

~~TIFFANY TICE~~

hp HEWLETT®  
PACKARD

DAVID MEADE

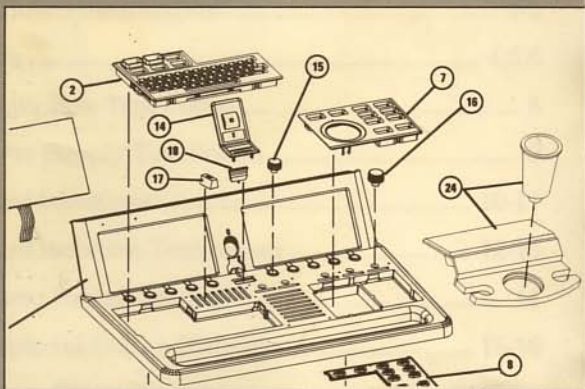
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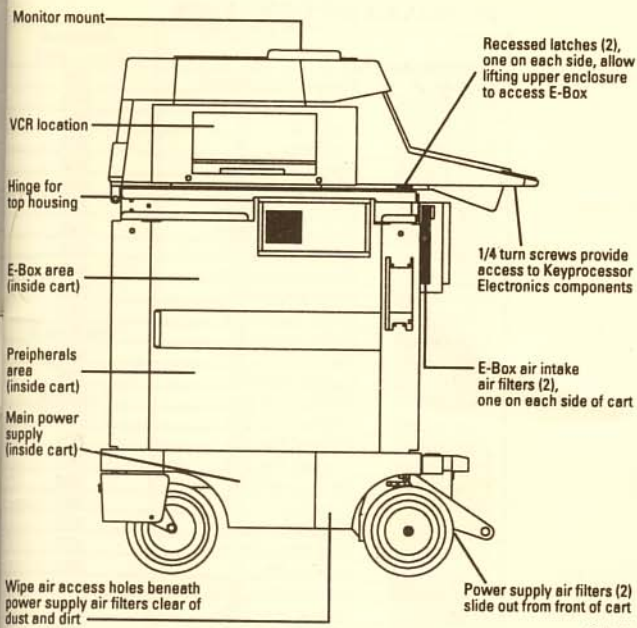
M2406/7A

SONOS 2000/2500

Quick Reference  
Service Guide

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300e062

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## PC BOARD INFORMATION

New/Exchange Part #	Minimum	Rev A.1.x/A.2 Date Code @	Rev B.1.2/B.2
77100-60140	Scanner Motherboard	3401	■
77100-60250/8	Distribution	3505	■
77100-60330/8	Front End	3409	■
77100-60440/8	Fine Delay	3339	■
77100-60520/8	Coarse Delay/200ns	3130	T
77100-60550/8	Coarse Delay/200ns	3408	■
77100-60530/8	Coarse Delay/100ns	3130	T
77100-60560/8	Coarse Delay/100ns	3408	■
77100-60540/8	Coarse Delay/Flt Tp	3130	T
77100-60570/8	Coarse Delay/Flt Tp	3408	■
77100-60660/8	Image Detector #1	3412	■
77100-60670/8	Image Detector #2	3412	■
77100-60840/8	Digital control	3546 (note 3)	■
77100-60930/8	TGC	3310	■
77100-61180/8	Doppler Detector	3228	■
77100-61210/8	PV/Omni Pwr Sup	3239	■ (note 1)
77100-61220/8	PV/Omni Pwr Sup	3541	■ (note 1)
77100-61230/8	PV/Omni Pwr Sup	3608	■
77100-62700/8	Transmit Pwr Sup	3402	■
77100-67500	Fan Control/Rear	2834	■
77100-62740	Rear I/O	3403	■
77100-65010	Scan Conv. Motherbd	3050	■
77160-65030	Scan Conv. Motherbd	3527	■
77100-65150/8	Scanner I/O	3524	■
77160-65160/8	Scanner I/O	3549	■
77100-65210/8	Doppler Processor	3406	■
77100-65310/8	DSR (note 2)	3140	■
77100-65440/8	Flow Processor	3408	■
77160-65510/8	R-Theta	3428	■
77100-65530/8	R-Theta	3544	■
77100-65610/8	Image Memory	3040	■
77160-65630/8	Image Memory	3544	■
77100-65700/8	PVT	3434	■
77100-65800/8	BW CLR	2914	N/A
77100-65900/8	Color CLR	2914	N/A
77100-65810/8	Combined CLR	3636	■
77100-66010/20/8	Video/I/O/ NTSC/PAL	3312	■
77100-66280/8	Processor Graphics	3523	■
77100-66300/8	Strip Chart	3325	■
77100-66380/8	AQ/Split	3405	■
77100-67500	Fan Control-Front	2834	■
77100-66590	AQIF Dataport	N/A	■
77921-60100/8	Keyscanner/Audio	3527	■
77921-60200	Main I/O	3402	■
77921-60240	Filter Board, 12V	N/A	■
77921-60300	Physio I/O	3351	■
77921-60400	System I/O	3341	■
77921-60600	Physio, Entended	3550 (note 3)	■
77921-60620	Physio, Entended	3621	■
77921-60610	Physio, ECG/Aux only	3550 (note 3)	■
77921-60630	Physio, ECG/Aux only	3621	■
77921-61300/8	Qwerty Board	3606	■
77921-61400	Function Keyboard	3606	■
77921-61700	Qwerty LED Daughterbrd	3330	■
77921-61800	Fun. LED Daughterbrd	3330	■
77921-80030	Touch Screens L & R	N/A	■
2090-0330	EL Panels Left or Right	N/A	■
1818-5622	SIMM Mem. Module	N/A	■
C2748-69501	(exchange) 32M SIMM	N/A	■
1818-5623	SIMM Mem. Module 8M	N/A	■

@ Minimum Date code is to be used in determining board revision levels to be used in kits and as replacement parts during repairs. It does not mean that a working board earlier than this date code should be removed from a system.

■ = Can put this board in this system.  
T = Can use this board for troubleshooting dead systems, but NOT IQ problems. Must not be left in system.

Note 1: 77100-61210 works only with A.0 & A.1.2. 77100-61220 and 77100-61230 are interchangeable.

Note 2: Proper DSR EPROMS must be used. Varies depending on rev. level.

Note 3: This is the minimum date code that should be used with this board in any B.0 system.



## PARTS

### VCRS - Exchange

77612A Panasonic 7300 NTSC	77612-68000
77622A Panasonic 7330E PAL	77622-68000
77613A Panasonic 7350 NTSC	77613-68000
77623A Panasonic 7350E PAL	77623-68000
77615A Panasonic MD 830 NTSC	77615-68000
77625A Panasonic MD 830E PAL	77625-68000

### PRINTERS, DSRS, MONITOR - Exchange

77560A Sony UP870 B/W NTSC	77560-68000
77565A Sony UP860 B/W PAL	77565-68000
77580A Sony UP910 B/W NTSC	77580-68000
77585A Sony UP910P B/W PAL	77585-68000
77530A Sony UP3000 Color NTSC	77530-68000
77530B Sony UP1850MD Color NTSC	77530-68100
77535A Sony UP3000P Color PAL	77535-68000
77535B Sony UP1850P Color PAL	77535-68100
77550B Sony UP5200 Color NTSC	77550-68001
77550C Sony UP5600MD Color NTSC	77550-68200
77555C Sony UP5600MDP Color PAL	77555-68200
77560B Sony UP890 Printer B&W	77560-68200
77450B DSR (2X drive)	77450-68100
77450C DSR (4X drive)	77450-68200
Monitor (12inch)	77921-68000

### TRANSDUCERS - Exchange

#### Sector

21202A 2.0/2.5 MHz	21202-68000
21205C 3.5 MHz	21205-68200
21210B 5.0 MHz Med.	21210-68100
21211B 5.0 MHz Short	21211-68100
21215A 2.5/2.0 MHz w/Dyn. Elev.	21215-68000
21242A 3.5/2.7 MHz	21242-68000
21243A 3.5/2.7 MHz w/Dyn. Elev.	21243-68000
21245A 5.0/3.7 MHz w/Dyn. Elev.	21245-68000
21246A 5.0 MHz Wide	21246-68000
21275A 7.5/5.5 MHz	21275-68000

#### Linear

21253A 5/3.5/2.5 MHz CLA	21253-68000
21253B 5/3.0/2.5 MHz CLA	21253-68100
21255A 4.5 MHz	21255-68000
21255B 4.5/3.5 MHz Trapezoidal	21255-68100
21258A 7.5 MHz	21258-68000
21258B 7.5/5.5 MHz Trapezoidal	21258-68100
21273A 7.5/5.0/3.5 MHz CLA	21273-68000
Standoff	21286-60060
Standoff Refill	21286-60020

#### TEE

21363A 5.0 MHz Biplane	21363-68000
21364A 5.0/3.7 MHz Omni	21364-68000
21365A 5.0 MHz Mini	21365-68000
21366A 7.5/5.5 MHz Biplane Ped.	21366-68000
21367A 6.2/5.0 MHz Omni II	21367-68000

#### Non-imaging

21221A 1.9 MHz	21221-60061
21223A 5 MHz CW	21223-60060
21228A 1.9 MHz PW TCD	21228-60060

## PRINTER SUPPLIES

77510A Kowa Thermal Paper	40479A
77530/5A Color Thrmal Prntr Paper	13993A
77530B/5B Color Paper (500 sheets)	21002A
77530B/5B B/W Paper (500 sheets)	21003A
77530A/535A Paper Tray	A-8262-176-ASON
77530A/535A Door, Ribbon Compart	X-3745-701-1SON
77530B Paper Tray	A-8310-002-ASON
77530B Print Output Tray	3-183-227-01SON
77535B Paper Tray	A-8310-002-DSON
77535B Print Output Tray	3-183-227-02SON
77550/555A/B Color Thrmal Prntr Paper	13991A
77550/555A/B B/W Thermal Paper	13992A
77550A/555A Paper Tray Assembly	A8261-099-ASON
77550A/555A Paper Eject Tray	3725-780-01SON
77550B Paper Tray Assembly	A-8261-250-ASON
77550C/555C Color Printer Paper	21006A (1 box)
77550C/555C Paper Tray Assembly	21007A (1 case)
77550C/555C Paper Eject Tray	A-8278-133-BSON
77550C/555C Ink Ribbon Holder	3-685-292-01SON
77560B B/W Printer Paper (5 rolls)	A-8278-124-ASON
77560/565A/B B/W Printer Paper	21005A
77560/565A Cleaning Sheet	M2236A (sm)
77580/585A B/W Printer Paper (lg)	243049501-SON
77580/585A Cleaning Sheet	M2237A
77580A/585A Door Assembly	373486901-SON
77580A/585A Paper Shaft	X-3714-939-1SON
77580A/585A Door Catch	3-741-020-01SON
	4-374-714-01SON

## SUPPLIES

Aquasonic gel 12 sm/1 lg bottle	40483A/B
Bite Guard - Adult	M1828A
Blank Optical Disk (1X media, Qty 8)	C2588A
Blank optical disk (2X media, Qty 8)	C2588T
Blank optical disk (4X media, Qty 8)	C2588F
S-VHS SQ-T120 case	13921B
TEE Sheath Kits (10)	40487A/E
Ultrasound transmission gel (Eur.)	40404A/B

## CABLES

RGB Monitor	77921-64010
RGB Internal	77100-64103
RGB Auxiliary	77100-64102
RGB Internal (to VCR bay)	77960-64021
Strip Chart	77921-64290
VCR (rear I/O to VCR)	77921-64040
VCR (main I/O to VCR)	77921-64020

## MISCELLANEOUS PARTS

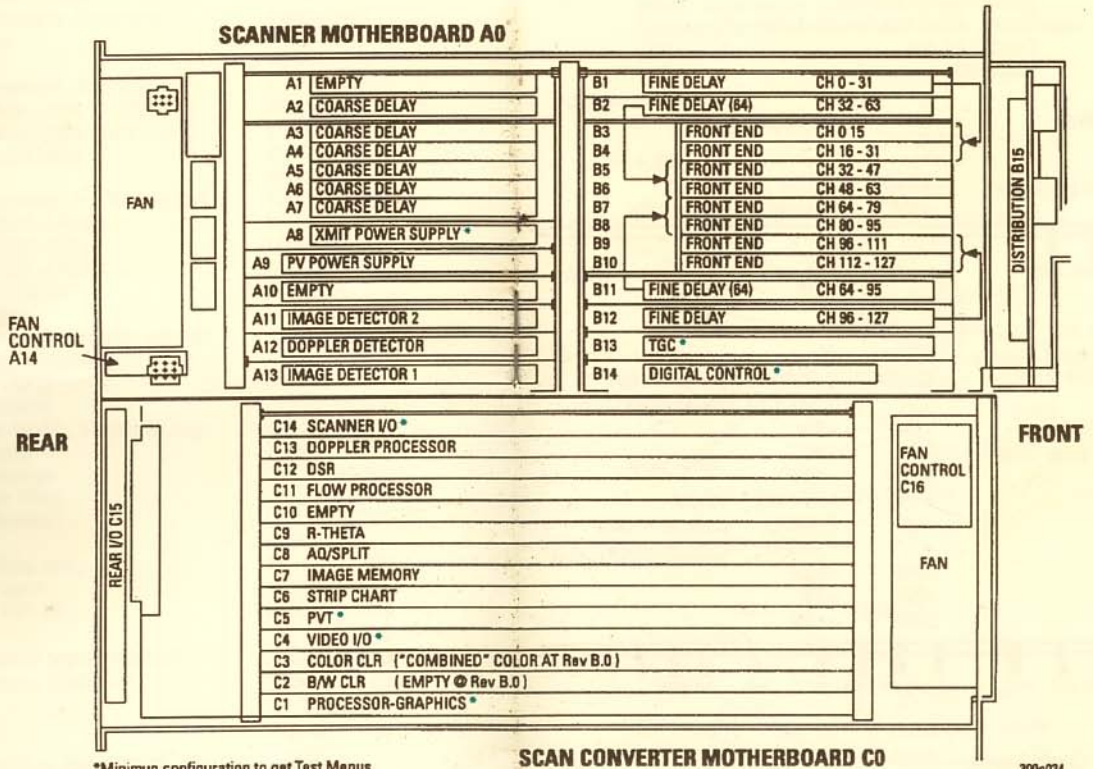
Analog Ribbon Cable	77100-64550
Battery (Processor Graphics)	1420-0349
Battery cover	1400-1712
BNC Barrel	1250-0080
BNC to Miniphone, Adaptor	77530-64010
Circuit breaker, 10A (220/240V)	3105-0302
Circuit breaker, 20A (100/120V)	3105-0258
Digital Ribbon Cable	77100-64560
Filter kit	M2406-60007
ECG cable (round) for TEE in OR	77020-60300
ECG cable (US-AAMI)	M1580A
ECG cable (IEC-INTL)	M1590A
ECG leads (US-AAMI)	M1603A
ECG leads (IEC-INTL)	M1613A
Fan for Imager	3160-0571
Keyprocessor quarter turn screws	1390-1036 (new style)
LED (Qwerty, Function)	1990-1682
LED (TGC, LGC)	AY4553K
Qwerty keyboard	77921-62350/1/2/4/5
Static Wipes for EL Touch Screen	9300-1741
Storage Caddy	77921-42440
Tectrol exchange	77101-68100
TEE Adapter Plug	77020-60315
TEE Care Booklet	21364-99740
Trackball	0950-1759
Transistor plate assy	77100-62250
Transducer latch	1252-4254
Transducer RFI kit	21200-80300
Cart Wheel	77921-87450
Footswitch (new style, w/label)	77921-62470
Physio Interface Cable Kit	77921-62480

## BLANK PANELS (GLACIER GRAY)

Panel, 3.5 inch, height	77921-07761
Panel, 5.25 inch, height	77921-07762
Panel, 7 inch, height	77921-07763
Panel, 8.75 inch, height	77921-07764
Panel, 1.75 inch, height	77921-07765
Panel screw, glac. gray	77921-22320



### SCANNER MOTHERBOARD A0



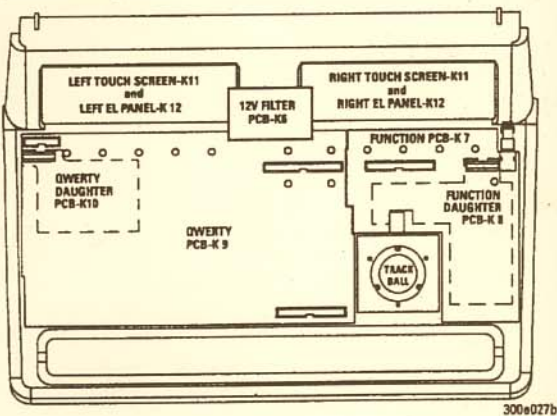
\*Minimum configuration to get Test Menus

### SCAN CONVERTER MOTHERBOARD C0

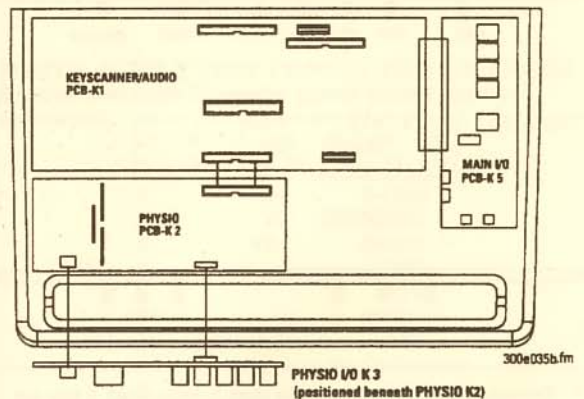
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### KEYPROCESSOR BOARD LOCATIONS

Boards on top section (from the top when closed)

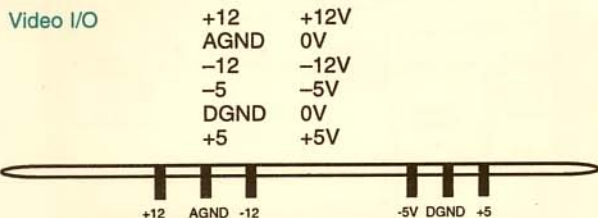
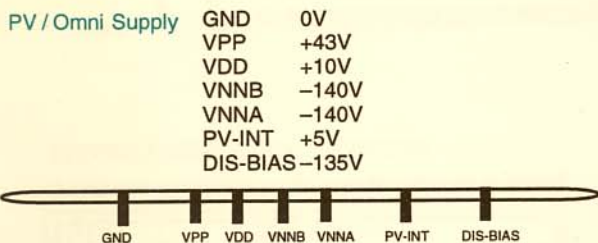
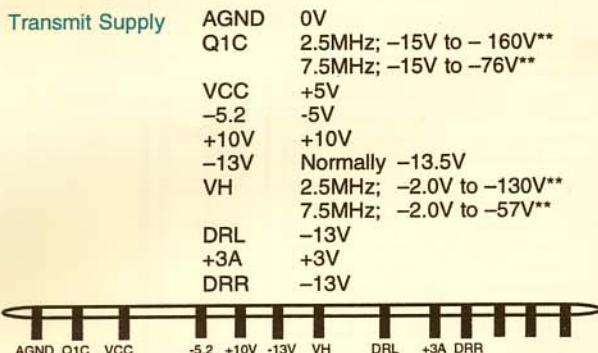
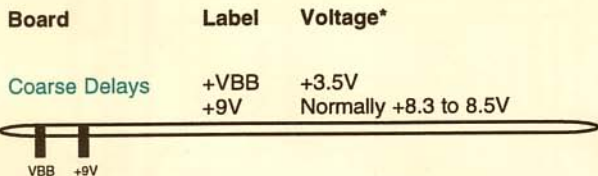


Boards on bottom section



## IMAGER BOX TEST POINTS

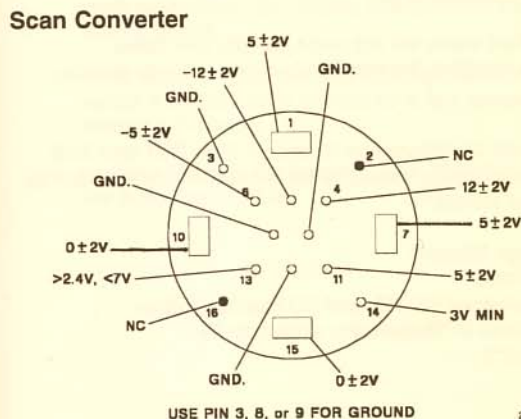
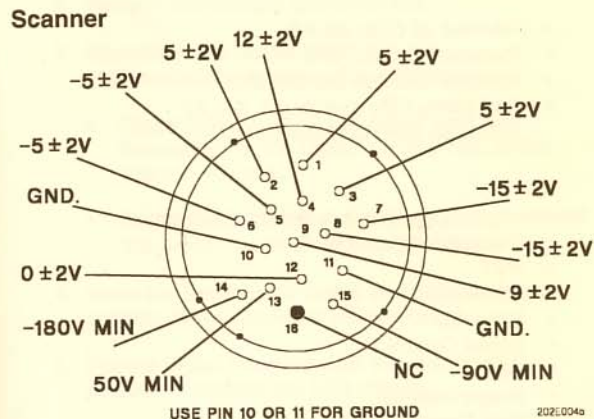
- Note:** - Only one transducer connected:  
2.5 MHz or 7.5 MHz.  
- Mode: 2D (Doppler off, Color off)  
- Depth: 24 cm  
- Gain: 50



\* The voltages measured should be close to those listed. If they are significantly different, there is a power supply problem.  
\*\* Varying gain from 0 to 50.

## POWER CABLE UNLOADED VOLTAGES

- Note:** - Disconnect all three power cables when testing either Scanner or Scan Converter cables.  
- Disconnect the controller DC cable at the Main I/O (J9).



## POWER SUPPLY TEST CONNECTOR VOLTAGES

Scanner and Scan Converter power cables must be connected.

Pin	Voltage
1	-180V
2	-90V
3	+50V
4	GND
5	+12V
6	+9V
7	-12V
8	No Connection
9	-5.3V
10	0V (Scanner +5 return)
11	+5V (Scanner)
12	+5V (Scan Converter)
13	0V (Scan Converter +5 return)
14	-15.2V

## BOARD ISOLATION TECHNIQUES

### Reduce the system to 64 channels

Reducing the system to 64-channels will isolate the problems to one half of FE, FD, and CD boards.

- Remove all CDs: A2-A7
- Remove FDs: B1, B12
- Remove FEs: B3, B4, B9, B10
- Add 200ns CDs to slots A5, A6, A7 (Requires one additional kit board.)

### Minimum Configuration to get Test Menus

- Processor Graphics
- PVT
- Scanner I/O
- Video I/O
- Digital Control
- TGC
- Image Detector
- Xmit Power Supply
- Keyscanner

If the Test menu will not come up with only these boards installed, the problem is in one of these boards.

### Minimum Configuration to Image, Run RST and SAB

Add the following boards to the "Minimum Configuration to get Test Menus":

- Image Memory
- R-Theta
- 64-channel FE, FD, and CD boards. (Follow instructions in "Reduce the system to 64-channels").

### Stand Alone Basic

1. Power down system.
2. Remove transducers and lower bail.
3. Disconnect the cables which provide communications between the subsystems:
  - Digital ribbon cable (front cable) from the Scanner I/O to the Digital Control/TGC at the Scanner I/O end.
  - RS232 cable from the rear of the E-box, "Kp Serial", to the Main I/O at the E-box.
4. Move the Scanner I/O toggle switch to the front position (Scan Converter internal clock).
5. Put the Digital Control switch 5 in the Closed position to activate the LED display.
6. Power on the system. "SAB" should be displayed on each subsystem LED display briefly before the testing begins.
7. If the Scanner does not start running SAB, close switch 8 on the Digital Control for a few seconds to reset the Scanner.
8. Look for errors in the format "XXXX XXXX" on the subsystem LEDs.



## SYSTEM SWITCH SETTINGS

### Keyscanner board - 8 bank DIP at U222

Switch #	Function	On / Off (Up/Down)
1	Not used	Off
2-3	<b>Factory</b>	On / Off
4	EL frame rate	60Hz / 70Hz (Normal)
5	Data line	Off
6	Factory mode	On / Off
7-8	Not used	Off

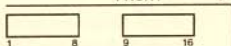
### Keyscanner board - 4 bank DIP at U138

Switch #	Function	On/Off (Up/Down)
1	Reset Keyscanner	Reset / Off
2	Factory	On / Off
3	Flash Program	Program / Off
4	Factory	On / Off

### Toggle switches

Board	Function	Forward/Back
TGC	TV Format	PAL / NTSC
Scanner I/O	Clock	Scan Conv./ Sys.

FRONT →



### Processor Graphics board

Switch #	Function	On / Off (Up/Down)
1	TV Format	PAL / NTSC
2	<b>Factory</b>	On / Off
3-5	Not used	Off
6	<b>Factory</b>	On / Off
7	Flash Program	Program / Off
8	<b>Factory</b>	On / Off
9	Not used	Off
10	<b>Factory</b>	On / Off
11-16	Not used	Off

### Video I/O board

Switch #	Function	Open/Closed (Down/Up)
1	Bkgrd level on tape	Grey / <b>Normal</b>
2	Loopback	Loopback / Non-loop back
3	Color Burst	Enabled / <b>Disabled</b>
4	Camera Port	<b>Color</b> / B/W (Normal)
5	RGB Aux Port chngd to Betacam	Betacam / <b>Normal</b>
6	RGB Aux Port chngd to Sync on Green	Sync on green / <b>Off</b>
7	RGB Aux video Levels	.7Vp-p / 1Vp-p (Normal)
8	RGB Int. Video Levels	.7Vp-p / 1Vp-p (Normal)

### Digital Control board

Switch #	Function	Open/Closed (Down/Up)
1-3	Factory	On / Off
4	Flash Program	<b>Normal</b> / Program
5	LED Display	<b>Normal</b> / LED*
6-7	Not Used	Off
8	Reset Scanner	<b>Normal</b> / Reset

\* Never image with 5 closed. Doppler tones may be generated.

**Bold** = Factory defaults

## PERIPHERAL SWITCH SETTINGS

### Kowa Recorder 77510A:

Config: (Hold period key while applying power) P - 0 1 3

Errors:

H: Thermal head overheated.

PS: System speed set for 10 mm/sec.

E: Test switch set for T on back of recorder.

J: Paper jammed.

UP: Thermal head positioned incorrectly.

### Sony Printer Color UP-5000 77550A/77555A :

75 Ohms (Input): ON (no terminators); AGC: OFF

### Sony Printer Color UP 5200 77550B:

75 Ohms (Input): ON Gain = +.5; AGC: Off

### Sony Printer Color UP-5600 77550C/77555C

75 Ohms (Input): ON

### Sony Printer Color UP-3000 77530/535A:

SW1 DIP switches: All OFF (down) except 4, 5 & 6 ON

Brightness = Center position

### Sony Printer Color UP-1850 77530/535B:

DIP switches: All OFF (down) except 3, 4, 5 & 6 ON

Gain = +2

### Sony Printer B/W UP-860/870 77560/565A:

DIP switches: 1 OFF (up), all others ON

Gamma: middle.

Dadj (NTSC) or Densite (PAL): Middle

### Sony B/W Printer UP-890 77560B

Back Panel Controls: All DIP switches down

Front Panel Controls:

Contr. & Brt = detent

Direction = STD

Size = Normal

Gamma III for UPP-110 HA paper

Gamma II for UPP-110 HD paper

Paper type IV for UPP-110 HA

Paper type II for UPP-110 HD

### Sony Printer B/W UP-910 77580/585A:

DIP switches: All OFF

75 ohms: ON

### Panasonic AG-MD830 VCR

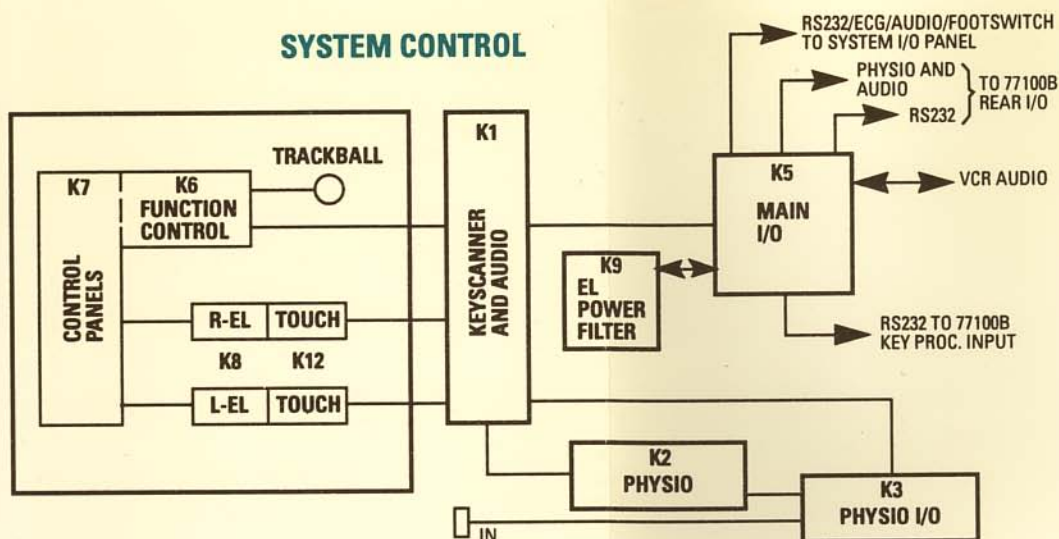
Audio Out	Mix
Audio Out Meter	Norm
Input	S-Video
S-VHS	Auto
Menu	Off
Mode Lock	Off
VISS	Rec
Tape Select	E120 (NTSC), E180 (PAL)
Auto Back	On
Tape In Mode	Stop
Tape End Mode	Stop
Rec. Tape End	Stop
Standby Off Time	30 min.
HiFi Rec	Off
Audio Dub	Ch2
Edit	Off
YC Filter	Off
	15

## PERIPHERAL SWITCH SETTINGS Cont'd

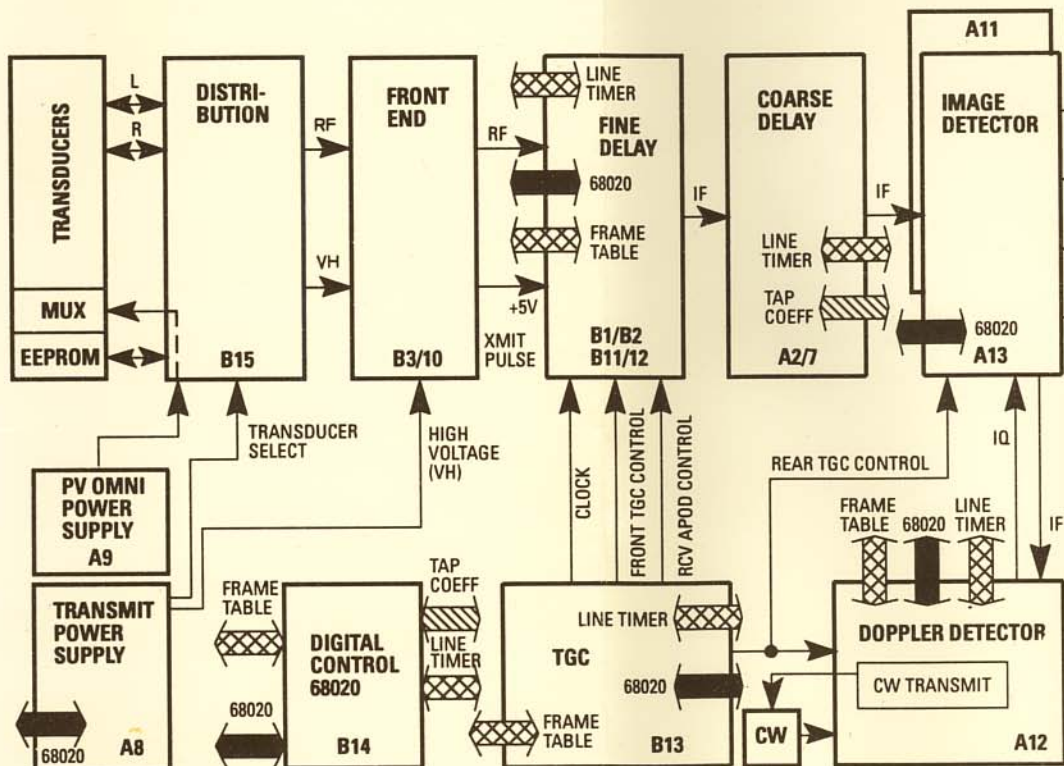
### Panasonic AG-7300/7330/7350 VCRs

YC Filter (Notch):	OFF
Controller Select:	1
Audio CH2 Select:	AUDIO
Mode Lock:	OFF
Auto Backspace:	ON
Video Sensor Rec:	OFF
CH2 Meter:	CH2
Audio Limiter:	OFF
Input Select:	S-Video
S-VHS:	ON (or Auto)
Audio Dub:	CH1-CH2
Audio monitor:	MIX
Dolby NR:	OFF
Video Mode:	AUTO
Tape Remain:	NORM
Edit:	OFF
Tracking, slow tracking:	Set to Detent
Picture:	Set to Mid-range
TV/VCR:	Any
Video Out Select:	NORM
Sync:	INT
Ext Timer Rec:	OFF
Audio Monitor Meter:	NORM
Audio Out:	NORM
Hi-Fi Rec:	OFF
TV System:	PAL or NTSC

## SYSTEM CONTROL



## SCANNER 77100B

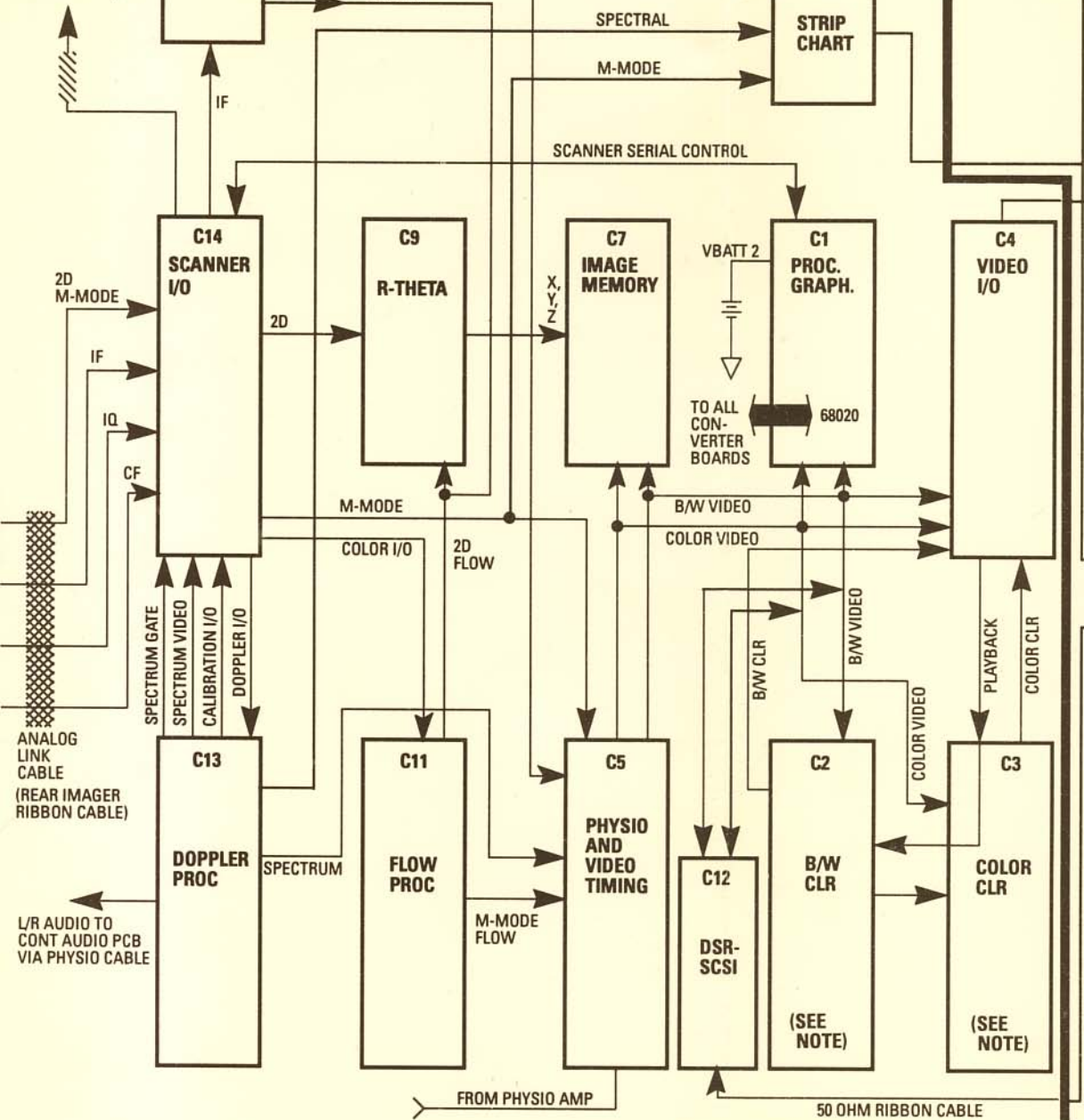




# SCAN CONVERTER 77100B

# OUTPUTS

CLOCKS, SERIAL BUS  
SYNC. MODE  
DIG LINK CABLE  
TO DC/TGC PCB'S  
(FRONT IMAGER  
RIBBON CABLE)



L/R AUDIO TO  
CONT AUDIO PCB  
VIA PHYSIO CABLE

NOTE: AT REV B.0, SLOT C2 IS EMPTY AND  
THE B/W CLR FUNCTION IS COMBINED WITH C3

# OUTPUTS AND PERIPHERALS

