor	R-25-22K-J	1		
	2601 0519	Carbon film resistor	R-25-220K-J	1		
	2600 6112	Carbon film resistor	R-25-3.3K-J	4		
	2600 6511	Carbon film resistor	R-25-4.7K-J	4		
	2600 4519	Carbon film resistor	R-25-680-J	1		
	2600 1919	Carbon film resistor	R-25-56-J	1		
	2620 1918	Carbon film resistor	R-50X-56-J	2		
	2620 2710	Carbon film resistor	R-50X-120-J	1		
	2622 1137	Carbon film resistor	R-75X-220-J	1		
	2760 2100	Trimmer VR	V8K4-1B500K	1		AB
	2770 6631	Variable resistor (VR)	K121K021J-100KB	1		AC
	2804 4933	Electrolytic capacitor	16RE100	4		N/A
	2804 4925	Electrolytic capacitor	50RE1	2		
	2804 9374	Electrolytic capacitor	6.3RE100	1		
	2804 5061	Electrolytic capacitor	16RE10	1		
	2804 5239	Electrolytic capacitor	16RE470	3		
	2804 5620	Electrolytic capacitor	6.3RE470	1		
	2808 0108	Electrolytic capacitor	16RE220	1		
	2818 0110	Ceramic capacitor	HE50SJYB102K	1		
	2818 2040	Ceramic capacitor	HE70SJYF103Z	1		
	2819 0255	Ceramic capacitor	HE40SJS100F	2		
	2830 6067	Mylar capacitor	AMZ-154K50	2		
④	3612 0487	Terminal Plate (jack board)	TCX-3330-01-010	1	C	AM
⑤	3721 0024	P.C. Joiner	PCJ-JPSS-12-30	1	X	AC
⑥	6902 8460	Heat sink 90C	M41516-1	1	X	-
		C1 MA3M-PCB ASS'Y				
	2100 7552	C-MOS IC	MN3102	1	A	AF
☆	2100 7692	C-MOS IC	MN3208	1	A	AL
	21210013	OP amp	NJM46580D (= BA4658DX)	1	A	AD
	22209035	Transistor	2SC1740	2	A	AD
	2301 3002	Diode	DS-442	2	C	AA
	2600 7313	Carbon film resistor	R-25-10K-J	1	X	N/A
	2600 9715	Carbon film resistor	R-25-100K-J	1		

Notes: ☆ - New parts
Q'ty - Q'ty used per unit

Rank: A - Essential
B - Stock recommended
C - Other
X - No stock recommended

MT-400V Parts List

Item	Code No.	Part Name	Specification	Q'ty	Rank	Price Code
◊	2819 0719	Ceramic capacitor	HE14SJCH331K	1	X	N/A
	2830 6087	Mylar capacitor	AMZ-154K50	3		
	2830 6041	Mylar capacitor	AMZ-104K50	4		
	2830 6024	Mylar capacitor	AMZ-102K50	3		
	2830 6091	Mylar capacitor	AMZ-272K50	1		
	2830 6156	Mylar capacitor	AMZ-563K50	4		
	2830 6032	Mylar capacitor	AMZ-103K50	11		
	2830 6083	Mylar capacitor	AMZ-223K50	12		
	0002 8164	Mylar capacitor	AMZF-273K50	4		
	2830 6105	Mylar capacitor	AMZ-332K50	5		
	2830 6461	Mylar capacitor	AMZ-471K50	1		
	2830 6321	Mylar capacitor	AMZV-152K50-T	4		
◊	0002 8165	Mylar capacitor	AMZF-392K50	4		
	2830 6121	Mylar capacitor	AMZ-472K50	5		
◊	2830 6681	Mylar capacitor	AMZ-123K50	1		
	2830 6059	Mylar capacitor	AMZ-153K50	5		
	2830 6113	Mylar capacitor	AMZ-333K50	3		
◊	2830 6690	Mylar capacitor	AMZ-393K50	1		
	2830 6104	Mylar capacitor	AMZ-823K50	2		
	2830 6148	Mylar capacitor	AMZ-562K50	1		
	2830 6479	Mylar capacitor	AMZ-683K50	1		
◊	2890 1568	Tantalum capacitor	CS15EQJ100K4S	1		
	3060 6035	Resistive ladder network	EXK-S19Z2052R	1	B	AO
①	3510 8157	Jack (right speaker)	HSJ0833-01-100	1	B	AC
②	3730 7211	Parallel cable M85A	2468-8-280	1	X	-
	3841 0105	Coil	R12-3034X	1	X	AC
		B) MA2M-PCB ASS'Y				
	2120 6342	Monolithic IC	LA4126T	1	A	AJ
	22106112	Transistor	2S8507F (2S8826)	1	A	AE
	22209035	Transistor	2SC1740	1	A	AD
	22303023	Transistor	2SD313F	1	A	AD
	2240 6110	FET	2SK30A	1	A	AD
	23103681	Zener diode	RD4.3E82	2	A	AA
	23102471	Zener diode	RD6.8E82	1	A	AA
	23103273	Zener diode	RD6.8E (B3)	1	A	AA
	2600 7313	Carbon film resistor	R-25-10K-J	2	X	N/A

Notes: ◊ - New parts
Q'ty - Q'ty used per unit

Rank: A - Essential
B - Stock recommended
C - Other
X - No stock recommended

MT-400V Parts List

Item	Code No.	Part Name	Specification	Q'ty	Rank	Price Code
	2600 3911	Carbon film resistor	R-25-390-J	1	X	N/A
	2600 4918	Carbon film resistor	R-25-1K-J	1		
	2620 2515	Carbon film resistor	R-50X-100-J	1		
144	2770 9591	Variable resistor volume	EWA-NA1X05814 10K NA	1	C	AE
149	2770 9605	Variable resistor rhythm cord bass	EWA-NFOX05814 10K NF	3	C	AE
145	2770 9613	Variable resistor tempo	EWA-NFOX05C16 1M	1	C	AE
149	2770 9621	Variable resistor stereo/low	EWA-NFOX05815 100K	1	C	AE
15	3420 3784	Slide switch power switch	SP-20202-1011	1	C	AD
16	3721 0016	P.C. Joiner M858	PCJ-JPSS-23-80	1	X	AD
17	5580 0201	Connector band	P.T75	6		
18	6901 3860	Sponge	M4630-7	1		
19	6911 1820	Shielded wire sub ass'y M85	M31403*1	1		
20	6911 1830	Shielded wire sub ass'y M85	M31403*2	1		
21	6911 1840	Shielded wire sub ass'y M85	M31403*3	1		
22	6911 1850	Shielded wire sub ass'y M85	M31403*4	1		
23	6911 1860	Shielded wire sub ass'y M85	M31403*5	1		
24	6911 1870	Shielded wire sub ass'y M85	M31403*6	1		
25	6911 1700	Shield plate 85A	M31410-1	1		
26	4307 2240	Unpopulated PCB	(M485-CN1M) M1553-1	1		N/A
27	4307 2250	Unpopulated PCB	(M485-CN2M) M1553-2	1		N/A
		b) KY1M-PCB ASS'Y				
	2301 3002	Diode	DS-442	49	C	AA
28	3721 0008	P.C. Joiner M85A	PCJ-JPSS-15-80	1	X	AD
29	43071641	Unpopulated PCB	(M490-KY1M) M1450A-1	1	X	AL
		c) KEYBOARD ASS'Y				
	6902 6320	Keyboard fixing plate 90B	M31066-1	1		
	6902 6340	Keyboard fixing plate 90	M2688-1	1		
	6902 6332	Keyboard fixing cushion B	M412558-1	1		
	6902 6352	Keyboard fixing cushion A	M412548-1	1		
30	6902 6150	Key 90A	M31055-1	4	X	AF
31	6902 6160	Key 90B	M31056-1	4		AF
32	6902 6170	Key 90C	M31057-1	4		AF
33	6902 6180	Key 90D	M31058-1	4		AF
34	6902 6190	Key 90E	M31059-1	4		AF
35	6902 6200	Key 90F	M31060-1	4		AF
36	6902 6210	Key 90G	M31061-1	4		AF
37	6902 6220	Key 90S	M31062-1	1		AF
38	6910 0290	Black key	M3416-1	20		AF

Notes: * - New parts
Q'ty - Q'ty used per unit

Rank: A - Essential
B - Stock recommended
C - Other
X - No stock recommended

MT-400V Parts List

Item	Code No.	Part Name	Specification	Q'ty	Rank	Price Code
	2600 7712	Carbon film resistor	R-25-15K-J	1	X	N/A
	2600 8514	Carbon film resistor	R-25-33K-J	1		
	2600 6911	Carbon film resistor	R-25-6.8K-J	1		
	2600 1315	Carbon film resistor	R-25-33-J	1		
	2600 3717	Carbon film resistor	R-25-330-J	1		
	2600 4918	Carbon film resistor	R-25-1K-J	1		
	2600 6112	Carbon film resistor	R-25-3.3K-J	1		
	2600 8913	Carbon film resistor	R-25-47K-J	4		
	2601 0110	Carbon film resistor	R-25-150K-J	1		
	2600 6511	Carbon film resistor	R-25-4.7K-J	2		
	2600 9511	Carbon film resistor	R-25-82K-J	1		
	2804 4925	Electrolytic capacitor	50RE1	1		
	2804 9358	Electrolytic capacitor	6.3RE47	2		
	2818 2040	Ceramic capacitor	HE70SJYF1032	2		
☆	2818 3267	Ceramic capacitor	RT-HE70TKCH680J-T	1		
	2818 6063	Ceramic capacitor	HE50SJS101K	1		
	2830 6032	Mylar capacitor	AMZ-103K50	1		
	2830 6461	Mylar capacitor	AMZ-471K50	1		
	2830 6075	Mylar capacitor	AMZ-222K50	1		
	2830 6479	Mylar capacitor	AMZ-683K50	2		
⑧ ☆	2770 9630	Slide VR resonance	S2528P601-10KBX2	1	C	AF
⑨ ☆	2770 9648	Slide VR Sustain level	S2518P606-10KB	1	C	AF
⑩ ☆	2770 9656	Slide VR Cut off	S2518P606-50KB	1	C	AF
⑪ ☆	2770 9664	Slide VR Attack/ delay	S2518P606-100KB	2	C	AF
☆	6911 1880	Shielded wire sub ass'y M85	M31403*7	1	X	-
☆	6911 1890	Shielded wire sub ass'y M85	M31403*8	1		-
☆	6911 1900	Shielded wire sub ass'y M85	M31403*9	1		-
☆	6911 1910	Shielded wire sub ass'y M85	M31403*10	1		-
		D) MA4M-PCB ASS'Y				
⑫ ☆	3510 8211	Mini Jack (BFC jack)	HSJ0922-01-030	1	B	AE
		E) KEYBOARD UNIT				
		a) CN-PCB ASS'Y				
	2301 3002	Diode	DS-442	38	C	AA
⑬	2320 7028	LED on/off & Rhythm	SLP-1358	2	C	AB

Notes: ☆ - New parts
Q'ty - Q'ty used per unit

Rank: A - Essential
B - Stock recommended
C - Other
X - No stock recommended

MT-400V Parts List

Item	Code No.	Part Name	Specification	Q'ty	Rank	Price Code
		d) SLIDE BOARD ASS'Y				
	5580 1274	Ball bearing	SUS304 Pai for slide bd.	1	X	AA
	6901 4972	Slide contact B	M4797B-1	1	B	AA
	6910 0480	Slide spring	M4491-1	1	B	AA
	6910 4860	Slide board 40	M3704-1	1	B	AC
		F) UPPER CASE ASS'Y				
39	6901 7080	Upper blind plate 3	M4671-3	5	X	-
40	6901 7090	Blind plate 2	M4672-3	2		-
41	6901 7300	Upper blind plate 4	M4687-2	1		-
42	69026640	Contact rubber 90A	M31038A-1 Octaves 1,2,3	3	B	AD
43	69026650	Contact rubber 90B	M31039A-1 Octave 4	1	B	AD
44	6910 1860	Fill-in contact rubber 31	M4675-1	3	B	AB
45	69104602	Switch board M10S sub ass'y	M3722C*1 tone bd	1	B	AH
46	69104612	Switch board M6S sub ass'y	M3723C*1 rhythm bd	1	B	AG
47	6910 4820	Key contact rubber M10S	M3691-1 tone bd	1	B	AD
48	6910 4830	Key contact rubber M6S	M3692-1 rhythm bd	1	B	AC
49	6910 5220	Blind plate 4	M4686-2	1	X	-
50	6910 5300	Blind plate 3	M4670-3	5	X	-
51	6910 9100	Reinforcement plate	M31285-1	1	X	-
52	6911 1640	CN contact 851	M41724-1 cord & accomp.	1	B	AC
53	6911 1650	CN spacer 851	M41727-1 "	1	X	-
54	6911 1660	CN contact 852	M41725-1 source & use	1	B	AC
55	6911 1670	CN spacer 852	M41728-1 "	1	X	-
56	6911 1680	CN contact 853	M41726-1 effect	1	B	AC
57	6911 1690	CN spacer 853	M41729-1 "	1	X	-
58	6911 1710	Slide button 85	M31354-1 filter control	5	X	AC
59	6911 1740	Rhythm button 40 (orange)	M4827-11 fill in	1	X	AC
60	6911 1750	Rhythm button 40 (beige)	M4827-12 start/stop/synchro	2	X	AC
61	6911 1760	Lock button 40 (blk/yell)	M4828-9 rhythm	6	X	AC
62	6911 1770	Lock button 40 (blk/blue)	M4828-10 tone	10	X	AC
63	6911 1780	Lock button 40 (blk/brn)	M4828-11 select	2	X	AC
64	6911 1790	Slide VR knob 90-B	M31355-1 volume knobs	6	C	AC
65	6911 1800	Slide knob 40 (orange top)	M3705-8 power, source, use	3	C	AC
66	6911 1810	Slide knob 40 (yellow top)	M3705-9 chord, accomp, effect	6	C	AC
67	6911 1520	Upper case sub ass'y	M2850*1	1	X	BA
	6911 1700	Shield plate 85A	M31410-1	1	X	-
	6911 3050	Shield plate 85B	M31421-1	1	X	-

Notes: * - New parts
Q'ty - Q'ty used per unit

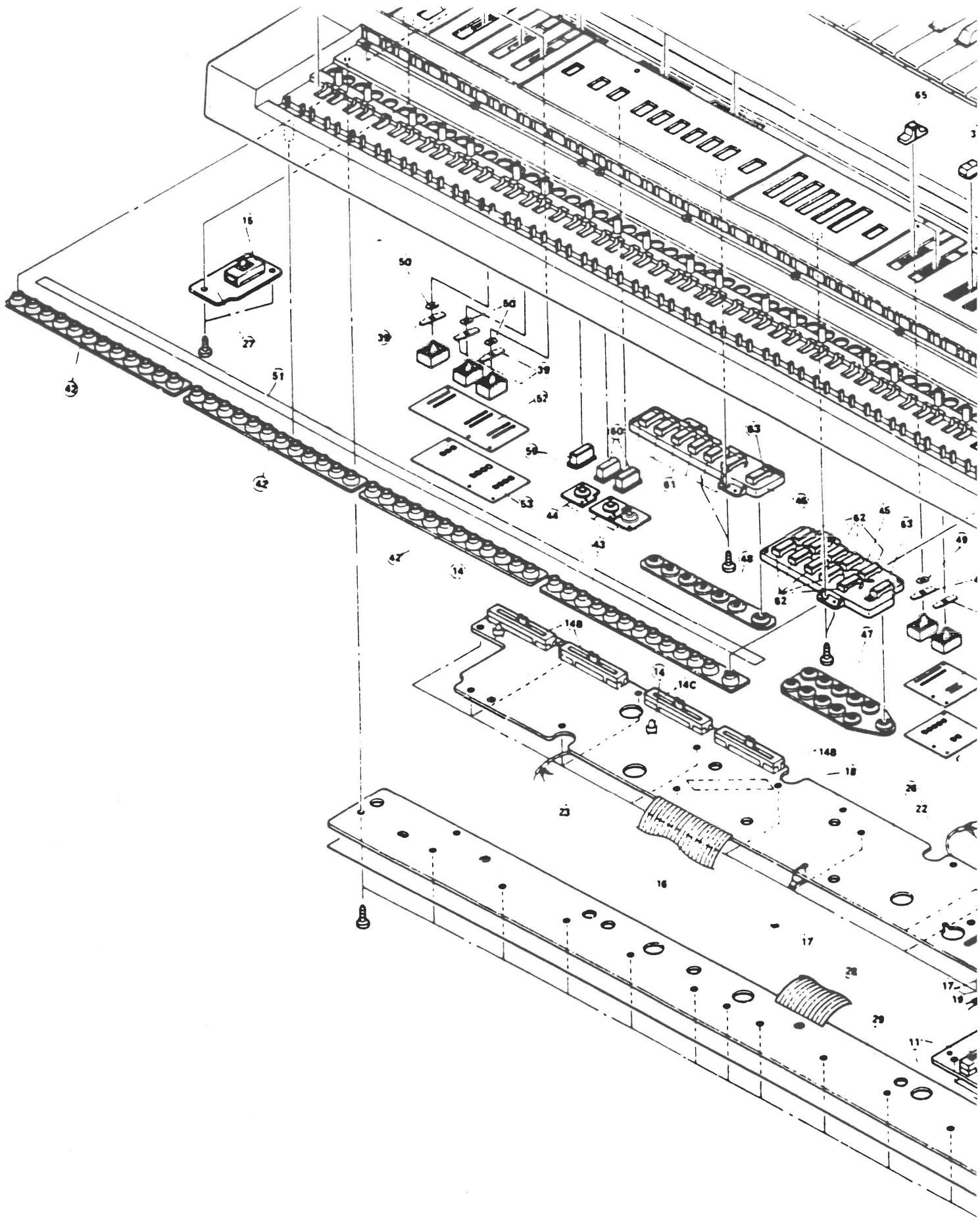
Rank: A - Essential
B - Stock recommended
C - Other
X - No stock recommended

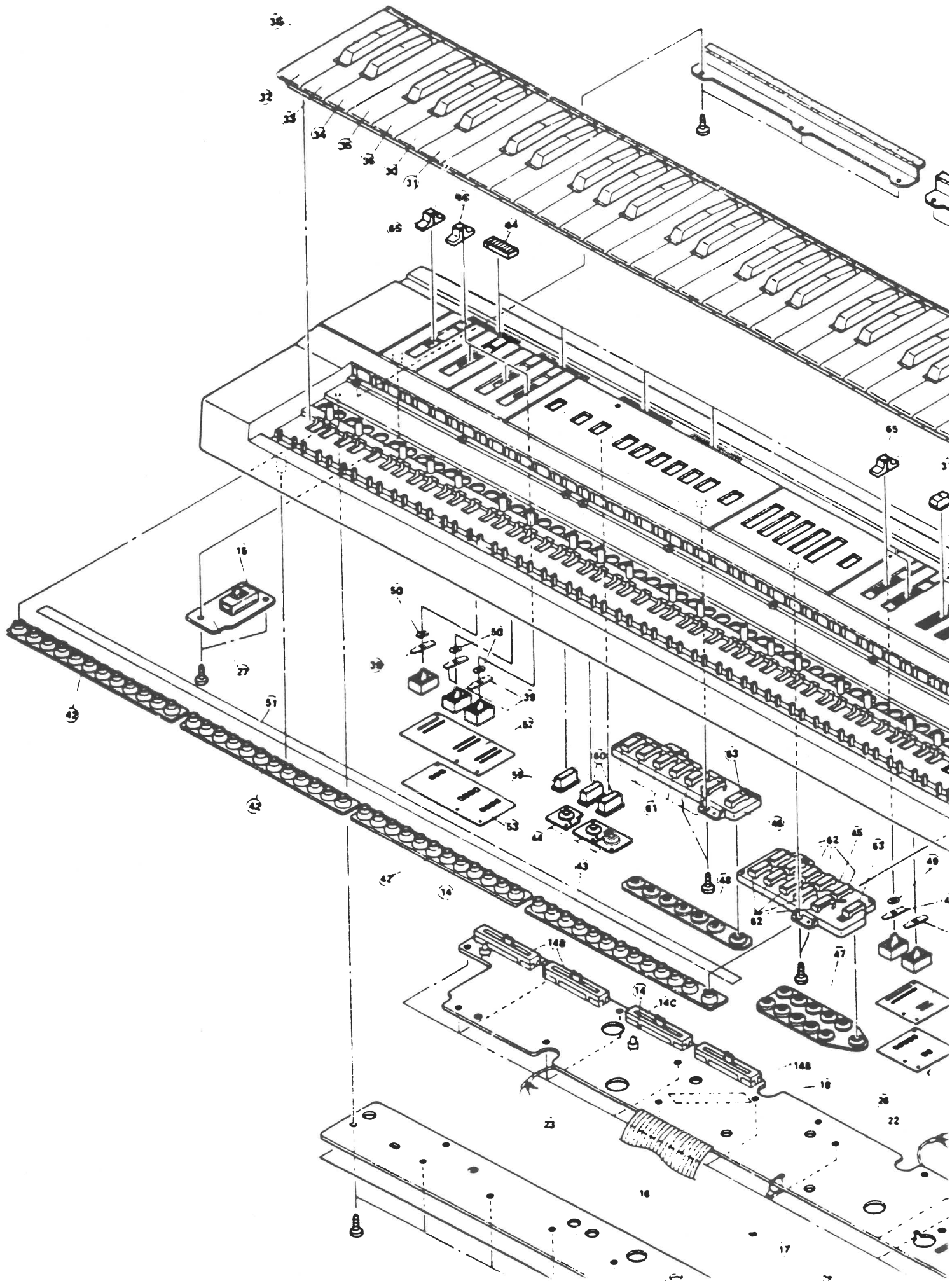
MT-400V Parts List

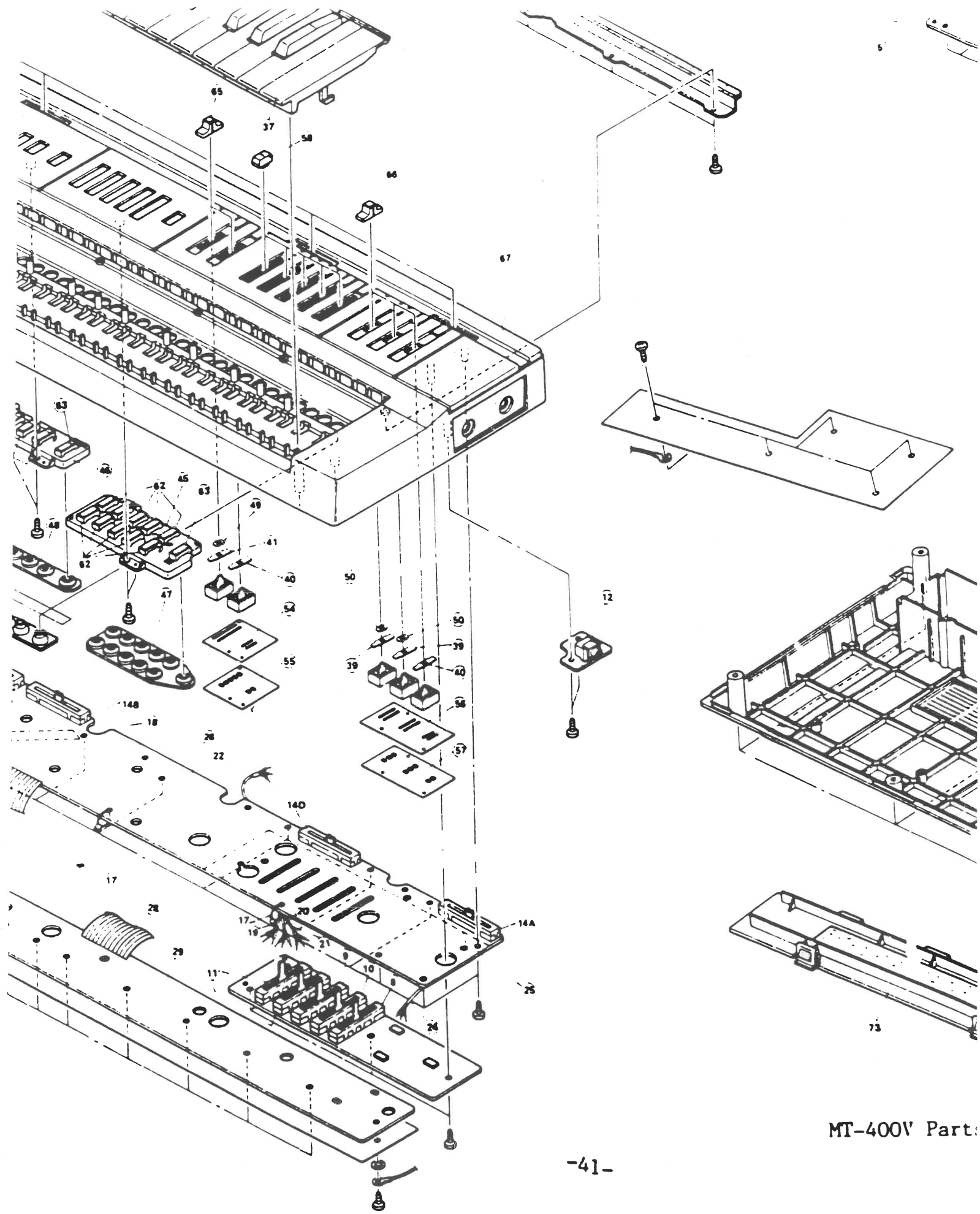
Item	Code No.	Part Name	Specification	Q'ty	Rank	Price Code
☆	6911 3060	Sponge	M4767-5	2	X	-
		2. SPEAKER SET				
68	3700 9806	Speaker cord	FXP0997-01-020	1	X	AC
69	3830 2132	Speaker	FAS-10P254S	1	C	AM
70	6902 6380	SP felt	M41241-1	1	X	-
71	6911 1431	SP lower case	M31043A-2	1	X	AH
72	6911 1553	SP upper case sub ass'y	M31080*2	1	X	AW
	6902 6690	Rubber foot	M41361-1	2	X	-
		3. LOWER CASE/BATTERY COVER				
73	6911 1214	Battery cover sub ass'y	M3663D*9	1	X	AE
74	6911 1427	Lower case sub ass'y	M2699G*2	1	X	AV

Notes: ☆ - New parts
Q'ty - Q'ty used per unit

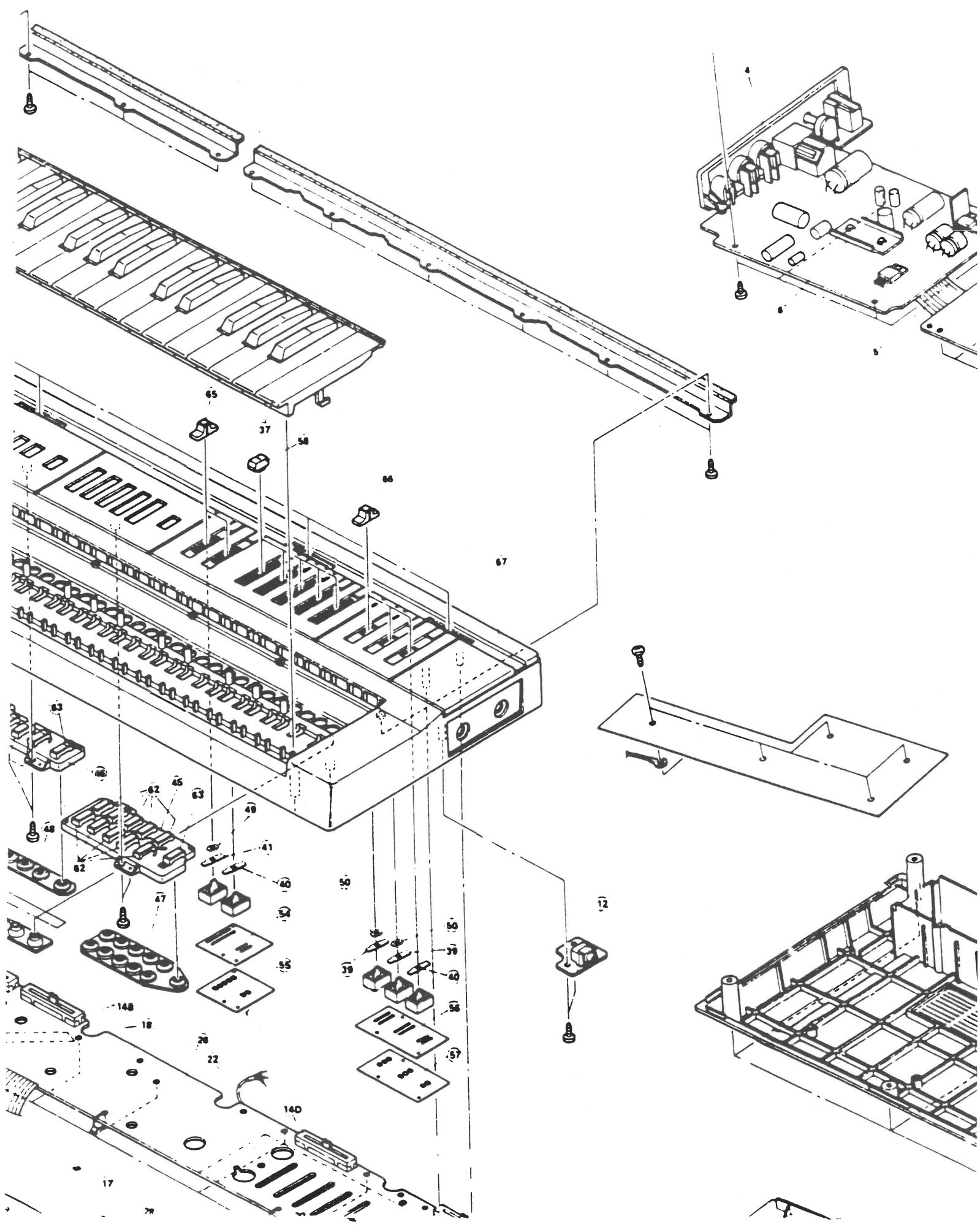
Rank: A - Essential
B - Stock recommended
C - Other
X - No stock recommended

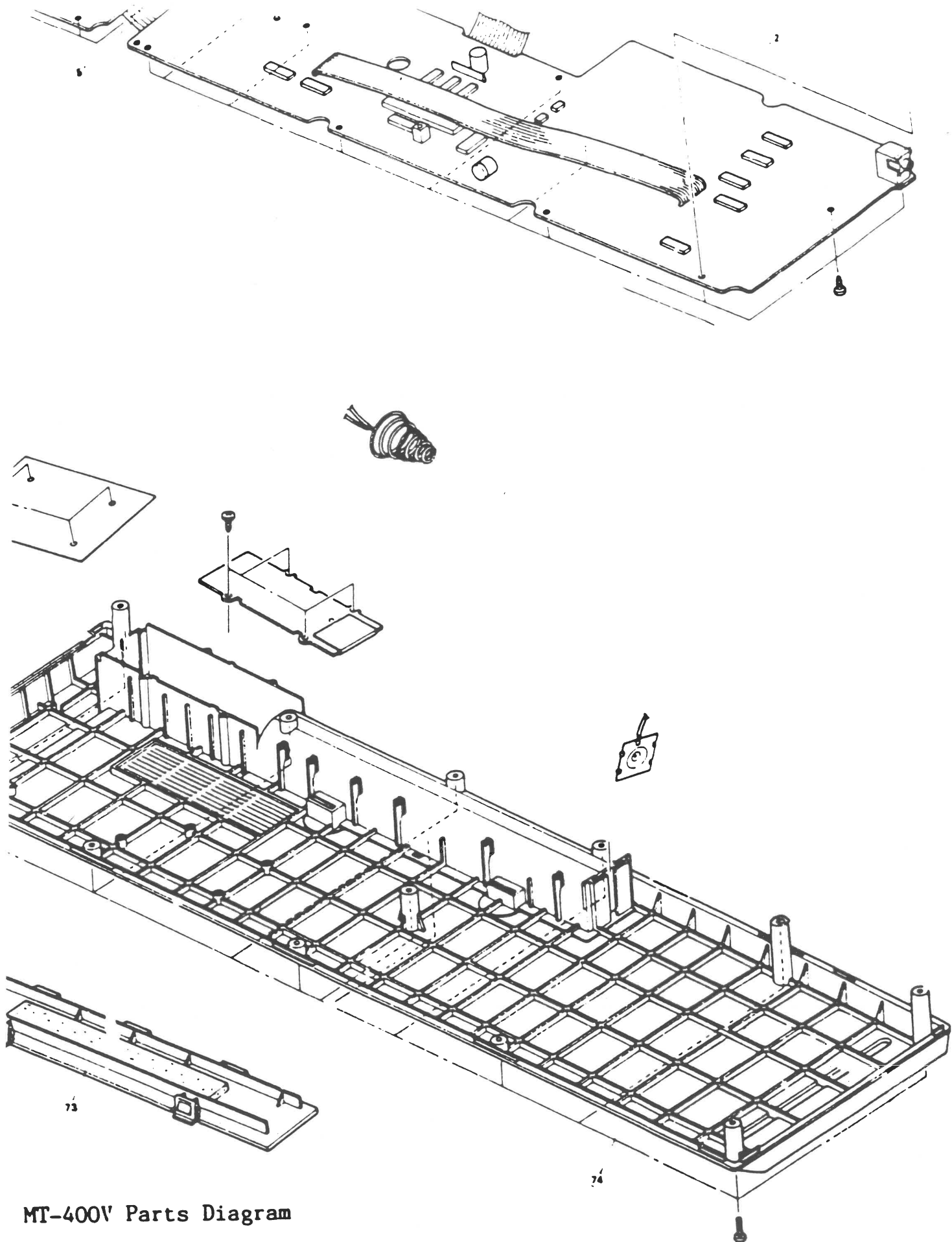




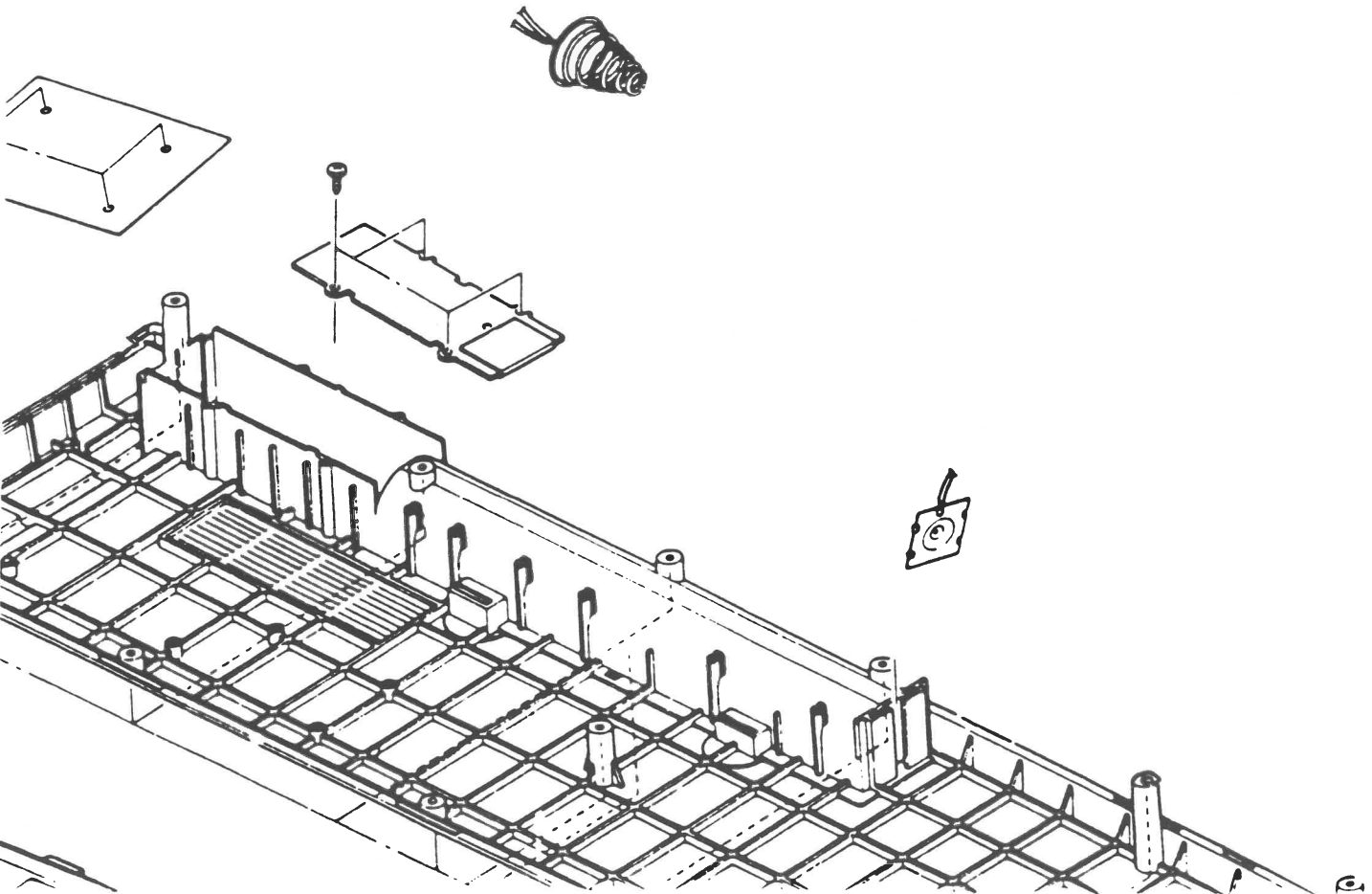
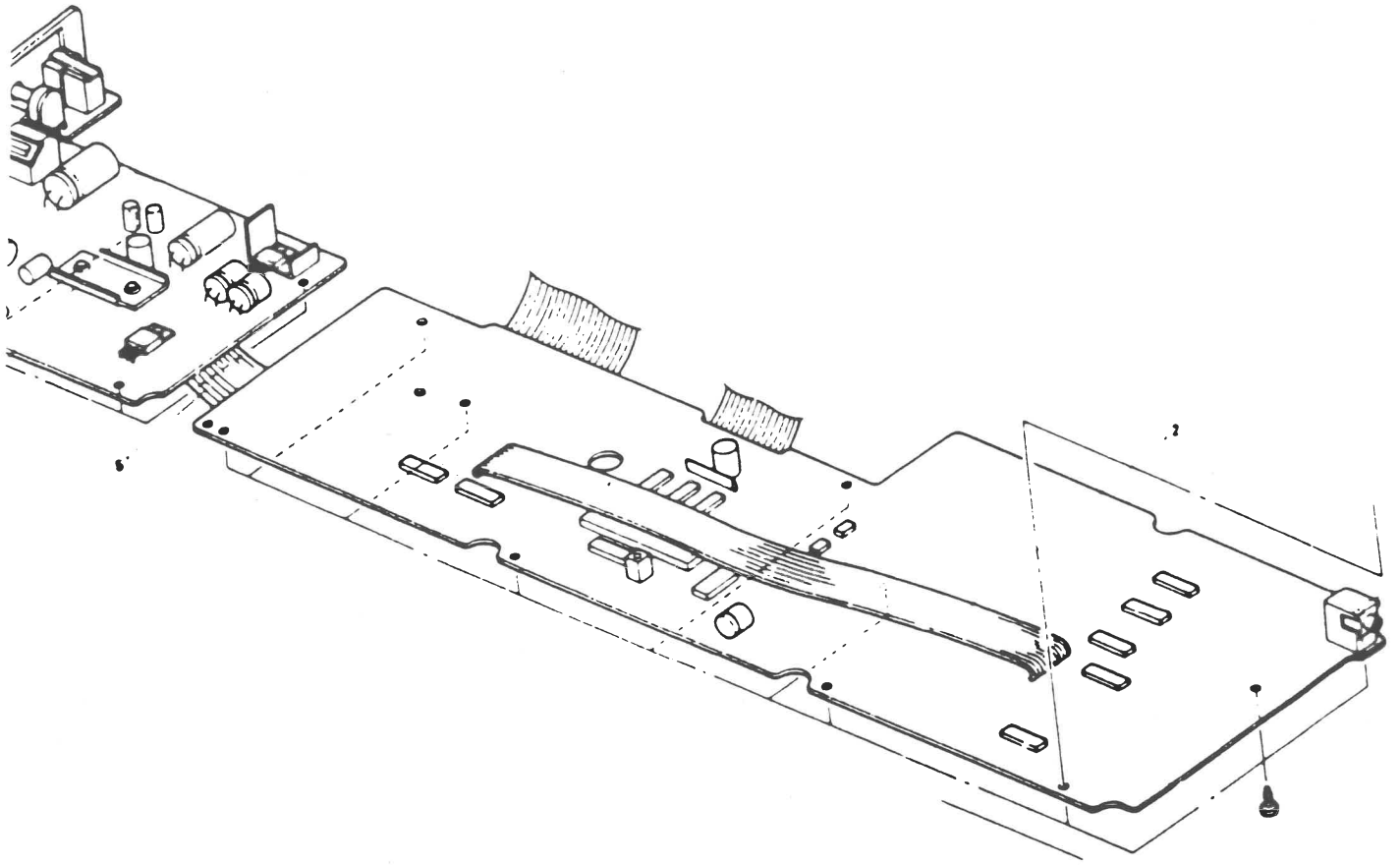


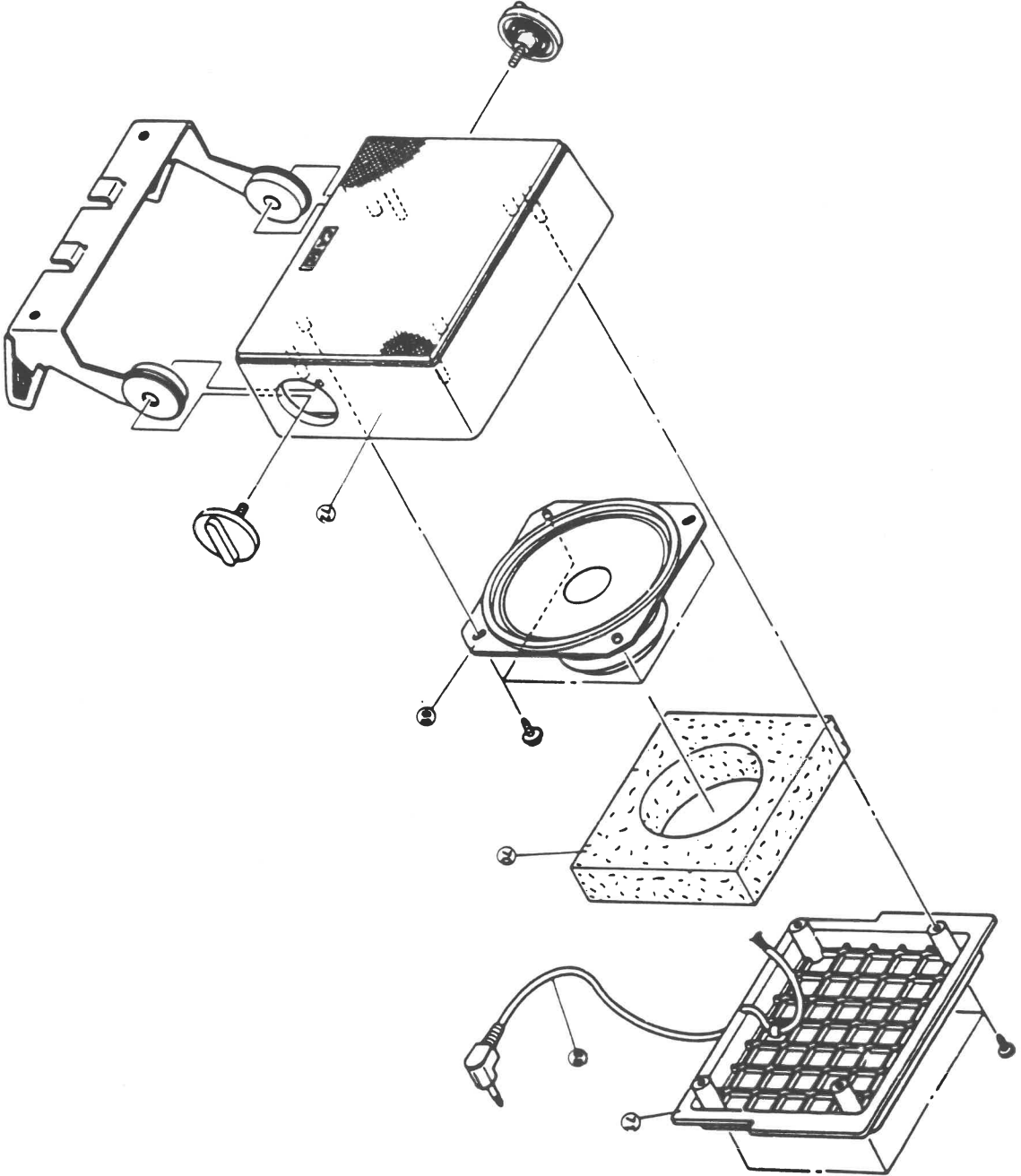
MT-400V Part:





MT-400V Parts Diagram





- 1) Price Codes subject to change without notice.
- 2) Refer to current Technical News Bulletins for price code values.

CT-410V (MX-87)

Item	Code no.	Part name	Specifications	Q'ty	Price Code	Rank
1) MAIN-PCR UNIT						
A) MAIN-PCR ASS'Y						
	20012001	LSI	UPD930G-011	1	BK	B
	20012043	LSI	UPD931C	1	BD	B
	21003255	MOS IC	TC4049BP (MN4049B)	4	AG	A
	21003549	MOS IC	TC4065BF (HC14066BP)	5	AF	A
	21003786	CMOS IC	TC40H004P	1	AE	A
	21003271	CMOS IC	MN-1001B (TC4001BP)	1	AE	A
	21003379	CMOS IC	MN4081B (TC4081BP)	1	AE	A
	21003280	CMOS IC	MN4002B (TC4002BP)	1	AE	A
	21210013	OP amp	BA4558DX (NJM4558DD)	6	AD	A
	22009010	Transistor	2SA933	4	AD	A
	22209035	Transistor	2SC1740	14	AD	A
	22203401	Transistor	2SC1815	3	AD	A
	22401238	FET	2SK163M	3	AD	A
	22406019	PUT	N13T1	1	AD	A
	23013002	Diode	DS-442	18	AA	C
	23400022	Vari-cap	SVC321	1	AE	B
	26005710	Carbon film resistor	R-25-2.2K-J	10	N/A	X
	26007917	Carbon film resistor	R-25-18K-J	5		
	26008514	Carbon film resistor	R-25-33K-J	11		
	26010918	Carbon film resistor	R-25-330K-J	5		
	26002516	Carbon film resistor	R-25-100-J	4		
	26007313	Carbon film resistor	R-25-10K-J	23		
	26009715	Carbon film resistor	R-25-100K-J	19		
	26007712	Carbon film resistor	R-25-15K-J	3		
	26003717	Carbon film resistor	R-25-330-J	2		
	26008719	Carbon film resistor	R-25-39K-J	5		
	26006716	Carbon film resistor	R-25-5.6K-J	6		
	26009111	Carbon film resistor	R-25-56K-J	6		
	26008911	Carbon film resistor	R-25-6.8K-J	3		
	26012112	Carbon film resistor	R-25-1M-J	3		
	26008115	Carbon film resistor	R-25-22K-J	23		
	26010519	Carbon film resistor	R-25-220K-J	5		
	26008310	Carbon film resistor	R-25-27K-J	6		
	26011116	Carbon film resistor	R-25-390K-J	5		
	26009318	Carbon film resistor	R-25-68K-J	8		

Note: ☆ New parts
Q'ty Q'ty used per unit

Rank: A Essential
B Stock recommended
C Others
X No stock recommended

CT-410V Parts List

Item	Code no.	Part name	Specifications	Q'ty	Price Code	Rank
	26004918	Carbon film resistor	R-25-1K-J	5	N/A	X
	26006112	Carbon film resistor	R-25-3.3K-J	3		
	26008913	Carbon film resistor	R-25-47K-J	9		
	26005511	Carbon film resistor	R-25-4.7K-J	6		
	26012911	Carbon film resistor	R-25-10-J	1		
	26007516	Carbon film resistor	R-25-12K-J	1		
	26009910	Carbon film resistor	R-25-120K-J	1		
	26010110	Carbon film resistor	R-25-150K-J	2		
	26010713	Carbon film resistor	R-25-270K-J	1		
	26004519	Carbon film resistor	R-25-680-J	1		
	26011311	Carbon film resistor	R-25-470K-J	7		
	26001919	Carbon film resistor	R-25-56-J	20		
	26009511	Carbon film resistor	R-25-82K-J	10		
	26016550	Carbon film resistor	R-25-5.6M-J	2		
	26006584	Carbon film resistor	R-25-160K-G	1		
	26018111	Carbon film resistor	R-25-2.2M-J	3		
	26000912	Carbon film resistor	R-25-22-J	1		
	26001714	Carbon film resistor	R-25-47-J	1		
	26016231	Carbon film resistor	R-25-25K-J	5		
	26015111	Carbon film resistor	R-25-50K-J	5		
	26202116	Carbon film resistor	R-50X-68-J	1		
	27602134	Trimmer VR	V8K4-11B500K	1	AB	C
☆	27602215	Trimmer VR	V8K4-11B20K	1	AB	C
	27602177	Trimmer VR	V8K4-11B10K	1	AB	C
	27602185	Trimmer VR	V8K4-11B500	5	AB	C
	27602169	Trimmer VR	V8K4-11B50K	1	AB	C
	28045051	Electrolytic capacitor	16RE10	6	N/A	X
	28049374	Electrolytic capacitor	6.3RE100	1		
	28049366	Electrolytic capacitor	6.3RE33	1		
	28049013	Electrolytic capacitor	50RNBBP1	6		
	28045191	Electrolytic capacitor	50RE R47	2		
	28070829	Electrolytic capacitor	50RE R22-T2-T	1		
	28049366	Electrolytic capacitor	6.3RE33	2		
	28045581	Electrolytic capacitor	6.3RE330	2		
	28049358	Electrolytic capacitor	6.3RE47	1		
	28180055	Ceramic capacitor	HE40SJY8221K	6		
	28180101	Ceramic capacitor	HE40SJY8681K	7		
	28182040	Ceramic capacitor	HE70SJYF103Z	26		
	28190492	Ceramic capacitor	RT-HE40TKSL150K-T	1		

Note: ☆ New parts
Q'ty used per unit

Rank: A Essential
B Stock recommended
C Others
X No stock recommended

CT-410V Parts List

Item	Code no.	Part name	Specifications	Q'ty	Price Code	Rank
	28183259	Ceramic capacitor	HE11SJCH221J	2	N/A	X
	28186045	Ceramic capacitor	HE40SJS�680K	4		
	28182040	Ceramic capacitor	HE70SJYF103Z	2		
☆	28190719	Ceramic capacitor	HE14SJCH331K	1		
☆	28183186	Ceramic capacitor	HE95SJCH18K	1		
	28306067	Mylar capacitor	AMZ-154K50	3		
	28306041	Mylar capacitor	AMZ-104K50	4		
	28306024	Mylar capacitor	AMZ-102K50	3		
	28306156	Mylar capacitor	AMZ-563K50	4		
	28306032	Mylar capacitor	AMZ-103K50	11		
	28306083	Mylar capacitor	AMZ-223K50	12		
	00028164	Mylar capacitor	AMZ-273K50	4		
	28306105	Mylar capacitor	AMZ-332K50	5		
	28306461	Mylar capacitor	AMZ-471K50	1		
	28306321	Mylar capacitor	AMZV-152K50-T	4		
	00028165	Mylar capacitor	AMZ-392K50	4		
	28306121	Mylar capacitor	AMZ-472K50	5		
	28306059	Mylar capacitor	AMZ-153K50	5		
	28306113	Mylar capacitor	AMZ-333K50	3		
	28306164	Mylar capacitor	AMZ-323K50	2		
	28306479	Mylar capacitor	AMZ-683K50	1		
	28306091	Mylar capacitor	AMZ-272K50	1		
	28306148	Mylar capacitor	AMZ-562K50	1		
	28306681	Mylar capacitor	AMZ-123K50	1		
	28306690	Mylar capacitor	AMZ-393K50	1		
	28901568	Tantalum capacitor	CS15EOJ100K4S	1		
	30606035	Ladder network	EXK-S19Z2052R	1	AO	A
①	37307211	Parallel cable M95A	2468-8-280	1		
	38410105	Coil	R12-3034X	1	AC	X
☆	69109170	Sponge 84	M41661-1	1		X
B) CN2M-PCB ASS'Y						
	23013002	Diode	DS-442	2	AA	C
	26002516	Carbon film resistor	R-25-100-J	1	N/A	X
	26003717	Carbon film resistor	R-25-330-J	1		
	26006911	Carbon film resistor	R-25-6.8K-J	1		
	26004918	Carbon film resistor	R-25-1K-J	1		
	26006511	Carbon film resistor	R-25-4.7K-J	1		
☆ ③	27706746	Variable resistor VR Sustain	S3018P605M-10KB	1	AE	B

Note: ☆ New parts
Q'ty Q'ty used per unit

Rank: A Essential
B Stock recommended
C Others
X No stock recommended

CT-410V Parts List

Item	Code no.	Parts name	Specifications	Q'ty	Price Code	Rank
④	27708754	Variable resistor VR	S3028P802M-10KB X2	1	AF	B
☆ ⑤	27708789	Variable resistor VR	S3018P605M-50KB	1	AE	B
☆ ⑥	27708797	Variable resistor VR	S3018P605M-100KB	2	AE	B
☆ ⑦	69041140	Shield wire sub ass'y	M31459*7	1	-	X
☆ ⑧	69041150	Shield wire sub ass'y	M31459*8	1	-	X
C) CN8-PCB ASS'Y						
☆ ⑩	37208515	EL wire M87E	SML2VJ-15-40	1	AC	X
⑪	69026940	Spacer 5.5	M4948-6	2	-	X
2) ASIM-PCB ASS'Y						
	21007552	CMOS IC	MN3102	1	AF	A
	21007692	CMOS IC	MN3209	1	AL	A
	21206237	Monolithic IC	LA4125WT	2	AJ	A
	21210013	OP amp	BA4558DX (NJM4558DD)	2	AD	A
	22106066	Transistor	2SB824	1	AE	A
	22209035	Transistor	2SC1740	1	AD	A
	22303023	Transistor	2SD313	1	AD	A
	22401211	FET	2SK163N	2	AD	A
	22405110	FET	2SK30A	3	AD	A
	23013002	Diode	DS-442	1	AA	C
	23103681	Zener diode	RD4.3E	3	AA	A
	23103168	Zener diode	RD8.2E	1	AA	A
	23102471	Zener diode	RD8.8E	1	AA	A
	23103273	Zener diode	RD5.6E	1	AA	A
	23102439	Zener diode	RD9.1E	1	AB	A
	26005710	Carbon film resistor	R-25-2.2K-J	2	N/A	X
	26008514	Carbon film resistor	R-25-33K-J	3		
	26002516	Carbon film resistor	R-25-100-J	1		
	26007313	Carbon film resistor	R-25-10K-J	10		
	26009715	Carbon film resistor	R-25-100K-J	1		
	26005311	Carbon film resistor	R-25-1.5K-J	2		
	26007712	Carbon film resistor	R-25-15K-J	1		
	26001315	Carbon film resistor	R-25-33J	1		

Note: ☆ New parts
Q'ty Q'ty used per unit

Rank: A Essential
B Stock recommended
C Others
X No stock recommended

CT-410V Parts List

Item	Code no.	Parts name	Specifications	Q'ty	Price Code	Rank
	26009111	Carbon film resistor	R-25-56K-J	2	N/A	X
	26003318	Carbon film resistor	R-25-220-J	2		
	26008115	Carbon film resistor	R-25-22K-J	1		
	26010519	Carbon film resistor	R-25-220K-J	1		
	26008310	Carbon film resistor	R-25-27K-J	2		
	26006112	Carbon film resistor	R-25-3.3K-J	3		
	26008913	Carbon film resistor	R-25-47K-J	8		
	26006511	Carbon film resistor	R-25-4.7K-J	2		
	26010110	Carbon film resistor	R-25-150K-J	1		
	26010713	Carbon film resistor	R-25-270K-J	2		
	26004519	Carbon film resistor	R-25-680-J	1		
	26001919	Carbon film resistor	R-25-56-J	1		
	26009511	Carbon film resistor	R-25-82K-J	1		
	26006317	Carbon film resistor	R-25-3.9K-J	2		
	26018111	Carbon film resistor	R-25-2.2M-J	2		
	26201918	Carbon film resistor	R-50X-56-J	2		
	26202710	Carbon film resistor	R-50X-120-J	1		
	26202515	Carbon film resistor	R-50X-100-J	2		
	26221137	Carbon film resistor	R-75X-220-J	1		
	27602134	Semi Fixed Resistor	VBK4-118500K	1	AB	B
⑬	27706622	Variable resistor VR (Pitch)	K161A0054-100K8	1	AC	B
	28044925	Electrolytic capacitor	50RE1	10	N/A	X
	28045051	Electrolytic capacitor	16RE10	1		
	28044933	Electrolytic capacitor	16RE100	10		
	28049374	Electrolytic capacitor	6.3RE100	2		
	28045638	Electrolytic capacitor	6.3RE220	2		
	28049358	Electrolytic capacitor	6.3RE47	2		
	28049013	Electrolytic capacitor	50RN88P1	2		
	28044801	Electrolytic capacitor	16RE2200	1		
	28045239	Electrolytic capacitor	16RE470	3		
	28045531	Electrolytic capacitor	16RE1000	1		
	28045620	Electrolytic capacitor	6.3RE470	2		
	28080108	Electrolytic capacitor	16RE220	2		
	28182040	Ceramic capacitor	HE70SJYF103Z	4		
	28190255	Ceramic capacitor	HE40SJSL100F	4		
	28183178	Ceramic capacitor	HE70SJCH680J	1		
	28186053	Ceramic capacitor	HE50SJSL101K	1		
	28306067	Mylar capacitor	AMZ-154K50	5		
	28306024	Mylar capacitor	AMZ-102K50	1		

Note: ☆ New parts
Q'ty Q'ty used per unit

Rank: A Essential
B Stock recommended
C Others
X No stock recommended

CT-410V Parts List

Item	Code no.	Parts name	Specifications	Q'ty	Price Code	Rank
	28306052	Mylar capacitor	AMZ-103K50	1	N/A	X
	28306461	Mylar capacitor	AMZ-471K50	1		
	28306075	Mylar capacitor	AMZ-222K50	1		
	28306479	Mylar capacitor	AMZ-683K50	2		
(14)	35123245	Jack AC Adapter	HEC470-01-270	1	AC	B
(15)	36120509	Jack Sustain/Lineout	YKB21-5013	3	AD	B
(16)	36120096	Jack Headphone/Foot VR	YKB21-5005	2	AC	B
☆	37208523	EL wire M87A	SML2VJ-12-280	1	AE	X
(18)	69026810	Heat sink 90A	M41359-1	1	-	X
(19)	69028460	Heat sink 90C	M41516-1	2	-	X
☆	69041161	Shield wire sub ass'y	M31459A*9	1	-	X
☆	69041171	Shield wire sub ass'y	M31459A*10	1	-	X
☆	69041500	Parallel cable M87A	M41925-1	1	-	X
☆	69041510	Parallel cable M87B	M41925-2	1	-	X
3) UPPER CASE UNIT						
A) CN1M-PCB ASS'Y						
	23013002	Diode	DS-442	26	AA	C
	23207095	LED Rhythm	SLP161B	1	AB	B
	26003911	CarLon film resistor	R-25-390-J	1	N/A	X
	26004918	Carbon film resistor	R-25-1K-J	1		
(25)	34805148	Push switch	SUZ22-M25802	1	AE	B
(26)	34805385	Push switch	SUZ12-M49801	1	AE	B
(27)	34805393	Push switch	SUZ22E-M49802	1	AO	B
☆	34805415	Push switch	SUZ82E-M48701	1	AT	B
☆	37208540	EL wire M87B	SML2VJ-23-392	1	AH	X
☆	69101170	Sponge E	M4630-5	1	-	X
☆	69109170	Sponge B4	M41661-1	1	-	X
B) CN3M-PCB ASS'Y						
	26002516	Carbon film resistor	R-25-100-J	1	N/A	X
(33)	27708746	Variable resistor VR Rhythm/Bass	S3018P605M-10KB	3	AE	B
(34)	27708754	Variable resistor VR Main	S3028P602M-10KBX2	1	AF	B
☆	27708797	Variable resistor VR Slow Speed	S3018P605M-100KB	1	AE	B
☆	27706801	Variable resistor VR Tempo	S3018P605M-1MC	1	AE	B
☆	37208558	EL wire M87F	SML2VJ-2-42	1	AA	X
☆	69041080	Shield wire sub ass'y	M31459*1	1	-	X
☆	69041090	Shield wire sub ass'y	M31459*2	1	-	X

Note: ☆ New parts
Q'ty Q'ty used per unit

Rank: A Essential
B Stock recommended
C Others
X No stock recommended

CT-410V Parts List

Item	Code no.	Parts name	Specifications	Q'ty	Price Code	Rank
☆ (40)	69041100	Shield wire sub ass'y	M31459*3	1	-	X
☆ (41)	69041110	Shield wire sub ass'y	M31459*4	1	-	X
☆ (42)	69041120	Shield wire sub ass'y	M31459*5	1	-	X
☆ (43)	69041130	Shield wire sub ass'y	M31459*6	1	-	X
C) CN4M-PCB ASS'Y						
	23207095	LED Power Indicator	SLP1618	1	AB	B
	26202515	Carbon film resistor	R-50X-100-J	1	N/A	X
(45)	34203784	Slide switch Power Switch	SP-20202-1011	1	AD	B
☆ (46)	69041520	Parallel cable M87C	M41925-3	1	-	X
D) CN5M-PCB ASS'Y						
	23013002	Diode	DS-442	10	AA	C
☆ (48)	37208566	EL wire M87C	SML2VJ-14-330	1	AE	X
E) CN6-PCB ASS'Y						
	22003534	Transistor	2SA1015Y	1	AD	A
	23013002	Diode	DS442	3	AA	C
☆	26150769	Carbon film resistor	ERD-25PJ223	1	N/A	X
☆	26150777	Carbon film resistor	ERD-25PJ224	1	N/A	X
☆ (50)	37208531	EL wire M87D	SML2VJ-7-32	1	AB	X
F) CN7-PCB ASS'Y						
(51A)	3612 0568	JACK Filter Control	YK821-5089	1	AD	B
G) SLIDE BOARD ASS'Y						
	55801274	Ball bearing	SUS304 2pi	9	AA	C
	69014972	Slide contact B	M4797B-1	9	AA	B
	69100480	Slide spring	M4491-1	9	AA	C
	69104860	Slide board 40	M3704A-1	9	AC	C
H) UPPER CASE ASS'Y						
(52A)	38303121	Speaker	C12057	2	AT	B
☆ (53)	69041180	Slide knob 71	M31359-2	2	AC	C
☆ (54)	69041190	Slide knob 71	M31359-3	7	AC	C
☆ (55)	69041200	Slide knob	M41350-2	6	AC	C

Note: ☆ New parts
Q.ty Q'ty used per unit

Rank: A Essential
B Stock recommended
C Others
X No stock recommended

CT-410V Parts List

Item	Code no.	Parts name	Specifications	Q'ty	Price Code	Rank
☆ (56)	69041211	VR knob 87	M31443A-1	5	AC	C
☆ (57)	69041221	Key top 98	M41821A-8	1	AC	C
☆ (58)	69041231	Key top 98	M41821A-9	2	AC	C
☆ (59)	69041241	Key top 98	M41821A-10	6	AC	C
☆ (60)	69041251	Key top 98	M41821A-11	2	AC	C
☆ (61)	69041261	Key top 98	M41821A-12	10	AC	C
☆ (62)	69041280	CN spacer 87-1	M41869-1	1	-	C
☆ (63)	69041290	CN spacer 87-2	M41870-1	1	-	C
☆ (64)	69041300	CN spacer 87-3	M41871-1	1	-	C
☆ (65)	69041310	CN contact 87-1	M41866-1	1	AB	B
☆ (66)	69041320	CN contact 87-2	M41867-1	1	AB	B
☆ (67)	69041330	CN contact 87-3	M41868-1	1	AB	B
☆ (68)	69101880	PW switch blind plate	M4673-1	1	-	C
(69)	69101892	Blind plate 2	M4672B-1	2	-	C
(70)	69101932	Upper blind plate 3	M4671B-1	3	-	C
(71)	69102232	Upper blind plate 4	M4687B-1	2	-	C
(73)	69105220	Blind plate 4	M4686-2	2	-	C
(74)	69105300	Blind plate 5	M4670-3	3	-	C
☆ (75)	69105310	Blind plate 5	M4690-3	1	-	C
☆ (76)	69105330	Upper blind plate 5	M4691-2	1	-	C
☆	69109170	Sponge 84	M41661-1	1	-	X
☆	69101170	Sponge E	M4630-5	2	-	X
	69101130	Sponge A	M4630-1	2	-	X
	69101140	Sponge B	M4630-2	1	-	X
☆ (77)	69041060	Upper case sub ass'y	M2897*1	1	BP	C
4) KEY BOARD UNIT						
A) KY1M/KY2M/KY3M-PCB ASS'Y						
	23013002	Diode	DS-442	49	AA	C
(78)	37209309	PC joiner M35H	PCJ-JPSS-3-22	2	AA	B
(79)	37209317	PC joiner M35J	PCJ-JPSS-6-22	2	AA	B
(80)	37209844	PC joiner M88A	PCJ-JPSS-9-80M	1	AB	B
(81)	37209952	PC joiner M88B	PCJ-JPSS-6-80M	1	AB	B
☆ (82)	69039320	Shield plate 98 KY3	M31448-1	1	-	X
☆ (83)	69041470	Shield plate 88 KY2	M31288-2	1	-	X
(84)	43070146	Blank PCB (M425-KY1M)	M3461C-1	1	AG	X
(85)	43070148	Blank PCB (M425-KY3M)	M3462C-1	1	AF	X
(86)	43070451	Blank PCB (M435-KY2M)	M2423A-1	1	AJ	X

Note: ☆ New parts
Q'ty Q'ty used per unit

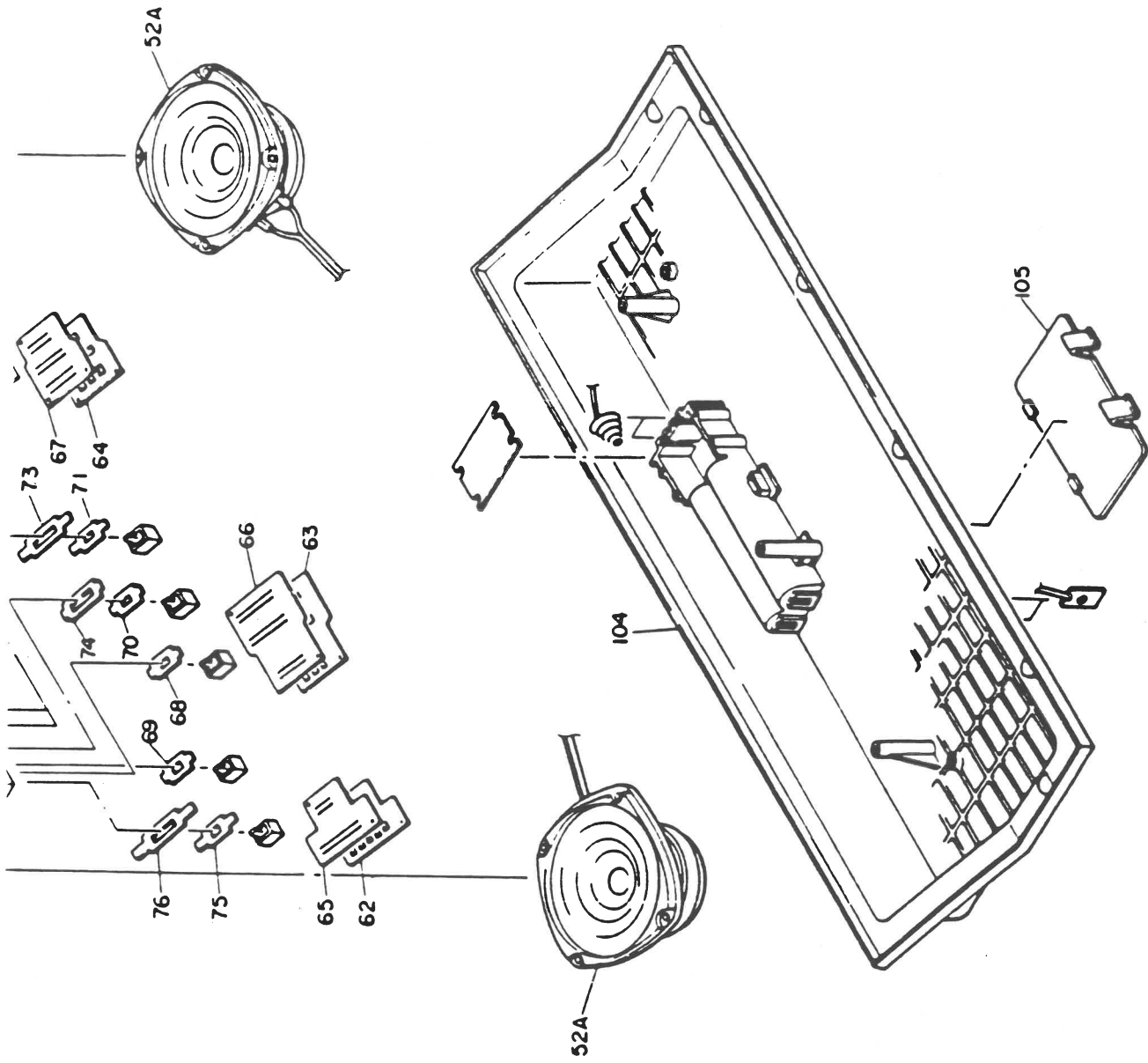
Rank: A Essential
B Stock recommended
C Others
X No stock recommended

CT-410V Parts List

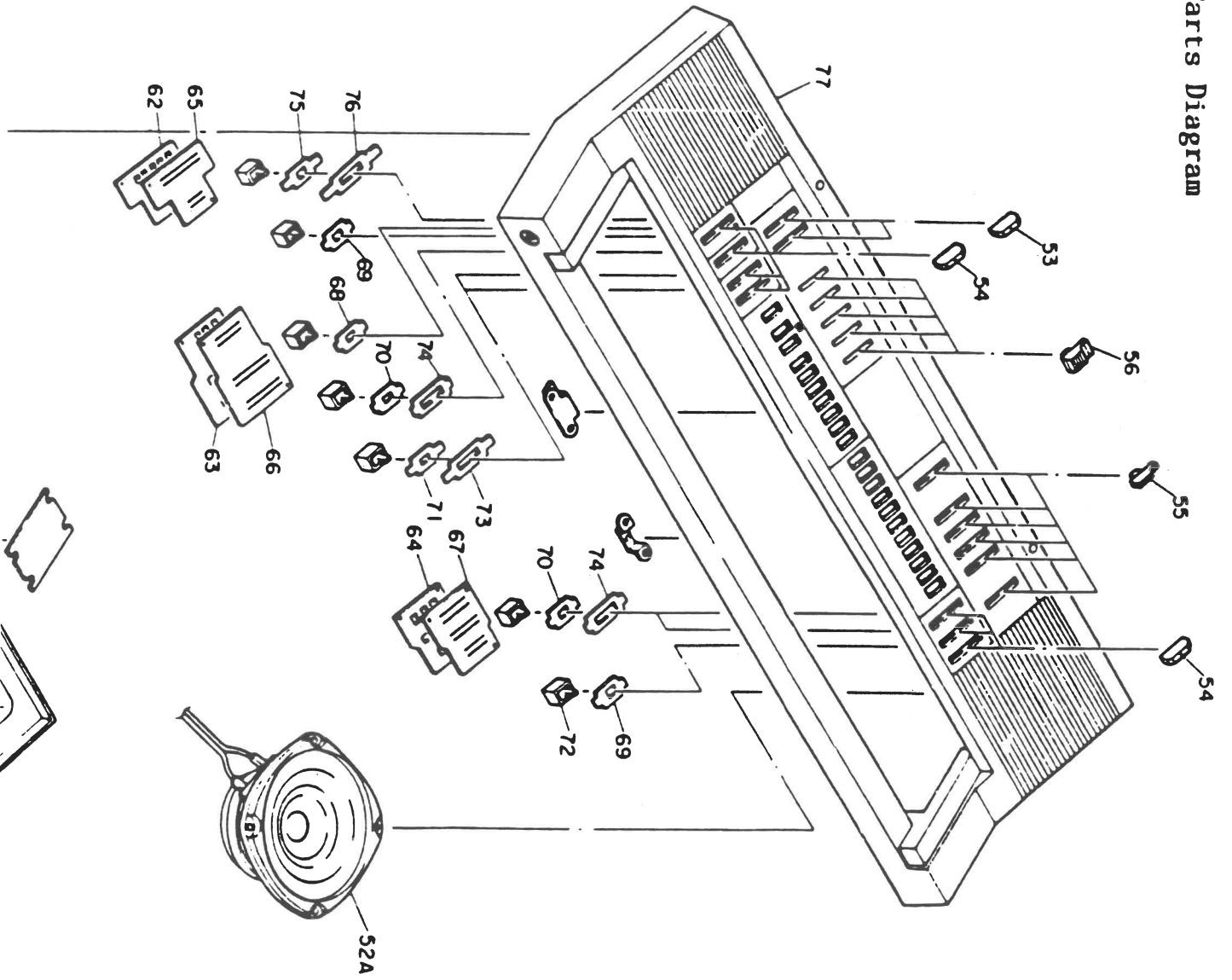
Item	Code no.	Parts name	Specifications	Q'ty		Price Code	Rank
B) Key board ass'y							
⑧7	69009121	Key stopper 49	M4421A-1	1		-	X
⑧8	69009290	Key A	M3404-1	4		AH	C
⑧9	69009300	Key B, E	M3405-1	8		AH	C
⑧0	69009310	Key C, F	M3406-1	8		AH	C
⑧1	69009320	Key D	M3407-1	4		AH	C
⑧2	69009330	Key G	M3408-1	4		AH	C
⑧3	69009340	Key S	M3409-1	1		AH	C
⑧4	69009350	Black key	M3410-1	20		AH	C
⑧8	69009360	KB spring	M441901	49		AA	C
⑧8	69008730	Felting seal P	M4599-1	3		-	X
⑧7	69009130	Key contact rubber C	M3412-1	3		AD	B
⑧8	69009140	Key contact rubber D	M3413-1	1		AD	B
⑧9	69009162	Guide felt A	M3428B-1	3		-	X
⑩0	69009172	Guide felt B	M3429B-1	1		-	X
⑩1	69009180	Stopper felt 49	M3425-1	1		-	X
⑩2	69016151	S felt 49C	M4844A-1	1		-	X
☆ ⑩3	69041340	KB chassis 49-87	M1578-1	1		-	X
☆	69108670	Sponge 83	M41593-1	1		-	X
☆	69042360	Sponge R	M4630-11	1		-	X
	69101140	Sponge B	M4630-2	1		-	X
5) LOWER CASE/BATTERY COVER/DUST COVER							
☆ ⑩4	69041052	Lower case sub ass'y	M2896B*1	1		BC	C
☆ ⑩5	69041070	Battery cover sub ass'y	M41410*3	1		AE	C
☆	69039850	Dust cover	M31466-1	1		AJ	C
☆	69101170	Sponge E	M4630-5	1		-	X
	69105500	Felting seal X	M4768-2	2		-	X
	69039860	Note Stand		1		AK	X

Note: ☆ New parts
Q'ty Q'ty used per unit

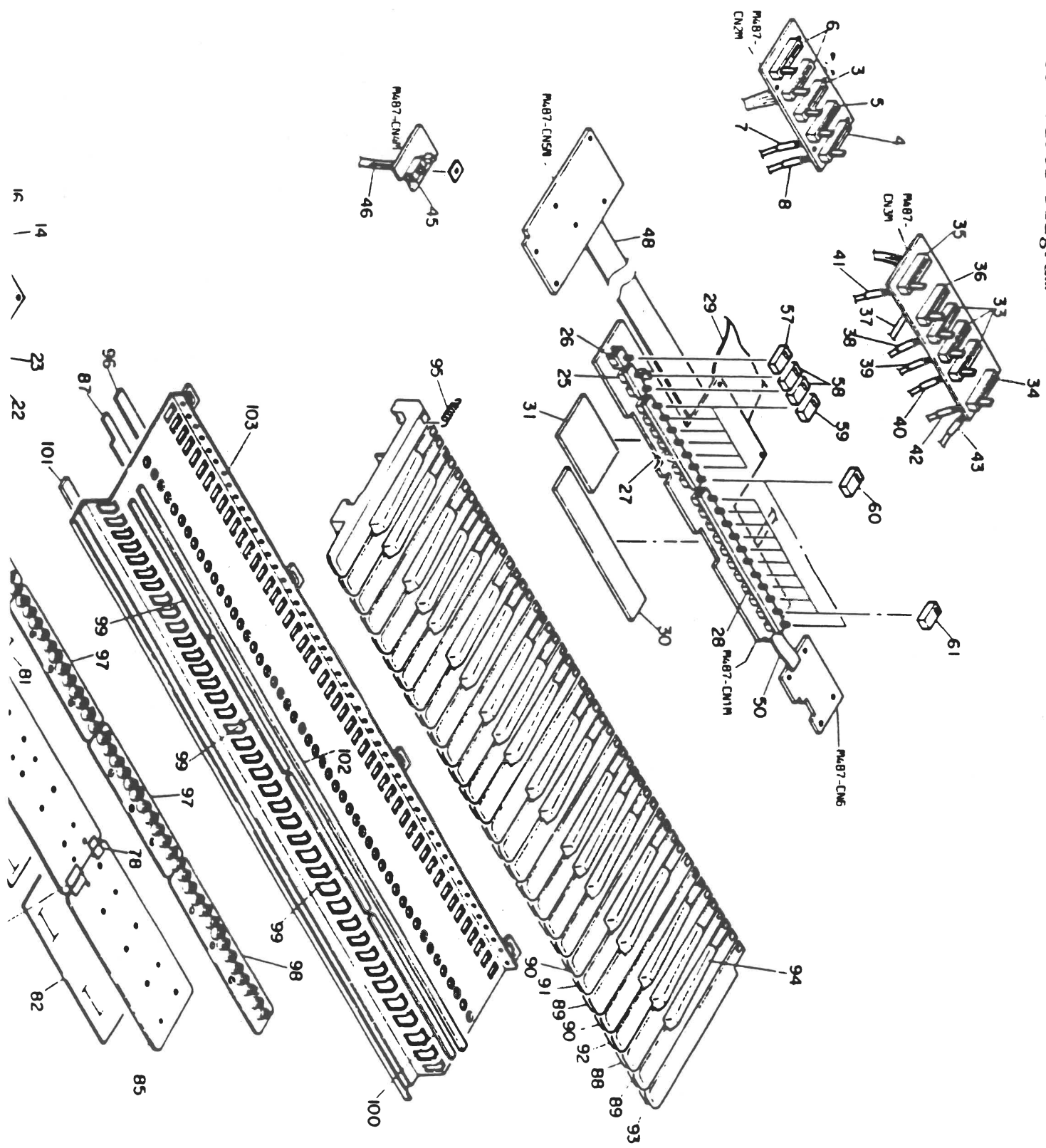
Rank: A Essential
B Stock recommended
C Others
X No stock recommended



CT-410V Parts Diagram

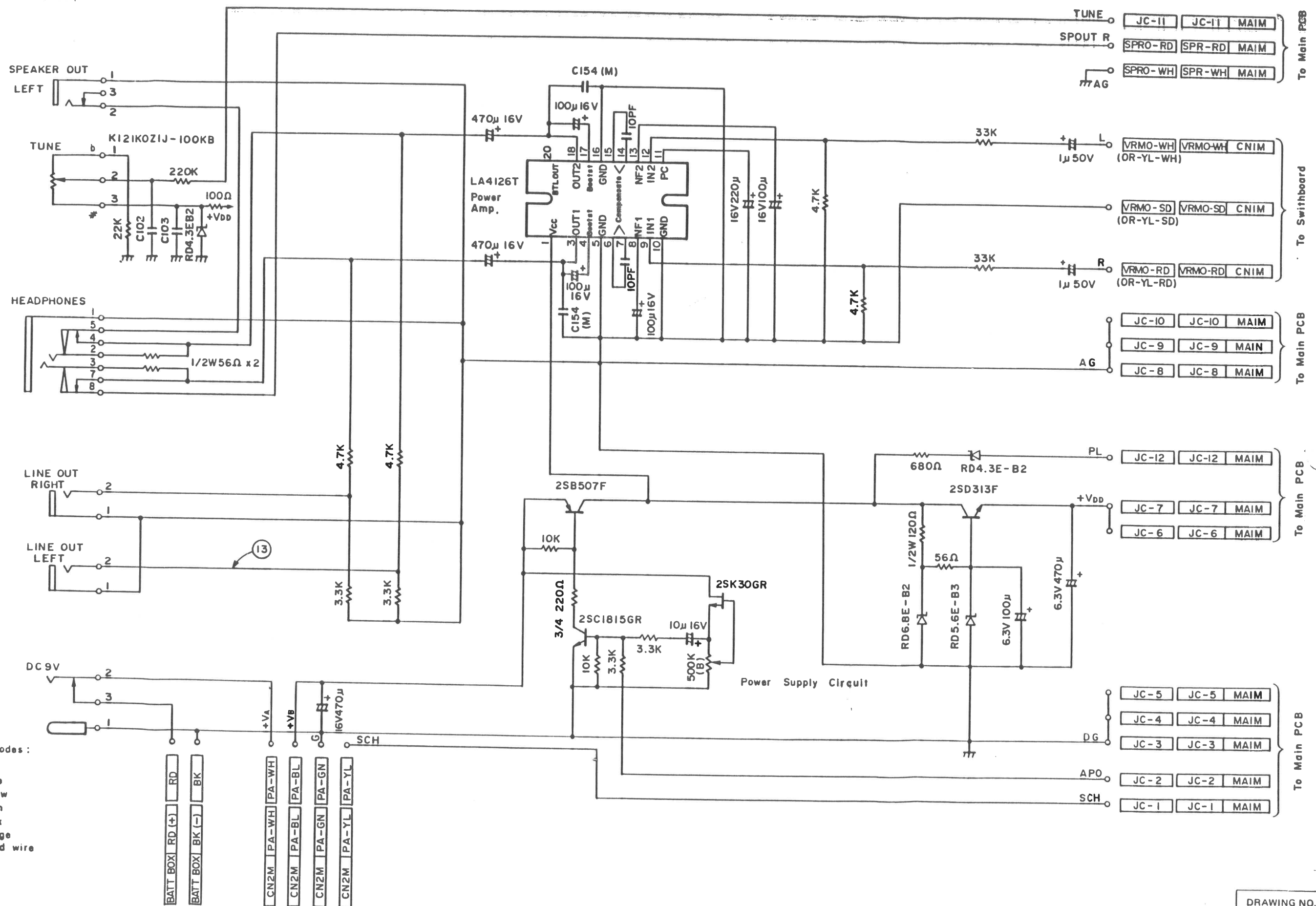


CT-410V Parts Diagram

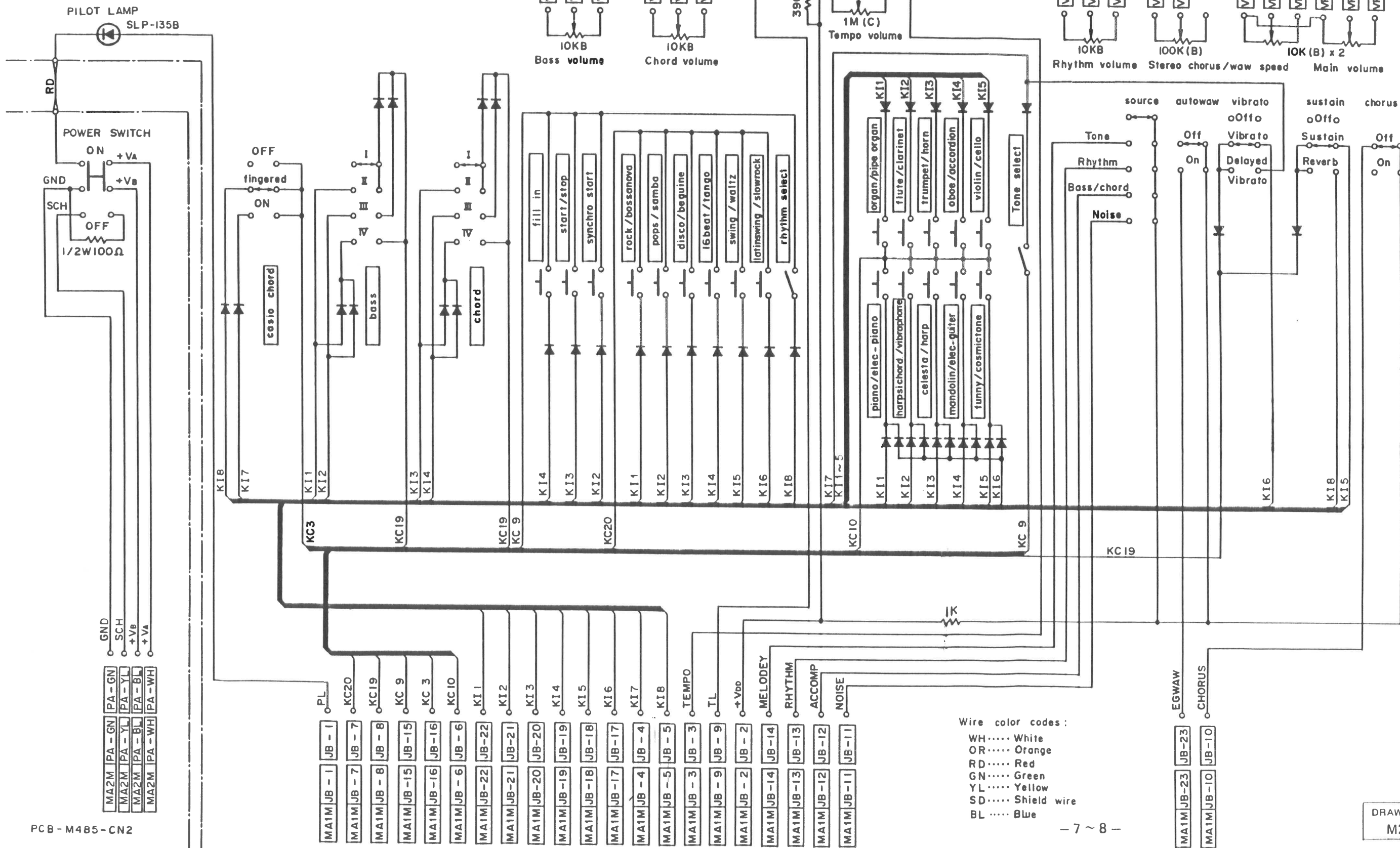


MT-400V & CT-410V
1-3. Amp PCB M485-MA2M

Wire color codes:
RD Red
WH White
YL Yellow
GN Green
BK Black
OR Orange
SD Shield wire



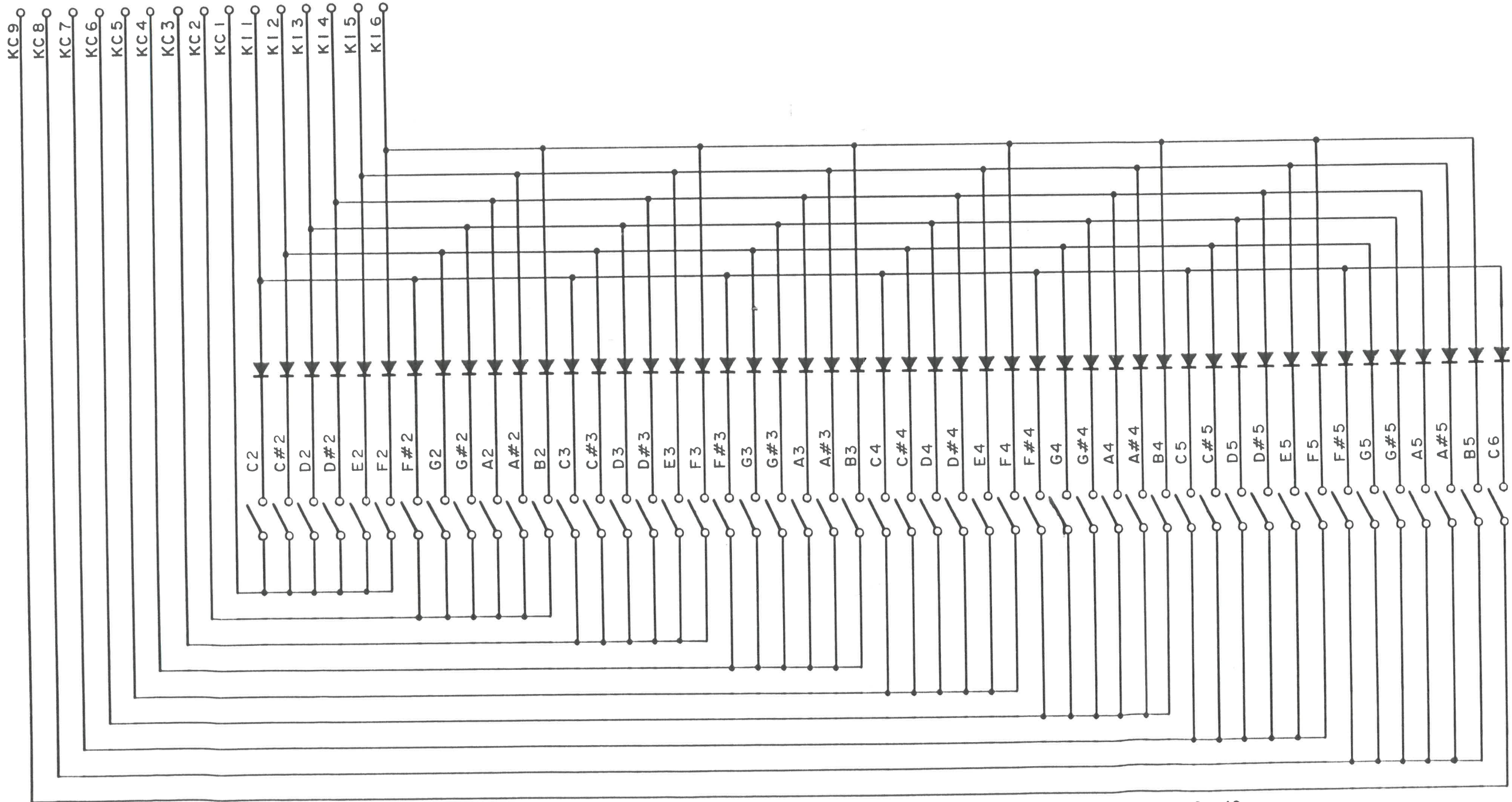
PCB-M485-CN1M



PCB - M485 - CN2

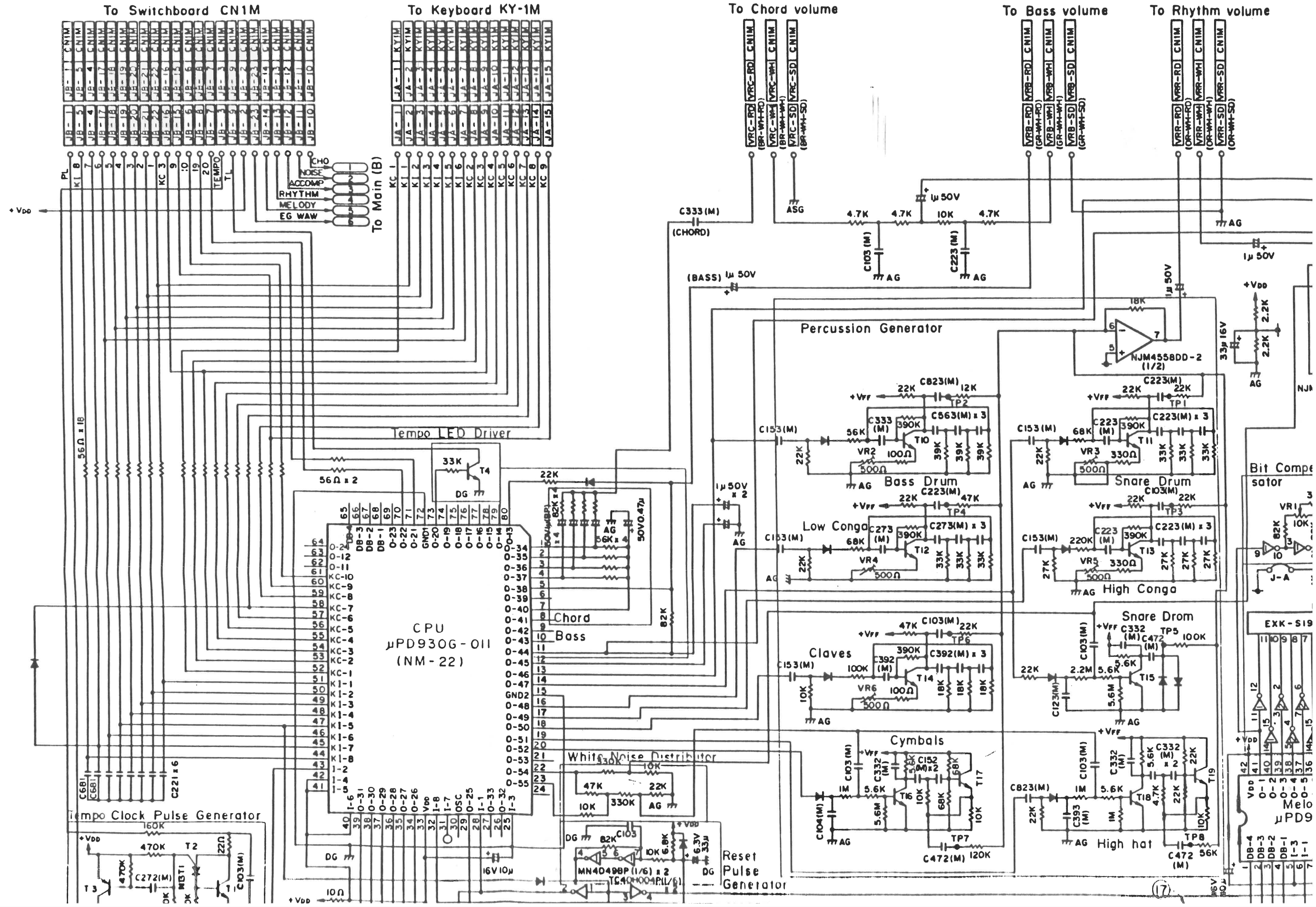
Wire color codes:
 WH..... White
 OR..... Orange
 RD..... Red
 GN..... Green
 YL..... Yellow
 SD..... Shield wire
 BL..... Blue

J.A 15	15	MA1
J.A 14	14	MA1
J.A 13	13	MA1
J.A 12	12	MA1
J.A 11	11	MA1
J.A 10	10	MA1
J.A 9	9	MA1
J.A 8	8	MA1
J.A 1	1	MA1
J.A 2	2	MA1
J.A 3	3	MA1
J.A 4	4	MA1
J.A 5	5	MA1
J.A 6	6	MA1
J.A 7	7	MA1

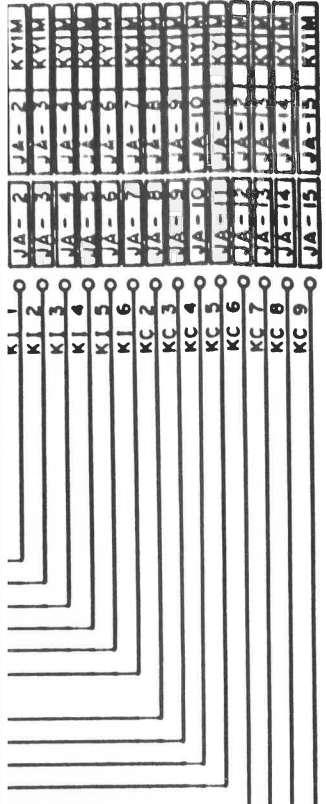


1. SCHEMATIC DIAGRAM

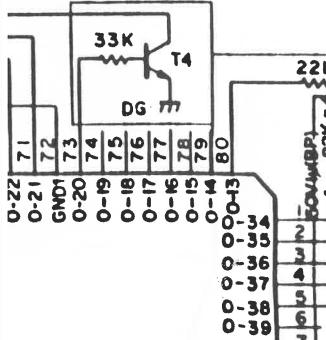
1-1. Main (A) PCB M485-MA1M



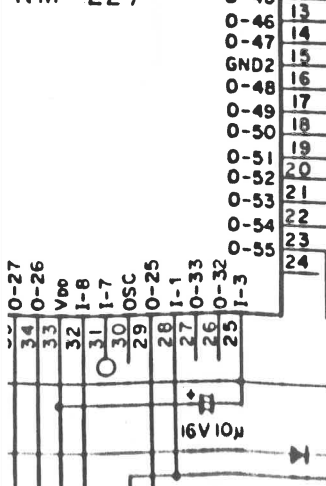
To Keyboard KY-1M



Tempo LED Driver



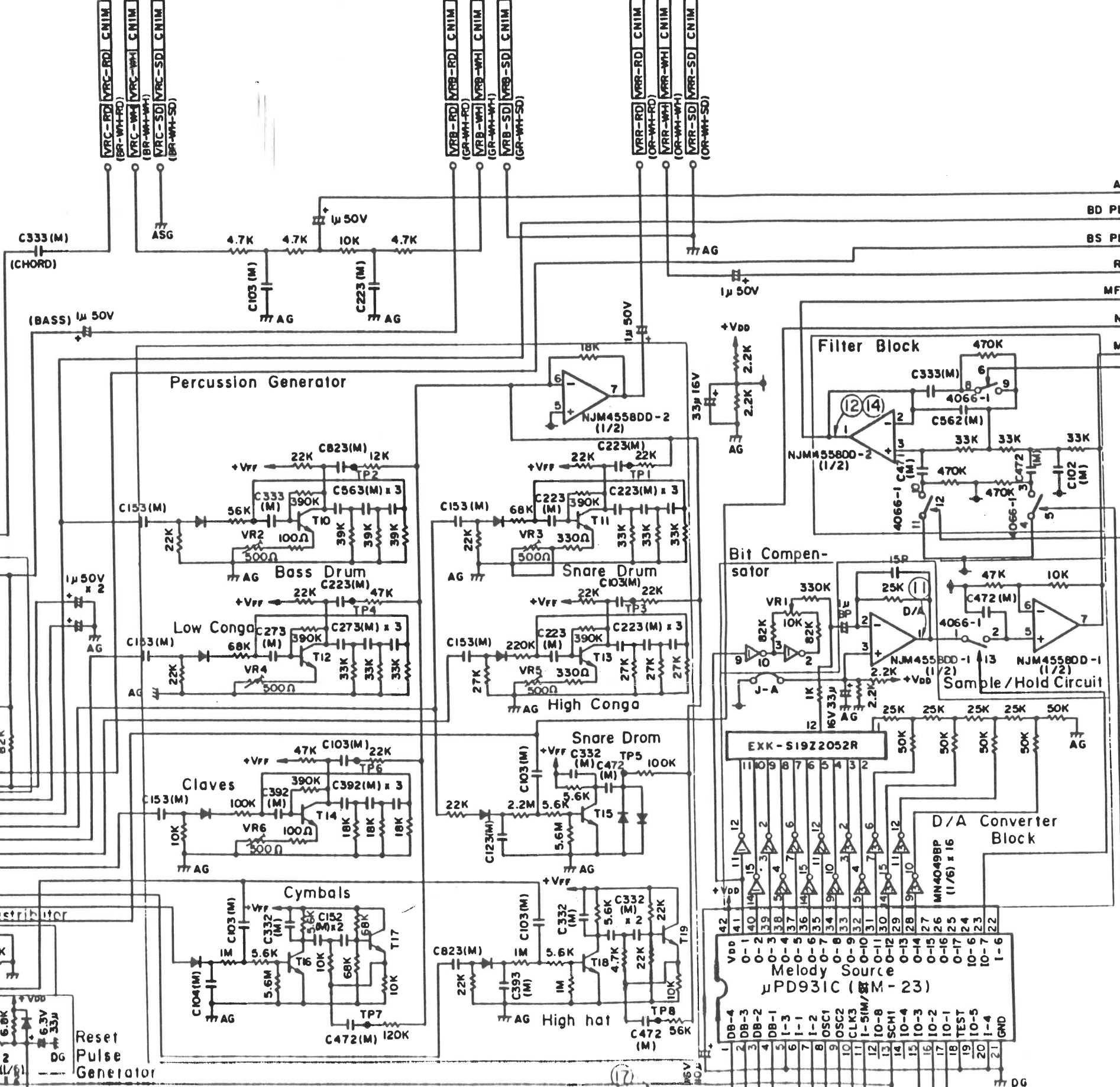
CPU PD930G-011 (NM-22)



To Chord volume

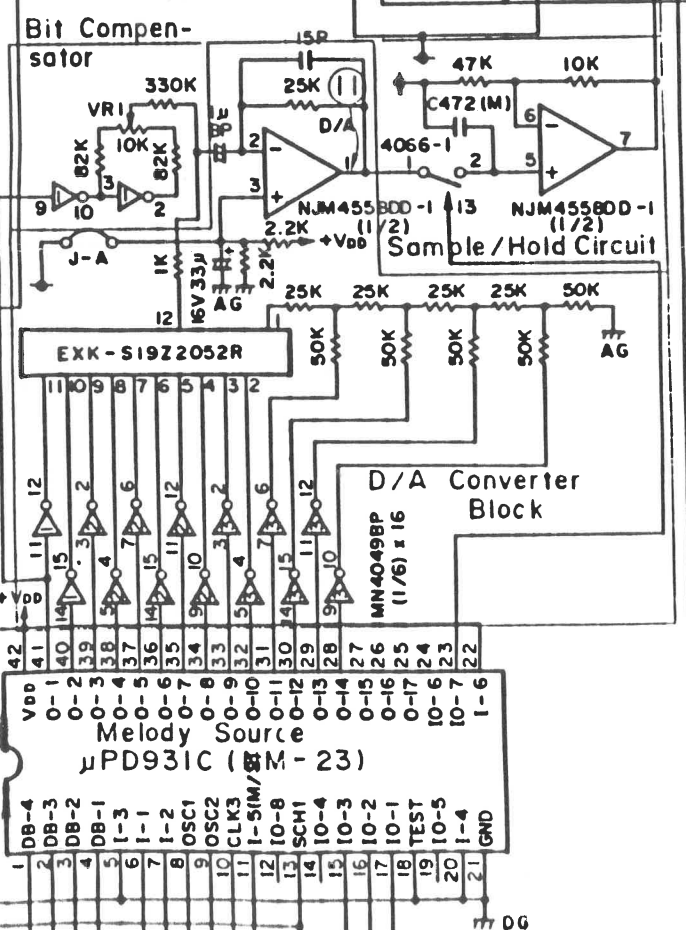
To Bass volume

To Rhythm volume



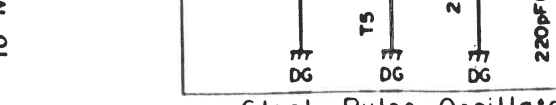
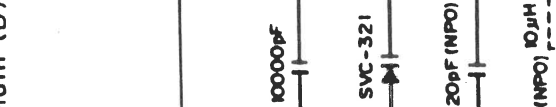
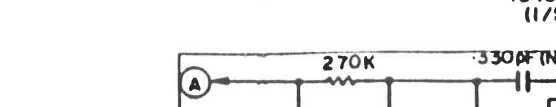
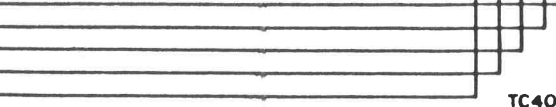
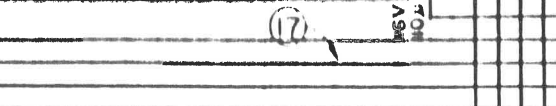
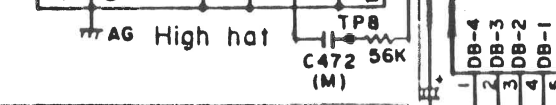
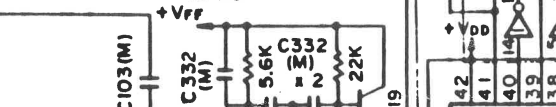
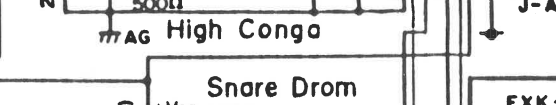
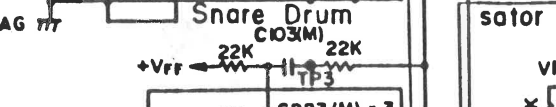
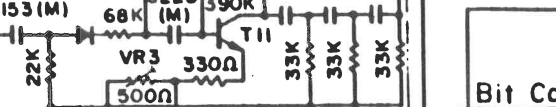
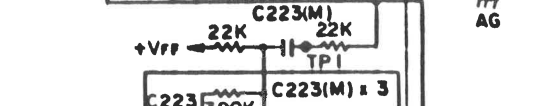
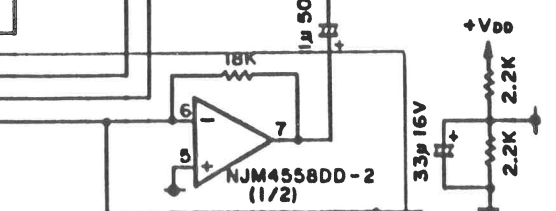
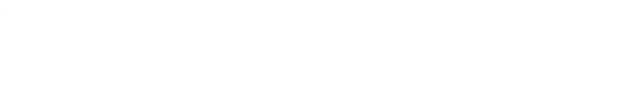
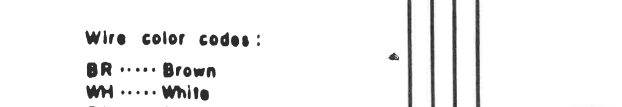
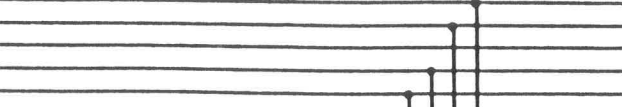
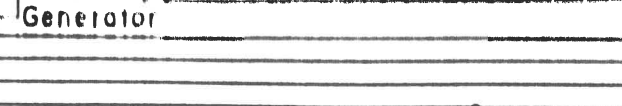
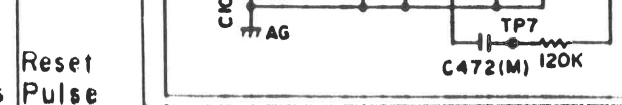
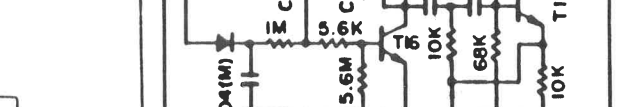
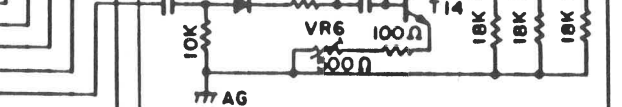
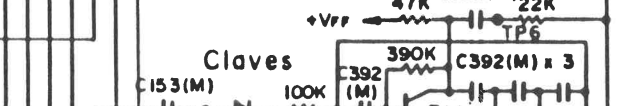
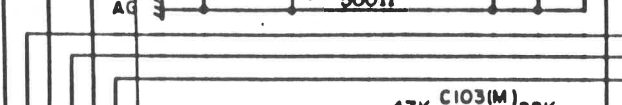
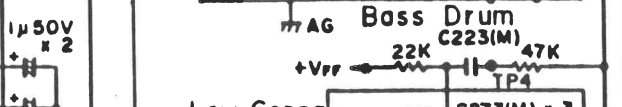
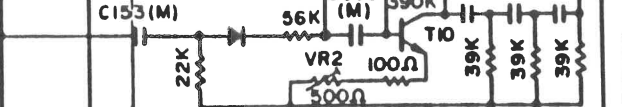
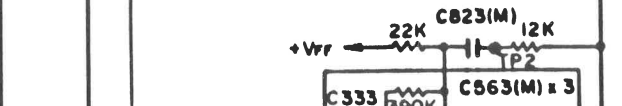
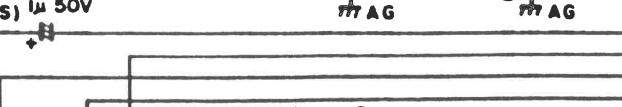
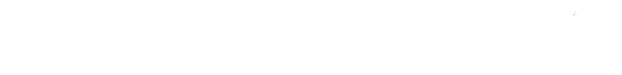
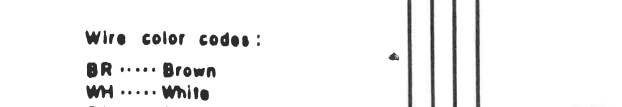
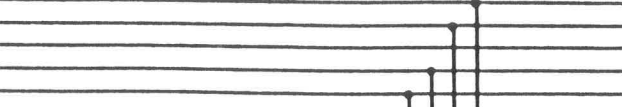
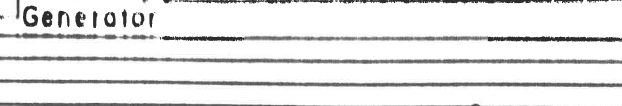
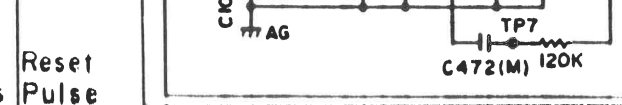
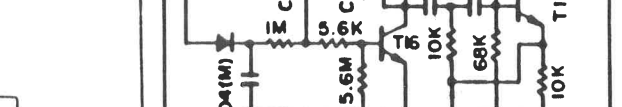
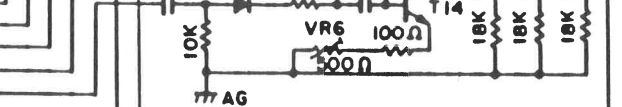
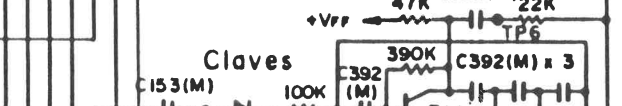
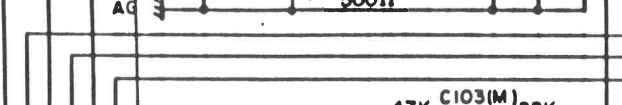
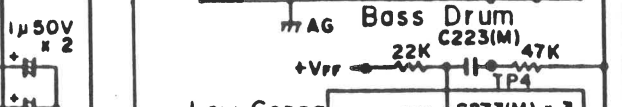
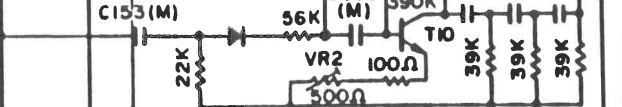
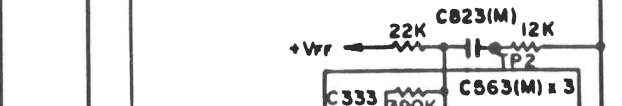
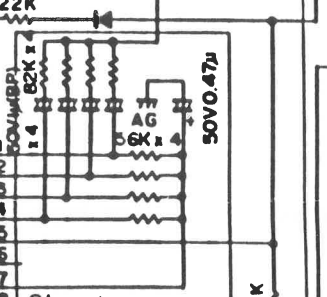
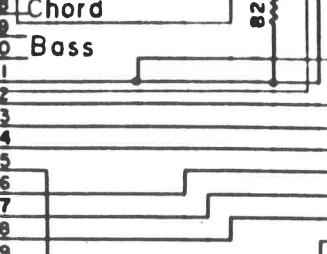
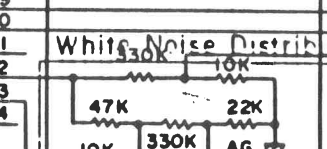
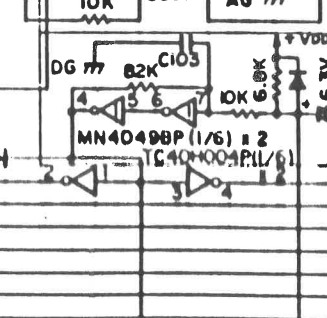
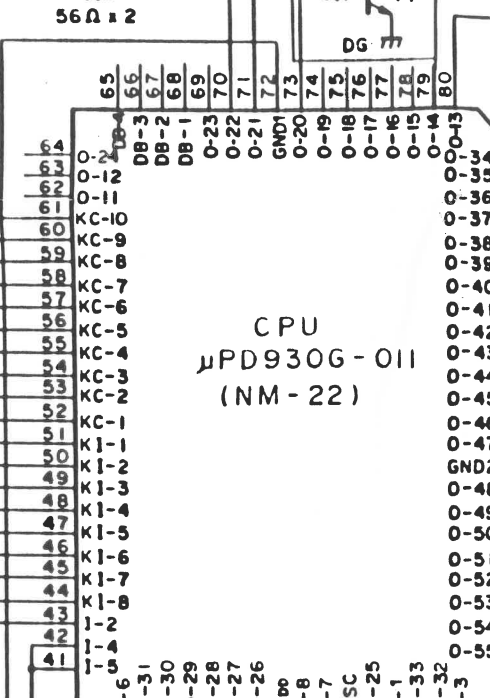
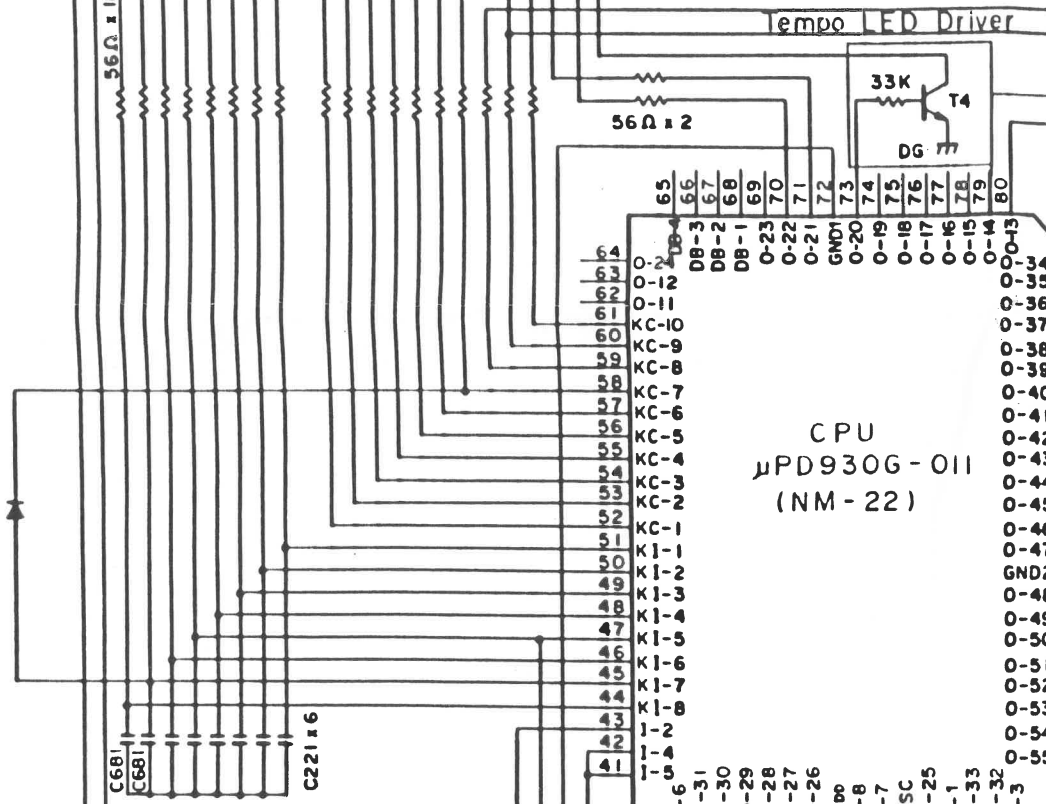
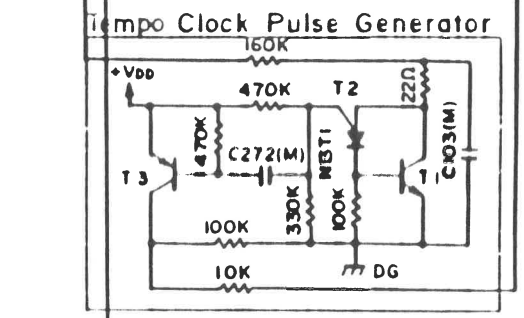
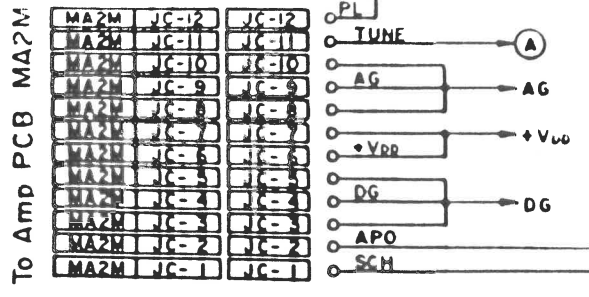
- AIN (11)
- BD PLS (12)
- BS PLS (13)
- RIN (14)
- MFIN (15)
- NIN (16)
- MIN (17)

To Main (B)

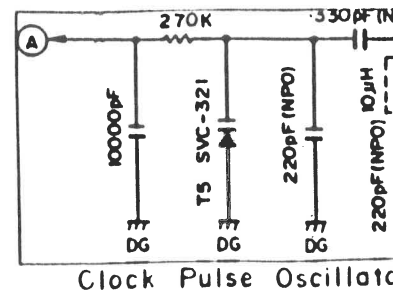
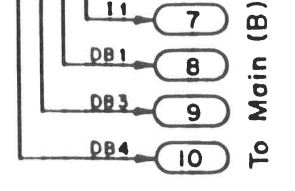


Reset Pulse Generator



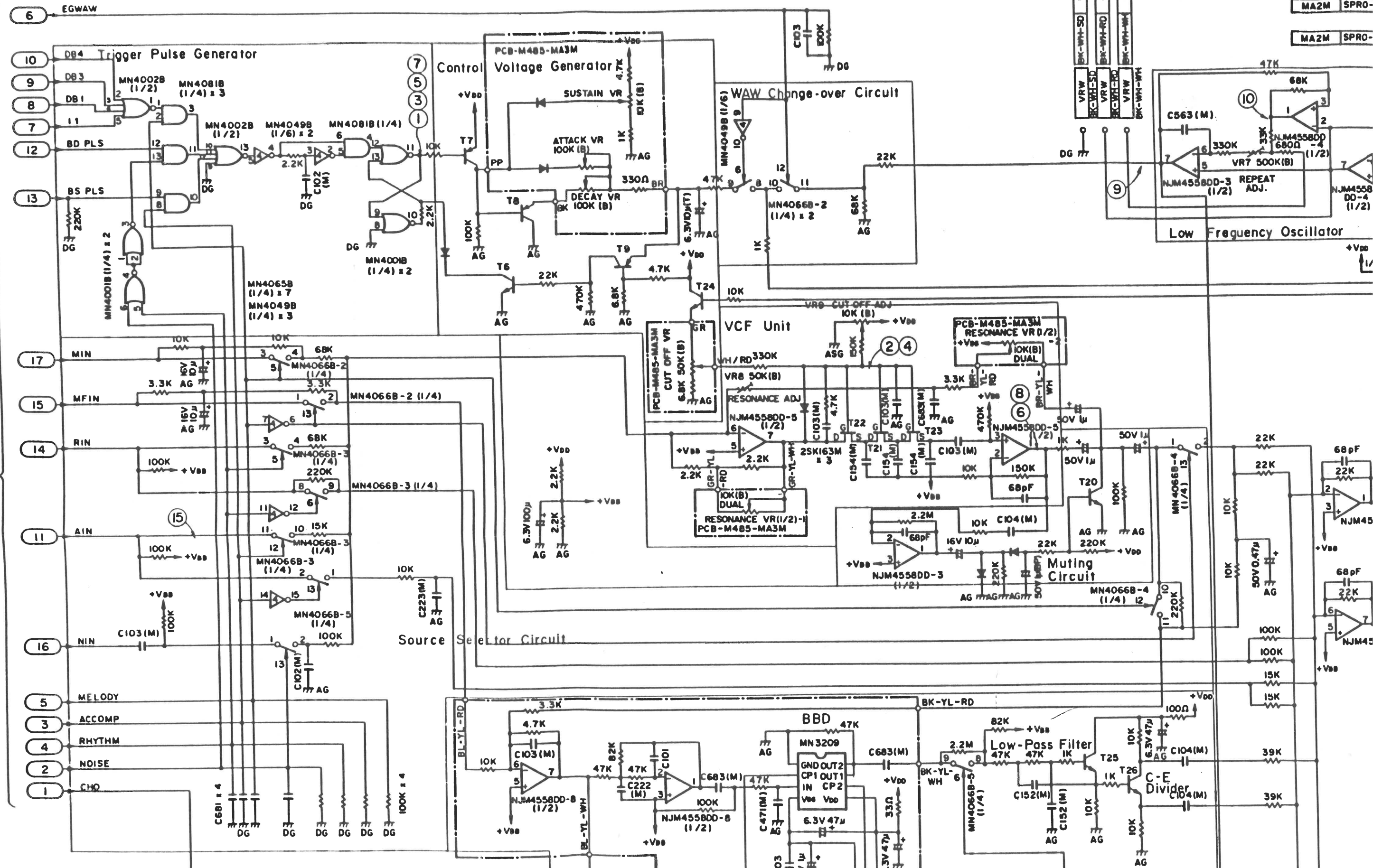


Wire color codes:
 BR Brown
 WH White
 RD Red
 GR Grey
 OR Orange
 SD Shield wire

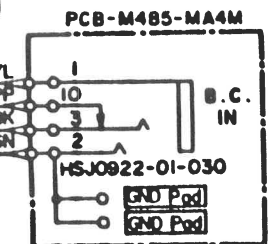
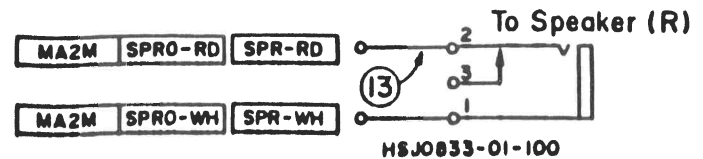
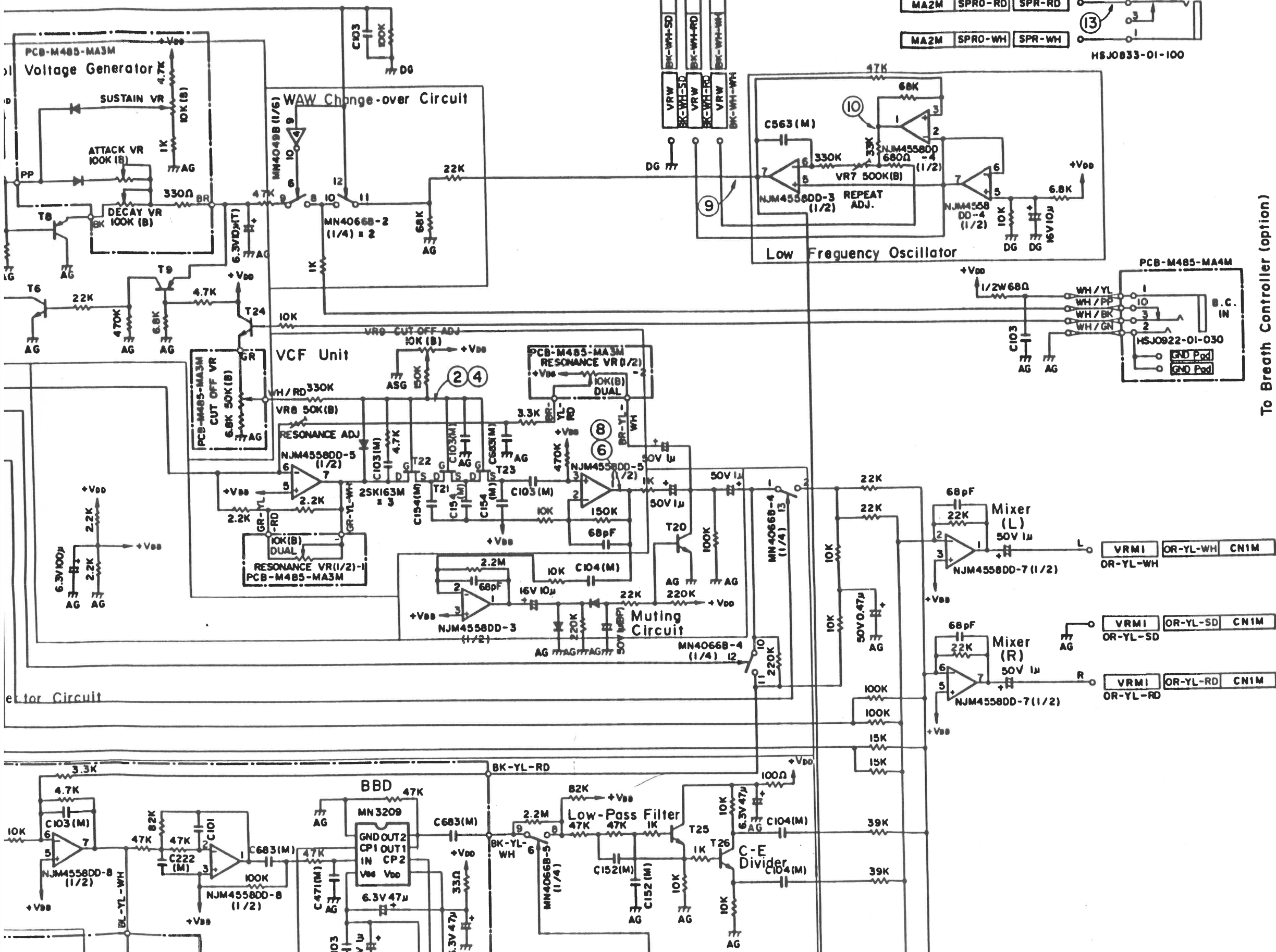


To Stereo chorus/waw speed volume

From Main (A) circuit

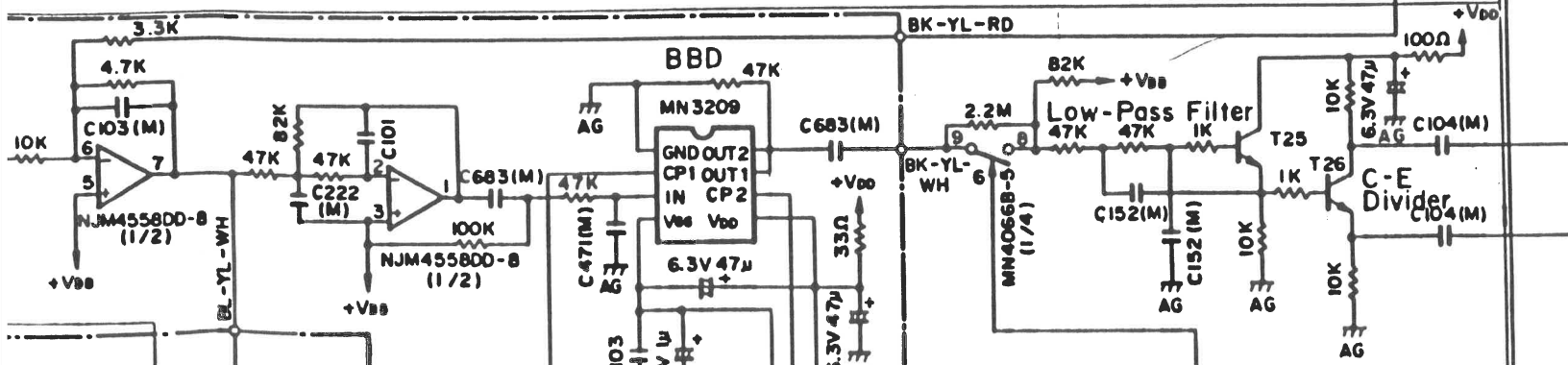


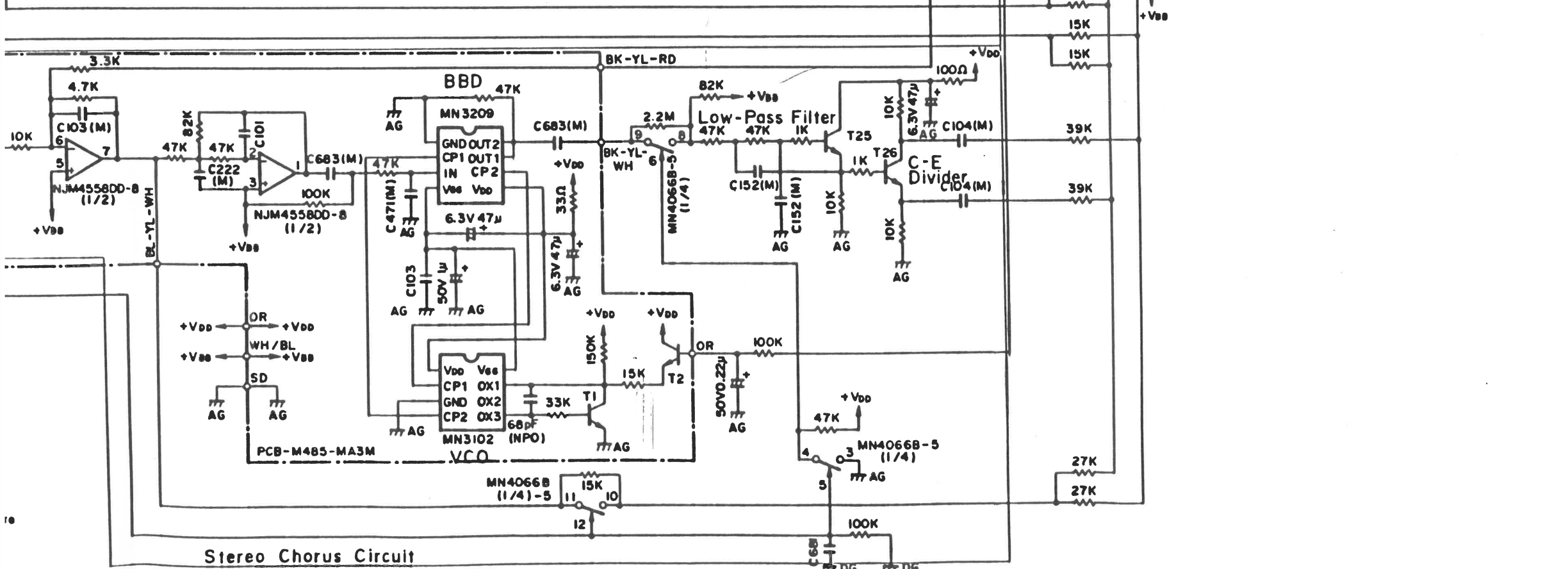
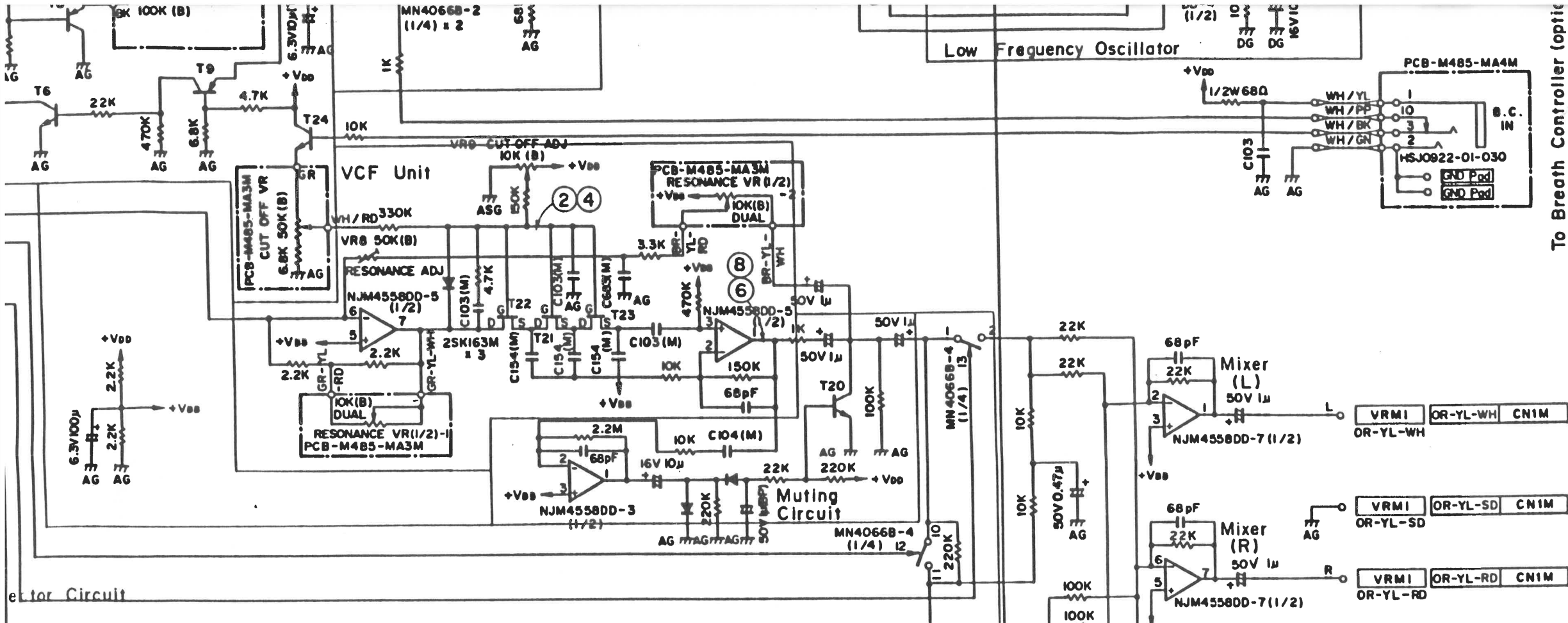
To Stereo chorus/waw speed volume



To Breath Controller (option)

el for Circuit





To Breath Controller (Optic)