# FARFISA® SERVICE MANUAL

Music is our world

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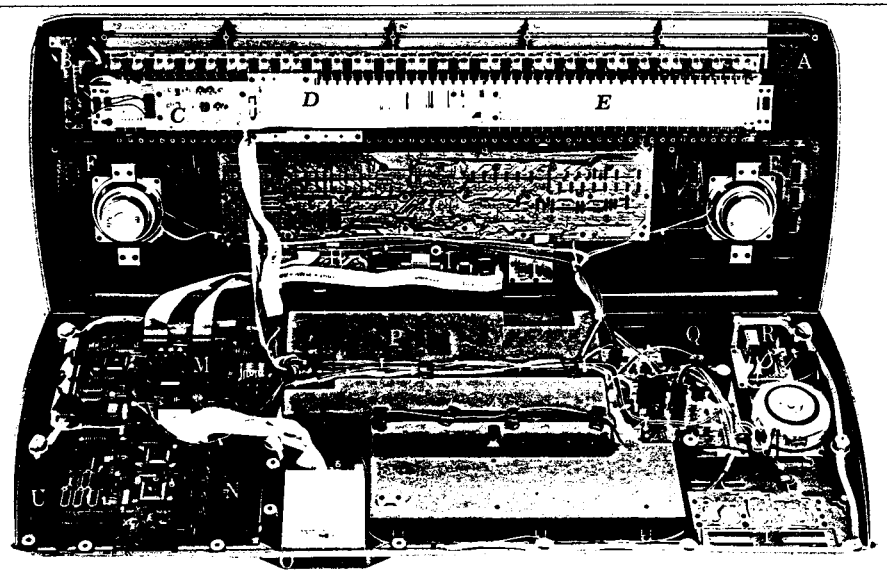
**FARFISA F5**
Music is our world

## CONSTRUCTION SECTION (INTERNAL VIEW)

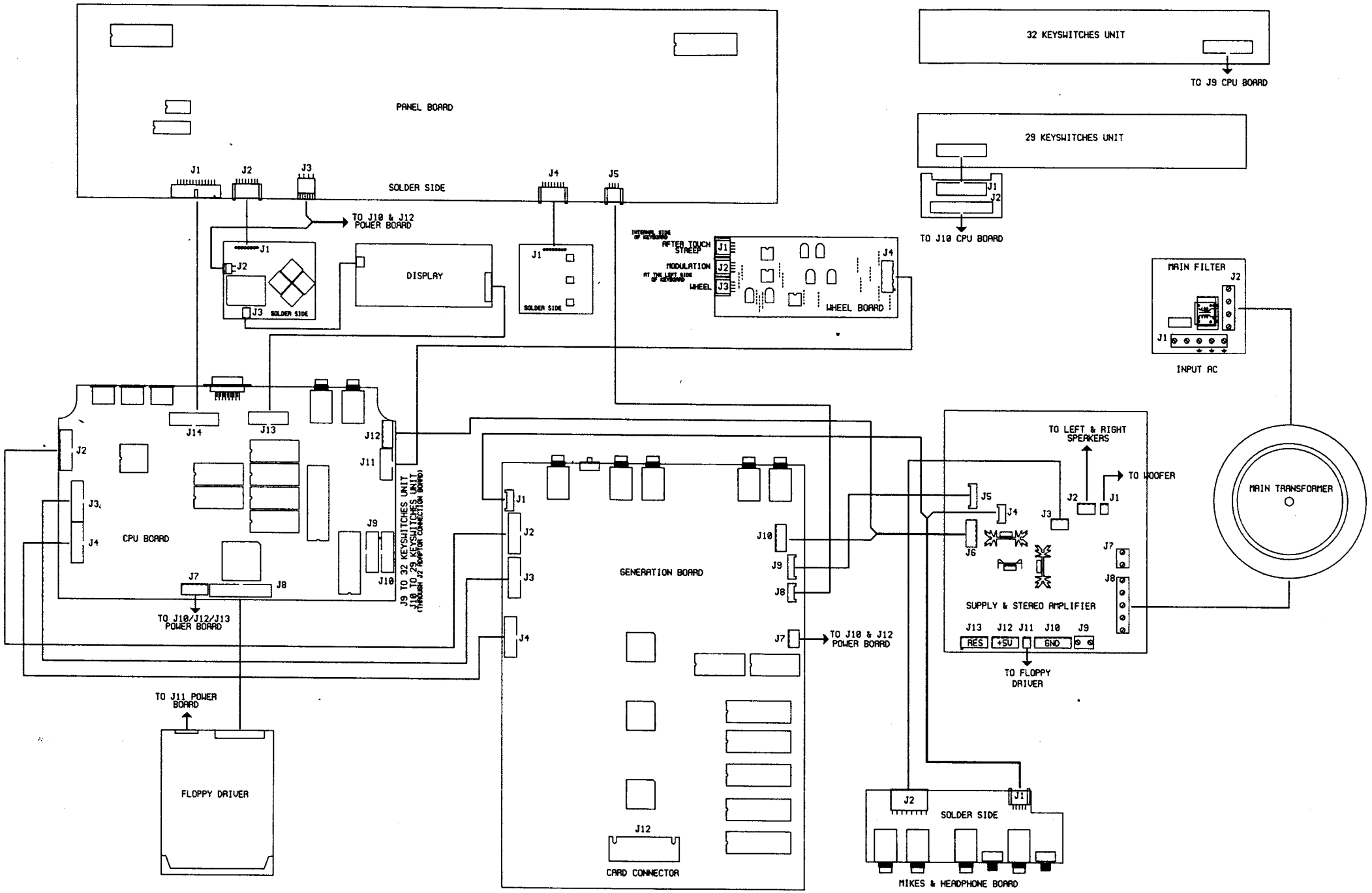


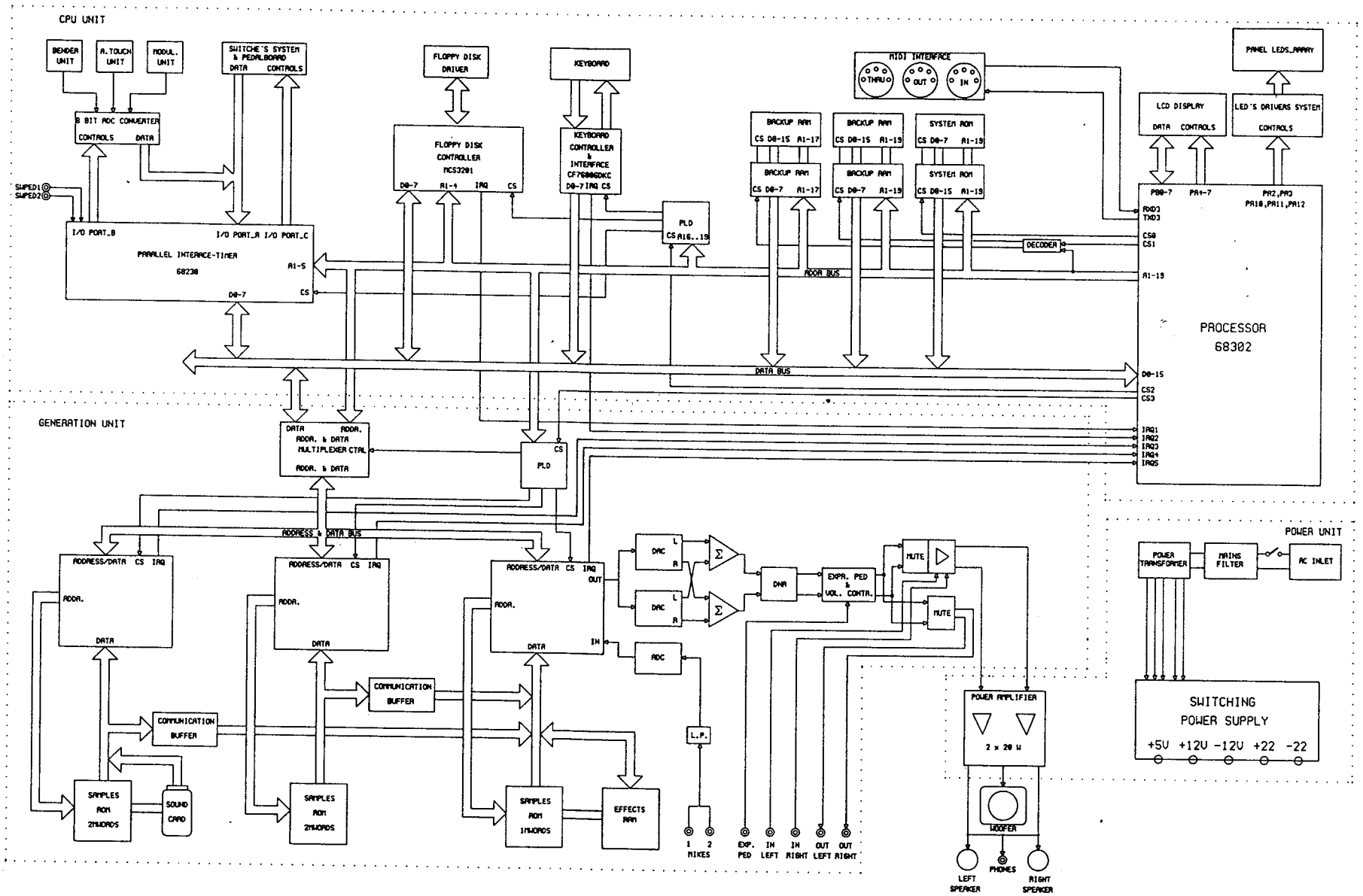

| | | | | | |
|---|---|---|---|---|---|
| A | TOP COVER | H | LEFT DISPLAY CONTROL UNIT | P | WOOFER SPEAKER CASE |
| B | MODULATION WHEEL ACTUATOR | I | DISPLAY UNIT | Q | SUPPLY/AMPLIFICATOR UNIT |
| C | MODULATION WHEEL PCB | L | RIGHT DISPLAY CONTROL UNIT | R | MAIN FILTER UNIT |
| D | 29 KEYSWITCHES UNIT | M | CENTRAL PROCESSOR UNIT | S | MAIN TRANSFORMER |
| E | 32 KEYSWITCHES UNIT | N | GENERATION UNIT | T | HEADPH./MICROPH. SOCKETS UNIT |
| F | UPPER SPEAKERS | O | 3 ½" DISK DRIVE | U | BOTTOM TRAY |
| G | COMMANDS PCB UNIT | | | | |



## SPECIFICATIONS

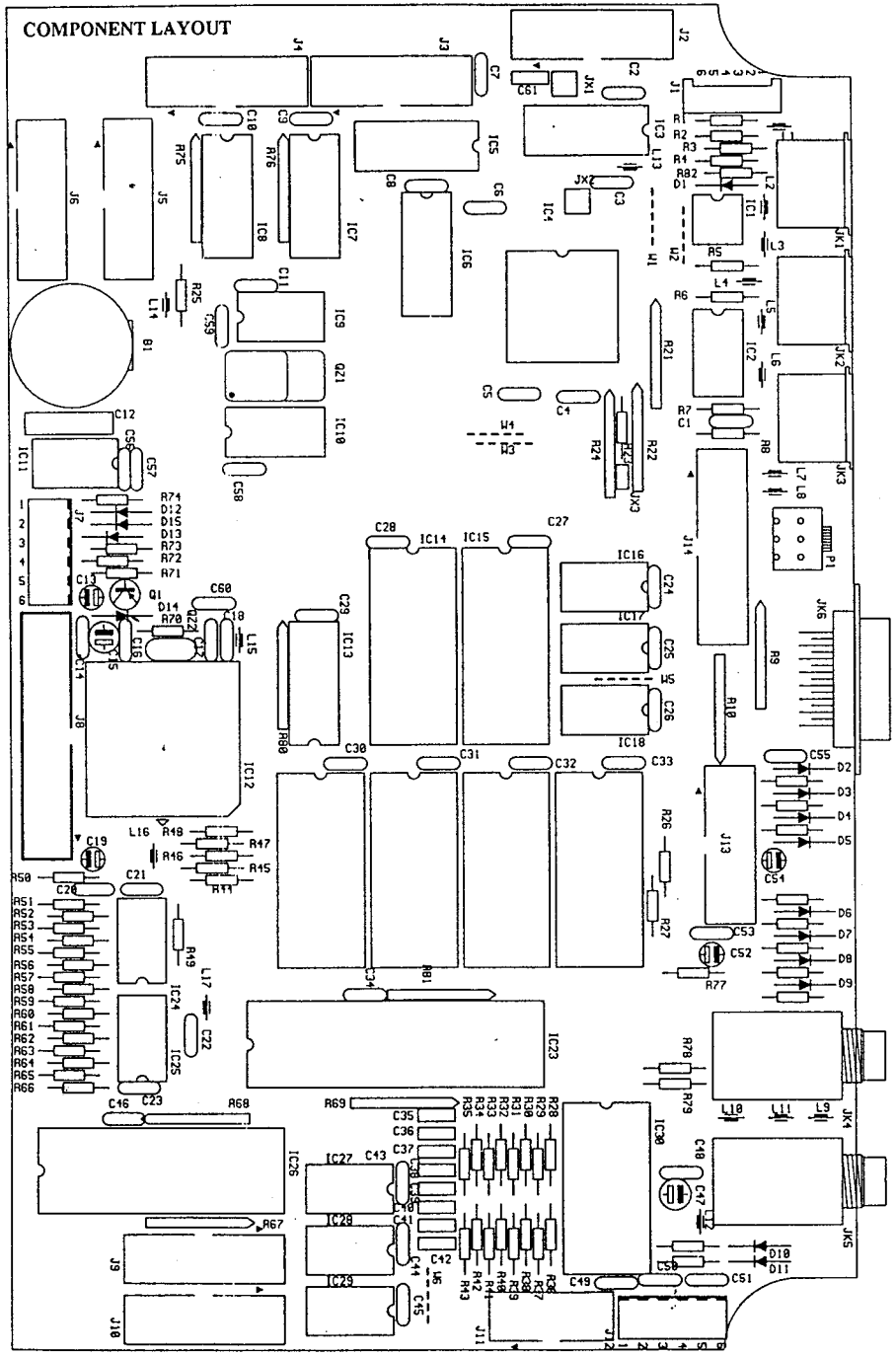
| | |
|---|---|
| KEYBOARD | **61 full size keys with Dynamic and After Touch controls.** |
| WHEEL | Double control: rotation for Pitch Bending, Pushing for Modulation. |
| DISPLAY | **Graphic, 64 x 240 pixels LCD, backlighted.** |
| SECTIONS | Polyphony: 34 notes. |
| POLY 1 LOWER & UPPER | Piano 1, El. Piano, FM Piano 1, Clavinet, El. Grand, Jazz Organ 1, Perc. Organ, Church, Theatre, Notre-Dame, Strings, Slow Strings, Cello, An. Strings, Ground, Brass Ens., Slow Brass, Symphonic Brass, Trombone, Trumpet, Folk Guitar, 12 Str. Guitar., Oval. Guitar., Rock Guitar, 1 Strat Guitar, HA Vox, Choir, KU Vox, Angels, Tae, Soft Sax, Sax Ensemble, Oboe, Harmonica, Musette, Jazz Flute, Warm Pad, Pad 84, Flute 1, Flute 2, Bassoon, Honky, Spicy, Square, Jump, Wake up, Velvet Guitar, Alpha, Polysynth, Synth Horn, Metal Light, Percussive, Synthpad, Steell Dream, Synthmar. |
| POLY 2 LOWER & UPPER | Piano 2, Honky Tonk, FM-Wu-Piano, FM Piano 2, Harpsichord, Jazz Organ 2, 16'+1'Org., Harmonium, Farfisa, Cathedral, Symphonic Strings, Mute Strings, Space War, Violin, Pizzicato, Flügel, Orch. Effect, FM Brass 1, Mute Trumpet, FM Brass 2, Gentle Guitar, Funky Guitar, Hard Guitar, Banjo, Bass & Gtr., Choral, Jazz Voice, Keke, Space Vox, Paradise, Medium Sax, Hard Sax, Clarinet, Accordion, Bandoneon, Pan Flute, Shiku, Pad Flute, Bottle, Whistle, Vibraphone, Marimba, Glockn, Bells, Ethnic, Xylophone, Celtic Harp, Lead, Sparkle, Metal Hit, Synth Guitar, Vangel 1, Solo Synth, Synth Clav., Fantasia, Synth Bell, Vangel 2. |
| BASS | Double Bass, String Bass, Fat Bass, Tuba, Free Bass, Guitar Bass, Funky Bass, Fretless, Slap Bass, Pick Bass. |
| CONDUCTOR | Poly 1 Lower, Poly 2 Lower, Poly 1 Upper, Poly 2 Upper. |
| LOWER SELECTOR | Poly 1, Poly 2. |
| UPPER SELECTOR | Poly 1, Poly 2. |
| CUSTOM SOUND | 20 Sounds Loading by disk or card. |
| POLY SECTION | 4 Sound Processor assigned to each of the POLY sections. Each sound processor can be selected among the 24 (Poly 1 and 2 Lower) or 29 (Poly 1 and 2 Upper) available. |
| EFFECT | Bypass, Equalizer 1/5, Pitch Shifter, Var. Filter, Ensemble, Slow Chorus, Pan Chorus 1-2, Flanger 1-2, Gtr. Flanger, Vib. Flanger, Rotor, Distorsion, Tremolo, Wha-Wha, Ambient 1-2-3, Single Delay 1-2, Ping Pong, Space Delay, Echo 1-2, L+R Delay. |
| MUSIC STYLES | 60 MUSIC STYLES:<br>8 Beat-1, 8 Beat-2, 8 Beat-3, 8 Beat-4, 12/8, 16 Beat-1, 16 Beat-2, 16 Beat-3, Fusion 1, Fusion 2, Soft Rock, Art Rock, Heavy Rock, Hard Rock, Funky, House, Disco, Soul, Tecno, Rap, Big Band, Slow Swing, Medium Swing, Fast Swing, Brush Swing, Boogie, Twist, Slow Rock, Rock'n Roll, Blues, March, March 6/8, Polka, Tango, Paso Doble, Waltz, Slow Waltz, Jazz Waltz, Mazurka, Tarantella, Fox-Trot, Shuffle, Ballad, Hully Gully, Charleston, Antique, Baroque, Classic, Romantic, Contemporary, Bossa Nova 1, Bossa Nova 2, Samba 1, Samba 2, Latin Rock, Mambo, Cha-Cha, Reggae, Beguine, Salsa. |
| CUSTOM STYLES | **15 custom music styles loading by disk.** |
| RHYTHM CONTROL | Fade-In, Fade-Out, Rallentando Fill/Break, Rallentando/Accelerando, Memory Manual, Memory Basic/Arranger, Key Start, Key Stop, Start/Stop, Intro/Ending 1, Intro/Ending 2, Fill-in 1, Fill-in 2, Break, Rhythm Variation, Manual Drum, Easy Chord. |
| CUSTOM VARIATION | **1, 2, 3, 4 Programmable by user.** |
| H. T. A. | **Human Touch Accompaniment with sensitivity control.** |
| ARRANGER | 1 and 2 also in layer. |
| LINE/MIC INPUT | **2 Inputs with sensitivity control.** |
| LINE/MIC SOUND PROCESSOR | **3 available simoultaneously, choosen among:** Bypass, Club, Vocal, Hall, Stadium, Pitch Shifter, Flanger 1-2, Echo, Tone Control, Chorus 1-2, Delay. |
| MASTER REVERB. | Room 1, Room 2, Club, Hall, Large Hall. |
| SEQUENCER | Complete Editing for Songs, Patterns and Tracks. **"Compilation"** function to play a preset sequence of song chain.<br>**"Jukebox"** function to select up 16 different songs directly from panel. Standard **Midi File** compatible **IBM & ATARI** format.<br>Farfisa format for Songs, Patterns and Tracks. Memory capacity for max. 70000 events (internal RAM has the back-up battery).<br>Utility to convert song from/to "General Midi" format. |
| PROGRAMME | 100 Programmes which can be memorized and recalled by user. |
| SOUND PADS | **6 different Sound effects for each music style.** |
| OUTPUTS | Left / General, Right. |
| INPUTS | Left, Right. |
| AMPLIFICATION | Stereo, **15+7+7 W RMS**, electronic cross-over. |
| FLOPPY DRIVER | Floppy disk 3½" HD. |
| SAMPLE CARD | Slot for PCM sampled cards. |
| LCD CONTRAST | Display contrast control. |
| SWITCH MONITOR INT/INT + EXT | Switch for the use of loudspeakers as Monitors. |
| HEADPHONES | 2 headphones sockets: the left one desactivate the loudspeakers. |
| FOOT CONTROL | Expression pedal socket. |
| SWITCH PEDAL 1-2 | 2 pedals socket (programmable functions). |
| MULTI-SWITCH PEDAL | 5 switch pedal or bass pedalboard socket. |
| MIDI IN, OUT, THRU | Master Keyboard operation. |
| DIMENSIONS | 107 x 42 x 13 cm. |
| WEIGHT | 16 Kg. |


PANEL BOARD
SOLDER SIDE
J1
J2
J3
J4
J5
TO J10 & J12
POWER BOARD
DISPLAY
SOLDER SIDE
32 KEYSWITCHES UNIT
TO J9 CPU BOARD
29 KEYSWITCHES UNIT
TO J10 CPU BOARD
AFTER TOUCH
STREEP
MODULATION
WHEEL
WHEEL BOARD
MAIN FILTER
INPUT AC
CPU BOARD
J14
J13
J12
J11
J9
J10
J7
J8
TO J10/J12/J13
POWER BOARD
J9 TO 32 KEYSWITCHES UNIT
J10 TO 29 KEYSWITCHES UNIT
(THROUGH J2 ROMPTOR CONNECTION BOARD)
GENERATION BOARD
TO J10 & J12
POWER BOARD
CARD CONNECTOR
TO LEFT & RIGHT
SPEAKERS
TO WOOFER
MAIN TRANSFORMER
SUPPLY & STEREO AMPLIFIER
J13 J12 J11 J10 J9
RES +5V GND
TO FLOPPY
DRIVER
TO J11 POWER
BOARD
FLOPPY DRIVER
MIKES & HEADPHONE BOARD


CPU UNIT
BENDER UNIT
A.TOUCH UNIT
MODUL. UNIT
SWITCHE'S SYSTEM & PEDALBOARD
DATA CONTROLS
FLOPPY DISK DRIVER
KEYBOARD
MIDI INTERFACE
THRU
OUT
IN
PANEL LEDS_ARRAY
8 BIT ADC CONVERTER
CONTROLS DATA
FLOPPY DISK CONTROLLER MCS3201
KEYBOARD CONTROLLER & INTERFACE CF76866DKC
BACKUP RAM
SYSTEM ROM
LCD DISPLAY
DATA CONTROLS
LED'S DRIVERS SYSTEM
CONTROLS
SWPED1
SWPED2
I/O PORT_B
I/O PORT_A I/O PORT_C
PARALLEL INTERFACE-TIMER
68230
PLD
DECODER
ADDR BUS
DATA BUS
PROCESSOR
68302
GENERATION UNIT
DATA ADDR. MULTIPLEXER CTRL
ADDR. & DATA
ADDRESS & DATA BUS
ADDRESS/DATA CS IRQ
SAMPLES ROM 2MWORDS
SAMPLES ROM 1MWORDS
EFFECTS RAM
COMMUNICATION BUFFER
SOUND CARD
DAC
ADC
DMA
EXPR. PED & VOL. CONTR.
MUTE
L.P.
1 2 MIKES
EXP. PED
IN LEFT
IN RIGHT
OUT LEFT
OUT RIGHT
POWER AMPLIFIER
2 x 20 W
WOOFER
LEFT SPEAKER
PHONES
RIGHT SPEAKER
POWER UNIT
POWER TRANSFORMER
MAINS FILTER
AC INLET
SWITCHING POWER SUPPLY
+5V +12V -12V +22 -22

# CENTRAL PROCESSOR UNIT (CPU)

COMPONENT LAYOUT



CENTRAL PROCESSING UNIT (CPU) PART # 45107090

SPARE PARTS FOR CPU

| PART # | DESCRIPTION | LOCATION |
|---|---|---|
| 27013430 | LM2450 3V-210mA/h lithium batt. | B1 |
| 27020110 | 32 pin IC socket | IC14-15-19÷22 |
| 27020170 | 40 pin IC socket | IC26 |
| 27020190 | 28 pin IC socket | IC30 |
| 27020720 | 20 pin IC socket | IC13 |
| 27020770 | 48 pin IC socket | IC23 |
| 27020950 | PLCC 68 pin IC socket | IC12 |
| 27061530 | 6 pin connector socket | J7-J12 |
| 27062110 | 14 pin connector socket | J11 |
| 27062120 | 16 pin connector socket | J9 |
| 27062130 | 20 pin connector socket | J2÷4-10-13 |
| 27062140 | 26 pin connector socket | J15 |
| 27062430 | 34 pin connector socket | J8 |
| 27065210 | 5 pin MIDI DIN socket | JK1-JK2-JK3 |
| 27065270 | 15 pin Bass pedalboard socket | J14 |
| 27065320 | 1/4 inch jack socket | JK4-JK5 |
| 27121510 | 8x4k7 array resistor | *** |
| 27121660 | 8x1k5 array resistor | R68 |
| 27228040 | 22k rotative potentiometer | P1 |
| 27390070 | 47 µF-10V tantalium capacitor | C13 |
| 27410020 | SD103B Schottky diode | D12 |
| 27410040 | 1N4148 signal diode | *** |
| 27420200 | BC558 NPN transistor | Q1 |
| 27421150 | 24Mhz quartz | QZ2 |
| 27421190 | 16 Mhz oscillator | QZ1 |
| 27431320 | 6N138 optocoupler | IC1 |
| 27431560 | 74HC04 hex inverter | IC9 |
| 27431760 | 74HC00 quadruple nand gate | IC11 |
| 27431950 | 74HC4040 12 bit binary coun. | IC10 |
| 27432150 | 74HC164 8 bit shift reg. | C27÷29 |
| 27432870 | MC68302FE16 µP | IC4 |
| 27432900 | 74AC04 hex inverter | IC16 |
| 27432910 | 74AC32 quad. or gate | IC17-IC18 |
| 27432930 | 74AC245 octal bus transceiv. | C7-IC8 |
| 27432940 | 74AC541 buf./l. drivers | C3-IC5-IC6 |
| 27432950 | 74HC125 bus buffer gates | IC2 |
| 27440360 | LM339 quad voltage comp. | IC24-IC25 |
| 27432170 | CF76006 dynamic key control. | IC26 |
| 27432750 | TC551001-128Kx8 static RAM | IC19÷22 |
| 27432880 | MC68230 paral. interface timer | IC23 |
| 27432890 | MCCS3201 disk drive controller | IC12 |
| 27441090 | ADC0809 analogic dig. conv. | IC30 |
| 32211301 | 27C4001 EPROM PROGRAM 1 | IC14 |
| 32211311 | 27C4001 EPROM PROGRAM 2 | IC15 |
| 32211320 | 16V8 GAL | IC13 |

Note: To avoid storage discharge CPU electronic unit maybe supplied without lithium battery.

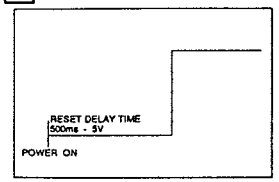
*** When not otherwise specified

BLOCK FUNCTIONAL DESCRIPTION

The CPU system uses IC4 type 68302 Motorola microprocessor running at 16MHz system clock frequency.
The system memory bank uses IC's 14-15 EPROM type 27C4001 for 1Mbytes memory containing gestion programme and rhythm pattern as well.
IC's 19÷22 type TC551001 are 512 Kbytes static RAM for variable system, sequencer songs and rhythm customs, IC's 19÷22 have a battery back up so that data is retained when the system is powered off.
Three individual 8 bit peripheral units are IC12 type MCS3201 for floppy disk controller, IC26 type CF76006 for DKC (dynamic key controller) and IC 23 type 68230 PIT (peripheral interface timer) that by I/O lines and I/O lines available on IC4 execute commands and panel interfaceing.
IC30 type ADC0808 addressed by I/O lines is connected to IC23 peripheral interface as analogue to digital conversion for After touch, modulation wheel and pitch bend actuators.

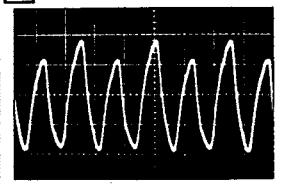
## TEST POINTS

1 — IC 11 pin 11



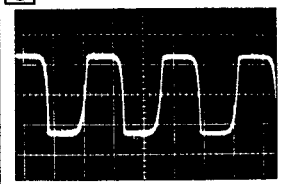

DC reset delay time at power ON

2 — DC 1V - 50 ns/div.



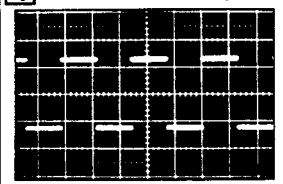
IC 10 pin 10 — 16MHz input clock

3 — DC 2V - 200 ns/div.



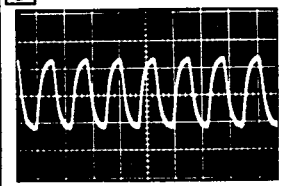
IC 26 pin 10 — 2MHz DKC clock

4 — DC 2V - 50 µs/div.



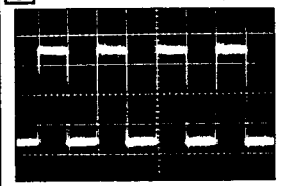
IC 26 pin 12 — 7.8KHz DKC Interrupt

5 — DC 5V - 100 ns/div.



IC 23 pin 40 — 8MHz clock

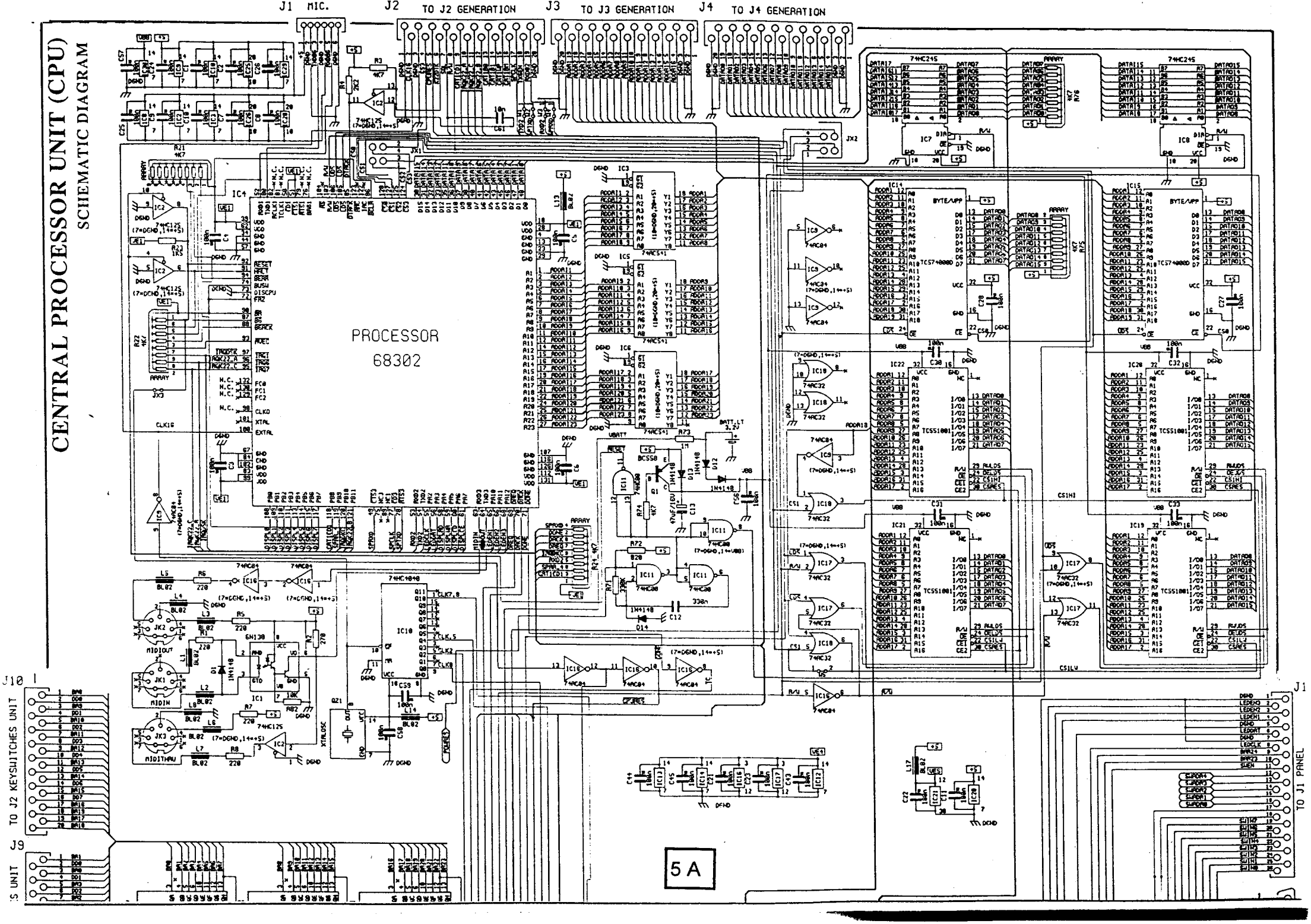
6 — DC 2V - 1 µs/div.

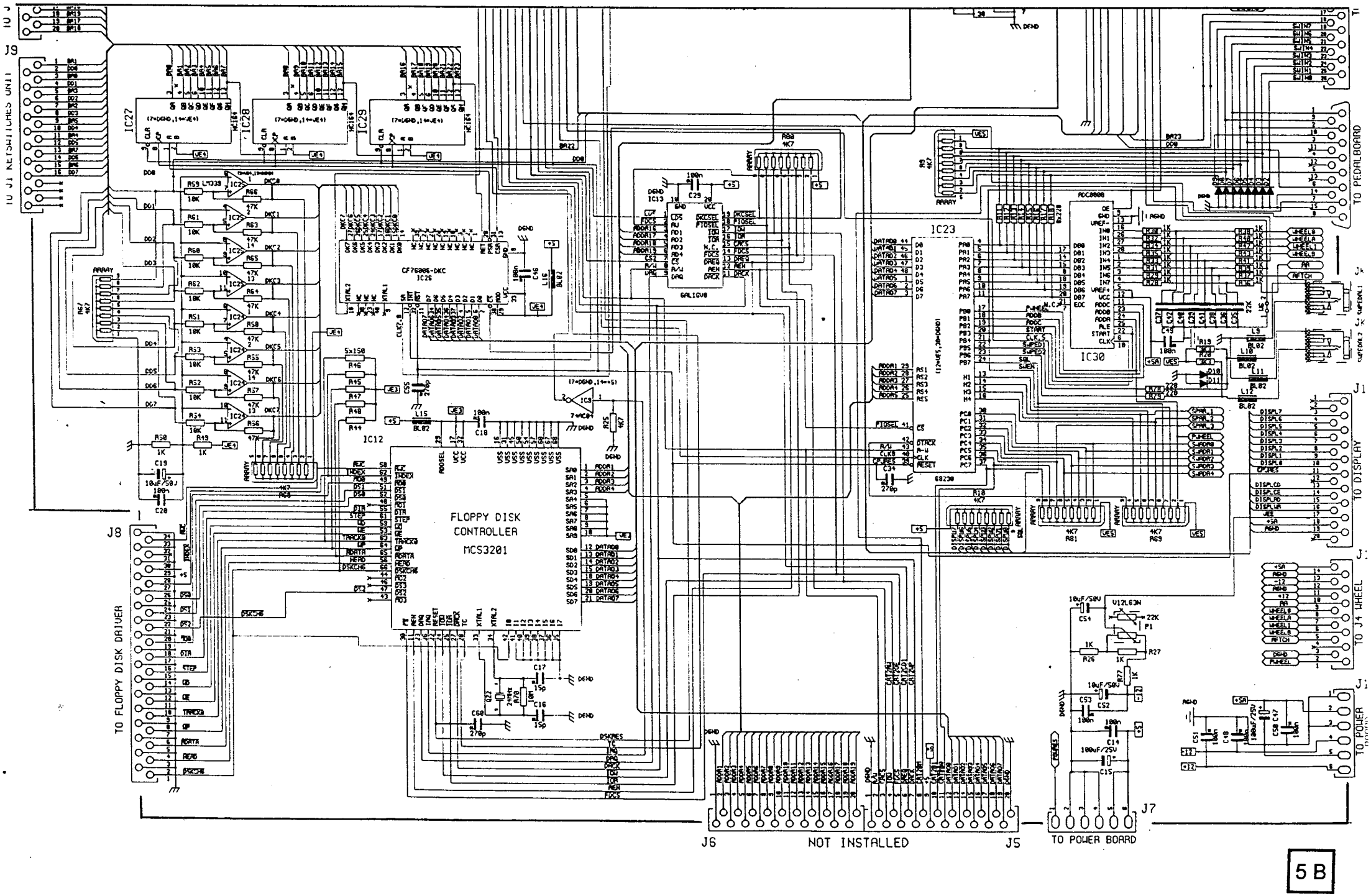


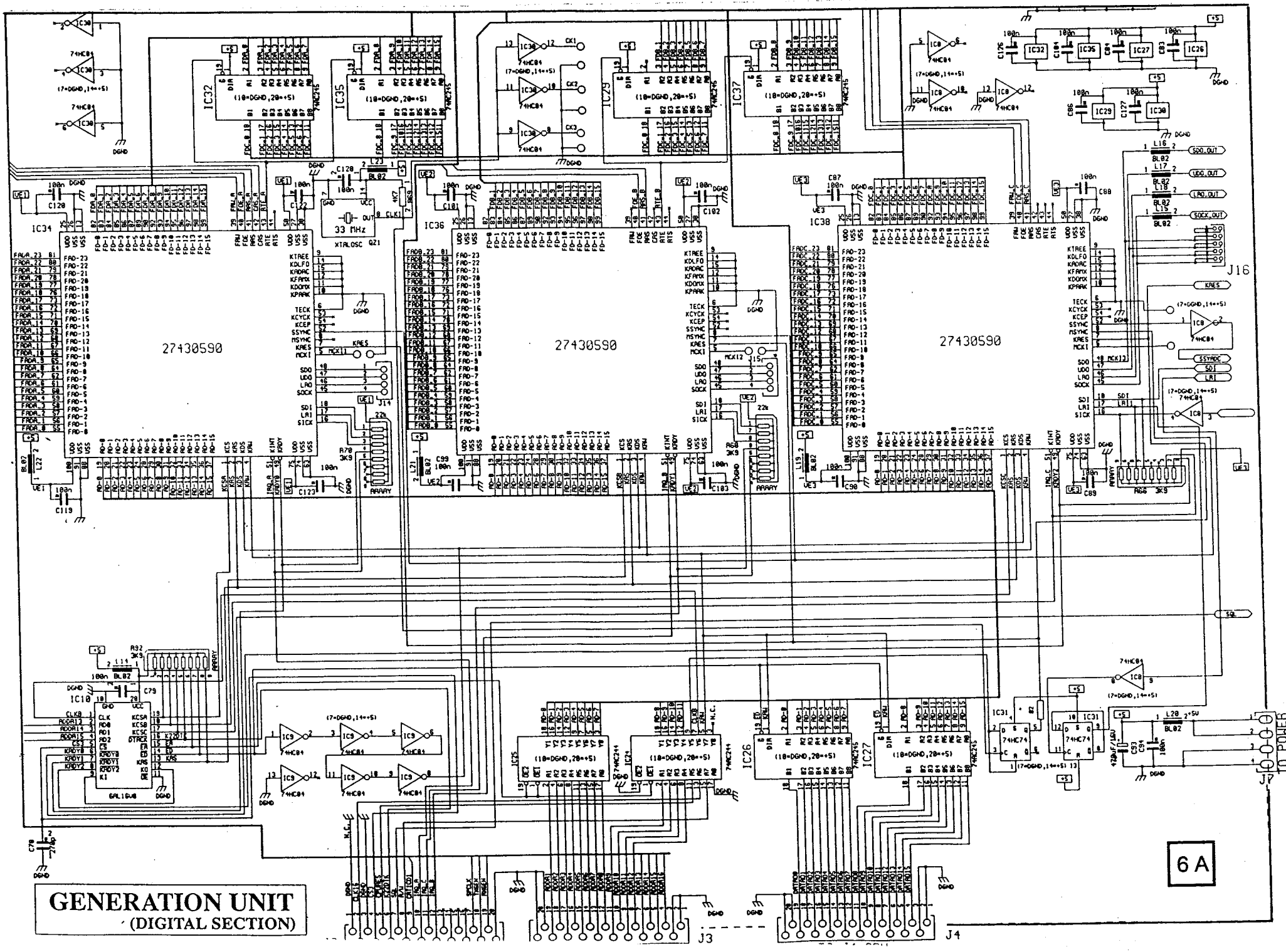
IC30 pin 10 — 500KHz ADC clock

# CENTRAL PROCESSOR UNIT (CPU)

SCHIEMATIC DIAGRAM

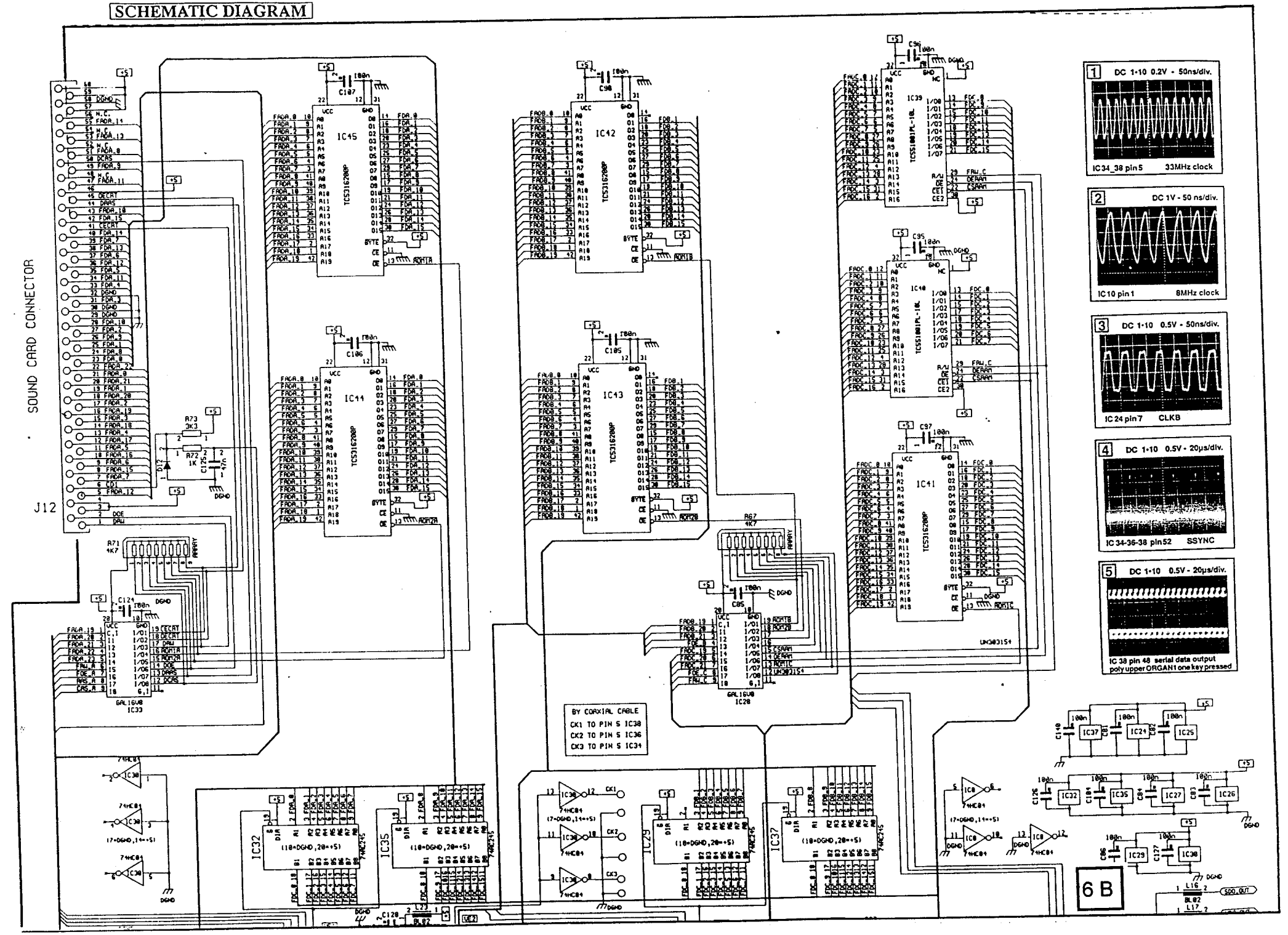



FLOPPY DISK
CONTROLLER
MCS3201
IC23
IC30
IC27
IC28
IC29
IC12
IC26
CF76906-DKC
GAL16V8
68230
TO FLOPPY DISK DRIVER
TO PEDALBOARD
TO DISPLAY
TO J4 WHEEL
TO POWER
TO POWER BOARD
J6
NOT INSTALLED
J5
J7
J8
J9
5 B



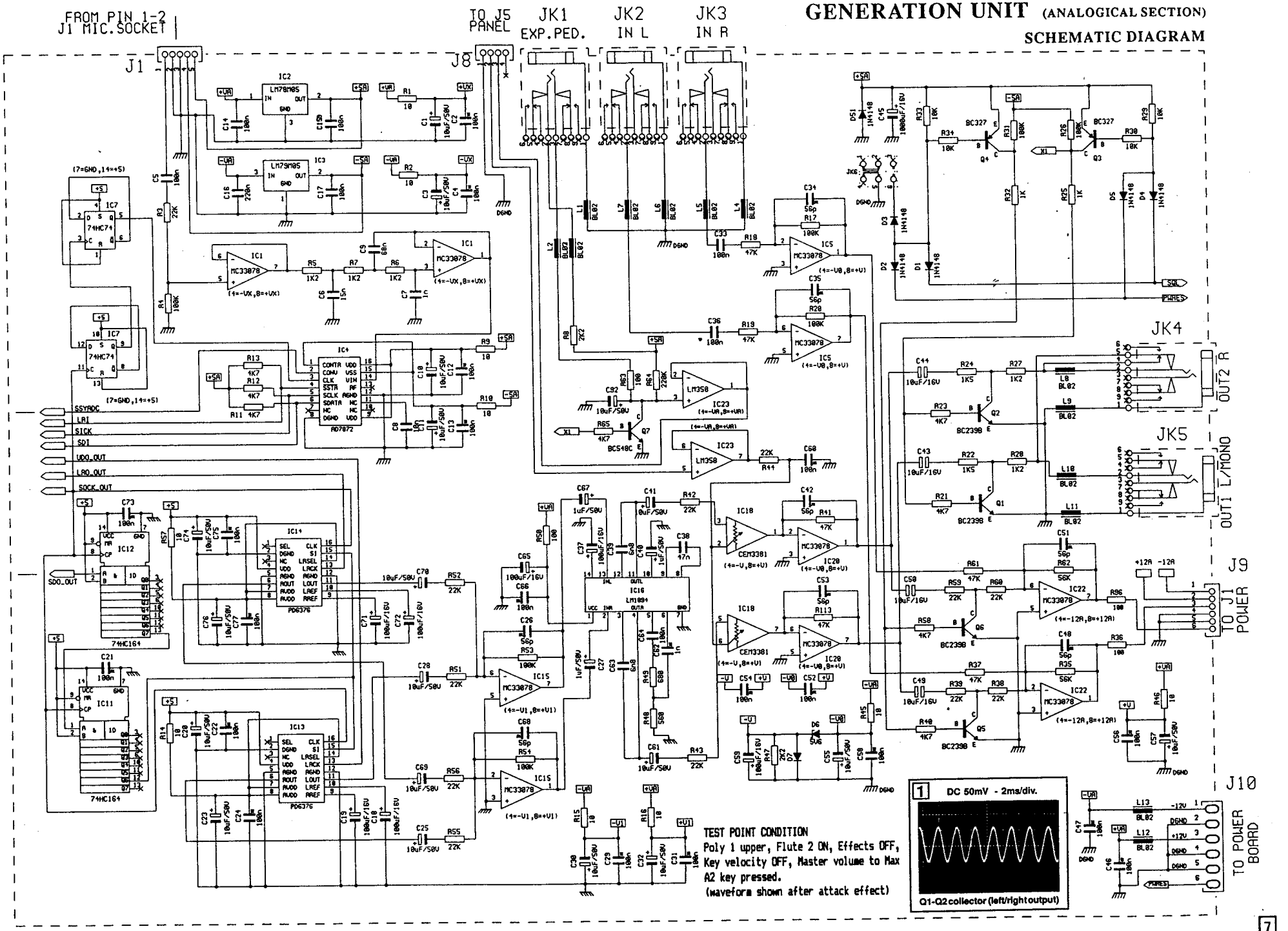

# GENERATION UNIT
## (DIGITAL SECTION)

# SCHEMATIC DIAGRAM

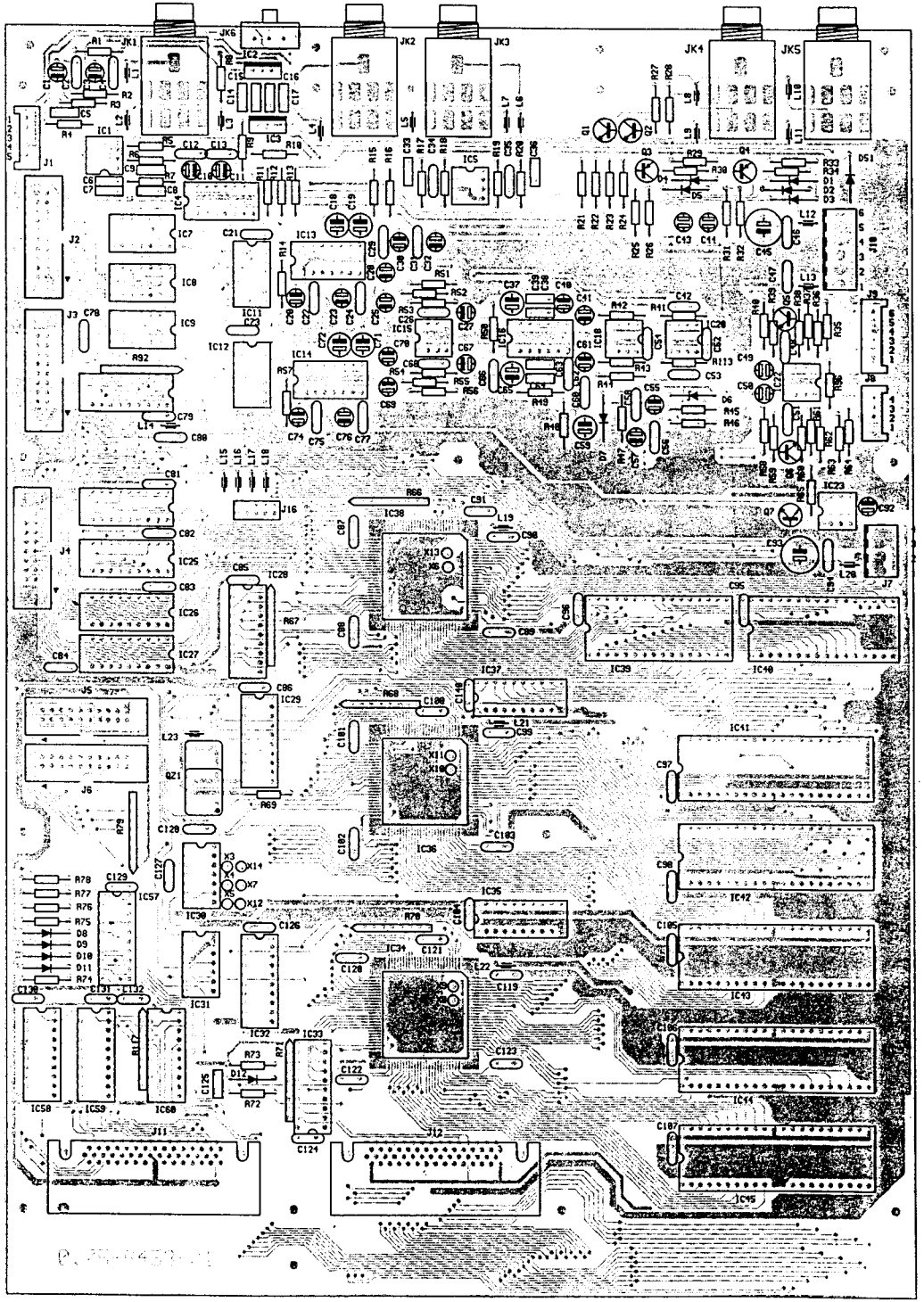


# GENERATION UNIT (ANALOGICAL SECTION)

## SCHEMATIC DIAGRAM



# GENERATION UNIT (COMPONENTS LAYOUT)



**SOUND GENERATION UNIT** **PART # 45107070**

**SPARE PARTS FOR SOUND GENERATION UNIT**

| PART # | DESCRIPTION | LOCATION |
|---|---|---|
| 26310460 | SS-E2-95/10 2 pos. slide switch | JK6 |
| 27020110 | 32 pin IC socket | IC39-40 |
| 27020720 | 20 pin IC socket | IC10-28-33 |
| 27060800 | 6 pin vert. connector socket | J9 |
| 27060840 | 5 pin vert. connector socket | J1 |
| 27060850 | 4 pin vert. connector socket | J8 |
| 27061530 | 6 pin vert. connector socket | J10 |
| 27061540 | 4 pin vert. connector sochet | J7 |
| 27062130 | 20 pin vert.connector socket | J2÷J4 |
| 27062200 | 60 pin cartridge socket | J12 |
| 27065320 | 1/4 inch Jack socket | JK1-JK3÷JK6 |
| 27121510 | 8x4K7 array resistor | R67-71 |
| 27121600 | 8x3K9 array resistor | R66-68-70-92 |
| 27200160 | 10 OHM-0,25W fuse resistor | ***** |
| 27410010 | 1N40042 1A rectifier diode | ***** |
| 27410040 | 1N4148 signal diode | ***** |
| 27410050 | 5,6V-0,5W Zener diode | D6 |
| 27420460 | BC239B NPN transistor | ***** |
| 27420480 | BC327 PNP transistor | Q3-Q4 |
| 27421200 | HX01204-33Mhz oscillator | QZ1 |
| 27431370 | 74HC74 dual D flip/flop | IC7-IC31 |
| 27431560 | 74HC04 hex inverter | IC8-IC9 |
| 27432150 | 74HC164 8 bit shift reg. | C11-IC12 |
| 27430590 | TC256C300F custom gener. | IC34-34-38 |
| 27432750 | TC551001PL-85 RAM | IC39-IC40 |
| 27432900 | 74AC04 Hex inverter | IC30 |
| 27432920 | 74AC244 Octal buffers | IC24-IC25 |
| 27432930 | 74AC245 Bus tran. | IC26-27-29-32-35-37 |
| 27433010 | TC5316200P-L042 16M ROM | IC45 |
| 27433020 | TC5316200P-L043 16M ROM | IC44 |
| 27433030 | TC5316200P-L044 16M ROM | IC43 |
| 27433040 | TC5316200P-L045 16M ROM | IC42 |
| 27433050 | TC5316200P-L046 16M ROM | IC41 |
| 27440170 | 78M05 voltage regulator | IC2 |
| 27440410 | LM358 dual oper. amplifier | IC22 |
| 27440840 | CEM3381 DC var. gain amplif. | IC18 |
| 27441030 | D6376CX 16 Bit DAC | IC13-IC14 |
| 27441100 | AD7872 14 Bit ADC | IC4 |
| 27441120 | 79M05 negative voltage reg. | IC3 |
| 27441140 | LM1894N DNR | IC16 |
| 27441150 | MC33078 oper.amplif. | IC1-5-15-20-22 |
| 32211270 | 16V8-F1 GAL | IC10 |
| 32211340 | 16V8-F1 GAL | IC33 |
| 32211350 | 16V8-F1 GAL | IC28 |
| 45204711 | Slot cartridge driver | J12 |

**BLOCK FUNCTIONAL DESCRIPTION**

SOUND GENERATION unit operate by IC's 34-36-38 FARFISA custom generators QFP100 package running at 33MHz syncronised system clock, the first IC34 is for POLY1 synthesis voices, the second IC36 is for POLY2 synthesis voices, while the third IC38 is for BASS voices and PERCUSSION, also by 128 Kwords obtained by IC's 39-40 (8 Bit static RAM) IC38 execute the sound EFFECTS.

IC's 44-45 1Mx16 ROM are 2 Mwords samples memory for IC34 voices synthesis generator, IC'43-46 1Mx16 ROM are 2Mwords samples memory for IC36 second voices synthesis generator, IC41 1Mx16 ROM is 1Mwords samples memory for third IC38 sound generator.

Both IC's 34-36-38 generators are CPU bus mapped through IC 32-35-29-37 for data bus multiplexing and address interfacing.

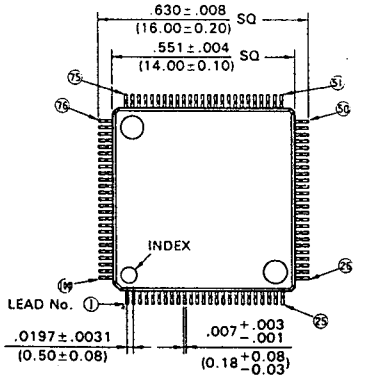
IC10 GAL is for address range decoder and for generation of multiplexing and handshake commands control among CPU and generation unit, unidirectional communication bus through IC's 24÷27 buffers execute data iterchange between generation board chips.

Serial data coming from IC38 outputs are connected to IC's 13-14 stereo DAC for 4 individual analogue outputs, then enter the respective left/right IC15 signal integrator and IC16 for noise level reduction,left and right output lines continue with IC18 dual DC variable gain amplifier for master volume control and IC20-22 dual operational amplifiers for signal amplification at output level.

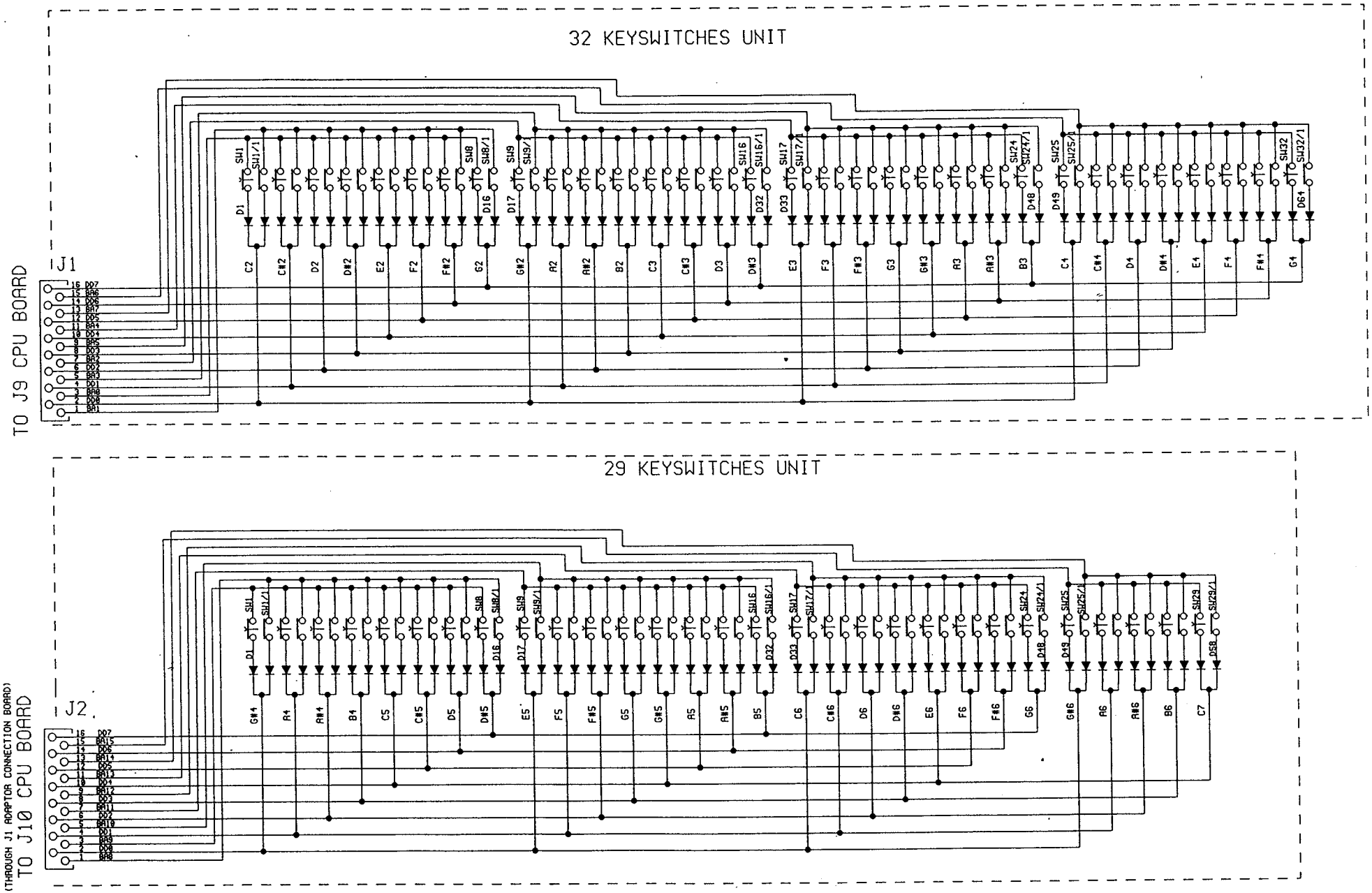
IC4 type AD7872 analogue to digital converter is to IC38 data connected for effects processing of signals coming from microphone input lines.

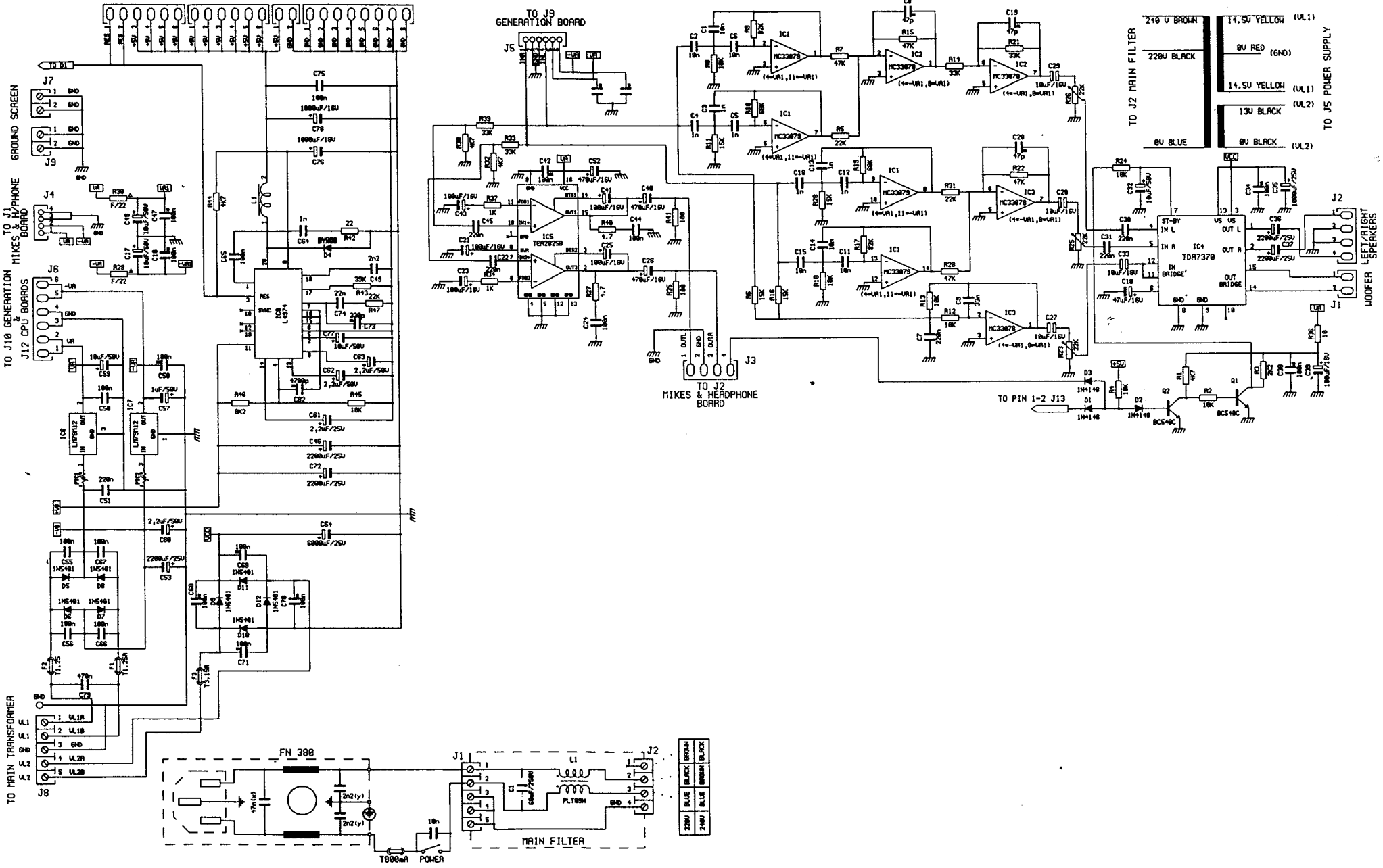
**100-LEAD PLASTIC FLAT PACKAGE**

(Case No. : FPT-100P-M05)

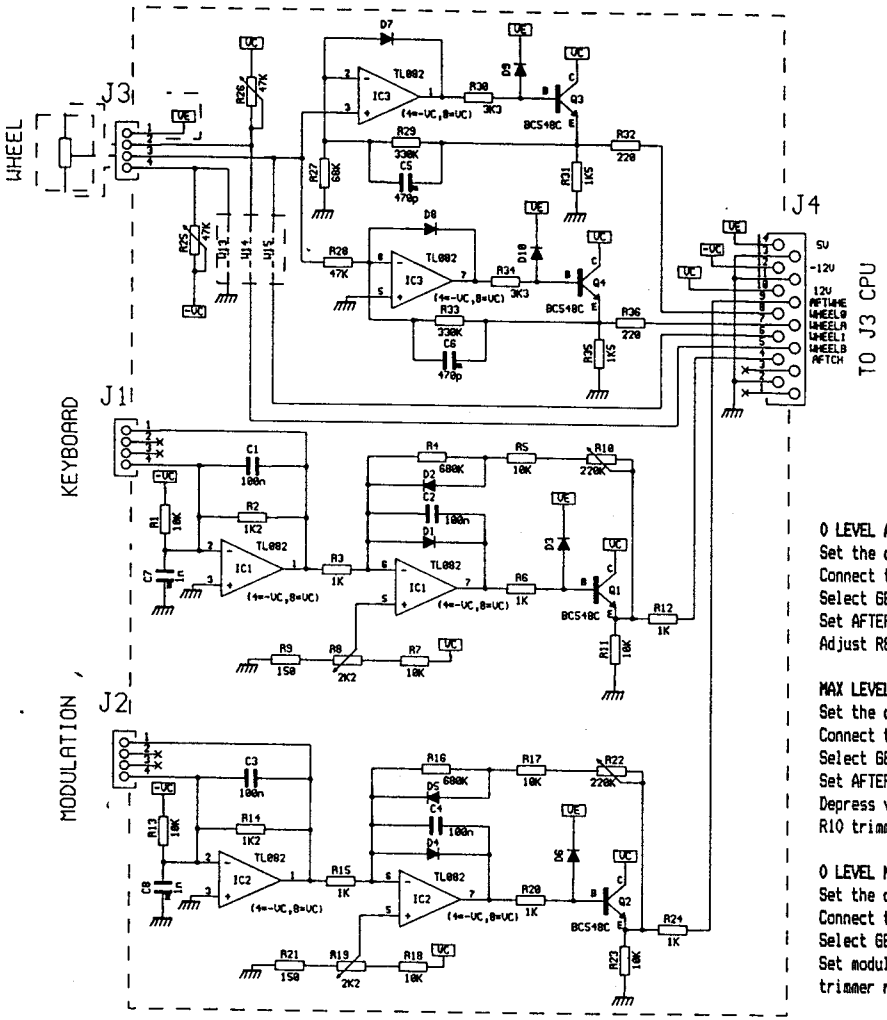



MEMO/UPDATING

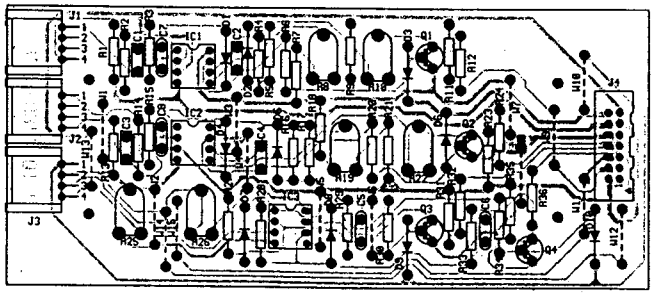

32 KEYSWITCHES UNIT
J1
TO J9 CPU BOARD
29 KEYSWITCHES UNIT
J2
(THROUGH J1 ADAPTOR CONNECTION BOARD)
TO J10 CPU BOARD


TO J9
GENERATION BOARD
J5
TO J2 MAIN FILTER
240 V BROWN
220V BLACK
0V BLUE
14.5V YELLOW (VL1)
0V RED (GND)
14.5V YELLOW (VL1)
13V BLACK (VL2)
0V BLACK (VL2)
TO J5 POWER SUPPLY
J2
WOOFER LEFT/RIGHT SPEAKERS
J1
IC4 TDA7370
ST-BY
IN L
IN R
IN BRIDGE
VS VS
OUT L
OUT R
OUT BRIDGE
J3
TO J2
MIKES & HEADPHONE BOARD
TO PIN 1-2 J13
J7
GROUND SCREEN
J9
J4
TO J1
MIKES & HEADPHONE BOARD
J6
TO J10 GENERATION & J12 CPU BOARDS
J8
TO MAIN TRANSFORMER
VL1
VL1
GND
VL2
VL2
IC8 L4974
IC5 TEA2025B
IC6 LM7812
IC7 LM7812
IC1 MC33079
IC2 MC33079
IC3 MC33079
D1 1N4148
D2 1N4148
Q1 BC549C
Q2 BC549C
FN 380
J1
J2
L1
PLT08N
MAIN FILTER
T800mA
POWER
BROWN
BLACK
BLUE
220V
240V

# WHEEL - MODULATION - AFTER TOUCH UNIT




## (COMPONENTS LAYOUT)



## 0 LEVEL AFTER TOUCH ADJUSTEMENT

Set the oscilloscope to DC 2V - 1ms/div.
Connect the 1-1 probe to CPU unit IC30 pin 4
Select GENERAL EDIT "real time"
Set AFTER TOUCH effect to Max
Adjust R8 trimmer resistor to 0 level

## MAX LEVEL AFTER TOUCH ADJUSTMENT

Set the oscilloscope to DC 2V - 1ms/div.
Connect the 1-1 probe to CPU unit IC30 pin 4
Select GENERAL EDIT "real time"
Set AFTER TOUCH effect to Max
Depress very firmly the A3 key then adjust R10 trimmer resistor to 5,2V.

## 0 LEVEL MODULATION WHEEL ADJUSTMENT

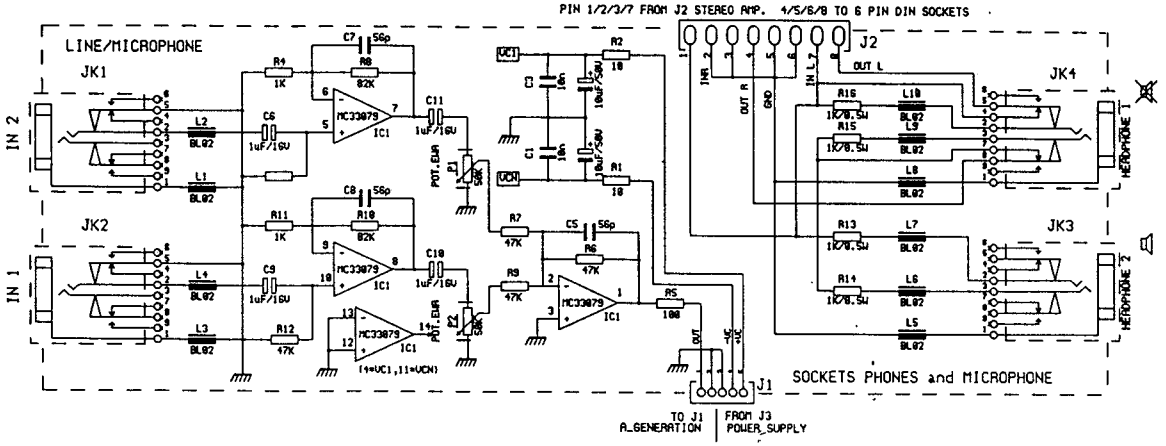
Set the oscilloscope to DC 2V - 1ms/div.
Connect the 1-1 probe to CPU unit IC30 pin 5
Select GENERAL EDIT "real time"
Set modulation effect to Max then adjust R19 trimmer resistor to 0 level.

## CENTER RANGE MODULTION WHEEL ADJUSTMENT

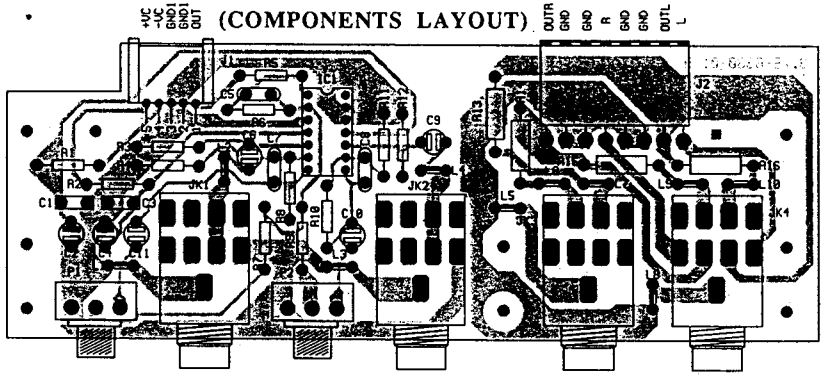
Set the oscilloscope to DC 2V - 1ms/div.
Connect the 1-1 probe to CPU unit IC30 pin 5
Select GENERAL EDIT "real time"
Set modulation effect to Max then adjust R22 trimmer resistor to obtain modulation effect starting at actuator center range.

NOTE: Over the above instumental adjustments some functional touch up may be reqired for a correct full range effects.

# MICROPHONE - HEADPHONE UNIT




## (COMPONENTS LAYOUT)



**WHEEL/AFTER TOUCH ELECT. UNIT PART# 45107040**

SPARE PARTS FOR WHEEL/AFTER TOUCH UNIT

| PART # | DESCRIPTION | LOCATION |
|---|---|---|
| 27061910 | 4 pin hor. connector socket | J2-J3 |
| 27062110 | 14 pin vert. connector socket | J4 |
| 27062450 | 4 pin pin hor. connector socket | J1 |
| 27256290 | 2K2 hor. trimmer resistor | R8-R19 |
| 27256530 | 220K hor.trimmer resistor | R10-R22 |
| 27410040 | 1N4148 signal diode | D1÷D6 |
| 27420210 | BC172C NPN transistor | Q1-Q2 |
| 27440810 | TL082 dual oper. amplifier | IC1-IC2 |

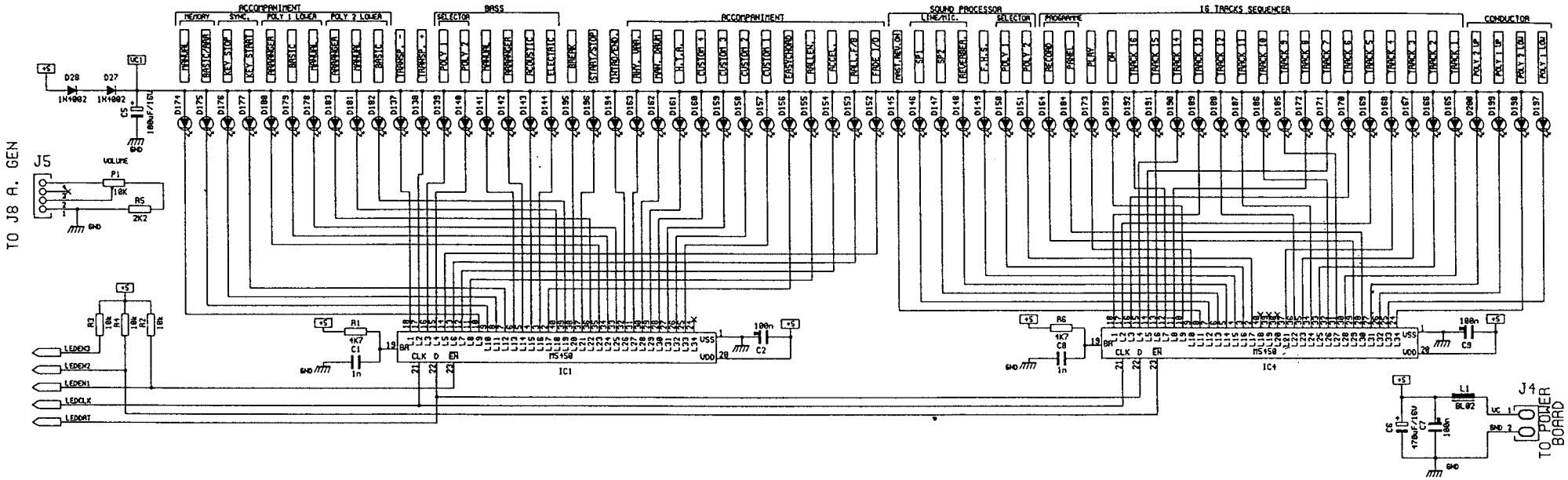
**HEADPHONE/MICROPHONE SOCKETES UNIT PART#45107210**

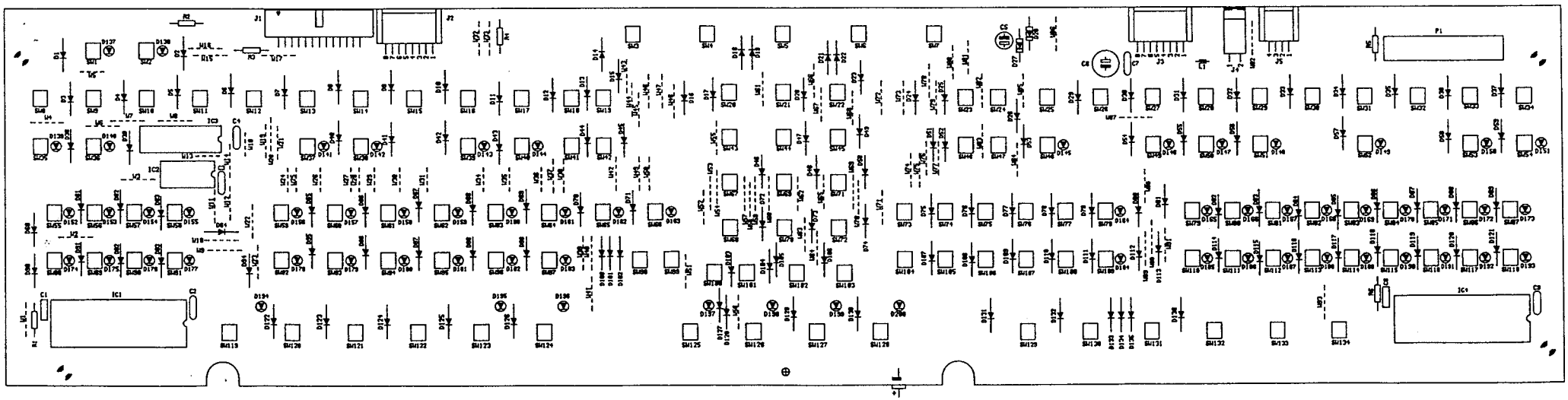
SPARE PARTS FOR HEADPHONE/MICROPHONE SOCHETES

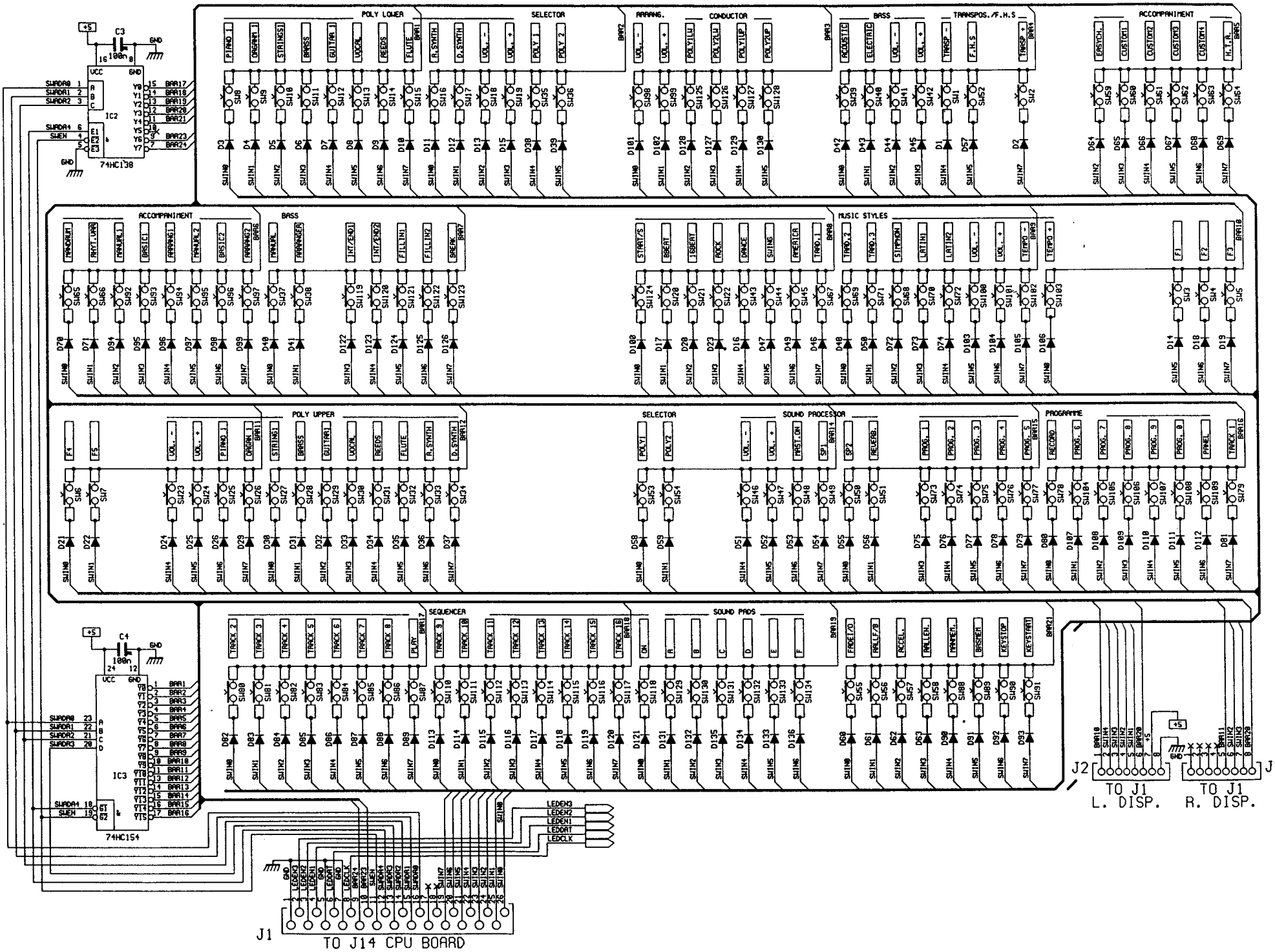
| PART # | DESCRIPTION | LOCATION |
|---|---|---|
| 27061650 | 8 pin hor.connector socket | J2 |
| 27061920 | 5 pin hor. connector socket | J1 |
| 27065320 | 1/4 inch jack socket | JK1÷JK4 |
| 27200160 | 10 Ohm fuse resistor | R1-R2 |
| 27228050 | 50KB rotative potentiometer | P1-P2 |
| 27441160 | MC33079 quad l.n.oper.amplifier | IC1 |

TLX711A-E0 LCD DISPLAY UNIT PART # 95001780
(no serviciable parts are available for this unit)

MF355C.252M 3½ FLOPPY DISK DRIVE PART # 27020940
(no serviciable parts are available for this unit)


ACCOMPANIMENT
MEMORY
SYNC.
POLY 1 LOWER
POLY 2 LOWER
BASS
SELECTOR
ACCOMPANIMENT
SOUND PROCESSOR
LINE/MIC.
SELECTOR
PROGRAMME
16 TRACKS SEQUENCER
CONDUCTOR
TO J8 A. GEN
J5
VOLUME
P1
10K
R5
2K2
GND
D28
D27
1N4002
1N4002
C5
100uF/16V
R3
10k
R4
10k
R2
10k
LEDEN3
LEDEN2
LEDEN1
LEDCLK
LEDDAT
R1
4K7
C1
1n
IC1
MS150
C2
100n
R6
4K7
C8
1n
IC4
C9
100n
L1
BL02
C6
470uF/16V
C7
100n
J4
TO POWER BOARD




POLY LOWER
SELECTOR
ARRANG.
CONDUCTOR
BASS
TRANSPOS./F.M.S
ACCOMPANIMENT
MUSIC STYLES
POLY UPPER
SOUND PROCESSOR
PROGRAMME
SEQUENCER
SOUND PADS
74HC138
74HC154
TO J14 CPU BOARD
TO J1
L. DISP.
TO J1
R. DISP.