Receiver 70FR060

/00U/01U/01X/02U/05U/10U

Service
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Service Manual

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PHILIPS

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PCS 57 926

SPECIFICATION

General:

Mains voltage	:230V ±10% 50Hz	for/00/02/14
	:240V ±10% 50Hz	for/05
	:120/230V ±15% 50Hz/60Hz	for/01
	:230V ±15% 50Hz	for/14
	:230V-240V ±10% 50Hz	for/10
	:120V ±10% 60Hz	for/17
Power consumption	:≤ 150W at 2x30W output power	
	:≤ 20W at stand by	
External supply	:For CCD60	
Timer setting	:Timer / clock	
Remarks time setting	:AM/PM/24 hours	
Slumber time setting	:10 - 30 - 60 minutes	
Volume control wake signal	:Yes	
Mains breakdown buffer	:4,5V for 1 year	
Alarm	:Tuner/CD/Cassette/DCC/Buzzer	
Alarm setting	:2 + News (only for Tuner)	
Battery	:3 x R6	
Dimensions:(wxhxd)	:260x172,5x254 mm	
Special features	:1 x 5 band spectrum analyser in FTD display	
	:1 x 5 band equaliser: -5 free memories in presets	
	-5 fixed (classic-vocal-rock-jazz-disco)	
	-1 flat	
	:Surround switch	

Amplifier:

Output power &	:≥2X30W at 6Ω D≤10% (EIAJ)	±0,5dB for/01/10/14
Distortion (D)	:2x22W at 8Ω D=≤0,7%(IEC)	
Sign.Noise:		
Phone input	:≥73dB (A-curve weighted)	
(IEC at Prated and Rsource=2k2)		
Other inputs	;≥75dB (A-curve weighted)	
(IEC at Prated and Rsource=22k)		
Crosstalk :		
Between stereo channels	:≥50dB (100Hz.....10kHz)	
source	:≥50dB (100Hz.....10kHz)	
Headphone	:3,5mm stereo jack	
Output voltage	:5V EMF at 22W/8Ω ±1dB	
Output impedance	:120Ω ±10%	
Frequency response:		
linear inputs	:40Hz -20kHz ±3dB	
phone	:40Hz -18kHz ±3dB	
Tone controle:		
Equaliser 2x5 band	:160Hz - 400Hz -1kHz -2,5kHz -6,3kHz	
	+10dB to -10dB in steps of ±2dB	
DBB(volume ≤-40dB ±2dB at 100Hz)	:+10dB (±2dB)	
Input sensitivity		
for 22W/8Ω ±1dB	:AUX 250mV Ri ≥ 20kΩ	
	:CD 350mV Ri ≥ 20kΩ	
	:Tape 350mV Ri ≥ 20kΩ	
	:DCC 500mV Ri ≥ 20kΩ	
	:Phone/MM 2,5mV Ri ≥ 47kΩ/220pf	
Output voltage	:Tape 250mV Ro < 2k5	
	:DCC 250mV Ro < 2k5	

Tuner: FM Part

Tuning range		: 87,5MHz to 108MHz : 65,81MHz to 74MHz and 87,7MHz to 108MHz only/14 : 76MHz to 90MHz only/06
Aerial input		: 75Ω coaxiaal
IF		: 10,7MHz ±25kHz
Sensitivity	mono	: 1,1µV 26dB S/R
	stereo	: 30 µV 50dB S/R
Selectivity		: 50 dB at 300kHz
Channel separation		: 40 dB (1kHz Mod.)
Distortion THD	mono	: 0,5 %
	stereo	: 0,7 %
Signal/noise ratio	mono	: 72 dB IEC weighted
	stereo	: 68 dB " "

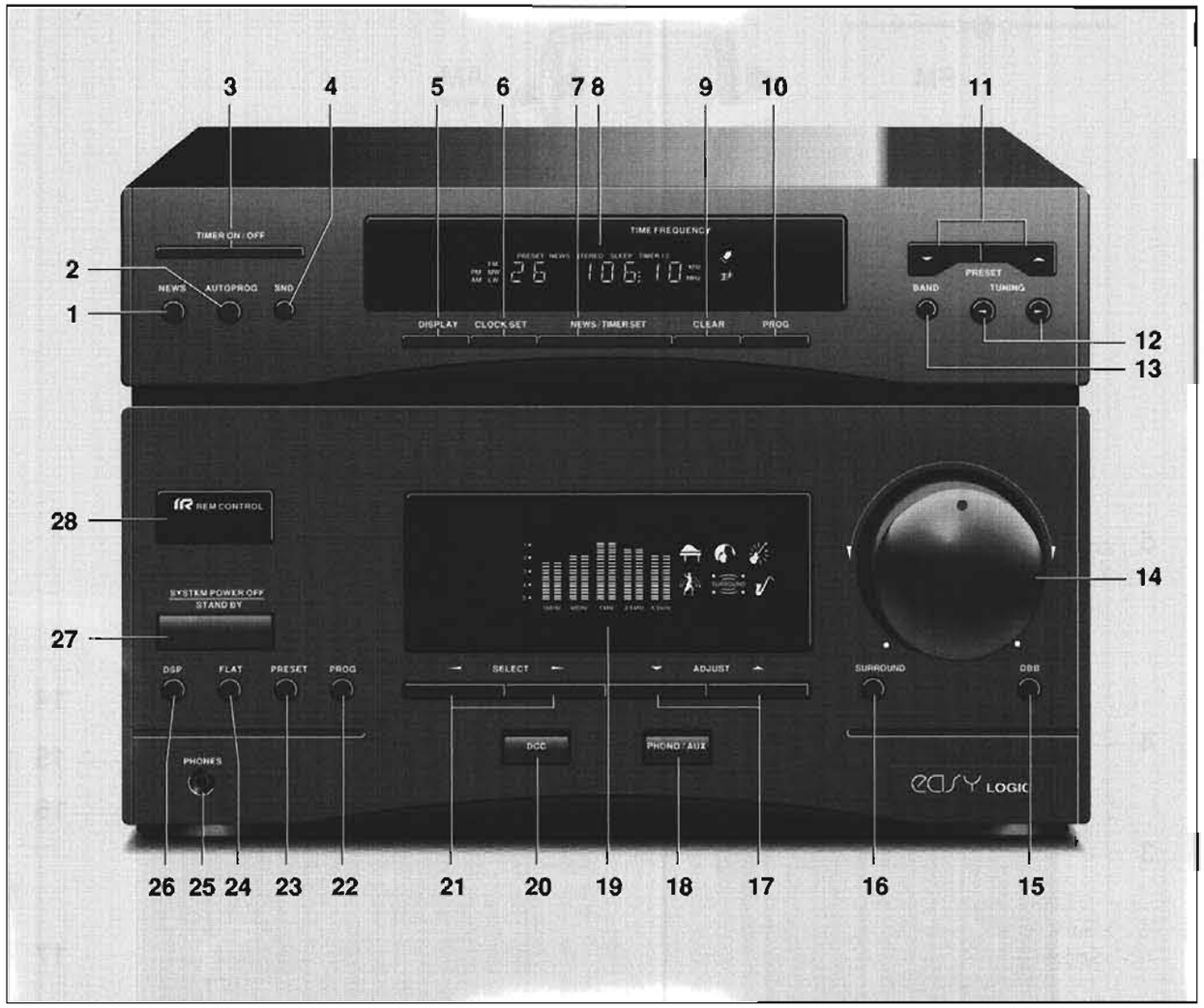
AM PART

Tuning range	MW	: 522kHz to 1611kHz : 522kHz to 1629kHz only/06 : 530kHz to 1710kHz only/17 : 530kHz to 1710kHz or 522kHz to 1611kHz only/01
	LW	: 153kHz to 279kHz
Aerial input		: Frame aerial
IF		: 450kHz ±1kHz
FM Search Scan		: 2 switcheable levels
Sensitivity	MW 558kHz	: 2mV/m
for 26dB S/R	1494kHz	: 1,5mV/m
	LW 155kHz	: 4mV/m
	270kHz	: 2,5mV/m
Selectivity		: 30dB at 9kHZ
Suppression	IF	: 60dB

Digital Part

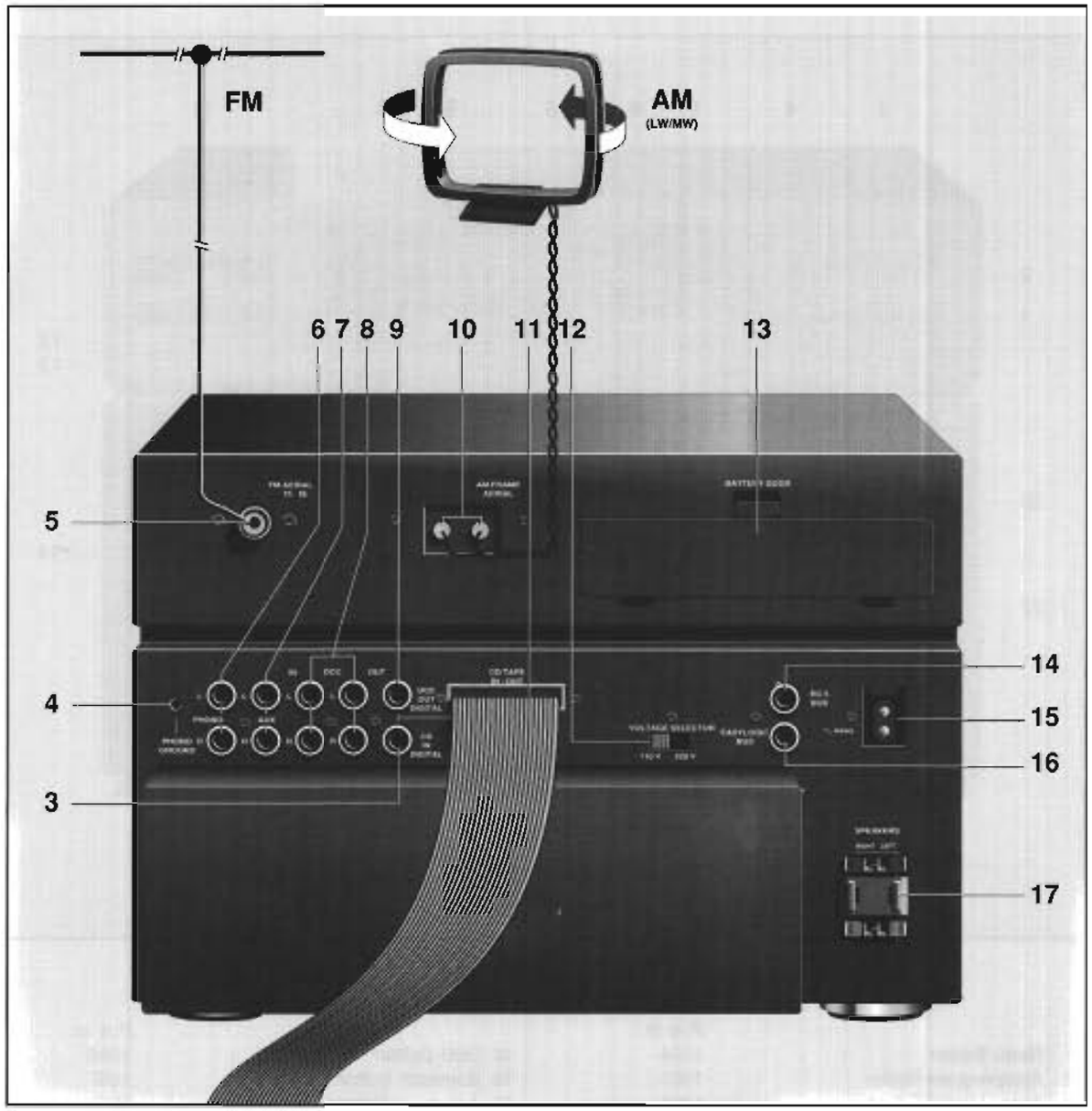
Switcheable	FM	: 50kHz :100kHz only/06/17 : 30kHz or 50kHz only/14
	MW	: 9kHz : 10kHz only/17 : 9kHz (Range 522-1611) only/14 : 10kHz (Range 530-1710) only/14
	LW	: 3kHz
Presets	FM/MW/LW	: 30 random

CONTROLS



		Pos nr.
1	News Button	1664
2	Autoprogram Button	1663
3	Timer ON/OFF Button	1665
4	Prog Button	1662
5	Display Button	1661
6	Clock Set Button	1660
7	News/Timer Set Button	1659
8	Display Tuner	1681
9	Mono Button	1657
10	Clear Button	1656
11	Preset Up Button	1650
	Down Button	1654
12	Tune Search UP Button	1651
	DOWN Button	1652
13	Band Button	1653
14	Volume Knob	3790
15	DBB Button	1666
16	Surround Button	1667
17	Adjust Up Button	1669
	Down Button	1670
18	Aux/Phono Button	1668
19	Display amplifier	1682
20	DCC Button	1678
21	Select Richt Button	1672
	Left Button	1671
22	Program Button (Equal)	1677
23	Preset Button (Equal)	1675
24	Flat Button	1674
25	Headphone socket	1710
26	SFC Button	1676
27	System OFF/STANDBY	1271
28	IR Eye	6652

CONNECTIONS



		Pos nr.			Pos nr.
3	CD In Digital	1463	11	CD/Tape In/Out	1458
4	Phono Ground		12	Voltage Selector	
5	FM Aerial	1110	13	Battery Compartment	
6	Phono In	1551	14	RC-5 Bus	1462
7	Aux In	1551	15	Mains Socket	1270
8	DCC In/Out	1551	16	Easy Logic Bus	1462
9	DCC Out Digital	1463	17	Speakers	1261
10	AM Frame aerial	1111			

DISMANTLING OF SOURCE SELECTOR

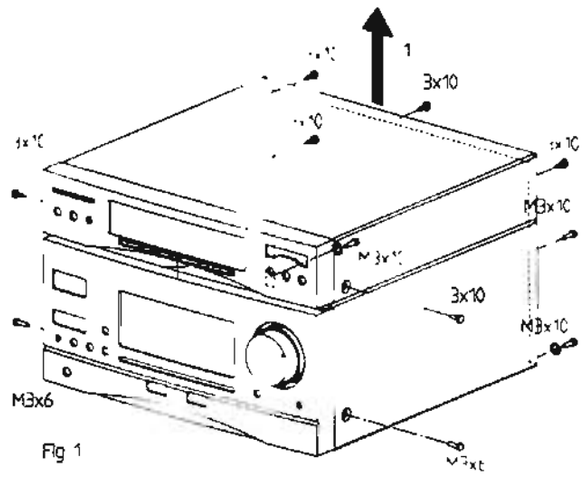


Fig 1

1 Remove 2x M3X6 screws
6x 3X10 screws
2x M3X10 screws with ring
1x M3X10 screw see fig 1
2 Remove cover as shown in fig 1 arrow 1

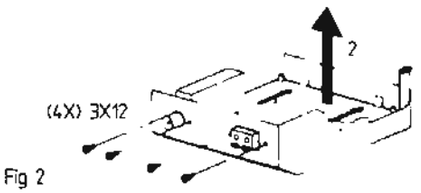


Fig 2

3 Remove 4x 3X12 screws see fig 2
4 Remove Tuner PCB as shown in fig 2 arrow 1-2

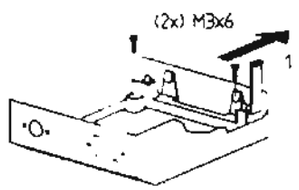


Fig 3

5 Remove 2x M3X6 screws see fig 3
6 Remove cover as shown in fig 3 arrow 1

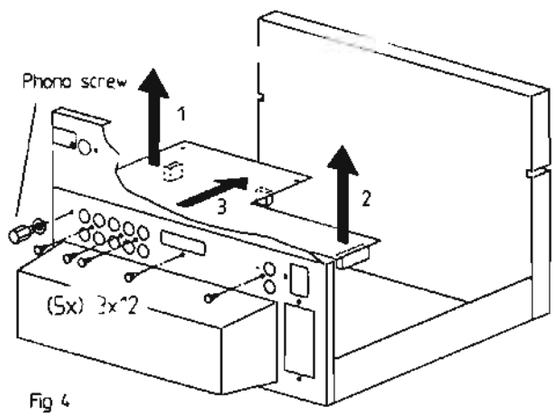


Fig 4

7 Remove 5x 3X12 screws
1x Phono ground screw see fig 4
8 Remove PCB as shown in fig 4 arrow 1 - 2 - 3

DISMANTLING OF FRONT & PCB

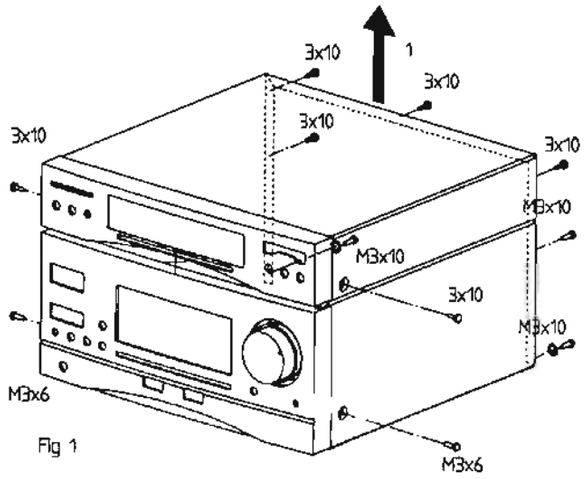


Fig 1

1 Remove 2x M3X6 screws
6x 3X10 screws
2x M3X10 screws with ring
1x M3X10 screw see fig 1
2 Remove cover as shown in fig 1 arrow 1

3 Remove power rod as shown in fig 2 arrow 4
4 Remove volume knob as shown in fig 2 arrow 1
5 Remove volume led as shown in fig 2 arrow 3
(puch snaps a littel open)
6 Remove nut M7X0,8 as shown in fig 2 arrow 2

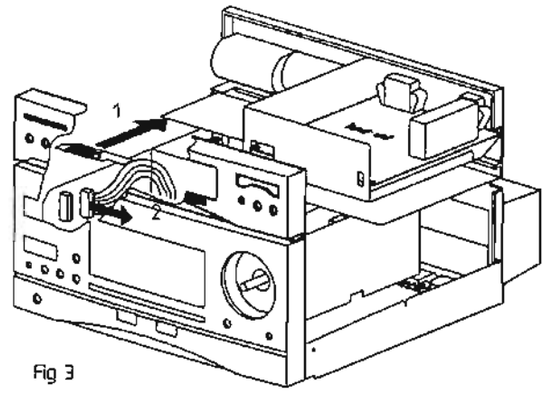


Fig 3

7 Remove lead assy as shown in fig 3 arrow 1 - 2

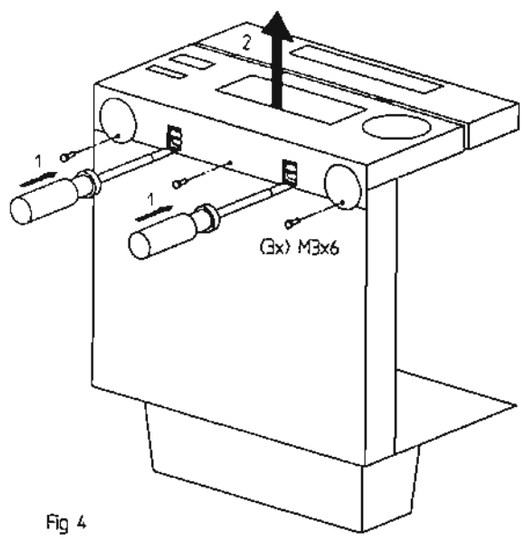


Fig 4

8 Remove 3x M3X6 screws see fig 4
9 Remove front as shown in fig 4 arrow 1 - 2

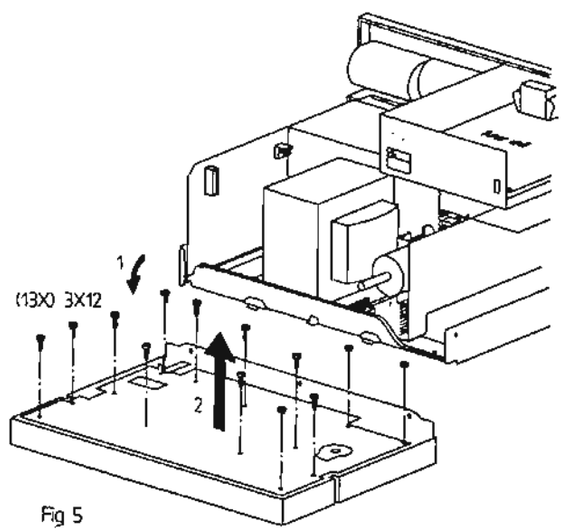


Fig 5

10 Tipp down front as shown in fig 5 arrow 1
11 Remove 13x 3X12 screws see fig 5
12 Remove PCB as shown in fig 5 arrow 2

DISMANTLING OF POWER PCB

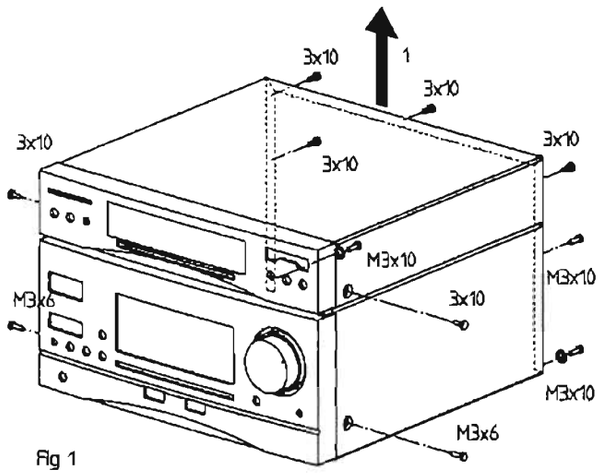


Fig 1

1 Remove 2x M3X6 screws
6x 3X10 screws
2x M3X10 screws with ring
1x M3X10 screw see fig 1
2 Remove cover as shown in fig 1 arrow 1

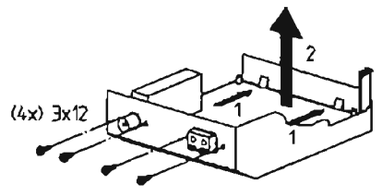


Fig 2

3 Remove 4x 3X12 screws see fig 2
4 Remove Tuner PCB as shown in fig 2 arrow 1-2

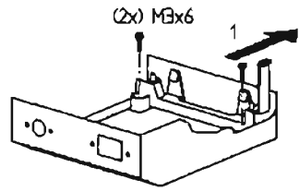


Fig 3

5 Remove 2x M3X6 screws see fig 3
6 Remove cover as shown in fig 3 arrow 1

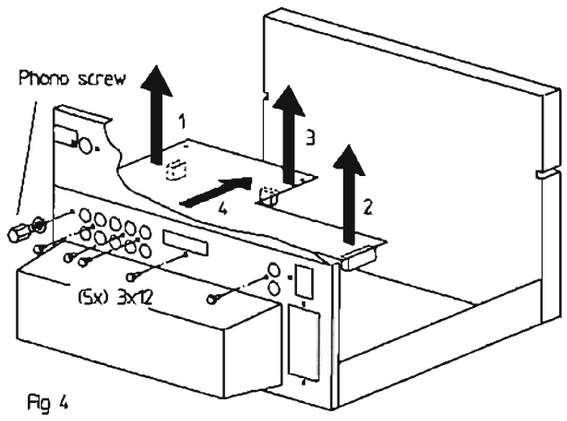


Fig 4

7 Remove 5x 3X12 screws
1x Phono ground screw see fig 4
8 Remove PCB as shown in fig 4 arrow 1 - 2 - 3

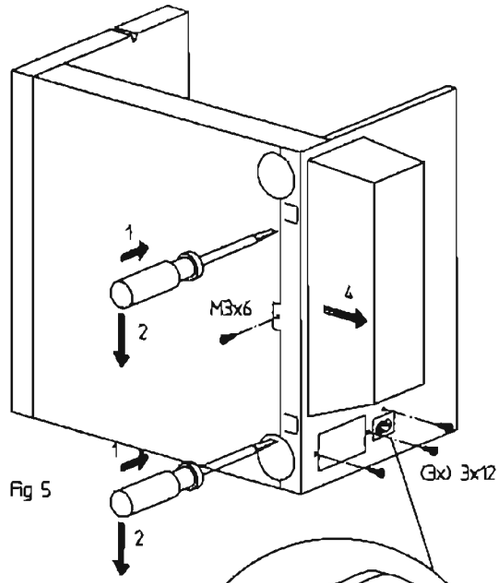


Fig 5

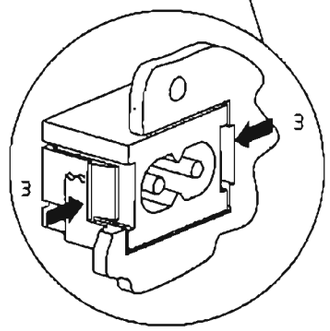


Fig 5a

9 Remove 1x M3X6 screw
3x 3X12 screws see fig 5
10 Remove backcover as shown in fig 5 arrow 1-2
To remove mainslet push snaps to inner side as shown fig 5a arrow 3
11 Remove backcover as shown in fig 5 arrow 4

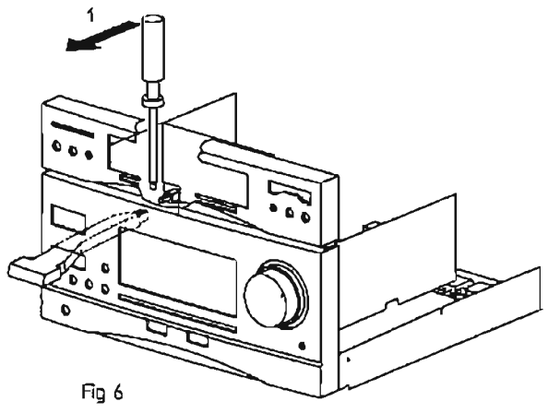


Fig 6

12 Remove power rod as shown in fig 6 arrow 1

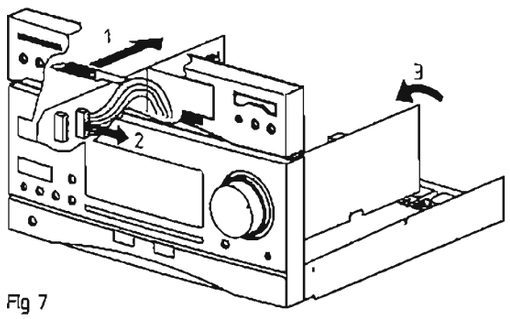


Fig 7

13 Remove lead assy as shown in fig 7 arrow 1 - 2
14 Make volume panel loose as shown in fig 7 arrow 3

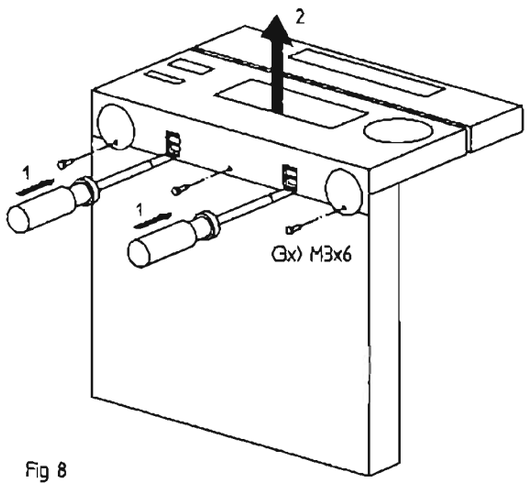


Fig 8

15 Remove 3x M3X6 screws see fig 8
16 Remove front as shown in fig 8 arrow 1 - 2

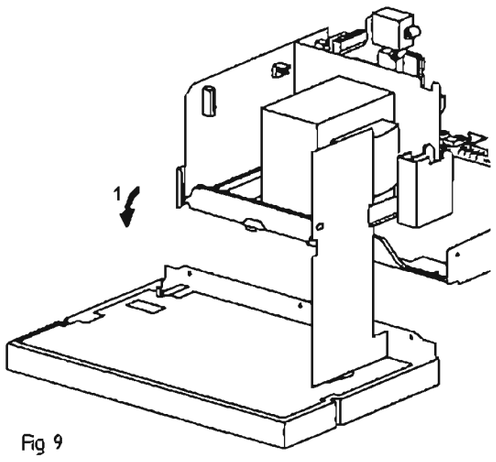


Fig 9

17 Tipp down front as show in fig 9 arrow 1

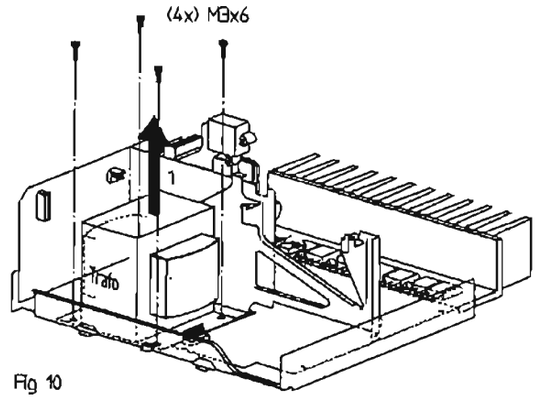


Fig 10

18 Remove 4x M3X6 screw see fig 10
19 Remove trafo as shown in fig 10 arrow 1

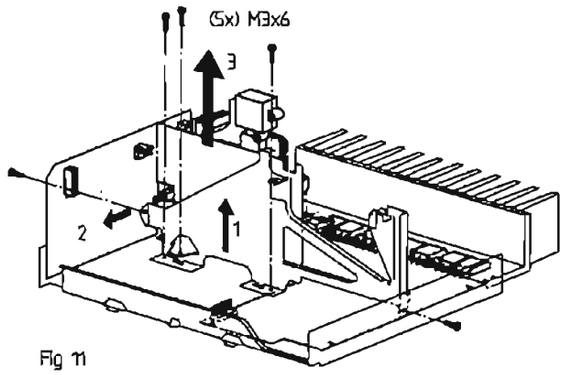


Fig 11

20 Remove 5x M3X6 screw see fig 11
21 Remove frame as shown In fig 11 arrow 1 - 2 - 3

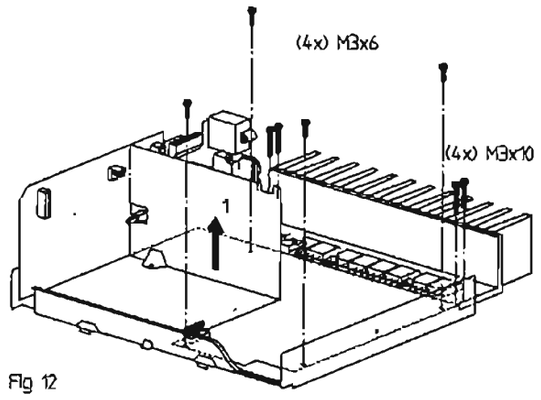


Fig 12

22 Remove 4x M3X10 screw
4x M3X6 screw see fig 12
23 Remove power PCB as shown in fig 12 arrow 1

SERVICE TEST PROGRAM

GENERAL

With this testprogramm the following parts can be checked.

1	Clock 8MHz	7	Spectrum
2	Clock 32kHZ	8	Eeprom clear
3	Key	9	Eeprom
4	Display	10	Source selection
5	Balance	11	Easylink
6	Volume		

To go in test mode press **DBB** and the **PHONO/AUX** switch at the same time when aplifier is switched on.
The display shows for 2 sec.the loaded versions from the µ processor,and then SERVICE.
AUX are selected

1 CLOCK 8MHz TEST :

-Press the **SFC** button to start this testprogram.

A signal of 3.9kHz is put on the buzzer output (IC7883 pin 4 port13).The display shows 8MHz
-To leave this test press **SFC** again,the display shows now SERVICE

2 CLOCK 32kHz TEST :

-Press the **CLOCK SET** button to start this testprogram.

A signal of 8 kHz is put on the buzzer output (IC7883 pin 4 port13).The display shows 32kHz
-To leave this test press **CLOCK SET** again,the display shows now SERVICE

3 KEY TEST :

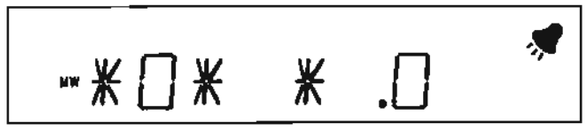
-Press the **FLAT** button to start this testprogram.

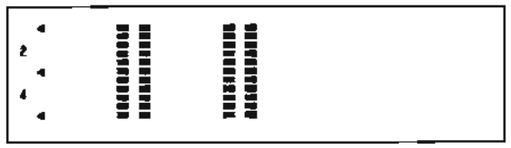
Press Button	Display Shows
SPC	KEY 17
PRESET	KEY 0E
PROGRAM	KEY 06
SELECT <	KEY 1E
SELECT >	KEY 1F
ADJUST DOWN	KEY 1B
ADJUST UP	KEY 1C
SURROUND	KEY 1A
DBB	KEY 19
DCC	KEY 07
PHONO/AUX	KEY 1D
NEWS	KEY 14
AUTOPROG	KEY 13
PROG	KEY 12
TIMER ON/OFF	KEY 15
DISPLAY	KEY 11
CLOCK SET	KEY 0D
NEWS/TIMER SET	KEY 0C
MONO	KEY 0A
CLEAR	KEY 09
BAND	KEY 04
TUNER <	KEY 03
TUNER >	KEY 02
PRESET DOWN	KEY 05
PRESET UP	KEY 01

-Press **FLAT** again, when the test is OK the dispay shows Key OK,otherwise Key ** .
-To leave this test press **FLAT** again,the display shows now SERVICE.

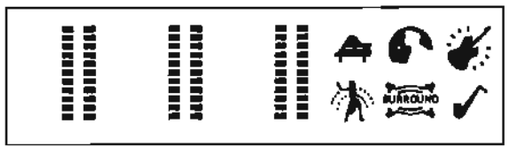
4 DISPLAY TEST :

-Press the **PRESET** button to start this testprogram.
The dispay shows now DISPLAY.
--Press **ADJUST UP** button.The display shows

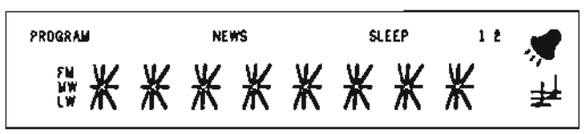


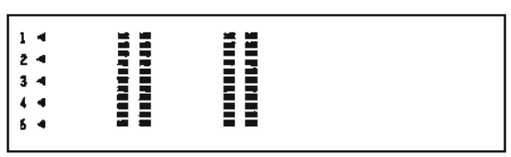


--Press again **ADJUST UP** button,the display shows now:



--Press again **ADJUST UP** button,the display shows now:





\+ DBB Led light
--Press again **ADJUST UP** button,the display light complitly up.
-To leave this test press **PRESET** button again,the display shows now SERVICE

5 BALANCE TEST :

-Press the **PROGAM** button to start this testprogram.
The dispay shows now DISPLAY:

--Press **ADJUST UP** button,after 8 times pressing this button the display shows :see fig a.
--Press **ADJUST DOWN** button,after 8 times pressing this button the display shows :see fig b.

Fig a

Fig b

-To leave this test press **PROGRAM** button again,the display shows now SERVICE

6 VOLUME TEST :

-Press the **SELECT <** button to start this testprogram.

The dispay shows now VOLUME.

--Press **ADJUST UP** button the volume turns clockwise
--Press **ADJUST DOWN** button the volume turns counter-clockwise
-To leave this test press **SELECT <** again,the display shows now SERVICE.

7 SPECTRUM TEST :

-Press the **SELECT >** button to start this testprogram.

The dispay shows now SPECTRUM.

--Press **ADJUST UP** button, one frequency band is select and this band is shows on display. SP - 6300 . Press again on the ADJUST UP button to scroll through this test.The display shows SP - 2500 SP - 1000
SP - 400 SP - 160
The first bar lights with ± 3mV on the aux input.
The 7 th bar lights with ± 20 mV on th aux input.
The 11 th bar lights with ± 100mV on the aux input

-To leave this test press **SELECT >** again,the display shows now SERVICE.

8 EEPROM CLEAR :

-Press the **ADJUST DOWN** button , the dispay shows CLR - PROM for 2 sec.With this test the eeprom is cleared automaticcally.

9 EEPROM TEST :

-Press the **ADJUST UP** button , the dispay shows PROM - OK for 2 sec. The eeprom is tested with an automatic write and read sequence.If a fault is found the dispay shows PROM - DEF .

10 SOURCE SELECTION TEST :

-Press the **DCC** button to start this testprogram.
The dispay shows now SOURCE.
–Press **ADJUST UP** button to select out the next source
TUNER TAPE CD PHONO AUX DCC

-To leave this test press **DCC** again,the display shows now SERVICE.

11 EASYLINK TEST :

-With this test the following are test:
--if both easylink IN and OUT are high
---if not the display shown **EAS-CON**
--the EasOut* port is put low and the EasIn* must follow
---if not the display shown **EAS-LOW**
--the EasOut* port is put High and the EasIn* must follow
---if not the display shown **EAS-HIGH**
*EasOut port=P50 pin75 IC7683
*EasIn port=P11 pin 2 IC7683

-Press the **TIMER ON/OFF** button to start this test:

The Easylink test is completed if the display shown after 2sec **EAS-OK**

SERVICE HINTS:

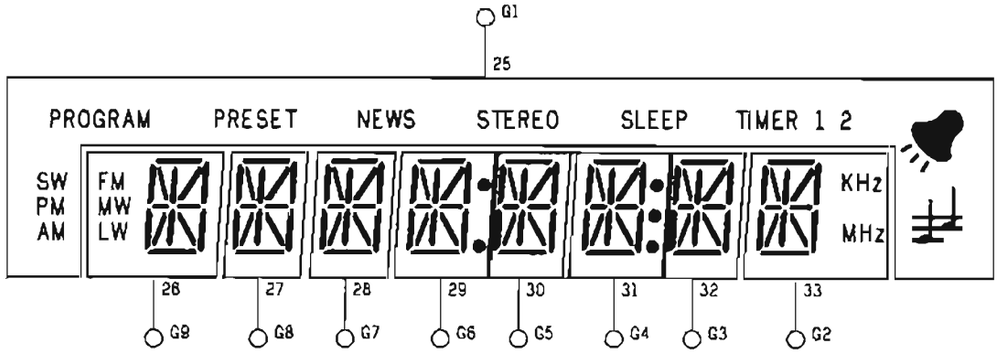
When the source selector panel is removed the power unit doesn't work amymore.
This can by helped in two ways.

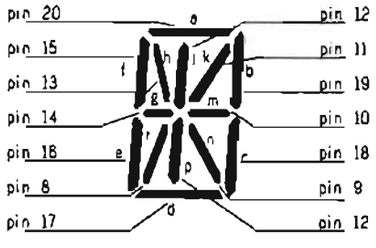
-Make a shortcircuit over diode 6282 (power unit)
or
-Connect the voltage +14V /massa/ -14V (plug 1280 power unit)back on the source selector panel(plug 1454 selector)

Trade Mode:

When through same reasen the trade mode is working it can be switched off as following
Switch power off.
Press DCC button and AUX/Phone button at the same time when you switch the power on.

GRID ASSIGMENT





PIN CONNECTION

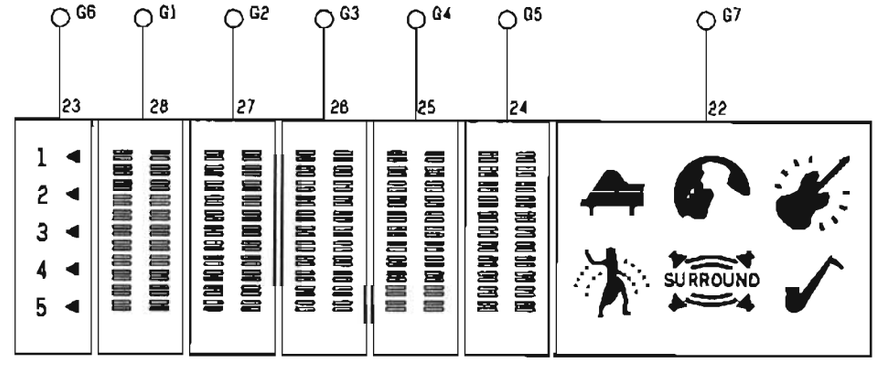
PIN NR	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01
CONNECTION	F2	F2	NP	NP	NC	2G	3G	4G	5G	6G	7G	8G	9G	1G	NC	NC	NC	NC	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	NP	NP	F1	F1

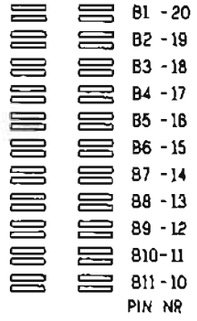
F1,F2-FILEMENT NP = NO PIN NC = NO CONNECTION 1G→9G = GRID

ANODE CONNECTION

	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	a	a	a	a	a	a	AM
P2	b	b	b	b	b	b	b	b	PM
P3	c	c	c	c	c	c	c	c	SW
P4	d	d	d	d	d	d	d	d	PROGRAM
P5	e	e	e	e	e	e	e	e	PRESET
P6	f	f	f	f	f	f	f	f	NEWS
P7	g	g	g	g	g	g	g	g	STEREO
P8	h	h	h	h	h	h	h	h	SLEEP
P9	j,p	j,p	j,p	j,p	j,p	j,p	j,p	j,p	TIMER
P10	k	k	k	k	k	k	k	k	1
P11	m	m	m	m	m	m	m	m	2
P12	n	n	n	n	n	n	n	n	
P13	r	r	r	r	r	r	r	r	
P14	FM	-	-	:	-	:	-	kHz	-
P15	MW	-	-	-	-	:	-	MHz	-
P16	LW	-	-	-	-	-	-	-	-

GRID ASSIGMENT





PIN CONNECTION

PIN NR	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01
CONNECTION	F1	F1	NP	G1	G2	G3	G4	G5	G6	G7	NC	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	NC	NC	NC	NC	NC	NC	NP	F2	F2

F1,F2-FILEMENT NP = NO PIN NC = NO CONNECTION 1G→7G = GRID

ANODE CONNECTION

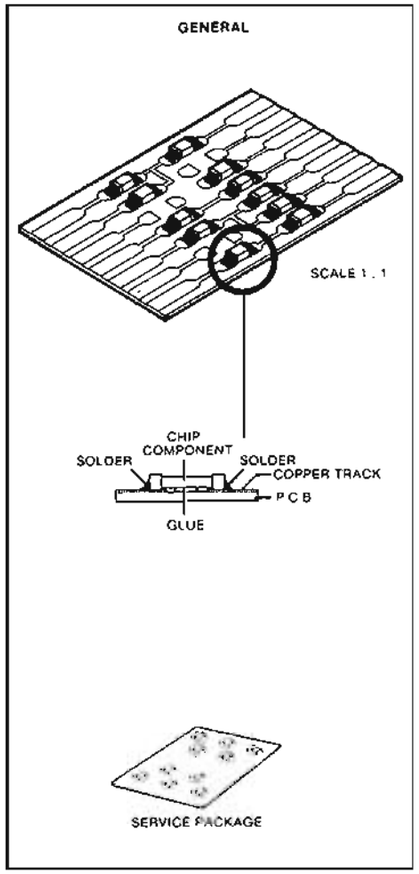
	1G	2G	3G	4G	5G	6G	7G
P1	B1	B1	B1	B1	B1	1	
P2	B2	B2	B2	B2	B2	2	
P3	B3	B3	B3	B3	B3	3	
P4	B4	B4	B4	B4	B4	4	
P5	B5	B5	B5	B5	B5	5	
P6	B6	B6	B6	B6	B6	◁(1)	
P7	B7	B7	B7	B7	B7	◁(2)	-
P8	B8	B8	B8	B8	B8	◁(3)	-
P9	B9	B9	B9	B9	B9	◁(4)	-
P10	B10	B10	B10	B10	B10	◁(5)	-
P11	B11	B11	B11	B11	B11	-	-

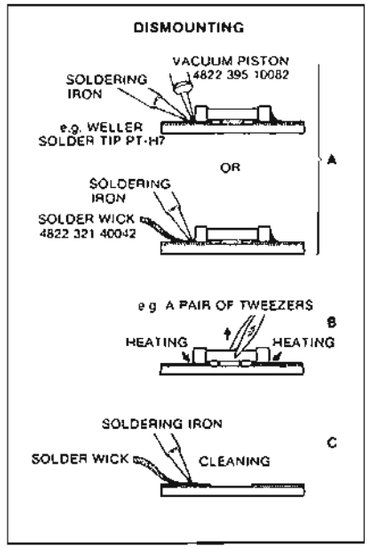
Quiescent Current

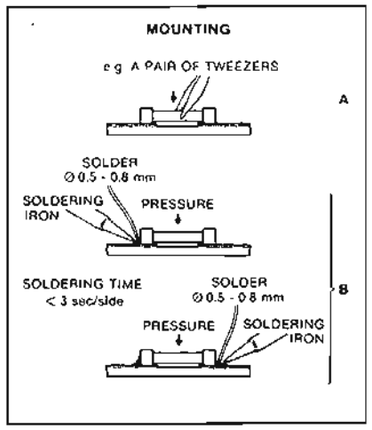
SK.... SWITCH	SIGNAL	TO	VOLUME	ADJUST	OSILLOSCOPE	D.C.METER INDICATOR
STAND - BY				L ch R 3285		L ch. DC 8 mV
				R ch. R 3284		R ch. DC 8 mV

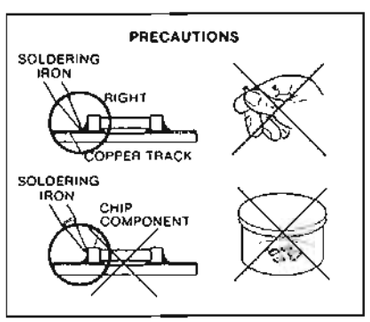
- Check for good thermal contact between power transistor and heatsink.
- Mains Voltage 220V /00 240V /05 5%
- Ambient themperature =20° 5° and heatsink must be atambient temperature.

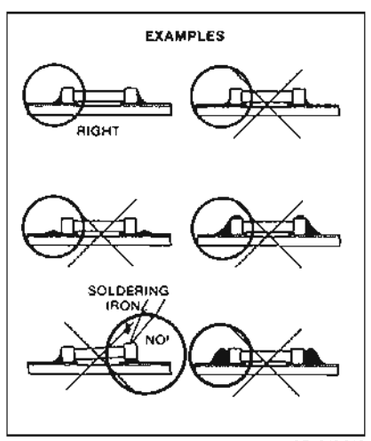
- Place the set on stand-by position.
- Trimpotmeter in clock wise position.
- The adjustment must be finished for both channels 20sec after power on.











27 012C12

GB

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

NL

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

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.

F

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

Pour votre sécurité, ces documents doivent etre utilisés par des specialistes agrées, seuls habilités à réparer votre appareil en panne.

WARNINGS

GB WARNING

All ICs and many other semi conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.When reparing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

NL WAARSCHUWING

Alle ICs en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD)
Onzorgvuldig behandelen tijden 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.

D WARNUNG

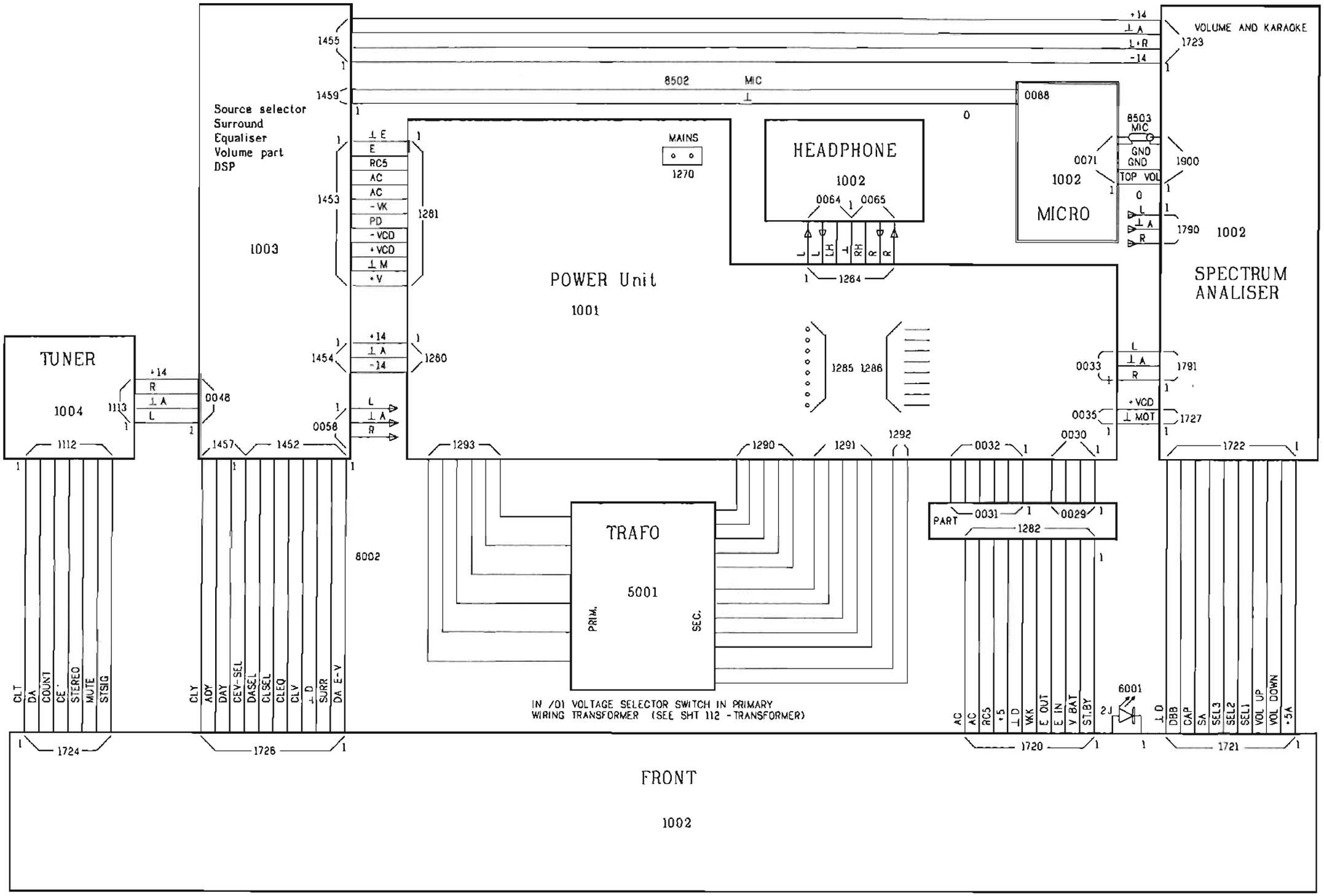
Alle ICs und viele andere Halbleiter sind empfindlich gegenüber electrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren. Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrair étre considérablement écourtée par le fait qu'aucune precaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien étre relié au meme potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller á ce que les composants ainsi que les outils que l'on utilise soient également á ce potentiel.

I AVERTIMENTO

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.



AP.3104-219-00710.SERV-MAN update 29-10-92

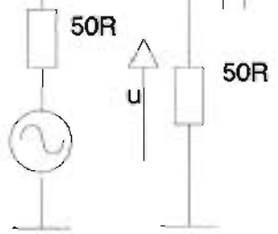
TUNER Adjustment table

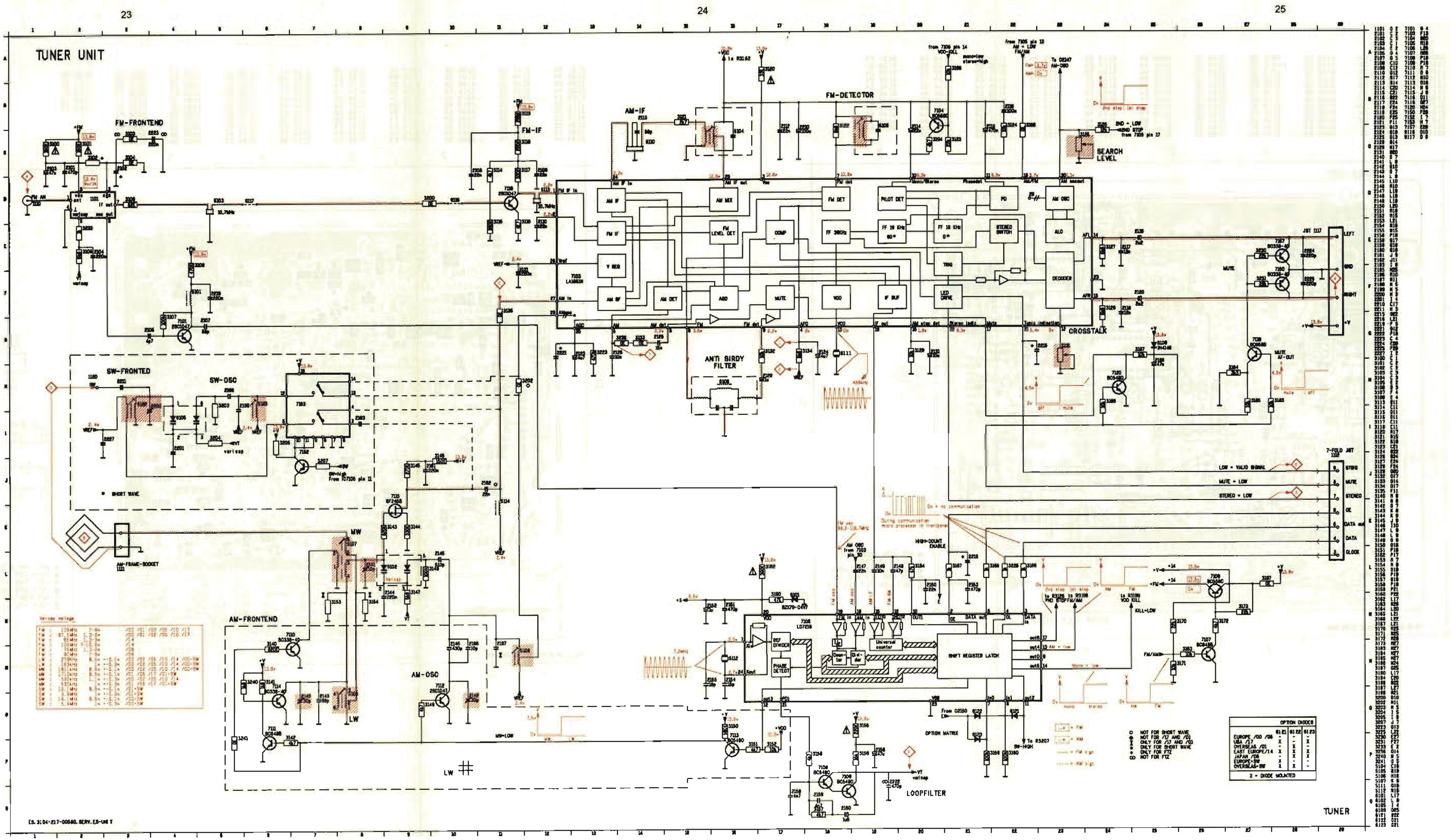
Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM /00/01/02/05 /10/17 87.5 - 108MHz			108 MHz	check		7....9V
			87.5MHz	check		1.3....2V
FM /14 65 - 108MHz			108 MHz	check		7...10,5V
			65 MHz	check		1,5....3V
FM /06 76 - 90MHz			90MHz	check		7....9V
			76MHz	check		1.3....2V
AM /01/06/17 530 - 1710kHz			1710kHz	5108	6	8.5V ± 0.1V
			530kHz	check		1V ± 0.3V
LW /00/02/05/10 /14 153 - 279kHz			279kHz	5108		8.5V ± 0.1V
			153kHz	check		1V ± 0.1V
MW /00/02/05/10 /14 522 - 1611kHz			1611kHz	2142		8.5V ± 0.1V
			522kHz	check		1.1V ± 0.3V
SW /00+SW 5,9 - 18,1MHz			18,1MHz	5123		8.5V ± 0.1V
			5,9MHz	check		1.1V ± 0.3V
SW /01+SW 3,9 - 12,1MHz			12,1MHz	5123		8.5V ± 0.1V
			3,9MHz	check		1.1V ± 0.3V
FM IF						
FM	98 MHz 1mVrf mod = 1kHz Δf = 75kHz 85 MHz /06	A	98MHz	5105	1 2	0V ± 20mV
STEREO CROSTALK						
FM	98 MHz 1mVrf 90% L + 9% pilot 85 MHz /06	A	98MHz	check	3	low < 1V
				3131	4	R min. out
SEARCH SENSITIVITY						
FM	98 MHz 15µV mod = 1kHz Δf = 75kHz 85 MHz /06	A	98MHz	3125	5	Switches just from High to Low
AM - IF						
MW	1494kHz Δf = 10kHz low as posible		1494kHz	5104	7	symmetrical and max height

TUNER Adjustment table

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
AM - RF						
MW /00/02/05 /10/14 mod= 1 kHz 30% AM	558kHz	B	558kHz	5107	7	MAX
	1494kHz		1494kHz	2141		
MW /01/06/17 mod= 1 kHz 30% AM	560kHz		560kHz	5107		MAX
	1600kHz		1600kHz	2141		
LW mod= 1 kHz 30% AM	155kHz		155kHz	5109		MAX
	270kHz		270kHz	2140		
SW /00+SW mod= 1 kHz 30% AM	5,9MHz	D	5,9MHz	5122		MAX
	18,1MHz		18,1MHz	2200		
SW /00+SW mod= 1 kHz 30% AM	3,9MHz	*	3,9MHz	5122		MAX
	12,1MHz		12,1MHz	2200		

* Sw measured via aerial capacitor 18pF

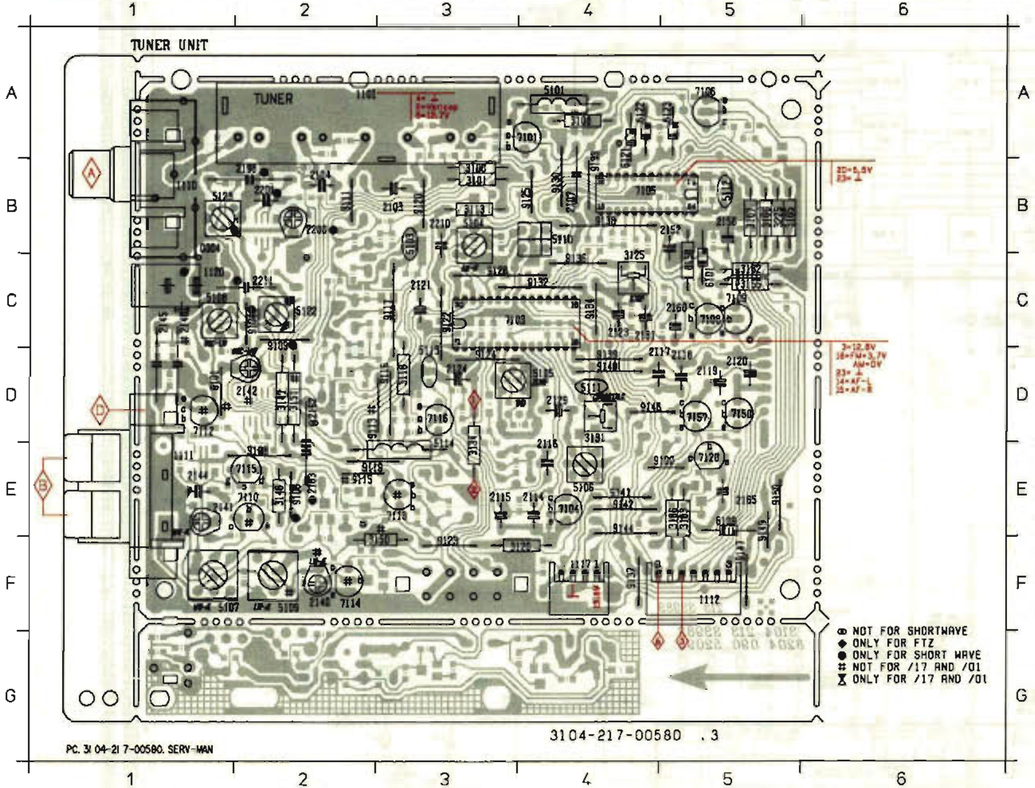




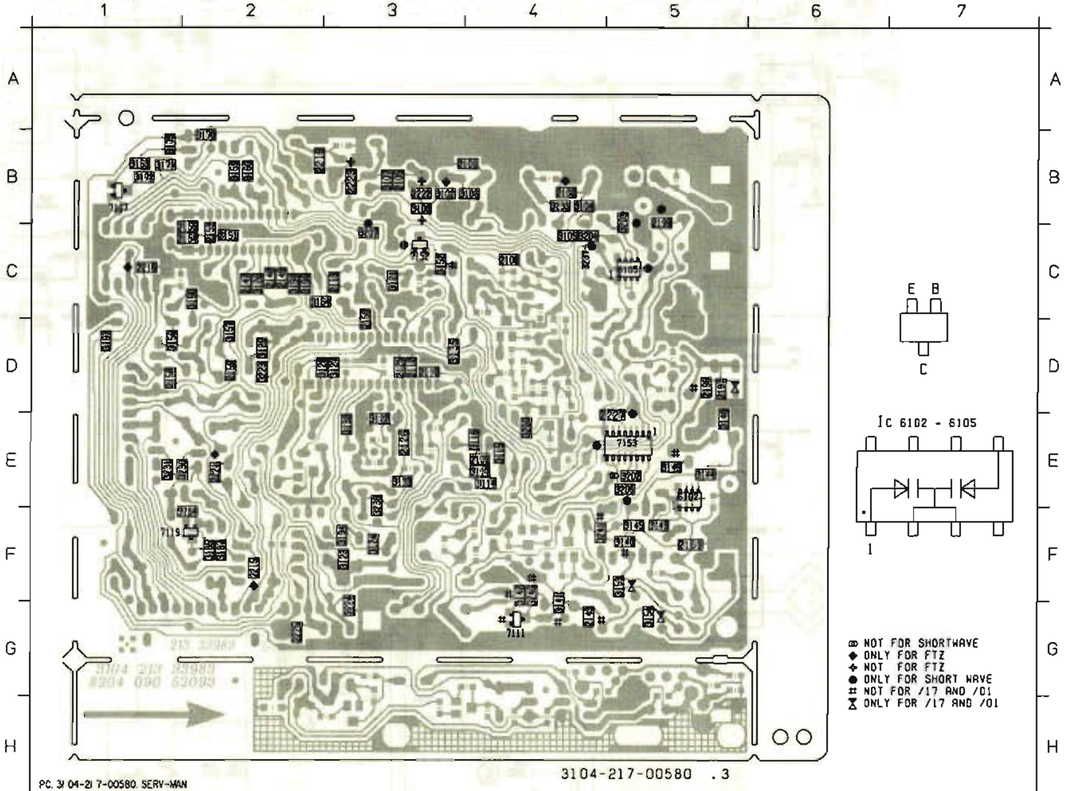
23
24
25
TUNER UNIT
FM-FRONTEND
FM-IF
AM-IF
FM-DETECTOR
SEARCH LEVEL
CROSSTALK
ANTI BIRDY FILTER
SW-FRONTED
SW-OSC
SHORT WAVE
AM-FRAME-SOCKET
MW
LW
AM-FRONTEND
AM-OSC
LOOPFILTER
OPTION MATRIX
AM MIX
FM DET
PILOT DET
PD
AM OSC
AM IF
FM IF
FM LEVEL DET
COMP
FF 38KHz
FF 19 KHz 90°
FF 19 KHz 0°
STEREO SWITCH
ALC
V REG
TRIG
DECODER
AM RF
AM DET
AGC
MUTE
VCO
IF BUF
LED DRIVE
LA1831N
SHIFT REGISTER LATCH
REF DIVIDER
PHASE DETECT
Universal counter
LEFT
GND
RIGHT
7-FOLD
STERO
MUTE
STEREO
CE
DATA out
DATA
CLOCK
LOW = VALID SIGNAL
MUTE = LOW
STEREO = LOW
HIGH=COUNT ENABLE
OPTION DIODES
EUROPE /00 /08
USA /17
OVERSEAS /01
EAST EUROPE/14
JAPAN /08
EUROPE+SW
OVERSEAS+SW
X = DIODE MOUNTED
NOT FOR SHORT WAVE
NOT FOR /17 AND /03
ONLY FOR /17 AND /03
ONLY FOR SHORT WAVE
ONLY FOR FTZ
NOT FOR FTZ
TUNER
ES.3104-217-00580. SERV. ES-UNIT

PCS 57 866

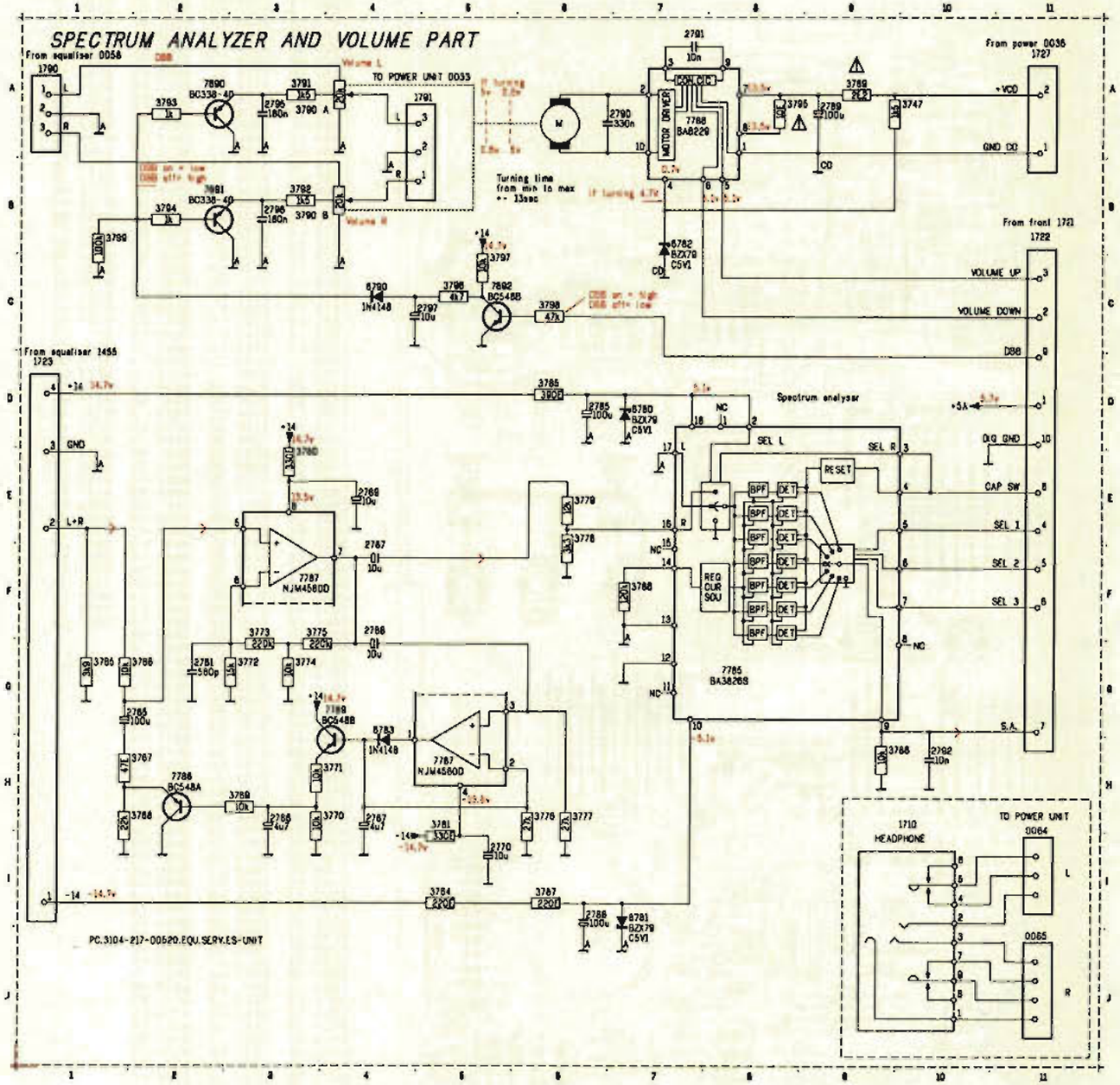
0004 B1	2116 E4	2142 D2	2201 B2	3148 E2	3225 B5	5113 D3	7105 B4	7157 D5	9119 E2	9137 F4
1101 A2	2117 D6	2144 E1	2210 B3	3147 D2	5101 A4	5114 E3	7106 A5	9100 E6	9120 B3	9138 B4
1110 B1	2118 D5	2145 C1	2211 C2	3150 F3	5103 B3	5122 D2	7108 C5	9101 D1	9122 C3	9139 D4
1111 E1	2119 D5	2146 C1	3100 B3	3151 D2	5104 B3	5123 B1	7109 C5	9104 D2	9123 F3	9140 D4
1112 F6	2120 D5	2152 B6	3101 B3	3155 C5	5106 D4	8101 C5	7110 E2	9106 E2	9124 D3	9141 E4
1117 F4	2121 C3	2156 B6	3106 A4	3158 C6	5108 E4	6109 E5	7112 D1	9108 E2	9125 B4	9142 E4
1120 C1	2123 C4	2160 C6	3113 B3	3162 C5	5107 F1	8121 A4	7113 E3	9109 D2	9128 C3	9144 E4
2103 B3	2124 D3	2162 D2	3118 D3	3165 B6	5108 D1	6122 A4	7114 F2	9111 B2	9130 B4	9145 D4
2104 B2	2129 D4	2163 E2	3120 F4	3166 B5	5109 F2	6123 A5	7115 E2	9113 D2	9132 C4	9147 F5
2107 B4	2131 C4	2166 E6	3126 C4	3167 B5	5110 B4	7101 A4	7116 D3	9115 E2	9133 B4	9148 E6
2114 E4	2140 F2	2198 B2	3131 D4	3183 E6	6111 D4	7103 D3	7120 E5	9118 D3	9134 C4	9150 E6
2115 E3	2141 E1	2200 B2	3134 E3	3186 E6	6112 B6	7104 E4	7160 D6	9117 C3	9136 D4	



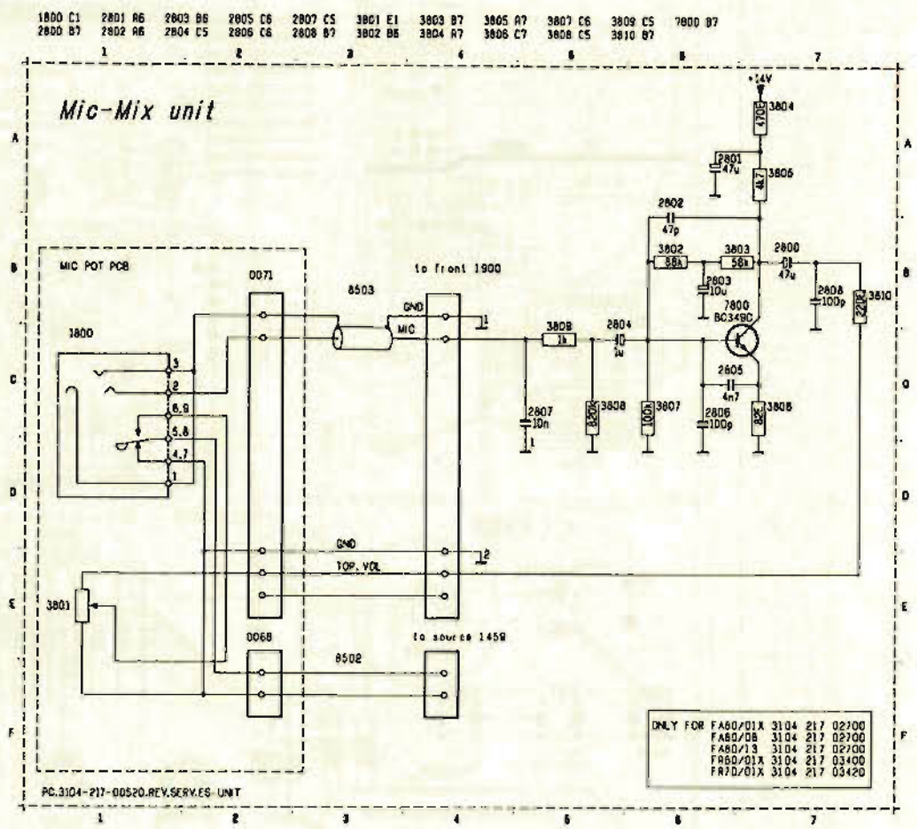
2101 B4	2147 C2	2198 D5	2227 E5	3121 C3	3140 F6	3156 D1	3185 F2	3205 E5	6105 C6
2102 B4	2148 C2	2199 D5	3102 B3	3122 E3	3141 B4	3157 D2	3187 F2	3207 C3	7107 B1
2106 B3	2149 D2	2198 C5	3103 B3	3123 F3	3142 F4	3159 B2	3190 D2	3223 D2	7111 D4
2108 C4	2150 D3	2215 F2	3104 B4	3124 F3	3143 F6	3160 B2	3194 F3	3230 E2	7119 F1
2109 E4	2161 C2	2218 C1	3105 C4	3126 C2	3144 E5	3163 B1	3196 C2	3231 E1	7152 C3
2110 D3	2153 C2	2219 B2	3106 B4	3127 D3	3145 F5	3164 C2	3197 D1	3233 B4	7163 E5
2112 D3	2154 C2	2221 C2	3107 B3	3128 D3	3148 E5	3170 B2	3198 C2	3238 E3	
2113 C3	2155 C2	2222 B3	3114 E4	3129 D2	3149 E6	3171 B1	3200 E4	3237 D4	
2125 D3	2158 D1	2223 B3	3115 E4	3132 E3	3152 C3	3172 B1	3202 E5	3240 F4	
2128 E3	2159 D2	2224 G3	3116 E4	3133 E3	3153 F5	3173 B1	3203 B5	3241 F4	
2143 G4	2161 F5	2225 G2	3117 E4	3135 D3	3154 G5	3184 F2	3204 C4	8102 E5	

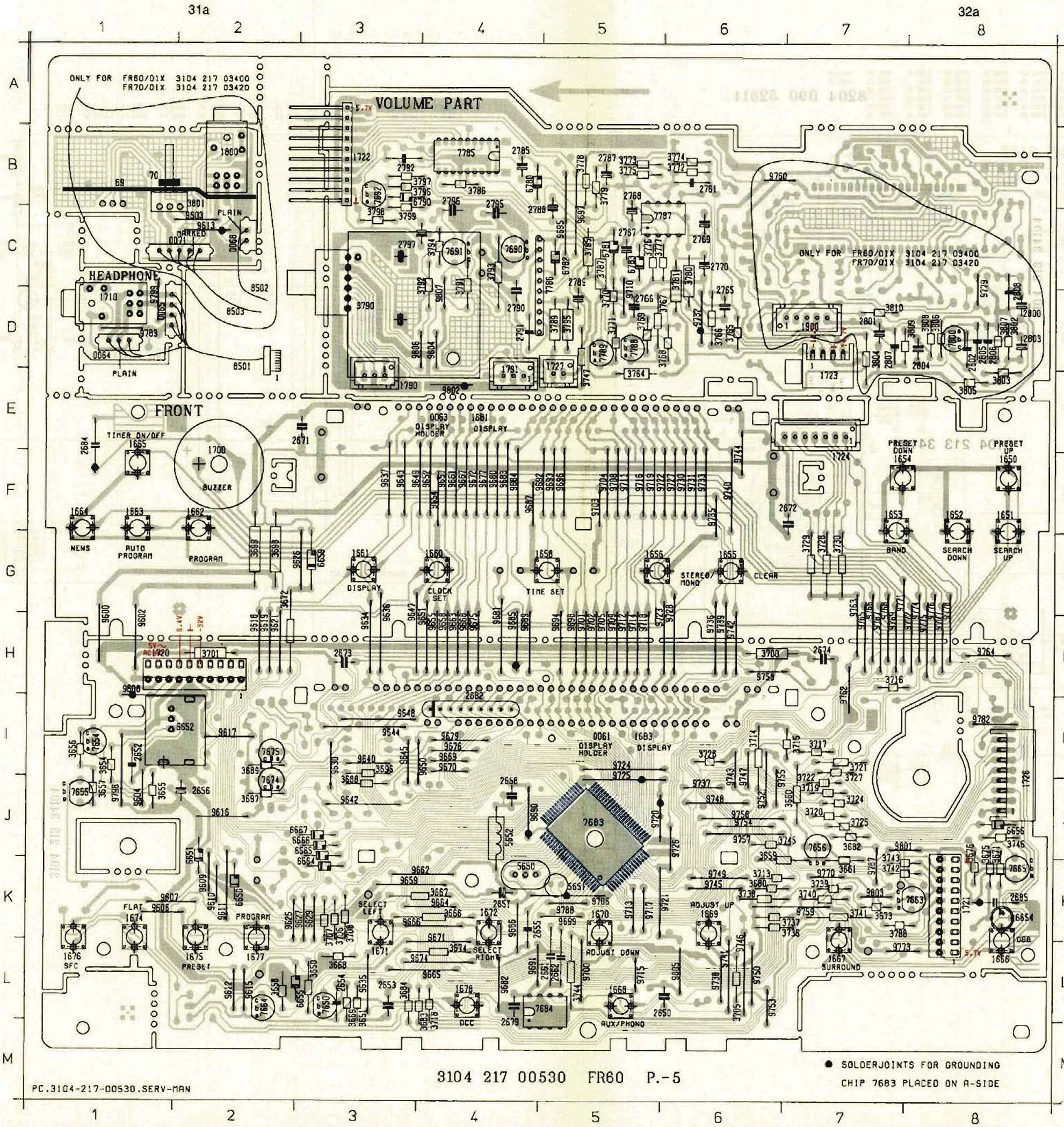


0064 I11 1790 A1 2768 F4 2789 R9 2797 C4 3768 H2 3774 G3 3780 E3 3789 R9 3794 B2 8780 D7 7691 B2 7788 H2
0065 J11 1791 A5 2769 E4 2790 R6 3747 A10 3769 H3 3775 F3 3781 H5 3790 R4 3795 R8 6781 I7 7692 C5 7789 G4
1710 H10 2761 G2 2770 I5 2791 R7 3784 I5 3770 H4 3776 H6 3785 G8 3790 B4 3798 C5 6782 B7 7785 G8
1722 B11 2765 G1 2785 D6 2792 H10 3785 G1 3771 H4 3777 H6 3786 F7 3791 R3 3797 C5 6783 D4 7786 A7
1723 G1 2766 H3 2787 F4 2795 R3 3786 G2 3772 G3 3778 E6 3787 I6 3792 B3 3798 C6 6790 C4 7787 F3
1727 A11 2767 H4 2788 I6 2796 B3 3787 H2 3773 F3 3779 E6 3788 H5 3793 A2 3799 B1 7690 R2 7787 H5



1800 C1 2801 A6 2803 B6 2805 C6 2807 C5 3801 E1 3803 B7 3805 A7 3807 C6 3809 C5 7800 B7
2800 B7 2802 A6 2804 C5 2806 C6 2808 B7 3802 B6 3804 A7 3806 C7 3808 C5 3810 B7





69	B1	3688	J3	7786	C5	9732	D6
70	B1	3689	I2	7787	C5	9733	F6
0061	I5	3696	I3	7788	D5	9735	F6
0063	E4	3697	J2	7789	D5	9736	H6
0064	D1	3698	G2	7800	D8	9737	J6
0065	D1	3699	G2	8501	E2	9738	L6
0068	C2	3700	H8	8502	D2	9739	H8
0071	C2	3701	H2	8503	D2	9740	F8
1650	F8	3705	L6	9600	H1	9741	L8
1651	F8	3706	K3	9602	H1	9742	H6
1652	F8	3707	K3	9603	C2	9743	I6
1653	F7	3708	K3	9604	J1	9744	F8
1654	F7	3713	K6	9606	K1	9745	K6
1655	G6	3714	I6	9607	K1	9746	L8
1656	G5	3715	I7	9608	H1	9747	I6
1658	G5	3716	H7	9609	K2	9748	J6
1660	G4	3717	I7	9610	K2	9749	K6
1661	G3	3718	L4	9611	K2	9750	L6
1662	F2	3719	J7	9612	L2	9752	J6
1663	F1	3720	J7	9613	C2	9753	L6
1664	F1	3721	I7	9615	L2	9754	J6
1665	E1	3722	J7	9616	J2	9755	J7
1666	L8	3724	J7	9617	I2	9756	J6
1667	L7	3725	J7	9618	H2	9757	J6
1668	L5	3726	I8	9619	H2	9758	H6
1669	K6	3727	J7	9621	H2	9759	K7
1670	K5	3728	G7	9625	K2	9760	B6
1671	L3	3729	G7	9626	G3	9762	H7
1672	K4	3730	G7	9627	K3	9763	G7
1674	K1	3738	K7	9629	K3	9764	H8
1675	L2	3737	K7	9630	I3	9765	H7
1676	L1	3738	K6	9634	H3	9766	G7
1677	L2	3739	K7	9635	L3	9767	H7
1678	L4	3740	K7	9636	G3	9768	G7
1681	E4	3741	K7	9637	F3	9769	H7
1683	I5	3742	K7	9640	I3	9770	K7
1700	F2	3743	K7	9642	J3	9771	G7
1710	D1	3744	L5	9643	F3	9772	H8
1720	H1	3745	J7	9644	I3	9773	L7
1721	K8	3746	J8	9645	I3	9774	G8
1722	B3	3747	E5	9647	G3	9775	H8
1723	E7	3764	E5	9648	I3	9776	G8
1724	F7	3765	D6	9649	F3	9777	H8
1726	I8	3766	D6	9650	I4	9778	G8
1727	D5	3767	D6	9651	H4	9779	C8
1790	E3	3768	D6	9652	F4	9782	I8
1791	E4	3769	D5	9654	F4	9783	D1
1800	B2	3770	D5	9655	H4	9787	K7
1900	D7	3771	D5	9657	F4	9788	K5
2650	L6	3772	B8	9658	H4	9798	J1
2651	K4	3773	B5	9659	K3	9799	D1
2652	I1	3774	B8	9661	F4	9801	J7
2653	L3	3775	B5	9662	K4	9802	E4
2654	L3	3776	C5	9663	H4	9803	K7
2655	K5	3777	C5	9664	K4	9804	D4
2656	J2	3778	B5	9665	L4	9805	L6
2658	J4	3779	B5	9666	K3	9806	D3
2661	L5	3780	C8	9667	F4	9807	D4
2662	L5	3781	C8	9668	H4		
2671	E3	3785	C5	9669	I4		
2672	F7	3786	B4	9670	I4		
2673	H3	3787	C5	9671	L4		
2674	H7	3788	K7	9672	F4		
2679	M4	3789	D5	9674	L4		
2682	I4	3790	D3	9675	H4		
2684	E1	3791	C4	9676	I4		
2685	K8	3792	C4	9677	F4		
2701	B8	3793	C4	9679	I4		
2765	D6	3794	C4	9680	F4		
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2767	C5	3798	B4	9682	L4		
2768	B5	3797	B4	9683	F4		
2769	C6	3798	C3	9684	F4		
2770	C6	3799	C3	9685	H4		
2785	B4	3801	C2	9688	K4		
2787	B5	3802	D8	9687	F4		
2788	C4	3803	E8	9689	H4		
2789	C5	3804	D7	9690	J4		
2790	D4	3805	E8	9691	L4		
2791	D4	3806	D8	9692	F5		
2792	B3	3807	D8	9693	F5		
2795	C4	3808	D8	9694	H5		
2796	B4	3809	D8	9695	C5		
2797	C3	3810	D7	9696	F5		
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2801	D7	5651	K5	9698	H5		
2802	D8	5652	J4	9699	K5		
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3651	L3	6664	K3	9708	F5		
3654	I1	6665	J3	9709	H5		
3655	J1	6666	J3	9710	C5		
3656	I1	6667	J3	9711	F5		
3657	J1	6780	B4	9712	H5		
3658	L2	6781	C5	9713	K5		
3659	K6	6782	C5	9714	H5		
3660	J7	6783	C5	9715	L5		
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3666	K4	7650	L3	9717	K5		
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3668	L3	7655	J1	9719	F5		
3669	L3	7658	J7	9720	J5		
3671	J8	7663	K8	9721	K6		
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3673	K7	7665	K8	9723	H5		
3674	L4	7674	J2	9724	I5		
3675	J8	7675	I2	9725	J5		
3676	J8	7684	L5	9726	J8		
3680	K6	7690	C4	9727	F8		
3682	J7	7691	C4	9728	G8		
3683	M4	7692	B3	9730	F8		
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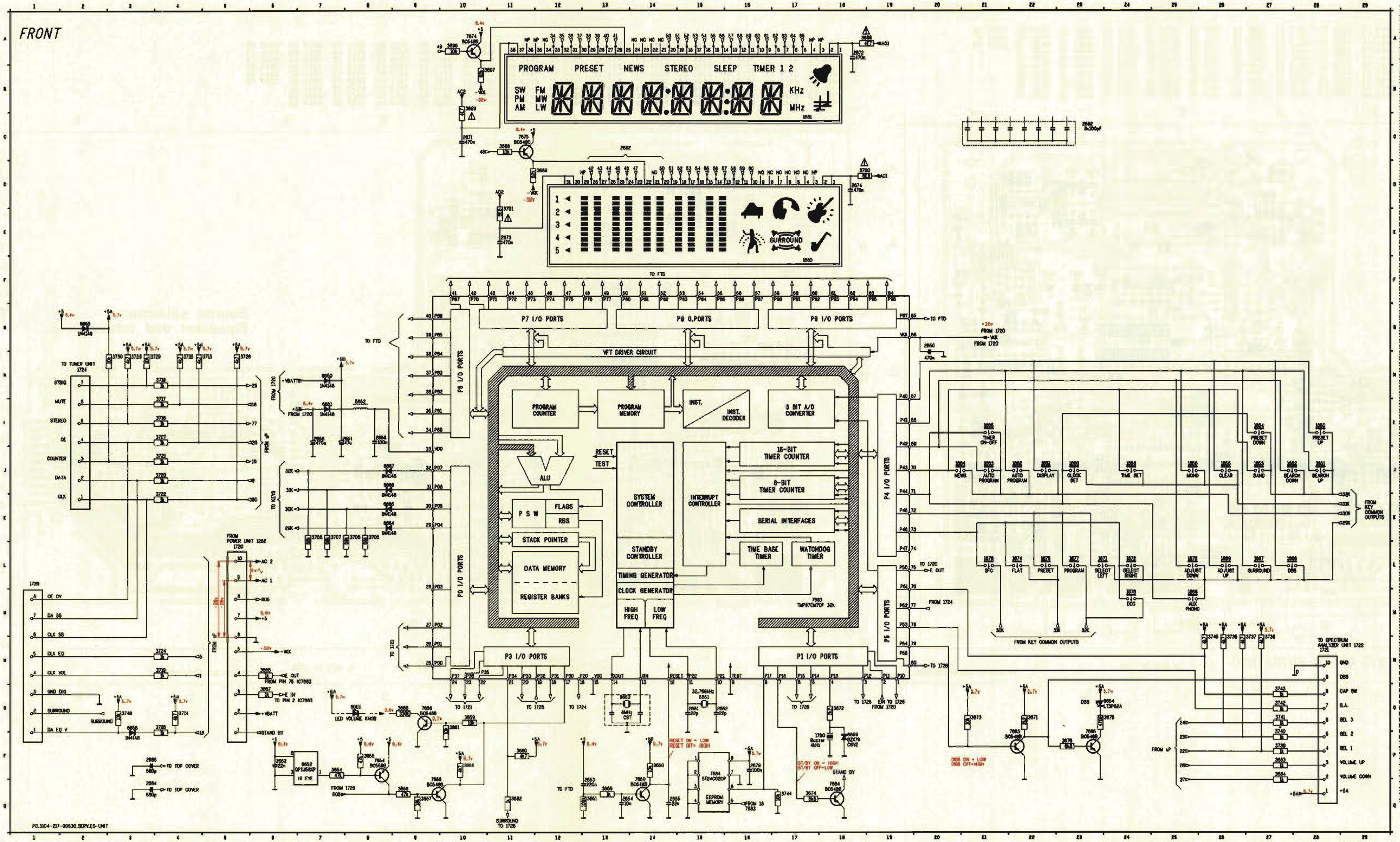
● SOLDERJOINTS FOR GROUNDING
CHIP 7683 PLACED ON A-SIDE


FRONT
PROGRAM
PRESET
NEWS
STEREO
SLEEP
TIMER 1 2
SW
PM
AM
FM
MW
LW
KHz
MHz
SURROUND
TO FTD
P7 I/O PORTS
P8 O.PORTS
P9 I/O PORTS
VFT DRIVER CIRCUIT
P6 I/O PORTS
PROGRAM COUNTER
PROGRAM MEMORY
INST.
INST. DECODER
8 BIT A/D CONVERTER
RESET
TEST
ALU
SYSTEM CONTROLLER
INTERRUPT CONTROLLER
16-BIT TIMER COUNTER
8-BIT TIMER COUNTER
SERIAL INTERFACES
P S W
FLAGS
RBS
STACK POINTER
DATA MEMORY
REGISTER BANKS
STANDBY CONTROLLER
TIMING GENERATOR
CLOCK GENERATOR
HIGH FREQ
LOW FREQ
TIME BASE TIMER
WATCHDOG TIMER
P4 I/O PORTS
P5 I/O PORTS
P0 I/O PORTS
P3 I/O PORTS
P1 I/O PORTS
TMP87CM70F
TO TUNER UNIT 1724
STBIG
MUTE
STEREO
CE
COUNTER
DATA
CLK
FROM POWER UNIT 1262 1720
CE CV
DA SS
CLK SS
CLK EQ
CLK VOL
GND CHG
SURROUND
DA EQ V
LED VOLUME KNOB
IR EYE
EEPROM MEMORY
ST24C02CP
RESET ON = LOW
RESET OFF = HIGH
ST/BY ON = HIGH
ST/BY OFF = LOW
STAND BY
DBB ON = LOW
DBB OFF = HIGH
TO TOP COVER
FROM KEY COMMON OUTPUTS
TO SPECTRUM ANALYZER UNIT 1722
GND
OSB
CAP SW
S.A.
SEL 3
SEL 2
SEL 1
VOLUME UP
VOLUME DOWN
FROM uP
NEWS
AUTO PROGRAM
DISPLAY
CLOCK SET
TIME SET
MONO
CLEAR
BAND
SEARCH DOWN
SEARCH UP
TIMER ON/OFF
PRESET DOWN
PRESET UP
SFC
FLAT
PRESET
PROGRAM
SELECT LEFT
SELECT RIGHT
DCC
ADJUST DOWN
ADJUST UP
SURROUND
DBB
AUX PHONO
PC.3104-217-00630.SERV.ES-UNIT

0048 D5 1551 G8 2472 F4 2587 A5 2627 C7 3451 F8 3461 F8 3471 D7 3483 F6 3493 E5 3510 F4 3587 E6 6603 C6 7605 A8 9470 E5 9480 E5 9493 B6 9503 A8
0056 G8 2453 F8 2477 E4 2591 B7 2628 E8 3452 F8 3462 F7 3472 E7 3484 F5 3494 F5 3511 E4 3601 B6 7451 F8 8450 A6 9471 F5 9481 D6 9494 B6 9507 A7
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1452 D5 2459 F8 2479 E4 2597 B7 2636 D7 3454 F7 3464 F7 3474 F7 3486 F5 3496 F8 3583 E3 3605 B8 7453 F4 9461 E4 9473 D5 9483 C5 9496 C7
1453 E1 2460 F7 2480 F4 2598 A7 2637 C7 3455 F8 3466 F8 3475 E7 3487 F5 3497 E6 3584 E3 3621 C5 7575 B5 9464 G5 9474 E5 9484 C5 9497 A7
1454 C5 2465 E8 2483 E6 2599 D6 2638 D7 3456 F8 3466 F7 3476 F7 3488 F5 3498 E6 3579 B5 3622 B6 7578 A5 9465 E5 9475 F5 9485 E8 9498 E8
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1463 G6 2471 E4 2582 B7 2626 E8 2642 C5 3460 F7 3470 F7 3482 F6 3492 E5 3508 F4 3586 E8 6575 A5 7604 A6 9469 D5 9479 C5 9489 B8 9502 B8

2451 F1 2484 E2 2485 E3 2585 B4 2601 C3 2610 D1 2621 C3 2634 C1 3501 E5 3575 B4 3606 B1 3615 C3 3628 C2 3640 B3
2452 F2 2469 E1 2488 F3 2586 A4 2602 D2 2611 B2 2622 D1 2645 B1 3502 F5 3576 B4 3607 C3 3616 D3 3627 B2 3641 C3
2455 F1 2470 E2 2487 F3 2588 A1 2603 C3 2612 C1 2623 C2 2646 A1 3503 E5 3577 B4 3608 D2 3617 C2 3628 A2 3642 C3
2456 E1 2473 E5 2575 B4 2589 C2 2604 D1 2615 C3 2624 D1 2647 B2 3504 F5 3578 A4 3609 C3 3618 D3 3631 A2 3643 B2
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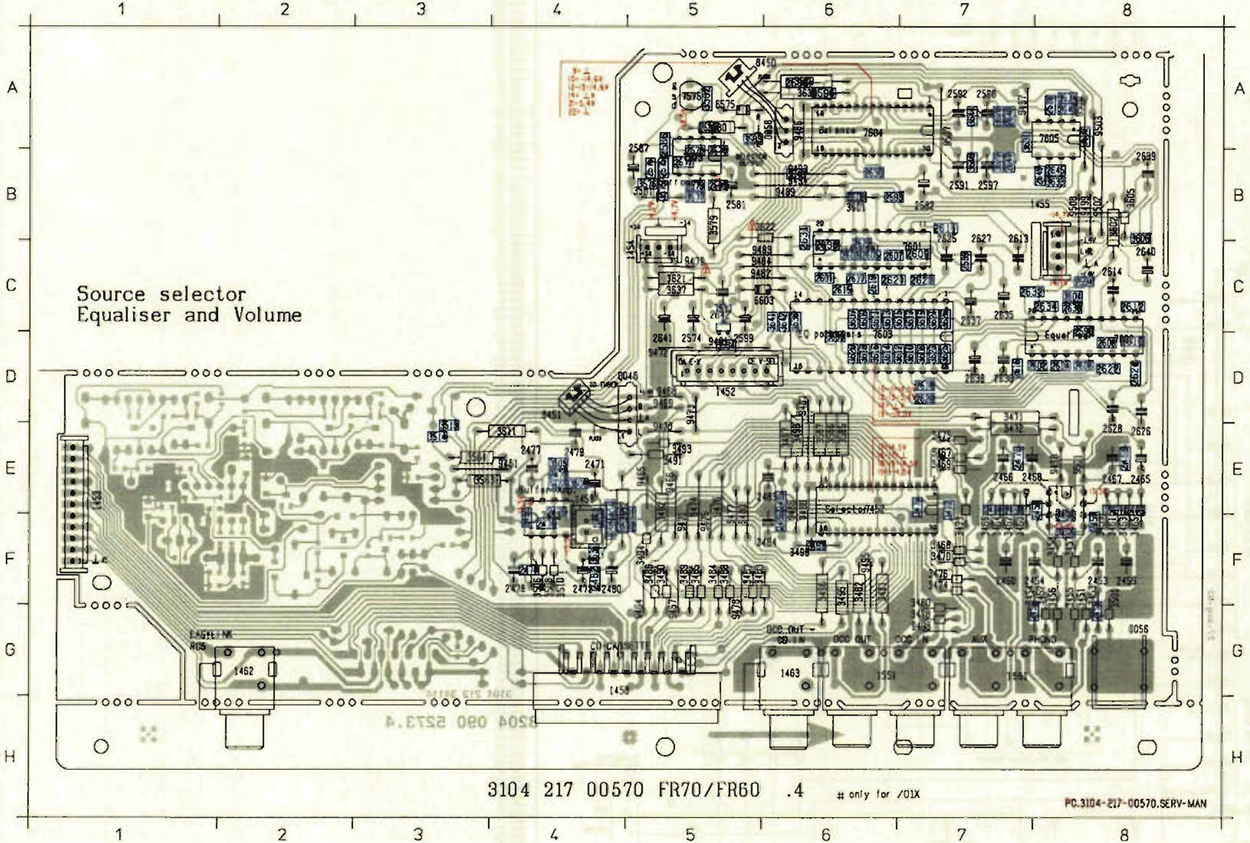
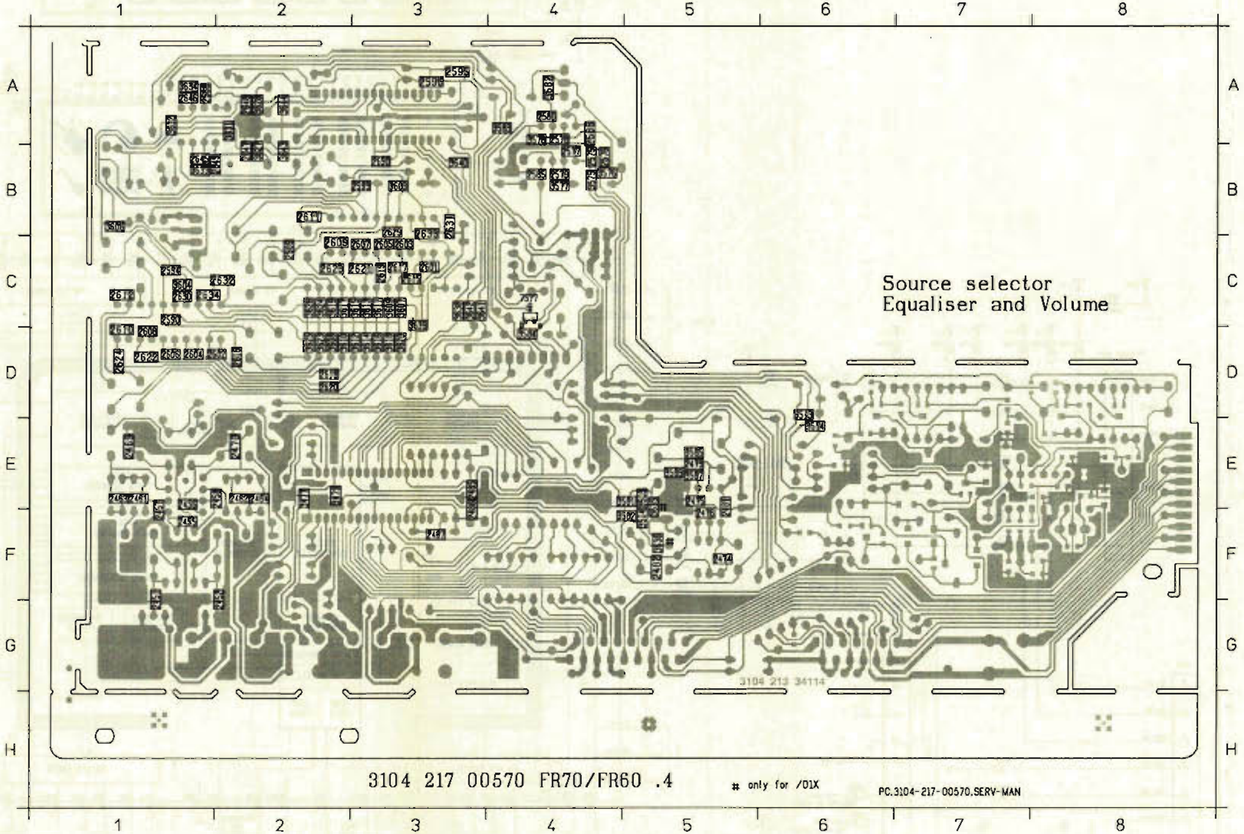


3104 217 00570 FR70/FR60 .4 # only for /01X

PC.3104-217-00570.SERV-MAN



3104 217 00570 FR70/FR60 .4 # only for /01X

PC.3104-217-00570.SERV-MAN

SOURCE SELECTOR AND SURROUND PART

SELECTOR

SURROUND SOUND CIRCUIT

Phone pre amplifier

Buffer Amplifier

LOGIC

PC.3104-217-00551.SERV.ES-UNIT

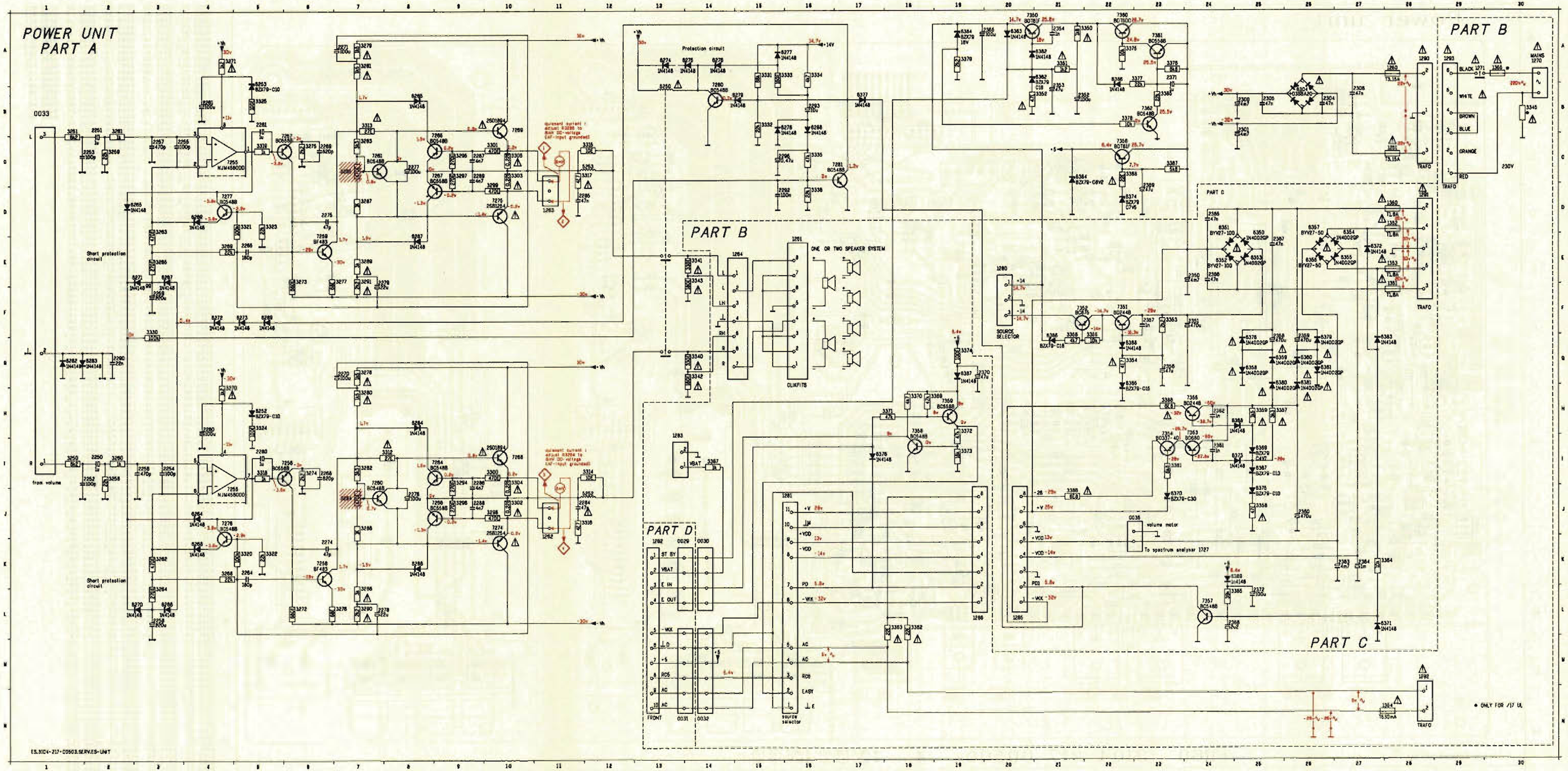
EQUALISER AND VOLUME PART

EQUALIZER

ELECTRONIC EQ POTMETERS

BALANCE

PC.3104-217-00560.EQU.SERV.ES-UNIT UPDATE 20/10/92



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1251	C28	3316	J11	6389	K24
1271	A29	3317	C11	7255	C4
1350	D28	3318	I5	7255	J4
1351	F28	3319	C5	7256	I6
1352	D28	3320	K5	7257	C6
1353	E28	3321	D5	7258	K6
1354	K28	3322	K5	7259	E6
1355	A30	3323	D5	7260	I7
2250	I2	3324	H5	7261	C7
2251	B2	3325	B5	7264	I9
2252	I1	3330	F3	7265	C9
2253	C1	3331	A15	7266	J9
2254	I3	3332	B15	7267	C9
2255	C3	3333	A15	7268	I10
2256	I3	3334	A16	7269	B10
2257	C3	3335	C16	7274	J10
2258	L3	3336	D16	7275	D10
2259	F3	3340	G14	7276	J4
2260	H4	3341	E14	7277	D4
2261	B4	3342	G14	7280	B14
2264	K5	3343	E14	7281	C17
2265	E5	3345	B30	7350	A20
2268	I6	3350	A21	7351	F22
2269	C6	3351	A21	7352	F21
2270	G7	3352	B21	7353	H24
2271	A7	3353	F23	7354	I23
2274	K6	3354	G22	7355	H24
2275	D6	3355	G22	7356	C22
2276	J8	3356	G21	7357	L24
2277	C8	3357	H25	7358	H18
2278	L7	3358	J25	7359	H19
2279	E7	3359	H25	7360	A22
2280	I5	3361	I23	7361	A23
2281	B5	3362	L18	7362	B23
2284	J11	3363	L18		
2285	D11	3364	K27		
2286	I9	3365	L24		
2287	C9	3367	C23		
2288	J9	3368	C22		
2289	C9	3369	H18		
2290	G2	3370	H18		
2292	D15	3371	H18		
2293	B16	3372	H19		
2296	C15	3373	I19		
2300	B25	3374	G19		
2301	B25	3375	A22		
2304	B26	3376	A23		
2305	B25	3377	A23		
2306	B27	3378	B22		
2350	E24	3379	A19		
2351	F24	3385	B23		
2352	B21	3386	J21		
2353	B21	3387	I14		
2354	A21	3388	H23		
2355	A19	5250	B13		
2356	G23	5252	J12		
2357	F23	5253	C12		
2358	D25	6252	H5		
2359	G26	6253	A5		
2360	J26	6264	J4		
2361	I24	6265	D2		
2362	H24	6266	L3		
2363	K27	6267	E3		
2364	K27	6268	K4		
2365	D24	6269	D4		
2366	E24	6270	L3		
2367	E25	6271	E3		
2368	L24	6272	F4		
2369	G23	6273	F5		
2370	G19	6274	A13		
2371	A23	6275	A14		
2372	L25	6276	A14		
3250	I1	6277	A15		
3251	B1	6278	B15		
3258	I2	6279	B15		
3259	C2	6282	G1		
3260	I2	6283	G2		
3261	B2	6284	H8		
3262	K3	6285	B8		
3263	D3	6286	K8		
3264	L3	6287	E8		
3265	E3	6288	B16		
3268	K4	6289	F5		
3269	E4	6304	B26		
3270	H4	6350	E25		
3271	A4	6351	D24		
3272	L6	6352	E24		
3273	E6	6353	E25		
3274	I6	6354	E27		
3275	C6	6355	E27		
3276	L7	6356	E26		
3277	E7	6357	D26		
3278	G7	6358	G25		
3279	A7	6359	G25		
3280	H7	6360	G26		
3281	A7	6361	G26		
3282	I7	6362	A21		
3283	C7	6363	A20		
3284	J7	6364	C21		
3285	C7	6365	G22		
3286	J7	6366	G21		
3287	D7	6367	I25		
3288	L7	6368	H25		
3289	E7	6369	I25		
3290	L7	6370	J23		
3291	E7	6371	L27		
3294	I9	6372	E27		
3295	C9	6373	I25		
3296	J9	6374	D22		
3297	C9	6375	J25		
3298	J10	6376	I17		
3299	D10	6377	B17		
3300	I10	6378	G25		
3301	C10	6379	G26		
3302	J10	6380	G25		
3303	C10	6381	G26		
3304	I10	6382	A21		
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3312	I8	6384	A19		
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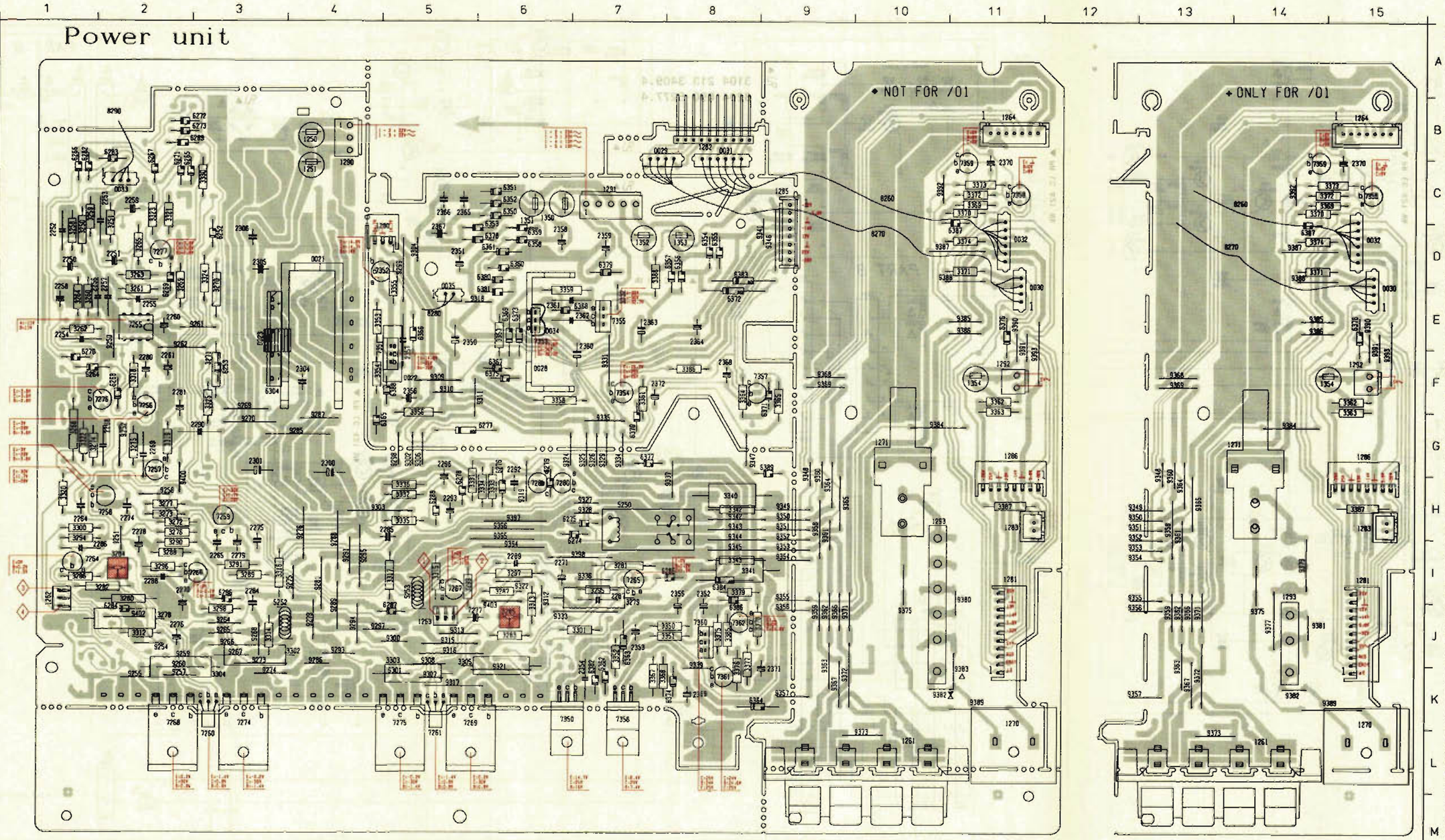
Power unit



FR60 3104 217 00500 .4

◆ ONLY FOR /01 △ ONLY FOR /05
◆ NOT FOR /01 ⧖ NOT FOR /05

PC.3104-217-00500.SERV-MAN

0021	D4	3265	D2	6276	G6	9267	G4	9389	K11						
0022	F5	3268	G1	6277	G5	9268	I4	9389	K15						
0023	E3	3269	E2	6278	H5	9269	J4	9390	E11						
0028	F6	3270	E3	6279	G6	9291	I4	9390	E15						
0029	B7	3271	F3	6282	B1	9293	J4	9391	E11						
0030	E11	3272	H2	6283	B2	9294	J4	9391	E15						
0030	E15	3273	H3	6284	J2	9295	I4	9392	C10						
0031	B8	3274	G1	6285	I8	9297	J4	9392	C14						
0032	D11	3275	G2	6286	I3	9298	G5	9393	F11						
0032	D15	3276	H2	6287	J5	9299	D8	9393	F15						
0033	I7	3277	H3	6300	J5	9300	D8	9394	I8						
0034	E8	3276	J2	6289	B3	9301	K5	9395	I8						
0035	E5	3279	J7	6304	F3	9302	G6	9396	H6						
1250	B4	3280	J2	6360	C6	9303	H4	9397	H6						
1251	C4	3281	J7	6351	C6	9304	D6	9398	I7						
1261	L10	3282	I2	6352	C6	9306	G5	9400	H2						
1261	L14	3283	J8	6353	D8	9307	K5	9402	J2						
1262	I1	3284	I2	6354	D8	9308	J6	9403	J8						
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1291	C7	3304	K3	6372	E8	9329	G7								
1292	F11	3305	J5	6373	E6	9331	F7								
1292	F15	3312	J2	6374	K6	9332	E7								
1293	H10	3313	J8	6375	F6	9333	J6								
1293	I14	3314	J3	6376	E11	9334	G7								
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1351	D6	3316	I3	6377	G7	9336	I7								
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2252	D1	3323	G2	6384	I8	9345	I8								
2253	G2	3324	D3	6386	J8	9348	D9								
2254	E1	3325	F3	6387	D11	9347	G8								
2255	E2	3330	G3	6387	D14	9348	D13								
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2257	E2	3332	H6	6389	D9	9349	H12								
2258	E1	3333	H8	7255	E2	9349	H9								
2259	G2	3334	H6	7256	F2	9350	H12								
2260	E2	3335	H5	7257	G2	9350	H8								
2261	F2	3336	H6	7258	H2	9351	H12								
2264	H1	3340	H8	7259	H3	9351	H9								
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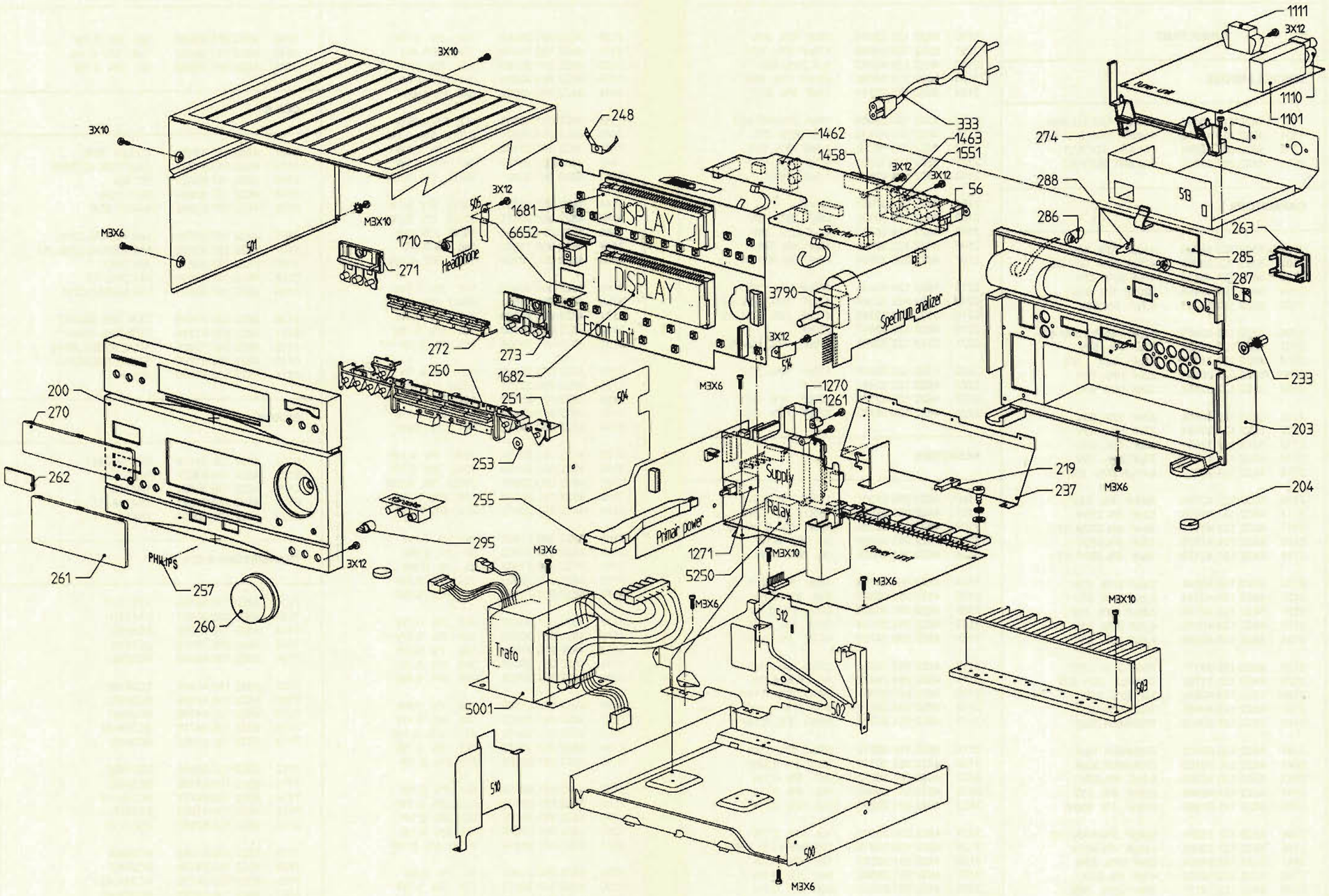
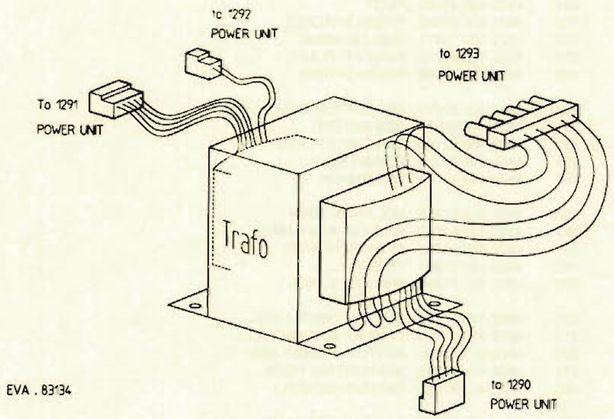
2269	G2	3343	I8	7264	I1	9353	I12								
2270	I2	3350	J8	7265	I7	9353	I9								
2271	I6	3351	J8	7266	I3	9354	I12								
2274	H2	3352	J7	7267	I5	9354	I9								
2275	H3	3353	E4	7268	K2	9355	I12								
2276	J2	3354	F4	7269	K5	9355	I9								
2277	J6	3355	E5	7274	K3	9356	J12								
2278	H2	3356	D5	7275	K5	9356	J9								
2279	I3	3357	E8	7276	F2	9357	K12								
2280	F2	3358	F8	7277	D2	9357	K9								
2281	F2	3359	E6	7280	H5	9358	H13								
2284	I3	3361	F7	7281	H6	9358	H9								
2285	H5	3362	F11	7350	K6	9359	J13								
2286	I2	3362	F15	7351	E4	9359	J9								
2287	I7	3363	D5	7352	D6	9360	G13								
2288	I2	3363	G15	7353	E6	9360	G9								
2289	I6	3364	F8	7354	F7	9361	H13								
2290	G3	3365	F9	7355	E7	9361	H9								
2292	G8	3367	K7	7356	K7	9362	J13								
2293	H5	3368	K8	7357	F9	9362	J9								
2298	G5	3369	C11	7358	C11	9363	J13								
2300	G4	3368	C15	7358	C16	9363	J9								
2301	G3	3370	C11	7359	C11	9364	H13								
2304	F4	3370	C14	7359	C14	9364	H9								
2305	D3	3371	D11	7380	J8	9365	H13								
2308	D3	3371	D14	7361	K8	9365	H9								
2350	E5	3372	C11	7362	J8	9366	J13								
2351	D5	3372	C15	8260	D10	9366	J9								
2352	I8	3373	C11	8260	D14	9367	K13								
2353	J7	3373	C15	8270	D10	9367	K9								
2354	K7	3374	D11	8270	D13	9368	F13								
2355	I8	3374	D14	8280	E5	9368	F9								
2356	F5	3375	J8	8290	B2	9369	F13								
2357	F5	3376	K8	9250	E2	9369	F9								
2358	D8	3377	J8	9251	H2	9371	J13								
2359	D7	3378	J9	9252	G2	9371	J9								
2360	F7	3379	I9	9254	J2	9372	K13								
2361	E6	3385	J8	9255	K2	9372	K9								
2362	E7	3386	F8	9257	K2	9373	L10								
2363	E7	3387	H11	9258	H2	9373	L13								
2364	E8	3387	H15	9259	J2	9375	J10								
2365	C5	3388	D7	9260	K2	9375	J14								
2366	C5	5250	H7	9261	E3	9377	J14								
2367	D6	5252	J8	9262	E2	9379	I14								
2368	F8	5253	I5	9264	J3	9380	I11								
2369	K8	6252	D3	9265	J3	9381	J14								
2370	D11	6263	F3	9266	J3	9382	K10								
2370	C15	6264	F1	9267	J3	9382	K14								
2371	K9	6265	B2	9268	J3	9383	K11								
2372	F7	6266	B1	9269	F3	9384	G10								
3250	D1	6267	B2	9270	G3	9384	G14								
3251	D2	6268	F2	9273	J3	9385	E11								
3258	D1	6269	E2	9274	K3	9385	E14								
3259	C1	6270	F1	9275	I4	9386	E11								
3260	E1	6271	B2	9276	H4	9386	E14								
3261	E2	6272	B3	9279	J4	9387	D10								
3262	E1	6273	B3	9281	I4	9387	D14								
3263	D2	6274	I7	9265	G4	9388	D10								
3264	E1	6275	H7	9266	J4	9388	D14								



MECHANICAL PARTS

56	4822 290 81515	TERMINAL
200	4822 426 51572	FRONT ASSY
200	4822 426 51616	FRONT ASSY only/01X
203	4822 426 20215	BACKSIDE ASSY
203	4822 426 20233	BACKSIDE only/01U/01X
204	4822 462 41933	FOOT
219	4822 404 21242	PRESS BRACKET
233	4822 502 13921	GND TERMINAL
237	4822 466 62233	INSOLAT. PLATE
248	4822 492 71139	EAETH SPRING
250	4822 410 62079	SEL.BUTTON ASSY
251	4822 410 62027	DBB BUTTON
253	4822 466 93146	DBB DSP S.PLATE
255	4822 535 93321	POWER ROD
257	4822 459 11078	WORKMARK
260	4822 413 51415	VOL.KNOB ASSY
261	4822 450 61942	WINDOW ASSY AMPL.
262	4822 450 61909	IR WINDOW ASSY
263	4822 462 71849	TERMINAL
270	4822 450 61893	WINDOW TUNER
271	4822 410 62122	BUTTON TIMER ASSY
272	4822 410 62123	DISPLAY BUTTON ASSY
273	4822 410 62084	BUTTON PRESET ASSY
274	4822 404 21246	SUPPORTING PIECE
285	4822 423 41181	BATTERY COVER
286	4822 492 63982	BATTERY CONTACT
287	4822 492 71116	BATTERY SPRING
288	4822 492 70868	BATTERY SPRING +
292	4822 466 30424	FTD SCREEN PLATE
295	4822 410 62431	KNOP KARAOKE only/01X
333	4822 321 10249	CORD SET
333	4822 321 10886	CORD SET /05U
1101	4822 210 10491	TUNER
1101	4822 210 10492	TUNER /02U
1110	4822 267 10283	FM ANT.SOCKET
1111	4822 267 31505	AM ANT.SOCKET
1261	4822 267 20432	PUCH TERMINAL 4X2P
1270	4822 265 31015	MAINS SOCKET
1271	4822 276 13277	POWER SWITCH
1458	4822 267 60331	CONNECTOR 19P
1462	4822 267 31503	PIN JACK 2F.
1463	4822 267 31504	PIN JACK 2F.
1551	4822 267 51159	PIN JACK 8F.
1681	4822 130 91122	DISPLAY TUNER
1682	4822 130 91153	DISPLAY AMPL.
1710	4822 267 31519	HEADPHONE SOCKET
3790	4822 102 10414	VOLUME ASSY 2X20k
5001	4822 146 31161	TRAFO
5001	4822 146 31156	TRAFO only/01/01X
5001	4822 146 31158	TRAFO only/10
5250	4822 280 70368	RELAY
6652	4822 214 52009	GP1U58XP
	4822 218 10467	REMOTE CONTROL RH6622

MAINS TRAFO DIAGRAM



TUNER PART

MISCELLANEOUS

1101	4822 210 10491	TUNER FEE337-A05
1101	4822 210 10492	TUNER FE415-G11/02
1110	4822 267 10283	FM ANT SOCKET
1111	4822 267 31505	AM ANT SOCKET

CAPACITORS

2101	5322 122 34099	470pF 10% 63V
2102	5322 122 32268	470pF 10% 50V /02
2103	4822 124 40433	47µF 20% 25V
2104	4822 121 42408	220nF 5% 63V
2105	5322 122 32287	4,7pF 5% 50V
2105	5322 122 32965	18pF 5%NPO 50V /02
2107	4822 122 10225	82pF 5% 50V
2107	4822 122 31385	22pF 50V /02
2108	5322 122 32654	22nF 10% 63V
2109	5322 122 32654	22nF 10% 63V
2110	5322 122 32654	22nF 10% 63V
2112	5322 122 32654	22nF 10% 63V
2113	5322 122 32661	56pF 5% 50V
2114	5322 124 41431	22µF 20% 35V
2115	4822 124 40239	0,47µF 20% 63V
2116	5322 121 42386	100nF 5% 63V
2117	4822 121 41935	12nF 5% 250V
2117	4822 121 43179	18nF 5% 250V /17
2118	4822 121 41935	12nF 5% 250V
2118	4822 121 43179	18nF 5% 250V /17
2119	4822 124 40244	2,2µF 20% 63V
2120	4822 124 40244	2,2µF 20% 63V
2121	4822 124 40196	220µF 20% 16V
2123	4822 124 40246	4,7µF 20% 63V
2124	4822 124 40246	4,7µF 20% 63V
2125	4822 122 33177	10nF 20% 50V
2126	4822 122 31782	15000pF 10% 50V
2129	4822 124 40242	1µF 20% 63V
2131	4822 124 40435	10µF 20% 50V
2140	4822 125 60102	TRIMMER 30pF
2141	4822 125 60101	TRIMMER 10pF
2142	4822 125 60102	TRIMMER 30pF
2143	5322 122 32269	6,8pF 5% 50V
2144	4822 121 42408	220nF 5% 63V
2145	4822 121 51263	510pF 1% 400V
2145	4822 121 51381	560pF 5% 400V /17
2146	4822 121 70082	430pF 1% 400V
2147	5322 122 32654	22nF 10% 63V
2148	5322 122 32452	47pF 5% 63V
2149	4822 122 33177	10nF 20% 50V
2150	5322 122 32654	22nF 10% 63V
2151	5322 122 34099	470pF 10% 63V
2152	4822 124 40242	1µF 20% 63V
2153	5322 122 34099	470pF 10% 63V
2154	5322 122 32481	15pF 5% 50V
2155	5322 122 32965	18pF 5%NPO 50V
2156	4822 124 40433	47µF 20% 25V
2158	5322 126 10223	4,7nF 10% 63V
2159	5322 126 10223	4,7nF 10% 63V
2160	4822 124 41631	1,5µF 50V
2161	4822 122 32927	220nF
2162	4822 122 10166	22nF 30% 16V
2165	4822 124 40433	47µF 20% 25V
2196	5322 122 32448	10pF 5% 50V
2197	4822 122 33804	27pF 5% 50V /17
2210	4822 124 41643	100µF 20% 16V
2215	5322 122 32268	470pF 10% 50V /02
2216	5322 122 32268	470pF 10% 50V /02
2219	4822 122 32927	220nF
2221	5322 122 32268	470pF 10% 50V /02
2222	5322 122 32268	470pF 10% 50V
2223	4822 122 32927	220nF
2224	4822 122 32575	220pF 10% 500V
2225	4822 122 32575	220pF 10% 500V

RESISTORS

3100	4822 050 21501	150Ω 1% 0,6W
3101	4822 050 21501	150Ω 1% 0,6W
3102	4822 051 20224	220k 5% 0,1W /02
3103	4822 051 20008	0Ω 5% 0,1W
3104	4822 051 20008	0Ω 5% 0,1W
3104	4822 051 20154	150k 5% 0,1W /02
3105	4822 051 20562	5k6 5% 0,1W
3106	4822 051 20829	82Ω 5% 0,1W
3107	4822 051 20104	100k 5% 0,1W
3108	4822 050 24701	470Ω 1% 0,6W
3113	4822 053 10221	220Ω 5% 1W
3114	4822 051 20472	4k7 5% 0,1W
3115	4822 051 20391	390Ω 5% 0,1W
3116	4822 051 20478	4Ω7 5% 0,1W
3117	4822 051 20331	330Ω 5% 0,1W
3118	4822 116 52215	220Ω 5% 0,5W
3120	4822 052 10339	33Ω 5% 0,33W
3121	4822 051 20272	2k7 5% 0,1W
3122	4822 051 20562	5k6 5% 0,1W
3123	4822 051 20223	22k 5% 0,1W
3124	4822 051 20103	10k 5% 0,1W
3125	4822 100 11213	TRIMMER 22k 30%
3126	4822 051 20123	12k 5% 0,1W
3127	4822 051 20562	5k6 5% 0,1W
3128	4822 051 20562	5k6 5% 0,1W

3129	4822 051 20103	10k 5% 0,1W
3131	4822 100 11319	TRIMMER 4k7
3132	4822 051 20103	10k 5% 0,1W
3133	4822 051 20008	0Ω 5% 0,1W
3134	4822 050 15602	5k6 1% 0,4W
3135	4822 051 10008	0Ω 5% 0,25W
3140	4822 051 20821	820Ω 5% 0,1W
3141	4822 051 20182	1k8 5% 0,1W
3142	4822 051 20472	4k7 5% 0,1W
3143	4822 051 20821	820Ω 5% 0,1W
3144	4822 051 20331	330Ω 5% 0,1W
3145	4822 051 20271	270Ω 5% 0,1W
3146	4822 053 10151	150Ω 5% 1W
3147	4822 050 15602	5k6 1% 0,4W
3148	4822 051 20104	100k 5% 0,1W
3149	4822 051 20472	4k7 5% 0,1W
3150	4822 050 25601	560Ω 1% 0,6W
3151	4822 050 24702	4k7 1% 0,6W
3152	4822 051 20103	10k 5% 0,1W
3153	4822 051 20008	0Ω 5% 0,1W /17
3154	4822 051 20008	0Ω 5% 0,1W /17
3155	4822 050 22201	220Ω 1% 0,6W
3156	4822 051 20153	15k 5% 0,1W
3157	4822 051 20472	4k7 5% 0,1W
3158	4822 050 24702	4k7 1% 0,6W
3159	4822 051 20104	100k 5% 0,1W
3160	4822 051 20104	100k 5% 0,1W
3162	4822 050 23901	390Ω 1% 0,6W
3163	4822 051 20103	10k 5% 0,1W
3164	4822 051 20473	47k 5% 0,1W
3165	4822 050 21002	1k 1% 0,6W
3166	4822 050 21002	1k 1% 0,6W
3167	4822 050 21002	1k 1% 0,6W
3170	4822 051 20223	22k 5% 0,1W
3171	4822 051 20103	10k 5% 0,1W
3172	4822 051 20472	4k7 5% 0,1W
3173	4822 051 20223	22k 5% 0,1W
3183	4822 050 21003	10k 1% 0,6W
3184	4822 051 20332	3k3 5% 0,1W
3185	4822 051 20103	10k 5% 0,1W
3186	4822 050 21003	10k 1% 0,6W
3187	4822 051 20103	10k 5% 0,1W
3190	4822 051 20479	47Ω 5% 0,1W
3194	4822 051 20472	4k7 5% 0,1W
3196	4822 051 20008	0Ω 5% 0,1W
3197	4822 051 20008	0Ω 5% 0,1W
3198	4822 051 20103	10k 5% 0,1W
3200	4822 051 20008	0Ω 5% 0,1W
3202	4822 051 20008	0Ω 5% 0,1W
3223	4822 051 20474	470k 5% 0,1W
3225	4822 050 21002	1k 1% 0,6W
3230	4822 051 20223	22k 5% 0,1W
3231	4822 051 20223	22k 5% 0,1W
3233	4822 051 10102	1k 2% 0,25W
3236	4822 051 20008	0Ω 5% 0,1W
3240	4822 051 20182	1k8 5% 0,1W
3241	4822 051 20008	0Ω 5% 0,1W

COILS

5101	4822 157 53192	0,22µH 20%
5103	4822 242 81249	CER TER 10,7MHz
5104	4822 157 63029	IFT AM
5105	4822 157 63904	DET COIL
5106	4822 157 63802	BIRDY TER
5107	4822 157 63799	MW AERIAL COIL
5107	4822 157 63835	MW AERIAL COIL /17
5108	4822 157 63912	AM OSC
5108	4822 157 63836	AM OSC /17
5109	4822 157 63801	LW AERIAL COIL
5110	4822 242 71878	CER TER 450kHZ
5111	4822 242 81248	CER RES 19kHZ
5112	4822 242 72976	X'TAL RES 7.2MHz
5113	4822 242 81249	SFE10,7MS3GH-A
5114	4822 152 20699	560µH

DIODES

6101	4822 130 34174	BZX79-C4V7
6102	4822 130 83075	HN1V02H
6109	4822 130 30621	1N4148
6121	4822 130 30621	1N4148 /17
6123	4822 130 30621	1N4148 /17

TRANSISTORS & IC's

7101	4822 130 60163	2SC1047
7103	4822 209 31001	LA1851N
7104	5322 130 60068	BC558C
7105	4822 209 30178	LC7218
7106	5322 130 60068	BC558C
7107	5322 130 41982	BC848B
7108	4822 130 44196	BC548C
7109	4822 130 44196	BC548C
7110	5322 130 44779	BC338-40
7111	5322 130 41982	BC848B
7112	4822 130 60163	2SC1047
7113	4822 130 44196	BC548C
7114	5322 130 44779	BC338-40
7115	4822 130 41024	BF245B
7116	4822 130 60163	2SC1047
7119	5322 130 41983	BC858B
7120	4822 130 44196	BC548C
7150	5322 130 44779	BC338-40
7157	5322 130 44779	BC338-40

MISCELLANEOUS

23	4822 492 70583	CLAMPING SPRING
34	4822 255 40128	CLIP
56	4822 290 81515	TERMINAL
61	4822 256 91974	HOLDER
1250	4822 071 53152	FUSE T3.15A
1251	4822 071 53152	FUSE T3.15A
1261	4822 267 20432	TERMINAL 4X2P
1270	4822 265 31015	MAINS SOCKET
1271	4822 276 13277	POWER SWITCH
1291	4822 265 31001	SOCKET
1350	4822 071 51602	FUSE T1.6A
1351	4822 071 51602	FUSE T1.6A
1352	4822 071 51602	FUSE T1.6A
1353	4822 071 51602	FUSE T1.6A
1354	4822 071 56301	FUSE T630MA
1458	4822 267 60331	CONNECTOR 19P
1462	4822 267 31503	PIN JACK 2F.
1463	4822 267 31504	PIN JACK 2F.
1551	4822 267 51159	PIN JACK 8F.
1650	4822 276 13114	TACT SWITCH
1651	4822 276 13114	TACT SWITCH
1652	4822 276 13114	TACT SWITCH
1653	4822 276 13114	TACT SWITCH
1654	4822 276 13114	TACT SWITCH
1655	4822 276 13106	TACT SWITCH
1656	4822 276 13106	TACT SWITCH
1658	4822 276 13106	TACT SWITCH
1660	4822 276 13106	TACT SWITCH
1661	4822 276 13106	TACT SWITCH
1662	4822 276 13114	TACT SWITCH
1663	4822 276 13114	TACT SWITCH
1664	4822 276 13114	TACT SWITCH
1665	4822 276 13114	TACT SWITCH
1666	4822 276 13106	TACT SWITCH
1667	4822 276 13106	TACT SWITCH
1668	4822 276 13106	TACT SWITCH
1669	4822 276 13106	TACT SWITCH
1670	4822 276 13106	TACT SWITCH
1671	4822 276 13106	TACT SWITCH
1672	4822 276 13106	TACT SWITCH
1674	4822 276 13106	TACT SWITCH
1675	4822 276 13106	TACT SWITCH
1676	4822 276 13106	TACT SWITCH
1677	4822 276 13106	TACT SWITCH
1678	4822 276 13106	TACT SWITCH
1681	4822 130 91122	DISPLAY TUNER
1683	4822 130 91153	DISPLAY AMPL.
1700	4822 280 10261	BUZZER
1710	4822 267 31519	HEADPHONE SOCKET
1800	4822 267 31607	PHONE SOCKET only/01X

CAPACITORS

2250	4822 124 40242	1µF 20% 63V
2251	4822 124 40242	1µF 20% 63V
2252	4822 122 10183	100pF 5% 50V
2253	4822 122 10183	100pF 5% 50V
2254	4822 122 10183	100pF 5% 50V
2255	4822 122 10183	100pF 5% 50V
2256	4822 122 31435	470pF 10% 50V
2257	4822 122 31435	470pF 10% 50V
2258	4822 124 40196	220µF 20% 16V
2259	4822 124 40196	220µF 20% 16V
2260	4822 124 41643	100µF 20% 16V
2261	4822 124 41643	100µF 20% 16V
2264	4822 126 11307	180pF 10% 500V
2265	4822 126 11307	180pF 10% 500V
2268	4822 122 10173	820pF 10% 50V
2269	4822 122 10173	820pF 10% 50V
2270	4822 124 41525	100µF 20% 25V
2271	4822 124 41525	100µF 20% 25V
2274	4822 126 11308	47pF 5% 500V
2275	4822 126 11308	47pF 5% 500V
2276	4822 124 41584	100µF 20% 10V
2277	4822 124 41584	100µF 20% 10V
2278	4822 124 41596	22µF 20% 50V
2279	4822 124 41596	22µF 20% 50V
2280	4822 124 40242	1µF 20% 63V
2281	4822 124 40242	1µF 20% 63V
2284	4822 121 43526	47nF 5% 100V
2285	4822 121 43526	47nF 5% 100V
2286	4822 122 10176	4,7nF 10% 50V
2287	4822 122 10176	4,7nF 10% 50V
2288	4822 122 10176	4,7nF 10% 50V
2289	4822 122 10176	4,7nF 10% 50V
2290	4822 122 10166	22nF 30% 16V
2292	5322 121 42386	100nF 5% 63V
2293	4822 124 40435	10µF 20% 50V
2296	4822 124 40239	0,47µF 20% 63V
2300	4822 124 42117	4700µF 20% 50V
2301	4822 124 42117	4700µF 20% 50V
2304	4822 121 43526	47nF 5% 100V
2305	4822 121 43526	47nF 5% 100V
2306	4822 121 43526	47nF 5% 100V
2350	4822 124 42121	4700µF 35V
2351	4822 124 41334	470µF 20% 35V
2352	5322 124 21189	100µF 20% 40V
2353	4822 124 40433	47µF 20% 25V
2354	4822 122 10158	1nF 10% 50V
2355	4822 124 41525	100µF 20% 25V
2356	4822 124 40433	47µF 20% 25V
2357	4822 122 10158	1nF 10% 50V
2358	4822 124 41334	470µF 20% 35V

2359	4822 124 41334	470µF 20% 35V
2360	4822 124 80194	470µF 20% 100V
2361	4822 122 10158	1nF 10% 50V
2362	4822 122 10158	1nF 10% 50V
2363	4822 124 42119	4700µF 20% 25V
2364	4822 124 42118	1000µF 20% 25V
2365	4822 121 43526	47nF 5% 100V
2366	4822 121 43526	47nF 5% 100V
2367	4822 121 43526	47nF 5% 100V
2368	4822 124 40244	2,2µF 20% 63V
2369	4822 124 40177	47µF 20% 10V
2370	4822 124 40177	47µF 20% 10V
2371	4822 124 40242	1µF 20% 63V
2372	4822 124 41584	100µF 20% 10V
2451	5322 122 32531	100pF 5% 50V
2452	5322 122 32531	100pF 5% 50V
2453	4822 124 40242	1µF 20% 63V
2454	4822 124 40242	1µF 20% 63V
2455	5322 122 32531	100pF 5% 50V
2456	5322 122 32531	100pF 5% 50V
2457	5322 116 80853	560pF 5% 63V
2458	5322 116 80853	560pF 5% 63V
2459	4822 124 40435	10µF 20% 50V
2460	4822 124 40435	10µF 20% 50V
2461	4822 122 33177	10nF 20% 50V
2462	4822 122 33177	10nF 20% 50V
2463	5322 126 10223	4,7nF 10% 63V
2464	5322 126 10223	4,7nF 10% 63V
2465	4822 124 40435	10µF 20% 50V
2466	4822 124 40435	10µF 20% 50V
2467	4822 124 40433	47µF 20% 25V
2468	4822 124 40433	47µF 20% 25V
2469	5322 122 32654	22nF 10% 63V
2470	5322 122 32654	22nF 10% 63V
2471	4822 124 40242	1µF 20% 63V
2471	5322 124 41431	22µF only/01X
2472	4822 124 40242	1µF 20% 63V
2472	5322 124 41431	22µF only/01X
2473	5322 122 31946	27pF 10% 50V
2474	5322 122 31946	27pF 10% 50V
2475	5322 116 80853	560pF 5% 63V
2476	5322 116 80853	560pF 5% 63V
2477	4822 124 40433	47µF 20% 25V
2478	4822 124 40433	47µF 20% 25V
2479	4822 124 40433	47µF 20% 25V
2480	4822 124 40433	47µF 20% 25V
2481	5322 122 32654	22nF 10% 63V
2482	5322 122 32654	22nF 10% 63V
2483	4822 124 40433	47µF 20% 25V
2484	4822 124 40433	47µF 20% 25V
2485	5322 122 32654	22nF 10% 63V
2486	5322 122 32654	22nF 10% 63V
2487	4822 122 33342	33nF 10% 63V
2574	4822 124 40435	10µF 20% 50V
2575	5322 122 32531	100pF 5% 50V
2576	5322 122 32531	100pF 5% 50V
2577	5322 116 80853	560pF 5% 63V
2578	5322 116 80853	560pF 5% 63V
2579	5322 126 10223	4,7nF 10% 63V
2580	5322 126 10223	4,7nF 10% 63V
2581	4822 124 40435	10µF 20% 50V
2582	4822 124 40435	10µF 20% 50V
2585	4822 122 33342	33nF 10% 63V
2586	4822 122 33496	100nF 10% 63V
2587	4822 124 40242	1µF 20% 63V
2588	5322 116 80853	560pF 5% 63V
2589	5322 116 80853	560pF 5% 63V
2590	5322 116 80853	560pF 5% 63V
2591	4822 124 40246	4,7µF 20% 63V
2592	4822 124 40246	4,7µF 20% 63V
2593	5322 122 32531	100pF 5% 50V
2594	5322 122 32531	100pF 5% 50V
2595	4822 122 32542	47nF 10% 63V
2596	4822 122 32542	47nF 10% 63V
2597	4822 124 40246	4,7µF 20% 63V
2598	4822 124 40246	4,7µF 20% 63V
2599	4822 124 40433	47µF 20% 25V
2601	5322 122 31865	1,5nF 10% 63V
2602	5322 122 31865	1,5nF 10% 63V
2603	4822 122 33891	3,3nF 10% 63V
2604	4822 122 33891	3,3nF 10% 63V
2605	4822 122 33336	8,2nF 10% 50V
2606	4822 122 33336	8,2nF 10% 50V
2607	5322 122 32654	22nF 10% 63V
2608	5322 122 32654	22nF 10% 63V
2609	4822 122 33105	56nF 10% 63V
2610	4822 122 33105	56nF 10% 63V
2611	4822 126 11691	150nF
2612	4822 126 11691	150nF
2613	5322 121 42661	330nF 5% 63V
2614	5322 121 42661	330nF 5% 63V
2615	5322 126 10223	4,7nF 10% 63V
2616	5322 126 10223	4,7nF 10% 63V
2617	5322 122 31866	6,8nF 10% 63V
2618	5322 122 31866	6,8nF 10% 63V
2619	4822 122 33893	18nF 10% 63V
2620	4822 122 33893	18nF 10% 63V
2621	4822 122 33608	39nF 10% 63V
2622	4822 122 33608	39nF 10% 63V
2623	4822 122 33496	100nF 10% 63V
2624	4822 122 33496	100nF 10% 63V
2625	4822 121 41738	270nF 5% 63V
2626	4822 121 41738	270nF 5% 63V
2627	5322 121 42498	680nF 5% 63V
2628	5322 121 42498	680nF 5% 63V
2629	5322 122 34099	470pF 10% 63V
2630	5322 122 34099	470pF 10% 63V
2631	4822 122 31797	22nF 10% 63V

2632	4822 122 31797	22nF 10% 63V
2633	4822 122 31797	22nF 10% 63V
2634	4822 122 31797	22nF 10% 63V
2635	4822 124 40246	4,7µF 20% 63V
2636	4822 124 40246	4,7µF 20% 63V
2637	4822 124 40246	4,7µF 20% 63V
2638	4822 124 40246	4,7µF 20% 63V
2639	4822 124 40433	47µF 20% 25V
2640	4822 124 40433	47µF 20% 25V
2641	4822 124 40433	47µF 20% 25V
2642	4822 124 40433	47µF 20% 25V
2645	5322 122 32658	22pF 5% 50V
2646	5322 122 32658	22pF 5% 50V
2647	5322 122 32531	100pF 5% 50V
2648	5322 122 32531	100pF 5% 50V
2649	5322 116 80853	560pF 5% 63V
2650	5322 122 32654	22nF 10% 63V
2650	4822 121 51252	470nF 5% 63V
2651	4822 124 23178	47µF 20% 16V
2652	4822 126 11585	22nF
2653	4822 121 42408	220nF 5% 63V
2654	4822 121 51387	10nF 20% 16V
2655	4822 126 11585	22nF
2656	4822 124 80195	470µF 20% 10V
2658	5322 121 42386	100nF 5% 63V
2661	4822 122 33191	22pF 5% 50V
2662	4822 122 33191	22pF 5% 50V
2671	4822 121 51252	470nF 5% 63V
2672	4822 121 51252	470nF 5% 63V
2673	4822 121 51252	470nF 5% 63V
2674	4822 121 51252	470nF 5% 63V
2679	5322 121 42386	100nF 5% 63V
2682	4822 122 90099	8X100pF
2684	4822 122 10459	560pF 10% 50V
2685	4822 122 10459	560pF 10% 50V
2761	4822 122 10459	560pF 10% 50V
2765	4822 124 41525	100µF 20% 25V
2766	4822 124 40246	4,7µF 20% 63V
2767	4822 124 40246	4,7µF 20% 63V
2768	4822 124 40435	10µF 20% 50V
2769	4822 124 40435	10µF 20% 50V
2770	4822 124 40435	10µF 20% 50V
2785	4822 124 41525	100µF 20% 25V
2787	4822 124 40435	10µF 20% 50V
2788	4822 124 41525	100µF 20% 25V
2789	4822 124 41525	100µF 20% 25V
2790	5322 121 42661	330nF 5% 63V
2791	4822 121 51387	10nF 20% 16V
2792	4822 121 51387	10nF 20% 16V
2795	4822 121 51356	180nF 10% 63V
2796	4822 121 51356	180nF 10% 63V
2797	4822 124 40435	10µF 20% 50V
2800	4822 124 40433	47µF only/01X
2801	4822 124 40433	47µF only/01X
2802	4822 122 33848	47pF only/01X
2803	4822 124 40435	10µF only/01X
2804	4822 124 40242	1µF only/01X
2805	4822 126 11714	4N7 only/01X
2806	4822 122 33195	100pF only/01X
2807	4822 121 51387	10nF only/01X
2808	4822 122 33195	100pF only/01X

RESISTORS

3250	4822 116 52303	8k2 5% 0,5W
3251	4822 116 52303	8k2 5% 0,5W
3258	4822 050 22203	22k 1% 0,6W
3259	4822 050 22203	22k 1% 0,6W
3260	4822 050 21002	1k 1% 0,6W
3261	4822 050 21002	1k 1% 0,6W
3262	4822 116 52224	470Ω 5% 0,5W
3263	4822 116 52224	470Ω 5% 0,5W
3264	4822 116 52217	270Ω 5% 0,5W
3265	4822 116 52217	270Ω 5% 0,5W
3268	4822 050 22203	22k 1% 0,6W
3269	4822 050 22203	22k 1% 0,6W
3270	4822 053 10122	1k2 5% 1W
3271	4822 053 10122	1k2 5% 1W
3272	4822 050 26801	680Ω 1% 0,6W
3273	4822 050 26801	680Ω 1% 0,6W
3274	4822 050 22202	2k2 1% 0,6W
3275	4822 050 22202	2k2 1% 0,6W
3276	4822 050 16809	68Ω 1% 0,4W
3277	4822 050 16809	68Ω 1% 0,4W
3278	4822 053 12152	1k5 5% 3W
3279	4822 053 12152	1k5 5% 3W
3280	4822 050 21502	1k5 1% 0,6W
3281	4822 050 21502	1k5 1% 0,6W
3282	4822 050 23302	3k3 1% 0,6W
3283	4822 050 23302	3k3 1% 0,6W
3284	4822 100 11677	470Ω 30%LIN 0.2W
3285	4822 100 11677	470Ω 30%LIN 0.2W
3286	4822 050 21002	1k 1% 0,6W
3287	4822 050 21002	1k 1% 0,6W
3288	4822 050 23002	3k 1% 0,6W
3289	4822 050 23002	3k 1% 0,6W
3290	4822 053 10222	2k2 5% 1W
3291	4822 053 10222	2k2 5% 1W
3294	4822 116 52217	270Ω 5% 0,5W
3295	4822 116 52217	270Ω 5% 0,5W
3296	4822 116 52217	270Ω 5% 0,5W
3297	4822 116 52217	270Ω 5% 0,5W
3298	4822 116 52224	470Ω 5% 0,5W
3299	4822 116 52224	470Ω 5% 0,5W
3300	4822 116 52224	470Ω 5% 0,5W
3301	4822 116 52224	470Ω 5% 0,5W
3302	4822 113 80598	0Ω22 5% 3W

3303	4822 113 80598	0Ω22 5% 3W
3304	4822 113 80598	0Ω22 5% 3W
3305	4822 113 80598	0Ω22 5% 3W
3312	4822 052 10279	27Ω 5% 0,33W
3313	4822 052 10279	27Ω 5% 0,33W
3314	4822 052 10109	10Ω 5% 0,33W
3315	4822 052 10109	10Ω 5% 0,33W
3316	4822 052 10478	4Ω7 5% 0,33W
3317	4822 052 10478	4Ω7 5% 0,33W
3318	4822 050 21002	1k 1% 0,6W
3319	4822 050 21002	1k 1% 0,6W
3320	4822 116 52234	100k 5% 0,5W
3321	4822 116 52234	100k 5% 0,5W
3322	4822 050 22203	22k 1% 0,6W
3323	4822 050 22203	22k 1% 0,6W
3324	4822 051 10101	100Ω 2% 0,25W
3325	4822 051 10101	100Ω 2% 0,25W
3330	4822 116 52234	100k 5% 0,5W
3331	4822 050 26803	68k 1% 0,6W
3332	4822 050 22203	22k 1% 0,6W
3333	4822 050 21501	150Ω 1% 0,6W
3334	4822 050 24702	4k7 1% 0,6W
3335	4822 050 24703	47k 1% 0,6W
3336	4822 050 22203	22k 1% 0,6W
3340	4822 113 80607	330Ω 5%
3341	4822 113 80607	330Ω 5%
3342	4822 050 21801	180Ω 1% 0,6W
3343	4822 050 21801	180Ω 1% 0,6W
3350	4822 050 21802	1k8 1% 0,6W
3351	4822 050 21202	1k2 1% 0,6W
3352	4822 052 10479	47Ω 5% 0,33W
3353	4822 050 22202	2k2 1% 0,6W
3354	4822 052 10478	4Ω7 5% 0,33W
3355	4822 050 21003	10k 1% 0,6W
3356	4822 050 24702	4k7 1% 0,6W
3357	4822 050 23302	3k3 1% 0,6W
3358	4822 052 10479	47Ω 5% 0,33W
3359	4822 050 21502	1k5 1% 0,6W
3361	4822 050 26802	6k8 1% 0,6W
3362	4822 053 10229	22Ω 5% 1W
3363	4822 053 10229	22Ω 5% 1W
3364	4822 050 21003	10k 1% 0,6W
3365	4822 050 23903	39k 1% 0,6W
3367	4822 050 25602	5k6 1% 0,6W
3368	4822 052 10229	22Ω 5% 0,33W
3369	4822 050 24703	47k 1% 0,6W
3370	4822 050 24702	4k7 1% 0,6W
3371	4822 050 24703	47k 1% 0,6W
3372	4822 050 24703	47k 1% 0,6W
3373	4822 050 21803	18k 1% 0,6W
3374	4822 051 10101	100Ω 2% 0,25W
3375	4822 050 21003	10k 1% 0,6W
3376	4822 050 26802	6k8 1% 0,6W
3377	4822 050 22203	22k 1% 0,6W
3378	4822 050 21003	10k 1% 0,6W
3379	4822 050 22202	2k2 1% 0,6W
3385	4822 050 22203	22k 1% 0,6W
3386	4822 052 10688	6Ω8 5% 0,33W
3387	4822 050 21002	1k 1% 0,6W
3388	4822 052 10688	6Ω8 5% 0,33W
3451	4822 050 23901	390Ω 1% 0,6W
3452	4822 050 23901	390Ω 1% 0,6W
3453	4822 050 13304	330k 1% 0,4W
3454	4822 050 13304	330k 1% 0,4W
3455	4822 050 15603	56k 1% 0,4W
3456	4822 050 15603	56k 1% 0,4W
3457	4822 050 23901	390Ω 1% 0,6W
3458	4822 050 23901	390Ω 1% 0,6W
3459	4822 050 21001	100Ω 1% 0,6W
3460	4822 050 21001	100Ω 1% 0,6W
3461	4822 050 25601	560Ω 1% 0,6W
3462	4822 050 25601	560Ω 1% 0,6W
3463	4822 050 13304	330k 1% 0,4W
3464	4822 050 13304	330k 1% 0,4W
3465	4822 050 12703	27k 1% 0,4W
3466	4822 050 12703	27k 1% 0,4W
3467	4822 116 52306	9k1 5% 0,5W
3468	4822 116 52306	9k1 5% 0,5W
3469	4822 116 52247	16k 5% 0,5W
3470	4822 116 52247	16k 5% 0,5W
3471	4822 116 52217	270Ω 5% 0,5W
3472	4822 116 52217	270Ω 5% 0,5W
3473	4822 050 22203	22k 1% 0,6W
3474	4822 050 22203	22k 1% 0,6W
3475	4822 050 22003	20k 1% 0,6W
3476	4822 050 22003	20k 1% 0,6W
3477	4822 051 20223	22k 5% 0,1W
3478	4822 050 22203	22k 1% 0,6W
3479	4822 051 20562	5k6 5% 0,1W
3480	4822 051 20562	5k6 5% 0,1W
3481	4822 116 52256	2k2 5% 0,5W
3482	4822 116 52256	2k2 5% 0,5W
3483	4822 116 52257	22k 5% 0,5W
3484	4822 116 52257	22k 5% 0,5W
3485	4822 116 52257	22k 5% 0,5W
3486	4822 116 52257	22k 5% 0,5W
3487	4822 050 21003	10k 1% 0,6W
3488	4822 050 21003	10k 1% 0,6W
3489	4822 050 21003	10k 1% 0,6W
3490	4822 050 21003	10k 1% 0,6W
3491	4822 116 52233	10k 5% 0,5W
3492	4822 116 52233	10k 5% 0,5W
3493	4822 050 21203	12k 1% 0,6W
3494	4822 050 21203	12k 1% 0,6W
3495	4822 116 52256	2k2 5% 0,5W
3496	4822 116 52256	2k2 5% 0,5W
3497	4822 116 52217	270Ω 5% 0,5W
3498	4822 116 52217	270Ω 5% 0,5W

3499	4822 116 52269	3k3 5% 0,5W
3500	4822 050 24701	470Ω 1% 0,6W
3501	4822 051 20223	22k 5% 0,1W
3502	4822 051 20223	22k 5% 0,1W
3503	4822 051 20104	100k 5% 0,1W
3504	4822 051 20104	100k 5% 0,1W
3505	4822 051 20683	68k 5% 0,1W
3506	4822 050 26803	68k 1% 0,6W
3507	4822 051 20561	560Ω 5% 0,1W
3508	4822 050 25601	560Ω 1% 0,6W
3509	4822 051 20104	100k 5% 0,1W
3510	4822 111 50521	100k 5%
3511	4822 116 52217	270Ω 5% 0,5W
3512	4822 116 52217	270Ω 5% 0,5W
3513	4822 051 20392	3k9 5% 0,1W
3514	4822 051 20392	3k9 5% 0,1W
3563	4822 116 52263	2k7 5% 0,5W
3564	4822 116 52263	2k7 5% 0,5W
3575	4822 051 10102	1k 2% 0,25W
3576	4822 051 10102	1k 2% 0,25W
3577	4822 051 20103	10k 5% 0,1W
3578	4822 051 20103	10k 5% 0,1W
3579	4822 116 52217	270Ω 5% 0,5W
3580	4822 116 52217	270Ω 5% 0,5W
3581	4822 050 21003	10k 1% 0,6W
3582	4822 051 10106	10M 5% 0,25W
3583	4822 051 20104	100k 5% 0,1W
3584	4822 051 20473	47k 5% 0,1W
3585	4822 050 21002	1k 1% 0,6W
3586	4822 050 21002	1k 1% 0,6W
3587	4822 050 21002	1k 1% 0,6W
3601	4822 116 52238	12k 5% 0,5W
3602	4822 116 52238	12k 5% 0,5W
3603	4822 051 20123	12k 5% 0,1W
3604	4822 051 20123	12k 5% 0,1W
3605	4822 050 21003	10k 1% 0,6W
3606	4822 051 20103	10k 5% 0,1W
3607	4822 051 20474	470k 5% 0,1W
3608	4822 051 20474	470k 5% 0,1W
3609	4822 051 20474	470k 5% 0,1W
3610	4822 051 20474	470k 5% 0,1W
3611	4822 051 20474	470k 5% 0,1W
3612	4822 051 20474	470k 5% 0,1W
3613	4822 051 20474	470k 5% 0,1W
3614	4822 051 20474	470k 5% 0,1W
3615	4822 051 20474	470k 5% 0,1W
3616	4822 051 20474	470k 5% 0,1W
3617	4822 051 20474	470k 5% 0,1W
3618	4822 051 20474	470k 5% 0,1W
3619	4822 051 20474	470k 5% 0,1W
3620	4822 051 20474	470k 5% 0,1W
3621	4822 052 10159	15Ω 5% 0,33W
3622	4822 052 10159	15Ω 5% 0,33W
3623	4822 051 20104	100k 5% 0,1W
3624	4822 051 20104	100k 5% 0,1W
3625	4822 051 20104	100k 5% 0,1W
3626	4822 051 20104	100k 5% 0,1W
3627	4822 051 20104	100k 5% 0,1W
3628	4822 051 20104	100k 5% 0,1W
3629	4822 052 10159	15Ω 5% 0,33W
3630	4822 052 10159	15Ω 5% 0,33W
3631	4822 051 20104	100k 5% 0,1W
3632	4822 051 20104	100k 5% 0,1W
3633	4822 051 20104	100k 5% 0,1W
3634	4822 051 20104	100k 5% 0,1W
3635	4822 051 20222	2k2 only/01X
3636	4822 051 20222	2k2 only/01X
3637	4822 116 52269	3k3 5% 0,5W
3638	4822 051 20109	10Ω 5% 0,1W
3639	4822 051 20008	0Ω 5% 0,1W
3640	4822 051 10102	1k 2% 0,25W
3641	4822 051 10102	1k 2% 0,25W
3642	4822 051 10102	1k 2% 0,25W
3643	4822 051 20103	10k 5% 0,1W
3644	4822 051 20103	10k 5% 0,1W
3650	4822 116 52233	10k 5% 0,5W
3651	4822 116 52234	100k 5% 0,5W
3654	4822 116 52284	47k 5% 0,5W
3655	4822 116 52284	47k 5% 0,5W
3656	4822 116 52284	47k 5% 0,5W
3657	4822 116 52251	18k 5% 0,5W
3658	4822 116 52283	4k7 5% 0,5W
3659	4822 116 52233	10k 5% 0,5W
3660	4822 116 52219	330Ω 5% 0,5W
3661	4822 116 52233	10k 5% 0,5W
3666	4822 050 11002	1k 1% 0,4W
3667	4822 050 11002	1k 1% 0,4W
3668	4822 050 21003	10k only/01X
3669	4822 050 11002	1k 1% 0,4W
3671	4822 116 52256	2k2 5% 0,5W
3672	4822 116 52256	2k2 5% 0,5W
3673	4822 116 52233	10k 5% 0,5W
3674	4822 116 52296	6k8 5% 0,5W
3675	4822 116 52224	470Ω 5% 0,5W
3676	4822 050 16802	6k8 1% 0,4W
3680	4822 050 24702	4k7 1% 0,6W
3682	4822 050 11002	1k 1% 0,4W
3683	4822 050 11002	1k 1% 0,4W
3684	4822 050 11002	1k 1% 0,4W
3688	4822 116 52233	10k 5% 0,5W
3689	4822 116 52304	82k 5% 0,5W
3696	4822 116 52233	10k 5% 0,5W
3697	4822 116 52304	82k 5% 0,5W
3698	4822 052 10478	4Ω7 5% 0,33W
3699	4822 052 10478	4Ω7 5% 0,33W
3700	4822 052 10688	6Ω8 5% 0,33W
3701	4822 052 10688	6Ω8 5% 0,33W
3705	4822 116 52297	68k 5% 0,5W

3706	4822 116 52297	68k 5% 0,5W
3707	4822 116 52297	68k 5% 0,5W
3708	4822 116 52297	68k 5% 0,5W
3713	4822 050 24702	4k7 1% 0,6W
3714	4822 116 52283	4k7 5% 0,5W
3715	4822 050 24702	4k7 1% 0,6W
3716	4822 050 21002	1k 1% 0,6W
3717	4822 050 21002	1k 1% 0,6W
3718	4822 050 21002	1k 1% 0,6W
3719	4822 050 11002	1k 1% 0,4W
3720	4822 050 21002	1k 1% 0,6W
3721	4822 050 11002	1k 1% 0,4W
3722	4822 050 21002	1k 1% 0,6W
3724	4822 050 21002	1k 1% 0,6W
3725	4822 050 21002	1k 1% 0,6W
3726	4822 050 24702	4k7 1% 0,6W
3727	4822 050 11002	1k 1% 0,4W
3728	4822 116 52283	4k7 5% 0,5W
3729	4822 116 52233	10k 5% 0,5W
3730	4822 116 52233	10k 5% 0,5W
3736	4822 116 52283	4k7 5% 0,5W
3737	4822 116 52283	4k7 5% 0,5W
3738	4822 116 52283	4k7 5% 0,5W
3739	4822 050 21002	1k 1% 0,6W
3740	4822 050 11002	1k 1% 0,4W
3741	4822 050 11002	1k 1% 0,4W
3742	4822 050 21002	1k 1% 0,6W
3743	4822 050 21002	1k 1% 0,6W
3744	4822 116 52233	10k 5% 0,5W
3745	4822 116 52283	4k7 5% 0,5W
3746	4822 116 52233	10k 5% 0,5W
3747	4822 116 52243	1k5 5% 0,5W
3764	4822 050 22201	220Ω 1% 0,6W
3765	4822 050 23902	3k9 1% 0,6W
3766	4822 116 52233	10k 5% 0,5W
3767	4822 116 52195	47Ω 5% 0,5W
3768	4822 116 52257	22k 5% 0,5W
3769	4822 116 52233	10k 5% 0,5W
3770	4822 116 52233	10k 5% 0,5W
3771	4822 116 52233	10k 5% 0,5W
3772	4822 116 52244	15k 5% 0,5W
3773	4822 116 52258	220k 5% 0,5W
3774	4822 116 52233	10k 5% 0,5W
3775	4822 116 52258	220k 5% 0,5W
3776	4822 116 52264	27k 5% 0,5W
3777	4822 116 52264	27k 5% 0,5W
3778	4822 116 52269	3k3 5% 0,5W
3779	4822 116 52238	12k 5% 0,5W
3780	4822 050 23301	330Ω 1% 0,6W
3781	4822 050 23301	330Ω 1% 0,6W
3785	4822 050 23901	390Ω 1% 0,6W
3786	4822 116 52239	120k 5% 0,5W
3787	4822 050 22201	220Ω 1% 0,6W
3788	4822 116 52233	10k 5% 0,5W
3789	4822 052 10228	2Ω2 5% 0,33W
3790	4822 102 10414	20kX2 20% 0,05W
3791	4822 116 52243	1k5 5% 0,5W
3792	4822 116 52243	1k5 5% 0,5W
3793	4822 050 11002	1k 1% 0,4W
3794	4822 050 11002	1k 1% 0,4W
3795	4822 052 10109	10Ω 5% 0,33W
3796	4822 116 52283	4k7 5% 0,5W
3797	4822 116 52233	10k 5% 0,5W
3798	4822 116 52284	47k 5% 0,5W
3799	4822 116 52234	100k 5% 0,5W
3801	4822 101 11245	POTM 10k only/01X
3802	4822 116 52297	68k only/01X
3803	4822 116 52291	56k only/01X
3804	4822 116 52224	470Ω only/01X
3805	4822 116 52283	4k7 only/01X
3806	4822 116 52202	82Ω only/01X
3807	4822 116 52234	100k only/01X
3808	4822 116 52305	820k only/01X
3809	4822 050 11002	1k only/01X
3810	4822 116 52215	220Ω only/01X

COILS

5001	4822 146 31161	TRAFO
5001	4822 146 31156	TRAFO only/01/01X
5001	4822 146 31158	TRAFO only/10
5250	4822 280 70368	RELAY
5252	4822 157 62255	COIL
5253	4822 157 62255	COIL
5650	5322 242 73697	CST 8 Mc
5651	4822 242 81016	CST 32 Mc
5652	4822 157 60147	COIL2,2µH

DIODES

6001	4822 130 83077	LED
6252	4822 130 61219	BZX79-C10
6253	4822 130 61219	BZX79-C10
6264	4822 130 30621	1N4148
6265	4822 130 30621	1N4148
6266	4822 130 30621	1N4148
6267	4822 130 30621	1N4148
6268	4822 130 30621	1N4148
6269	4822 130 30621	1N4148
6270	4822 130 30621	1N4148
6271	4822 130 30621	1N4148
6272	4822 130 30621	1N4148
6273	4822 130 30621	1N4148
6274	4822 130 30621	1N4148
6275	4822 130 30621	1N4148

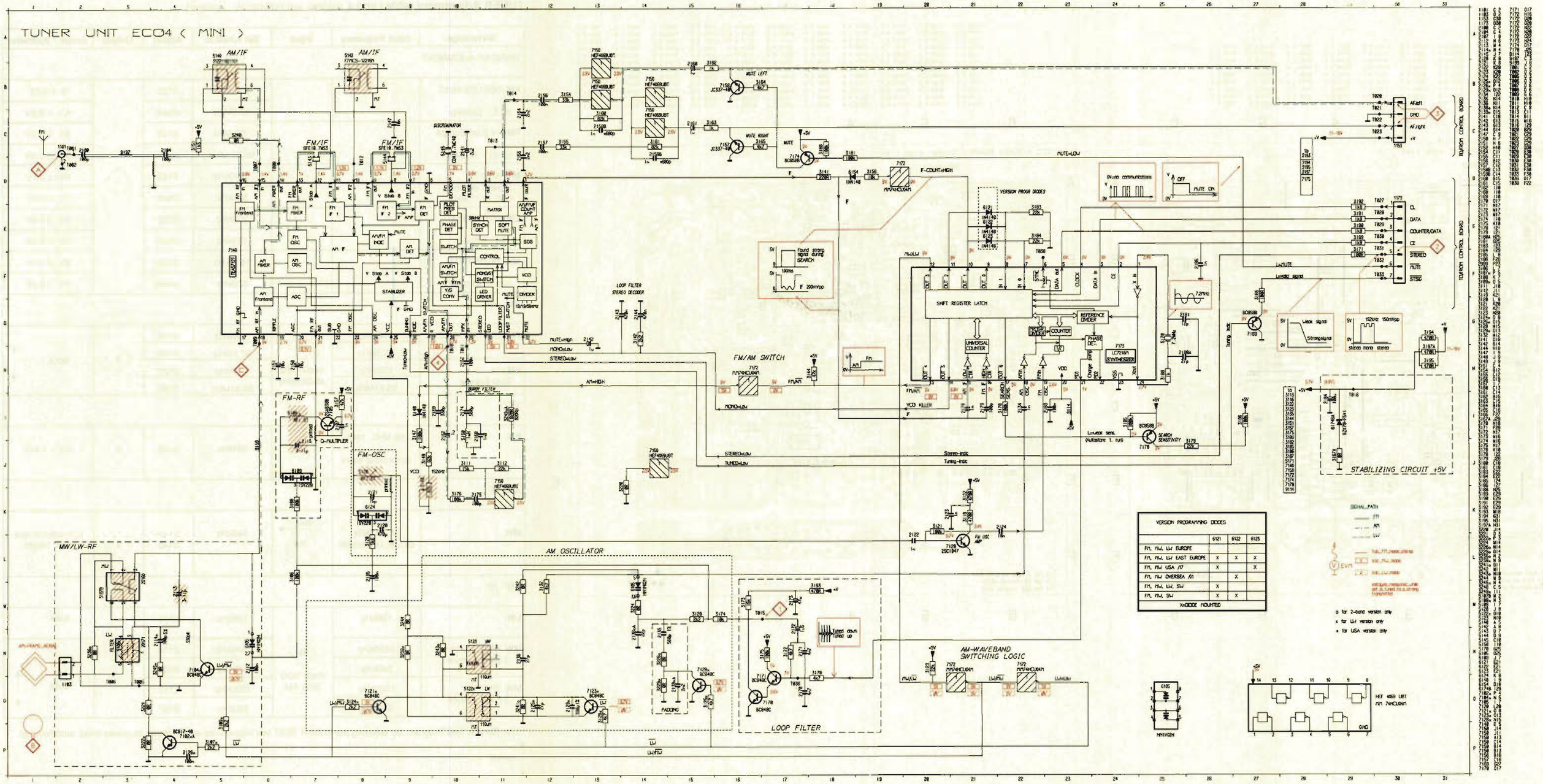
6276	4822 130 30621	1N4148
6277	4822 130 30621	1N4148
6278	4822 130 30621	1N4148
6279	4822 130 30621	1N4148
6282	4822 130 30621	1N4148
6283	4822 130 30621	1N4148
6284	4822 130 30621	1N4148
6285	4822 130 30621	1N4148
6286	4822 130 30621	1N4148
6287	4822 130 30621	1N4148
6288	4822 130 30621	1N4148
6289	4822 130 30621	1N4148
6304	4822 130 82079	D3SBA20
6350	5322 130 30684	1N4002GP
6351	4822 130 31982	BYV27-100
6352	4822 130 31982	BYV27-100
6353	5322 130 30684	1N4002GP
6354	5322 130 30684	1N4002GP
6355	5322 130 30684	1N4002GP
6356	5322 130 32184	BYV27-50
6357	5322 130 32184	BYV27-50
6358	5322 130 30684	1N4002GP
6359	5322 130 30684	1N4002GP
6360	5322 130 30684	1N4002GP
6361	5322 130 30684	1N4002GP
6362	4822 130 34268	BZX79-C16
6363	4822 130 30621	1N4148
6364	4822 130 34382	BZX79-C8V2
6365	4822 130 34281	BZX79-C15
6366	4822 130 31024	BZX79-C18
6367	4822 130 34195	BZX79-C13
6368	4822 130 30621	1N4148
6369	4822 130 34174	BZX79-C4V7
6370	4822 130 34328	BZX79-B30
6371	4822 130 30621	1N4148
6372	4822 130 30621	1N4148
6373	4822 130 30621	1N4148
6374	4822 130 30861	BZX79-C7V5
6376	4822 130 61219	BZX79-B10
6376	4822 130 30621	1N4148
6377	4822 130 30621	1N4148
6378	5322 130 30684	1N4002GP
6379	5322 130 30684	1N4002GP
6380	5322 130 30684	1N4002GP
6381	5322 130 30684	1N4002GP
6382	4822 130 30621	1N4148
6383	4822 130 30621	1N4148
6384	4822 130 31024	BZX79-C18
6386	4822 130 30621	1N4148
6387	4822 130 30621	1N4148
6388	4822 130 30621	1N4148
6389	4822 130 30621	1N4148
6451	5322 130 34563	BZX79-C2V7
6452	4822 130 34173	BZX79-B5V6
6575	4822 130 30621	1N4148
6603	4822 130 34233	BZX79-C5V1
6650	4822 130 30621	1N4148
6651	4822 130 30621	1N4148
6652	4822 214 52009	GP1U58XP
6654	4822 130 81007	LT3P82A
6655	4822 130 30621	1N4148
6656	4822 130 30621	1N4148
6659	4822 130 34167	BZX79-C6V2
6664	4822 130 30621	1N4148
6665	4822 130 30621	1N4148
6666	4822 130 30621	1N4148
6667	4822 130 30621	1N4148
6780	4822 130 34233	BZX79-C5V1
6781	4822 130 34233	BZX79-C5V1
6782	4822 130 34233	BZX79-C5V1
6783	4822 130 30621	1N4148
6790	4822 130 30621	1N4148

TRANSISTORS & IC's

7255	4822 209 70157	NJM4560DD
7256	4822 130 41691	BC556B
7257	4822 130 41691	BC556B
7258	4822 130 42607	BF483
7259	4822 130 42607	BF483
7260	4822 130 40937	BC548B
7261	4822 130 40937	BC548B
7264	4822 130 40937	BC548B
7265	4822 130 40937	BC548B
7266	4822 130 44197	BC558B
7267	4822 130 44197	BC558B
7268	4822 130 63073	2SD1894
7269	4822 130 63073	2SD1894
7274	4822 130 63073	2SB1254
7275	4822 130 63073	2SB1254
7276	4822 130 40937	BC548B
7277	4822 130 40937	BC548B
7280	4822 130 44461	BC546B
7281	4822 130 40937	BC548B
7350	4822 130 62952	ON4772
7351	4822 130 60542	BD244B
7352	5322 130 61677	BC875
7353	5322 130 60206	BD680
7354	4822 130 41344	BC337-40
7355	4822 130 60542	BD244B
7356	4822 130 62952	ON4772
7357	4822 130 40937	BC548B
7358	4822 130 40937	BC548B
7359	4822 130 44197	BC558B
7360	4822 130 62284	BDT60C
7361	4822 130 44197	BC558B
7362	4822 130 40937	BC548B

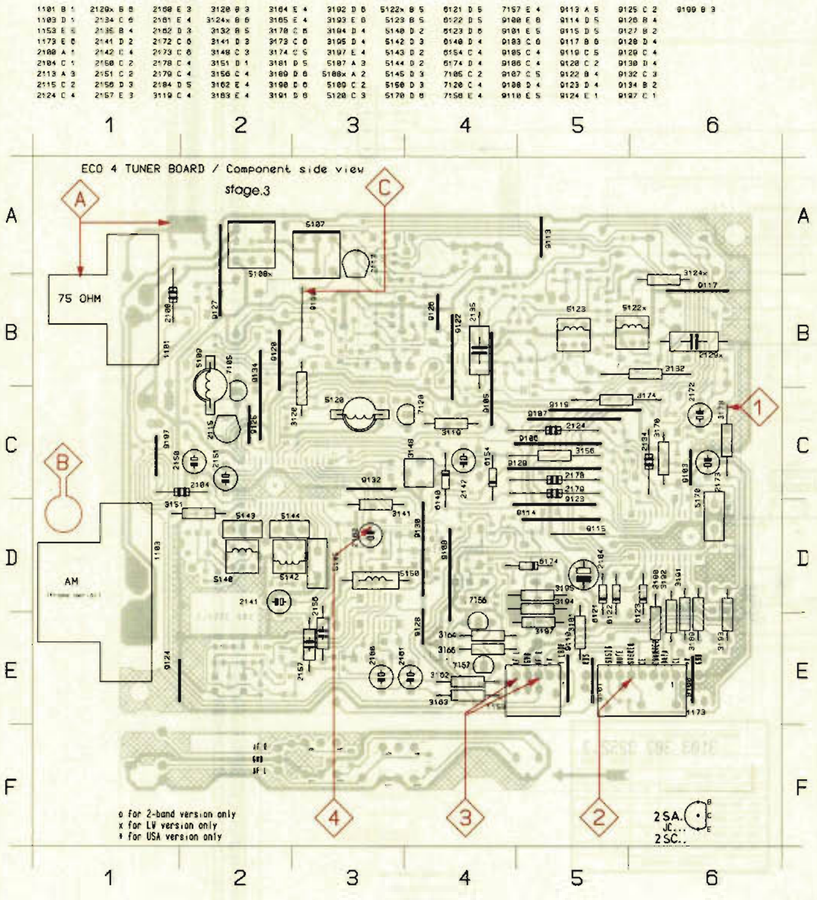
7451	4822 209 70157	NJM4560DD
7452	4822 209 72748	LC7821
7453	4822 209 70157	NJM4560DD
7575	4822 209 70157	NJM4560DD
7576	4822 130 41024	BF245B
7577	5322 130 41983	BC858B
7601	4822 209 71301	M5229P
7602	4822 209 71301	M5229P
7603	4822 209 30372	LC7520
7604	4822 209 31618	LC7536
7605	4822 209 70157	NJM4560DD
7650	4822 130 40937	BC548B
7654	4822 130 44197	BC558B
7655	4822 130 40937	BC548B
7656	4822 130 40937	BC548B
7663	4822 130 40937	BC548B
7664	4822 130 40937	BC548B
7665	4822 130 40937	BC548B
7674	4822 130 40937	BC548B
7675	4822 130 40937	BC548B
7683	4822 209 31591	TMP87CH70F...
7684	4822 209 62098	ST24C02AB1
7690	5322 130 44779	BC338-40
7691	5322 130 44779	BC338-40
7692	4822 130 40937	BC548B
7785	4822 209 31502	BA3826S
7786	4822 209 63667	BA6229
7787	4822 209 83274	NJM4560D
7788	4822 130 40948	BC548A
7789	4822 130 40937	BC548B
7800	4822 130 44246	BC549C only/01X

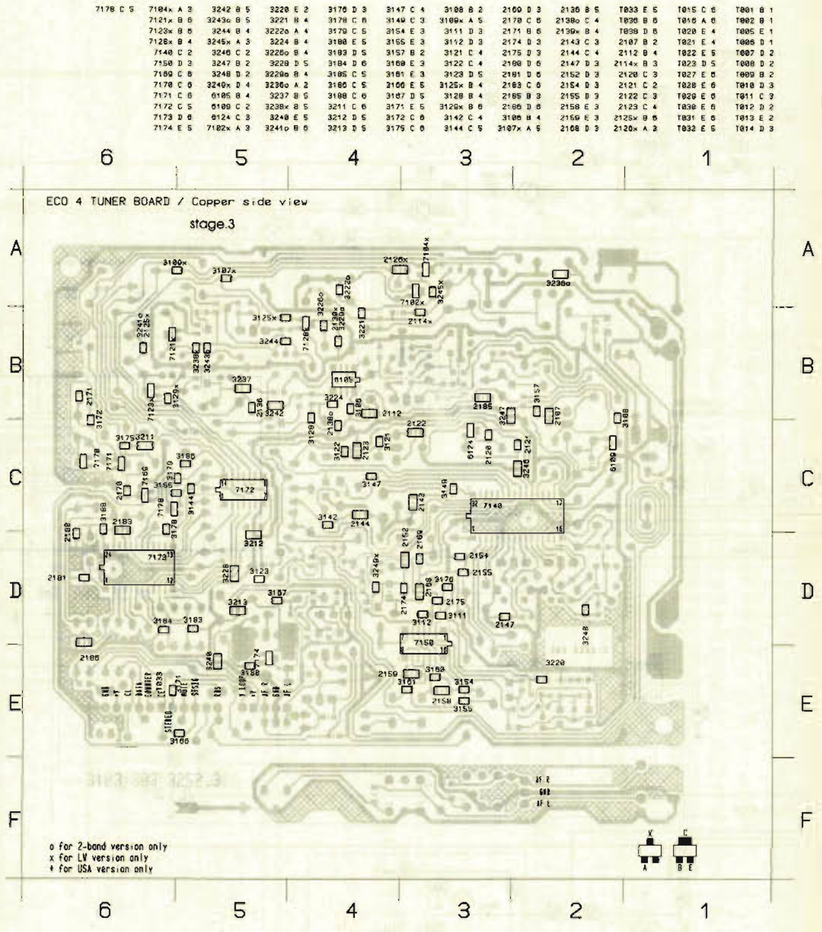
TUNER UNIT ECO4 (MINI)



VERSION PROGRAMMING DIODES	6121	6122	6123
FM, MW, LW EUROPE			
FM, MW, LW EAST EUROPE	x	x	x
FM, MW USA /07	x		x
FM, MW OVERSEA /01		x	
FM, MW, LW, SW	x		
FM, MW, SW	x	x	

x=DIODE MOUNTED





TUNER Adjustment table (ECO 4 FM/MW- and FM/MW/LW - versions)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM /00/01/05/10/17			108 MHz	5120		8 ± 0.2V
87.5 - 108MHz			87.5MHz	check		4.1 ± 0.5V
FM /14 East Europe			108 MHz	5120		8V ± 0.2V
65.81 - 108MHz			65.81 MHz	check		0.8 ± 0.4V
MW /01/17 2-band version			1710kHz	5123	1	9V ± 0.1V
530 - 1710kHz			530kHz	check		1V ± 0.4V
LW /00/05/10/14			279kHz	5122		8V ± 0.2V
153 - 279kHz			153kHz	check		1V ± 0.4V
MW /00/05/10/14			1611kHz	5123		8V ± 0.1V
522 - 1611kHz			522kHz	check		1V ± 0.4V
FM - RF						
FM /00/01/05/10/17	108MHz	A	108MHz	2115		
	87.5MHz		87.5MHz	5109	3	MAX
FM /14 East Europe	108MHz	mod=1kHz Δf=22.5kHz	108MHz	2115		
	65.81MHz		65.81MHz	5109		
VCO						
FM	98 MHz, 1mV continuous wave	A	98MHz	3148	2	152 ± 1 kHz
AM - IF						
MW	540kHz Δf = 10kHz as low as possible	100nF 50E C	540kHz	5142 5140	4	symmetrical and max height
AM - RF						
LW	198kHz		198kHz	5108		MAX
MW /00/05/10/14 3-band version	1494kHz	B	1494kHz	2113	4	
	549kHz	mod=1kHz 30% AM	549kHz	5107		
MW /01/17 2-band version	1500kHz		1500kHz	2113		MAX
	550kHz		550kHz	5107		

* Use Service Test Program. By selecting the TUNER TEST test frequencies will be stored as preset frequ. automatically.

repeat

1101 B 1	2129x B 6	2160 E 3	3120 B 3	3164 E 4	3192 D 6	5122x B 5	6121 D 5	7157 E 4	9113 A 5	9125 C 2	9190 B 3
1103 D 1	2134 C 6	2161 E 4	3124x B 6	3165 E 4	3193 E 6	5123 B 5	6122 D 5	9100 E 6	9114 D 5	9126 B 4	
1153 E 5	2135 B 4	2162 D 3	3132 B 5	3170 C 6	3194 D 4	5140 D 2	6123 D 6	9101 E 5	9115 D 5	9127 B 2	
1173 E 6	2141 D 2	2172 C 6	3141 D 3	3173 C 6	3195 D 4	5142 D 3	6140 D 4	9103 C 6	9117 B 6	9128 D 4	
2100 A 1	2142 C 4	2173 C 6	3148 C 3	3174 C 5	3197 E 4	5143 D 2	6154 C 4	9105 C 4	9119 C 5	9129 C 4	
2104 C 1	2150 C 2	2178 C 4	3151 D 1	3181 D 5	5107 A 3	5144 D 2	6174 D 4	9106 C 4	9120 C 2	9130 D 4	
2113 A 3	2151 C 2	2179 C 4	3158 C 4	3189 D 6	5108x A 2	5145 D 3	7105 C 2	9107 C 5	9122 B 4	9132 C 3	
2115 C 2	2156 D 3	2184 D 5	3162 E 4	3190 D 6	5109 C 2	5150 D 3	7120 C 4	9108 D 4	9123 D 4	9134 B 2	
2124 C 4	2157 E 3	3119 C 4	3163 E 4	3191 D 6	5120 C 3	5170 D 6	7156 E 4	9110 E 5	9124 E 1	9197 C 1	

1 2 3 4 5 6

ECO 4 TUNER BOARD / Component side view

stage.2

A C B 1 2 3 4

75 OHM

AM

(frame aerial)

o for 2-band version only
x for LV version only
* for USA version only

2SA..
JC...
2SC..

1 2 3 4 5 6

ECO - 4 TUNER

TUNER PART

MISCELLANEOUS

1101	4822 267 10283	SOCKET COAX IEC 75Ω
1101	4822 265 20598	F-CONNECT. COAX 75Ω /17
1103	4822 267 31505	SOCKET 2P CLICKFIT

CAPACITORS

2100	4822 122 33195	100pF 10% 50V
2104	4822 122 33195	100pF 10% 50V
2107	4822 122 31746	1000pF 2% 63V
2112	4822 122 33496	100nF 10% 63V
2113	4822 125 60101	10 pF
2114	5322 122 32531	100pF 5% 50V /00/14
2115	4822 125 60101	10 pF
2120	5322 122 32268	470pF 10% 50V
2121	5322 122 32481	15pF 5% 50V
2122	4822 122 31746	1000pF 2% 63V
2123	4822 122 31746	1000pF 2% 63V
2124	4822 121 51387	10nF 20% 16V
2125	5322 122 31946	27pF 10% 50V /00/14
2126	4822 122 33496	100nF 10% 63V /00/14
2129	4822 121 43705	390pF 1% 160V /00/14
2134	4822 122 33197	1nF 10% 50V
2135	4822 121 70245	560pF 1% 160V
2136	5322 122 31946	27pF 10% 50V
2138	5322 122 32658	22pF 5% 50V
2139	4822 122 33175	2,2nF 20% 50V /00/14
2141	4822 124 40244	2,2µF 20% 63V
2142	4822 124 40242	1µF 20% 63V
2143	4822 122 33325	470nF 16V
2144	4822 122 33325	470nF 16V
2147	4822 122 33177	10nF 20% 50V
2150	4822 124 40435	10µF 20% 50V
2151	4822 124 40435	10µF 20% 50V
2152	4822 122 33496	100nF 10% 63V
2154	4822 122 33175	2,2nF 20% 50V
2155	4822 122 33175	2,2nF 20% 50V
2156	5322 126 10181	100nF 25V
2157	5322 126 10181	100nF 25V
2158	4822 122 31775	680pF 2% 63V
2158	4822 122 31746	1000pF 2% 63V /17
2159	4822 122 31775	680pF 2% 63V
2159	4822 122 31746	1000pF 2% 63V /17
2160	4822 124 40242	1µF 20% 63V
2161	4822 124 40242	1µF 20% 63V
2162	4822 124 40242	1µF 20% 63V
2168	4822 122 33481	1N8 5%
2169	5322 122 31863	330pF 5% 50V
2170	5322 126 10223	4,7nF 10% 63V
2171	5322 126 10223	4,7nF 10% 63V
2172	4822 124 41631	1,5µF 50V
2173	4822 124 40433	47µF 20% 25V
2174	5322 116 80853	560P 5%
2175	5322 122 32531	100P 5%
2178	4822 122 33197	1nF 10% 50V
2179	4822 122 33195	100pF 10% 50V
2180	5322 122 31946	27pF 10% 50V
2181	4822 122 32139	12pF 2% 63V
2183	4822 122 33496	100nF 10% 63V
2184	4822 124 41584	100µF 20% 10V
2185	4822 122 33496	100nF 10% 63V
2186	4822 122 31746	1000pF 2% 63V

RESISTORS

3106	4822 051 20104	100k 5% 0,1W
3107	4822 051 20222	2k2 5% 0,1W /00/14
3108	4822 051 20104	100k 5% 0,1W
3109	4822 051 20222	2k2 5% 0,1W /00/14
3111	4822 051 20153	15k 5% 0,1W
3112	4822 051 20223	22k 5% 0,1W
3119	4822 116 52224	470Ω 5% 0,5W
3120	4822 050 15602	5k6 1% 0,4W
3121	4822 051 20104	100k 5% 0,1W
3122	4822 051 20471	470Ω 5% 0,1W
3123	4822 051 20223	22k 5% 0,1W
3124	4822 050 22202	2k2 1% 0,6W /00/14
3125	4822 051 20472	4k7 5% 0,1W /00/14
3128	4822 051 20222	2k2 5% 0,1W
3129	4822 051 20472	4k7 5% 0,1W /00/14
3132	4822 050 24702	4k7 1% 0,6W
3141	4822 050 22201	220Ω 1% 0,6W
3142	4822 051 20222	2k2 5% 0,1W
3144	4822 051 20473	47k 5% 0,1W
3147	4822 051 20184	180k 5% 0,1W
3148	4822 100 11682	47k 30%LIN 0.2W
3149	4822 051 20823	82k 5% 0,1W
3151	4822 050 21502	1k5 1% 0,6W
3154	4822 051 20333	33k 5% 0,1W
3155	4822 051 20333	33k 5% 0,1W
3156	4822 050 21003	10k 1% 0,6W
3157	4822 051 20473	47k 5% 0,1W
3159	4822 051 20103	10k 5% 0,1W
3160	4822 051 20823	82k 5% 0,1W
3161	4822 051 20823	82k 5% 0,1W
3162	4822 050 21002	1k 1% 0,6W
3163	4822 050 21002	1k 1% 0,6W
3164	4822 050 24702	4k7 1% 0,6W
3165	4822 050 24702	4k7 1% 0,6W
3166	4822 051 20101	100Ω 5% 0,1W

3167	4822 051 20008	0Ω 5% 0,1W
3170	4822 050 24702	4k7 1% 0,6W
3171	4822 051 20101	100Ω 5% 0,1W
3172	4822 051 20472	4k7 5% 0,1W
3173	4822 116 52244	15k 5% 0,5W
3174	4822 050 21003	10k 1% 0,6W
3175	4822 051 20104	100k 5% 0,1W
3176	4822 051 20104	100k 5% 0,1W
3178	4822 051 20104	100k 5% 0,1W
3179	4822 051 20223	22k 5% 0,1W
3180	4822 051 20104	100k 5% 0,1W
3181	4822 116 52234	100k 5% 0,5W
3183	4822 051 20223	22k 5% 0,1W
3184	4822 051 20223	22k 5% 0,1W
3185	4822 051 20104	100k 5% 0,1W
3186	4822 051 20104	100k 5% 0,1W
3188	4822 051 10102	1k 2% 0,25W
3189	4822 050 21802	1k8 1% 0,6W
3190	4822 050 21802	1k8 1% 0,6W
3191	4822 050 21802	1k8 1% 0,6W
3192	4822 050 21802	1k8 1% 0,6W
3193	4822 116 52224	470Ω 5% 0,5W
3194	4822 050 24701	470Ω MRS25
3195	4822 050 24701	470Ω MRS25
3197	4822 050 24701	470Ω MRS25
3211	4822 051 10008	0Ω 5% 0,25W
3212	4822 051 10008	0Ω 5% 0,25W
3213	4822 051 10008	0Ω 5% 0,25W
3220	4822 051 20008	0Ω 5% 0,1W
3221	4822 051 20008	0Ω 5% 0,1W
3222	4822 051 20008	0Ω 5% 0,1W /01/17
3224	4822 051 20008	0Ω 5% 0,1W
3226	4822 051 20008	0Ω 5% 0,1W
3228	4822 051 10008	0Ω 5% 0,25W
3229	4822 051 20008	0Ω 5% 0,1W /01/17
3236	4822 051 10008	0Ω 5% 0,25W /01/17
3237	4822 051 10008	0Ω 5% 0,25W
3238	4822 051 20008	0Ω 5% 0,1W /00/14
3240	4822 051 10008	0Ω 5% 0,25W
3241	4822 051 20008	0Ω 5% 0,1W /01/17
3242	4822 051 10008	0Ω 5% 0,25W
3243	4822 051 20008	0Ω 5% 0,1W /01/17
3244	4822 051 20008	0Ω 5% 0,1W
3245	4822 051 20008	0Ω 5% 0,1W /00/14
3246	4822 051 10008	0Ω 5% 0,25W
3247	4822 051 10008	0Ω 5% 0,25W
3248	4822 051 20008	0Ω 5% 0,1W
3249	4822 051 20821	820Ω

COILS

5107	4822 157 63799	MW AERIAL COIL /00/14
5107	4822 157 63835	MW AERIAL COIL /01/17
5108	4822 157 63801	LW AERIAL COIL /00/14
5109	4822 156 30947	RF COIL 1,5T
5120	4822 156 30947	RF COIL 1,5T
5122	4822 157 60517	110µH /00/14
5123	4822 157 60517	110µH
5140	4822 158 60511	AM-IF COIL
5142	4822 157 70302	AM-IF COIL
5143	4822 242 70665	CER. TER 10,7MHz
5144	4822 242 70665	CER. TER 10,7MHz
5145	4822 242 81362	CER. DISCRIMINATOR
5150	4822 157 50975	1 mH
5170	4822 242 72976	CER. RES. 7,2MHz

DIODES

6105	4822 130 83075	HN1V02H
6109	4822 130 82833	1SV228
6121	4822 130 30621	1N4148 /14/17
6122	4822 130 30621	1N4148 /01/14
6123	4822 130 30621	1N4148 /14/17
6124	4822 130 82833	1SV228
6140	4822 130 30621	1N4148
6154	4822 130 30621	1N4148
6155	4822 130 30621	1N4148
6174	4822 130 34233	BZX79-F5V1

TRANSISTORS & IC's

7102	4822 130 42615	BC817-40 /00/14
7104	5322 130 42136	BC848C /00/14
7105	4822 130 60093	2SA838B
7120	4822 130 60163	2SC1047
7121	5322 130 42136	BC848C /00/14
7123	5322 130 42136	BC848C /00/14
7128	5322 130 42136	BC848C /00/14
7140	4822 209 32011	TEA5712T/N1 (RF-IC)
7150	5322 209 14482	HEF4069UBT(INVERTER)
7156	4822 130 63199	JC337-40.
	4822 130 41344	BC337-40.
7157	4822 130 63199	JC337-40.
	4822 130 41344	BC337-40.
7169	5322 130 41983	BC858B
7170	5322 130 42136	BC848C
7171	5322 130 42136	BC848C
7172	4822 209 30606	MM74HCU04M(INVERTER)
7173	4822 209 31998	LC7218M SYNTHESIZER
7174	5322 130 41983	BC858B
7178	5322 130 41983	BC858B

Service
Service
Service

Product Service Group CE Audio

Service Information

GB
To adapt the service manual the following sheets have been added/changed.

NL
Voor het aanpassen van de service manual zijn de onderstaande pagina's toegevoegd/gewijzigd.

F
Afin de pouvoir adapter le "manual service" les feuillets suivants ont été soit modifiés, soit ajoutés.

D
Zür anpassung des Service Manual sind die nachstehenden Seiten hinzugefügt/geändert.

I
Le seguenti pagine sono state cambiate/aggiunte allo scopo di adattare il Manuale di Servizio.

	Page	Reason
Front Page		ECO-4 Tuner + /00U/01X added
Wiring diagram	19a-20a	/01X added
Micro-Mix Diagram	30	/01X added
Front PCB	31a-32a	Update /01X added
Front Diagram	33a-35a	Update
Source Selector PCB	36a-38a	Update + /01X added
Source Selector Diagram	39a-40a	Update + /01X added
Equaliser Diagram	41a-42a	Update
Power Diagram	43a-45a	Update
Power PCB	46a-48a	Update
List of mechanical Parts	51a	Update + /00U/01X added
List of electrical Parts	54a-62a	Update + /00U/01X added
ECO-4 Tuner Diagram	63 -65	Added
ECO-4 Tuner PCB	66 -67	Added
Adjustments ECO-4 Tuner	68	Added
ECO-4 Tuner PCB.2	69	Added
List of electr. Parts ECO-4	70 -71	Added

The 70FR060 the version **/00U /01X** has been introduced.
The 70FR060 /00U version is with ECO-4 Tuner
The 70FR060 /01X version is with Micro - Mix circuit and with ECO-4 Tuner
We refer to the Service manual 70FR060 codnr.4822 725 23914 ,except the following changes:

Position	Codenumber	Description
200	4822 426 51616	FRONT ASSY only/01X
203	4822 426 20233	BACKSIDE only/01/01X
295	4822 410 62431	KNOB only/01X
2471	5322 124 41431	22µF only/01X
2472	5322 124 41431	22µF only/01X
3635	4822 051 20222	2k2 only/01X
3636	4822 051 20222	2k2 only/01X
5001	4822 146 31156	MAINS TRAFO only/01/01X

Micro - Mix circuit : only /01X

Position	Codenumber	Description
1800	4822 267 31607	MICRO SOCKET
2800	4822 124 40433	47µF 20% 25V
2801	4822 124 40433	47µF 20% 25V
2802	4822 122 33848	47pF 5% 50V
2803	4822 124 40435	10µF 20% 50V
2804	4822 124 40242	1µF 20% 63V
2805	4822 126 11714	4n7 20%
2806	4822 122 33195	100pF 10% 50V
2807	4822 121 51387	10nF 20% 16V
2808	4822 122 33195	100pF 10% 50V
3668	4822 050 21003	10k 1% 0,6W
3801	4822 101 11245	POTM. 10k
3802	4822 116 52297	68k 5% 0,5W
3803	4822 116 52291	56k 5% 0,5W
3804	4822 116 52224	470E 5% 0,5W
3805	4822 116 52283	4k7 5% 0,5W
3806	4822 116 52202	82E 5% 0,5W
3807	4822 116 52234	100k 5% 0,5W
3808	4822 116 52305	820k 5% 0,5W
3809	4822 050 11002	1k 1% 0,4W
3810	4822 116 52215	220E 5% 0,5W
7800	4822 130 44246	BC549C