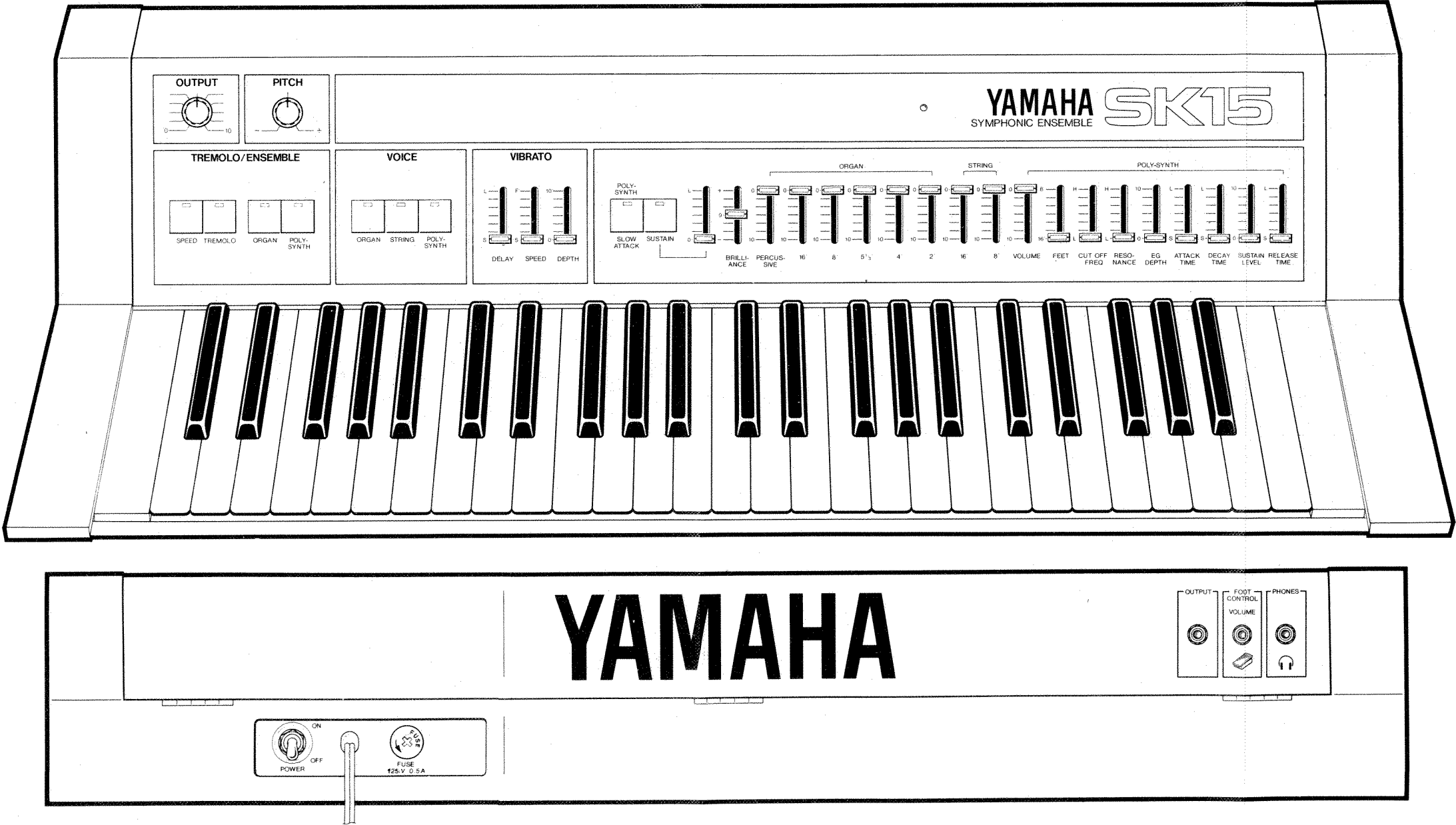
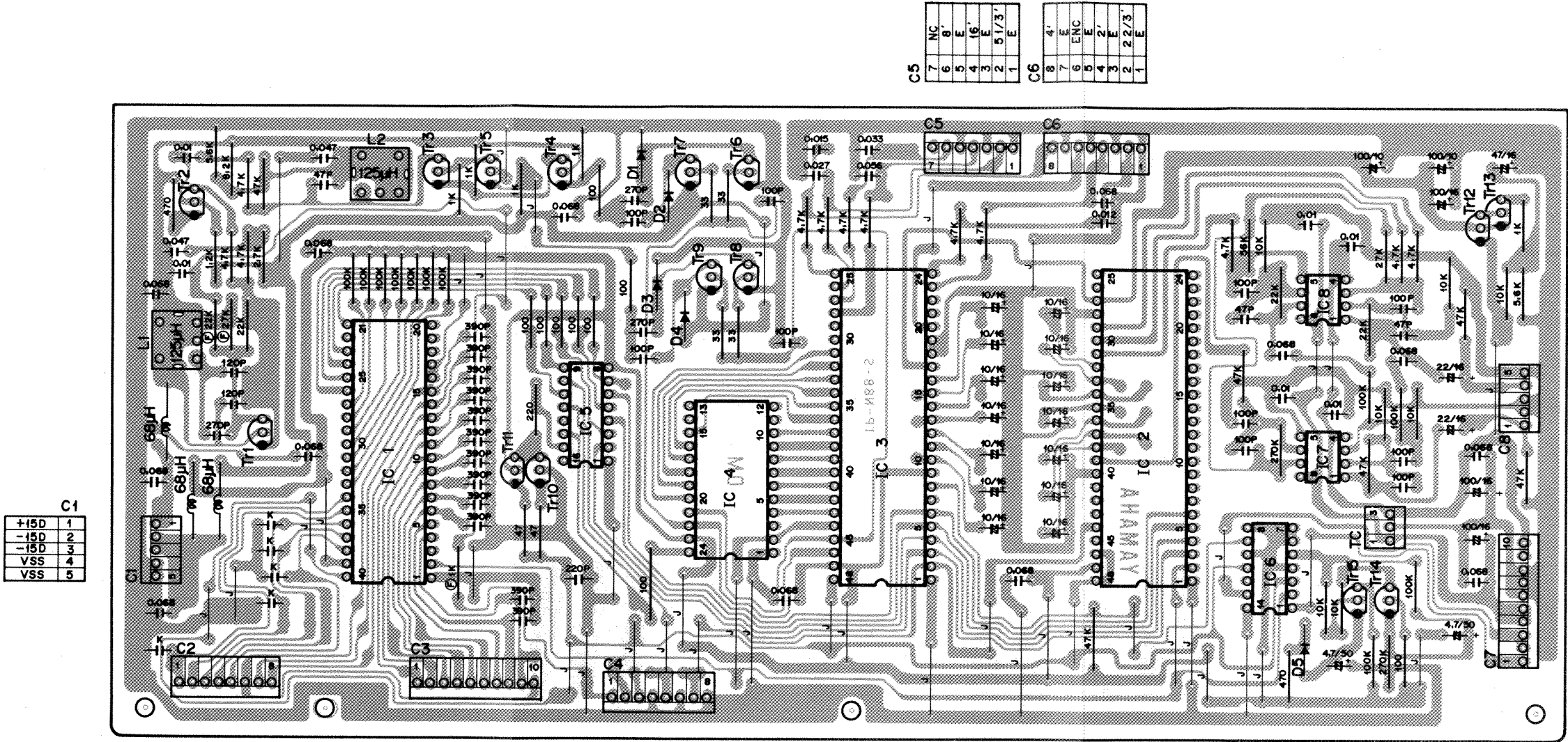


PANEL LAYOUT



DM Circuit Board & Wiring



C1

+15D	1
-15D	2
-15D	3
VSS	4
VSS	5

C5

7	NC
6	8'
5	E
4	16'
3	E
2	51/3'
1	E

C6

8	4'
7	ENC
6	E
5	2'
4	E
3	22/3'
2	E
1	E

C8

8	E
4	P8'
3	E
2	E
1	P16'

C7

10	-15A
9	-15A
8	E
7	E
6	E
5	+15A
4	+15A
3	TR
2	TR
1	IC

- Notes)
- 1. Circuit Board : LC 28951
  - 2. IC
    - IC 1 : YM62100
    - IC 2 : YM70400
    - IC 3 : YM70200
    - IC 4 : YM62200
    - IC 5 : TC4050BP
    - IC 6 : TC4013BP
    - IC 7, 8 : NJM4558DV
  - 3. Transistors
    - Tr1, 4, 5, 7, 9, 10: 2SC752(Y)
    - Tr2,3 : 2SA1164(Y)
    - Tr6, 8, 11 : 2SA1164(GR)
    - Tr12, 15 : 2SC1815(O,Y)
    - Tr13, 14 : 2SA1015(O,Y)
  - 4. Diodes
    - D1 ~ 5 : 1S1555
  - 5. Capacitor
    - (K) marked : Ceramic Capacitor 1000P
  - 6. Resistor
    - ⊕ marked : Metal Oxide Film Resistor (± 1%)

C2

U1	1
U2	2
U3	3
U4	4
U5	5
C	6
B	7
A#	8

C3

A	1
G#	2
F#	3
F#	4
E	5
D#	6
C#	7
C	8

C4

VM	1
IC	2
VM	3
VSS	4
SY	5
VSS	6
SI	7
VSS	8

C1

Pin No.	Pin Name	Wire Color	Destination
1	+15D	BR	DC-+15 (C1-5)
2	-15D	YE	DC- -15 (C1-1)
3	-15D	-	-
4	Vss	BL	DC-E (C2-3)
5	Vss	BL	DC-E (C2-4)

C2

Pin No.	Pin Name	Wire Color	Destination
1	U1	RE	MK-B1 (C2-6)
2	U2	OR	MK-B2 (C2-7)
3	U3	YE	MK-B3 (C2-8)
4	U4	GR	MK-B4 (C2-9)
5	U5	BE	MK-B5 (C2-10)
6	C	BR	MK-C (C2-5)
7	B	PK	MK-B (C2-4)
8	A#	SB	MK-A# (C2-3)

C3

Pin No.	Pin Name	Wire Color	Destination
1	A	GG	MK-A (C2-2)
2	G#	WH	MK-G# (C2-1)
3	G	GY	MK-G (C1-8)
4	F#	VI	MK-F# (C1-7)
5	F	BE	MK-F (C1-6)
6	E	GR	MK-E (C1-5)
7	D#	YE	MK-D# (C1-4)
8	D	OR	MK-D (C1-3)
9	C#	RE	MK-C# (C1-2)
10	C	BR	MK-CL (C1-1)

C4

Pin No.	Pin Name	Wire Color	Destination
1	VM	GG	CPA-VM (C2-7)
2	IC	WH	CPA-IC (C2-4)
3	φM	S BE	CPA-φM (C5-7)
4	Vss	S BE S	-
5	SY	S VI	CPA-SY (C5-9)
6	Vss	S VI S	-
7	SI	S GR	CPA-SO (C5-5)
8	Vss	S GR S	-

C5

Pin No.	Pin Name	Wire Color	Destination
1	E	S OR S	-
2	51/3'	S OR	CPB-51/3' (C3-2)
3	E	S OR S	-
4	16'	S BR	CPB-16' (C2-6)
5	E	S RE S	-
6	8'	S RE	CPB-8' (C2-8)
7	NC	-	-

C6

Pin No.	Pin Name	Wire Color	Destination
1	E	S GR S	-
2	22/3'	S GR	CPB-22/3' (C1-6)
3	E	S BE	-
4	2'	S BE S	CPB-2' (C3-6)
5	E	S WH S	-
6	ENC	S WH	CPB-ENC (C2-4)
7	E	S YE S	-
8	4'	S YE	CPB-4' (C3-4)

C7

Pin No.	Pin Name	Wire Color	Destination
1	IC	-	-
2	TR	BE	CPA-VTR (C2-1)
3	TR	BE	CPB-TR (C1-3)
4	+15A	BR	DC- +15 (C1-7)
5	+15A	-	-
6	E	BL	DC-E (C2-5)
7	E	-	-
8	E	-	-
9	-15A	-	-
10	-15A	YE	DC- -15 (C1-3)

C8

Pin No.	Pin Name	Wire Color	Destination
1	P16'	S VI	CPB-P16' (C3-8)
2	E	S VI S	-
3	E	-	-
4	P8'	S GY	CPB-P8' (C3-10)
5	E	S GY S	-

BASIC SETTING

BLOCK	CONTROL	SETTING
OUTPUT	MASTER VOLUME	10
PITCH		CENTER
SWITCH BLOCK		
TREMOLO/ENSEMBLE	SPEED TREMOLO, ORGAN POLY-SYNTH	ALL OFF (LED OFF)
VOICE	ORGAN, STRING, POLY-SYNTH	ALL ON (LED ON)
VIBRATO	DELAY, SPEED	S
	DEPTH	O
	POLY-SYNTH, SUSTAIN SWITCH	
TONE CONTROL Section	POLY-SYNTH, SUSTAIN	ALL OFF (LED OFF)
	SUSTAIN LEVER	S
	BRILLIANCE LEVER	CENTER
	ORGAN, STRING LEVER 16', 8'	O
	PERCUSSIVE, 16' ~ 2	
POLY-SYNTH	VOLUME LEVER	O
	FEET LEVER	16'
	CUT OFF, RESONANCE LEVER	L
	EG-DEPTH LEVER	O
	AT, DT, RT LEVER	S
	SUSTAIN LEVER	O

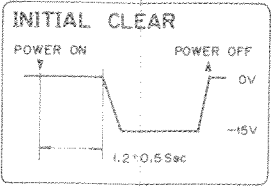
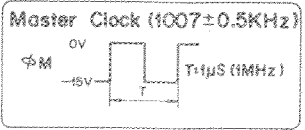
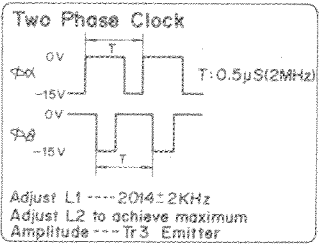
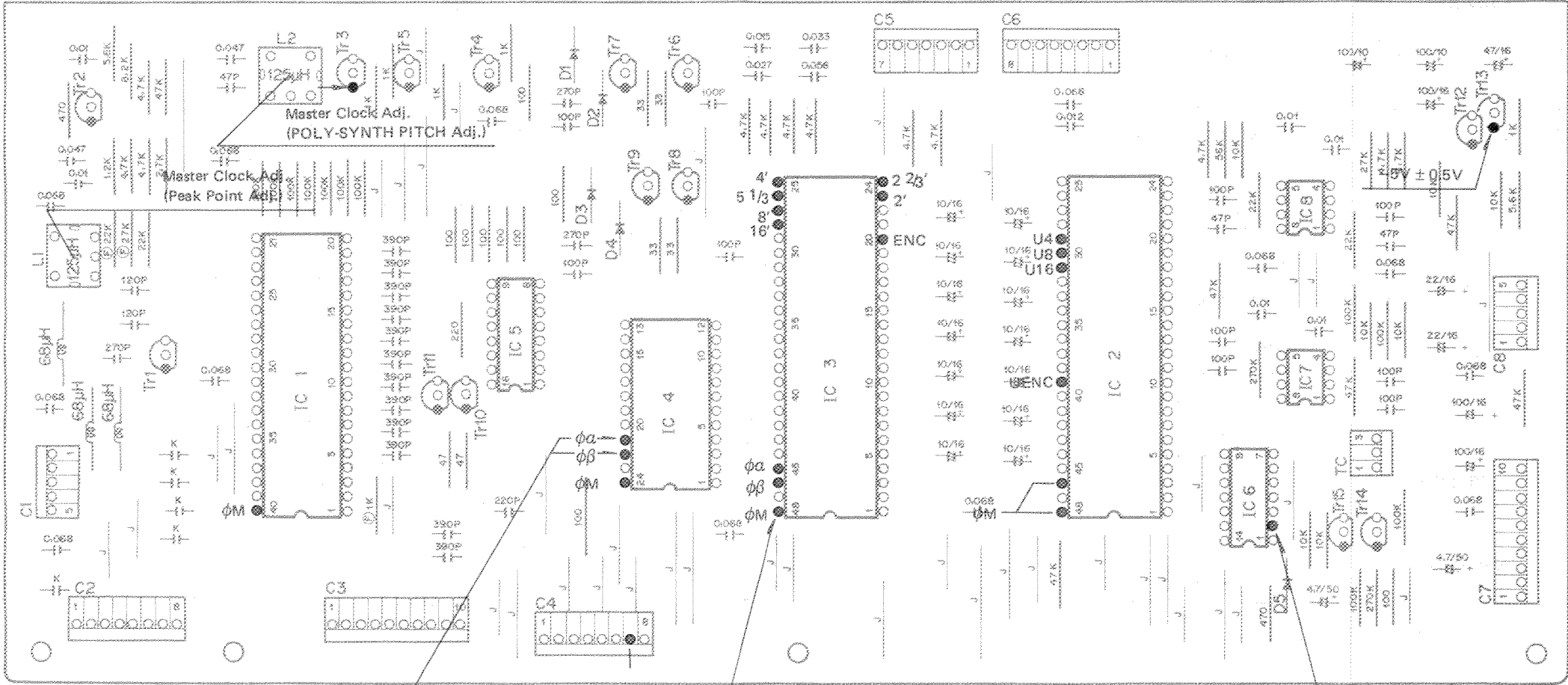
## Adjustments and Inspection Standards

## CIRCUIT BOARDS FUNCTIONS

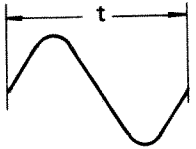
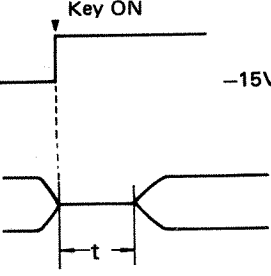
Circuit boards	Functions	Circuit boards	Functions
CPA	VIBRATO Circuit Pitch control circuit TREMOLO, SPEED Switch Circuit ENSEMBLE (ORGAN, POLY-SYNTH) Switch Circuit VOICE Select Switch Circuit SLOW ATTACK-SUSTAIN Switch Circuit SUSTAIN TIME CONTROL Circuit BRILLIANCE Circuit EXP Circuit Foot control Circuit Output amplifier circuit Headphones circuit -5V Generator	DM	Master Clock Circuit Initial Clear Circuit (KAC) Wave Generator Circuit Click Cancel Circuit POLY-SYNTH Waveform MIX Circuit
CPB	ORGAN Tone circuit (16', 8', 5 1/3', 4', 2') PERCUSSIVE Tone circuit STRING Tone circuit (16', 8') POLY-SYNTH Tone circuit (VCF) POLY-SYNTH EG Circuit	TE	Input LPF Circuit  BBD Clock Generator Circuit BBD Driver Circuit Output LPF Circuit Amplitude Modulation Circuit
		DC	+15V Regulator -15V Regulator

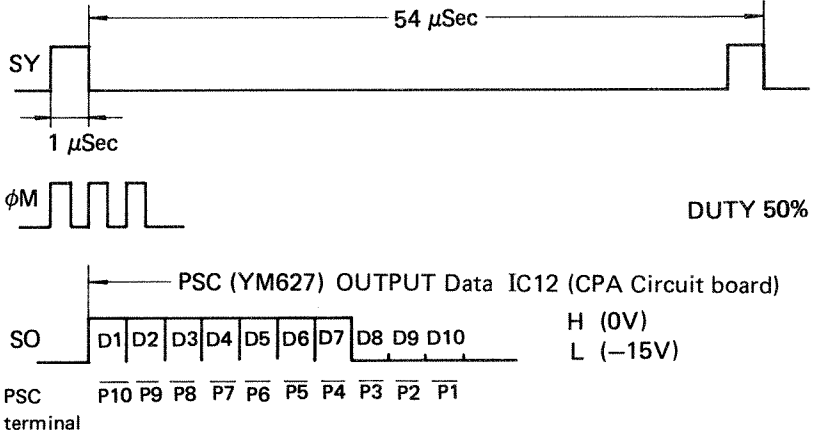
**DM circuit board**

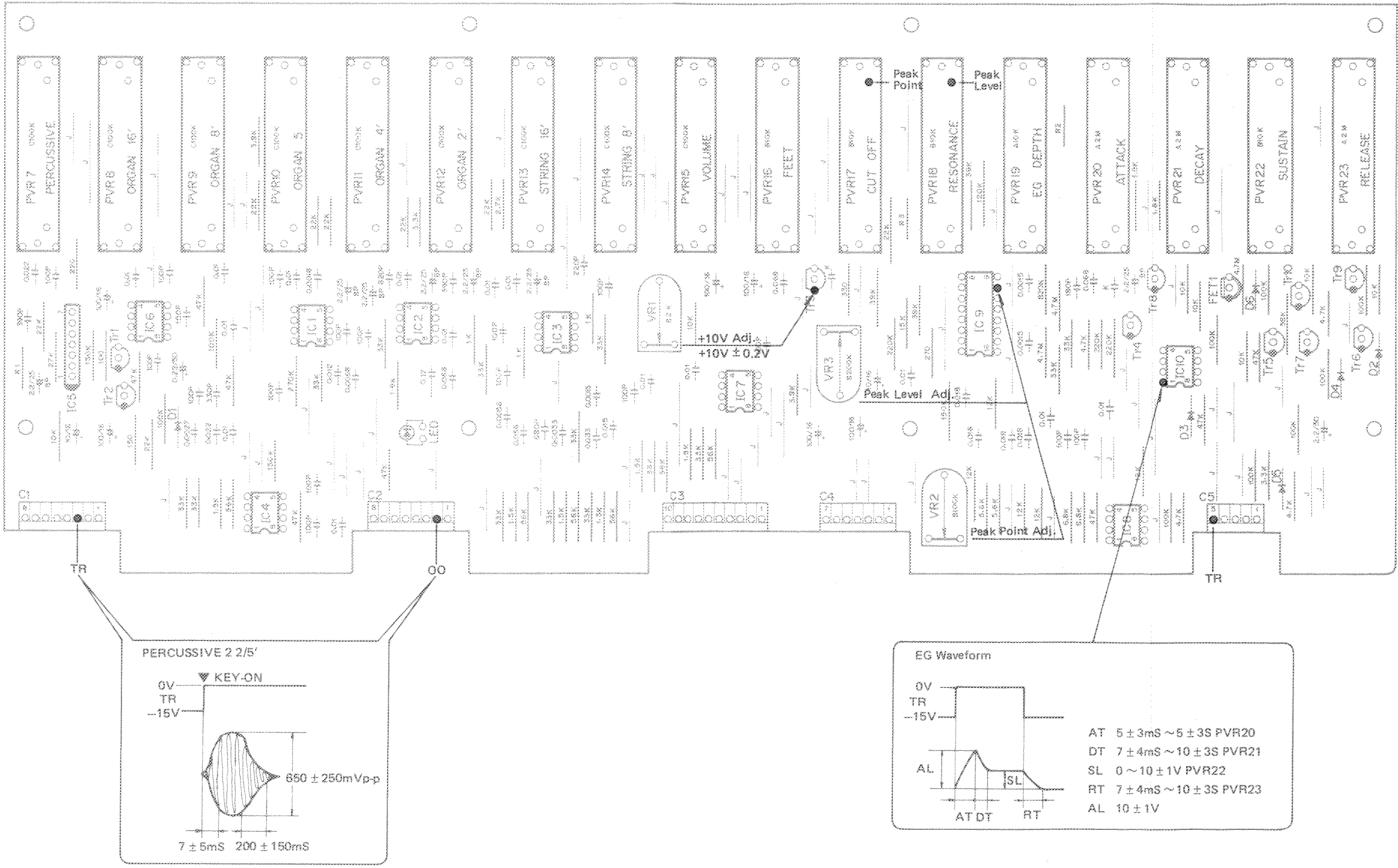
Item	Setting		Test point	Adjustment & reading	Where to adjustment	Remark
Pitch	ORGAN 8'	10	OUTPUT	A3 Key ON	DM Circuit	
	PITCH VR	Center		A3 = 443Hz	L1	Adjustment
			Tr3 Emitter	maximum amplitude	L2	Adjustment
—5V Regulator			Tr13 Emitter	—5V ± 0.5V		Check



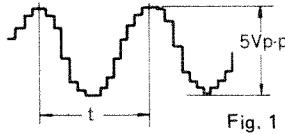
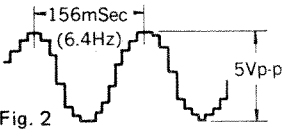
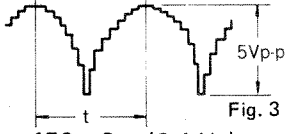
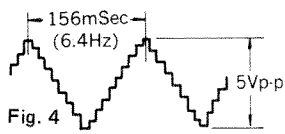
CPA circuit board

Item	Setting	Test point	Adjustment & reading	Where to adjustment	Remark
VIBRATO Block					
VIB-DEPTH	DEPTH VR 0 PITCH VR – (MIN) + (MAX)	VM (C2-7)	$-2.5 \pm 0.5V$ 438Hz $+2.5V \pm$		Check Check
PITCH	PITCH VR Center	VM (C2-7)	$0V \pm 0.1V$ 443Hz		Check
SPEED adjustment	DEPTH VR 10 SPEED VR S	VM (C2-7)	$3.3V \pm 0.3V_{p-p}$ $t = 0.2sec$ ( $f = 5 \pm 1Hz$ ) 	VR2 B-5KΩ	
	SPEED VR F	VM (C2-7)	$t = 0.143sec$ ( $f = 7 \pm 0.3Hz$ )		Check
DELAY TIME adjustment			When depressing any key, the waveform should appear as shown below. 		
	VTR (C2-1)  VM (C2-7)  DELAY VR S L		$t = 0$ $t = 2.7 \pm 0.6sec$	VR3 B-5KΩ	Adjustment
+15V Protector		(C1-1)	+15V		Check

Item	Setting	Test point	Adjustment & reading	Where to adjustment	Remark
Output level	ORGAN SW ON ORGAN 8' ..... 10 Depress the C5 key  OUTPUT VR ..... 10 STRING SW ON STRING 8' ..... 10 Depress the C5 key	OUT (C1-6)  OUT (C1-6)	Adjust to achieve three times as much as OR (C4-2)  Adjust to achieve three times as much as ST (C4-4)	VR1 B-10KΩ  VR1 B-10KΩ	Adjustment  Check
SLOW ATTACK SUSTAIN	Serial Data Timing Chart for (GF-1, GOA)  <p>Note) D1 : H or L      SLOW ATTACK/FAST D2 : H or L      DAMP/SUSTAIN D3 : L (fixed) D4 : H (fixed) D5 : H or L      S1 D6 : H or L      S2 } SUSTAIN Data D7 : H or L      S3 D8 : L (fixed) D9 : L (fixed) D10: L (fixed)</p>				



TE circuit board

Item	Setting	Test point	Adjustment & reading	Where to adjustment	Remark
T/E Clock Generator Circuit Ensemble Speed adjustment	TREMOLO/ENSEMBLE ENSEMBLE ... ON	O1 (IC1 - pin 16) O2 (IC1 - pin 15) O3 (IC1 - pin 14)  O4 (IC1 - pin 13) O5 (IC1 - pin 12) O6 (IC1 - pin 11)	The waveforms shown in Fig 1 and 2 should appear at O1, O2, O3, and O4, O5, O6 (IC1) terminal.  Fig. 1 $t=1.6 \text{ Sec (0.64 Hz)}$  Fig. 2	VR2	
Tremolo Speed adjustment	ENSEMBLE ... OFF TREMOLO ... ON	O1 (IC1 - pin 16)  O2 (IC1 - pin 15) O3 (IC1 - pin 14)  O4 (IC1 - pin 13) O5 (IC1 - pin 12) O6 (IC1 - pin 11)	The waveforms shown in Fig 3 should appear at O1. At this time adjust VR1 so that the frequency is $6.4\text{Hz} \pm 0.1\text{Hz}$ .  Fig. 3 $t=156 \text{ mSec (6.4 Hz)}$ The waveforms shown in Fig 4 should appear at O2, O3.  Fig. 4 Check for a DC voltage of -2.5V.	VR1	
BBD Circuit	Connect pin 9 (TEST-Terminal) of IC1 to -15V.  Keyboard Endblock TREMOLO/ENSEMBLE TREMOLO ... ON  OUTPUT block ORGAN ..... 0  ORGAN block 8 ..... 10	Tr2-E Tr3-E Tr4-E	Adjust VR3, VR4, and VR5 for the best achievable sine wave.	VR3 VR4 VR5	

