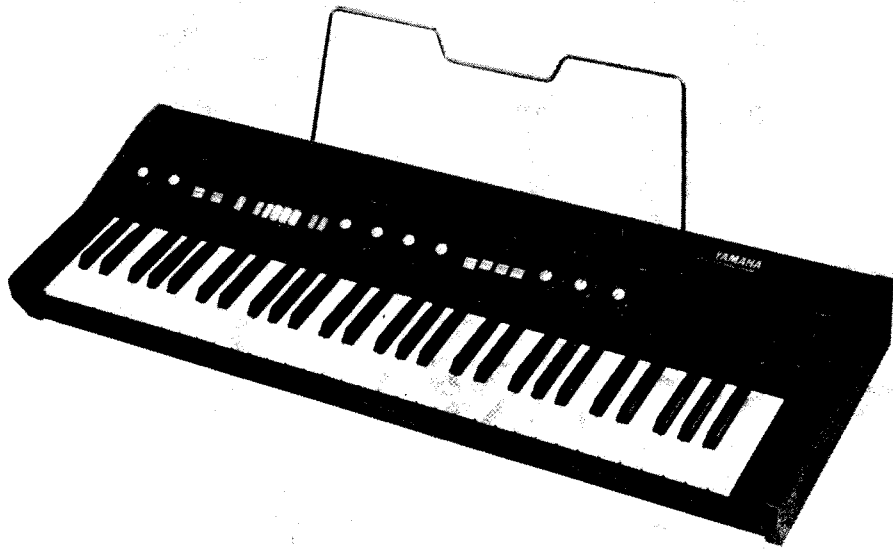


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SERVICE MANUAL

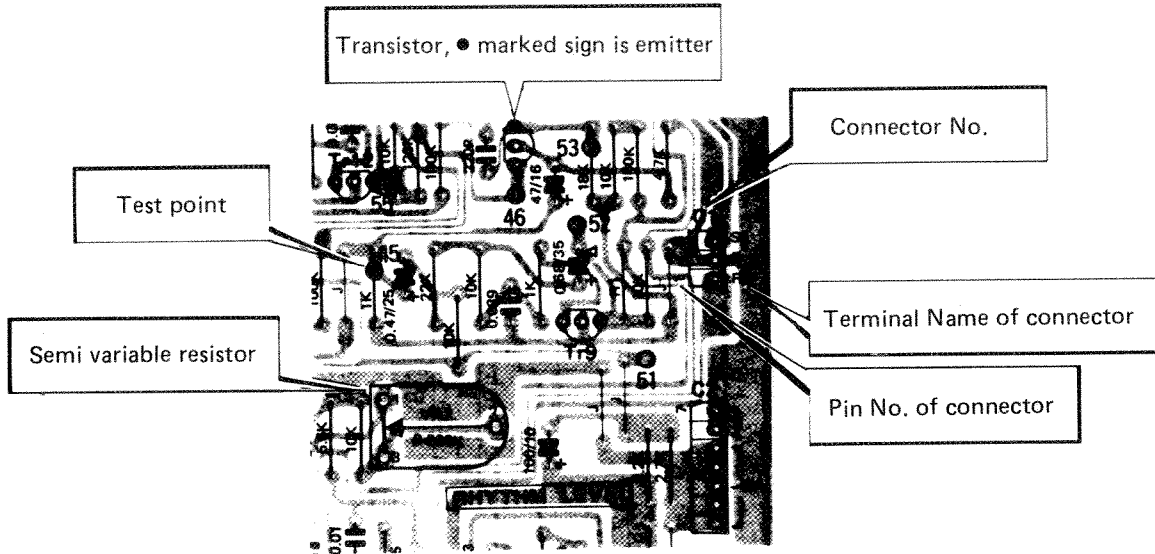
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CODING GUIDE

CIRCUIT BOARD

All circuit board layouts are from component side unless otherwise specified.



Show the Connection Table about the connection.

Connector No. of DM circuit board (unit)

DM-C1				DM-C2			
No.	Pin Name	Wire Color	Destination	No.	Pin Name	Wire Color	Destination
1	A1C	GY	PU A1C (IC3-B)	1	VSS	BL 12	PU E (IC3-2)
2	VE	YE	PN1 VE (IC6-3)	2	VSS	BL 12	PU 3 (IC3-3)
3	VI	WH	PN1 VI (IC6-4)	3	VSS	GR 12	PN1 EC2 (IC5-1)
				4	VSS	BL 12	PN1-VSS (IC4-7)
				5	VSS	BL 12	PN3 VSS (IC3-3)
				6	VSS	BL 12	EXP VSS (IC1-3)
				7	VSS		
				8	15D	RE 12	PU 15 (IC3-5)
				9	15D	RE 12	PN4 -15 (IC1-6)
				10	15D	RE 12	EXP LA (IC1-5)

Connected unit name

Connected terminal name

Connected connector and pin No.

DISASSEMBLY PROCEDURE

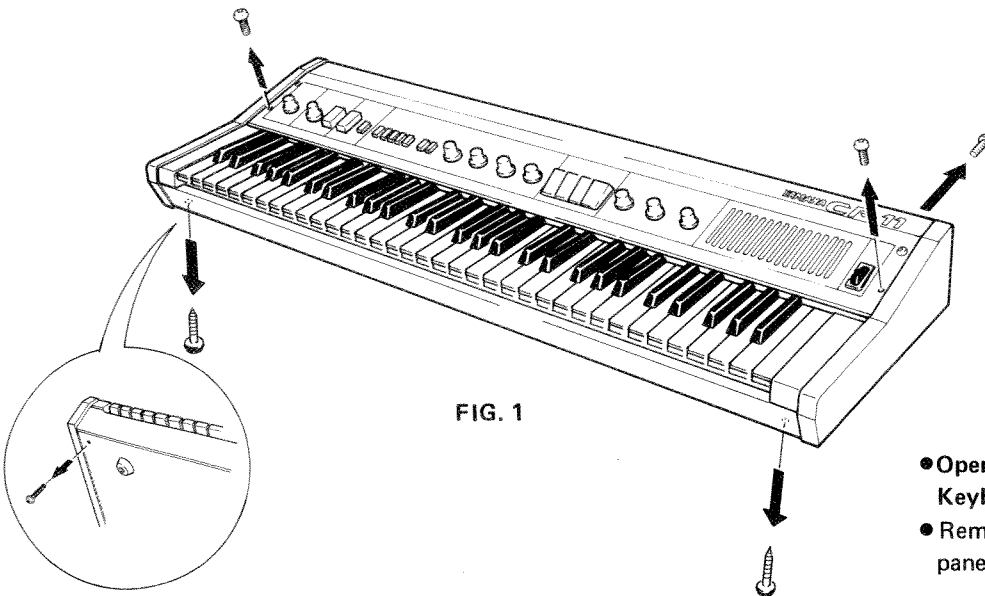


FIG. 1

- Opening the Control Panel and Keyboard.
- Removes 5 screws from the control panel and bottom cover.

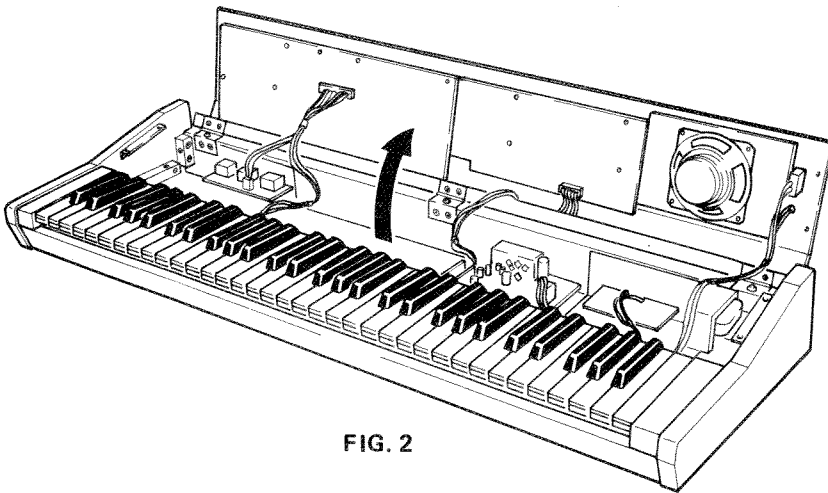


FIG. 2

- Lift the control panel as shown in the figure 2 until it is fully opened.

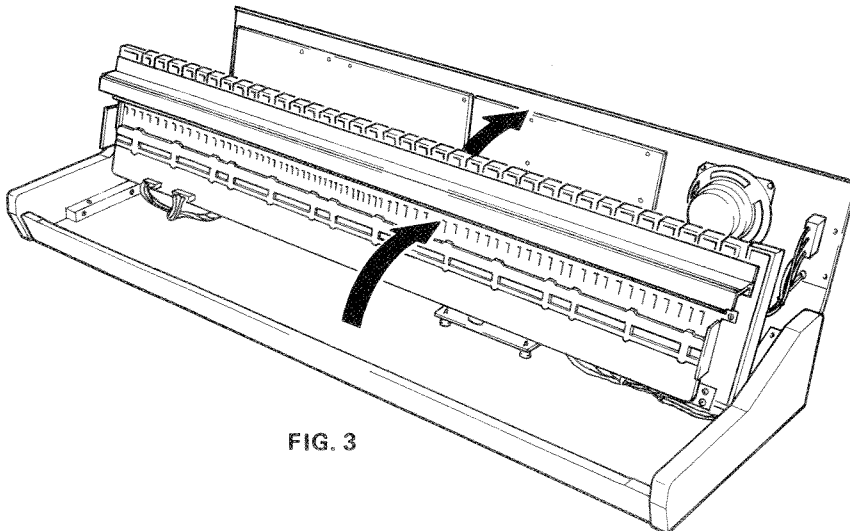









FIG. 3

- The keyboard can now be lifted as shown in the figure 3.

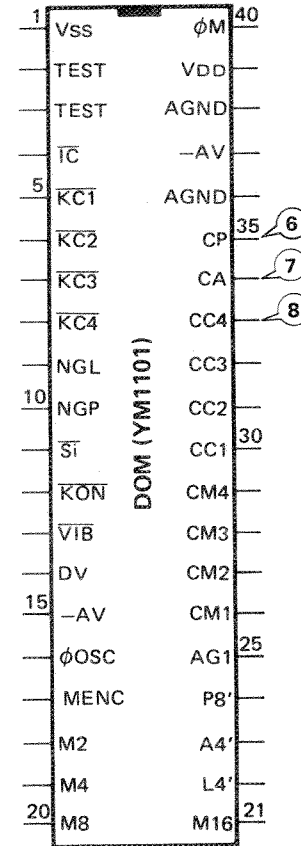
SPECIFICATIONS

Keyboard	61 keys, from C1 to C6
Simultaneous Voices	
when Auto-Accompaniment inactivated . . .	10 voices within whole range of keyboard
when Auto-Accompaniment activated . . .	Melody part : 4 voices, Auto-accompaniment part : 6 voices
PITCH Control	435 to 450 Hz at A3
TREMOLO Control	TREMOLO Tablet Switch : ON / OFF
SUSTAIN Control	SUSTAIN Tablet Switch : ON / OFF
	EG MODE Switch  :  ,  : 
AUTO ACCOMPANIMENT Section	Rhythm Select Switch
	 / 
	MARCH / DISCO
	WALTZ / ROCK
	TANGO / SWING
	RHUMBA / SAMBA
	RHYTHM START Push Switch : Start/Stop
	KEY START Switch : Key Synchronous Start
	TEMPO :  = 43 to 300 Variable
	ARPEGGIO : Level Control
	BASS & CHORD : Level Control
	RHYTHM : Level Control
TONE SELECT Switch	PIANO 1, PIANO 2, HARPSICHORD 1, HARPSICHORD 2 Tablets
EQUALIZER Control	BASS, TREBLE Controls
Loudness Control	VOLUME Control
Power Control	POWER Switch
OTHERS	
Power Amplifier	Output : 5 Watts at 4 ohms load
Speaker	10 cm (4"), 4 ohms
REAR PANEL	HEADPHONES : 8 to 300 ohms
	FOOT PEDAL : Foot Switch FC-5 Connectable
	OUTPUT : 600 ohms, -10dBm
Power Requirement	U.S. & Canadian Models: 120V, 60Hz
	General Model: 110-130, 220-240V, selectable 50/60Hz
Power Consumption	10 Watts
Dimensions (W x H x D)	36¼ x 4¼ x 12½ inch, 925 x 108.2 x 322 cm
Weight	23.8 lbs, 10.8 kg
Finish	Rosewood grained
Accessories	Foot Pedal : FC-5, Score Stand

* Specifications and Design are subject to change due to improvement.

Type	YM1101	Function	DOM (Digital Tone Generator)
------	--------	----------	------------------------------

Pin		Description	Pin		Description
No.	Name		No.	Name	
1	VSS	Ground (0V)	40	ϕ M	Master clock IN (470kHz)
2	TEST	Test Pin	39	VDD	DC Supply (-9V)
3	TEST	-- do. --	38	AGND	Analog GND
4	\overline{IC}	Initial clear IN	37	-AV	DC Supply for Sound source (-3.5V)
5	$\overline{KC1}$	Key code data IN (\leftarrow KAR)	36	AGND	GND (Auto Bass Sound source)
6	KC2		35	CP	C.R for Auto Bass/Manual Key Sound source envelope setting
7	$\overline{KC3}$		34	CA	C.R for Auto Arpeggio/Manual Key Sound source envelope setting
8	$\overline{KC4}$		33	CC4	C.R for Auto Chord/Manual Key Sound source envelope setting
9	NGL	NC	32	CC3	
10	NGP	NC	31	CC2	
11	\overline{SI}	Serial data IN (\leftarrow PSC II)	30	CC1	
12	\overline{KON}	NC	29	CM4	C.R for Manual Key Sound source envelope setting
13	\overline{VIB}	GND	28	CM3	
14	DV	NC	27	CM2	
15	-AV	DC supply for sound source (-3.5V)	26	CM1	
16	ϕ OSC	Clock for sound source IN (530kHz)	25	AG1	GND (Manual Key sound source)
17	MENC	MENC	24	P8'	Auto Bass sound source OUT
18	M2'	2'	23	A4'	Auto Arpeggio sound source OUT
19	M4'	4'	22	L4'	Auto Code sound source OUT
20	M8'	8'	21	M16'	GND

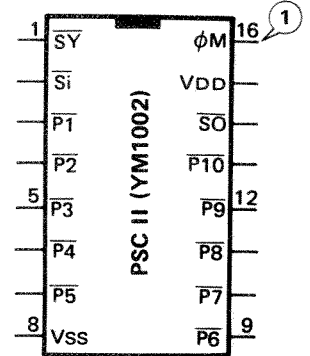


NOTE) Marks ... Refer to MAIN WAVEFORM CHECKPOINTS (P11 ~ 13)

Type	YM1002	Function	PSC II (Parallel/Serial Converter)
------	--------	----------	------------------------------------

Pin		Description
No.	Name	
1	\overline{SY}	Synchro data IN (\Leftarrow KAR)
2	\overline{Si}	Serial data IN (\Leftarrow PSC II)
3	$\overline{P1}$	Parallel data IN 1 (\Leftarrow SW)
4	$\overline{P2}$	— do. — 2 (\Leftarrow SW)
5	$\overline{P3}$	— do. — 3 (\Leftarrow SW)
6	$\overline{P4}$	— do. — 4 (\Leftarrow SW)
7	$\overline{P5}$	— do. — 5 (\Leftarrow SW)
8	VSS	Ground (0V)

Pin		Description
No.	Name	
16	ϕM	Master clock IN (470kHz)
15	VDD	DC Supply ($-9V$)
14	\overline{SO}	Serial data OUT (\Rightarrow KAR, DOM)
13	$\overline{P10}$	Parallel data IN 10 (\Leftarrow SW)
12	$\overline{P9}$	— do. — 9 (\Leftarrow SW)
11	$\overline{P8}$	— do. — 8 (\Leftarrow SW)
10	$\overline{P7}$	— do. — 7 (\Leftarrow SW)
9	$\overline{P6}$	— do. — 6 (\Leftarrow SW)



NOTE) \circ Marks ... Refer to MAIN WAVEFORM CHECKPOINTS (P11 ~ 13)

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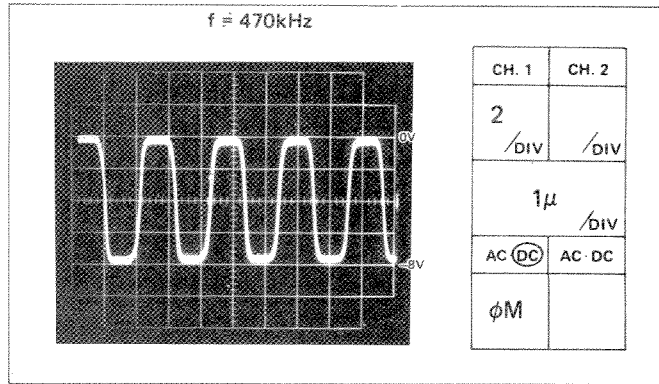
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MAIN WAVEFORM CHECKS

Wave Shape Figures

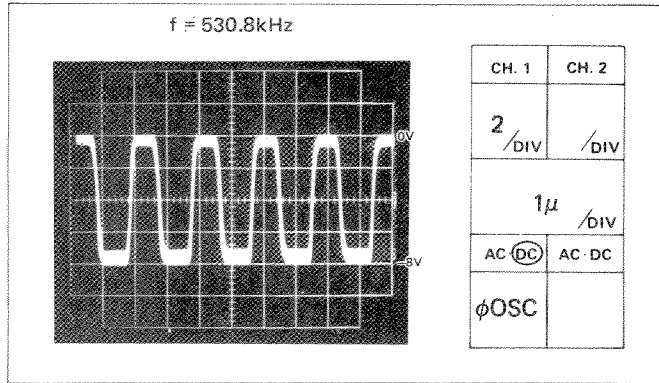
1 Master Clock (ϕM)

- CHECKPOINT (CPA)
10th Pin of IC5
- CONDITION
Power SW. - ON



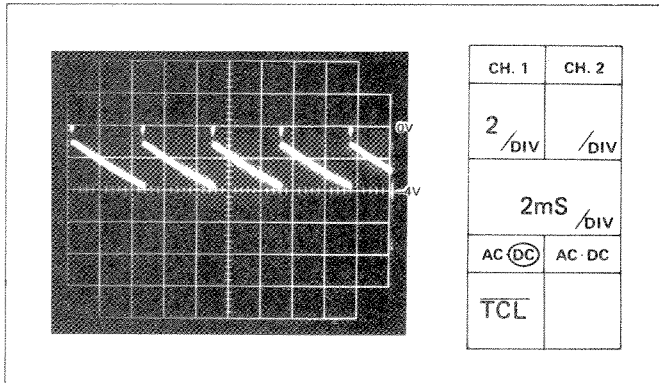
2 Sound Source Clock (ϕOSC)

- CHECKPOINT (CPA)
8th Pin of IC5
[16th Pin of IC2 (DOM)]
- CONDITION
Power SW. - ON



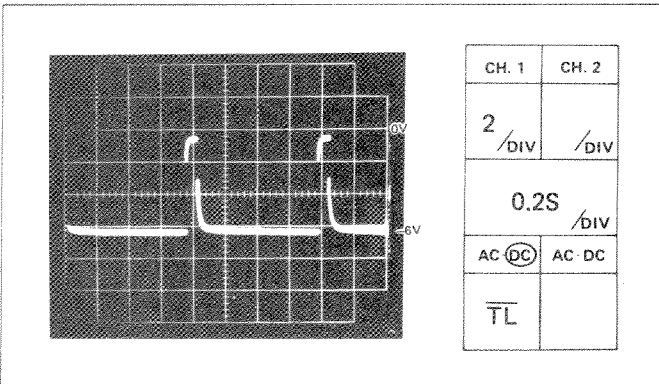
3 Tempo Clock (\overline{TCL})

- CHECKPOINT (CPA)
37th Pin of IC1 (KAR)
- CONDITIONS
RHYTHM START
Tempo Volume MAX.



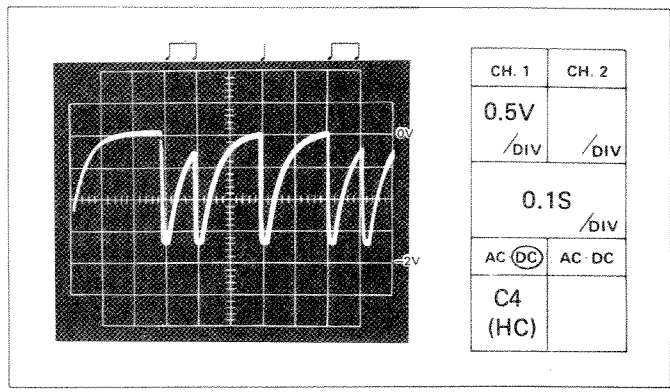
4 Tempo Lamp Drive Pulse (\overline{TL})

- CHECKPOINT (CPA)
38th Pin of IC1 (KAR)
- CONDITIONS
RHYTHM START
Tempo Volume MAX.



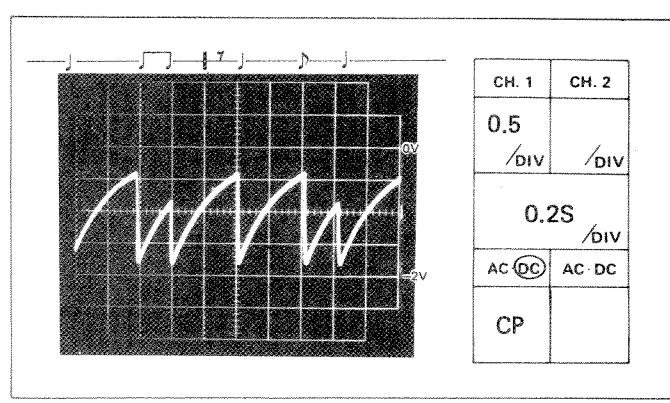
5 Rhythm Envelope (HC)

- CHECKPOINT (CPA)
35th Pin of IC1 (KAR)
Envelope of High Conga
- CONDITIONS
RHYTHM START (RHUMBA)
Tempo Volume MAX.
* The waveform varies with the rhythm.



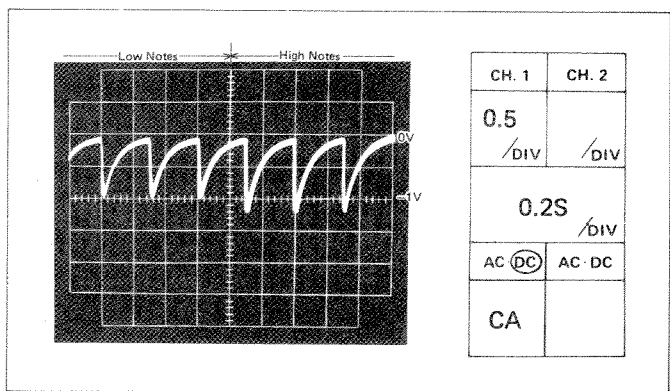
6 Auto Bass Envelope (CP)

- CHECKPOINT (CPA)
35th Pin of IC2 (DOM)
- CONDITIONS
RHYTHM START (ROCK)
KEY START – ON
&
KEY – ON (C1 ~ F2#)
* The waveform varies with the rhythm.



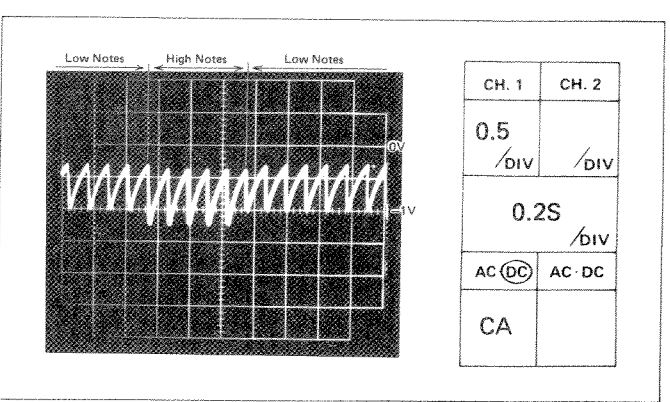
7-a Auto Arpeggio Envelope (CA)

- CHECKPOINT (CPA)
34th Pin of IC2 (DOM)
- CONDITIONS
KEY START – ON
&
KEY – ON (C1 ~ F2#)



7-b Auto Arpeggio Envelope (CA)

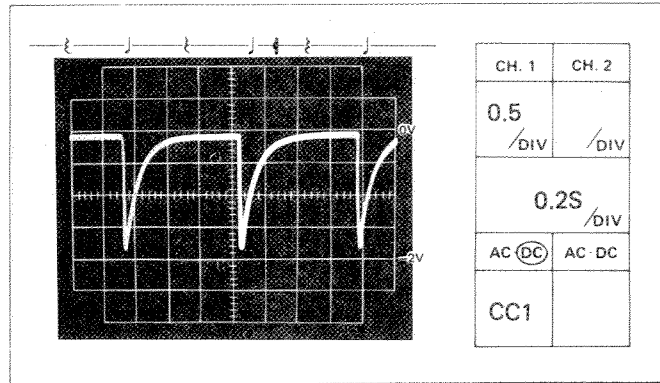
- CHECKPOINT (CPA)
34th Pin of IC2 (DOM)
- CONDITIONS
KEY START – ON
&
KEY – ON (C1 ~ F2#)
* When Up Tempo compared with 7-a.



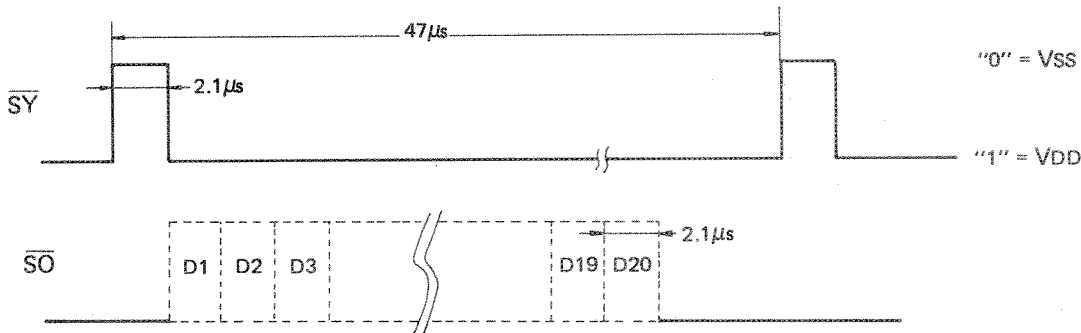
8 Auto Chord Envelope (CC1~4)

● CHECKPOINT (CPA)
From 30th to 33th Pin of IC2 (DOM)

● CONDITIONS
KEY START – ON
&
KEY – ON (C1 ~ F2#)



Serial Function Data



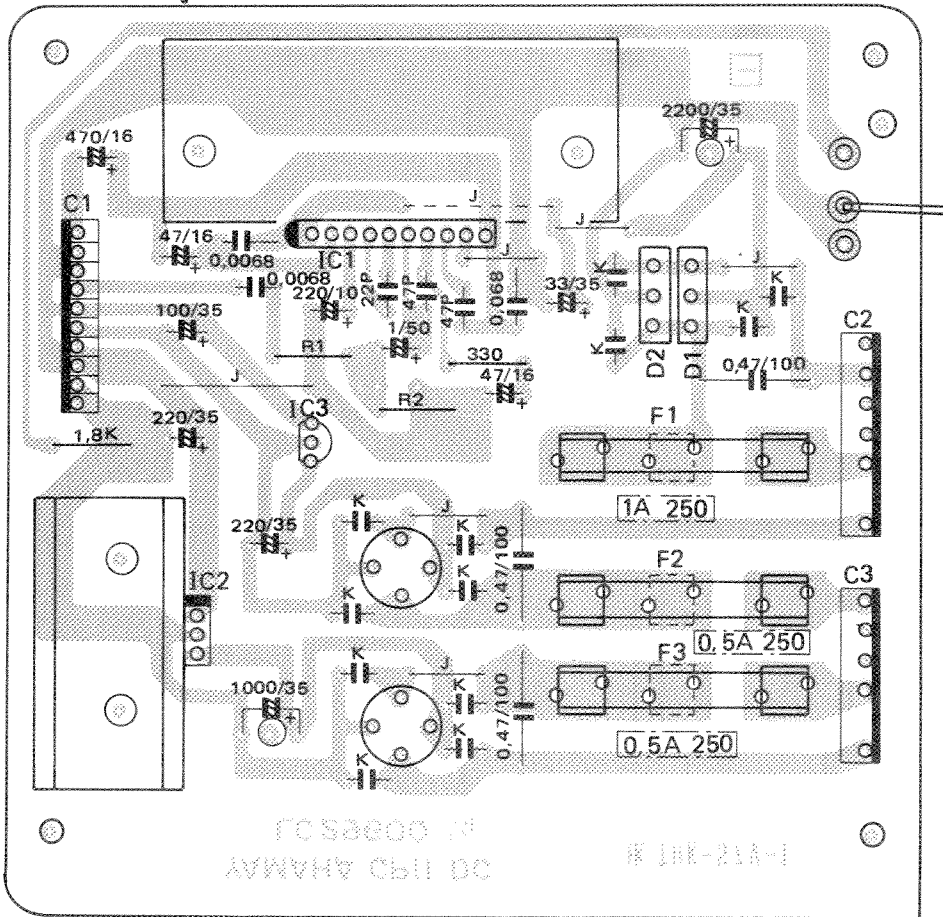
D1, 3, 5, 7, 10, 18 and 19 are fixed at "1".
D4 is fixed at "0".
D9 is "1" if FS is on and "0" if FS is off.

Parallel Data		Serial Data
PSC II (IC 3)	P10	D1 -
	P9	D2 EG MODE
	P8	D3 -
	P7	D4 -
	P6	D5 -
	P5	D6 *SUSTAIN
	P4	D7 -
	P3	D8 KEY START
	P2	D9 FOOT SW
	P1	D10
	P10	D11 RHYTHM START
	P9	D12 KEY START
	P8	D13 RHYTHM SELECT
	P7	D14 MARCH (DISCO)
	P6	D15 WALTZ (ROCK)
	P5	D16 TANGO (SWING)
	P4	D17 RHUMBA (SAMBA)
	P3	D18 -
	P2	D19 -
	P1	D20 TANGO (SWING)

SUSTAIN SW works only when FS is off.

DC & JK CIRCUIT BOARDS

DC



C1

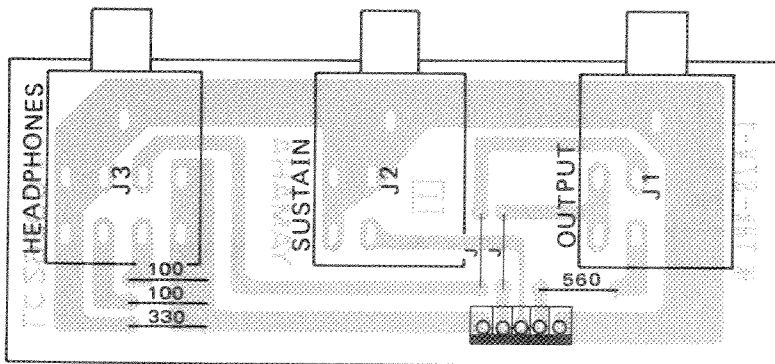
Pin No.	Pin Name	Wire Color	Destination
1	SP1	GY	JK-SP1 (C1-1)
2	GND	BL	SP-SPM
3	GND	BL	JK-GND (C1-5)
4	MI	S OR	CPB-OUT (C2-9)
5	Vss	GR	CPA-Vss (C1-5)
6	VDD	BE	CPA-VDD (C1-4)
7	GND	BL	CPA-GND (C4-1)
8	GND	BL	CPB-GND (C2-2)
9	-15V	YE	CPA-15V (C4-2)
10	-15V	YE	CPB-15V (C2-1)

Notes)

1. Circuit Board : LC29600 [I]
2. Integrated Circuits
 IC1 : TA7205AP
 IC2 : μ PC14315H
 IC3 : TA78L009P
3. Diodes
 D1 : 1D2C1
 D2 : 1D2Z1
 D3, 4 : 1D4B1
4. Capacitor
 (K) mark : 1000P

KEP-NA10776-1 X 1/4 Δ

JK



Note)

1. Circuit Board : LC29600 [I]

JK

Pin No.	Pin Name	Wire Color	Destination
1	SP1	GY	DC-SP1 (C1-1)
2	SP2	WH	SP-SPP (C1-1)
3	FSW	OR	CPA-FSW (C1-3)
4	OUT	S OR	CPB-OUT (C2-7)
5	GND	BL	DC-GND (C1-3)

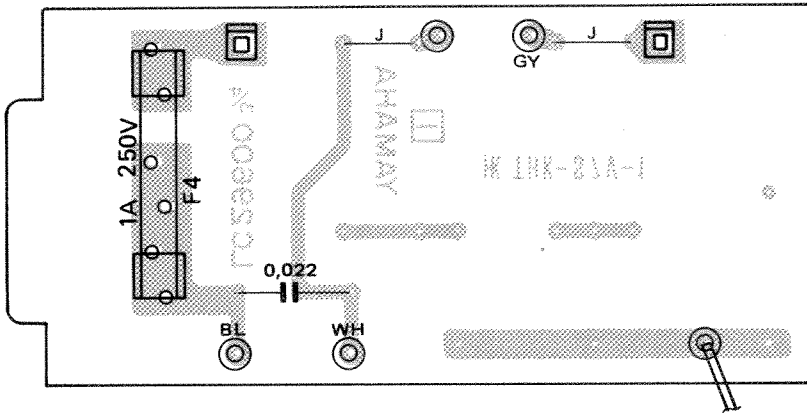
SP

Pin No.	Pin Name	Wire Color	Destination
1	SPP	WH	JK-SP2 (C1-2)
2	SPM	BL	DC-GND (C1-2)

KEP-NA10776-1 X 2/4 Δ

AC CIRCUIT BOARD

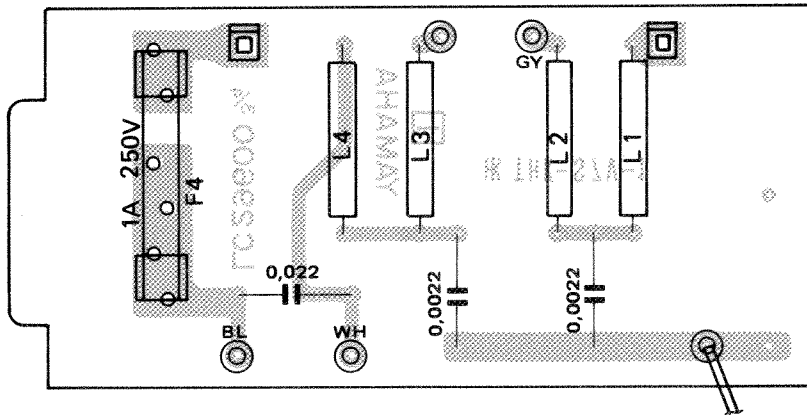
AC1 (JAPANESE)



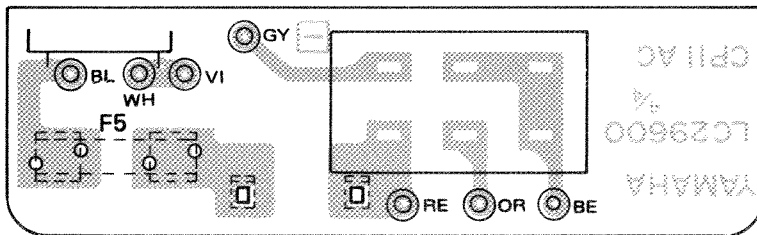
Note)
1. Circuit Board : LC29600 [1]

KEP-NA10776-1 X 3/4 Δ

AC1 (US)



AC2 (GENERAL)



Note)
1. Circuit Board : LC29600 [1]

KEP-NA10776-1 X 4/4 Δ

	Part No.	Circuit Board				F1	F2	F3	F4	F5
		DC	JK	AC1	AC2					
Japanese	NA10776	○	○	○		▽ 1A 250V	▽ 0.5A 250V	▽ 0.5A 250V	▽ 1A 250V	
US	NA10777	○	○	○		⓪ 1A 250V	⓪ 0.5A 250V	⓪ 0.5A 250V	⓪ 1A 250V	
Canadian	NA10778	○	○	○		⓪ 1A 250V	⓪ 0.5A 250V	⓪ 0.5A 250V	⓪ 1A 250V	
General	NA10779	○	○		○	Ⓢ T1A 250V	Ⓢ T500mA 250V	Ⓢ T500mA 250V		Ⓢ T315mA 250V

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PARTS LIST

CONTENTS

A. Electronic Components (電気部品)	1
B. Cabinet Assembly (外装集成)	3
C. Keyboard Assembly (鍵盤)	6
D. Foot Switch (フットペダル)	7

A. Electronic Components(電気部品)

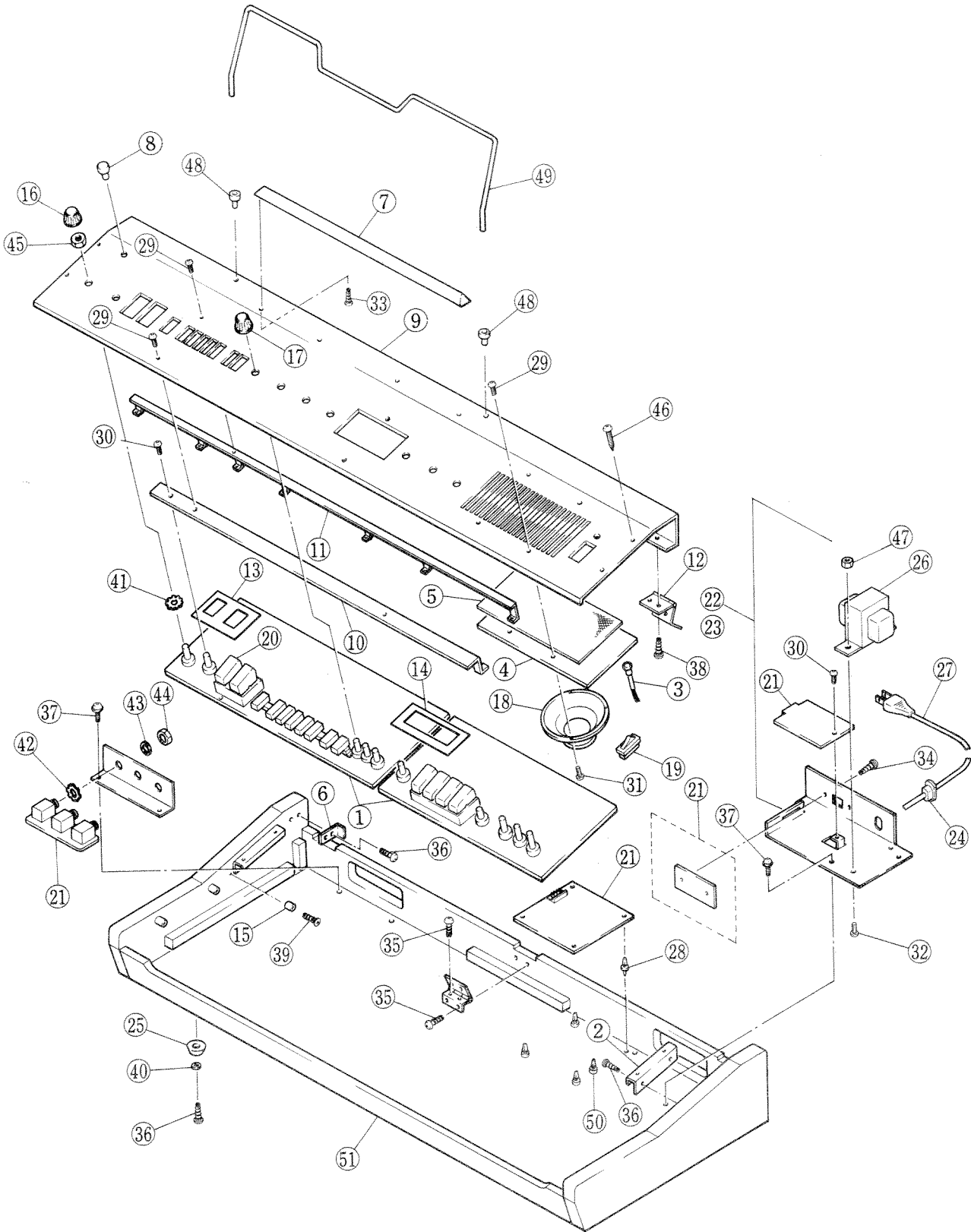
Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets
* NA:10:77:40		Circuit Board, CPA, CPB	#2945	CPA, CPBシート		
* NA:10:77:60		- do. -, JK, DC, AC	#2960	JK, DC, ACシート		
* NA:10:77:70		- do. -, - do. -	- do. -	"		U
* NA:10:77:80		- do. -, - do. -	- do. -	"		C
* NA:10:77:90		- do. -, - do. -	- do. -	"		G
	iG:00:13:90	IC	NJM4558DV	I C	Dual OP Amp.	
	iG:02:60:00	- do. -	iG2600	"		
	iG:02:87:00	- do. -	μ PC14315H	"		
	iG:03:74:70	- do. -	μ PD4069C	"		
	iG:04:07:00	- do. -	TA78L009P	"		
* iG:06:28:00		- do. -	TA7205AP	"		
	iT:10:02:00	- do. -	YM1002	"		
	iT:10:11:00	- do. -	YM1011	"		
	iT:11:01:00	- do. -	YM1101	"		
	iA:10:15:70	Transistor	2SA1015(O, Y)	トランジスタ		
	iC:07:52:30	- do. -	2SC752TM(Y)	"		
	iC:18:15:70	- do. -	2SC1815(O, Y)	"		
	iF:00:00:40	Diode	IS1555	ダイオード		
	iF:00:02:90	LED		LED		
	iF:00:11:90	- do. -	TLR-124	"		
	iH:00:02:80	Diode	ID2C1	ダイオード		
	iH:00:02:90	- do. -	ID2Z1	"		
	iH:00:04:70	- do. -	ID4B1	"		
	HS:31:04:40	Variable Resistor	B50K Ω	ボリューム		
	HS:31:05:50	- do. -	A10K Ω	"		
	HS:31:05:70	- do. -	B10K Ω	"		
	HS:31:13:30	- do. -	C100K Ω	"		
* HS:31:17:00		- do. -	C500K Ω	"		
* UW:55:91:00		Electrolytic Capacitor	1000 μ F/35V	小型ケミコン		
* UW:85:92:20		- do. -	2200 μ F/35V	"		
	FZ:00:22:50	Spark Suppressor Cap.	0.022 μ F	スパークキラー		
	FZ:00:28:50	Ceramic Capacitor	0.0022 μ F	セラコン		
	FC:18:54:70	MM Capacitor	0.47 μ F/100V	メタライズドマイラコン		
	FD:65:24:70	Polystyrene Capacitor	470P	スチコン		
	FD:65:28:20	- do. -	820P	"		
	UK:63:71:00	Bipolar Electrolytic Capacitor	10 μ F/16V	BPケミコン		
	FL:66:54:70	- do. -	0.47 μ F/50V	"		
	FL:66:61:00	- do. -	1 μ F/50V	"		
	UL:14:66:80	Low Noise Capacitor	6.8 μ F/25V	ローノイズケミコン		
	KA:10:10:60	Power Switch		パワースイッチ		
* KA:10:11:00		Tablet Switch		タブレットスイッチ		

* New Parts (新規部品) (J: Japanese, U: U.S. American, C: Canadian, NE: European)

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets
	KA:90:30:60	Push Switch	2Key	ブッシュスイッチ		
	KA:90:30:70	- do. -	6Key	"		
	KA:40:08:30	Voltage Selector		電 圧 切 替 器		
	KC:00:12:50	Relay	MZ-12	リ レ -		
	KB:00:03:10	Fuse	0.5A 250V	ヒ ュ - ズ		
	KB:00:03:30	- do. -	1A 250V	"		
	KB:00:06:50	- do. -	T315mA 250V	"		G
	KB:00:07:10	- do. -	T500mA 250V	"		G
	KB:00:07:30	- do. -	T1A 250V	"		G
	KB:00:10:60	- do. -	1A 250V	"		U,C
	KB:00:11:50	- do. -	0.5A 250V	"		U,C
	GE:30:03:50	Choke Coil		チ ョ - ク コ イ ル		
	GE:90:01:90	OSC Coil	500 μ H	発 振 コ イ ル		
	GE:90:05:00	Coil	CK4	コ イ ル		
	QU:00:09:00	Crystal	470KHz	セラミック発振子		
※	GA:04:02:00	Power Transformer		電 源 ト ラ ン ス		
※	GA:04:03:00	- do. -		"		U,C
※	GA:04:04:10	- do. -		"		G
	MG:00:06:00	AC Cord		電 源 コ - ド		
	MG:00:08:60	- do. -		"		G
	MG:00:02:70	- do. -		"		C
	MG:00:07:10	- do. -		"		U
	LB:20:12:30	Phone Jack	Mono	ジ ャ ッ ク		
	LB:30:10:80	- do. -	Stereo	"		
	LB:50:02:50	Base Pin	5P	2.5ピッチベースピン	Top Entry	
	LB:50:03:70	- do. -	5P	"	Bottom Entry	
	LB:60:24:70	- do. -	10P	"	Top Entry	
	LB:60:30:00	- do. -	7P	"	Bottom Entry	
	LB:60:30:10	- do. -	8P	"	- do. -	
	LB:60:30:70	- do. -	10P	"	- do. -	
	LB:60:40:20	Housing		ハ ウ ジ ン グ		
	LB:50:02:40	Connector Housing	5P	2.5ピッチハウジング		
	LB:60:24:40	- do. -	7P	"		
	LB:60:24:80	- do. -	8P	"		
	LB:60:24:50	- do. -	10P	"		
	LB:50:04:70	Wafer Assembly		ウエハーアッセンブリー		
	LB:60:39:70	- do. -		"		

※ New Parts (新規部品)

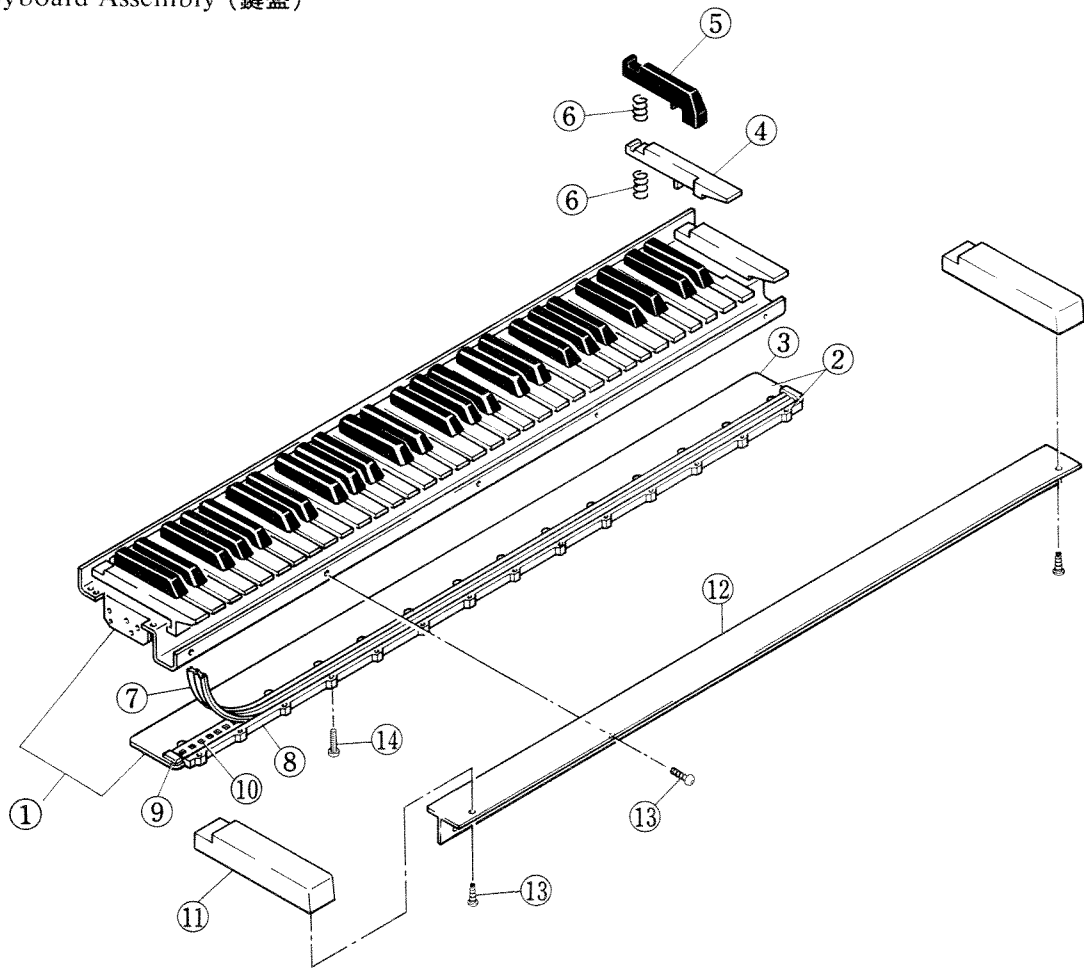
B. Cabinet Assembly (外装集成)



Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets
1	NA:10:77:40	Circuit Board, CPA, CPB	#2945	CPA, CPBシート		
2	NB:10:43:20	Panel Angle Assembly		パネルアングル Ass'y		
* 3	NB:10:43:70	LED Unit		LEDユニット		
* 4	AA:05:45:10	Holder For Speaker		スピーカー取付板		
* 5	CA:01:37:10	Speaker Net		スピーカーネット		
6	AA:05:33:00	Angle bracket		ア ン グ ル		
7	CB:04:24:20	Music Stopper		譜面止めレール		
8	CB:81:40:60	Rubber Cap		ゴムキャップ		
* 9	AA:05:33:10	Control Panel		コントロールパネル		
* 10	AA:05:33:20	Circuit Board Angle (A)		シート取付アングルA		
* 11	AA:05:33:30	-- do. -- (B)		" B		
12	AA:81:12:40	Hinge		蝶 番		
* 13	CA:01:32:70	Dust Proof Cover		防塵クロス		
* 14	CA:01:32:80	-- do. --		"		
15	CB:03:30:70	Stopper		回 転 止 め		
16	CB:81:21:30	Knob	Yellow	ツ マ ミ		
17	CB:81:21:40	-- do. --	White	"		
* 18	JA:10:51:00	Speaker		ス ピ ー カ ー		
19	KA:10:10:60	Power Switch		パ ワ ー ス イ ッ チ		
* 20	NK:90:17:10	Tablet Button	TREMOLO	タブレットボタン		
* 21	NK:90:17:20	-- do. --	SUSTAIN	"		
* 22	NK:90:17:30	-- do. --	PIANO 1	"		
* 23	NK:90:17:40	-- do. --	PIANO 2	"		
* 24	NK:90:17:50	-- do. --	HARPSICHORD 1	"		
* 25	NK:90:17:60	-- do. --	HARPSICHORD 2	"		
* 26	NA:10:77:60	Circuit Board, JK, DC, AC	#2960	JK, DC, ACシート		
* 27	NA:10:77:70	-- do. -- -- do. --	-- do. --	"		U
* 28	NA:10:77:80	-- do. -- -- do. --	-- do. --	"		C
* 29	NA:10:77:90	-- do. -- -- do. --	-- do. --	"		G
* 30	NB:10:44:00	Power Supply Unit		電 源 ユ ニ ッ ト		
* 31	NB:10:44:10	-- do. --		"		U
* 32	NB:10:44:20	-- do. --		"		C
* 33	NB:10:44:30	Power Supply Unit		"		G
34	CB:06:86:30	Bush, AC Cord		コ ー ド ブ ッ シ ュ		
35	CB:07:27:50	-- do. --		"		
36	CB:80:68:50	-- do. --		"		
37	CB:80:12:70	Leg		ゴ ム 脚		
* 38	GA:04:02:00	Power Transformer		電 源 ト ラ ン ス		
* 39	GA:04:03:00	-- do. --		"		U,C
* 40	GA:04:04:10	-- do. --		"		G
41	MG:00:06:00	AC Cord		電 源 コ ー ド		
42	MG:00:08:60	-- do. --		"		G
43	MG:00:02:70	-- do. --		"		C
44	MG:00:07:10	-- do. --		"		U
45	CB:03:97:50	Holder, Circuit Board		シ ー ト ホ ル ダ ー		
46	EC:33:00:50	Truss Screw	M3 x 5 BL	ト ラ ス 小 ネ ジ		
47	ED:33:00:60	Bind Head Screw	M3 x 6 BL	バ イ ン ド 小 ネ ジ		
48	ED:34:00:60	-- do. --	M4 x 6 BL	"		
49	ED:34:01:00	-- do. --	M4 x 10 BL	"		
50	Ei:33:00:60	Bind Head Tapping Screw	3 x 6 BL	バ イ ン ド タ ッ ピ ン グ ネ ジ		
51	Ei:33:01:00	-- do. --	3 x 10 BL	"		
52	Ei:33:01:20	-- do. --	3 x 12 BL	"		

* New Parts (新規部品)

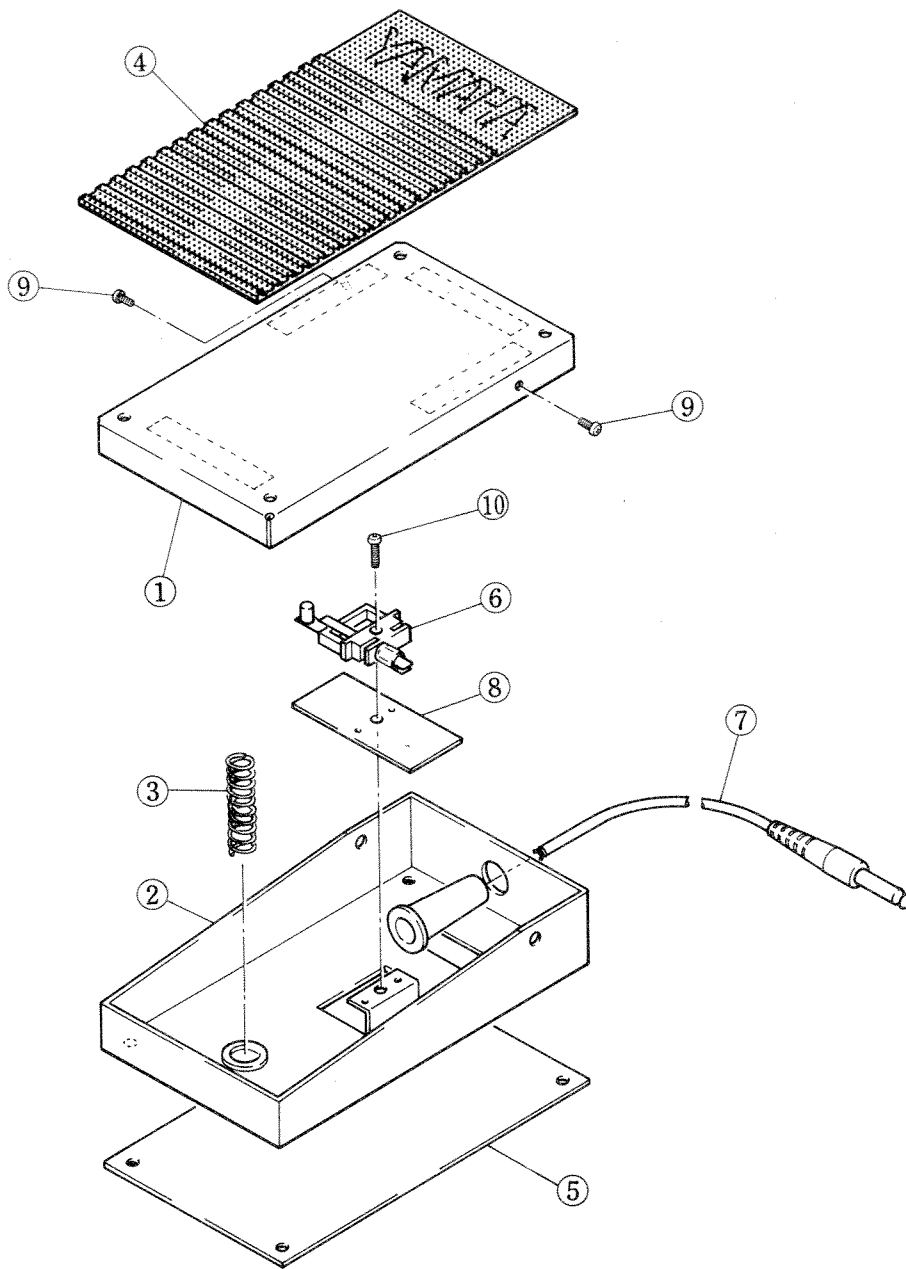
C. Keyboard Assembly (鍵盤)



Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets
1	NB:10:14:50	Keyboard Assembly	鍵 盤 Ass'y	61 key		
2	NB:10:14:60	Switch Unit	スイッチユニット			
3	NA:10:51:10	Circuit Board, MK	M K シ ー ト			
4	CB:03:22:10	White Key	白 鍵			
	CB:03:22:20	- do. -	"			
	CB:03:22:30	- do. -	"			
	CB:03:22:40	- do. -	"			
	CB:03:22:50	- do. -	"			
	CB:03:22:60	- do. -	"			
5	CB:03:22:70	Black Key	黒 鍵			
6	AA:04:37:20	Key Spring	コイルスプリング			
7	CB:03:23:30	Rubber Contact	可 動 導 電 ゴ ム			
8	CB:03:24:00	Holder	基 板 ホ ル ダ ー (Q)			
	CB:03:24:10	- do. -	" (K)			
9	CB:03:35:40	End Plate	エ ン ド プ レ ー ト			
10	CB:03:35:70	Isolation Spacer	絶 縁 ス ペ ー サ (Q)			
	CB:03:35:80	- do. -	" (K)			
11	CB:81:50:10	End Block	拍 子 木			
12	CB:03:37:60	Front Rail	ロ 棒 レ ー ル			
13	Ei:34:01:00	Bind Tapping Screw	バ イ ン ド タ ッ ピ ン グ ネ ジ	4 x 10 BL		
14	EZ:33:01:40	Bind Screw	エ ー バ ー タ イ ト バ イ ン ド ネ ジ	M3 x 14 Ye		

* New Parts (新規部品)

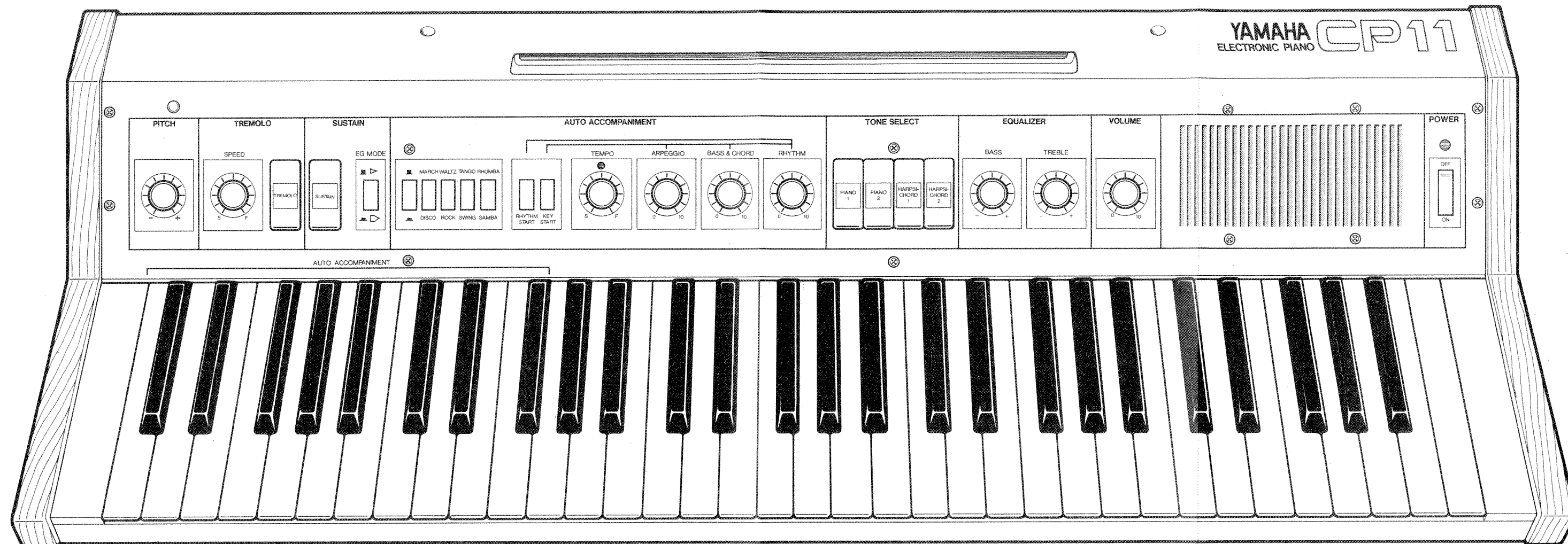
D. Foot Switch (フットペダル) FC-5



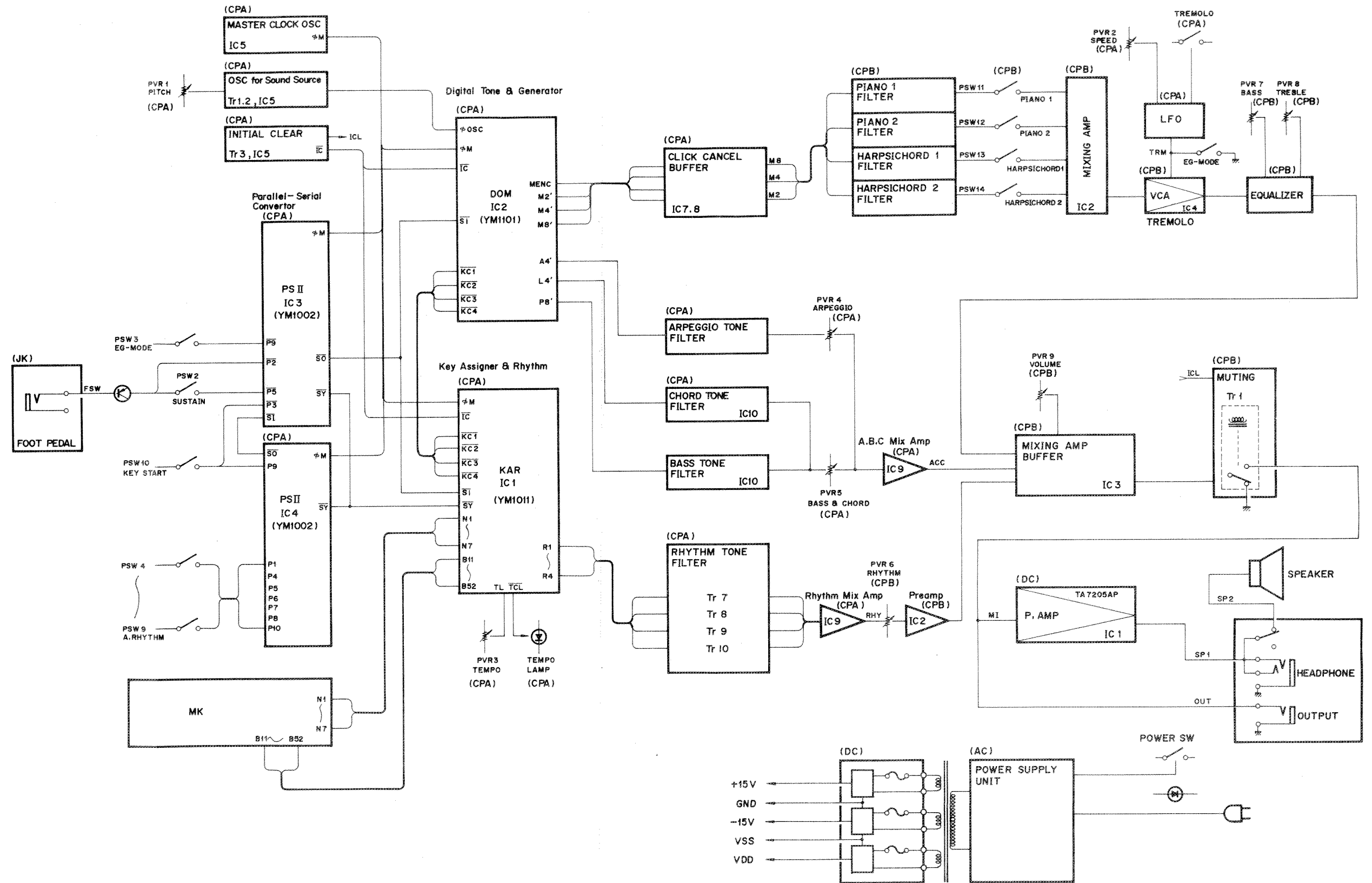
Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets
1	AA:81:28:80	Upper Case, Foot Switch	ペダル上蓋			
2	AA:81:28:90	Bottom Case, Foot Switch	ペダル底蓋			
3	AA:81:29:00	Spring	ペダルバネ			
4	CB:81:51:40	Rubber Mat, Upper	上蓋マット			
5	CB:81:51:50	Rubber Mat, Bottom	底蓋マット			
6	NB:03:71:50	Switch Assembly	スイッチアッセンブリー	1B		
7	Mi:80:11:20	Cord With Phone Plug	プラグ付コード			
8	CA:80:04:50	Washer	ファイバーワッシャー			
9	EK:00:35:20	Pan Head Screw	段付小ネジ	M3 x 4 (6.5)	Black	
10	EA:03:01:20	- do. -	ナベ小ネジ	M3 x 12	Yellow	

* New Parts (新規部品)

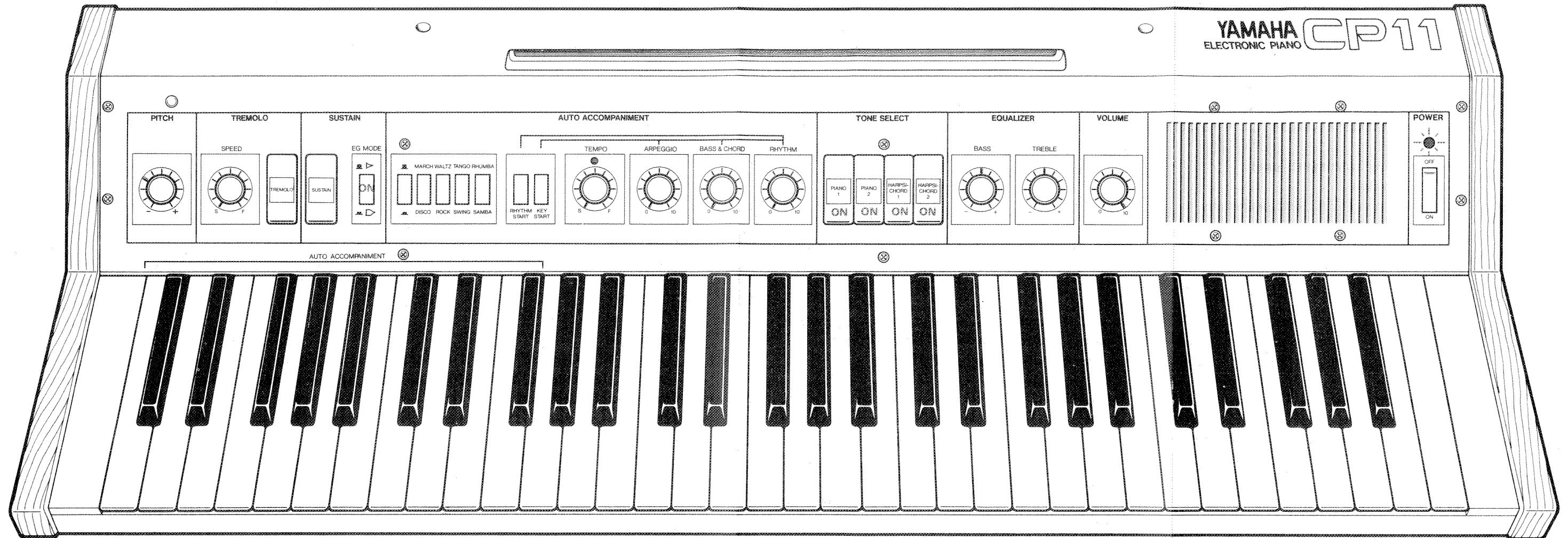
PANEL LAYOUT



BLOCK DIAGRAM



PANEL SETTINGS



BLOCK	CONTROL	SETTING
PITCH		"10 o'clock" position
TREMOLO	SPEED TREMOLO	S OFF
SUSTAIN	SUSTAIN EG MODE	OFF ON (■)
AUTO ACCOMPANIMENT	MARCH · WALTZ · TANGO · RHUMBA DISCO · ROCK · SWING · SAMBA RHYTHM START KEY START TEMPO ARPEGGIO BASS & CHORD RHYTHM	OFF (■) } OFF S } 0
TONE SELECT	PIANO 1 PIANO 2 HARPSICHORD 1 HARPSICHORD 2	} ON
EQUALIZER	BASS TREBLE	} Middle
VOLUME		Maximum

CHECKS AND ADJUSTMENT PROCEDURES

Before tuning the instrument or checking circuits, set the instrument in the state described in PANEL SETTINGS. Then you should select a suitable setting according to the requirements of each item that is being checked or adjusted.

- **Number of sounds developed**

During AUTO ACCOMPANIMENT, four sounds develop with the upper keyboard (G2 ~ G6) and, with the lower keyboard (C1 ~ F 2), one arpeggio sound and up to four chord sounds.

- **Measuring instruments used**

Oscilloscope

Level meter (12.47 kHz) with filter

Frequency counter

*If no testpoint is designated, connect a 10 kohm resistor to the OUTPUT terminal and measure output via the resistor.

1. **Tuning**

- Set PITCH (PVR1) at its "10 o'clock" position and depress key A3. Adjust L1 OSC coil (500 μ H) of the CPA board by turning its core so that the output frequency become 440Hz \pm 0.5Hz.

*The output frequency should be 454Hz \pm 3Hz at the minimum position of PVR1.

2. **Circuit checks**

- **Output level**

Output level should be $-12\text{dB} \pm 3\text{dB}$ when any of seven white keys B3 ~ C3 is depressed.

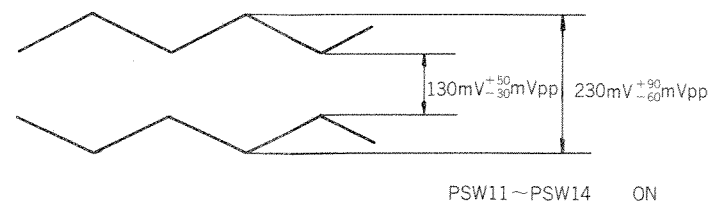
- **Noise level**

When BASS (PVR7) and TREBLE (PVR8) are at their middle position, noise level should be below -70dB independent of the settings of the other controls and switches.

*Noise level should not rise above -60dB when PVR7 and PVR8 are moved.

- **Tremolo**

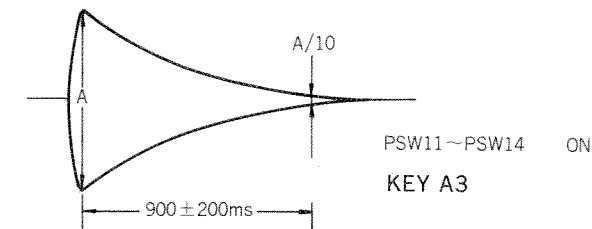
When TREMOLO (PSW1) is on and key A3 is depressed, tremolo effect should be produced as shown below.



CHECKS AND ADJUSTMENT PROCEDURES

- **EG mode**

Sounds should decay when EG MODE (PSW3) is OFF (\triangleright) and be sustained when it is ON (\square). The maximum amplitude should be approximately twice as large as the amplitude of sustained sounds.



- **Rhythm**

When RHYTHM (PVR6) is at its maximum position, the amplitude of bass drum signal (first beat of MARCH) should be $12\text{V} \pm 0.3\text{Vpp}$. Rhythm output should not appear at the minimum position of PVR6.

- **Arpeggio**

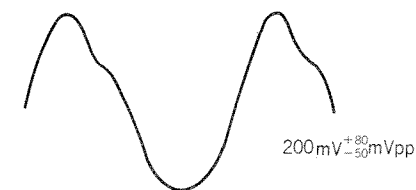
When ARPEGGIO (PVR4) is at its maximum position, the maximum amplitude of arpeggio sounds should be $220\text{mV} \pm 50\text{mVpp}$. No arpeggio sounds should be produced at the minimum position of PVR4.

- **Bass**

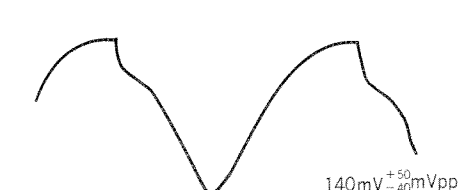
When BASS & CHORD (PVR5) is at its maximum position, the maximum amplitude of bass sounds should be $0.8\text{V} \pm 0.2\text{Vpp}$. No bass sounds should be produced at the minimum position of PVR5.

3. **Waveform and level of each voice**

- **PIANO 1 (PSW11)**



- **PIANO 2 (PSW12)**



- **HARPSICHORD 1 (PSW13)**

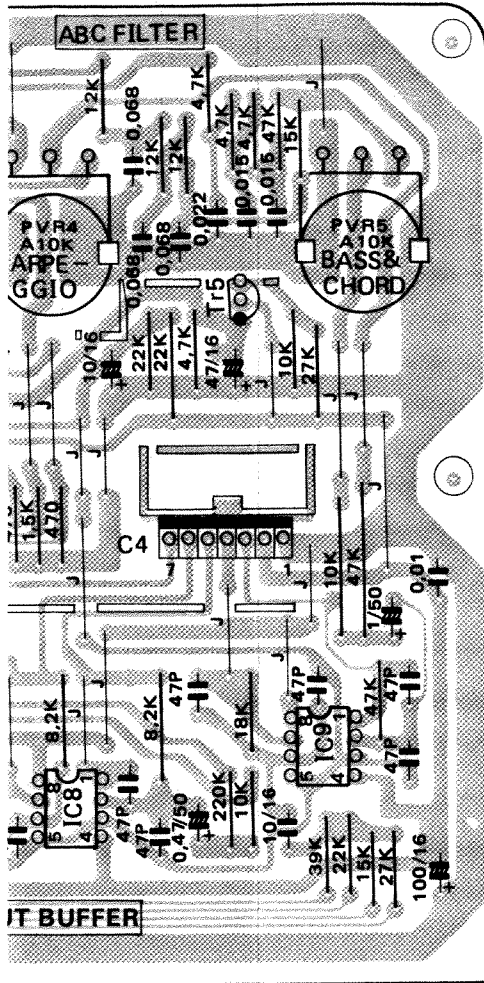


- **HARPSICHORD 2 (PSW14)**



CPA CIRCUIT BOARD

M 8
M 4
M 2
RHY
ACC
-15V
GND



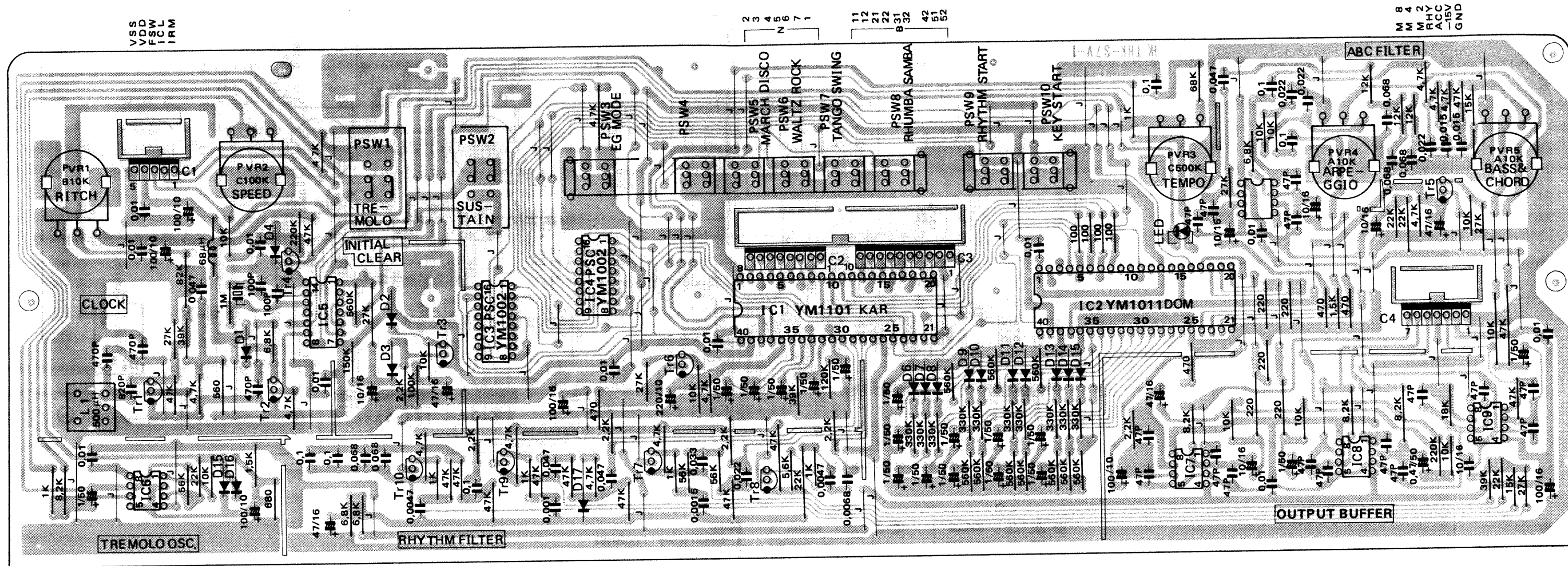
YM1011

Pin		Description	Pin		Description		
No.	Name		No.	Name			
1	VSS	Ground (0V)	40	ϕ M	Master Clock IN (470kHz)		
2	N2		39	VDD	DC Supply (-9V)		
3	N3		38	TL	Tempo lamp Drive OUT		
4	N4		37	TCL	C.R for tempo clock oscillation		
5	N5		36	-AV	DC supply for Rhythm sound source (-3.5V)		
6	N6	Note Block (\Leftarrow MK)	35	C4	HC		
7	N7		34	C5		HB	
8	N1	Key Code Data OUT (\Rightarrow DOM)	33	C3	C.R for Rhythm envelope setting		
9	KC1		32	C1		SDN	
10	KC2		31	C2			HH
11	KC3	Octave Block (\Leftarrow MK)	30	R4	BDP		
12	KC4		29	R3		DP	
13	B11		28	R2			HB/HLC
14	B12		27	R1			
15	B21	26	AG1	Analog GND			
16	B22	Octave Block (\Leftarrow MK)	25	IC	Initial clear IN		
17	B31		24	Si	Serial data IN (\Leftarrow PSC II)		
18	B32	Octave block (\Leftarrow MK)	23	SY	Synchro data OUT (\Rightarrow PSCII)		
19	B41		22	B52			
20	B42		21	B51			

YM1101

Pin		Description	Pin		Description
No.	Name		No.	Name	
1	VSS	Ground (0V)	40	ϕ M	Master clock IN (470kHz)
2	TEST	Test Pin	39	VDD	DC Supply (-9V)
3	TEST	-- do. --	38	AGND	Analog GND
4	IC	Initial clear IN	37	-AV	DC Supply for Sound source (-3.5V)
5	KC1	Key code data IN (\Leftarrow KAR)	36	AGND	GND (Auto Bass Sound source)
6	KC2		35	CP	C.R for Auto Bass/Manual Key Sound source envelope setting
7	KC3		34	CA	C.R for Auto Arpeggio/Manual Key Sound source envelope setting
8	KC4		33	CC4	C.R for Auto Chord/Manual Key Sound source envelope setting
9	NGL	32	CC3	C.R for Manual Key Sound source envelope setting	
10	NGP	31	CC2		
11	Si	Serial data IN (\Leftarrow PSC II)	30	CC1	GND (Manual Key sound source)
12	KON	NC	29	CM4	
13	VIB	GND	28	CM3	Auto Arpeggio sound source OUT
14	DV	NC	27	CM2	
15	-AV	DC supply for sound source (-3.5V)	26	CM1	GND
16	ϕ OSC	Clock for sound source IN (530kHz)	25	AG1	
17	MENC	MENC	24	P8'	Auto Arpeggio sound source OUT
18	M2'	2'	23	A4'	
19	M4'	4'	22	L4'	GND
20	M8'	8'	21	M16'	

Description	Pin		Description
	No.	Name	
Master clock IN (\Leftarrow KAR)	16	ϕ M	Master clock IN (470kHz)
DC Supply (\Leftarrow PSC II)	15	VDD	DC Supply (-9V)
Serial data OUT (\Rightarrow KAR, DOM)	14	SO	Serial data OUT (\Rightarrow KAR, DOM)
Parallel data IN 10 (\Leftarrow SW)	13	PT0	Parallel data IN 10 (\Leftarrow SW)
9 (\Leftarrow SW)	12	P9	-- do. -- 9 (\Leftarrow SW)
8 (\Leftarrow SW)	11	P8	-- do. -- 8 (\Leftarrow SW)
7 (\Leftarrow SW)	10	P7	-- do. -- 7 (\Leftarrow SW)
6 (\Leftarrow SW)	9	P6	-- do. -- 6 (\Leftarrow SW)



View from the printed pattern side of the circuit board.

C1

Pin No.	Pin Name	Wire Color	Destination
1	TRM	BR	CPB-TRM (C2-4)
2	ICL	RE	CPB-ICL (C2-10)
3	FSW	OR	JK-FSW (C1-3)
4	VDD	BE	DC-VDD (C1-6)
5	Vss	GR	DC-Vss (C1-5)

C2

Pin No.	Pin Name	Wire Color	Destination
1	-	-	-
2	N1	BR	MK-N1 (C2-1)
3	N7	VI	MK-N7 (C2-7)
4	N6	BE	MK-N6 (C2-6)
5	N5	GR	MK-N5 (C2-5)
6	N4	YE	MK-N4 (C2-4)
7	N3	OR	MK-N3 (C2-3)
8	N2	RE	MK-N2 (C2-2)

C3

Pin No.	Pin Name	Wire Color	Destination
1	B52	GG	MK-B52 (C1-10)
2	B51	WH	MK-B51 (C1-9)
3	B42	GY	MK-B42 (C1-8)
4	B41	VI	MK-B41 (C1-7)
5	B32	BE	MK-B32 (C1-6)
6	B31	GR	MK-B31 (C1-5)
7	B22	YE	MK-B22 (C1-4)
8	B21	OR	MK-B21 (C1-3)
9	B12	RE	MK-B12 (C1-2)
10	B11	BR	MK-B11 (C1-1)

C4

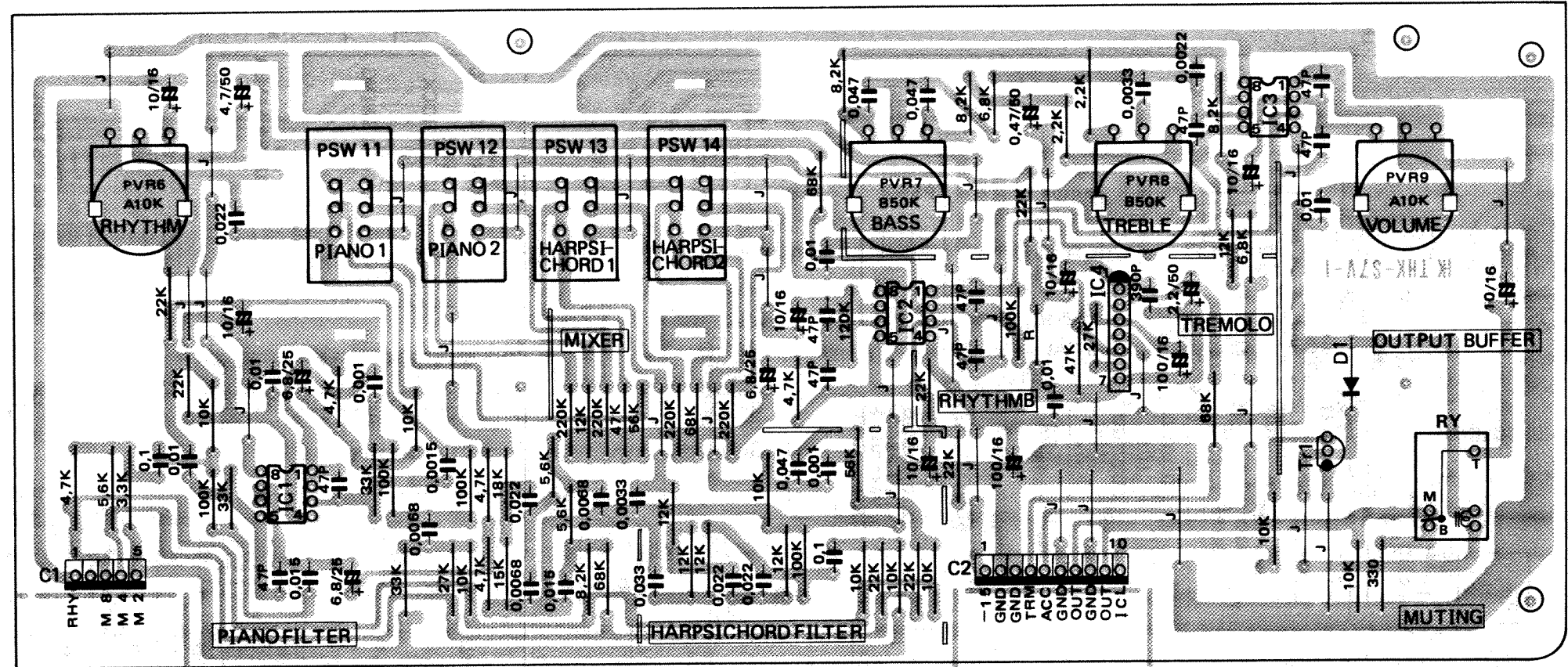
Pin No.	Pin Name	Wire Color	Destination
1	GND	BL	DC-GND (C1-7)
2	-15V	YE	DC-15V (C1-9)
3	ACC	WH	CPB-ACC (C2-5)
4	RHY	GY	CPB-RHY (C1-1)
5	M2	VI	CPB-M2 (C1-5)
6	M4	BE	CPB-M4 (C1-4)
7	M8	GR	CPB-M8 (C1-3)

- Notes)
1. Circuit Board : LC29452
 2. Transistors
 Tr1 : 2SC752TM
 Tr2, 3, 7 ~ 10 : 2SC1815
 Tr4 ~ 6 : 2SA1015
 3. Integrated Circuits
 IC1 : YM1011
 IC2 : YM1101
 IC3, 4 : YM1002
 IC5 : μ PD4069C
 IC6 ~ 10 : NJM4558DV
 4. Diodes
 D1 ~ 17 : 1S1555

YM1002

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	SY	Synchro data IN (\leftarrow KAR)	16	ϕ M	Master clock IN (470kHz)
2	S \bar{I}	Serial data IN (\leftarrow PSC II)	15	VDD	DC Supply (-9V)
3	P \bar{I}	Parallel data IN 1 (\leftarrow SW)	14	S \bar{O}	Serial data OUT (\Rightarrow KAR, DO)
4	P $\bar{2}$	- do. - 2 (\leftarrow SW)	13	P $\bar{I}0$	Parallel data IN 10 (\leftarrow SW)
5	P $\bar{3}$	- do. - 3 (\leftarrow SW)	12	P $\bar{9}$	- do. - 9 (\leftarrow SW)
6	P $\bar{4}$	- do. - 4 (\leftarrow SW)	11	P $\bar{8}$	- do. - 8 (\leftarrow SW)
7	P $\bar{5}$	- do. - 5 (\leftarrow SW)	10	P $\bar{7}$	- do. - 7 (\leftarrow SW)
8	Vss	Ground (0V)	9	P $\bar{6}$	- do. - 6 (\leftarrow SW)

CPB CIRCUIT BOARD



View from the printed pattern side of the circuit board.

C1

Pin No.	Pin Name	Wire Color	Destination
1	RHY	GY	CPA-RHY (C4-4)
2	-	-	-
3	MB	GR	CPA-MB (C4-7)
4	M4	BE	CPA-M4 (C4-8)
5	M2	V1	CPA-M2 (C4-5)

C2

Pin No.	Pin Name	Wire Color	Destination
1	-15V	YE	DC -15V (C1-10)
2	GND	BL	DC-GND (C1-8)
3	-	-	-
4	TRM	BR	CPA-TRM (C1-1)
5	ACC	WH	CPA-ACC (C4-3)
6	GND	S OR S	-
7	OUT	S OR S	JK-OUT (C1-4)
8	GND	S OR S	-
9	OUT	S OR S	DC-MI (C1-4)
10	ICL	RE	CPA-ICL (C1-2)

Notes

1. Circuit Board : LC29452
2. Transistor
Tr1 : 2SA1015
3. Integrated Circuits
IC1 ~ 3 : NJM4558DV
IC4 : iG2600