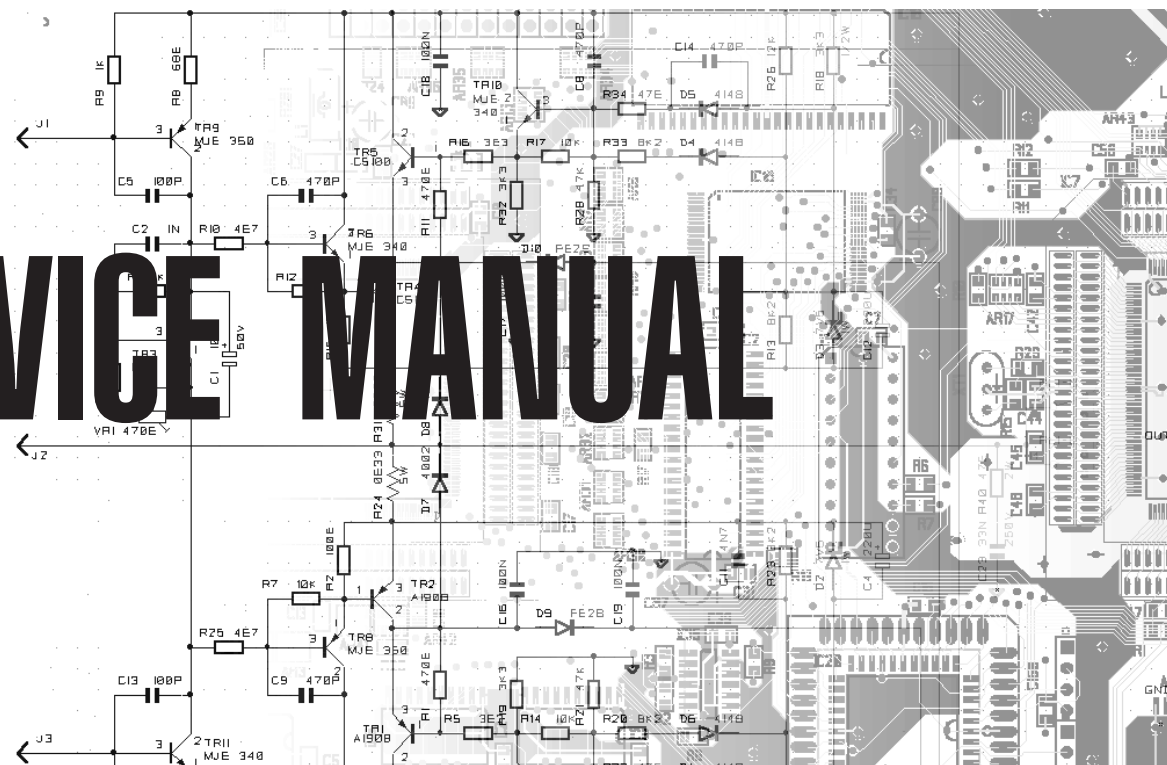




PRO 1 PRO 2

REALPIANO DIGITAL

SERVICE MANUAL



Index

3	Opening & Keyboard Disassembling Instructions
4	Autotest Procedure
5	Block Diagrams
6	Power Supply & I/O, Line Input & Monitor Output Contact Schematics
7	Contacts & Keyboard Interface Schematics, Timing Table
8	PRO1 Controls Panel Schematic
9	PRO1 Cpu & Sound Generator Schematic
10	PRO2 Controls Panel Schematic
11	PRO2 Cpu & Sound Generator Schematic
12	Spare Part List

Warnings



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.

• Male connector.

◌ Female connector.

◌ M/F faston connector.

↑ Supply voltage.

◻ Test point.

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

⊥ Logic supply ground.

⊥ Analog supply ground.

⊥ Chassis ground.

⊥ Earth ground.



ATTENTION

Observe precautions when handling electrostatic sensitive devices.

Address



GENERALMUSIC S.p.A. Sales Division: 47842 S.Giovanni in Marignano (RN) ITALY - Via delle Rose, 12



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▶ CODE: 270146 ◀

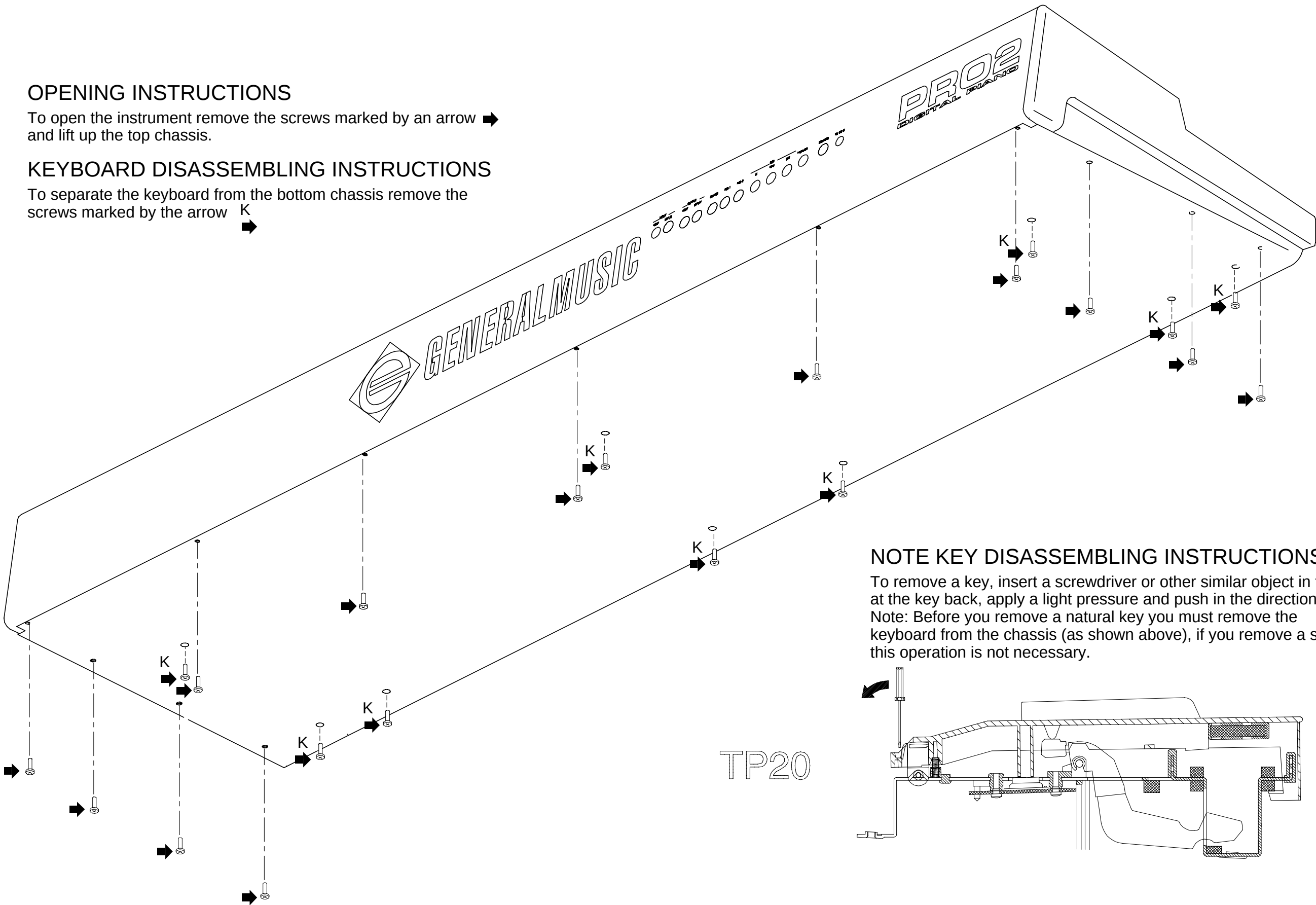


OPENING INSTRUCTIONS

To open the instrument remove the screws marked by an arrow ➡ and lift up the top chassis.

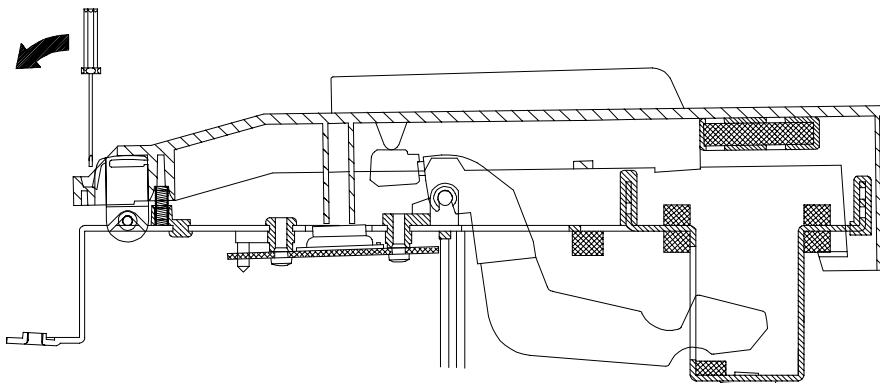
KEYBOARD DISASSEMBLING INSTRUCTIONS

To separate the keyboard from the bottom chassis remove the screws marked by the arrow K ➡



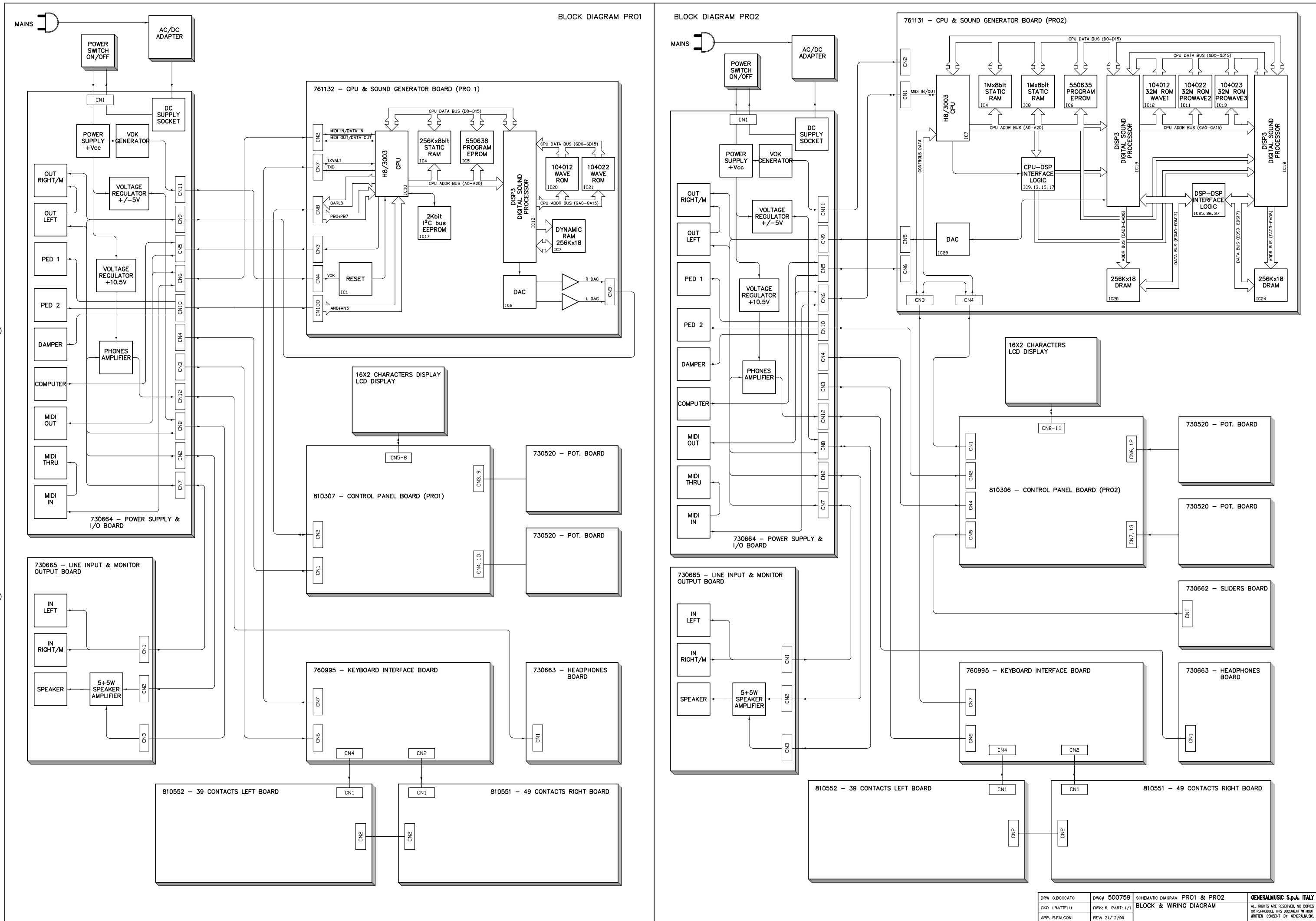
NOTE KEY DISASSEMBLING INSTRUCTIONS

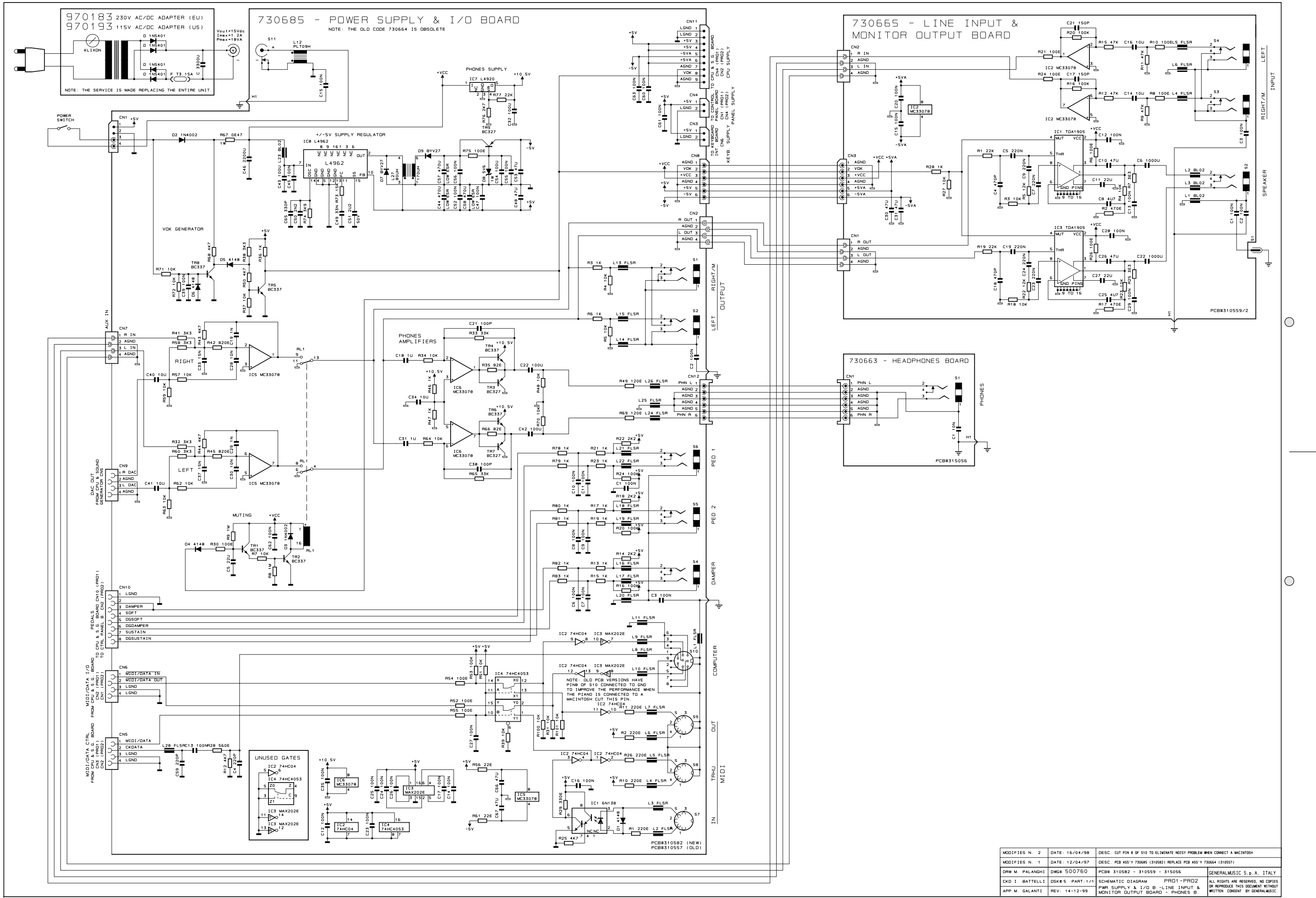
To remove a key, insert a screwdriver or other similar object in the split at the key back, apply a light pressure and push in the direction shown. Note: Before you remove a natural key you must remove the keyboard from the chassis (as shown above), if you remove a sharp key this operation is not necessary.



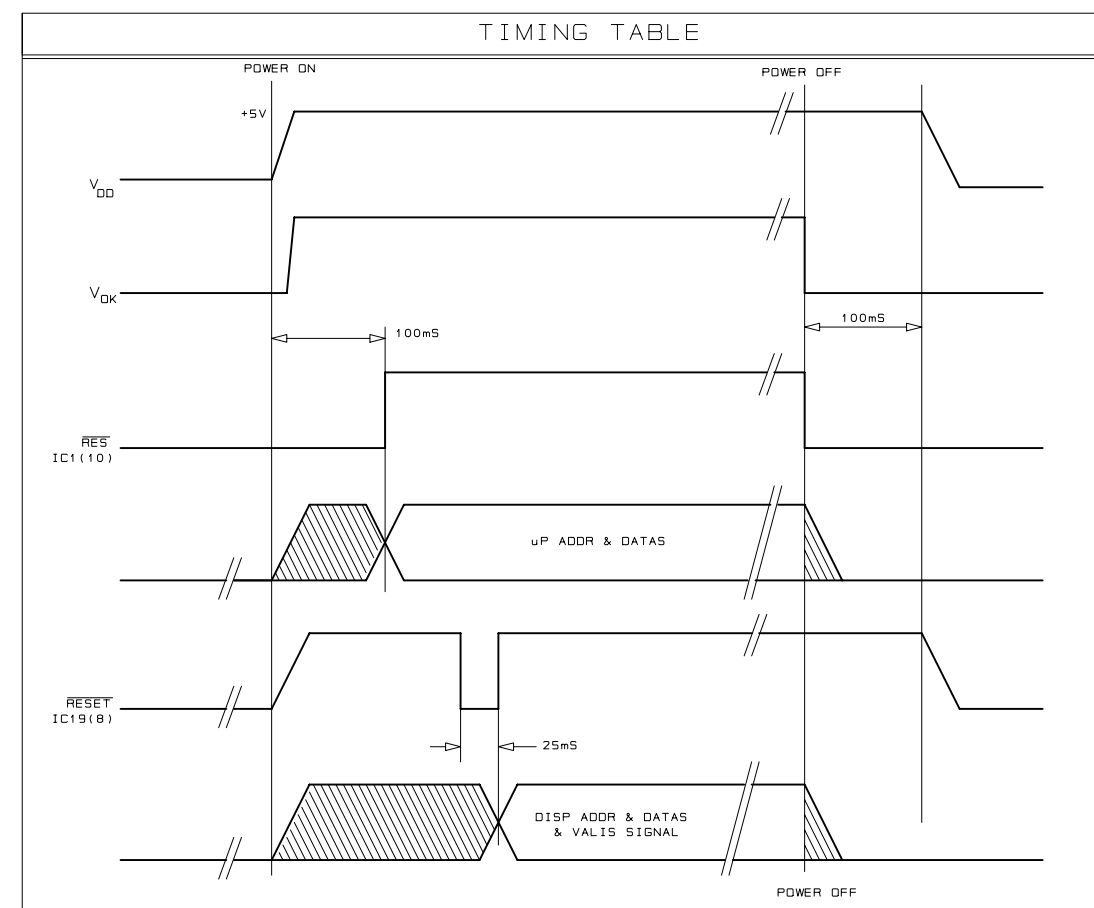
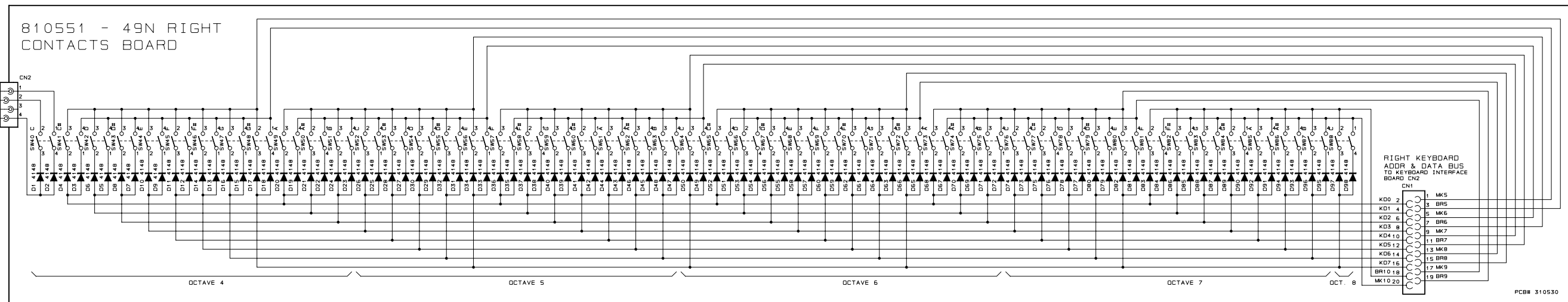
TP20

AUTOTEST CHART			RP 1 PRO	RP 2 PRO
Test	Operation Description	Event Description	Display	
Start	Turn on the instrument while holding pressed "SOUNDS" button.	A display message appears:	PRO1 AUTOTEST -----	PRO2 AUTOTEST -----
Memory	Press "SOUNDS" button.	Display shows current software version in EPROM:	month day year hour:min:sec v#.##	month day year hour:min:sec v#.##
	Press "SOUNDS" button.	The display shows a running dot while the Piano calculates the eeprom checksum, after a few seconds the checksum value is displayed, check it with the hexadecimal code printed on the eeprom label.	Please wait OK Checksum hhhh	Please wait OK Checksum hhhh
	Press "SOUNDS" button.	The display shows the memory address while the Piano checks the SRAM, after a few seconds the final address is displayed.	RAM MEMORY CHECK addr 2055BF OK	RAM MEMORY CHECK addr 23FFFF OK
Display	Press "SOUNDS" button.	The display shows:	LCD DISPLAY TEST -----	LCD DISPLAY TEST -----
		After a few seconds check that all the display segments turn black.		
LED	Press "SOUNDS" button.	Check that all leds light on.	--- LED Test --- Are all leds on?	--- LED Test --- Are all leds on?
Buttons	Press "SOUNDS" button.	Moving the VOLUME and DATA potentiometers the display shows the corresponding position number from 0 to 127.	Button Test Vol:vvv Pot:ppp	Button Test Vol:vvv Pot:ppp
	Press the UP and DOWN arrow buttons.	Display shows U (up) or D (down) letters on the left side.	U Button Test D Vol:127 Pot:127	U Button Test D Vol:127 Pot:127
	Press all panel buttons one by one except "SOUNDS" button.	Every button pressed must light corresponding led.	U Button Test D Vol:127 Pot:127	U Button Test D Vol:127 Pot:127
Equalizer (Pro2 only)	Press "SOUNDS" button.	The display shows temporarily:		EQ POT TEST ... -----
		Moving the Equalizer potentiometers the display shows the corresponding position number from 0 to 127.		111 222 333 444 555 666 777 888
Pedals	Press "SOUNDS" button.	The display is shared in three columns, one for each pedal damper (Da), Pedal1 (Pe) and Pedal2 (Pe).	:Da### Pe### Pe### :mp### d1### d2###	:Da### Pe### Pe### :mp### d1### d2###
		Inserting a footswitch pedal in each socket the upper value must change from 0 to 127 accordingly to the pedal position, the lower value must be always 0.		
		Inserting a variable analogic pedal in each socket the upper value changes to its maximum value (usually ranges from 110 to 120), the lower value vary from 0 to the maximum value accordingly to the pedal position.		
MIDI	Press "SOUNDS" button.			
	Loop the MIDI IN and OUT connectors with a single MIDI cable.	The display shows: If loop is interrupted, display shows:	TEST MIDI IN/OUT LOOP DETECTED OK TEST MIDI IN/OUT --- NO LOOP! ---	TEST MIDI IN/OUT LOOP DETECTED OK TEST MIDI IN/OUT --- NO LOOP! ---
Computer Interface	Press "SOUNDS" button.			
	Loop the pin 3 and 5 of the COMPUTER socket.	A display message appears: If loop is interrupted, display shows:	TST COMPUTER I/O LOOP DETECTED OK TST COMPUTER I/O --- NO LOOP! ---	TST COMPUTER I/O LOOP DETECTED OK TST COMPUTER I/O --- NO LOOP! ---
		Check with the oscilloscope a 1MHz clock signal on pin 1 of the COMPUTER socket.		
Sinus Test	Press "SOUNDS" button.	The instrument plays a 1KHz sinusoidal tone. TRANSPOSE buttons should slightly modify frequency.	SINUS SWEEP Freq. 1000 Hz	SINUS SWEEP Freq. 1000 Hz
Exit	Press "SOUNDS" button.	An end test message appears:	TEST TERMINATED! SOUNDS to quit	TEST TERMINATED! SOUNDS to quit
Note: The autotest operations can be performed only in the sequence specified above. During test all normal keyboard functions are disabled. At the end of autotest a memory reset take place.				



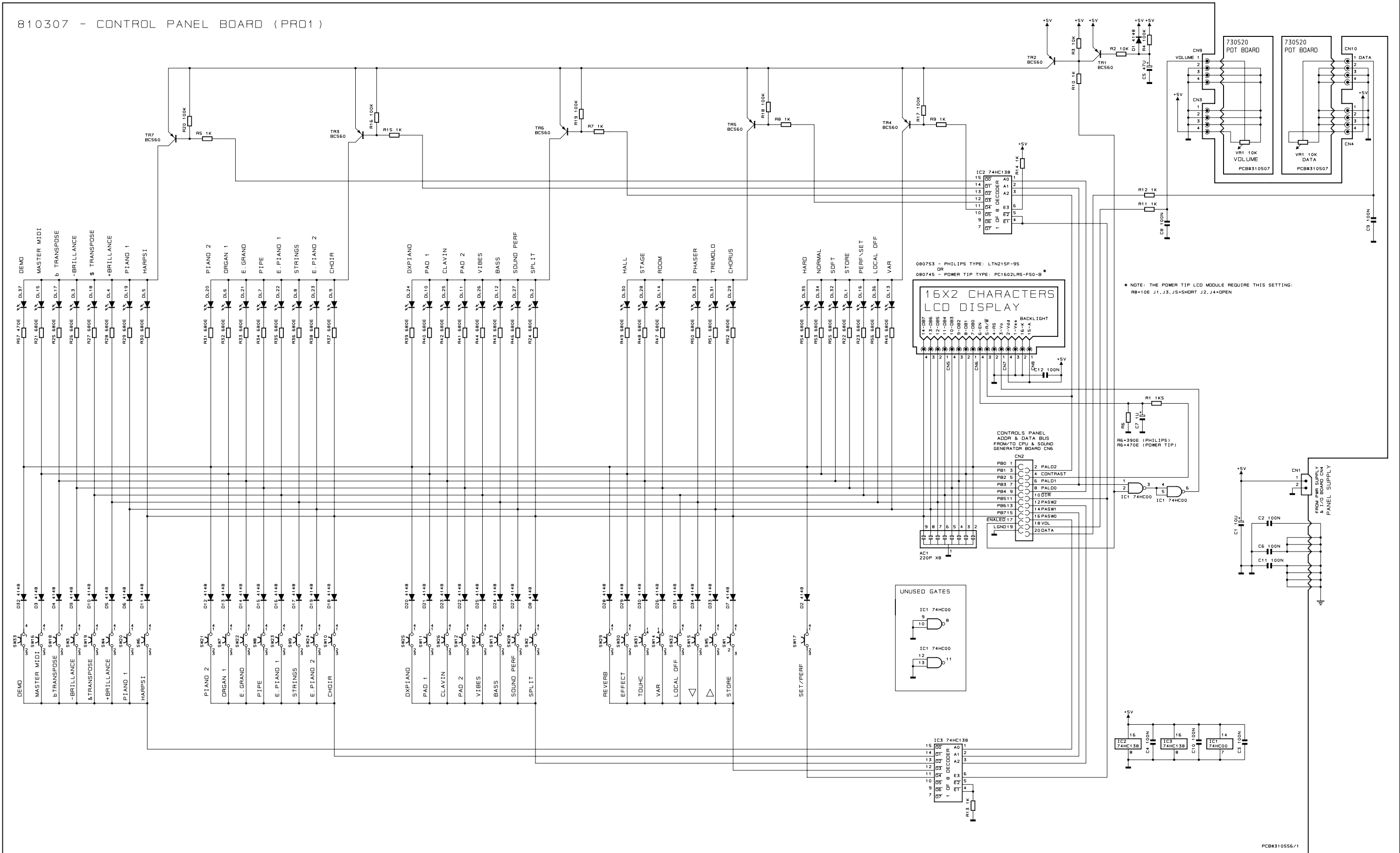


MODIFIES N. 2	DATE: 16/04/98	DESC: CUT PIN 8 OF S10 TO ELIMINATE NOISY PROBLEM WHEN CONNECT A MACINTOSH
MODIFIES N. 1	DATE: 12/04/97	DESC: PCB ASS'Y 730685 (310592) REPLACE PCB ASS'Y 730664 (310557)
DRW M. PALANGHI	DWG# 500760	PCB# 310582 - 310559 - 310556
CKD I. BATELLI	DSK# 5 PART: 1/1	SCHEMATIC DIAGRAM PRO1-PRO2
APP M. GALANTI	REV: 14-12-99	PWR SUPPLY & I/O B.-LINE INPUT & MONITOR OUTPUT BOARD - PHONES B.
		GENERALMUSIC S.p.A. ITALY
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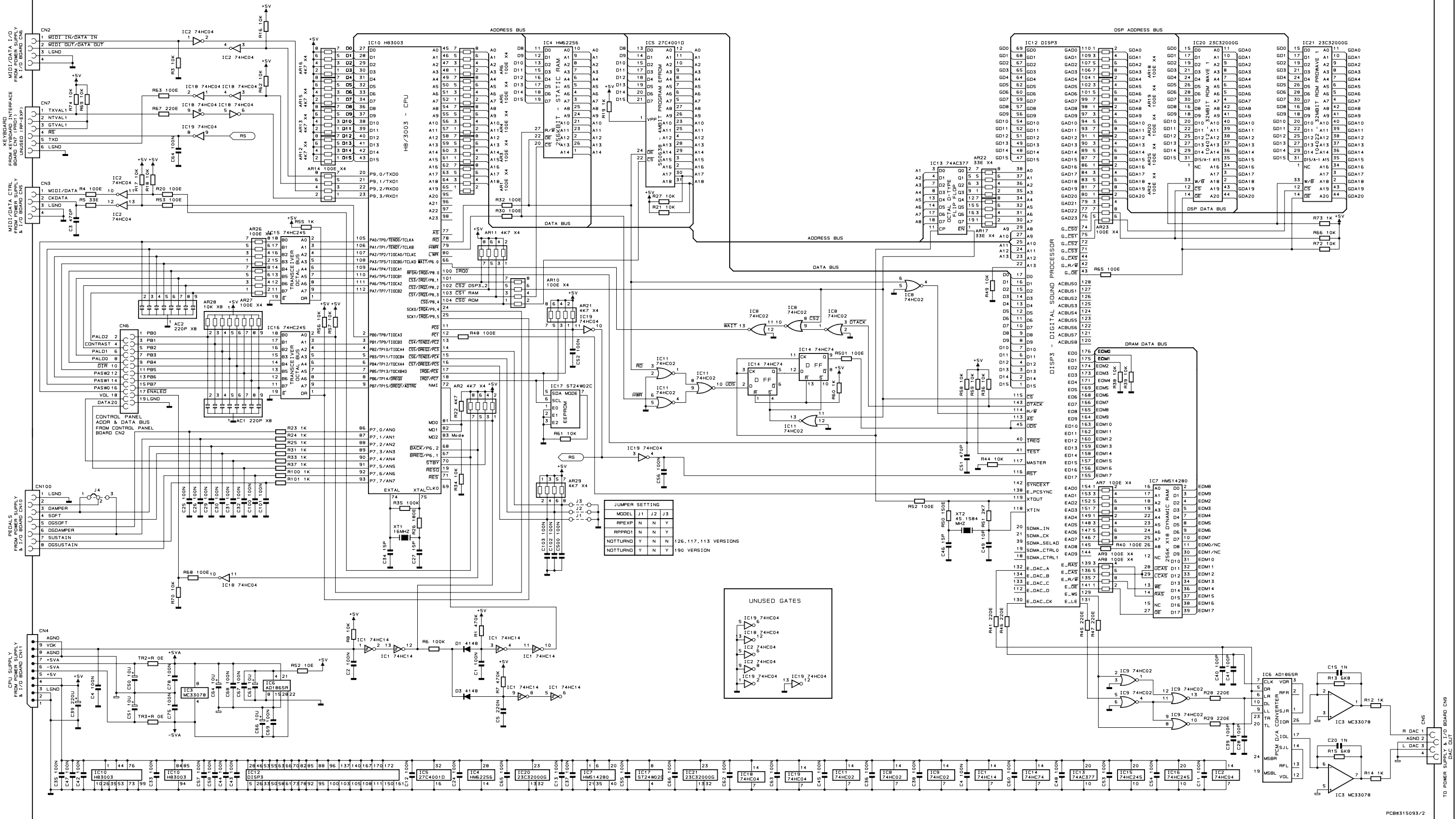
DRW BOCCATO	DWG# 500761	PCB# 310531 310530	GENERALMUSIC S.p.A. ITALY
CRD GIORGI	DSK# 5 PART:1/1	SCHEMATIC DIAGRAM PRO1 - PRO2	ALL RIGHTS ARE RESERVED, NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP. GALANTI	REV: 14-12-99	CONTACTS BOARD & KEYBOARD INTERFACE BOARD	

810307 - CONTROL PANEL BOARD (PRO1)



MODIFIES N. 1	DATE: 27/7/99	DESC. THE DISPLAY TYPE CHANGE FROM PHILIPS TO POWER TIP.	GENERALMUSIC S.p.A. ITALY
DRW G. BOCCATO	DWG# 500762	PCB# 310556	
CKD R. GIORGI	DSK# 6 PART: 1/1	SCHEMATIC DIAGRAM RP-PRO1	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC
APP M. GALANTI	REV: 20-12-99	CONTROLS PANEL BOARD	

761132 - CPU & SOUND GENERATOR BOARD (PRO1 & RP EXPANDER)



10

Spare Part List

Legend	
EU	= specify European Version (230Vac)
US	= specify United States Version (115Vac)
PRO1	= for PRO1 version only
PRO2	= for PRO2 version only
GEM	= Gem Brand Version
GM	= Generalmusic Brand Version
Code	Description

Accessories

970183	230V AC/DC Adapter (EU)
970193	115V AC/DC Adapter (US)
271099	Owner's Manual (All Languages)
970134	Piano Single Foot Switch

Optional Accessories

130301	2mt Midi Cable
970013	Volume Pedal
970107	Professional Volume Pedal
970116	Single Pedal Switch
970080	Triple Pedal Switch
970134	Piano Single Foot Switch
970266	Piano Triple Pedal (Soft, Sustain with Switches Damper with Pot.)
970310	Multimedia Kit
130429	* 3mt RS232 Cable (Mini-Din 8 to D-Sub9)
970110	X-Metal Stand
970300	50+50W Amplified Stand (EU)
970311	50+50W Amplified Stand (US)

Cabinet Assembly

	Bottom Chassis
660524	Bottom Chassis
651583	Left Side
651582	Right Side
	Top Chassis
660523	Top Chassis (PRO1) (GEM)
660522	Top Chassis (PRO2) (GEM)
660538	Top Chassis (PRO1) (GM)
660537	Top Chassis (PRO2) (GM)
653122	Keyboard Left Side
651585	Keyboard Right Side
653326	"<>" Pad
653121	"Store"... "Sounds" Pad
653120	"Sequencer" and "Eq On/Off" Pad
653119	"Var", "Sounds", "Reverb", "Effect", "Touch" Pad
653117	"Local/Off" and "Demo" Pad
653116	"Master/Midi" and "Perf/Edit" Pad
651648	Plexiglass Display Screen
347255	Equalizer Slider Knob
340820	Slider Knob
340523	6,5mm Spacer
340512	Slider Potentiometer Guide
340435	Adhesive Foot
340357	Spacer For Left & Right Side
340092	5mm Board Spacer
210258	Slider Potentiometer Felt
171544	CPU Board Support
171543	Printed Circuit Panel Support
171542	Holder Square
171397	Right Side Spacer
110285	Power Switch

Keyboard & Interface Assembly

720489	*	Keyboard Assembly with Interface
840762	*	20 Wires 25cm Length Flat Cable
840761	*	20 Wires 12.5cm Length Flat Cable
760995	*	Keyboard Interface Board (PCB#315024)
141018	**	20 Contacts Vert Female Connector
141011	**	6 Contacts Vert Female Connector
140918	**	2 Contacts Hor Male Connector
100740	**	HD6433278 Cpu F=20MHz
100605	**	74HC125 Quad 3-State Buffer
050493	**	Resistor Array 10K X4 1/8w 5%
050492	**	10Kx8 1/8w 5% Resistor Array
050414	**	2K2 X4 1/8w 5% Resistor Array
010726	**	19.2MHz Ceramic Resonator With Capacitors
010662	**	220p 10% 50V X8 Cap Array
010661	**	47p 10% 50V X8 Cap Array
720490	*	88N Keyboard Assembly (TP20)
810552	**	39N Left Contacts Board (PCB#310531)
340764	***	3 Dual Contacts Rubber Strip
340211	***	12 Dual Contact Rubber Strip
141018	***	20 Contacts Vert Female Connector

141010	***	4 Contacts Vert Female Connector
080103	***	1N4148 100mA 75V Signal Diode
810551	**	49N Right Contacts Board (PCB#310530)
340212	***	13 Dual Contact Rubber Strip
340211	***	12 Dual Contact Rubber Strip
141018	***	20 Contacts Vert Female Connector
141010	***	4 Contacts Vert Female Connector
080103	***	1N4148 100mA 75V Signal Diode
160211	**	Key Return Spring (TP20)
151172	**	Last C Key (TP20)
151171	**	First A Key (TP20)
151170	**	Sharp Key (TP20)
151169	**	B Key (TP20)
151168	**	A Key (TP20)
151167	**	G Key (TP20)
151166	**	F Key (TP20)
151165	**	E Key (TP20)
151164	**	D Key (TP20)
151163	**	C Key (TP20)

Power Supply & I/O Board

320685	Power Supply & I/O Board (PCB#310582)	
340138	*	Dc-Socket Reinforcement
230569	*	FL5R200PNT EMI Coil For Signal
230566	*	80/170uh 1.5a Switching Double Coil
230559	*	20uH 50V 3A Dc Line Filter
230527	*	BL02RN2-R62 EMI Coil For Signal
141012	*	8 Contacts Vert Female Connector
141010	*	4 Contacts Vert Female Connector
140929	*	9 Contacts Vert Male Connector
140917	*	2 Contacts Vert Male Connector
140908	*	6 Contacts Vert Male Connector
140873	*	4 Contacts Vert Male Connector
140361	*	6 Contacts Vert Male Pass-Thru Connector (Phones)
140247	*	8p Mini Din Female Socket
140220	*	Jack Slim H F Apj678 Adimpex
140212	*	Horizontal Female 5 Poles Din Socket
140211	*	Horizontal Male Dc Socket
110305	*	Relay 12V / 2 Switch 1A 250V
100947	*	L4920 1.2-20V Low Drop Adjustable Regulator
100919	*	MC33078 Dual Ln J-Fet Operational Amplifier
100901	*	L4962 5-40V 1.5A Switching Regulator
100734	*	MAX202E RS232 Drivers/Receiver
100626	*	74HC4053 3x2ch Analog Multiplexer
100602	*	74HC04 Hex Inverter
100035	*	6N138 Optocoupler
090153	*	BC327 TO92 Pnp Transistor
090152	*	BC337 TO92 Npn Transistor
080241	*	5V6 1W 5% Zener Diode
080170	*	BYV27 2A 100V Fast Recovery Diode
080156	*	1N4002 1A 100V Rectifier Diode
080103	*	1N4148 100mA 75V Signal Diode
030950	*	470u 16v 20% Low Esr Vert Electrolytic Capacitor

Phones Board

730663	Phones Board (Pcb#315056)
140220	* Jack Slim Hor Apj678 Adimpex

Line Input & Monitor Output Board

330665	Line Input & Monitor Output Board (PCB#310559)	
230569	*	FL5R200PNT EMI Coil For Signal
230527	*	BL0R2N-R62 EMI Coil For Signal
141010	*	4 Contacts Vert Female Connector
140908	*	6 Contacts Vert Male Small Connector
140222	*	Jack Slim Vertical
140220	*	Jack Slim H F Apj678 Adimpe
100919	*	MC33078 Dual LN J-Fet Operational Amplifier
100902	*	TDA1905 5W Power Amplifier

PRO1 Controls Panel Board

810307	Controls Panel Board (PCB#310556)	
730520	*	Pot. Board (PCB# 310507/1)
140874	**	Single In Line Vert Male Strip (specify contacts)
070551	**	10K Linear 30mm Slider Potentiometer
340825	*	2.8mm Led Spacer
140918	*	2 Contacts Hor Male Connector
140874	*	Single In Line Vert Male Strip (specify contacts)
140529	*	Microswitch 12V 50mA 0.25mm
100606	*	74HC138 1 Of 8 Decoder
100600	*	74HC00 Quad 2-Input Nand Gate
090192	*	BC307 TO92 Pnp Transistor
080748	*	2mm Dot Diffused Green Led
080747	*	2mm Dot Diffused Red Led
080745	*	2x16 Characters Lcd Display
080103	*	1N4148 100mA 75V Signal Diode

PRO1 CPU & Sound Generator Board

761132	CPU & Sound Generator Board (PCB#315093/2)
550638	* 27C4001D 4Mbit Program Eprom
140877	* Jumper For Contacts Strip (p=2.54mm)
141018	* 20 Contacts Vert Female Connector
141012	* 8 Contacts Vert Female Connector
141011	* 6 Contacts Vert Female Connector
141010	* 4 Contacts Vert Female Connector
140929	* 9 Contacts Vert Male Connector
140889	* Dual In Line Vert Male Strip (specify contacts)
106001	* MC33078P Smd Dual LN J-Fet Operational Amplifier
105006	* HD6413003F16 Cpu
105009	* DISP3 Digital Sound Processor (Hitachi)
104022	* 23C32000G 32Mbit ROM ProWave2
104021	* AT24C32 SOIC 32KB EEPROM Memory
104020	* HM62256AFP-7T SOP Sram 256K Ta=70nS
104012	* 23C32000G SOP Rom 32Mbit Wave1
104010	* HM514280AJ SOJ Dram 4M5bit Ta=70nS
103010	* 74HC04D SOIC Hex Inverter
103009	* 74HC02D SOIC Quad 2-In Nor Gate
103007	* 74HC74D SOIC Dual D/A-Flip
103004	* AD1865R SOP 18bit D/A Converter
103002	* 74HC245DW Soic Octal Bus Transceiver
103000	* 74HC14D Soic Hex Inverter Schmitt Trigger
101501	* 74AC377DW SOIC Octal Dtype Flip Flop
081000	* PMLL4148 Smd 100mA 75V Signal Diode
055102	* 33E X4 1/16w 5% Smd Resistor Array
055101	* 4K7 X4 1/16w 5% Smd Resistor Array
055100	* 100E X4 1/16w 5% Smd Resistor Array
050492	* 10Kx8 1/8w 5% Resistor Array
010727	* 45.1584MHz Quartz Resonator
010704	* 16MHz Quartz Resonator
010662	* 220p 10% 50V X8 Cap Array

PRO2 Controls Panel Board

813036	Controls Panel Board (PCB#310554)	
730520	**	Pot. Board (PCB# 310507/1)
140874	*	Single In Line Vert Male Strip (specify contacts)
070551	**	10K Linear 30mm Slider Potentiometer
340825	*	2.8mm Led Spacer
140918	*	2 Contacts Hor Male Connector
140874	*	Single In Line Vert Male Strip (specify contacts)
140529	*	Microswitch 12V 50mA 0.25mm
100740	*	HD6433278 Cpu F=20MHz
100645	*	74HC4351 8ch Analog Multiplexer
100607	*	74HC164 8bit S To P Shift Register
100605	*	74HC125 Quad 3-State Buffer
090194	*	BC560 T092 Pnp Transistor
090183	*	BC550 T092 Npn Transistor
080748	*	2mm Dot Diffused Green Led
080747	*	2mm Dot Diffused Red Led
080745	*	2x16 Characters Rcd Display
080103	*	1N4148 100mA 75V Signal Diode
050492	*	10Kx8 1/8w 5% Resistor Array
010726	*	19.2MHz Ceramic Resonator With Capacitors
010661	*	47p 10% 50V X8 Cap Array

PRO2 Sliders Board

730662	Sliders Board (PCB#310555)
141015	14Contacts Vert Female Connector
070614	30mm 10K Lin Slider Potentiometer

PRO2 CPU & Sound Generator Board

761131	CPU & Sound Generator Board (PCB#315080)	
556035	*	27C4096 4Mbit Program Eprom
110282	*	3.6V 60mAh Nicd Battery
230569	*	FL5R200PNT EMI Coil For Signal
141011	*	6 Contacts Vert Female Connector
141010	*	4 Contacts Vert Female Connector
140929	*	9 Contacts Vert Male Connector
140889	*	Dual In Line Vert Male Strip (specify contacts)
105006	*	HD6413003F16 Cpu
105009	*	DISP3 Digital Sound Processor (Hitachi)
104023	*	23C32000G 32Mbit ROM ProWave3
104022	*	23C32000G 32Mbit ROM ProWave2
104012	*	23C32000G 32Mbit ROM Wave1
104010	*	HM514280AJ SOJ Dram 4M5bit Ta=70nS
104000	*	HM628128LP7 SOP 1Mbit (128Kx8) Static Ram
103010	*	74HC04D SOIC Hex Inverter
103009	*	74HC02D SOIC Quad 2-In Nor Gate
103007	*	74HC74D SOIC Dual Flip-Flop
103004	*	AD1865R SOP 18bit D/A Converter
103002	*	74HC245DW SOIC Octal Bus Transceiver
103001	*	74HC08D SOIC Quad 2-Input And Gate

015101	*	74AC377DW SOIC Octal DType Flip Flop
100920	*	LM336Z 2.5V 10mA Voltage Reference
100919	*	MC33078 Dual LN J-Fet Operational Amplifier
100075	*	LM311 Voltage Comparator
090194	*	BC560 TO92 Pnp Transistor
081000	*	PMLL4148 Smd 100mA 75V Signal Diode
055102	*	33E X4 1/16w 5% Smd Resistor Array
055101	*	4K7 X4 1/16w 5% Smd Resistor Array
055100	*	100E X4 1/16w 5% Smd Resistor Array
010727	*	45.1584MHz Quartz Resonator
010704	*	16MHz Quartz Resonator

Note:

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:

- 1) Model name,
- 2) Section name,
- 3) Module code,
- 4) Reference name,
- 5) Quantity number.