

YAMAHA ELECTONE®

HC-2/HC-4

SERVICE MANUAL



HC-4

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IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

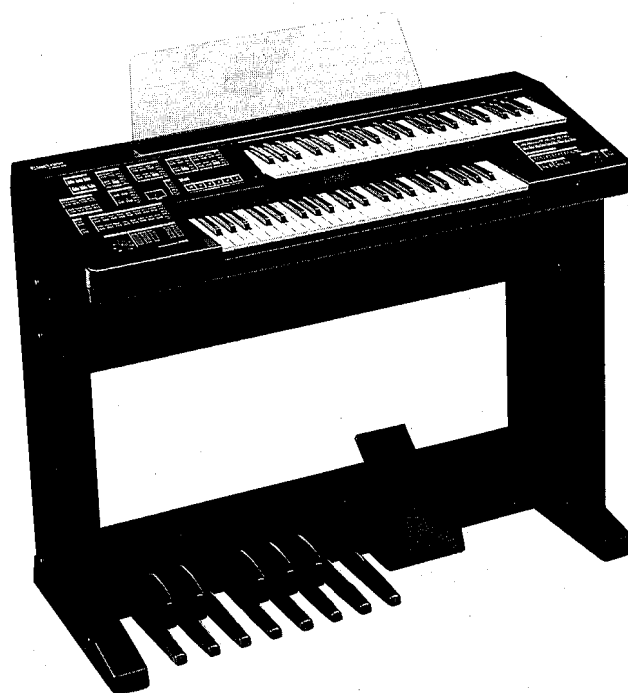
WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.



HC-2

SPECIFICATIONS (HC-2, HC-4)

		HC-4	HC-2
KEYBOARD	UPPER KEYBOARD	44 keys F ₂ -C ₆ (3 2/3 oct.)	
	LOWER KEYBOARD	44 keys F ₁ -C ₅ (3 2/3 oct.)	
	PEDAL KEYBOARD	13 keys C ₀ -C ₁ (1 oct.)	
TOUCH RESPONSE	INITIAL TOUCH	UPPER, LOWER	—
VOICE SECTIONS	UPPER ORCHESTRAL	STRINGS, BRASS 1, BRASS 2, PIANO, WOOD, COMBI., VOLUME	
	LEAD	FLUTE, OBOE, TRUMPET, TROMBONE, VOLUME	
	LOWER ORCHESTRAL	STRINGS, BRASS 1, BRASS 2, PIANO, COMBI. 1, COMBI. 2, VOLUME	
	BASS VOICES	CONTRABASS 1, CONTRABASS 2, ELECTRIC BASS, TUBA, VOLUME	
	VOICE MENU	JAZZ ORGAN, PIPE ORGAN, ACCORDION, ELECTRIC PIANO, HARPSICHORD, JAZZ GUITAR, STEEL GUITAR, VIBRAPHONE, CLARINET, SAXOPHONE, PAN FLUTE, SYNTH LEAD, USER VOICE 1•2•3•4, ORIGINAL VOICE	JAZZ ORGAN, PIPE ORGAN, ACCORDION, SYNTH BRASS, ELECTRIC PIANO, HARPSICHORD, VIBRAPHONE, CELESTA, JAZZ GUITAR, STEEL GUITAR, VIOLIN, CLARINET, CLARINET, SAXOPHONE, PAN FLUTE, SYNTH LEAD, ELECTRIC BASS, ORIGINAL VOICE
	Registrations For Beginners	○	○
EFFECTS/ CONTROLS	VIBRATO	UPPER LEAD, LOWER ORCHES., UPPER ORCHES.	
	SUSTAIN	UPPER, LOWER, PEDAL	
	SUSTAIN/VIBRATO DEPTH	0, 1, 2, 3, 4	
	TREMOLO/SYMPHONIC	TREMOLO, SYMPHONIC, (CHORUS), UPPER ORCHES., LOWER ORCHES.	
	TOUCH	○	—
	GLIDE (LEAD)	○ (FOOT SWITCH)	—
	TRANSPOSITION	▲, ▼	▲ ▼
	PITCH	▲, ▼	—
RHYTHM	RHYTHM PATTERNS	MARCH, WALTZ, SWING, SAMBA, LATIN ROCK, BOUNCE, DISCO, COUNTRY, TANGO, BALLAD, BOSSANOVA, LATIN, SLOW ROCK, 8 BEAT, 16 BEAT, SALSA	
	RHYTHM CONTROLS	VOLUME, BALANCE, TEMPO, TEMPO DISPLAY, TEMPO LAMP, START, SYNCHRO START, INTRO, ENDING, FILL IN 1, FILL IN 2, FOOT SWITCH (RHYTHM STOP, FILL IN 1, FILL IN 2, ENDING)	VOLUME, BALANCE, TEMPO, TEMPO LAMP, START, SYNCHRO START, INTRO, ENDING, FILL IN 1, FILL IN 2
KEYBOARD PERCUSSION		LOWER, PEDAL	
AUTO BASS CHORD		SINGLE FINGER, FINGERED CHORD, CUSTOM A.B.C., MEMORY	
ARPEGGIO CHORD		1, 2, 3, 4, VOLUME	
MELODY ON CHORD		1, 2, 1+2	
REGISTRATION MEMORY		MEMORY/TO PACK, 1, 2, 3, 4, 5, DISABLE	MEMORY, 1, 2, 3, 4, 5, DISABLE
REGISTRATION MENU		STANDARD 1~13, ORGAN SELECT 1~13	
PACK		CONFIRM, TO PACK, FROM PACK, READY, ERROR	—
FM VOICE PACK		▲, ▼, COARSE, COPY	—
MAIN CONTROLS		MASTER VOLUME, POWER, FOOT SWITCH, EXPRESSION PEDAL	MASTER VOLUME, POWER, EXPRESSION PEDAL
CONNECTORS		HEADPHONES, AUX. OUT, EXP. IN, MIDI IN, MIDI OUT	
AMPLIFIERS (RMS)		30 W	
SPEAKERS		18 cm (7")×1, 5 cm (2")×1	
DIMENSIONS (W×D×H)		106 cm (41-3/4")×39 cm (15-1/2")×85 cm (33-1/4")	
WEIGHT		36.6 kg (80.7 lbs.)	35.9 kg (79.1 lbs.)

• Output Level

1) Preparations

Before performing inspections, switches and controls should be set as following:

- Master Volume control .. Maximum
- Exp. Pedal Maximum
- Balance control Center
- Voice Volume controls ... Maximum at voice level inspection.
- Measurement connector .. HEADPHONES jack
- Effects OFF (Touch, Tremolo, Symphonic, Sustain, Vibrato)

* Touch: HC-4 only

2) Output Level

	Voice	Level	Remarks
UK ORCHESTRAL	BRASS 1	4 dBm \pm 1dB	UK C3 on
LK ORCHESTRAL	PIANO	11.6 ~ 14.6 Vp-p	LK C3 on
UK LEAD	FLUTE	15 dBm \pm 1dB	UK C3 on
LK ORCHESTRAL	BRASS 1	4 dBm \pm 1dB	LK C3 on
ARPEGGIO CHORD	1	7.9 ~ 12.6 Vp-p	Auto Rhythm: MARCH, Tempo: 43, LK C3 on
PK BASS	CONTRA BASS 1	12 dBm \pm 1dB	PK F0 on
AUTO RHYTHM	MARCH	0.7 ~ 0.9 Vp-p	Measure at the AUX. OUT jack.

3) Connectors I/O Level

When a sinewave of - 20dBm, 1kHz is applied to the EXP. IN connector, the output signal of the AUX. OUT and HEADPHONES connectors are as follows.

AUX. OUT: - 14.5dBm \pm 2dB

HEADPHONES: + 18.0dBm \pm 2dB

4) Noise Level

- 44dBm maximum on any registrations.

For the noise level measurement, a low-pass filter with the cut-off frequency of 12.7kHz, - 6dB/oct. must be used.

• Power Consumption

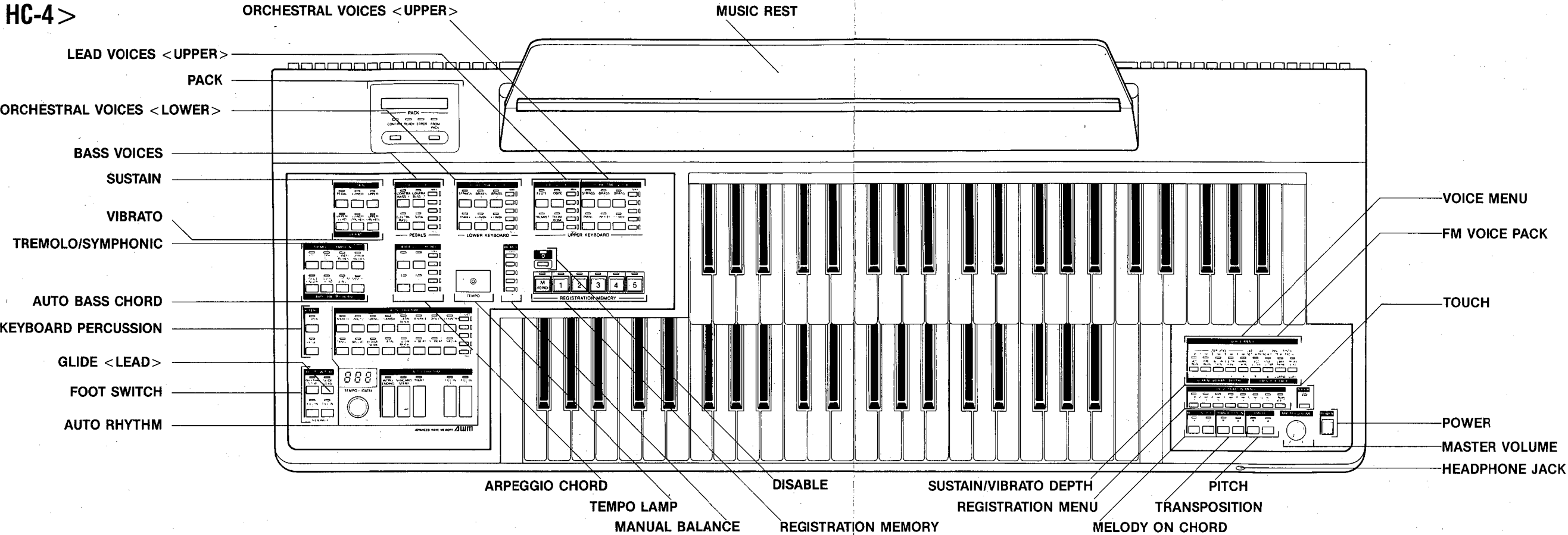
U.S. & Canadian models: 50W

European model: 40W

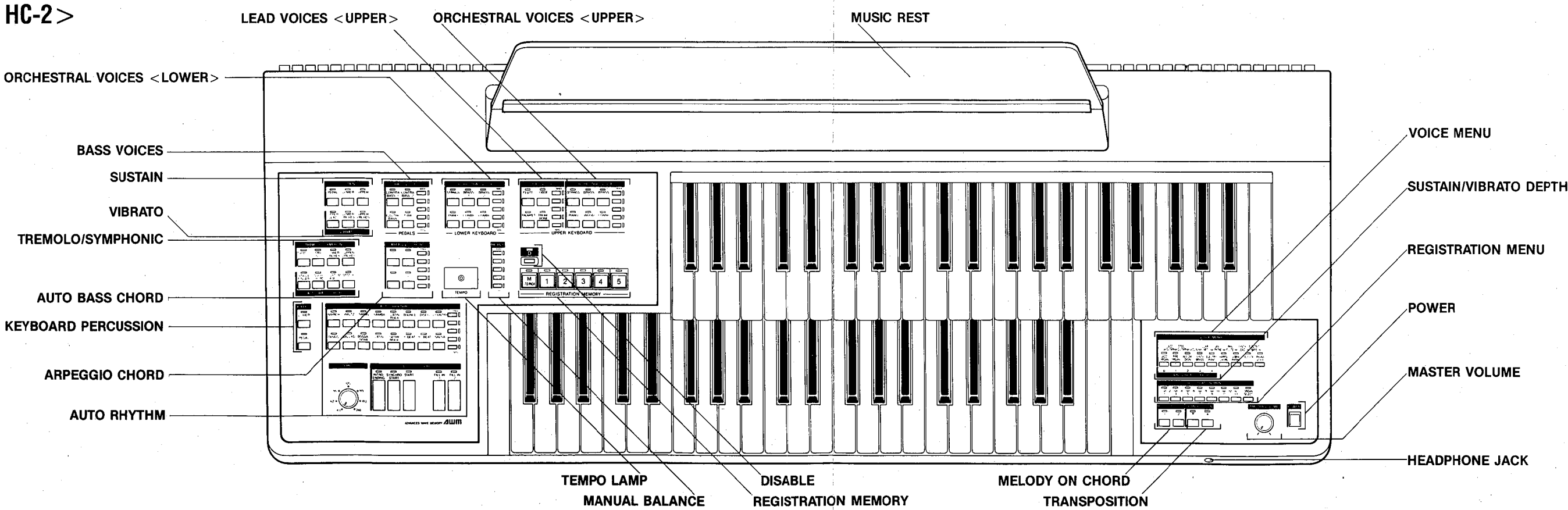
General Export model: 40W

PANEL LAYOUT

< HC-4 >



< HC-2 >



● Accessory Jacks

● HEADPHONE Jack



HEADPHONES

IMPORTANT: Do not use this jack for any purpose other than headphones!

● AUX. OUT Jack



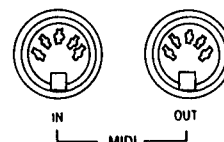
AUX. OUT

● EXP. IN Jack



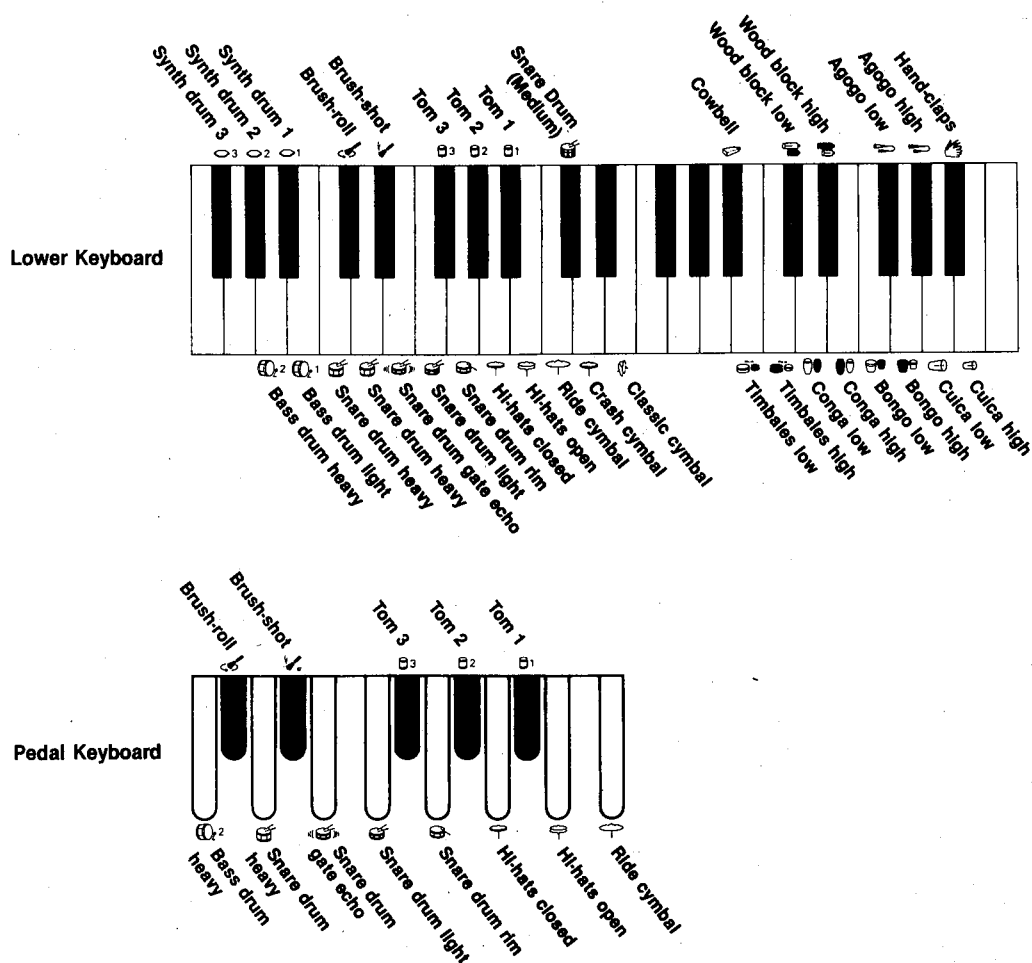
EXP.
IN

● MIDI IN/OUT Jacks



IN OUT
MIDI

● Keyboard Percussion Key Assignment



● Voices of the Basic Registrations

[Voices of the Basic Registrations]

	1	2	3	4	5
Sound	String Ensemble	Brass Ensemble	Flute/Piano Ensemble	Cosmic Sound	Synthesizer Sound
Upper Keyboard	Strings	Brass	Flute	Cosmic	Synth Brass
Lower Keyboard	Strings	Brass	Piano	Cosmic	Synth Brass
Pedal Keyboard	Contra Bass	Tuba	Contra Bass	Cosmic	Synth Bass

● Music Style & Rhythm of Registration Menu & Organ Registration

REGISTRATION MENU.

Reg. No.	Music Style & Rhythm
Reg. 1	March/Polka Rhythm: March Tempo=120
Reg. 2	Pipe Organ Rhythm: 8 Beat (Vol. 0) Tempo=120
Reg. 3	Woodwind Ensemble Rhythm: March Tempo=120
Reg. 4	Piano Trio Rhythm: Ballad Tempo=170
Reg. 5	Jazz Combo 1 Rhythm: Swing Tempo=120
Reg. 6	Jazz Combo 2 Rhythm: Bossanova Tempo=145
Reg. 7	Big Band 1 Rhythm: Swing Tempo=120
Reg. 8	Big Band 2 Rhythm: Ballad Tempo=86
Reg. 9	Country Rhythm: Country Tempo=124
Reg. 10	String Ensemble Rhythm: Waltz Tempo=115
Reg. 11	Piano Ballad Rhythm: 8 Beat Tempo=77
Reg. 12	Pops Ensemble 1 Rhythm: Salsa Tempo=115
Reg. 13	Pops Ensemble 2 Rhythm: Samba Tempo=124

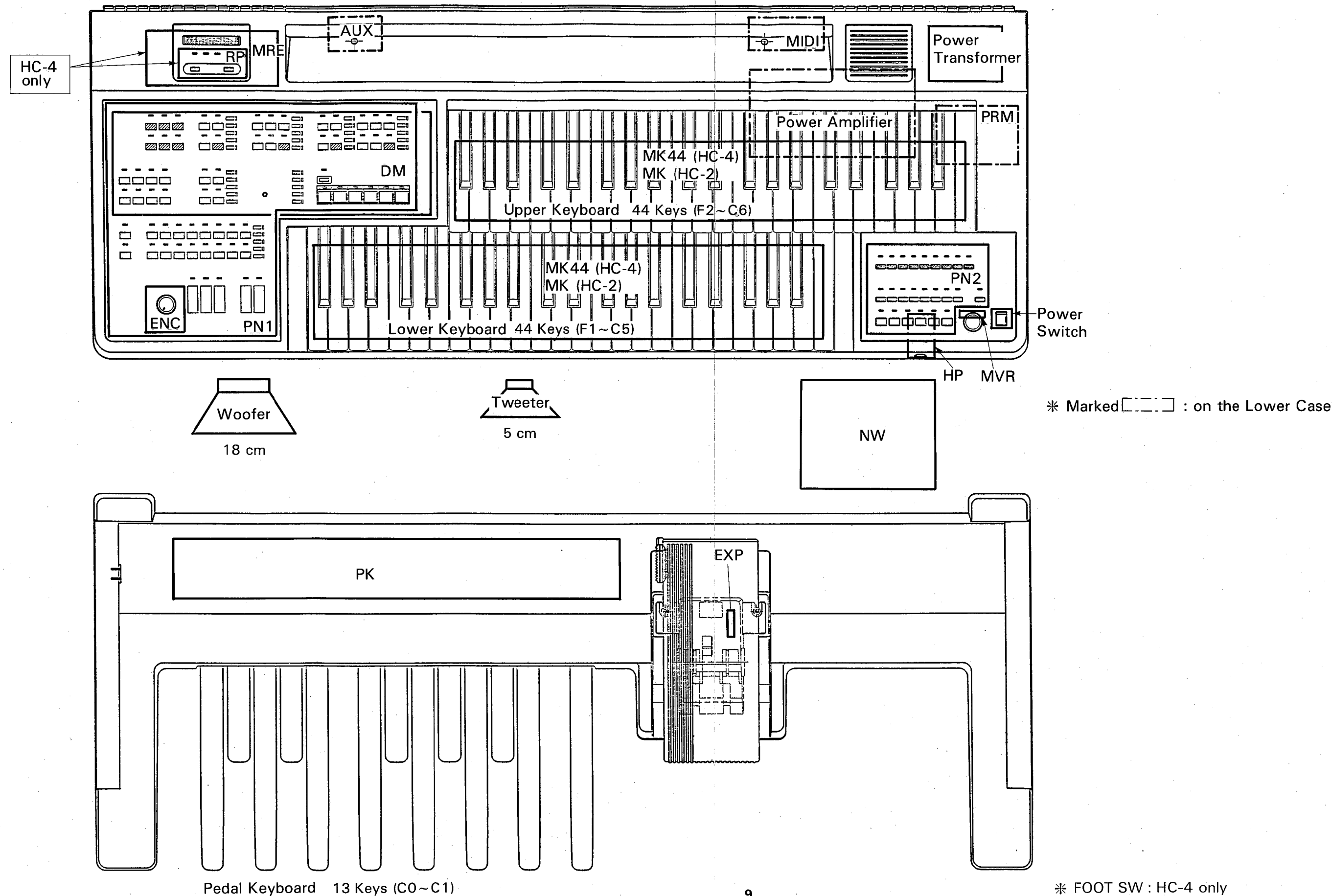
ORGAN REGISTRATION

Reg. No.	Music Style & Rhythm	Combination	Effect
Reg. 1	Jazz Organ 1 Rhythm: Swing Tempo=132	Upper: 16'+8'+5 1/3'+AT 2 2/3 Lower: 8'+4' Pedal: 16'+8'	(Trem.) (Trem.)
Reg. 2	Jazz Organ 2 Rhythm: Ballad Tempo=86	Upper: 16'+1 1/3'+1' Lower: 8'+4' Pedal: 8'	(Trem.) (Trem.)
Reg. 3	Jazz Organ 3 Rhythm: Bossanova Tempo=144	Upper: 16'+5 1/3'+4' Lower: 8'+4' Pedal: 16'+8'	(Trem.) (Trem.)
Reg. 4	Pop Organ 1 Rhythm: 8 Beat Tempo=82	Upper: 16'+4'+1' Lower: 8'+4'+2' Pedal: 8'	(Sym.) (Sym.)
Reg. 5	Pop Organ 2 Rhythm: Swing Tempo=124	Upper: 16'+1 3/5'+1' Lower: 8'+2 Pedal: 8'	(Trem.) (Trem.)
Reg. 6	Pop Organ 3 Rhythm: Ballad Tempo=96	Upper: 8'+2 2/3'+1 3/5'+1' Lower: 8'+2' Pedal: 8'	(Trem.) (Trem.)
Reg. 7	Classical Organ 1 Rhythm: March (Vol.=0) Tempo=120	Upper: 16'+8'+4'+2'+1' Lower: 16'+8'+4'+2'+1' Pedal: 16'+8'+4'	(Chor.) (Chor.)
Reg. 8	Classical Organ 2 Rhythm: March (Vol.=0) Tempo=120	Upper: Gedeckt 8' Lower: Gedeckt 8' Pedal: 8'	
Reg. 9	Classical Organ 3 Rhythm: March (Vol.=0) Tempo=120	Upper: Diapason (16') Lower: Diapason (8') Pedal: 16'+8'	
Reg. 10	Classical Organ 4 Rhythm: March (Vol.=0) Tempo=120	Upper: Full Organ (16') Lower: Full Organ (8') Pedal: Pipe bass 16'+8'	
Reg. 11	Theater 1 Rhythm: March Tempo=124	Upper: 16'+8'+4'+2'+1' Lower: 8'+4'+2 2/3' Pedal: 16'+8'	(Trem.) (Trem.)
Reg. 12	Theater 2 Rhythm: Waltz Tempo=106	Upper: 8' Lower: 8' Pedal: 8'	(Trem.) (Trem.)
Reg. 13	Theater 3 Rhythm: Samba Tempo=124	Upper: Full Theater 16' Lower: Full Theater 8' Pedal: 16'+8'	(Trem.) (Trem.)

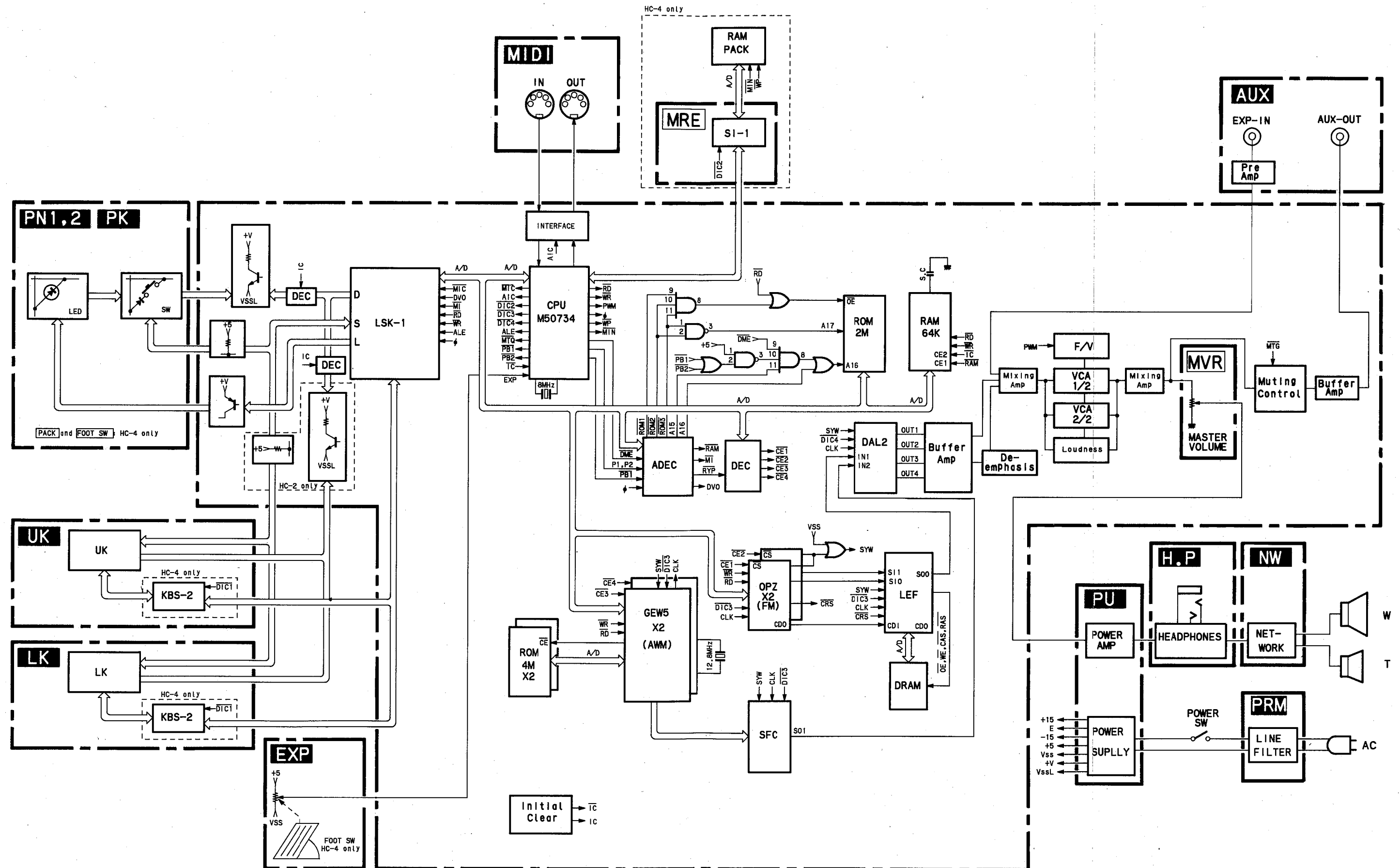
Tempo is not factory-preset.

Tempo is factory-preset on Organ Registration Menu only.

■CIRCUIT BOARD LAYOUT (HC-2,HC-4)

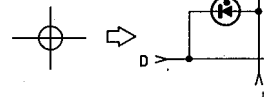
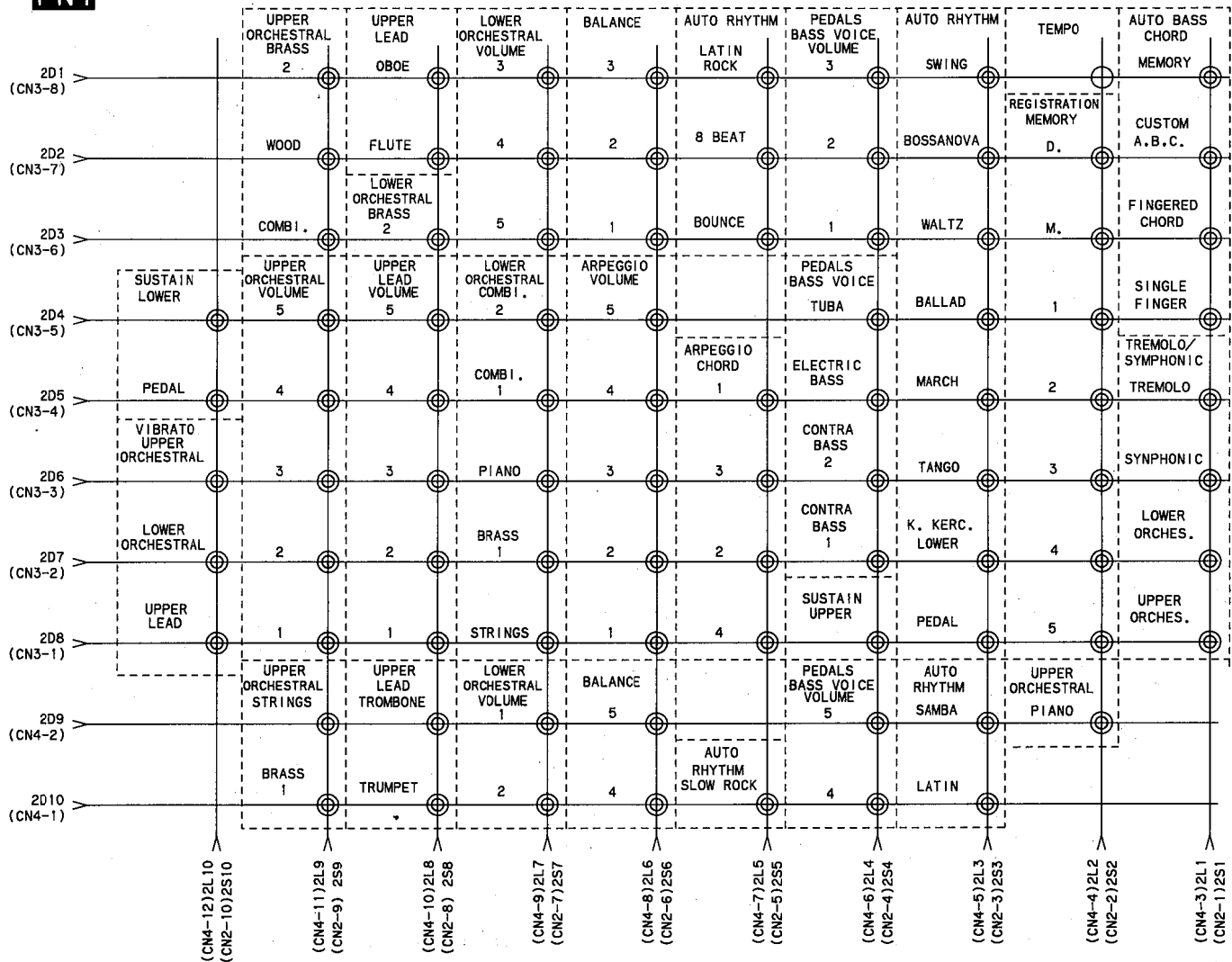


■ BLOCK DIAGRAM (HC-2,HC-4)

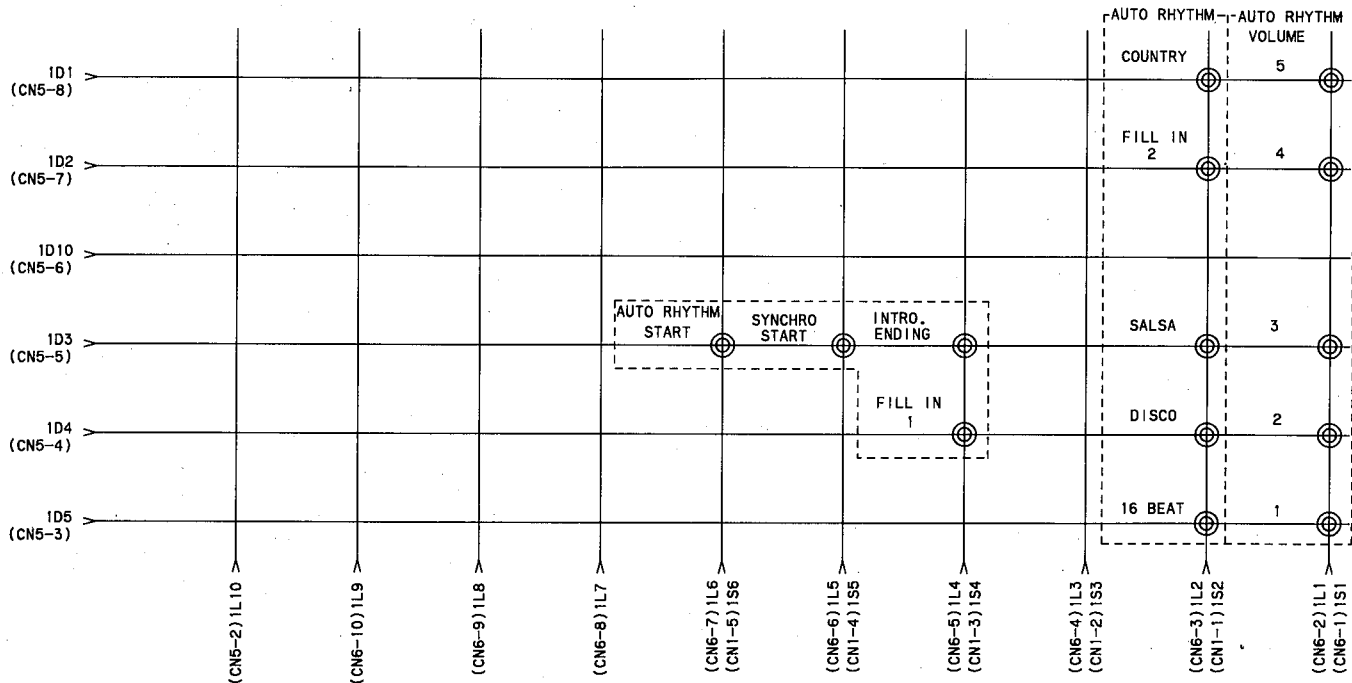


■ PN1 & PN2 MATRIX CIRCUIT DIAGRAM (HC-2)

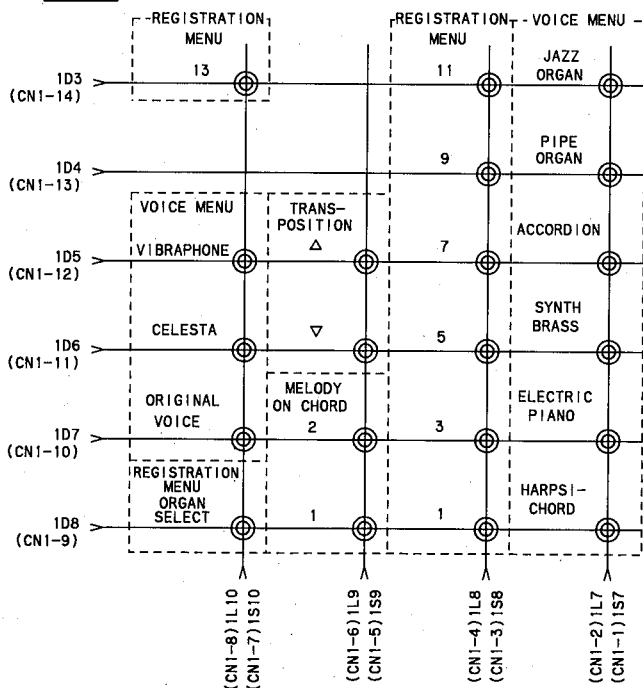
PN 1



PN1

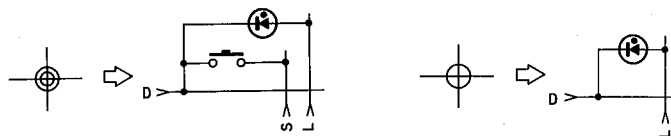
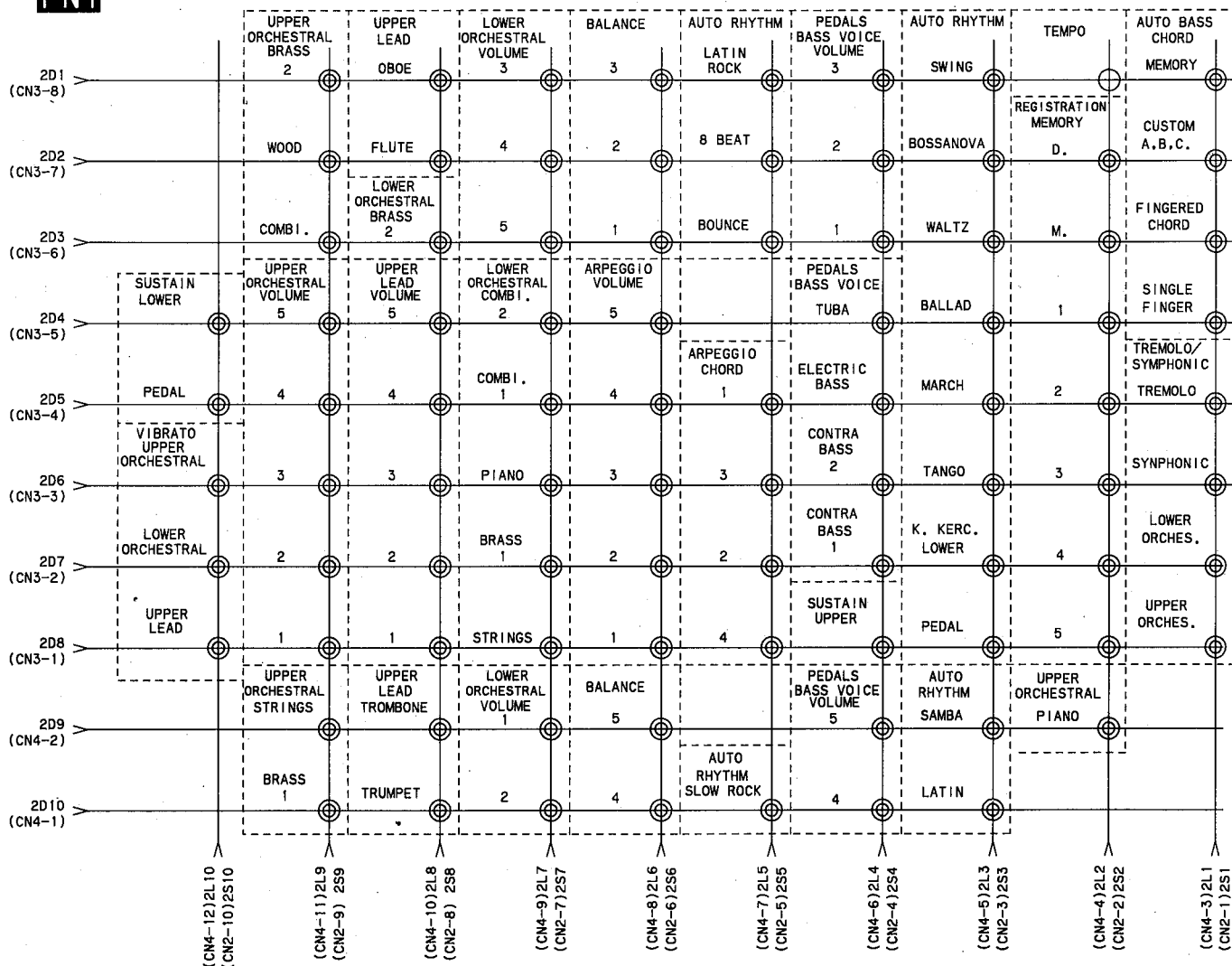


PN2

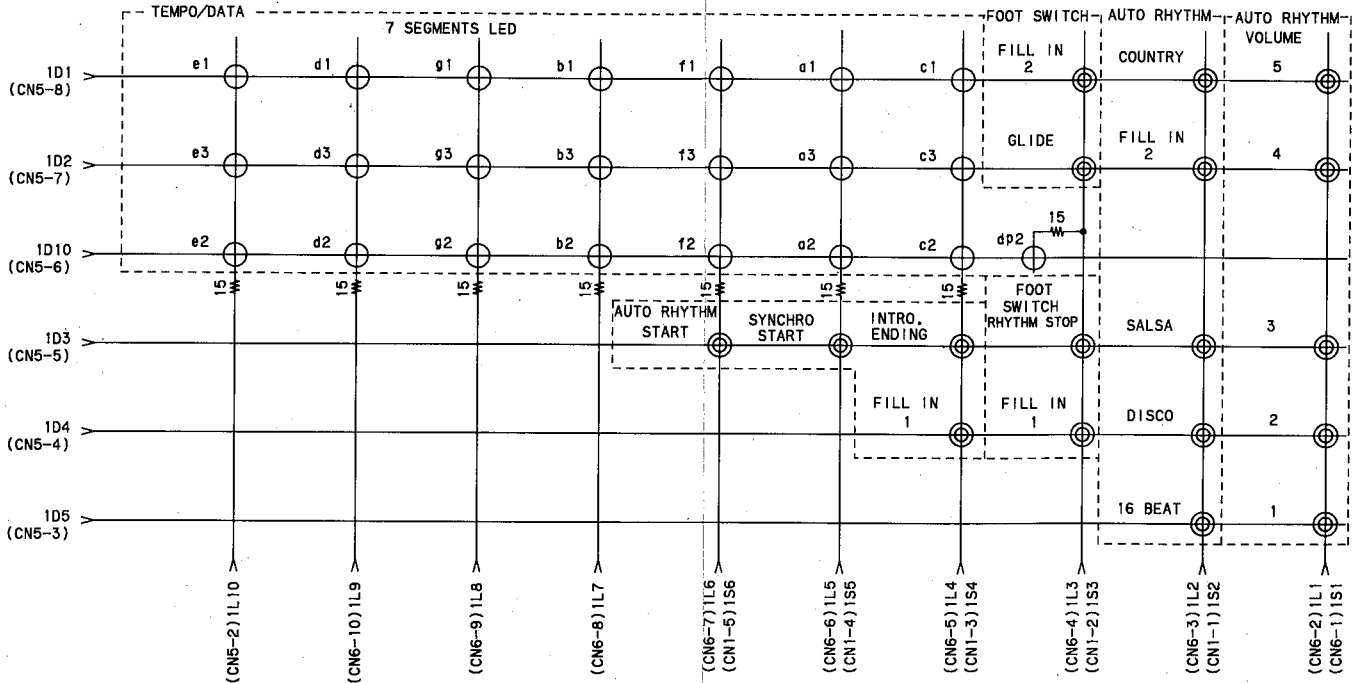


■ PN1 & PN2 MATRIX CIRCUIT DIAGRAM (HC-4)

PN 1



PN1



PN2

