SUPER JX

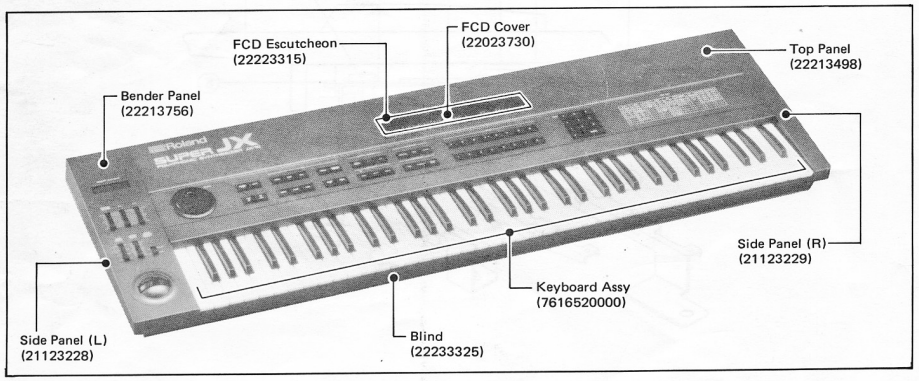
JX-10

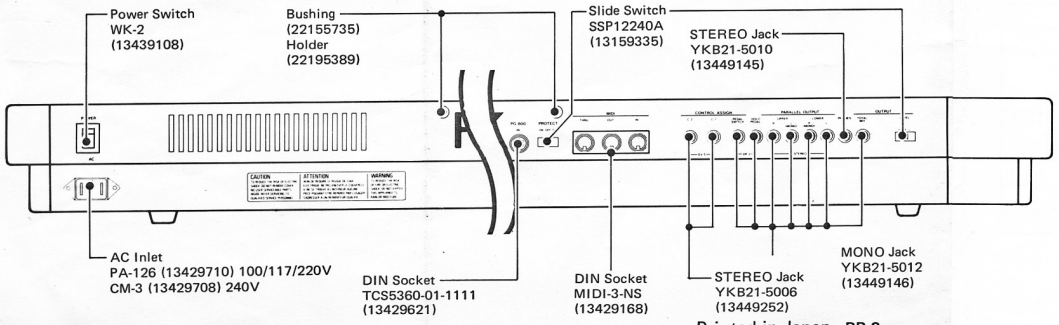
SERVICE NOTES *First Edition*

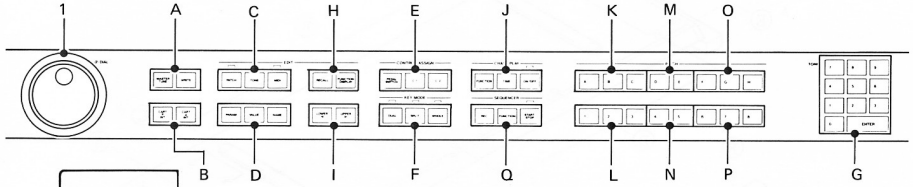
SPECIFICATIONS

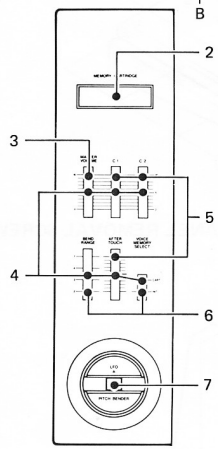
Keyboard : 76 key, (E to G)
Memory Capacity
a. Patch Memory
Internal Memory : 64
Memory Cartridge : 64
b. Tone
Preset : 50
Internal Memory : 50
Memory Cartridge : 50
c. Sequencer Data
(Using the supplied Memory cartridge M-16C or M-64C)
M-16C : Approx. 400 notes
M-64C : Approx. 1600 notes
Output:
MIX H = 8KΩ, +20dBm max.
M = 41KΩ +5dBm max.
L = 47.8KΩ −10dBm max.
UPPER L 3.3KΩ
R 3.3KΩ
LOWER L 3.3KΩ
R 3.3KΩ
HOLD PEDAL OFF : 0V ; ON : 5V
PEDAL SW OFF : 0V ; ON : 5V
C1, C2 0V−2.5V

Dimensions: 1186 (W) x 375 (D) x 101 (H) mm
46-11/16 x 14-3/4 x 4 in.
Weight: 14 kg/30 lb. 14 oz.
Power Consumption : 28W
Accessories
Connection Cord x 2
Memory Cartridge
M-16C x 1
M-64C x 1
Edit Map
Music Rest
Owner's Manual
MIDI Guide Book "MIDI"
Options
Programmer PG-800
Expression Pedal EV-5
Pedal Switch DP-6, DP-2
Memory Cartridge M-16C, M-64C
Carrying Case









No.	PART NAME	DESCRIPTION	PART NO.
1	α-Dial Knob	————	22485102
	Rotary Encoder	EC16B40B	13279792
	α-dial Escutcheon	————	22223314
2	Cartridge Socket Assy	————	7616505000
3	Slide Pot.	EWA HA0 X15 D54	13359534
4	Knob	————	22485103
5	Slide Pot.	EWA NFE X15 B14	13339455
6	Slide SW	EWA NAM X15 300	13159509
7	Bender Unit	PB-11	23273795

LETTER	KEYTOP ASSY	PART NO.
A	MASTER TUNE, WRITE	22473775
B	CART ▶ INT, CART ◀ INT	22473776
C	PATCH, TONE, MIDI	22473777
D	PARAM, VALUE, NAME	22473778
E	PEDAL SWITCH, C1, C2	22473779
F	DUAL, SPILIT, WHOLE	22473780
G	TEN KEYS(0 - 9), ENTER	22473781
H	RECALL, FUNCTION DISPLAY	22473782
I	LOWER ◀ , UPPER ▶	22473783
J	FUNCTION, TIME, ON/OFF	22473784
K	A, B, C	22473785
L	1, 2, 3	22473786
M	D, E	22473787
N	4, 5	22473788
O	F, G, H	22473789
P	6, 7, 8	22473790
Q	REC, FUNCTION, START/STOP	22473792

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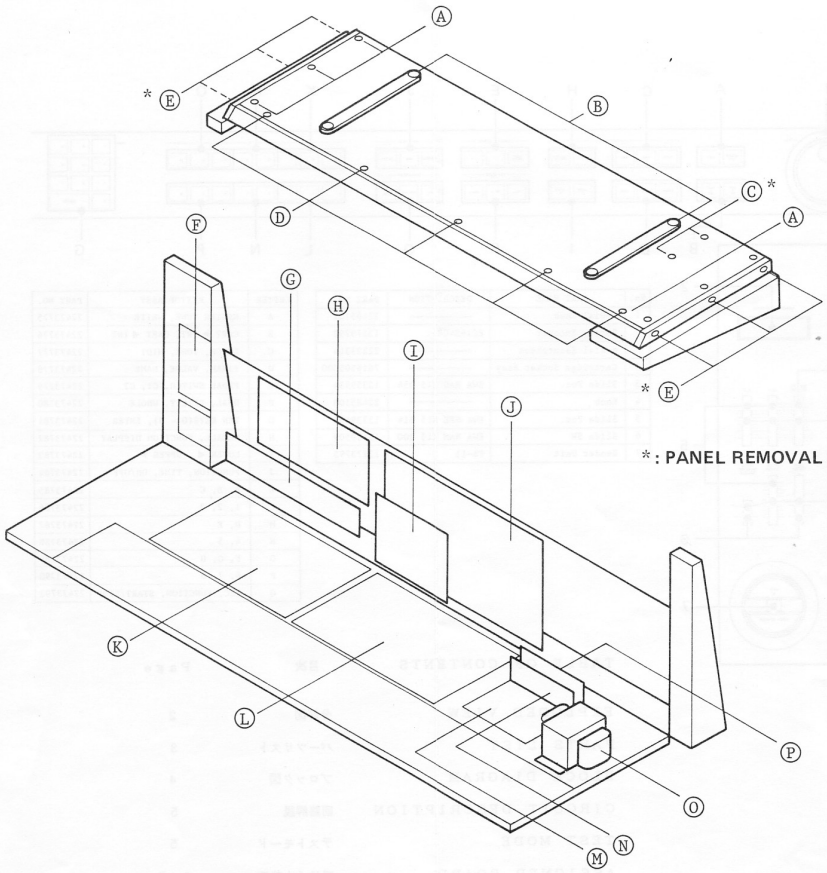
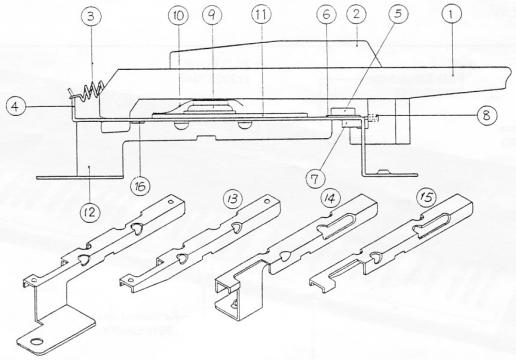


*: PANEL REMOVAL SCREWS

LETTER	DESCRIPTION	PART NO.
Ⓐ	3 x 16mm RH BLK with Washer	
Ⓑ	Rubber Foot	22355129
Ⓒ	4 x 16mm Truss BLK	
Ⓓ	4 x 16mm Truss BLK	
Ⓔ	3 x 12mm Binding Bayonet	
Ⓕ	Volume Board Assy	7616530000
Ⓖ	Jack Board Assy	7616519000
Ⓗ	Switch Board Assy	7616528000

LETTER	DESCRIPTION	PART NO.
Ⓘ	Assigner Board Assy	7616510000
Ⓙ	Display Board Assy	7616529000
Ⓚ	Module Board Assy (LOWER)	761657000
Ⓛ	Module Board Assy (UPPER)	
Ⓜ	Power Supply Board Assy	7616516100 100/117V 7616516400 220V 7616516500 240V
Ⓝ	Head Sink	22463487
Ⓞ	Power Transformer	22453443U0
Ⓟ	Sub Heat Sink	22463488

1	22575216	NATURAL KEY C, F 257-216	8	22155716	GUIDE BUSH
	22575214	NATURAL KEY D 257-214	9	22185218	KEY SWITCH 12P 218-218
	22575217	NATURAL KEY E, B 257-217	10	22245146	SWITCH COVER 224-146 (24P)
	22575215	NATURAL KEY G 257-215		22245147	SWITCH COVER 224-147 (28P)
	22575213	NATURAL KEY A 257-213	11	7616522000	KEY SWITCH ASSY 24P LOW
	22575219	NATURAL KEY E' 257-219		7616523000	KEY SWITCH ASSY 24P MID
	22575220	NATURAL KEY G' 257-220		7616524000	KEY SWITCH ASSY 28P HI
2	22575212	SHARP KEY 257-212	12	22035131	STAND B-JX 203-131
3	22175176	KEY SPRING 217-176 (NATURAL KEY)	13	22125541	ANGLE B-JX 212-541
	22175177	KEY SPRING 217-177 (SHARP KEY)	14	22035130	STAND A-JX 203-130
4	22815521	CHASSIS 281-521	15	22125542	ANGLE A-JX 212-542
5	22265452	FELT 226-452	16	22135415	STOPPER A 213-415
6	23165664	AFTER TOUCH ASSY		22135418	STOPPER D 213-418
7	22265453	FELT 226-453			



PARTS LIST

PANEL, CASING

22213498	Top Panel
22213756	Bender Panel
21133147	Bottom Board
22233325	Blind Panel
21123228	Side Panel (left)
21123229	Side Panel (right)
22123197	Plate
22123550	Angle (Same for both R, L)

KNOB, BUTTON

22485103	Slide Pot., switch (Bender panel)
22485102	αdial
22473775	Keytop Assy A (MASTER TUNE, WRITE)
22473776	Keytop Assy B (CART → INT, CART ← INT)
22473777	Keytop Assy C (PATCH, TONE, MIDI)
22473778	Keytop Assy D (PALAM, VALUE, NAME)
22473779	Keytop Assy E (PEDAL SWITCH, C1, C2)
22473780	Keytop Assy F (DUAL, SPLIT, WHOLE)
22473781	Keytop Assy G (TEN KEYS, ENTER)
22473782	Keytop Assy H (RECALL, FUNCTION DISPLAY)
22473783	Keytop Assy I (← LOWER, UPPER →)
22473784	Keytop Assy J (FUNCTION, TIME, ON/OFF)
22473785	Keytop Assy K (A B C)
22473786	Keytop Assy L (1 2 3)
22473787	Keytop Assy M (D E)
22473788	Keytop Assy N (4 5)
22473789	Keytop Assy O (F G H)
22473790	Keytop Assy P (6 7 8)
22473792	Keytop Assy Q (REC, FUNCTION, START/STOP)

SWITCH

13159509	EWA-NAM X15 300 (Portamento ON/OFF Bend range select)
13159335	SSSP12240A (Output level, Memory protect)
13129704	SKH CAB 131A (All key switches)
13279792	EC 16B 40B (Rotary encoder for αdial)
13149108	WK2A44 3A (Power)

JACK, SOCKET

13449146	YKB21-5012 (MONO)
13449145	YKB21-5010 (STEREO)
13449252	YKB21-5006 (STEREO)
13429168	MIDI3-NS (5P DIN, triplet)
13429621	TCS5360-01-1111 (6P DIN, programmer)
13429710	AC Inlet PA-126 (100/117/220V)
13429708	AC Inlet CM-3 (240V)

MEMORY CARTRIDGE SOCKET

23425803	SHELL (Black)
23425165	PBRS-28U-T01-S (Socket)

POWER TRANSFORMER

22453443U0	245-443U0

COIL

12449251	DC-DC Converter
12449244	SC-02-15E (Line filter)

RESONATOR

12389737	HC/U 16MHz (Crystal)
12389748	CSB600P (Ceralock)

PCB ASSY

7616510000	Assigner Board
7616507000	Module Board
7616516200	Power Supply Board (100/117V)
7616516400	Power Supply Board (220/240V)
7616519000	Jack Board
7616528000	Switch Board
7616529000	Display Board
7616530000	Volume Board

POTENTIOMETER

13339455	EWA-NFE X15 B14 (Slide Pot.)
13359354	EWA-NAO X15 D54 (Slide Pot.)
13339461	EWA-NFD X15 B14 (Slide Pot.)
13299193	EVN-D4A A00 B54 (Trimmer)
13299199	EVN-D4A A00 B13 (Trimmer)

IC

15229830	MB63H149PF-G-BND	(Dynamic gate array)
15179334	TC5564 PL-20	(C-MOS static RAM)
15179343FD	MB8416A-12-SK-G	(C-MOS static RAM)
15179733	TC27256 D-20-733	(ROM A Assigner board)
15179732	MBM2764-25Z-732	(ROM B LOWER Module board)
15179745	MBM2764-25Z-745	(ROM C UPPER Module board)
15179203	HD63B03RP	(CPU on assigner board)
12519150	μPD7001C	(8-bit A/D converter)
15179142F0	MBL8031AH-P-G	(CPU on Module board)
15179358	μPD8155HC-2	(8-bit static RAM)
15179185B0	M5M82C54 P-6-D-1	(Programable counter)
15219149	MM5437	(Digital noise source)
15159503	TC40H000P	(C-MOS Inverter)
15159524	TC40H245P	(C-MOS Driver)
15159511	TC40H174P	(C-MOS D-FF)
15159508	TC40H373P	(C-MOS Latch)
15169301B0	M74LS00	(Quad NAND)
15169304B0	M74LS04	(Hex inverter)
15169308B0	M74LS30	(8-input NAND)
15169347B0	M74LS32	(Quad OR)
15169311H0	HD74LS74	(Dual D-FF)
15169318B0	M74LS138	(Decoder)
15169325B0	M74LS273	(8 D-FF)
15169327B0	M74LS367	(Hex buffer)
15169305B0	M74LS08	(Quad 2-input AND)
15169321B0	M74LS161	(Counter)
15159128T0	TC4050BP	(Hex buffer)
15159114T0	TC4052BP	(Analog switch)
15159115T0	TC4066BP	(Quad analog switch)
15159113D0	BU4051BP	(Analog switch)
15159124	HD14093	(Quad 2-input NAND)
15179240	μPD7538A-013	(Display 4-bit CPU)
15219159	μPD6300C	(FIP latch driver)
15189171	M5218P	(OP amp)
15189154J0	NJM064	(Quad op amp)
15219213	MN-3009	(BBD)
15169504	MN-3101	(BBD Driver)
15219157	M5241L	(VCA for electronic volume)
15189136	M5218L	(OP amp)
15229826	IR-3R05	(VCF-VCA Pack)
15199117	M5230L	(V-regulator)

TRANSISTOR

15119106	2SA733Q	
15129107	2SC945Q	
15119814	2SB1015-O	
15129827	2SD1406-O	
15119601	2SB605L	
15129130OG	2SC1583G	
15129613	2SD1207S	
15119819	2SB507E	
15129820	2SD313E	
15129170	2SC945R	

Gm selected for Q6, Q7, Q10 of Module board VCF/VCA module; dotted in Red, Orange, Yellow or Green. 18 2SC945R (3 for each voice) on a given Module board should be of the same color dot for reproducing uniform timber.

15139103	2SK30A-GR	
15119133	DTA114EF	(Digital transistor)
15129150	DTC114EF	(Digital transistor)

DIODE, LED, PHOTO COUPLER

15019125	1SS-133	
15019143	1S-116	
15019603	05Z9.1Z	
15019605	05Z43Y	
150196070X	05X6.2X	
15029718	FIP 32B 6R	(Fluorescent indicator)
15029206	GL3HD5 (LED)	
15229706	TLP-552 (Photo coupler)	
15019208	1SR-35-200	(Diode on Power supply board)
15019243	1B4B1 (Rectifier bridge)	
15019257	4D4B41 (Rectifier bridge)	

RESISTOR

13919313	RMLS 8-104J	(100k x8 array)
13919321	RMLS 13-103J	(10k x 3 array)
13919310	RMLS 8-103J	(10k x 8 array)
13919308	RMLS 6-103J	(10k x 6 array)
13919147	RMLS 4-103J	(10k x 4 array)
13919335	RGLD 6-102J	(1k x 6array)
13919146	RKM 14L 503F	(R-2R DA array)
13919168	RMLS 4-224J	(220k x4 array)
13919336	RMLS 8-224J	(220k x8 array)
13919322	RMLS 4-102J	(1k x 4array)

CAPACITOR

13529104	DE7150F472MVA1	(Line bypass)
13549216Y0	0.01μF 50V, G (±2%)	(Film)
13529116	DD107SL221G50V	(220pF, 50VG)
13529128	DD107CH680J50V	(68pF, Temperature compensating)

FUSE, FUSE HOLDER

12559336	GGS 2A	(100/117V)
12559513	CEE T1A	(220/240V)
12199552	UF0005-02	(Fuse holder)

CONNECTOR HOUSING

13439263	5267-06A	
13439264	5267-07A	
13439265	5267-08A	
13439269	5267-09A	
13439278	5267-11A	
13439267	5267-12A	
13439266	5267-10A	
13439261	5267-04A	
13439285	5268-03A	
13439318	5268-11A	
13439273	5268-06A	
13439271	5268-02A	
13439272	5268-04A	
13439270	5268-08A	
13439280	Card fitting CF-028	(Sumi card connector)
13439315	Card fitting CF-034	(Sumi card connector)
13439316	Card fitting CF-127	(Sumi card connector)
13439317	Card fitting CF-134	(Sumi card connector)

AC CORD, CORD SET

13439801	PVFF 2.5m	(100V)
12369504	Cord bush SR-4N-4	(100V)
22193842	Cord holder	(100V)
13439812F0	VC-704-J01	(117V)
13439813F0	EC-210-J01	(220V)
13439814F0	SC-415-J06	(240V 3P, Australian)
13436846	BH-301-J01	(240V 3P, England)

COVER

22023730	FCD cover	
22253118	Bender shield cover	
22253122	Shield cover	
22243143	Slide volume cover 224-143	
22673503	Cover 267-503	(Heat sink)
22023736	LED cover 202-736	

COLLAR, BUSHING

12159713	Collar TA-305	(5mm)
12159734	Collar TA-307	(7mm)
12159733	Collar TA-310	(10mm)
12159715	Bushing TB-300	

FLAT CABLE

13479189	Sumi card SMCD 28 x 700-BD10P1.25
13479184	Sumi card SMCD 34 x 250-AD x 10
13479185	Sumi card SMCD 27 x 100-AD x 10

HEAT SINK

22463487		246-487
22463488	Sub	246-488
22465124		246-124 (Rectifier 4D4B41)

WIRING

23493388	A
23493389	B
23493390	C

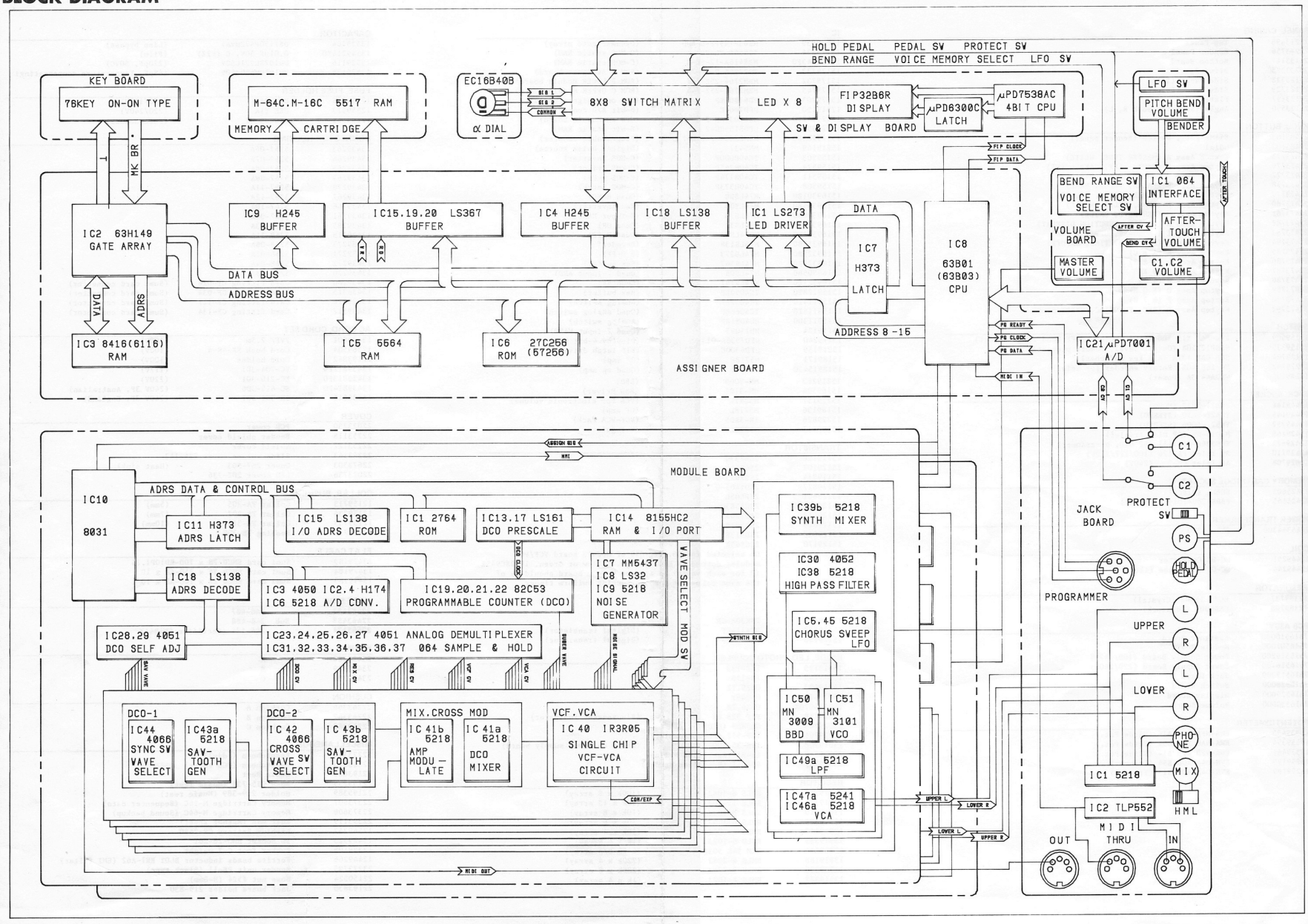
CUSHION

22263366	Cushion A
22263367	Cushion B
22263368	Cushion C

MISCELLANEOUS

22223314	Escutcheon (dial)
22223315	Escutcheon (FCD cover)
22193621	Music Rest
22155735	Bush 215-735 (Music rest)
22195389	Holder 219-389 (Music rest)
22373607	Memory Cartridge M-16C (Sequencer data)
22373608	Memory Cartridge M-64C (Sound backup)
22393119	Edit map (Magnet sheet)
12569252	Lithium Battery CR-2450
13429523	IC Socket SMO-28-S6T
12359105	Rubber foot G-7 weight
12449266	Ferrite beads inductor BL01 RN1-A62 (EMI filter)
23273795	Bender unit PB-11 (Black type)
22150524	Boss nut Ø524 (H=8mm)
22193830	Jack board holder 219-830

BLOCK DIAGRAM



CIRCUIT DESCRIPTIONS

G E N E R A L
The JX-10 is a 12-voice (24 DCO, 12 VCF, 12 VCA) synthesizer consistitng of the following two systems.

C o n t r o l S y s t e m
The sytem is composed of four CPUs.
Assigner CPU 63B01 -- Master 1 pc
Module CPU 8031 ------- Slave 2 pcs
Display CPU UPD753BAC - Slave 1 pc

V o i c i n g S y s t e m
The sytem falls into two PCBs: UPPER and LOWER Modules,each caters for 6 voices through the following circuit configuration.
VCO ----- 4 programmable interval timmers (M5M82C54P), each containing 3 counters.
VCF ----- 6 one-chip VCF & VCA ICs IR3R05
Chorus Circit -- 2 channels

D E T A I L

A s s i n e r B o a r d
KEYBOARD READING
Every key has two normally open contacts (Break and Make) of closed-and-closed configuration.See Fig. 1. The velocity data of a key strike is base on an elapse of break contact closing after make contact.
IC2 63H149, gate array reads the 76 keys,writing the status into IC3 6116,RAM which is timeshared by CPU IC8, 63B01V. The CPU can directly access the RAM stored data as necessary.

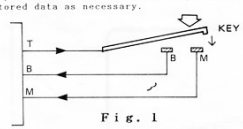


Fig. 1

SWITCH READING
The CPU IC8, 63B01V reads the status of switches connecting to the 8 by 8 matrix, through buffers IC18 (LS138) and IC4 (H245). The switchings are:
Touch switches and slide switches on the panel
Polarity of the bender LFO switch
Hold pedal Control Assign pedal

A/D CONVERTER
IC21, UPD7001C is a one chip multiplexer and A/D converter. It accomodates analog voltages from
Control Assign knob
Bender
Aftertouch
and sends the data to the CPU IC8 in a digital format.

PROGRAMMER PG-800
The output data from the PG-800 is sent to the CPU IC8 directly in a serial synchronized format.

M o d u l e B o a r d
DCOs
DCO 1
The 8MHz clock from the assigner board is first divided at prescaler IC17, LS161 either by 1/2, 1/4, 1/8 or 1/16 according to the DCO range set before being sent to programmable counters IC19 and IC20 (82C54) which further divide the clock down to the object frequency.

DCO 2
The DCO 2 has an additional circuit, FINE TUNE put midway between prescaler and programmable couters ICs 21 and 22. The circuit consists of IC12 (LS00) NAND and IC14 (8155) SRAM containing 22 I/Os and a timer and always lowers the clock except when FINE TUNE knob is set at extreme + position. Therefore, the pitch data from the CPU IC10 (8031) containes an offset data so that the frequencies at IC21 and IC22 outputs are in tune when FINE TUNE knob is set at +/-0.

WAVEFORM SHAPER

Sawtooth
The circuit generates a series of sawtooth waves to the frequency of a programmable counter output. DCO1 and module A are taken as examples.
The square wave T1-A is first differentiated;the positive going pulse forward biases Q9, which in turn discharges C74. The C74 is then charged through IC43 whose output, i.e. charging rate is determined by DCO1-A from IC26.The charging rate increases as the note or pitch rises,maintaining the sawtooth amplitude nearly constant over the keyboard range.

Pulse
Increasing DCO1-A above overcharge flatens the top of sawtooth.This phenomenon will be made use of when PULS is selected on the panel.

回路解説

概 要

ＪＸ－１０は１２ボイス（２４ＤＣＯ，１２ＶＣＦ，１２ＶＣＡ）のシンセサイザーであり，主な構成は次の通りです。

制御系
アサイナＣＰＵ６３Ｂ０１（マスタ）１個，モジュールＣＰＵ８０３１（スレーブ）２個，ディスプレイＣＰＵｕＰＤ７５３８ＡＣ（スレーブ）１個の計４個を有しています。

音源系
ＵＰＰＥＲ及びＬＯＷＥＲモジュール基板には，それぞれ６つのボイスが搭載されています。
１枚のモジュール基板には以下のものが内蔵されています。

▲ＤＣＯ：プログラマブル・カウンタ　Ｍ５Ｍ８２Ｃ５４Ｐ　４個
▲ＶＣＦ，ＶＣＡ：ワンチップＶＣＦ-ＶＣＡ ＩＣ　ＩＲ３Ｒ０５　６個
▲コーラス回路：２系統

詳 細

Ａ　アサイナ・ボード

◇キーボード
各キーのＳＷは，ブレイク及びメイク接点から低うスイッチングはＯＮ－ＯＮ方式です。（Ｆｉｇ．１）
ブレイクが接してからメイクが接するまでの時間差が，ベロシティデータとなります。
７６鍵のＯＮ－ＯＦＦデータは（ＩＣ２（６３Ｈ１４９）ゲートアレイで読み込まれ，ＩＣ３（６１１６）ＲＡＭの鍵盤番地に対応したアドレスへ格納されます。ＩＣ８（６３Ｂ０１Ｖ）ＣＰＵはこの１ＣＳＲＡＭをゲートアレイと共有しており，直接アクセスしてキーデータを読み込みます。

◇ＳＷ類の読み込み
ＩＣ８（６３Ｂ０１Ｖ）ＣＰＵは，以下のものを，ＩＣ１８（ＬＳ１３８）及びＩＣ４（Ｈ２４５）のバッファを介し，８Ｘ８のマトリクスから読み込みます。
・パネルのタクトＳＷ及びスライドＳＷ
・ベンダーの方向及びＬＦＯ　ＳＷ
・ホールド・ペダル，ペダルＳＷ（コントロール・アサイン）

◇Ａ／Ｄコンバータ
ＩＣ２１（ｕＰＤ７００１Ｃ）４ＣＨアナログ入力マルチプレクサＡ／Ｄコンバータは，下記の電圧を読み取ると，デジタルデータとして
ＩＣ８（６３Ｂ０１Ｖ）ＣＰＵに送ります。
》コントロール・アサイン　Ｃ１，Ｃ２
》ベンダー
》アフター・タッチ

◇プログラマ　ＰＧ－８００
ＰＧ－８００のシリアルデータは，同期式のシリアル伝送でＩＣ８（６３Ｂ０１Ｖ）ＣＰＵのポートへ直接送られます。

Ｂ　モジュール・ボード

◇ＤＣＯ１
アサイナボードから送られてきたＳＭＨｚのクロックはＩＣ１７（ＬＳ１６１）プリスケーラにより１ＤＣＯ設定レンジに応じて，１/２，１/４，１/８，１/１６に分周され，ＩＣ１９，２０（８２Ｃ５４）プログラマブル・カウンタへ送られます。このカウンタは，ＣＰＵからのデータによって，クロックを目的周波数まで分周しるモジュールへ出力します。

◇ＤＣＯ２
基本的な動作はＤＣＯ１と同様ですが，ＤＣＯ２の場合は，プリスケーラからの出力信号がＦＩＮＥ　ＴＵＮＥ回路を介して，ＩＣ２１，２２（８２Ｃ５４）へ送られる点で，異なります。
ＦＩＮＥ　ＴＵＮＥ回路はＩＣ１２（ＬＳ００）ＮＡＮＤとＩＣ１４（８１５５）Ｓ－ＲＡＭ（２２ＩＯ＋タイマ付）から構成され，ＦＩＮＥ　ＴＵＮＥつまミ（またはパラメーターバリュー）が＋側から－側へ移動するにつれてプリスケーラからの信号周波数を低くしていきます。
（ＦＩＮＥ　ＴＵＮＥつまミ（またはパラメーターバリュー）が中側から－側へ移動するにつれてプリスケーラからの信号周波数を低くしていきます。
（ＦＩＮＥ　ＴＵＮＥつまミ（またはパラメーターバリュー）が中側から－側へ移動するにつれてプリスケーラからの信号周波数を低くしていきます。
この場合（プリスケーラ信号の），周波数はすでに低くなっています。これを補うためＩＣ１０（８０３１）ＣＰＵはＩＣ２１，２２（８２Ｃ５４）へ補正したデータを送ります。］

◇波形変換

…鋸歯状波
プログラマブルカウンタの出力周波数に同期した鋸歯状波を発生します。以下ＤＣＯ－１，モジュールＡを例に取って説明します。
矩形波Ｔ１－Ａは微分され正のパルスを発生し，Ｑ９を通じＣ７４を放電します。　Ｃ７４は引き続きＩＣ４３により充電されて行きますが，充電速度はＤＣＯ－１で定まり，音階が高くなるにつれて早くなります。　このためＩＣ４３の出力振幅は全音階にわたっほぼ一定に保たれます。

…パルス波
ＤＣＯ１－Ａを極端に大きくし，充電カーブの立ち上げを早くすれば，波形の頭が平らとなり下側をのパルス波が得られます。

SYNCHRONIZATION
Enabling SYNC allows the positive going pulse derived from T1-A to be applied to DCO-2 counter IC21 through an analog switch IC44,SY-A and GATE pin. The pulse is also routed through D7 to the base of Q9 for synchronizing the DCO-2 sawtooth generator.

VCF AND VCA
A pair of VCF and VCA is fabricated on one chip IC IC40 (IR3R05). VCF is a state variable filter of -24dB/oct LPF. The VCA stage has both LINEAR and EXPONENTIAL control inputs. The LINEAR input accepts VCA CV while the EXPONENTIAL input caters for VCA level and companding CVs.
The 1st VCA inside IC40 (IR3R05) and the 2nd VCA IC47 (5241L) constitute compressor/expander pair and improve S/N ratio.

◇シンクロ
ＳＹＮＣオンの場合Ｔ１－Ａから発生したパルスはアナログＳＷ　ＩＣ４１を通じて，ＤＣＯ２のカウンタＩＣ２１のＧＡＴＥへ同期用パルス（ＳＹ－Ａ）として加えられます。同時にＤＣＯ２の鋸歯状波発生回路を（Ｑ９を通じて）リセットします。

◇ＶＣＦ，ＶＣＡ
）ＩＣ４０（ＩＲ３Ｒ０５）ワンチップＶＣＦ-ＶＣＡ ＩＣ
ＶＣＦの部分はステートバリアブルの２ポールＬＰＦの２段で４ポール　-24dB/oct の特性があります。
）最終段ＶＣＡ　ＩＣ４７（５２４１Ｌ）
ＩＣ４７（５２４１Ｌ）は，コンプレッション／エキスパンドとして動き，ＳＮ比を改善しています。

VCAの部分はLINEARとEXPONENTIALの２つのコントロール入力を持っており，VCA CVはLINEARに，VCAレベルとコンパンディングCVはEXPONENTIAL入力に入ります。

● Pin Functions
IN ①　Signal Input
FREQ ②
RESO ③　CV Input These CVs determine timbre and
LINE ④　level of a sound
EXPO ⑤
C1 ⑬
C2 ⑫
C3 ⑪
C4 ⑩
LOAD ⑥

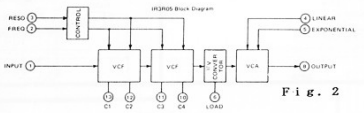


Fig. 2

IN ①　シグナル入力
FREQ ②
RESO ③
LINE ④　コントロール入力
EXPO ⑤
C1 ⑬
C2 ⑫
C3 ⑪
C4 ⑩
LOAD ⑥

D i s p l a y B o a r d
CPU FOR FIP
IC1 (UPD753BAC-013) diectly controls FIP based on the data and command sent from the assigner board CPU(63B01V) which demands additional ports from latch IC2 (UPD6300C).

S w i t c h B o a r d
ROTARY ENCODER INTERFACE
Output signals from rotary encoder are first fed to IC1 (4093), shimitt trigger where they are routed to LATCH and CLK pins of IC2 (74LS), respectively. CLK and Q outputs from IC2 are read by software scanning through the switch matrix, in the same manner as other switches.

V o l u m e B o a r d
AFTERTOUCH
The output voltage from the aftertouch sensor is linear-compensated at IC1 (064) and then sent to the assigner board with its amount determined by VR4 setting.

C　ディスプレイ・ボード

◇ＦＩＰ用ＣＰＵ
ＩＣ１（ｕＰＤ７５３８ＡＣ－０１３）ＣＰＵは，アサイナ・ボードのＣＰＵ（６３Ｂ０１Ｖ）から送られてきた同期式のシリアルデータ及びコマンドをもとに，ＦＩＰを直接コントロールしています。
ＩＣ２（ｕＰＤ６３００Ｃ）ＬＡＴＣＨは，ＦＩＰ用ＣＰＵのポート不足分を補っています。

Ｄ　スイッチ・ボード

◇ロータリエンコーダ・インターフェイス
ロータリエンコーダの２信号出力はＩＣ１（４０９３）シュミット・トリガを介し，１つはＩＣ２（ＬＳ７４）ＬＡＴＣＨのデータに，もう１つはＣＬＫに接続されています。
ＩＣ２ＬＡＴＣＨのＣＬＫとＱは，ＳＷマトリクスに接続されており，他のＳＷと同様にソフトウェア・スキャンされます。

Ｅ　ボリューム・ボード

◇アフタータッチ
アフタータッチ，センサの出力電圧はＩＣ１（０６４）で直線補正されます。
さらに，スライドＶＲ４で可変された値がアサイナ・ボードへ送られます。

TEST MODE

The JX-10 may be put into one of four test modes for adjusting or checking purpose.

1. A s s i g n e r C h e c k M o d e
When the JX-10 won't step to the next routine while displaying the opening message after power up (in normal switch on), enter this mode to see whether the assigner board functions normally, independent of module boards.

N O T E
The default routine of a module board CPU after "normal power-up" is to scan chips under its control and correct their variations,if needed. Upon completion of the default routine, the CPU sends a ready signal to the assigner CPU. If one of module CPUs (UPPER and LOWER) cannot send the signal due to serious chip problem, the assigner CPU will go into hang-up. This test mode frees the assigner CPU from such "no ready" signal and allows the CPU to go to the next steps.
If the display doesn't change reading as shwon in Fig. A upon normal power-on, enter this test mode.

テストモード

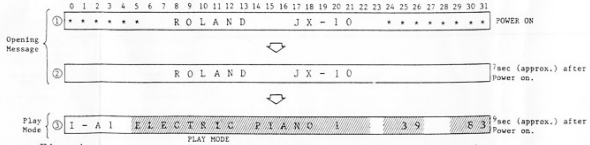
ＪＸ－１０には４通りのテストモードがあり，調整及び機能チェックに応用することができます。

1　アサイナ部点検モード（ハングアップ時）

電源を投入したときにＪＸ－１０がオープニングメッセージを表示したまま，次の動作へ進まない場合，本テストモードを用いることにより，アサイナ部のみの動作が可能かつ，不可能かを調べられます。

「通常での電源投入時，モジュールＣＰＵはまず自身が管理するチップを点検しパラフをの補正や調整を行った後，準備完了信号をアサイナＣＰＵへ送ります。２個のモジュールＣＰＵ（ＵＰＰＥＲ及びＬＯＷＥＲ側）からこの信号が送られてこないと，アサイナＣＰＵはハングアップしてしまいます。
このテストモードは上記のような場合に，モジュールＣＰＵから準備完了信号を受け取らなくても，アサイナＣＰＵが次の動作を行えるようにするものです。」

通常の電源投入時，正常のディスプレイ表示進行はＦｉｇ．Ａのようになります。



PLAY MODE
(Display reading in shaded area varies with control settings.)

Fig. A

1-1. Entering Assigner Check Mode
While pressing PATCH MEMORY A button, turn the switch on.
Comparing the display reading shift in the test mode with that of normal play mode will suggest the possible cause. Fig. B.

○モードへの入り方
ＰＡＴＣＨ　ＭＥＭＯＲＹの「Ａ」ボタンを押しながら電源をいれる。

参考
通常の電源投入後及び本テストモード操作による電源投入後のディスプレイの状態によってどの部分が異常であるか大まかに推定できます。（Ｆｉｇ．Ｂ）

Display reading in various settings		Possible Cause
Normal Power-up	Power-up for the test mode	
Won't start, or hangs up in one of steps in Fig. A	Won't start, or hangs up in one of steps in Fig. A	Assigner or Display board deffective
Hangs up in 1 of Fig. A	Goes to 3 of Fig. A without fail	UPPER or LOWER module board suspective
Hangs up in 2 of Fig. A	Goes to 3 of Fig. A without fail	Assigner board failed in reading pots and associated circuits Deffective A/D

各操作におけるディスプレイの状態		推定内容
通常に電源をいれる	本テストモードで電源をいれる	
立ち上がらない、またはFig.Aのいずれかでハングアップ	立ち上がらない、またはFig.Aのいずれかでハングアップ	アサイナまたはディスプレイ・ボード動作不良
Fig.A 1の状態でハングアップ	Fig.A 3の状態まで正常に進行する。	UPPERまたはLOWERのモジュール・ボード動作不良
Fig.A 2の状態でハングアップ	Fig.A 3の状態まで正常に進行する。	VRの読み込み（Ａ／Ｄ）関連動作不良

Fig. B

2. A s s i g n e d M o d u l e D i s p l a y M o d e
While in this mode LEDs indicate which module is currently assigned to a key being held.Fig. B. Two modules, one each from UPPER and LOWER are assigned to a key.

2-1. Entering Module Display Mode
While pressing PATCH MEMORY B button, turn the power on.

3. R o t a r y A s s i g n M o d e
Moduels are assigned to a key pressed, one at a time from A to F in cyclic manner.
C A U T I O N
If more than one key is pressed simultaneously, the subsequent assignments are disordered. Turn the power off and re-enter the mode.

3-1. Entering Rotary Mode
While pressing PATCH MEMORY C button, switch the power on.

4. R O M V e r s i o n D i s p l a y M o d e
The mode displays the current version of ROM IC8 of the assigner board.

N O T E
Version data is stored in the assigner ROM only. Replacing module ROM with different version does not change version number on the display.

4-1. Entering Version Display Mode
While pressingf PATCH MEMORY H button, switch the power on.

○モードへの入り方
ＰＡＴＣＨ　ＭＥＭＯＲＹの「Ｂ」ボタンを押しながら電源をいれる。

2　関音モジュール表示モード

あるキーを押した場合，そのキーがどのモジュールをアサインしているか，ＬＥＤで表示します。（Ｆｉｇ．Ｃ）
１つのキーに対し，ＵＰＰＥＲ，ＬＯＷＥＲそれぞれ１つまで，モジュール（ボイス）が割り当てられます。

○モードへの入り方
ＰＡＴＣＨ　ＭＥＭＯＲＹの「Ｂ」ボタンを押しながら電源をいれる。

3　ロータリ・モード

任意の１つのキーを繰り返し押した場合，Ａから下までのモジュールが，順番で割り当てられます。
［注意：複数のキーを同時に押した場合，以後のアサイン順序は乱れます。確認するためには改めて本モードにはいる要があります。］

○モードへの入り方
ＰＡＴＣＨ　ＭＥＭＯＲＹの「Ｃ」ボタンを押しながら電源をいれる。

4　ＲＯＭバージョン表示モード

アサイナ基板のＲＯＭ（ＩＣ８）のバージョンを表示します。
［注意：モジュール基板のＲＯＭ（ＩＣ１）には一切関係しません。］

○モードへの入り方
ＰＡＴＣＨ　ＭＥＭＯＲＹの「Ｈ」ボタンを押しながら電源をいれる。

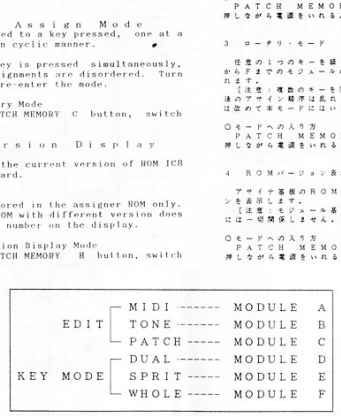
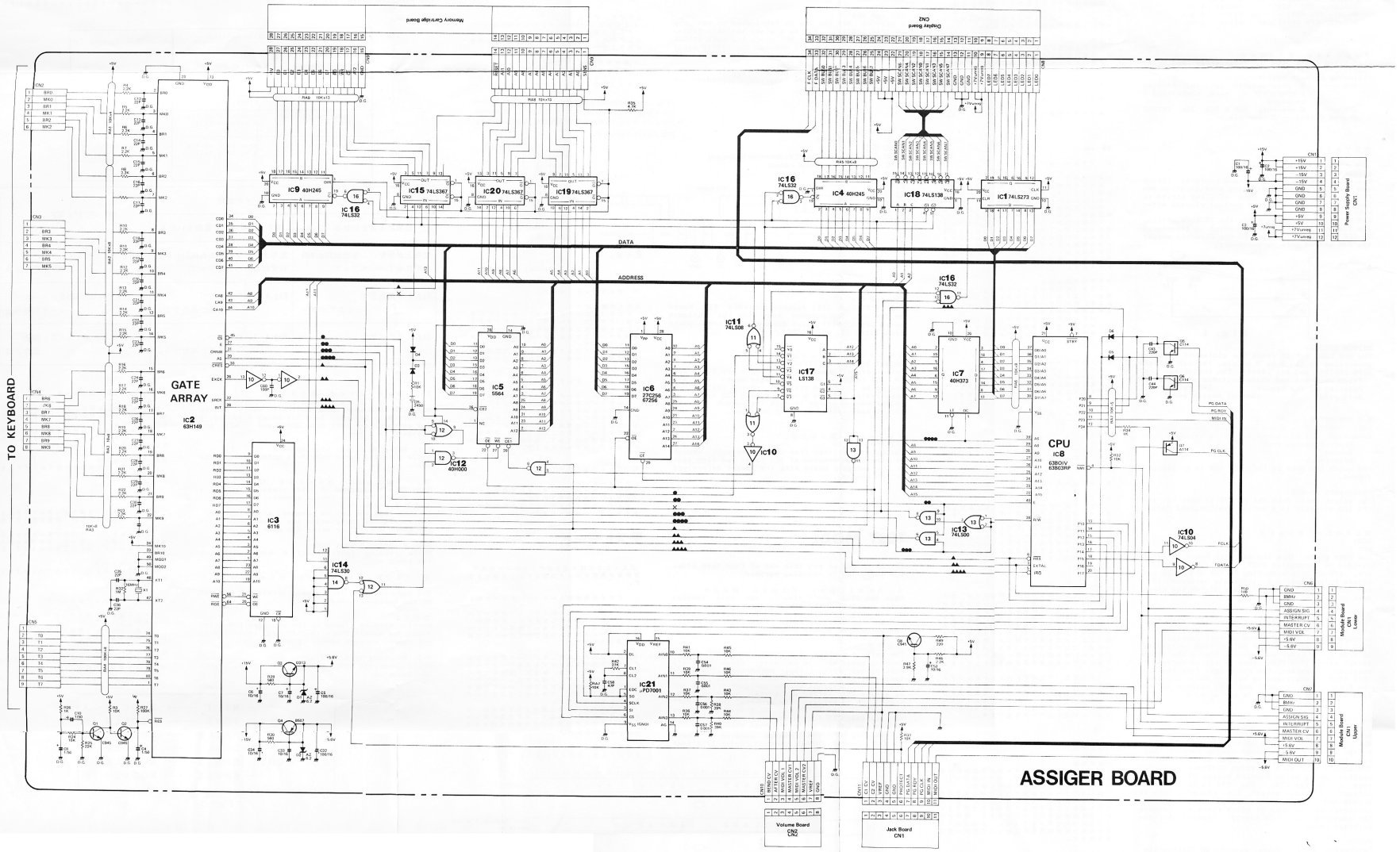
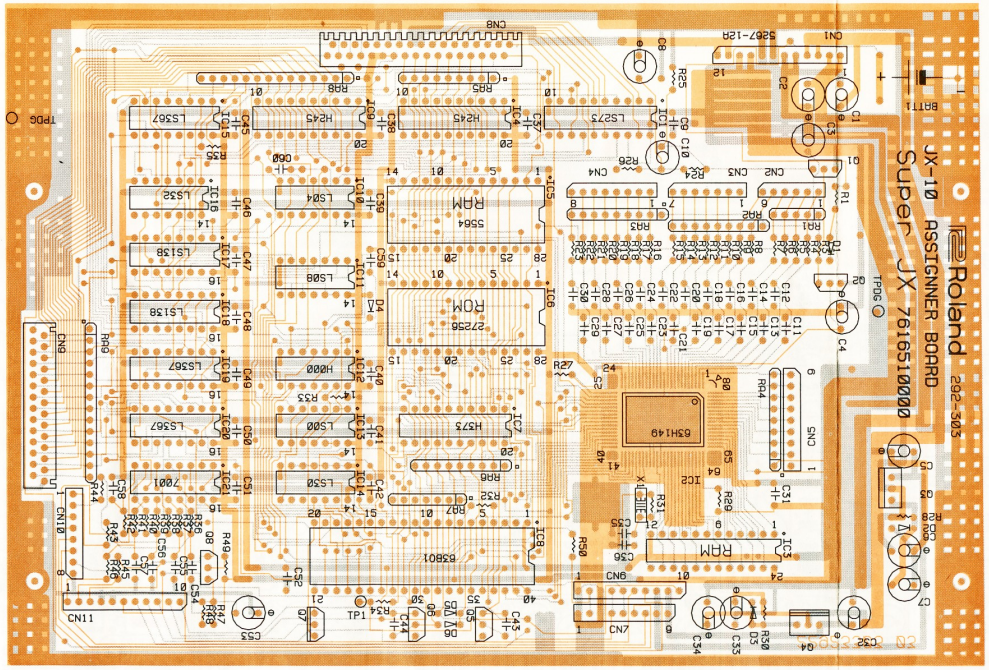


Fig. C

CIRCUIT DIAGRAM

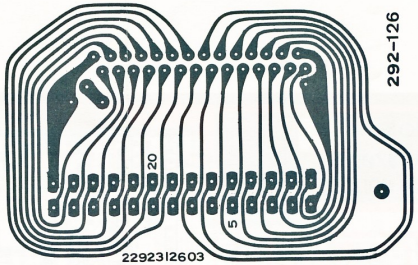




PARTS SIDE 部品面

ASSIGNER BOARD

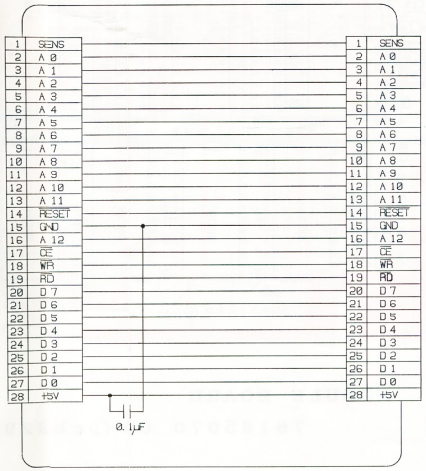
76165100 00 (pcb22923303 03)



SOLDER SIDE 半田面

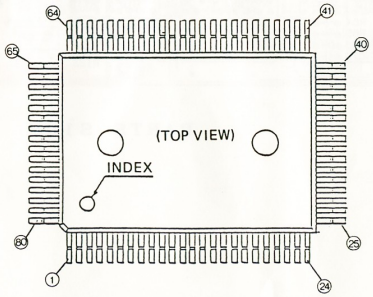
CARTRIDGE BOARD

76165050 00 (pcb22923126 03)

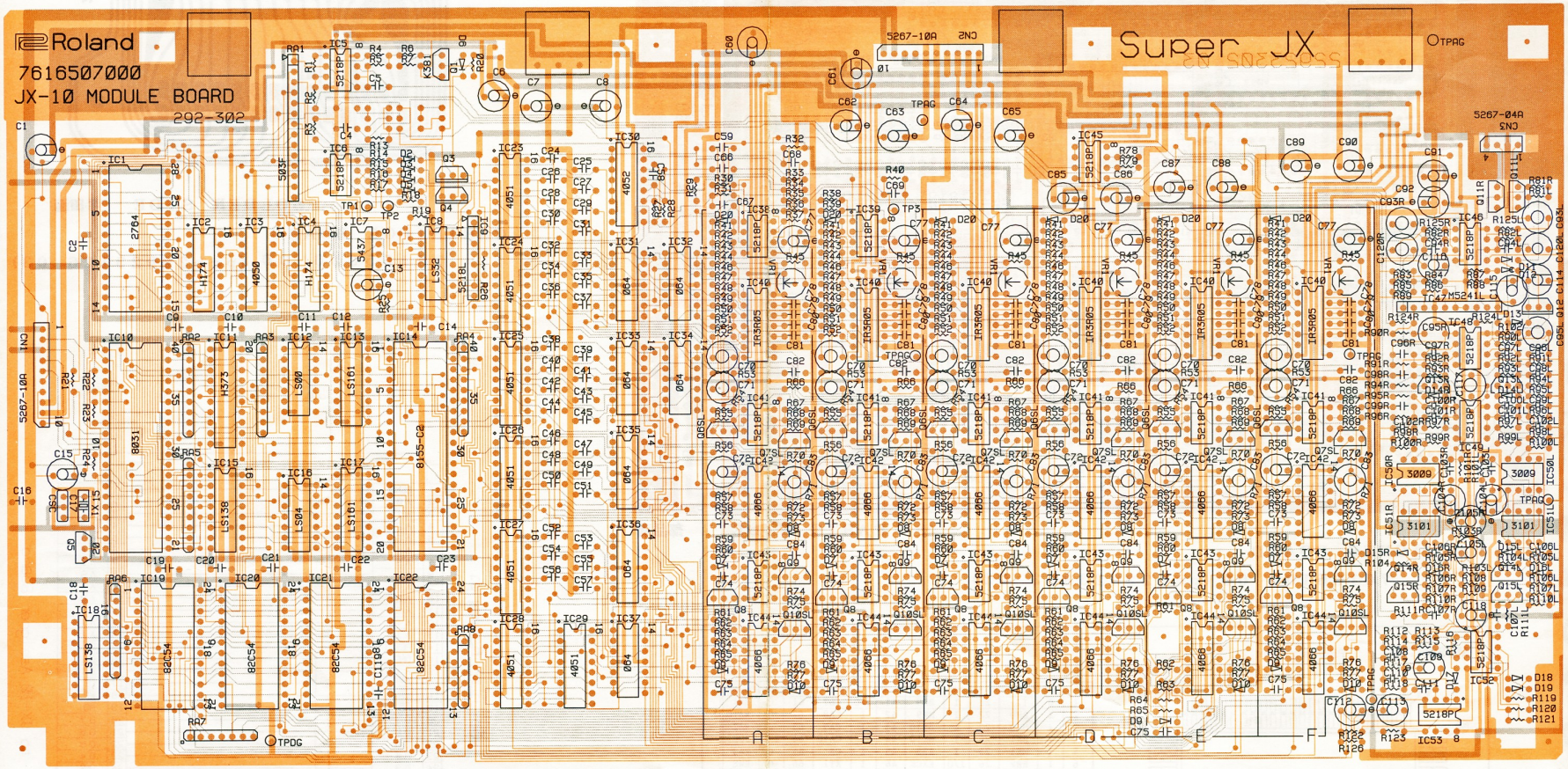


JX-10 Memory Cartridge Board

MB63H149 Pin Assignment



Pin no.	I/O	Pin name	Pin no.	I/O	Pin name	Pin no.	I/O	Pin name	Pin no.	I/O	Pin name
1	O	T7	21	I	BR9	41	I/O	CD7	61	O	RA1
2	I	BR0	22	I	MK9	42	I	CA8	62	O	RA10
3	I	MK0	23	I	BR10	43	I	CA9	63	O	RA2
4	I	BR1	24	I	MK10	44	I	CA10	64	I/O	ROE
5	I	MK1	25	I	RES	45	I	CS	65	O	RA3
6	I	BR2	26	I/O	EXCK	46	I	XT1	66	O	RWE
7	I	MK2	27	I	E	47	O	XT2	67	O	RA4
8	I	BR3	28	O	INT	48	O	ASEL	68	O	RA9
9	I	MK3	29	I	AS	49	I	MOD1	69	O	RA5
10	I	BR4	30	O	CRES	50	I	MOD2	70	O	RA8
11	I	MK4	31	I	CRNW	51	I/O	RD3	71	O	RA6
12	–	VSS	32	O	SRCK	52	–	VSS	72	O	RA7
13	I	BR5	33	–	VDD	53	I/O	RD4	73	–	VDD
14	I	MK5	34	I/O	CD0	54	I/O	RD2	74	O	T0
15	I	BR6	35	I/O	CD1	55	I/O	RD5	75	O	T1
16	I	MK6	36	I/O	CD2	56	I/O	RD1	76	O	T2
17	I	BR7	37	I/O	CD3	57	I/O	RD6	77	O	T3
18	I	MK7	38	I/O	CD4	58	I/O	RD0	78	O	T4
19	I	BR8	39	I/O	CD5	59	I/O	RD7	79	O	T5
20	I	MK8	40	I/O	CD6	60	O	RA0	80	O	T6

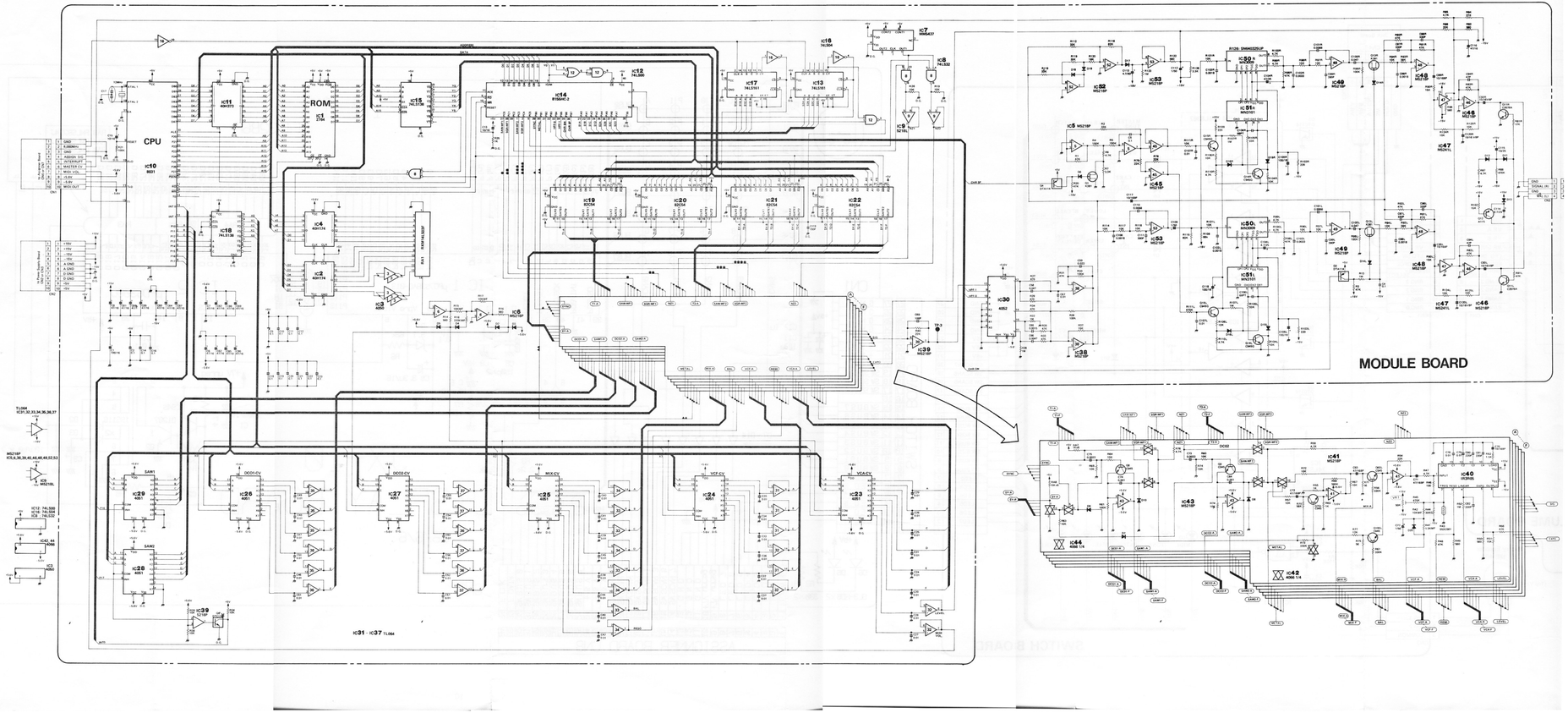


MODULE BOARD

76165070 00 (pcb22923302 03)

PARTS SIDE 部品面

CIRCUIT DIAGRAM



ADJUSTMENT

A D J U S T I N G V C F

1. Press and hold PATCH MEMORY B and C buttons and turn the power on. The JX-10 is now in the combination of test modes 2 and 3.
During the mode each single key down is assigned a module indicated by a ligting LED as shown in Fig.C. The assignment is cyclic and will be disordered when more than one key is touched at a time. Should this happen,turn the power off then enter this mode again.

C A U T I O N
Allow at least 5 minutes for warm up before go to the para. 2.

2. Press EDIT, TONE button.
Edit the parameters (UPPER and LOWER) to the values listed in Fig. D from the front panel. Do not use PG-800 or programmer for this purpose. Keep the socket for the PG-800 on the rear panel unplugged.

3. Plug OUTPUT jacks:
oscilloscope to UPPER L (Mono)
dummy plug (open-circuited) to LOWER R (Mono)

4. Press the A key that generates 442Hz (A key above middle C).

5. Identify the modules being assigned to the key by watching the panel LEDs. Fig. C.
Adjust the trimmer of the module on UPPER module board for the maximum swing on the screen.

6. (Note that pressing the A key advances the module.) Repeat step 5 for the remaining modules of UPPER module board.

7. Replug the OUTPUT jacks:
dummy plug (open-circuited) to UPPER L (Mono)
oscilloscope to LOWER R (Mono)

8. Repeat steps 5 and 6 for the LOER modules.

NUMBER	PARAMETER	VALUE
11	DCO 1 RANG	8'
12	DCO 1 WF	SQUR
13	DCO 1 TUNE	00
14	DCO 1 LFO	00
15	DCO 1 ENV	00
41	MIX DCO 1	99
42	MIX DCO 2	00
43	MIX ENV	00
52	VCF FREQ	54
53	VCF RES	99
54	VCF LFO	00
55	VCF ENV	00
56	VCF KEY	00
61	VCA LEVEL	70
62	VCA MODE	GATE
64	CHORUS	OFF

Fig. D

調整仕様

V C F

1 P A T C H M E M O R Y の「B」、「C」ボタンを押しながら電源をいれる。（テストモード２、３のコンビネーションを立ち上げる。）

1つのキーを押すたびに、U P P E R 及びL O W E R 側から、F i g . C のL E D に対応したモジュールが順々にアサインされます。
［注意：複数のキーを同時に押すとアサインされる順序は乱れてしまいます。もし、乱れてしまった場合は、再度このモードを立ち上げて下さい。］
通電５分経過後に次のステップへ進んで下さい。

2 E D I T の「T O N E」ボタンを押す。
F i g . D の音色パラメータをP G − 8 0 0 を用いずに、本体のみでU P P E R 、L O W E R 両方について設定する。
［注意：P G − 8 0 0 端子には、何も接続しないこと。］

3 O U T P U T ジャックのU P P E R L（M O N O）にオシロスコープを、L O W E R（M O N O）にダミージャック（オープン）を接続する。

4 A 4（4 4 2 H z）キーを押す。

5 現在アサインされている（パネルL E D に表示）U P P E R 側のモジュールの半固定V R を調整し、出力波形が最大になるようにする。

6 残りの５つのモジュールも同様に行う。（但し、A 4 キーをその都度押し直す。）

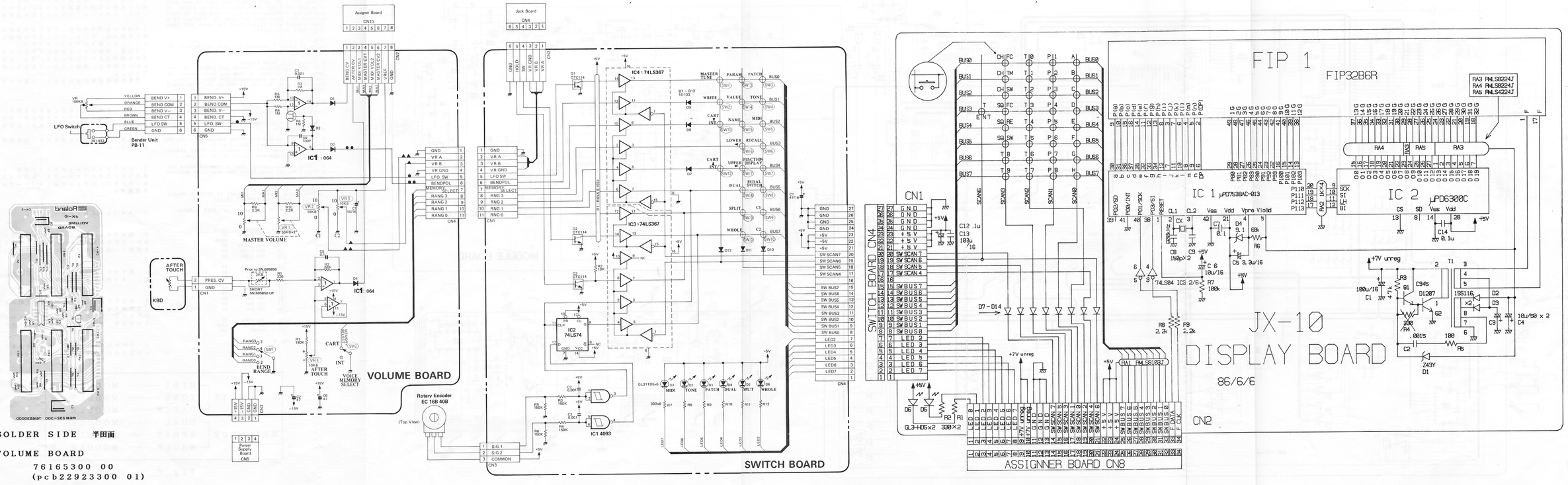
7 O U T P U T ジャックの接続を下記のように入れ換える。
U P P E R L（M O N O）＝ダミージャック
L O W E R（M O N O）＝オシロスコープ

8 L O W E R モジュール・ボードの各モジュールをU P P E R 側と同様に調整する。

EDIT	MIDI	MODULE	A
	TONE	MODULE	B
	PATCH	MODULE	C
KEY MODE	DUAL	MODULE	D
	SPRIT	MODULE	E
	WHOLE	MODULE	F

Fig. C

CIRCUIT DIAGRAM

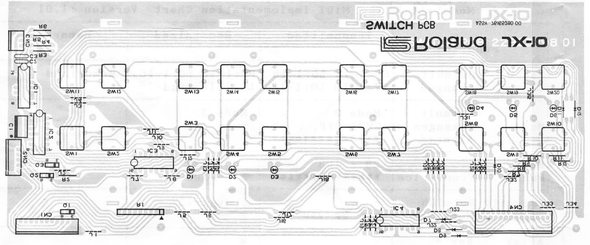


SOLDER SIDE 半田面

VOLUME BOARD

76165300 00

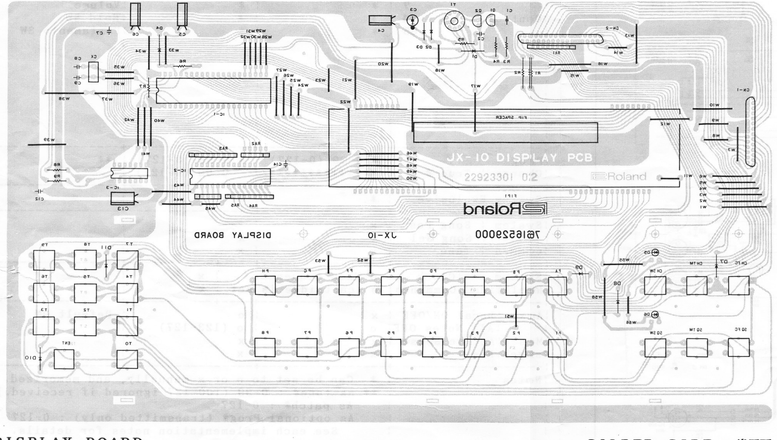
(pcb22923300 01)



SWITCH BOARD

76165280 00 (pcb22923298 01)

SOLDER SIDE 半田面

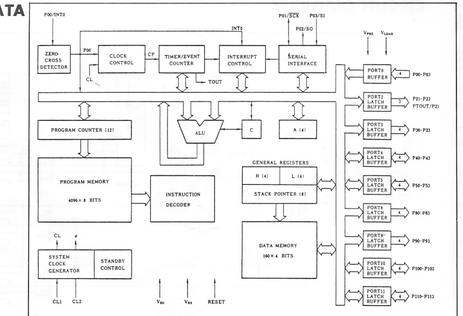


DISPLAY BOARD

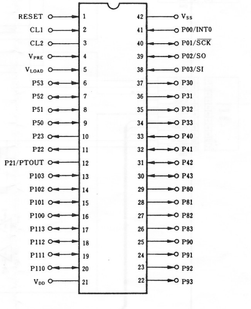
76165290 00 (pcb22923301 02)

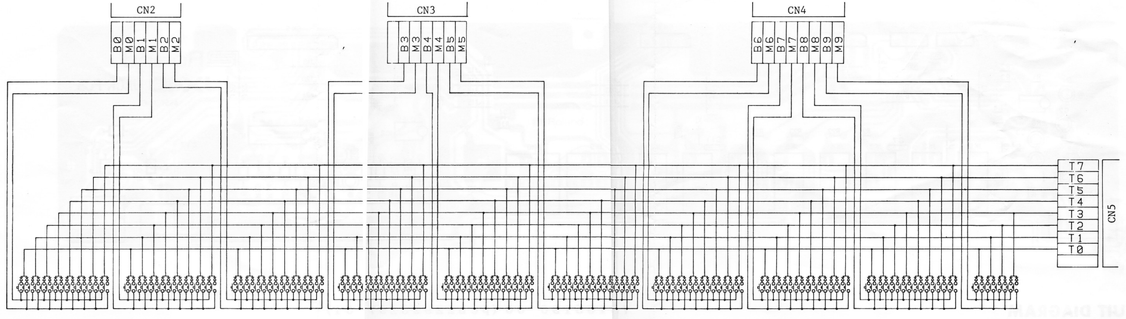
SOLDER SIDE 半田面

IC DATA

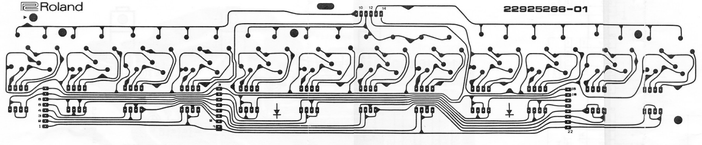


端子接続図 (Top View)

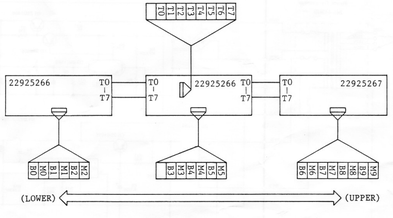


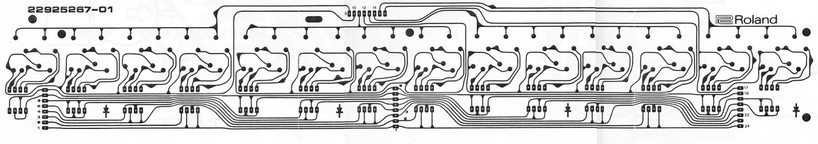


KEYBOARD PCB

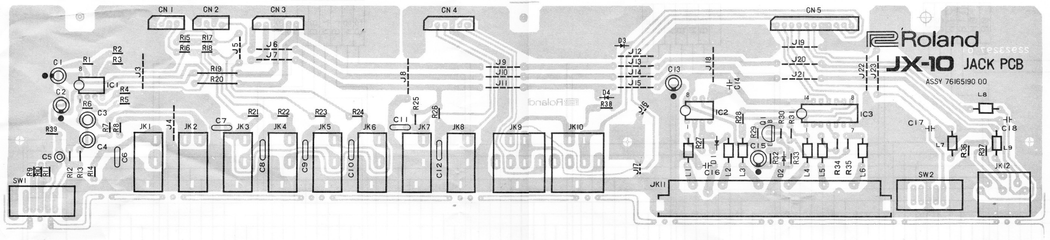


(pcb 22925266-01)





(pcb 22925267-01)

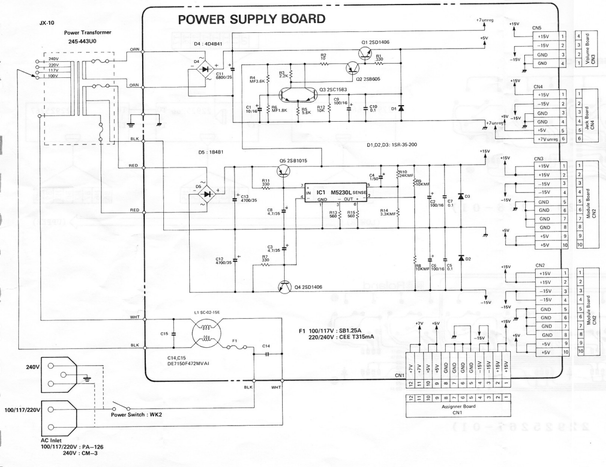


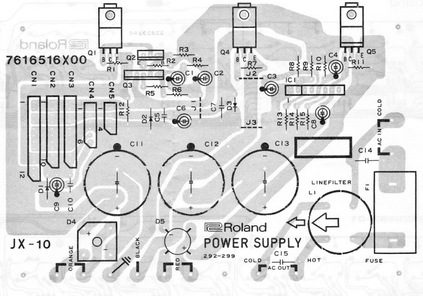
JACK BOARD

76165190 00(pcb22923297 01)

PARTS SIDE 部品面

CIRCUIT DIAGRAM



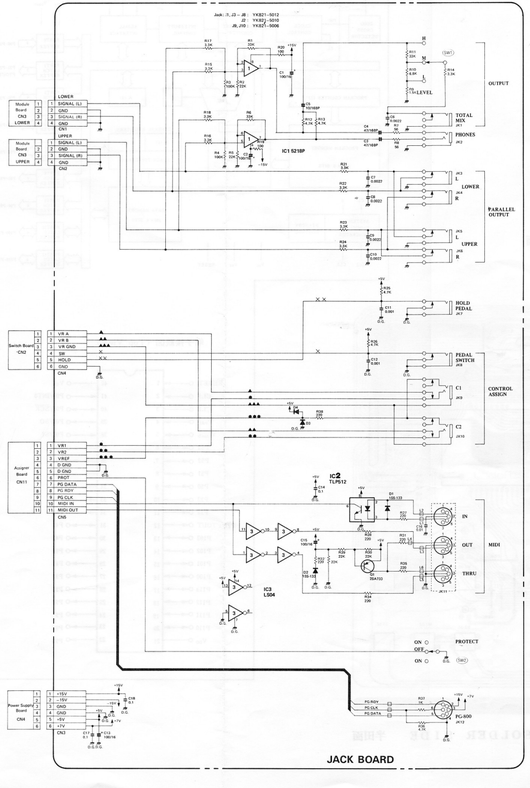


PARTS SIDE 部品面

POWER SUPPLY BOARD

100/117V	76165162	00(pcb22923299 00)
220V	76165164	00(pcb22923299 00)
240V	76165165	00(pcb22923299 00)

CIRCUIT DIAGRAM



MIDI IMPLEMENTATION

[12 voice polyphonic synthesizer]
Model JX-10 MIDI Implementation Chart

Date :Feb. 21 1986
Version :1.01

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default	UP:1-16 LO:1-16	UP:1-16 LO:1-16	memorized
	Changed	UP:1-16 LO:1-16	LO:1-16 LO:1-16	
Mode	Default	Mode 3	Mode 3	
	Messages	OMNI OFF, POLY	x	
	Altered	**********		
Note Number		28 - 103	0 - 127	
	True voice	**********	21 - 108	
Velocity	Note ON	o	o v=1-127	
	Note OFF	x 9n v=0	x	
After Touch	Key's	x	x	
	Ch's	o	*	
Pitch Bender		*	* 2/3/4/7 semi	8 bits reso.
Control Change	1	*	*	Modulation
	5	o	o	Portamento Time
	7	*	*	Volume
	64	*	*	Hold SW
	65	*	*	Portamento SW
Prog Change		* 0-99 (0-127)	* 0-99 (0-127)	**
	True #	**********	0-99 (0-127)	
System Exclusive		*	*	
System Common	Song Pos	x	x	
	Song Sel	x	x	
	Tune	x	x	
System Real Time	Clock	o When sequencer	x	
	Commands	o cartridge is set	x	
Aux Mes-sages	Local ON/OFF	x	o	Default ON
	All Notes OFF	o	o (123-127)	
	Active Sense	x	x	
	Reset	x	x	

Notes:
* Can be set to o or x manually, and memorized.
** As tone# : 0-99 (100-127 ignored if received.)
As patch# : 0-127
As optional Prog# (transmitted only) : 0-127
See each implementation notes for details.

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO o : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No

JX-10 MIDI IMPLEMENTATION Ver 1.01 Feb. 21 1986

*** JX-10 MIDI IMPLEMENTATION ***
Version 1.01
Feb. 21 1986

1. TRANSMITTED DATA

Status	Second	Third	Description	
1001 nnnn	0kkk kkkk	0000 0000	Note OFF kkkkkkk = 28 - 103	
1001 nnnn	0kkk kkkk	0vvv vvvv	Note ON kkkkkkk = 28 - 103 vvvvvvv = 1 - 127	
1011 nnnn	0000 0001	0vvv vvvv	Modulation vvvvvvv = 0 - 127	*1
1011 nnnn	0000 0101	0vvv vvvv	Portamento time vvvvvvv = 0 - 127	
1011 nnnn	0000 0111	0vvv vvvv	Volume vvvvvvv = 0 - 127	*1,*2
1011 nnnn	0100 0000	0111 1111	Hold ON	*1
1011 nnnn	0100 0000	0000 0000	Hold OFF	*1
1011 nnnn	0100 0001	0111 1111	Portamento ON	*1
1011 nnnn	0100 0001	0000 0000	Portamento OFF	*1
1100 nnnn	0ppp pppp		Program Change pppppppp = 0 - 99 (0 - 127)	*1,*3
1101 nnnn	0vvv vvvv		Channel After Touch vvvvvvv = 0 - 127	
1110 nnnn	0vvv vvvv	0vvv vvvv	Pitch Bender Change	*1
1011 nnnn	0111 1011	0000 0000	ALL NOTES OFF	*4
1011 nnnn	0111 1100	0000 0000	OMNI OFF	*5
1011 nnnn	0111 1111	0000 0000	POLY ON	*5
1111 1000			Timing clock	*6
1111 1010			Start	*6
1111 1100			Stop	*6

Notes :

Normally, transmitting channel depends on UPPER/LOWER CHANNEL and KEY MODE.
If MIDI SEND OPTION UPPER/LOWER CHANNEL and MIDI SEND OPTION KEY MODE is set, channels are followed to its settings.

*1 Transmitted if the corresponding function switch is ON.

*2 a. When 'C1' or 'C2' slider is assigned as VOLUME, and moved :
The value is transmitted if the corresponding function switch is ON.
b. When PATCH # is changed :
MIDI SEND OPTION VOLUME is transmitted if it was set.

*3 a. When TONE # is changed :
TONE # is transmitted if the corresponding function switch is ON.
pppppppp = 0 - 99 : TONE No. 1 - 100

b. When PATCH No. is changed :
TONE # for new PATCH is transmitted. (See note a.)
If OPTION PROGRAM CHANGE NUMBER is set, the Number is transmitted instead of TONE #.
pppppppp = 0 - 127 : PROGRAM CHANGE NUMBER 1 - 128

If PATCH MEMORY CHANNEL is set, PATCH # is transmitted to PATCH MEMORY CHANNEL, after transmitting TONE # (or OPTION PROGRAM CHANGE NUMBER).
pppppppp = 0 - 63 : Internal Memory PATCH A1 - H8
64 -127 : Cartridge Memory PATCH A1 - H8

*4 When all keys on the keyboard are released, this message is sent.

*5 When power is first applied while MIDI button being held down, these messages are transmitted for all channels (1-16).

*6 When the CARTRIDGE - that stores sequence data - is set.

2. RECOGNIZED RECEIVE DATA

Status	Second	Third	Description	
1000 nnnn	0kkk kkkk	0vvv vvvv	Note OFF, velocity ignored	
1001 nnnn	0kkk kkkk	0000 0000	Note OFF kkkkkkk = 0 - 127 (21 - 108)	*1
1001 nnnn	0kkk kkkk	0vvv vvvv	Note ON kkkkkkk = 0 - 127 (21 - 108) vvvvvvv = 1 - 127	*1
1011 nnnn	0000 0001	0vvv vvvv	Modulation vvvvvvv = 0 - 127	*2
1011 nnnn	0000 0101	0vvv vvvv	Portamento time vvvvvvv = 0 - 127	
1011 nnnn	0000 0111	0vvv vvvv	Volume vvvvvvv = 0 - 127	*2
1011 nnnn	0100 0000	01xx xxxx	Hold ON	*2
1011 nnnn	0100 0000	00xx xxxx	Hold OFF	*2
1011 nnnn	0100 0001	01xx xxxx	Portamento ON	*2
1011 nnnn	0100 0001	00xx xxxx	Portamento OFF	*2
1100 nnnn	0ppp pppp		Program Change vvvvvvv = 0 - 127 (0 - 99)	*2,*3
1101 nnnn	0vvv vvvv		Channel After Touch vvvvvvv = 0 - 127	*2
1110 nnnn	0vxx xxxx	0vvv vvvv	Pitch Bender Change	*2
1011 nnnn	0111 1010	0000 0000	Local OFF	*2
1011 nnnn	0111 1010	0111 1111	Local ON	*2
1011 nnnn	0111 1011	0000 0000	ALL NOTES OFF	

Notes :

All messages except PATCH# (Program Change) are received from UPPER and/or LOWER CHANNEL according to KEY MODE.

*1 Note numbers outside of the range 21 - 108 are transposed to the nearest octave inside this range.

*2 Received if the corresponding function switch is ON.

*3 a. When PATCH MEMORY CHANNEL is OFF :
Received as TONE # if the corresponding function switch is ON.
pppppppp = 0 - 99 : TONE No. 1 - 100
b. When PATCH MEMORY CHANNEL is set :
Received as PATCH #, from PATCH MEMORY CHANNEL.
pppppp = 0 - 63 : Internal Memory PATCH A1 - H8
64 -127 : Cartridge Memory PATCH A1 - H8

3. HANDSHAKING COMMUNICATION

* How to enter to 'DUMP' or 'LOAD' mode :
1. Press both MIDI and WRITE button.
2. Select DUMP or LOAD by ALPHA-DIAL, then press ENTER.

* Exclusive messages are transmitted and received if SYSTEM EXCLUSIVE (MIDI FUNCTION #11) is ON.

3.1 Message type

3.1.1 Want to send a file (WSF)

Byte	Description	
a 1111 0000	Exclusive status	
b 0100 0001	Roland ID #	
c 0100 0000	Operation code = WSF	
d 0000 nnnn	Unit # = UPPER MIDI basic channel,nnnn = 0 - 15 where nnnn + 1 = channel #	
e 0010 0100	Format type (JX-10)	
f 0fff ffff	File name (1 byte)	*1
g 0sss ssss	Check sum	*2
h 1111 0111	End of System Exclusive	

3.1.2 Request a file (RQF)

Byte	Description	
a 1111 0000	Exclusive status	
b 0100 0001	Roland ID #	
c 0100 0001	Operation code = RQF	
d 0000 nnnn	Unit # = UPPER MIDI basic channel,nnnn = 0 - 15 where nnnn + 1 = channel #	
e 0010 0100	Format type (JX-10)	
f 0fff ffff	File name (1 byte)	*1
g 0sss ssss	Check sum	*2
h 1111 0111	End of System Exclusive	

Notes :
*1 There are two kinds of file names as shown below.

Byte	Description
e 0001 0110	Memory Cartridge M-16C
e 0110 0100	Memory Cartridge M-64C

*2 Summed value of the byte of file name and the check sum must be 0 (7bits).

3.1.3 Data (DAT)

Byte	Description	
a 1111 0000	Exclusive status	
b 0100 0001	Roland ID #	
c 0100 0010	Operation code = DAT	
d 0000 nnnn	Unit # = UPPER MIDI basic channel, nnnn = 0 - 15 where nnnn + 1 = channel #	
e 0010 0100	Format type (JX-10)	
f 0000 tttt	CARTRIDGE MEMORY data	*1
:	(repeated 256 times = 128 bytes)	
g 0sss ssss	Check sum	*2
h 1111 0111	End of System Exclusive	

Notes :
*1 CARTRIDGE MEMORY data is sent in four-bit nibbles.

*data format

CRTRIDGE MEMORY data	send data
byte	byte
1 aaaa bbbb	1 0000 aaaa
	2 0000 bbbb
2 cccc dddd	3 0000 cccc
	4 0000 dddd
:	:

*2 Summed value of the all bytes in data and the check sum must be 0 (7bits).

3.1.4 Acknowledge (ACK)

Byte	Description
a 1111 0000	Exclusive status
b 0100 0001	Roland ID #
c 0100 0011	Operation code = ACK
d 0000 nnnn	Unit # = UPPER MIDI basic channel,nnnn = 0 - 15 where nnnn + 1 = channel #
e 0010 0100	Format type (JX-10)
f 1111 0111	End of System Exclusive

3.1.5 End of file (EOF)

Byte	Description
a 1111 0000	Exclusive status
b 0100 0001	Roland ID #
c 0100 0101	Operation code = EOF
d 0000 nnnn	Unit # = UPPER MIDI basic channel,nnnn = 0 - 15 where nnnn + 1 = channel #
e 0010 0100	Format type (JX-10)
f 1111 0111	End of System Exclusive

3.1.6 Communication error (ERR)

Byte	Description
a 1111 0000	Exclusive status
b 0100 0001	Roland ID #
c 0100 1110	Operation code = ERR
d 0000 nnnn	Unit # = UPPER MIDI basic channel,nnnn = 0 - 15 where nnnn + 1 = channel #
e 0010 0100	Format type (JX-10)
f 1111 0111	End of System Exclusive

3.1.7 Rejection (RJC)

Byte	Description
a 1111 0000	Exclusive status
b 0100 0001	Roland ID #
c 0100 1111	Operation code = RJC
d 0000 nnnn	Unit # = UPPER MIDI basic channel,nnnn = 0 - 15 where nnnn + 1 = channel #
e 0010 0100	Format type (JX-10)
f 1111 0111	End of System Exclusive

3.2 Sequence of communication

3.2.1 In the 'Dump' mode.

this unit	message	objective unit
	WSF ----->	
	<----- ACK or (RQF)	
	DAT ----->	
	<----- ACK	
	:	
	:	
	DAT ----->	
	<----- ACK	
	EOF ----->	
	<----- ACK	

3.2.2 In the 'Load' mode.

this unit	message	objective unit
	RQF ----->	
	(<----- WSF	
	ACK ----->)	
	<----- DAT	
	ACK ----->	
	:	
	:	
	<----- DAT	
	ACK ----->	
	<----- EOF	
	ACK ----->	

Notes :

* This unit sends RJC and the sequence is discontinued when it receives ERR or detects some error.
* This unit sends RJC when the sequence is discontinued manuarry.

* This unit stops the sequence if unit receives RJC.

* IF the CARTRIDGE is M-16C,then DAT message repeats 16 times.
IF the CARTRIDGE is M-64C,then DAT message repeats 64 times.

CHANGE INFORMATION

Preventing Sound Leakage
EFF SN 640305 Affected PCB: Module Board

Add 3.3k (R126) in parallel to C112.
This filters out unwanted high harmonics compoents in a sound.

Making Aftertouch Adjust-free
EFF SN 695830 Affected PCB: Volume Board
The factory experience proved that the aftertouch sensor needs no adjusting of its output. In order to eliminate unnecessary adjustment and retain positive connection, the trimmerpot, if exists, on VOLUME board should be set at FCCW position or jumper-shorted. Fig. E.

ROM Version
The latest version(July 1986) of ROMs A, B and C is 2.00.
The ROM version number system in the JX-10 is that whenever one of three ROMs is revised,ohter two ROMs are also renumbered to the new version. The version display program is stored in ROM A only.
The software revision shown in the table below have been done on ROM A only -- ROM B and ROM C of Vers. 1.72-2.00 retain unchanged program.

変更案内

○音もれの防止　　SN640325から

高い周波数で音もれが発生する場合があり それを防止するためモジュール・ボードのC112と並列にR126 3.3Kを追加。

○アフタータッチ調整VR（ボリューム・ボード2KB）削除（無調整）　SN695850から

SN695850未満の製品は調整VRを左へ回しきるか、またはFig. Eのようにショートしてください。

○ROM Version
1986年7月現在ROM(A),(B),(C)の最新は2.00です。
Fig. Fに示す変更はROM(A)についてのみ行われています。従ってROM(B)及び(C)のプログラムはVer1.72-2.00を通じて変わりません。

[注意：ROMバージョン表示についてJX-10では、混乱を避けるため3個のいずれかのプログラムが変更された場合、他の2個のバージョンも同時に変更されます。]

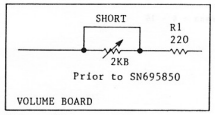


Fig. E

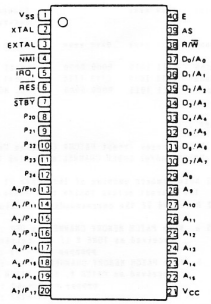
		Part No.
ROM(A)	ASSIGNER BOARD IC6	15179733
ROM(B)	LOWER MODULE BOARD IC1	15179732
ROM(C)	UPPER MODULE BOARD IC1	15179745

ROM(A) Version No.	Serial Number	改善された症状	What is cured
1.72	Prior to 650679		
1.80	650680 | 650789	・一度もPATCH WRITEモードへ入らずにREWRITE VOICEを行うと、PATCHナンバーが元とは異なったナンバーに書き変わってしまう。 ・PATCH MEMORYのエディット時において、ファクタ17[KEY MODE]の UPPER WHOLEとLOWER WHOLEとを逆に書き込んでしまう。	When REWITE VOICE is done without entering PATCH WRITE,the current PATCH NUMBER will be memorized incorrectly. In PATCH MEMORY edit, factor 17 KEY MODE sets [UPPER WHOLE and LOWER WHOLE] reversely.
1.90	650790 | 673899	・キーを押さえた状態でPATCH CHANGEを行うとクリックノイズがでる。 ・MIDI IMPLEMENTATIONでは、MIDI SWを押しながら電源SWをいれると下記のメッセージが出力することになっているが、実際には出力しない。 ＊POLY ON ＊OMNI OFF ・TONE EDIT時に、PATCH ファクタ18[TOTAL VOLUME]の値が無視され、TONEパラメータ61[VCA LEVEL]の値のみで音量が設定されてしまう。 ・TONE EDIT後、TONE RECALLを行ってもTONEパラメータ61[VCA LEVEL]の値が元の値に戻らない。	Resetting PATCH CHANGE while holding a key(s) induces click noise. Discrepancy in MIDI IMPLEMENTATION: It says " when power is first applied while MIDI switch is being pressed,the following messages are transmitted" [POLY ON and OMNI OFF]. This is not true. With TONE edit, PATCH FACTOR 18 [TOTAL VOLUME] is ignored and the loudness is determined only by TONE parameter 61[VCA LEVEL]. TONE RECALL after TONE edit cannot recall parameter 61 [VCA LEVEL].
2.0	673900 UP	・以下の設定時において、LOWER側の設定がUNISON（1キーについて2モジュール発音する。）であるのにもかかわらず、3キー中2つのキーが単音で発音してしまう。 KEY MODE : DUAL UPPER ASSIGN : UNISON以外 LOWER ASSIGN : UNISON ・HOLDペダルを踏み込み、アフタータッチをかけながらHOLDペダルを離す。 その後、アフタータッチをかけないようにしてキーを弾いても、LOWERモジュールのみアフタータッチ効果がでてしまう。 [但し、その後一度でもアフタータッチをかけると正常にもどる。]	Although set at UNISON, two among three keys in LOWER keyboard are assigned only one voice each. Either of the following settings will see the problem. KEY MODE: DUAL LOWER ASSIGN: UNISON UPPER ASSIGN: other than UNISON When a key is after-touched before HOLD pedal is released, all subsequent non-aftertouch keys will have the aftertouch effect on lower modules even if HOLD pedal has been kept unpressed. Once any key is played aftertouch this condition returns to normal.

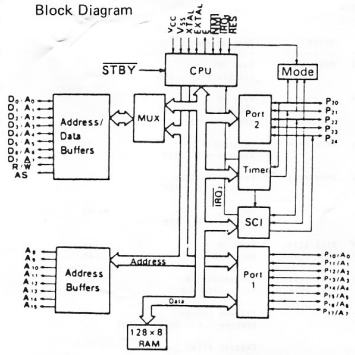
IC DATA

HD63B03RP

Pin Configuration (Top View)

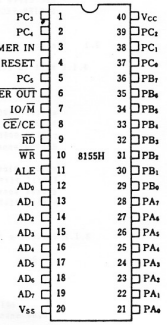


Block Diagram



μPD8155HC

Pin Configuration (Top View)



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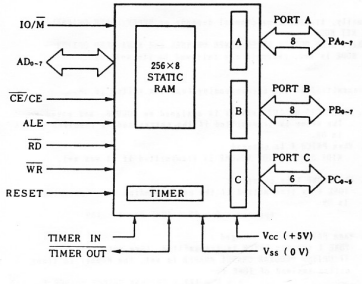
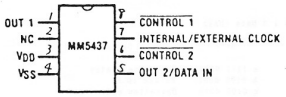


MM5437

Pin Configuration (Top View)



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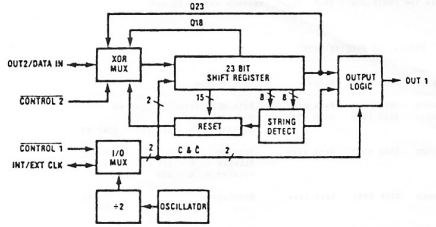


訂正及び追加

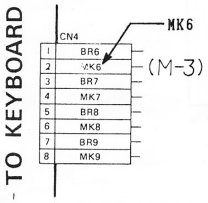
CHANGE,CORRECTION & SUPPLEMENT

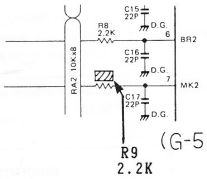
下図の箇所を修正願います。

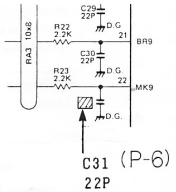
Schematic Diagram Correction

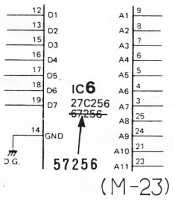
6ページ　　Page 6　　ASSIGNER BOARD

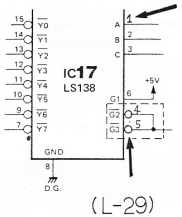
( ) = LOCATION

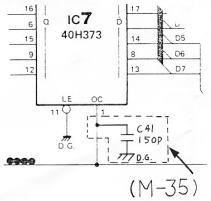


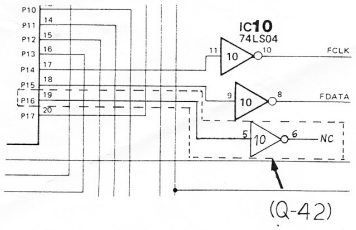












ASSIGER BOARD

N

(W-38)

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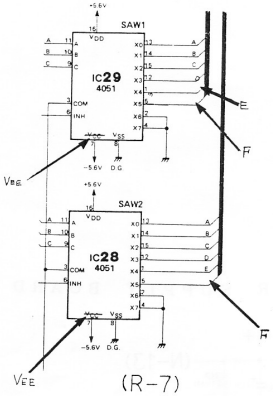
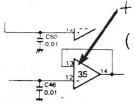
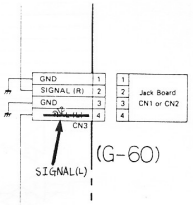
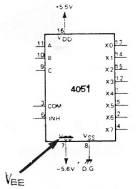
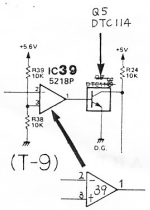
Schematic Diagram Correction

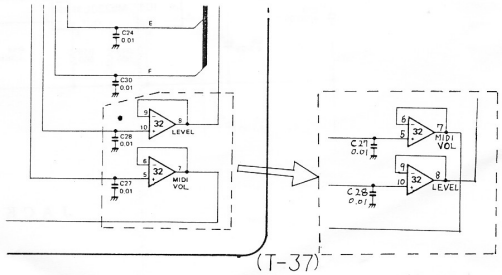


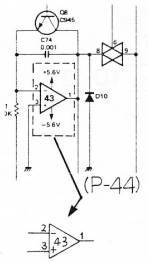


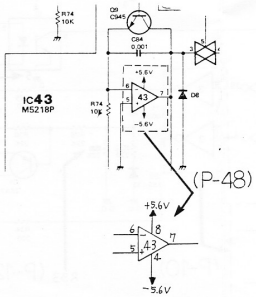


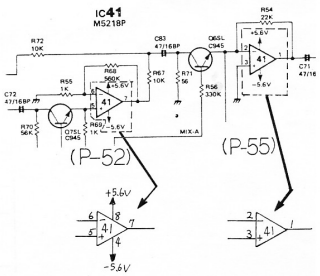












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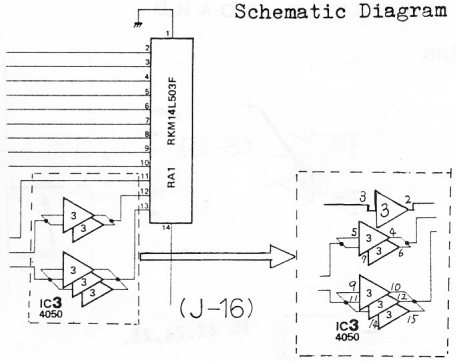
MODULE BOARD

Schematic Diagram Correction



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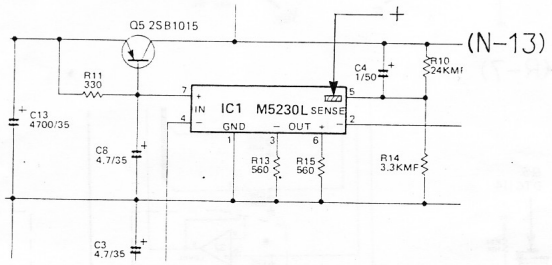
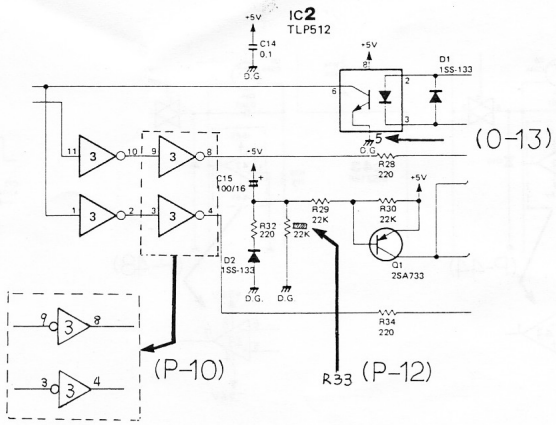
POWER SUPPLY BOARD

Schematic Diagram Correction



JACK BOARD



下記注意文は北欧諸国向専用です。

The labels below must be attched to the JX-10 service notes that is to be referenced in DNS ruling countries.

ADVARSEL!

Lithiumbatteri. Eksplosionsfare.
Udskiftning må kun foretages af en sagkyndig, og som beskrevet i servicemanual.

Lithium batteri må kun udskiftes med samme type og fabrikat.

VARNING!

Lithiumbatteri. Explosionsrisk.
Får endast bytas av behörig servicetekniker.
Se instruktioner i servicemanualen.

Lithium batteri för endast ersättes med samme typ och fabrikat.

ADVARSEL!

Lithiumbatteri. Fare for eksplotion.
Må bare skiftes av kvalifisert tekniker som beskrevet i servicemanualen.

Lithium batteri må kun utskiftes med samme type og fabrikat.

VAROITUS!

Lithiumpariston. Rajahdysvaara.
Pariston saa vaihtaa ainoastaan alan ammottimies.

Kun vaihat lithium pariston KAYTA saman valmistajan samaa tyyppia.