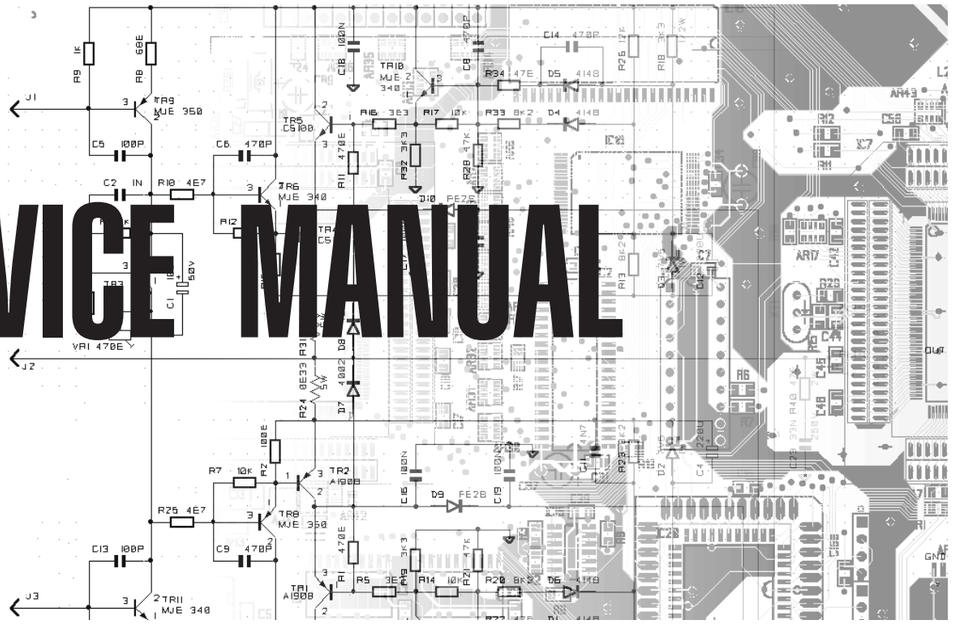
RP120

RealPiano DIGITAL

Pianovelle

SERVICE MANUAL



GENERALMUSIC®

CODE: 270246

Baldwin

Index

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.

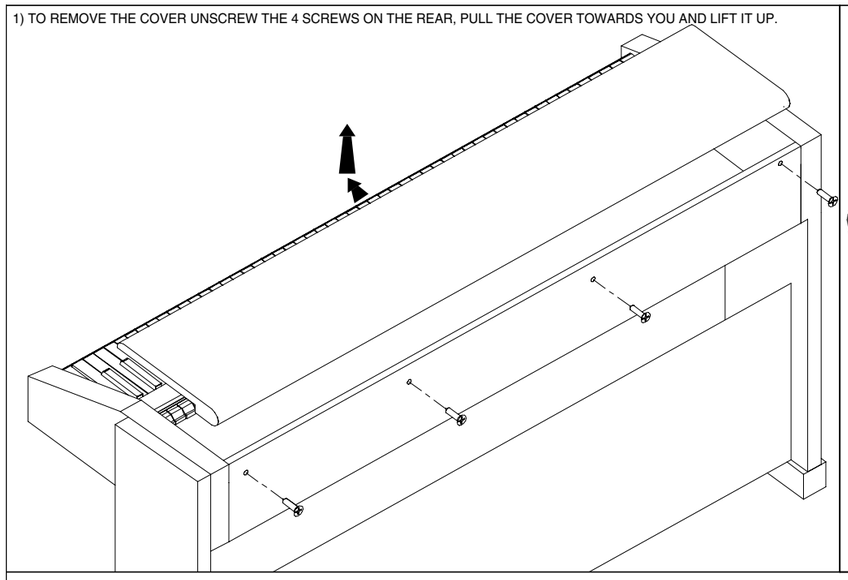
- Soldering point.
- Male connector.
- Female connector.
- M/F faston connector.
- Supply voltage.
- Test point.
- Flag joined with one or more flags with the same signal name inscribed.
- Logic supply ground.
- Analog supply ground.
- Chassis ground.
- Earth ground.

ATTENTION Observe precautions when handling electrostatic sensitive devices.

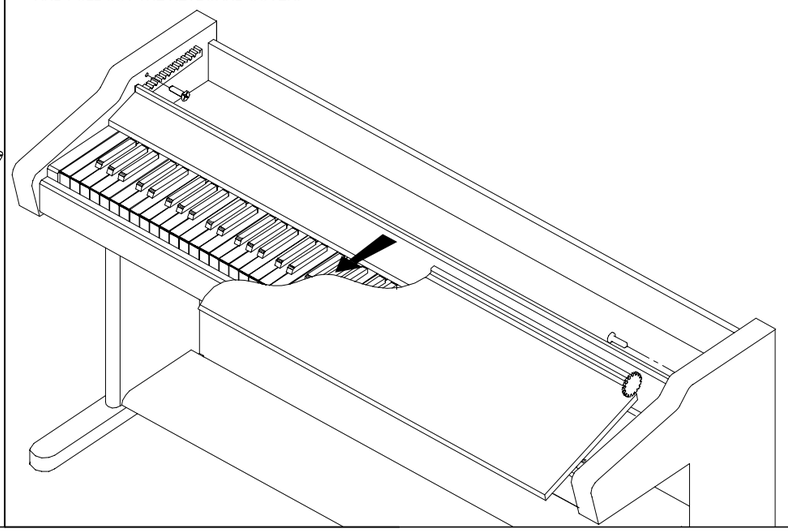
Address

GENERALMUSIC S.p.A. Sales Division: 47842 S.Giovanni in Marignano (RN) ITALY - Via delle Rose, 12
Phone +39(0)541/959511 - Fax +39(0)541/957404 - GENERALMUSIC on the NET: http://www.generalmusic.com

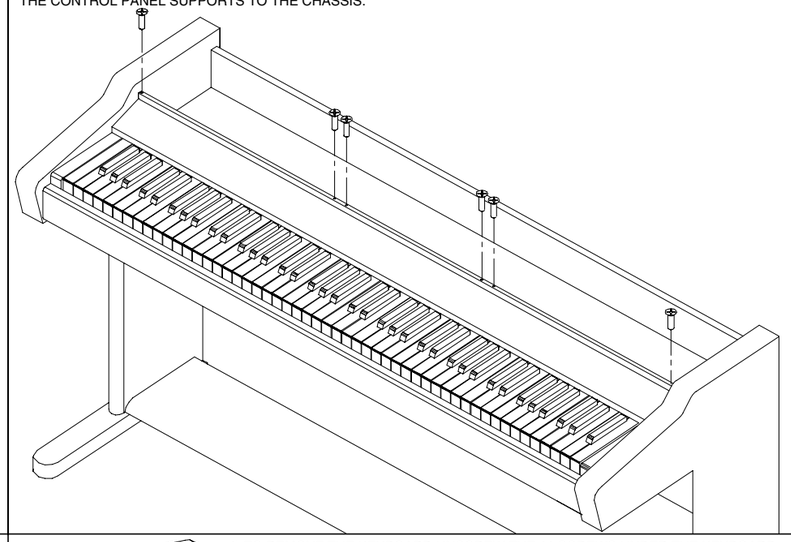
1) TO REMOVE THE COVER UNSCREW THE 4 SCREWS ON THE REAR, PULL THE COVER TOWARDS YOU AND LIFT IT UP.



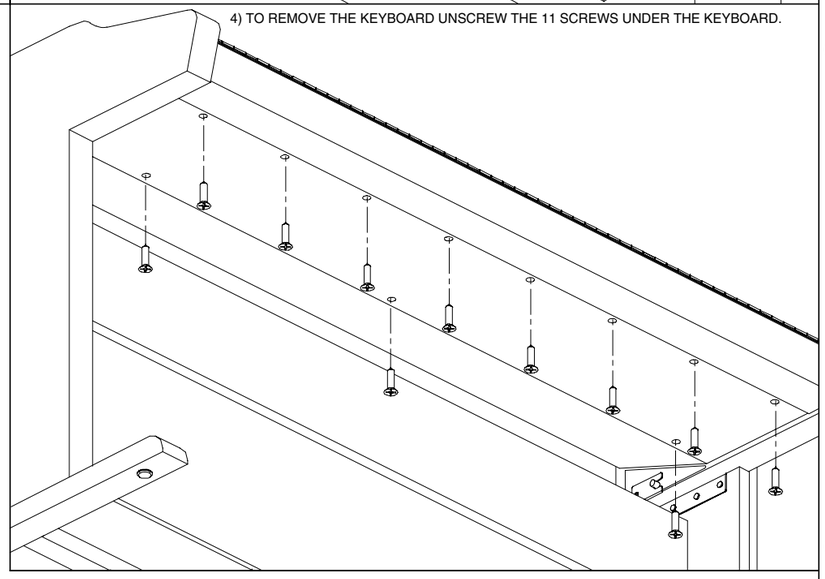
2) TO REMOVE THE KEYBOARD COVER UNSCREW THE TWO SCREWS ON THE BARS (ONE FOR EACH SIDE), AND PULL OUT THE KEYBOARD COVER.



3) TO REMOVE THE CONTROL PANEL UNSCREW THE SCREWS AT EACH END AND THE SCREWS THAT ANCHOR THE CONTROL PANEL SUPPORTS TO THE CHASSIS.



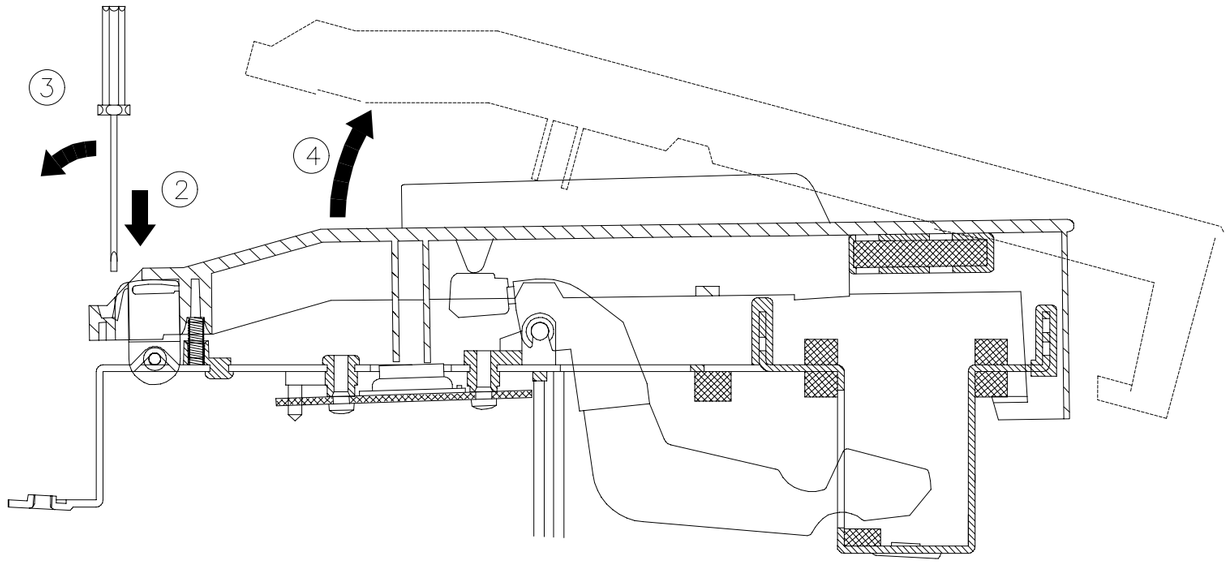
4) TO REMOVE THE KEYBOARD UNSCREW THE 11 SCREWS UNDER THE KEYBOARD.



5) 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, IF YOU REMOVE A SHARP KEY THIS OPERATION IS NOT NECESSARY

TP21



DRW G.Boccato	DWG# 500934	PCB#	GENERALMUSIC S.p.A. ITALY
CKD I.Battelli	DISK: PRT: 1/1	RP120 Opening Instructions & Keyboard disassembling	
APP. M.Galanti	REV: 01/02/01		

RP90-100-120-150 INITIAL CHECK

Operation Descriptions	Display
The following procedures must be executed subsequently in the specified order.	
Before turn on the instrument check the jumpers setting on CPU & SOUND GENERATOR BOARD corresponds at the model accordingly to the following table: MODEL J4 J5 J3 J6 J2 RP100 GEM 1-2 1-2 1-2 1-2 1-2 RP100 BALDWIN 1-2 1-2 1-2 1-2 2-3 RP150 GEM 1-2 1-2 1-2 2-3 1-2 RP150 BALDWIN 1-2 1-2 1-2 2-3 2-3 RP90 GEM 1-2 1-2 2-3 1-2 1-2 v2.00 or greater RP90 BALDWIN 1-2 1-2 2-3 1-2 2-3 v2.00 or greater RP120 GEM 1-2 1-2 2-3 2-3 1-2 v2.02 or greater RP120 BALDWIN 1-2 1-2 2-3 2-3 2-3 v2.02 or greater	| * REALPIANO * | | RP100 | | * BALDWIN * | |PIANOVELLE RP100| | * REALPIANO * | | RP150 | | * BALDWIN * | |PIANOVELLE RP150| | * REALPIANO * | | RP90 | | * BALDWIN * | |PIANOVELLE RP90 | | * REALPIANO * | | RP120 | | * BALDWIN * | |PIANOVELLE RP120|
Remove the secondary fuses F1, F2, F3, located on POWER AMPLIFIER & SUPPLY BOARD; turn on the instrument and verify the supply AC voltages: (CN5) between pin1 and pin3 = 10 ± 0,5Vac (CN9) between pin1 and pin2 = 16 ± 0,8Vac (CN9) between pin1 and pin3 = 16 ± 0,8Vac (CN9) between pin2 and pin3 = 32 ± 1,6Vac	
Turn off the instrument, and put the fuses back on its holders.	
Turn on the instrument and the appropriate welcome message appears on the display.	
A few seconds later the led GRAND PIANO light. Check the supply DC voltages on CPU & SOUND GENERATOR BOARD: (CN8) between pin9 and pin7 = +5 ± 0,25Vdc (CN8) between pin1 and pin4 = +12 ± 0,6Vdc (CN8) between pin1 and pin5 = -12 ± 0,6Vdc	|INTERNAL PRESET| | GRAND PIANO |

RP90-100-120-150 AUTOTEST PROCEDURE

Operations Description	Display
The instrument starts in AUTOTEST mode turning on the instrument while pressing down the "GRAND PIANO" button (pressing PRESET instead GRAND PIANO the procedure starts from LCD display test). NOTE: Each time you press the "GRAND PIANO" button the autotest procedure proceeds to the next step.	| RP98 | | AUTOTEST |
Set the default display contrast in the ± 6 range by pressing the DATA + or - buttons.	|CONTRAST = # | | |
The instrument show the date, time and release version of the software loaded in flash memory.	| mmm dd yyyy | |hh:mm:ss V #.## |
The instrument asks if you want to update it, press GRAND PIANO to skip, the appropriate procedure to update the software is explained further.	|EPROM to FLASH | |push REC to prog|
The instrument performs the flash memory data checksum and display it in hexadecimal value. NOTE: the BT (boot) value must be 95C4 for ver.2.00, if it does not correspond you can not update software thru serial port but only with Update Software Board. For example version 2.02 have BT=95C4 PR=83B4 ALL=1978.	|Wait * | |Eprom Checksum | |cks BT PR ALL| | #### #### #### |
The instrument performs the Library ROM memory data checksum and display it in hexadecimal value (RP120 only).	|Wait * | |Library Checksum| |Wait OK! | |Checksum A021|
The instrument performs the RAM memory test showing the address checked.	|RAM MEMORY CHECK| |addr 23BFFF OK|
The LCD display test shows two rows of sixteen dark spaces.	|▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮| |▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮|
Check that all leds are lighting.	|--- LED TEST ---| |Are all leds on?|
Check the VOLUMES ranges from 0 to 127. Check all buttons (except GRAND PIANO) pressing their one at a time and checking that corresponding led lights, pressing PAGE UP and DOWN buttons the display shows "U" and "D", pressing DATA + and - buttons the display shows "+" and "-", pressing BALANCE < and > buttons the display shows an "X" in 1 and 2 digits, pressing TOUCH, STORE and REC/CONTROL buttons the display shows an "X" in 3, 4 and 5 digits respectively.	| |Button test | | |Vol:0 12345 | |U|Button test +| |D|Vol:127 XXXXX-|
Check the SOFT and SUSTAIN pedals, pressing each one the value change from 0 (released) to 127 (pressed), for RP100 the DAMPER pedal operation is similar, for RP150 the DAMPER pedal varying its value continuosly from 0 (released) to nearly 127 (pressed).	|Soft Sust Damp| | 0 0 0|
Check the MIDI I/O connecting the MIDI OUT and MIDI IN sockets by a MIDI cable.	|TEST MIDI IN/OUT| |LOOP DETECTED OK|
Check COMPUTER I/O shorting pin 3 and pin 5 on the COMPUTER socket, check with the oscilloscope a 4Vpp (1Mhz) signal on pin 1, set volume to half stroke.	|TST COMPUTER I/O| |LOOP DETECTED OK|
The instrument generates a 1KHz sinusoidal signal in both audio channels. VOLUME fader controls the amplitude of signal and TRANSPOSE b and # buttons controls the frequency from 10Hz to 2756Hz.	| SINUS. SWEEP | |Freq. 1000 Hz|
Re-set the frequency at 1KHz and check HEADPHONES and AUX outputs with the oscilloscope inserting a stereo jack in the left phones socket (speakers will go be silent) and two mono jack in the AUX OUT sockets and set volume to its maximum.	
Now verify the following level of signals: Phones output without load = 17 ± 1.7Vpp AUX output = 1.35 ± 0.14Vpp	
Set the VOLUME to minimum.	
Apply a sinusoidal signal of 0.730Vpp at 1KHz with a generator to the AUX IN left and right sockets and verify the signal output: AUX output = 1.35 ± 0.07Vpp	
Autotest is over, turn off the instrument.	|TEST END: SWITCH| |POWER TO RESTART|

RP90-100-120-150 O.S. UPDATING PROCEDURE from Serial Port (COMPUTER) ver. 2.xx or greater

Operations Description	Display
NOTE: This procedure is valid only if the software version installed on the piano is the 2.00 or greater. Some additional tips and advices are included in the Flashblaster Firmware Update Disk. The disk containing the Fblaster program can also be downloaded by internet at generalmusic web site (www.generalmusic.com) or required at support@generalmusic.com	
Connect the serial cable between the COMPUTER of the piano and the RS232 COM port of the computer (PC-Ibm or compatible).	
Insert the disk in the drive A (or whatever your 3.5" drive is assigned to), open the contents of drive A and double click on the fblaster.exe file.	
From the OPTIONS/SETTINGS menu, make sure that the TEST AND PROGRAM choice is selected. This is very important.	
Turn on the piano, while holding down the REC button until the display shows:	|READY TO UPDATE | | |
Click with the mouse on the GO! button or, from the ACTION menu, select EXECUTE (ALT+A, E). The piano display appears as follows:	|TESTING... | |n1/n2 PACKETS |
At the end of the test the following display appears:	| TEST OK | | |
After a short time, the following display appears:	|ERASING... | | |
You are now erasing the old operating system from FLASH memory. When the system is erased, the following display appears as your new operating system is installed into Flash Memory:	|UPDATING... | |n1/n2 PACKETS |
When the entire update procedure is completed, the following display appears:	|UPDATE_OK:SWITCH| |POWER TO RESTART|
The update has now been successfully completed. Turn off the power switch on the piano, and turn it back on again to use your updated instrument.	

RP90-100-120-150 Some Repairing Tips

Operations Description	Display
This message could be appear if an error occur on the communication channel. Possible solutions: 1) inconsistent data received on MIDI or COMPUTER input socket, check the ratings of the device connected to the piano. 2) if the error persist, try to replace Outputs Board first and CPU board second.	|MIDI SCI error | | |
This message could be appear if an error occur on the communication channel. Possible solutions: 1) verify all the connections between Keyboard Interface Board and the CPU board. 2) if the error persist, try to replace Keyboard Interface Board first and CPU board second.	|VALIS SCI error | | |
This message could be appear if an error occur on the communication between CPU and DISP3 chips. Possible solutions: 1) verify all the tracks, solders and components between CPU and DISP3 chips as shown in schematics. 2) if the error persist, replace the CPU board and send back to generalmusic the failed CPU board.	|Disp Failure | | |

MAINS

768197 – MAINS FILTER BOAD
CN1
CN2

POWER SWITCH ON/OFF

230136 TRANSFORMER 230V
230137 TRANSFORMER 115V

730675 – POWER AMPLIFIER & SUPPLY BOARD
CN5
RECTIFIER
D1
+5V SUPPLY REGULATOR
IC1
CN9
RECTIFIER
D7
+/–12V SUPPLY REGULATOR
IC4, 6
MUTING
TR6, 3, 2, 1
CN1
CN8
25+25W POWER AMPLIFIER
IC5
CN7
CN4
CN2
VOK SIGNAL GENERATOR
TR5, 4
CN6
CN3

731019 – HF CROSSOVER FILTER BOARD
CN1

TWEETER RIGHT CHANNEL SPEAKERS
WOOFER RIGHT CHANNEL SPEAKERS
WOOFER LEFT CHANNEL SPEAKERS
TWEETER LEFT CHANNEL SPEAKERS

730516 – PHONES BOARD
CN1

731037 – CONTROL PANEL BOARD
CN3
CN1
CN2

730997 – DISPLAY BOARD
CN2
CN1

730995 – OUTPUTS BOARD
CN4
RIGHT/ MONO AUX
LEFT AUX OUT
RIGHT/ MONO IN
LEFT IN
CN2
MIDI IN
MIDI OUT
MIDI THRU
COMPUTER
CN2
CN3
PEDAL

720613 – PEDAL ASSEMBLY

761214 – CPU & SOUND GENERATOR BOARD
CN8
CPU DATA BUS (D0–D15)
1MBit STATIC RAM IC8
1Mbit STATIC RAM IC4
UPDATING EPROM CONNECTOR CN3
8Mbit FLASH MEMORY IC3
16Mbit LIBRARY MEMORY IC9
CPU ADDR BUS (A0–A21)
HB/3003 CPU & DIGITAL SOUND PROCESSOR IC16
CN1
16MHz QUARTZ XT1
DISP3 DIGITAL SOUND PROCESSOR IC19
45.1584 MHz QUARTZ XT2
104041 64Mbit W98 ROM IC13
READ/ WRITE GAL IC28, IC29
16Mbit DYNAMIC RAM IC22
PCM D/A CONVERTER IC23
CN3
CN7
CN9
CN5

761173 – KEYBOARD INTERFACE BOARD
CN7
CN6
CN4
CN2

810552 – 39 CONTACTS LEFT BOARD
CN1
CN2

810551 – 49 CONTACTS RIGHT BOARD
CN2
CN1

DRW G. Boccato	DWG# 500941	PCB#	GENERALMUSIC S.p.A. ITALY
CKD I. Battelli	DISK: 2 PRT:1/1	RP120 BLOCK DIAGRAM	
APP. M. Galanti	REV: 02/02/01		

730675 - POWER AMPLIFIER & SUPPLY BOARD

768197-MAINS FILTER BOARD

MAINS
EU: 230Vac +/-15% 50Hz
US: 115Vac +/-15% 50/60Hz

CN1 CN2 POWER SWITCH

L1 B82722 A2102N1

C1 4N7 250V
C2 4N7 250V
C3 100N 250VAC

PCB#310642

230136 TRANSFORMER 230Vac 130VA (EU)
230137 TRANSFORMER 115Vac 130VA (US)

WHITE KLIXON BLUE

C 100N 250VAC

WHITE BLUE

ORANGE
ORANGE
YELLOW
GREEN
YELLOW

CN5
3 10VAC
2
1 0VAC

F1 T1 25A

+5V DIGITAL SUPPLY

D1 KBL02
C7 100N
C3 4700U
C4 100N
IC1 7805 IN GND OUT
C5 220N
C6 100N
C2 100N
+10V
+5V

CN9
3 16VAC
2 16VAC
1 0VAC

F3 T3 15A
F2 T3 15A

+/-12V ANALOG SUPPLY

D7 KBL02
C43 100N
C36 4700U
C40 220N
IC6 7812 IN GND OUT
C39 100N
C13 100N
C21 100N
C45 100N
C42 4700U
C38 2U2
C29 1U
C10 100N
C19 100N
IC3 MC33078
IC2 MC33078
IC4 7912 GND IN OUT
+20V
+12V
-20V
-12V

VOK CIRCUIT

D5 1N4002
D6 1N4002
R23 1K
R25 10K
R22 100E
D4 4148
R19 22K
TR4 BC550
TR5 BC550
C35 1U
R24 1K2
C20 100U
R1 1K

MUTING CIRCUIT

D3 4148
R26 100E
R37 1M
TR6 BC550
TR3 BC550
R36 22K
R39 15K
C34 22U
R21 22K
D2 4148
R6 470K
R15 1K
C37 100N

LP & MIXER

CN8
1 R DAC
2 AGND
3 L DAC
4 AGND

DAC OUTPUT FROM CPU BOARD CN9

R31 33K
R30 33K
C24 150P
R27 8K2
C14 1N5
R11 33K
C25 1U
IC3 MC33078
R29 100K C23 1N

R10 10K
R13 47K
TR1 J176
R12 100K
C16 1U
R35 10K
C32 470P

R8 33K
R3 33K
C9 150P
R2 8K2
C11 1N5
R4 33K
C12 1U
IC3 MC33078
R9 100K C8 1N

R5 10K
R14 47K
TR2 J176
R15 100K
C15 1U
R33 10K
C31 470P
C17 4U7

AUX INPUT PREAMP

C18 47P
R17 100K
R7 47K
IC2 MC33078
C22 47P
R20 100K
R18 47K
IC2 MC33078

MUTE +Vs
IC5 TDA7265
25+25W POWER AMPLIFIER
-Vs -Vs
GND
-20V

R44 8K2
R43 8K2
R42 22K
R40 10E
R34 1K
C27 100N
R41 22K
R39 10E
R32 1K
C26 100N
C38 100N

720613 - TRIPLE PEDAL ASSEMBLY

NOTE: THE DAMPER POT HAVE SPECIAL SPECIFICATIONS, REPLACE WITH MANUFACTURER'S PARTS ONLY (CODE 070556).

RED
BLACK
VR1 20KB
DAMPER
WHITE
SOSTENUTO
SW2
GREEN
SOFT
SW1
ORANGE
BROWN
(FRONT VIEW)

DAMPER ADJUST:
SET THE POTENTIOMETER TO HAVE ABOUT 700E BETWEEN PIN 5 AND 1 OF DIN SOCKET WITH THE PEDAL AT THE REST POSITION.

731019 - HF CROSSOVER FILTER BOARD

CN1
R1 10E 5W
C1 47U 100V
C2 47U 100V
R2 10E 5W

PCB# 310654

LEFT WOOFER
LEFT TWEETER
RIGHT TWEETER
RIGHT WOOFER

SPEAKERS & PHONES

CN7
C44 3U3
TWEETER L 1
TWEETER IN 2
PWR OUT L 3
4
GND 5
6
PWR OUT R 7
TWEETER IN 8
TWEETER R 9
C41 3U3

730516 - PHONES BOARD

CN1
1 PWR L
2 SPK L
3
4
5 PWR R
6 SPK R

R3 330E
R5 330E
S3
PHONES 1
S4
PHONES 2
L1 FLSR
L2 FLSR
L3 FLSR
R1 330E
R2 330E
S1
S2
C3 100N
R6 10E
C1 100N
C2 100N
R4 10E

PCB#310541

730995 - OUTPUTS BOARD

PEDALS

CN3
1 SUSTAIN
2 SOFT
3 DAMPER
PEDAL IN FROM CPU BOARD CN7

L12 FLSR
SOFT
S4
L13 FLSR
R19 330E
SUSTAIN
L9 FLSR
L11 FLSR
L8 FLSR
SENSE
DAMPER
C9 100N
C3 100N
C8 100N
R14 47K
R18 10K
R15 10K
IC2 74HC04
R6 10K
TR2 BC550
R17 1K
TR1 BC560
R7 10K
R8 1K
L10 FLSR
R22 10K

RS232 RS422
RXD+ 8
GPI 7
RXD- 5
CTS HSKi 2
shield 9
RTS HSKo 1
GND GND 4
TXD- 3
TXD+ 6
S11
COMPUTER

IC3 MAX202E
L17 FLSR
L18 FLSR
L15 FLSR
L16 FLSR
L14 FLSR

CN6
AGND 1
VOK 2
AGND 3
+12V 4
-12V 5
+5V 6
+5V 7
LGND 8
LGND 9
TO CPU & S.G. BOARD CN6 CPU SUPPLIES

CN2
1 MIDI IN
2 MIDI OUT
3 LGND
4 LGND
5 RX
6 TX
7 CK_MAC
8 LGND
MIDI & COMPUTER I/O FROM/TO CPU & S.G. BOARD CN2

R12 220E
R11 220E
R16 10K
R13 10K
R5 220E L7 FLSR
S3
MIDI OUT
R4 220E L6 FLSR
R10 330E
R3 220E L5 FLSR
S2
MIDI THRU
R2 220E L4 FLSR
IC1 6N138
NC NC
D1 4148
R1 220E L2 FLSR
L3 FLSR
S1
MIDI IN
R8 4K7

CN1
1 +5V
2 LGND
TO KEYBOARD INTERFACE BOARD CN6
PANEL SUPPLY KEYBOARD SUPPLY

CN2
1 +5V
2 LGND
TO CONTROL PANEL BOARD CN1
PANEL SUPPLY

CN3
1 +5V
2 LGND
C1 100N

CN1
1 +5V
2 LGND
C4 10U
C5 100N
C6 100N
C7 100N
C12 22U
C13 100N
C16 100N
C17 100N
C14 100N
C15 100N
C18 100N
IC2 74HC04
IC3 MAX202E

CN4
1 R OUT
2 AGND
3 L OUT
4 R IN
5 AGND
6 L IN
AUX IN OUT

C28 100N
R28 4K7
S1

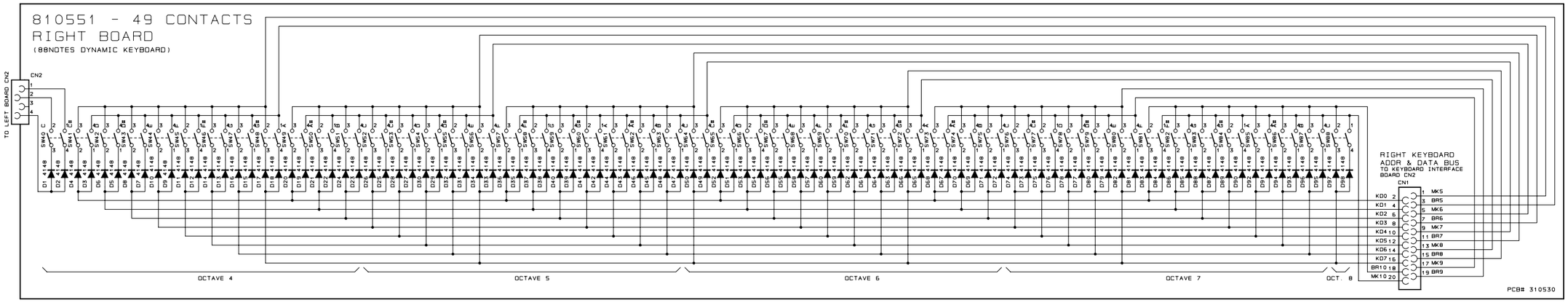
C10 22U
L23 FLSR
S7
RIGHT /MONO AUX OUT
R20 680E
C11 22U
L24 FLSR
S8
LEFT AUX OUT
L22 BL02
C1 100N
C18 1U
L19 FLSR
S5
RIGHT /MONO AUX IN
R23 100K
C19 1U
L20 FLSR
S6
LEFT AUX IN
R24 100K
L21 BL02
C2 100N
L1 FLSR
S10

PCB#310608

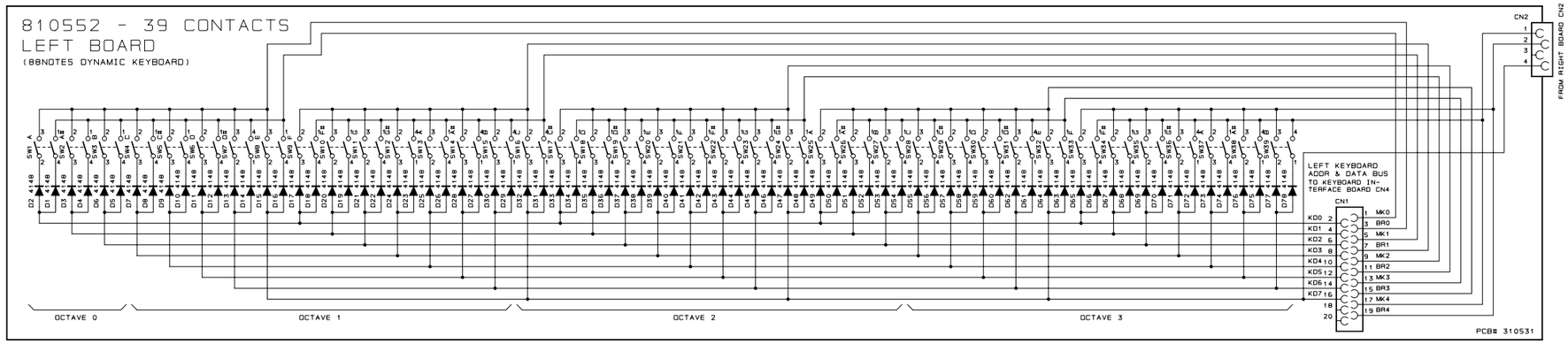
PCB#310543

DRW G.BOCCATO	DWG# 500936	PCB# 310543 - 310608 - 310541	GENERALMUSIC S.p.A.
CKD I.BATTELLI	DATE 02-02-01	DESCRIPTION RP120 POWER AMPLIFIER & SUPPLY BOARD OUTPUTS BOARD - PHONES BOARD	
APP M.GALANTI	REV# A		

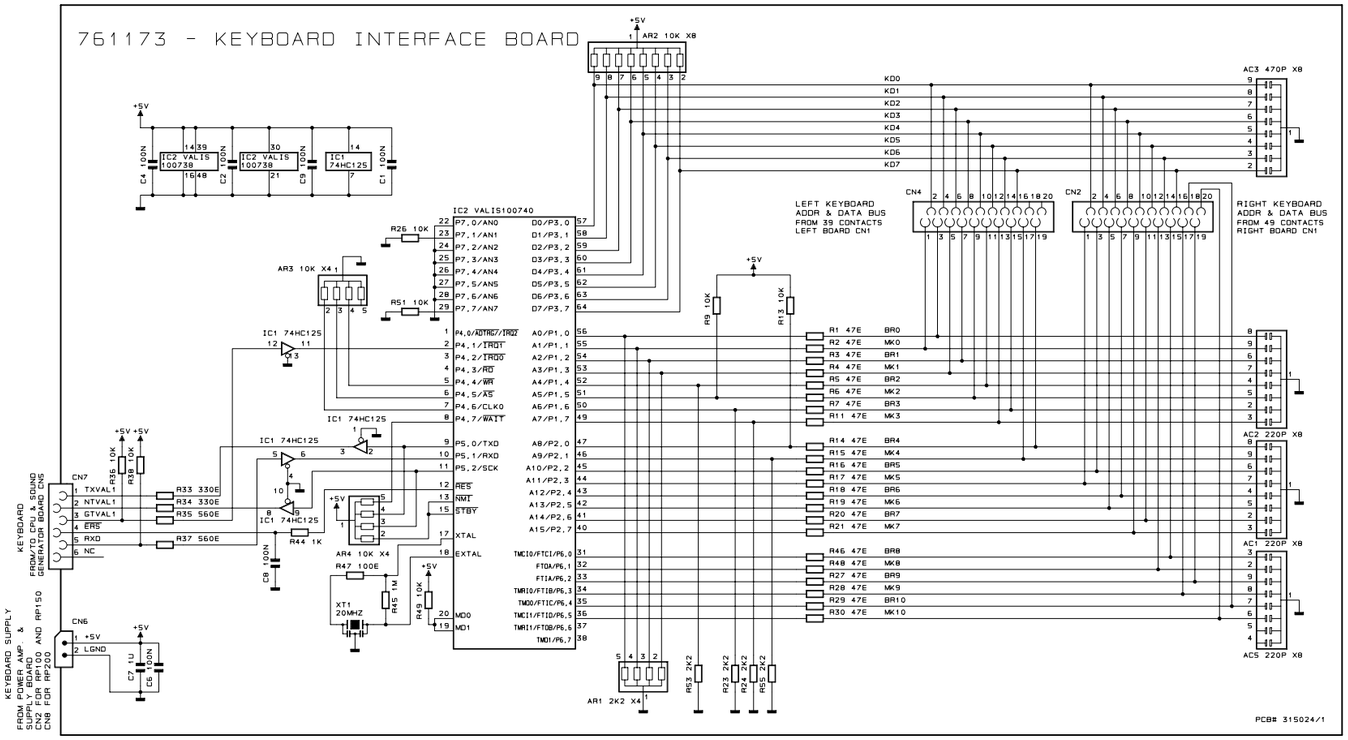
810551 - 49 CONTACTS
RIGHT BOARD
(88NOTES DYNAMIC KEYBOARD)



810552 - 39 CONTACTS
LEFT BOARD
(88NOTES DYNAMIC KEYBOARD)

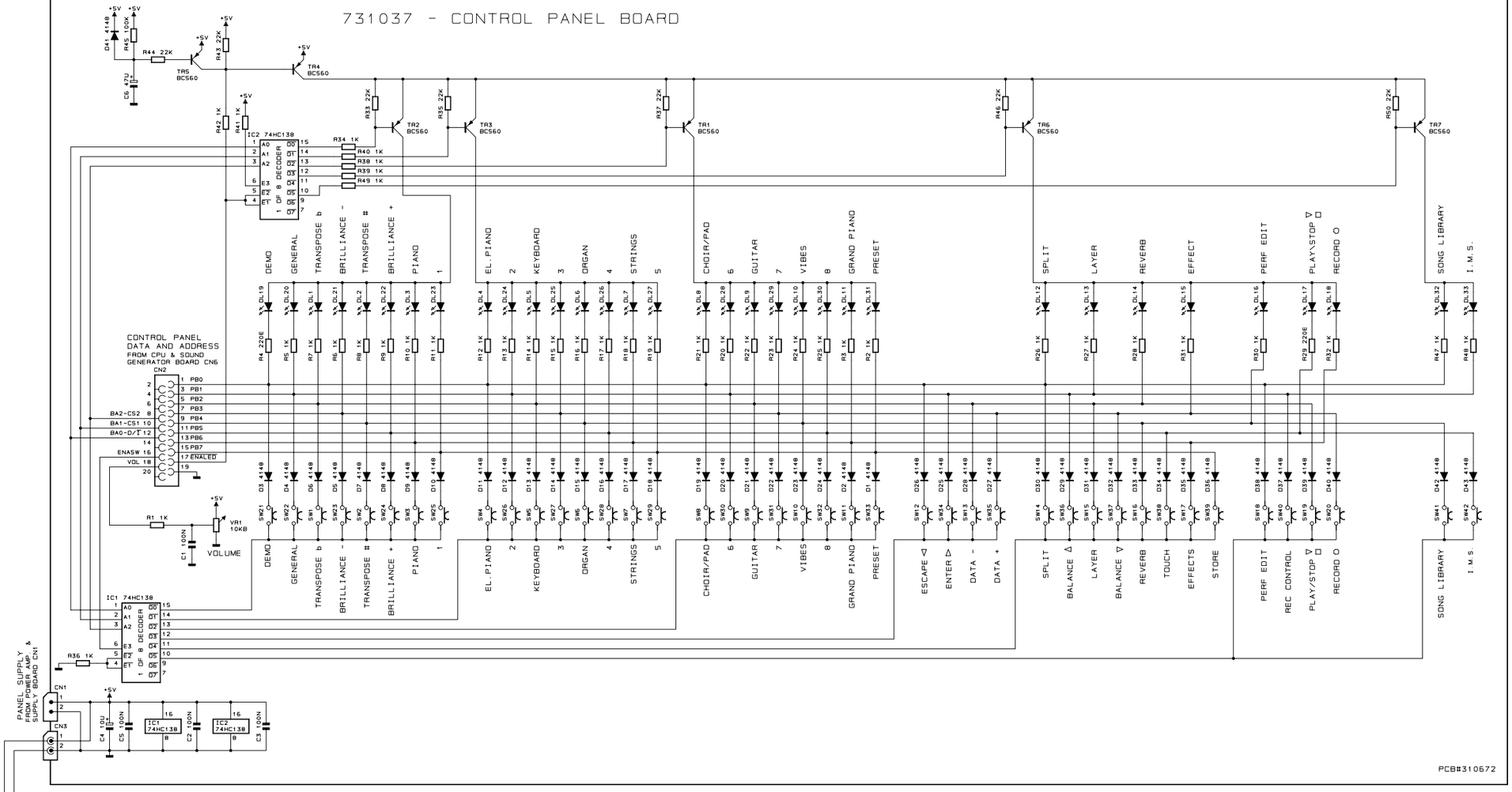


761173 - KEYBOARD INTERFACE BOARD

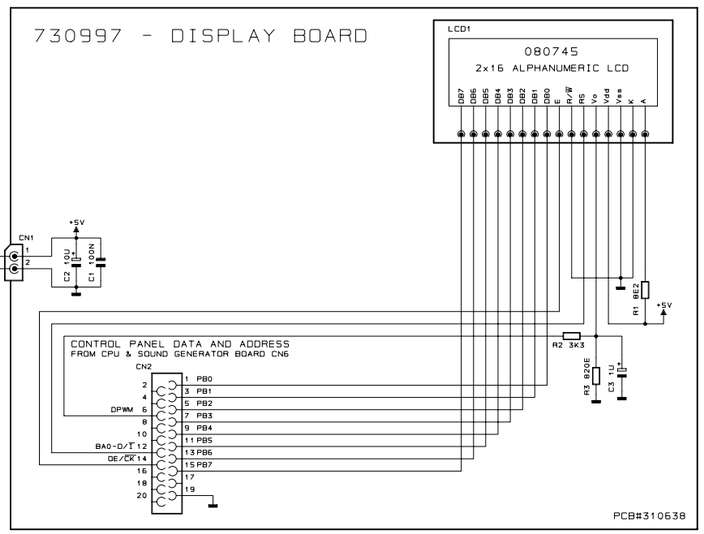


DRW BOCCATO	DWG# 500875	PCB# 310531 - 310530 - 315024	GENERALMUSIC S.p.A.
DEPT. DIG.PIANO	DATE 12/05/99	DESCRIPTION RP100-150-200 CONTACTS BOARD & KEYBOARD INTEFACE BOARDS	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC
PART# 1 OF 1	REV# B		

731037 - CONTROL PANEL BOARD



730997 - DISPLAY BOARD



DRW G.Boccato	DWG# 500940	PCB# 310672 - 310638	GENERALMUSIC S.p.A.
CKD I.Battelli	DATE 02-02-01	DESCRIPTION RP 90-100-120-150 CONTROL PANEL BOARD DISPLAY BOARD	
APP M.Galanti	REV# B		

761214 - CPU & SOUND GENERATOR BOARD

751180 - UPDATING SOFTWARE BOARD

PCB#315166

550657 - EPROM WITH LAST VERSION SOFTWARE FOR RP100, RP150, RP90, RP120
550658 - EPROM WITH LAST VERSION SOFTWARE FOR RP200, RP220 AND GRP300
NOTE: THE EPROM IS NOT INCLUDED AND MUST BE ORDERED SEPARATELY.

PCB#310603/1

CONTROL PANEL DATA AND ADDRESS TO CONTROL PANEL CN1 AND DISPLAY ASSY CN2

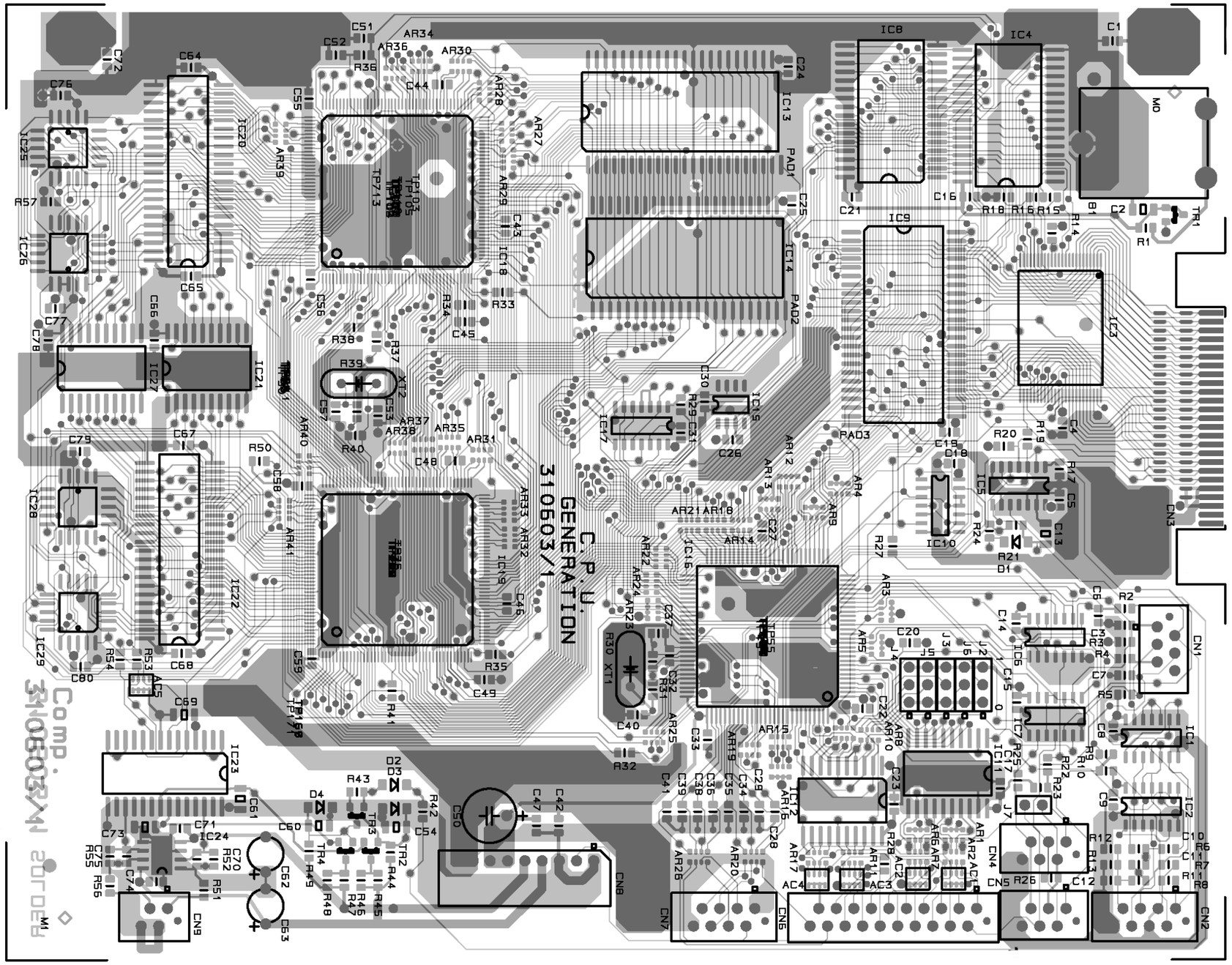
JUMPER SETTING TABLE

MODEL	J4	J5	J3	J6	J2	
RP100 GEM	L	L	L	L	L	
RP100 BAL.	L	L	L	L	H	
RP150 GEM	L	L	L	H	L	
RP150 BAL.	L	L	L	H	H	
RP90 GEM	L	L	H	L	L	*
RP90 BAL.	L	L	H	L	H	*
RP120 GEM	L	L	H	H	L	**
RP120 BAL.	L	L	H	H	H	**

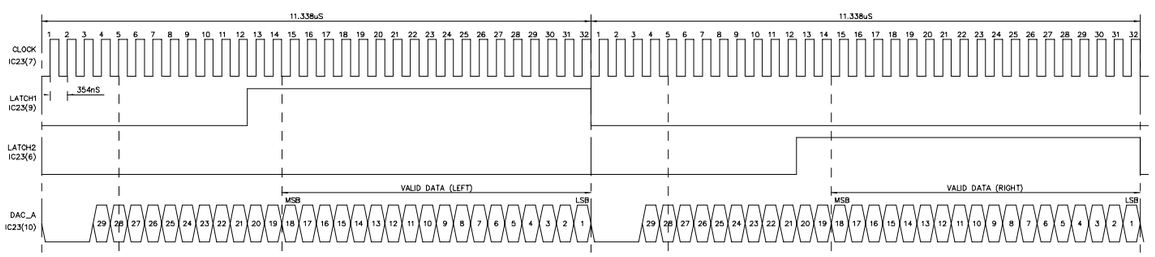
* SOFTWARE VERSION ABOVE 2.00
** SOFTWARE VERSION ABOVE 2.02

DRW G.BOCCATO	DWG# 500938	PCB# 310603/1	GENERALMUSIC S.p.A.
CKD P.FACCIN	DATE 02/02/01	DESCRIPTION RP100-RP150-RP90-RP120	
APP M.GALANTI	REV# B	CPU & SOUND GENERATOR BOARD	

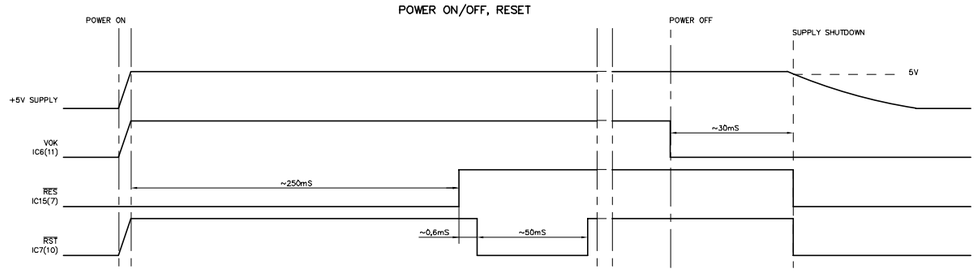
CPU & SOUND GENERATOR BOARD (PCB#310603/1)



PCM SERIAL DATA BUS



POWER ON/OFF, RESET



NOTE: ALL COMPONETS PIN REFERENCE ARE LOCATED ON "CPU & SOUND GENERATOR BOARD" UNLESS OTHERWISE SPECIFIED.

DRW G. Boccato	DWG# 500869	PCB#	GENERALMUSIC S.p.A. ITALY
CKD	DISK: PRT:1/1	Timing Table & 310603 Board Layout	
APP.	REV: 03/08/99		

RP series FAQ

	Questions	Answers
1	What do the pedals make?	**Soft (left pedal):** This pedal is a switch control pedal (on/off) and affects the timbre of the instrument such that it plays softer, allowing you to continue using the same playing style at a lower volume. **Sostenuto only for some models (centre pedal):** This pedal is a switch control pedal (on/off) which sustains the notes of the key currently depressed, all new notes played after having depressed the pedal are not affected, this pedal operates like a grand piano centre pedal. **Damper (right pedal):** This pedal applies the sustain effect to all notes released. If you release a note after depressing the damper, the note will proceed towards its natural decay according to the type of sound played. The Damper pedal is particularly effective with Piano type sounds, it is controlled by a "**Damper Physical Model**" patented by Generalmusic.
2	Why do the uppermost keys play always sustained?	For all piano sounds the notes from E6 to C8 are automatically sustained such as in an acoustic piano.
3	Why do all pedals work in reverse mode?	The instrument reads the status of the pedals at the power on and assume this status (normally open or normally closed depends by the type of pedal) as the default status in the rest position. The pedals must be inserted before you switch on the instrument.
4	Why do some pedal work in reverse mode?	For the same reason explained first you have not to press a pedal while the instrument is switched on and until it is ready to use.
5	I have replaced the DAMPER pedal potentiometer, how do I let position it correctly?	Set the potentiometer to have about 700 ohm between pin 5 and 1 of DIN plug with the pedal at the rest position. Note: the Damper potentiometer have a special resistive stroke, when you replace it use the manufacturer's part only (code 070556).
6	How can I do a complete **SYSTEM RESET**?	Turn on the instrument while pressing down the "General" button. Each time you do an autotest procedure a system reset is performed.
7	Why does not the instrument respond correctly to the key pressed on keyboard after I have replaced the CPU Board?	If the CPU Board replaced is the right type check the jumper setting on it as described on this service manual and execute a complete Autotest.
8	Why does not the instrument respond correctly to the button pressed on controls panel after I have replaced the CPU Board?	If the CPU Board replaced is the right type check the jumper setting on it as described on this service manual and execute a complete Autotest.
9	Why does not the instrument respond correctly to the pedal pressed after I have replaced the CPU Board?	If the CPU Board replaced is the right type check the jumper setting on it as described on this service manual and execute a complete Autotest.
10	Why does not the Instrument retain the user presets and data?	After a long period of inactivity may be occur that the internal battery backup have not a sufficient time for re-charging during the normal activity, try to leave the instrument switched on for about 12-14 hours. Afterwards if the instrument will lost the data again, replace the battery.

Spare Part List

Legend		
EU		= Specify European Version (230Vac)
US		= Specify United States Version (115Vac)
R		= Rosewood Finish
B		= Gloss Black Finish
M		= Mahogany Finish
Gem		= Gem Version
Baldwin		= Baldwin Version
Code		**Description**

Optional Accessories

130301		2mt Midi Cable
970296		**Pianist's Bench (R)**
970297		**Pianist's Bench (B)**
970319		**Pianist's Bench (M)**

Accessories

271307		Owner's Manual (Italian-English-French-German) (Gem)
271308		Owner's Manual (English-French-Spanish) (Baldwin)
130274		Mains Cable (EU)
130276		Mains Cable (US)

Consolette

970390		**RP120 Stand Assembly (R)**
970391		**RP120 Stand Assembly (B)**
970392		**RP120 Stand Assembly (M)**
720613	*	Triple Pedal Assembly (replace entirely)
660698	*	Front Reinforcement Bar for Lower Crossbar
660697	*	Rear Reinforcement Bar for Lower Crossbar
660632	*	Cabinet Support
660407	*	Support for Rear Panel
510308	*	Wooden Parts (R)
510309	*	Wooden Parts (B)
510310	*	Wooden Parts (M)
262291	**	Lower Crossbar (R)
262292	**	Lower Crossbar (B)
262293	**	Lower Crossbar (M)
262290	**	Upper Crossbar (R)(B)(M)
262283	**	Right Leg (R)
262284	**	Right Leg (B)
262285	**	Right Leg (M)
262280	**	Left Leg (R)
262281	**	Left Leg (B)
262282	**	Left Leg (M)
340959	*	Plastic Foot (R)(M)
340943	*	Plastic Foot (B)
340945	*	Circular Anti-Slip Plastic Foot
340116	*	Adhesive Clamp For Pedals Cable
271309	*	Installation Instructions
210021	*	1x15mm Adhesive Red Felt (specify mt)
210018	*	1x5mm Adhesive Red Felt (specify mt)
171814	*	S-Reinforcement for Lower Crossbar
171785	*	Pedals Support
171776	*	Foot Reinforcement
129093	*	WL5x80ts Screw
120687	*	Barrel Nut
120686	*	Conical Screw
120685	*	Threaded Rod
120681	*	MA6x13 Sleeve
120600	*	M4 Self-Locking Nut
120523	*	6mm Black Spring Washer
120463	*	4.3x12.5x1 Black Washer
120374	*	WL4x15tt Black Screw
120336	*	WL4x25tt Black Screw
120070	*	M6x20tc Black Screw

Cabinet

710625		**Cabinet Assembly (R)**
710626		**Cabinet Assembly (B)**
710627		**Cabinet Assembly (M)**
710631	*	Cover Assembly (R)
710632	*	Cover Assembly (B)
710633	*	Cover Assembly (M)
660699	**	Front Panel Finishing (R)(M)
660639	**	Front Panel Finishing (B)
340960	**	Music Stop (R)(M)
653503	**	Music Stop (B)
262287	**	Cover (R)
262288	**	Cover (B)
262289	**	Cover (M)
262271	**	Fillet
120463	**	4.3x12.5x1 Black Washer
120322	**	WL4x15tc Black Screw
120288	**	WL3x20tc Black Screw
710628	*	**Keyboard Cover Assembly (R)**
710629	*	**Keyboard Cover Assembly (B)**
710630	*	**Keyboard Cover Assembly (M)**
660689	**	Front Handle for Keyboard Cover (R)(M)
660612	**	Front Keyboard Cover Handle (B)
660645	**	Rear Keyboard Cover Bar
340922	**	Plastic Sliding Cap for Handle
340811	**	Toothed Wheel
340119	**	Bush
261972	**	Keyboard Cover (R)
262141	**	Keyboard Cover (B)
262142	**	Keyboard Cover (M)
210017	**	2x10mm Adhesive Black Felt (specify mt)
210016	**	1x10mm Adhesive Black Felt (specify mt)
171335	**	Toothed Wheel Bar
120690	**	Toothed Wheel Lock
120310	**	WL3.5x10tt Black Screw
660410	*	Speakers Protection Grid
660405	*	50x240mm Heatsink Grid
510299	*	Wooden Parts (R)
510300	*	Wooden Parts (B)
510301	*	Wooden Parts (M)
262286	**	Rear Panel (R)(B)(M)
262271	**	Fillet
262260	**	Keyboard Cross-bar (R)
262311	**	Keyboard Cross-bar (B)
262312	**	Keyboard Cross-bar (M)
261968	**	Left Side (R)
262137	**	Left Side (B)
262138	**	Left Side (M)
261967	**	Right Side (R)
262135	**	Right Side (B)
262136	**	Right Side (M)
340904	*	Toothed Bar
340116	*	Adhesive Clamp For Pedals Cable
210054	*	1x5mm Adhesive Spik (specify mt)
171804	*	Keyboard Crossbar Angular Fixing
171606	*	Angular Reinforcement
171331	*	Left Cover Clamp
171330	*	Right Cover Clamp
120684	*	M4x10 Sleeve
120681	*	MA6x13 Sleeve
120346	*	WL4x20tc Black Screw
120336	*	WL4x25tt Black Screw
120329	*	WL3x20ts Black Screw
120322	*	WL4x15tc Black Screw
710643		**Music Stand Assembly (R)(Gem)**
710645		**Music Stand Assembly (B)(Gem)**
710647		**Music Stand Assembly (M)(Gem)**
710642		**Music Stand Assembly (R)(Baldwin)**
710644		**Music Stand Assembly (B)(Baldwin)**
710646		**Music Stand Assembly (M)(Baldwin)**
660406	*	Stop Pinch Bar for Music Stand
323062	*	Adhesive Bumpon Rubber
262051	*	Music Stand (R)
262220	*	Music Stand (B)
262222	*	Music Stand (M)
171361	*	Music Stand Hinge
120289	*	WL3x10ts Black Screw
120272	*	WL3x10tc Black Screw
653470		Left Cheek Block for Keyboard (R)(M)
653433		Left Cheek Block for Keyboard (B)
653469		Right Cheek Block for Keyboard (R)(M)
653432		Right Cheek Block for Keyboard (B)
340933		5x5.9x12 Insulated Bush
340916		Button for Power Switch
340329		Rubber Bush for Cable
340075		PC-Board Spacer
323069		11.1X5mm Bumpon Rubber
210216		Adhesive Rubber Foam 20x5mm (Specify mt)
210054		1x5mm Adhesive Spik (specify mt)
180779		210x62mm "Gem" Adhesive
180675		40.5x12 "Gem" Adhesive Plate
180674		20x24mm "GM" Logo Adhesive Plate
180781		75x17mm "Pianovelle" Adhesive
180780		210x62mm "Baldwin Pianovelle" Adhesive
180676		82x13.3mm "Baldwin" Logo Adhesive Plate
171638		Mains Switch Support
120600		M4 Self-Locking Nut
120581		M3 Black Self-Locking Nut
120522		4mm Black Spring Washer
120521		3mm Black Spring Washer
120476		5.5x15x1.5 Black Washer
120463		4.3x12.5x1 Black Washer

120405		B3.5x9.5tc Black Screw
120374		WL4x15tt Black Screw
120341		WL4x20tt Black Screw
120340		WL4x12tt Black Screw
120336		WL4x25tt Black Screw
120289		WL3x10ts Black Screw
120132		M5x20tc Black Screw
120063		M4x20tc Black Screw
120034		M4x12tc Black Screw
120028		M3x6tc Black Screw
120025		M3x10tsp Black Screw
120008		M3x16tsp Black Screw

Mains & Transformer Assembly

110614		Mains Socket
770861		Mains Cables Assembly
110320	*	**Power Switch**
768197		**Mains Filter Board (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-Ul-Csa)
230136		**Transformer 230Vac 130W (EU)**
230137		**Transformer 115Vac 130W (US)**

Power Amplifier & Supply Board

110013		T1.25A Fuse 5x20mm (EU)
110003		T3.15A Fuse 5x20mm (EU)
110061		T3.15A Fuse 6.3x32mm (US)
110026		T1.25A Fuse 6.3x32mm (US)
730675		**Power Amplifier & Supply Board (Pcb#310543)**
340154	*	TO3/TO218 Mica Washer
340079	*	TO220 Mica Washer
340078	*	TO220 Insulated Bush
171514	*	Heatsink Fixing
170717	*	Heatsink for STK
170716	*	TO220 38mm height Heatsink
141010	*	4 Contacts Vert Female Connector
140917	*	2 Contacts Vert Male Connector
140352	*	9 Contacts Hor Male Connector
140351	*	6 Contacts Hor Male Connector
140010	*	3 Contacts P=10 Vert Terminal Block
120849	*	Hor Pc Male Faston 2.8
120582	*	M3 Black Nut
120521	*	3mm Black Spring Washer
120313	*	B3.9x13tc Black Screw
120003	*	M3x8tc Black Screw
110119	*	Fuse Clip 10A max (EU) (US)
100958	*	TDA7265 Dual 25W 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
090856	*	J176 TO92 P-Channel J-Fet Transistor
090183	*	BC550C TO92 LN Npn Transistor
080605	*	KBL02 4A 200V Rectifier Diode Bridge
080156	*	1N4002 1A 100V Rectifier Diode
080103	*	1N4148 100mA 75V Signal Diode
052072	*	1M 1/8w 5% Resistor
052068	*	470K 1/8w 5% Resistor
052060	*	100K 1/8w 5% Resistor
052056	*	47K 1/8w 5% Resistor
052054	*	33K 1/8w 5% Resistor
052052	*	22K 1/8w 5% Resistor
052050	*	15K 1/8w 5% Resistor
052048	*	10K 1/8w 5% Resistor
052047	*	8K2 1/8w 5% Resistor
052044	*	4K7 1/8w 5% Resistor
052037	*	1K2 1/8w 5% Resistor
052036	*	1K 1/8w 5% Resistor
052024	*	100E 1/8w 5% Resistor
050131	*	10E 1/4W 5% Resistor
030554	*	4700u 35v 20% Snap-In Electrolytic Capacitor
030324	*	22u 50V 20% Vert Electrolytic Capacitor
030245	*	10u 50V 20% Vert Electrolytic Capacitor
030170	*	4u7 50V 20% Vert Electrolytic Capacitor
030162	*	3u3 50V 20% Vert Electrolytic Bipolar Capacitor
030082	*	2u2 50V 20% Vert Electrolytic Capacitor
030005	*	1u 50V 20% Vert Electrolytic Capacitor
021028	*	220n 63V 10% MKT Polyester Capacitor
021024	*	100n 63V 10% MKT Polyester Capacitor
021000	*	1n 63V 10% MKT Polyester Capacitor
010599	*	1u 50V -20+80% Ceramic Cap. Multilayer
010595	*	100n 50V -20+80% Ceramic Cap. Multilayer
010483	*	1n5 50V 10% CL2 Ceramic Capacitor
010427	*	470p 50V 5% CL1 N750 Ceramic Capacitor
010364	*	150p 50V 5% CL1 N750 Ceramic Capacitor
010303	*	47p 50V 5% CL1 N750 Ceramic Capacitor

Speakers Assembly

770859		Speaker Cables Assembly
731019		**HF Crossover Filter Board (Pcb#310654)**
140323	*	6 Contacts Vert Male Connector
060253	*	10E 5W 10% Wire Resistor
030348	*	47u 100V 20% Axial Electrolytic Bipolar Capacitor
340928		Plastic Speaker Box
220120		**6" 8ohm Full-range Speaker**
220119		**3" 8ohm Full-range Speaker**
210271		80x10x4Cm Acoustic Filler
210270		20x10x4Cm Acoustic Filler
210217		Black Sealer (specify mt)
171699		3" Speaker Support

Phones Assembly

730674		Phones Assembly
730516	*	**Phones Board (Pcb# 310541)**
230569	**	FL5R200PNT EMI Coil For Signal
140351	**	6 Contacts Hor Male Connector
140217	**	Jack Slim Horizontal S-F Socket
140207	**	Jack Horizontal F Socket (with dual switch)
120857	**	Vertical Male Faston 6.3mm
050131	**	10E 1/4W 5% Resistor
040312	**	330E 1/2W 5% Resistor
010595	**	100n 50V -20+80% Ceramic Cap. Multilayer
652854	*	Phones Board Support
210017	*	2x10mm Adhesive Black Felt (specify mt)
171327	*	PC-Board Fixing
120292	*	WL3x10tc Black Screw

Keyboard Assembly

720633		Keyboard & Interface Assembly
840762	*	20 Wires 25cm Length Flat Cable
840761	*	20 Wires 12.5cm Length Flat Cable
761173	*	**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	**	10Kx4 1/8w 5% Resistor Array
050492	**	10Kx8 1/8w 5% Resistor Array
050414	**	2K2x4 1/8w 5% Resistor Array
010725	**	20MHz Ceramic Resonator With Capacitors
010662	**	220p 10% 50V X8 Cap Array
010661	**	47p 10% 50V X8 Cap Array
720632	*	**88N TP23 Keyboard Assembly**
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
160220	**	Key Return Spring (TP23)
151256	**	Last C Key (TP23)
151255	**	First A Key (TP23)
151254	**	Sharp Key (TP23)
151253	**	B Key (TP23)
151252	**	A Key (TP23)
151251	**	G Key (TP23)
151250	**	F Key (TP23)
151249	**	E Key (TP23)
151248	**	D Key (TP23)
151247	**	C Key (TP23)
340092	*	5mm Board Spacer
120288	*	WL3x20tc Black Screw

Controls Panel Assembly

820616		Controls Panel Assembly (R)(M)
820617		Controls Panel Assembly (B)
810684	*	**Controls Panel Board Assembly**
731037	**	Controls Panel Board (Pcb#310672)
141018	***	20 Contacts Vert Female Connector
140918	***	2 Contacts Hor Male Connector
140529	***	Microswitch 12V 50mA 0.25mm
100606	***	74HC138 1 Of 8 Decoder
090194	***	BC560C TO92 LN Pnp Transistor
080752	***	Led 3mm Wide Diffused Red
080724	***	Led 3mm 40deg High Eff Green
080103	***	1N4148 100mA 75V Signal Diode
070551	***	10K Linear 30mm Slider Potentiometer
052060	***	100K 1/8w 5% Resistor
052052	***	22K 1/8w 5% Resistor
052036	***	1K 1/8w 5% Resistor
052028	***	220E 1/8w 5% Resistor
030403	***	47u 25V 20% Vert Electrolytic Capacitor
030245	***	10u 50V 20% Vert Electrolytic Capacitor
010595	***	100n 50V -20+80% Ceramic Cap. Multilayer
730997	**	Display Board (Pcb#310638)
323069	***	11.1X5mm Bumpon Rubber
141018	***	20 Contacts Vert Female Connector
140918	***	2 Contacts Hor Male Connector
140890	***	4 Contacts Hor Male Single-Strip
080745	***	2x16 Characters Lcd Display
052042	***	3K3 1/8w 5% Resistor
052035	***	820E 1/8w 5% Resistor
052034	***	680E 1/8w 5% Resistor
040134	***	10E 1/2W 5% Resistor
030246	***	10u 25V 20% Low Prof Vert Electrolytic Capacitor
030006	***	1u 50V 20% Low Prof Vert Electrolytic Capacitor
010595	***	100n 50V -20+80% Ceramic Cap. Multilayer
120579	**	M2 Nut
120145	**	M2x10tc Black Screw
660695	*	Controls Panel (R)
660696	*	Controls Panel (B)
653488	*	<+/-> Rubber Pad
653487	*	<<>> Rubber Pad
653486	*	<PLAY-REC> Rubber Pad
653485	*	<DEMO-VIBES> Rubber Pad
653483	*	<SPLIT-REC CONTR.> Rubber Pad
653481	*	<GRAND-PIANO> Rubber Pad
651648	*	Plexiglass Display Screen
651563	*	Cloth For Panel Slits
340915	*	LED Lens
340820	*	Slider Knob
340523	*	6.5mm Spacer
340512	*	Slider Potentiometer Guide
210258	*	Slider Potentiometer Felt
210020	*	1.5x12mm Adhesive Red Felt (specify mt)
210017	*	2x10mm Adhesive Black Felt (specify mt)
171736	*	Control Panel Support
120581	*	M3 Black Self-Locking Nut
120257	*	B2.9x9.5tc Black Screw

Cpu & Sound Generator Board

761214		**Cpu & Sound Generator Board (Pcb#310603)**
560021	*	GAL 16V8C-7 Programmed Disp3 Ram Read
560020	*	GAL 16V8C-7 Programmed Disp3 Ram Write
141018	*	20 Contacts Vert Female Connector
141012	*	8 Contacts Vert Female Connector
141011	*	6 Contacts Vert Female Connector
141010	*	4 Contacts Vert Female Connector
140930	*	9 Contacts Hor Male Connector
140877	*	Jumper For Contacts Strip (p=2.54mm)
140874	*	Single In Line Vert Male Strip (specify contacts)
110282	*	3.6V 60mAh Nicd Battery
106003	*	MAX709 Power Monitor With Reset
106001	*	MC33078P SOIC Dual Low Noise Op. Amp.
105009	*	DISP3 QFP Digital Sound Processor (Hitachi)
105006	*	HD6413003F16 QFP Cpu
104042	*	HM5118160J-5 16Mbit Dram Ta=50nS
104041	*	23C64000G SOP 64MBit Rom “Wave98”
104030	*	AM29F400B-90EC TSOP 4Mbit Flash Memory Ta=90nS
104014	*	HN624316FBC30 SOP 16Mbit Rom “Library”
104000	*	HM628128LFP5 SOP 1Mbit Static Ram Ta=55nS
103012	*	74HC125D SOIC Quad Tri-State Buffer
103010	*	74HC04D SOIC Hex Inverter
103009	*	74HC02D SOIC Quad 2-In Nor Gate
103004	*	AD1865R SOP 18bit D/A Converter
103002	*	74HC245DW SOIC Octal Bus Transceiver
103001	*	74HC08D SOIC Quad 2-Input And Gate
091001	*	BC857 TO236 Smd Pnp Transistor
091000	*	BC847 TO236 Smd Npn Transistor
081204	*	5V6 1/2W 5% Smd Zener Diode
081000	*	PMLL4148 Smd 100mA 75V Signal Diode
055101	*	4K7 X4 1/16w 5% Smd Resistor Array
055100	*	100E X4 1/16w 5% Smd Resistor Array
030565	*	220u 25V 20% Vert Electrolytic Capacitor
030245	*	10u 50V 20% Vert Electrolytic Capacitor
011501	*	220pF x4 10% 100V NP0 Smd Capacitor Array
011500	*	47pF x4 10% 100V NP0 Smd Capacitor Array
011103	*	1u 16V 10% Smd CL2 XTR 1206
010727	*	45.1584MHz Quartz Resonator
010704	*	16MHz Quartz Resonator

Outputs Assembly

730996		Outputs Assembly
730995	*	**Outputs Board (Pcb#310608)**
230569	**	FL5R200PNT EMI Coil For Signal
230527	**	BL02RN2-R62 EMI Coil For Signal
141012	**	8 Contacts Vert Female Connector
141010	**	4 Contacts Vert Female Connector
140918	**	2 Contacts Hor Male Connector
140908	**	6 Contacts Vert Male Small Connector
140247	**	8 Poles Mini Din Female Socket
140217	**	Jack Slim Horizontal S-F Socket
140216	**	6 Poles Din Horizontal Female Socket
140212	**	5 Poles Din Horizontal Female Socket
120857	**	Vertical Male Faston 6.3mm
100734	**	MAX202E RS232 Drivers/Receiver
100602	**	74HC04 Hex Inverter
100035	**	6N138 Optocoupler
090194	**	BC560C TO92 LN Pnp Transistor
090183	**	BC550C TO92 LN Npn Transistor
080103	**	1N4148 100mA 75V Signal Diode
052060	**	100K 1/8w 5% Resistor
052056	**	47K 1/8w 5% Resistor
052048	**	10K 1/8w 5% Resistor
052044	**	4K7 1/8w 5% Resistor
052036	**	1K 1/8w 5% Resistor
052034	**	680E 1/8w 5% Resistor
052030	**	330E 1/8w 5% Resistor
052028	**	220E 1/8w 5% Resistor
030565	**	220u 25V 20% Vert Electrolytic Capacitor
030324	**	22u 50V 20% Vert Electrolytic Capacitor
030245	**	10u 50V 20% Vert Electrolytic Capacitor
030005	**	1u 50V 20% Vert Electrolytic Capacitor
010595	**	100n 50V -20+80% Ceramic Cap. Multilayer
653440	*	Outputs Panel
210018	*	1x5mm Adhesive Red Felt (specify mt)
171329	*	Support for Outputs Panel
120292	*	WL3x10tc Black Screw

Wiring Connections

841213	*	9 Wires 10cm Lenght Crimp Terminal Cable
841206	*	4 Wires 20cm Length Flat Cable
841176	*	20 Wires 47cm Flat Cable with Ferrite and 3 blocks
841173	*	6 Wires 7.5cm Length Crimp Terminal Cable
841137	*	6 Wires 50cm Length Flat Cable
841043	*	2 Wires 35cm Length Crimp Terminal Cable
841041	*	8 Wires 12.5cm Length Flat Cable
841010	*	2 Wires 50cm Length Crimp Terminal Cable
840844	*	2 Wires 7.5cm Length Crimp Terminal Cable
840799	*	4 Wires 7.5cm Length Flat Cable

Updating Software Board

751180	Updating Software Board (Pcb#315166)
550657	Eprom with Last Software Version for RP90-100-120-150 Digital Piano

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.