

OPERA 6

DYNAMIC PROGRAMMABLE
SYNTHESIZER

DK 600

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UPDATED OCTOBER 1983

SIEL

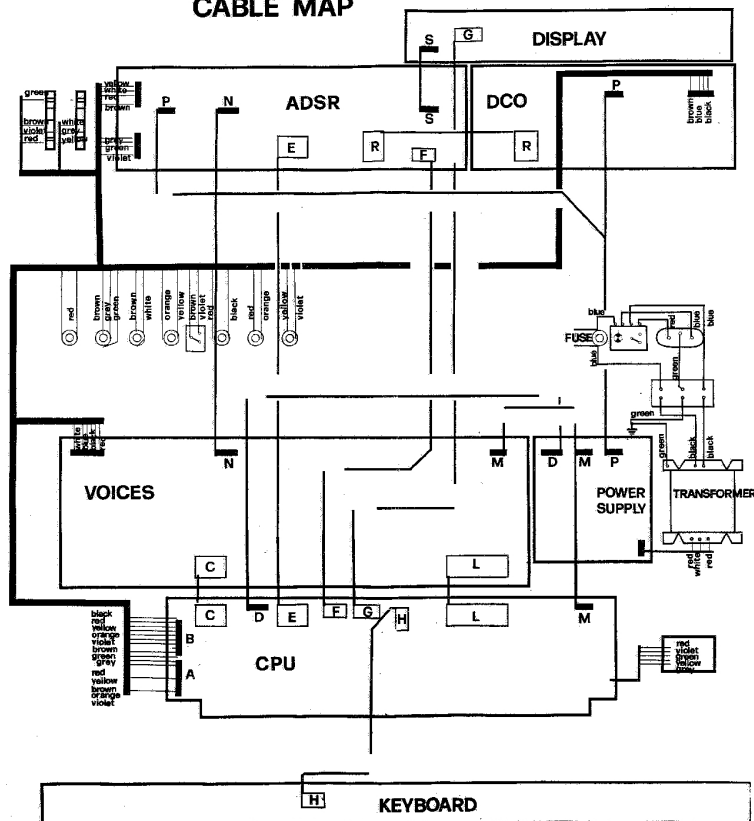
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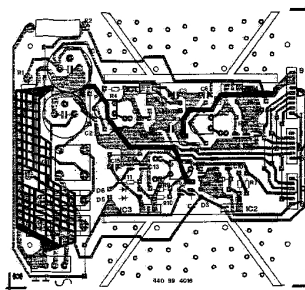
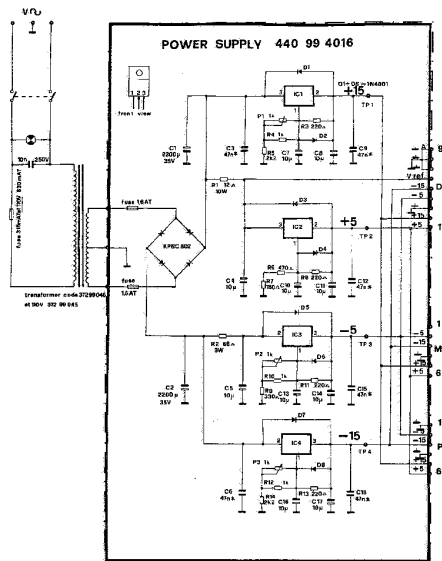
VIA L. DA VINCI n. 11 - 20090 INCI - 20090 ACCADIAVA PICENA (AN) ITALY
P.O. BOX 159 - 20018 SAN RENDETO (MI) - 20018 (MI) ITALY
TELEFONO 02/57074 (5 linee) - TELEFAX 02/57071
Cassa di Risparmio e Poste S.p.A. 0009010677 SIEL
Pubblicazione elettronica M790032

SCHEMATIC
DIAGRAM

SIEL

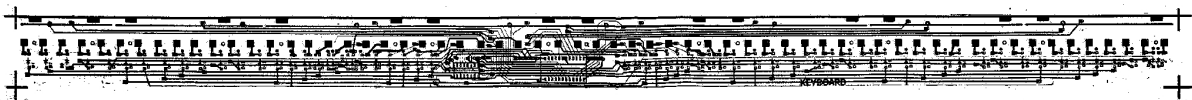
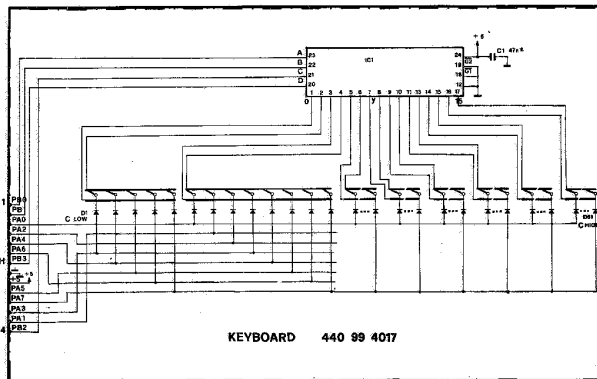
CABLE MAP



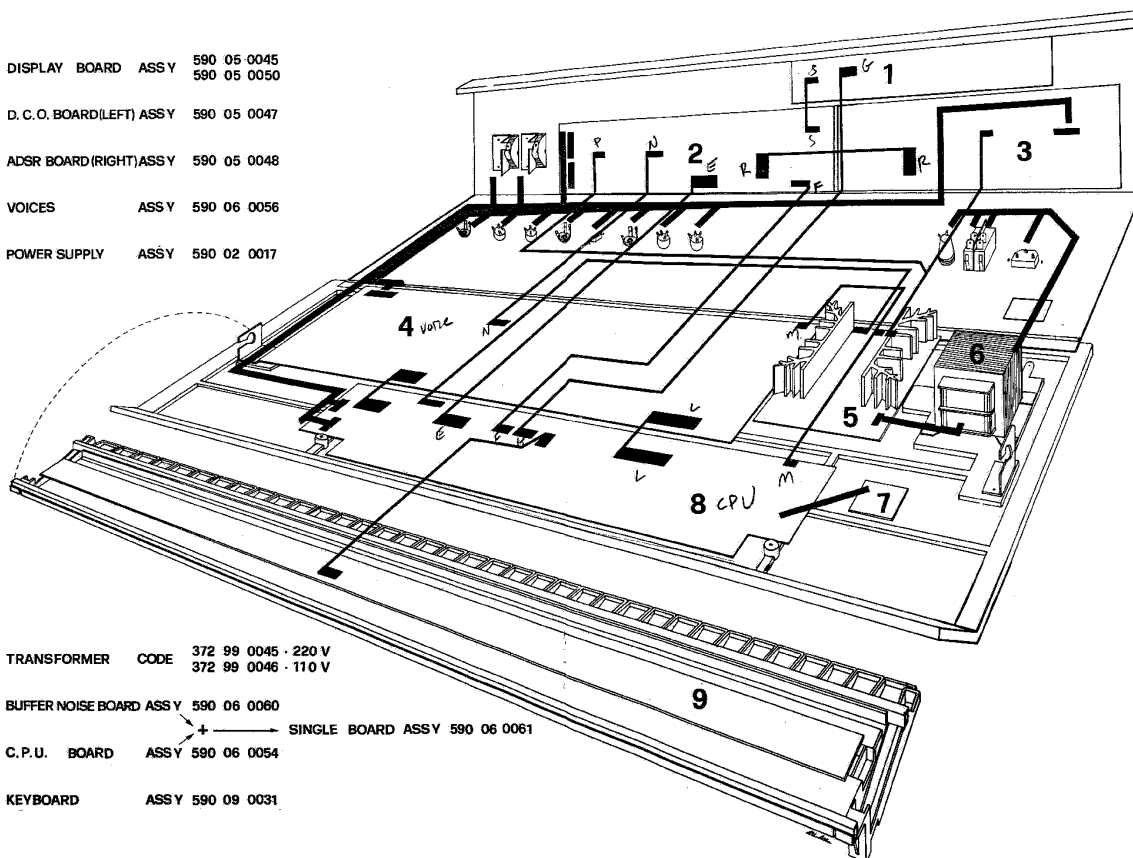


POWER SUPPLY			
I C 1-2	LM 377	367.99.6006	
I C 3-4	LM 337	367.99.6005	

KEYBOARD			
I C 1	74LS154	367.99.6503	



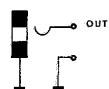
- 1 DISPLAY BOARD ASSY 590 05 0045
590 05 0050
- 2 D. C. O. BOARD(LEFT) ASSY 590 05 0047
- 3 ADSR BOARD(RIGHT) ASSY 590 05 0048
- 4 VOICES ASSY 590 06 0056
- 5 POWER SUPPLY ASSY 590 02 0017



- 6 TRANSFORMER CODE 372 99 0045 · 220 V
372 99 0046 · 110 V
- 7 BUFFER NOISE BOARD ASSY 590 06 0060
+ ———→ SINGLE BOARD ASSY 590 06 0061
- 8 C.P.U. BOARD ASSY 590 06 0054
- 9 KEYBOARD ASSY 590 09 0031

BACK PANEL ASSEMBLY

OUT



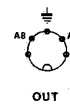
PEDALS



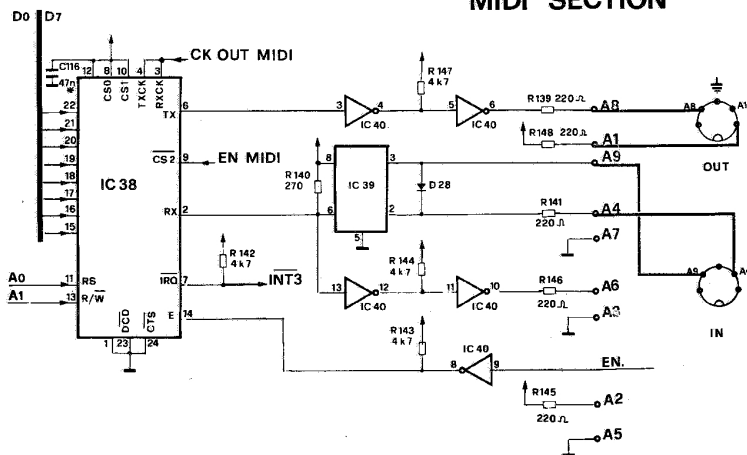
TAPE



MIDI



MIDI SECTION



NOTE

Interconnect cables should not exceed fifty feet (15 meters), and must have a corresponding 5-pin DIN male plug (SWITCHCRAFT 05GN5M or equivalent.) The cable should be shielded twisted pair, with the shield connected to pin 2 at both ends. Notice that while the MIDI OUT jack is grounded to the instrument chassis, MIDI IN is not. This allows the cables to provide their shielding services without creating ground loops.

ADJUSTMENT

ADJUSTMENT SEQUENCE

1. Power Supply Trim
2. HFO A Tuning
3. Waveforms Gen. Amplitude Adjustment
4. VCA Gain Adjustment
5. HFO B Tuning
6. ADSR Time Adjustment
7. VCF Offset Adjustment

All adjustments must be made after the instrument's power has been on for at least five minutes.

POWER SUPPLY TRIM

- 1) Switch on the instrument.
- 2) Set DMM to TP1 (.4016) and adjust P1 to read +15,000 V
- 3) Set DMM to TP2 (.4016) and read +5V 251.
- 4) Set DMM to TP3 (.4016) and adjust P2 to read +5,000 V.
- 5) Set DMM to TP4 (.4016) and adjust P3 to read - 15,000 V.

Note: the supply must be fully loaded.

HFO A TUNING (.5009)

- 1) Press FREE, introduce saw-tooth A (L.E.D. WAVES), set CUTOFF to the max. and RESONANCE to the min.
- 2) Set MASTER TUNE to the center.
- 3) Press the second 'A' (from the right) and adjust P1 to obtain a 440 Hz frequency (use a diapason).

WAVEFORMS GEN. AMPLITUDE ADJUSTMENT (.5011)

- 1) Press FREE.
- 2) Connect oscilloscope to TP9.
- 3) Introduce saw-tooth A.
- 4) Press the second 'E' (from the right) and set the saw-tooth amplitude to +4,800 Vpp operating trimmer P5.
- 5) Press the first 'E' (from the left - three octaves lower than the former) and set amplitude to +4,800 Vpp operating trimmer P4.
- 6) Verify that the saw-tooth amplitude is +4,800 Vpp on the whole keyboard extension.
- 7) Connect oscilloscope to TP3.
- 8) Repeat point 4) operating P1.
- 9) Repeat point 5) operating P2.
- 10) Repeat point 6).
- 11) This adjustment is to be made for the 6 voices.

Adjustment Control

- 1) Connect oscilloscope to TP24.
- 2) Recall program 51.
- 3) Verify that the 6 voices' PW's are at 50%.

VCF CUTOFF AND RESONANCE ADJUSTMENT (.5011)

- 1) Recall program 51.
- 2) Connect oscilloscope to TP24.
- 3) Press any key and set the sine amplitude (any frequency), to 400 mVpp operating P5 of the voice indicated by the lit L.E.D.
- 4) Repeat point 3) for the 6 voices.
- 5) Set P8 to the center.
- 6) Connect Freq.m. to TP24.
- 7) Press any key and set the sine frequency to 880 Hz operating P7 of the voice indicated by the lit L.E.D.
- 8) Repeat point 7 for the 6 voices.

ADSR TIME ADJUSTMENT (.5011)

- 1) Recall program 52.
- 2) Connect oscilloscope to pin 10 (IC 1) or to R7 of voice 1.
- 3) Press any key and set attack time to 5,800 seconds operating P10 of the voice indicated by the lit L.E.D.
- 4) Repeat point 3) for the 6 voices.

VCA GAIN ADJUSTMENT (.5011)

- 1) Press FREE.
- 2) Introduce saw-tooth A.
- 3) Set CUTOFF to the max.
- 4) Set RESONANCE to the min.
- 5) Connect oscilloscope to TP24.
- 6) Press middle 'C' and adjust P9 of the voice indicated by the lit L.E.D. to obtain a saw-tooth amplitude equal to 400 mVpp.

HFO B ADJUSTMENT (.5009)

- 1) Recall program 50.
- 2) Press any key and adjust P3 so as to eliminate the beat between HFO A and HFO B.

VCF OFFSET ADJUSTMENT (.5011)

- 1) Press FREE.
- 2) Set VCF CUTOFF to 3/4.
- 3) Set VCF RESONANCE to the min.
- 4) Connect DMM to TP24.
- 5) Without depressing any key, read voltage on DMM; e.g. -1.34 mV.
- 6) Press any key and adjust P6 of the voice indicated by the lit L.E.D. so as to read the same voltage as per point 5) on the DMM.
- 7) Repeat point 6) for the 6 voices.

NOTES

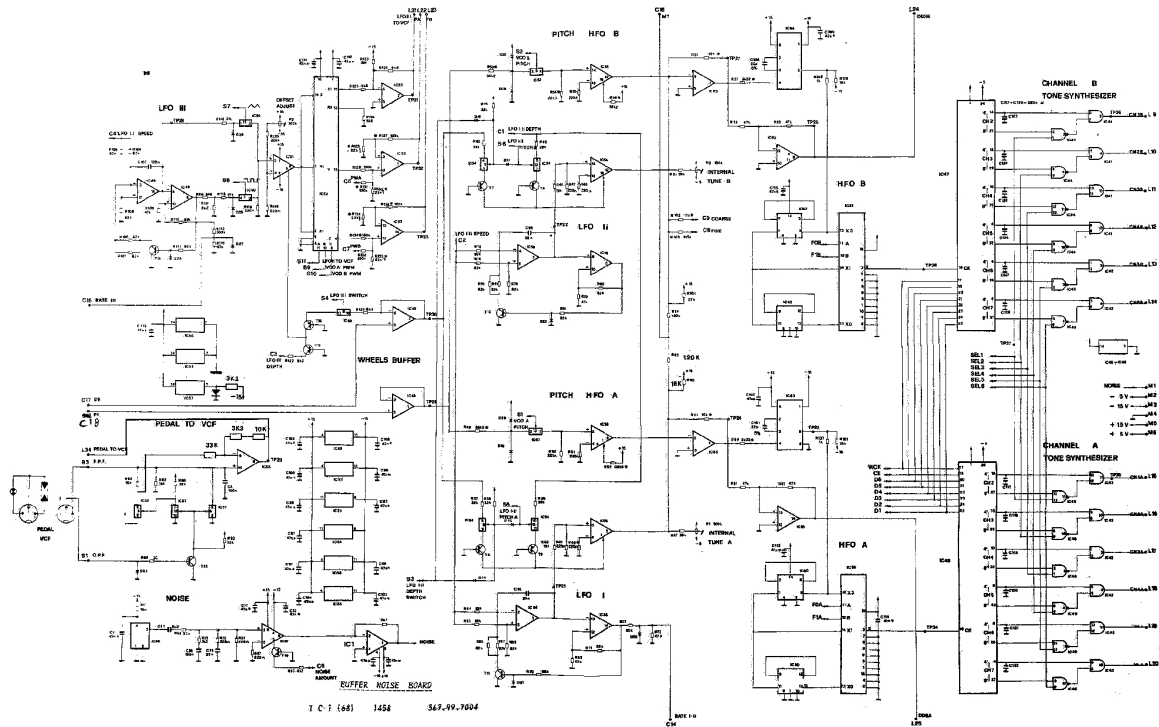
- R* IMPLIES SPECIAL RESISTOR
 - C* IMPLIES CERAMIC CAPACITOR
 - ALL PNP TRANSISTORS ARE BC 560 part code 364.99.0004
 - ALL NPN TRANSISTORS ARE BC 239 part code 364.99.0005
 - ALL DIODES ARE 1N4148
 - ALL RESISTORS ARE 1/4 WATT
 - ALL ELECTROLYTIC CAPACITORS ARE 16 V DC
- UNLESS OTHERWISE INDICATED.

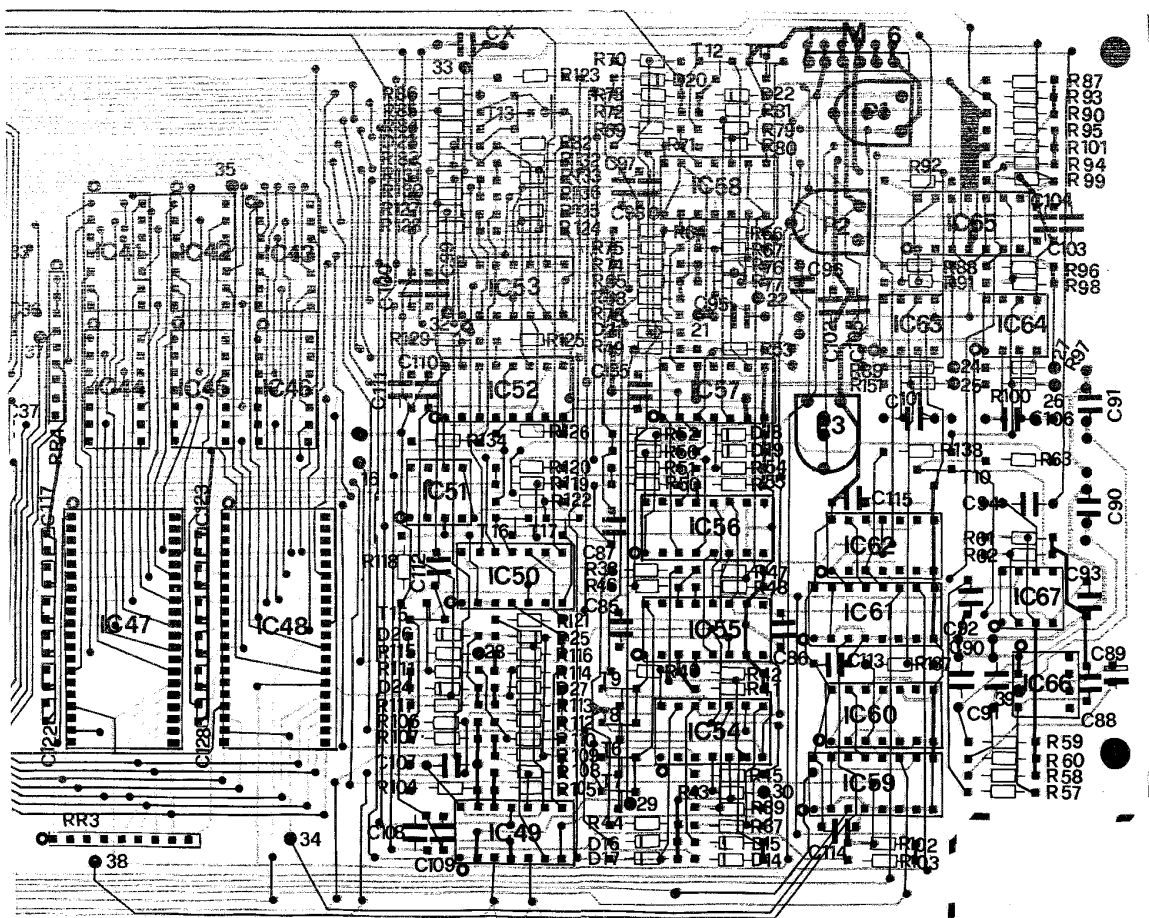
GENERATION SECTION

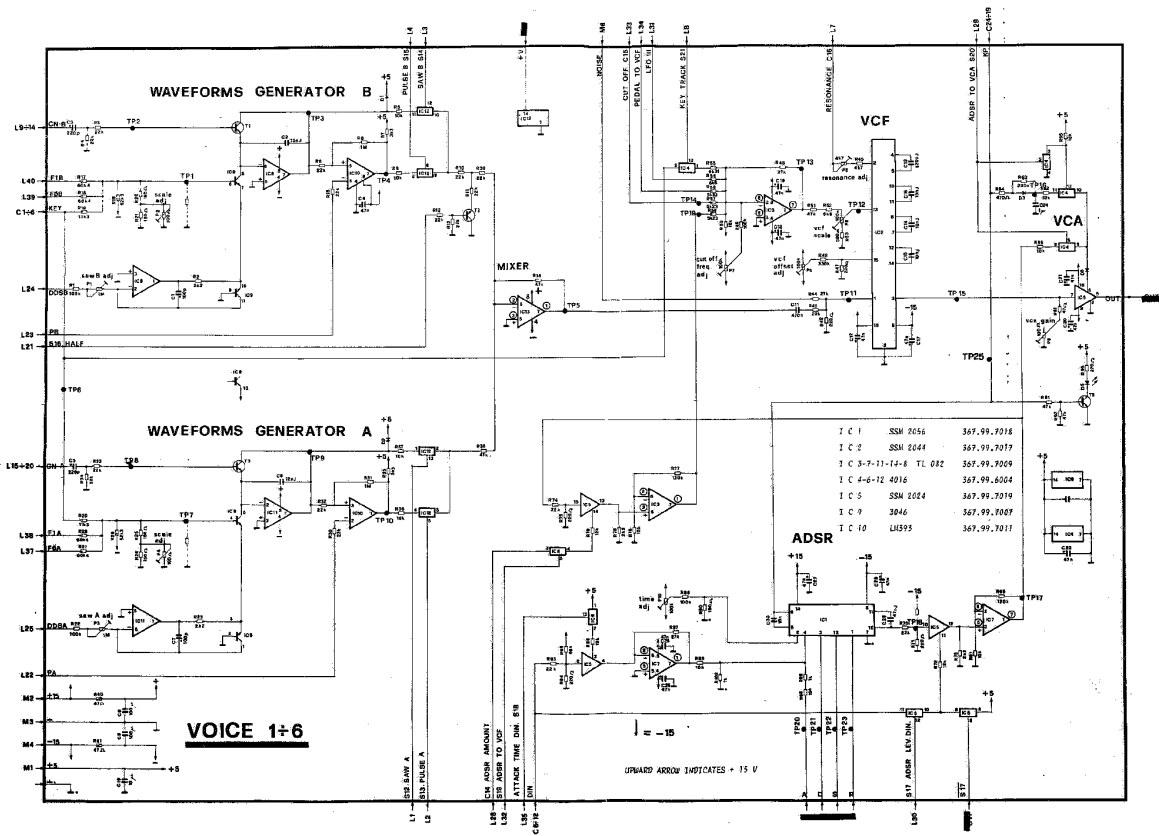
PC. 440 99 5009 OR 5010

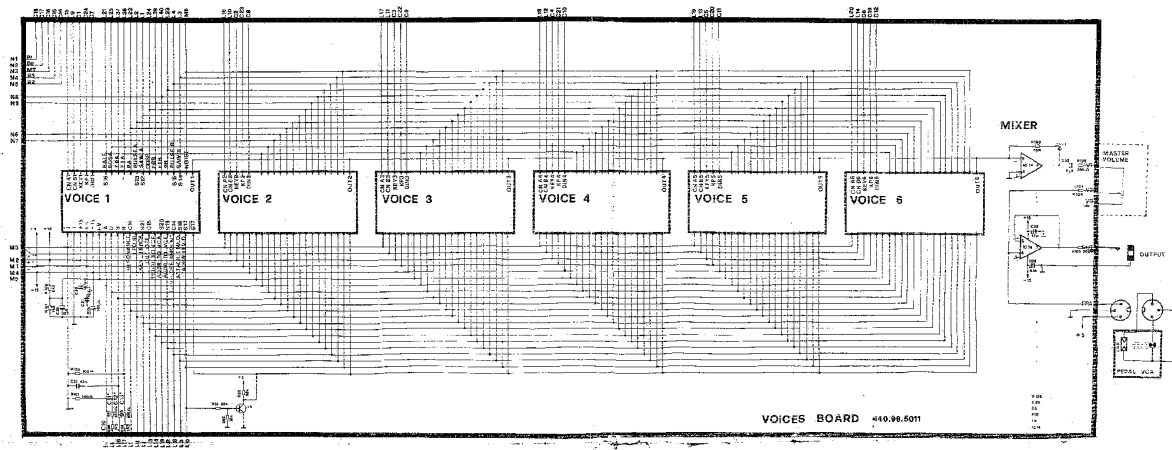
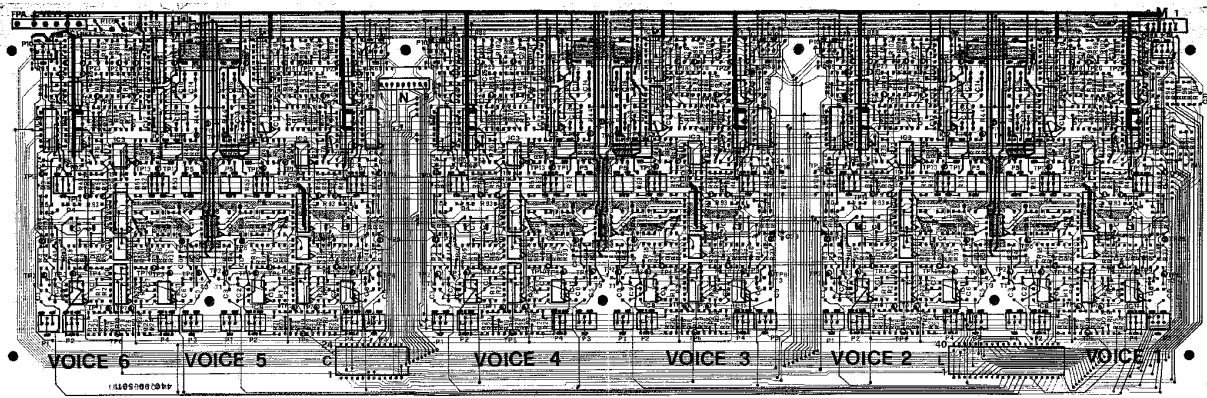
(RIGHT)

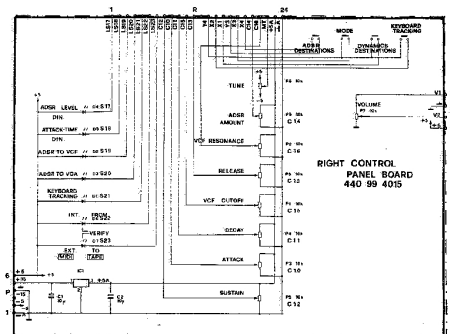
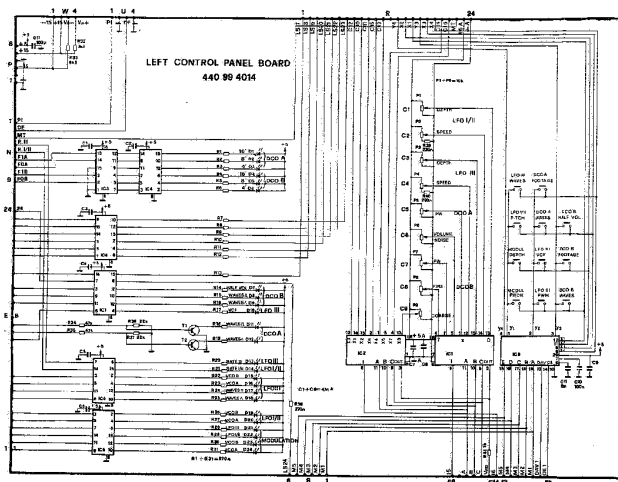
UPPER 480V INDICATES +5 V





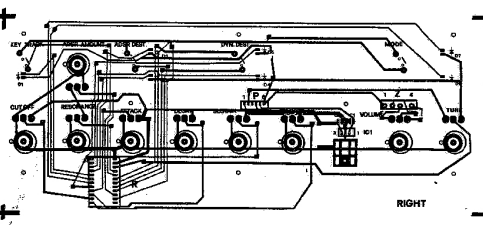
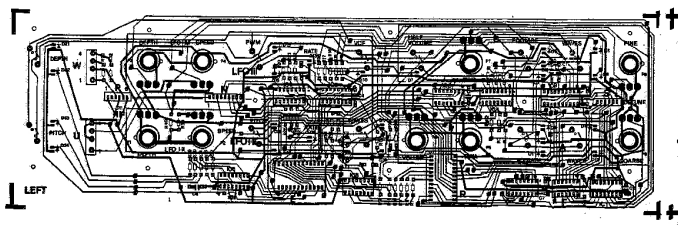


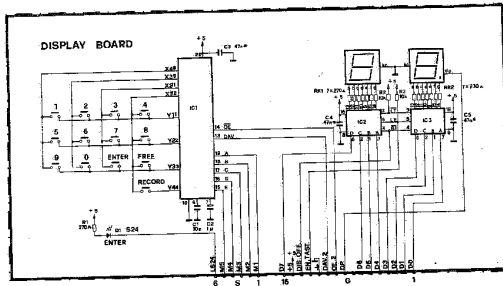




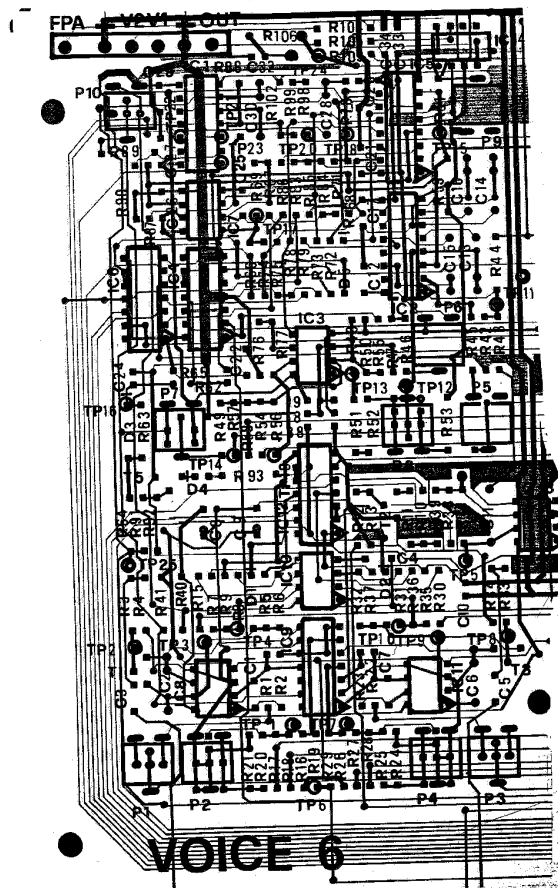
LEFT CONTROL PANEL D.C.C.			
I C 1-2	4051	567.99.6013	
I C 3	4555	567.99.6036	
I C 4/6	4049	567.99.6012	
I C 9	74C923	567.99.6035	

RIGHT CONTROL PANEL A.D.S.E.			
I C 1	7405	567.99.8009	

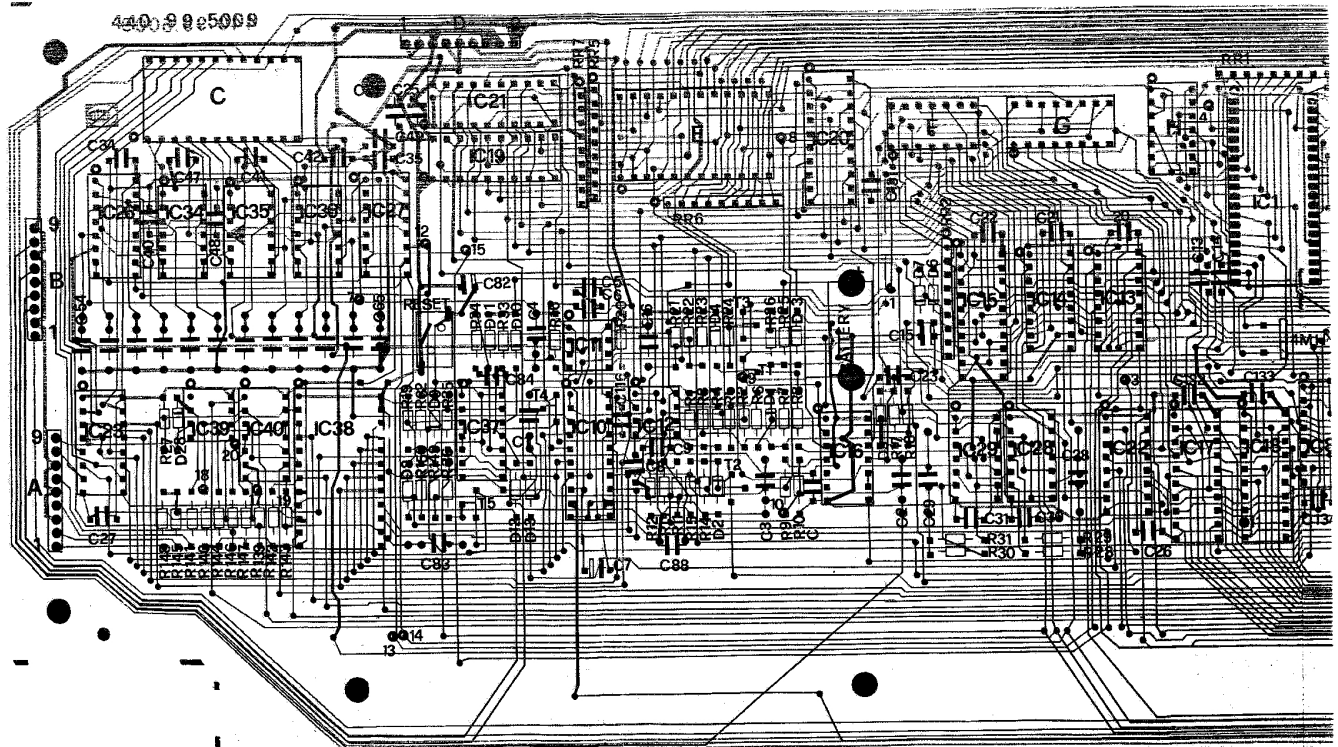




DISPLAY BOARD			
I.C. 1	74C923	567.95.4035	
I.C. 2-3	4511	567.95.4027	
DISPLAY	MAN #140	561.95.5001	



CPU SECTION P. C. 440 99 5009 OR 5010 (LEFT)



9 5009 OR 5010 (LEFT)

