



Realpiano Rp700

SERVICE MANUAL



code 270290

Index

- 2 Opening & Keyboard Disassembling Instructions.
- 3 Repair Instructions & Timing Table.
- 4 Block Diagram, Mains Filter Board Schematics.
- 4 Power Supply & Amplifier Board, Phones Board Schematics.
- 5 Left, Middle, Right Contacts Board Schematics.
- 5 Keyboard Interface, In/Out, Controls Panel Board Schematics.
- 6 CPU & Sound Generator Board Schematic.
- 7 Power Supply & Amplifier Board, Mains Filter, In/Out Pcb Layouts.
- 7 Controls Panel, Keyboard Interface, Cpu & Sound Generator Pcb Layouts.
- 8 Spare Part List.



Notice

Service must be carried out by qualified personnel only. Any tampering carried out by unqualified personnel during the guarantee period will forfeit the right to guarantee.

For a correct operation of the instrument, after having switched off, be careful to wait at least 3 seconds before switching on again.

To improve the device's specifications, the schematic diagrams may be subject to change without prior notice.

All components marked by this symbol have special safety characteristics, when replacing any of these components use only manufacturer's specified parts.

The (μ) micro symbol of capacitance value is substituted by U.

The (Ω) omega symbol of resistance value is substituted by E.

The electrolytic capacitors are 25Vdc rated voltage unless otherwise specified.

All resistors are 1/8W unless otherwise specified.

All switches shown in the "OFF" position. All DC voltages measured to ground with a voltmeter 20KOhm/V.

← Soldering point.

↑ Supply voltage.

⬇ Logic supply ground.

• Male connector.

□ Test point.

⬇ Analog supply ground.

⌋ Female connector.

⎓ Flag joined with one or more flags with the same signal name inscribed.

⬇ Chassis ground.

⌋ M/F faston connector.

⊕ Earth ground.



ATTENTION

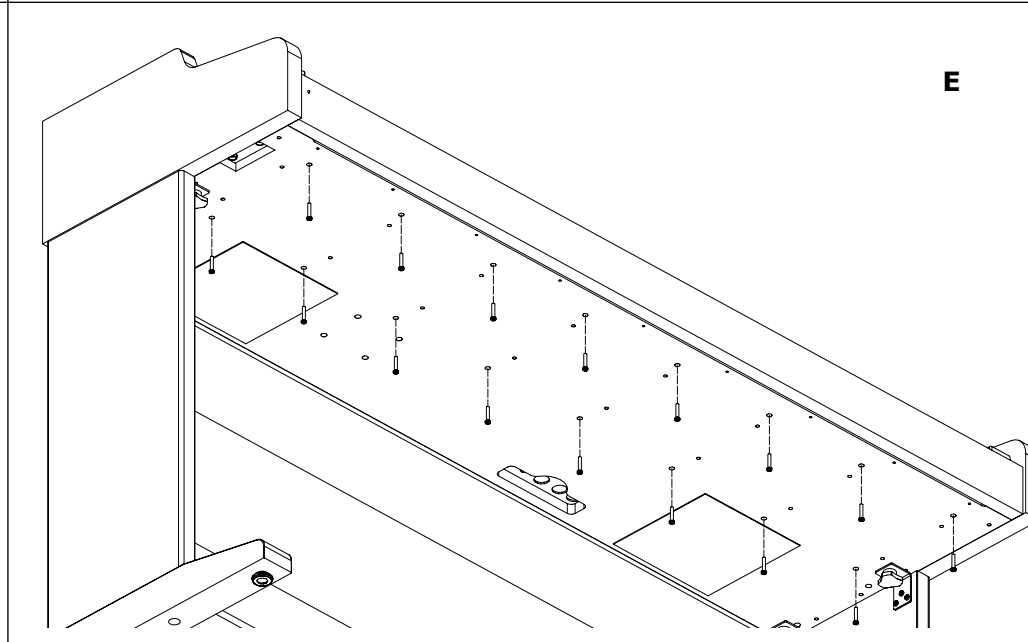
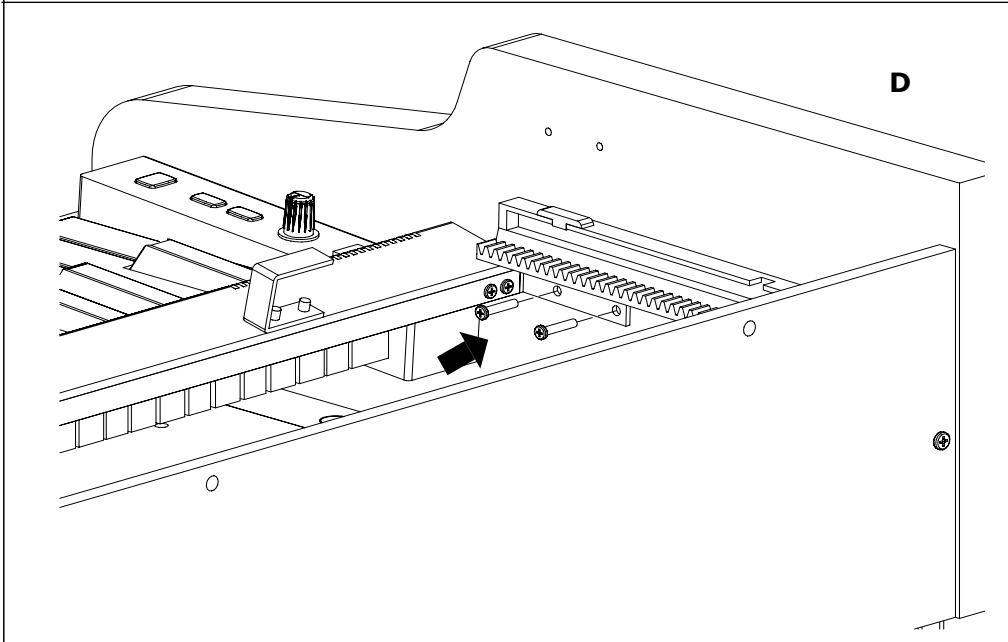
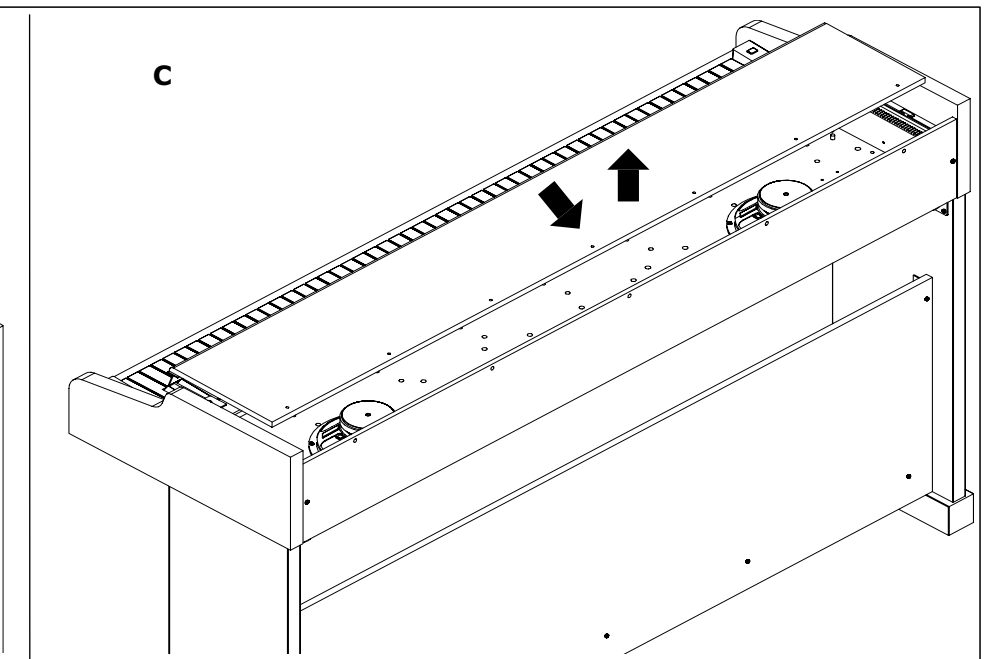
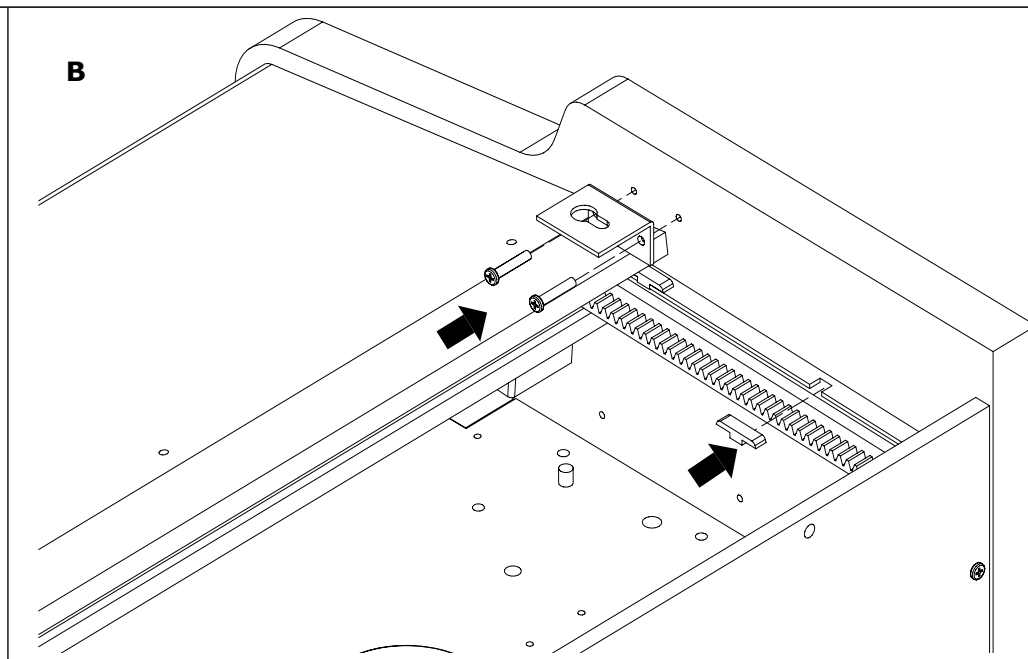
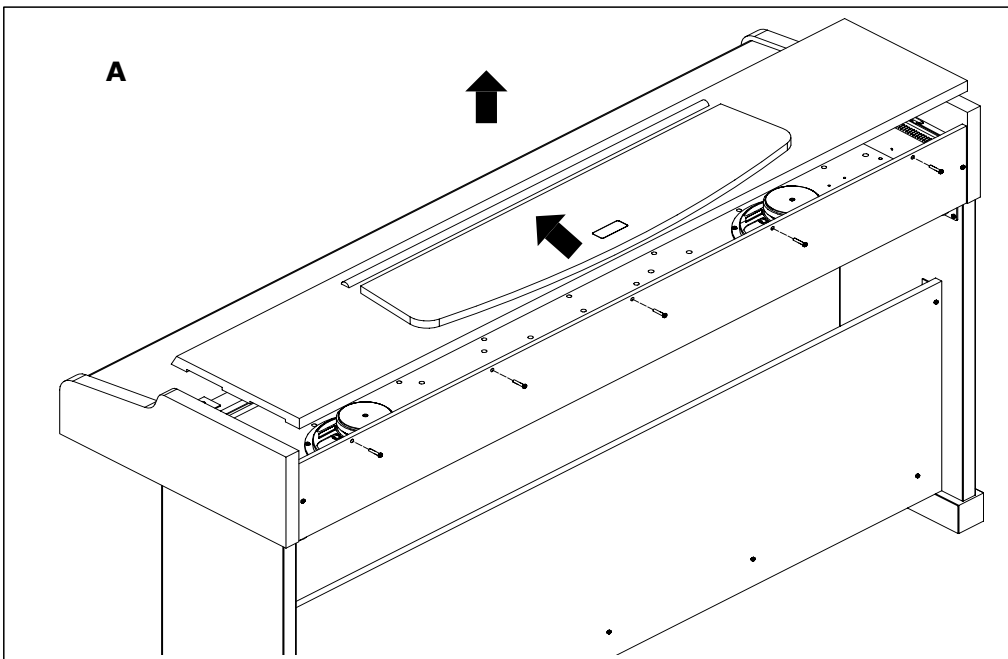
Observe precautions when handling electrostatic sensitive devices.



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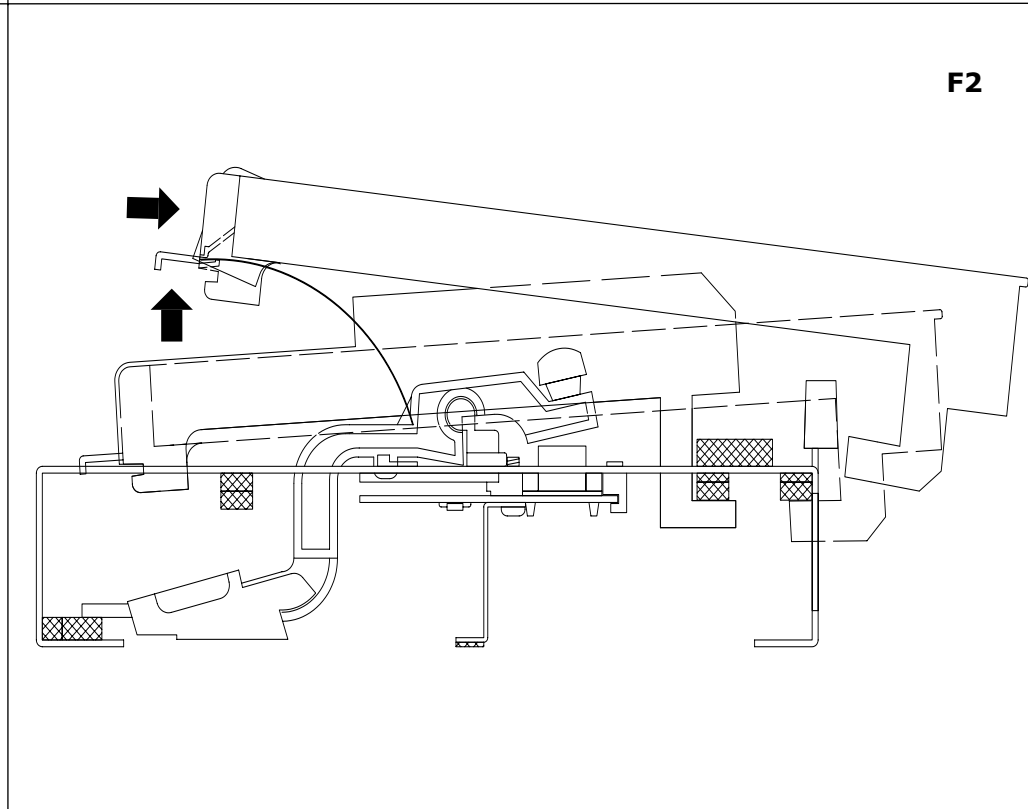
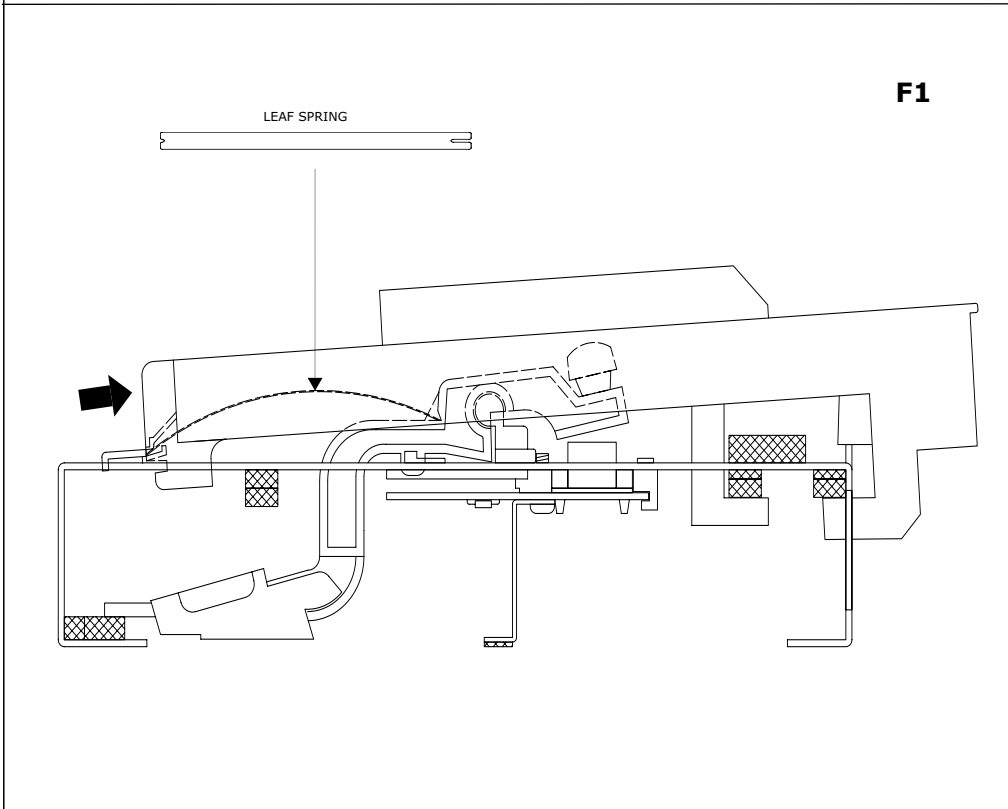


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HOW TO OPEN THE RP700 CABINET:

- A)** Remove the top cover unscrewing the 5 screws on rear panel, pull the cover towards you and lift it up.
- B)** Slide the keyboard cover on rear position and unscrew two metal supports on sides; then slide the keyboard cover full towards you and remove the glued plastic caps on centre of two Lx & Rx black rack guides.
- C)** Slide again on rear direction the keyboard cover until the wheel link bar rise the opening of removed plastic caps and lift up the keyboard cover from cabinet.
- D)** Moreover, to remove the keyboard front panel, unscrew the 2+2 fixing screws on sides.
- E)** To remove the keyboard group, unscrew 16 fixing screws from the bottom cabinet and lift up the keyboard, after having disconnected the 2 flat cables



HOW TO INSPECT THE KEYBOARD AND TO REPLACE THE SINGLE KEYS:

- F)** Remove the keyboard group from cabinet as described on point E); then place the keyboard on flat surface to check all mechanical & electrical parts.
- To replace the single white & black keys, pull each key on arrow direction of F1 figure; then turn up the single key from fulcrum as shown on F2 figure.
 - To mount the single white & black keys on keyboard take care to apply the leaf spring between the hammer corner and key back side; then place and move each key on keyboard frame following the arrows opposite direction of F2 figure.

| | | | |
|-----------------|---------------|---|--|
| DRW G. DINI | DWG# 500998 | PCB# | GENERALMUSIC S.p.A. ITALY |
| CKD M. DI CARLO | DATE 20/07/04 | SCHMATIC DIAGRAM | ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC. |
| APP. M. GALANTI | REV: | OPENING & KEYBOARD DISASSEMBLING INSTRUCTIONS | |

RP700 REPAIR INSTRUCTIONS

This model doesn't provide an autotest procedure, then in case of electr. fault we suggest to proceed on its repairing as follows:

- [1] Switch ON the Piano and check if the led on cabinet is lighted and the led of Grand Piano button is flashing after some seconds from the switch ON phase.
- [2] Then, after having opened the RP700 cabinet, check the presence of supply voltages on power board ass.y (+5V, +/-12V, and +/-20Vcc for power amplifiers TDA 7296).

[3] POWER ON/OFF, MASTER RESET, MUTE TIMING check

Using dual channel oscilloscope, try to visualise +5V Power Supply, VOK, Reset, Mute signals timing during RP700 POWER ON, as by timing 1; Starting from the POWER ON event the RP700 remains in Reset condition until the +5V Supply rises 4.75V value on IC17 pin2 (MAX709) setting the active VOK (after 200ms) and Reset controls; the VOK and Reset signal are connected to pin 209 and to pin 206 of DRAKE Chip (IC9); the RST delay should be >60uS refer to VOK rise time. The Mute signal is controlled by RP700 O.S., after the finish of start-up phase, it activates the analogue signals on IN/OUT's plugs and on speakers, through RL2 & RL1 relays of 731083 power supply board.

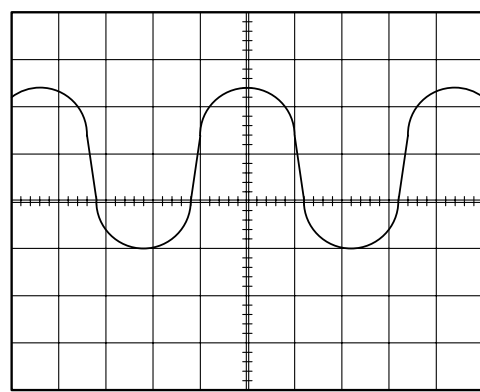
[4] MAIN (CPU) BOARD ASS.Y CHECK

The RP700 Digital Piano provides a main (CPU 761300) board ass.y that requires a specific knowledge of DRAKE (Dsp Risc Advanced Keyboard Engine) custom chip, no easy to extend and to check outside of GM factory; so, we suggest the replacement of main board when the RP700 doesn't work at all or work partially on sounds generation and on keys & controls playng. In any case the following informations can be useful to locate a specific problem on main board, before to replace it:

[4.a] MASTER & BIT CLOCK

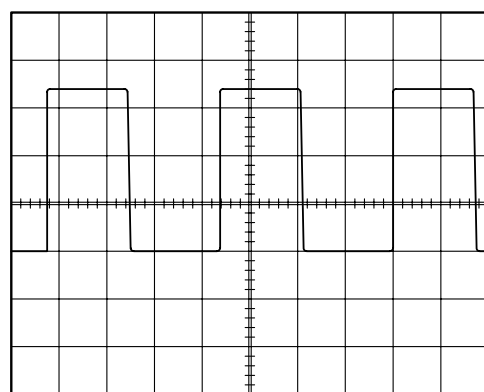
The Master clock (MCLK) of main board is generated on DRAKE chip (pin 160-161) with XT1 quartz oscillator (fo =11.2896MHz)that you can check by oscilloscope on pin 2 IC19 as by fig. 1: The Bit Clock (BCLK) of main board is generated inside DRAKE chip (pin 230) dividing 4 times the MCLK; its frequency is: =2.8224MHz that you can check by oscilloscope on pin 26 IC19 as by fig. 2:

FIG.1



CH1 TRACE setting:
TIMEBASE: 20ns/div.
AMPLITUDE: 1V/div.
SIGNAL NAME: MCLK
(PIN2 IC19)

FIG.2



CH1 TRACE setting:
TIMEBASE: 100ns/div.
AMPLITUDE: 1V/div.
SIGNAL NAME: BITCLK
(PIN26 IC19)

[4.b] CONTROLS PANEL BUS TIMING

It is generated by DRAKE chip (IC9) through the RP700 O.S.; the relative signals can be checked by oscilloscope as shown on timing 2.

[4.c] CPU-KEYBOARD INTERFACE TIMING

It is generated by DRAKE chip (IC9) through the RP700 O.S.; the relative signals can be checked by oscilloscope as shown on timing 3.

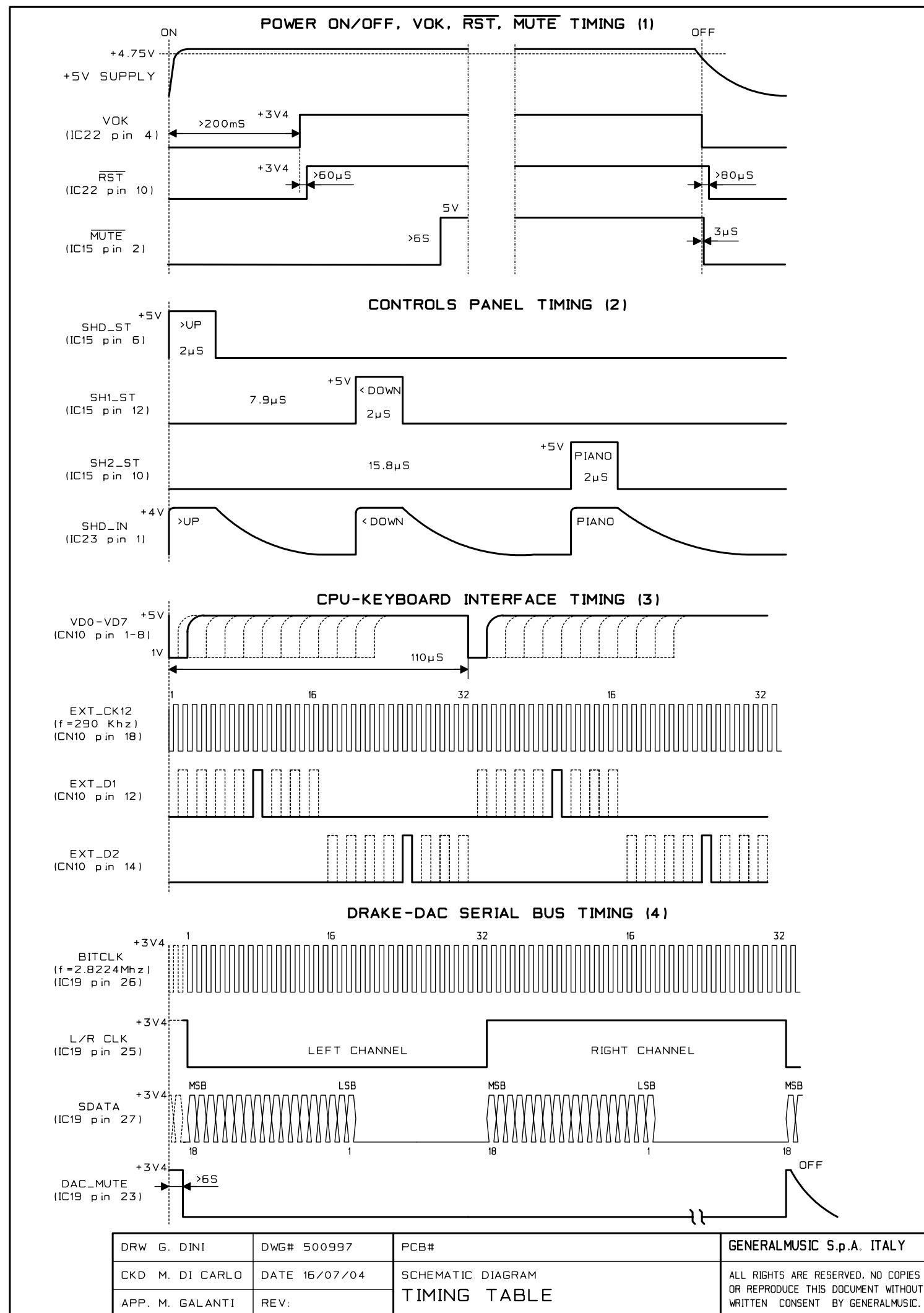
[4.d] DRAKE - DAC SERIAL BUS TIMING :

It is generated by DRAKE chip (IC9) through the RP700 O.S.; the relative signals for the D-Sigma stereo D/A converter can be checked by oscilloscope as shown by timing 4.

[4.e] If the previous checks on main board are OK, the RP700 has to generate sounds; to verify this condition, press the SOUND DATA UP & DOWN buttons at same time to active the DEMO function with the GRAND PIANO led flashing. Now a sound pattern sequence should be played by CPU board, in line with the O.S. release installed; in absence of sound from speaker verify with oscilloscope the presence of the audio signal on CN7 connector, pin 14, 16. At last try to reload the O.S. on Main board as by following instruction.

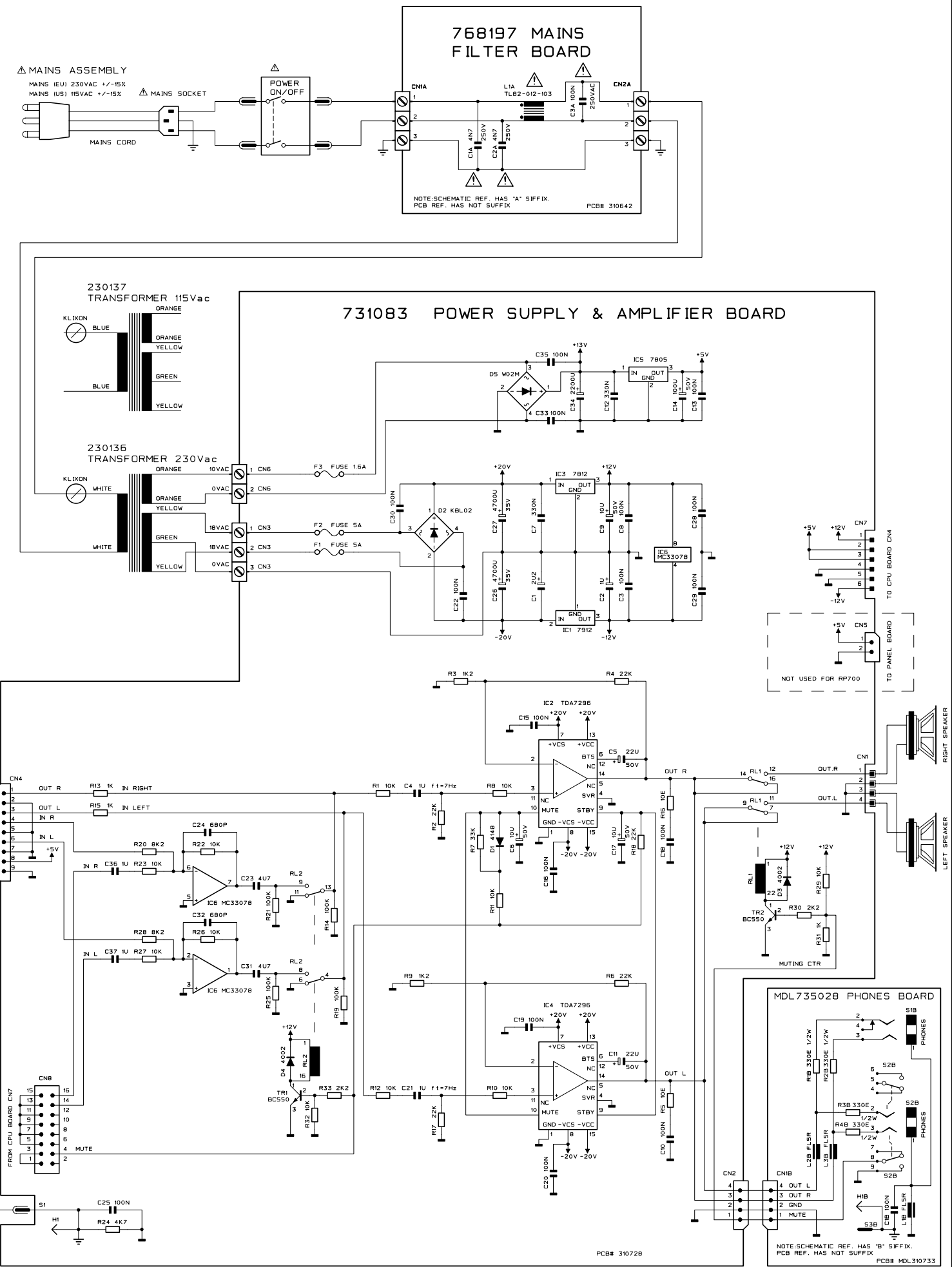
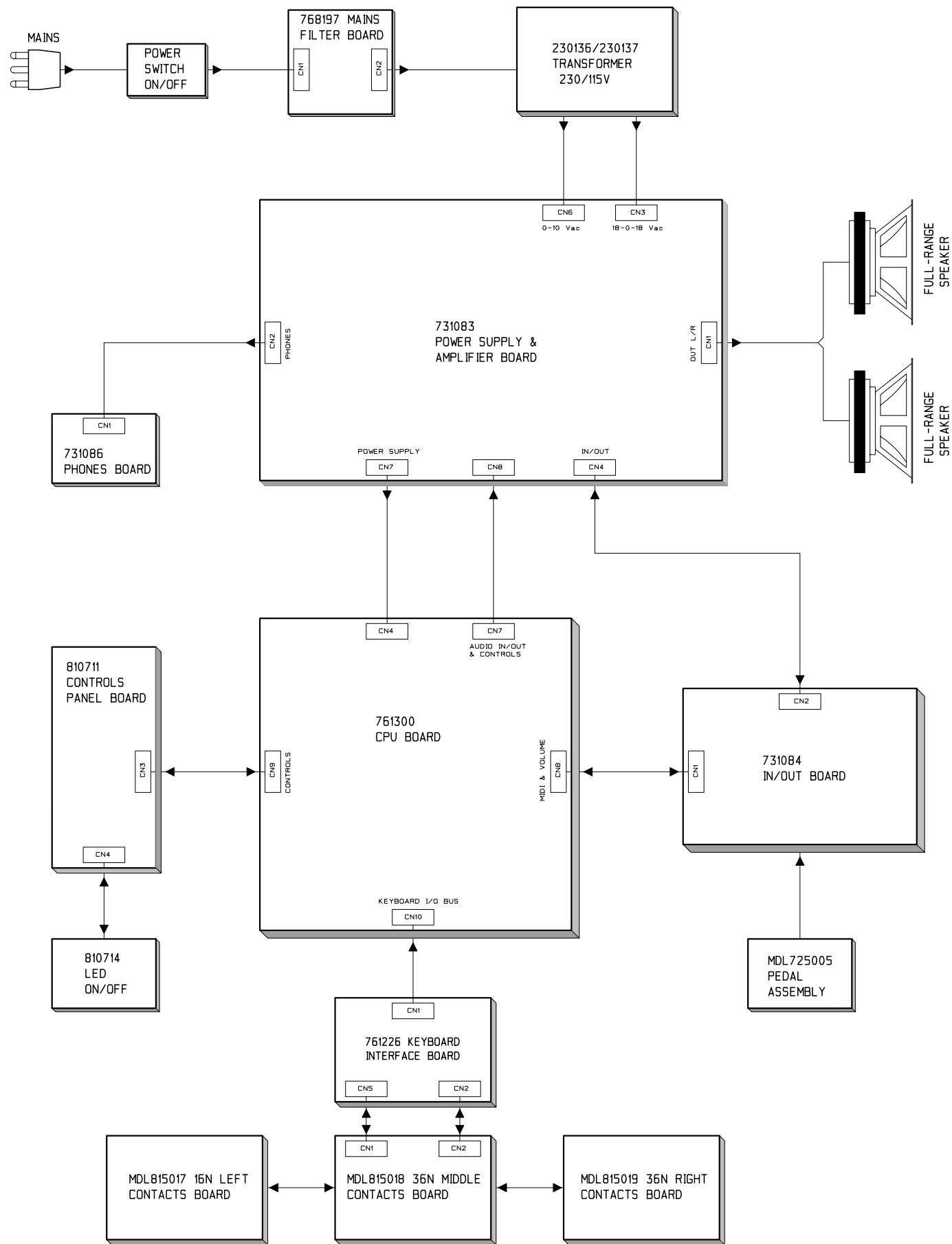
[5] OPERATING SYSTEM UPDATE

The O.S. of main board is preload into (IC2) NAND FLASH Memory from GM factory; the 256Kbit NAND FLASH Memory is formatted and written with O.S. pattern using PC system with RS232 serial port and hardware interface kit. The update of O.S. must be taken out from qualified Personal; it requires the opening of RP700 cabinet, the shift of J1 Jumper from E2 to UART position on CPU board, and the proper installation of an interface kit on main board CN1 connector; to execute this operation, please refer to the separate document O.S. update installation instructions procedure.



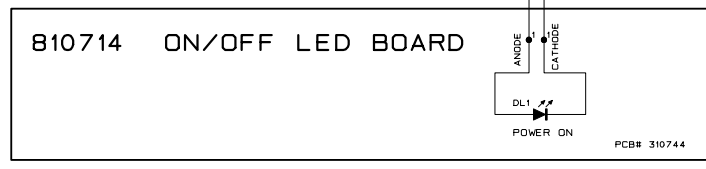
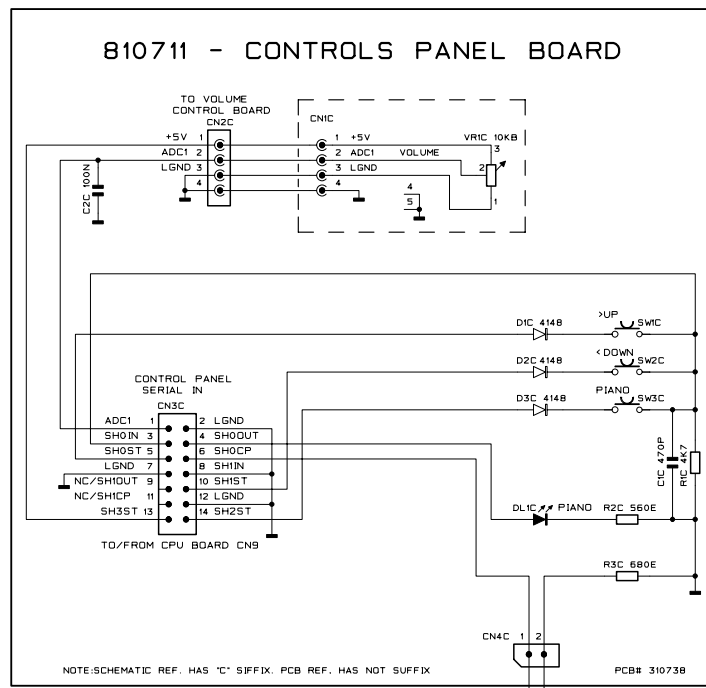
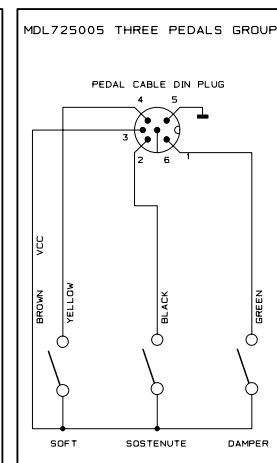
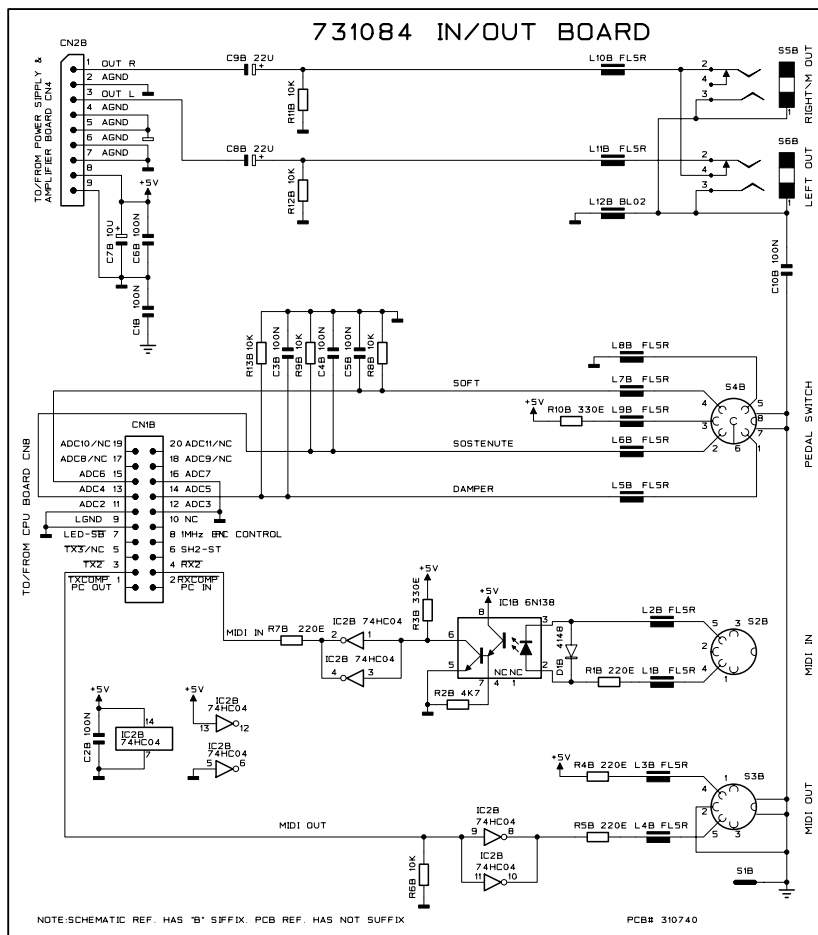
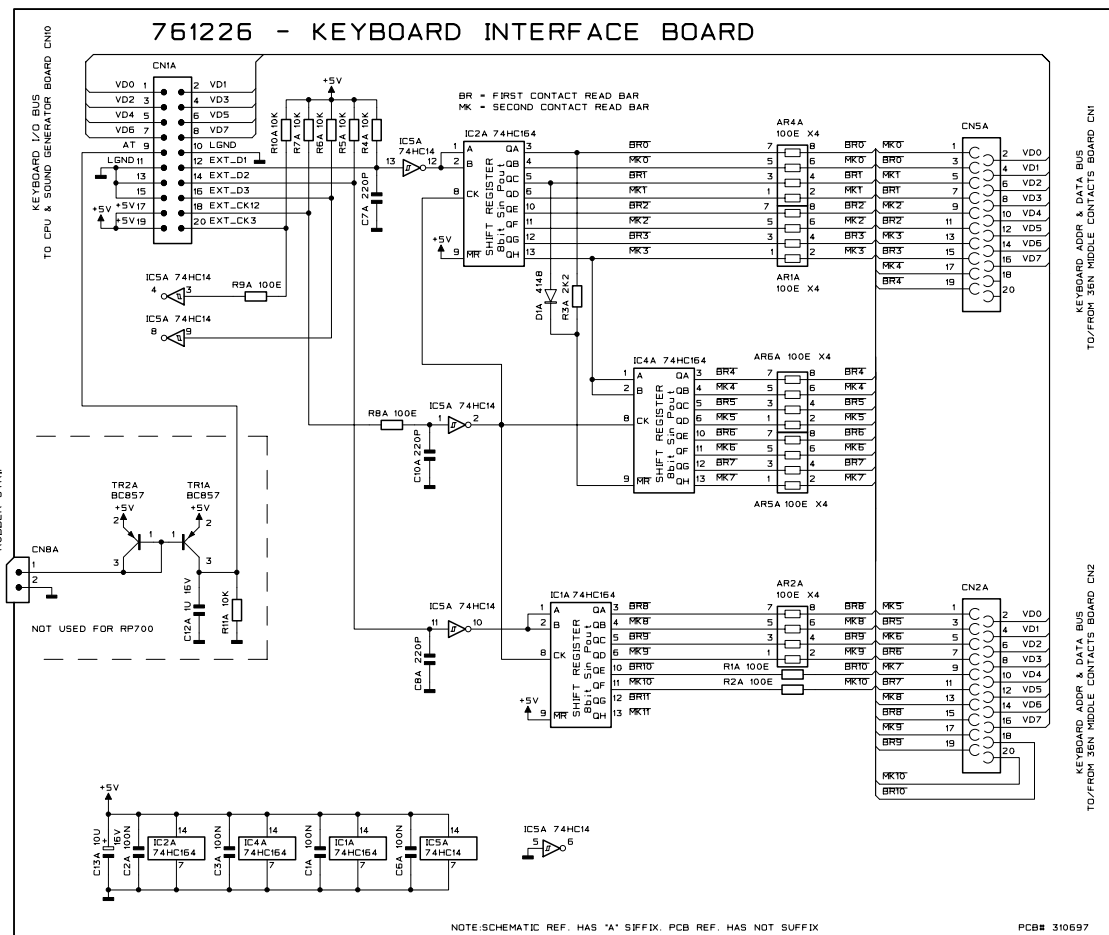
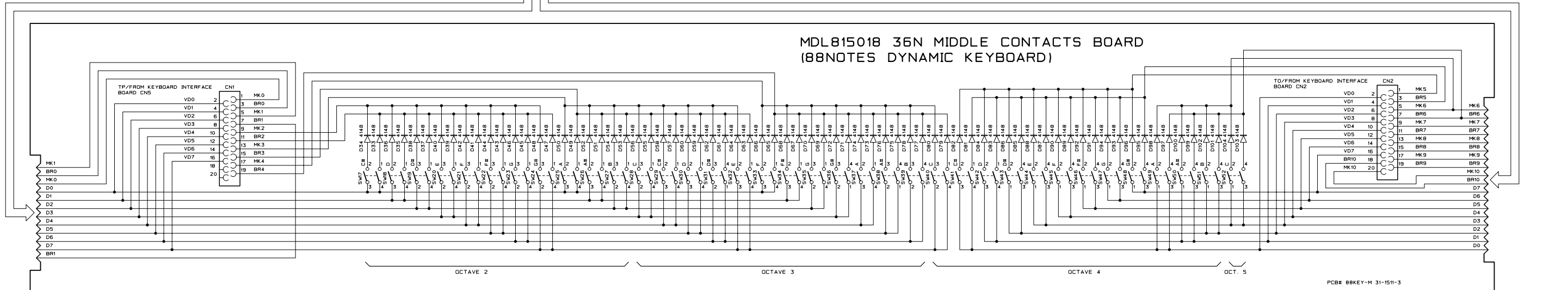
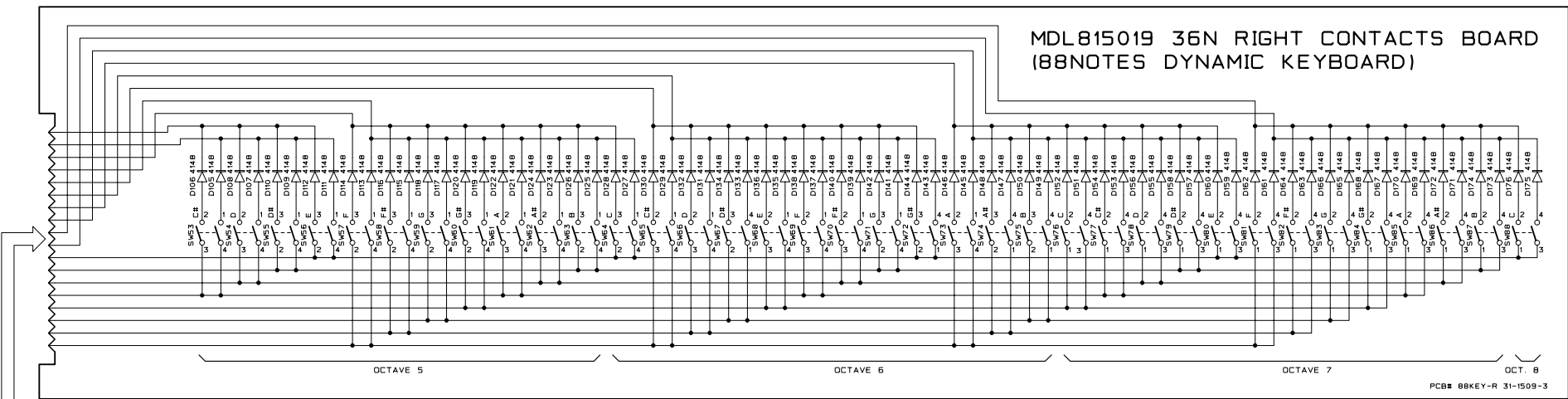
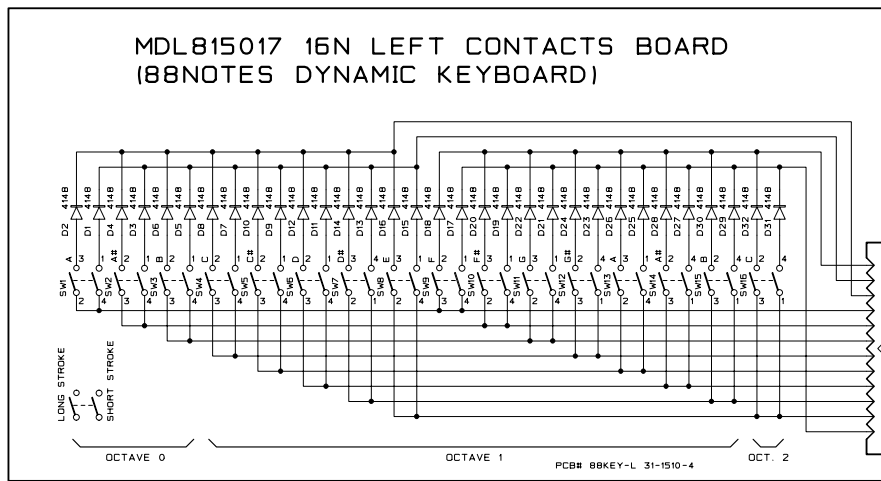
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| APP. M. GALANTI | REV: | TIMING TABLE | |

RP700 BLOCK DIAGRAM



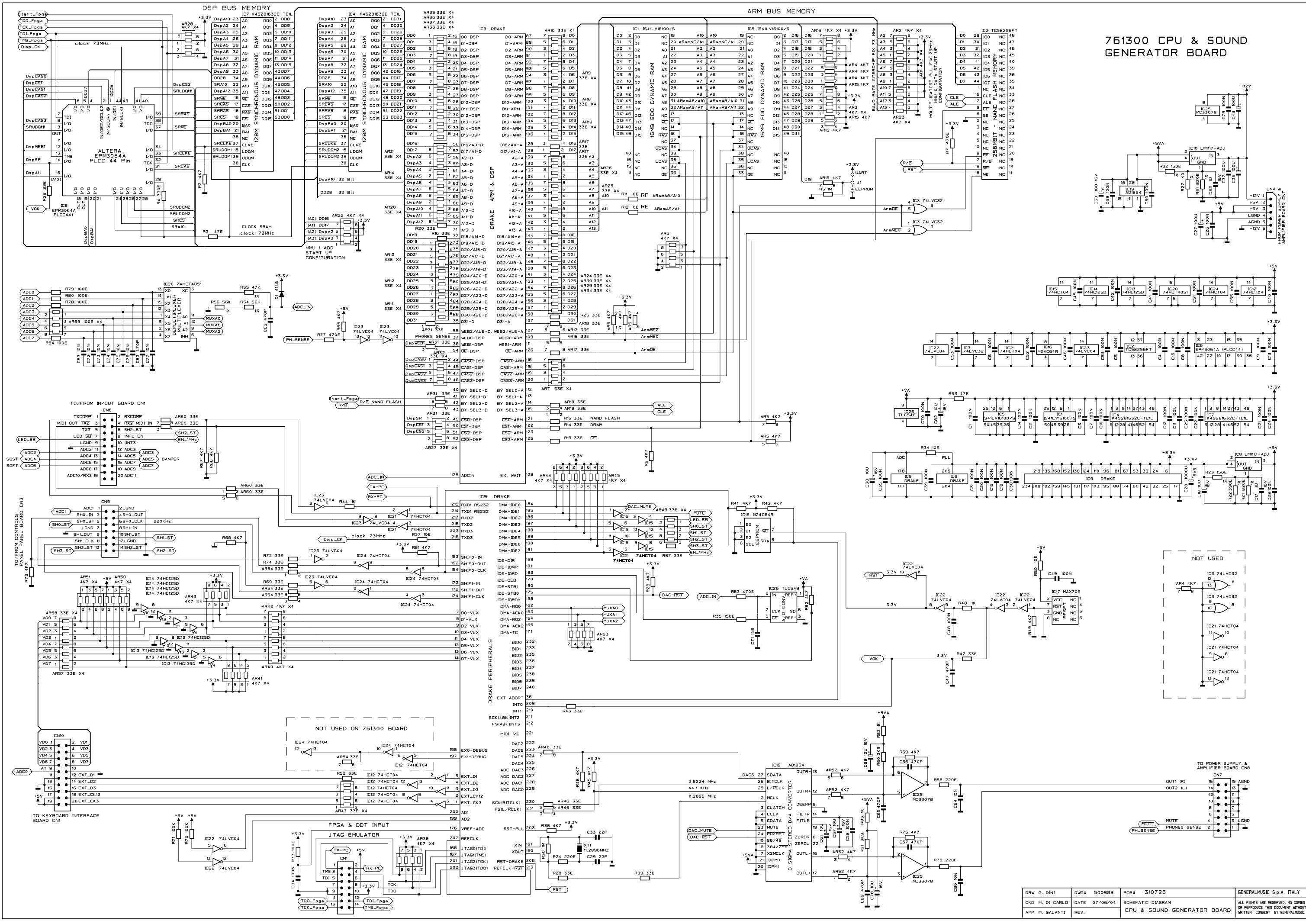
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| APP. M. GALANTI | REV: | RP700 BLOCK DIAGRAM | |

| | | | |
|-----------------|---------------|--|--|
| DRW G. DNI | DWG# 500990 | PCB# 310642, 310728, MDL310733 | GENERALMUSIC S.p.A. ITALY |
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| APP. M. GALANTI | REV: | SCHMATIC DIAGRAM MAINS FILTER BOARD, POWER SUPPLY & AMPLIFIER BOARD, PHONES BOARD. | |



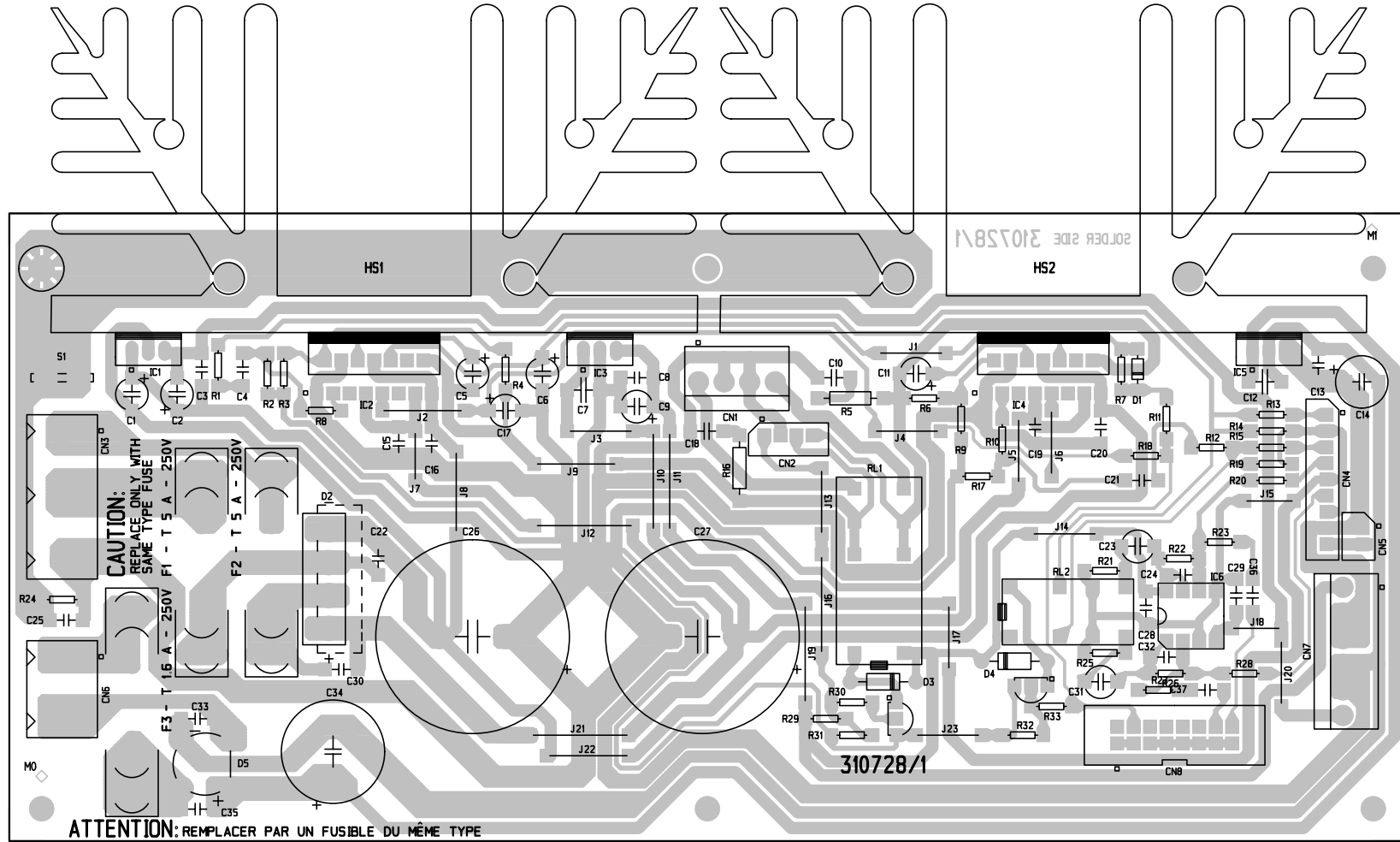
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| DRW G. DINI | DWG# 500991 | PCB# 310530, 310531, 310697, 310740, 310738, 310744 | GENERALMUSIC S.p.A. ITALY |
| CKD M. DI CARLO | DATE 28/05/04 | SCHMATIC DIAGRAM KEYBOARD INTERFACE 39N L CONTACTS BOARD, IN/OUT BOARD 49N R CONTACTS BOARD, CTR PANEL BOARD | ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC. |
| APP M. GALANTI | REV: | | |

761300 CPU & SOUND GENERATOR BOARD

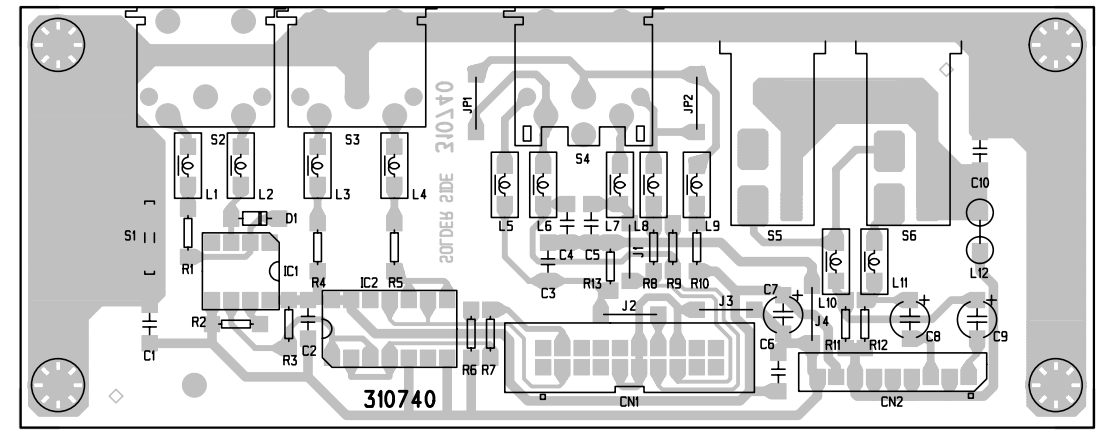


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|-----------------|---------------|-----------------------------|---|
| DRW G. DNI | DWG# 500988 | PCB# 310726 | GENERALMUSIC S.p.A. ITALY |
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| APP. M. GALANTI | REV: | CPU & SOUND GENERATOR BOARD | |

731083 POWER SUPPLY & AMPLIFIER BOARD

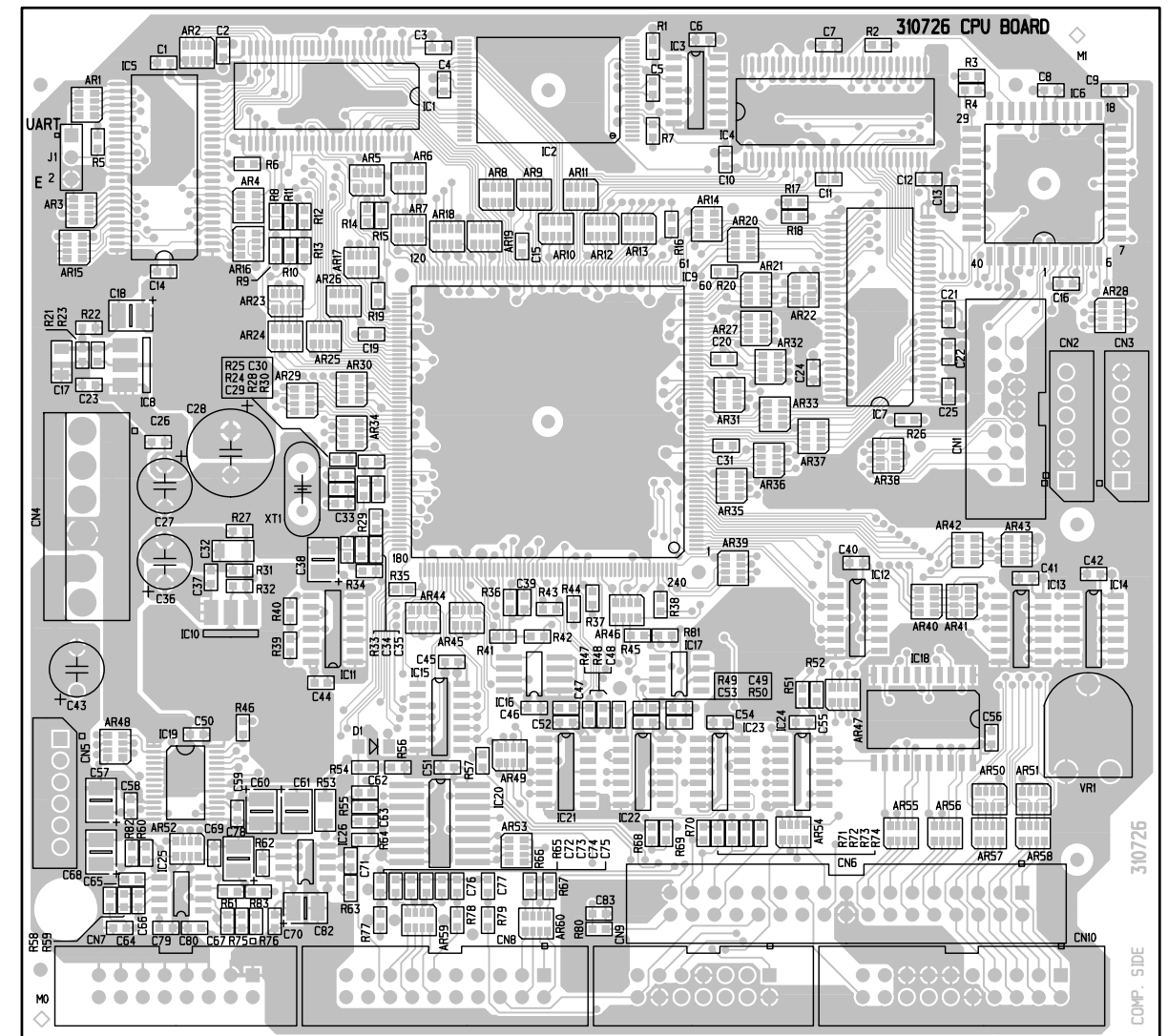


731084 IN/OUT BOARD

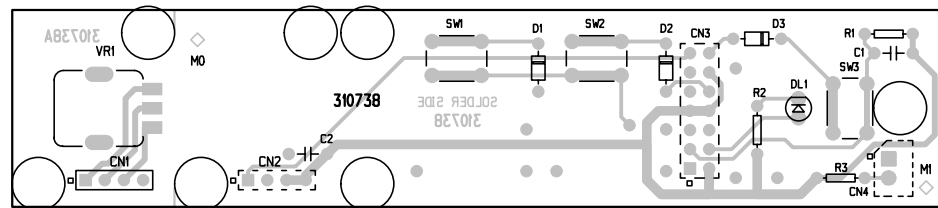


761300 CPU & SOUND GENERATOR BOARD

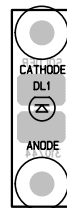
310726 TOP SILK



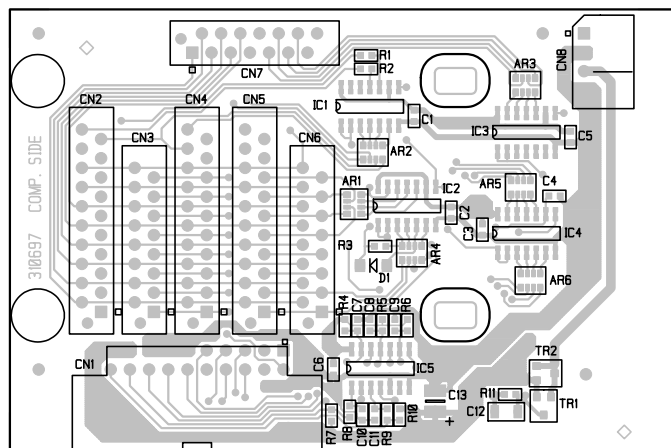
810711 CONTROLS PANEL BOARD



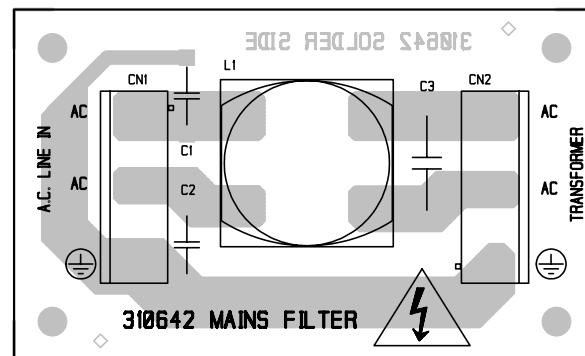
810714 ON/OFF LED BOARD



761226 KEYBOARD INTERFACE BOARD



768197 MAINS FILTER BOARD



SPARE PART LIST

| | |
|---|----------------------------|
| LEGEND Abbreviation explanation: | |
| (EU) | =European Version (230Vac) |
| (US) | =U.S. Version (115Vac) |
| (I) | =Italian Version |
| (F) | =French Version |
| (D) | =German Version |
| (UK) | =English Version |

| CODE | DESCRIPTION |
|-----------|-------------------------------------|
| | Accessories of Rp700 Packing |
| 271389 | Owner’s Manual (UK-I-F-D) |
| 130297 | 10A-3P 2.5Mt Black Mains Cable (EU) |
| 130283 | 10A-3P 2.5Mt Black Mains Cable (US) |
| 970461 | Rosewood Bench |
| MDL265001 | * Black Seat for Bench |
| MDL265000 | * Rosewood Leg for Bench |
| MDL525001 | * Fixing Screw Kit |

| | Stand |
|-----------|---|
| MDL715001 | Rosewood Stand Right Leg Assembly |
| MDL715002 | Rosewood Stand Left Leg Assembly |
| MDL665007 | Black Painted Crossbar Angular Fixing |
| MDL665006 | Black Painted Stand Rear Angular Fixing |
| MDL345072 | Adjustable Foot with M6x10 Screw |
| MDL120016 | Wl 3,5x15tc Black Zinc Plated Screw |
| MDL120006 | M6x55 tcp Nicheled Plated Special Screw |
| 120681 | M6x13 Threaded Barrel Nut for Wooden |
| MDL715000 | Rosewood Stand Pedal Crossbar Assembly |
| MDL725005 | 3 Pedals Brass Group Assembly |
| MDL265002 | Rosewood Stand Pedal Crossbar (Without Pedal Group) |
| 120059 | M4x25tc Black Zinc Plated Screw |
| MDL345071 | Adjustable Foot with M8x24 Screw |
| MDL345070 | Black Knob with M6x23 Screw |
| MDL340116 | Adhesive Black Clamp for Pedals Cable |
| MDL265003 | Rosewood Stand Rear Panel |
| MDL120001 | M6x40 TCP Nicheled Plated Special Screw |
| MDL525000 | Fixing Screw Kit |

| | Cabinet Assembly |
|---------------|--|
| MDL715005 | Rosewood Wooden Cabinet Assembly |
| MDL665011 | * Brown Painted Front Panel W/Silk |
| 220120 | * 6” Full-range 20W 8E Speaker |
| MDL665010 | * Black Painted Speakers Protection Grid |
| MDL655097 | * Brown Silkscreened Right Cheek Block |
| MDL345073 | * Black Rack With Guide (Right) |
| MDL345078 | * Black Rack With Guide (Left) |
| MDL265013 | * Rosewood Music Holder |
| MDL265012 | * Cabinet Bottom Base |
| MDL265011 | * Rosewood Cabinet Left Flank |
| MDL265010 | * Rosewood Cabinet Right Flank |
| MDL265009 | * Rosewood Cabinet Cover |
| MDL265008 | * Rosewood Cabinet Rear Panel |
| MDL265007 | * Rosewood Cabinet Keyboard Crossbar |
| MDL715004 | * Rosewood Keyboard Cover Assembly |
| MDL345075 | ** Black Toothed Wheel Link Bar Support |
| MDL345074 | ** Black 16 Toothed Wheel |
| MDL265017 | ** Rosewood Keyboard Cover |
| MDL175014 | ** Black Aluminium Keyboard Cover Handle |
| MDL175010 | ** Toothed Wheel Link Bar |
| MDL175009 | ** Keyboard Cover Rear Crossbar |
| 340916 | Push-Push Switch Plastic Knob |
| 340075 | Nylon Board Spacer (Richco Bhl-6-01) |

| | Music Stand Assembly |
|-----------|---|
| MDL715003 | * Rosewood Music Stand Assembly |
| MDL665009 | ** Black Paint Stop Pinch-Bar for Music Stand |
| MDL665008 | ** BrassPlate with "GEM" Logo Cut |
| MDL265016 | ** Rosewood Music Stand |
| MDL175004 | ** Black Zinc Plated Music Stand Hinge |

| | Mains & Transformer Assembly |
|--|---|
| 770948 | Mains/Switch Cable Assembly |
| 110320 | * Power Switch |
| 110614 | 3 Terminal Universal Mains Inlet 10A Faston=6.3mm |
| 768197 | Mains Filter Without Fuse Board Ass.y (Pcb#310642) |
| 230568 | * 10mH 250Vac 1A AC Line EMI Coil "Siemens" |
| 140010 | * 3 Contacts P=10 Vert Terminal Block |
| 020493 | * 100n 250Vac MKP EMI Capacitor "Siemens" |
| 010545 | * 4n7 250V Ceramic Capacitor (Iec-UI-Csa) |
| 230136 Transformer 230Vac 130W (EU) | |
| 230137 Transformer 115Vac 130W (US) | |
| | |
| | |
| | |

| | On/Off Led Board Assembly |
|---------------|---|
| 810714 | On/Off Led Board Assembly (PCB#310744) |
| 841353 | * Molex 5264/Tinned Dual Wire Cable L=10Cm |
| 080752 | * Led 3mm Red |

| | Power Ampl.& Supply Board Ass.y |
|---------------|---|
| 110020 | T5A Fuse 5x20mm (EU) |
| 110012 | T1.6A Fuse 5x20mm (EU) |
| 110021 | T5A Fuse 6.3x32mm (US) |
| 110055 | T1.6A Fuse 6.3x32mm (US) |
| 731083 | Power Ampl.& Supply Board Ass.y (PCB#310728/1) |
| 170717 | * STK Amplifier Black Zinc Plated Heatsink |
| 141102 | * 6 Contacts Vert Male Connector |
| 141101 | * 4 Contacts Vert Male Connector |
| 140929 | * 9 Contacts Vert Male Connector |
| 140917 | * Molex 5267 2 Pos. Vert. Male Connector |
| 140873 | * 4 Contacts Vert Male Connector |
| 140854 | * 16 Contacts Vert Male Connector Din41651 |
| 140085 | * 2 Contacts P=10 Vert Terminal Block |
| 140010 | * 3 Contacts P=10 Vert Terminal Block |
| 120857 | * 6.3mm Vertical Male Faston for Pcb |
| 110305 | * Relay 12V / 2 Switch 1A 250V |
| 110304 | * Relay 12V / 2 Switch 5A 250V |
| 100969 | * TDA7296 60W Power Amplifier |
| 100919 | * MC33078 Dual LN Operational Amplifier |
| 100059 | * 7805 +5V 1A Voltage Regulator |
| 100045 | * 7812 +12V 1A Voltage Regulator |
| 100043 | * 7912 -12V 1A Voltage Regulator |
| 090183 | * BC550C TO92 LN Npn Transistor |
| 080605 | * KBL02 4A 200V Rectifier Diode Bridge |
| 080168 | * W02M 1.5A Rectifier Diodes Bridge |
| 080156 | * 1N4002 1A 100V Rectifier Diode |
| 080103 | * 1N4148 100mA 75V Signal Diode |
| 030805 | * 2200u 25V 20% Vert Electrolytic Capacitor |
| 030554 | * 4700u 35v 20% Snap-In Electrolytic Capacitor |

| | Phones Board Assembly |
|--|---|
| MDL735028 Phones Board Assembly (PCB#MDL310733) | |
| 140872 | * Molex 5268 4 Pos. Male Hor. Conn. P=2.5mm |
| 140217 | * Horizontal Stereo Jack Slim Socket |
| 140207 | * Horizontal Female Jack Socket |

| | Keyboard Assembly |
|------------------|--|
| MDL725006 | 88 Note Keyboard Assembly (Hammer) |
| MDL815017 | * 16 Note Left Contacts Board (Pcb#88Key-L 31-1510-4) |
| MDL815018 | * 36 Note Middle Contacts Board (Pcb#88Key-M 31-1511-3) |
| MDL815019 | * 36 Note Right Contacts Board (Pcb#88Key-R 31-1509-3) |
| MDL345076 | ** 4Dual Contacts Rubber Strip |
| MDL345077 | ** 12Dual Contacts Rubber Strip |
| MDL165001 | * Leaf Spring |
| MDL155008 | * First A Key |
| MDL155007 | * Sharp Key |
| MDL155000 | * C Key |
| MDL155001 | * D Key |
| MDL155002 | * E Key |
| MDL155003 | * F Key |
| MDL155004 | * G Key |
| MDL155005 | * A Key |
| MDL155006 | * B Key |
| MDL155009 | * Last C Key |

| | Keyboard Interface Board Assembly |
|---------------|---|
| 761226 | Keyboard Interface Board Assembly (Pcb#310697) |
| 141018 | * 20 Contacts Vert Female Connector |
| 140918 | * 2 Contacts Hor Male Connector |
| 140852 | * 20 Contacts Hor Male Connector Din41651 |
| 103015 | * 74HC164D SOIC 8bit S To P Shift Register |
| 103000 | * 74HC14D Soic Hex Inverter Schmitt Trigger |
| 091001 | * BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G) |
| 081000 | * PMLL4148 Smd 100mA 75V Signal Diode |

| | Left Controls Panel Assembly |
|---------------|--|
| MDL825006 | Left Controls Panel Assembly (Brown) |
| 810711 | * Control Panel Assembly (PCB#310738) |
| 140956 | ** 40 Pos. Headers Male H=8.5 Vert. Single Strip |
| 140917 | ** Molex 5267 2 Pos. Vert. Male Connector |
| 140860 | ** 14 Contacts Vert Male Dual In Line Strip |
| 140529 | ** Touch Switch 12V 50mA 0.25mm |
| 080723 | ** Led 3mm High Efficiency Tinted Red |
| 080103 | ** 1N4148 100mA 75V Signal Diode |
| 074593 | ** 10KB 9mm Vertical Rotary Potentiometer |
| MDL655098 | * Brown Silkscreened Left Cheek Block |
| 653531 | * "< >" Silkscreened Dual Actuator |
| 347404 | * H=16.9mm 180°Red/Black Bicolour Knob |
| 340972 | * 9.6x13 Dark Gray Quad Actuator with Gem |
| 120294 | * WL3x6.5TC Black Zinc Plated Screw (no Tip) |

| | CPU Board Assembly |
|---------------|---|
| 761300 | CPU Board Assembly (PCB#310726) |
| 141102 | * 6 Contacts Vert Male Connector |
| 140910 | * 14 Contacts Vert Male Connector Din41651 |
| 140874 | * Single In Line Vert Male Strip (specify contacts) |
| 140854 | * 16 Contacts Vert Male Connector Din41651 |
| 140851 | * 20 Contacts Vert Male Connector Din41651 |
| 106009 | * LM1117DTX-ADJ Voltage Reg.0,8A TO252 |
| 106003 | * MAX709 Power Monitor With Reset |
| 106001 | * MC33078P SOIC Dual Low Noise Op. Amp. |
| 105015 | * EPM3064ALC 44-4 EE Fpga |
| 105012 | * DRAKE - Cpu & Dsp Processor |
| 104072 | * TC58256AFT 3v3 TSOP 256MBit Nand Flash |
| 104066 | * K4S281632C-TC1L 128Mbitx16 Sync Dram 100MHz |
| 104065 | * IS41LV16100/S50T 16Mbitx16 Edo Dram |
| 104052 | * AT24C64 64Kbit Serial Access EEPROM |
| 103511 | * I.C. 74HCT4051 8CH Analog Mux/Demux |
| 103501 | * 74HCT04 SOIC Hex Inverter |
| 103066 | * TLC548CD SOIC 8-bit A/D Converter |
| 103052 | * AD1854 Stereo 24bit Dac |
| 103048 | * 74LVC32D SOIC Quad 2-input Or Gate |
| 103047 | * 74LVC04 SOIC Hex Inverter |
| 103012 | * 74HC125D SOIC Quad Tri-State Buffer |
| 081000 | * PMLL4148 Smd 100mA 75V Signal Diode |
| 055614 | * 56K 1/16W 1% Smd Resistor 0603 |
| 055612 | * 47K 1/16W 1% Smd Resistor 0603 |
| 055572 | * 1K0 1/16w 1% Smd Resistor 0603 |
| 055570 | * 820E 1/16w 1% Smd Resistor 0603 |
| 055562 | * 390E 1/16w 1% Smd Resistor 0603 |
| 055552 | * 150E 1/16w 1% Smd Resistor 0603 |
| 010728 | * 11.2896MHz Quartz Resonator |

| | In/Out Assembly |
|---------------|--|
| 731092 | In/Out Assembly |
| MDL665013 | * Black Silkscreened Output Panel |
| MDL175011 | * Output Panel Angular Support |
| MDL120012 | * M3x6 TC Black Zinc Plated Self-Threading Screw |
| 731084 | * In/Out Board Assembly (PCB#310740) |
| 230569 | ** FL5R200PNT EMI Coil For Signal |
| 230527 | ** BL02RN2-R62 EMI Coil For Signal |
| 140929 | ** 9 Contacts Vert Male Connector |
| 140851 | ** 20 Contacts Vert Male Connector Din41651 |
| 140217 | ** Jack Stereo Slim Horizontal Socket |
| 140216 | ** 6 Poles Din Horizontal Female Socket |
| 140212 | ** 5 Poles Din Horizontal Female Socket |
| 120857 | ** 6.3mm Vertical Male Faston for Pcb |
| 100602 | ** 74HC04 Hex Inverter |
| 100035 | ** 6N138 Optocoupler |
| 080103 | ** 1N4148 100mA 75V Signal Diode |

| | Wiring Connections |
|--------|---|
| 770946 | Cables Assembly |
| 841390 | * Micro-M/Latch 20x55CM P=1.27 Flat Cable |
| 841389 | * Latch 16x12.5CM P=1.27 Flat Cable +EMI Fer. |
| 841388 | * AWG18 Y/G Wire Jumper Fast/Tinned L=40mm |
| 841387 | * Latch 20x40CM P=1.27 Flat Cable |
| 841355 | * Molex 5264 4 Wires AWG20 Cable L=90CM |
| 841351 | * Latch14x110cm P=1.27 Flat Cable |
| 841302 | * Molex 5264 9 Wires AWG20 Cable L=40CM |
| 841198 | * Molex 5195 6Wires AWG18 Cable L=7.5CM |
| 841196 | * Wire Jumper AWG18 Y/G L=12.5CM (Eyel/Fast) |
| 841026 | * AWG18 Y/G Wire Jumper L=7.5 (Eyel/Fast) |
| 840764 | * AWG18 Yellow/Green Wire Jumper L=10CM |
| 840563 | * Latch 20x12.5CM P=1.27 Flat Cable |

| | Note: |
|--|---|
| All dimensions are in mm unless otherwise specified. | |
| The screw description is defined as follows: | |
| type of screw + diameter + X + length + type of head | |
| where type of screw is one of these: | |
| M | = Metric thread |
| B | = Self-tapping screw for metal |
| WL | = Self-tapping screw for wood |
| and type of head is one of these: | |
| tc | = cylinder Phillips head |
| ts | = flared Phillips head |
| tt | = rounded Phillips head |
| te | = hexagonal nut head |
| tsp | = flat flared Phillips head |
| tce | = cylinder Allen hexagonal head |
| The washer description is defined as follow: | |
| hole diameter + X + external diameter + X + thick | |
| Each spare part is single quantity unless otherwise specified. | |
| Asterisk prefix explanation: | |
| Omitted | = First level spare part. |
| (*) One asterisk | = Second level, part of previous listed first level part. |
| (**) Two asterisk | = Third level, part of previous listed second level part. |
| (***) Three asterisk | = |

Any request for not above mentioned part must encompass specific description including:

- Model name,
- Section name,
- Module code,
- Reference name,
- Quantity number.