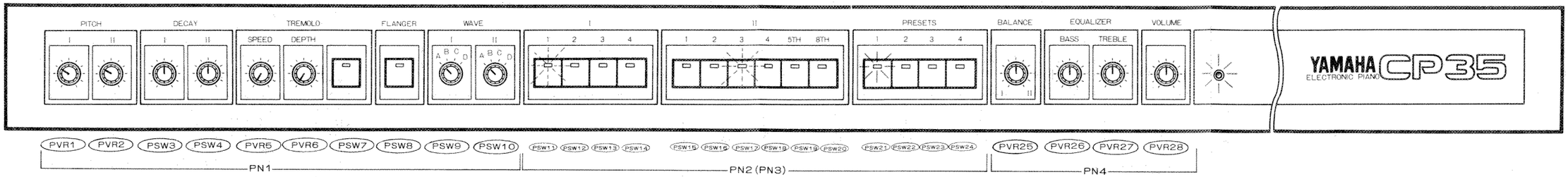
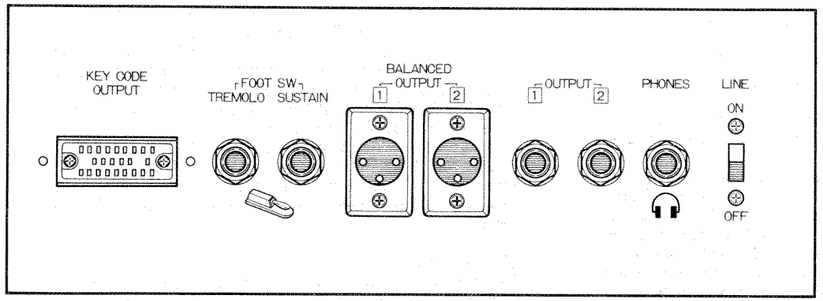
PANEL LAYOUT

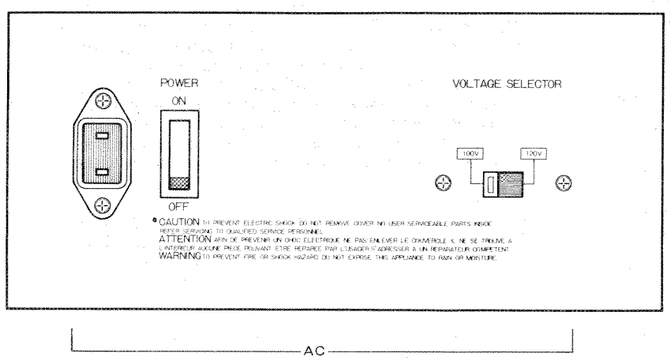
FRONT PANEL



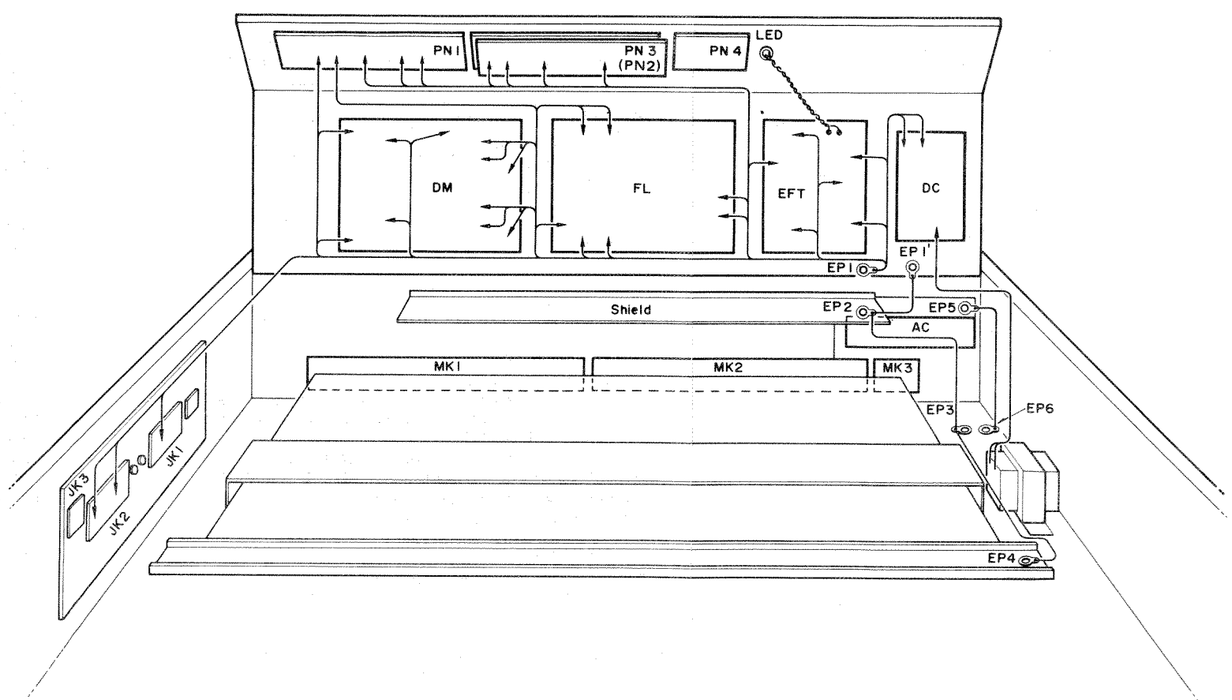
LEFT SIDE PANEL



REAR PANEL



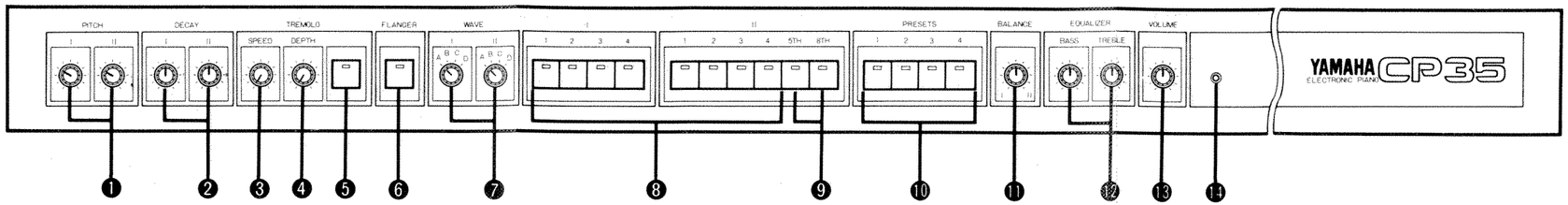
UNIT LAYOUT



CP35

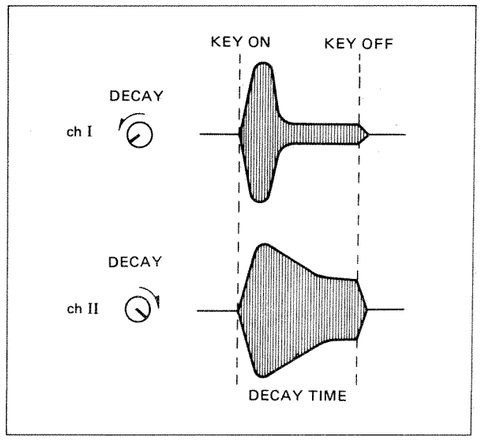
PART NAMES AND FUNCTIONS

CONTROL PANEL (FRONT PANEL)



❶ PITCH I, II
The PITCH I and PITCH II controls independently adjust the pitch of the CP35's sound channels I and II, respectively. Turning either of these controls to the right (clockwise) raises the pitch of the respective channel, while turning to the left (counterclockwise) lowers pitch.
Setting channel I and channel II to different pitches produces a "detune" effect creating a fatter, honky-tonk piano type sound.
Pitch control range is approximately from 436Hz to 453Hz. Setting the PITCH controls to approximately 10 o'clock provides 440Hz (A_3) tuning.

❷ DECAY I, II
The DECAY I and DECAY II controls independently adjust the decay time of sound channels I and II, respectively. Turning either of these controls to the right (clockwise) lengthens the decay time of the respective channel, while turning to the left (counterclockwise) shortens decay time. The DECAY controls can each be set to eight different positions. Once the pitch, tone and balance of the two sound channels have been set, the DECAY I and II controls can be used to create a broad variety of decay time combinations providing extra sound control flexibility.
By setting exceptionally long decay times it is possible to create sustained, organ-like tones.



❸ TREMOLO SPEED
The tremolo effect produces periodic variations in the volume of the sound. Turning the TREMOLO SPEED control to the right (clockwise) increases the speed of the volume variation, while turning it to the left (counterclockwise) creates a slower tremolo sound.
If the CP35's independent OUT [1] and OUT [2] outputs are connected to separate amplifier and speaker systems, the sound will seem to sweep back and forth between the two speakers at a rate determined by the TREMOLO SPEED control.

❹ TREMOLO DEPTH
This control determines by how much the volume of the sound is varied by the tremolo effect. Turning the TREMOLO DEPTH control to the right (clockwise) produces a larger variation in volume, while turning it to the left (counterclockwise) produces a smaller (shallower) volume variation.

TREMOLO SPEED	TREMOLO DEPTH	TREMOLO OUTPUT
SPEED Slow	DEPTH Smaller	OUT [1]
SPEED Fast	DEPTH Larger	OUT [2]

❺ TREMOLO SWITCH
This switch turns the tremolo effect on or off. Pressing this switch causes its LED indicator to light showing that the tremolo effect is on. Pressing it a second time turns the tremolo effect off (LED "off").
* Tremolo output from OUT [1] and [2] is reverse phase.
* If both of the tremolo outputs from OUT [1] and OUT [2] are mixed with the monaural signal by using a mixer, the tremolo effect is not produced.

❻ FLANGER SWITCH
The flanger effect produces a pleasant "swooshing" or "swirling" effect with long tones, and adds interesting tonal variation to staccato passages.
Pressing the FLANGER switch causes its LED indicator to light showing that the flanger effect is on. Pressing it a second time turns the flanger effect off (LED "off").

❼ WAVE I, II
The WAVE I and II selectors independently select the waveform shape of the channel I and channel II tone generators, respectively. Four different basic waveforms (A, B, C and D) can be selected for each channel, providing a broad range of subtle tonal variations.
*The WAVE selectors are only effective when the PRESETS selectors ❿ are not in use.

❽ FILTER I, II SELECTORS
These selectors determine the tonal quality of the sound. An independent set of four FILTER selectors is provided for each sound channel. Pressing any FILTER selector causes its LED indicator to light showing that the respective filter is activated.
1. FILTER SELECTOR 1 activates a low-pass filter thereby producing a round, warm sound. Effect is the same for channel I and channel II.
2. FILTER SELECTOR 2 activates a low-pass filter with a higher cutoff frequency than that of FILTER SELECTOR 1, thereby producing a somewhat harder sound. The channel I FILTER 2 selector adds an attack to the sound, while the channel II FILTER 2 selector does not.
3. FILTER SELECTOR 3 activates a bandpass filter which produces a clear, well-defined sound. Effect is the same for channel I and channel II.
4. FILTER SELECTOR 4 activates a high-pass filter thereby producing a hard, bright sound. The channel I FILTER 4 selector adds an attack to the sound, while the channel II FILTER 4 selector does not.

*FILTER selectors 1 through 4 (channels I and II) are only effective when the PRESETS selectors ❿ are not in use. When any of the PRESETS sounds are in use, filter settings are held in "standby", and the selected filter LED's flash to indicate the standby mode. Changing filter settings while any PRESETS selector is in use causes no change in sound quality.

❾ 5TH, 8TH SELECTORS
These selectors raise the pitch of channel II by the designated interval with respect to channel I.
Pressing the 5th selector causes the pitch of channel II to be an interval of perfect fifth higher than channel I.
Pressing the 8th selector causes the pitch of channel II to be one octave higher than channel I.
Pressing both the 5th and 8th selectors causes the pitch of channel II to be an interval of perfect 12th (an octave and a fifth) higher than channel I.
*The 5th and 8th selectors are only effective when the PRESETS selectors ❿ are not in use. When any of the PRESETS sounds are in use, 8th and 5th selector settings are held in "standby", and the selected interval LED(s) flash to indicate the standby mode.

❿ PRESETS
Four preset sound selectors are provided, only one of which can be used at a time.
PRESETS have priority over the FILTER selectors, so pressing and PRESETS selector, even while the FILTER selectors are in use, immediately switches to the PRESETS sound.
1. Immediate switching from the FILTER sound to the PRESETS sound is accomplished simply by pressing the desired PRESETS selector. When a PRESETS selector is pressed, active FILTER settings are held in "standby" with their respective LED indicators flashing.
2. The PRESETS sounds consist of pre-programmed channel I and II WAVE, FILTER, BALANCE, and channel II 5th and 8th selector settings.
3. Controls which do affect the sound when the PRESETS are in use are PITCH, DECAY, TREMOLO, FLANGER, EQUALIZER and VOLUME.
4. FILTER settings can be selected or altered while the PRESETS are in use without immediately affecting the sound. FILTER settings selected in this way are indicated by the appropriate FILTER indicator LED(s) flashing.
   WAVE and BALANCE settings can also be altered in advance while the PRESETS are in use.
5. Immediate switching from the PRESETS sound to the FILTER sound is accomplished by pressing the activated PRESETS selector (lighted LED) a second time.

*PRESETS selectors, PRESETS selector and FILTER selector settings cannot be combined.
In addition to the combination of FILTER I 1--4 and FILTER II 1--4, using channel I and II DECAY WAVE allows you to adjust the timbre at will. Be sure to take advantage of the sound creation possibilities of DECAY I and II.

⓫ BALANCE
Determines the relative volumes of channels I and II--i.e. "mixing" between channels I and II. Turning the BALANCE control to the right (clockwise) increases the volume of channel II in relation to channel I, while turning it to the left (counterclockwise) increases the volume of channel I in relation to channel II.
*The BALANCE control is only effective when the PRESETS selectors ❿ are not in use.

⓬ EQUALIZER
BASS: Turning the BASS control to the right (clockwise) emphasizes the low-frequency range thereby producing a fat, heavy sound. Turning this control to the left (counterclockwise) de-emphasizes the low-frequency range, while, set to its center position response is virtually flat.
TREBLE: Turning the TREBLE control to the right (clockwise) emphasizes the high-frequency range thereby producing a light, bright sound. Turning this control to the left (counterclockwise) de-emphasizes the high-frequency range, while, at its center position response is virtually flat.

⓭ VOLUME
Controls the overall volume level of the CP35 sound. Turning the VOLUME control to the right (clockwise) increases overall volume, while turning it to the left (counterclockwise) decreases overall volume.

⓮ POWER INDICATOR
This indicator lights to show that the rear-panel power switch is turned on.

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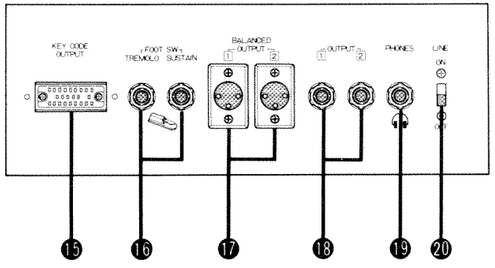
SIDE PANEL



⓯ KEYCODE OUTPUT

This multi-pin terminal can be connected to the Yamaha CS70M Dual Channel Polyphonic Synthesizer KEYCODE INPUT connector, permitting the CS70M to be played from the CP35 keyboard.

⓰ FOOT SW

TREMOLO: A foot switch (FC-4, contained as accessory) plugged into this jack can be used to turn the TREMOLO effect on and off. The effect of the foot switch is the same as that of the front-panel TREMOLO switch.

*TREMOLO can be turned on or off using the footswitch even if the front-panel TREMOLO switch is off.

SUSTAIN: A foot switch (FC-4, contained as accessory) plugged into this jack permits foot on/off control of CP35 sustain. Sustain length is determined by the front-panel DECAY I and II controls.

FC-4, one unit is contained in product as accessory. More foot switches (FC-4 or FC-5) are available optionally.

⓱ BALANCED OUTPUT [1], [2]

Balanced output connectors for channels [1] and [2].

These three-pin balanced XLR-TYPE output connectors should be used in cases where long cable runs are necessary in order to reduce hum and noise pickup.

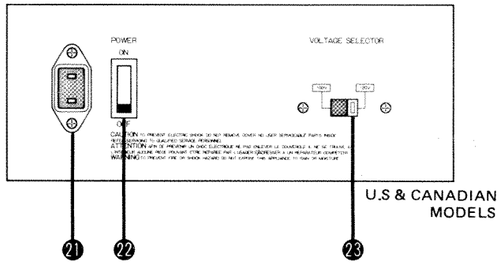
When the TREMOLO effect is activated, the volume variation output from channel [2] is reverse phase from that of channel [1]. When the TREMOLO effect is not activated, output from channel [1] and channel [2] is identical.

⓲ OUTPUT [1], [2] (unbalanced)

These standard phone plug outputs should be used when connecting the CP35 to conventional musical instrument amplifiers.

When the TREMOLO effect is activated, the volume variation output from channel [2] is reverse phase from that of channel [1]. When the TREMOLO effect is not activated, output from channel [1] and channel [2] is identical.

REAR PANEL



⓳ PHONES

Plugging a pair of stereo or mono headphones into this jack provides convenient private monitoring of the CP35 output. Headphone volume is controlled by the main VOLUME control ⓭.

⓴ LINE ON/OFF

This switch turns signal output from the BALANCED OUTPUT ⓱ and OUTPUT ⓲ connectors on or off. The PHONES output remains active even if the LINE switch is turned OFF.

㉑ AC CORD CONNECTOR

Accepts the female-connector end of the supplied AC power cord.

㉒ POWER ON/OFF

This switch turns AC power to the unit on or off.

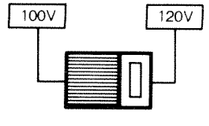
When the POWER switch is initially turned on, the front-panel power indicator, and PRESETS 1 indicator light, and the FILTER I-1, II-3 indicators flash indicating standby. Playing the keyboard produces the PRESETS 1 sound.

㉓ VOLTAGE SELECTOR

This selector must be set to comply with the AC main voltage in your area. Improper VOLTAGE SELECTOR setting can result in impaired performance and even cause parmanent damage to the instrument.

〈U.S. & CANADIAN MODELS〉

The voltage changeover switch is factory-set to AC 120V. Confirm the switch is set as shown in the figure on the left, and don't touch it.



〈GENERAL MODEL〉

The line voltage selector on the rear panel selects one of four regulating positions for each nominal line voltage. To select the correct nominal line voltage and selector position, refer to Table 1. In order to set the voltage selector, each position is shown in Fig. 1.

If voltage in your area is:	108 – 132 volts	198 – 242 volts	216 – 264 volts
Set voltage selector to:	120V	220V	240V

Table 1

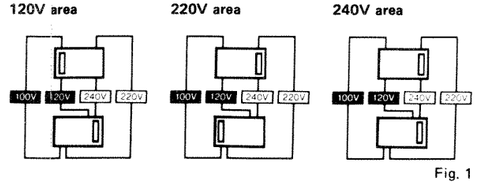


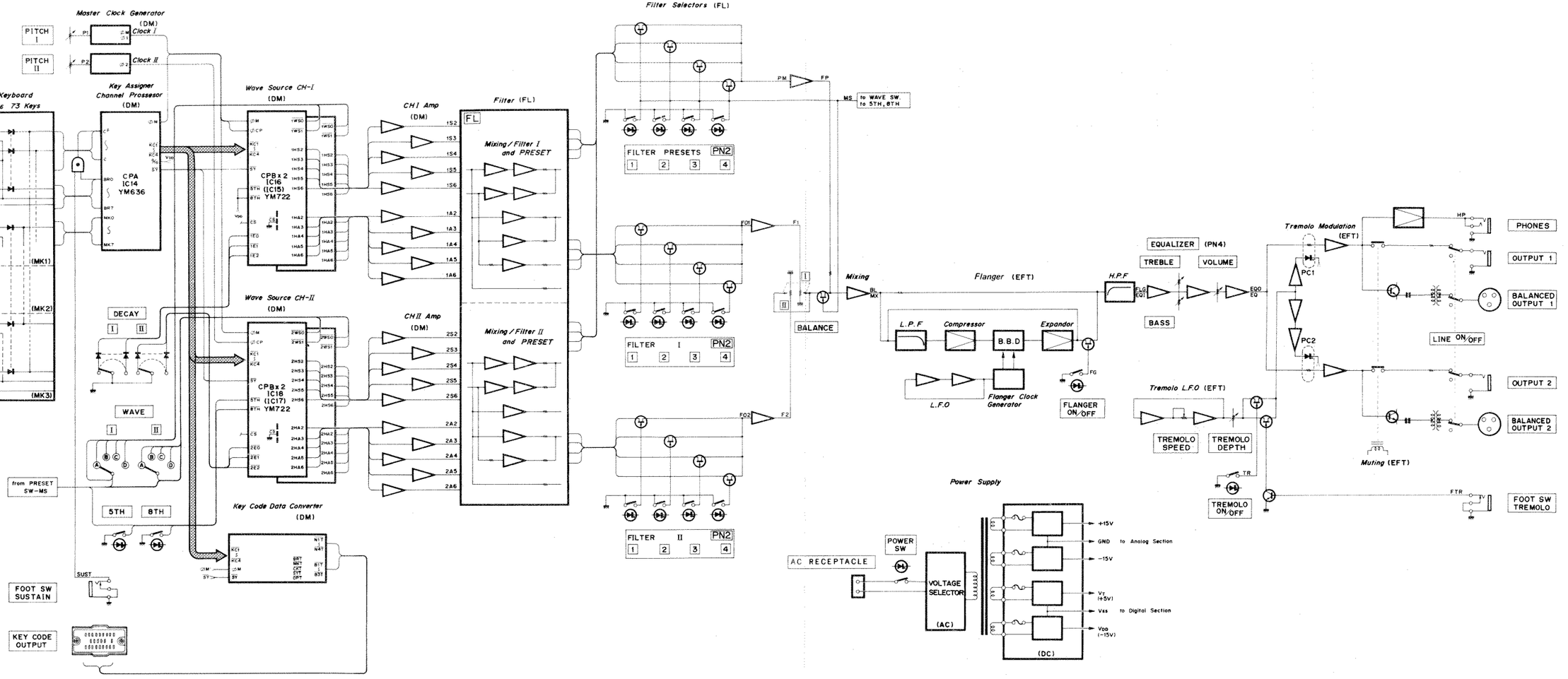
Fig. 1

CAUTION: THIS EQUIPMENT MAY BE DAMAGED IF OPERATED WITH THE LINE VOLTAGE SELECTOR SET TO AN INCORRECT POSITION.

MEMO

CP35

BLOCK DIAGRAM



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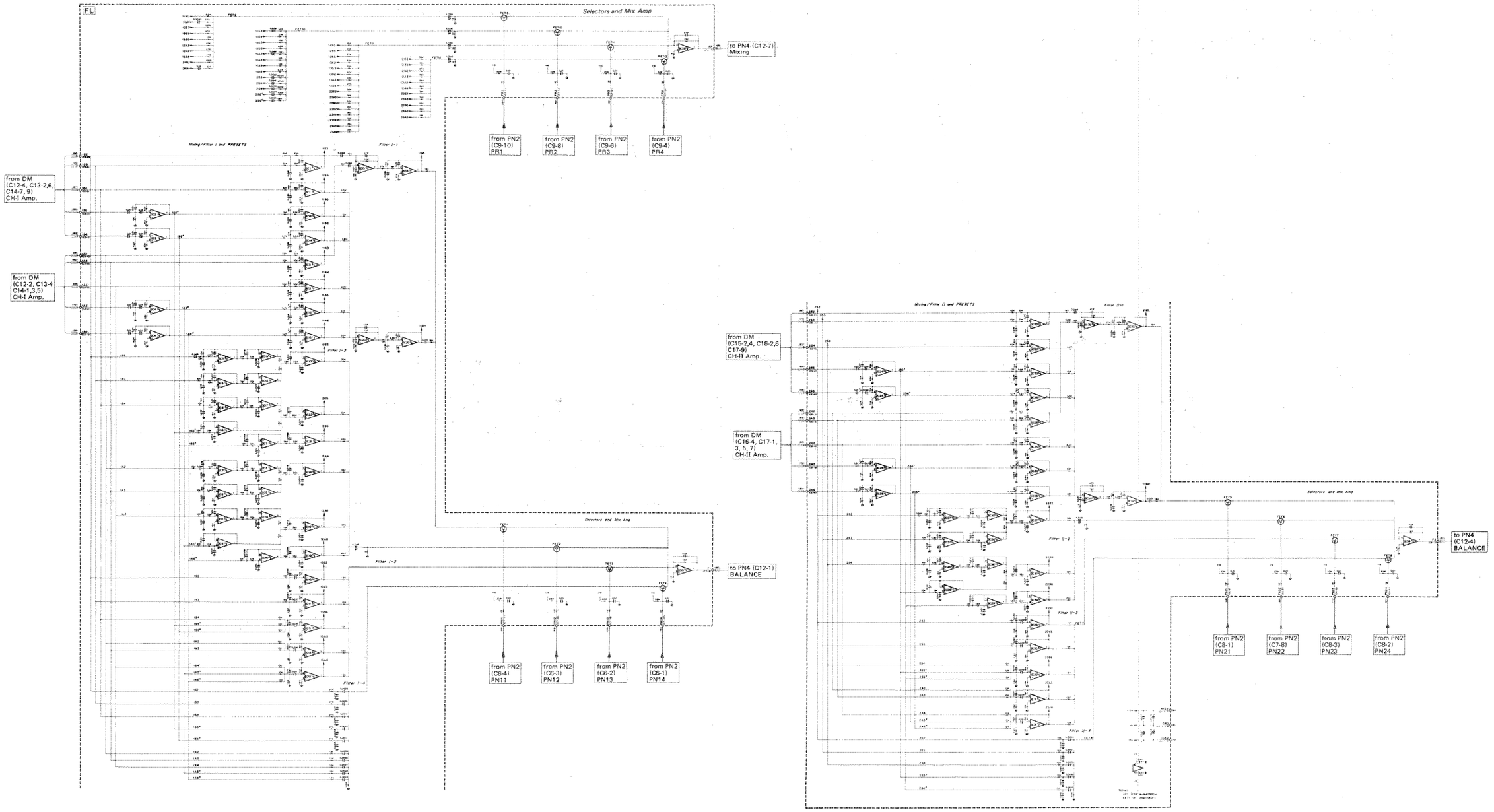
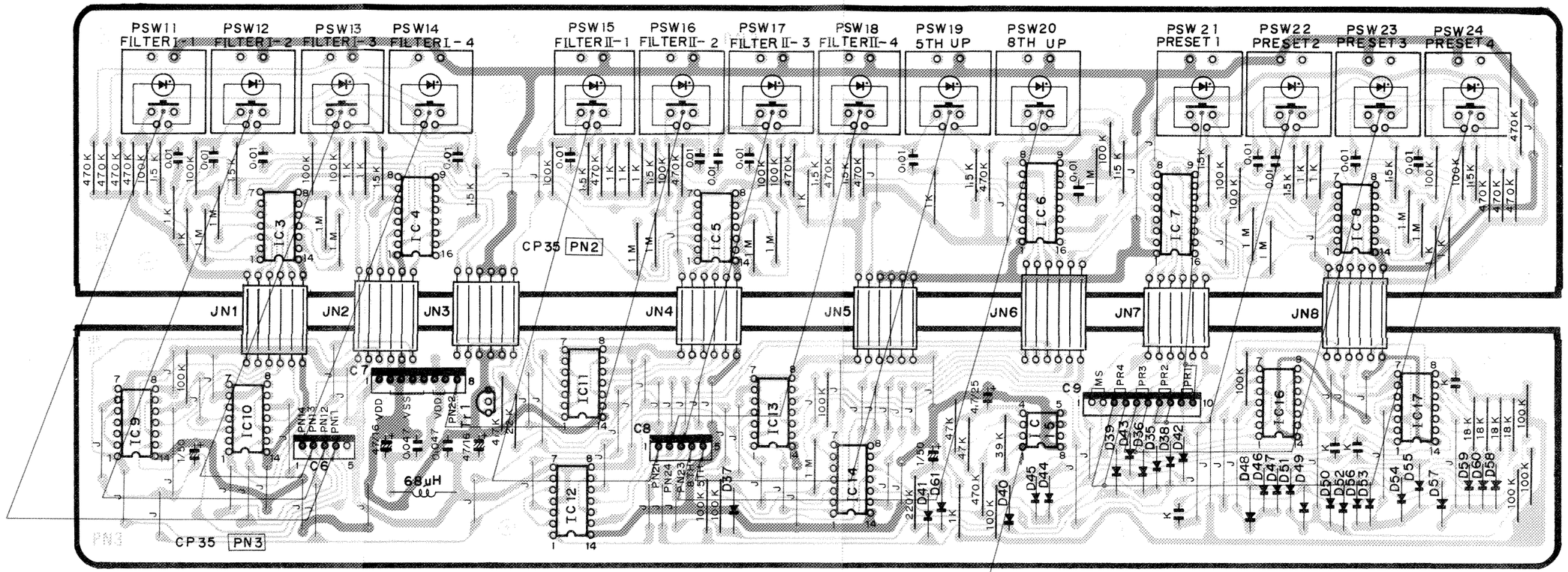
FL Circuit Diagram



CP35

PN2, 3 Circuit Board & Wining

Pattern Side (パターン側)



Pattern Side (パターン側)

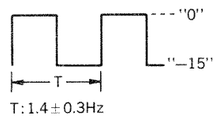
PN3 Board

FILTER SW. Data: The levels listed below appear at the respective terminals when the FILTER switches are turned ON or OFF.

	ON	OFF
FILTER I —1→C6—4	0V	—15V
FILTER I —2→C6—3	0V	—15V
FILTER I —3→C6—2	0V	—15V
FILTER I —4→C6—1	0V	—15V

	ON	OFF
FILTER II —1→C8—1	0V	—15V
FILTER II —2→C7—8	0V	—15V
FILTER II —3→C8—3	0V	—15V
FILTER II —4→C8—2	0V	—15V
5TH →C8—5	0V	—15V
8TH →C8—4	0V	—15V

LED Flasher Circuit



PRESET SW. Data:
The levels listed below appear at the repective terminals when the PRESET switches are turned ON or OFF.

	ON	OFF
PRESET1 (C9—9)	0V	—15V
PRESET2 (C9—7)	0V	—15V
PRESET3 (C9—5)	0V	—15V
PRESET4 (C9—3)	0V	—15V

- Connector

C6

Pin No.	Pin Name	Wire Color	Destination
1	PN14	YE	FL-PN14 (C7-10)
2	PN13	OR	FL-PN13 (C7-9)
3	PN12	RE	FL-PN12 (C7-8)
4	PN11	BR	FL-PN11 (C7-7)
5	—	—	—

C7

Pin No.	Pin Name	Wire Color	Destination
1	V_{DD}	PK	PN1-V_{DD} (C1-6)
2	V_{SS}	—	—
3	V_{SS}	GY	PN1-V_{SS} (C1-7)
4	V_{SS}	GY	DC-V_{SS} (C1-3)
5	V_{SS}	GY	DC-V_{SS} (C1-4)
6	V_{DD}	RE	DC-V_{DD} (C2-5)
7	V_{DD}	RE	DC-V_{DD} (C2-6)
8	PN22	BE	FL-PN22 (C6-5)

C8

Pin No.	Pin Name	Wire Color	Destination
1	PN21	GR	FL-PN21 (C6-6)
2	PN24	GY	FL-PN24 (C6-1)
3	PN23	VI	FL-PN23 (C6-2)
4	8TH	PK	DM-8TH (C9-4)
5	5TH	SB	DM-5TH (C9-3)

C9

Pin No.	Pin Name	Wire Color	Destination
1	MS	BR	PN1-MS (C4-3)
2	MS	BR	PN4-MS (C12-5)
3	PR4	PK	PN1-PR4 (C4-4)
4	PR4	PK	FL-PR4 (C7-4)
5	PR3	SB	PN1-PR3 (C4-5)
6	PR3	SB	FL-PR3 (C7-2)
7	PR2	GG	PN1-PR2 (C4-6)
8	PR2	GG	FL-PR2 (C7-3)
9	PR1	WH	PN1-PR1 (C4-7)
10	PR1	WH	FL-PR1 (C7-1)

Note)
1. IC
   IC3, 5, 8, 14 : TC4081BP
   IC4, 6, 7 : TC4049BP
   IC9 ~ 13, 16, 17 : TC4013BP
   IC15 : NJM4558DV
2. Transistor
   Tr1 : 2SA509 (O, Y)
3. Diode
   D35 ~ 61 : 1S1555

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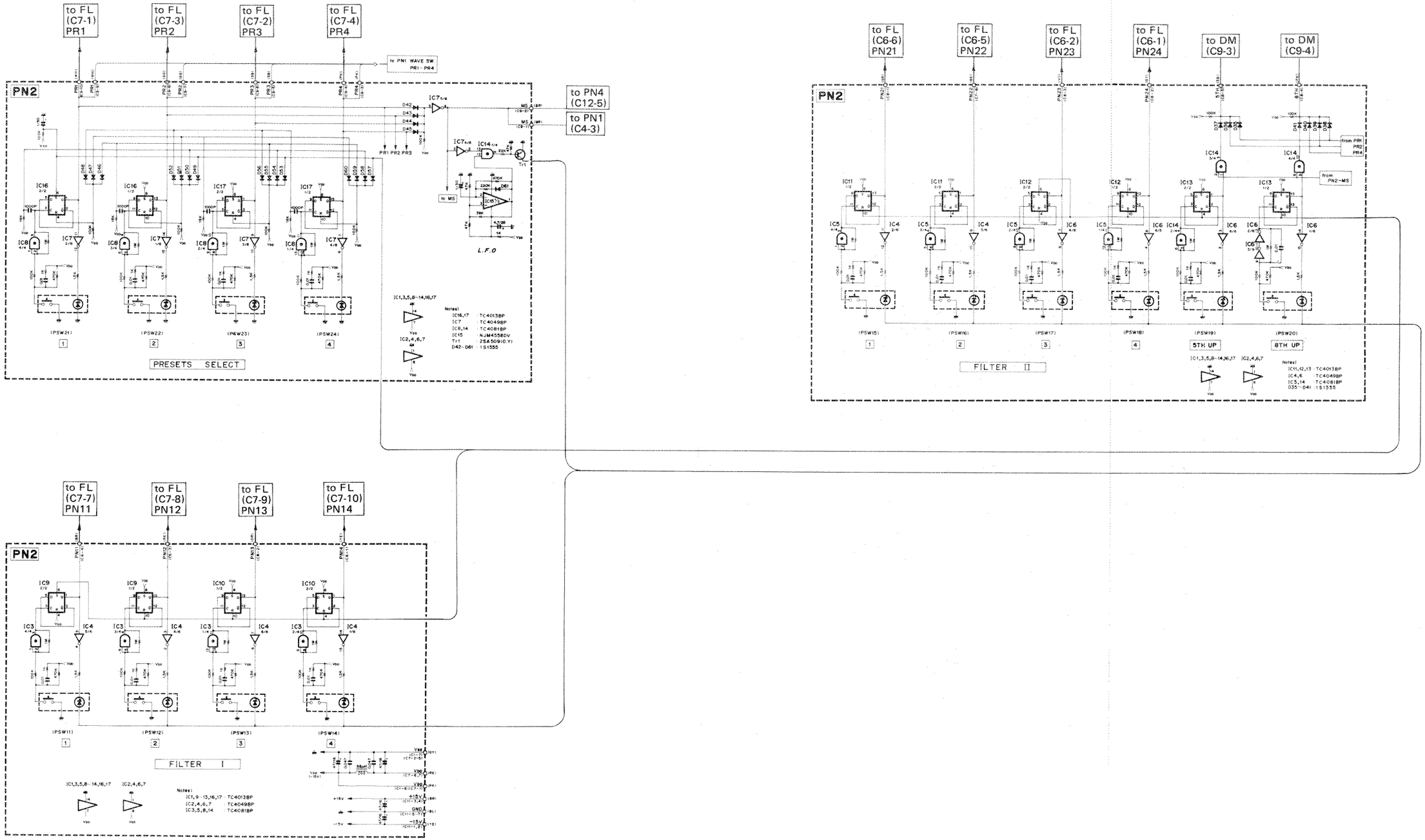
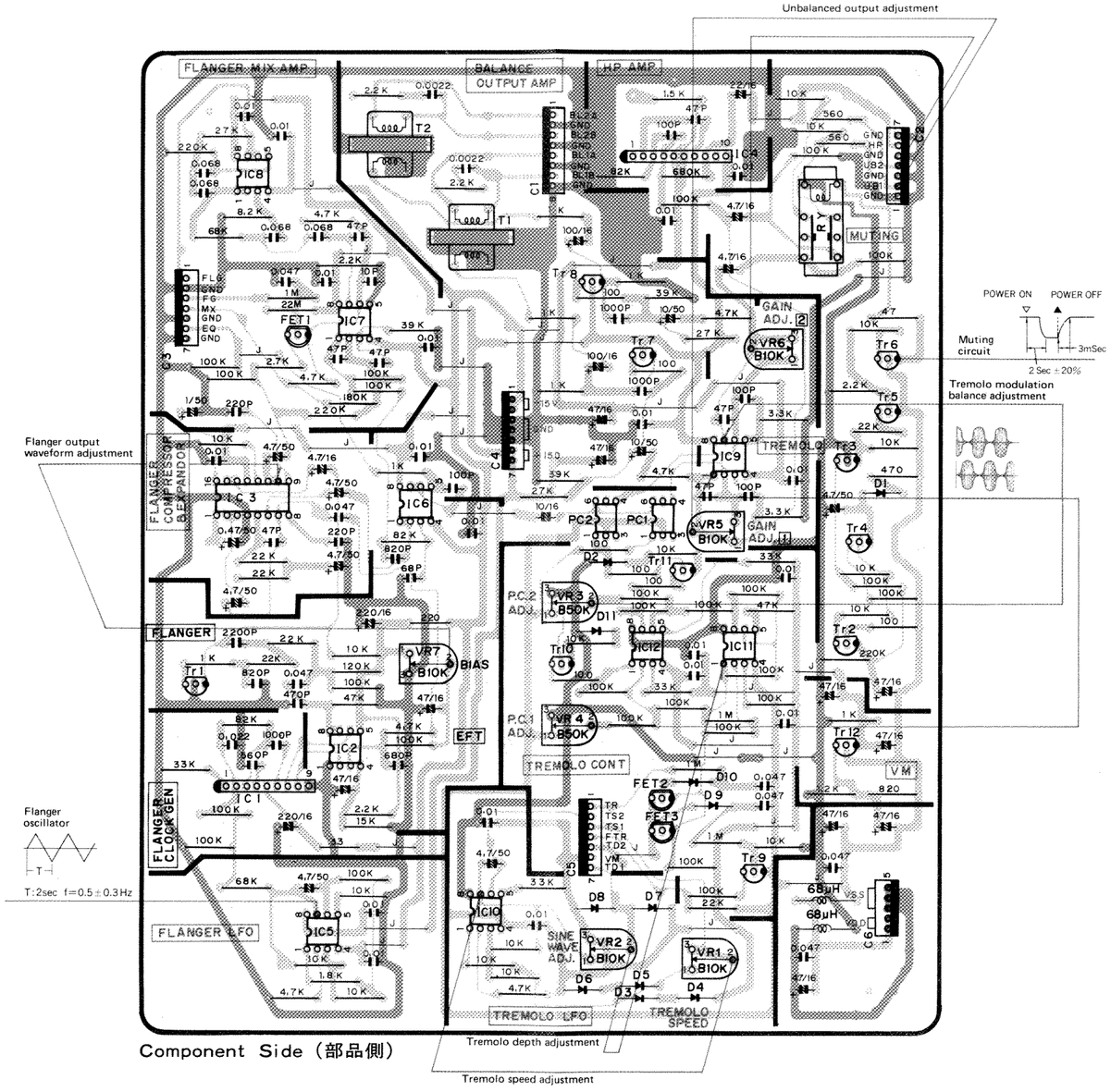
PN2, 3 Circuit Diagram





Component Side（部品側）

EFT Circuit Board & Wining

MEMO

PC1,PC2 • Connector

C1

Pin No.	Pin Name	Wire Color	Destination
1	BL2A	S SB	JK-BL2A (C4-7)
2	GND	S SB S	JK-GND (C4-8)
3	BL2B	S PK	JK-BL2B (C4-8)
4	GND	S PK S	JK-GND (C4-5)
5	BL1A	S WH	JK-BL1A (C4-3)
6	GND	S WH S	JK-GND (C4-4)
7	BL1B	S GG	JK-BL1B (C4-2)
8	GND	S GG S	JK-GND (C4-1)

C2

Pin No.	Pin Name	Wire Color	Destination
1	GND	BL	JK-GND (C1-3)
2	UB1	S VI	JK-UB1 (C2-3)
3	GND	S VI S	JK-GND (C2-4)
4	UB2	S GY	JK-UB2 (C2-5)
5	GND	S GY S	JK-GND (C2-6)
6	HP	S BR	JK-HP (C2-1)
7	GND	S BR S	JK-GND (C2-2)

C3

Pin No.	Pin Name	Wire Color	Destination
1	FLG	S GR	PN4-FLG (C10-2)
2	GND	–	–
3	FG	RE	PN1-FG (C4-2)
4	MX	S YE	PN4-MX (C12-10)
5	GND	S YE S	–
6	EQ	S BE	PN4-EQ (C10-5)
7	GND	S BE S	–

C4

Pin No.	Pin Name	Wire Color	Destination
1	–15V	YE	DC–15V (C3-4)
2	–15V	YE	PN4–15V (C11-2)
3	GND	BL	DC-GND (C4-8)
4	GND	BL	FL-GND (C1-5)
5	GND	BL	PN4-GND (C11-7)
6	+15V	BR	DC+15V (C4-4)
7	+15V	BR	PN4-+15V (C11-4)

C5

Pin No.	Pin Name	Wire Color	Destination
1	TR	OR	PN1-TR (C4-1)
2	TS2	BE	PN1-TS2 (C3-2)
3	TS1	GR	PN1-TS1 (C3-1)
4	FTR	YE	JK-FTR (C1-1)
5	TD2	GY	PN1-TD2 (C3-4)
6	VM	WH	PN1-VM (C3-3)
7	TD1	VI	PN1-TD1 (C3-5)

C6

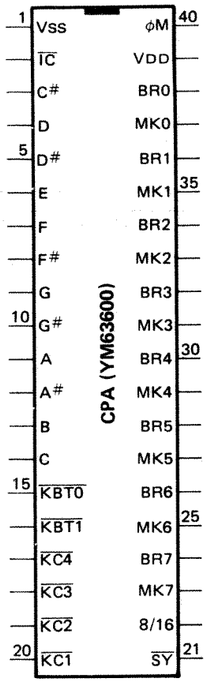
Pin No.	Pin Name	Wire Color	Destination
1	VDD	RE	DC-VDD (C2-7)
2	VDD	–	–
3	VSS	GY	DC-VSS (C1-5)
4	VSS	GY	DC-VSS (C1-6)
5	VSS	–	–

Notes)
1. IC
   IC1 : IG03490
   IC2 : MN3009
   IC3 : NE570
   IC4 : TA7220P
   IC5 ~ 12 : NJM4558DV
2. Transistor
   Tr1, 3 ~ 5, 7 ~ 9 : 2SC1815 (O, Y)
   Tr2, 6, 12 : 2SA1015 (O, Y)
   Tr10, 11 : 2SA509 (O, Y)
3. FET
   FET1, 2, 3 : 2SK105 (F)
4. Diode
   D1 ~ 11 : 1S1555
5. PC
   PC1, 2 : P1501
6. Line Transformer
   T1, 2 : GD90025
7. RY
   RY : RZ12

Part Name	YM636000	Function Name	CPA (Combo Piano–A) Key Coder Channel Prossesor

Terminal Pin No.	Terminal Name	I/O	Description
1	VSS	I	Ground (0V)
2	$\overline{IC}$	I	Initial Clear
3	C#	I/O	Note Block
4	D	I/O	– do. –
5	D#	I/O	– do. –
6	E	I/O	– do. –
7	F	I/O	– do. –
8	F#	I/O	– do. –
9	G	I/O	– do. –
10	G#	I/O	– do. –
11	A	I/O	– do. –
12	A#	I/O	– do. –
13	B	I/O	– do. –
14	C	I/O	– do. –
15	$\overline{KBT0}$	I	Keyboard Transposition Data ..... No use
16	$\overline{KBT1}$	I	– do. –
17	$\overline{KC4}$	O	Key Code Data
18	$\overline{KC3}$	O	– do. –
19	$\overline{KC2}$	O	– do. –
20	$\overline{KC1}$	O	– do. –

Terminal Pin No.	Terminal Name	I/O	Description
40	φM	I	Master Clock (1MHz)
39	VDD	I	DC Supply (–15V)
38	BR0	O	Octave Block (Break)
37	MK0	O	Octave Block (Make)
36	BR1	O	– do. – (Break)
35	MK1	O	– do. – (Make)
34	BR2	O	– do. – (Break)
33	MK2	O	– do. – (Make)
32	BR3	O	– do. – (Break)
31	MK3	O	– do. – (Make)
30	BR4	O	– do. – (Break)
29	MK4	O	– do. – (Make)
28	BR5	O	– do. – (Break)
27	MK5	O	– do. – (Make)
26	BR6	O	– do. – (Break)
25	MK6	O	– do. – (Make)
24	BR7	O	– do. – (Break)
23	MK7	O	– do. – (Make)
22	8/16	I	8 Voice/16 Voice Select
21	$\overline{SY}$	O	Synchro Data



MEMO

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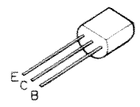
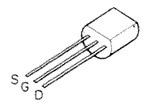
● Transistor



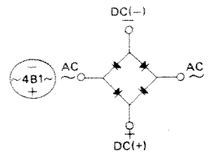
2SA509
2SA1015
2SC1815
2SC752

● FET



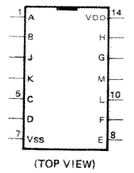
2SK105

● Diode



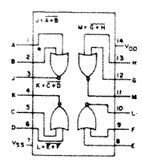
1D4B1

● IC
TC4001BP
Quadruple 2-Input NOR Gate

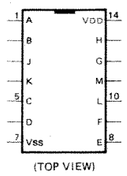


(TOP VIEW)

Logic Diagram

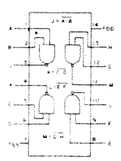


TC4011BP
Quadruple 2-Input NAND Gate

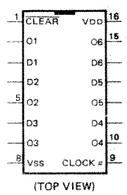


(TOP VIEW)

Logic Diagram

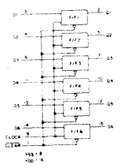


TC40174BP
Hex "D"-Type Flip-Flop



(TOP VIEW)

Block Diagram

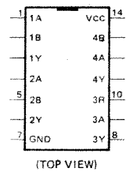


Truth Tablw (1 Flip-Flop)

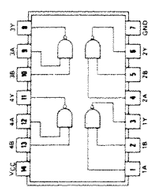
INPUTS CLOCK	DATA	CLEAR	OUTPUT Q
	0	1	0
	1	1	1
	X	1	NC
X	X	0	0

1 = High Level
0 = Low Level
X = Don't Care
NC = No Change

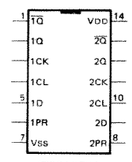
HD74LS37
Quadruple 2-Input NAND Buffers



(TOP VIEW)

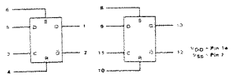


TC4013BP
Duad "D" Flip-Flop
with Set/Reset Capability



(TOP VIEW)

Block Diagram

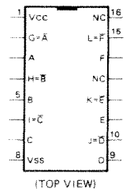


Truth Table

INPUTS CLOCK	DATA	RESET	SET	OUTPUTS Q	$\overline{Q}$
	0	0	1	0	1
	1	0	1	1	0
	X	0	0	Q	$\overline{Q}$
	X	1	0	0	1
	X	0	0	1	0
	X	1	1	1	1

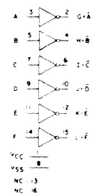
X : Don't Care
↑ : Level Change

TC4049BP
Hex Buffer/Converter (Inverting)



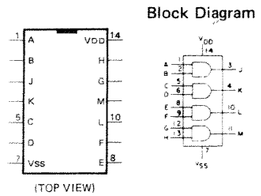
(TOP VIEW)

Logic Diagram



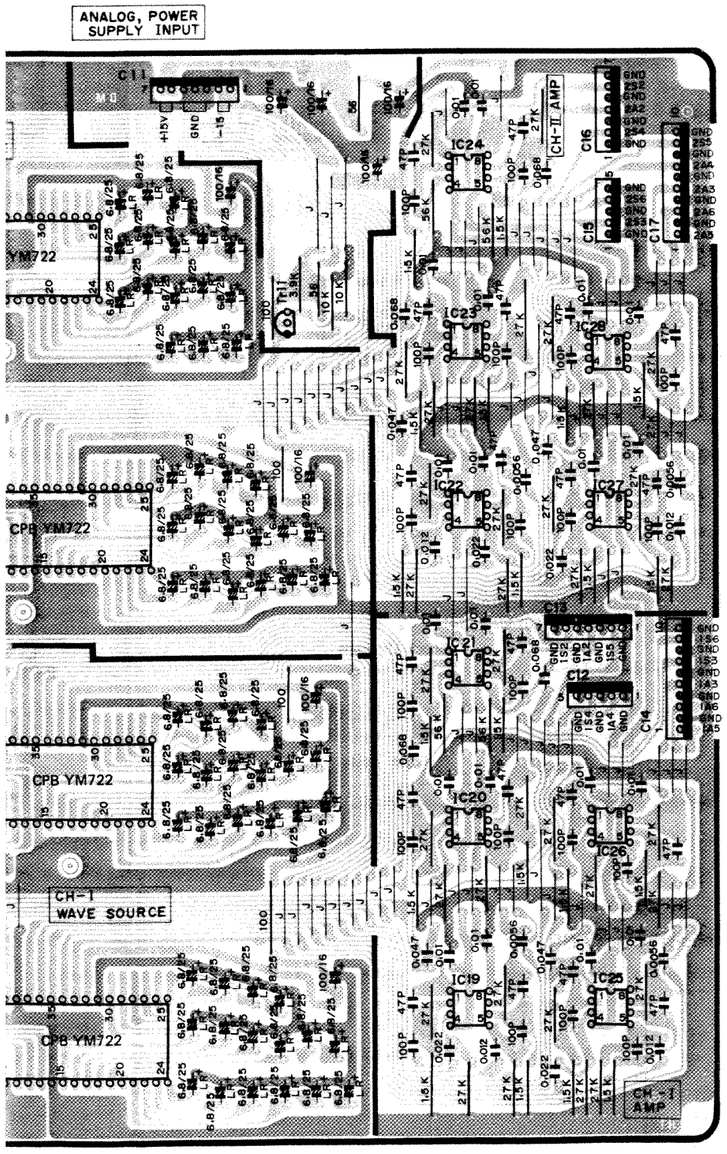
TC4081BP
Quadruple 2-Input AND Gate

Block Diagram



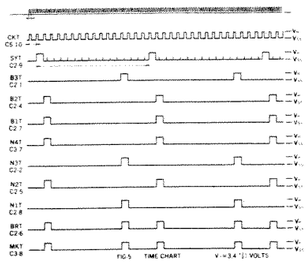
(TOP VIEW)

DM Circuit Board & Wining



* KEY CODE DATA OUT

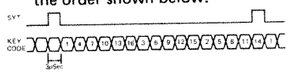
After power has been turned on, if the A_2 key is first pressed, then while A_2 is held F_3 is pressed, the following timing results.



C2-3 become Vss when the foot pedal is OFF.
C2-3 become VH-3.4 +2.1, −0.7 when the foot pedal is ON.

Key Code

Key code is sent to a free channel in the order shown below.



Key and Key Code Relationship

BRT(18p) ... "H" when the transfer point (T) is not connected with the break contact (BR), "L" when the transfer point is connected to the break contact.

MKT(19p) ... "H" when transfer point (T) is connected to the make contact (MK), "L" when envelope has ended and there is no connection with break point (BR).

DRT(20p) ... "H" when the sustain pedal is pressed, "L" when released.

SYT(21p) ... Synchronization signal. Synchronization=48 microseconds

OCT(16p) ... "L" in the case of CP

CON(17p) ... "L"

CKT(22p) ... Clock $\phi M/3$

	K2	K1
UK (CP for UK only)	L	H

* H: TTL high level (0)
* L: TTL low level (−15)

	B3T	B2T	B1T
$E_0 \sim C_1$	L	L	H
$C_1^{\sharp} \sim C_2$	L	H	L
$C_2^{\sharp} \sim C_3$	L	H	H
$C_3 \sim C_4$	H	L	L
$C_4^{\sharp} \sim C_5$	H	L	H
$C_5^{\sharp} \sim C_6$	H	H	L
$C_6 \sim E_6$	H	H	H

	N4T	N3T	N2T	N1T
$C^{\sharp}$	L	L	L	L
D	L	L	L	H
$D^{\sharp}$	L	L	H	L
E	L	H	L	L
F	L	H	L	H
$F^{\sharp}$	L	H	H	L
G	H	L	L	L
$G^{\sharp}$	H	L	L	H
A	H	L	H	L
$A^{\sharp}$	H	H	L	L
B	H	H	L	H
C	H	H	H	L

• Connector

C1

Pin No.	Pin Name	Wire Color	Destination
1	VT	–	–
2	VT	BE	DC-VT (C2-1)
3	Vss	–	–
4	Vss	GY	DC-Vss (C1-2)
5	Vss	GY	DC-Vss (C1-1)
6	VDD	RE	DC-VDD (C2-3)
7	VDD	RE	DC-VDD (C2-4)

C2

Pin No.	Pin Name	Wire Color	Destination
1	B3T	BR	KC-B3T (CN-3)
2	N3T	GR	KC-N3T (CN-7)
3	DPT	SB	KC-DPT (CN-20)
4	B2T	RE	KC-B2T (CN-4)
5	N2T	BE	KC-N2T (CN-8)
6	BRT	GY	KC-BRT (CN-18)
7	B1T	OR	KC-B1T (CN-5)
8	N1T	VI	KC-N1T (CN-9)
9	SYT	PK	KC-SYT (CN-21)
10	CKT	SB	KC-CKT (CN-22)

C3

Pin No.	Pin Name	Wire Color	Destination
1	Vss *	WH	KC-Vss * (CN-23)
2	Vss *	WH	KC-Vss* (CN-24)
3	CON.	WH	KC-OCT (CN-16)
4	OCT.	WH	KC-CON. (CN-17)
5	K2	WH	KC-K2 (CN-1)
6	K1	VI	KC-K1 (CN-2)
7	N4T	YE	KC-N4T (CN-6)
8	MKT	GG	KC-MKT (CN-19)

C4

Pin No.	Pin Name	Wire Color	Destination
1	Vss *	–	–
2	P1	SB	PN1-P1 (C1-1)
3	Vss *	WH	PN1-Vss (C1-2)
4	P2	PK	PN1-P2 (C1-4)
5	VDD*	OR	PN1-VDD* (C1-3)

C5

Pin No.	Pin Name	Wire Color	Destination
1	C*	BR	MK1-C* (C1-7)
2	D	RE	MK1-D (C1-6)
3	D*	OR	MK1-D* (C1-5)
4	E	YE	MK1-E (C1-4)
5	F	GR	MK1-F (C1-3)
6	F*	BE	MK1-F* (C1-2)
7	G	VI	MK1-G (C1-1)

C6

Pin No.	Pin Name	Wire Color	Destination
1	G*	GY	MK1-G* (C2-5)
2	A	WH	MK1-A (C2-4)
3	A*	GG	MK1-A* (C2-3)
4	B	SB	MK1-B (C2-2)
5	C	PK	MK1-C (C2-1)

C7

Pin No.	Pin Name	Wire Color	Destination
1	BRO	–	–
2	MKO	–	–
3	BR1	GR	MK1-BR1 (C3-6)
4	MK1	BE	MK1-MK1 (C3-7)
5	BR2	VI	MK1-BR2 (C3-5)
6	MK2	GY	MK1-MK2 (C3-4)
7	BR3	WH	MK1-BR3 (C3-3)
8	MK3	GG	MK1-MK3 (C3-2)
9	BR4	SB	MK2-BR4 (C3-6)
10	MK4	PK	MK2-MK4 (C3-7)

C8

Pin No.	Pin Name	Wire Color	Destination
1	BR5	BR	MK2-BR5 (C3-5)
2	MK5	RE	MK2-MK5 (C3-4)
3	BR6	OR	MK2-BR6 (C3-3)
4	MK6	YE	MK2-MK6 (C3-2)
5	BR7	GR	MK3-BR7 (C1-2)
6	MK7	BE	MK3-MK7 (C1-3)
7	MK7	–	–

C9

Pin No.	Pin Name	Wire Color	Destination
1	2WS0	WH	PN1-2WS0 (C5-2)
2	2WS1	GG	PN1-2WS1 (C5-5)
3	8TH	SB	PN3-8TH (C8-5)
4	8TH	PK	PN3-8TH (C8-4)
5	2E0	YE	PN1-2E0 (C2-5)
6	2E1	GR	PN1-2E1 (C2-6)
7	2E2	BE	PN1-2E2 (C2-7)
8	SUST.	BR	JK-SUST. (C1-5)

C10

Pin No.	Pin Name	Wire Color	Destination
1	1E0	BR	PN1-1E0 (C2-2)
2	1E1	RE	PN1-1E1 (C2-3)
3	1E2	OR	PN1-1E2 (C2-4)
4	1WS1	GY	PN1-1WS1 (C5-3)
5	1WS0	VI	PN1-1WS0 (C5-4)

C11

Pin No.	Pin Name	Wire Color	Destination
1	−15V	–	–
2	−15V	YE	DC−−15V (C3-1)
3	GND	–	–
4	GND	BL	DC-GND (C4-6)
5	GND	BL	FL-GND (C1-5)
6	+15V	–	–
7	+15V	BR	DC-+15V (C4-1)

C12

Pin No.	Pin Name	Wire Color	Destination
1	GND	–	–
2	1A4	S OR	FL-1A4 (C4-6)
3	GND	–	–
4	1S4	S GY	FL-1S4 (C2-6)
5	GND	–	–

C13

Pin No.	Pin Name	Wire Color	Destination
1	GND	–	–
2	1S5	S WH	FL-1S5 (C2-4)
3	GND	–	–
4	1A2	S BR	FL-1A2 (C4-10)
5	GND	–	–
6	1S2	S SB	FL-1S2 (C2-10)
7	GND	–	–

C14

Pin No.	Pin Name	Wire Color	Destination
1	1A5	S YE	FL-1A5 (C4-4)
2	GND	–	–
3	1A6	S GR	FL-1A6 (C4-2)
4	GND	–	–
5	1A3	S RE	FL-1A3 (C4-8)
6	GND	–	–
7	1S3	S VI	FL-1S3 (C2-8)
8	GND	–	–
9	1S6	S GG	FL-1S6 (C2-2)
10	GND	–	–

C15

Pin No.	Pin Name	Wire Color	Destination
1	GND	–	–
2	2S3	S VI	FL-2S3 (C3-4)
3	GND	–	–
4	2S6	S GG	FL-2S6 (C3-10)
5	GND	–	–

C16

Pin No.	Pin Name	Wire Color	Destination
1	GND	–	–
2	2S4	S GY	FL-2S4 (C3-6)
3	GND	–	–
4	2A2	S BR	FL-2A2 (C5-2)
5	GND	–	–
6	2S2	S BE	FL-2S2 (C3-2)
7	GND	–	–

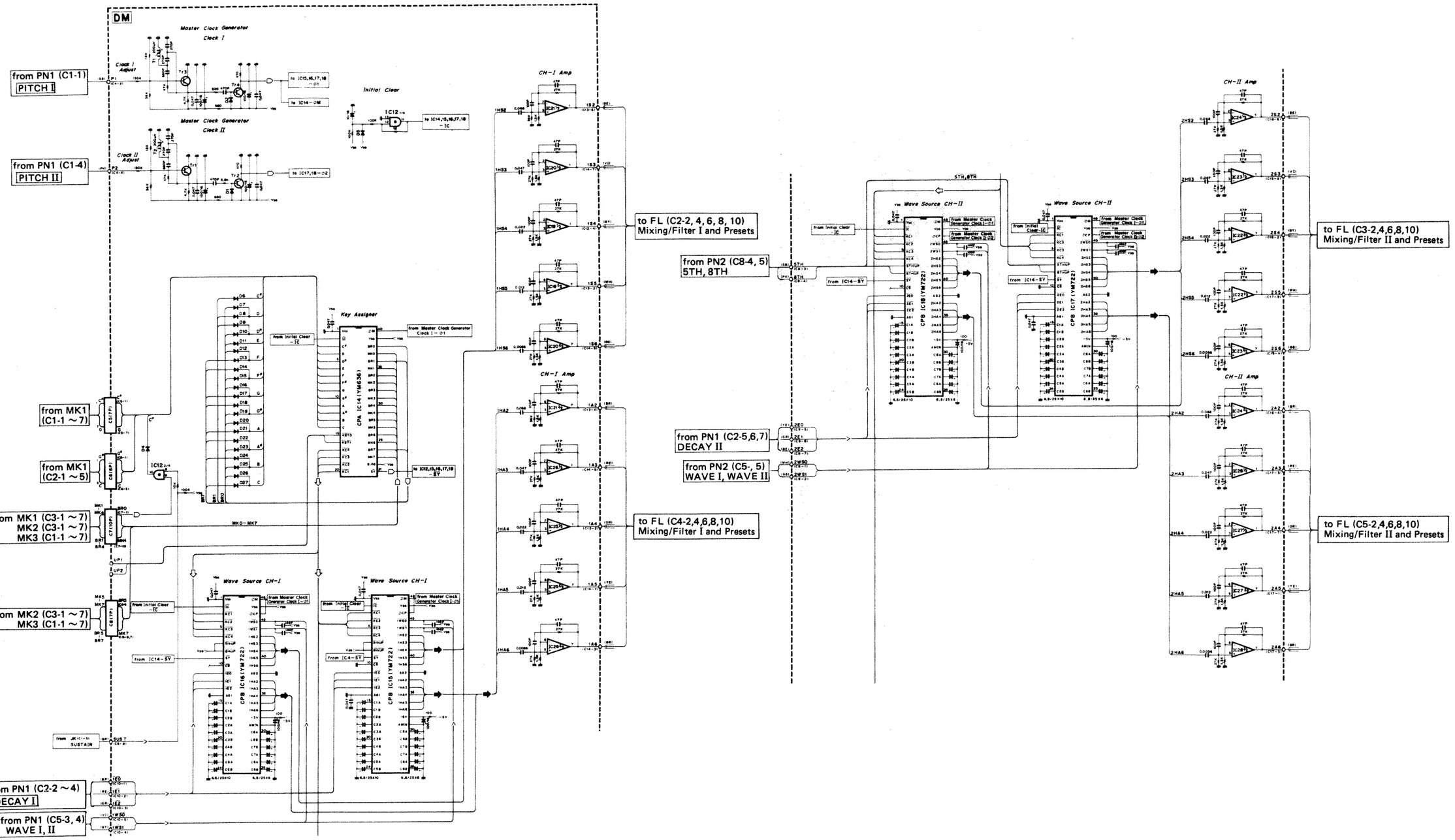
C17

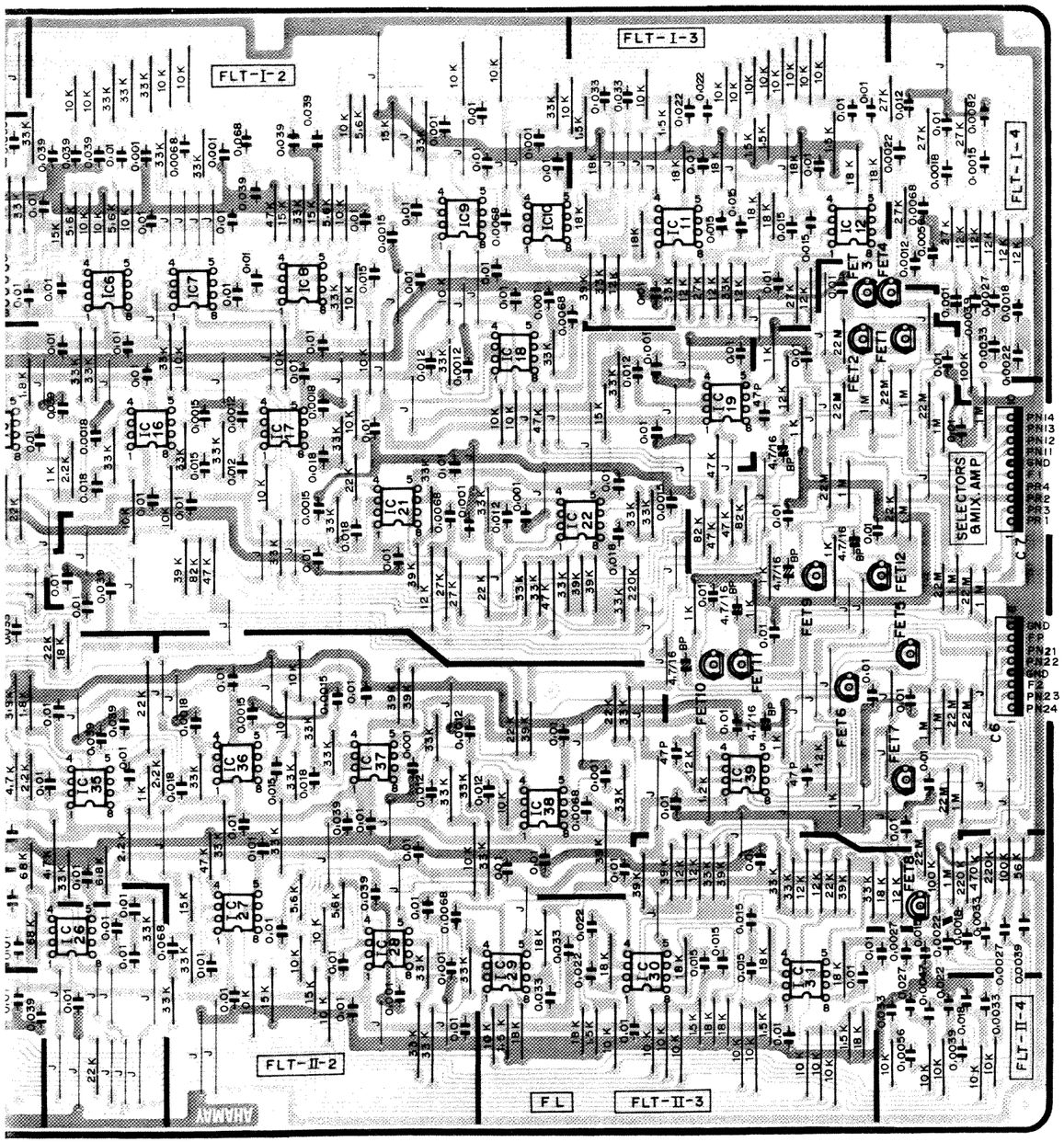
Pin No.	Pin Name	Wire Color	Destination
1	2A5	S YE	FL-2A5 (C5-8)
2	GND	–	–
3	2A6	S GR	FL-2A6 (C5-10)
4	GND	–	–
5	2A3	S RE	FL-2A3 (C5-4)
6	GND	–	–
7	2A4	S OR	FL-2A4 (C5-6)
8	GND	–	–
9	2S5	S WH	FL-2S5 (C3-8)
10	GND	–	–

Note)

1. IC
   - IC1 ~ 3 : HD74LS37
   - IC4 : TC4011BP
   - IC5, 6 : TC4013BP
   - IC7 : TC4001BP
   - IC8 ~ 11 : TC40174BP
   - IC12, 13 : TC4081BP
   - IC14 : YM636
   - IC15 ~ 18 : YM722
   - IC19 ~ 28 : NJM4558DV
2. Transistor
   - Tr1 ~ 10 : 2SC752 (Y)
   - Tr11 : 2SA509Y
3. Diode
   - D1 ~ 27 : 1S1555

DM Circuit Diagram





FL Circuit Board & Wining

- Connector

C1

Pin No.	Pin Name	Wire Color	Destination
1	−15V	YE	DC −15V (C3-2)
2	−15V	YE	DC −15V (C3-3)
3	GND	BL	DC-GND (C4-7)
4	GND	BL	DM-GND (C11-5)
5	GND	BL	EFT-GND (C4-4)
6	+15V	BR	DC +15V (C4-2)
7	+15V	BR	DC +15V (C4-3)

C2

Pin No.	Pin Name	Wire Color	Destination
1	GND	S GG S	–
2	1S6	S GG	DM-1S6 (C14-9)
3	GND	S WH S	–
4	1S5	S WH	DM-1S5 (C13-2)
5	GND	S GY S	–
6	1S4	S GY	DM-1S4 (C12-4)
7	GND	S VI S	–
8	1S3	S VI	DM-1S3 (C14-7)
9	GND	S BE S	–
10	1S2	S BE	DM-1S2 (C13-6)

C3

Pin No.	Pin Name	Wire Color	Destination
1	GND	S BE S	–
2	2S2	S BE	DM-2S2 (C16-6)
3	GND	S VI S	–
4	2S3	S VI	DM-2S3 (C15-2)
5	GND	S GY S	–
6	2S4	S GY	DM-2S4 (C16-2)
7	GND	S WH S	–
8	2S5	S WH	DM-2S5 (C17-9)
9	GND	S GG S	–
10	2S6	S GG	DM-2S6 (C15-4)

C4

Pin No.	Pin Name	Wire Color	Destination
1	GND	S GR S	–
2	1A6	S GR	DM-1A6 (C14-3)
3	GND	S YE S	–
4	1A5	S YE	DM-1A5 (C14-1)
5	GND	S OR S	–
6	1A4	S OR	DM-1A4 (C12-2)
7	GND	S RE S	–
8	1A3	S RE	DM-1A3 (C14-5)
9	GND	S BR S	–
10	1A2	S BR	DM-1A2 (C13-4)

C5

Pin No.	Pin Name	Wire Color	Destination
1	GND	S BR S	–
2	2A2	S BR	DM-2A2 (C16-4)
3	GND	S RE S	–
4	2A3	S RE	DM-2A3 (C17-5)
5	GND	S OR S	–
6	2A4	S OR	DM-2A4 (C17-7)
7	GND	S YE S	–
8	2A5	S YE	DM-2A5 (C17-1)
9	GND	S GR S	–
10	2A6	S GR	DM-2A6 (C17-3)

C6

Pin No.	Pin Name	Wire Color	Destination
1	PN24	GY	PN3-PN24 (C8-2)
2	PN23	VI	PN3-PN23 (C8-3)
3	F2	S RE	PN4-F2 (C12-4)
4	GND	–	–
5	PN22	BE	PN3-PN22 (C7-8)
6	PN21	GR	PN3-PN21 (C8-1)
7	FP	S OR	PN4-FP (C12-7)
8	GND	–	–

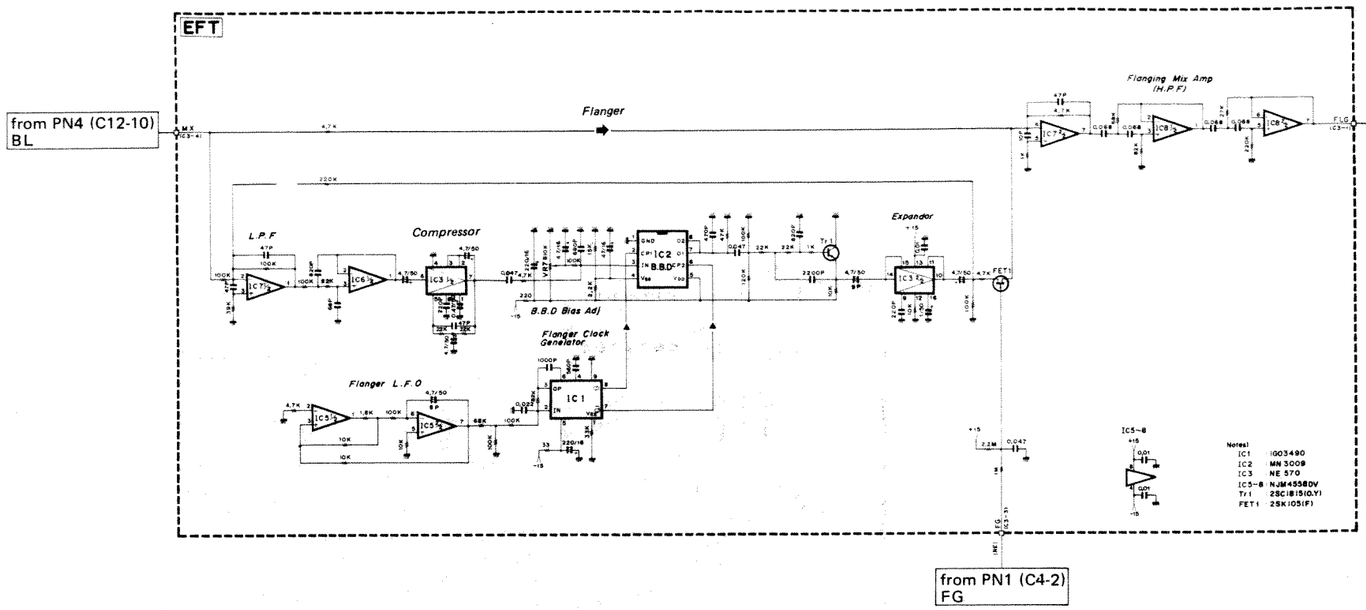
C7

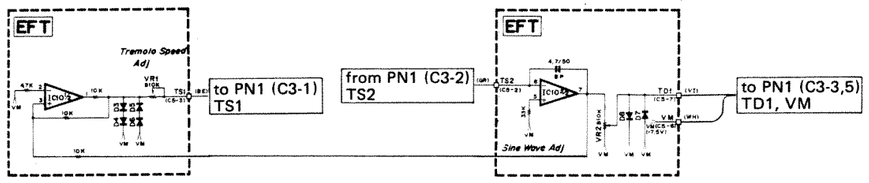
Pin No.	Pin Name	Wire Color	Destination
1	PR1	WH	PN3-PR1 (C9-10)
2	PR3	SB	PN3-PR3 (C9-6)
3	PR2	GG	PN3-PR2 (C9-8)
4	PR4	PK	PN3-PR4 (C9-4)
5	F1	S BR	PN4-F1 (C12-1)
6	GND	–	–
7	PN11	BR	PN3-PN11 (C6-4)
8	PN12	RE	PN3-PN12 (C6-3)
9	PN13	OR	PN3-PN13 (C6-2)
10	PN14	YE	PN3-PN14 (C6-1)

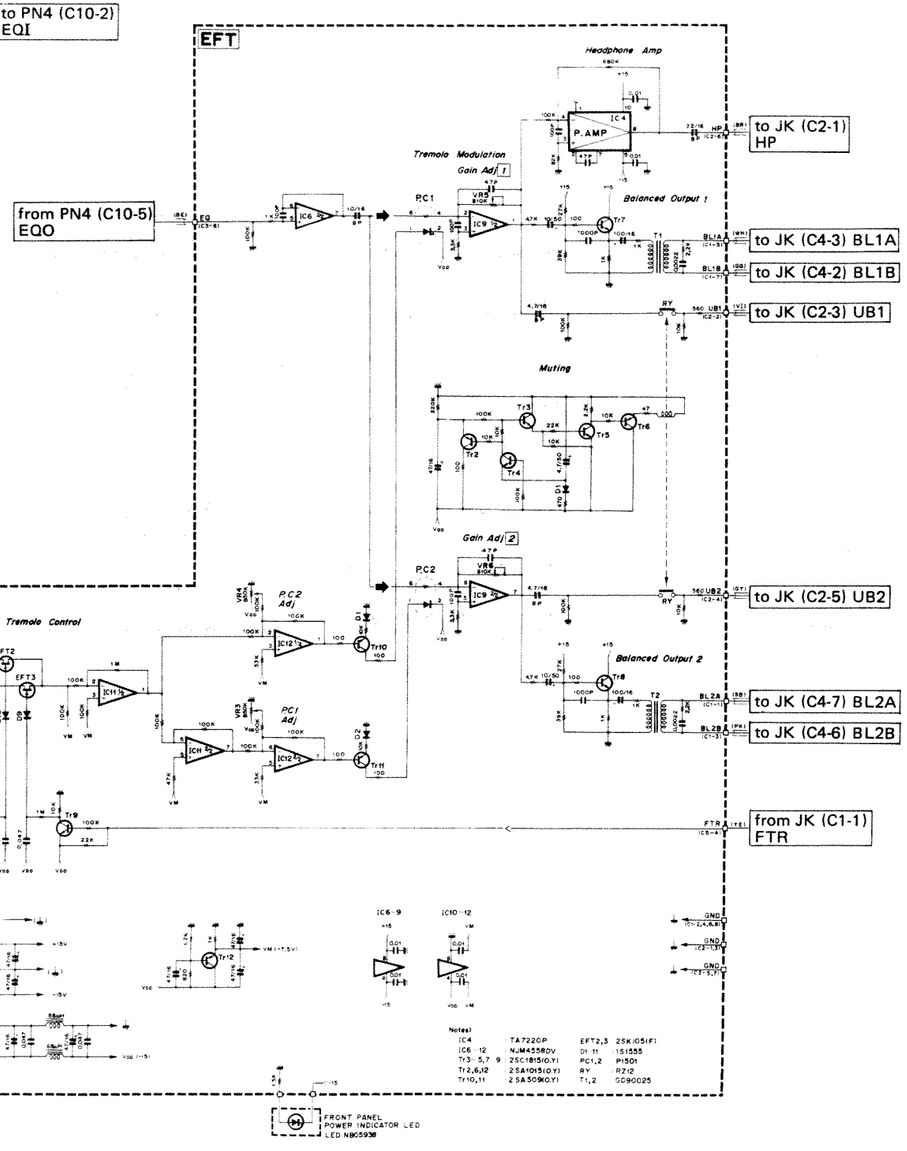
Notes)
1. IC
   IC1, 2, 3 : μPC14315
   IC4 : μPC14305
2. Diode
   D1, 2, 3, 4 : 1D4B1

MEMO

EFT Circuit Diagram





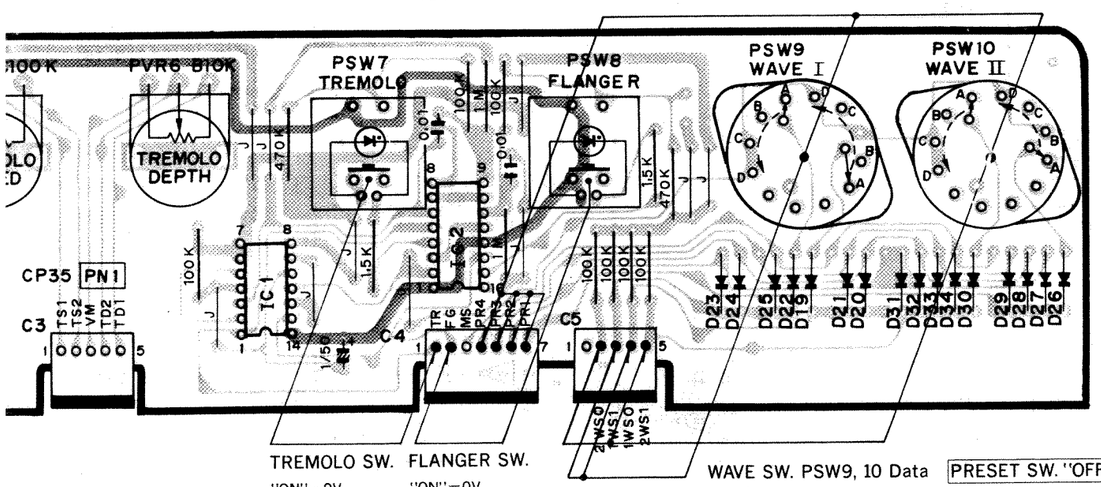


WAVE SELECT Data

PRESET SW. PSW21, 22, 23, 24 Wave Select Data　PRESET SW "ON"

PRESET "ON" POSITION	PR1 (C4–7)	PR2 (C4–6)	PR3 (C4–5)	PR4 (C4–4)	1WS1 (C5–3)	1WS0 (C5–4)	2WS1 (C5–5)	2WS0 (C5–2)
1	V_{SS}	V_{DD}	V_{DD}	V_{DD}	H	L	H	H
2	V_{DD}	V_{SS}	V_{DD}	V_{DD}	H	H	H	H
3	V_{DD}	V_{DD}	V_{SS}	V_{DD}	L	H	H	H
4	V_{DD}	V_{DD}	V_{DD}	V_{SS}	H	L	H	L

"V_{SS}"="H"=" 0 v"
"V_{DD}"="L"="−15 v"



TREMOLO SW.
"ON"=0V
"OFF"=−15V

FLANGER SW.
"ON"=0V
"OFF"=−15V

WAVE SW. PSW9, 10 Data　PRESET SW. "OFF"

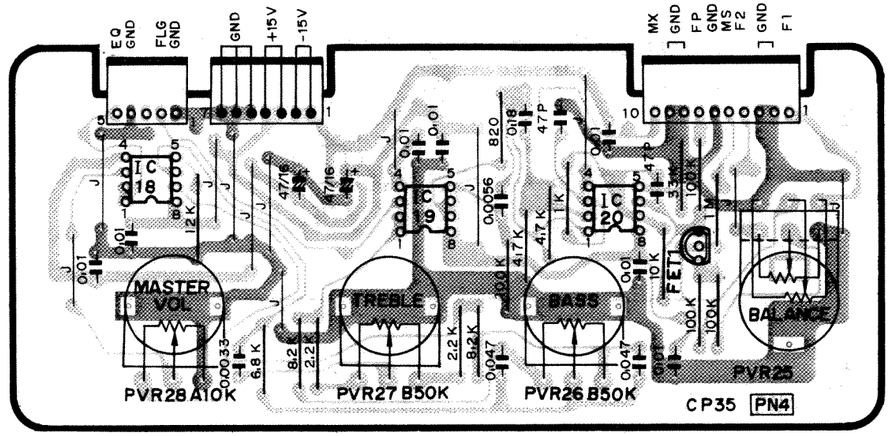
WAVE SW. POSITION	1WS1 (C5–3) 2WS1 (C5–5)	1WS0 (C5–4) 2WS0 (C5–2)
A	L	L
B	L	H
C	H	L
D	H	H

C5

Pin No	Pin Name	Wire Color	Destination
1	–	–	–
2	2WS0	WH	DM-2WS0 (C9-1)
3	1WS1	GY	DM-1WS1 (C10-4)
4	1WS0	VI	DM-1WS0 (C10-5)
5	2WS1	GG	DM-2WS1 (C9-2)

Notes)
1. IC
IC1 : TC4013BP
IC2 : TC4049BP
2. Diode
D1 ~ 34 : 1S1555

PN1, 4 Circuit Board & Wining



Pattern Side (パターン側)

- Connector

C10

Pin No	Pin Name	Wire Color	Destination
1	GND	S GR S	–
2	FLG	S GR	EFT-FLG (C3-1)
3	–	–	–
4	GND	–	–
5	EQ	S BE	EFT-EQ (C3-6)

C11

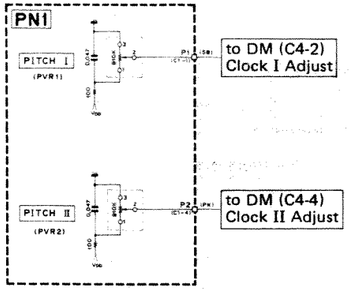
Pin No	Pin Name	Wire Color	Destination
1	−15V	YE	DC−15V (C3-5)
2	−15V	YE	EFT−15V (C4-2)
3	+15V	BR	DC+15V (C4-5)
4	+15V	BR	EFT-+15V (C4-7)
5	GND	–	–
6	GND	BL	DC GND (C4-9)
7	GND	BL	EFT-GND (C4-5)

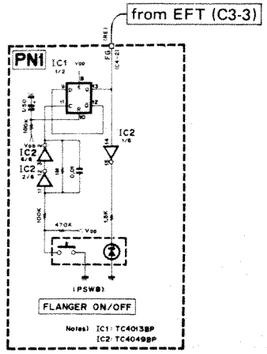
C12

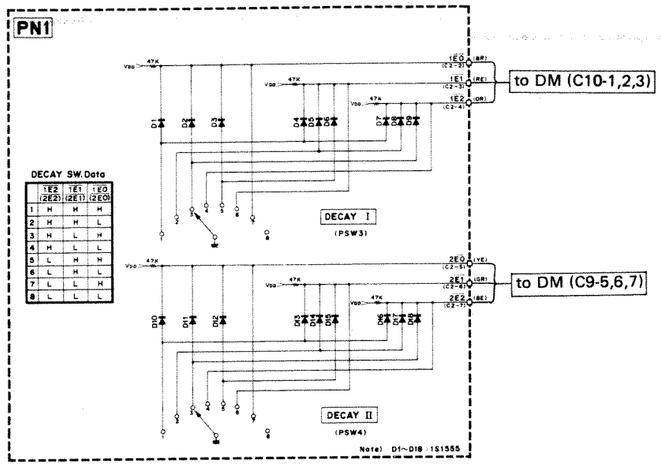
Pin No	Pin Name	Wire Color	Destination
1	F1	S RE	FL-F1 (C7-5)
2	GND	S RE	–
3	GND	S BR	–
4	F2	S BR	FL-F2 (C6-3)
5	MS	BR	PN3-MS (C9-2)
6	GND	S OR S	–
7	FP	S OR	FL-FP (C6-7)
8	GND	–	–
9	GND	–	–
10	MX	S YE	EFT-MX (C3-4)

Note)
1. IC
IC1 ~ 39 : NJM4558DV
2. FET
FET1 ~ 12 : 2SK105 (F)

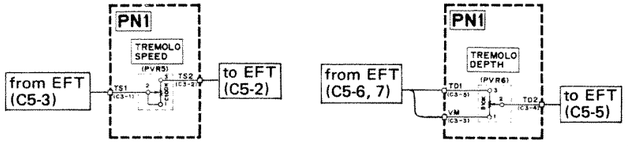
PN1 Circuit Diagram

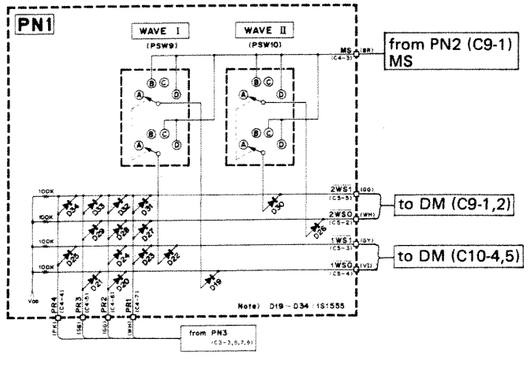


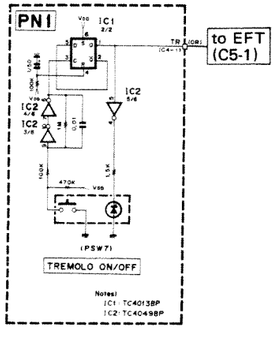




	1E2 (2E2)	1E1 (2E1)	1E0 (2E0)
1	H	H	H
2	H	H	L
3	H	L	H
4	H	L	L
5	L	H	H
6	L	H	L
7	L	L	H
8	L	L	L







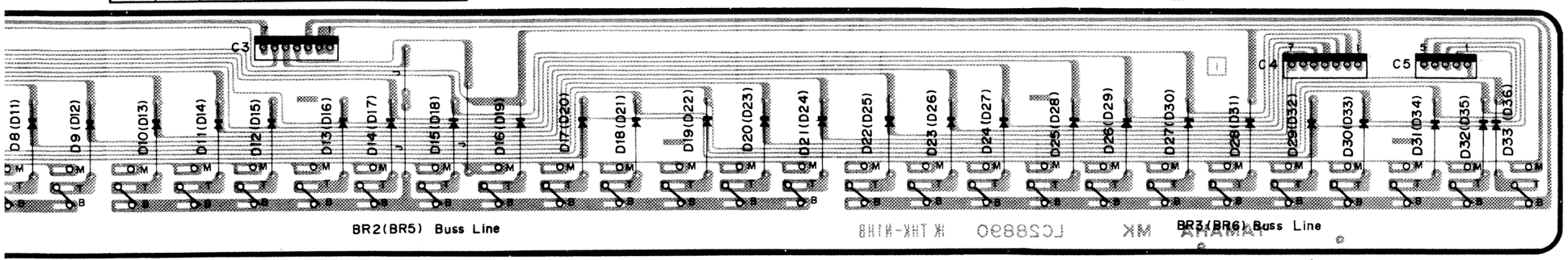
MK1, 2, 3 Circuit Board & Wining, Circuit Diagram

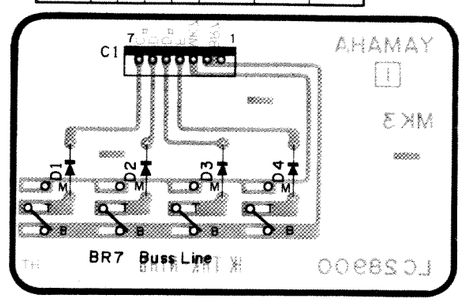
C3 Pin	7	6	5	4	3	2	1
MK1	MK1	BR1	BR2	MK2	BR3	MK3	MK3
(MK2)	MK4	BR4	BR5	MK5	BR6	MK6	MK6

C4 Pin	7	6	5	4	3	2	1
MK1	C#	D	D#	E	F	F#	G
(MK2)	C#	D	D#	E	F	F#	G

C5 Pin	5	4	3	2	1
MK1	G#	A	A#	B	C
MK2	—	—	—	—	—

Pin	7	6	5	4	3	2	1
MK3	C#	D	D#	E	MK7	BR7	BR7





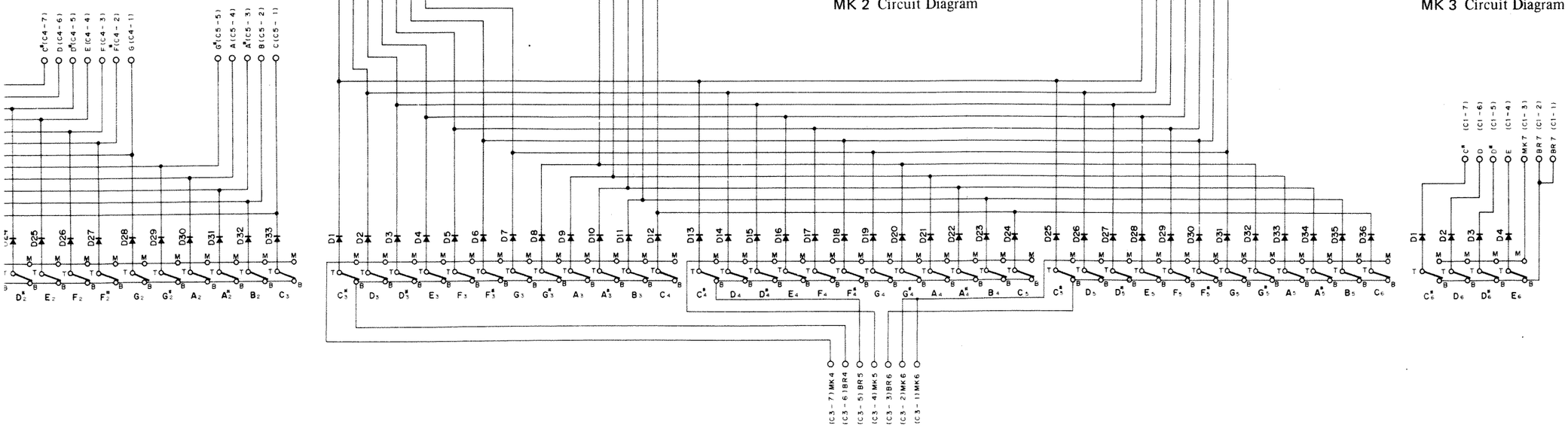
Bo (B3) C1 (C4) C#1 (C#4) D1 (D4) D#1 (D#4) E1 (E4) F1 (F4) F#1 (F#4) G1 (G4) G#1 (G#4) A1 (A4) A#1 (A#4) B1 (B4) C2 (C5) C#2 (C#5) D2 (D5) D#2 (D#5) E2 (E5) F2 (F5) F#2 (F#5) G2 (G5) G#2 (G#5) A2 (A5) A#2 (A5) B2 (B5) C3 (C6)

C#6 D6 D#6 E6

KEP-NA10700-13 ②

KEP-NA10702-13 ①

MK 2 Circuit Diagram



MK 3 Circuit Diagram

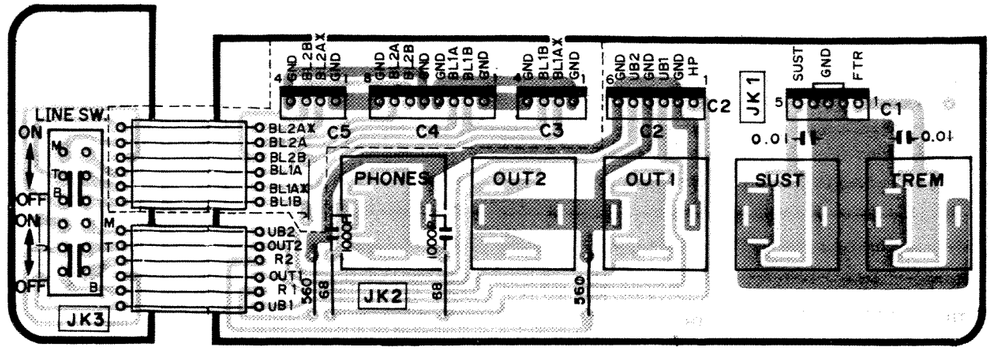
Notes)
MK1 Board
- Diodes
  D1 ~ 33 : 1S1555

MK2 Board
- Diodes
  D1 ~ 36 : 1S1555

MK3 Board
- Diodes
  D1 ~ 4 : 1S1555

KEC-10175-13

JK1, 2, 3, Circuit Board & Wining, Circuit Diagram



Pattern Side (パターン側)

- Connector

KEP-NA10696-17 ⚠

C1

Pin No.	Pin Name	Wire Color	Destination
1	FTR	YE	EFT-FTR (C5-4)
2	GND	–	–
3	GND	BL	EFT-GND (C2-1)
4	GND	–	–
5	SUST.	BR	DM-SUST. (C9-8)

C2

Pin No.	Pin Name	Wire Color	Destination
1	HP	S BR	EFT-HP (C2-6)
2	GND	S BR S	EFT-GND (C2-7)
3	UB1	S VI	EFT-UB1 (C2-2)
4	GND	S VI S	EFT-GND (C2-3)
5	UB2	S GY	EFT-UB2 (C2-4)
6	GND	S GY S	EFT-GND (C2-5)

C3

Pin No.	Pin Name	Wire Color	Destination
1	GND	S OR S	XLR1-GND (XLR1-1)
2	BL1A*	S OR	XLR1-BL1A* (XLR1-2)
3	BL1B	S YE	XLR1-BL1B(XLR1-3)
4	GND	S YE S	XLR1-GND(XLR1-1)

C4

Pin No.	Pin Name	Wire Color	Destination
1	GND	S GG S	EFT-GND (C1-8)
2	BL1B	S GG	EFT-BL1B (C1-7)
3	BL1A	S WH	EFT-BL1A (C1-5)
4	GND	S WH S	EFT-GND (C1-6)
5	GND	S PK S	EFT-GND (C1-4)
6	BL2B	S PK	EFT-BL2B (C1-3)
7	BL2A	S SB	EFT-BL2A (C1-1)
8	GND	S SB S	EFT-GND (C1-2)

C5

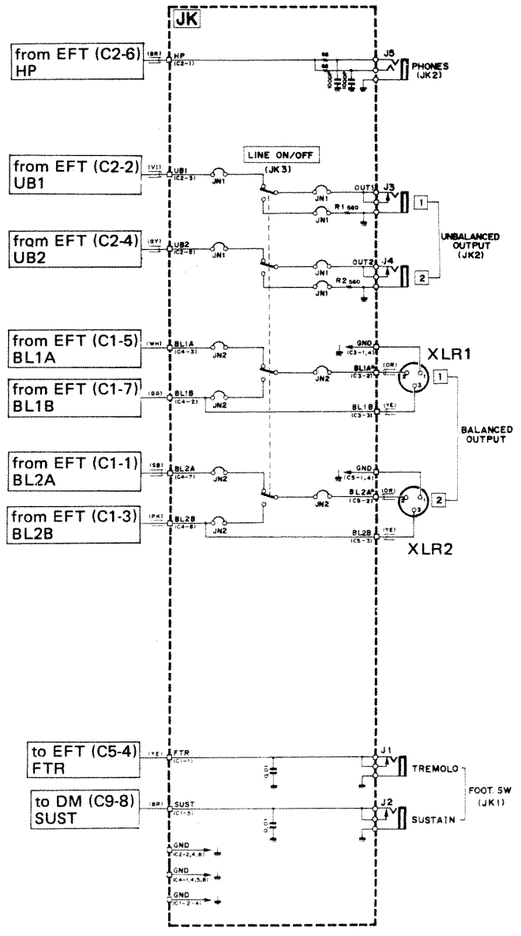
Pin No.	Pin Name	Wire Color	Destination
1	GND	S OR S	XLR -GND(XLR2-1)
2	BL2A*	S OR	XLR2-BL2A* (XLR2-2)
3	BL2B	S YE	XLR2-BL2B(XLR2-3)
4	GND	S YE S	XLR2-GND(XLR2-1)

XLR1

Pin No.	Pin Name	Wire Color	Destination
1	GND	S OR S	JK-GND (C3-1)
1	GND	S YE S	JK-GND (C3-4)
2	BL1A*	S OR	JK-BL1A* (C3-2)
3	BL1B	S YE	JK-BL1B (C3-3)

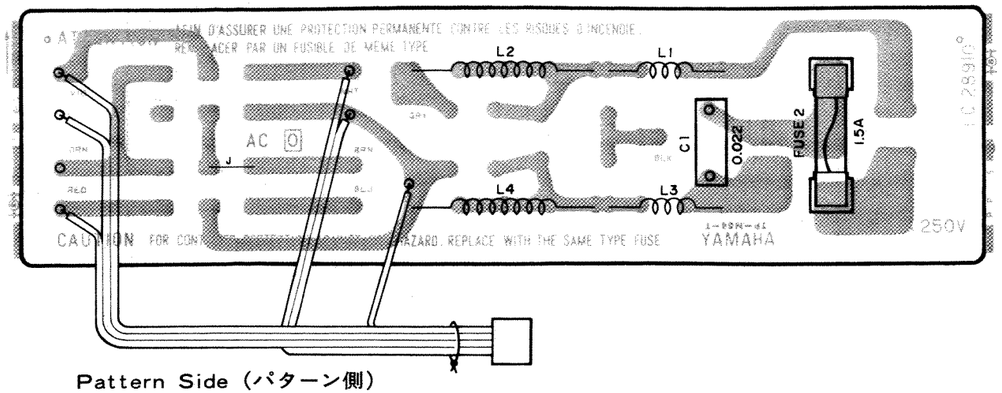
XLR2

Pin No.	Pin Name	Wire Color	Destination
1	GND	S OR S	JK-GND (C5-1)
1	GND	S YE S	JK-GND (C5-4)
2	BL2A*	S OR	JK-BL2A* (C5-2)
3	BL2B	S YE	JK-BL2B (C5-3)



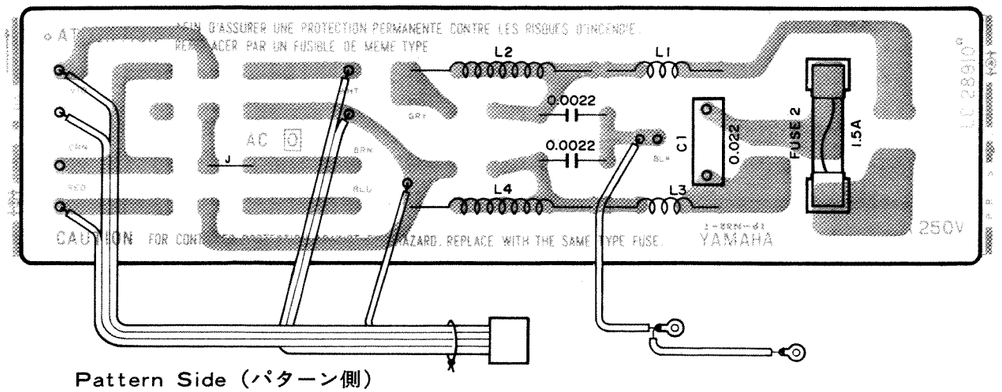
KEC-10173-13 ⚠2

- Japanese, Canadian model



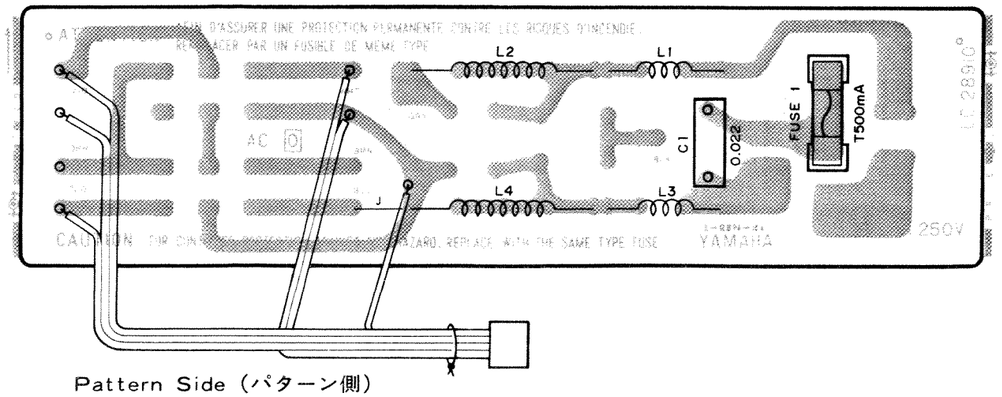
Pattern Side (パターン側)

- U.S. American model



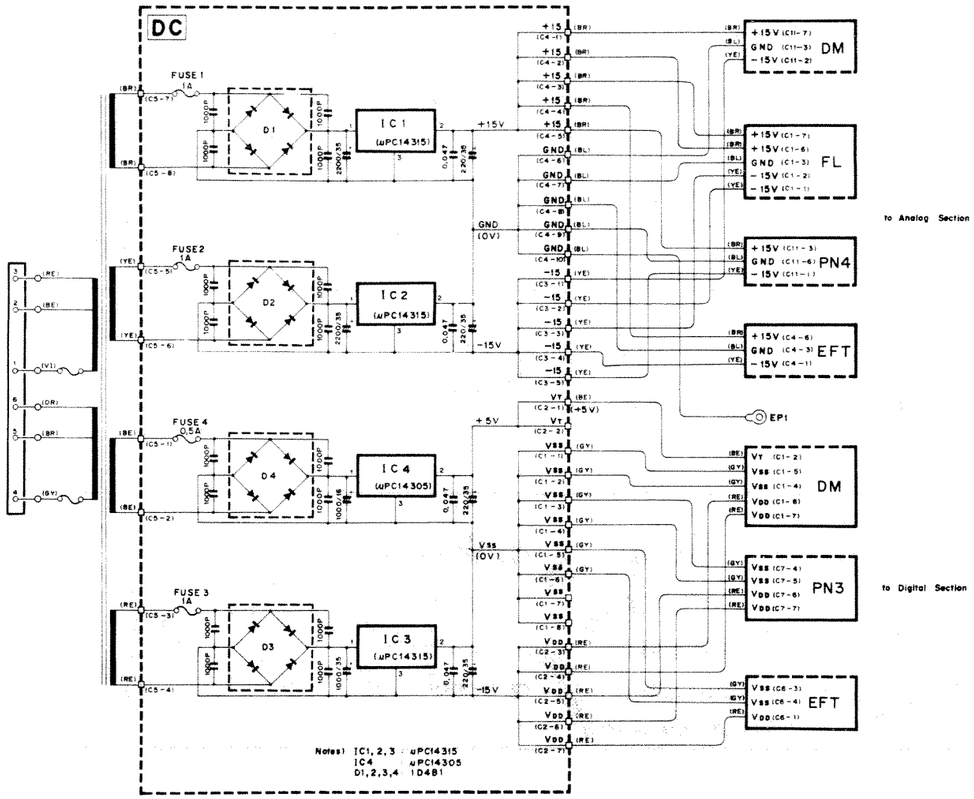
Pattern Side (パターン側)

- N. European model



Pattern Side (パターン側)

KEP-NA10703-14 ⚠2



- Connector

C1

Pin No.	Pin Name	Wire Color	Destination
1	Vss	GY	DM-Vss (C1-5)
2	Vss	GY	DM-Vss (C1-4)
3	Vss	GY	PN3-Vss (C7-4)
4	Vss	GY	PN3-Vss (C7-5)
5	Vss	GY	EFT-Vss (C6-3)
6	Vss	GY	EFT-Vss (C6-4)
7	Vss	--	--
8	Vss	--	--

C2

Pin No.	Pin Name	Wire Color	Destination
1	VT	BE	DM-VT (C1-2)
2	VT	--	--
3	VDD	RE	DM-VDD (C1-6)
4	VDD	RE	DM-VDD (C1-7)
5	VDD	RE	PN3-VDD (C7-6)
6	VDD	RE	PN3-VDD (C7-7)
7	VDD	RE	EFT-VDD (C6-1)

C3

Pin No.	Pin Name	Wire Color	Destination
1	-15V	YE	DM--15V (C11-2)
2	-15V	YE	FL--15V (C1-1)
3	-15V	YE	FL--15V (C1-2)
4	-15V	YE	EFT--15V (C4-1)
5	-15V	YE	PN4--15V (C11-1)

C4

Pin No.	Pin Name	Wire Color	Destination
1	+15V	BR	DM-+15V (C11-7)
2	+15V	BR	FL-+15V (C1-6)
3	+15V	BR	FL-+15V (C1-7)
4	+15V	BR	EFT-+15V (C4-6)
5	+15V	BR	PN4-+15V (C11-3)
6	GND	BL	DM-GND (C11-3)
7	GND	BL	FL-GND (C1-3)
8	GND	BL	EFT-GND (C4-3)
9	GND	BL	PN4-GND (C11-6)
10	GND	BL	EP1

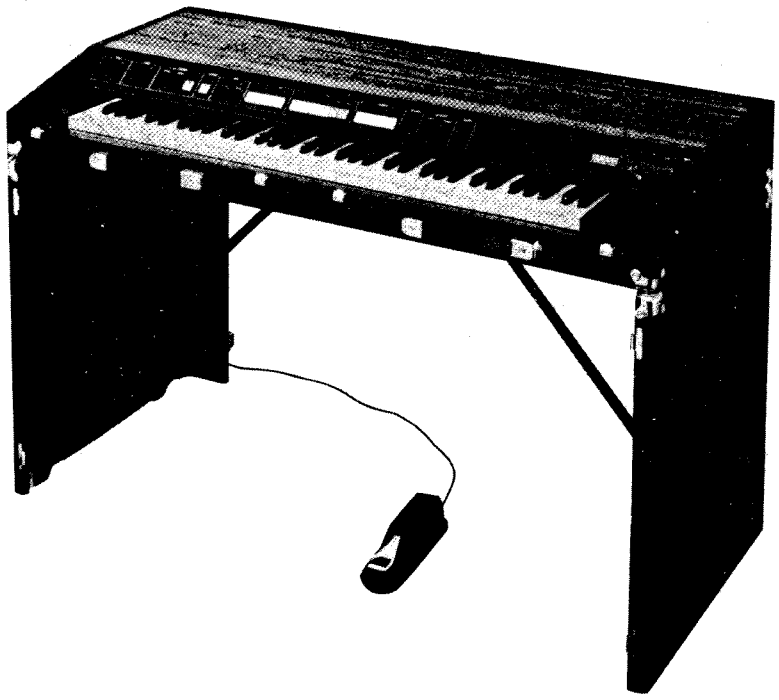
Notes)
1. IC
   IC1, 2, 3 : μPC14315
   IC4 : μPC14305
2. Diode
   D1, 2, 3, 4 : 1D4B1

MEMO

YAMAHA

ELECTRONIC PIANO

CP35

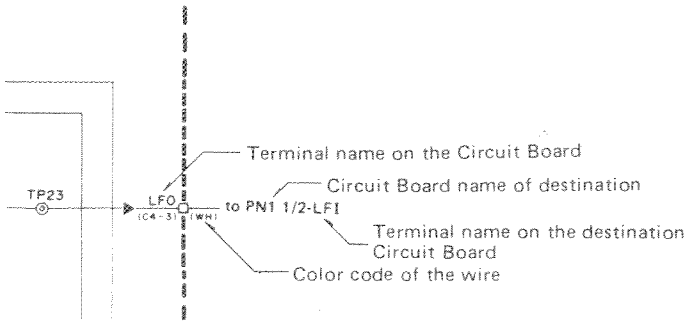


SERVICE MANUAL

CONTENTS

CODING GUIDE

1 Wiring Notation

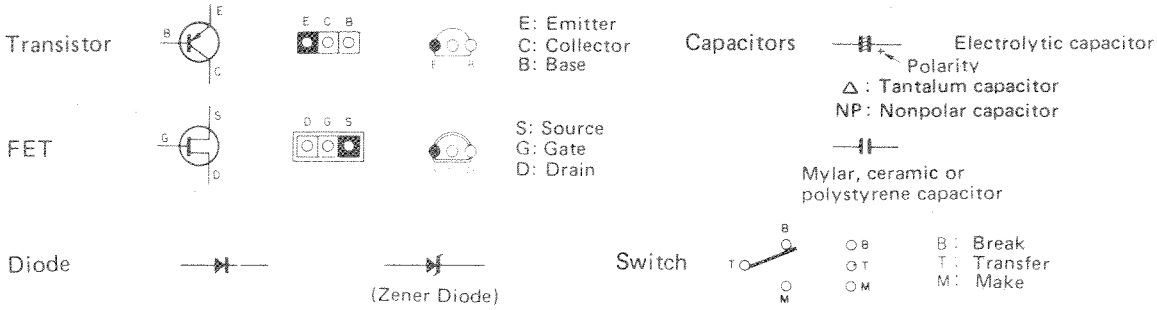


Note: Types of wire

BL — Ordinary wire

BL — Shield wire

2 Symbol Description



3 Abbreviations of Wire Color Codes

BLACK (クロ) ..... BL	BROWN (チャ) ..... BR	RED (アカ) ..... RE
ORANGE (ダイ) ..... OR	YELLOW (キイ) ..... YE	GREEN (ミドリ) ..... GR
BLUE (アオ) ..... BE	VIOLET (ムラサキ) VI	GRAY (ハイ) ..... GY
WHITE (シロ) ..... WH	GRASS GREEN (クサ) ..... GG	SKY BLUE (ソラ) ..... SB
PINK (モモ) ..... PK	TRANSPARENT (トウメイ) ..... TR	

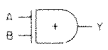
4 Relation of Color Coding and Notes

C	C♯	D	D♯	E	F	F♯	G	G♯	A	A♯	B
BR (チャ)	RE (アカ)	OR (ダイ)	YE (キイ)	GR (ミドリ)	BE (アオ)	VI (ムラサキ)	GY (ハイ)	WH (シロ)	GG (クサ)	SB (ソラ)	PK (モモ)

5 Logic Symbols

	MIL	YAMAHA
NOT		
NOR		
NAND		

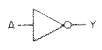
Exclusive OR (排他的論理和)



Truth Table

A	B	Y
L	L	L
H	L	H
L	H	H
H	H	L

NOT (Inverter)



Truth Table

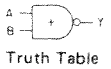
A	Y
L	H
H	L

OR

Truth Table

A	B	Y
L	L	L
H	L	H
L	H	H
H	H	H

NOR



Truth Table

A	B	Y
L	L	H
H	L	L
L	H	L
H	H	L

AND

Truth Table

A	B	Y
L	L	L
H	L	L
L	H	L
H	H	H

NAND

Truth Table

A	B	Y
L	L	H
H	L	H
L	H	H
H	H	L

SPECIFICATIONS

KEYBOARD . . . . . 73 keys (E0 – E6)
Velocity-sensitive touch response
16 note simultaneous output, max.

CONTROLS
PITCH I
PITCH II
DECAY I . . . . . 8 position switch
DECAY II . . . . . 8 position switch
TREMOLO SPEED
TREMOLO DEPTH
TREMOLO ON/OFF
FLANGER ON/OFF
WAVE I . . . . . 4 position switch (A,B,C,D)
WAVE II . . . . . 4 position switch (A,B,C,D)
FILTER I . . . . . 4 independent selectors (1,2,3,4)
FILTER II . . . . . 4 independent selectors (1,2,3,4)
5TH, 8TH . . . . . Independent 5th and 8th transpose selectors
PRESETS . . . . . 4 independent selectors (1,2,3,4)
BALANCE . . . . . I ⟷ II
EQUALIZER . . . . . Continuously variable bass and treble controls
VOLUME

SIDE PANEL
KEY CODE OUTPUT
FOOT SW TREMOLO
FOOT SW SUSTAIN
BALANCED OUTPUT 1 2 . . . . . XLR type connectors
UNBALANCED OUTPUT 1 2 . . . . . 1/4" phone jacks
PHONES . . . . . 8 ohms or high impedance headphones
LINE ON/OFF

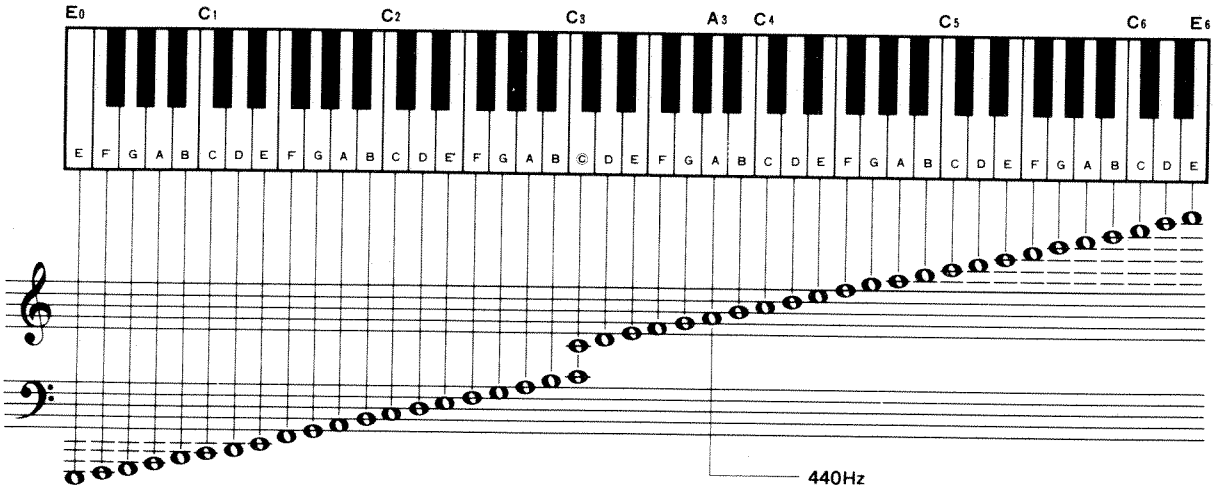
POWER REQUIREMENTS . . . . . U.S. & Canadian models
120V 50/60Hz 36 Watts
General model
Selectable (100, 120, 220 or 240V) 36 Watts

DIMENSIONS (W x H x D) . . . . . 50-1/4" x 31-1/4" x 23-1/2" (1,276 x 794 x 596 mm)

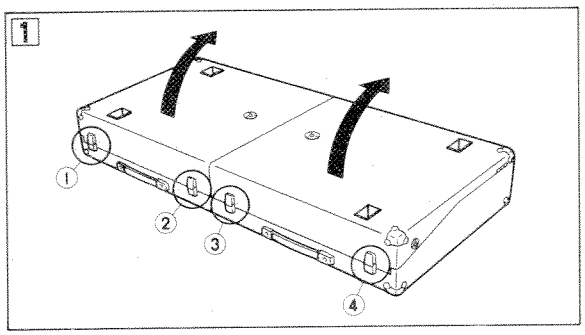
WEIGHT . . . . . 110.2 lbs (50 kg)

STANDARD ACCESSORY . . . . . FC-4 footswitch

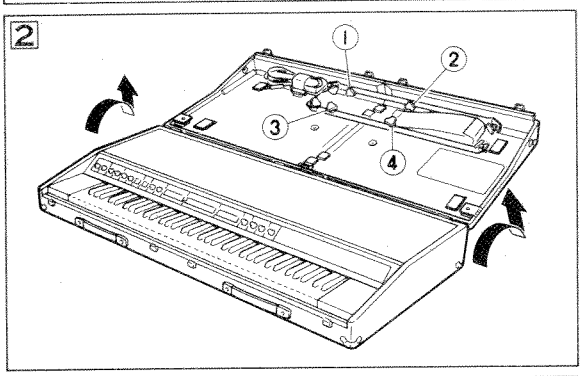
** Specifications are subject to change without notice.*



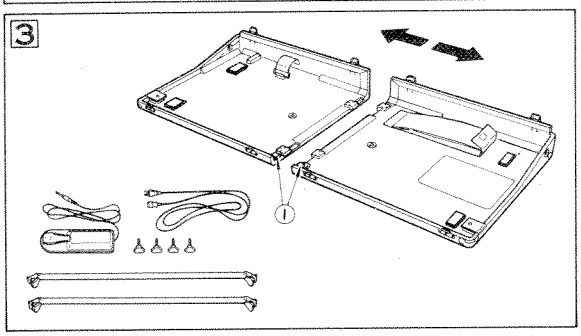
ASSEMBLY PROCEDURE



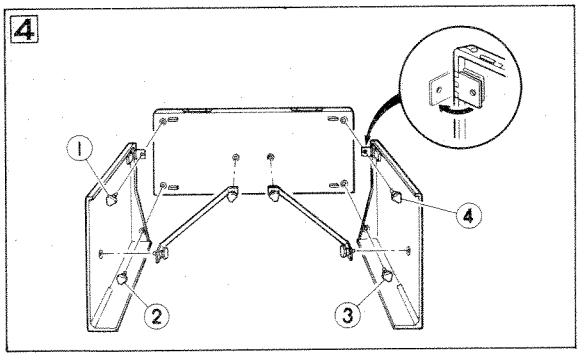
- Lay the CP35 on the floor as shown and open the lid fully by unlatching the four catches ① ~ ④ .



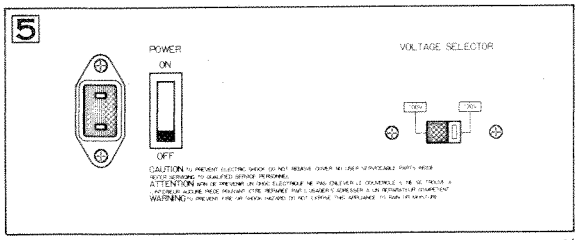
- Detach the lid from the body by lifting it so as to slip it off its rear hinges.
  Provided inside of the lid are the AC cord, leg braces and the sustain pedal.
- Unscrew the thumbscrews ① ~ ④ and remove the leg braces.
  NOTE: Make sure not to lose these thumbscrews, for they will be used when connecting the main body and legs.



- Unlatch the catch ① found inside of the lid and pull the lid apart right and left.
  NOTE: The two halves of the lid become the CP35's legs.



- Place the main body of the CP35 on its back edge and fasten one leg to each side of the body using two of the thumbscrews removed in step 2.
- Fix the main body and the legs securely with the leg braces.
- Set the CP35 upright and check each thumbscrew for tightness. This completes the physical assembly of the CP35.
- Connect both the output cord to the amplifier and the sustain pedal.



- Set the voltage selector to the proper line voltage of that area where CP35 is used and set the switches and controls. And then connect the AC cable to the AC INLET jack on the CP35 firmly.
  (→SEE PAGE8)

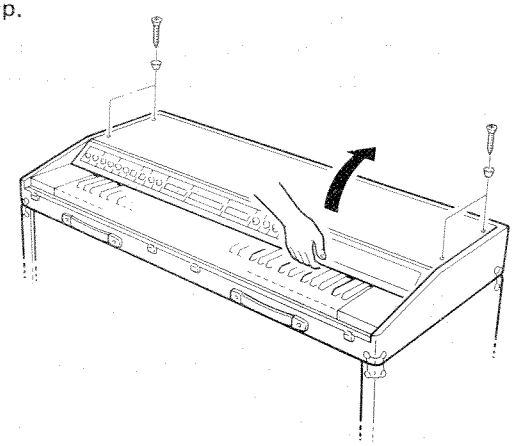
(U.S & CANADIAN MODELS)

DISASSEMBLY PROCEDURE

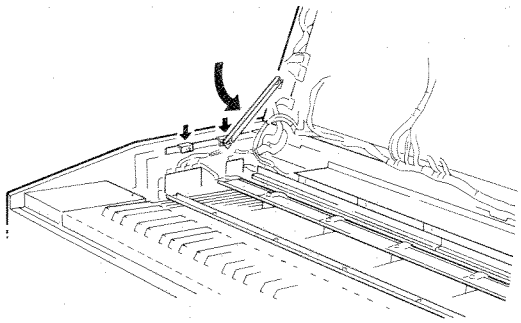
1. Opening the lid

Remove the 4 screws holding the lid.

Grasp the panel just above the keyboard and lift up.

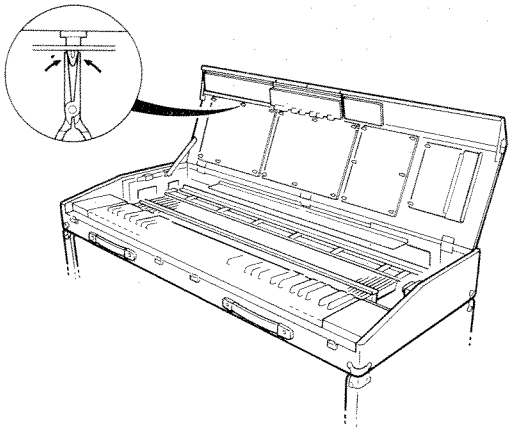


Use the stay provided to hold the lid. The stay provides two different lid angles.



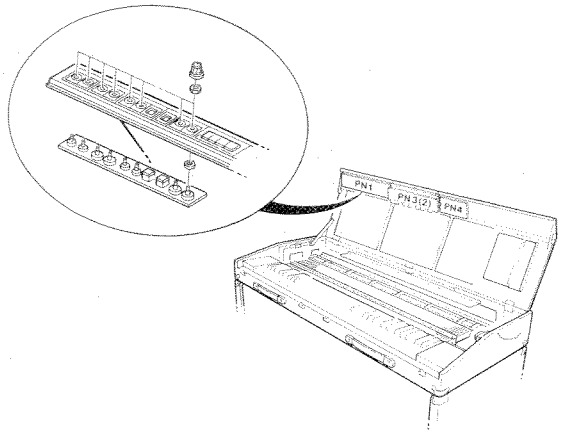
2. Removing circuit boards

Compress the board holders with pliers to release the boards.

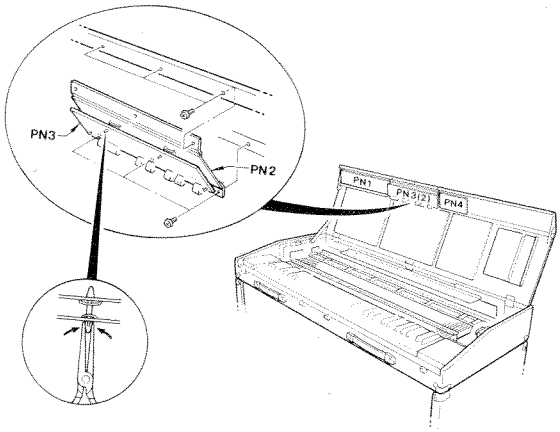


3. Removing panel boards

1) Remove all front panel knobs, hex nuts and washers.
(PN1, PN4 boards)



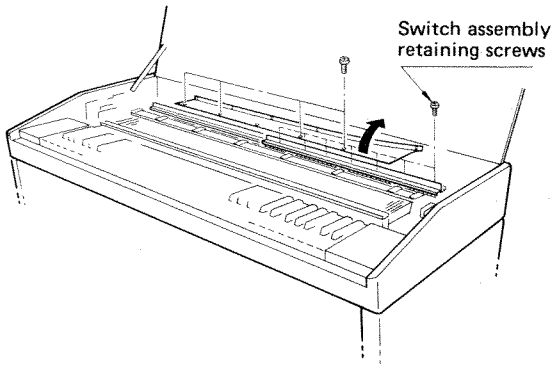
2) Removing the screws on the boards will allow them to be removed one at a time. Compress the PN3 circuit board holders with pliers to release them.
(PN2, PN3)

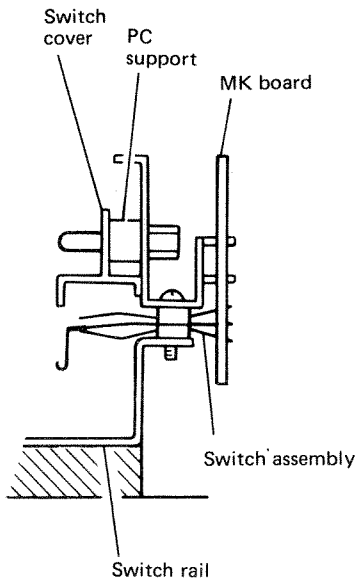


4. Removing the switch assembly (MK board)

Remove the shield plate.

The switch assembly is divided into 3 separate parts. Remove the screws of the desired section or sections to be removed.

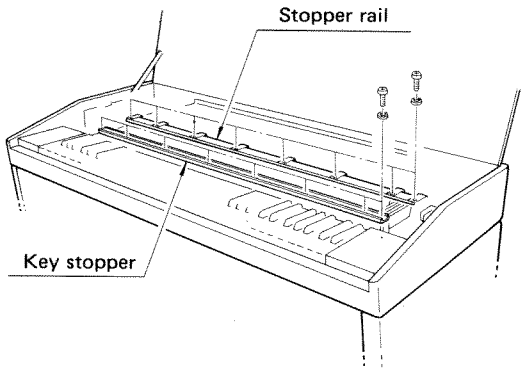




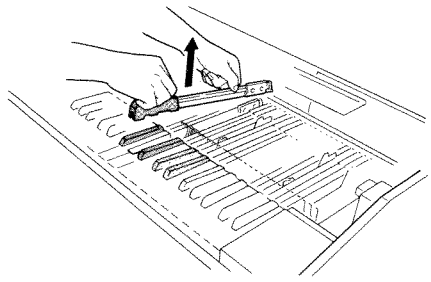
5. Removing the keys

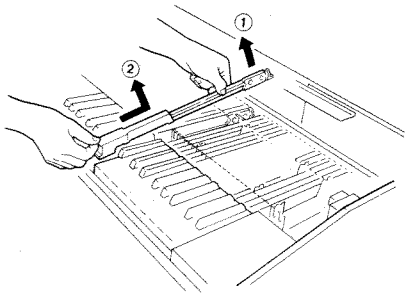
Before removing any keys be sure to remove the switch assembly, being careful not to damage the switch contacts.

Remove the stopper rail and the key stopper screws. Reinforcing hardware is attached to the stopper rail.



Be sure to remove the black keys before removing the white keys.





TECHNICAL EXPLANATION

External specifications

The CP35 is an electronic piano with touch response, preset memories, and built-in filters. There are two independent channels of tone generation, and up to 16 notes can be played simultaneously.

Keyboard

There is a single keyboard with one make/break transfer switch for each key.

The touch-response effect is generated by counting the time between the make and break of the key switch and generating the level of the note according to the time difference (velocity sensitive).

Key assigner & channel processor

LSI YM636 (CPA) detects the pressed keys and assigns their keycode data in chronological order to the 16 note memories.

The 16 locations each contain touch response, sustain pedal, and other data. Also, because the successive notes are distributed among 16 locations, the IC calculates appropriate envelope times.

Wave Source
(Tone generator)

LSI YM722 (CPB) generates the music signal using the keycode data from YM636 (CPA) and touch response data.

The YM722 can only handle 8 notes, so two of them are used for each channel to handle 16.

16 notes are output in parallel from YM633, with 1–8 going to one YM722 (CPB) LSI and 9–16 going to another.

Applying Vdd (–15V) to the CS terminal of the YM722s (pin 10) selects 1–8, while Vss (0V) selects 9–16. In the CP35, IC16 and IC18 apply to channels 1 through 8 while IC15 and IC17 apply to channels 9 through 16. Because the system has two channels there are four YM722s altogether.

The octave blocks have two outputs with completely different envelopes for attack and sustain.

MEMO

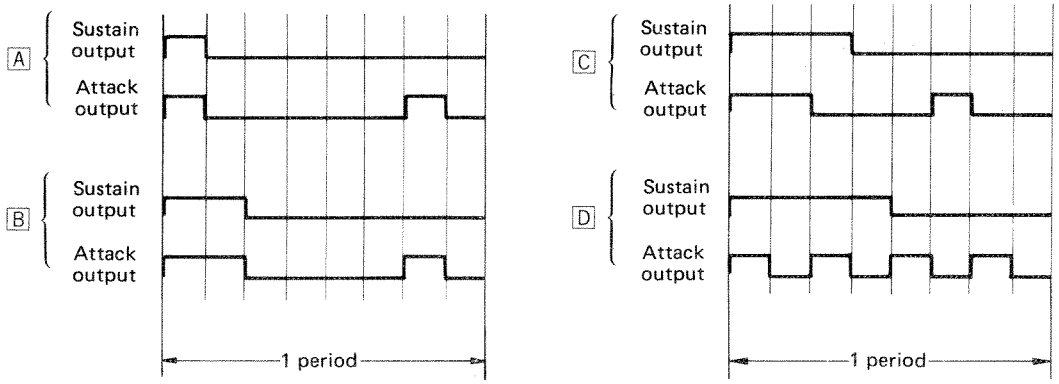
The table below gives the correspondence between output terminals, the notes output, and the output envelopes.

Terminal			Output note	Output envelope
C_1 15 CIA		HS2 43	$E_0 \sim C_1$ $C_1^{\#} \sim C_2$	Sustain envelope
16 CIB		HS3 42	$C_2^{\#} \sim C_3$	
C_2		HS4 41	$C_3^{\#} \sim C_4$	0V
		HS5 40	$C_4^{\#} \sim C_5$	Approx.100mV
	YM722	HS6 39	$C_5^{\#} \sim E_6$	
	CPB			
		HA2 37	$E_0 \sim C_1$ $C_1^{\#} \sim C_2$	Attack envelope
		HA3 36	$C_2^{\#} \sim C_3$	
C_{15} 29 C8B		HA4 35	$C_3^{\#} \sim C_4$	0V
30 C8A		HA5 34	$C_4^{\#} \sim C_5$	Approx.50mV
C_{16}		HA6 33	$C_5^{\#} \sim E_6$	

- So that the charge/discharge times of the capacitors which determine the envelopes of the 8 intervals of $C_1 \sim C_{16}$ will not have any effect on the note envelopes, two capacitors are used for each note and are switched alternately in and out.
- The basic waveform that will be used to produce all music signals is selected by the A, B, C and D positions of the WAVE I, II (PSW9, 10) switches as shown in the diagram.

WAVE 1 II

Output waveform



- By using the CH-II 5th and 8th (PSW19, 20) panel switches, the second channel can be shifted up a fifth, an octave, or a twelfth from the first channel.

	SET CONDITION	OUTPUT NOTE RANGE
Channel I		$E_0 \sim A_3 \sim E_6$
Channel II	• 5th On	$B_0 \sim E_4 \sim B_6$ (up a 5th)
	• 8th On	$E_1 \sim A_4 \sim E_7$ (up an octave)
	• 5th, 8th On	$B_1 \sim E_5 \sim B_7$ (up a twelfth)

Filters

The filter circuits are constructed entirely of capacitors, resistors, and Op amps, in both filter and mixer configurations. They combine the attack outputs HA2–HA6 and the sustain outputs HS2–HS6 and send them to the filter select circuit.

Filter select circuit

The select circuit is a Schmidt trigger combining an "On" switch, a NAND and an inverter, plus a flip flop, an indicator LED, and an LED driver with an op amp multivibrator (low-frequency oscillator) for LED flashing. FET gates (FET1–12, one for each voice) are turned on (0V) or off (–15V) to select the voice.

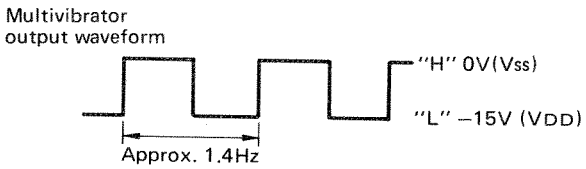
The select switches operate as follows:

a) The four voices of the Filter I–1 to I–4 switches may be combined.
b) The four voices of the Filter II–1 to II–4 switches may be combined.
c) Only one of the Preset 1 to 4 voices may be selected.
d) The Presets switches activate pre-selected settings for Wave I, II, 5th, 8th, and Balance.
e) When power is first turned on, the Presets I LED lights and the Filter I–1 and Filter II–3 LEDs flash. Playing the keyboard produces the voice selected by Presets 1.
f) To switch from the Preset voice to the Filter voice press the lit Preset switch.
g) The Filter I or Filter II switch can be depressed in preparation for use while using a Preset voice. The selected switch will flash. In addition, the Wave switch and the Balance control may be preset at this time.
h) To switch from the Filter I or II voice to a Preset voice, press the appropriate Preset switch. The selected switch will light, and the previous Filter I or II switch will flash.

The filter select circuit is shown in the diagram. (Refer to the SELECT circuit diagram on page 14)

The power-on reset sequence is as follows:

a) Immediately after power on, –15V (V_{DD}) from the 1μF capacitor and the 100K resistor sets the Preset I flip flop via pin S of IC16, the Filter I–1 flip flop (1/2 of IC9), and the Filter II–3 flip flop (1/2 of IC12).
b) A high appears at pin 16 of the set of Preset 1 flip flop (half of IC16), passes through PR1 and turns on Preset 1 FET 9 gate. The Preset 1 voice goes through FP to the mixing terminal. At the same time, Filter I–1 and Filter II–3 gates FET1–FET7 are on, so the signal also passes through F1 and F2 to the Balance mixing circuit.
c) The high at PR1 goes through diode D42 and an inverter (part of IC7) to become a low. The low turns off mixing gate FET1. This shows that the Preset 1 voice is to be given priority regardless of Preset 1, Filter I–1, and Filter I–3.
d) The low at MS is inverted by IC7 to become a high, and the AND gate IC14 pin 13 becomes high. Then the Op amp IC15, a capacitor and a resistor form a multivibrator, which sends the waveform shown to pin 12 of AND gate IC14.
   Output at pin 11 of the AND gate (IC14) sends a low signal as shown in the timing diagram to turn on transistor Tr1.



The collector of Tr1 drives the common anode line of [Filter I–1 ~ 4], [Filter II–1 ~ 4], [5th] and [8th] indicator LEDs.

This causes [the Filter I–1] and [Filter II–3] LEDs to flash continuously.

e) $\overline{5th}$ and $\overline{8th}$ signals

The high from PR1 (see (b) above) passes through diode D35 to become a high at the $\overline{5th}$ terminal, then passes through D38 to bring the $\overline{8th}$ terminal high. In other words, [the Preset I] voice activated with power on has [5th] and [8th] turned on. Channel II has a pitch that is higher than channel I by an octave and a fifth. The LEDs don't flash after power on.

5th and 8th selected by Presets

PRESETS	I	2	3	4
channel II	[5TH] & [8TH]	[5TH] & [8TH]	Normal	[8TH]

f) Wave I and Wave II signals

The high from PR1 (see (b) above) goes to the PR1 terminals on the PN1 board, and sets channel 1WS1 to high and channel II 2WS0 and 2WS1 to high. When Preset 1 is selected, this shows that wave C is selected on channel I and wave D on channel II.

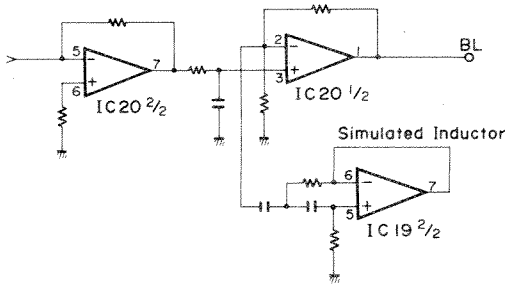
PRESET WAVE selection

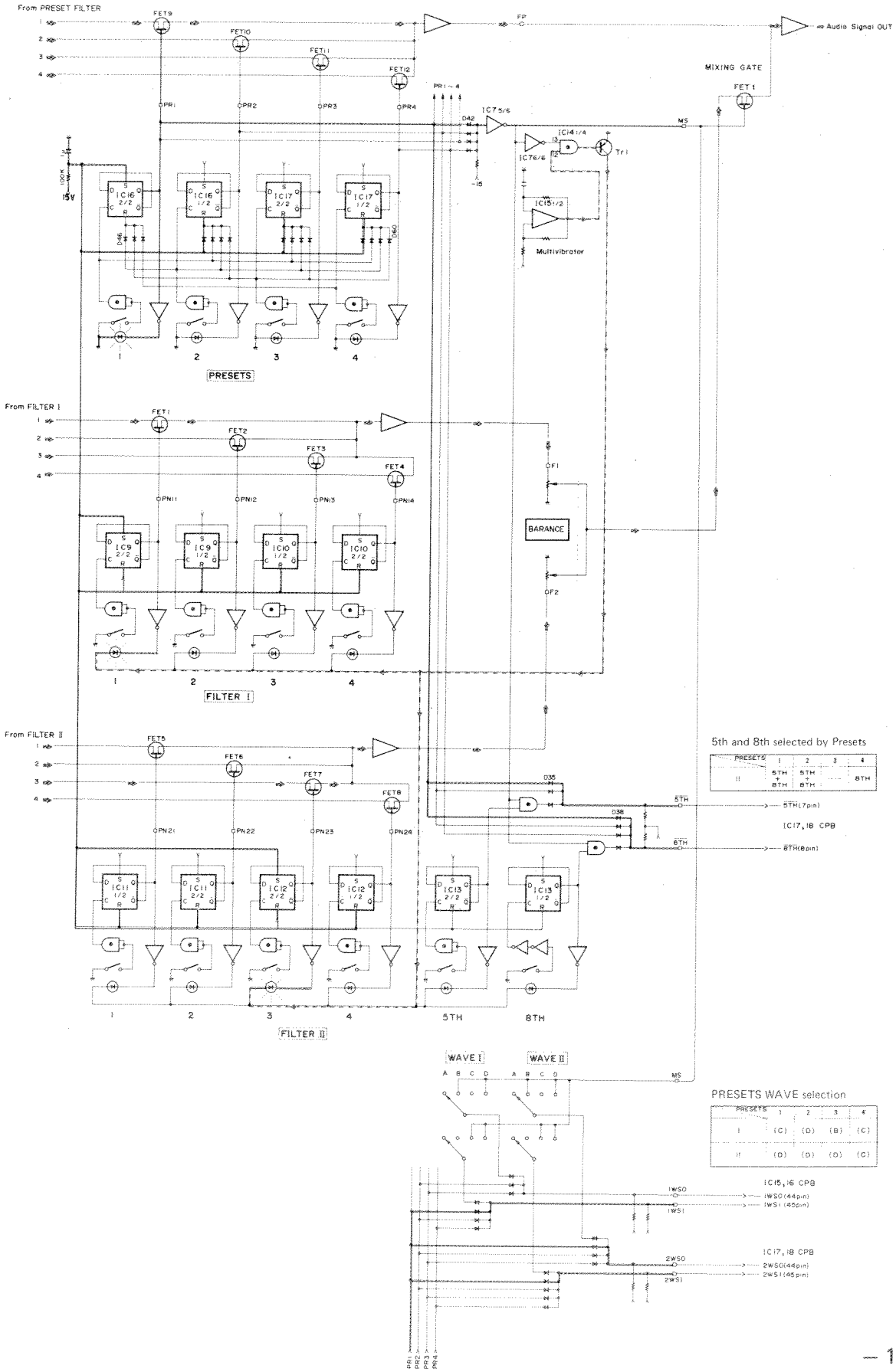
PRESETS		I	2	3	4
Channel I		WAVE [C]	WAVE [D]	WAVE [B]	WAVE [C]
	WSO	L	H	H	L
	WSI	H	H	L	H
Channel II		WAVE [D]	WAVE [D]	WAVE [D]	WAVE [C]
	WSO	H	H	H	L
	WSI	H	H	H	H

g) Diodes D46–D60 are used to select one preset voice and ignore the others. (no mixing performed).

MIXING

Overall timbre of the signal from the output of the filter select and preset select circuits is adjusted by equalization. A simulated semiconductor inductor is formed by IC19-2/2 which, combined with IC20-1/2, forms a peaking type equalizer. This equalizer creates a +10dB frequency boost at 560Hz.




From PRESET FILTER
FET9
FET10
FET11
FET12
FP
Audio Signal OUT
MIXING GATE
FET 1
PR1~4
IC7 5/6
IC14 1/4
IC7 6/6
Tr1
IC15 1/2
Multivibrator
15V
100K
PRESETS
From FILTER I
FET1
FET2
FET3
FET4
BARANCE
FILTER I
From FILTER II
FET5
FET6
FET7
FET8
FILTER II
5TH
8TH
5th and 8th selected by Presets
5TH(7pin)
8TH(8pin)
IC17, 18 CPB
WAVE I
WAVE II
PRESETS WAVE selection
IC15, 16 CPB
1WS0(44pin)
1WS1(45pin)
IC17, 18 CPB
2WS0(44pin)
2WS1(45pin)

KEY CODE OUT

This output is provided for connection to other keyboards having a KEY CODE INPUT connector, such as the CS70M. A special cable is used to connect the CP-35 KEY CODE OUTPUT to the peripheral keyboard's KEY CODE INPUT. With the CP35 connected to another keyboard in this manner, the CP35 keys directly control on/off switching of the respective keys on the peripheral keyboard.

KEY CODE INTERFACE

The key code interface circuit transforms the 4-bit CPA key code output data into the required parallel key code data format.

CPA OUTPUT KEY CODE DATA FORMAT

Transmitted key code

Channel	1 2 3	4 5 6	7 8 9	10 11 12	13 14 15	16 17 18	19 20 21	22 23 24	25 26 27	28 29 30	31 32 33	34 35 36	37 38 39	40 41 42	43 44 45	46 47 48
KC1	BR B1 N1	←	←	←	←	←	←	←	←	←	←	←	←	←	←	←
KC2	$\overline{DP}$ B2 N2															
KC3	MK B3 N3															
KC4	☆ CHG N4															
Note timing 16CHs	1	4	7	10	13	16	3	6	9	12	15	2	5	8	11	14

Key code format (Block)

B1	H	L	H	L	H	L	H
B2	L	H	H	L	L	H	H
B3	L	L	L	H	H	H	H
73 Keys	E_0 ↕ C_1	$C_1^\#$ ↕ C_2	$C_2^\#$ ↕ C_3	$C_3^\#$ ↕ C_4	$C_4^\#$ ↕ C_5	$C_5^\#$ ↕ C_6	$C_6^\#$ ↕ E_6

Key code format (Note)

N1	L	H	L	L	H	L	L	H	L	L	H	L
N2	L	L	H	L	L	H	L	L	H	L	L	H
N3	L	L	L	H	H	H	L	L	L	H	H	H
N4	L	L	L	L	L	L	H	H	H	H	H	H
	$C^\#$	D	$D^\#$	E	F	$F^\#$	G	$G^\#$	A	$A^\#$	B	C

KEY CODE OUT DATA

The format of the parallel key code data output from the key code data interface is as shown below.

Key Code Output Connector

Pin Name	Pin No.	Data · Condition
K2	(1)	Keyboard data "L" (fixed)
K1	(2)	Keyboard data "H" (fixed)

Block data

	E_0~C_1	$C_1^\#$~C_2	$C_2^\#$~C_3	$C_3^\#$~C_4	$C_4^\#$~C_5	$C_5^\#$~C_6	$C_6^\#$~E_6
B3T	L	L	L	H	H	H	H
B2T	L	H	H	L	L	H	H
R1T	H	L	H	L	H	L	H

Note data

	$C^\#$	D	$D^\#$	E	F	$F^\#$	G	$G^\#$	A	$A^\#$	B	C
N4T	L	L	L	L	L	L	H	H	H	H	H	H
N3T	L	L	L	H	H	H	L	L	L	H	H	H
N2T	L	L	H	L	L	H	L	L	H	L	L	H
N1T	L	H	L	L	H	L	L	H	L	L	H	L

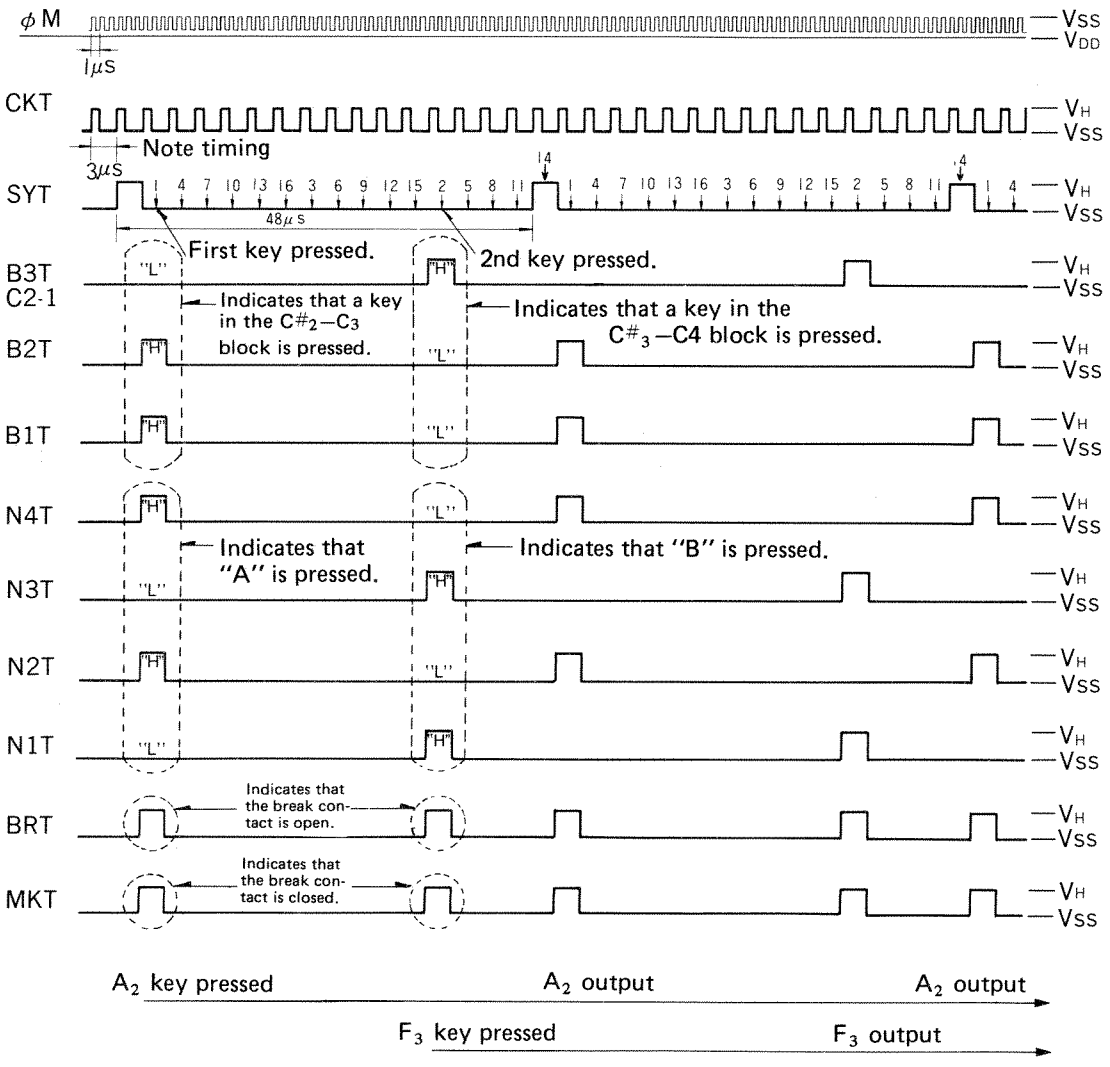
OCT	(16)	Octave data "L" (fixed)
CON	(17)	Connection data "L" (fixed)

端子名	端子No.	内　容・状　態	
BRT	(18)	Touch response data	"H" when the transfer point (T) is not connected with the break contact (BR), "L" when the transfer point is connected to the break contact.
MKT	(19)	Touch response data	"H" when transfer point (T) is connected to the make contact (MK), "L" when envelope has ended and there is no connection with break point (BR).
$\overline{DPT}$	(20)	Damp data	"H" when the sustain pedal is pressed, "L" when released.
SYT	(21)	Syncro data	Synchronization signal. Synchronization=48 microseconds.
CKT	(22)	Clock	ϕM/3 Synchronized at 1/3 master clock.
Vss	(23)	Power	
Vss	(24)	"	

KEY CODE DATA OUT TIMING CHART

After power has been turned on, if the A_2 key is first pressed, then while A_2 is held F_3 is pressed, the following timing results.

$V_H = +3.4^{+2.1}_{-0.7}$ VOLTS
Vss = 0VOLTS
V_{DD} = −15VOLTS

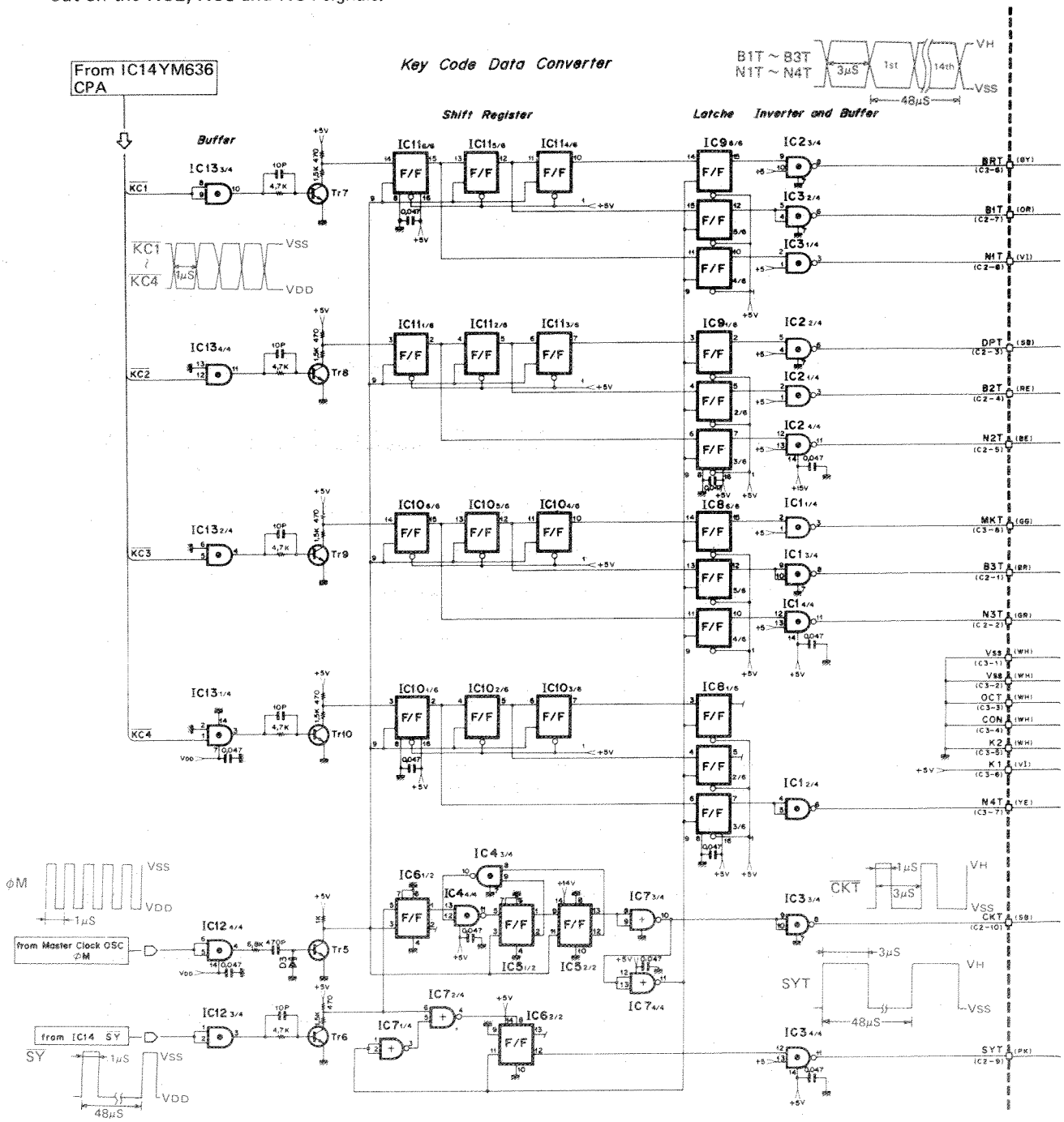


KEYCODE DATA CONVERSION CIRCUIT

Transistors Tr5–Tr10 convert the MOS output level [Vss(0V), Vdd(−15V)] from the key code channel processor IC, IC14(CPA), to TTL logic levels [Vss(0V), Vdd(+5V)]. An inverter is also included.

The data in $\overline{KCI}$ (BR, BI, NI) are synchronized to appear simultaneously using shift register IC11-4/6–6/6.

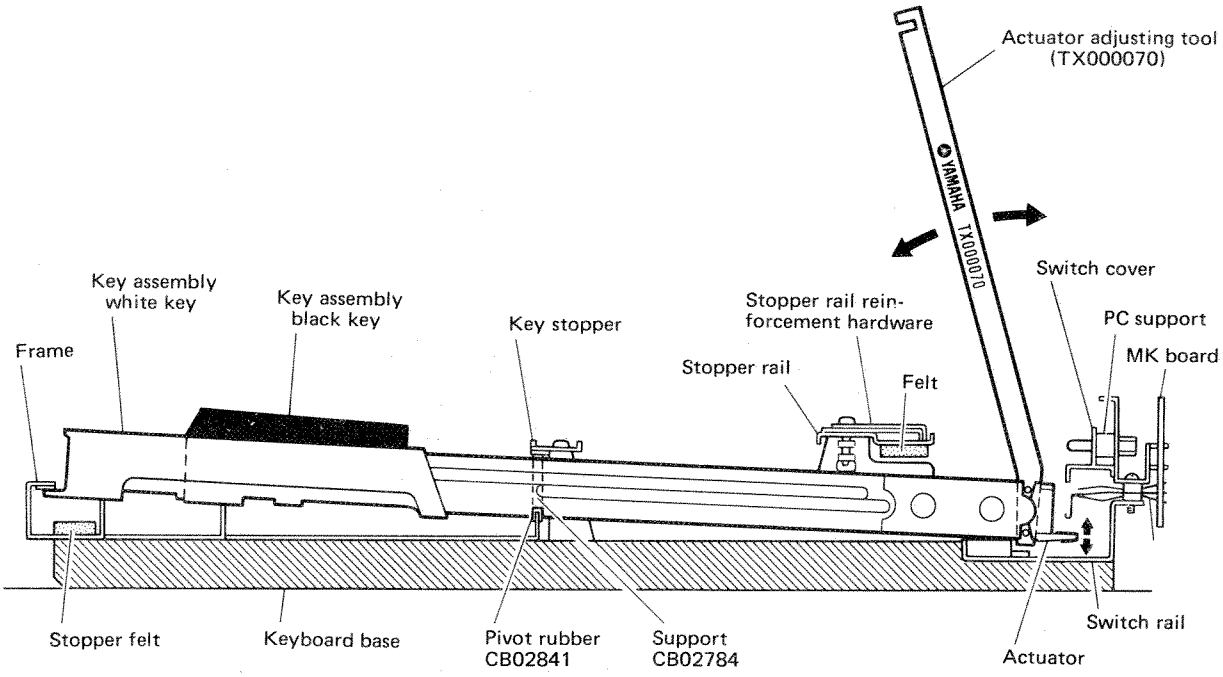
IC9-4/6–6/6 forms a latch circuit that stretches the data pulses to 3 microseconds. This operation is carried out on the $\overline{KC2}$, $\overline{KC3}$ and $\overline{KC4}$ signals.



ADJUSTING THE MECHANISM

- **Adjusting the velocity keying actuator**

*NOTE: Actuator adjustment is preset at the factory, so no adjustment is required unless the key assembly is replaced.



Use the actuator adjusting tool to adjust the level of each key to be the same as the adjacent keys.

* If the level of a note is too low, lower the actuator by moving the adjustment tool forward. Lowering the actuator results in higher velocity thereby increasing level.
* If the level of a note is high, raise the actuator by moving the adjustment tool back. Raising the actuator results in lower velocity thereby decreasing level.

MEMO

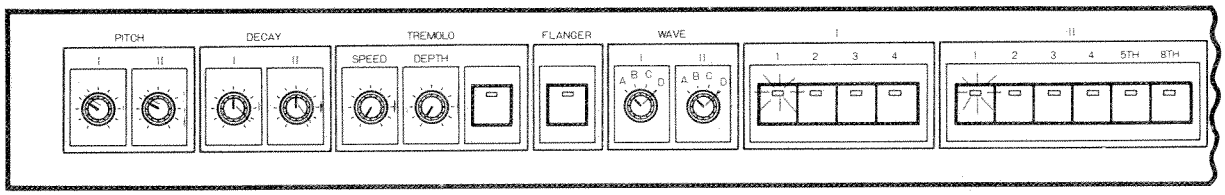
BASIC ADJUSTMENT PROCEDURE(ELECTRICAL)

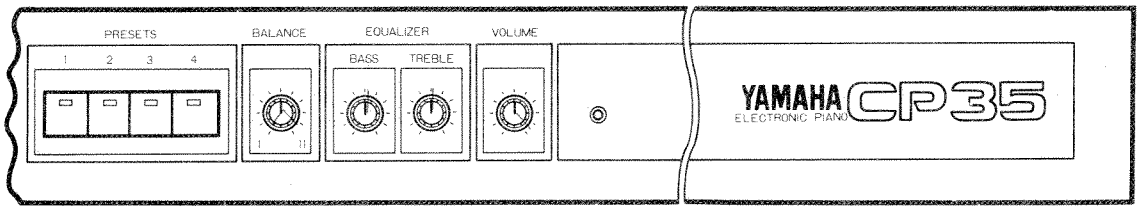
1. Basic panel settings

Initial setting: When power is first turned on the following condition is obtained:

• Power indicator	LED	ON
• Presets 1 (PSW21)	LED	ON
• Filter I–1 (PSW11)	LED	Flashing/Standby Mode
• Filter I–3 (PSW17)	LED	Flashing/Standby Mode
• Other LEDs		OFF

When performing adjustments, all controls should be set as shown in the illustration and chart below except as otherwise indicated.





PITCH I	(PVR1)	10 o'clock position
PITCH II	(PVR2)	10 o'clock position
DECAY I	(PSW3)	fully clockwise (DECAY MAX)
DECAY II	(PSW4)	fully clockwise (DECAY MAX)
TREMOLO SPEED	(PVR5)	MINIMUM
TREMOLO DEPTH	(PVR6)	MINIMUM
TREMOLO ON–OFF	(PSW7)	OFF
FLANGER	(PSW8)	OFF
WAVE I	(PSW9)	fully clockwise (D position)
WAVE II	(PSW10)	fully clockwise (D position)
I–1	(PSW11)	ON
I–2	(PSW12)	OFF
I–3	(PSW13)	OFF
I–4	(PSW14)	OFF

II–1	(PSW15)	ON
II–2	(PSW16)	OFF
II–3	(PSW17)	OFF
II–4	(PSW18)	OFF
5TH	(PSW19)	OFF
8TH	(PSW20)	OFF
PRESETS 1	(PSW21)	OFF
PRESETS 2	(PSW22)	OFF
PRESETS 3	(PSW23)	OFF
PRESETS 4	(PSW24)	OFF
BALANCE	(PVR25)	fully counter-clockwise when measuring channel I fully clockwise when measuring channel II
EQUALIZER BASS	(PVR26)	Centered
EQUALIZER TREBLE	(PVR27)	Centered
VOLUME	(PVR28)	MAXIMUM

2. Tuning

Test Equipment	Tuning scope
Control Settings	PITCH I, PITCH II at 10 o'clock.
Adjustment Specification	A_3 = 440Hz
Procedure	Adjust master oscillator cois "L1" and "L2" on the KC board for 440Hz while depressing the A_3 key

3. Procedures for adjusting individual boards

- Test equipment
  tuning scope
  digital voltmeter
  oscilloscope

- Circuit Boards and Their Functions

Circuit Board	Function
DM	clock generators I & II key assigner tone generators I & II keycode convertor initial clear circuit
FL	filters channel I – 1, 2, 3, 4, channel II – 1, 2, 3, 4 preset – 1, 2, 3, 4
PN2 PN3	filter selection switch filter I – 1 ~ 4 filter II – 1 ~ 4 preset – 1 ~ 4 5th, 8th select switch LED flasher
EFT	flanger effect circuit BBD device driver circuit compander, expander circuits tremolo effect circuits (2) photo coupler driver circuits (2)

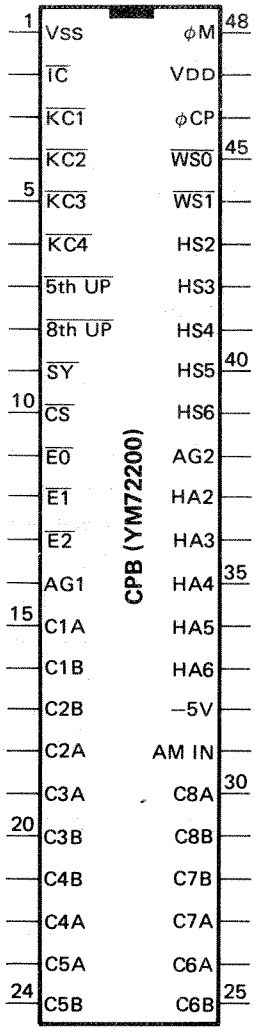
Circuit Board	Function
EFT	output circuits unbalanced output circuit balanced output circuit headphone output circuit muting circuit
PN1	Pitch control I & II circuits Decay switch I & II circuits tremolo switch speed depth flanger switch Wave switch I & II circuits
PN4	Balance control circuit equalizer (bass & treble) control circuits master volume circuit
DC	+5, –15V regulators (for digital circuits) +15, –15V regulators (for analog circuits)

IC DATA CHART

Part Name	YM722000	Function Name	CPB (Combo Piano–B) Tone Generator

Terminal Pin No.	Terminal Name	I/O	Description
1	VSS	I	Ground (0V)
2	$\overline{IC}$	I	Initial Clear
3	$\overline{KC1}$	I	Key Code Data
4	$\overline{KC2}$	I	– do. –
5	$\overline{KC3}$	I	– do. –
6	$\overline{KC4}$	I	– do. –
7	$\overline{5th\ UP}$	I	Transposition Data
8	$\overline{8th\ UP}$	I	– do. –
9	$\overline{SY}$	I	Synchro Data
10	$\overline{CS}$	I	Chip Select 1~8ch, 9~16ch Synchro Select.
11	$\overline{E0}$	I	Envelope Data
12	$\overline{E1}$	I	– do. –
13	$\overline{E2}$	I	– do. –
14	AG1	I	Analog Ground
15	C1A	I	Envelope Setting Capacitor
16	C1B	I	– do. –
17	C2B	I	– do. –
18	C2A	I	– do. –
19	C3A	I	– do. –
20	C3B	I	– do. –
21	C4B	I	– do. –
22	C4A	I	– do. –
23	C5A	I	– do. –
24	C5B	I	– do. –

Terminal Pin No.	Terminal Name	I/O	Description
48	ϕM	I	Master Clock (1MHz)
47	VDD	I	DC Supply (–15V)
46	ϕCP	I	Pitch Clock
45	$\overline{WS0}$	I	Wave Select Data
44	$\overline{WS1}$	I	– do. –
43	HS2	O	Sound Source Waveform (Sustain) Block 0, 1,
42	HS3	O	– do. – 2
41	HS4	O	– do. – 3
40	HS5	O	– do. – 4
39	HS6	O	– do. – 5, 6
38	AG2	I	Analog Ground
37	HA2	O	Sound Source Waveform (Attack) Block 0, 1,
36	HA3	O	– do. – 2
35	HA4	O	– do. – 3
34	HA5	O	– do. – 4
33	HA6	O	– do. – 5, 6
32	–5V	I	DC Supply (≒ –10V)
31	AMIN	I	Minimum Level Setting
30	C8A	I	Envelope Setting Capacitor
29	C8B	I	– do. –
28	C7B	I	– do. –
27	C7A	I	– do. –
26	C6A	I	– do. –
25	C6B	I	– do. –



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YAMAHA

ELECTRONIC PIANO

CP35

PARTS LIST

CONTENTS

Printed in Japan

A. Electronic Components

	Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets
※		NA 10 69 20	Circuit Board, PN	# 2883	PN シート		
※		NA 10 69 30	— do. — , EFT	# 2884	EFT 〃		
※		NA 10 69 40	— do. — , DM	# 2885	DM 〃		
※		NA 10 69 50	— do. — , FL	# 2886	FL 〃		
※		NA 10 69 60	— do. — , JK	# 2887	JK 〃		
※		NA 10 69 70	— do. — , DC	# 2888	DC 〃		J
※		NA 10 69 80	— do. — , — do. —	— do. — 〃			U,C
※		NA 10 69 90	— do. — , — do. —	— do. — 〃			G
※		NA 10 70 30	— do. — , AC	# 2891	AC シート		J
※		NA 10 70 40	— do. — , — do. —	— do. — 〃			U
※		NA 10 70 50	— do. — , — do. —	— do. — 〃			G
※		NA 10 74 10	— do. — , — do. —	— do. — 〃			C
※		NB 10 35 10	Power Transformer Assembly	# 8258	電源トランスAss'y		G
※		NB 10 41 50	— do. —	# 0393 〃			J,U
※		NB 10 41 60	— do. —	# 0393 〃			C
※		NB 81 76 90	Switch Assembly	33Key	スイッチ Ass'y		
※		NB 81 77 00	— do. —	40Key 〃			
		NB 80 76 00	Switch Unit	6Key	スイッチユニット		
		NB 80 76 10	— do. —	3Key 〃			
※		NB 81 75 70	— do. —	4Key 〃			
		iG 00 11 70	IC	TC4001BP	IC	2-input NOR	
		iG 00 11 80	— do. —	TC4013BP 〃		D Flip-Flop	
		iG 00 12 40	— do. —	TC4011BP 〃		2-input NAND	
		iG 00 12 60	— do. —	TC4049BP 〃		Buffer/Converter	
		iG 00 13 90	— do. —	NJM4558DV 〃		OP. Amp	
		iG 00 17 60	— do. —	TC4081BP 〃		2-input AND	
		iG 02 74 00	— do. —	TA7220P 〃		Amp	
		iG 02 87 00	— do. —	μPC14315H 〃		+15V Regulator	
		iG 03 13 00	— do. —	NE570N 〃		Noise Reduction	
		iG 03 29 00	— do. —	# 3290 〃		BBD Driver	
		iG 03 33 00	— do. —	μPC14305H 〃		+5V Regulator	
		iG 04 61 00	— do. —	MN3009 〃		256 Stage BBD	
		iG 05 08 00	— do. —	TC40174BP 〃		D Flip-Flop	
※		iG 05 34 00	— do. —	HD74LS37P 〃		2-input NAND	
※		iT 63 60 00	— do. —	YM63600 〃		CP-A (Key coder Channel Processor)	
※		iT 72 20 00	— do. —	YM72200 〃		CP-B (Tone Generator)	
		iA 05 09 10	Transistor	2SA509 (Y)	トランジスタ		
		iA 10 15 70	— do. —	2SA1015 (O,Y) 〃			
		iC 07 52 20	— do. —	2SC752 (Y) 〃			
		iC 18 15 70	— do. —	2SC1815 (O,Y) 〃			
		iE 10 12 00	FET	2SK105 (F)	FET		
		iF 00 00 40	Diode	1S1555	ダイオード		
		iH 00 04 70	— do. —	1D4B1 〃			
※		iK 00 03 40	Photo Coupler	P1501	フォトカプラー		
		iL 00 05 80	Mica Base		マイカベース		
		CB 07 28 80	Insulation Bushing		絶縁ブッシュ		

※ New Parts (新規部品) (J : Japan, U : US.American, C : Canadian, G : General)

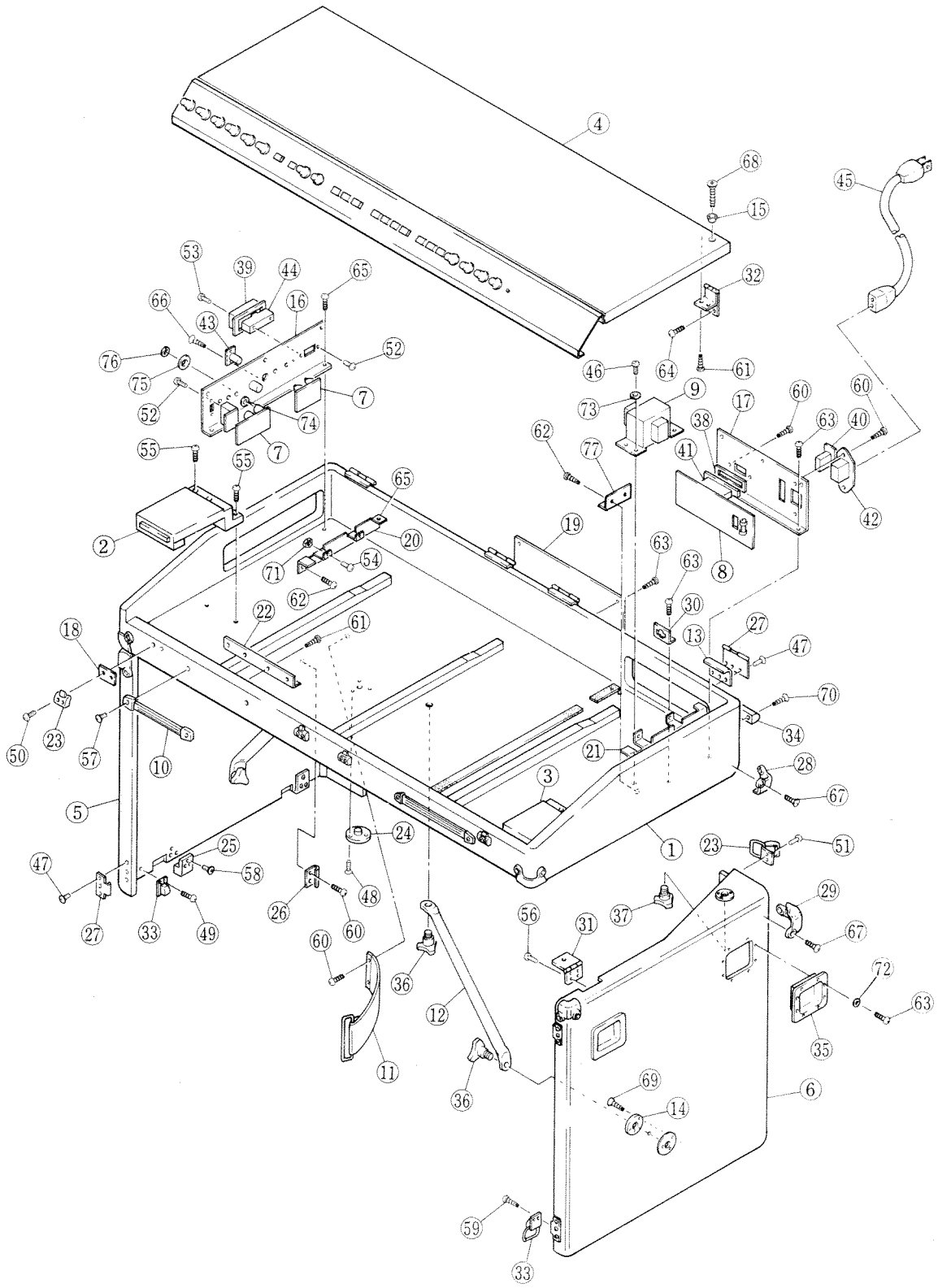
	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
		HS 31 04 40	Variable Resistor	B50KΩ	ロータリーボリューム	TREBLE, BASS		
		HS 31 05 50	— do. —	A10KΩ	〃	MASTER VOL.		
		HS 31 05 70	— do. —	B10KΩ	〃	PITCH,TREMOLO DEPTH		
		HS 31 13 30	— do. —	C100KΩ	〃	TREMOLO SPEED		
※		HS 31 14 20	— do. —	BH10KΩx2	〃	BALANCE		
		HT 37 00 20	Semi Variable Resistor	B10KΩ	半固定抵抗			
		HT 37 01 00	— do. —	B50KΩ	〃			
		HV 35 43 30	Flame-Proof Carbon Resistor	33Ω	不燃化カーボン抵抗			
		HV 35 52 20	— do. —	220Ω	〃			
		HW 99 45 60	Fuse Resistor	56Ω	ヒューズ抵抗	FN19560		
		FD 65 22 70	Polystyrene Capacitor	270PF	スチロールコンデンサ			
		FD 65 26 80	— do. —	680PF	〃			
		FL 63 64 70	B.P. Electrolytic Cap.	4.7μF/16V	B.P. ケミコン			
		FL 63 71 00	— do. —	10μF/16V	〃			
		FL 63 72 20	— do. —	22μF/16V	〃			
		FL 66 64 70	— do. —	4.7μF/50V	〃			
		FM 80 92 20	Electrolytic Capacitor	2200μF/35V	ケミコン			
		UJ 15 91 00	— do. —	1000μF/35V	〃			
		UJ 13 91 00	— do. —	1000μF/16V	〃			
※		UL 14 66 80	— do. —	6.8μF/25V	〃	Lo Noise		
		FZ 00 22 50	Spark Suppressor Cap.	0.022μF	スパークキラーコンデンサ			
		FZ 00 28 50	— do. —	0.0022μF	〃			U
		KA 10 10 60	Power Switch		パワースイッチ			
		KA 40 08 10	Slide Switch	4-2	スライドスイッチ	LINE SW		
		KA 40 08 30	Voltage Selector		電圧切替器			
		KA 50 17 20	Rotary Switch	1-8	ロータリースイッチ	DECAY I, II		
		KA 50 17 00	— do. —	3-4	〃	WAVE I, II		
		KA 90 17 01	Push Switch W/LED	Gray	プッシュスイッチ	TREMOLO, FLANGER 5TH, 8TH UP		
		KA 90 17 11	— do. —	White	〃	FILTER, PRESET		
		KB 00 03 10	Fuse	0.5A 250V	ヒューズ			J
		KB 00 03 30	— do. —	1A 250V	〃			J
		KB 00 03 40	— do. —	1.5A 250V	〃			J
		KB 00 07 10	— d0. — (Miniature)	T500mA 250V	ミニチュアヒューズ			G
		KB 00 07 30	— do. — — do. —	T1A 250V	〃			G
		KB 00 10 60	— do. —	1A 250V	ヒューズ			U,C
		KB 00 11 50	— do. —	0.5A 250V	〃			U,C
		KB 00 15 90	— do. —	1.5A 250V	〃			U,C
※		KC 00 13 00	Relay	RZ12	リレー			
		GD 90 02 50	Line Transformer		ラインドランス			
		GE 30 03 50	Choke Coil	68μH	チョークコイル			
		GE 90 03 40	OSC Coil	200μH	OSC コイル			

※ New Parts (新規部品)

Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
	GE 90 05 00	Coil	CK4	コイル			U
	GE 90 05 30	– do. –	CK6	〃			U
	MG 00 10 30	AC Cord		電源コード			J
	MG 00 10 40	– do. –		〃			U
	MG 00 10 50	– do. –		〃			G
	MG 00 12 80	– do. –		〃			C
	LB 20 18 20	AC Inlet	2P	ACインレット			J,U,C
	LB 20 18 60	– do. –	– do. –	〃			G
	LB 20 15 40	Phone Jack		ジャック			
	LB 30 01 60	Connon Socket	XLR-3-32	キャノンソケット			
	LB 20 05 70	Fuse Holder Pin		ヒューズホルダーピン			
	LB 20 15 30	– do. –		〃			
	LB 50 02 50	Connector Base Pin	5P	2.5ピッチベースピン	Top Entry		
	LB 60 24 60	– do. –	7P	〃	– do. –		
	LB 60 24 90	– do. –	8P	〃	– do. –		
	LB 60 24 70	– do. –	10P	〃	– do. –		
	LB 40 05 90	– do. –	4P	〃	Side Entry		
	LB 50 02 70	– do. –	5P	〃	– do. –		
	LB 60 28 20	– do. –	6P	〃	– do. –		
	LB 60 30 20	– do. –	8P	〃	– do. –		
	LB 50 03 70	– do. –	5P	〃	Bottom Entry		
	LB 60 30 00	– do. –	7P	〃	– do. –		
	LB 60 30 70	– do. –	10P	〃	– do. –		
	LB 40 05 60	Connector Housing	4P	2.5ピッチハウジング			
	LB 50 02 40	– do. –	5P	〃			
	LB 60 28 10	– do. –	6P	〃			
	LB 60 24 40	– do. –	7P	〃			
	LB 60 24 80	– do. –	8P	〃			
	LB 60 24 50	– do. –	10P	〃			
	LB 60 15 40	Connector Plug	9P	9Pプラグ			
	LB 60 15 50	Connector Cap	9P	9Pキャップ			
	LB 60 40 40	Connector Housing	8P	ハウジング			
	LB 60 39 90	Connector	8P	コネクター			
	LB 60 39 40	Connector Socket	24P	コネクターソケット			
	BB 00 44 30	Pin Contact		ピンコンタクト			
	BB 00 49 90	– do. –		〃			
	LB 60 16 70	– do. –		〃			
	LB 60 16 60	Socket Contact		ソケットコンタクト			

※ New Parts (新規部品)

B. Cabinet Assembly



	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
※	1	DA 02 45 50	Bottom Case Assembly		底枠集成			
※	2	DA 02 45 70	End-Block Assembly (L)		拍子木集成(左)			
※	3	DA 02 45 80	– do. – (R)		〃 (右)			
※	4	DA 02 45 90	Top-Board Assembly		屋根集成			

※ New Parts (新規部品)

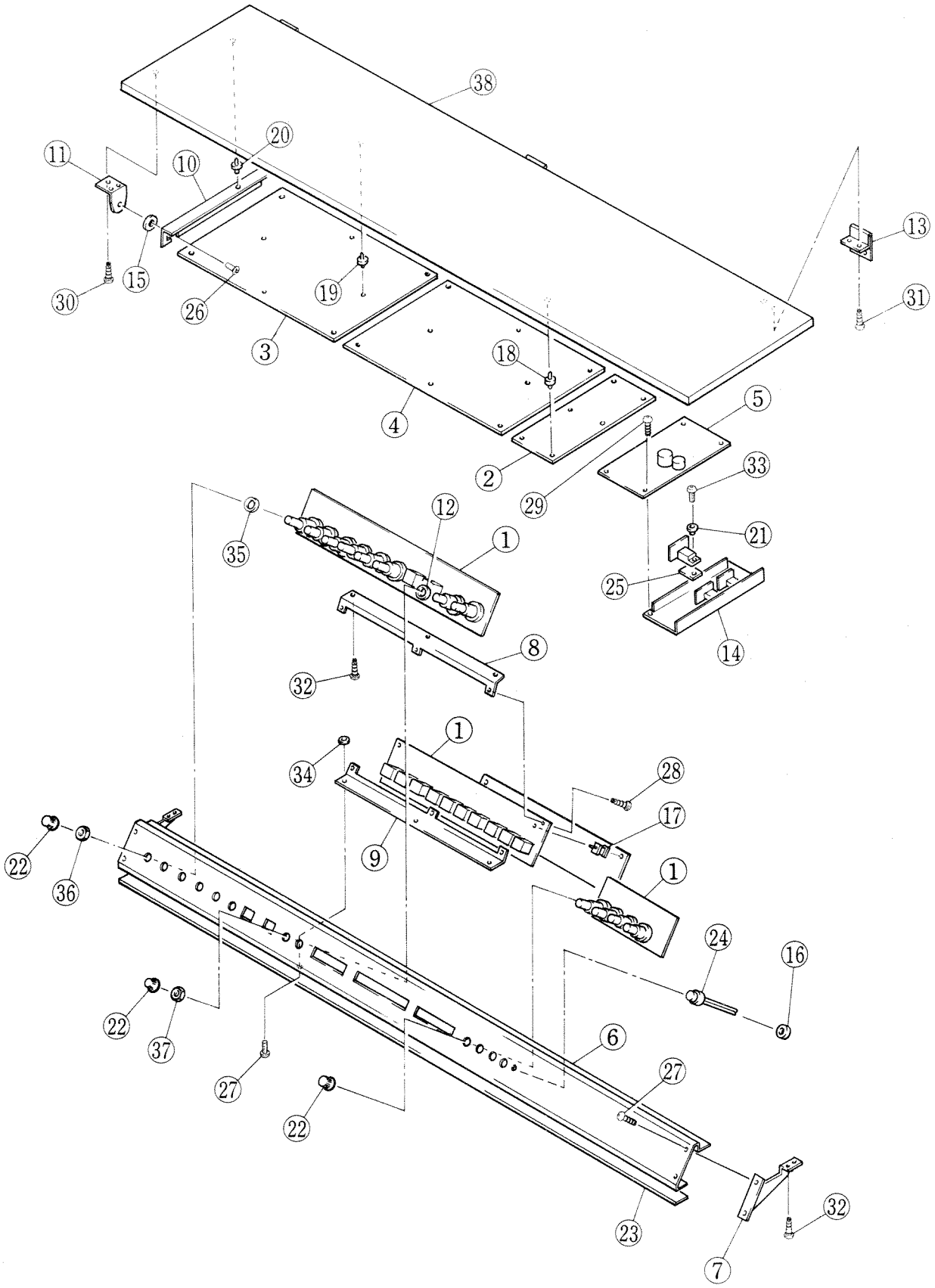
	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
※	5	DA 02 46 00	Cover Assembly (L)		蓋脚集成（左）			
※	6	DA 02 46 10	— do. — (R)		〃 （右）			
※	7	NA 10 69 60	Circuit Board, JK	# 2887	JK シート			
※	8	NA 10 70 30	— do. — , AC	# 2891	AC 〃			J
※		NA 10 70 40	— do. — , — do. —	— do. —	〃			U
※		NA 10 70 50	— do. — , — do. —	— do. —	〃			G
※		NA 10 74 10	— do. — , — do. —	— do. —	〃			C
※	9	NB 10 35 10	Power Transformer Assembly		電源トランスAss'y			G
※		NB 10 41 50	— do. —		〃			J,U
※		NB 10 41 60	— do. —		〃			C
	10	NB 80 59 50	Handle Assembly		取手 Ass'y			
	11	NB 80 59 60	Pedal Stopper Band		ペダル止めバンドAss'y			
	12	NB 81 69 90	Stay Assembly		脚柱 Ass'y			
	13	AA 01 46 90	Corner Angle		コーナーアングル			
	14	AA 01 58 70	Stay Washer		脚受座金			
	15	AA 02 90 40	Washer		皿ワッシャー			
※	16	AA 05 25 40	I/O Panel		I／O パネル			
※	17	AA 05 25 60	AC Panel		電源パネル			J,U,C
※		AA 05 25 70	— do. —		〃			G
※	18	AA 05 32 40	Lock Plate		パッチン錠プレート			
※	19	AA 05 26 20	Name Plate		ネームプレート			
※	20	AA 05 26 30	Top Board Holder (L)		屋根受金具（左）			
※	21	AA 05 26 40	— do. — (R)		〃 （右）			
※	22	AA 05 32 00	Handle Plate		取手取付金具			
	23	AA 80 24 50	Lock		パッチン錠			
	24	AA 80 42 70	Nut, Leg		脚用ナット			
	25	AA 80 42 90	Slip Fitting		滑り座			
	26	AA 80 43 20	Pedal Stopper		引掛金具			
	27	AA 80 64 20	Latch Hinge		引掛蝶番			
	28	AA 80 90 50	Corner Metal		コーナー金具			
	29	AA 81 47 70	— do. —		〃			
	30	AA 81 63 00	Connector Holder		コネクタホルダー			
	31	AA 81 66 30	Leg Hinge		脚蝶番			
	32	AA 81 73 80	Top Board Hinge		蝶番			
	33	AA 99 00 00	Lock		パッチン錠			
	34	CB 01 03 10	Case Leg		脚			
※	35	CB 04 02 10	Handle		蓋脚取手			
	36	CB 80 83 30	Knob Bolt		ノブネジ			
	37	CB 80 83 40	— do. —	M8×30	〃			
	38	CB 81 78 90	Spacer		スペーサー			
	39	CB 81 79 10	Cover		カバー			
	40	KA 10 10 60	Power Switch		パワースイッチ			
	41	KA 40 08 30	Voltage Selector		電圧切替器			
	42	LB 20 18 20	AC Inlet, 2P		2P インレット			J,U,C
		LB 20 18 60	— do. — , — do. —		〃			G
	43	LB 30 01 60	Cannon Socket	XLR-3-32	キャノンソケット			
	44	LB 60 39 40	Connector Socket	24P	コネクターソケット			
	45	MG 00 10 30	AC Cord		電源コード			J
		MG 00 10 40	— do. —		〃			U
		MG 00 10 50	— do. —		〃			G
		MG 00 12 80	— do. —		〃			C
	46	EA 34 01 50	Pan Head Screw	M4×15 BL	ナベ小ネジ			
	47	EB 23 01 40	Flat Head Screw	M3×14 Cr	皿小ネジ			

※ New Parts（新規部品）

Ref. No.	Part No.	Description			部品名	Remarks	Common Model	Markets
48	EB 33 01 60	Flat Head Screw	M3x16	BL	皿小ネジ			
49	EC 23 01 40	Truss Screw	M3x14	Cr	トラス小ネジ			
50	EC 23 01 60	— do. —	M3x16	Cr	〃			
51	ED 23 01 40	Bind Screw	M3x14	Cr	バインド小ネジ			
52	ED 32 60 40	— do. —	M2.6x4	BL	〃			
53	ED 32 60 80	— do. —	M2.6x8	BL	〃			
54	ED 34 00 80	— do. —	M4x8	BL	〃			
55	Ei 33 52 00	Bind Tapping Screw	3.5x20	BL	バインドタッピングネジ			
56	ED 34 02 00	Bind Screw	M4x20	BL	バインド小ネジ			
57	EF 25 03 50	Oval Head Screw	M5x35	Cr	丸皿小ネジ			
58	EF 33 01 60	— do. —	M3x16	BL	〃			
59	EH 23 01 40	Truss Tapping Screw	3x14	Cr	トラスタッピングネジ			
60	Ei 33 01 00	Bind Tapping Screw	3x10	BL	バインドタッピングネジ			
61	Ei 33 01 20	— do. —	3x12	BL	〃			
62	Ei 33 01 60	— do. —	3x16	BL	〃			
63	Ei 33 51 20	— do. —	3.5x12	BL	〃			
64	Ei 33 51 60	— do. —	3.5x16	BL	〃			
65	EK 00 34 90	Nut			J型スピードナット			
66	EM 23 00 80	Oval Head Tapping Screw	3x8	Cr	丸皿タッピングネジ			
67	EM 23 01 20	— do. —	3x12	Cr	〃			
68	EM 45 03 00	— do. —	5x30	BL	〃			
69	EO 33 01 20	Flat Head Tapping Screw	3x12	BL	皿タッピングネジ			
70	EO 33 52 00	— do. —	3.5x20	BL	〃			
71	EV 10 30 40	Hexagonal Nut	M4	BL	六角ナット			
72	EV 20 30 40	Flat Washer	4S	BL	平座金			
73	EV 40 30 40	Toothed Lock Washer	A4S	BL	歯付座金			
74	EV 41 00 98	— do. —	A9S	Ye	〃			
75	LX 20 00 10	Flat Washer	9S	Cr	特殊平座金			
76	LX 20 00 20	Hexagonal Nut	M9	Cr	特殊六角ナット			
※ 77	AA 05 32 80	Transformer Holder			トランス受け			

※ New Parts (新規部品)

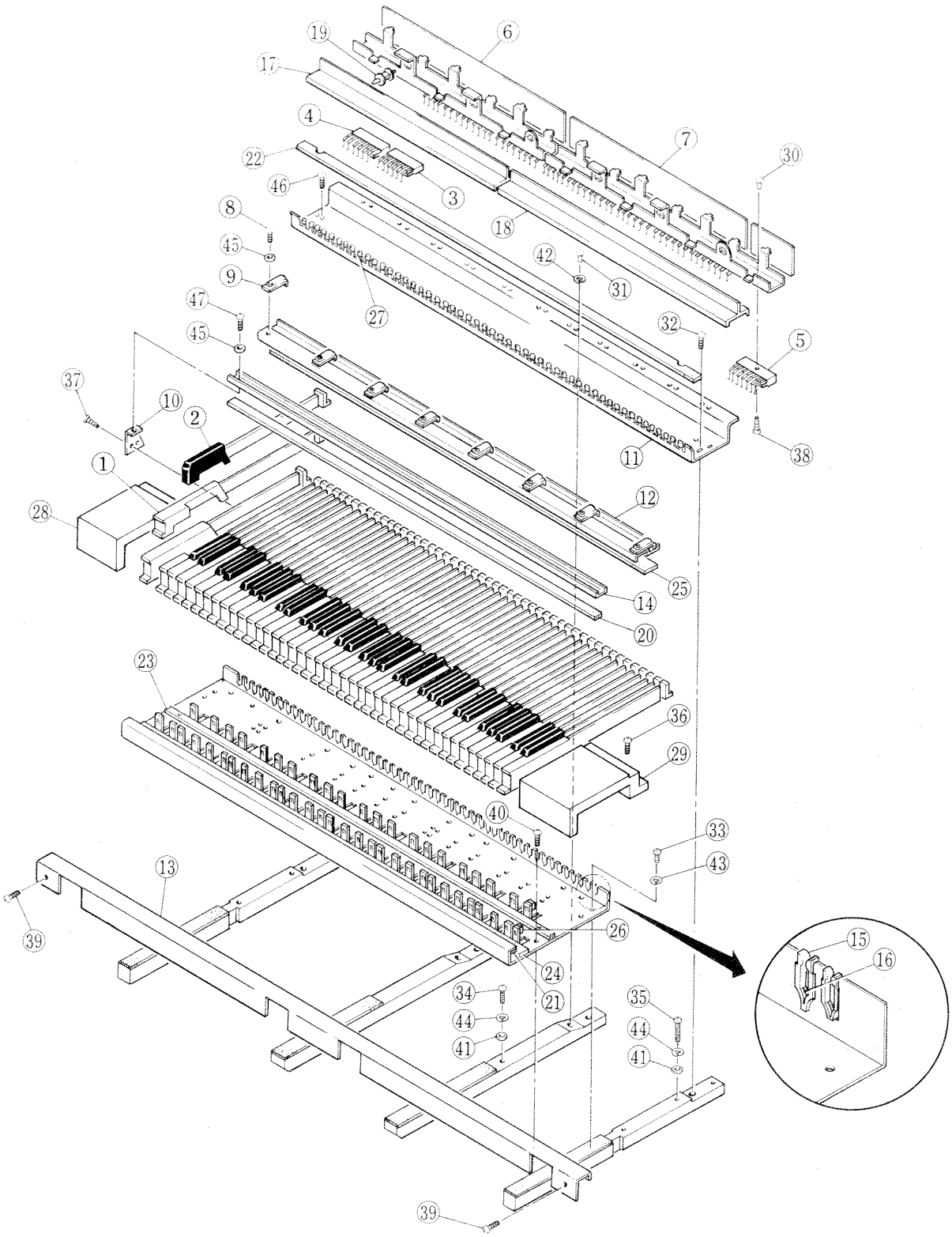
C. Top Board Assembly



	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
※	1	NA 10 69 20	Circuit Board, PN	# 2883	PN シート			
※	2	NA 10 69 30	— do. — , EFT	# 2884	EFT 〃			
※	3	NA 10 69 40	— do. — , DM	# 2885	DM 〃			
※	4	NA 10 69 50	— do. — , FL	# 2886	FL 〃			
※	5	NA 10 69 70	— do. — , DC	# 2888	DC 〃			J
※		NA 10 69 80	— do. — , — do. —	— do. —	〃			U,C
※		NA 10 69 90	— do. — , — do. —	— do. —	〃			G
※	6	AA 05 24 60	Panel		パネル			
※	7	AA 05 24 80	Panel Stay		パネルステー			
※	8	AA 05 25 00	Panel Angle (U)		PN固定金具U			
※	9	AA 05 25 10	— do. — (L)		〃 L			
※	10	AA 05 26 00	Stay		ステー			
※	11	AA 05 26 10	Stay Holder		ステー固定金具			
	12	AA 80 58 20	Spacer		スペーサー			
	13	AA 81 73 80	Hinge		蝶番			
	14	BA 01 50 70	Heat Sink		ヒートシンク			
	15	CB 01 18 30	Bushing		ブッシュ			
	16	CB 02 99 30	LED Socket		LEDソケット			
	17	CB 03 84 10	C.B. Holder		シートホルダー			
※	18	CB 03 97 50	— do. —		〃			
	19	CB 04 00 80	— do. —		〃			
	20	CB 08 70 00	— do. —		〃			
	21	CB 07 28 80	Insulation Bushing		絶縁ブッシュ			
	22	CB 81 01 20	Knob		ツマミ			
※	23	CC 01 52 90	Panel Felt		パネル貼フェルト			
	24	iF 00 02 90	LED		LED			
	25	iL 00 05 80	Mica Base		マイカベース			
	26	EB 34 01 20	Flat Head Screw	M4x12 BL	皿小ネジ			
	27	EC 33 00 80	Truss Screw	M3x8 BL	トラス小ネジ			
	28	ED 33 00 60	Bind Screw	M3x6 BL	バインド小ネジ			
	29	Ei 33 00 80	Bind Tapping Screw	3x8 BL	バインドタッピングネジ			
	30	Ei 33 01 00	— do. —	3x10 BL	〃			
	31	Ei 33 01 20	— do. —	3x12 BL	〃			
	32	Ei 33 51 20	— do. —	3.5x12 BL	〃			
	33	EL 32 60 80	Sems Screw	M2.6x8 BL	セムス小ネジ			
	34	EV 41 00 30	Toothed Lock Washer	A3S Ye	歯付座金			
	35	EV 41 00 70	— do. —	A7S Ye	〃			
	36	EZ 30 70 10	Hexagonal Nut	M7 Ye	特殊六角ナット			
	37	EZ 30 90 10	— do. —	M9 Ye	〃			
	38	DA 02 45 90	Top Board Assembly		屋根集成			

※ New Parts (新規部品)

D. Keyboard Assembly



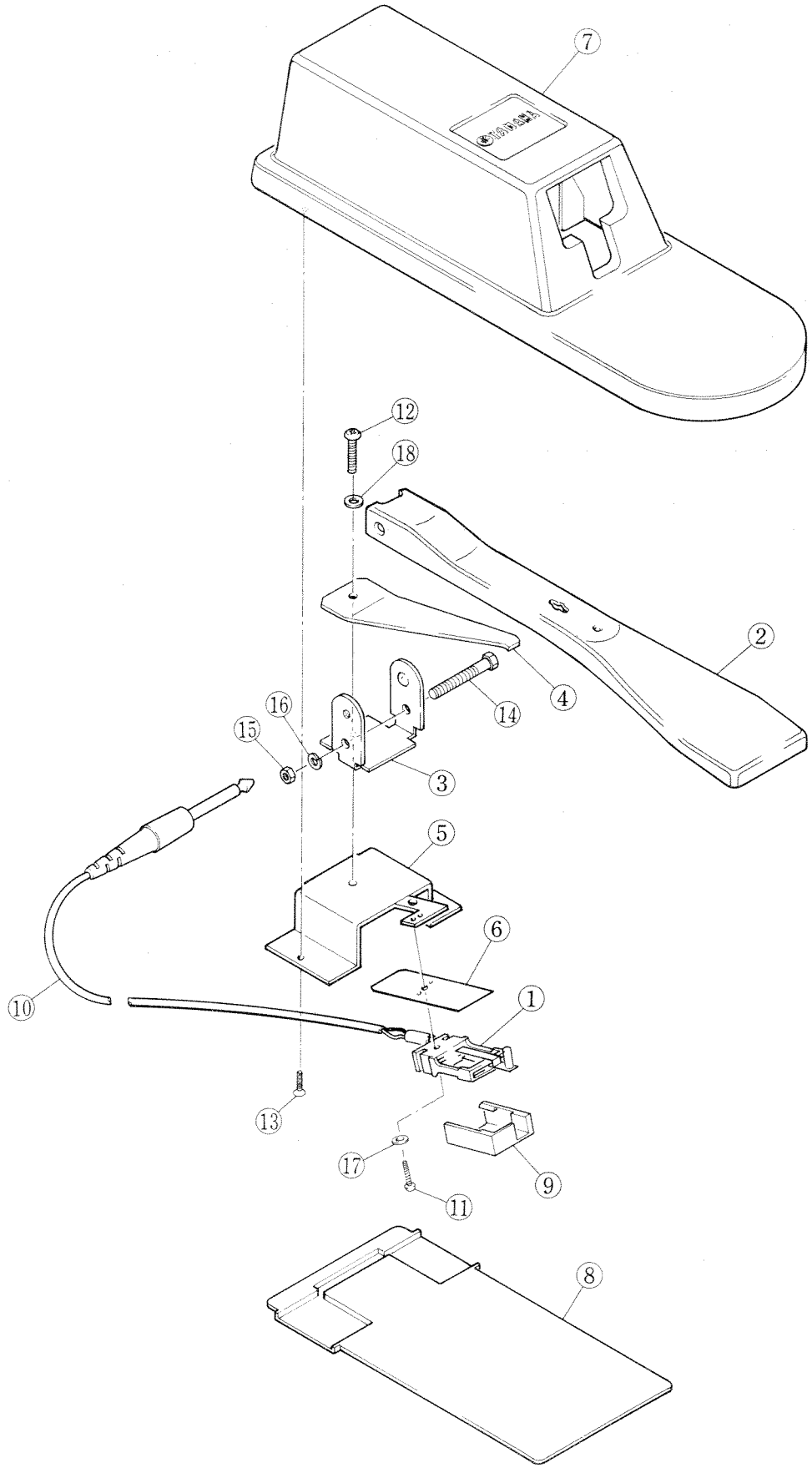
Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
1	NB 04 51 00	White Key Assembly	E'	白鍵 Ass'y			
	NB 04 34 30	– do. –	C, F	〃			
	NB 04 34 40	– do. –	D	〃			
	NB 04 34 50	– do. –	E, B	〃			

※ New Parts (新規部品)

	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
		NB 04 34 60	White Key Assembly	G	白鍵 Ass'y			
		NB 04 34 70	— do. —	A	〃			
	2	NB 04 35 10	Black Key Assembly		黒鍵 Ass'y			
	3	NB 80 76 00	Switch Unit	6Key	スイッチユニット			
	4	NB 80 76 10	— do. —	3Key	〃			
※	5	NB 81 75 70	— do. —	4Key	〃			
※	6	NB 81 76 90	Switch Assembly	33Key	スイッチ Ass'y			
※	7	NB 81 77 00	— do. —	40Key	〃			
	8	ES 04 02 00	Tap Tight Screw	4 X 20 Ye	タップタイトネジ			
	9	AA 80 46 40	Guard, Stopper Rail		ストッパーレール補強金具			
	10	AA 80 46 50	Stay (B)		ステー (B)			
※	11	AA 81 67 80	Switch Rail		スイッチレール			
※	12	AA 81 68 00	Stopper Rail		ストッパーレール			
※	13	AA 05 32 10	Front Rail		口金			
※	14	AA 81 68 40	Key Stopper		キーストッパー			
	15	CB 02 78 40	Support		サポート			
	16	CB 02 84 10	Pivot Rubber		ピボットゴム			
※	17	CB 03 97 80	Switch Cover		スイッチカバー			
※	18	CB 03 97 90	— do. —		〃			
	19	CB 81 78 10	PC Support		PC サポート			
※	20	CB 81 87 30	Key Stopper Rubber		キーストッパーゴム			
※	21	CC 02 19 50	Stopper Felt		ストッパーフェルト			
※	22	CC 07 04 40	— do. —		〃			
※	23	CC 07 04 60	— do. —		〃			
※	24	CC 07 04 80	— do. —		〃			
※	25	CC 07 05 00	— do. —		〃			
	26	CD 01 00 50	Key Guide Cloth		キーガイドクロス			
	27	CH 00 02 90	Tube	Between White & White Key	ヒシチューブ			
		CH 00 03 00	— do. —	Between White & Black Key	〃			
※	28	DA 02 45 70	End Block Assembly (L)		拍子木集成 (左)			
※	29	DA 02 45 80	— do. — (R)		〃 (右)			
	30	EA 03 01 20	Pan Head Screw	M3x12 Ye	ナベ小ネジ			
	31	EA 04 01 60	— do. —	M4x16 Ye	〃			
	32	EA 05 01 60	— do. —	M5x16 Ye	〃			
	33	EA 05 02 00	— do. —	M5x20 Ye	〃			
	34	EA 35 03 00	— do. —	M5x30 BL	〃			
	35	EA 35 03 50	— do. —	M5x35 BL	〃			
	36	E i 33 52 00	Bind Tapping Screw	3.5x20 BL	バインドタッピングネジ			
	37	EJ 03 00 60	Pan Head Tapping Screw	3x6 Ye	ナベタッピングネジ			
	38	EJ 03 01 20	— do. —	3x12 Ye	〃			
	39	EH 33 51 20	Truss Tapping Screw	3.5x12 BL	トラスタッピングネジ			
	40	EQ 03 51 30	Round Head Wood Screw	3.5x13 Ye	丸木ネジ			
	41	EV 20 30 50	Flat Washer	5S BL	平座金			
	42	EV 30 00 40	Spring Lock Washer	4S Ye	バネ座金			
	43	EV 30 00 50	— do. —	5S Ye	〃			
	44	EV 30 30 50	— do. —	5S BL	〃			
	45	EV 42 00 40	Toothed Lock Washer	B4S Ye	歯付座金			
	46	ES 04 01 20	Tap Tight Screw	4x12 Ye	タップタイトネジ			
	47	ES 04 01 50	— do. —	4x15 Ye	〃			

※ New Parts (新規部品)

E. Sustainer Pedal



Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
1	NB 03 71 40	Tablet Switch	1M	タブレットスイッチ			
2	AA 80 32 40	Pedal		ペダル			
3	AA 80 32 50	Pedal Holder		ペダル受け			
4	AA 80 32 60	Pedal Spring		ペダル板バネ			
5	AA 80 32 70	Frame		フレーム			
6	CA 80 04 50	Fiber Washer		ファイバーワッシャー			
7	CB 80 67 40	Pedal Box		ペダル本体			
8	CB 80 67 50	Bottom Plate		底板			
9	CB 80 83 60	Switch Cover		接点カバー			
10	M i 01 42 20	Cord Assembly		コード			
11	EA 03 01 20	Pan Head Screw	M3x12 Ye	ナベ小ネジ			
12	EA 05 02 00	— do. —	M5x20 Ye	〃			
13	EB 03 00 80	Flat Head Screw	M3x8 Ye	皿小ネジ			
14	EV 98 04 90	Bolt	M5x40 Ye	六角ボルト			
15	EV 10 00 50	Hexagonal Nut	M5 Ye	六角ナット			
16	EV 30 00 50	Spring Lock Washer	5S Ye	バネ座金			
17	EV 20 00 30	Flat Washer	3S Ye	平座金			
18	EV 20 00 50	— do. —	5S Ye	〃			

※ New Parts (新規部品)

CP35 SERVICE MANUAL

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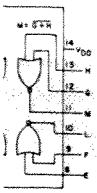
CP35

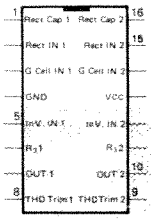
R Gate

Diagram

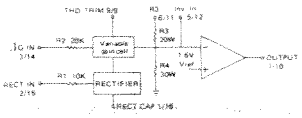


NE570
COMPANDER

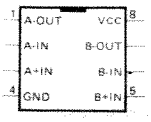
Block & Schematic Diagram



(TOP VIEW)

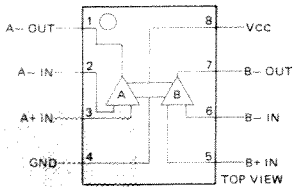


NJM4558DV
Dual Operational Amplifier

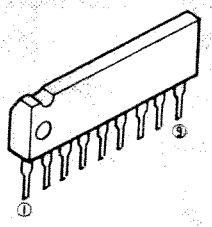


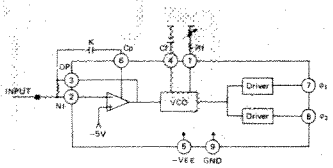
(TOP VIEW)

Logic Diagram



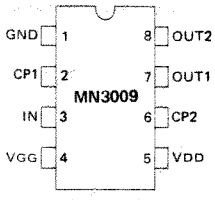
iG03290
BBD driver



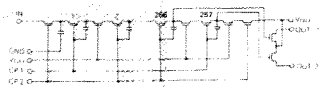


①	②	③	④	⑤	⑥	⑦	⑧	⑨
Rf	-IN	OP	Cf	V_{EE}	Cp	$\phi 1$	$\phi 2$	GND

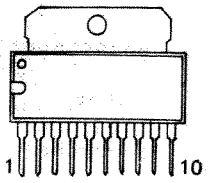
MN3009
256 stage BBD

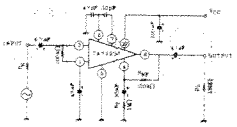


(Top View)



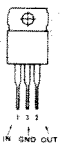
TA7220P
LOW POWER AMP.
P SIP 10 PIN (with Tab)

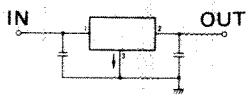




3pin: INPUT
8pin: OUTPUT

μPC14305H
μPC14315H
P 3 PIN





Pin No.	①	③	②
Pin Name	IN	GND	OUT
μPC14305H	10V		5V
μPC14315H	23V		15V

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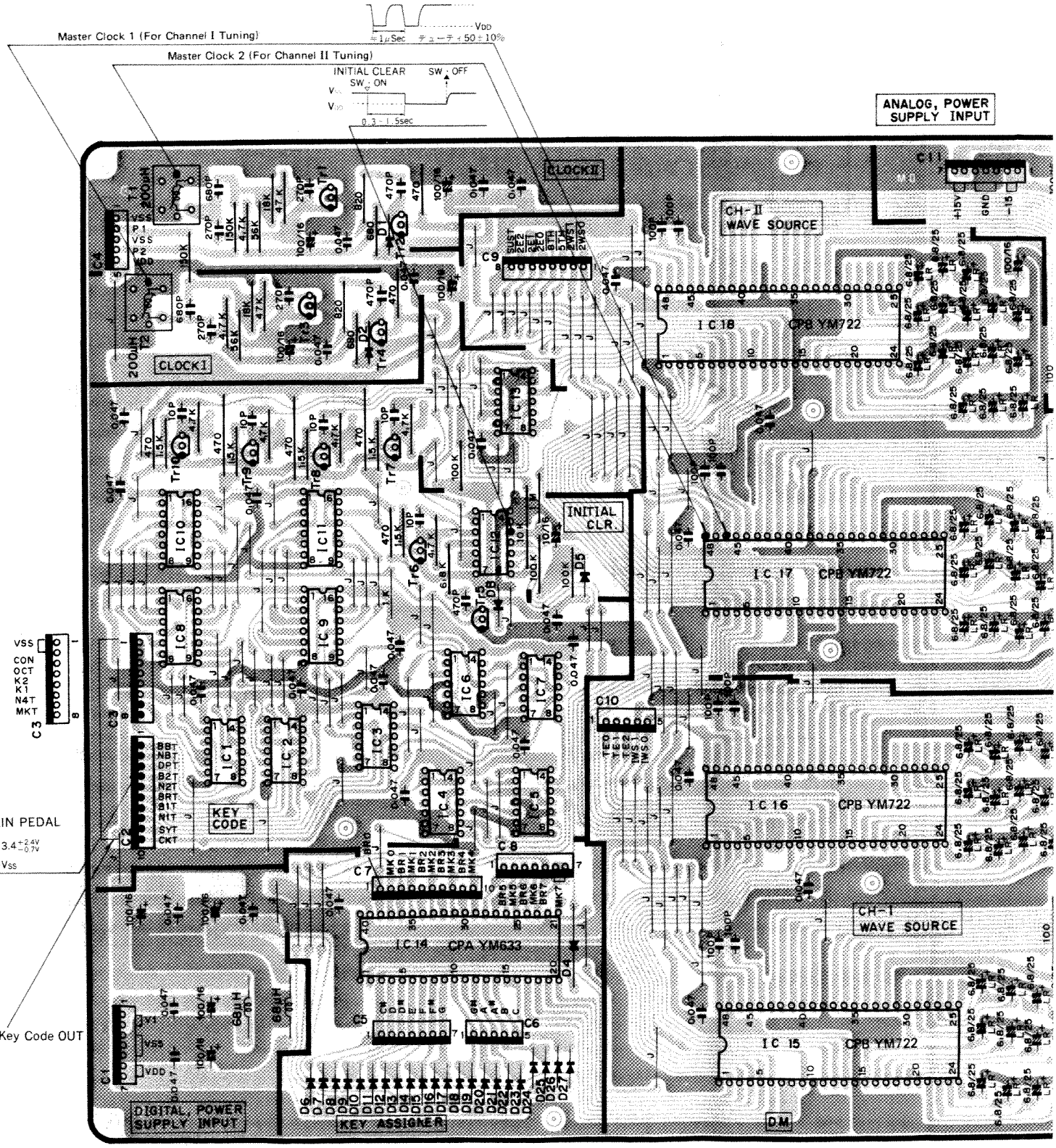
DM Circuit Board & Wining



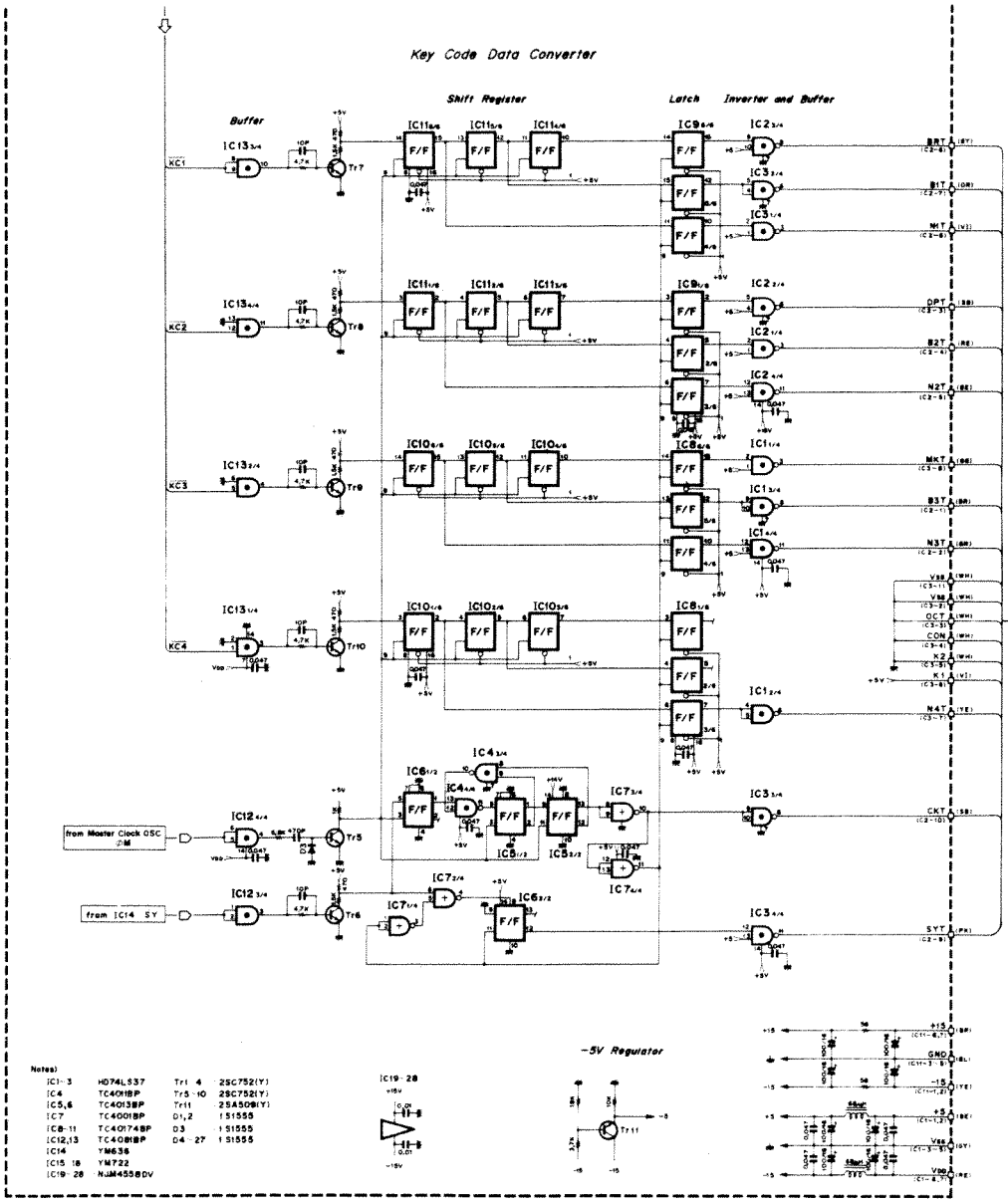
Component Side（部品側）

CP35

DM Circuit Diagram

(C3-2,4,6,8,10)
g/Filter II and Presets

(C5-2,4,6,8,10)
g/Filter II and Presets



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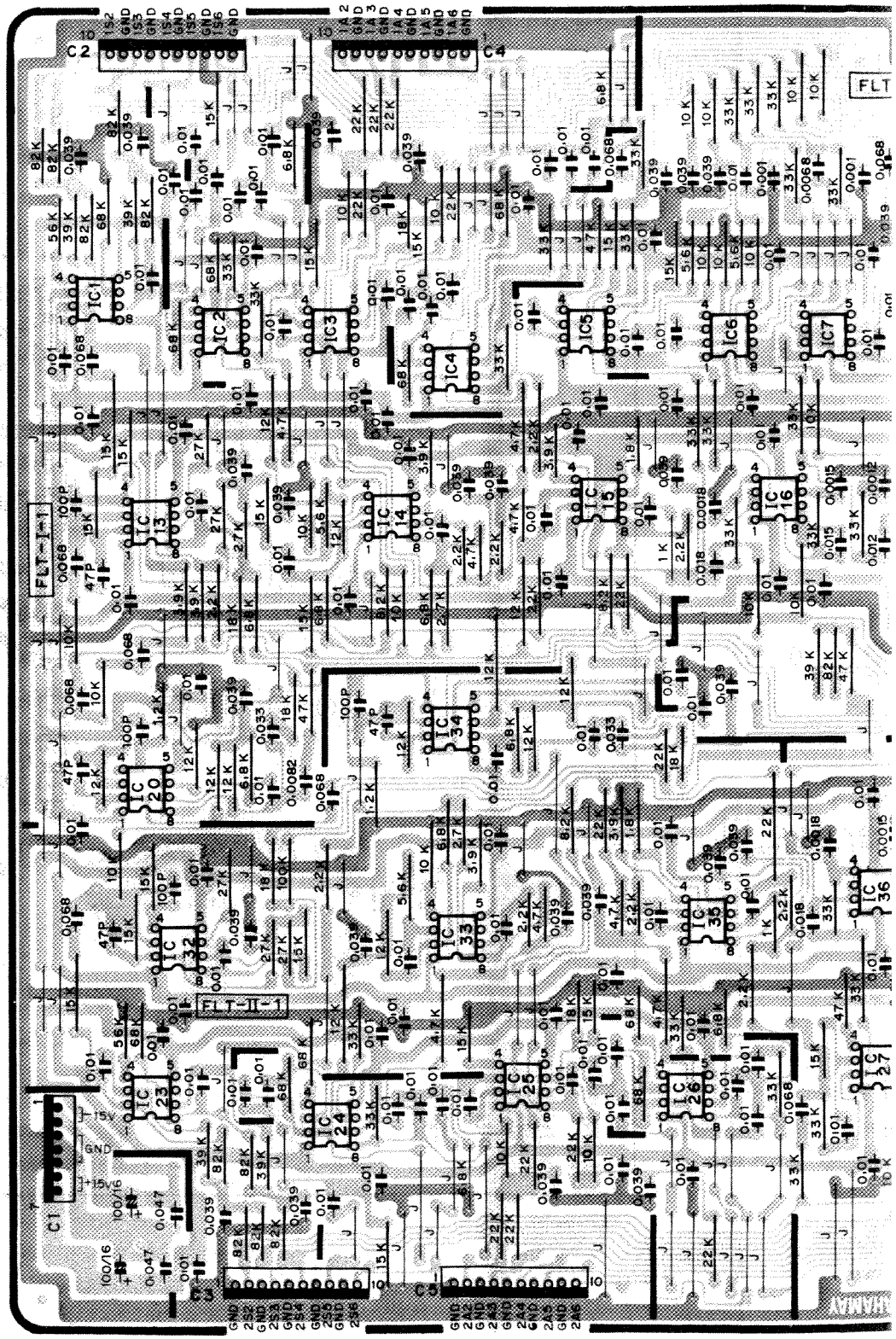
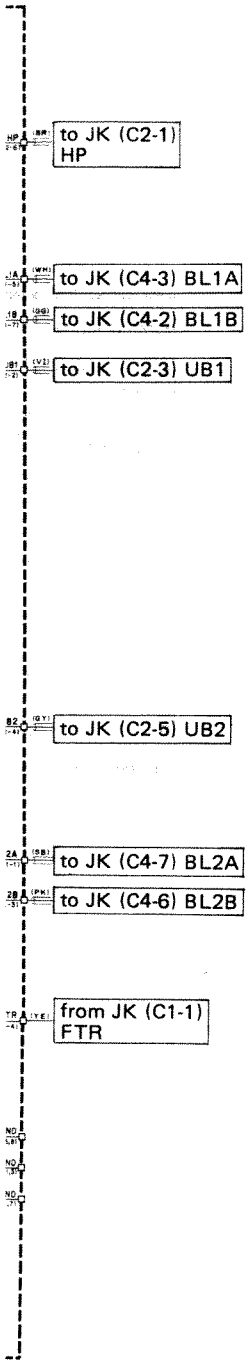
FL Circuit Board & Wining

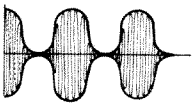
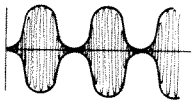
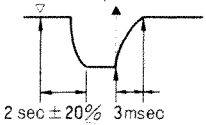


Component Side (部品側)

CP35

EFT Circuit Diagram



Item	Setting	Test Point	Adjustment	Adj. Point	Rem.
FLANGER OSC		IC5 pin 7	 f = 0.5 ± 0.3Hz		Check
		IC1 pin 7 pin 8	 f = 120kHz ~ 25kHz Make sure that FM mod. is applied in above freq. range.		Check
FLANGER WAVEFORM	FILTER I – 1 only on. Press C_5 key.	IC3 pin 10	 Adj. for perfect symmetry.	VR7	Adj.
TREMOLO OSC	TREMOLO SPEED –MAX	IC10 pin 7	 f = 15 ± 0.5Hz	VR1	Adj.
Speed	TREMOLO SPEED –MIN	IC10 pin 7	 f = 0.5 ± 0.4Hz		Check
Depth	TREMOLO DEPTH –MAX	IC11 pin 1			
	TREMOLO SW –ON	IC11 pin 1	Adjust for sine-wave.	VR2	Adj.
MODULATION BALANCE					
OUT 1		IC9 pin 1		VR3	Adj.
OUT 2		IC9 pin 7	 Adjust for 95% mod. Check that IC9 pin 1 is 180 degrees out of phase.	VR4	Adj.
UNBALANCED output circuit	FILTER I – 1 –ON	EQ (C3-6)	Adjust so 0.8 times the EQ terminal input signal appears at UB1, UB2.		
OUT 1	C_5 Key –ON	UB1 (C2-2)	power ON power OFF  2 sec ± 20% 3msec	VR5	Adj.
OUT 2		UB2 (C2-4)		VR6	Adj.
MUTING	Power	Tr6 Emitter			Check

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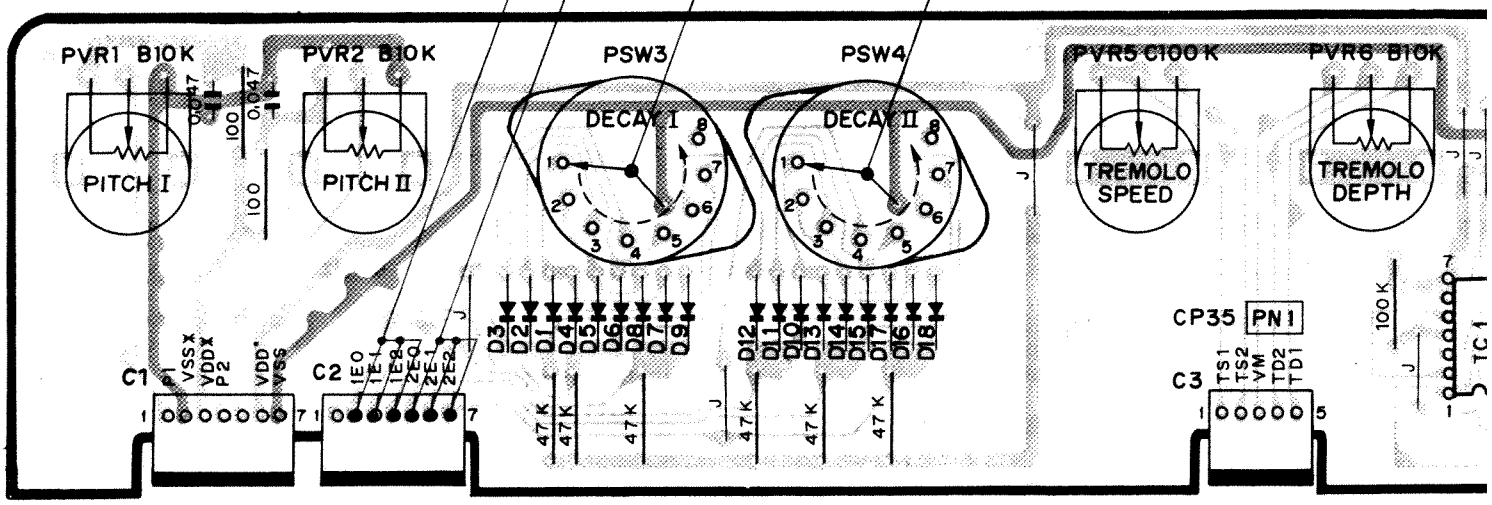
PN1, 4 Circuit Diagram

DECAY SW. Data

POSITION	1	2	3	4	5	6	7	8
$\overline{1E2}$ (C2–4) $\overline{2E2}$ (C2–7)	H	H	H	H	L	L	L	L
$\overline{1E1}$ (C2–3) $\overline{2E1}$ (C2–6)	H	H	L	L	H	H	L	L
$\overline{1E0}$ (C2–2) $\overline{2E0}$ (C2–5)	H	L	H	L	H	L	H	L

"H" =0V
"L" =−15V



- Connector

C1

Pin No.	Pin Name	Wire Color	Destination
1	P1	SB	DM-P1 (C4-2)
2	Vss*	WH	DM-Vss* (C4-3)
3	VDD*	OR	DM-VDD* (C4-5)
4	P2	PK	DM-P2 (C4-4)
5	–	–	
6	VDD°	PK	PN3-VDD° (C7-1)
7	Vss	GY	PN3-Vss (C7-3)

C2

Pin No.	Pin Name	Wire Color	Destination
1	*		–
2	$\overline{1E0}$	BR	DM-$\overline{1E0}$ (C10-2)
3	$\overline{1E1}$	RE	DM-$\overline{1E1}$ (C10-3)
4	$\overline{1E2}$	OR	DM-$\overline{1E2}$ (C10-4)
5	$\overline{2E0}$	YE	DM-$\overline{2E0}$ (C9-5)
6	$\overline{2E1}$	GR	DM-$\overline{2E1}$ (C9-6)
7	$\overline{2E2}$	BE	DM-$\overline{2E2}$ (C9-7)

C3

Pin No.	Pin Name	Wire Color	Destination
1	TS1	BE	EFT-TS1 (C5-3)
2	TS2	GR	EFT-TS2 (C5-2)
3	VM	WH	EFT-VM (C5-6)
4	TD2	GY	EFT-TD2 (C5-5)
5	TD1	VI	EFT-TD1 (C5-7)

C4

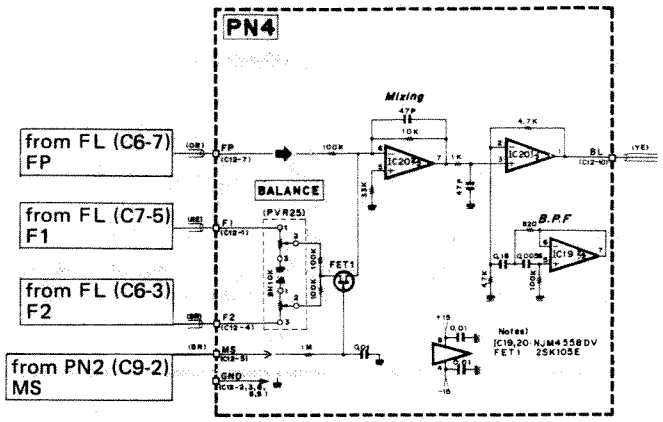
Pin No.	Pin Name	Wire Color	Destination
1	TR	OR	EFT-TR (C5-1)
2	FG	RE	EFT-FG (C3-3)
3	MS	BR	PN3-MS (C9-1)
4	PR4	PK	PN3-PR4 (C9-3)
5	PR3	SB	PN3-PR3 (C9-5)
6	PR2	GG	PN3-PR2 (C9-7)
7	PR1	WH	PN3-PR1 (C9-9)

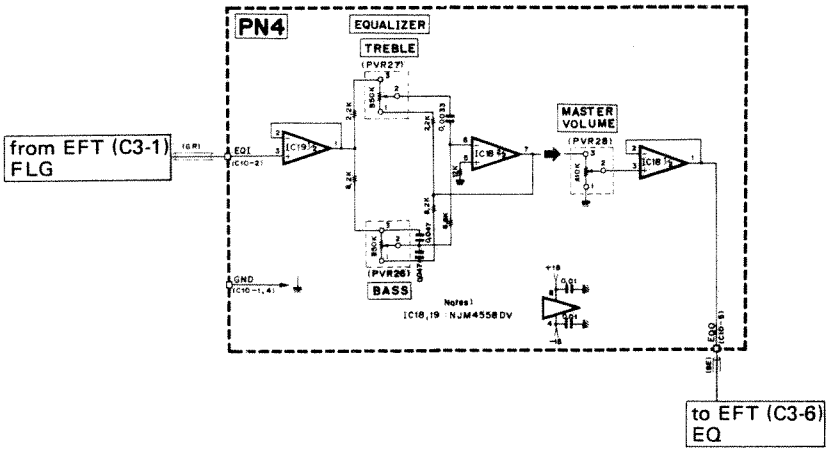
C5

Pin No.	Pin Name	Wire Color	Destination
1	–		–
2	$\overline{2WS0}$	WH	DM-$\overline{2WS0}$ (C9-1)
3	$\overline{1WS1}$	GY	DM-$\overline{1WS1}$ (C10-4)
4	$\overline{1WS0}$	VI	DM-$\overline{1WS0}$ (C10-5)
5	$\overline{2WS1}$	GG	DM-$\overline{2WS1}$ (C9-2)

CP35

PN4 Circuit Diagram





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MK1, 2, 3 Circuit Board & Wining, Circuit Diagram

C1

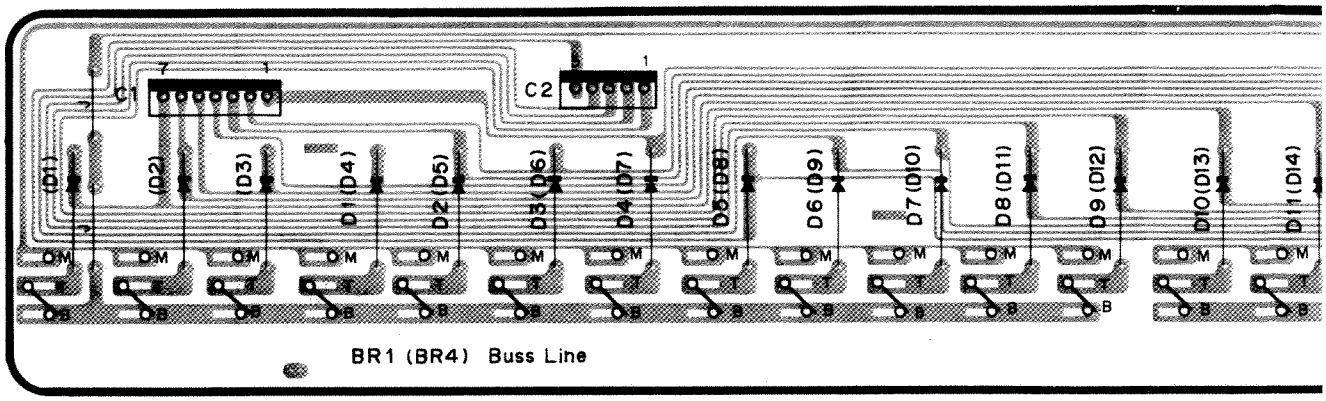
Pin	7	6	5	4	3	2	1
MK1	—	—	—	E	F	F#	G
(MK2)	C#	D	D#	E	F	F#	G

C2

Pin	5	4	3	2	1
MK1	G#	A	A#	B	C
(MK2)	G#	A	A#	B	C

C3

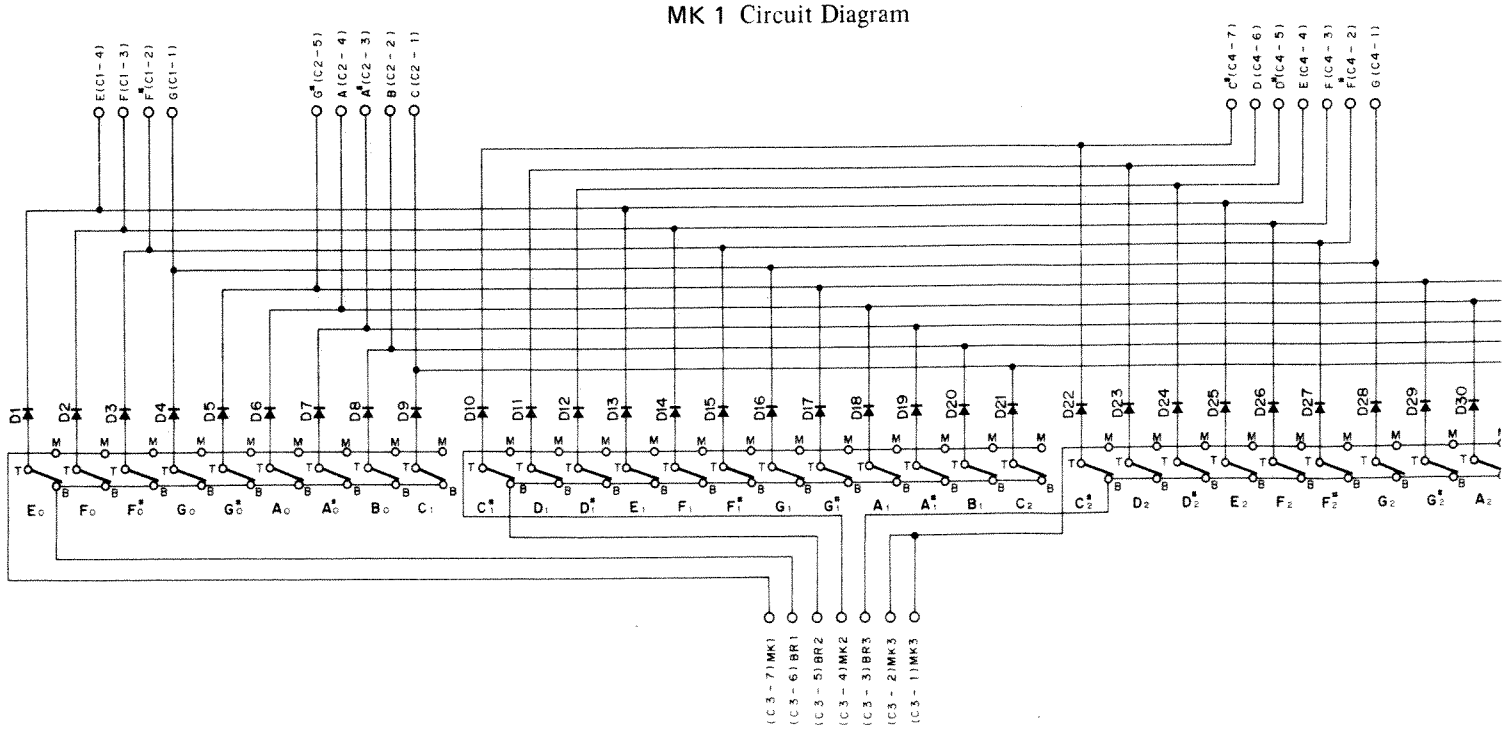
Pin	7	
MK1	MK1	BI
(MK2)	MK4	BI



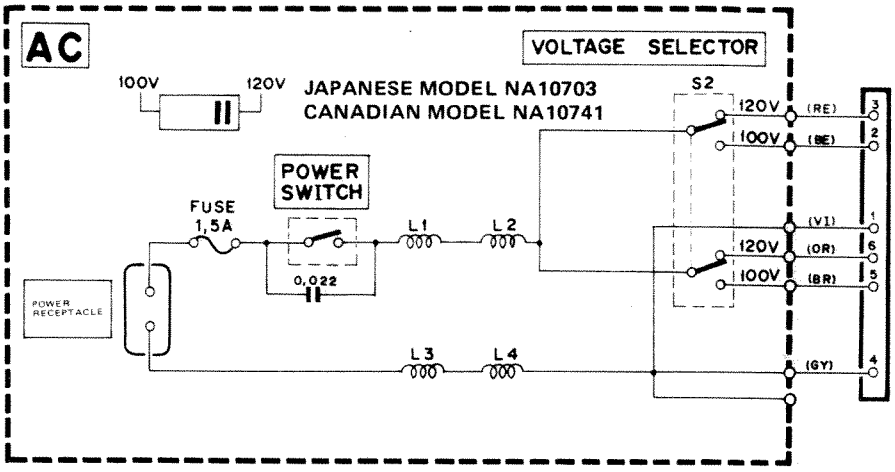
MK1 Board			E0	F0	F#0	G0	G#0	A0	A#0	B0	C1	C#1	D
(MK2 Board)	(C#3)	(D3)	(D#3)	(E3)	(F3)	(F#3)	(G3)	(G#3)	(A3)	(A#3)	(B3)	(C4)	(C#4)	(D

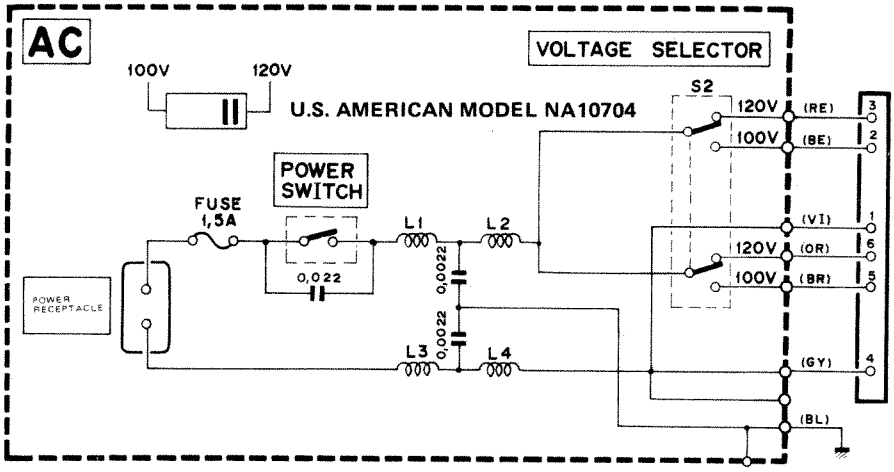
Component Side (部品側)

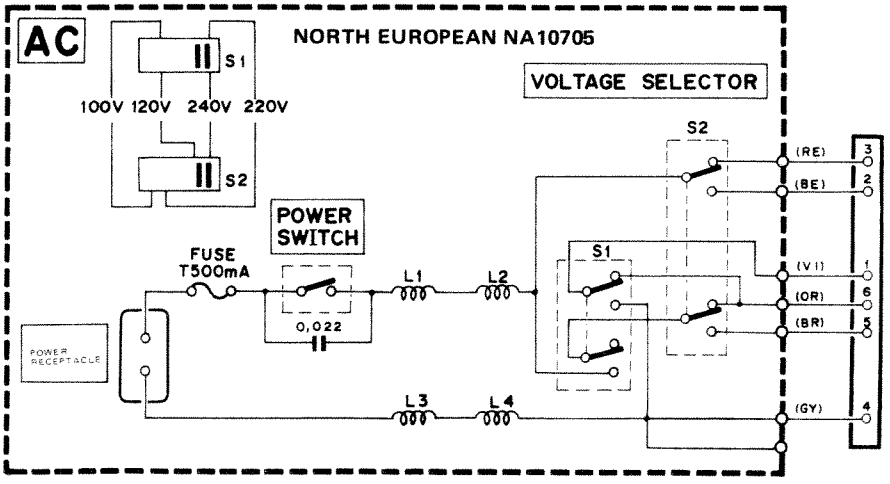
MK 1 Circuit Diagram



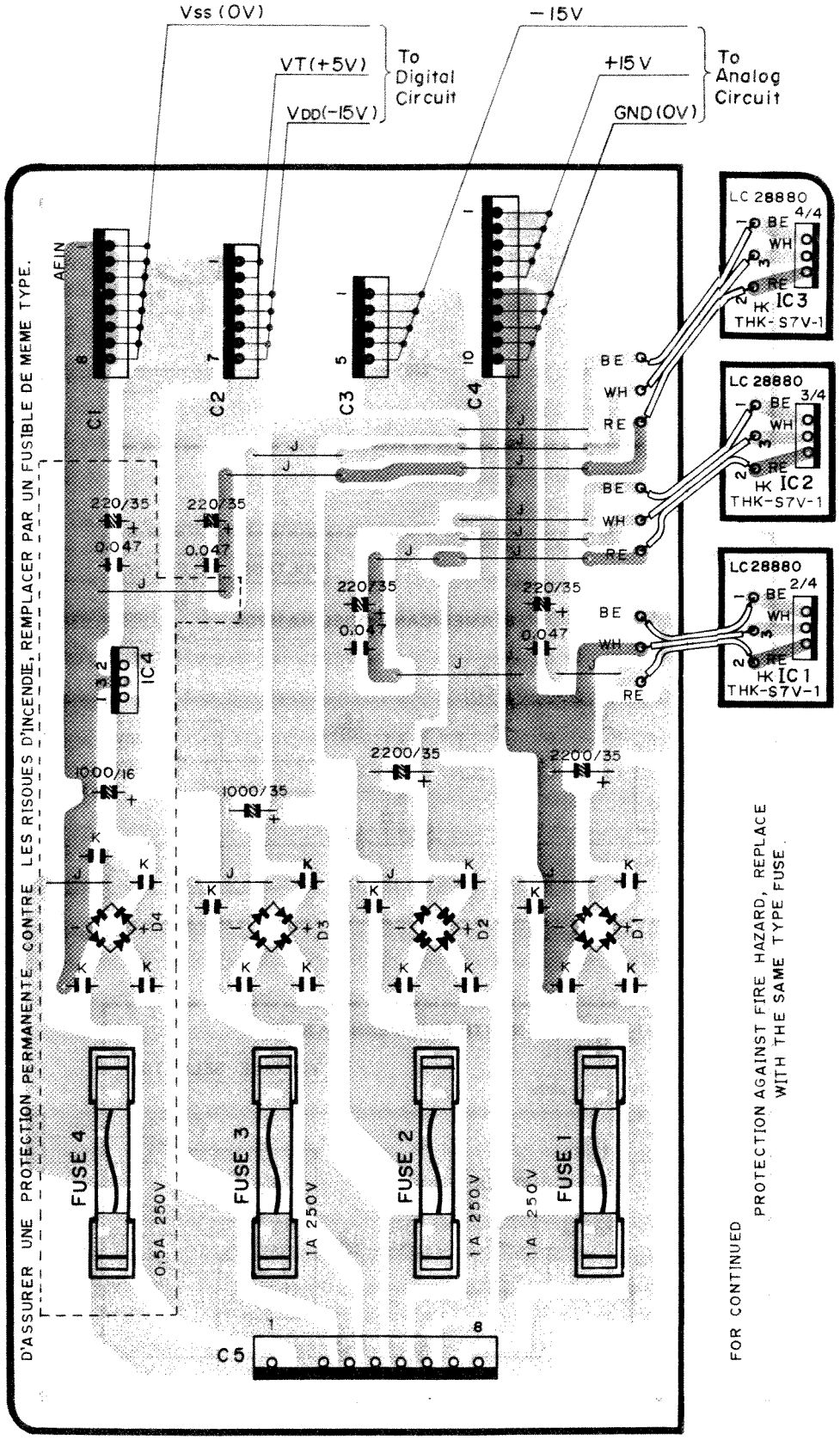
AC Circuit Board & Wining, Circuit Diagram







DC Circuit Board & Wining, Circuit Diagram



FOR CONTINUED

Component Side (部品側)

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