

Service
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MX980D/37



Service Manual



TABLE OF CONTENTS

	Page
Location Boards / System info	1-2
Technical Specification	1-3
Service Tool / Measurement setup / Safety	1-4
Warning / Handling Chip components	1-5
Abbreviations	1-6
Instruction for Use	2
Dismantling hints / Service positions	3-1
Dismantling hints MDM Module	3-2
Wiring diagram	3-3
Block diagram	4
Service Test program	5
Front Board	6
Tuner 95 diagram	7A
ECO 5 Tuner diagram	7B
Multi-Channel Decoding Module	8
Mains Board	9
Mono Board	10
Exploded view	11
S-VHS Board	12
Exploded view partslist	13
Partslist Mono Board	14

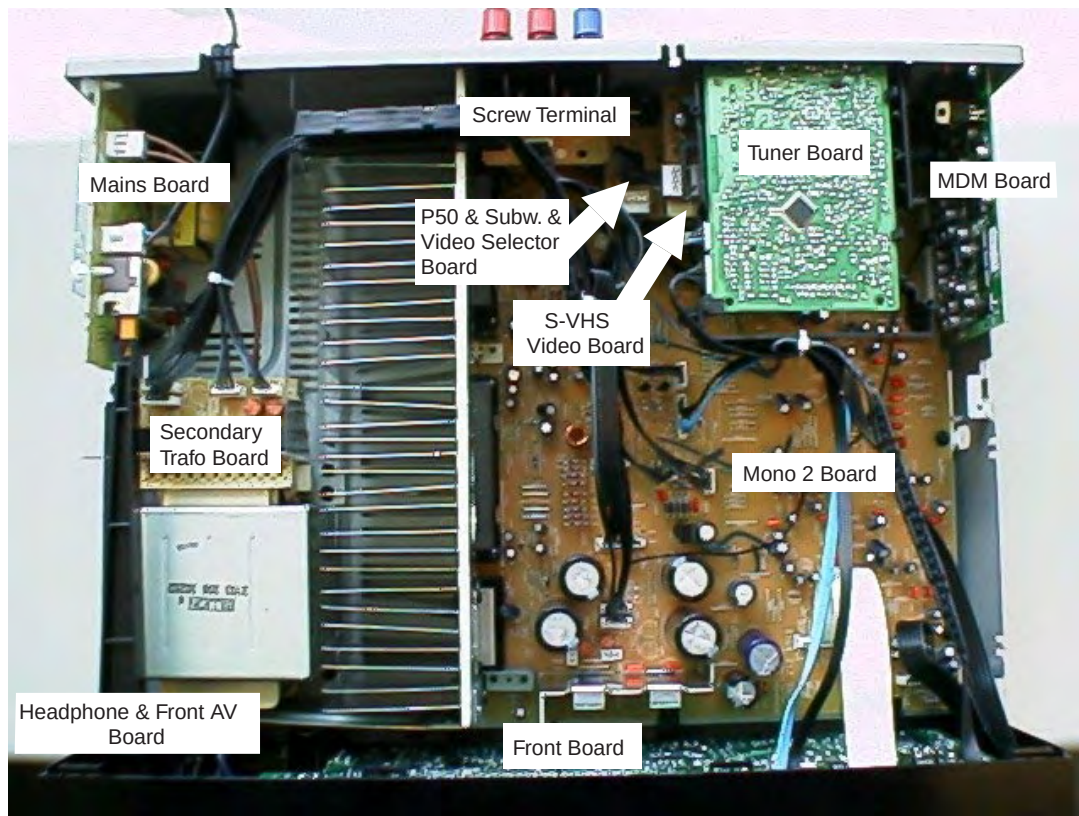
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

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PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS



SYSTEM INFORMATION

Receiver	Front speaker	Center speaker	Surround speaker	Subwoofer
MX 980D/37 include :				
FR975/17	2 x Home Cinema Speaker 100W	Home Cinema Center Speaker 100W	2 x Home Cinema Speaker 100W	FB201V/17

VERSION VARIATIONS

Features & Board in used	Type & Versions	FR975		
		/00	/01C	/17
Front colour		Black	Champagne	Black
Tuner board - Tuner 95		x	-	-
Tuner board - ECO 5		-	x	x
RDS		x	-	-
Antenna input FM		Coaxial 75R	Coaxial 75R	Clickfit 300R
Mains cord type		IEC	IEC	UL polarized
Mains outlet type		IEC	IEC	UL polarized
Mains voltage		230V	110-127 / 220-240	120V
Voltage selector		-	x	-

SPECIFICATION FR975

General

Mains voltage	: 230V for /00 : 110-127V / 220-240 switchable only /01/01C : 120V for /17
Mains frequency	: 50Hz for /00 : 50/60Hz for /01/01C : 60Hz for /17
Power consumption	: ≤ 2W at stby : ≤ 3W at stby 240V/01/01C
Dimension. wxhxd	: 435x138x350 mm
Remote control	: Multibrand/Universal

Amplifier

Output power	
Stereo mode (L+R)	: 2x100W DIN only /00/01 (1kHz, 0,7%THD, 6Ω) : 2x80W FTC only /17 (40Hz-20kHz 0,7%THD, 6Ω)
Surround mode	
L+R	: 2x100W (1kHz, 0,7%THD, 6Ω)
Center	: 100W (1kHz, 0,7%THD, 6Ω)
Surround Left+Right	: 2x100W (1kHz, 0,7%THD, 6Ω)
Distortion (5W)	
1kHz	: ≤ 0,05%
40Hz - 20kHz	: ≤ 0,2%
Headphone	: 6,3mm stereo jack with switch
Output level	: 3V EMF, 60Ω
Crosstalk between source (1W)	—1kHz : ≤ -65dB 250Hz – 10kHz : ≤ -60dB
Crosstalk between channels (1W)	-1kHz : ≤ -55dB 250Hz – 10kHz : ≤ -50dB
Frequency response	: ≤ 10Hz – ≥ 20kHz (-3dB) Limit
Power stage protection	: Shortcircuit : DC (Vout ≥ 10V) for ±1sec
Temperature	: Transformer (≥ 140° Celcius) : Heatsink (≥ 140° Celcius)

Audio Selector

Input sensitivity	
Phono	: 5mV impedance 47kΩ/220pf
CD	: 250mV impedance ≥ 47kΩ
CDR/TAPE	: 250mV impedance ≥ 47kΩ
VCR	: 250mV impedance ≥ 47kΩ
TV	: 250mV impedance ≥ 47kΩ
SAT	: 250mV impedance ≥ 47kΩ
6CH / DVD	: 250mV impedance ≥ 47kΩ
FRONT AV	: 250mV impedance ≥ 22kΩ
Output level	
CDR/TAPE	: 250mV impedance ≤ 1kΩ
VCR	: 250mV impedance ≤ 1kΩ
Output level (variable)	
Subwoofer pre-out	: 800mV impedance ≤ 1kΩ
Center pre-out	: 800mV impedance ≤ 1kΩ

Digital Selector

Input	: 2 x cinch : 2 x optical
Output	: 1 x cinch

Video Selector - CVBS

Input sensitivity	
DVD/VCR/TV/Front AV	: 1 Vpp impedance 75Ω
Output level	
Monitor/VCR	: 1 Vpp impedance 75Ω
Frequency response	: ≤ 50Hz → ≥ 6MHz

Video Selector - SVHS

Input sensitivity	
DVD/VCR/TV	: 1 Vpp impedance 75Ω
Output level	
Monitor/VCR	: 1 Vpp impedance 75Ω
Frequency response	: ≤ 50Hz → ≥ 6MHz

Tone controle

Loudness	
(volume ≤ -20dB Ref: 1kHz=0dB)	: 100Hz +6 dB : 10kHz +2,5 dB
Tone control (Ref: 1kHz=0dB)	
	: Bass 100Hz -9dB → +9dB : Treble 10kHz -9dB → +9dB

Multi Channel Decoder - MDM2000

MPEG5.1 / MPEG 7.1 (7.1 downmix to 5.1)
Dolby Digital (AC-3)
Digital Theater Systems (DTS)
Linear PCM (up to 96kHz, 24 bits resolution)
Automatic audio/data type detection (AC-3,dts,MPEG-2,PCM)
Dolby Pro Logic
MPEG-2 dual mono channel selection I/II
Virtual Dolby Surround (422/423)
Virtual MPEG Digital (522/523)
Virtual Dolby Digital (522/523)
Virtual DTS Surround (522/523)
Multi - Front / Multi - rear / Natural Surround
Digital Bass Management
Parallel Stereo Downmix
Four Stereo (224)
Volume Control
Noise Generator (test tone)
Surround mode selector
Delay Center and Surround Left , Surround Right

Tuner - (Tuner95 & ECO5)

RDS	: Only in /00
FM	
Tuning range	: 87.5 – 108MHz
Grid	: 50kHz : 100kHz only for /17 : 50 & 100kHz for /01/01C*
IF frequency	: 10.7MHz ±25kHz
Aerial input	: 75 Ω coaxial : 300 Ω clickfit only for /17
Sensitivity at 26dB S/N	: ≤ 2μV
Selectivity at 300kHz	: ≥ 55dB
Image rejection	: ≥ 100dB [48dB]
Distortion at RF=1mV,dev.75kHz	: ≤ 0,8% [0,9%]
-3dB Limiting point	: ≤ 2μV
Crosstalk at RF=1mV,dev.40kHz	: ≥ 35dB [27dB] : ≥ 22dB only for /17
MW	
Tuning range	: 522 -1611kHz for /00 : 531 -1602kHz for/01/01C* : 530 -1700kHz for/01/01C* : 530 -1700kHz for /17
Grid	: 9kHz for /00 : 9 & 10kHz for /01/01C* : 10kHz for /17
IF frequency	: 450kHz ±1kHz
Aerial input	: Frame aerial
Sensitivity at 26dB S/N	: ≤ 1,5mV/m [3,5mV/m]
Selectivity at 9kHz	: ≥ 23dB [18dB]
IF rejection	: ≥ 50dB [64dB]
Image rejection	: ≥ 33dB [28dB]
Distortion at RF=50mV,m=80%	: ≤ 3%

LW only in /00

Tuning range	: 153 - 279kHz
Grid	: 3kHz
IF frequency	: 450kHz ±1kHz
Aerial input	: Frame aerial
Sensitivity at 26dB S/N	: ≤ 2,8mV/m
Selectivity at 9kHz	: ≥ 26dB : ≥ 24dB only for /17
IF rejection	: ≥ 100dB
Image rejection	: ≥ 45dB
Distortion at RF=50mV,m=80%	: ≤ 3%dB

[...] Values indicated are for "ECO 5 Tuner" only

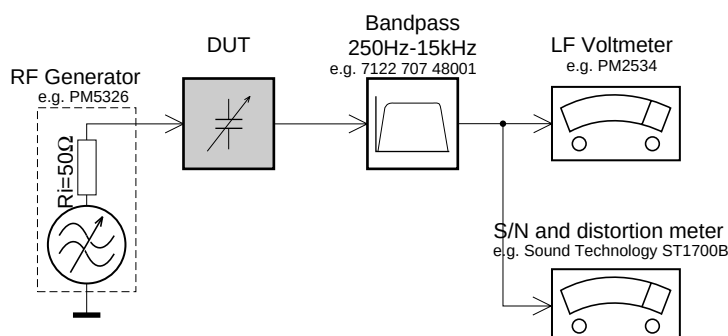
* Setting is software controlled

SERVICE TOOL

Audio Signals Test Disc 1 4822 397 30184

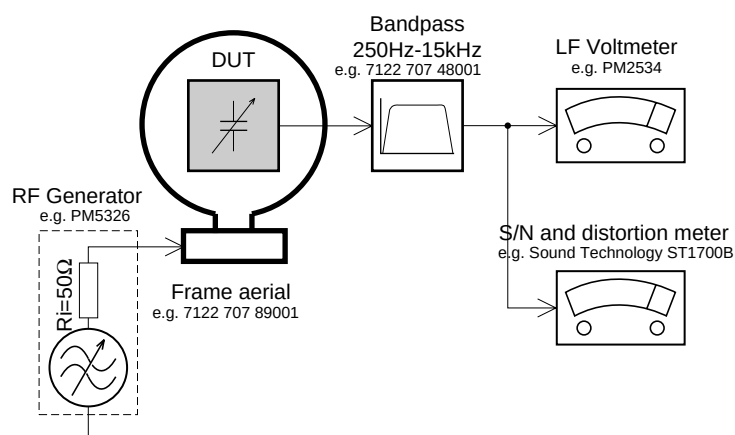
MEASUREMENT SETUP

Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilotone (19kHz, 38kHz).

Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

SAFETY

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

Safety components are marked by the symbol

(F)

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

Les composants de sécurité sont marqués

SAFETY



(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden. Sicherheitsbauteile sind durch das Symbol

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast. De Veiligheidsonderdelen zijn aangeduid met het symbool

(I)

Le norme di sicurezza estigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati. Componenti di sicurezza sono marcati con

WARNING

ⓖ WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

ⓕ ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilez le braceleterti d'une résistance de sécurité.

Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

ESD



ⓓ WARNING

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

Sorgen Sie dafür, daß sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.

Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

ⓃL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).

Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

Ⓢ AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).

La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.

Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

ⓖB AVAILABLE ESD PROTECTION EQUIPMENT :

anti-static table mat large 1200x650x1.25mm
small 600x650x1.25mm

anti-static wristband

connection box (3 press stud connections, 1M)

extendible cable (2m, 2M , to connect wristband to connection box)

connecting cable (3m, 2M , to connect table mat to connection box)

earth cable (1M , to connect any product to mat or to connection box)

KIT ESD3 (combining all 6 prior products - small table mat)

wristband tester

4822 466 10953

4822 466 10958

4822 395 10223

4822 320 11307

4822 320 11305

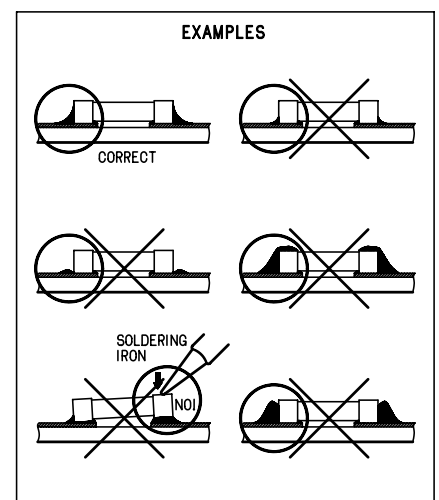
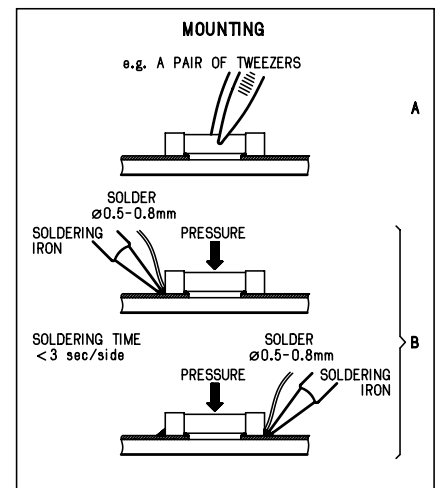
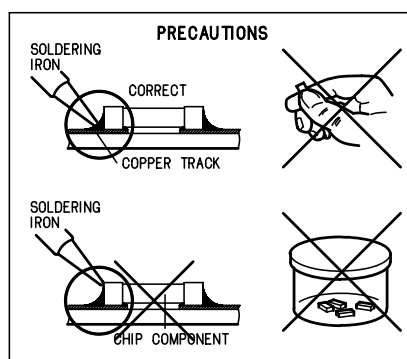
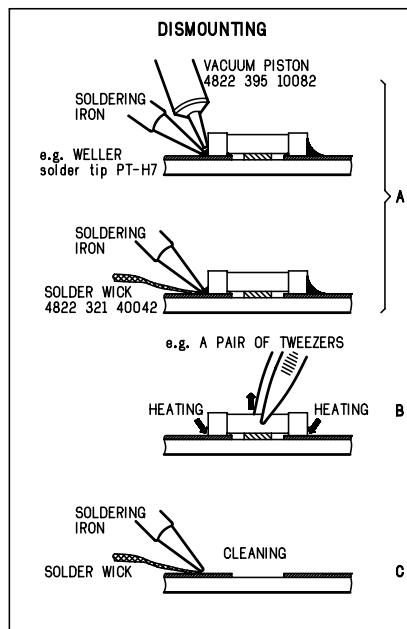
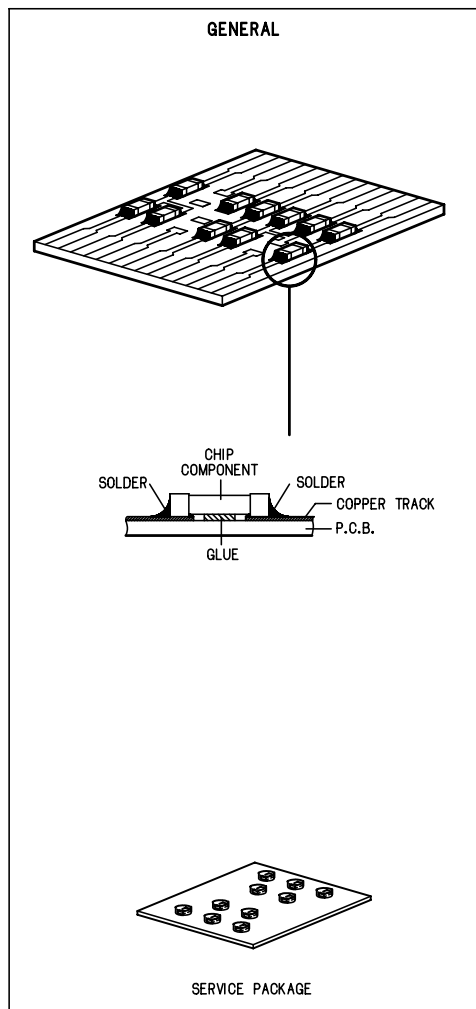
4822 320 11306

4822 320 11308

4822 310 10671

4822 344 13999

HANDLING CHIP COMPONENTS



ABBREVIATIONS

A

ac 0VA	AC 0 Voltage
ac 10VB	AC 10 Voltage
ac 110VB	AC 110 Voltage
ac 120VB	AC 120 Voltage
ac gnd	AC ground
ac h1	AC high voltage 1
ac h2	AC high voltage 2
ac l1	AC low voltage 1
ac l2	AC low voltage 2
ac1	AC voltage 1
ac2	AC voltage 2
ac3	AC voltage 3
amp lr on	Amplifier Left - Right On
amp mute c s	Amplifier mute center surround
amp mute c s sub	Amplifier mute center surround subwoofer
amp mute lr	Amplifier mute Left - Right
amp pd	Amplifier power down
amp prot	Amplifier protection
amp s on	Amplifier surround On
amp stby	Amplifier Standby
av gnd	Audio ground
av l	Audio Left
av r	Audio Right
A/V	Audio/Video

F

f1	Filament 1
f2	Filament 2
fmute	Fast mute

G

gnd d	Ground digital
gnd s	Ground signal

H

hp gnd	Headphone ground
hp l	Headphone Left
hp on	Headphone On
hp r	Headphone Right
hst	Heatsink temperature

L

ls c	Loudspeaker Center
ls gnd	Loudspeaker ground
ls l	Loudspeaker Left
ls r	Loudspeaker Right

M

mdm	Multi channel <u>D</u> ecoding <u>M</u> odule
mdm c out	— Center out
mdm gnd	— ground
mdm l dmix	— Downmix Left
mdm l in	— Left in
mdm l out	— Left out
mdm r dmix	— Downmix Right
mdm r in	— Right in
mdm r out	— Right out
mdm req	— request
mdm rst	— reset
mdm scl	— I ² C clock
mdm sda	— I ² C data
mdm sl out	— surround Left out
mdm sr out	— surround Right out
mdm sub out	— subwoofer out
mfd	Mains failure detection

P

p gnd	P50 ground
p p50	Cinema link P50 code

S

s gnd	Surround ground
sofac scl	Sofac I ² C clock
sofac1 sda1	Sofac 1 I ² C data1
sofac2 sda2	Sofac 2 I ² C data2
ss ce	Source selector chipenable
ss clk	Source selector clock
ss data	Source selector data
surr pre-out	Surround pre-out

T

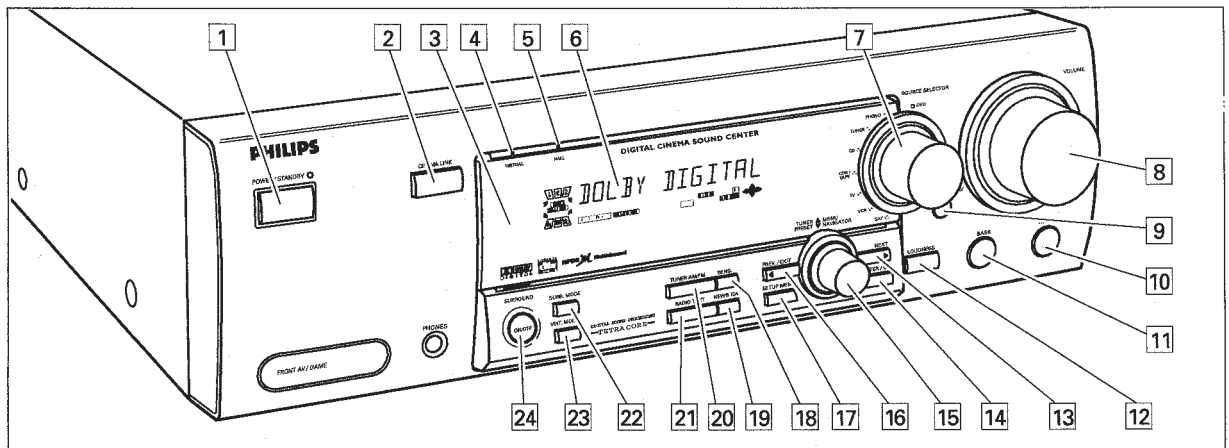
tu clk	Tuner clock
tu da	Tuner data
tu en	Tuner enable
tu gnd	Tuner ground
tu l	Tuner Left
tu r	Tuner Right
tu rds	Tuner RDS
tu stereo	Tuner stereo

V

v gnd	Video ground
v scl	Video I ² C clock
v sda	Video I ² C data
v sig	Video signal
v sub sur	Video subwoofer surround

INSTRUCTIONS FOR USE

CONTROLS

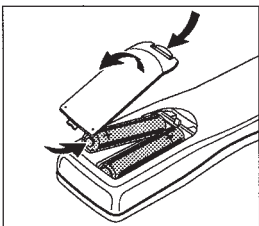


- | | |
|---|--|
| <p>1 POWER / STANDBYSwitches the receiver on and off.</p> <p>2 CINEMA LINKSwitches the system control bus between the receiver and the TV on and off.</p> <p>3Sensor for the infrared remote control.</p> <p>4 VIRTUALControl light for virtual surround.</p> <p>5 HALLControl light for HALL.</p> <p>6Display</p> <p>7 SOURCE SELECTORSelects the different audio and video connectors.</p> <p>8 VOLUMEIncreases and decreases the volume level.</p> <p>9 FRONT AVSelects the FRONT AV / GAME input (FR 975 only).</p> <p>10 TREBLEAdjusts the treble when used in combination with VOLUME.</p> <p>11 BASSAdjusts the bass when used in combination with VOLUME.</p> <p>12 LOUDNESSSwitches LOUDNESS on and off.</p> <p>13 NEXT ►TUNER: searches radio stations. MENU: switches to the next menu level.</p> <p>14 ENTER / OKConfirms selected menu values.</p> | <p>15 TUNER PRESET ◄ MENU NAVIGATOR
TUNER: switches to the next and previous stored radio station. MENU: moves upwards and downwards.</p> <p>16 ◄ PREV. / EXITTUNER: searches radio stations. MENU: switches to the previous menu level.</p> <p>17 SETUP MENUSwitches the menu on and off.</p> <p>18 SENS.Switches between low and high tuner sensitivity.</p> <p>19 NEWS/TASwitches the RDS news and RDS traffic announcement on and off.</p> <p>20 TUNER AM/FMSwitches the wavebands of the tuner.</p> <p>21 RADIO TEXTScrolls through the different RDS information.</p> <p>22 SURR. MODESwitches through the different speaker configurations.</p> <p>23 VIRT. MODEScrolls through the different virtual surround sound modes.</p> <p>24 SURROUND ON/OFFSwitches between the last selected surround mode and stereo.</p> |
|---|--|

REMOTE CONTROL

Remote control usage

Open the battery compartment of the remote control and insert 2 alkaline batteries, type **AA** (R06, UM-3).



Remove batteries if they are flat or the remote control is not going to be used for a long time.

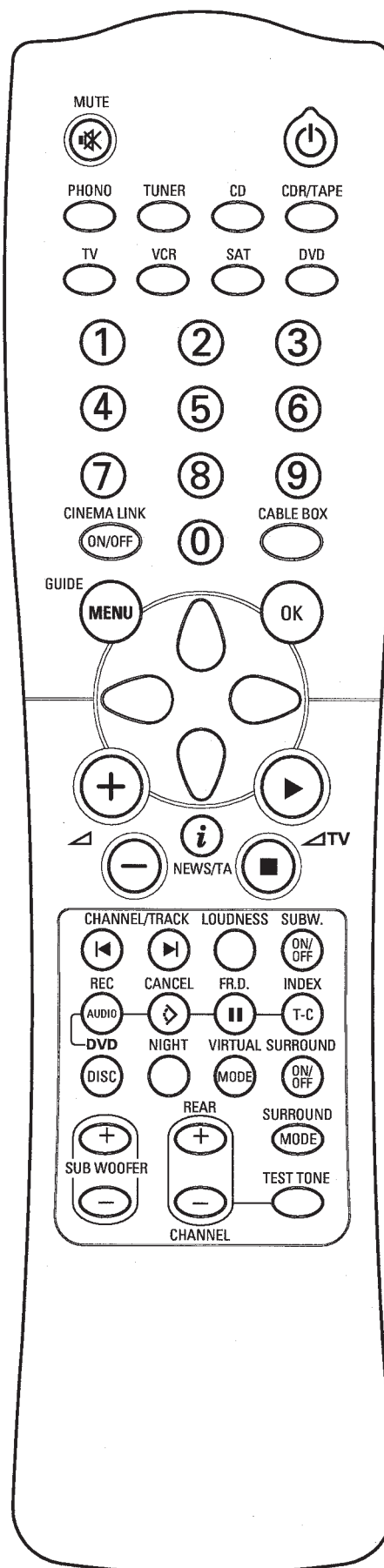
Batteries contain chemical substances, so they should be disposed of properly.

The buttons on the remote control work the same way as the corresponding ones on the receiver.

Important!

You have to press a source button for longer than 1 second to switch the sound source on the receiver. Pressing a source button for less than 1 second will only switch the remote control to use the commands for the selected product.

The remote control remains tuned to the selected source until another source button on the remote control is pressed. This enables you to operate additional sources (i. e. winding a tape) without changing the source on the receiver.



INSTRUCTIONS FOR USE

REMOTE CONTROL

Remote control buttons

	MUTE	Mutes the sound of the receiver.	REC, DVD AUDIO	CDR, VCR: Starts recording. DVD: Switches audio tracks.
	.....	Switches the receiver to standby.	CANCEL, DVD 	CD, CDR, SAT, VCR: Clears a program, cancels selections. DVD: Switches the view angle.
PHONO, TUNER, CD, CDR/TAPE, TV, VCR, SAT, DVD .....	.....	Switches the remote control to the commands of the different products. Selects the sources if pressed longer than 1 second. SAT only works with <i>digital</i> satellite receivers.	FR.D., DVD 	TUNER: Switches to FREQUENCY DIRECT. CD, CDR, VCR, DVD: Pauses playback.
1-0 .....	.....	Keys in numbers for tracks, stations or frequencies. Numbers consisting of two figures must be keyed in within 2 seconds.	INDEX, DVD T-C	VCR: Switches the index search on and off. SAT: Switches the themes on and off. DVD: Switches between title and chapter.
CINEMA LINK ON/OFF .....	.....	Switches the system connection between the receiver and the TV on and off.	DISC	CD-, CDR-, DVD-Changers: Switches to the next disc.
CABLE BOX .....	.....	Without function.	NIGHT	Switches NIGHT MODE on and off.
MENU GUIDE .....	.....	TUNER: Switches the receiver menu on and off. DVD, TV: Switches the DVD/TV menu on and off.	VIRTUAL MODE	Scrolls through the different virtual surround sound modes.
OK .....	.....	Confirms menu options.	SURROUND ON/OFF	Switches SURROUND SOUND on and off.
Arrow buttons .....	.....	TUNER: Moves in the menus. Right/left arrows are tuning up/down. CD, CDR: Left/right arrows are searching backwards/forwards, up/down arrows are selecting the next/previous track.	+ / - SUBWOOFER	Increases/decreases the subwoofer volume.
+	.....	Increases the receiver volume.	+ / - REAR	Increases/decreases the volume of the rear speakers. While test tone is on, the volume of the speakers you are hearing can be increased/decreased with these buttons.
-	.....	Decreases the receiver volume.	SURROUND MODE	Scrolls through the different surround modes.
 NEWS/TA .....	.....	Switches the functions NEWS and TRAFFIC ANNOUNCEMENT on and off. TV: Switches teletext on and off. SAT: Switches the information text on and off.	TEST TONE	Switches the test tone on and off. While test tone is on, the volume of the speakers you are hearing can be increased/decreased with + / - REAR.
  TV .....	.....	Increases the TV volume. CD, CDR, VCR, DVD: Starts playback.		
  TV .....	.....	Decreases the TV volume. CD, CDR, VCR, DVD: Stops playback.		
 CHANNEL/TRACK .....	.....	Selects the previous preset tuner station. VCR: Rewinds the tape. CD, CDR, DVD: Selects the previous track. TV: Selects the previous channel.		
 CHANNEL/TRACK .....	.....	Selects the next preset tuner station. VCR: Fast forwards the tape. CD, CDR, DVD: Selects the next track. TV: Selects the next channel.		
LOUDNESS .....	.....	Switches LOUDNESS on and off.		
SUBW. ON/OFF .....	.....	Switches the subwoofer on and off.		

INSTRUCTIONS FOR USE

REMOTE CONTROL

Programming the universal remote control

You can identify the universal remote control by the inscription **Multibrand/Universal**.

The universal remote control must be programmed to use the codes for your appliances of different brands. This is done by keying in a 4-digit code or by scanning the codes until the correct one is found. We recommend to using the 4-digit code. This method is faster and more reliable. The code scanning method should only be used if you cannot find the code for one of your appliances. The code table can be found at the end of the booklet.

Important!

The buttons of the remote control must be used for programming, not the buttons of the receiver or other appliances.

Programming with the 4-digit code

- 1** Keep the source button for the appliance which should be controlled and  pressed for 3 seconds.
- 2** Key in the 4-digit code for the appliance (codetable at the end of the booklet).

Notes:

- If more than 4 digits are entered, the remote control will recognize only the ones keyed in first.
- If you do not key in a code within 30 seconds the remote control will switch off the programming function without changing the code.
- To program a new appliance, simply overwrite the old code by entering a new one.

Scanning the codetable

- 1** Switch on the appliance which should be controlled.
 - 2** Keep the source button for the appliance which should be controlled and  pressed for 3 seconds.
 - 3** Press and release  again.
 - The remote control sends the codes for channel up or standby (depending on the selected source) for one brand after the other.
 - 4** As soon as the appliance reacts – switches to the next channel or to standby – press  to confirm the code.
 - The identified code will be used.
- If the set does not react within 2 minutes, the code for this appliance is not stored in the remote control. The code of the remote control will remain unchanged.

Note: When taking out the batteries of the remote control for more than 1 minute the codes must be reprogrammed.

Once you have found and tested the codes for your various appliances, you may want to write them down here.

PHONO

TUNER.....

CD

CDR/TAPE

TV

VCR

SAT

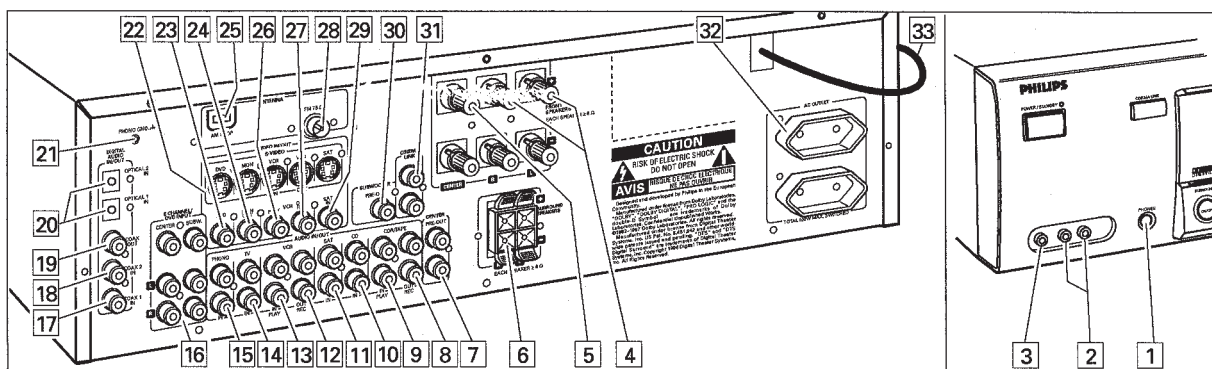
DVD

Resetting the remote control

- 1** Keep one of the source buttons and  pressed for 3 seconds.
- 2** Key in the 3-digit code 981.
 - The remote control is now reset to all its original Philips codes.

INSTRUCTIONS FOR USE

CONNECTORS

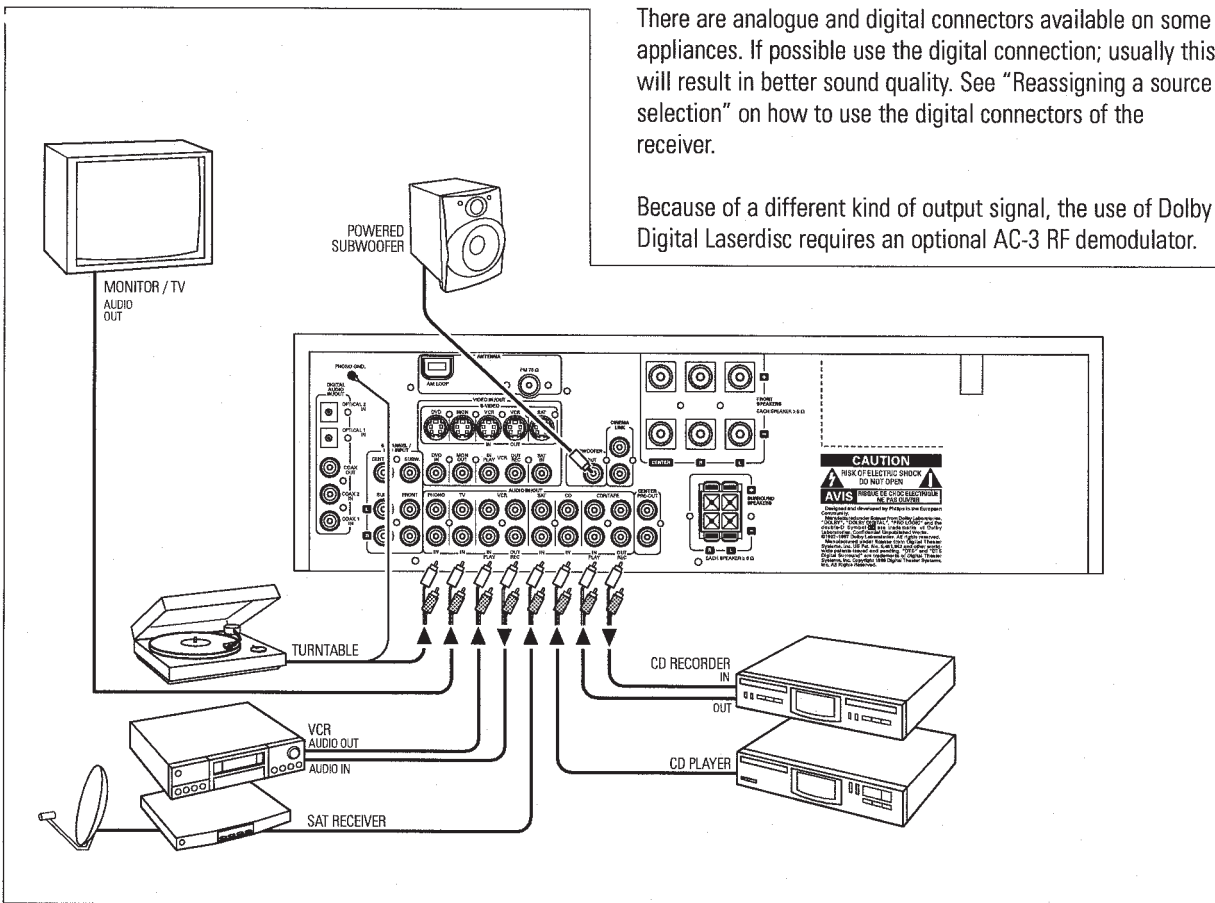


Connectors	Connectors name	Connect to:
6.3 mm headphone socket at the front	1 PHONES	A headphone with a 6.3 mm plug.
Audio and video inputs at the front (FR 975 only)	2 FRONT AV / GAME	Left and right audio out sockets of appliances such as video cameras and game consoles.
	3 FRONT AV / GAME	Video out sockets of appliances such as video cameras and game consoles.
FRONT SPEAKERS	4 R, L	Right and left front speaker.
	5 CENTER	Center speaker.
SURROUND SPEAKERS	6 R, L	Right and left surround speaker.
AUDIO IN/OUT	8 CDR/TAPE OUT	Input of a CD recorder or a tape deck.
	9 CDR/TAPE IN	Output of a CD recorder or a tape deck.
	10 CD IN	Output of a CD player.
	11 SAT IN	Output of a satellite system.
	12 VCR OUT	Input of a video recorder.
	13 VCR IN	Output of a video recorder.
	14 TV IN	Output of a TV.
	15 PHONO IN	Output of a turntable with MM coil.
	21 PHONO GND 	Ground cable of a turntable.
6 CHANNEL / DVD INPUT	16 6 CHANNEL / DVD INPUT	6 channel output of appliances such as DVD or laserdisc players.
DIGITAL AUDIO IN/OUT	17 COAX 1 IN	Coaxial output of digital appliances (default input for source DVD).
	18 COAX 2 IN	Coaxial output of digital appliances.
	19 COAX OUT	Coaxial input of digital appliances such as CD recorders or MD recorders.
	20 OPTICAL IN	Optical output of digital appliances such as DVD players, CD players, CD recorders or MD players (FR 965 only).
	20 OPTICAL 1 (2) IN	Optical output of digital appliances such as DVD players, CD players, CD recorders or MD players (FR 975 only).
VIDEO IN/OUT	22 S-VIDEO	S-Video inputs/outputs of video appliances for better video quality (FR 975 only).
	23 DVD IN	Output of a DVD player.
	24 MON OUT	Input of a monitor (e. g. the TV).
	26 VCR IN	Output of a video recorder.
	27 VCR OUT	Input of a video recorder (for recording).
	29 SAT IN	Output of a satellite system.
Antenna connectors	25 AM LOOP	Frame antenna supplied.
	28 FM 75 Ω	Wire antenna supplied or exterior antenna.
Preamplified outputs	7 CENTER PRE-OUT	Input of a TV when it is used as the centre speaker (only possible when the CINEMA LINK system bus is connected).
	30 SUBWOOFER PRE-OUT	Input of a powered subwoofer.
System control bus	31 CINEMA LINK	System control bus sockets of a Philips TV with CINEMA LINK.
Mains outlets (not on all versions)	32 AC OUTLET	Supplies same voltage as mains. Up to 100 W total permitted load.
Mains lead	33	After all other connections have been made, connect the mains lead to the wall socket.

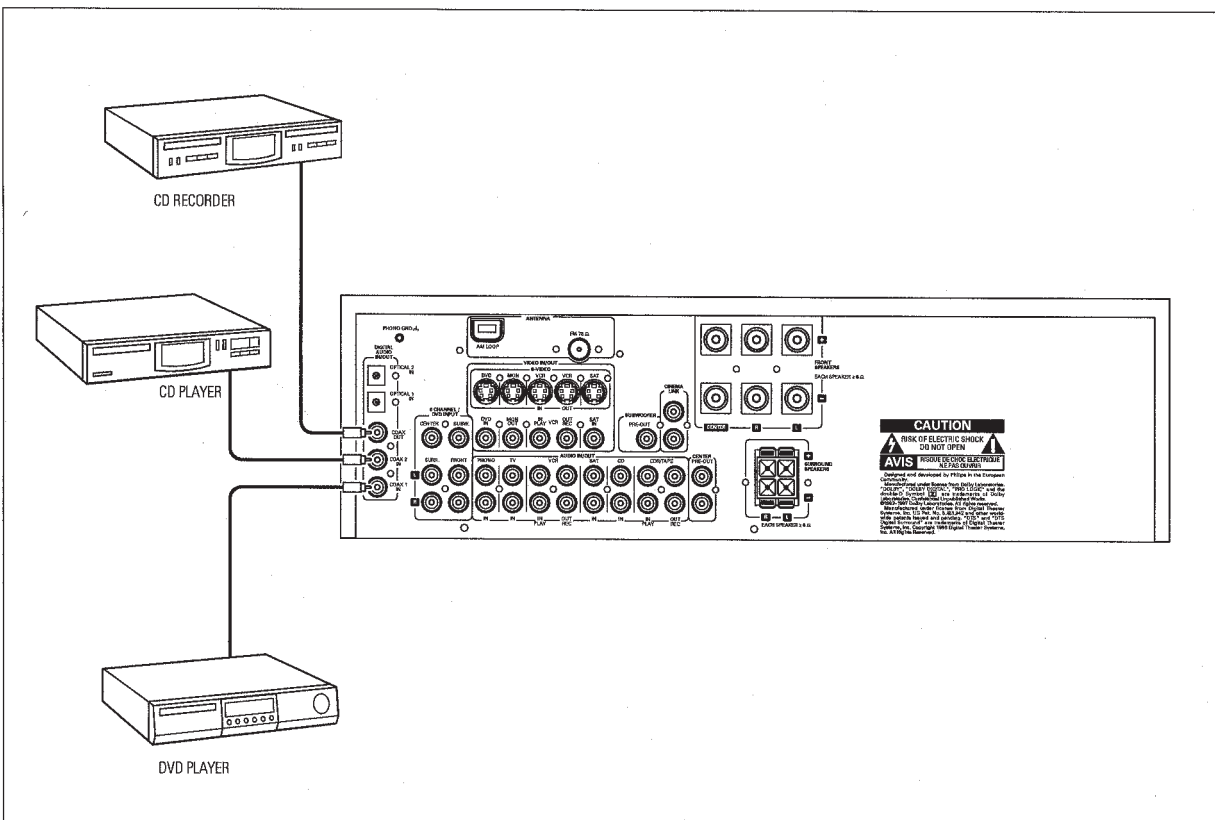
INSTRUCTIONS FOR USE

CONNECTIONS

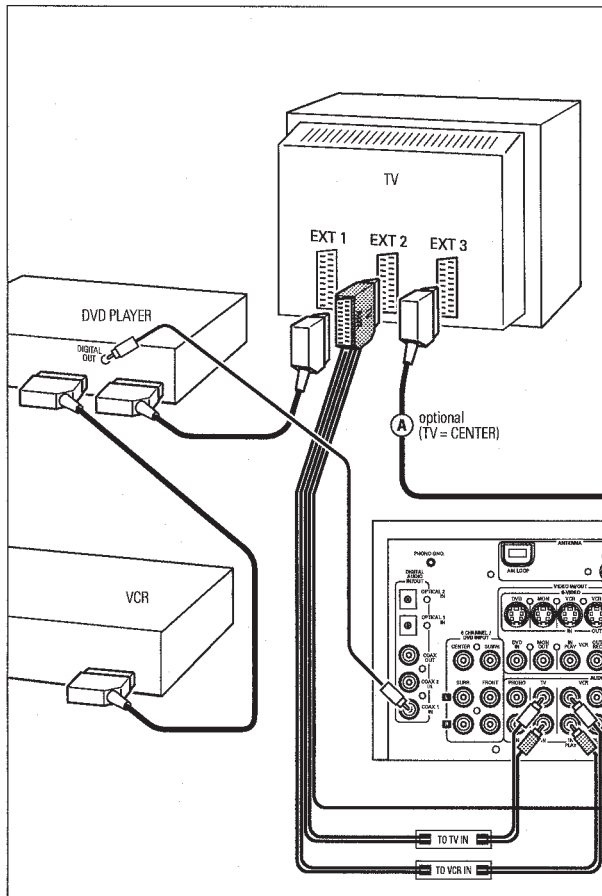
Analogue audio connections



Digital audio connections



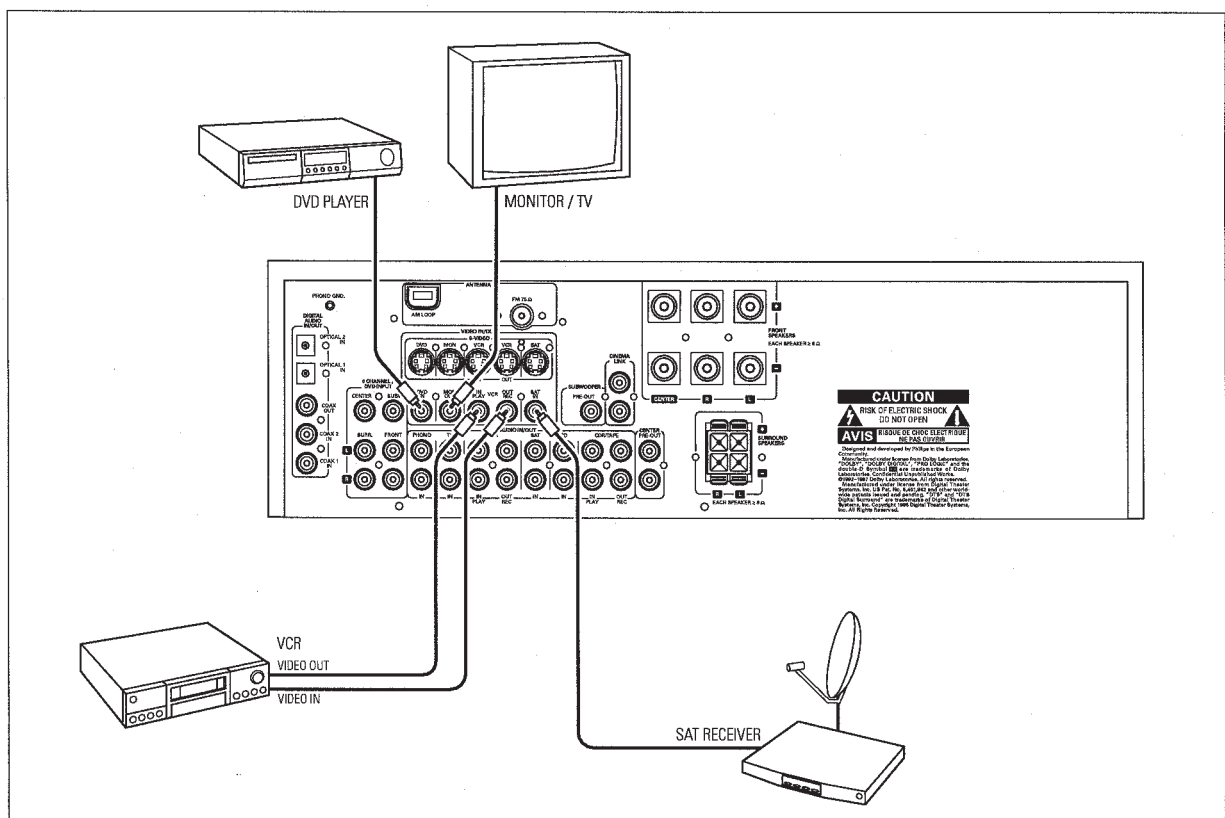
System control bus, CINEMA LINK



If the receiver and your Philips TV (or even better in addition a Philips VCR or DVD player) with Cinemalink are connected with the CINEMA LINK system bus control, some extra system benefits are offered:

- Upon starting a source, the system will automatically switch to that input.
- You may control the system via the TV screen. Depending on the language of the TV, this can be done in your preferred language.
- The TV can function as the center speaker of your system, making a separate center speaker unnecessary. (The cable (A) has to be purchased separately.)
- By pressing the standby button on the remote control, you can switch the complete system to standby.

Video connections



INSTRUCTIONS FOR USE

CONNECTIONS

Mains

The type plate is located on the rear of the receiver.

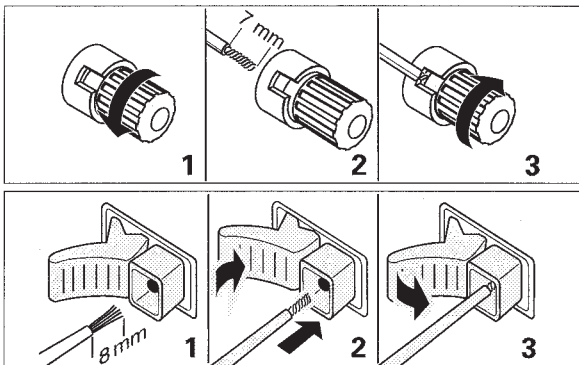
- 1 Check whether the mains voltage as shown on the type plate corresponds to your local mains voltage. If it does not, consult your dealer or service organization.
- 2 Connect the mains cable to the wall socket.

To disconnect the set from the mains completely, remove the mains plug from the wall socket.

For users in the U. K.: please follow the instructions on page 2.

Speaker connections

Some of the speaker connections on the receiver are screw connectors and some are click-fit connectors. Use them as shown below.



- 1 Always connect the coloured (or marked) wire to the coloured terminal and the black (or unmarked) wire to the black terminal.
- 2 Connect:
 - Left front speaker to L (red and black)
 - Right front speaker to R (red and black)
 - Center speaker to CENTER (blue and black)
 - Left surround speaker to SURROUND L (grey and black)
 - Right surround speaker to SURROUND R (grey and black)

TV as the center speaker

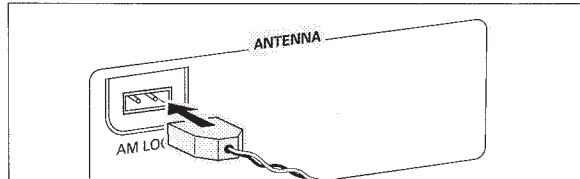
You may use your Philips TV with CINEMA LINK as the center speaker. For TVs with a scart connector an additional audio cinch-to-scart cable is needed. For TV's with cinch connectors additional cinch cables are needed. These cables must be connected to the blue CENTER PRE-OUT connector on the back. Look into the instruction manual of your TV on how to use it as the center speaker.

Antenna connections

AM (MW) antenna

The loop antenna supplied is for indoor use only. Position the antenna as far away as possible from the receiver, the TV, the cables, a DVD player, a VCR and other radiation sources.

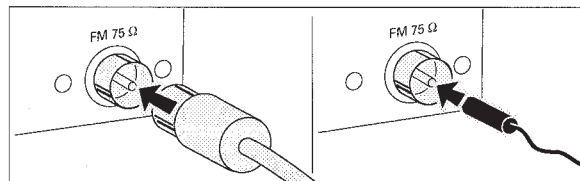
- 1 Fit the plug of the frame antenna to AM LOOP as shown below.
- 2 Turn the antenna for optimum reception.



FM antenna

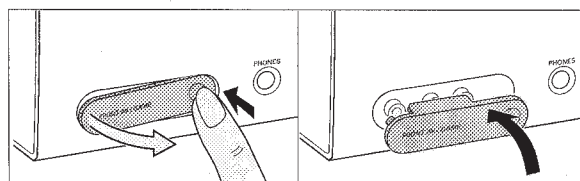
The wire antenna supplied can only be used to receive nearby stations. For better reception we recommend using a cable antenna system or an outdoor antenna.

- 1 Fit the supplied wire antenna to FM 75 Ω as shown below.
 - 2 Move the antenna in different positions for optimum reception.
- If you are using a cable antenna system or an outdoor antenna, fit the antenna plug to FM 75 Ω instead of the wire antenna.



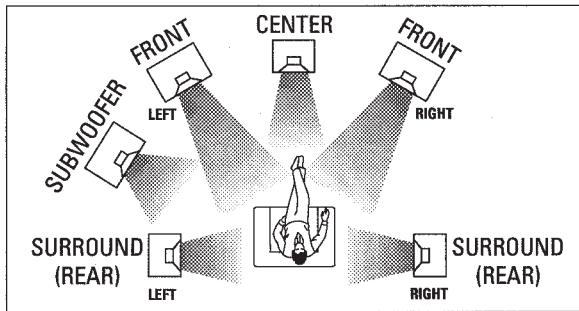
FRONT AV / GAME cap (FR 975 only)

- To remove the FRONT AV / GAME cap, press on the right side of the cap.
- Insert the cap from below to close the compartment.



INSTRUCTIONS FOR USE

SYSTEM SETUP



Positioning of the speakers

General hints for positioning

Avoid positioning the speakers in a corner or on the floor as this will boost the bass tones too much. Placing the speakers behind curtains, furniture, etc. will reduce the treble response. The listener should always be able to "see" the speakers.

Each room has different acoustic characteristics and the positioning possibilities are often limited. You can find the best position for your speakers by referring to the picture above.

As a minimum we recommend 5 speakers (2 front, a center, 2 surround) for good surround sound. It is possible to reproduce some kind of surround sound with fewer speakers. This is done by redirecting the signals which are foreseen for the missing speakers to the existing ones. See "Menus" on how to set up the receiver correctly for the number and size of the speakers used.

Positioning the front speakers

The front speakers should be placed right and left in front of the listening position like usual stereo speakers.

Positioning the center speaker

The center speaker should be placed in the center between the two front speakers, e. g. underneath or on top of the TV. The best height for the center speaker is the height of the listener's ears (while seated).

Positioning the surround speakers

The surround speakers should face each other and be in line with, or slightly behind the listener.

Positioning the subwoofer

A subwoofer can be used to enhance the bass performance of your system dramatically. The subwoofer can be positioned anywhere in the room, because it is not possible to locate the source of deep tones. Nevertheless, you should not place the subwoofer in the middle of a room, since the bass could be severely weakened. Do not place any object on the subwoofer.

Speaker setup and testing

The relative volume of the speakers must be adjusted for optimal surround sound. You should be at your usual listening position when adjusting the speaker volume. See "Receiver menus" on how to set up the receiver for the used speakers. Ideally, the volume in the listening position should be the same from all speakers.

- 1 Press POWER / STANDBY to switch on the receiver.
- 2 Press TEST TONE on the remote control.
 - ➔ A test tone coming from the different speakers, except the subwoofer, is heard.
- 3 Press + / - REAR on the remote control to increase/decrease the volume of the actual speaker. The best result is achieved when all speakers have equal volume in the listening position.
- 4 Press TEST TONE on the remote control.
 - ➔ The test tone stops.

Note: If you are not completely satisfied with the volume settings, we recommend making minor adjustments to them during surround sound playback.

Power handling

If the receiver is used at very high power it can produce distortions which may seriously damage your speakers. If distortions occur, reduce the volume and the tone controls to a level where the sound is acceptable again.

To avoid overheating of the set a safety circuit has been built in. Therefore your set may disconnect under extreme conditions. If this happens, switch the set off and let it cool down before reusing it.

Headphones

Connecting headphones to PHONES will switch off the speakers. The receiver switches to STEREO and surround sound will be reduced to a stereo signal which is reproducible by standard headphones.

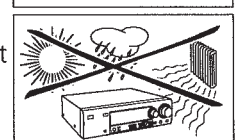
Disconnecting the headphones switches on the speakers again. If you wish to enjoy surround sound again, switch the receiver back to surround sound.

Maintenance

Clean the receiver with a soft, slightly dampened, lint-free cloth. Do not use any cleaning agents as they may have a corrosive effect.



Do not expose the receiver to humidity, rain, sand or excessive heat (caused by heating equipment or direct sunlight).



INSTRUCTIONS FOR USE

DISPLAY

Display

The display of the receiver is divided into 4 sections, which are to be used for the following:

Speaker diagram



A rectangle with a letter in it shows that a speaker has been selected in the setup menu. However, the subwoofer indicator will only light when a subwoofer signal is available. If only a letter is shown, this speaker is not used and its sound is reproduced by the other speakers.

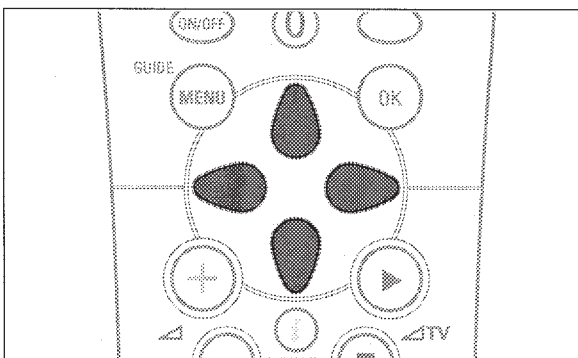
-virtual surround sound
- SURROUND**surround sound is reproduced
- DIGITAL SURROUND**digital surround sound is reproduced
- L, R**front left and right speaker
- C**center speaker
- SL, SR**surround speakers
- SW**subwoofer

Menu indication

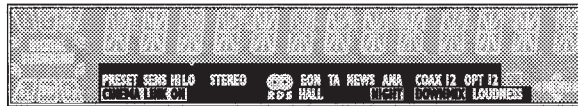


These signs show you if the menu is on or off and indicate in which direction you may move.

- MENU**menu is on
-You may move backwards to the previous menu topic using ◀ PREV. / EXIT ("left" key on the remote control).
-You may move up in an option list using MENU NAVIGATOR ("up" key on the remote control).
-You may move down in an option list using MENU NAVIGATOR ("down" key on the remote control).
-You may move forward to the next menu topic using NEXT ▶ ("right" key on the remote control).
- OK**You may confirm the displayed value.



Status lights



Signs showing you various settings and information about the status of the receiver.

- PRESET**Tuner is tuned to a preset radio station.
- SENS HI**Tuner is switched to high sensitivity.
- SENS LO**Tuner is switched to low sensitivity.
- CINEMA LINK ON**CINEMA LINK is active
- STEREO**An FM station is being received in stereo.
-An RDS station is being received.
- EON**An RDS station with EON is being received.
- HALL**HALL effect is on.
- TA**RDS traffic announcement is on
- NEWS**RDS news announcement is on
- ANA**Analogue input is being used for the playing source.
- NIGHT**NIGHT MODE is on.
- COAX 1**Coaxial digital input COAX 1 is being used for the playing source.
- COAX 2**Coaxial digital input COAX 2 is being used for the playing source.
- DOWNMIX**Incoming multi channel signals are being reduced to fewer output signals (depending on the number of speakers).
- OPT**Optical digital input OPTICAL IN is being used for the playing source (FR 965 only).
- OPT 1**Optical digital input OPTICAL 1 IN is being used for the playing source (FR 975 only).
- OPT 2**Optical digital input OPTICAL 2 IN is being used for the playing source (FR 975 only).
- LOUDNESS**LOUDNESS is switched on.

Information area



This area is used for feedback of the receiver, tuner frequencies, menu options, values and scrolling text messages.

Receiver menu

The receiver is equipped with a menu system. The menu is used for the setup of the receiver. The different menu options are related to each other in a logical way. Let's assume you have no center speaker connected, and therefore switched **CENTER SPEAKR** to **NO**. If you try to use **VOL CENTER**, a message will be scrolled that this is not possible (**INSTALL CENTER SPEAKER**).

The menu always works the same way. Arrows in the display show you the possible moving directions.

- 1 Press **SETUP MENU**.
→ **MENU**, and * **EFFECTS** is displayed.
- **You can exit the menu at any time by pressing SETUP MENU.**
- 2 Turn **MENU NAVIGATOR** until the desired option (or a value) is displayed.
- 3 Press **NEXT** ► to choose the displayed option (or **ENTER / OK** to confirm a value).
- You can leave any option (values remain unchanged) by pressing **◀ PREV. / EXIT**.

Menu structure

- * **EFFECTS**
 - Switches sound effects.
 - **VIRT SURR**
virtual surround: 0...100 %
- * **VOL BALANCE**
 - Adjusts the relative volume balance between the connected speakers.
 - **TEST TONE**
Test tone: on/off
 - **VOL FRONT-L**
Volume front left speaker: -50...+50
 - **VOL FRONT-R**
Volume front right speaker: -50...+50
 - **VOL CENTER**
Volume center speaker: -50...+50
 - **VOL REAR-L**
Volume rear left speaker: -50...+50
 - **VOL REAR-R**
Volume rear right speaker: -50...+50
 - **VOL SUBWOOFER**
Volume subwoofer: -50...+50

Note: When using the 6 CHANNEL / DVD INPUT the values below cannot be changed.

- * **SPEAKR SETUP**
 - Selects the used speakers.
 - **SUBW PRESENT**
Subwoofer present: yes/no
 - **CENTER SPEAKR**
Center speaker present: yes/no
 - **REAR SPEAKR**
Rear speakers present: yes/no
- * **SPEAKR SIZES**
 - Chooses the speaker sizes of the used speakers, for optimal sound reproduction. **LARGE** indicates a speaker which can reproduce frequencies lower than 50 Hz. If **SUBW PRESENT** is set to **NO**, **FRONT SIZE** can only be set to **LARGE**. If **FRONT SIZE** is set to **SMALL**, **CENTER SIZE** can only be set to **SMALL** and consequently a subwoofer must be connected.
 - **FRONT SIZE**
Left and right front speakers: small/large
 - **CENTER SIZE**
Center speaker: small/large
 - **REAR SIZE**
Rear speakers: small/large
- * **SPK DISTANCE**
 - Distance between the usual listening position and the speakers. This defines the delay time for the surround sound.
 - **DISTANCE L/R**
Distance to front speakers: 1...10 m
 - **DISTANCE CNTR**
Distance to center speaker: 1...10 m
 - **DISTANCE REAR**
Distance to rear speakers: 1...10 m

INSTRUCTIONS FOR USE

MENUS

* SELECT INPUT

Assigns the audio input connectors to the different source selections chosen with SOURCE SELECTOR (see "SOURCE SELECTION" for details).

- COAX 1
Digital coaxial input 1, COAX 1 IN
- COAX 2
Digital coaxial input 2, COAX 2 IN
- OPT (FR 965 only)
Digital optical input, OPTICAL IN
- OPT 1 (FR 975 only)
Digital optical input, OPTICAL 1 IN
- OPT 2 (FR 975 only)
Digital optical input, OPTICAL 2 IN
- SAT IN
Analogue audio input SAT IN
- VCR IN
Analogue audio input VCR IN
- TV IN
Analogue audio input TV IN
- CDR IN
Analogue audio input CDR IN
- CD IN
Analogue audio input CD IN
- 6 CH IN
Analogue audio input 6 CHANNEL / DVD INPUT

* TUNER

Setup for preset radio stations (see "TUNER" for details).

- AUTO INSTALL
Stores radio stations automatically
- MAN INSTALL
Stores radio stations manually
- GIVE NAME
Allows to assign names to stored radio stations
- RESHUFFLE
Resorts stored radio stations

TV menu

If the receiver is connected to a Philips CINEMA LINK TV via the CINEMA LINK system control bus sockets (see "CONNECTIONS"), you may use the TV to set up the system. An option called RECEIVER will be added to the TV menu.

If CINEMA LINK is on, adjustments on the receiver will be shown on the TV screen for a few seconds. Consult the instruction booklet of your TV on how to use the TV menu. The options offered may vary by TV model.

Switching the connection

- Press CINEMA LINK to switch the connection between the receiver and the TV either on or off.
 - If the connection is switched on, **CINEMA LINK ON** is displayed.

Note: We recommend switching CINEMA LINK off during recording. This avoids unwanted interruptions due to switching TV functions.

If CINEMA LINK is switched on and the TV menu is active, **TV MENU** is displayed and the menu and sound functions on the receiver are locked.

INSTRUCTIONS FOR USE

SOURCE SELECTION

SOURCE SELECTOR

When selecting a source by turning SOURCE SELECTOR, the audio and video inputs with the corresponding name are activated. The incoming signal is reproduced by all audio and – if the source includes a video signal – video outputs of the receiver. It is possible to reassign a source selection to other than these standard inputs.

Source selected Connectors used

DVD.....	COAX 1 digital audio input and DVD IN video input
PHONO.....	PHONO IN audio input
TUNER	The tuner part of the receiver is used, all inputs are switched off.
CD	CD IN audio input
CDR/TAPE	CDR/TAPE IN audio input
TV.....	TV IN audio input and no video input
VCR.....	VCR IN audio input and VCR IN video input
SAT	SAT IN audio input and SAT IN video input

6 CHANNEL / DVD INPUT selection

The 6 CHANNEL / DVD INPUT connectors can be assigned to any of the available sources (excluding TUNER and PHONO). The assignment can be done via the * *SELECT INPUT* option in the menu. See below for more details.

Reassigning a source selection

If a source is selected with SOURCE SELECTOR the standard audio input is used. To change this, the source selection must be reassigned to another audio input.

Example: Reassigning **CD** from the analogue CD IN audio input to the digital COAX 2 IN audio input.

- 1 Choose * *SELECT INPUT* from the menu and press NEXT ►.
- 2 Turn SOURCE SELECTOR to select the source which should be reassigned (e. g. **CD**).
→ The name of the source is displayed and the light of the source flashes.
- 3 Turn **◆** MENU NAVIGATOR to select the input connectors which should be used (e. g. **CD** → **COAX2**).
- 4 Press ENTER / OK to confirm your selection.
→ **STORED** is displayed briefly.
- 5 This source selection is now using the chosen audio input (e. g. **CD** uses the COAX 2 IN input connectors, **COAX 2** lights when switching to CD).

Using one source selection for two or more appliances

You may assign more than one source to a source selection. This can be useful when products are connected one after the other in a chain.

Example: A VCR is connected to the TV but only the TV is connected to the receiver. Both SOURCE SELECTOR settings, TV as well as VCR, have to use the TV input connectors.

- 1 Choose * *SELECT INPUT* from the menu and press NEXT ►.
- 2 Turn SOURCE SELECTOR to select the source which should be reassigned (e. g. **VCR**).
→ The name of the source is displayed and the light of the source flashes.
- 3 Turn **◆** MENU NAVIGATOR to select the input connectors which should be used (e. g. **VCR** → **TV IN**).
- 4 Press ENTER / OK to confirm your selection.
→ **STORED** is displayed briefly.
- 5 This source selection is now using the chosen audio input (e. g. **VCR** uses the TV IN input connectors, **VCR** **TV IN** is displayed briefly when switching to VCR).

About 6 CHANNEL / DVD INPUT

The 6 CHANNEL / DVD INPUT can be used to connect a device with a built-in multichannel decoder (e.g. Dolby Digital, DTS, etc.) and 6-channel output connector, i. e. a high end DVD player.

When using the 6 CHANNEL / DVD INPUT audio input, the receiver works as a multichannel amplifier. The source reproduces surround sound and sends it to the receiver divided into the necessary channels. Therefore the SURROUND ON/OFF, HALL and SURR. MODE button have no effect since the provided signal is already multichannel.

From a source which is connected to the 6 CHANNEL / DVD INPUT audio input cannot be recorded.

INSTRUCTIONS FOR USE

PLAYBACK, RECORDING

Playing a source

- 1 Press POWER / STANDBY to switch on the receiver.
- 2 Turn SOURCE SELECTOR to select a source.
 - The name of the source is displayed.
- You can select the FRONT AV / GAME input by pressing FRONT AV (FR 975 only).
- 3 Start playback of the source as usual.

Adjusting the sound

- Turn VOLUME to adjust the volume.
 - VOLUME and the volume level between 0 and 50 is displayed.
- 1 Press BASS or TREBLE.
 - BASS or TREBLE and the actual value are displayed briefly. Then TURN VOLUME KNOB TO CHANGE is scrolled.
- 2 Turn VOLUME to adjust the bass or treble.
 - BASS or TREBLE and the actual value are displayed.

Note: If VOLUME is not turned within 5 seconds or if any other control is used, the bass or treble adjustment is switched off.

- If a subwoofer is connected, press SUBW. ON/OFF to increase the bass performance.

Note: In case of digital surround sound, a subwoofer signal will only be available when supported by the source material.

- Press LOUDNESS to switch loudness either on or off.
 - LOUDNESS is displayed if loudness is on.

Recording from a source

If you wish to record from a source you must select it with SOURCE SELECTOR. The incoming signal is reproduced by all audio and – if the source includes a video signal – video outputs of the receiver. The sound settings do not affect the recording.

- 1 Turn SOURCE SELECTOR (or press FRONT AV – FR 975 only) to select the source you want to record from.
 - The name of the source is displayed.
- 2 Prepare the desired recording appliance. It must be connected to one of the outputs of the receiver.
- 3 Start recording on the recording appliance.
- 4 Start the playback of the source as usual.

Notes: – The audio and video signal of VCR IN is not reproduced by VCR OUT. The same applies to the audio signal of CDR/TAPE IN to CDR/TAPE OUT.
– We recommend not to use the digital output COAX OUT of the receiver to record from an analogue source. Use the analogue output CDR/TAPE instead.
– From a source which is connected to the 6 CHANNEL / DVD INPUT audio input cannot be recorded.

Recording from the digital output

It is possible to connect a digital recorder to the digital output of the receiver. In this way, all signals coming from the digital inputs can be recorded directly on the connected audio recorder. The receiver will also convert all signals coming from the analogue inputs to the digital output.

The receiver can be used to record digitally a multichannel surround sound audio signal (Dolby Digital, DTS or MPEG) from, for example, DVD to CD-R. The receiver will convert the digital multichannel signal into a stereo signal without loss of relevant sound information.

Notes: – When recording a Dolby Digital, DTS or MPEG signal, each track must be recorded individually.
– Digital recording is not possible when the digital source material is copy-protected.

INSTRUCTIONS FOR USE

SURROUND SOUND

About surround sound

Surround sound gives you a complete new listening sensation. You will have the feeling of being in the middle of the action, because sound is coming from everywhere around you. Look out for TV broadcasts, audio and video tapes and discs with the , ,  or  **Multichannel** marks which are encoded for multichannel surround sound. You should prefer Dolby Digital, DTS or MPEG Multichannel to get the best out of your receiver.

The FR 965 and FR 975 are able to reproduce DTS surround sound. DTS is a premium multichannel surround sound system available on DVD discs, laserdiscs and audio discs. Consult your software dealer on the availability of DTS software in your region.

Notice that DVD discs do not always carry full multichannel surround. To be sure that a disc is multichannel encoded consult your dealer.

Most ordinary stereo tapes and discs can be replayed using surround sound settings with good results. If the reproduction is distorted in surround mode, switch to normal stereo mode.

The availability of the various surround sound modes described depends on the number of speakers used and the incoming sound information.

Switching surround sound

With surround sound on, you can switch through the different surround modes. Note that the possibilities are related to speaker setup defined in the receivers menu.

If a digital surround signal is detected, the receiver will scroll either **DOLBY DIGITAL**, **DTS** or **MPEG**.

- 1** Press SURROUND ON/OFF to switch on the surround sound.
→The surround mode in use is scrolled.
- 2** Press SURR. MODE repeatedly to listen to the different surround modes (if available).
→The chosen mode and the speakers used are displayed.
If the incoming multichannel signals are reduced to fewer output signals, **DOWNMIX** is displayed.
- 3** Press VIRTUAL MODE as often as necessary to switch through the virtual surround sound modes:
 - 1 × to activate **3D SURROUND**
 - 2 × to activate **MULTI FRONT**
 - 3 × to activate **MULTI REAR**
 - 4 × to activate **NATURAL SURROUND**
 →A light indicates if a virtual surround sound mode is on.
-signs indicate which virtual surround sound mode is active.
- 4** Press SURROUND ON/OFF to switch off the surround sound.
→**SURROUND OFF** is scrolled.

INSTRUCTIONS FOR USE

SURROUND SOUND

Surround sound settings

HALL

The sound reproduction is enhanced and a slight echo is added. This gives the impression of being in a large room. Can only be used in stereo mode.

SURROUND

The surround mode enables normal surround sound reproduction with 4 or 5 speakers. Depending on the source material, Dolby Surround Pro Logic, Dolby Digital, DTS or MPEG is reproduced.

PRO LOGIC, DOLBY DIGITAL, DTS, MPEG

In addition to SURROUND, the surround mode used – depending on the source material – will be displayed. In case of digital surround, the sound format AC-3 (for Dolby Digital), DTS or MPEG (for MPEG 2 Multichannel) will be displayed, followed by the sound channels, available on the source (e. g. DVD).

Example: AC-3 3/2.1 Dolby Digital, 3 front channels, 2 surround channels and a subwoofer channel.
 MPEG 2/0.0 MPEG Multichannel, stereo sound only.
 AC-3 3/1.0 Dolby Digital, 3 front channels, 1 (mono) surround channel without subwoofer signal.
 DTS 3/2.1 DTS, 3 front channels, 2 surround channels and a subwoofer channel.

FRONT-3 STEREO

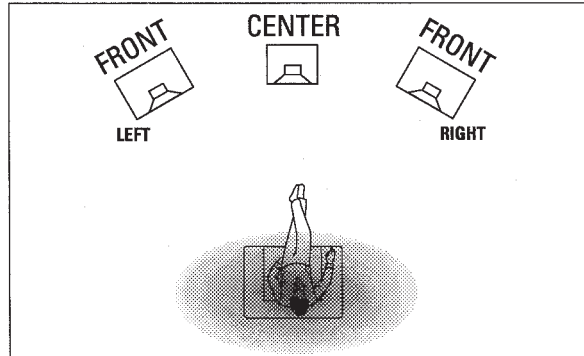
The surround sound is muted. 3 Stereo lets you listen to surround sound without using the surround speakers.

STEREO

All sound is reproduced and played through the front left and right speakers. This enables standard stereo reproduction.

Virtual Surround

Your receiver is able to reproduce one or more forms of virtual surround sound. Virtual surround gives a more real life sound impression by creating phantom speakers in addition to or instead of real speakers. The position of the listener influences the surround effect. The area where the effect is best is shown in grey.



The level of virtual surround sound effect can be adjusted in the setup menu. The following surround sound modes are available:

3D SURROUND

No rear speakers are needed. The sound of the rear channel is simulated by the front speakers. Surround sound is simulated through the front left, right and center speakers.

MULTI FRONT

Phantom speakers are created next to the left and right front speaker.

MULTI REAR

Phantom speakers are created next to the left and right rear speaker.

NATURAL SURROUND

Phantom speakers are created next to the left and right front and rear speakers.

Note: The availability of MULTI FRONT and MULTI REAR depends on the sound channels on the source material.

NIGHT MODE (only on the remote control)

The loud parts of the sound are lowered and the soft passages are raised. You can enjoy surround sound without disturbing sleeping children or neighbours. Night mode only works with Dolby Digital and MPEG, and only if supported by the source material.

INSTRUCTIONS FOR USE

TUNER

Tuning to radio stations

You can search for radio stations by scanning the frequency band. You can also key in the frequency of a known radio station. If an FM station is being broadcast and received in stereo, **STEREO** is shown.

Searching for radio stations

- 1 Turn SOURCE SELECTOR to select the tuner.
→ **TUNER** is displayed.
 - 2 Select a waveband by pressing TUNER AM/FM repeatedly.
→ The selected waveband is displayed.
 - 3 Keep ◀ or ▶ pressed for approximately 1 second.
→ **SEARCH** is displayed and the tuner tunes to a station with sufficient strength.
 - 4 Repeat this procedure until you find the desired station.
- To fine tune to a weak transmitter, briefly press ◀ or ▶ as often as necessary for optimum reception.

Tuning to a radio station by frequency (with the remote control only)

- 1 Press TUNER.
→ **TUNER** is displayed.
- 2 Press FR. D..
→ **_** is displayed.

- 3 Use 1–0 to key in the frequency of a radio station.

Note: Only valid numbers within the frequency range of the tuner can be keyed in.

Switching FM sensitivity

You can switch the tuner to a lower search sensitivity, to search only for stations with a strong signal (FM only).

- 1 Turn SOURCE SELECTOR to select the tuner.
→ **TUNER** is displayed.
- 2 Press SENS. on the receiver.
→ Either **SENS HI** or **SENS LO** is displayed for 5 seconds.

*Note: While searching for radio stations, the actual sensitivity is displayed. In this case, **SENS LO** means the tuner is only looking for radio stations with a strong signal.*

Storing radio stations

You may store up to 30 radio stations in the memory. The receiver can select and program radio stations by itself or you can choose them yourself.

Automatic programming

- 1 Choose * **TUNER** from the menu and press NEXT ▶.
- 2 Choose **AUTO INSTALL** and press NEXT ▶.
→ The preset number where programming will start, the waveband and **AUTO** are displayed.
- 3 Turn TUNER PRESET ◀ to change the preset number where programming should start.
- 4 Use TUNER AM/FM to switch to the desired waveband.
- 5 Press ENTER / OK to start programming.
→ **AUTO INSTALL** flashes and all available radio stations are programmed, this may take a few minutes. Programming is done when **AUTO INSTALL** stops flashing.

Manual programming

- 1 Choose * **TUNER** from the menu and press NEXT ▶.
- 2 Choose **MAN INSTALL** and press NEXT ▶.
→ A preset number, the waveband and the frequency are displayed.
- 3 Turn TUNER PRESET ◀ to change to the preset number where the radio station should be stored.
- 4 Tune to the desired radio station (see "Searching for radio stations").
- 5 Press ENTER / OK to confirm your selection.
→ **STORED** is displayed briefly. The radio station is programmed at the chosen preset number.
- 6 Select and store all desired radio stations this way.

Tuning to stored radio stations

- 1 Turn SOURCE SELECTOR to TUNER to select the tuner.
→ TUNER is displayed.
- 2 Turn TUNER PRESET $\blacklozenge$ to select a preset radio station.
→ PRESET, the preset number and station are displayed.

Resorting stored radio stations

After programming radio stations, you might want to change their sequence. *RESHUFFLE* allows you to exchange the positions of presets.

- 1 Choose * TUNER from the menu and press NEXT $\blacktriangleright$.
- 2 Choose *RESHUFFLE* and press NEXT $\blacktriangleright$.
→ PRESET, a preset number and station are displayed.
- 3 Turn TUNER PRESET $\blacklozenge$ to select a preset station.
- 4 Press ENTER / OK to confirm the selection.
→ The selected preset number *SWAP* (→) and a second preset number are displayed.
- 5 Turn TUNER PRESET $\blacklozenge$ to select the other preset station.
- 6 Press ENTER / OK to confirm the exchange.
→ *RESHUFFLED* is displayed briefly and these two preset numbers are swapped.

Naming radio stations

It is possible to assign a name to any of the preset radio stations. RDS station names also can be overwritten.

- 1 Choose * TUNER from the menu and press NEXT $\blacktriangleright$.
- 2 Choose *GIVE NAME* and press NEXT $\blacktriangleright$.
→ A preset radio station is displayed.
- 3 Turn TUNER PRESET $\blacklozenge$ to select the preset to be renamed.
- 4 Press ENTER / OK to confirm your selection.
→ The existing name or _____ is displayed.
- 5 Turn TUNER PRESET $\blacklozenge$ to select a letter and NEXT $\blacktriangleright$ or $\blacktriangleleft$ PREV. to move to the next or previous position.
- 6 After you have entered the entire name, press ENTER / OK to confirm.
→ *STORED* is displayed and the name is stored.

Note: If you want to use the transmitted RDS station name again, simply clear the given name.

Clearing station names

- 1 Use the menu option * TUNER, choose *GIVE NAME*.
→ A preset radio station is displayed.
- 2 Turn $\blacklozenge$ MENU NAVIGATOR to select the name to be cleared.
- 3 Press ENTER / OK to confirm your selection.
- 4 Press $\blacktriangleleft$ PREV. while the first letter is flashing.
→ *CL* is flashing to the left of the station name.
- 5 Press ENTER / OK to clear the station name.
Or, if you have changed your mind,
press $\blacktriangleleft$ PREV. to leave the station name as it is.

RDS

Radio Data System is a service that allows FM stations to send additional information. If you are receiving an RDS station,  and the station name are displayed.

Switching through different RDS information

- Press RADIO TEXT on the receiver repeatedly to switch through the following information (if available):
 - Radio text messages
 - RDS clock
 - Frequency
 - Station name

Note: The time signal broadcasted from certain RDS stations may not always be accurate.

RDS News and Traffic Announcement

It is possible to set up the tuner in such a way that any playback is interrupted by news or traffic information of a chosen RDS station. Announcement functions only work if the necessary RDS signals are being broadcast.

If RDS stations are also carrying an EON signal (**E**nhanced **O**ther **N**etworks), **EON** is displayed. This signal enables the tuner to search not only the chosen RDS station, but the whole EON station network for news and traffic information.

- 1** Tune to the desired RDS station.
- 2** Press NEWS/TA:
 - Once** to display **NEWS**, this switches on the news announcement function.
 - Twice** to display **TA**, this switches on the traffic announcement function.
 - Three times** to display **TA** and **NEWS**, this switches on both announcement functions.
- 3** Select and play any other source as usual.
 - ➔ While news or traffic information is being broadcast the receiver will switch to tuner and **NEWS** or **TA** will flash.
- 4** Press NEWS/TA until the display indication disappears to switch off the function(s).
 - or**
 - Press NEWS/TA during an announcement to switch off the function(s).

Note: Be sure to switch the news and traffic announcement off during recording, otherwise these announcements also will be recorded.

Remote Control / Remote Control Buttons

The following should be read instead of the original text

- ✖ MUTE Mutes the sound of the receiver in all modes, except TV.
Mutes the sound of your Philips TV set if your remote control is in TV mode.
- ⏻ Switches the source selected on your remote control (e.g. VCR, TV) to standby.
When pressed longer than 2 seconds, the receiver switches to standby.

Connections / Analog Audio Connections

Please read the following text as additional to the text

DTS Digital Surround™ is a discrete 5.1-channel digital audio format available on CD, LD, and DVD software which consequently cannot be decoded and played back inside most CD, LD, or DVD players. For this reason, when DTS-encoded software is played back through the analog outputs of the CD, LD, or DVD player, excessive noise will be exhibited. To avoid possible damage to the audio system, proper precautions should be taken by the customer if the analog outputs are connected directly to the receiver.

To enjoy DTS Digital Surround™ playback, a DTS-compatible player has to be connected to one of the digital inputs of the receiver.

System Setup

Please read the following new chapter after the "Positioning the Speakers" chapter in this section:

Receiver Adjustment

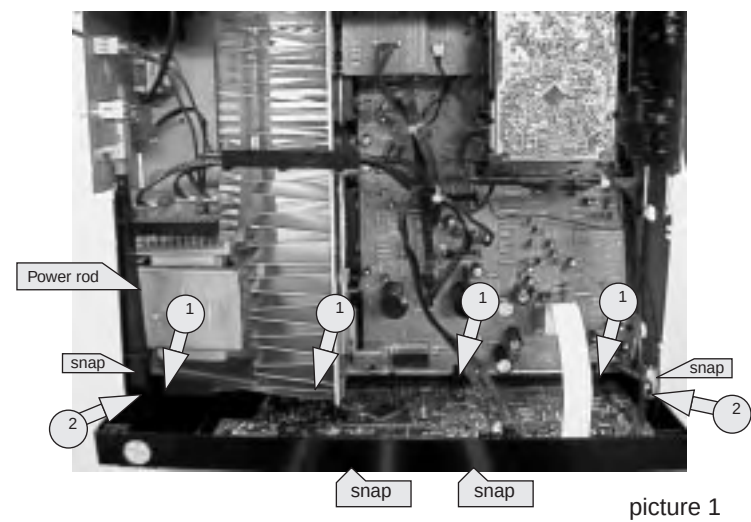
Once the number and position of loudspeakers has been fixed, you can adjust the initial receiver settings for optimal surround sound with the actual setup:

- 1 Set what speakers have been connected to the receiver (*see "Menus / Speaker Setup"*)
Note: The initial setting of your receiver is:
two front speakers left and right: present (cannot be altered)
center speaker: present
two rear speakers: present
subwoofer: present
- 2 Select the size of the speakers (SMALL or LARGE) (*see "Menus: Speaker Sizes"*)
Select *SMALL* if your speaker is able to reproduce low notes down to at least 80–100 Hz.
Select *LARGE* if your speaker is able to reproduce low notes down to at least 50 Hz.
(As a rule of thumb, a *LARGE* speaker has a cone diameter of at least 12 cms (5 inches).)
See the specification sheets of your loudspeakers.
Note: The initial setting of your receiver is: all speakers set to *LARGE*.
- 3 Set the distance from the speakers to the listener's position (*see "Menus: Speaker Distance"*)
Note: The initial setting of your receiver is: all speakers set at a distance of 3 meters.

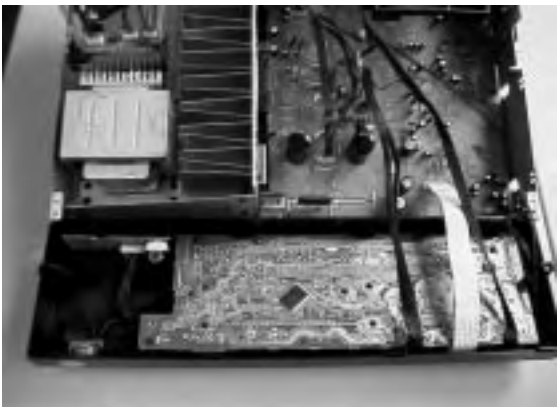
General note: Use the initial settings if you prefer that your receiver does not correct automatically for speaker sizes and distances.

DISMANTLING HINTS

Dismantling of Front

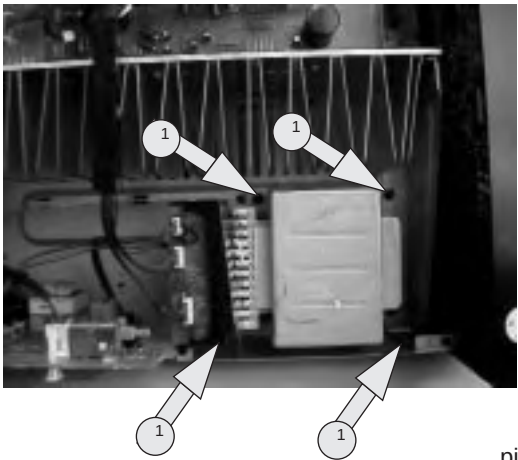


- 1) Remove top cover
- 2) Remove power rod
- 3) Remove 6 x screw as shown in picture 1
- 4) Release two snaps (left & right side front)
- 5) Release two snaps on the bottom side front
- 6) Tipp down front as shown in picture 2



picture 2

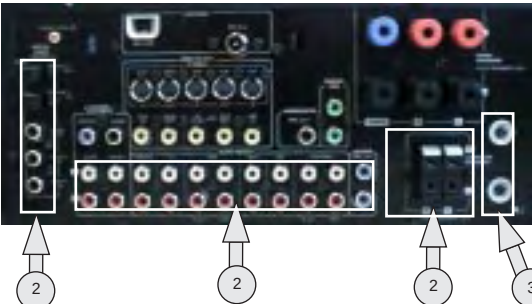
Dismantling of mainstrafo



- 1) Remove power rod
- 2) Remove 4x screw as shown in picture 8

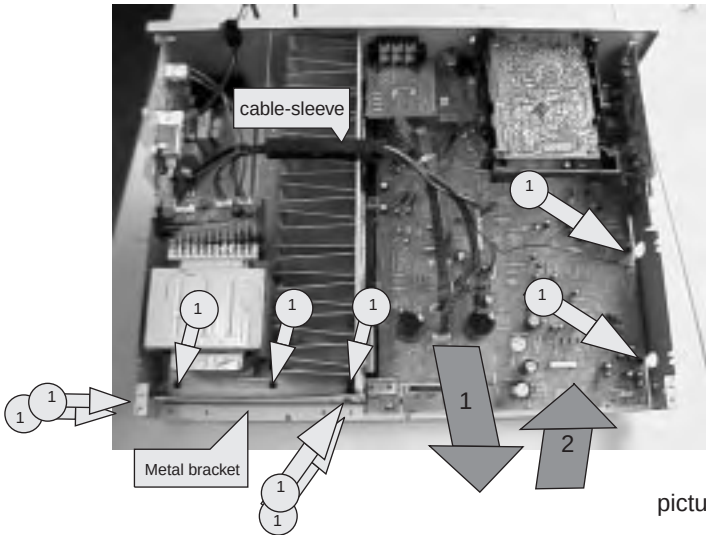
Dismantling of mono board

- 1) Remove front . See picture 1
- 2) Remove whole front (disconnect the wires on the mono board coming from front)



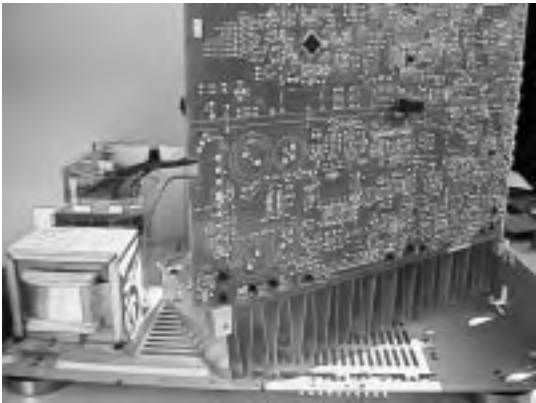
picture 3

- 3) Remove 14 x screws shown in mentionned aria . See picture 3



picture 4

- 4) Remove wires out the cable-sleeve.
- 5) Remove 7 x screw and remove metal bracket
- 6) Remove 2 x screw on mono board . See pictue 4
- 7) Remove mono board as shown arrow 1 & 2 . See picture 4
- 8) Bring the mono board in the service position as shown in picture 5



picture 5

Legend

- ① = Torx M3x6mm (screw with big head)
- ② = Torx 3x10mm
- ③ = Torx M3x6mm

Service position monoboard

- 1) Bring front in position as shown in picture 6
 - 2) Snap nok of front in bottom to make front stable . See picture 7
 - 3) Connect front wiring back to monoboard.
- *The tuner module doesn't have to be connected. Use an other source (pe.CD)

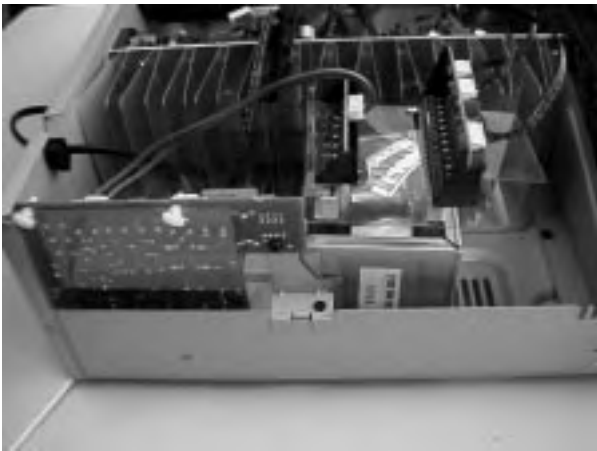


picture 6



picture 7

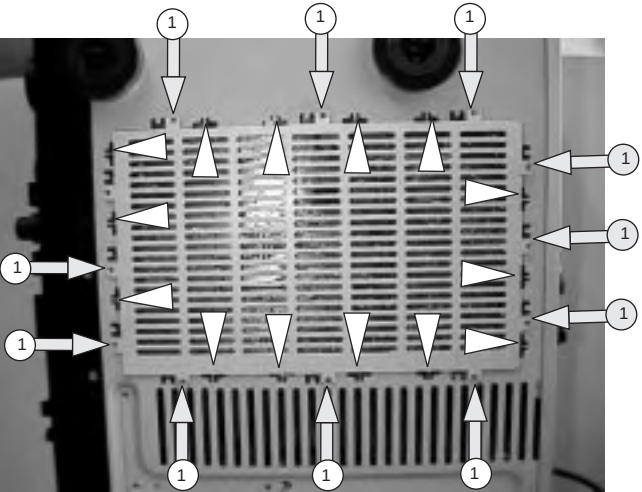
Service position main trafo



picture 9

- 1) Put main trafo as shown in picture 9

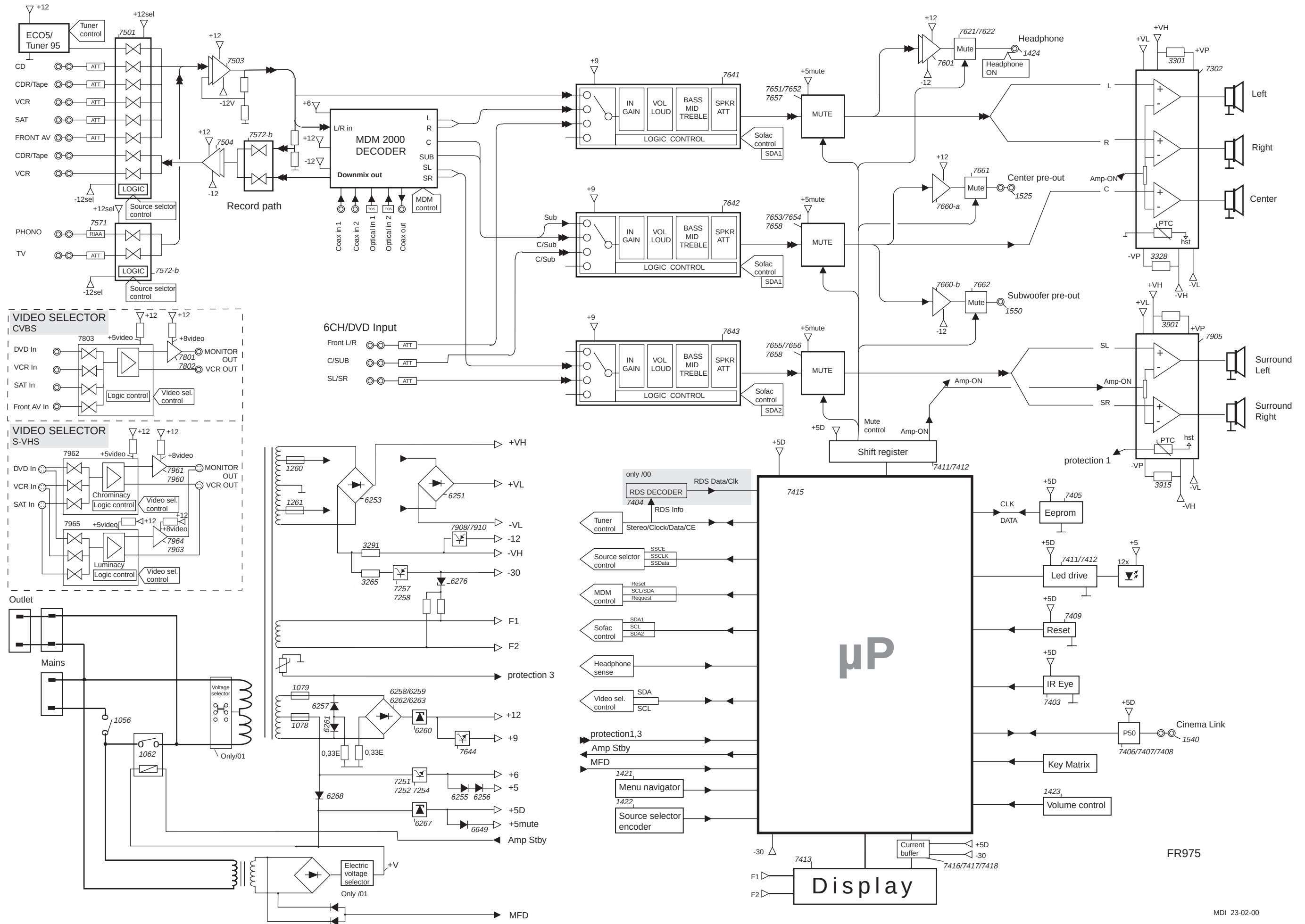
Handling service cover



picture 10

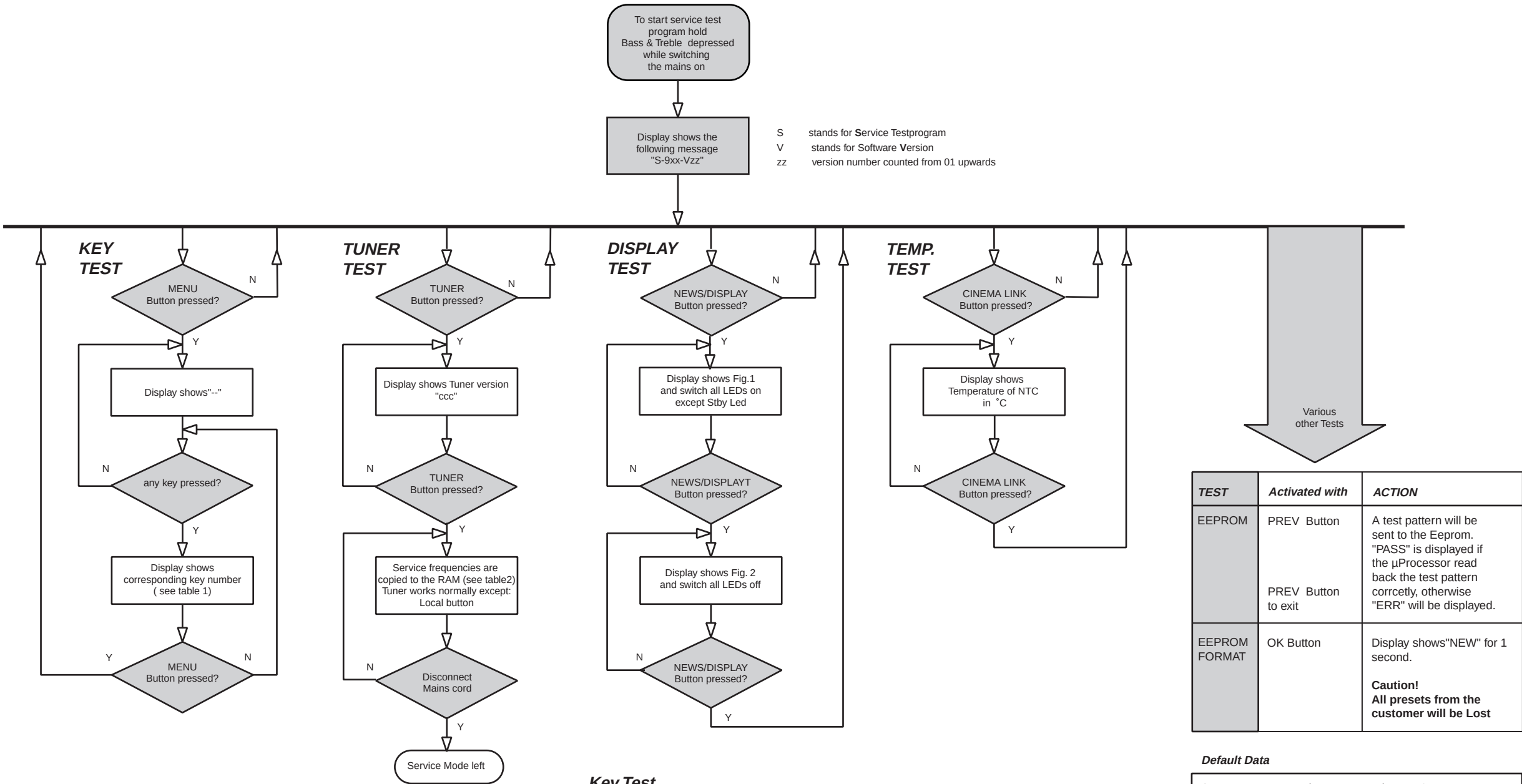
- 1) To open the service cover cut 14 x lugs between cover and bottom . See picture 10 (▽)
 - 2) To close the service cover put 11 x screw in mentionned holes. See picture 10
- Service codenumber 12x Torx M3x6mm screw with big head = 4822 502 14659

BLOCKDIAGRAM



FR975

SERVICE TEST PROGRAM



Tuner Test

Display info Version	Europe "EUR" /00	East Eur. 3-band "EEL" /14	East Eur. 2-band "EEU" /14	USA "USA" /17	Oversea "OSE" /01
Preset 1	87.5MHz	65.81MHz	65.81MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	74MHz	74MHz	530kHz	531kHz
4	1602kHz	87.5MHz	87.5MHz	1700kHz	1602kHz
5	558kHz	531kHz	531kHz	560kHz	558kHz
6	1494kHz	1602kHz	1602kHz	1500kHz	1494kHz
7	153kHz	558kHz	558kHz	98MHz	----
8	279kHz	1494kHz	1494kHz	----	----
9	198kHz	153kHz	98MHz	----	----
10	98MHz	279kHz	70.01MHz	----	----
11	----	198kHz	----	----	98MHz

This table is valid for all types of tuners.
Customer presets will not be changed after this Tuner test.
If a station is tuned then the display flag "OK" will be ON otherwise it will be OFF.
If the tuned frequency is carrying RDS information, the display flag "RDS" will be ON.
Oversea version: the tuning grid can be switched between 9kHz and 10kHz by pressing the key "TUNER" for longer than 2 seconds. "Grid 9" or "Grid10" will be shown accordingly.
Grid 9kHz is in FM 50kHz, Grid 10kHz is in FM 100kHz
Europe version: the LW can be switched On and Off by pressing the key "TUNER" for longer than 2 seconds. LW OFF or LW ON will be shown accordingly.

Table 2

Key Test

Key	Number	Key	Number	Key	Number
Cinema	1	Sens	7	Loudness	13
Surr. on/off	2	*News T/A	8	Bass	14
Surr. Mode	3	Prev.Exit	9	Treble	15
Virt. Mode	4	Setup Menu	-	*Front A/V	16
Tuner	5	Next	11		
*Radio Text	6	Enter/OK	12		

*Button Radio Text change in Name/Frequency in /01/17 version
Button News T/A change in Display in /01/17 version
Button Front A/V not in FR965

Table 1

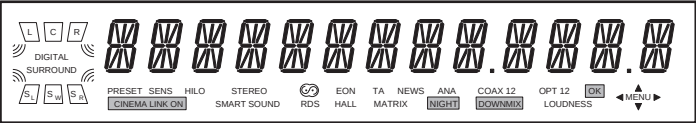
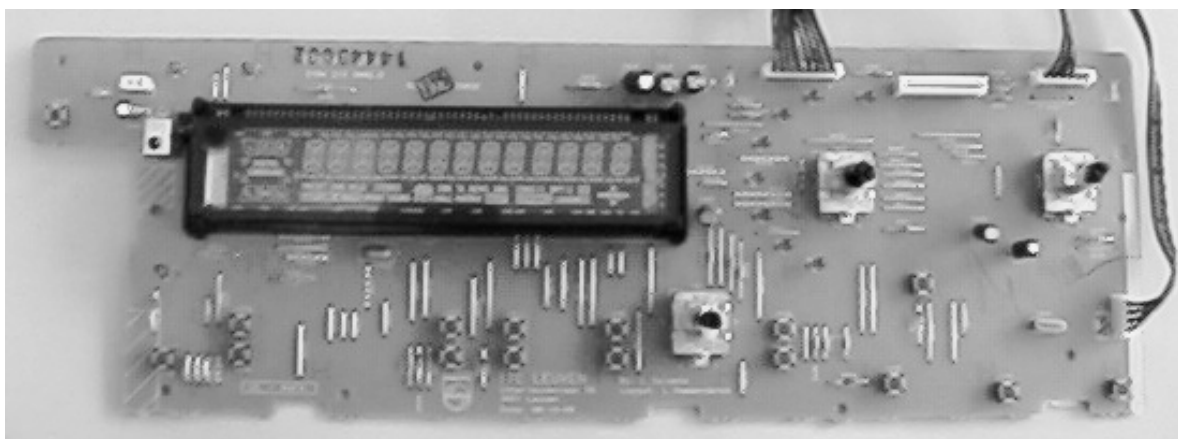


Figure 1



Figure 2

mdi 04-04-00

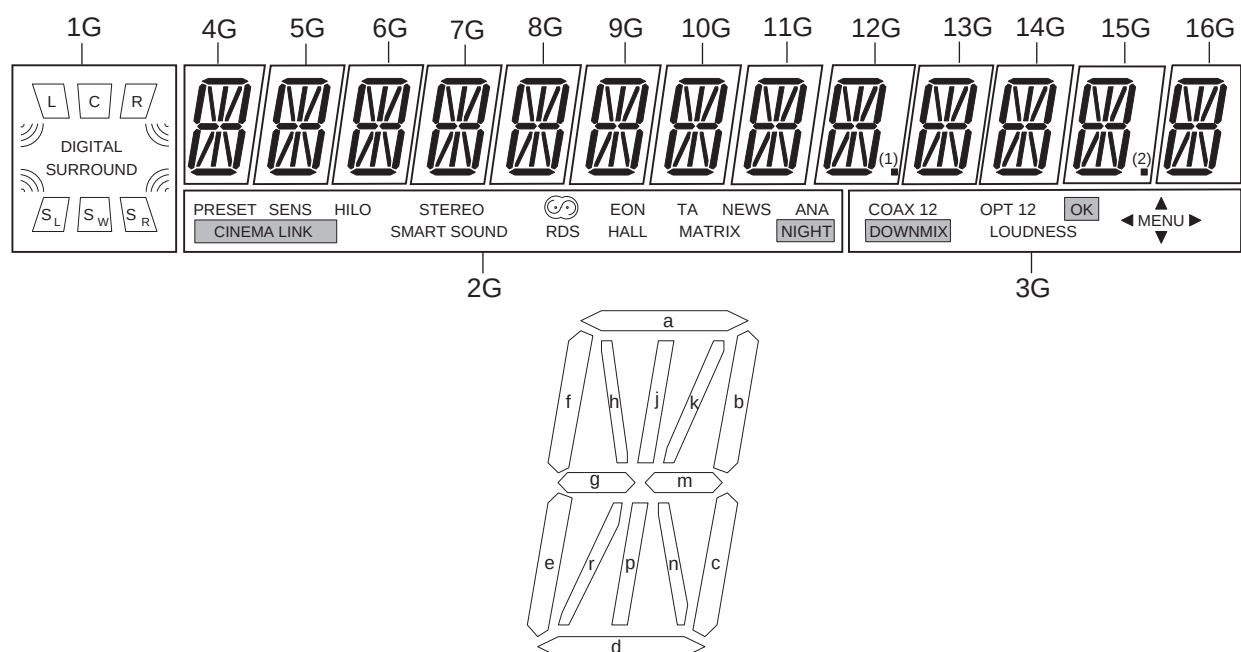


FRONT BOARD

TABLE OF CONTENTS

FTD Display pin connections.....	6-2
Headphone & Led board layout	6-3
Circuit diagram	6-4
Component layout	6-5
Partslst	6-6

FTD DISPLAY PIN CONNECTIONS



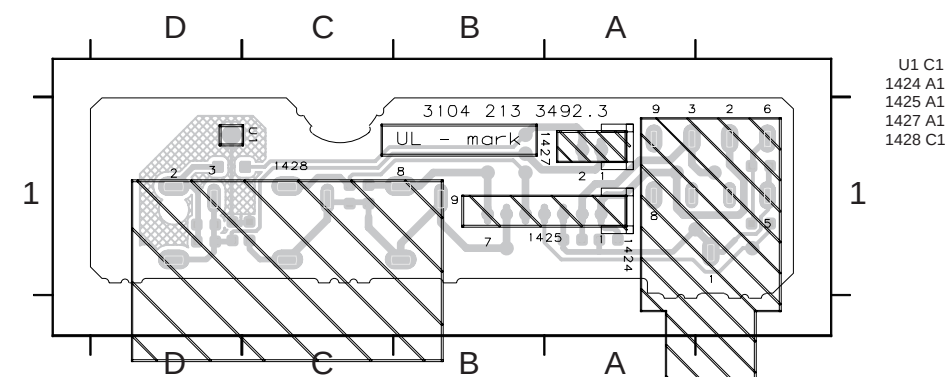
	1G	2G	3G	4G~11G	12G	13G ,14G	15G	16G
P1		MATRIX		a	a	a	a	a
P2			COAX	j p	j p	j p	j p	j p
P3	C	ANA	1 _(coax)	h	h	h	h	h
P4	 (C)	LO	2 _(coax)	k	k	k	k	k
P5	 (S _L)		OPT	b	b	b	b	b
P6	 (S _R)	EON	1 _(opt)	f	f	f	f	f
P7	 (S _w)	HALL	2 _(opt)	m	m	m	m	m
P8	S _(L)	HI	LOUDNESS	g	g	g	g	g
P9	L	NEWS		c	c	c	c	c
P10	S _(R)	PRESET	MENU	e	e	e	e	e
P11	R			r	r	r	r	r
P12	 	SMART SOUND		n	n	n	n	n
P13	 	STEREO		d	d	d	d	d
P14	SURROUND	TA		-	 (1)	-	 (2)	-
P15	DIGITAL	SENS	-	-	-	-	-	-

Pin Connection

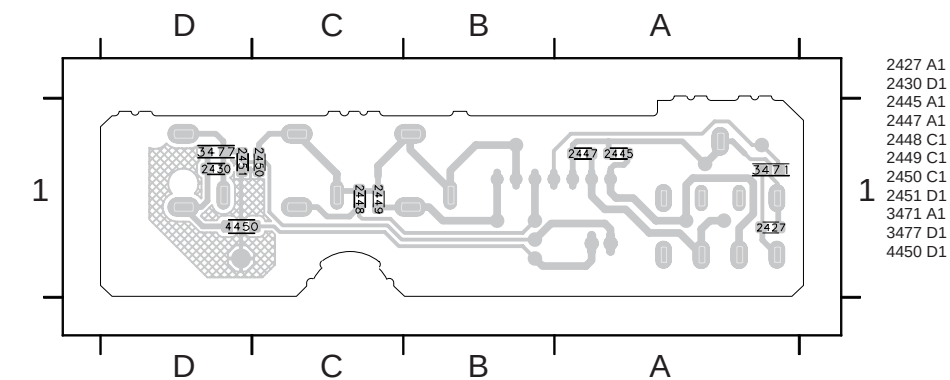
[illegible][illegible]

Note: FI , F2 ----- Filament
NC ----- No connection
NP ----- No pin
1G ~ 16G ----- Grid

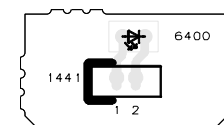
HEADPHONE BOARD - COMPONENT VIEW

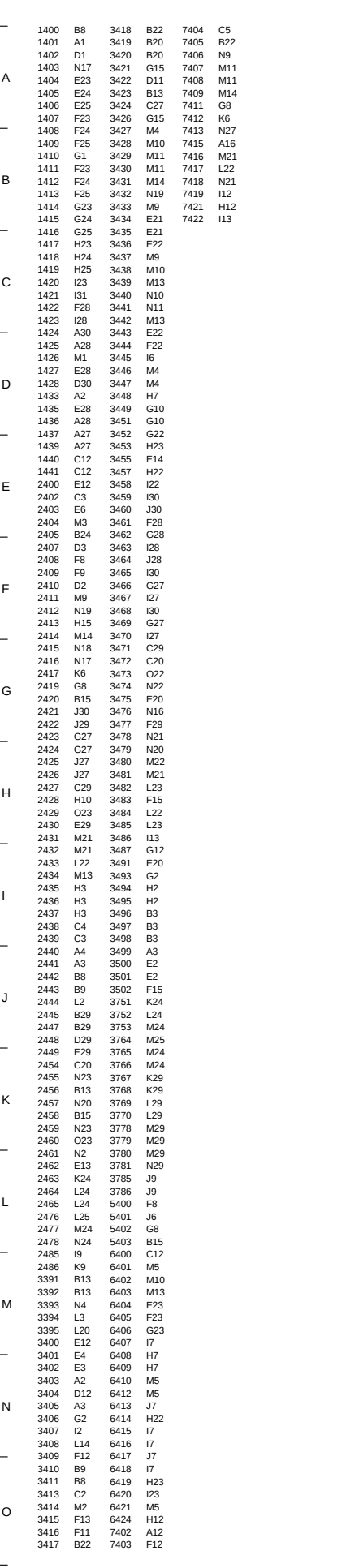


HEADPHONE BOARD - COPPER SIDE VIEW



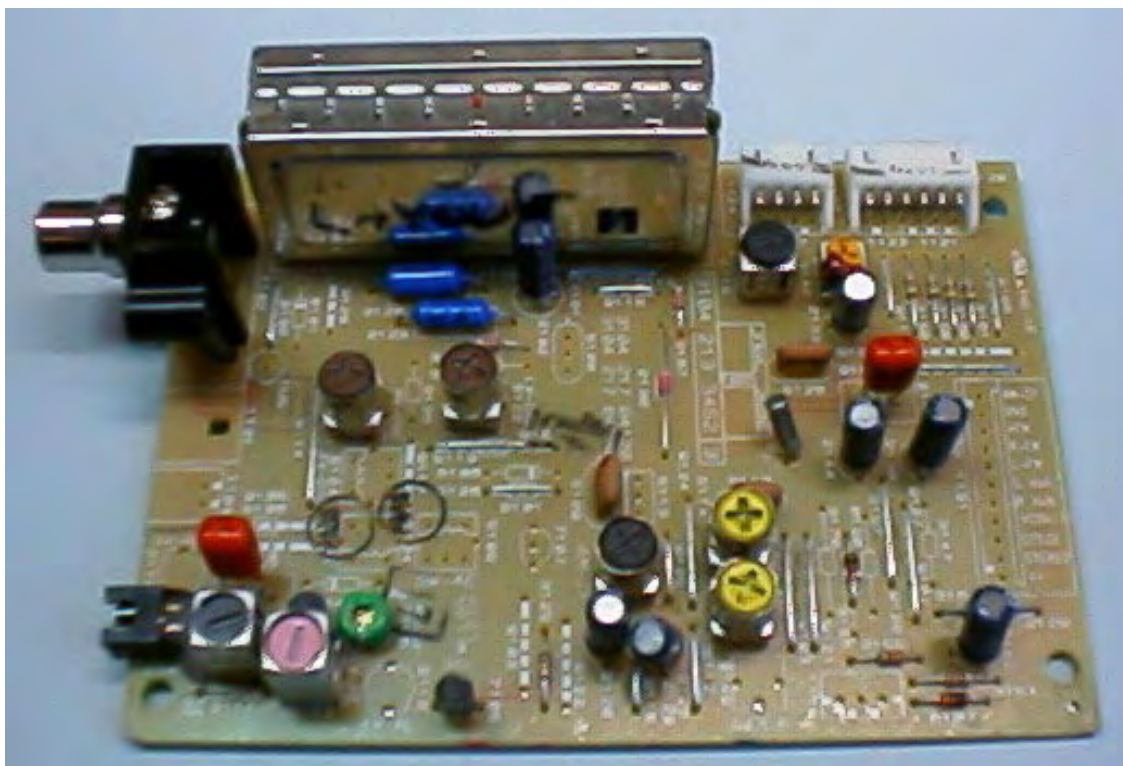
LED BOARD - COMPONENT VIEW





ELECTRICAL PARTSLIST - FRONT BOARD

MISCELLANEOUS			2454	5322 122 32654	22NF10%X7R 63V	3443	4822 116 52219	330E 5% 0,5W	3774	4822 051 20333	33K00 5% 0,1W
1400	4822 242 11033	CRYSTAL (4,332MH)	2455	4822 124 41751	47UF 20% 50V	3444	4822 116 52219	330E 5% 0,5W	3775	4822 051 20333	33K00 5% 0,1W
1403	4822 242 72066	CST8,00MT	2456	4822 124 40433	47UF20% 25V	3445	4822 117 13577	330R 1% 1,25W	3776	4822 051 20333	33K00 5% 0,1W
1404	4822 276 13114	SWITCH, PUSH BUTTON	2457	5322 122 32654	22NF10%X7R 63V	3446	4822 117 13577	330R 1% 1,25W	3777	4822 051 20333	33K00 5% 0,1W
1405	4822 276 13114	SWITCH, PUSH BUTTON	2458	5322 122 32654	22NF10%X7R 63V	3447	4822 116 52219	330E 5% 0,5W	3778	4822 051 20333	33K00 5% 0,1W
1406	4822 276 13114	SWITCH, PUSH BUTTON	2459	5322 122 32654	22NF10%X7R 63V	3448	4822 116 52219	330E 5% 0,5W	3779	4822 051 20333	33K00 5% 0,1W
1407	4822 276 13114	SWITCH, PUSH BUTTON	2460	5322 122 32654	22NF10%X7R 63V	3449	4822 117 10837	100K 1% 0,1W	3780	4822 051 20333	33K00 5% 0,1W
1408	4822 276 13114	SWITCH, PUSH BUTTON	2461	5322 122 32654	22NF10%X7R 63V	3451	4822 117 10833	10K 1% 0,1W	3781	4822 051 20333	33K00 5% 0,1W
1409	4822 276 13114	SWITCH, PUSH BUTTON	2462	5322 122 31647	1NF10%X7R 63V	3452	4822 116 52219	330E 5% 0,5W	3785	4822 051 10102	1K00 2% 0,25W
1410	4822 265 10981	15FE-BT-VK-N	2463	5322 122 32531	100PF 5%NP0 50V	3453	4822 116 52219	330E 5% 0,5W	3786	4822 051 10102	1K00 2% 0,25W
1411	4822 276 13114	SWITCH, PUSH BUTTON									
			2464	5322 122 32531	100PF 5%NP0 50V	3455	4822 051 20223	22K00 5% 0,1W	4401	4822 051 20008	OR00 JUMP. (0805)
1412	4822 276 13114	SWITCH, PUSH BUTTON	2465	5322 122 32531	100PF 5%NP0 50V	3457	4822 116 52219	330E 5% 0,5W	4402	4822 051 20008	OR00 JUMP. (0805)
1413	4822 276 13114	SWITCH, PUSH BUTTON	2466	5322 122 32531	100PF 5%NP0 50V	3458	4822 117 13577	330R 1% 1,25W	4403	4822 051 20008	OR00 JUMP. (0805)
1414	4822 276 13114	SWITCH, PUSH BUTTON	2467	5322 122 32531	100PF 5%NP0 50V	3459	4822 117 10833	10K 1% 0,1W	4404	4822 051 20008	OR00 JUMP. (0805)
1415	4822 276 13114	SWITCH, PUSH BUTTON	2468	5322 122 32531	100PF 5%NP0 50V	3460	4822 117 10833	10K 1% 0,1W	4406	4822 051 20008	OR00 JUMP. (0805)
1416	4822 276 13114	SWITCH, PUSH BUTTON	2469	5322 122 32531	100PF 5%NP0 50V	3461	4822 117 10833	10K 1% 0,1W	4407	4822 051 20008	OR00 JUMP. (0805)
1417	4822 276 13114	SWITCH, PUSH BUTTON	2470	5322 122 32531	100PF 5%NP0 50V	3462	4822 117 10833	10K 1% 0,1W	4408	4822 051 20008	OR00 JUMP. (0805)
1418	4822 276 13114	SWITCH, PUSH BUTTON	2471	5322 122 32531	100PF 5%NP0 50V	3463	4822 117 10833	10K 1% 0,1W	4410	4822 051 20008	OR00 JUMP. (0805)
1419	4822 276 13114	SWITCH, PUSH BUTTON	2472	5322 122 32531	100PF 5%NP0 50V	3464	4822 117 10833	10K 1% 0,1W	4411	4822 051 20008	OR00 JUMP. (0805)
1420	4822 276 13114	SWITCH, PUSH BUTTON	2473	5322 122 32531	100PF 5%NP0 50V	3465	4822 117 11503	220R 1% 0,1W	4413	4822 051 20008	OR00 JUMP. (0805)
1421	4822 273 10372	SWITCH, ROTARY									
			2474	5322 122 32531	100PF 5%NP0 50V	3466	4822 117 11503	220R 1% 0,1W	4416	4822 051 20008	OR00 JUMP. (0805)
1422	4822 273 10372	SWITCH, ROTARY	2475	5322 122 32531	100PF 5%NP0 50V	3467	4822 117 11503	220R 1% 0,1W	4417	4822 051 20008	OR00 JUMP. (0805)
1423	4822 273 10365	ROTARY ENCODER 24P	2476	5322 122 32531	100PF 5%NP0 50V	3468	4822 117 11503	220R 1% 0,1W	4418	4822 051 20008	OR00 JUMP. (0805)
1424	4822 265 11584	1P YKB21-5209	2477	5322 122 32531	100PF 5%NP0 50V	3469	4822 117 11503	220R 1% 0,1W	4420	4822 051 20008	OR00 JUMP. (0805)
1428	4822 265 11336	3P. FEM. CINCH	2478	5322 122 32531	100PF 5%NP0 50V	3470	4822 117 11503	220R 1% 0,1W	4421	4822 051 20008	OR00 JUMP. (0805)
8002	4822 320 12706	FLEXIBLE FOIL 15P 220MM	2485	5322 122 31647	1NF10%X7R 63V	3471	4822 051 10102	1K00 2% 0,25W	4422	4822 051 20008	OR00 JUMP. (0805)
CAPACITORS			2486	4822 122 33197	1NF 10% 50V	3472	4822 051 10102	1K00 2% 0,25W	4423	4822 051 20008	OR00 JUMP. (0805)
2400	4822 124 41584	100UF 20% 10V	RESISTORS			3473	4822 051 20008	OR00 JUMP. (0805)	4424	4822 051 20008	OR00 JUMP. (0805)
2402	5322 122 31647	1NF10%X7R 63V	3391	4822 051 10102	1K00 2% 0,25W	3474	4822 051 20008	OR00 JUMP. (0805)	4425	4822 051 20008	OR00 JUMP. (0805)
2403	5322 116 80853	560PF 5%NP0 63V	3392	4822 051 20223	22K00 5% 0,1W	3475	4822 117 10837	100K 1% 0,1W	4426	4822 051 20008	OR00 JUMP. (0805)
2404	5322 122 31647	1NF10%X7R 63V	3393	4822 051 20223	22K00 5% 0,1W				4450	4822 051 20008	OR00 JUMP. (0805)
2405	5322 122 32654	22NF10%X7R 63V	3394	4822 051 20223	22K00 5% 0,1W	3477	4822 117 12521	68R 1% 0,1W	COILS & FILTERS		
2407	5322 122 34099	470PF10%X7R 63V	3395	4822 051 20008	OR00 JUMP. (0805)	3478	4822 117 10837	100K 1% 0,1W	5400	4822 157 11477	LAL02TB2R2J
2408	5322 122 32654	22NF10%X7R 63V	3400	4822 051 20479	47R00 5% 0,1W	3479	4822 051 10102	1K00 2% 0,25W	5401	4822 157 11477	LAL02TB2R2J
2409	4822 124 22652	2,2UF20% 50V	3401	4822 050 21003	10K00 1% 0,6W	3480	4822 117 10837	100K 1% 0,1W	5402	4822 157 11477	LAL02TB2R2J
2410	5322 122 32654	22NF10%X7R 63V	3402	4822 050 21003	10K00 1% 0,6W	3481	4822 051 10102	1K00 2% 0,25W	5403	4822 157 11477	LAL02TB2R2J
2411	4822 122 33575	220PF 5% NP0 63V	3403	4822 117 11507	6K8 1% 0,1W	3482	4822 117 10837	100K 1% 0,1W	DIODES		
			3404	4822 116 52219	330E 5% 0,5W	3484	4822 051 10102	1K00 2% 0,25W	6400	9322 100 14682	LTL1214A
2412	4822 124 41751	47UF 20% 50V				3485	4822 051 20008	OR00 JUMP. (0805)	6401	4822 130 82978	LTL-16KPE-P
2413	5322 122 32654	22NF10%X7R 63V	3405	4822 116 52257	22K 5% 0,5W	3491	4822 117 10837	100K 1% 0,1W	6402	4822 130 30621	1N4148
2414	5322 122 32654	22NF10%X7R 63V	3406	4822 050 21003	10K00 1% 0,6W	3493	4822 051 20471	470R00 5% 0,1W	6403	4822 130 30621	1N4148
2415	5322 122 32658	22PF 5% 50V	3407	4822 050 21003	10K00 1% 0,6W				6404	4822 130 30621	1N4148
2416	5322 122 32658	22PF 5% 50V	3408	4822 050 21003	10K00 1% 0,6W	3494	4822 051 20471	470R00 5% 0,1W	6405	4822 130 30621	1N4148
2417	5322 122 32654	22NF10%X7R 63V	3409	4822 051 10102	1K00 2% 0,25W	3495	4822 051 20471	470R00 5% 0,1W	6406	4822 130 30621	1N4148
2419	5322 122 32654	22NF10%X7R 63V	3410	4822 117 11449	2K2 1% 0,1W	3496	4822 051 20471	470R00 5% 0,1W	6407	4822 130 82978	LTL-16KPE-P
2420	4822 124 23432	100UF20% 10V	3411	4822 117 13579	220K 1% 0,1W	3497	4822 051 20471	470R00 5% 0,1W	6408	4822 130 82978	LTL-16KPE-P
2421	5322 122 32654	22NF10%X7R 63V	3413	4822 050 11002	1K00 1% 0,4W	3498	4822 051 20471	470R00 5% 0,1W	6409	4822 130 82978	LTL-16KPE-P
			3414	4822 051 10102	1K00 2% 0,25W	3499	4822 051 20471	470R00 5% 0,1W			
2422	5322 122 32654	22NF10%X7R 63V	3415	4822 051 20008	OR00 JUMP.	3500	4822 051 20471	470R00 5% 0,1W	6410	4822 130 82978	LTL-16KPE-P
2423	5322 122 32654	22NF10%X7R 63V				3501	4822 051 20471	470R00 5% 0,1W	6412	4822 130 82978	LTL-16KPE-P
2424	5322 122 32654	22NF10%X7R 63V	3416	4822 117 10833	10K 1% 0,1W	3502	4822 051 10102	1K00 2% 0,25W	6413	4822 130 82978	LTL-16KPE-P
2425	5322 122 32654	22NF10%X7R 63V	3417	4822 117 10833	10K 1% 0,1W	3751	4822 051 20333	33K00 5% 0,1W	6414	4822 130 30621	1N4148
2426	5322 122 32654	22NF10%X7R 63V	3418	4822 117 10833	10K 1% 0,1W				6415	4822 130 82978	LTL-16KPE-P
2427	5322 122 31647	1NF10%X7R 63V	3419	4822 117 10833	10K 1% 0,1W	3752	4822 051 20333	33K00 5% 0,1W	6416	4822 130 82978	LTL-16KPE-P
2428	4822 124 40769	4,7UF20% 100V	3420	4822 117 10833	10K 1% 0,1W	3753	4822 051 20333	33K00 5% 0,1W	6417	4822 130 82978	LTL-16KPE-P
2429	4822 124 41751	47UF 20% 50V	3421	4822 117 10833	10K 1% 0,1W	3754	4822 051 20333	33K00 5% 0,1W	6418	4822 130 82978	LTL-16KPE-P
2430	4822 122 33575	220PF 5% NP0 63V	3422	4822 117 10833	10K 1% 0,1W	3755	4822 051 20333	33K00 5% 0,1W	6419	4822 130 30621	1N4148
2431	5322 122 32531	100PF 5%NP0 50V	3424	4822 050 11002	1K00 1% 0,4W	3756	4822 051 20333	33K00 5% 0,1W	6420	4822 130 30621	1N4148
			3426	4822 050 11002	1K00 1% 0,4W	3757	4822 051 20333	33K00 5% 0,1W	6421	4822 130 82978	LTL-16KPE-P
2432	5322 122 32531	100PF 5%NP0 50V	3427	4822 116 83868	150R 5% 0,5W	3758	4822 051 20333	33K00 5% 0,1W	TRANSISTORS & ICs		
2433	5322 122 32531	100PF 5%NP0 50V				3759	4822 051 20333	33K00 5% 0,1W	7402	4822 130 11607	PDTA144ET
2434	4822 126 14076	220N 25V. P8020	3428	4822 051 20273	27K00 5% 0,1W	3760	4822 051 20333	33K00 5% 0,1W	7403	4822 130 10165	GP1U28XP
2435	4822 122 33575	220PF 5% NP0 63V	3429	4822 051 20223	22K00 5% 0,1W	3761	4822 051 20333	33K00 5% 0,1W	7404	4822 209 31981	SAA6579T
2436	4822 122 33575	220PF 5% NP0 63V	3430	4822 051 20223	22K00 5% 0,1W				7405	4822 209 17445	M24C08-MN6
2437	4822 122 33575	220PF 5% NP0 63V	3431	4822 117 10833	10K 1% 0,1W	3762	4822 051 20333	33K00 5% 0,1W	7406	4822 130 60511	BC847B
2438	4822 122 33575	220PF 5% NP0 63V	3432 ▲	4822 052 10478	4R70 5% 0,33W	3763	4822 051 20333	33K00 5% 0,1W	7407	4822 130 60511	BC847B
2439	4822 122 33575	220PF 5% NP0 63V	3433 ▲	4822 117 10833	10K 1% 0,1W	3764	4822 051 20333	33K00 5% 0,1W	7408	4822 130 60511	BC847B
2440	4822 122 33575	220PF 5% NP0 63V	3434	4822 051 20223	22K00 5% 0,1W	3765	4822 051 20333	33K00 5% 0,1W	7409	4822 130 60511	BC847B
2441	4822 122 33575	220PF 5% NP0 63V	3435	4822 116 52257	22K 5% 0,5W	3766	4822 051 20333	33K00 5% 0,1W	7411	5322 209 11306	HEF4094BT
			3436	4822 116 52257	22K 5% 0,5W	3767	4822 051 20333	33K00 5% 0,1W	7412	5322 209 11306	HEF4094BT
2442	4822 126 13692	47PF 1% NP0 63V	3								

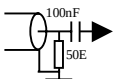


TUNER 95 BOARD

TABLE OF CONTENTS

Adjustment table	7A-2
Blockdiagram	7A-3
Component layout	7A-4
Circuit diagram	7A-5
Partslist	7A-6

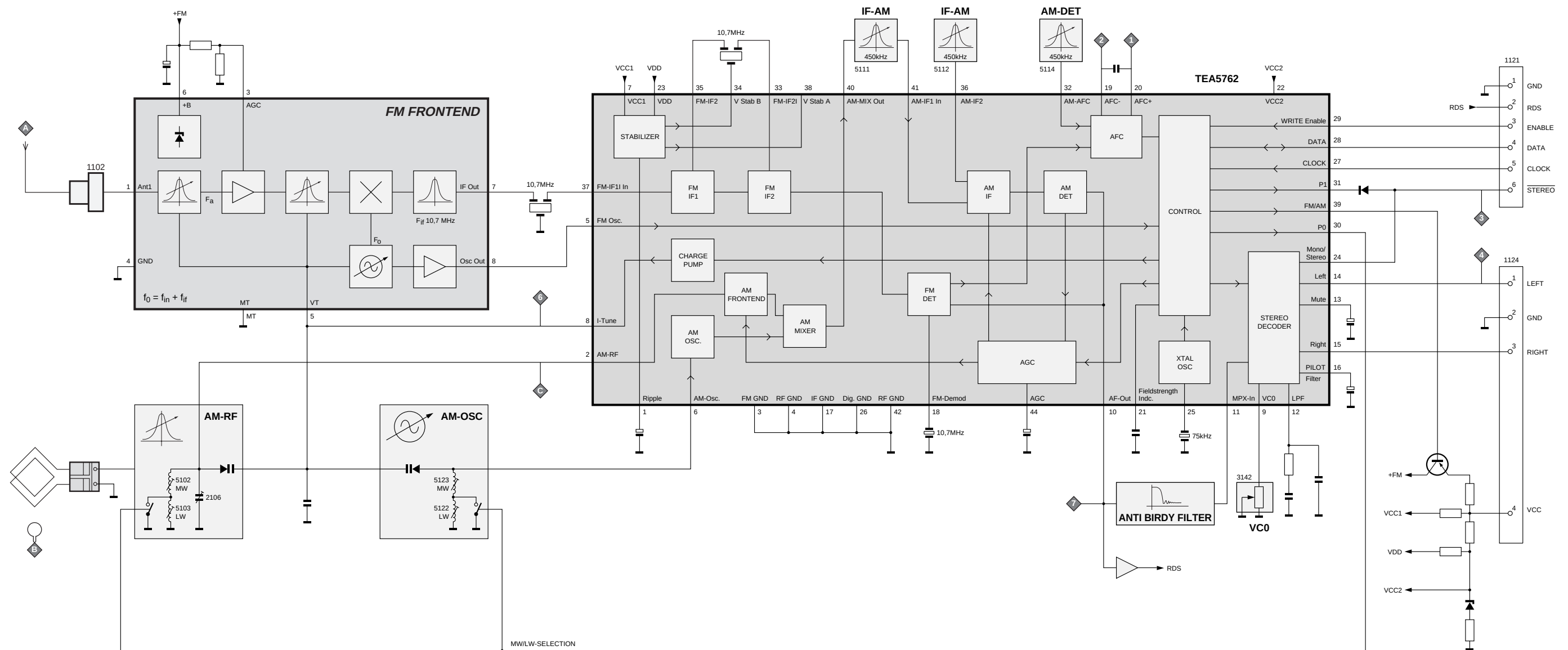
TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50) 87.5 - 108 MHz			108 MHz	check		7 ... 9V
			87.5 MHz	check		1.3 ... 2V
MW (9) 531 - 1602 kHz			1602 kHz	5123		8.3V ± 0.2V
			531 kHz	check		1V ± 0.4V
LW (3) 153 - 279 kHz			279 kHz	5122		8.3V ± 0.2V
			153 kHz	check		1V ± 0.4V
FM – DETECTION						
FM	98 Mhz 1mV continuous wave <i>short pin 21 (IC7101) to ground</i>		98 MHz	5107	 	0mV ± 3mV
FM – VCO						
FM	98 Mhz 1 mV continuous wave		98 MHz	3142		152kHz ± 1 kHz
DISTORTION						
FM	98 Mhz 1 mV 90 % L + 9 % pilot mod = 1kHz		98MHz	mixcoil inside Tuner 1110		Distortion minimum
AM – IF						
MW	450kHz Δf = 10kHz Low as possible Swept signal	 	MW	5111		symmetrical and max. height 
	5112					
	450kHz continuous wave			5114	 	0mV ± 2mV
AM - RF						
MW	558kHz Mod = 1kHz 30 % AM 1494 kHz	 *	558kHz	5102		MAX 
			1494kHz	2106		
LW	198kHz mod = 1kHz 30 % AM		198kHz	5103		MAX

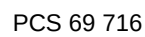
* Signal send via a frame antenna
(..) = tuning grid in kHz

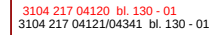
 repeat

adjtable for 3104 217 04121/04341



1	2	3	4	5	6	7	8	9	10	11	12	13
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[illegible]

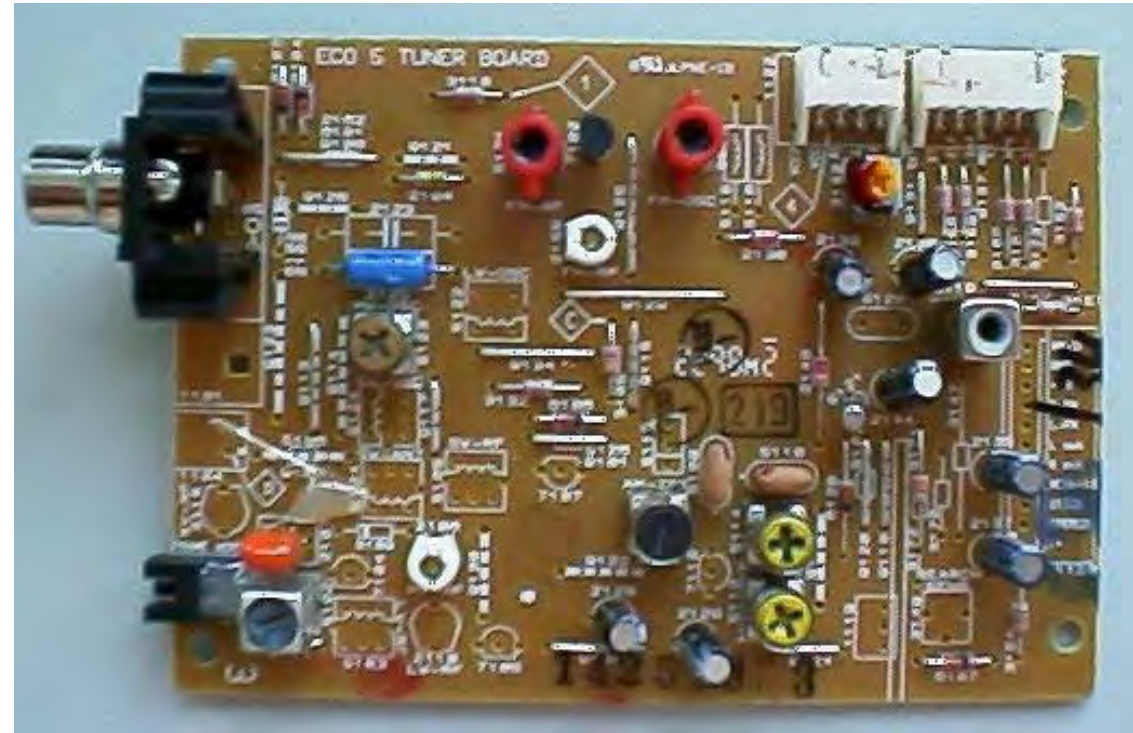


ELECTRICAL PARTSLIST - TUNER 95 BOARD

MISCELLANEOUS			RESISTORS		
1102	4822 267 10283	YKD31-0432	3103	4822 051 20008	0R00 JUMP. (0805)
1103	4822 265 31184	S2B-XH-A-BK	3104	4822 051 10102	1K002% 0,25W
1110	4822 210 10739	FE415-G23	3107	4822 051 20829	82R005%0,1W
CAPACITORS			3108	4822 117 11449	2K2 1%0,1W
2102	4822 124 80791	470UF20%16V	3109	4822 117 11449	2K2 1%0,1W
2106	4822 125 60102	5P2-30P N750100V	3110	4822 051 20008	0R00 JUMP. (0805)
2107	4822 121 51252	470NF 5%63V	3111	4822 051 20008	0R00 JUMP. (0805)
2108	4822 126 13695	82PF 1% NP063V	3120	4822 051 20008	0R00 JUMP. (0805)
2109	5322 122 32658	22PF 5% 50V	3123	4822 051 10008	0R005% 0,25W
2120	5322 122 32659	33PF5%50V	3124	4822 051 10008	0R005% 0,25W
2122	5322 126 10465	3,9NF 10% X7R 50V 08	3125	4822 116 83864	10K5%0,5W
2123	4822 121 10766	390PF 1% 630V KP464	3128	4822 116 52256	2K2 5%0,5W
2125	4822 121 10578	560P1%630V	3129	4822 051 20008	0R00 JUMP. (0805)
2127	4822 122 32927	220NF +80-20%Y5V 50V	3130	4822 051 10008	0R005% 0,25W
2128	4822 124 41579	10UF 20% 50V	3131	4822 051 10008	0R005% 0,25W
2129	4822 124 40242	1UF20%63V	3132	4822 051 20008	0R00 JUMP. (0805)
2130	4822 126 11585	22NF+80-20% Y5V 25V	3134	4822 051 20223	22K005%0,1W
2131	4822 122 33325	470NF 16V	3135	4822 051 20008	0R00 JUMP. (0805)
2132	4822 122 33325	470NF 16V	3137	4822 117 10833	10K1%0,1W
2133	4822 124 40242	1UF20%63V	3138	4822 051 20008	0R00 JUMP. (0805)
2134	4822 126 13188	15NF 5% X7R63V	3139	4822 051 10008	0R005% 0,25W
2135	4822 122 32927	220NF +80-20%Y5V 50V	3140	4822 051 20331	330R005%0,1W
2136	4822 126 13188	15NF 5% X7R63V	3141	4822 117 11148	56K1%0,1W
2137	4822 122 32927	220NF +80-20%Y5V 50V	3142	4822 100 11163	100K30%LIN0,1W
2138	4822 124 41576	2,2UF 20% 50V	3143	4822 051 20223	22K005%0,1W
2139	4822 126 10002	100NF20%Y5V 25V	3144	4822 051 10102	1K002% 0,25W
2140	4822 121 51252	470NF 5%63V	3145	4822 117 11449	2K2 1%0,1W
2141	4822 122 31947	100NF20%Y5V 63V	3146	4822 051 20479	47R005%0,1W
2142	4822 122 31947	100NF20%Y5V 63V	3147	4822 051 10008	0R005% 0,25W
2143	4822 122 32927	220NF +80-20%Y5V 50V	3150	4822 051 20472	4K705%0,1W
2144	4822 124 40242	1UF20%63V	3151	4822 051 20683	68K005%0,1W
2145	4822 122 33575	220PF5%NPO50V	3152	4822 051 20471	470R005%0,1W
2147	4822 122 33575	220PF5%NPO50V	3153	4822 051 20471	470R005%0,1W
2148	4822 122 33809	22NF20%Y5V 50V	3154	4822 116 83868	150R5%0,5W
2150	4822 122 31947	100NF20%Y5V 63V	3155	4822 116 52219	330E5%0,5W
2151	4822 126 14236	50V 15P 5%	3158	4822 116 83883	470R5%0,5W
2152	4822 126 13695	82PF 1% NP063V	3159	4822 116 83883	470R5%0,5W
2158	4822 122 31947	100NF20%Y5V 63V	3160	4822 116 83883	470R5%0,5W
2160	4822 122 32139	12PF 2%NP0 63V	3161	4822 116 83883	470R5%0,5W
2161	5322 122 34123	1NF10%X7R 50V	3162	4822 051 20224	220K005%0,1W
2162	4822 124 81151	22UF 50V	3163	4822 051 10008	0R005% 0,25W
			3164	4822 052 10478	4R705% 0,33W
			3165	4822 051 10008	0R005% 0,25W
			3167	4822 116 83872	220R5%0,5W
			3169	4822 051 20008	0R00 JUMP. (0805)
			3171	4822 051 20008	0R00 JUMP. (0805)
			3172	4822 051 10008	0R005% 0,25W
			3173	4822 051 20008	0R00 JUMP. (0805)
			3176	4822 051 20008	0R00 JUMP. (0805)
			3177	4822 051 20223	22K005%0,1W

ELECTRICAL PARTSLIST - TUNER 95 BOARD

RESISTORS			DIODES		
3178	4822 051 10008	0R005% 0,25W	6105	4822 130 83075	HN1V02H-B
3181	4822 051 10008	0R005% 0,25W	6106	4822 130 30621	1N4148
3183	4822 051 10008	0R005% 0,25W	6107	4822 130 34488	BZX79-B11
3184	4822 051 10008	0R005% 0,25W	6120	4822 130 30621	1N4148
3185	4822 051 10008	0R005% 0,25W	TRANSISTORS & INTERGRATED CIRCUITS		
3186	4822 051 10102	1K002% 0,25W	7101	4822 209 90315	TEA5762H/V1
3188	4822 051 10008	0R005% 0,25W	7103	4822 130 42513	BC858C
3192	4822 051 20008	0R00 JUMP. (0805)	7104	5322 130 44779	BC338-40
3197	4822 051 20472	4K705%0,1W	7105	5322 130 44779	BC338-40
COILS & FILTERS			7109	5322 130 41983	BC858B
5102	4822 157 71634	MW AERIAL	7110	5322 130 41983	BC858B
5103	4822 157 71635	LW AERIAL	7122	5322 130 42136	BC848C
5107	4822 157 11443	2U4 10M7	7124	5322 130 42136	BC848C
5109	4822 157 71639	SFE10,7MJA10H-A-TF21			
5110	4822 242 70665	SFE10,7MS3-A			
5111	4822 158 60511	AM-1F			
5112	4822 157 70302	F7MCS-12216N			
5114	4822 157 70302	F7MCS-12216N			
5115	4822 157 71636	BIRDIE COIL			
5121	4822 242 10261	T6252F00 (75KHZ)			
5122	4822 157 60517	110,00 UH8%			
5123	4822 157 60517	110,00 UH8%			

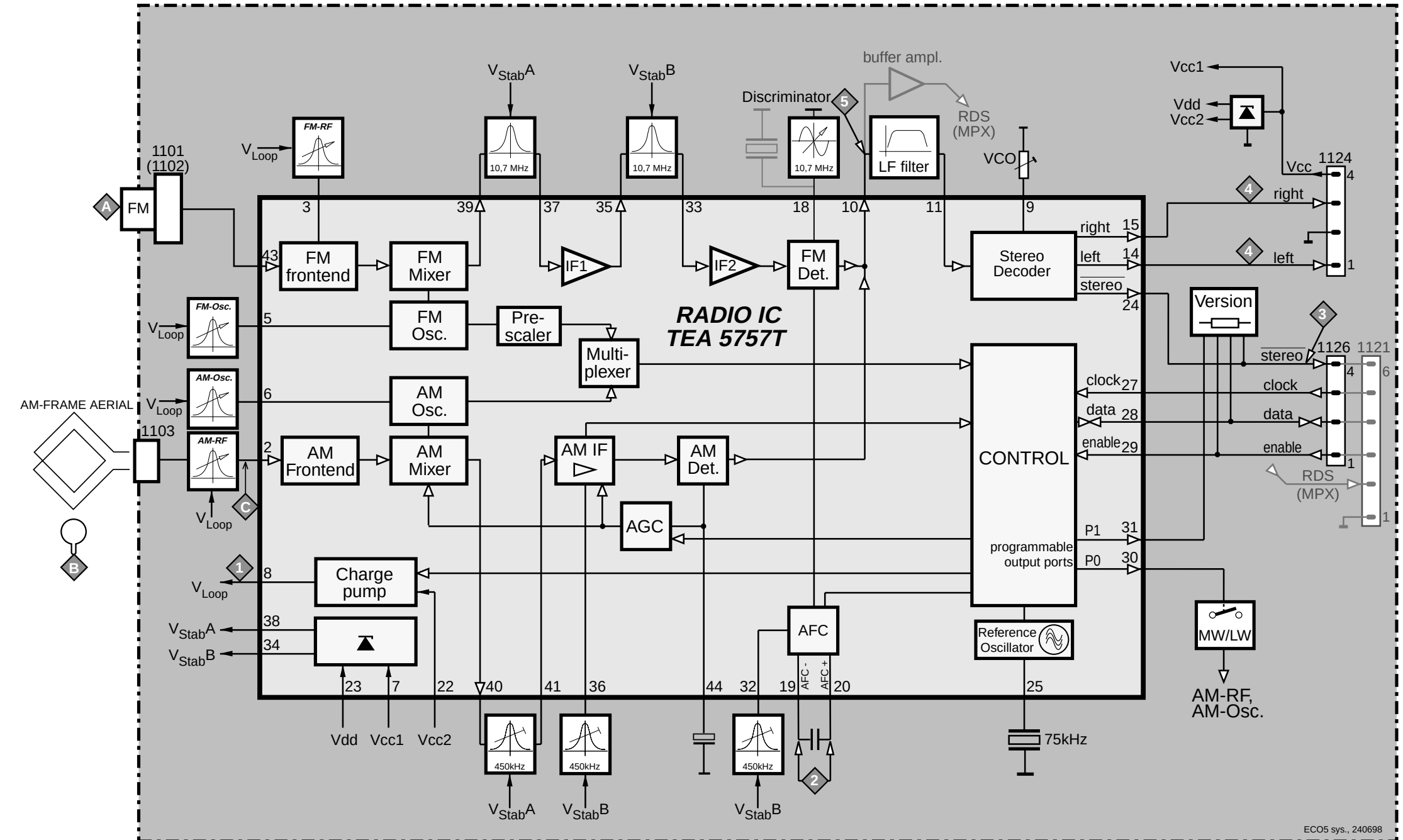


TUNER BOARD ECO5

TABLE OF CONTENTS

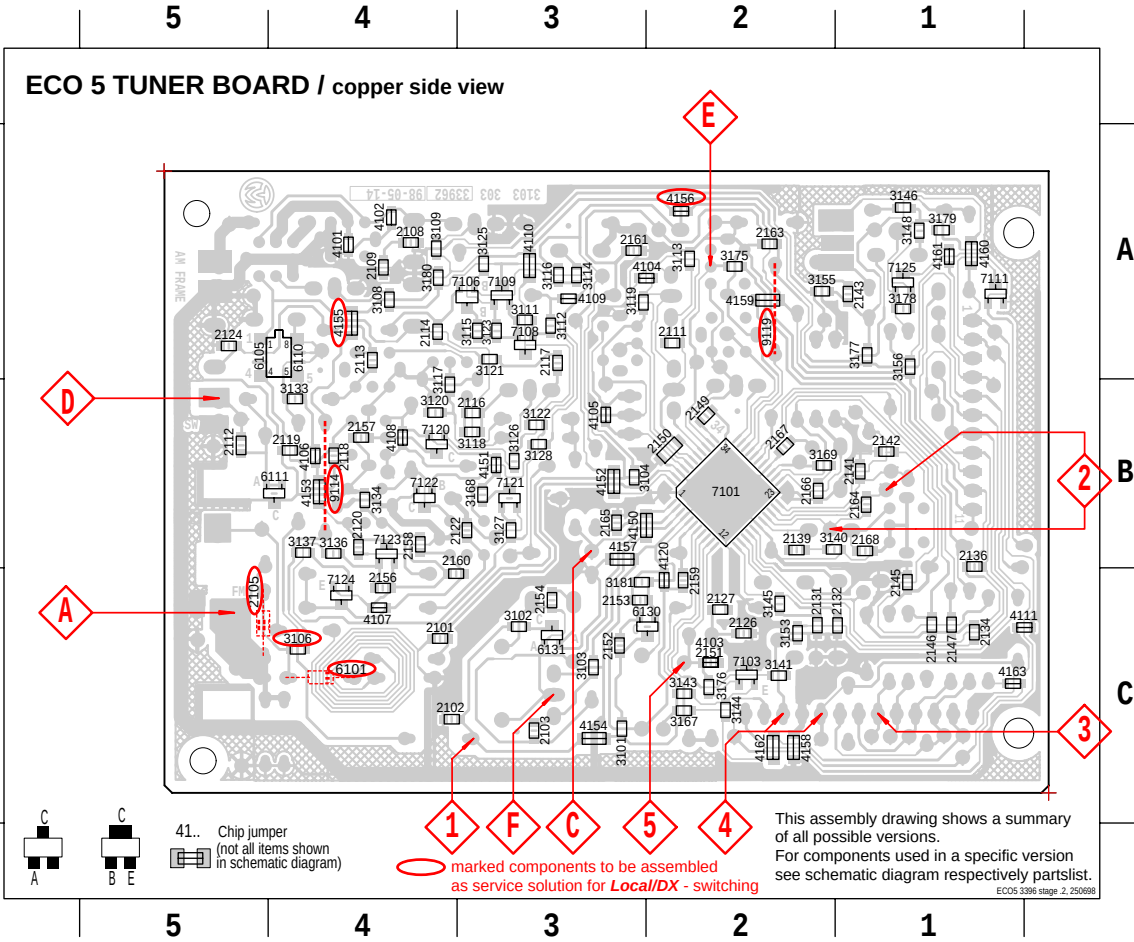
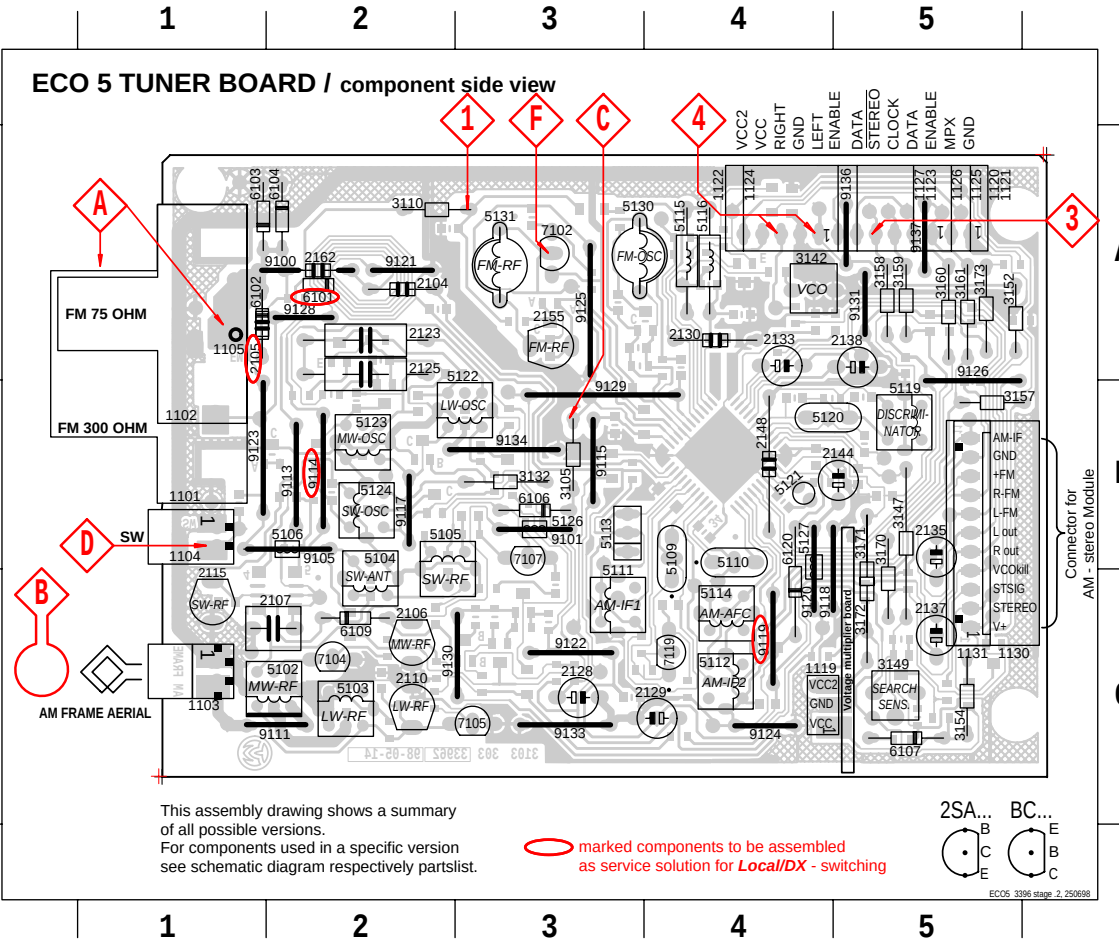
Blockdiagram	7B-1
Component layout	7B-2
Adjustmanttable	7B-2
Circuit diagram	7B-3
Partslist	7B-4

TUNER BOARD **ECO 5 systems**

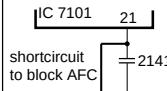
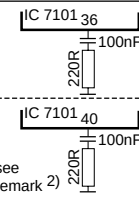
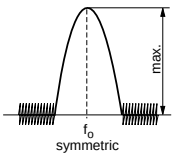
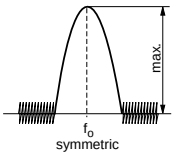


1101 A1	2106 C2	2137 C5	3149 C5	3173 A5	5114 C4	5130 A3	7104 C2	9117 B2	9129 B3
1102 A1	2107 C2	2138 A5	3152 A5	5102 C2	5115 A4	5131 A3	7105 C3	9118 B4	9130 C3
1103 C1	2110 C2	2144 B5	3154 C5	5103 C2	5116 A4	6101 A2	7107 B3	9119 C4	9131 A5
1104 B1	2115 C1	2148 B4	3157 B5	5104 C2	5119 B5	6102 A1	7119 C4	9120 B4	9133 C3
1105 A1	2123 A2	2155 A3	3158 A5	5105 B2	5120 B4	6103 A1	9100 A2	9121 A2	9134 B3
1119 C5	2125 A2	2162 A2	3159 A5	5106 B2	5121 B4	6104 A2	9101 B3	9122 C3	9136 A5
1120 A5	2128 C3	3105 B3	3160 A5	5109 B4	5122 B3	6106 B3	9105 B2	9123 B1	9137 A5
1130 B5	2129 C4	3110 A2	3161 A5	5110 B4	5123 B2	6107 C5	9111 C2	9124 C4	
1131 B5	2130 A4	3132 B3	3170 C5	5111 C3	5124 B2	6109 C2	9113 B2	9125 A3	
2104 A2	2133 A4	3142 A4	3171 C5	5112 C4	5126 B3	6120 C4	9114 B2	9126 B5	
2105 A1	2135 B5	3147 B5	3172 C5	5113 B3	5127 B4	7102 A3	9115 B3	9128 A2	

2101 C4	2118 B4	2139 B2	2153 C3	2166 B2	3112 A3	3123 A3	3143 C2	3175 A2	4105 B3	4153 B4	6105 A4	7120 B4
2102 C4	2119 B4	2141 B1	2154 C3	2167 B2	3113 A2	3125 A3	3144 C2	3176 C2	4106 B4	4154 C3	6110 A4	7121 B3
2103 C3	2120 B4	2142 B1	2156 C4	2168 B1	3114 A3	3126 B3	3145 C2	3177 A1	4107 C4	4155 A4	6111 B4	7122 B4
2108 A4	2122 B3	2143 A1	2157 B4	3101 C3	3115 A3	3127 B3	3146 A1	3178 A1	4108 B4	4156 A2	6130 C2	7123 B4
2109 A4	2124 A5	2145 C1	2158 B4	3102 C3	3116 A3	3128 B3	3148 A1	3179 A1	4109 A3	4157 B3	6131 C3	7124 C4
2111 A2	2126 C2	2146 C1	2159 C2	3103 C3	3117 B4	3133 B4	3153 C2	3180 A4	4110 A3	4158 C2	7101 B2	7125 A1
2112 B5	2127 C2	2147 C1	2160 C4	3104 B3	3118 B3	3134 B4	3155 A2	3181 C3	4111 C1	4159 A2	7103 C2	
2113 A4	2131 C2	2149 B2	2161 A3	3106 C4	3119 A3	3136 B4	3156 A1	4101 A4	4120 C2	4160 A1	7106 A3	
2114 A4	2132 C1	2150 B2	2163 A2	3108 A4	3120 B4	3137 B4	3167 C2	4102 A4	4150 B2	4161 A1	7108 A3	
2116 B3	2134 C1	2151 C2	2164 B1	3109 A4	3121 A3	3140 B2	3168 B3	4103 C2	4151 B3	4162 C1	7109 A3	
2117 A3	2136 B1	2152 C3	2165 B3	3111 A3	3122 B3	3141 C2	3169 B2	4104 A2	4152 B3	4163 C1	7111 A1	



TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123	1	6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	F		5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz ¹⁾
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C Δf=±15kHz V _{RF} = 3mV		5111	4	
			see remark 2)	5112		
AM AFC MW		C continuous wave V _{RF} = 10mV		5114	2	0 ± 2 mV DC
AM RF ³⁾						
MW ⁴⁾ FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B 	1494kHz	2106	4	
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V _{RF} as low as possible	1500kHz	2106		
	560kHz		560kHz	5102		

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

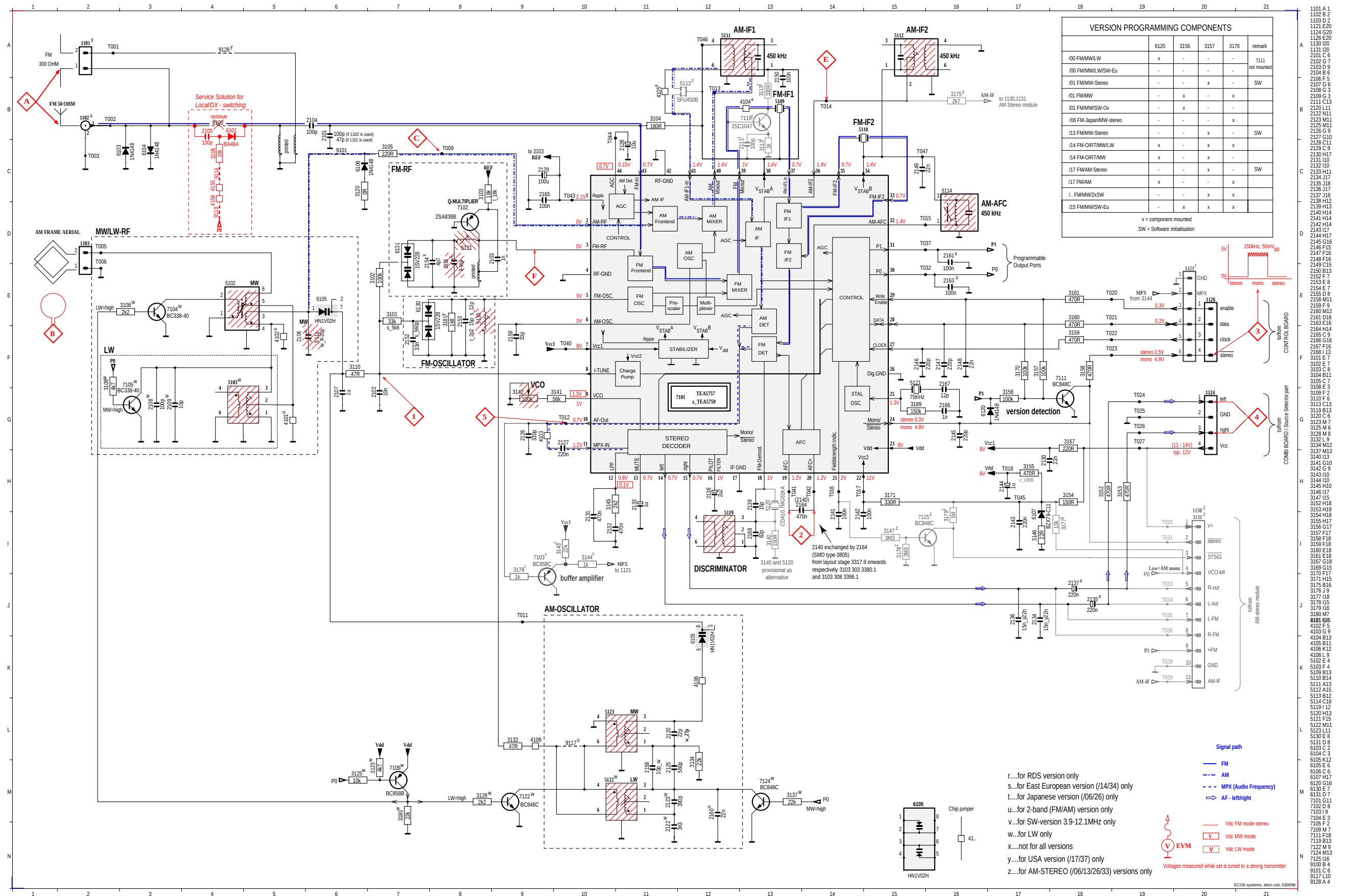
¹⁾ If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

³⁾ For AM RF adjustments the original frame antenna has to be used !

⁴⁾ MW has to be aligned before LW.

↑ Repeat

TUNER BOARD ECO5 / Systems



ELECTRICAL PARTSLIST - ECO5 TUNER BOARD**MISCELLANEOUS**

1101 482226731505 Antenna Socket 300R only in /17
 1102 482226710283 Antenna Socket 75R only in /01

CAPACITORS

2101 532212232531 100PF 5%NP0 50V only in /01
 2101 482212613692 47PF 1% NP0 63V only in /17
 2102 482212233177 10NF 20% X7R 50V
 2103 532212234123 1NF10%X7R 50V
 2104 482212233195 100PF 10% 50V

2106 482212560101 3P0-11P N450 100V
 2107 482212151319 1UF 10% 63V
 2120 532212232658 22PF 5% 50V
 2125 482212151381 560PF 5% 400V
 2126 532212231863 63V 330PF PM5

2127 482212613473 220NF80-20% 50V
 2128 482212441579 10UF 20% 50V
 2129 482212441584 100UF 20% 10V
 2130 482212611585 22NF+80-20% Y5V 25V
 2131 482212613482 470NF80/20% 16V

2132 482212613482 470NF80/20% 16V
 2133 482212440242 1UF20% 63V
 2134 482212613188 15NF 5% X7R 63V only in /01
 2134 532212232654 22NF10%X7R 63V only in /17
 2135 482212440746 0,22UF20% 63V

2136 482212613188 15NF 5% X7R 63V only in /01
 2136 532212232654 22NF10%X7R 63V only in /17
 2137 482212440746 0,22UF20% 63V
 2138 482212441576 2,2UF 20% 50V
 2139 482212614236 50V 15P 5%

2141 482212610002 100NF20%Y5V 25V
 2142 482212610002 100NF20%Y5V 25V
 2143 482212613473 220NF80-20% 50V
 2144 482212440242 1UF20% 63V
 2145 482212233575 220PF 5% NP0 63V

2146 482212233575 220PF 5% NP0 63V
 2147 482212233575 220PF 5% NP0 63V
 2148 482212611585 22NF+80-20% Y5V 25V
 2149 532212232654 22NF10%X7R 63V
 2150 482212231947 100NF20%Y5V 63V

2152 482212612105 50V 33NF PM5
 2153 482212232504 15PF 2% NP0 50V 1206
 2155 482212560101 3P0-11P N450 100V
 2159 532212232659 33PF 5% 50V
 2160 532212232654 22NF10%X7R 63V

2164 482212613482 470NF80/20% 16V
 2165 482212610002 100NF20%Y5V 25V
 2166 532212234123 1NF10%X7R 50V
 2167 482212232139 12PF 2%NP0 63V
 2168 482212613695 82PF 1% NP0 63V

RESISTORS

3101 482205120333 33K00 5% 0,1W
 3102 482205120104 100K00 5% 0,1W
 3103 482211710965 18K 1% 0,1W
 3104 482211711448 180R 1% 0,1W
 3105 482211683872 220R 5% 0,5W

3110 482211652195 47E 5% 0,5W
 3120 482205120008 0R00 JUMP. (0805)
 3132 482211652195 47E 5% 0,5W
 3134 482205120223 22K00 5% 0,1W
 3141 482211711148 56K 1% 0,1W

3142 482210011163 100K 30%LIN 0,1W
 3145 482211711449 2K2 1% 0,1W
 3146 482205120229 22R 5% 0,1W
 3152 482211683883 470R 5% 0,5W
 3153 482205120471 470R 5% 0,1W

3154 482211683868 150R 5% 0,5W
 3155 482205120471 470R 5% 0,1W
 3156 482205120104 100K 5% 0,1W only in /01
 3158 482211683883 470R 5% 0,5W
 3159 482211683883 470R 5% 0,5W

3160 482211683883 470R 5% 0,5W
 3161 482211683883 470R 5% 0,5W
 3167 482211711503 220R 1% 0,1W
 3169 482205120154 150K 5% 0,1W
 3170 482211652234 100K 5% 0,5W

3171 482211652219 330E 5% 0,5W
 4101 482205120008 0R00 JUMP. (0805)
 4102 482205120008 0R00 JUMP. (0805)
 4103 482205120008 0R00 JUMP. (0805)
 4104 482205120008 0R00 JUMP. (0805)

4105 482205120008 0R00 JUMP. (0805)
 4106 482205120008 0R00 JUMP. (0805)
 4108 482205120008 0R00 JUMP. (0805)
 4111 482205120008 0R00 JUMP. (0805)
 4120 482205120008 0R00 JUMP. (0805)

4150 482205110008 0R00 5% 0,25W
 4152 482205110008 0R00 5% 0,25W
 4153 482205110008 0R00 5% 0,25W
 4154 482205110008 0R00 5% 0,25W
 4157 482205110008 0R00 5% 0,25W

4158 482205110008 0R00 5% 0,25W
 4159 482205110008 0R00 5% 0,25W

COILS & FILTERS

5102 482215771634 MW RF COIL
 5109 482224270665 SFE 10,7MHz
 5110 482224270665 SFE 10,7MHz
 5111 482215860511 AM-IF Filter 10,7MHz
 5112 482215770302 AM-IF Filter 10,7MHz

5114 482215770302 AM-IF Filter 10,7MHz
 5119 482215711443 Discriminator 10,7MHz

5121 482224210261 Quartz 75kHz
 5123 482215760517 Osc Coil MW
 5130 482215630947 RF-Coil 1,5T
 5131 482215630947 RF-Coil 1,5T

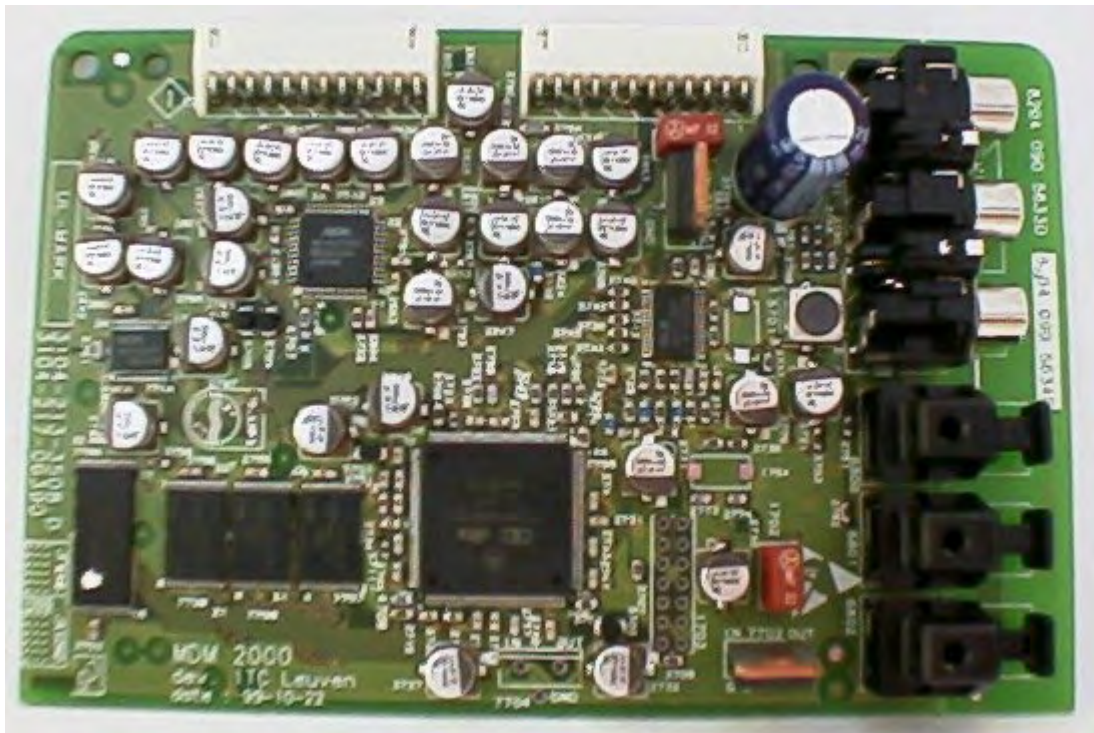
DIODES

6103 482213030621 1N4148
 6104 482213030621 1N4148
 6105 482213083075 HN1V02H-B
 6106 482213030621 1N4148
 6107 482213034488 BZX79-B11

6120 482213030621 1N4148 only in /17
 6130 482213082833 1SV228
 6131 482213082833 1SV228

TRANSISTORS & ICs

7101 482220990924 TEA5757H/V1
 7102 482213060093 2SA838B
 7111 532213042136 BC848C

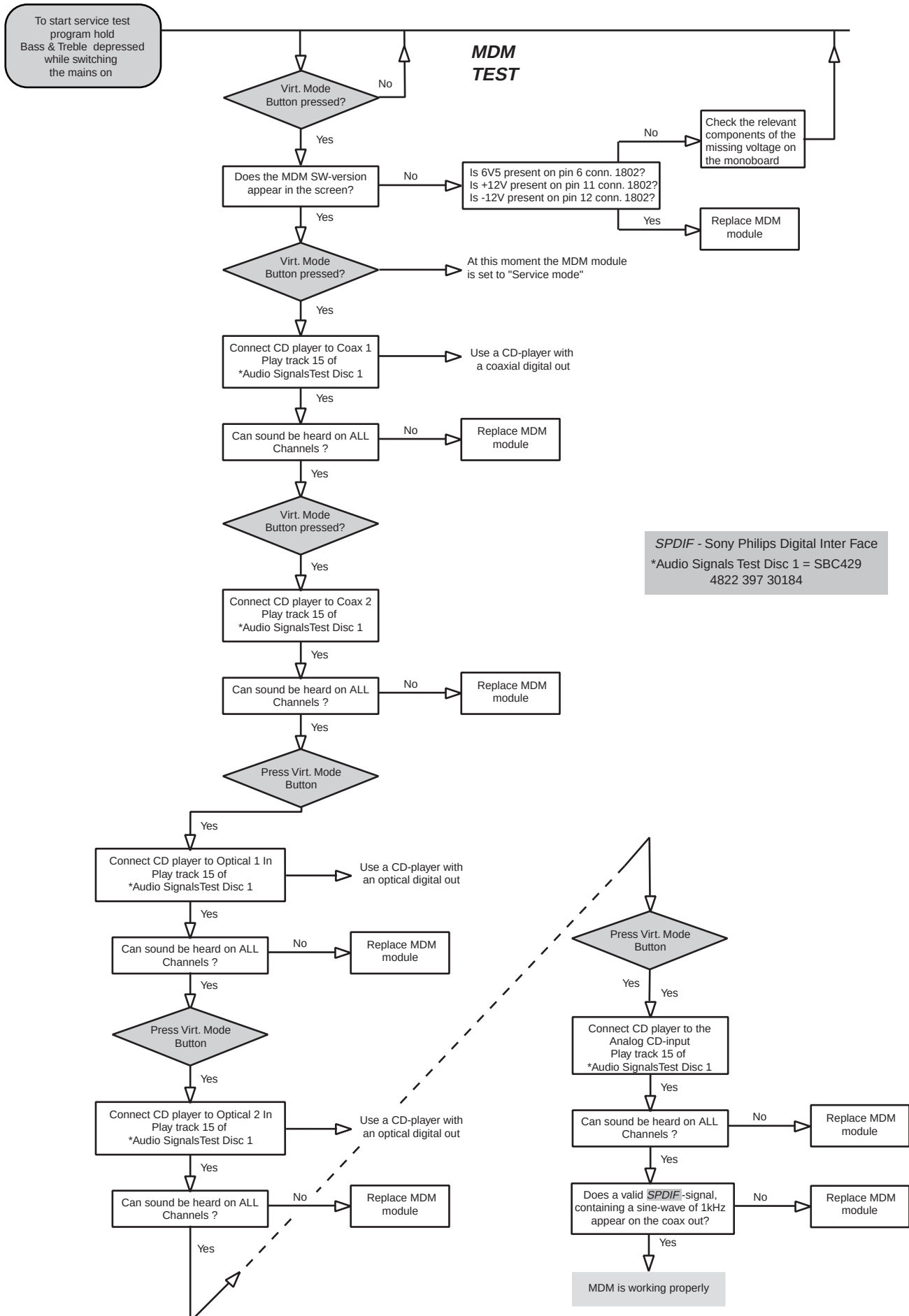


MULTI-CHANNEL DECODING MODULE

TABLE OF CONTENTS

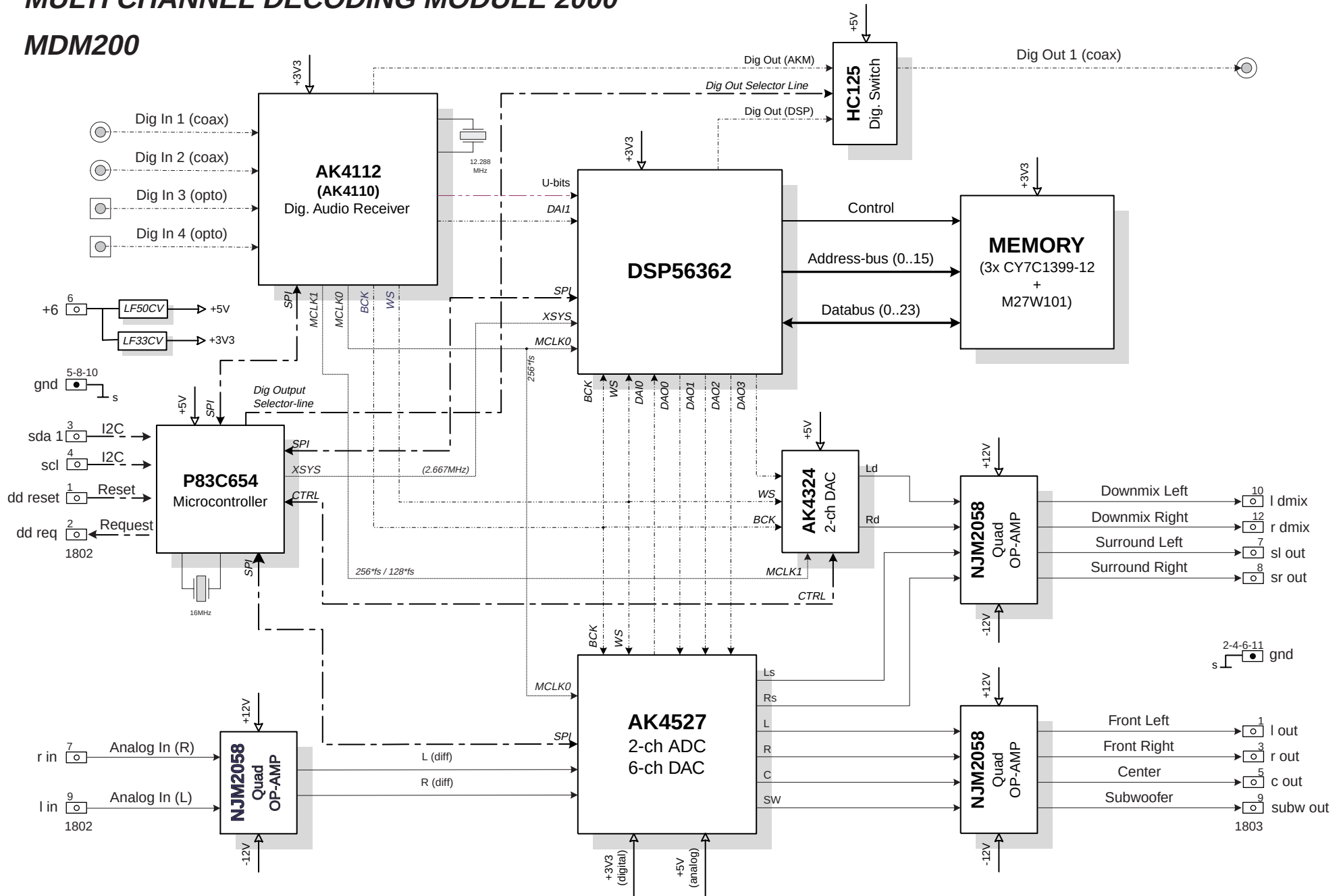
Troubleshooting	8-2
Block-diagram	8-3
Partslist	8-4

MULTI-CHANNEL DECODING MODULE - Troubleshooting



MULTI CHANNEL DECODING MODULE 2000

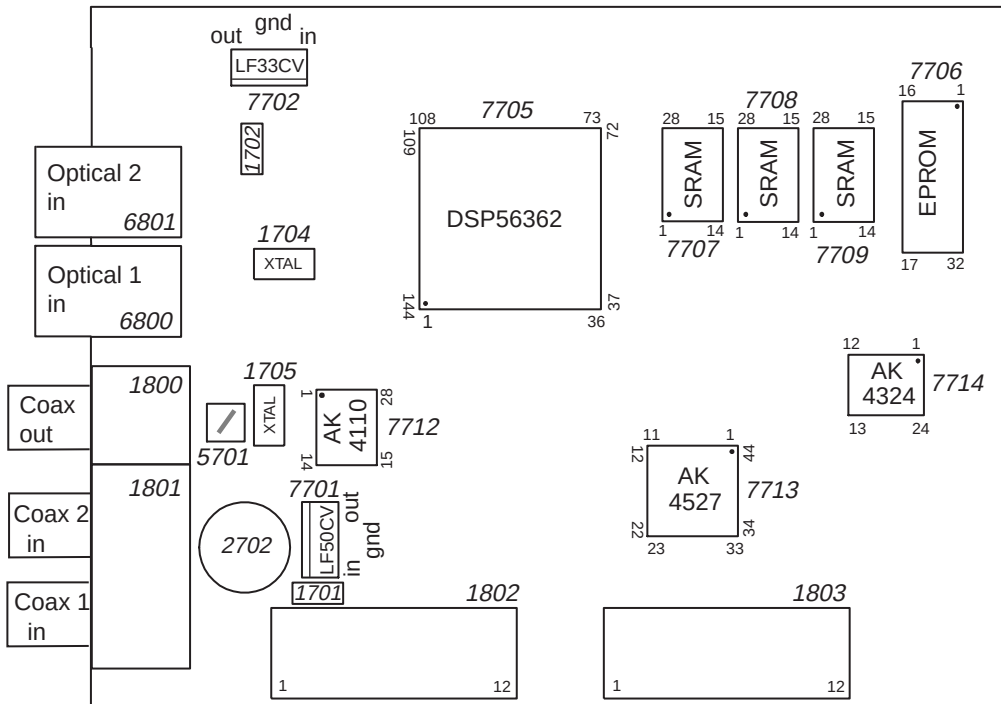
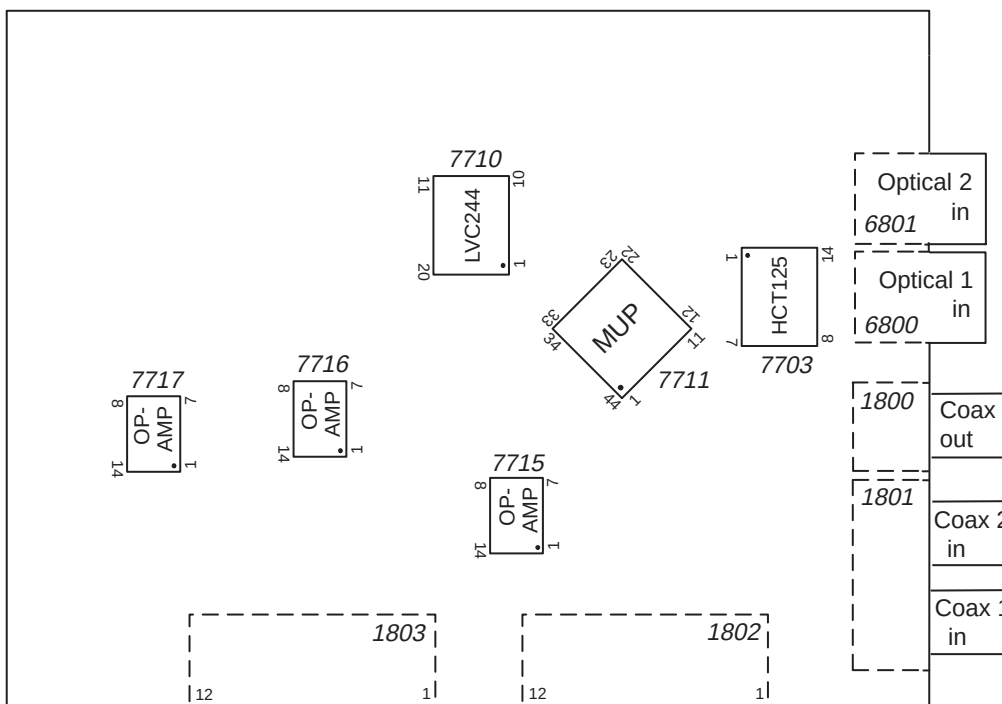
MDM200

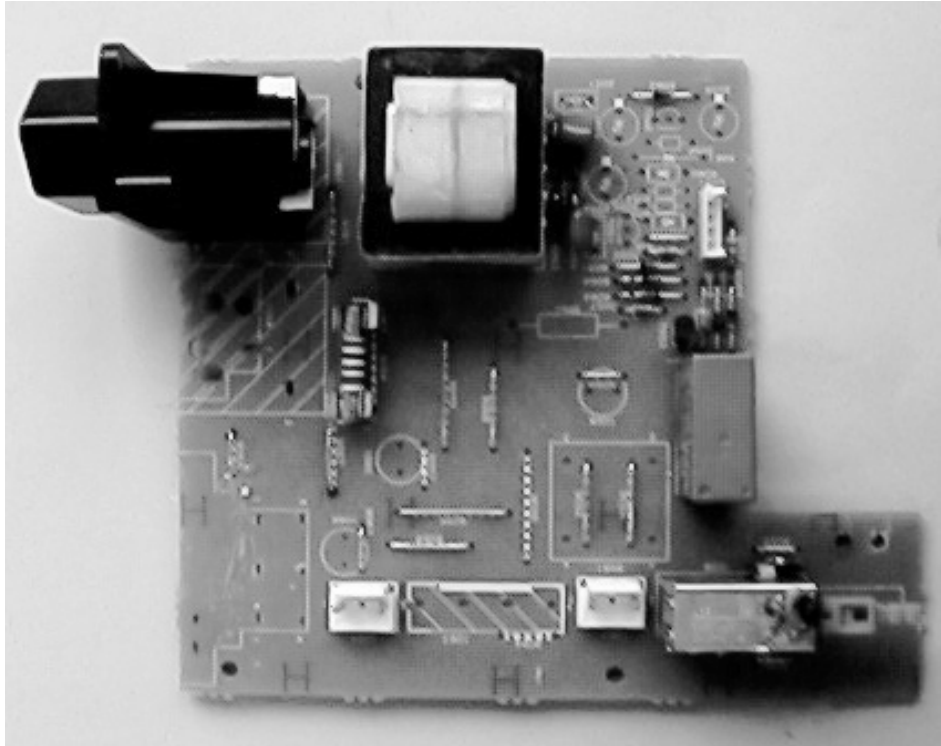


ELECTRICAL PARTSLIST - MDM MODULE

1003	3104 217 06390	MDM 2000 MODULE	2702	4822 123 14025	16V 2200U 20%
1701	4822 252 51172	FUSE 0,315A	6800	4822 218 11487	CONN. FIBER-GLASS GP1F32R
1702	4822 252 51172	FUSE 0,315A	6801	4822 218 11487	CONN. FIBER-GLASS GP1F32R
1704	2422 543 01118	CRYSTAL 16MHZ	7701	9322 146 09687	LF50CV
1705	2422 543 01132	CRYSTAL 12MH28	7702	4822 209 16978	LF33CV
1800	4822 267 31729	COAX OUT CONN.			
1801	4822 267 31448	COAX IN CONNECTOR			
1802	2422 025 10253	CON 12P. MALE			
1803	2422 025 10253	CON 12P. MALE			

Note: Only the parts mentioned in this list are normal service parts.

Component side view**Copper side view**



MAINS BOARD

TABLE OF CONTENTS

Circuit diagram	9-2
Component layout	9-3
Partslist	9-5

MAINS BOARD

Stand by Relais 1062

SDT-R

not for /01

9055

9056

only for /01

1063

only for /01

1065

see table

9057

see table

1066

see table

9063

see table

1064

TO MAINS TRANSFORMER PRIMARY SIDE

1N4148 6057 1N4148 6058

3058 2K2

7053 BC337-25

1N4148 6063 1N4148 6064 1N4148 6065 1N4148 6066 1N4148 6067 1N4148 6068 1N4148 6069 1N4148 6070 1N4148 6071 1N4148 6072 1N4148 6073 1N4148 6074 1N4148 6075 1N4148 6076 1N4148 6077 1N4148 6078 1N4148 6079 1N4148 6080 1N4148 6081 1N4148 6082 1N4148 6083 1N4148 6084 1N4148 6085 1N4148 6086 1N4148 6087 1N4148 6088 1N4148 6089 1N4148 6090 1N4148 6091 1N4148 6092 1N4148 6093 1N4148 6094 1N4148 6095 1N4148 6096 1N4148 6097 1N4148 6098 1N4148 6099 1N4148 6100 1N4148 6101 1N4148 6102 1N4148 6103 1N4148 6104 1N4148 6105 1N4148 6106 1N4148 6107 1N4148 6108 1N4148 6109 1N4148 6110 1N4148 6111 1N4148 6112 1N4148 6113 1N4148 6114 1N4148 6115 1N4148 6116 1N4148 6117 1N4148 6118 1N4148 6119 1N4148 6120 1N4148 6121 1N4148 6122 1N4148 6123 1N4148 6124 1N4148 6125 1N4148 6126 1N4148 6127 1N4148 6128 1N4148 6129 1N4148 6130 1N4148 6131 1N4148 6132 1N4148 6133 1N4148 6134 1N4148 6135 1N4148 6136 1N4148 6137 1N4148 6138 1N4148 6139 1N4148 6140 1N4148 6141 1N4148 6142 1N4148 6143 1N4148 6144 1N4148 6145 1N4148 6146 1N4148 6147 1N4148 6148 1N4148 6149 1N4148 6150 1N4148 6151 1N4148 6152 1N4148 6153 1N4148 6154 1N4148 6155 1N4148 6156 1N4148 6157 1N4148 6158 1N4148 6159 1N4148 6160 1N4148 6161 1N4148 6162 1N4148 6163 1N4148 6164 1N4148 6165 1N4148 6166 1N4148 6167 1N4148 6168 1N4148 6169 1N4148 6170 1N4148 6171 1N4148 6172 1N4148 6173 1N4148 6174 1N4148 6175 1N4148 6176 1N4148 6177 1N4148 6178 1N4148 6179 1N4148 6180 1N4148 6181 1N4148 6182 1N4148 6183 1N4148 6184 1N4148 6185 1N4148 6186 1N4148 6187 1N4148 6188 1N4148 6189 1N4148 6190 1N4148 6191 1N4148 6192 1N4148 6193 1N4148 6194 1N4148 6195 1N4148 6196 1N4148 6197 1N4148 6198 1N4148 6199 1N4148 6200 1N4148 6201 1N4148 6202 1N4148 6203 1N4148 6204 1N4148 6205 1N4148 6206 1N4148 6207 1N4148 6208 1N4148 6209 1N4148 6210 1N4148 6211 1N4148 6212 1N4148 6213 1N4148 6214 1N4148 6215 1N4148 6216 1N4148 6217 1N4148 6218 1N4148 6219 1N4148 6220 1N4148 6221 1N4148 6222 1N4148 6223 1N4148 6224 1N4148 6225 1N4148 6226 1N4148 6227 1N4148 6228 1N4148 6229 1N4148 6230 1N4148 6231 1N4148 6232 1N4148 6233 1N4148 6234 1N4148 6235 1N4148 6236 1N4148 6237 1N4148 6238 1N4148 6239 1N4148 6240 1N4148 6241 1N4148 6242 1N4148 6243 1N4148 6244 1N4148 6245 1N4148 6246 1N4148 6247 1N4148 6248 1N4148 6249 1N4148 6250 1N4148 6251 1N4148 6252 1N4148 6253 1N4148 6254 1N4148 6255 1N4148 6256 1N4148 6257 1N4148 6258 1N4148 6259 1N4148 6260 1N4148 6261 1N4148 6262 1N4148 6263 1N4148 6264 1N4148 6265 1N4148 6266 1N4148 6267 1N4148 6268 1N4148 6269 1N4148 6270 1N4148 6271 1N4148 6272 1N4148 6273 1N4148 6274 1N4148 6275 1N4148 6276 1N4148 6277 1N4148 6278 1N4148 6279 1N4148 6280 1N4148 6281 1N4148 6282 1N4148 6283 1N4148 6284 1N4148 6285 1N4148 6286 1N4148 6287 1N4148 6288 1N4148 6289 1N4148 6290 1N4148 6291 1N4148 6292 1N4148 6293 1N4148 6294 1N4148 6295 1N4148 6296 1N4148 6297 1N4148 6298 1N4148 6299 1N4148 6300 1N4148 6301 1N4148 6302 1N4148 6303 1N4148 6304 1N4148 6305 1N4148 6306 1N4148 6307 1N4148 6308 1N4148 6309 1N4148 6310 1N4148 6311 1N4148 6312 1N4148 6313 1N4148 6314 1N4148 6315 1N4148 6316 1N4148 6317 1N4148 6318 1N4148 6319 1N4148 6320 1N4148 6321 1N4148 6322 1N4148 6323 1N4148 6324 1N4148 6325 1N4148 6326 1N4148 6327 1N4148 6328 1N4148 6329 1N4148 6330 1N4148 6331 1N4148 6332 1N4148 6333 1N4148 6334 1N4148 6335 1N4148 6336 1N4148 6337 1N4148 6338 1N4148 6339 1N4148 6340 1N4148 6341 1N4148 6342 1N4148 6343 1N4148 6344 1N4148 6345 1N4148 6346 1N4148 6347 1N4148 6348 1N4148 6349 1N4148 6350 1N4148 6351 1N4148 6352 1N4148 6353 1N4148 6354 1N4148 6355 1N4148 6356 1N4148 6357 1N4148 6358 1N4148 6359 1N4148 6360 1N4148 6361 1N4148 6362 1N4148 6363 1N4148 6364 1N4148 6365 1N4148

MAINS TRAFO PART

Primary part Trafo

To 1063 mains board only /01

To 1064 mains board

Secondary part Trafo

To 1251 monoboard supply

To 1252 monoboard supply

To 1255 monoboard supply

To 1253 monoboard supply

Table:

	FR740	FR760
	FR965	FR975
1074	-	x
9077	x	-
9078	x	-
9062	-	x
9098	-	x

Note: /00 = /22 /01= /21 /17= /37

ELECTRICAL PARTSLIST - MAINS BOARD**MISCELLANEOUS**

1051 ▲ 4822 267 31994 MAINS OUTLET only in /00/01C
 1053 ▲ 4822 267 31994 MAINS OUTLET only in /00/01C
 1054 ▲ 2422 030 00301 MAINS OUTLET only in /17
 1055 ▲ 4822 272 10269 VOLTAGE SEL. only in /01C
 1056 ▲ 4822 276 13224 MAINS SWITCH

1061 ▲ 4822 265 20723 MAINS INLET
 1062 ▲ 4822 280 10391 RELAY
 1063 ▲ 4822 267 10728 B4P7-VH only in /01C
 1064 ▲ 4822 265 20723 B2P3-VH
 1065 ▲ 4822 071 54002 FUSE 4A only in /01C

1066 ▲ 4822 071 54002 FUSE 4A only in /00/01C
 1066 ▲ 4822 071 55002 FUSE 5A only in /17
 1067 ▲ 2422 086 10912 FUSE 2,5A only in /00
 1067 ▲ 2422 086 10915 FUSE 5A only in /01C
 1068 ▲ 4822 071 52001 FUSE 200MA only in /01C

1069 ▲ 4822 071 53151 FUSE 315MA only in /00/17
 1078 ▲ 4822 071 51602 FUSE 1.6A
 1079 ▲ 4822 071 52002 FUSE 2A

CAPACITORS

2051 4822 121 43526 47NF 5% 250V
 2052 4822 121 43526 47NF 5% 250V
 2053 4822 124 40207 100UF20% 25V only in /01C
 2054 4822 124 40207 100UF20% 25V only in /01C
 2055 4822 126 14084 4,7NF 20% 250V

RESISTORS

3051 ▲ 4822 053 21106 10M only in /17
 3052 4822 050 11002 1K00 1% 0,4W
 3053 4822 050 11002 1K00 1% 0,4W
 3054 4822 116 52283 4K7 5% 0,5W only in /01C
 3055 4822 116 52256 2K2 5% 0,5W only in /01C

3056 4822 050 21003 10K 1% 0,6W only in /01C
 3057 4822 052 10129 12R00 5% 0,33W
 3058 4822 116 52256 2K2 5% 0,5W
 3059 4822 050 21003 10K00 1% 0,6W
 3061 4822 050 21003 10K00 1% 0,6W

3079 4822 052 10108 1R 5% 0,33W only in /01C

TRAFO

5052 ▲ 4822 146 11143 STBY TRAFO for /00
 5052 ▲ 4822 146 11144 STBY TRAFO for /01C
 5052 ▲ 4822 146 11142 STBY TRAFO for /17

DIODES

6051 4822 130 30621 1N4148
 6052 4822 130 31878 1N4003G
 6053 4822 130 31878 1N4003G
 6055 4822 130 31878 1N4003G
 6056 4822 130 31878 1N4003G

6057 4822 130 30621 1N4148
 6058 4822 130 30621 1N4148
 6059 4822 130 31878 1N4003G only in /01C
 6060 4822 130 31878 1N4003G only in /01C
 6061 4822 130 34382 BZX79-B8V2 only in /01C

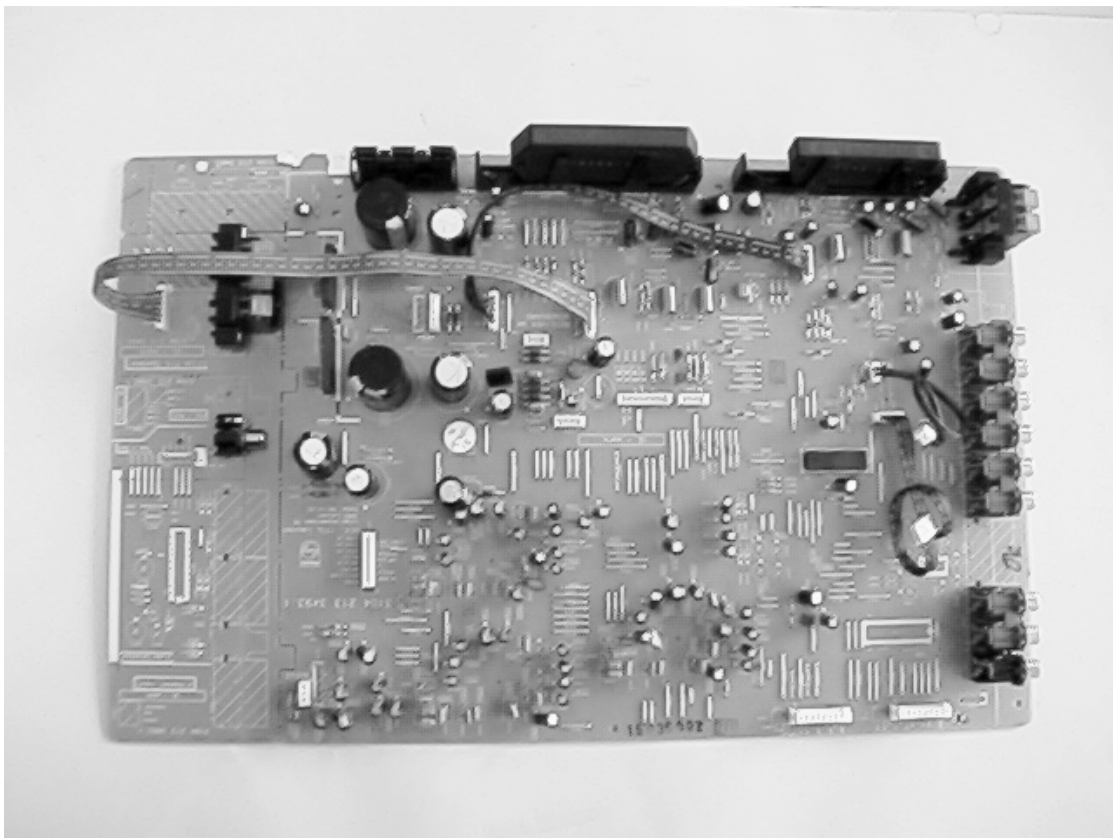
6062 4822 130 30621 1N4148
 6063 4822 130 30621 1N4148
 6064 4822 130 30621 1N4148
 6065 4822 130 31878 1N4003G only in /01C

DIODES

6066 4822 130 30621 1N4148
 6067 4822 130 30621 1N4148

TRANSISTORS

7051 4822 130 41246 BC327-25 only in /01C
 7052 4822 130 40959 BC547B only in /01C
 7053 4822 130 40981 BC337-25



MONO2 BOARD

TABLE OF CONTENTS

Measurement hint	10-2
P50/Speaker/Video Selector layout	10-3
Circuit diagram Source selector	10-4
Circuit diagram Volume controle	10-5
Circuit diagram Supply	10-6
Circuit diagram Amplifier	10-7
Component layout	10-8
Mappings Components & Chips side.....	10-9
Component layout copper side view	10-10

MEASUREMENT REFERENCES TO LAYOUT ON PAGE 10-8**IC7643**

IC 7643 Pin	Can be measure via Test point on component side monoboard	Funtionality
17	TP 47	MDM Surround L in
18	TP 48	6 CH Surround L in
9	TP 50	MDM Surround R in
10	TP 51	6 CH Surround R in
3	TP 52	4,7V
2	TP 53	4,7V
4	TP 54	4,7V
26	TP 55	4,7V
27	TP 56	4,7V
33	TP 57	Surround Right out
36/40/43	TP 58	Ground
41/42	TP 59	9,4V
39	TP 60	4,7V
19	TP 61	8,7V
34	TP 63	Surround Left out
25	TP 64	4,7V
24	TP 65	4,7V
12	TP 66	4,7V
20	TP 67	4,7V
21	TP 68	4,7V

IC7504

IC 7504 Pin	Can be measure via Test point on component side monoboard	Funtionality
5 via R3614	TP 77	Rec - in Right
4	TP 78	-13,5V
7 via R3616	TP 79	Rec - out Right
8	TP 80	12V
3 via R3613	TP 81	Rec - in Left
1 via R3615	TP 82	Rec - out Left

MEASUREMENT REFERENCES TO LAYOUT ON PAGE 10-8

IC7641

IC 7641 Pin	Can be measure via Test point on component side monoboard	Funtionality
16	TP 1	Left in
17	TP 2	MDM Left in
18	TP 3	6 CH Front left in
8	TP 4	Right in
9	TP 5	MDM Right in
10	TP 6	6 CH Front Right in
3	TP 7	4,7V
2	TP 8	4,7V
4	TP 9	4,7V
26	TP 10	4,7V
27	TP 11	4,7V
33	TP 12	Right out
36/40/43	TP 13	Ground
41/42	TP 14	9,4V
39	TP 15	4,7V
19	TP 16	8,7V
34	TP 18	Left out
25	TP 19	4,7V
24	TP 20	4,7V
12	TP 21	4,7V
20	TP 22	4,7V
21	TP 23	4,7V

IC7601

IC 7601 Pin	Can be measure via Test point on component side monoboard	Funtionality
5	TP 69	Headphone Amp L in
4	TP 70	-13,5V
8	TP 71	12V
3	TP 72	Headphone Amp R in

IC7503

IC 7503 Pin	Can be measure via Test point on component side monoboard	Funtionality
5	TP 73	Right in
4	TP 74	-12V
8	TP 75	11V
3	TP 76	Left in

Tr 7621

Tr7621	Can be measure via Test point on component side monoboard	Funtionality
B	TP 96	-1,5V
C	TP 97	Ground
E	TP 98	Headphone Amp L out

IC7642

IC 7642 Pin	Can be measure via Test point on component side monoboard	Funtionality
16	TP 24	4,7V
17	TP 25	MDM Center in
18	TP 26	6 CH Center in
8	TP 27	MDM Subwoofer in
9	TP 28	MDM Subwoofer in
10	TP 29	6 CH Subwoofer in
3	TP 30	4,7V
2	TP 31	4,7V
4	TP 32	4,7V
26	TP 33	4,7V
27	TP 34	4,7V
33	TP 35	Subwoofer out
36/43	TP 36	Ground
40/41/42	TP 37	9,4V
39	TP 38	4,7V
19	TP 39	8,7V
34	TP 40	Center out
25	TP 41	4,7V
24	TP 42	4,7V
12	TP 43	4,7V
20	TP 44	4,7V
21	TP 45	4,7V

Tr 7622

Tr7622	Can be measure via Test point on component side monoboard	Funtionality
B	TP 99	-0,5V
C	TP 100	Ground
E	TP 101	Headphone Amp R out

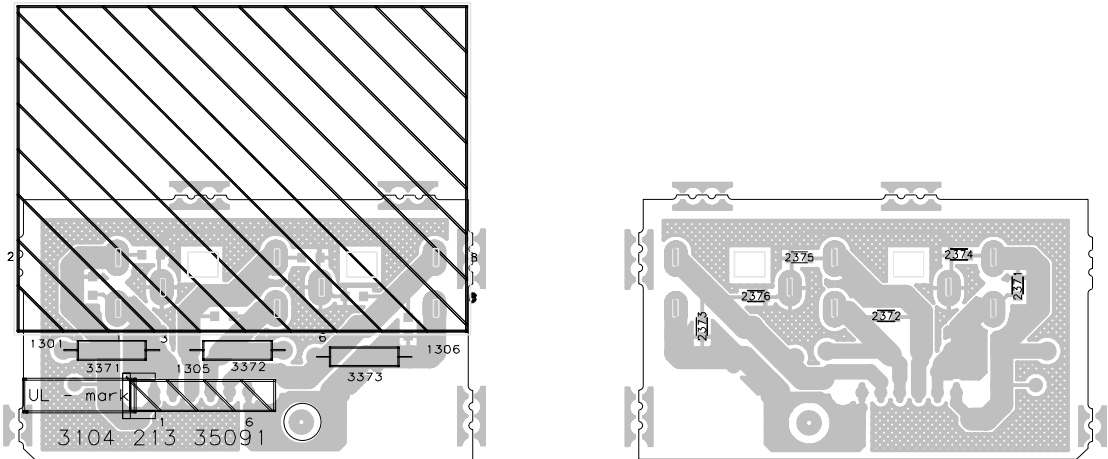
Tr 7653

Tr7653	Can be measure via Test point on component side monoboard	Funtionality
B	TP 86	-1,8V
E	TP 88	Center mute

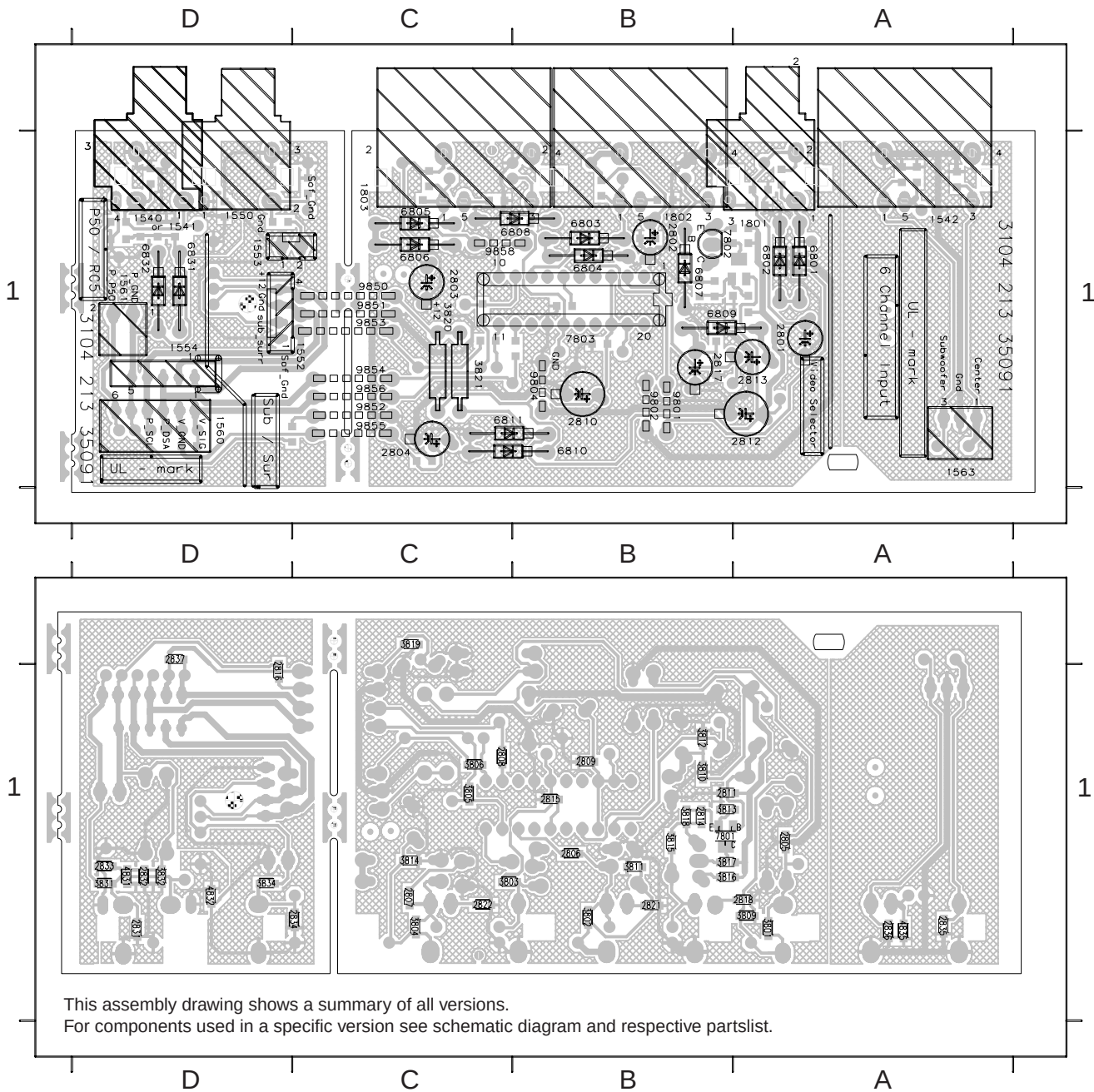
Tr 7658

Tr7658	Can be measure via Test point on component side monoboard	Funtionality
B	TP 83	5V
C	TP 84	-13V
E	TP 85	5V

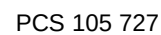
SCREW TERMINAL BOARD - COMPONENT VIEW & COPPER SIDE VIEW

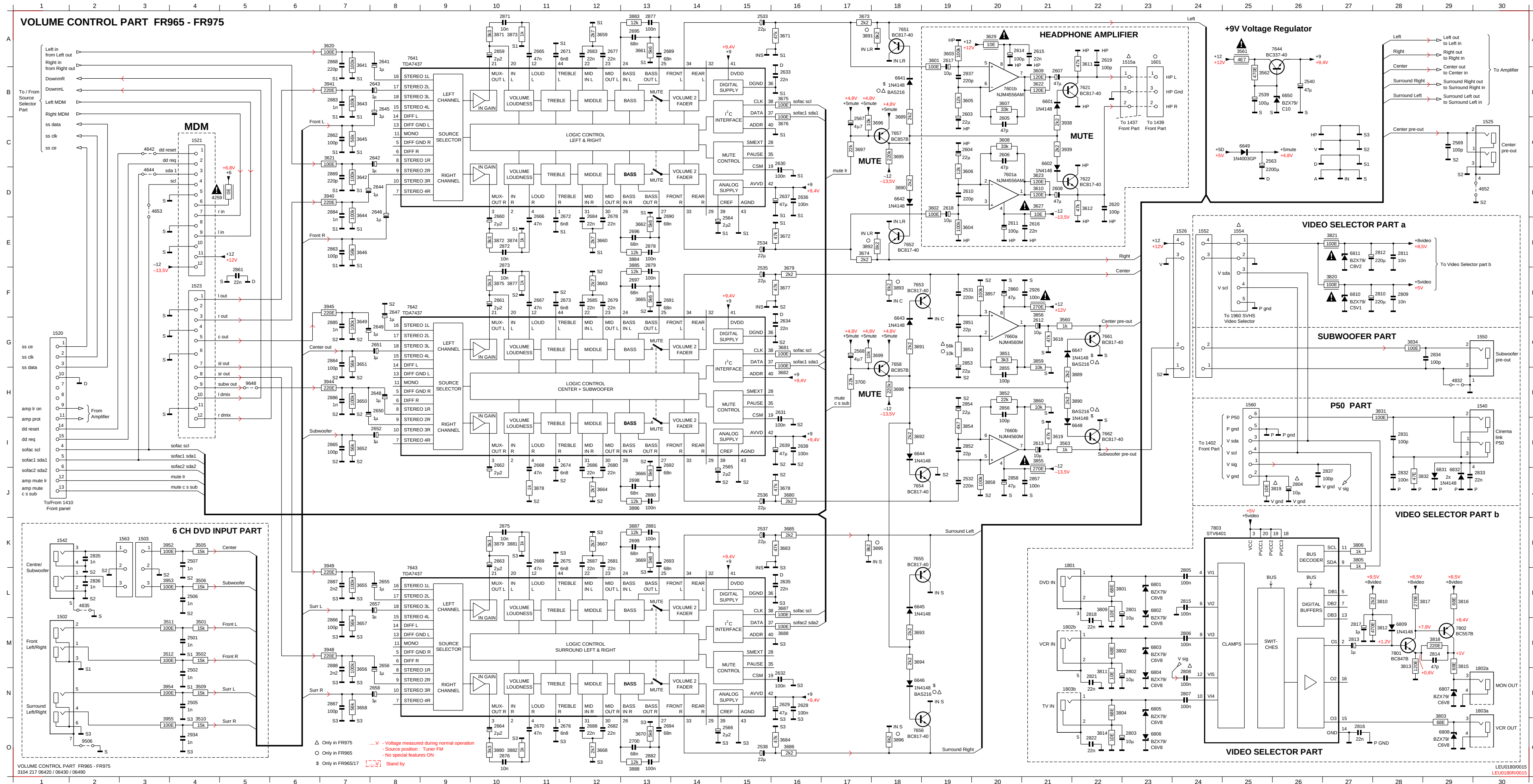


P50/RC5 VIDEO SELECTOR BOARD - COMPONENT VIEW & COPPER SIDE VIEW

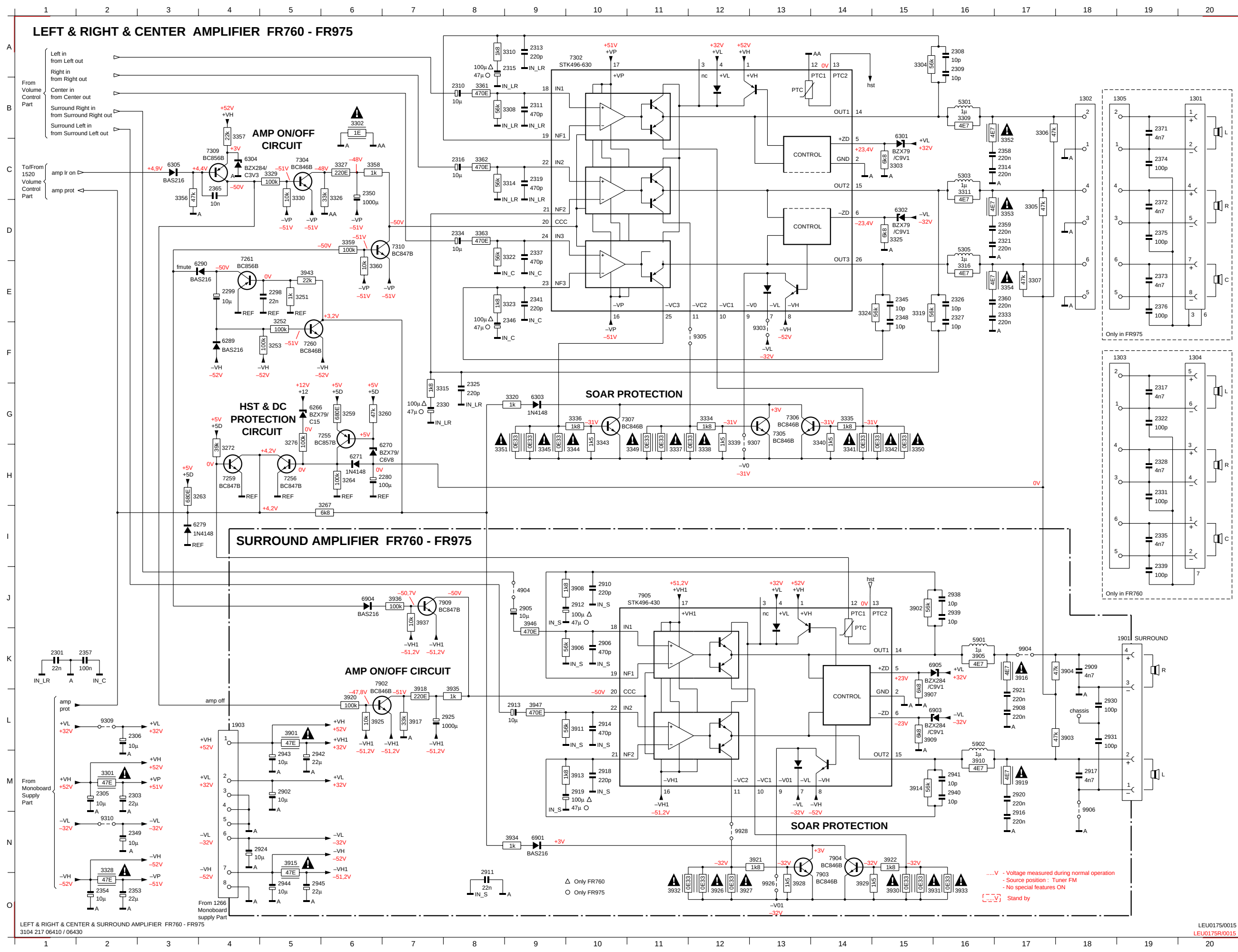
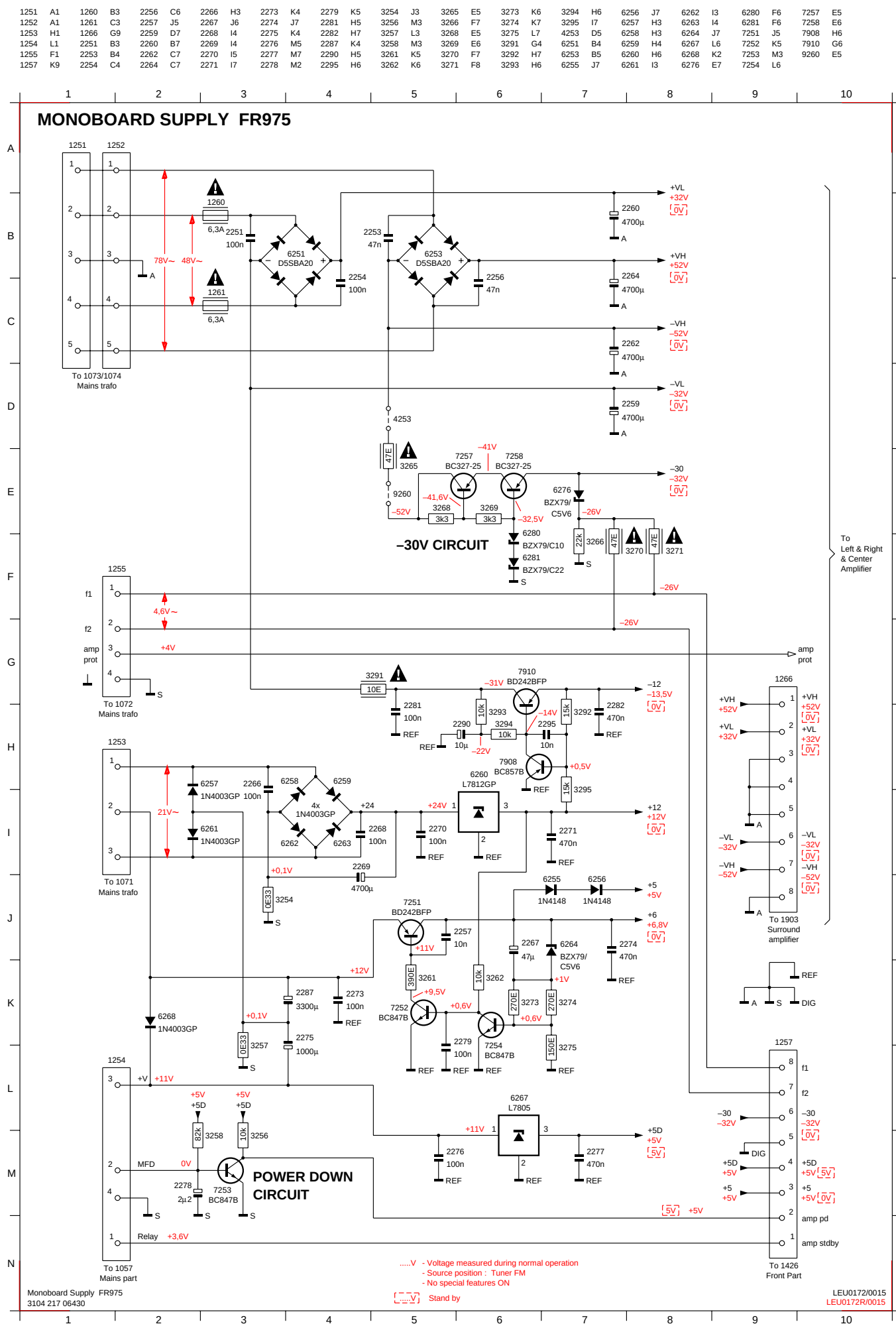


This assembly drawing shows a summary of all versions.
For components used in a specific version see schematic diagram and respective partslist.





1502 M1 2694 O13 3664 J12 6650 B26
1503 K3 2695 A13 3665 F13 6801 L23
1515a A23 2696 E13 3666 J13 6802 L23
1520 G1 2697 F13 3667 K12 6803 M23
1521 C4 2698 J13 3668 O12 6804 N23
1523 F4 2699 K13 3669 K13 6805 N23
1525 C30 2700 O13 3670 O13 6806 O23
1526 E24 2801 L23 3671 A16 6807 N29
1540 H30 2802 N23 3672 E16 6808 O29
1542 K1 2803 O23 3673 A17 6809 M28
1550 G30 2804 J26 3674 E17 6810 F27
1552 E24 2805 L24 3675 B16 6811 E27
1554 E25 2806 M24 3676 C18 6812 J29
1560 H25 2807 N24 3677 F16 6813 J29
1563 K2 2808 N24 3678 J16 7601a B20
1601 A23 2809 F28 3679 F16 7601b D20
1801 K21 2810 F28 3680 J16 7621 B22
1802a N30 2811 E28 3681 C18 7622 D22
1802b M21 2812 E28 3682 H16 7641 A8
1803a N30 2813 M27 3683 K16 7642 F8
1803b N21 2814 M29 3684 O16 7643 L8
2501 M4 2815 L24 3685 A19 7644 A25
2502 N4 2816 O27 3686 O16 7651 A18
2505 N4 2817 M27 3687 L16 7652 E18
2506 L4 2818 L22 3688 M16 7653 F18
2507 K4 2819 F28 3689 C18 7654 J18
2531 F19 2822 O22 3690 D18 7655 K18
2532 J19 2831 I28 3691 G18 7656 O18
2533 A15 2832 J28 3692 I18 7657 C18
2534 E15 2833 J30 3693 M18 7658 G18
2535 F15 2834 G29 3694 M18 7659a G20
2536 J15 2835 K2 3695 C18 7660b I20
2537 K15 2836 L2 3696 C18 7661 G22
2538 O15 2837 J27 3697 C17 7662 I22
2539 D22 2879 E13 3698 H18 7801 M28
2540 B26 2882 I19 3699 G18 7802 M29
2563 C25 2883 G19 3700 H17 7803 K24
2564 E15 2884 H19 3801 L22 9506 O2
2565 J15 2885 P1 3802 C18 9648 H5
2566 O15 2886 H20 3803 N29
2567 C17 2887 J21 3804 N22
2568 G17 2888 J20 3805 K27
2569 C29 2889 F20 3806 K27
2603 B19 2891 F5 3809 L22
2604 C19 2892 C7 3810 L28
2605 C20 2893 E7 3811 N22
2606 C20 2894 A7 3812 L28
2607 B21 2895 I7 3813 N28
2608 D21 2896 M7 3814 O22
2610 D19 2897 N7 3815 J25
2611 E20 2898 A7 3816 J27
2612 G21 2899 D7 3817 L28
2613 I21 2871 A10 3818 M29
2614 A20 2872 E10 3819 J25
2615 A21 2873 I10 3820 F27
2616 E21 2875 K10 3821 E27
2617 A19 2876 O10 3831 H28
2618 D19 2877 A13 3832 J28
2619 A22 2878 E13 3834 G28
2620 D22 2879 E13 3851 K10
2629 N16 2881 K13 3853 G19
2630 C16 2882 O13 3854 I19
2631 H16 2883 P1 3855 J21
2632 N16 2884 D7 3856 F21
2633 B16 2885 G7 3857 F20
2634 G16 2886 H7 3858 J20
2635 L16 2887 A7 3859 G21
2636 D16 2888 M7 3860 H21
2637 D16 2892 F21 3871 A10
2638 I16 2934 O4 3872 E10
2639 I16 2937 B19 3873 A10
2641 A9 3501 M4 3874 E10
2642 C7 3502 M4 3875 F10
2643 B7 3505 K4 3877 F10
2644 D8 3506 L4 3878 J11
2645 B8 3509 N4 3879 K10
2646 D8 3510 O4 3880 O10
2647 F8 3511 M3 3881 K10
2648 H8 3512 M3 3882 O10
2649 G8 3540 G21 3883 A13
2648 H8 3561 A25 3884 E13
2651 G8 3562 B25 3885 E13
2652 I8 3563 I21 3886 J13
2655 L8 3601 A19 3887 K13
2656 M8 3602 D19 3888 O13
2658 N7 3604 E19 3890 H22
2659 A10 3605 B19 3891 A17
2660 E10 3606 D19 3892 E17
2661 F10 3607 B20 3893 F18
2662 I10 3608 C20 3895 K18
2663 K10 3609 B21 3896 O18
2664 O10 3610 D21 3898 C21
2665 A11 3611 A22 3899 C21
2666 E11 3612 D22 3940 D7
2667 F11 3618 G21 3941 B7
2668 H11 3619 I21 3944 H7
2669 K11 3620 A7 3945 F7
2670 O11 3621 C7 3948 M7
2671 A11 3622 B21 3949 K7
2672 E11 3623 D21 3952 K3
2673 F11 3627 D21 3953 L3
2674 I11 3629 A20 3954 N3
2675 K11 3641 B7 3955 O3
2676 O11 3642 D7 3956 O4
2677 A12 3643 B7 4642 C3
2678 E12 3644 E7 4644 D3
2679 F12 3645 C7 4652 D30
2680 I12 3646 E7 6602 C21
2681 K12 3649 G7 4632 D18
2682 O12 3650 H7 4635 L2
2683 A12 3651 G7 6601 B21
2684 E12 3652 I7 6602 C21
2685 F12 3655 L7 6641 E18
2686 I12 3656 N7 6642 D18
2687 K12 3657 M7 6643 G18
2688 O12 3658 N7 6644 H18
2689 A13 3659 A12 6645 I18
2690 E13 3660 E12 6646 N18
2691 F13 3661 A13 6647 G22
2692 I13 3662 E13 6648 I22
2693 K13 3663 F12 6649 C25



MONO2 BOARD - MAPPING COMPONENT SIDE VIEW

1251	E8	2306	G7	2643	C6	3271	E4	5306	F4	9272	F8	9536	C1	9619	D4
1252	E8	2310	F4	2644	C6	3273	G8	5901	F2	9273	F8	9537	D1	9621	D4
1253	E6	2315	F4	2645	B6	3274	G8	5902	F1	9274	E9	9538	D1	9624	D7
1254	D6	2316	F4	2646	C6	3276	E3	6251	F9	9275	F8	9539	D1	9625	C7
1255	D4	2330	F4	2647	B4	3291	G9	6252	F9	9276	D8	9540	D2	9626	D4
1256	E7	2334	G4	2648	B4	3301	F4	6253	E9	9278	D8	9541	D2	9627	D4
1257	D5	2346	G5	2649	A4	3303	F7	6254	E9	9279	F8	9542	C2	9628	D5
1258	E5	2349	F7	2650	B4	3309	F5	6255	D5	9280	E7	9543	D2	9629	E2
1259	E8	2350	G4	2651	A4	3311	E5	6256	D5	9281	D3	9544	D1	9630	D4
1260	F8	2352	F5	2652	B4	3313	G7	6257	E6	9285	E8	9545	D1	9631	D4
1261	F8	2353	F5	2653	A6	3316	E4	6258	E6	9286	F8	9546	D2	9632	D4
1262	E8	2354	F6	2654	A6	3318	G7	6259	D6	9287	F8	9547	E7	9633	A2
1265	E7	2356	G5	2655	A6	3325	G7	6260	G8	9288	E8	9548	D3	9643	A6
1266	E7	2357	G5	2656	A6	3328	G5	6261	E6	9301	G7	9549	D3	9645	A1
1270	A2	2365	F4	2657	A6	3337	F6	6262	E6	9302	F7	9550	A3	9647	A3
1272	E7	2527	B3	2658	A6	3338	F6	6263	D6	9303	G7	9551	A3	9648	A3
1302	E6	2528	C3	2659	B6	3341	F6	6264	G7	9304	G6	9552	A3	9651	A7
1501	A1	2531	F1	2660	C7	3342	F6	6266	D3	9305	G6	9553	A3	9654	D2
1502	B1	2532	D2	2661	A4	3344	F6	6267	D7	9306	G6	9555	B3	9655	C8
1503	A1	2533	C7	2662	B4	3345	F6	6268	D6	9307	G6	9556	B3	9656	C7
1511	D2	2534	C7	2663	A6	3349	F6	6270	E3	9308	F7	9557	B3	9657	B8
1512	E1	2535	B5	2664	B7	3350	F6	6271	E3	9309	G7	9558	C3	9903	E4
1513	D1	2536	B5	2665	B6	3351	F6	6274	E7	9310	E7	9559	C3	9904	F2
1514	C1	2537	A7	2666	C6	3352	F5	6275	E7	9311	F5	9560	C3	9905	F1
1515	A9	2538	A7	2667	A4	3353	F5	6276	E4	9312	F5	9561	C3	9906	G1
1516	C1	2539	B3	2668	B4	3354	E5	6279	E3	9313	F5	9562	C3	9907	D5
1520	B8	2540	B3	2669	A6	3357	F4	6280	E5	9314	F5	9563	C3	9908	F3
1521	A2	2541	C4	2670	B6	3505	A4	6281	E5	9315	E4	9564	C4	9909	G3
1522	A2	2542	C4	2689	B7	3506	A3	6301	G7	9316	G5	9566	A4	9910	F2
1523	A3	2543	C4	2690	B8	3535	D3	6302	F7	9318	G5	9567	A4	9911	F2
1524	A3	2544	C4	2691	A5	3536	D3	6303	E3	9319	G5	9568	A4	9912	F2
1525	F1	2553	C5	2692	B5	3561	B3	6501	C2	9320	G6	9569	A5	9913	F3
1526	E2	2554	C5	2693	A7	3566	C2	6601	A9	9321	G6	9570	A5	9914	F3
1527	E2	2557	C3	2694	A7	3567	B2	6602	B9	9322	G6	9571	A5	9915	E3
1530	D5	2558	D3	2695	B7	3583	C2	6642	E4	9323	G7	9573	B5	9916	F2
1545	B2	2561	C2	2696	B8	3584	B2	6643	D4	9324	E6	9574	B6	9917	G4
1546	C1	2562	B2	2697	A5	3588	A1	6644	D2	9325	E6	9577	B6	9918	F3
1601	A9	2563	D7	2698	A5	3597	A2	6645	F2	9326	E6	9578	B6	9919	F3
1901	G1	2564	C7	2699	A7	3598	A2	6649	D7	9501	A1	9579	B6	9920	F2
1902	F4	2565	B5	2700	A7	3620	C6	6650	B3	9502	A1	9580	B6	9921	D8
1903	F3	2566	B7	2853	F1	3627	B9	7251	G7	9503	A2	9581	B6	9922	F3
2251	F9	2567	C5	2854	E1	3629	A9	7257	E4	9504	A2	9583	C5	9923	G3
2253	E8	2568	C6	2858	E1	3630	D3	7258	E4	9505	A2	9584	B5	9924	G3
2254	F9	2571	B1	2860	E2	3631	C3	7301	G5	9507	A2	9585	C5	9925	F3
2256	E8	2572	B1	2877	B7	3632	C3	7302	G6	9508	A2	9586	C5	9926	F2
2258	E7	2575	C1	2878	C8	3691	D4	7303	G5	9509	B1	9588	B7	9927	G3
2259	D7	2576	B1	2879	A5	3694	E2	7501	D3	9510	B2	9589	A8	9928	G3
2260	F7	2581	C2	2880	A5	3697	B6	7571	B1	9511	C3	9590	A8	9929	G3
2261	F7	2582	B2	2881	A7	3855	E1	7572	B2	9513	A2	9591	A8	9930	G3
2262	D8	2593	C3	2882	A7	3901	G2	7644	B3	9514	A2	9592	B8		
2264	F8	2594	B3	2901	G2	3904	F1	7901	G2	9515	D3	9593	B8		
2266	E6	2603	A8	2902	F3	3905	F2	7905	G3	9516	B5	9594	C1		
2267	G8	2604	A8	2905	G1	3907	G3	7910	G8	9517	B5	9595	C2		
2268	D6	2607	A8	2912	G2	3909	G3	9251	E8	9520	D3	9599	C8		
2269	D9	2608	A8	2913	G1	3910	F1	9252	F8	9521	B2	9600	C8		
2272	C8	2611	A8	2919	G1	3915	G2	9253	E4	9522	B2	9601	C8		
2275	D7	2612	F1	2923	G2	3916	F2	9254	E4	9523	B2	9603	D6		
2278	D6	2613	E2	2924	F3	3919	F1	9256	D6	9524	B3	9604	D6		
2280	E3	2614	A9	2925	G4	3926	F3	9257	F7	9525	B2	9605	D6		
2283	E5	2617	A8	2942	G2	3927	F3	9258	D9	9526	B2	9606	C8		
2287	C8	2618	A8	2943	F3	3930	F3	9259	D8	9527	B3	9608	D6		
2290	G9	2629	B7	2944	G3	3931	F3	9261	E4	9528	B2	9609	D6		
2292	F8	2630	B7	2945	G2	3932	F3	9262	F5	9529	B2	9611	D6		
2293	D8	2631	A4	3254	C9	3933	F2	9263	F2	9530	C2	9613	C5		
2297	E3	2632	A6	3257	C9	5301	F5	9265	E4	9531	B2	9614	C5		
2299	E3	2637	C7	3261	G8	5302	F5	9267	E4	9532	C2	9615	D5		
2302	F5	2639	B5	3262	G8	5303	E5	9268	E4	9533	C2	9616	D5		
2303	F5	2641	C6	3265	E5	5304	E5	9269	E7	9534	C2	9617	C5		
2305	G7	2642	C6	3270	E4	5305	F4	9271	F7	9535	C2	9618	D4		

MONO2 BOARD - MAPPING COPPER SIDE VIEW

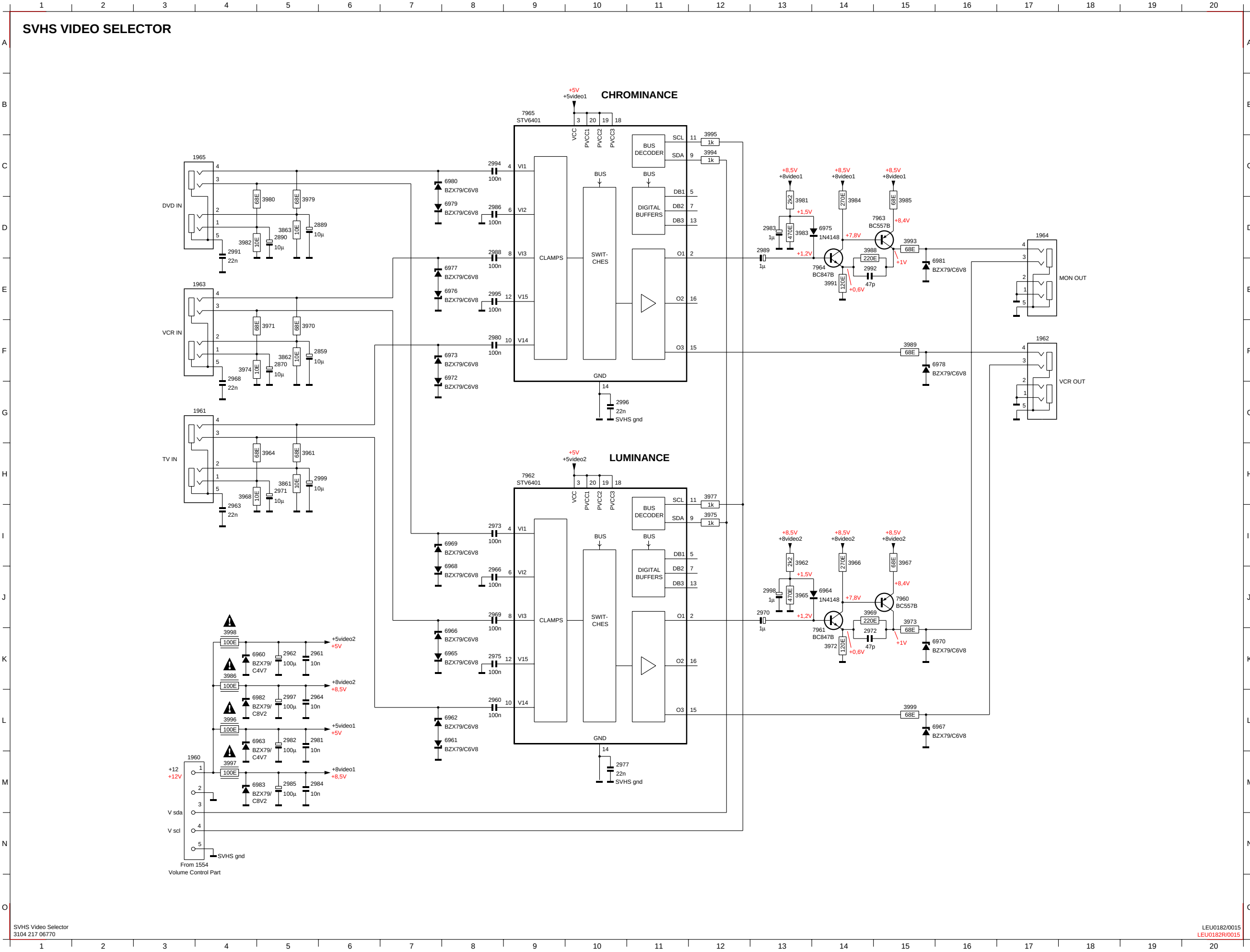
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2271	G1	2552	C5	2864	A5	3304	F5	3548	C5	3646	C3	3881	A3	4515	B8	6290	E6
2273	G2	2555	D6	2865	B5	3305	F4	3549	D6	3649	A5	3882	B3	4516	B8	6304	F5
2274	G2	2556	D6	2866	A3	3306	F4	3550	D6	3650	B5	3883	B2	4517	B7	6305	F5
2276	E3	2559	C6	2867	A3	3307	E5	3551	C4	3651	A5	3884	B1	4518	B7	6641	F5
2277	E2	2569	F8	2868	C3	3308	G4	3552	C4	3652	B5	3885	A4	4519	C8	6646	E7
2279	G1	2570	B6	2869	C3	3310	F5	3553	C7	3653	A3	3886	A4	4520	C7	6647	E7
2281	G1	2573	B8	2871	B3	3314	G4	3554	D6	3654	A3	3887	A2	4521	D7	6648	D7
2282	G1	2574	B8	2872	C3	3315	F5	3555	C6	3655	A3	3888	A2	4522	D7	6901	F7
2295	G1	2577	C8	2873	A5	3319	F5	3556	C5	3656	A3	3889	E7	4523	D7	6903	G6
2298	E7	2578	B8	2874	B5	3320	E6	3557	B6	3657	A3	3890	E7	4524	D7	6904	G5
2301	F5	2579	C8	2875	A3	3322	G4	3560	F8	3658	A3	3891	F5	4526	E7	6905	G6
2304	G3	2580	B7	2876	B3	3323	G4	3562	B6	3659	B2	3892	F5	4528	D6	7252	G1
2307	F5	2583	C7	2883	B3	3324	G4	3563	E7	3660	B1	3893	D5	4529	D6	7253	D3
2308	G5	2584	B7	2884	C3	3326	G5	3571	B8	3661	B2	3894	D7	4530	C7	7254	G1
2309	G5	2585	B8	2885	B5	3327	G5	3572	B8	3662	B1	3895	F7	4531	C7	7255	E6
2311	G4	2586	B8	2886	B5	3329	G5	3573	B8	3663	A5	3896	F7	4532	C7	7256	E7
2312	G4	2595	C6	2887	A3	3330	G5	3574	B8	3664	A4	3902	G7	4533	C7	7259	E7
2313	G4	2596	B6	2888	A3	3334	F3	3575	B8	3665	A4	3903	F8	4537	A6	7260	E7
2314	F4	2599	C6	2904	G7	3335	F3	3576	B8	3666	A4	3906	G7	4538	A5	7261	E7
2319	G4	2600	B6	2906	G7	3336	F3	3577	C8	3667	A2	3908	G7	4539	B5	7304	G5
2320	G4	2601	A7	2907	G7	3339	F3	3578	B8	3668	A2	3911	G7	4540	A6	7305	F3
2321	F4	2602	B7	2908	F7	3340	F3	3579	C8	3669	A2	3913	G7	4541	A3	7306	F3
2324	G5	2605	A1	2909	F8	3343	F3	3580	B8	3670	A1	3914	G7	4542	A3	7307	F3
2325	G4	2606	A1	2910	G7	3356	F5	3581	C8	3671	C2	3917	G6	4543	A3	7309	F5
2326	G5	2609	B8	2911	G7	3358	G5	3582	B7	3672	C2	3918	G6	4544	A3	7310	G5
2327	G5	2610	A1	2914	G7	3359	G5	3585	C7	3673	D5	3920	F5	4545	B1	7503	C5
2333	F4	2615	A1	2915	G7	3360	G5	3586	B7	3674	D5	3921	F6	4548	C1	7504	B6
2337	G4	2616	A1	2916	F8	3361	F5	3587	B7	3675	C2	3922	F6	4550	C3	7601	A1
2338	G4	2619	A1	2917	G8	3362	G4	3589	B7	3676	C2	3925	G5	4551	C3	7621	A1
2341	G4	2620	A1	2918	G7	3363	G4	3590	B7	3677	B4	3928	F6	4552	C3	7622	A1
2345	G4	2621	B8	2920	G8	3501	B3	3591	C6	3678	B4	3929	F6	4553	C4	7641	C2
2347	G4	2622	D6	2921	F7	3502	C3	3592	B6	3679	D5	3934	F7	4555	C5	7642	B5
2348	G5	2623	D6	2926	E8	3509	A3	3593	C6	3680	D5	3935	G5	4556	C4	7643	A2
2351	G3	2624	B7	2927	F6	3510	A3	3594	B6	3681	B4	3936	G5	4557	C5	7651	F5
2358	F4	2625	B7	2929	F6	3511	B8	3595	C6	3682	B4	3937	G5	4558	C5	7652	F5
2359	F4	2626	B7	2930	G8	3512	B8	3596	B6	3683	A2	3938	B1	4559	C4	7653	D5
2360	F4	2627	D6	2931	G8	3513	D7	3601	A1	3684	A2	3939	B1	4560	E8	7654	D7
2363	F3	2628	B2	2932	C8	3514	D7	3602	A1	3685	F7	3940	C3	4564	A8	7655	F7
2501	B8	2633	C2	2933	C8	3515	E8	3603	A1	3686	E7	3941	B3	4565	C5	7656	F7
2502	B8	2634	B4	2934	B8	3516	E8	3604	A1	3687	A2	3943	E7	4566	C5	7657	C4
2505	B8	2635	A2	2935	F3	3517	E8	3605	A1	3688	A2	3944	B5	4641	A3	7658	C4
2506	A8	2636	C2	2936	F3	3518	E8	3606	A1	3689	E5	3945	A5	4642	A4	7660	E8
2507	A8	2638	B4	2937	A1	3519	E8	3607	A1	3690	E5	3946	G7	4644	A3	7661	E8
2508	C5	2671	C2	2938	G7	3520	E8	3608	A1	3692	E7	3947	G8	4649	B1	7662	E7
2509	C5	2672	C2	2939	G7	3521	D8	3609	A1	3693	F8	3948	A3	4650	B4	7902	G6
2510	C6	2673	B4	2940	G7	3522	D8	3610	A1	3695	D1	3949	A3	4651	C2	7903	F6
2511	D7	2674	B5	2941	G7	3523	D8	3611	A1	3696	C4	3950	D7	4652	F8	7904	F6
2512	D7	2675	B2	2946	G6	3524	D8	3612	A1	3698	E6	3951	D7	4653	A3	7908	G1
2513	E8	2676	B2	3251	E7	3525	D8	3613	C6	3699	C4	3952	A8	4901	G6	7909	G5
2514	E8	2677	B2	3252	E7	3526	D8	3614	B6	3700	B3	3953	A8	4902	G7		
2515	E8	2678	B2	3253	E7	3527	D8	3615	C6	3851	E7	3954	B8	4903	G7		
2516	E8	2679	A4	3255	G1	3528	D8	3616	B6	3852	E8	3955	A8	4904	F7		
2517	D8	2680	A4	3256	D4	3529	D8	3618	F8	3853	F8	4251	E2	4905	B6		
2518	D8	2681	A2	3258	D4	3530	C8	3619	E7	3854	E8	4252	E6	4908	E6		
2519	D8	2682	A2	3259	E7	3531	C8	3621	C3	3856	E8	4253	E3	4909	F7		
2520	D8	2683	B2	3260	E7	3532	C8	3622	A1	3857	F8	4256	D7	4910	F5		
2521	D8	2684	B2	3263	E7	3533	C8	3623	A1	3858	E8	4258	E4	4913	G2		
2522	C8	2685	A5	3264	E6	3534	C8	3633	B7	3859	E7	4259	D4	4914	D4		
2523	D6	2686	B4	3266	E5	3537	C8	3634	B7	3860	E7	4260	C1	4915	C4		
2524	D6	2687	A2	3267	E6	3538	C8	3635	B7	3871	B3	4283	D1	4916	F7		
2525	C8	2688	A2	3268	E4	3539	C8	3636	C5	3872	C3	4284	D1	4917	C1		
2526	C8	2851	E8	3269	E4	3540	C8	3637	C5	3873	B3	4285	D1	4918	B2		
2529	B6	2852	E8	3272	E7	3541	C5	3638	C5	3874	C3	4287	D4	4920	C1		
2530	B6	2855	E8	3275	G1	3542	C5	3639	C5	3875	A5	4320	G4	4921	C1		
2545	C5	2856	E8	3292	G1	3543	C5	3641	C3	3876	B5	4505	A8	4922	E6		
2546	C5	2857	E8	3293	G1	3544	C5	3642	C3	3877	A5	4506	A6	4923	G5		
2549	C5	2861	A7	3294	G1	3545	C5	3643	C3	3878	B5	4512	B5	4924	G5		



S-VHS VIDEO BOARD

TABLE OF CONTENTS

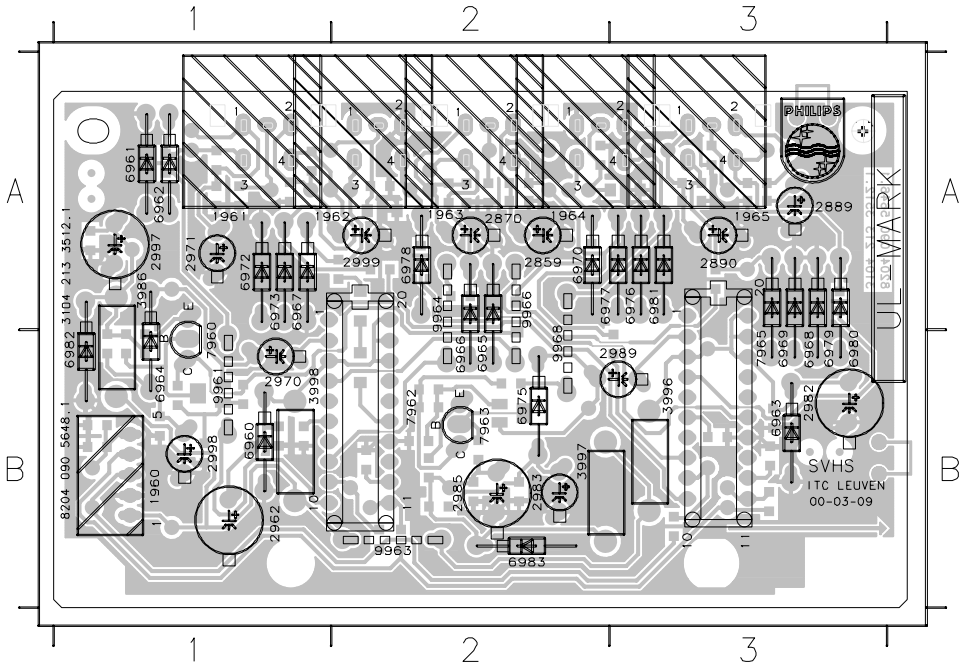
Circuit diagram	12-2
Component layout	12-3
Partslist	12-4



- 1960 M3
- 1961 G3
- 1962 F17
- 1963 E3
- 1964 D17
- 1965 C3
- 2859 F5
- 2870 F5
- 2889 D5
- 2890 D5
- 2960 L8
- 2961 K5
- 2962 K5
- 2963 I4
- 2964 L5
- 2966 J8
- 2968 F4
- 2969 J8
- 2970 J13
- 2971 H5
- 2972 K14
- 2973 I8
- 2975 K8
- 2977 M10
- 2980 F8
- 2981 L5
- 2982 L5
- 2983 D13
- 2984 M5
- 2985 M5
- 2986 D8
- 2988 D8
- 2989 D13
- 2991 D4
- 2992 E14
- 2994 C8
- 2995 E8
- 2996 G10
- 2997 L5
- 2998 J13
- 2999 H5
- 3861 H5
- 3862 F5
- 3863 D5
- 3961 H5
- 3962 I13
- 3964 H5
- 3965 J13
- 3966 I14
- 3967 I15
- 3968 H4
- 3969 J14
- 3970 F5
- 3971 F5
- 3972 K14
- 3973 J15
- 3974 F4
- 3975 I12
- 3977 H12
- 3979 D5
- 3980 D5
- 3981 D13
- 3982 D4
- 3983 D13
- 3984 D14
- 3985 D15
- 3986 K4
- 3988 D14
- 3989 F15
- 3991 E14
- 3993 D15
- 3994 C12
- 3995 C12
- 3996 L4
- 3997 M4
- 3998 K4
- 3999 L15
- 6960 K4
- 6961 L8
- 6962 L8
- 6963 L4
- 6964 J14
- 6965 K8
- 6966 K8
- 6967 L15
- 6968 J8
- 6969 I8
- 6970 K15
- 6972 F8
- 6973 F8
- 6975 D14
- 6976 E8
- 6977 E8
- 6978 F15
- 6979 D8
- 6980 C8
- 6981 E15
- 6982 L4
- 6983 M4
- 7960 J15
- 7961 K14
- 7962 H9
- 7963 D14
- 7964 E14
- 7965 B9

S-VHS VIDEO SELECTOR BOARD

Component side view



PARTSLIST - EXPLODED VIEW**MECHANICAL PARTS FR975/00/17**

1	3104 217 52810	FRONT CABINET ASSY
2	4822 410 12442	BUTTON HINGE ASSY SURR.
3	4822 410 12435	BUTTONS HINGE TUNER
4	4822 410 12443	BUTTON HINGE ASSY MENU
5	4822 410 12436	BUTTONS HINGE BASS TREBLE
6	4822 410 12437	BUTTONS EASY LINK
7	4822 410 12478	BUTTON HINGE A/V
8	4822 380 10274	LIGHT GUIDE SURROUND
9	3104 214 38460	LIGHT GUIDE VIRTUAL/HALL
10	4822 380 10277	LIGHT GUIDE SELECTOR
11	3104 217 52760	ORNAMENTAL PLATE FR975/00
11	3104 217 52800	ORNAMENTAL PLATE FR975/17
12	3104 217 52130	RING KNOB VOLUME
13	3104 217 52140	RING KNOB SOURCE SELECTOR
14	3104 217 52910	WINDOW DISPLAY FR975/00
14	3104 217 52900	WINDOW DISPLAY FR975/17
15	4822 426 10895	BACKPLATE A/V
17	4822 442 01879	COVER PLATE ASSY
25	4822 410 12438	KNOB VOLUME
26	4822 410 12439	KNOB SOURCE SELECTOR
27	4822 410 12441	KNOB MENU NAV
28	4822 459 10887	BADGE PHILIPS
36	4822 691 10773	LEG SILVER
38	4822 691 10773	LEG SILVER
115	4822 535 10638	POWER ROD
116	4822 462 11176	POWER CAP
117	4822 532 60948	BUSCH, PLASTIC
125	4822 442 01817	COVERPLATE

ELECTRICAL PARTS

1003	3104 217 06390	MDM2000 Module
5001 ▲	4822 146 11165	MAINS TRAFO FR975/00
5001 ▲	4822 146 11169	MAINSTRAFO FR975/01C
5001 ▲	4822 146 21225	MAINS TRAFO FR975/17
8020 ▲	4822 321 11139	MAINS CORD FR975/00/01C
8020 ▲	3139 118 77230	MAINSCORD UL FR975/17

MISCELLANEOUS PARTS FR975/00/01C/17

4822 303 50063	FM AERIAL 75R only in /00/01C
4822 320 11094	FM AERIAL 300R only in /17
4822 303 50082	AM FRAME
2422 076 00314	COMB/CINCH only in /00
4822 263 21206	CINCH/CINCH only in /01C/17
4822 321 61452	CABLE ASSY CINCH/CINCH
3104 219 04310	REMOTE CONTROL
3103 306 17010	INSTR.FOR.USE
3103 306 17020	INSTR.FOR.USE /01C

MECHANICAL PARTS FR975/01C

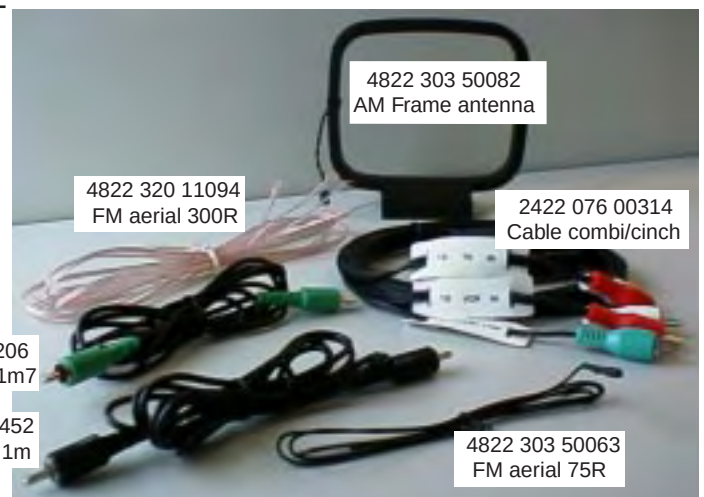
1	3104 217 52820	FRONT ASSY
2	3104 217 52570	BUTTON SURROUND
3	3104 217 52620	BUTTON TUNER
4	3104 217 52560	BUTTON MENU
5	3104 217 52630	BUTTON BASS TREBLE
6	3104 217 52550	BUTTON EASY LINK
7	3104 217 52640	BUTTON A/V ASSY
8	4822 380 10274	LIGHT GUIDE SURROUND
9	3104 214 38460	LIGHT GUIDE VIRTUAL/HALL
10	4822 380 10277	LIGHT GUIDE SELECTOR
11	3104 217 52780	ORNAMENTAL PLATE ASSY
12	3104 217 52410	RING KNOB VOL.ASSY
13	3104 217 52420	RING KNOB
14	3104 217 52920	WINDOW DISPLAY ASSY
15	3104 214 38930	BACKPLATE A/V
17	3104 217 52540	COVER PLATE ASSY
25	3104 217 52380	KNOB VOLUME ASSY
26	3104 217 52390	KNOB SOURCE
27	3104 217 52400	KNOB MENU NAV.
28	4822 459 10887	BADGE PHILIPS
36	3104 217 52530	LEG CHAMPAGNE
38	3104 217 52530	LEG CHAMPAGNE
115	4822 535 10638	POWER ROD
116	3104 217 52650	POWER CAP ASSY
117	4822 532 60948	BUSH, PLASTIC
125	4822 442 01817	COVERPLATE

MISCELLANEOUS PARTS MX980D/37

3104 219 04231	FRONT SPEAKER 100W
3104 219 04241	CENTER SPEAKR 100W
3104 219 04231	SURROUND SPEAKER 100W
3104 219 03730	SUBWOOFER FB201V/1
4822 320 12719	CORD SET FRONT SPEAKER
4822 320 12721	CORD SET CENTER SPEAKER
4822 320 12722	CORD SET SURR. SPEAKER

4822 263 21206
green/green 1m7

4822 321 61452
black/black 1m



ELECTRICAL PARTSLIST - MONO2 BOARD

MISCELLANEOUS			CAPACITORS		
1260	▲ 4822 252 51123	FUSE6,3A	2325	4822 122 33575	220PF 5% NP0 63V
1261	▲ 4822 252 51123	FUSE 6,3A	2326	5322 122 32448	10PF 5% NP0 63V
1301	2422 015 19403	SCREW 6P LS	2327	5322 122 32448	10PF 5% NP0 63V
1502	4822 267 31823	CINCH	2330	4822 124 40433	47UF 20% 10V
1512	4822 267 31823	CINCH	2333	4822 126 13473	220NF80-20% 50V
1513	4822 267 31823	CINCH	2334	4822 124 40248	10UF20% 63V
1514	4822 267 31823	CINCH	2337	5322 122 32268	470PF 10% 50V
1516	4822 267 31823	CINCH	2341	4822 122 33575	220PF 5% NP0 63V
1520	4822 265 10981	CINCH 1P	2345	5322 122 32448	10PF 5% NP0 63V
1521	2422 025 11067	CON BM V 12P	2346	4822 124 40433	47UF 20% 10V
1523	2422 025 11067	CON BM V 12P	2348	5322 122 32448	10PF 5% NP0 63V
1525	4822 265 11608	CINCH 2P	2349	4822 124 40248	10UF20% 63V
1540	4822 265 20542	CINCH 2P	2350	4822 124 40181	220UF20% 10V
1542	2422 026 05134	CINCH 2P	2353	4822 124 40764	22UF 100 V
1550	4822 267 31729	CINCH 1P	2354	5322 124 40641	10UF 20% 100V
1801	4822 267 31996	CONN. 1P	2357	4822 126 12882	100NF+80-20% 50V
1802	4822 265 11619	CINCH 2P	2358	4822 126 13473	220NF80-20% 50V
1803	4822 265 11619	CINCH 2P	2359	4822 126 13473	220NF80-20% 50V
1901	4822 265 11609	CON. CLICK 4P	2360	4822 126 13473	220NF80-20% 50V
CAPACITORS			2365	4822 121 41857	10NF 5% 250V
2251	5322 121 42578	100NF 5% 250V	2371	5322 126 10223	4,7NF10%X7R 63V
2253	4822 121 43526	47NF 5% 250V	2372	5322 126 10223	4,7NF10%X7R 63V
2254	5322 121 42578	100NF 5% 250V	2373	5322 126 10223	4,7NF10%X7R 63V
2256	4822 121 43526	47NF 5% 250V	2374	5322 122 32531	100PF 5%NP0 50V
2257	4822 122 33177	10NF 20% X7R 50V	2375	5322 122 32531	100PF 5%NP0 50V
2259	4822 124 80415	4700UF20% 50V	2376	5322 122 32531	100PF 5%NP0 50V
2260	4822 124 80415	4700UF20% 50V	2501	5322 126 10511	1NF 5%NP0 50V
2262	4822 124 12423	4700UF 20% 63V	2502	5322 126 10511	1NF 5%NP0 50V
2264	4822 124 12423	4700UF 20% 63V	2505	5322 126 10511	1NF 5%NP0 50V
2266	5322 121 42386	100NF 5% 63V	2506	5322 126 10511	1NF 5%NP0 50V
2267	4822 124 41751	47UF 20% 50V	2507	5322 126 10511	1NF 5%NP0 50V
2268	5322 121 42386	100NF 5% 63V	2508	5322 122 32531	100PF 5%NP0 50V
2269	4822 124 80563	4700UF 35V	2509	5322 122 32531	100PF 5%NP0 50V
2270	4822 126 13838	100NF 50V P80M20	2510	5322 122 32531	100PF 5%NP0 50V
2271	4822 126 14583	470NF 10% 16V	2511	5322 122 32531	100PF 5%NP0 50V
2272	4822 124 12328	6800UF 16V	2512	5322 122 32531	100PF 5%NP0 50V
2273	4822 126 14585	100NF 10% 50V	2513	5322 122 32531	100PF 5%NP0 50V
2274	4822 126 14583	470NF 10% 16V	2514	5322 122 32531	100PF 5%NP0 50V
2275	4822 124 81144	1000U 16V	2515	5322 122 32531	100PF 5%NP0 50V
2276	4822 126 14585	100NF 10% 50V	2516	5322 122 32531	100PF 5%NP0 50V
2277	4822 126 14583	470NF 10%	2517	5322 122 32531	100PF 5%NP0 50V
2278	4822 124 22652	2,2UF20% 50V	2518	5322 122 32531	100PF 5%NP0 50V
2279	4822 126 14585	100NF 10% 50V	2519	5322 122 32531	100PF 5%NP0 50V
2280	4822 124 41584	100UF 20% 10V	2520	5322 122 32531	100PF 5%NP0 50V
2281	4822 126 13838	100NF 50V P80M20	2521	5322 122 32531	100PF 5%NP0 50V
2282	4822 126 14583	470NF 10% 16V	2522	5322 122 32531	100PF 5%NP0 50V
2290	4822 124 40248	10UF20% 63V	2523	5322 122 32531	100PF 5%NP0 50V
2295	4822 122 33177	10NF 20% X7R 50V	2524	5322 122 32531	100PF 5%NP0 50V
2298	5322 122 32654	22NF10%X7R 63V	2525	5322 122 32531	100PF 5%NP0 50V
2299	5322 124 40641	10UF 20% 100V	2526	5322 122 32531	100PF 5%NP0 50V
2301	5322 122 32654	22NF10%X7R 63V	2527	4822 124 41751	47UF 20% 50V
2303	4822 124 40764	22UF 100 V	2528	4822 124 41751	47UF 20% 50V
2305	5322 124 40641	10UF 20% 100V	2529	4822 126 13838	100NF 50V P80M20
2306	4822 124 40248	10UF20% 63V	2530	4822 126 13838	100NF 50V P80M20
2308	5322 122 32448	10PF 5% NP0 63V	2531	4822 121 42408	220NF 5% 63V
2309	5322 122 32448	10PF 5% NP0 63V	2532	4822 121 42408	220NF 5% 63V
2310	4822 124 40248	10UF20% 63V	2533	4822 124 81151	22UF 50V
2311	5322 122 32268	470PF 10% 50V	2534	4822 124 81151	22UF 50V
2313	4822 122 33575	220PF 5% NP0 63V	2535	4822 124 81151	22UF 50V
2314	4822 126 13473	220NF80-20% 50V	2536	4822 124 81151	22UF 50V
2315	4822 124 40433	47UF 20% 10V	2537	4822 124 81151	22UF 50V
2316	4822 124 40248	10UF20% 63V	2538	4822 124 81151	22UF 50V
2319	5322 122 32268	470PF 10% 50V	2539	4822 124 40207	100UF20% 25V
2321	4822 126 13473	220NF80-20% 50V	2540	4822 124 40433	47UF20% 25V
			2541	4822 124 40248	10UF20% 63V

ELECTRICAL PARTSLIST - MONO2 BOARD**CAPASITORS**

2542	4822 124 40248	10UF20% 63V
2543	4822 124 11912	220UF 20% 6,3V
2544	4822 124 11912	220UF 20% 6,3V
2545	5322 122 32531	100PF 5%NP0 50V
2546	5322 122 32531	100PF 5%NP0 50V
2549	5322 122 32658	22PF 5% 50V
2550	5322 122 32658	22PF 5% 50V
2551	4822 126 13838	100NF 50V P80M20
2552	4822 126 13838	100NF 50V P80M20
2553	4822 124 41751	47UF 20% 50V
2554	4822 124 41751	47UF 20% 50V
2555	4822 126 13838	100NF 50V P80M20
2556	4822 126 13838	100NF 50V P80M20
2557	4822 124 41751	47UF 20% 50V
2558	4822 124 41751	47UF 20% 50V
2559	4822 126 12105	CER2 50V 33NF PM5
2561	4822 124 40764	22UF 100 V
2562	4822 124 40764	22UF 100 V
2563	4822 123 14025	16V 2200U 20%
2564	4822 124 22652	2,2UF20% 50V
2565	4822 124 22652	2,2UF20% 50V
2566	4822 124 22652	2,2UF20% 50V
2567	4822 124 40769	4,7UF20% 100V
2568	4822 124 40769	4,7UF20% 100V
2569	5322 122 32531	100PF 5%NP0 50V
2570	5322 122 32531	100PF 5%NP0 50V
2571	4822 124 40248	10UF20% 63V
2572	4822 124 40248	10UF20% 63V
2573	4822 122 33575	220PF 5% NP0 63V
2574	4822 122 33575	220PF 5% NP0 63V
2575	4822 124 40248	10UF20% 63V
2576	4822 124 40248	10UF20% 63V
2577	4822 122 33177	10NF 20% X7R 50V
2578	4822 122 33177	10NF 20% X7R 50V
2579	4822 122 33127	2,2NF10%X7R 63V
2580	4822 122 33127	2,2NF10%X7R 63V
2581	4822 124 41751	47UF 20% 50V
2582	4822 124 41751	47UF 20% 50V
2583	4822 122 33891	3,3NF10%X7R 63V
2584	4822 122 33891	3,3NF10%X7R 63V
2585	4822 126 13695	82PF 1% NP0 63V
2586	4822 126 13695	82PF 1% NP0 63V
2593	4822 124 81151	22UF 50V
2594	4822 124 81151	22UF 50V
2595	5322 122 32531	100PF 5%NP0 50V
2596	5322 122 32531	100PF 5%NP0 50V
2599	5322 122 32658	22PF 5% 50V
2600	5322 122 32658	22PF 5% 50V
2603	4822 124 81151	22UF 50V
2604	4822 124 81151	22UF 50V
2605	4822 126 13692	47PF 1% NP0 63V
2606	4822 126 13692	47PF 1% NP0 63V
2607	4822 124 41751	47UF 20% 50V
2608	4822 124 41751	47UF 20% 50V
2610	4822 122 33575	220PF 5% NP0 63V
2611	4822 124 40207	100UF20% 25V
2612	4822 124 40248	10UF20% 63V
2613	4822 124 40248	10UF20% 63V
2614	4822 124 40207	100UF20% 25V
2615	5322 122 32654	22NF10%X7R 63V
2616	5322 122 32654	22NF10%X7R 63V
2617	4822 124 40248	10UF20% 63V
2618	4822 124 40248	10UF20% 63V
2619	5322 122 32531	100PF 5%NP0 50V
2620	5322 122 32531	100PF 5%NP0 50V

CAPACITORS

2622	5322 122 32531	100PF 5%NP0 50V
2623	5322 122 32531	100PF 5%NP0 50V
2624	5322 122 32531	100PF 5%NP0 50V
2625	5322 122 32531	100PF 5%NP0 50V
2626	5322 122 32531	100PF 5%NP0 50V
2627	5322 122 32531	100PF 5%NP0 50V
2628	4822 126 14585	100NF 10% 50V
2629	4822 124 41751	47UF 20% 50V
2630	5322 121 42386	100NF 5% 63V
2631	5322 121 42386	100NF 5% 63V
2632	5322 121 42386	100NF 5% 63V
2633	5322 122 32654	22NF10%X7R 63V
2634	5322 122 32654	22NF10%X7R 63V
2635	5322 122 32654	22NF10%X7R 63V
2636	4822 126 14585	100NF 10% 50V
2637	4822 124 41751	47UF 20% 50V
2638	4822 126 14585	100NF 10% 50V
2639	4822 124 41751	47UF 20% 50V
2641	4822 124 21913	1UF20% 63V
2642	4822 124 21913	1UF20% 63V
2643	4822 124 21913	1UF20% 63V
2644	4822 124 21913	1UF20% 63V
2645	4822 124 21913	1UF20% 63V
2646	4822 124 21913	1UF20% 63V
2647	4822 124 21913	1UF20% 63V
2648	4822 124 21913	1UF20% 63V
2649	4822 124 21913	1UF20% 63V
2650	4822 124 21913	1UF20% 63V
2651	4822 124 21913	1UF20% 63V
2652	4822 124 21913	1UF20% 63V
2655	4822 124 21913	1UF20% 63V
2656	4822 124 21913	1UF20% 63V
2657	4822 124 21913	1UF20% 63V
2658	4822 124 21913	1UF20% 63V
2659	4822 124 22652	2,2UF20% 50V
2660	4822 124 22652	2,2UF20% 50V
2661	4822 124 22652	2,2UF20% 50V
2662	4822 124 22652	2,2UF20% 50V
2663	4822 124 22652	2,2UF20% 50V
2664	4822 124 22652	2,2UF20% 50V
2665	4822 121 43526	47NF 5% 250V
2666	4822 121 43526	47NF 5% 250V
2667	4822 121 43526	47NF 5% 250V
2668	4822 121 43526	47NF 5% 250V
2669	4822 121 43526	47NF 5% 250V
2670	4822 121 43526	47NF 5% 250V
2671	5322 122 31866	6,8NF10%X7R 63V
2672	5322 122 31866	6,8NF10%X7R 63V
2673	5322 122 31866	6,8NF10%X7R 63V
2674	5322 122 31866	6,8NF10%X7R 63V
2675	5322 122 31866	6,8NF10%X7R 63V
2676	5322 122 31866	6,8NF10%X7R 63V
2677	5322 122 32654	22NF10%X7R 63V
2678	5322 122 32654	22NF10%X7R 63V
2679	5322 122 32654	22NF10%X7R 63V
2680	5322 122 32654	22NF10%X7R 63V
2681	5322 122 32654	22NF10%X7R 63V
2682	5322 122 32654	22NF10%X7R 63V
2683	5322 122 32654	22NF10%X7R 63V
2684	5322 122 32654	22NF10%X7R 63V
2685	5322 122 32654	22NF10%X7R 63V
2686	5322 122 32654	22NF10%X7R 63V
2687	5322 122 32654	22NF10%X7R 63V
2688	5322 122 32654	22NF10%X7R 63V
2689	5322 121 42465	68NF 5% 63V

ELECTRICAL PARTSLIST - MONO2 BOARD

CAPACITORS

2690	5322 121 42465	68NF 5%	63V
2691	5322 121 42465	68NF 5%	63V
2692	5322 121 42465	68NF 5%	63V
2693	5322 121 42465	68NF 5%	63V
2694	5322 121 42465	68NF 5%	63V

2695	5322 121 42465	68NF 5%	63V
2696	5322 121 42465	68NF 5%	63V
2697	5322 121 42465	68NF 5%	63V
2698	5322 121 42465	68NF 5%	63V
2699	5322 121 42465	68NF 5%	63V

2700	5322 121 42465	68NF 5%	63V
2801	4822 124 22833	10UF	50V
2802	4822 124 22833	10UF	50V
2803	4822 124 22833	10UF	50V
2804	4822 124 22833	10UF	50V

2805	4822 126 14585	100NF 10%	50V
2806	4822 126 14585	100NF 10%	50V
2807	4822 126 14585	100NF 10%	50V
2808	4822 126 14585	100NF 10%	50V
2809	5322 122 34098	10NF10%X7R	63V

2810	4822 124 40196	220UF20%	16V
2811	5322 122 34098	10NF10%	63V
2812	4822 124 40196	220UF20%	16V
2813	4822 124 21913	1UF20%	63V
2814	4822 126 13692	47PF 1% NP0	63V

2815	4822 126 14585	100NF 10%	50V
2816	5322 122 32654	22NF10%	63V
2817	4822 124 21913	1UF20%	63V
2818	5322 122 32654	22NF10%X7R	63V
2821	5322 122 32654	22NF10%X7R	63V

2822	5322 122 32654	22NF10%X7R	63V
2831	5322 122 32531	100PF 5%NP0	50V
2832	4822 126 14585	100NF 10%	50V
2833	5322 122 32654	22NF10%X7R	63V
2834	5322 122 32531	100PF 5%NP0	50V

2835	5322 122 32531	100PF 5%NP0	50V
2836	5322 122 32531	100PF 5%NP0	50V
2837	5322 122 32531	100PF 5%NP0	50V
2851	5322 122 32658	22PF 5%	50V
2852	5322 122 32658	22PF 5%	50V

2853	4822 124 81151	22UF	50V
2854	4822 124 81151	22UF	50V
2855	5322 122 32531	100PF 5%NP0	50V
2856	5322 122 32531	100PF 5%NP0	50V
2857	4822 126 14585	100NF 10%	50V

2858	4822 124 41751	47UF 20%	50V
2860	4822 124 41751	47UF 20%	50V
2861	5322 122 32654	22NF10%X7R	63V
2862	5322 122 32531	100PF 5%NP0	50V
2863	5322 122 32531	100PF 5%NP0	50V

2864	5322 122 32531	100PF 5%NP0	50V
2865	5322 122 32531	100PF 5%NP0	50V
2866	5322 122 32531	100PF 5%NP0	50V
2867	5322 122 32531	100PF 5%NP0	50V
2868	4822 122 33575	220PF 5% NP0	63V

2869	4822 122 33575	220PF 5% NP0	63V
2871	4822 122 33177	10NF 20% X7R	50V
2872	4822 122 33177	10NF 20% X7R	50V
2873	4822 122 33177	10NF 20% X7R	50V
2875	4822 122 33177	10NF 20% X7R	50V

2876	4822 122 33177	10NF 20% X7R	50V
2877	5322 121 42386	100NF 5%	63V
2878	5322 121 42386	100NF 5%	63V
2879	5322 121 42386	100NF 5%	63V

CAPACITORS

2880	5322 121 42386	100NF 5%	63V
2881	5322 121 42386	100NF 5%	63V
2882	5322 121 42386	100NF 5%	63V
2883	5322 126 10511	1NF 5%NP0	50V
2884	5322 126 10511	1NF 5%NP0	50V

2885	5322 126 10511	1NF 5%NP0	50V
2886	5322 126 10511	1NF 5%NP0	50V
2887	4822 122 33127	2,2NF10%X7R	63V
2888	4822 122 33127	2,2NF10%X7R	63V
2902	4822 124 40248	10UF20%	63V

2905	4822 124 40248	10UF20%	63V
2906	5322 122 32268	470PF 10%	50V
2908	4822 126 13473	220NF80-20%	50V
2909	5322 126 10223	4,7NF10%X7R	63V
2910	4822 122 33575	220PF 5% NP0	63V

2911	5322 122 32654	22NF10%X7R	63V
2912	4822 124 40433	47UF 20%	10V
2913	4822 124 40248	10UF20%	63V
2914	5322 122 32268	470PF 10%	50V
2916	4822 126 13473	220NF80-20%	50V

2917	5322 126 10223	4,7NF10%X7R	63V
2918	4822 122 33575	220PF 5% NP0	63V
2919	4822 124 40433	47UF 20%	10V
2920	4822 126 13473	220NF80-20%	50V
2921	4822 126 13473	220NF80-20%	50V

2924	4822 124 40248	10UF20%	63V
2925	4822 124 40181	220UF20%	10V
2926	4822 126 14585	100NF 10%	50V
2930	5322 122 32531	100PF 5%NP0	50V
2931	5322 122 32531	100PF 5%NP0	50V

2932	5322 122 32531	100PF 5%NP0	50V
2933	5322 122 32531	100PF 5%NP0	50V
2934	5322 126 10511	1NF 5%NP0	50V
2937	4822 122 33575	220PF 5% NP0	63V
2938	5322 122 32448	10PF 5% NP0	63V

2939	5322 122 32448	10PF 5% NP0	63V
2940	5322 122 32448	10PF 5% NP0	63V
2941	5322 122 32448	10PF 5% NP0	63V
2942	4822 124 40764	22UF	100 V
2943	5322 124 40641	10UF 20%	100V

2944	5322 124 40641	10UF 20%	100V
2945	4822 124 40764	22UF	100 V

RESISTORS

3251	4822 051 10102	1K	2%	0,25W
3252	4822 117 10837	100K	1%	0.1W
3253	4822 117 10837	100K	1%	0.1W
3254	▲ 4822 117 11342	0R33	5%	2W
3256	4822 117 10833	10K	1%	0,1W

3257	▲ 4822 117 11342	0R33	5%	2W
3258	4822 117 11149	82K	1%	0,1W
3259	4822 117 10361	680R	1%	0,1W
3260	4822 117 10834	47K	1%	0,1W
3261	4822 116 83881	390R	5%	0,5W

3262	4822 050 21003	10K	1%	0,6W
3263	4822 117 10361	680R	1%	0,1W
3264	4822 117 10837	100K	1%	0.1W
3265	▲ 4822 052 10479	47R	5%	0,33W
3266	4822 051 20223	22K	5%	0,1W

3267	4822 117 11507	6K8	1%	0,1W
3268	4822 051 20332	3K3	5%	0,1W
3269	4822 051 20332	3K3	5%	0,1W
3270	▲ 4822 052 10479	47R	5%	0,33W
3271	▲ 4822 052 10479	47R	5%	0,33W

3272	4822 051 20393	39K00	5%	0,1W
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ELECTRICAL PARTSLIST - MONO2 BOARD

RESISTORS					RESISTORS				
3273	4822 116 83872	220R	5%	0,5W	3510	4822 116 83933	15K	1%	0,1W
3274	4822 116 83876	270R	5%	0,5W	3511	4822 051 20101	100R	5%	0,1W
3275	4822 117 10353	150R	1%	0,1W	3512	4822 051 20101	100R	5%	0,1W
3276	4822 116 52234	100K	5%	0,5W	3513	4822 117 10834	47K	1%	0,1W
3291 ▲	4822 052 10109	10R	5%	0,33W	3514	4822 117 10834	47K	1%	0,1W
3292	4822 116 83933	15K	1%	0,1W	3515	4822 051 20471	470R	5%	0,1W
3293	4822 117 10833	10K	1%	0,1W	3516	4822 051 20471	470R	5%	0,1W
3294	4822 117 10833	10K	1%	0,1W	3517	4822 051 20393	39K	5%	0,1W
3295	4822 116 83933	15K	1%	0,1W	3518	4822 051 20393	39K	5%	0,1W
3301 ▲	4822 052 10479	47R00	5%	0,33W	3519	4822 051 20822	8K2	5%	0,1W
3302 ▲	4822 117 11151	1R	5%		3520	4822 051 20822	8K2	5%	0,1W
3303	4822 116 83961	6K8	5%		3521	4822 051 20393	39K00	5%	0,1W
3304	4822 117 11148	56K	1%	0,1W	3522	4822 051 20393	39K00	5%	0,1W
3305	4822 117 10834	47K	1%	0,1W	3523	4822 051 20822	8K20	5%	0,1W
3306	4822 117 10834	47K	1%	0,1W	3524	4822 051 20822	8K20	5%	0,1W
3307	4822 117 10834	47K	1%	0,1W	3525	4822 051 20393	39K00	5%	0,1W
3308	4822 117 11148	56K	1%	0,1W	3526	4822 051 20393	39K00	5%	0,1W
3309	4822 050 24708	4R70	1%	0,6W	3527	4822 051 20822	8K20	5%	0,1W
3310	4822 051 20182	1K80	5%	0,1W	3528	4822 051 20822	8K20	5%	0,1W
3311	4822 050 24708	4R70	1%	0,6W	3529	4822 051 20471	470R00	5%	0,1W
3314	4822 117 11148	56K	1%	0,1W	3530	4822 051 20471	470R00	5%	0,1W
3315	4822 051 20182	1K80	5%	0,1W	3531	4822 051 20393	39K00	5%	0,1W
3316	4822 050 24708	4R70	1%	0,6W	3532	4822 051 20393	39K00	5%	0,1W
3319	4822 117 11148	56K	1%	0,1W	3533	4822 051 20822	8K20	5%	0,1W
3320	4822 051 10102	1K00	2%	0,25W	3534	4822 051 20822	8K20	5%	0,1W
3322	4822 117 11148	56K	1%	0,1W	3535	4822 116 52251	18K	5%	0,5W
3323	4822 051 20182	1K80	5%	0,1W	3536	4822 116 52251	18K	5%	0,5W
3324	4822 117 11148	56K	1%	0,1W	3537	4822 051 20393	39K00	5%	0,1W
3325	4822 116 83961	6K8	5%		3538	4822 051 20393	39K00	5%	0,1W
3326	4822 051 20333	33K00	5%	0,1W	3539	4822 051 20822	8K2	5%	0,1W
3327	4822 117 11503	220R	1%	0,1W	3540	4822 051 20822	8K2	5%	0,1W
3328 ▲	4822 052 10479	47R00	5%	0,33W	3541	4822 051 20393	39K00	5%	0,1W
3329	4822 117 10837	100K	1%	0,1W	3542	4822 051 20393	39K00	5%	0,1W
3330	4822 117 10833	10K	1%	0,1W	3543	4822 117 12955	2K7 1%	0,1W	0805
3334	4822 051 20182	1K80	5%	0,1W	3544	4822 117 12955	2K7 1%	0,1W	0805
3335	4822 051 20182	1K80	5%	0,1W	3545	4822 117 10833	10K	1%	0,1W
3336	4822 051 20182	1K80	5%	0,1W	3546	4822 117 10833	10K	1%	0,1W
3337 ▲	4822 117 11342	0R33	5%	2W	3549	4822 051 20332	3K3	5%	0,1W
3338 ▲	4822 117 11342	0R33	5%	2W	3550	4822 051 20332	3K3	5%	0,1W
3339	4822 117 11139	1K5	1%	0,1W	3551	4822 117 11504	270R	1%	0,1W
3340	4822 117 11139	1K5	1%	0,1W	3552	4822 117 11504	270R	1%	0,1W
3341 ▲	4822 117 11342	0R33	5%	2W	3553	4822 117 11504	270R	1%	0,1W
3342 ▲	4822 117 11342	0R33	5%	2W	3554	4822 117 11504	270R	1%	0,1W
3343	4822 117 11139	1K5	1%	0,1W	3555	4822 051 20332	3K30	5%	0,1W
3344 ▲	4822 117 11342	0R33	5%	2W	3556	4822 117 11504	270R	1%	0,1W
3345 ▲	4822 117 11342	0R33	5%	2W	3557	4822 117 11504	270R	1%	0,1W
3349 ▲	4822 117 11342	0R33	5%	2W	3560	4822 051 10102	1K00	2%	0,25W
3350 ▲	4822 117 11342	0R33	5%	2W	3561 ▲	4822 052 10478	4R70	5%	0,33W
3351 ▲	4822 117 11342	0R33	5%	2W	3562	4822 051 20471	470R00	5%	0,1W
3352 ▲	4822 053 10478	4R70	5%	1W	3563	4822 051 10102	1K00	2%	0,25W
3353 ▲	4822 053 10478	4R70	5%	1W	3566	4822 116 83876	270R	5%	0,5W
3354 ▲	4822 053 10478	4R70	5%	1W	3567	4822 116 83876	270R	5%	0,5W
3356	4822 117 10834	47K	1%	0,1W	3571	4822 051 20334	330K00	5%	0,1W
3357	4822 116 52257	22K	5%	0,5W	3572	4822 051 20334	330K00	5%	0,1W
3358	4822 051 10102	1K00	2%	0,25W	3573	4822 051 10102	1K00	2%	0,25W
3359	4822 117 10837	100K	1%	0,1W	3574	4822 051 10102	1K00	2%	0,25W
3360	4822 117 10833	10K	1%	0,1W	3575	4822 117 11148	56K	1%	0,1W
3361	4822 051 20471	470R00	5%	0,1W	3576	4822 117 11148	56K	1%	0,1W
3362	4822 051 20471	470R00	5%	0,1W	3577	4822 051 20561	560R00	5%	0,1W
3363	4822 051 20471	470R00	5%	0,1W	3578	4822 051 20561	560R00	5%	0,1W
3501	4822 116 83933	15K	1%	0,1W	3579	4822 051 20394	390K00	5%	0,1W
3502	4822 116 83933	15K	1%	0,1W	3580	4822 051 20394	390K00	5%	0,1W
3505	4822 116 52244	15K	5%	0,5W	3581	4822 051 20273	27K00	5%	0,1W
3506	4822 116 52244	15K	5%	0,5W	3582	4822 051 20273	27K00	5%	0,1W
3509	4822 116 83933	15K	1%	0,1W	3583	4822 050 21003	10K00	1%	0,6W

ELECTRICAL PARTSLIST - MONO2 BOARD

RESISTORS					RESISTORS				
3584	4822 050 21003	10K00	1%	0,6W	3664	4822 117 12955	2K7	1%	0,1W 0805
3585	4822 117 11139	1K5	1%	0,1W	3665	4822 051 20562	5K6	5%	0,1W 0805
3586	4822 117 11139	1K5	1%	0,1W	3666	4822 051 20562	5K6	5%	0,1W 0805
3587	4822 051 20392	3K9	5%	0,1W	3667	4822 117 12955	2K7	1%	0,1W 0805
3588	4822 116 52276	3K9	5%	0,5W	3668	4822 117 12955	2K7	1%	0,1W 0805
3589	4822 117 10833	10K	1%	0,1W	3669	4822 051 20562	5K6	5%	0,1W 0805
3590	4822 117 10833	10K	1%	0,1W	3670	4822 051 20562	5K6	5%	0,1W 0805
3591	4822 117 10837	100K	1%	0,1W	3671	4822 117 10834	47K	1%	0,1W
3592	4822 117 10837	100K	1%	0,1W	3672	4822 117 10834	47K	1%	0,1W
3593	4822 051 20472	4K70	5%	0,1W	3673	4822 117 11449	2K2	1%	0,1W
3594	4822 051 20472	4K70	5%	0,1W	3674	4822 117 11449	2K2	1%	0,1W
3595	4822 051 20472	4K70	5%	0,1W	3675	4822 051 20101	100R	5%	0,1W
3596	4822 051 20472	4K70	5%	0,1W	3676	4822 051 20101	100R	5%	0,1W
3601	4822 051 20101	100R00	5%	0,1W	3677	4822 117 10834	47K	1%	0,1W
3602	4822 051 20101	100R00	5%	0,1W	3678	4822 117 10834	47K	1%	0,1W
3603	4822 117 10837	100K	1%	0,1W	3679	4822 117 11449	2K2	1%	0,1W
3604	4822 117 10837	100K	1%	0,1W	3680	4822 117 11449	2K2	1%	0,1W
3605	4822 117 11383	12K	1%	0,1W	3681	4822 051 20101	100R	5%	0,1W
3606	4822 117 11383	12K	1%	0,1W	3682	4822 051 20101	100R	5%	0,1W
3607	4822 051 20333	33K00	5%	0,1W	3683	4822 117 10834	47K	1%	0,1W
3608	4822 051 20333	33K00	5%	0,1W	3684	4822 117 10834	47K	1%	0,1W
3609	4822 051 20121	120R00	5%	0,1W	3685	4822 117 11449	2K2	1%	0,1W
3610	4822 051 20121	120R00	5%	0,1W	3686	4822 117 11449	2K2	1%	0,1W
3611	4822 117 10834	47K	1%	0,1W	3687	4822 051 20101	100R	5%	0,1W
3612	4822 117 10834	47K	1%	0,1W	3688	4822 051 20101	100R	5%	0,1W
3613	4822 051 20471	470R00	5%	0,1W	3689	4822 117 11449	2K2	1%	0,1W
3614	4822 051 20471	470R00	5%	0,1W	3690	4822 117 11449	2K2	1%	0,1W
3615	4822 051 20471	470R00	5%	0,1W	3691	4822 116 52256	2K2	5%	0,5W
3616	4822 051 20471	470R00	5%	0,1W	3692	4822 117 11449	2K2	1%	0,1W
3618	4822 117 10834	47K	1%	0,1W	3693	4822 117 11449	2K2	1%	0,1W
3619	4822 117 10834	47K	1%	0,1W	3694	4822 116 52256	2K2	5%	0,5W
3620	4822 116 52175	100E	5%	0,5W	3695	4822 117 13579	220K	1%	0,1W
3621	4822 051 20101	100R00	5%	0,1W	3696	4822 117 10833	10K	1%	0,1W
3622	4822 051 20121	120R00	5%	0,1W	3697	4822 116 52257	22K	5%	0,5W
3623	4822 051 20121	120R00	5%	0,1W	3698	4822 117 13579	220K	1%	0,1W
3627 ▲	4822 052 10109	10R	5%	0,33W	3699	4822 117 10833	10K	1%	0,1W
3629 ▲	4822 052 10109	10R	5%	0,33W	3700	4822 051 20223	22K	5%	0,1W
3630	4822 050 11002	1K00	1%	0,4W	3801	4822 117 12521	68R	1%	0,1W
3631	4822 050 11002	1K00	1%	0,4W	3802	4822 117 12521	68R	1%	0,1W
3632	4822 050 11002	1K00	1%	0,4W	3803	4822 117 12521	68R	1%	0,1W
3633	4822 051 10102	1K00	2%	0,25W	3804	4822 117 12521	68R	1%	0,1W
3634	4822 051 10102	1K00	2%	0,25W	3805	4822 051 10102	1K	2%	0,25W
3635	4822 051 10102	1K00	2%	0,25W	3806	4822 051 10102	1K	2%	0,25W
3636	4822 051 20471	470R	5%	0,1W	3809	4822 051 20109	10R	5%	0,1W
3637	4822 051 20471	470R	5%	0,1W	3810	4822 117 11449	2K2	1%	0,1W
3641	4822 117 10837	100K	1%	0,1W	3811	4822 051 20109	10R	5%	0,1W
3642	4822 117 10837	100K	1%	0,1W	3812	4822 051 20471	470R	5%	0,1W
3643	4822 117 10837	100K	1%	0,1W	3813	4822 051 20121	120R	5%	0,1W
3644	4822 117 10837	100K	1%	0,1W	3814	4822 051 20109	10R	5%	0,1W
3645	4822 117 11148	56K	1%	0,1W	3815	4822 117 12521	68R	1%	0,1W
3646	4822 117 11148	56K	1%	0,1W	3816	4822 117 12521	68R	1%	0,1W
3649	4822 117 10837	100K	1%	0,1W	3817	4822 117 11504	270R	1%	0,1W
3650	4822 117 10837	100K	1%	0,1W	3818	4822 117 11503	220R	1%	0,1W
3651	4822 117 11148	56K	1%	0,1W	3819	4822 051 20109	10R	5%	0,1W
3652	4822 117 11148	56K	1%	0,1W	3820	4822 053 10101	100R	5%	1W
3655	4822 117 10837	100K	1%	0,1W	3821	4822 053 10101	100R	5%	1W
3656	4822 117 10837	100K	1%	0,1W	3831	4822 051 20101	100R	5%	0,1W
3657	4822 117 11148	56K	1%	0,1W	3832	4822 051 20479	47R	5%	0,1W
3658	4822 117 11148	56K	1%	0,1W	3834	4822 051 20101	100R	5%	0,1W
3659	4822 117 12955	2K7	1%	0,1W 0805	3851	4822 051 20332	3K3	5%	0,1W
3660	4822 117 12955	2K7	1%	0,1W 0805	3852	4822 051 20223	22K	5%	0,1W
3661	4822 051 20562	5K6	5%	0,1W 0805	3853	4822 117 11148	56K	1%	0,1W
3662	4822 051 20562	5K6	5%	0,1W 0805	3854	4822 051 20472	4K70	5%	0,1W
3663	4822 117 12955	2K7	1%	0,1W 0805	3855	4822 116 83876	270R	5%	0,5W
					3856	4822 117 11504	270R	1%	0,1W

ELECTRICAL PARTSLIST - MONO2 BOARD

RESISTORS					RESISTORS				
3857	4822 117 10837	100K	1%	0,1W	3947	4822 051 20471	470R00	5%	0,1W
3858	4822 117 10837	100K	1%	0,1W	3948	4822 117 11503	220R	1%	0,1W
3859	4822 117 10833	10K	1%	0,1W	3949	4822 117 11503	220R	1%	0,1W
3860	4822 117 10833	10K	1%	0,1W	3950	4822 051 20182	1K80	5%	0,1W
3871	4822 051 20332	3K30	5%	0,1W	3951	4822 051 20182	1K80	5%	0,1W
3872	4822 051 20332	3K30	5%	0,1W	3952	4822 051 20101	100R00	5%	0,1W
3873	4822 051 10102	1K00	2%	0,25W	3953	4822 051 20101	100R00	5%	0,1W
3874	4822 051 10102	1K00	2%	0,25W	3954	4822 051 20101	100R00	5%	0,1W
3875	4822 051 20332	3K30	5%	0,1W	3955	4822 051 20101	100R00	5%	0,1W
3877	4822 051 10102	1K00	2%	0,25W	4251	4822 051 20008	0R00 JUMP.	(0805)	
3878	4822 051 10102	1K00	2%	0,25W	4252	4822 051 20008	0R00 JUMP.	(0805)	
3879	4822 051 20332	3K30	5%	0,1W	4253	4822 051 20008	0R00 JUMP.	(0805)	
3880	4822 051 20332	3K30	5%	0,1W	4256	4822 051 20008	0R00 JUMP.	(0805)	
3881	4822 051 10102	1K00	2%	0,25W	4258	4822 051 20008	0R00 JUMP.	(0805)	
3882	4822 051 10102	1K00	2%	0,25W	4259	4822 051 20008	0R00 JUMP.	(0805)	
3883	4822 117 11383	12K	1%	0,1W	4260	4822 051 20008	0R00 JUMP.	(0805)	
3884	4822 117 11383	12K	1%	0,1W	4283	4822 051 20008	0R00 JUMP.	(0805)	
3885	4822 117 11383	12K	1%	0,1W	4284	4822 051 20008	0R00 JUMP.	(0805)	
3886	4822 117 11383	12K	1%	0,1W	4285	4822 051 20008	0R00 JUMP.	(0805)	
3887	4822 117 11383	12K	1%	0,1W	4287	4822 051 20008	0R00 JUMP.	(0805)	
3888	4822 117 11383	12K	1%	0,1W	4320	4822 051 20008	0R00 JUMP.	(0805)	
3889	4822 117 11449	2K2	1%	0,1W	4506	4822 051 20008	0R00 JUMP.	(0805)	
3890	4822 117 11449	2K2	1%	0,1W	4513	4822 051 20008	0R00 JUMP.	(0805)	
3901 ▲	4822 052 10479	47R00	5%	0,33W	4514	4822 051 20008	0R00 JUMP.	(0805)	
3902	4822 117 11148	56K	1%	0,1W	4515	4822 051 20008	0R00 JUMP.	(0805)	
3903	4822 117 10834	47K	1%	0,1W	4516	4822 051 20008	0R00 JUMP.	(0805)	
3904	4822 116 83884	47K	5%	0,5W	4517	4822 051 20008	0R00 JUMP.	(0805)	
3905	4822 050 24708	4R70	1%	0,6W	4518	4822 051 20008	0R00 JUMP.	(0805)	
3906	4822 117 11148	56K	1%	0,1W	4519	4822 051 20008	0R00 JUMP.	(0805)	
3907	4822 116 83961	6K8	5%		4520	4822 051 20008	0R00 JUMP.	(0805)	
3908	4822 051 20182	1K80	5%	0,1W	4521	4822 051 20008	0R00 JUMP.	(0805)	
3909	4822 116 83961	6K8	5%		4522	4822 051 20008	0R00 JUMP.	(0805)	
3910	4822 050 24708	4R70	1%	0,6W	4523	4822 051 20008	0R00 JUMP.	(0805)	
3911	4822 117 11148	56K	1%	0,1W	4524	4822 051 20008	0R00 JUMP.	(0805)	
3913	4822 051 20182	1K80	5%	0,1W	4526	4822 051 20008	0R00 JUMP.	(0805)	
3914	4822 117 11148	56K	1%	0,1W	4528	4822 051 20008	0R00 JUMP.	(0805)	
3915 ▲	4822 052 10479	47R00	5%	0,33W	4529	4822 051 20008	0R00 JUMP.	(0805)	
3916 ▲	4822 053 10478	4R70	5%	1W	4530	4822 051 20008	0R00 JUMP.	(0805)	
3917	4822 051 20333	33K00	5%	0,1W	4531	4822 051 20008	0R00 JUMP.	(0805)	
3918	4822 117 11503	220R	1%	0,1W	4532	4822 051 20008	0R00 JUMP.	(0805)	
3919 ▲	4822 053 10478	4R70	5%	1W	4533	4822 051 20008	0R00 JUMP.	(0805)	
3920	4822 117 10837	100K	1%	0,1W	4537	4822 051 20008	0R00 JUMP.	(0805)	
3921	4822 051 20182	1K80	5%	0,1W	4538	4822 051 20008	0R00 JUMP.	(0805)	
3922	4822 051 20182	1K80	5%	0,1W	4539	4822 051 20008	0R00 JUMP.	(0805)	
3925	4822 117 10833	10K	1%	0,1W	4540	4822 051 20008	0R00 JUMP.	(0805)	
3926 ▲	4822 117 11342	0R33	5%	2W	4541	4822 051 20008	0R00 JUMP.	(0805)	
3927 ▲	4822 117 11342	0R33	5%	2W	4542	4822 051 20008	0R00 JUMP.	(0805)	
3928	4822 117 11139	1K5	1%	0,1W	4543	4822 051 20008	0R00 JUMP.	(0805)	
3929	4822 117 11139	1K5	1%	0,1W	4544	4822 051 20008	0R00 JUMP.	(0805)	
3930 ▲	4822 117 11342	0R33	5%	2W	4545	4822 051 20008	0R00 JUMP.	(0805)	
3931 ▲	4822 117 11342	0R33	5%	2W	4548	4822 051 20008	0R00 JUMP.	(0805)	
3932 ▲	4822 117 11342	0R33	5%	2W	4550	4822 051 20008	0R00 JUMP.	(0805)	
3933 ▲	4822 117 11342	0R33	5%	2W	4551	4822 051 20008	0R00 JUMP.	(0805)	
3934	4822 051 10102	1K00	2%	0,25W	4552	4822 051 20008	0R00 JUMP.	(0805)	
3935	4822 051 10102	1K00	2%	0,25W	4553	4822 051 20008	0R00 JUMP.	(0805)	
3936	4822 117 10837	100K	1%	0,1W	4555	4822 051 20008	0R00 JUMP.	(0805)	
3937	4822 117 10833	10K	1%	0,1W	4556	4822 051 20008	0R00 JUMP.	(0805)	
3938	4822 117 11449	2K2	1%	0,1W	4557	4822 051 20008	0R00 JUMP.	(0805)	
3939	4822 117 11449	2K2	1%	0,1W	4558	4822 051 20008	0R00 JUMP.	(0805)	
3940	4822 117 11503	220R	1%	0,1W	4559	4822 051 20008	0R00 JUMP.	(0805)	
3941	4822 117 11503	220R	1%	0,1W	4560	4822 051 20008	0R00 JUMP.	(0805)	
3943	4822 051 20223	22K00	5%	0,1W	4564	4822 051 20008	0R00 JUMP.	(0805)	
3944	4822 117 11503	220R	1%	0,1W	4565	4822 051 20008	0R00 JUMP.	(0805)	
3945	4822 117 11503	220R	1%	0,1W	4566	4822 051 20008	0R00 JUMP.	(0805)	
3946	4822 051 20471	470R00	5%	0,1W	4642	4822 051 20008	0R00 JUMP.	(0805)	

ELECTRICAL PARTSLIST - MONO2 BOARD**RESISTORS**

4644	4822 051 20008	0R00 JUMP. (0805)
4651	4822 051 20008	0R00 JUMP. (0805)
4652	4822 051 20008	0R00 JUMP. (0805)
4653	4822 051 20008	0R00 JUMP. (0805)
4832	4822 051 20008	0R00 JUMP. (0805)

4835	4822 051 20008	0R00 JUMP. (0805)
4901	4822 051 20008	0R00 JUMP. (0805)
4902	4822 051 20008	0R00 JUMP. (0805)
4903	4822 051 20008	0R00 JUMP. (0805)
4904	4822 051 20008	0R00 JUMP. (0805)

4905	4822 051 20008	0R00 JUMP. (0805)
4913	4822 051 20008	0R00 JUMP. (0805)
4917	4822 051 20008	0R00 JUMP. (0805)
4918	4822 051 20008	0R00 JUMP. (0805)
4920	4822 051 20008	0R00 JUMP. (0805)

4921	4822 051 20008	0R00 JUMP. (0805)
4922	4822 051 20008	0R00 JUMP. (0805)
4923	4822 051 20008	0R00 JUMP. (0805)
4924	4822 051 20008	0R00 JUMP. (0805)
4925	4822 051 20008	0R00 JUMP. (0805)

FILTERS

5301	4822 157 70599	COIL
5303	4822 157 70599	COIL
5305	4822 157 70599	COIL
5901	4822 157 62255	COIL
5902	4822 157 62255	COIL

DIODES

6251	4822 130 82078	D5SBA20
6253	4822 130 82078	D5SBA20
6255	4822 130 30621	1N4148
6256	4822 130 30621	1N4148
6257	4822 130 31878	1N4003G

6258	4822 130 31878	1N4003G
6259	4822 130 31878	1N4003G
6260	4822 209 33575	L7812CP
6261	4822 130 31878	1N4003G
6262	4822 130 31878	1N4003G

6263	4822 130 31878	1N4003G
6264	4822 130 34173	BZX79-B5V6
6266	4822 130 34281	BZX79-B15
6267	4822 209 31841	L7805CP
6268	4822 130 31878	1N4003G

6270	4822 130 34278	BZX79-B6V8
6271	4822 130 30621	1N4148
6276	4822 130 34173	BZX79-B5V6
6279	4822 130 30621	1N4148
6280	4822 130 61219	BZX79-B10

6281	4822 130 34441	BZX79-B22
6289	4822 130 83757	BAS216
6290	4822 130 83757	BAS216
6301	4822 130 30862	BZX79-B9V1
6302	4822 130 30862	BZX79-B9V1

6303	4822 130 30621	1N4148
6304	4822 130 11411	BZX284-C3V3
6305	4822 130 83757	BAS216
6501	4822 130 30621	1N4148
6601	4822 130 30621	1N4148

6602	4822 130 30621	1N4148
6641	4822 130 83757	BAS216
6642	4822 130 30621	1N4148
6643	4822 130 30621	1N4148
6644	4822 130 30621	1N4148

6645	4822 130 30621	1N4148
6646	4822 130 83757	BAS216

DIODES

6647	4822 130 83757	BAS216
6648	4822 130 83757	BAS216
6649	4822 130 31878	1N4003G
6650	4822 130 61219	BZX79-B10
6801	4822 130 34278	BZX79-B6V8

6802	4822 130 34278	BZX79-B6V8
6803	4822 130 34278	BZX79-B6V8
6804	4822 130 34278	BZX79-B6V8
6805	4822 130 34278	BZX79-B6V8
6806	4822 130 34278	BZX79-B6V8

6807	4822 130 34278	BZX79-B6V8
6808	4822 130 34278	BZX79-B6V8
6809	4822 130 30621	1N4148
6810	4822 130 34233	BZX79-B5V1
6811	4822 130 34382	BZX79-B8V2

6831	4822 130 30621	1N4148
6832	4822 130 30621	1N4148
6901	4822 130 83757	BAS216
6903	4822 130 11047	BZX284-C9V1
6904	4822 130 83757	BAS216

6905	4822 130 11047	BZX284-C9V1
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TRANSISTORS

7251	9322 139 22687	BD242BFP
7252	4822 130 60511	BC847B
7253	4822 130 60511	BC847B
7254	4822 130 60511	BC847B
7255	4822 130 60373	BC856B

7256	4822 130 60511	BC847B
7257	4822 130 41246	BC327-25
7258	4822 130 41246	BC327-25
7259	4822 130 60511	BC847B
7260	5322 130 60159	BC846B

7261	4822 130 60373	BC856B
7302	4822 209 17507	STK496-630
7304	5322 130 60159	BC846B
7305	5322 130 60159	BC846B
7306	5322 130 60159	BC846B

7307	5322 130 60159	BC846B
7309	4822 130 60373	BC856B
7310	4822 130 60511	BC847B
7501	4822 209 72748	LC7821
7503	4822 209 83357	NJM4560M

7504	4822 209 83357	NJM4560M
7571	4822 209 70157	NJM4560DD
7572	4822 209 72748	LC7821
7601	4822 209 31378	NJM4556MB
7621	4822 130 42615	BC817-40

7622	4822 130 42615	BC817-40
7641	4822 209 17386	TDA7437T
7642	4822 209 17386	TDA7437T
7643	4822 209 17386	TDA7437T
7644	4822 130 40855	BC337

7651	4822 130 42615	BC817-40
7652	4822 130 42615	BC817-40
7653	4822 130 42615	BC817-40
7654	4822 130 42615	BC817-40
7655	4822 130 42615	BC817-40

7656	4822 130 42615	BC817-40
7657	4822 130 60373	BC856B
7658	4822 130 60373	BC856B
7660	4822 209 83357	NJM4560M
7661	4822 130 42615	BC817-40

7662	4822 130 42615	BC817-40
7801	4822 130 60511	BC847B

ELECTRICAL PARTSLIST - MONO2 BOARD

TRANSISTORS

7802	4822 130 44568	BC557B
7803	4822 209 16886	STV6401
7902	5322 130 60159	BC846B
7903	5322 130 60159	BC846B
7904	5322 130 60159	BC846B
7905	4822 209 17384	STK411-230E
7908	4822 130 60373	BC856B
7909	4822 130 60511	BC847B
7910	9322 139 22687	BD242BFP