

Service  
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**RTV servis Horvat**

Kešinci, 31402 Semeljci

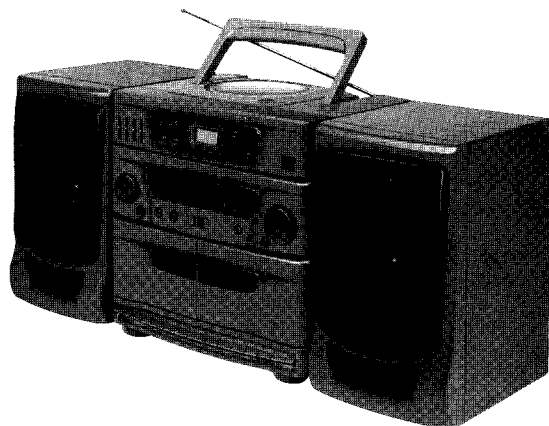
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# Service Manual

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## SPECIFICATION

### GENERAL

Mains voltage	: 220V-230V for /00 230-240V for /05/10 120V for /17 Switchable: 110V-127V / 220-240V for /01
Mains frequency	: 50Hz - 60Hz
Battery	: 9V (R20 x 6)
Power consumption	: 30W max.
Dimension (W x D x H)	: 598 x 271 x 221mm
Weight	: 6.01kg

### TUNER : FM SECTION

Tuning range	: 87.35MHz - 108.25MHz 87.0MHz - 108.5MHz -/17
IF frequency	: 10.7MHz
Sensitivity at 26dB S/N	: < 6.89 $\mu$ V
Selectivity at 600kHz bandwidth	: > 20dB
IF rejection	: > 50dB
Image rejection	: > 20dB

### TUNER : AM SECTION (/01/17)

Tuning range	: 520kHz - 1730kHz -/17 512kHz - 1635kHz -/01
IF frequency	: 468kHz
Sensitivity at 26dB S/N	: < 4.0mV/M
Selectivity at 18kHz bandwidth	: > 16dB
IF rejection	: > 24dB
Image rejection	: > 28dB

### TUNER : AM SECTION (others versions)

Tuning range	MW : 512kHz - 1635kHz LW : 147kHz - 291kHz
IF frequency	: 468kHz
Sensitivity at 26dB S/N	MW : < 4.0mV/M LW : < 6.0mV/M
Selectivity at 18kHz bandwidth	MW : > 16dB LW : > 20dB
IF rejection	MW : > 24dB LW : > 26dB
Image rejection	MW : > 28dB LW : > 30dB

### AMPLIFIER

Output power at 10% distortion:	Mains : 2 x 2.5W -1dB Battery : 2 x 2.3W -1dB
Speaker impedance	: 2 x 4 $\Omega$ 2 x 4 $\Omega$ with piezzo /17
Frequency response within +7dB/-3dB	: 100Hz - 8kHz
DBB switch	: +8dB at 100Hz
Equalizer control	: -5dB to +5dB
Line-in sensitivity	Mic : 800mV
Headphone output at 32 $\Omega$	: 13mW

### CASSETTE RECORDER

Number of tracks	: 2 x 2 stereo
Tape speed	: 4.76 cm/sec $\pm$ 3% 2 x 4.76 cm/sec
Wow and flutter	: < 0.5%
Fast-wind time C60	: 130 sec
Bias system:	: 60kHz $\pm$ 5kHz
Recording playback frequency response within -8dB	: 250Hz - 6.3kHz
Signal to Noise ratio	IEC I : > 42dB NS Dubbing : > 42dB HS Dubbing : > 42dB

### COMPACT DISC

Frequency response within $\pm$ 3dB	: 30Hz - 16kHz
Signal/Hiss ratio	: > 80dB
Distortion at 1kHz	: < 0.3%
Channel difference at 1kHz	: < 2dB
Channel crosstalk at 1kHz	: 50dB

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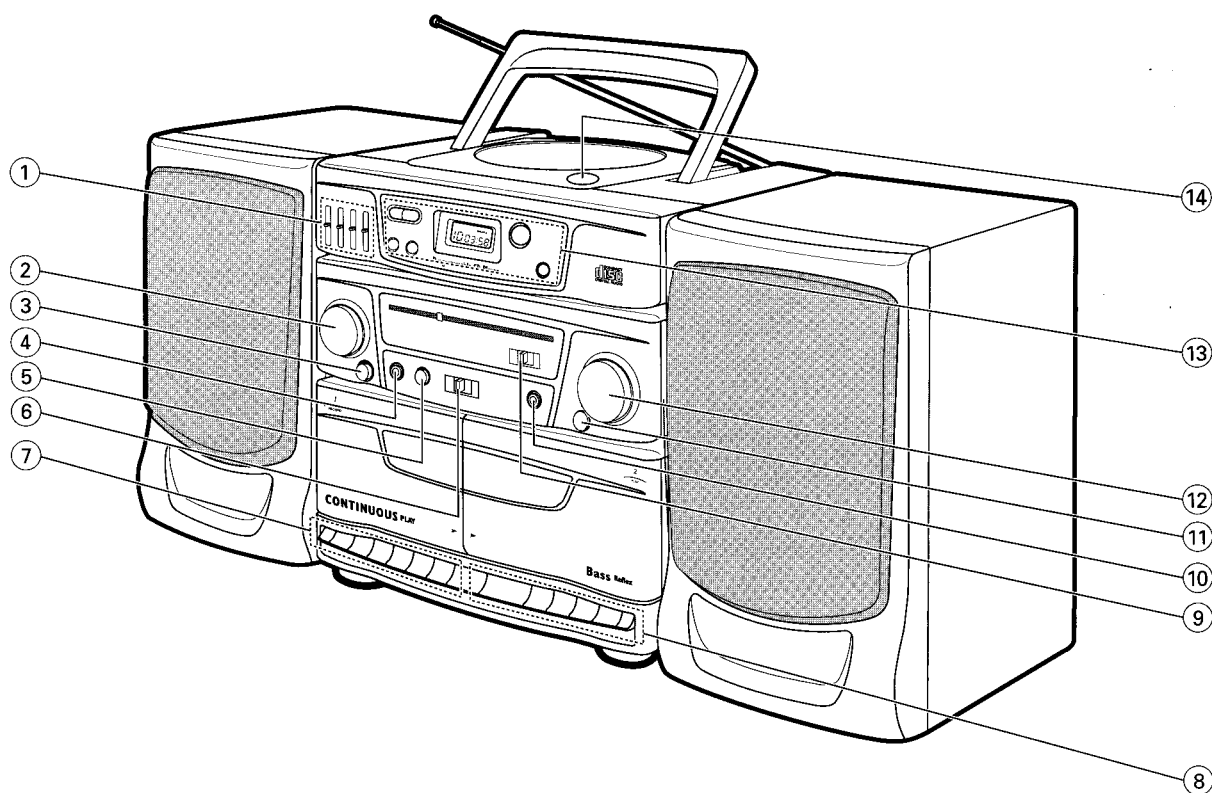
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## CONTROL AND CONNECTION



### Connections and Controls

1	Band Equalizer control	3517,3518,3542,3543
2	Volume control	1400
3	Power ON/OFF	1253
4	Headphone	1251
5	DBB switch	1500
6	Mode selector	1550
7	Cassette Deck 1 keyboards	
8	Cassette Deck 2 keyboards	
9	Band selector	1780
10	Microphone	1530
11	High speed dubbing button	1781
12	Tuning knob	3718
13	CD control panel	
14	CD open/close	

### Service Aids

#### Screw drivers:

Universal tool holder  
4822 395 91019  
Torx driver set T6 - T20  
4822 395 50145  
Torx driver T8  
4822 395 50263  
Torx driver T10 extented  
4822 395 50423  
Torx bit T10 150mm  
4822 395 50456

#### Cassettes:

SBC420 Test cassette Ferro - IEC I  
4822 397 30071

#### Compact disc:

SBC429 Audio Signals disc  
4822 397 30184

## TAPEDECK ADJUSTMENT

ADJUSTMENT	CASSETTE	SK ...	DECK I	DECK II	MEASURE ON	READ ON	ADJUST WITH	ADJUST TO
Azimuth	10kHz SBC420 *	Cass.	Play	—	1251	mv-meter	Left hand Screw R/P Head	Max. L = R
		Cass.	—	Play	1251	mv-meter	Left hand Screw R/P Head	
Motor Speed (normal)	3150Hz SBC420 *	Cass.	Play	—	1251	Wow and Flutter Meter	3718	** a
		Cass.	—	Play	1251	Wow and Flutter Meter	3718	
Motor Speed (high)	3150Hz SBC420 *	Cass. HSD	Record	Play	1251	Frequency Counter		6.0kHz ± 0.3 kHz

\* SBC 420 : 4822 397 30071

\*\* a The maximum permissible speed deviation is 3%.  
Moreover, the wow and flutter value can be read.  
This value should not exceed 0.5%

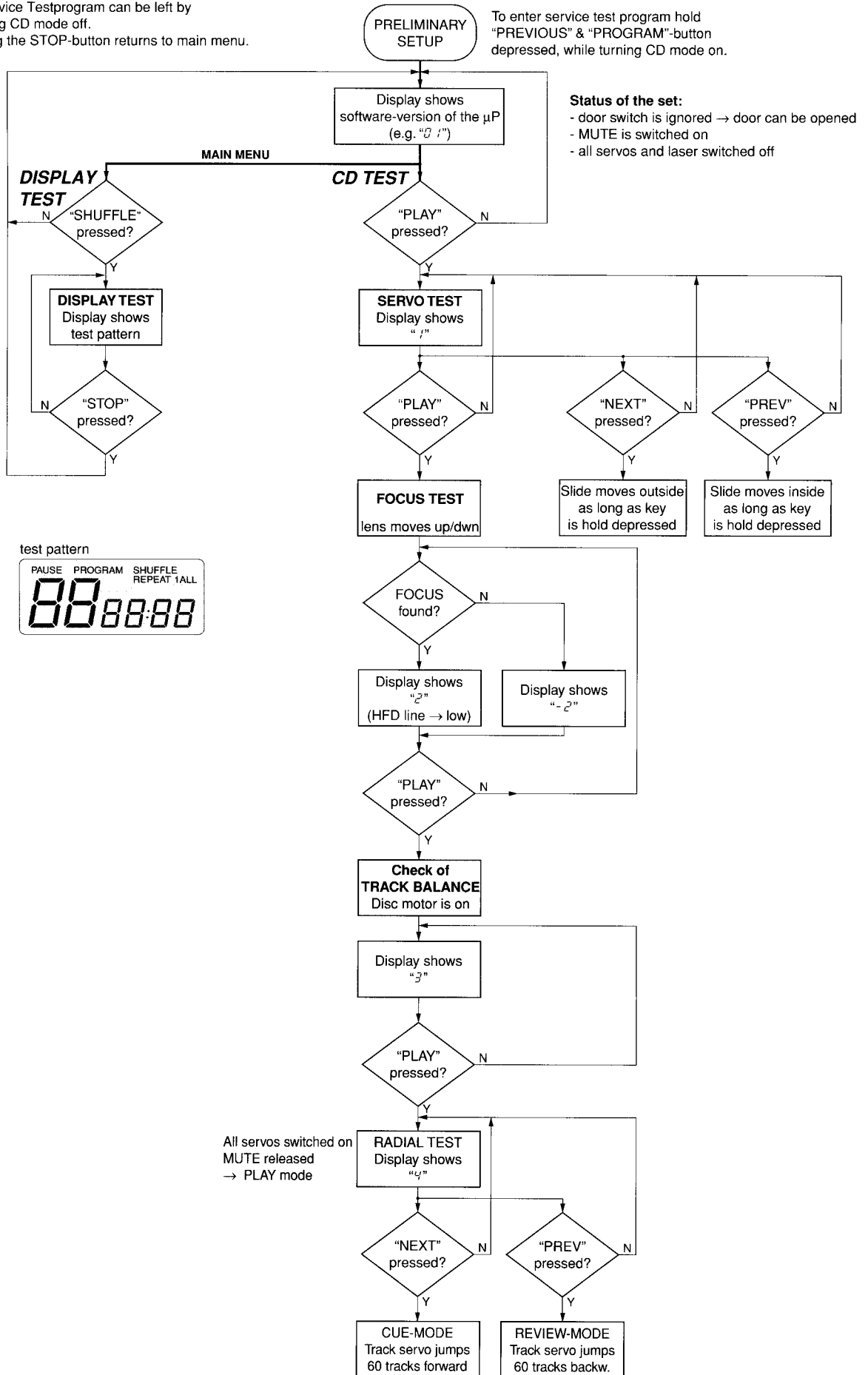
## SERVICE TEST PROGRAM

Operating sequence	Display shows	Remarks	In case of problem
Hold "Program" and "Previous button down while power on to enter service test program.	<b>01</b>	01 -microprocessor software version	
Press "Shuffle"		The display shows all segments and flags as test pattern.	Press "Stop" to return to the Main menu.
Press "Play" Press "Next" Press "Previous"	<b>1</b>	The slide move out. The slide move in.	Press "Stop" to return to the Main menu.
Press "Play"	<b>2 or -2</b>	Focus is on. Focus noise is audible.	Press "Stop" to return to the Main menu.
Press "Play"	<b>3</b>	The speed regulation is switched on and the disc motor starts rotating.  The radial servo and the slide servo are off. The optical pickup stands still.	Press "Stop" to return to the Main menu.
Press "Next"	<b>4</b>	The radial servo is on, mute is released and the music is audible.	Press "Stop" to return to the Main menu.
Press "Stop" to return to Main menu.			

# SERVICE TESTPROGRAM / FLOW CHART

The Service Testprogram can be left by switching CD mode off. Pressing the STOP-button returns to main menu.

To enter service test program hold "PREVIOUS" & "PROGRAM"-button depressed, while turning CD mode on.



## ABBREVIATIONS

### MICRO CONTROLLER:

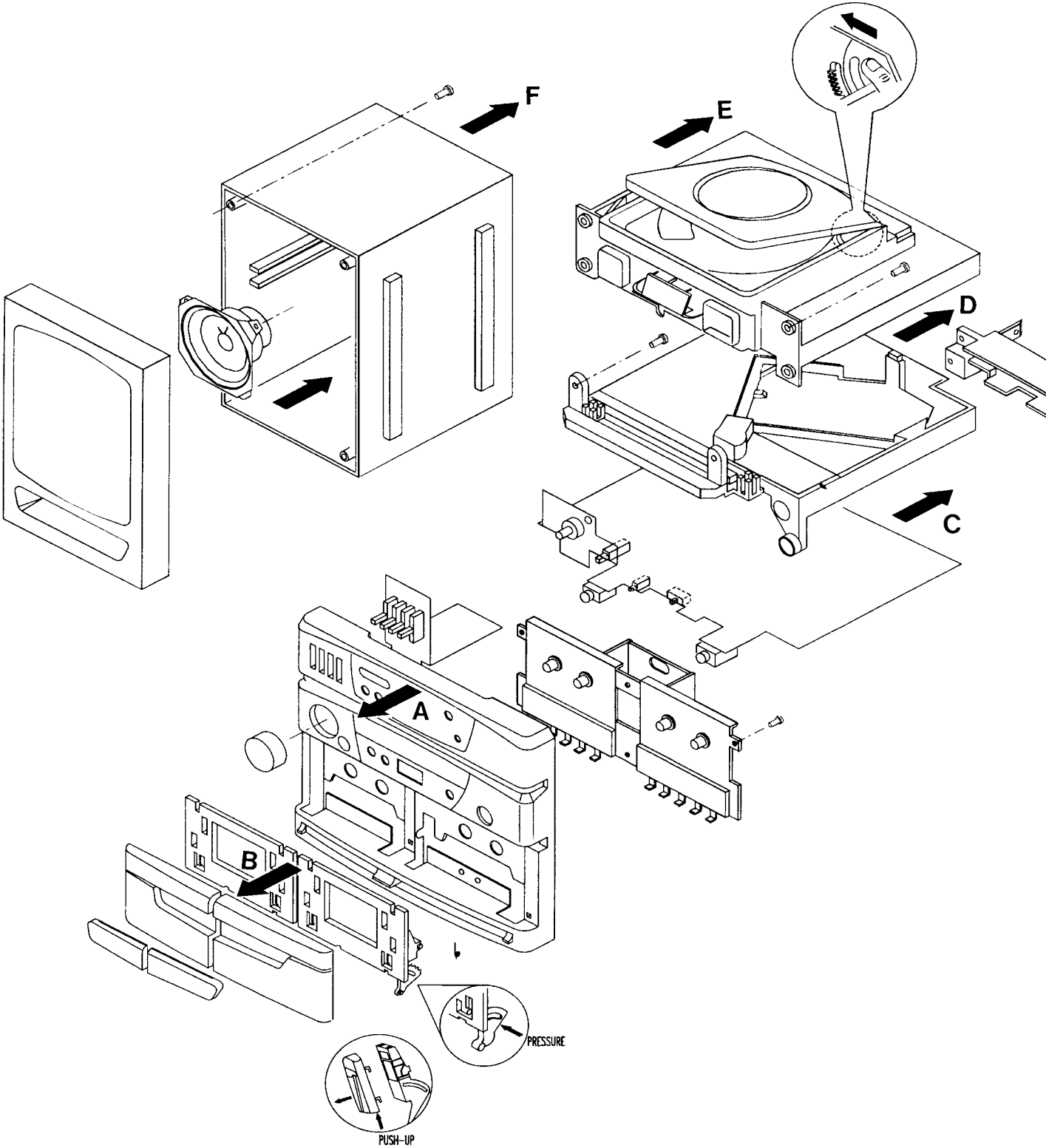
Pin	Name	Direction	Description
10	CLK	signal processor → $\mu$ P	4,2336 MHz clock input
17, 18	RESET	reset circuit → $\mu$ P	low level resets the $\mu$ P
19	TRACK-IN	$\mu$ P → servo driver IC	via this line the $\mu$ P controls the trackservo during jumps
20	LASER I	$\mu$ P → laser control circuit	high level switches the laser control circuit on
21	DOOR	door switch → $\mu$ P	high level indicates to the $\mu$ P that door is closed
22	TRACK-OUT	$\mu$ P → servo driver IC	via this line the $\mu$ P controls the trackservo during jumps
24	SLIDE-IN	$\mu$ P → motor driver IC	via this line the $\mu$ P controls the slide motor during startup and jumps
25	SLIDE-OUT	$\mu$ P → motor driver IC	via this line the $\mu$ P controls the slide motor during startup and jumps
30	DATA	$\mu$ P ↔ signal processor	interface data I/O-line
31	CLOCK	$\mu$ P → signal processor	interface clock output line
32	RAB	$\mu$ P → signal processor	interface Read/Write and Acknowledge output
33	SYNC	Rec/Pb switch → $\mu$ P	synchro start indication - low level indicates to the $\mu$ P that tape transport is switched to recording mode
34	TRACK GAIN	$\mu$ P → TRACK SERVO amplifier	low level switches the TRACK SERVO amplifier to high gain during jumps
35	TRACK-CNTL	$\mu$ P → TRACK SERVO amplifier	high level switches the TRACK SERVO amplifier on
36	LASER II	$\mu$ P → FOCUS DETECTOR circuit	low level switches the FOCUS DETECTOR circuit on
37	HF OK	FOCUS DETECTOR circuit → $\mu$ P	low level indicates to the $\mu$ P that focus has been found or is o.k
38	TRACK-CROSS	TRACK CROSS COMPARATOR → $\mu$ P	via this line the $\mu$ P counts the crossed tracks during jumps
39	INNERSWITCH	disc drive → $\mu$ P	via this line the $\mu$ P gets the indication that the slide has reached the inner position

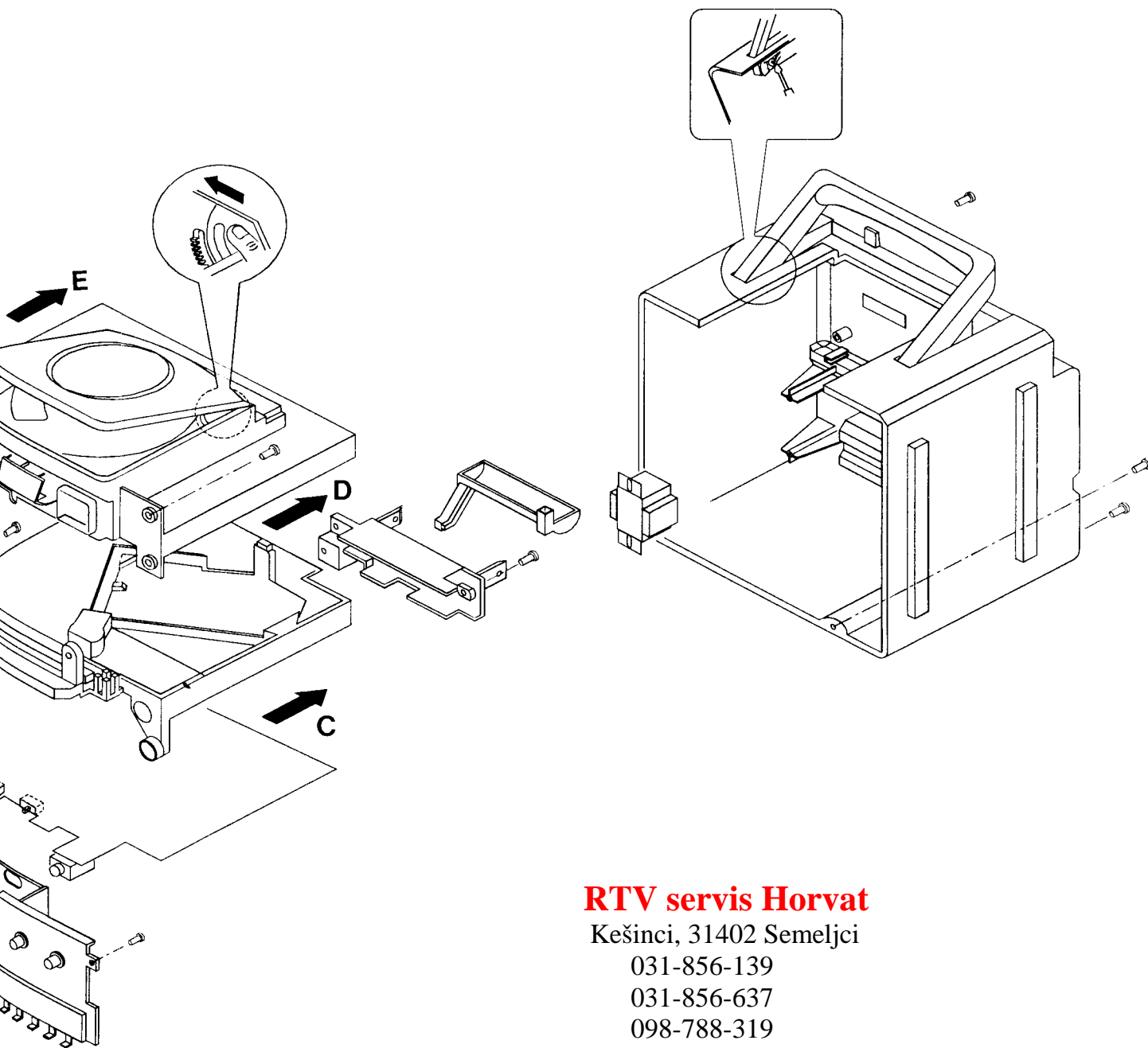
### SAA7345 – SIGNAL PROCESSOR CD6

Pin	Name	Direction	Description
1	CL11	not connected	11.2896MHz clock output (3-state)
2	DOBM	not connected	digital bi-phase mark output (3-state)
3	V1	not connected	versatile input pin of signal processor
4	V2	not connected	versatile input pin of signal processor
5	Test2	GND	test input of signal processor
6	Test1	GND	test input of signal processor
7	ISLICE	signal processor → data slicer	current feedback from internal data slicer
8	HFIN	HF-preamp → signal processor	comparator signal input
9	HFREF	HF-preamp → signal processor	comparator signal input
10	IREF	→ signal processor	reference current pin (nom. VDD/2)
11	VDDA		+ supply (analog) of signal processor
12	VSSA		- supply (analog) of signal processor
13	CRIN	X-Tal → signal processor	crystal/resonator input of signal processor
14	CROUT	signal processor → X-Tal	crystal/resonator output of signal processor
15	VDD1		+ supply for I/O-buffers of signal processor
16	VSS1		- supply for I/O-buffers of signal processor
17	CL16	not connected	16.9344MHz clock output of signal processor
18	MISC	not connected	general purpose DAC output (3-state)
19	DATA	signal processor → DAC	serial data output of signal processor (3-state)
20	WCLK	signal processor → DAC	word clock output of signal processor (3-state)
21	SCLK	signal processor → DAC	serial bit clock output of signal processor (3-state)
22	MOTOR1	signal processor → motor driver IC	motor output1 of signal processor; versatile (3-state)
23	MOTOR2	signal processor → motor driver IC	motor output2 of signal processor; versatile (3-state)
24	V5	not connected	versatile output pin of signal processor
25	V4	not connected	versatile output pin of signal processor
26	V3	not connected	versatile output pin of signal processor (open drain)
27	KILL	not connected	kill output; programmable (open drain)
28	PORE	reset circuit → signal processor	power-on reset enable input (active low)
29	CLA	signal processor → $\mu$ P	4.2336MHz microprocessor clock output
30	DA	$\mu$ P ↔ signal processor	interface data I/O-line
31	CL	$\mu$ P → signal processor	interface clock input line
32	RAB	$\mu$ P → signal processor	interface R/W and acknowledge input
33	CFLG	not connected	correction flag output (open drain)
34...42		connected to GND	
43	VSS2		- digital supply for internal logic of signal processor
44	VDD2		+ digital supply for internal logic of signal processor

**DISASSEMBLY DRAWING**

**SEQUENCE A-B-C-D-E-F**





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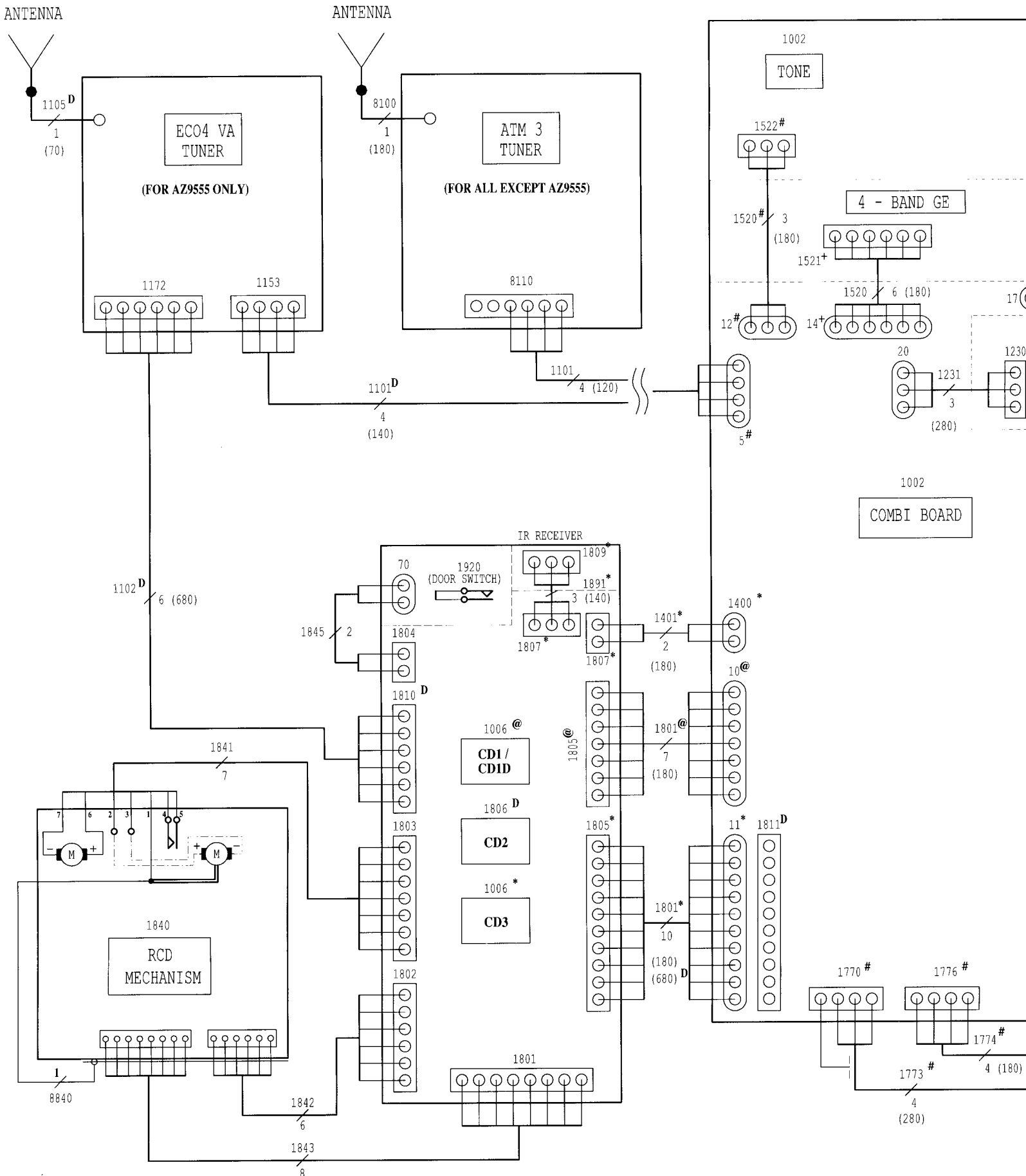
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# BLOCK DIAGRAM



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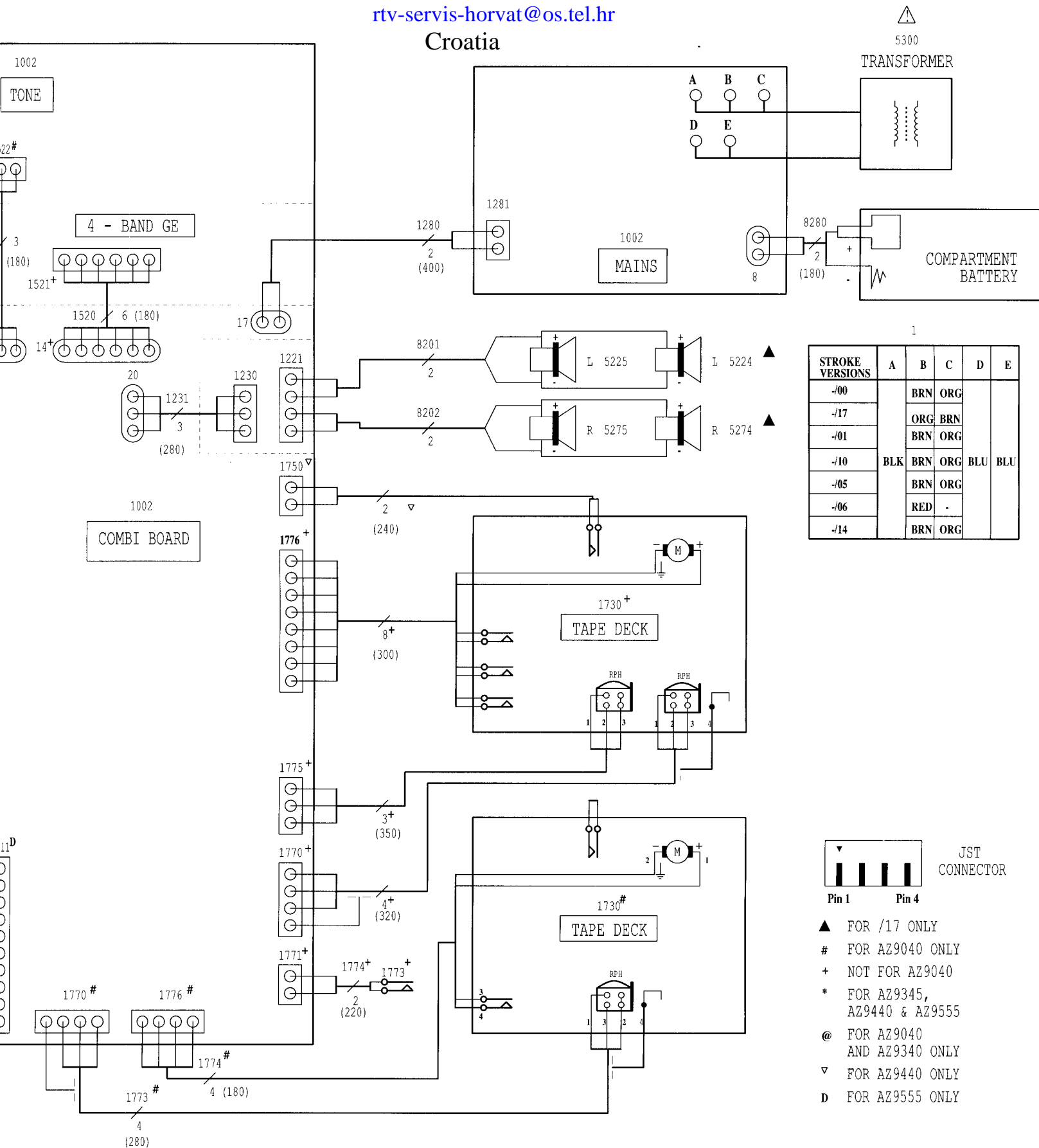
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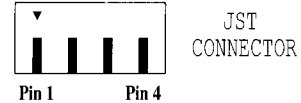
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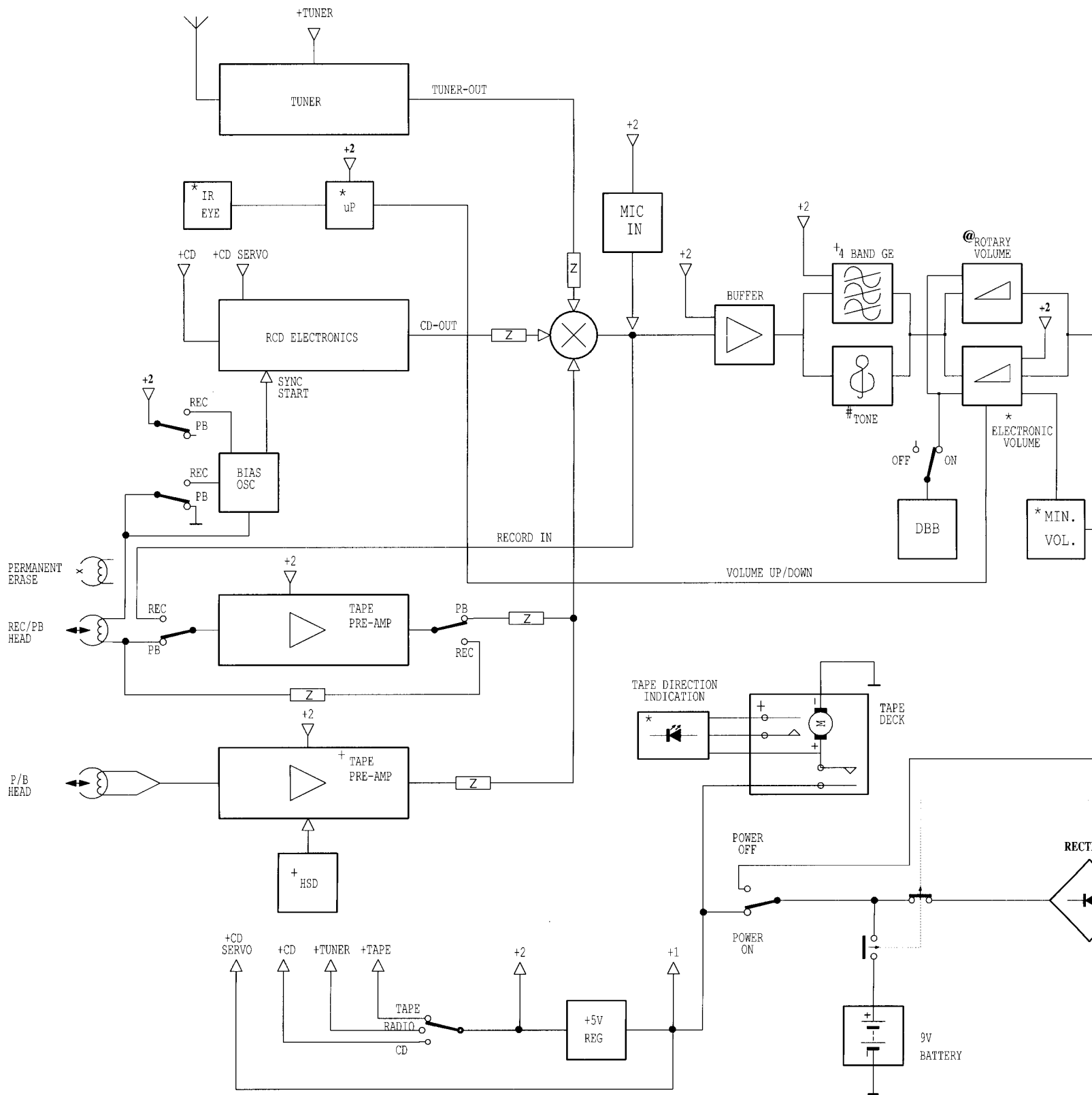


STROKE VERSIONS	A	B	C	D	E
-/00		BRN	ORG		
-/17		ORG	BRN		
-/01		BRN	ORG		
-/10	BLK	BRN	ORG	BLU	BLU
-/05		BRN	ORG		
-/06		RED	-		
-/14		BRN	ORG		



- ▲ FOR /17 ONLY
- # FOR AZ9040 ONLY
- + NOT FOR AZ9040
- \* FOR AZ9345, AZ9440 & AZ9555
- @ FOR AZ9040 AND AZ9340 ONLY
- ▽ FOR AZ9440 ONLY
- D FOR AZ9555 ONLY

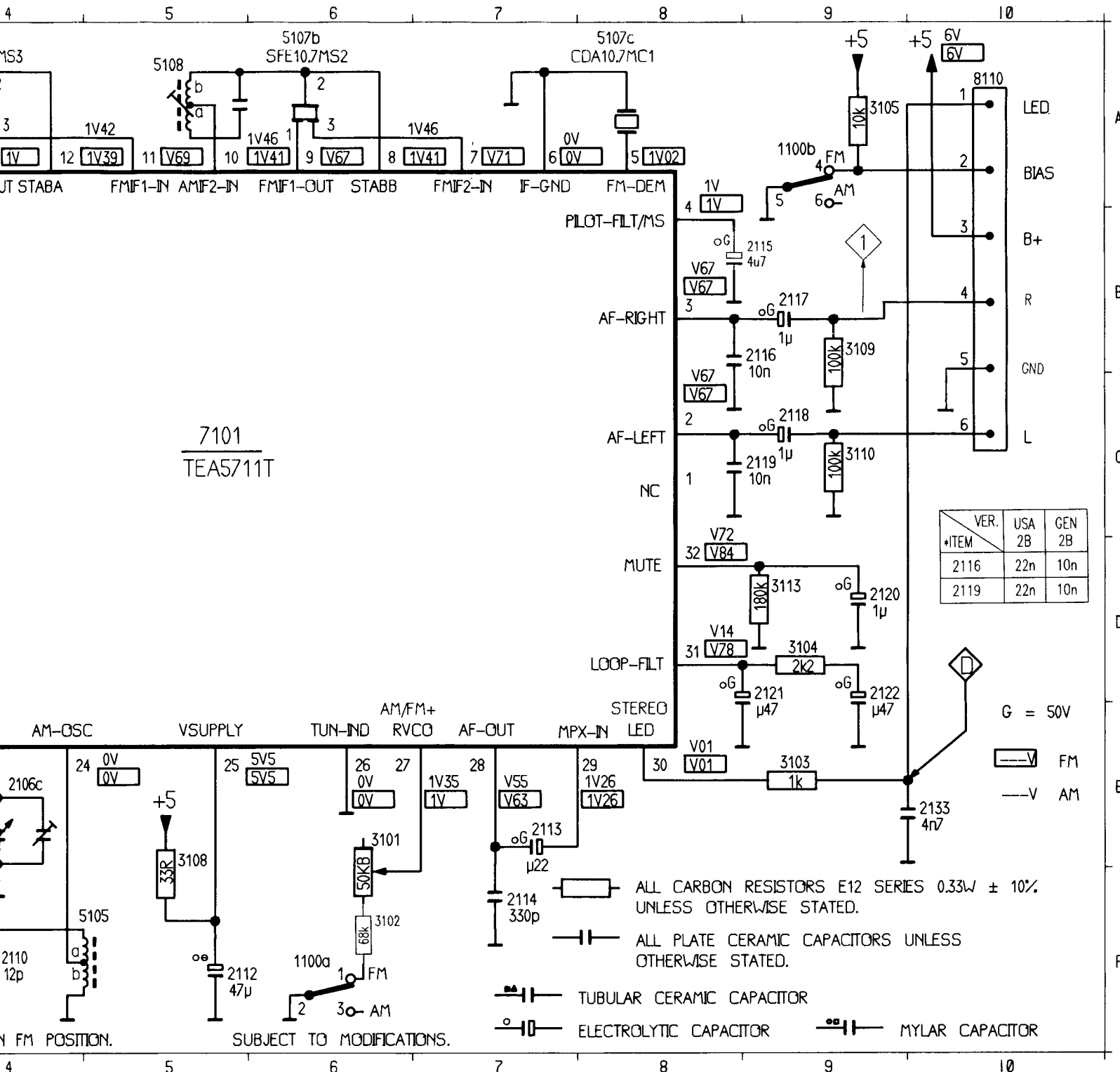
# WIRING DIAGRAM



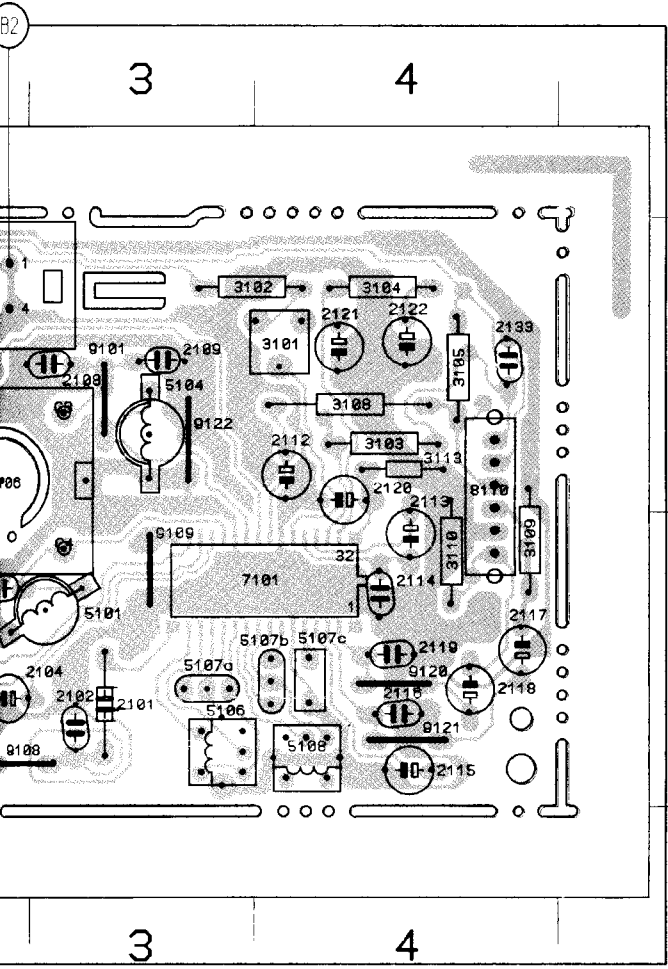




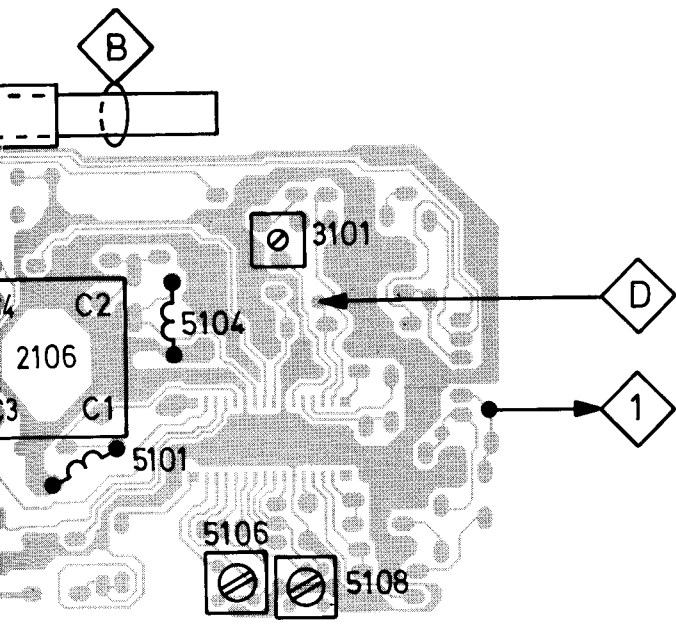
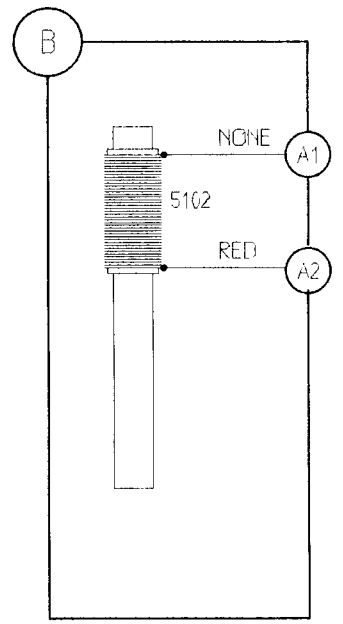
9 2122 D 9 3103 E 9 3109 B 9 5101 D 1 5106 A 3 5108 A 5 8110 A10  
 9 2133 E10 3104 D 9 3110 C 9 5102 C 1 5107a A 4 6101 B 1 9101 E 3  
 9 3101 E 6 3105 A 9 3113 D 9 5104 E 3 5107b A 6 6102 B 1  
 9 3102 F 6 3108 E 5 5100 B 2 5105 F 5 5107c A 8 7101 C 5 2135 C 1







- |          |           |
|----------|-----------|
| 1100 B 1 | 5106 B 3  |
| 2101 B 3 | 5107a B 3 |
| 2102 B 3 | 5107b B 4 |
| 2103 B 2 | 5107c B 4 |
| 2104 B 2 | 5108 B 4  |
| 2105 B 2 | 6101 B 1  |
| 2106 A 2 | 6102 B 1  |
| 2108 A 3 | 7101 B 4  |
| 2109 A 3 | 8110 A 4  |
| 2110 A 2 | 9101 A 3  |
| 2112 A 4 | 9108 B 2  |
| 2113 B 4 | 9109 B 3  |
| 2114 B 4 | 9113 A 2  |
| 2115 B 4 | 9120 B 4  |
| 2116 B 4 | 9121 B 4  |
| 2117 B 4 | 9122 A 3  |
| 2118 B 4 | 9211 B 2  |
| 2119 B 4 |           |
| 2120 A 4 |           |
| 2121 A 4 |           |
| 2122 A 4 |           |
| 2133 A 4 |           |
| 2135 B 2 |           |
| 3101 A 4 |           |
| 3102 A 3 |           |
| 3103 A 4 |           |
| 3104 A 4 |           |
| 3105 A 4 |           |
| 3108 A 4 |           |
| 3109 B 4 |           |
| 3110 B 4 |           |
| 3113 A 4 |           |
| 5101 B 3 |           |
| 5102 A 2 |           |
| 5104 A 3 |           |
| 5105 A 2 |           |





# ALIGNMENT

## ALIGNMENT AM - FM TUNER

Tuning range AM : 512kHz - 1635kHz -/01  
 520kHz - 1730kHz - /17

Tuning range FM : 87.35MHz - 108.25MHz -01  
 87.0MHz - 108.5MHz -/17

SK...	FREQUENCY	I/P	VARICON	ADJUST	O/P	SCOPE/METER
-------	-----------	-----	---------	--------	-----	-------------

### AM - IF

AM *	468kHz via 10nF	A	min.	5106 5108	1	▲   ▼ max.
------	--------------------	---	------	--------------	---	------------------

### AM - RF

AM *	512kHz # 1635kHz # 550kHz # 1500kHz #	B	max. min. Tune Tune	5105 C4 5102 C3	1	▲   ▼ max.
------	--	---	------------------------------	--------------------------	---	------------------

### FM - RF

FM	87.35MHz @	C	max.	5104	1	▲   ▼ max.
	108.25MHz @		min.	C2		
	88MHz @		Tune	5101		
	106MHz @		Tune	C1		

\* Mod. 400Hz 30%      @ ± 0.5MHz      # ± 20kHz

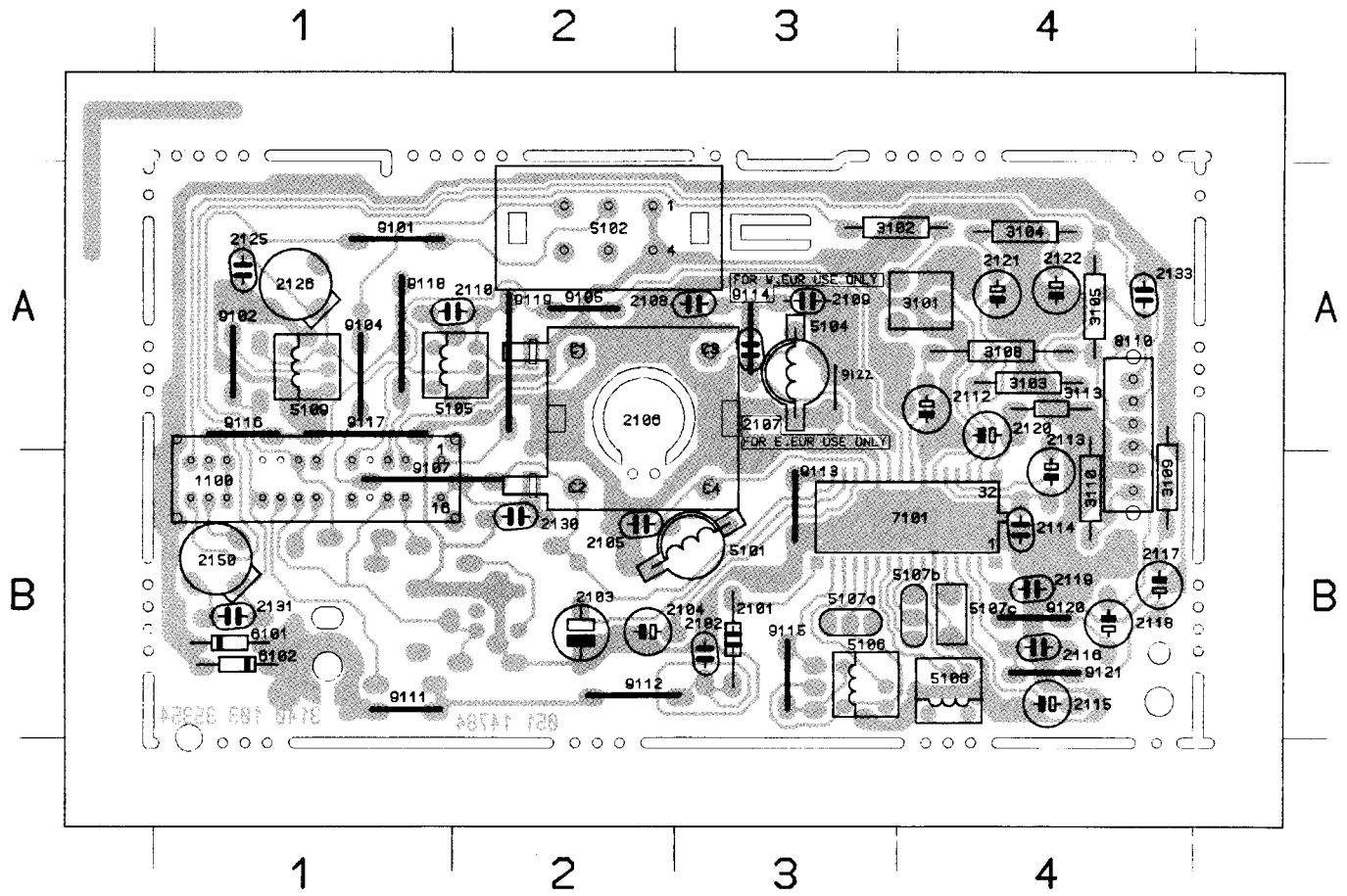
### STEREO DECODER

SK...	FREQUENCY	I/P	VARICON	ADJUST	O/P	SCOPE/METER
FM STEREO	98MHz \$	C	Tune	3101	D	▲   ▼ 152±0.1kHz

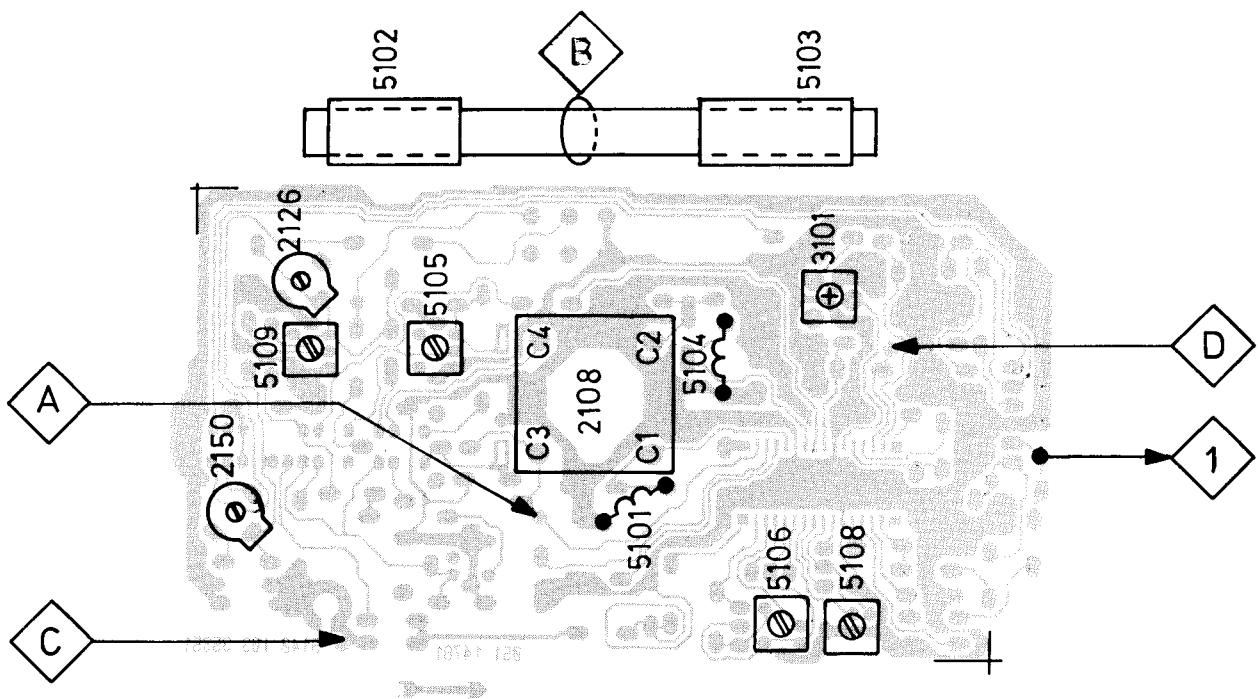
\$ Without Pilot

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# TUNER BOARD COMPONENT LAYOUT (FM/MW/LW)



- 1100 B
- 2101 B
- 2102 B
- 2103 B
- 2104 B
- 2105 B
- 2106 A
- 2107 A
- 2108 A
- 2109 A
- 2110 A
- 2112 A
- 2113 B
- 2114 B
- 2115 B
- 2116 B
- 2117 B
- 2118 B
- 2119 B
- 2120 A
- 2121 A
- 2122 A
- 2125 A
- 2126 A
- 2130 B
- 2131 B
- 2133 A
- 2150 B
- 3101 A
- 3102 A
- 3103 A
- 3104 A
- 3105 A
- 3108 A
- 3108 B
- 3110 B





ALIGNMENT FM - MW - LW TUNER

SK...	FREQUENCY	I/P	VARICON	ADJUST	O/P	SCOPE/METER
-------	-----------	-----	---------	--------	-----	-------------

AM - IF

MW *	468kHz via 10nF	A	min.	5106 5108	1	▲   ▼ max.
------	--------------------	---	------	--------------	---	------------------

AM - RF

MW * 512 - 1635kHz	512kHz 1635kHz 550kHz 1500kHz	B	max. min. Tune Tune	5105 C4 5102 C3	1	▲   ▼ max.
LW * 147 - 291kHz	147kHz 291kHz 155kHz 270kHz		max. min. Tune Tune	5109 2126 5103 2150		

FM - RF

FM 87.35-108.25MHz	87.35MHz @ (64.7MHz)	C	max.	5104	1	▲   ▼ max.
	108.25MHz @ (108.5MHz)		min.	C2		
	88MHz @ (68MHz)		Tune	5101		
	106MHz @		Tune	C1		

\* Mod. 400Hz 30% @ ± 0.15MHz

STEREO DECODER

SK...	FREQUENCY	I/P	VARICON	ADJUST	O/P	SCOPE/METER
FM STEREO	98MHz \$	C	Tune	3101	D	▲   152±0.1kHz ▼

\$ Without Pilot

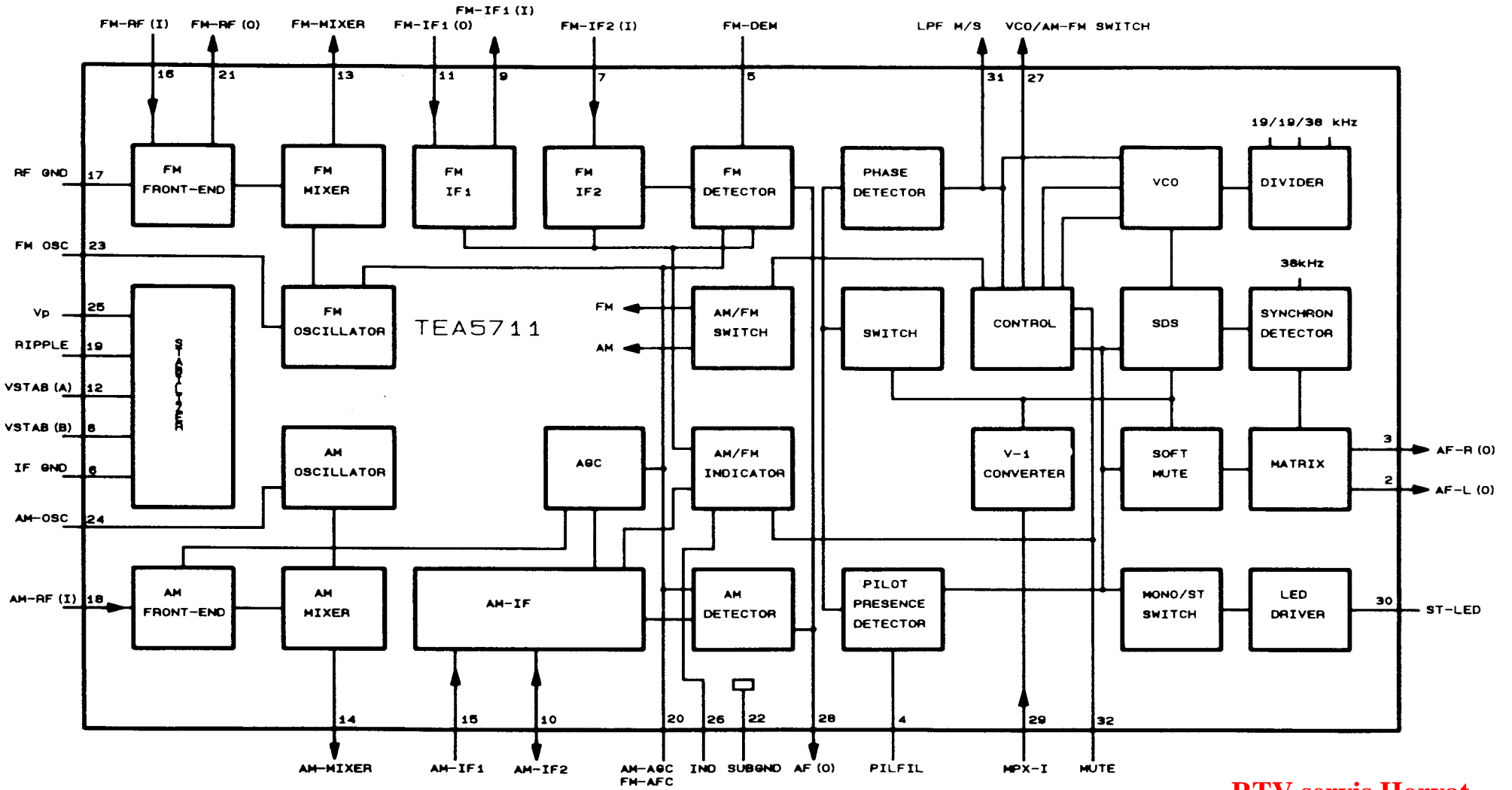
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# IC SPECIFICATION

## IC SPECIFICATION

### TEA5711(T) - AM/FM Stereo Radio Circuit

SYMBOL	PIN	DESCRIPTION
NC	1	not connected
AF-Lo	2	left channel audio output (output imp. = 5k $\Omega$ )
AF-Ro	3	right channel audio output (output imp. = 5k $\Omega$ )
PILFIL	4	pilot detector filter pin
FM-DEM	5	ceramic discriminator pin
IFGND	6	ground of IF, detector and MPX stages
FM-IF2i	7	second FM-IF input (input imp. = 330 $\Omega$ )
VSTAB <sub>B</sub>	8	stabilized internal supply voltage (B)
FM-IF1o	9	first FM-IF output (output imp. = 330 $\Omega$ )
AM-IF2vo	10	input/output to IFT; output: current source
FM-IF1i	11	first FM-IF input (input imp. = 330 $\Omega$ )
VSTABA	12	stabilized internal supply voltage (A)
FM-MIXER	13	output to ceramic IF filter (output imp. = 330 $\Omega$ )
AM-MIXER	14	open-collector output to IFT
AM-IF1i	15	input from IFT or ceramic filter (input imp. = 3k $\Omega$ )
FM-RFi	16	FM-RF aerial input (input imp. = 3k $\Omega$ )
RFGND	17	FM-RF ground
AM-RFi	18	parallel tuned AM aerial circuit to ground (total input capacitance = 3pF)
RIPPLE	19	ripple capacitor pin
AM-AGC/FM-AFC	20	AGC/AFC capacitor pin
FM-RFo	21	parallel tuned FM-RF circuit to ground
SUBGND	22	substrate and RF ground
FM-OSC	23	parallel tuned FM-OSC circuit to ground
AM-OSC	24	parallel tuned AM-OSC circuit to ground
Vp	25	positive supply voltage
IND	26	signal level output
VCO/AM-FM SWITCH	27	VCO and switch terminal : open for AM ; ground for FM
AFo	28	AM/FM AF output (output imp. = 5k $\Omega$ )
MPXi	29	input for stereo decoder (input imp. = 150k $\Omega$ )
ST - LED	30	stereo indicator
LPF M/S	31	pin for loopfilter and mono/stereo switch
MUTE	32	mute pin



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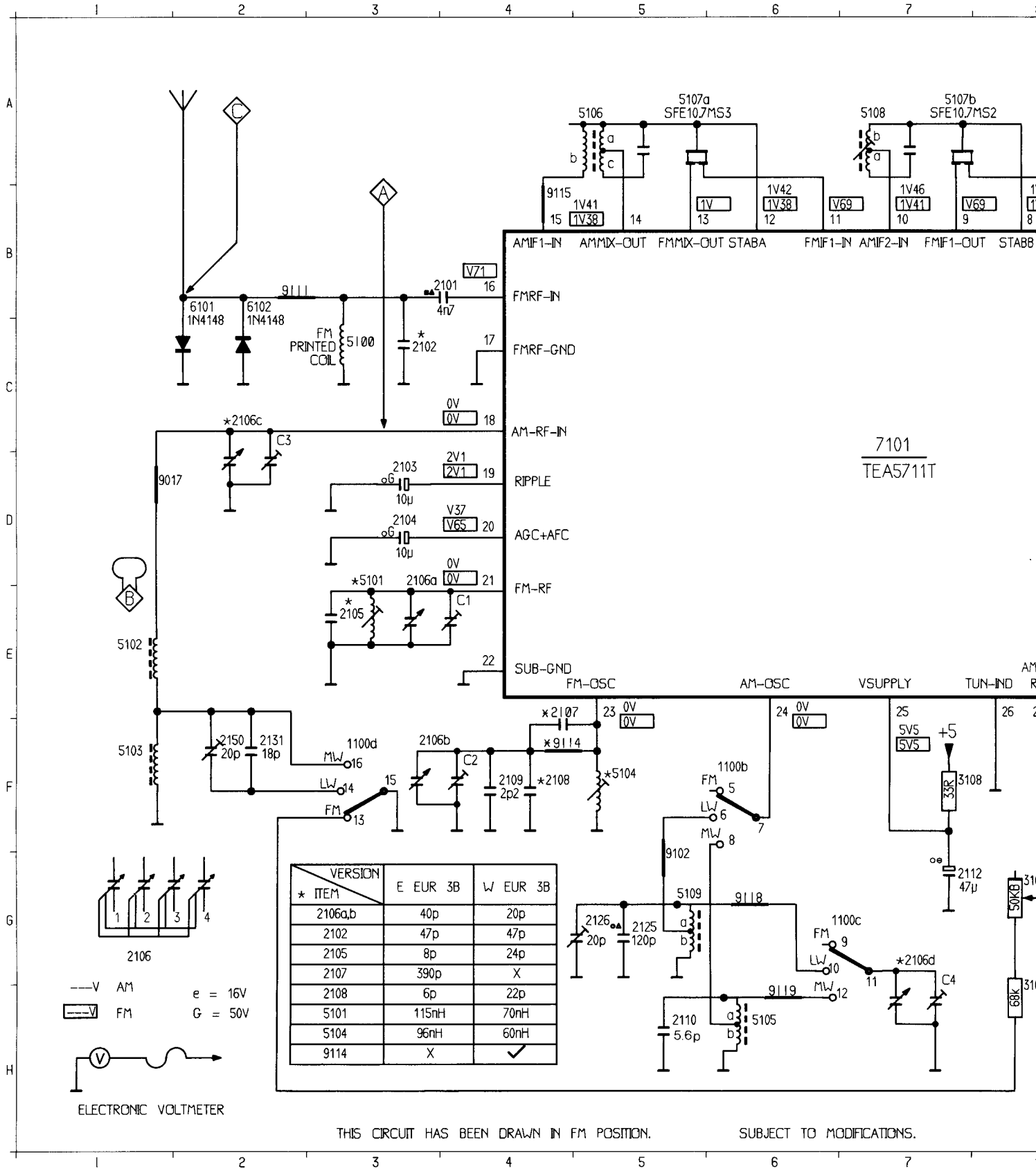
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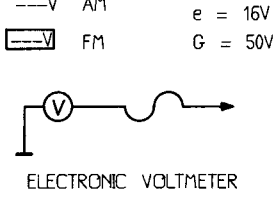
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# TUNER BOARD CIRCUIT (FM/MW/LW)

1100a	G 10	2101	B 4	2105	E 3	2106d	G 7	2110	H 5	2115	B 10	2119	D 10	2125	G 5	3101	G 8	3105	G 11	3113	D 11	5103	F 1
1100b	F 6	2102	C 3	2106a	D 3	2107	E 4	2112	G 7	2116	C 10	2120	D 10	2126	G 5	3102	H 8	3108	F 7	5100	C 3	5104	F 5
1100c	G 7	2103	D 3	2106b	F 3	2108	F 4	2113	F 9	2117	C 11	2121	E 10	2131	F 2	3103	F 10	3109	C 11	5101	D 3	5105	H 6
1100d	F 3	2104	D 3	2106c	C 2	2109	F 4	2114	G 9	2118	C 10	2122	E 11	2150	F 2	3104	E 10	3110	D 11	5102	E 1	5106	A 5

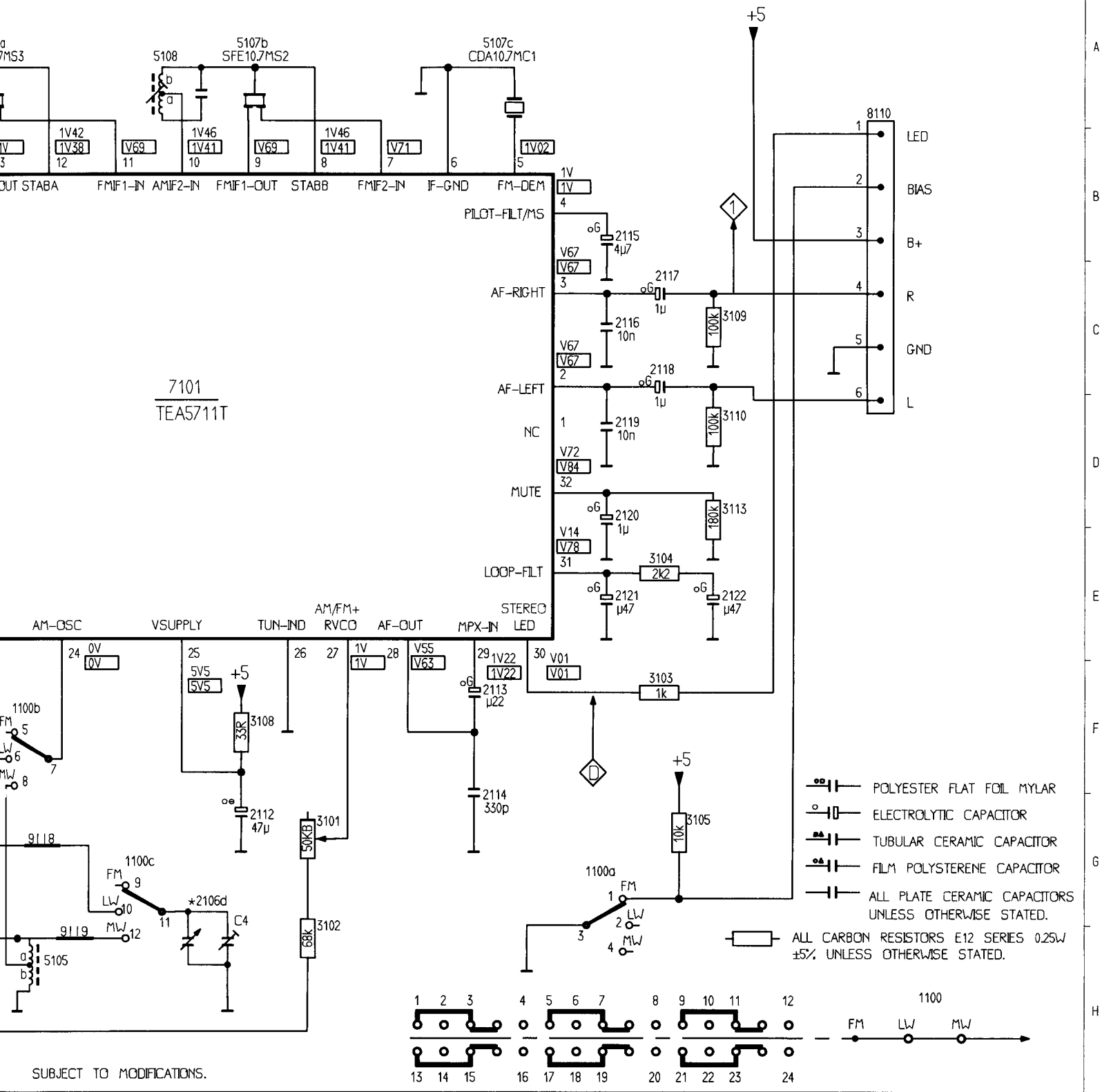


VERSION	E EUR 3B	W EUR 3B
* ITEM		
2106a,b	40p	20p
2102	47p	47p
2105	8p	24p
2107	390p	X
2108	6p	22p
5101	115nH	70nH
5104	96nH	60nH
9114	X	✓



3101	G 8	3105	G 11	3113	D 11	5103	F 1	5107a	A 5	5109	G 5	8110	A 12	9114	F 4
3102	H 8	3108	F 7	5100	C 3	5104	F 5	5107b	A 7	6101	B 2	9017	D 1	9115	B 4
3103	F 10	5109	C 11	5101	D 3	5105	H 6	5107c	A 9	6102	B 2	9102	G 5	9118	G 6
3104	E 10	3110	D 11	5102	E 1	5106	A 5	5108	A 7	7101	C 7	9111	B 2	9119	H 6

6 7 8 9 10 11 12 13



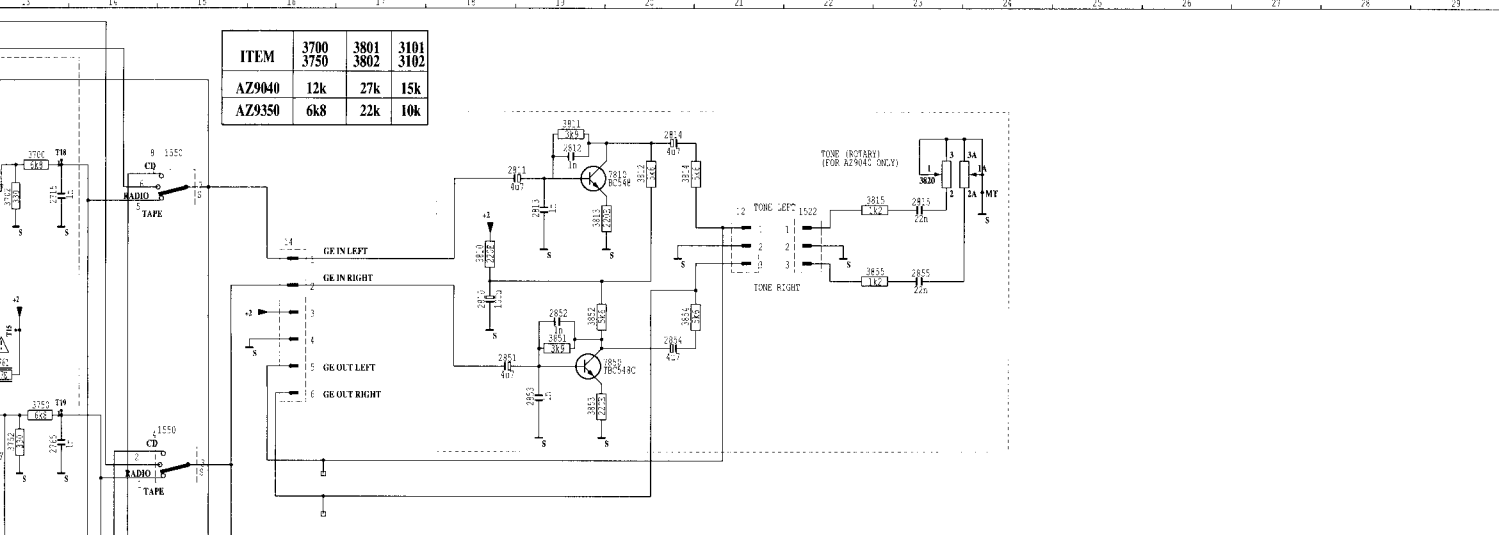
SUBJECT TO MODIFICATIONS.

6 7 8 9 10 11 12 13

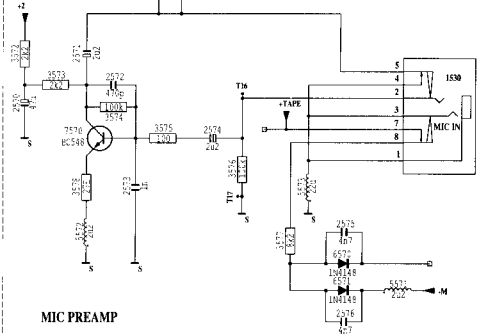
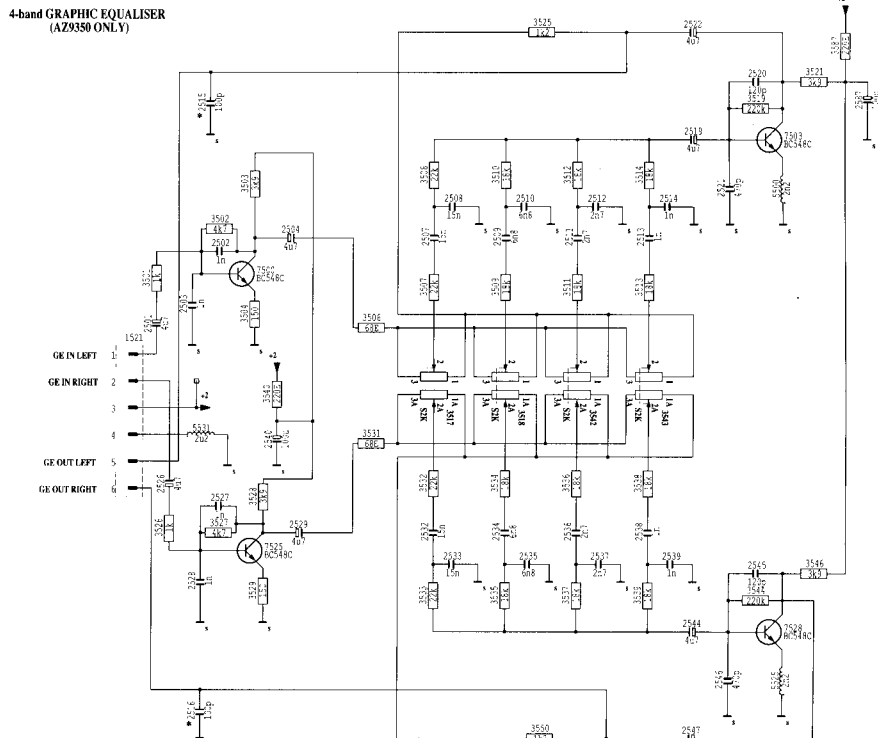




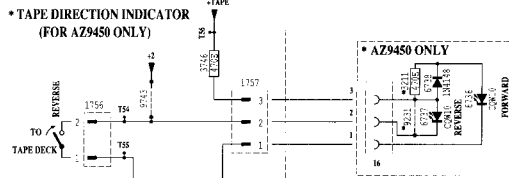
ITEM	3700 3750	3801 3802	3101 3102
AZ9040	12k	27k	15k
AZ9350	6k8	22k	10k



**4-band GRAPHIC EQUALISER  
(AZ9350 ONLY)**



**\* TAPE DIRECTION INDICATOR  
(FOR AZ9450 ONLY)**



- +1 (9V)
- +2 (5V6)
- +CD (5V6)
- +TUNER (5V6)
- +TAPE (5V6)
- +REC (5V6)

\* PROVISION  
USE ALSO  
3139 118 39081 SHT 130-01

1306 B 9	2226 A 6	2350 B 5	2526 A 8	2574 D 2	2614 B 1	2751 A 3	2774 A 4	2855 A 9	3500 D 6	3528 B 8	357
1307 D 8	2227 A 7	2354 B 6	2527 B 7	2575 C 2	2620 B 1	2752 A 3	2775 A 4	3101 C 2	3501 A 8	3529 B 8	357
1400 C 7	2228 A 7	2360 C 3	2528 B 8	2576 C 2	2621 B 1	2753 A 3	2776 A 4	3102 C 2	3502 B 8	3531 B 8	357
1500 C 4	2229 A 6	2501 A 8	2529 B 8	2580 C 4	2700 B 4	2754 A 3	2787 A 2	3103 A 1	3503 B 8	3532 D 8	357
1501 C 6	2230 A 7	2502 B 8	2532 D 8	2581 C 4	2701 B 3	2755 A 4	2788 A 2	3104 B 1	3504 A 8	3533 B 8	357
1502 D 6	2240 C 5	2503 A 8	2533 C 8	2584 C 4	2702 B 3	2756 B 4	2789 B 2	3211 D 1	3505 D 6	3534 C 8	358
1521 A 8	2241 D 3	2504 B 8	2534 C 8	2586 C 5	2703 B 3	2757 A 4	2791 A 1	3220 A 6	3506 B 8	3535 B 8	358

1

2

3

4

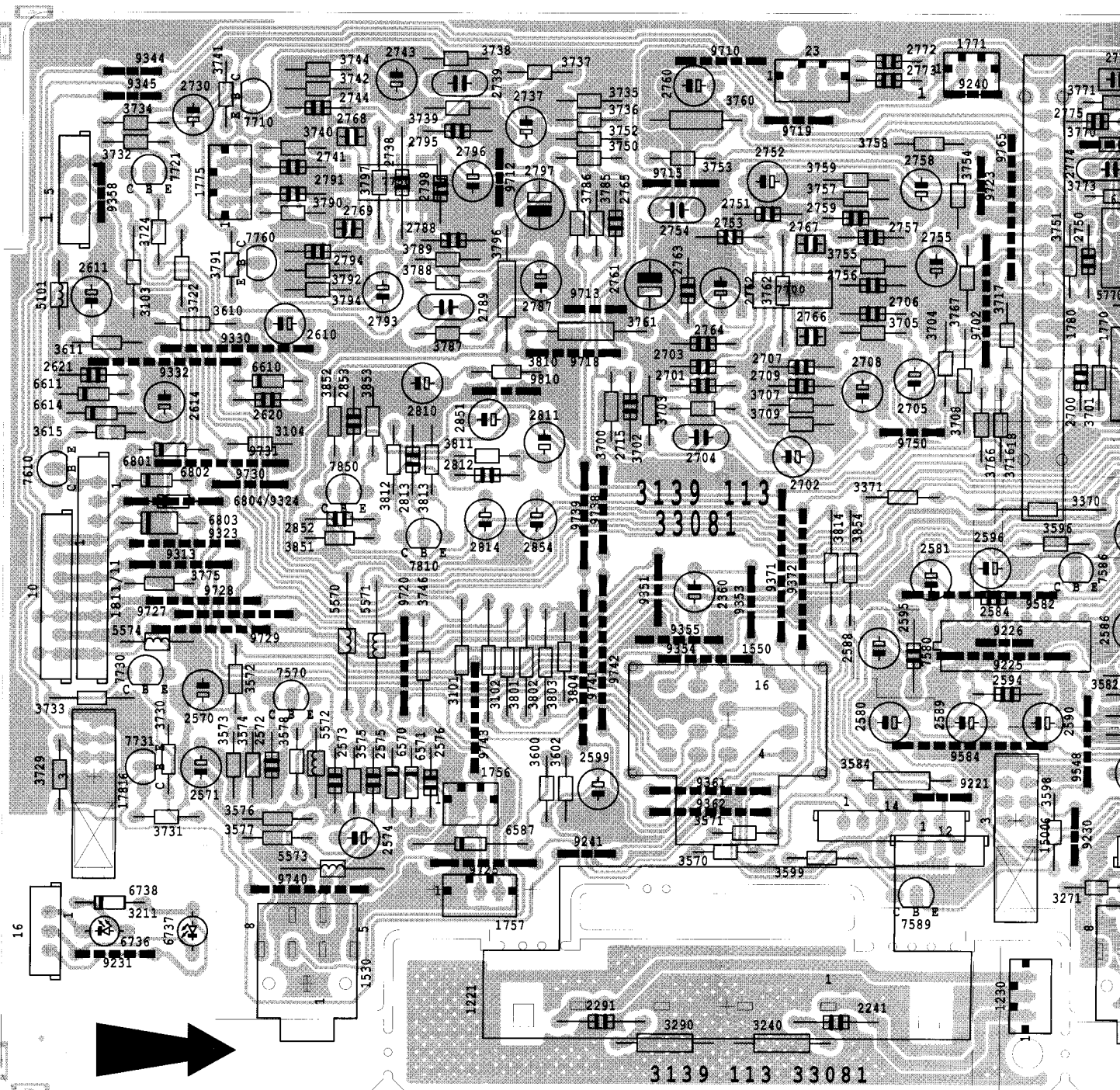
az9340.c

A

B

C

D



1

2

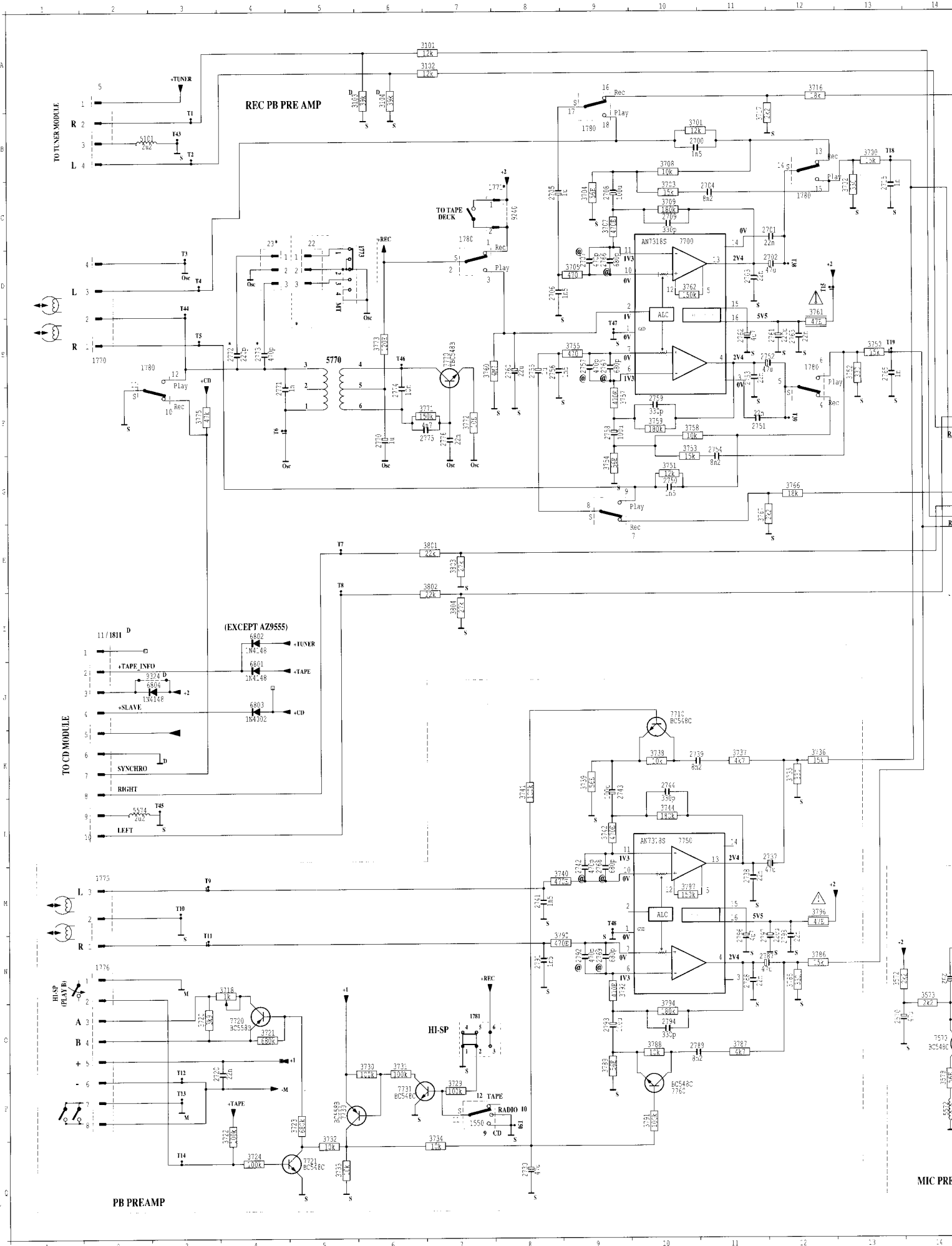
3

4









# RTV servis Horvat

Kešinci, 31402 Semeljci

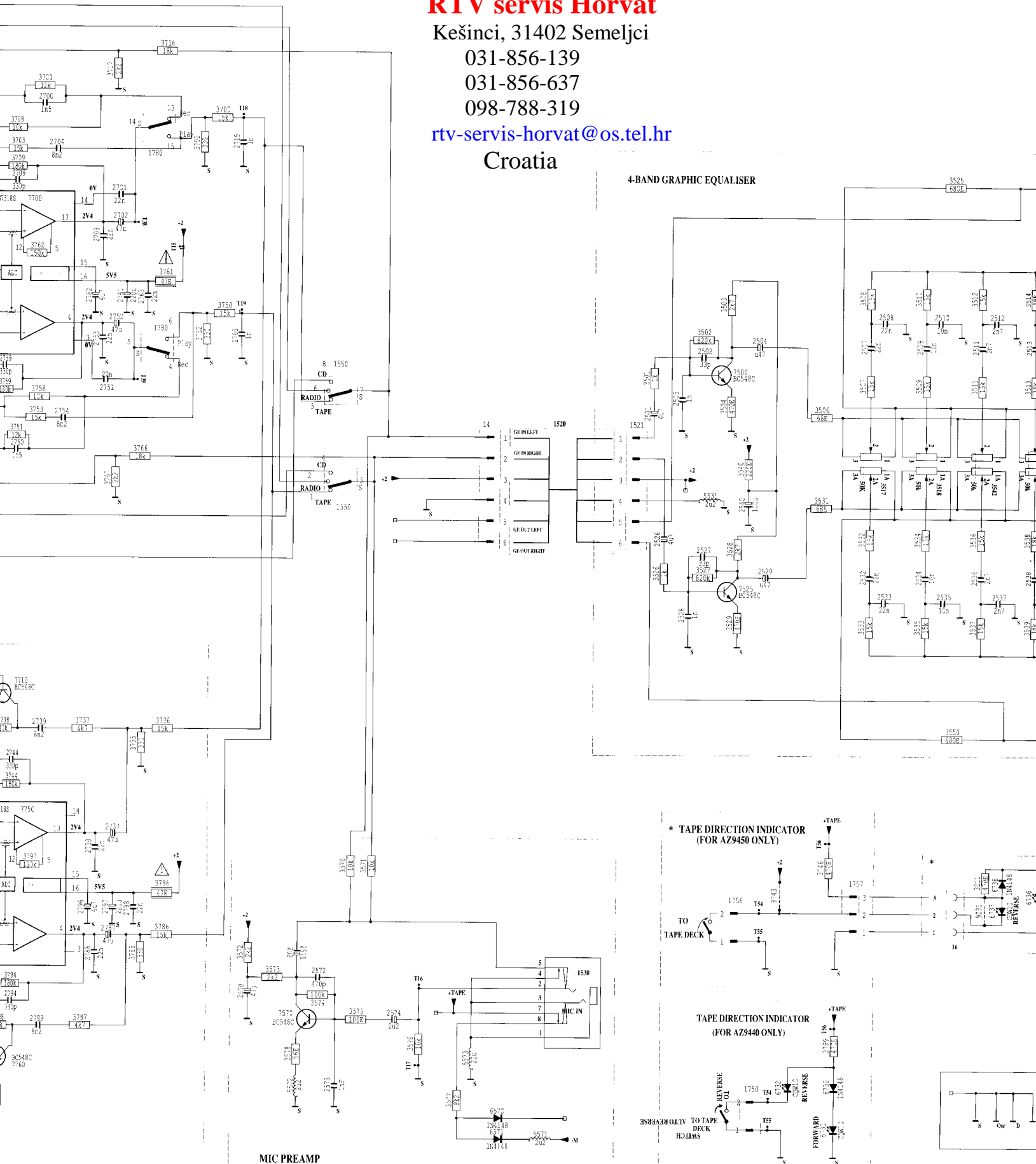
031-856-139

031-856-637

098-788-319

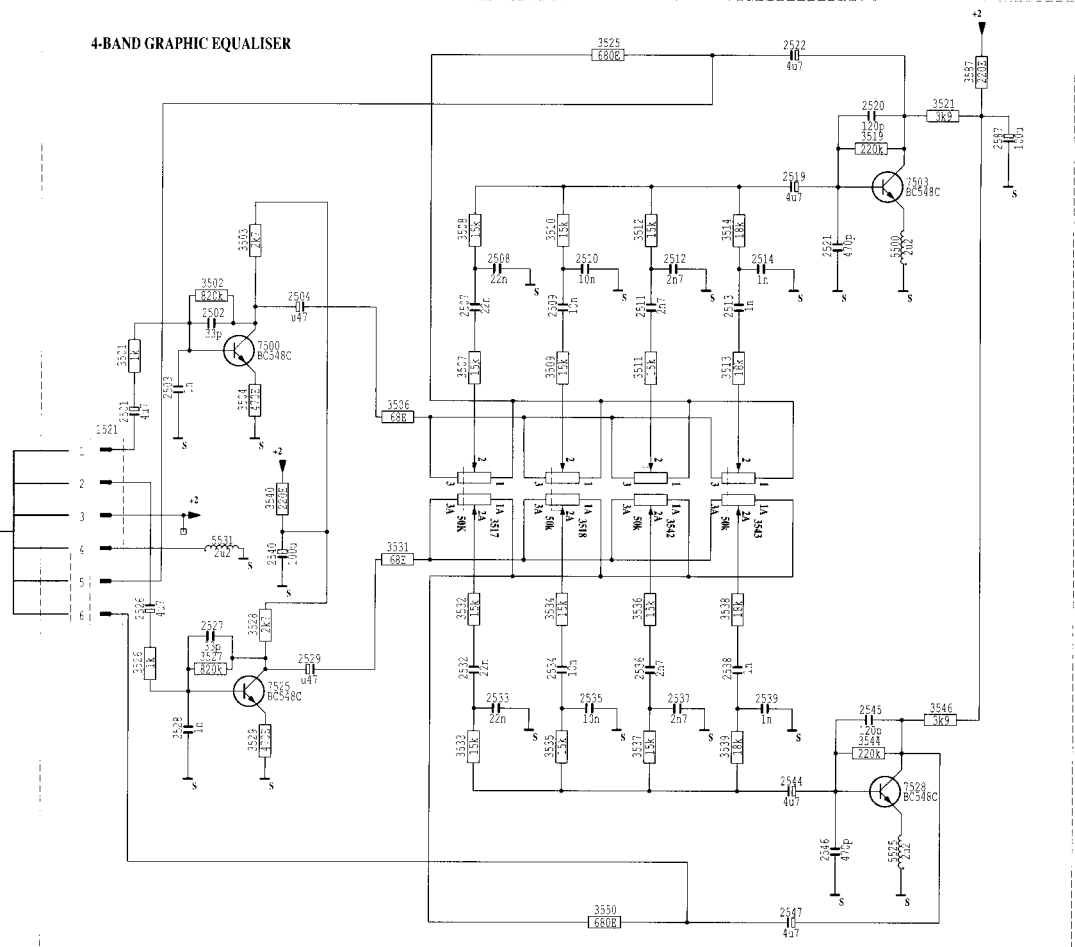
[rtv-servis-horvat@os.tel.hr](mailto:rtv-servis-horvat@os.tel.hr)

Croatia

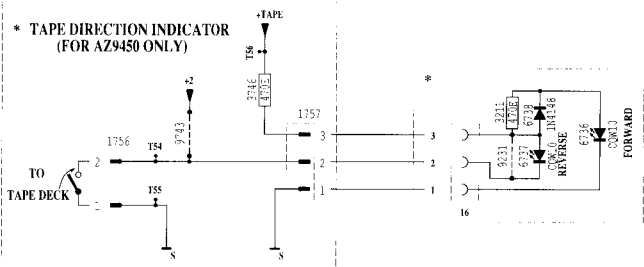


11 1 2  
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14 017  
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97 017  
98 017  
99 017  
100 017

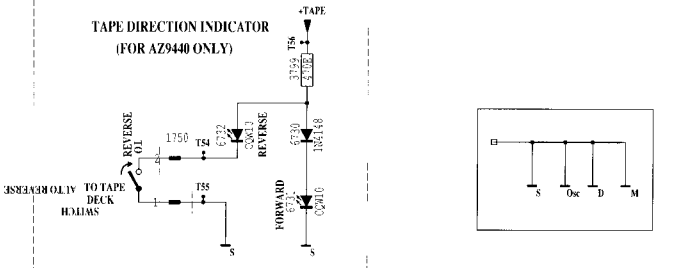
**4-BAND GRAPHIC EQUALISER**



**\* TAPE DIRECTION INDICATOR (FOR AZ9450 ONLY)**



**TAPE DIRECTION INDICATOR (FOR AZ9440 ONLY)**



**ITEMS MARKED '@'**

AZ9345	AZ9355
AZ9440	AZ9450
	AZ9555
2707	2766
2757	2767
2742	2768
2792	2769

+1 (9V)	+CD (5V6)
+2 (5V6)	+TUNER (5V6)
	+TAPE (5V6)
	+REC (5V6)

**\* PROVISION  
D AZ9555 ONLY**

**FOR AZ9345 & AZ9440, USE ALSO  
3139 118 8391 SH130-2**



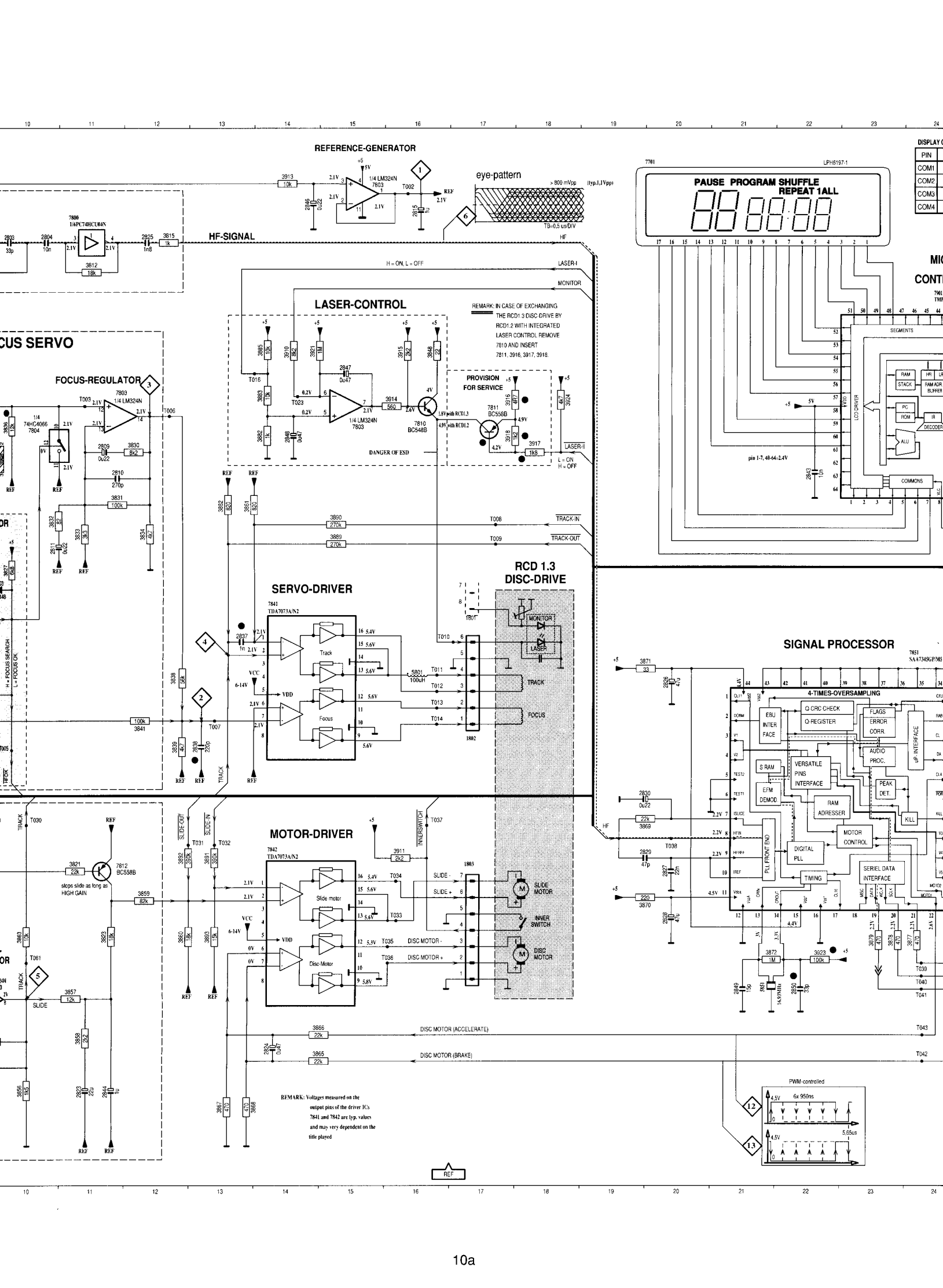












DISPLAY	PIN
COM1	17
COM2	18
COM3	19
COM4	20

MIC  
CONT



7851  
SA473450PMS

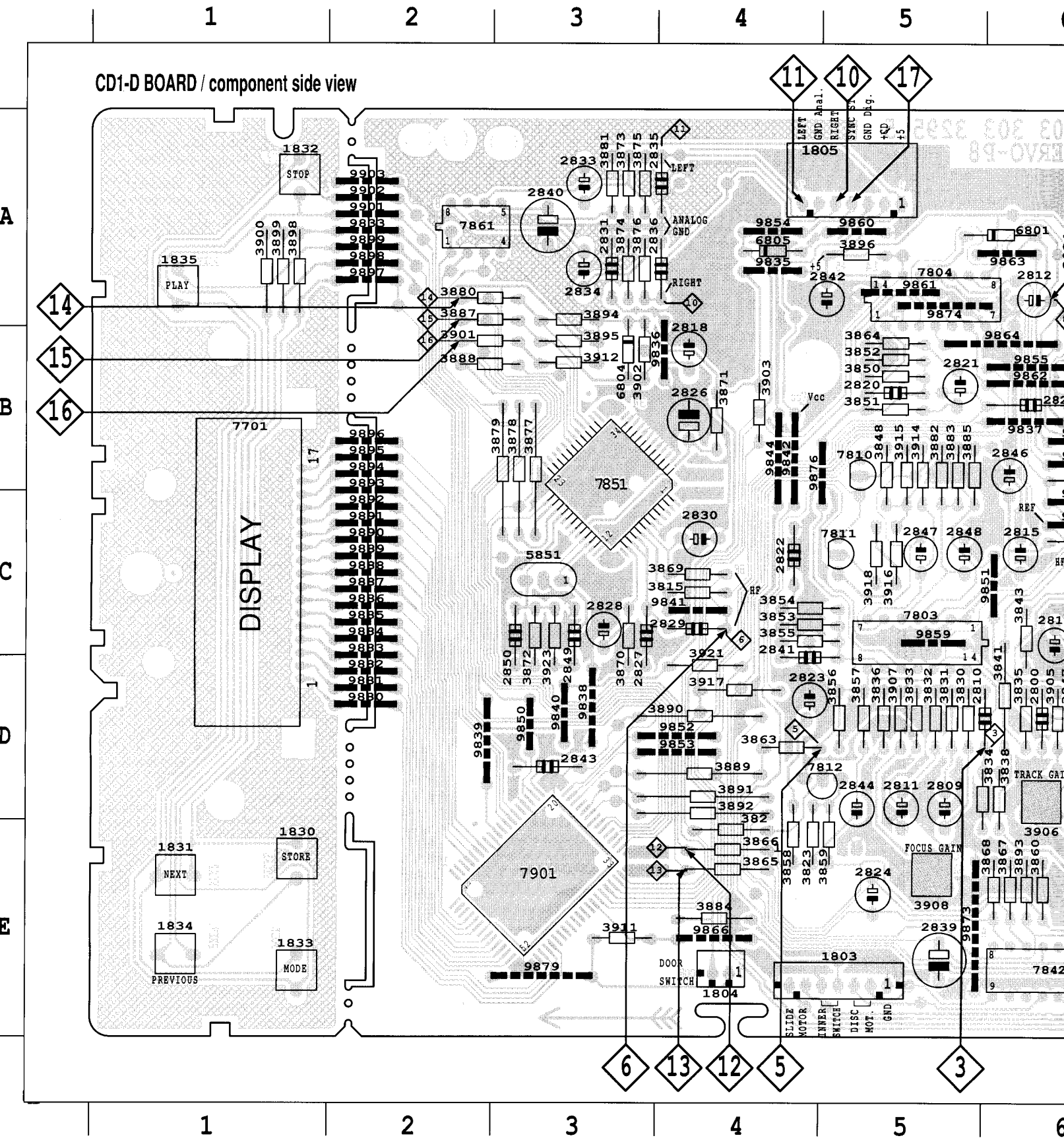


4-TIMES-OVERSAMPLING

PWM-controlled



CD1 LAYOUT







# ADJUSTMENT TABLE (RCD1.3D with discrete servo electronic)

CD-PART					
<b>LASER CURRENT</b>					
The trimpot. for adjustment of the laser current is located on the disc drive and has been adjusted in the production line. Therefore for service purpose it is not intended to adjust the laser current. Check only if the HF-signal level is higher than 800mV <sub>pp</sub> .					
<b>TRACK BALANCE</b>					
Service pos. 3 Display shows "3"			3846	Adjust to 0±10mV DC offset	
<b>TRACK GAIN</b>					
Play with Test-Disc 5 track 1	1300 Hz 100 mV <sub>rms</sub>	see Fig. 1	3906		CHX = 50 mV/DIV CHY = 50 mV/DIV Adjust according to FIG.3
<b>FOCUS GAIN</b>					
Play with Test-Disc 5 track 1	1200 Hz 500 mV <sub>rms</sub>	see Fig. 2	3908		CHX = 200 mV/DIV CHY = 200 mV/DIV Adjust according to FIG.3

Test disc 5 4822 397 30096

**REMARK:** In case the discdrive or the optical pickup has been exchanged, always adjust **TRACK BALANCE**, **TRACK GAIN** and **FOCUS GAIN**.

FIG. 1

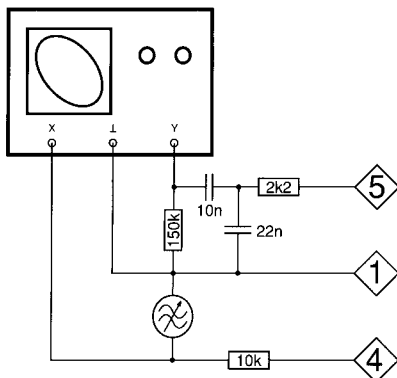


FIG. 2

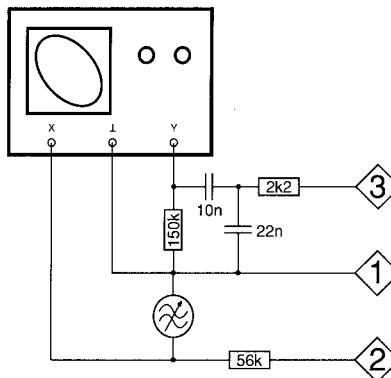
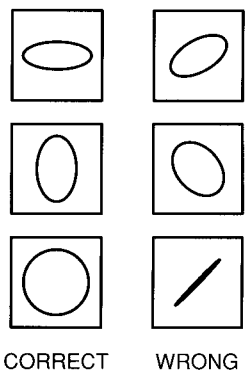


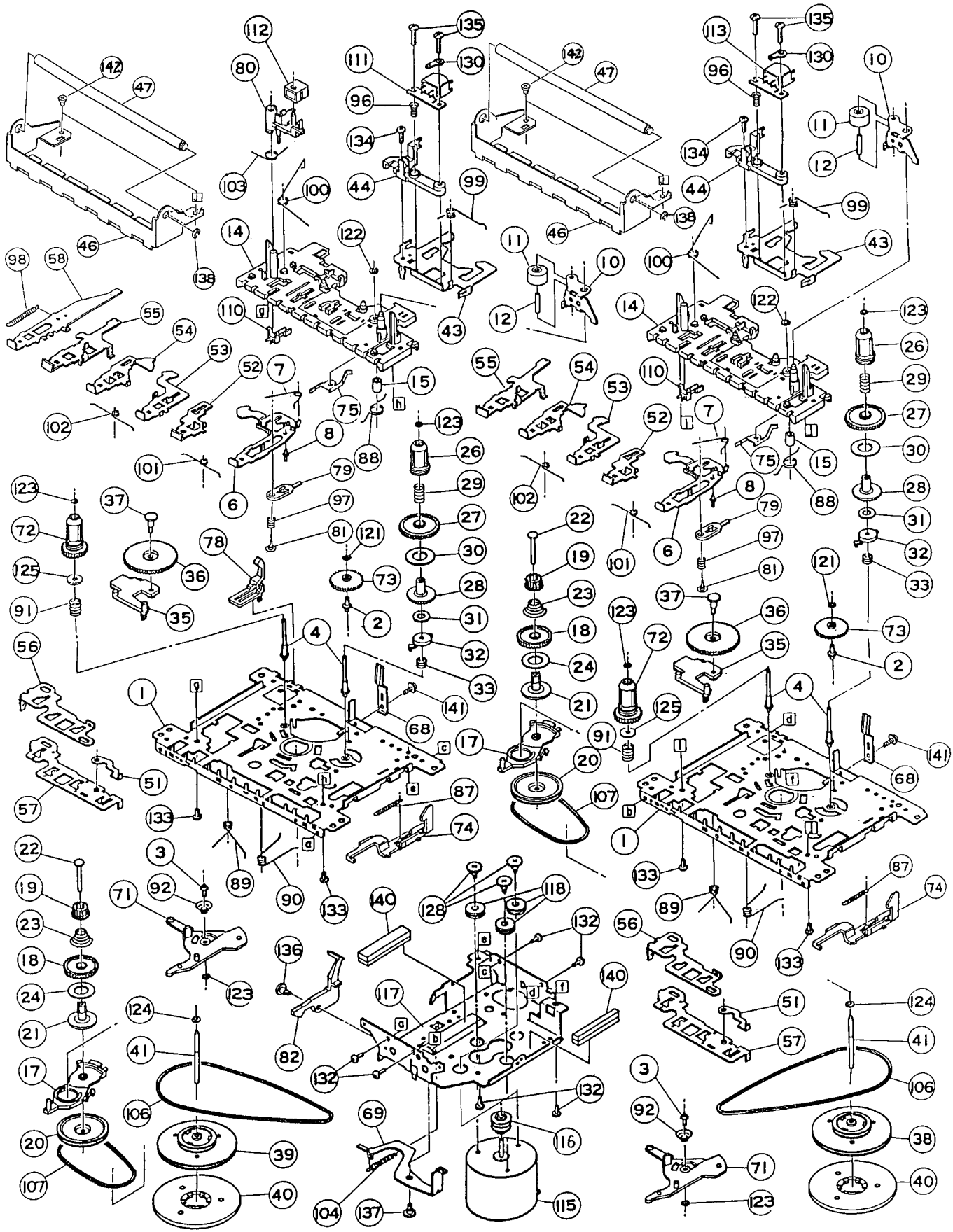
FIG. 3



**TAPEDECK EXPLODED VIEW**

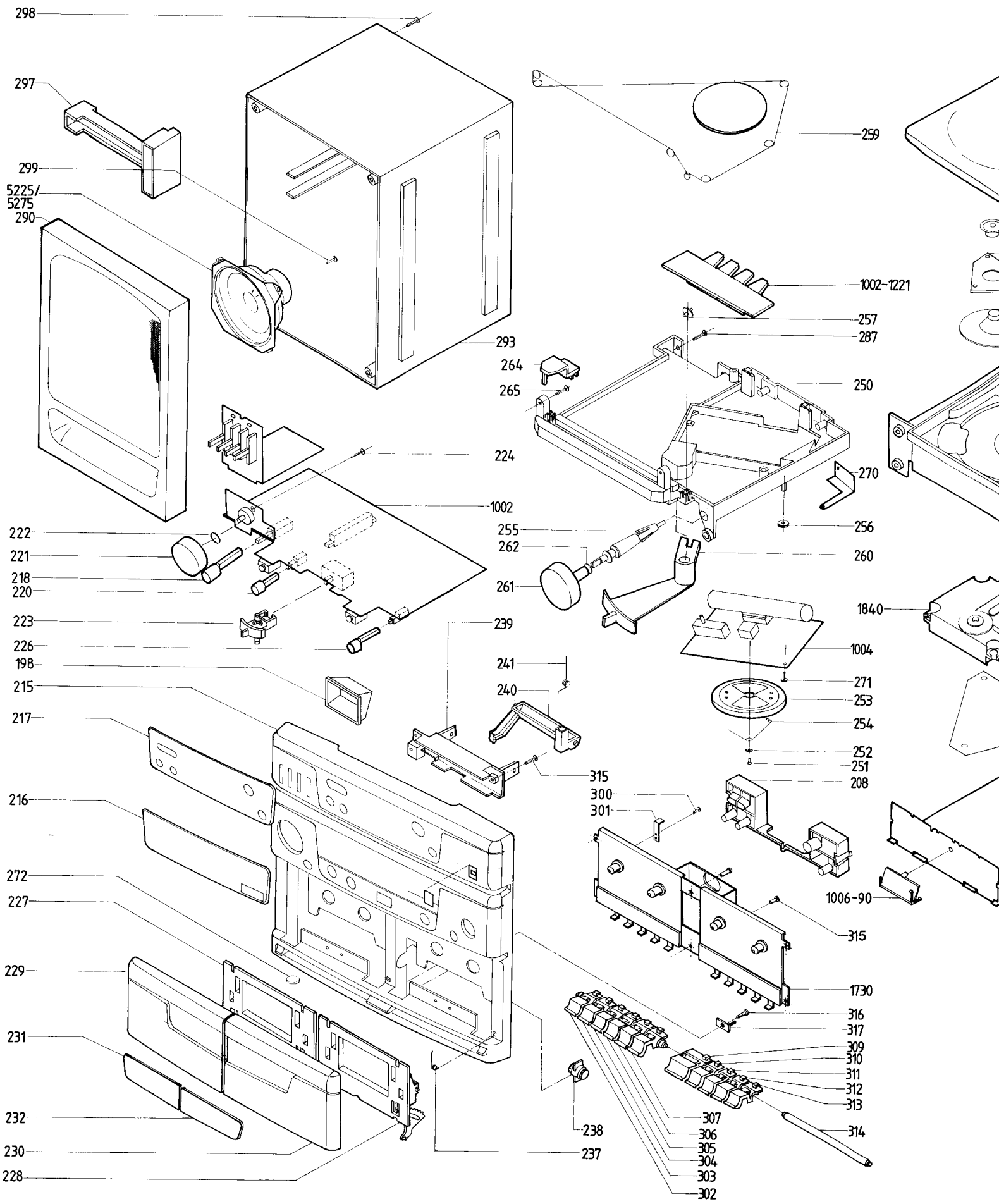
**CDS-83WPB**

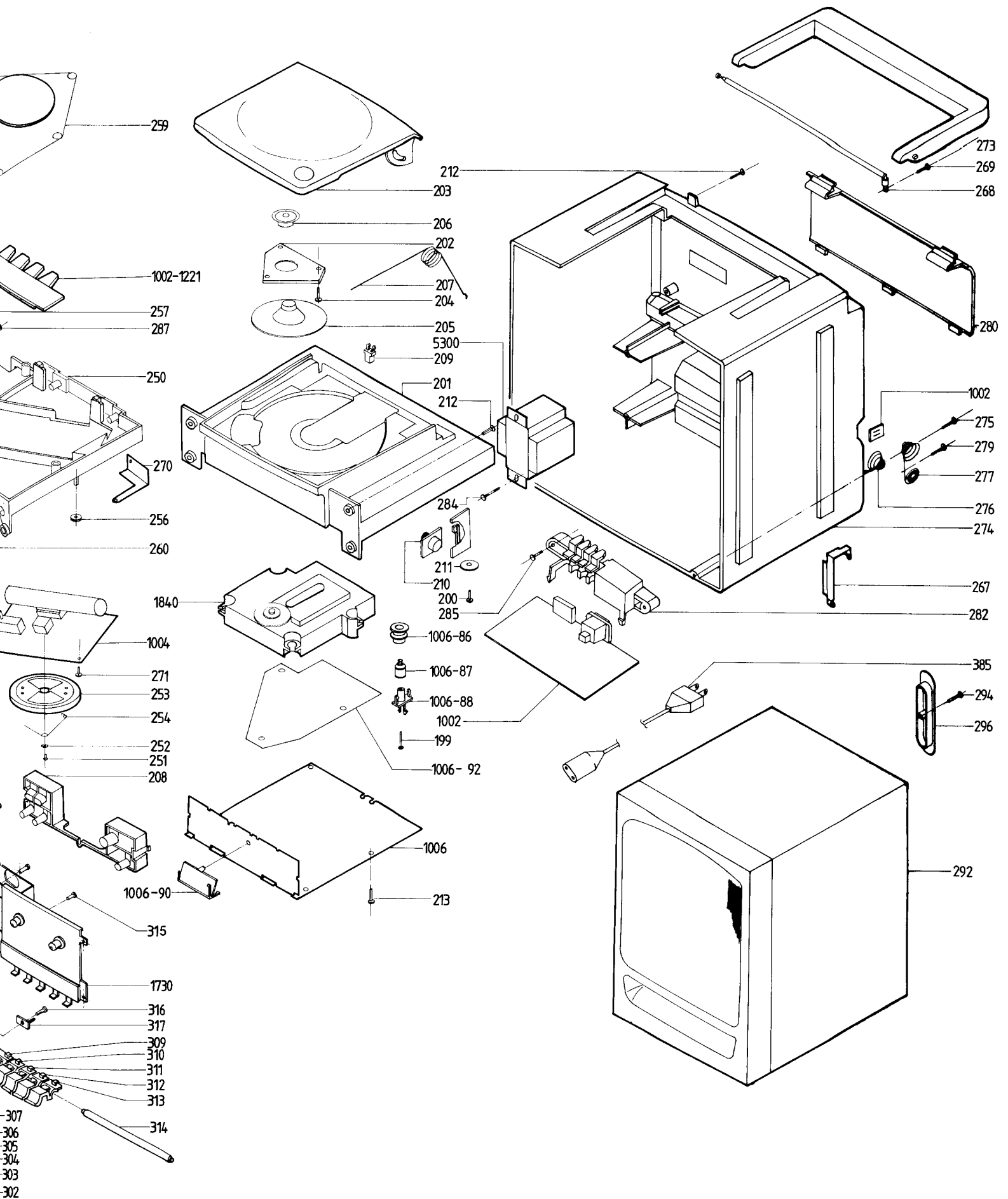
**SET EXPLO**



- 298
- 297
- 299
- 5225/  
5275
- 290
- 222
- 221
- 218
- 220
- 223
- 226
- 198
- 215
- 217
- 216
- 272
- 227
- 229
- 231
- 232
- 230
- 228

# SET EXPLODED VIEW





**SET MECHANICAL PARTLIST**

**TAPEDECK**

196	4822 526 20168	Magnet magnetized
203	4822 444 61036	CD door
203	4822 443 64489	CD door /17
205	4822 466 93464	Stabiliser disc
206	4822 532 12311	Metal ring
207	4822 492 52332	Spring CD
208	4822 410 63644	Button CD
209	4822 276 13079	Latch switch
210	4822 529 10257	Damper assy
215	4822 423 51191	Cabinet front
216	4822 450 62398	Window Tuner Unit /01/10
216	4822 450 62401	Window Tuner Unit /17
216	4822 450 62429	Window Tuner Unit /14
216	4822 450 62409	Window Tuner Unit /05
217	4822 450 62399	Window CD1
218	4822 410 63643	Knob POWER
220	4822 410 63637	Knob DBB
221	4822 410 63641	Knob VOLUME
222	4822 492 51374	Spring
223	4822 410 63639	Knob MODE
226	4822 410 63638	Knob HSD
227	4822 443 64132	Door cassette (L)
228	4822 443 64133	Door cassette (R)
229	4822 443 64394	Cover cassette (L)
230	4822 443 64393	Cover cassette (R)
231	4822 450 62394	Window cassette (L)
232	4822 450 62395	Window cassette (R)
237	4822 492 71143	Spring
238	4822 529 10278	Damper assy
241	4822 492 70426	Rec spring
253	4822 528 40285	Drum
254	4822 492 40799	Wire spring
255	4822 535 91958	Spindle
256	4822 528 80907	Pulley pom
257	4822 528 50116	Pulley pom
260	4822 411 61963	Knob band
261	4822 413 31847	Knob tuning
262	4822 492 51374	Ring
264	4822 450 81223	Pointer
268	4822 303 30298	Telescopic Aerial
272	4822 462 40683	Plate (FOOT)
273	4822 498 10529	Handle
274	4822 421 60228	Cabinet rear
276	4822 492 51734	Spring compression
277	4822 492 51733	Spring compression
280	4822 423 41277	Door battery
290	4822 445 30267	Cabinet spk front
290	4822 445 30266	Cabinet spk front /17
290	4822 423 51204	Cabinet spk front /01
291	4822 464 90792	Loudspeaker frame /17
292	4822 445 40132	Cabinet spk rear (R)
293	4822 445 40131	Cabinet spk rear (L)

296	4822 404 10887	Cord winder
302	4822 410 63625	Button REC 1
303	4822 410 63626	Button PLAY 1
304	4822 410 63627	Button REW 1
305	4822 410 63628	Button FFW 1
306	4822 410 63629	Button STOP/EJECT 1
307	4822 410 63631	Button PAUSE 1
309	4822 410 63632	Button PLAY 2
310	4822 410 63633	Button REW 2
311	4822 410 63634	Button FFW 2
312	4822 410 63635	Button STOP/EJECT 2
313	4822 410 63636	Button PAUSE 2

10	4822
11	4822
74	4822
106	4822
107	4822
110	4822
111	4822
112	4822
113	4822
115	4822
116	4822

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

Note : Only the spare parts.

197	SCR PAN ST ZN M2X4
199	SCR PAN TORX TAP ST ZN BK 2X16
200	SCR WASH PAN TORX ST ZN 3X12
204	SCR PAN TORX TAP ST ZN BK 3X8
211	WASHER
213	SCR PAN TORX TAP ST ZN BK 3X12
214	SCR PAN TORX TAP ST ZN BK 3X16
224	SCR PAN TORX TAP ST ZN BK 3X12
236	SCR PAN TORX TAP ST ZN BK 2X10
251	TRUSS SCR M2.6X6X0.45P
263	SCR PAN TORX TAP ST ZN BK 3X16
265	SCR PAN TORX TAP ST ZN BK 3X12
269	SCR PAN TORX TAP ST ZN BK 3X12
271	SCR PAN TORX TAP ST ZN BK 3X12
275	SCR PAN TORX TAP ST ZN BK 3X12
279	SCR WASH PAN TORX ST ZN 3X10
284	SCR WASH PAN TORX ST ZN 3X16
285	SCR PAN TORX TAP ST ZN BK 3X12
287	SCR PAN TORX TAP ST ZN BK 3X12
294	SCR PAN TORX TAP ST ZN BK 3X16
298	SCR PAN TORX TAP ST ZN BK 3X32
299	SCR WASH PAN TORX ST ZN 3X10
300	SCR PAN ST ZN M2X4
315	SCR PAN TORX TAP ST ZN BK M3X6
316	SCR PAN TORX TAP ST ZN BK 3X12

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

**HANDLING**



**TAPEDECK MECHANICAL PARTLIST**

10	4822 528 70849	Pinch roller arm
11	4822 528 70695	Pinch roller assy
74	4822 403 30792	Eject hook (B)
106	4822 358 31125	Main belt
107	4822 358 31124	Sub belt
110	4822 278 90663	Leaf switch
111	4822 249 10397	R/PF head MS15R-AA2N1
112	4822 249 40296	E head SS-1000-02
113	4822 249 10397	R/PF head MS15R-AA2N1
115	4822 361 21592	Motor EG-530YD-9BH
116	4822 528 81493	Motor pulley

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

**HANDLING CHIP COMPONENTS**

**GENERAL**  
SCALE 1:1  
Labels: CHIP COMPONENT, SOLDER, COPPER TRACK, P.C.B., GLUE  
Label: SERVICE PACKAGE

**DISMOUNTING**  
A: SOLDERING IRON (e.g. WELLER SOLDER TIP PT-H7) and VACUUM PISTON (4822 395 10082)  
OR  
SOLDERING IRON and SOLDER WICK (4822 321 40042)  
B: e.g. A PAIR OF TWEEZERS HEATING  
C: SOLDERING IRON and SOLDER WICK CLEANING

**MOUNTING**  
A: e.g. A PAIR OF TWEEZERS  
Labels: SOLDER (∅ 0.5 - 0.8 mm), SOLDERING IRON, PRESSURE  
B: SOLDERING TIME < 3 sec./side, SOLDER (∅ 0.5 - 0.8 mm), PRESSURE, SOLDERING IRON



**PRECAUTIONS**  
Labels: SOLDERING IRON, RIGHT, COPPER TRACK, CHIP COMPONENT, NO!

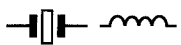

**EXAMPLES**  
Labels: RIGHT, NO!

27 012C12


TUNER BOARD (FM/MW/LW - version /05/14)

(FM/AM - vers

MISCELLANEOUS		
1100	4822 277 30933	Slide switch
		
2101	4822 122 32764	4.7nF 20% 50V
2102	4822 126 12812	47pF 5% 50V
2103	4822 124 41402	10µF 20% 50V
2104	4822 124 41402	10µF 20% 50V
2105	4822 126 12283	8p2F 5%
2106	4822 125 50682	Cap tuning 2xAM/2xFM
2107	4822 126 12827	390pF 5%
2108	4822 126 12284	5p6F ±0.5pF
2109	4822 126 12809	2.2pF 5% N470 50V
2110	4822 126 12829	8pF 50V
2112	4822 124 40433	47µF 20% 25V
2113	4822 124 42129	0.22µF 20% 63V
2114	4822 126 12671	330pF 10% YB 50V
2115	4822 124 40246	4µ7 20% 63V
2116	4822 124 80141	10nF 10% 50V
2117	4822 124 41398	1µF 20% 63V
2118	4822 124 41398	1µF 20% 63V
2119	4822 124 80141	10nF 10% 50V
2120	4822 124 41398	1µF 20% 63V
2121	4822 124 40239	0.47µF 20% 63V
2122	4822 124 40239	0.47µF 20% 63V
2125	4822 126 12826	120pF 50%50V
2126	4822 125 50045	Trimcap 1.8-22pF 250V
2131	4822 126 12824	18pF 50% 50V
2150	4822 125 50045	Trimcap 1.8-22pF 250V
		
3101	4822 100 20167	50k 30%LIN 0.1W
3102	4822 116 52297	68k 5% 0.5W
3103	4822 116 83863	1k 5% 0.5W
3104	4822 116 52256	2k2 5% 0.5W
3105	4822 116 83864	10k 5% 0.5W
3108	4822 116 52191	33Ω 5% 0.5W
3109	4822 116 52234	100k 5% 0.5W
3110	4822 116 52234	100k 5% 0.5W
3113	4822 116 52252	180k 5% 0.5W


		
5101	4822 157 70762	Coil- 4.5T
5102	4822 158 60627	MW/LW Ant. Bar
5104	4822 157 70033	FM Osc coil
5105	4822 157 71145	MW Osc coil
5106	4822 157 70499	AM IFT coil
5107	4822 242 81154	Ceramic filter 10.7MHz
5108	4822 156 11146	AM IFT coil
5109	4822 157 71144	LW osc coil
6101	4822 130 30621	1N4148
6102	4822 130 30621	1N4148
		
7101	4822 209 32746	TEA5711T/N2


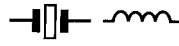


Note : Only the parts mentioned in this list are normal service spare parts.

MIS	
2	482
1100	482
1201	482
	
2101	482
2102	482
2103	482
2104	482
2105	482
2106	482
2108	482
2109	482
2110	482
2110	482
2112	482
2113	482
2114	482
2115	482
2116	482
2116	482
2117	482
2118	482
2119	482
2119	482
2120	482
2121	482
2122	482
2133	482
2135	482

5T  
Ant. Bar  
coil  
coil  
coil  
filter 10.7MHz  
coil  
coil  
  
1T/N2

are normal service

MISCELLANEOUS		
2	4822 256 90463	Holder Ferrite bar
1100	4822 277 21698	Slide switch
1201	4822 526 10176	Rod
		
2101	4822 122 32764	4.7nF 20% 50V
2102	4822 126 12812	47pF 5% 50V
2103	4822 124 41402	10µF 20% 50V
2104	4822 124 41402	10µF 20% 50V
2105	4822 126 12814	24pF 5% N220 50V
2106	4822 125 50681	Cap tuning 2xAM/2xFM
2108	4822 122 32147	22pF 5% N470 50V
2109	4822 126 12809	2.2pF 5% N470 50V
2110	4822 126 12229 @	8p2F N750 50V
2110	4822 126 12361 %	10pF 5% N750 50V
2112	4822 124 40433	47µF 20% 25V
2113	4822 124 42129	0.22µF 20% 63V
2114	4822 126 12671	330pF 10% YB 50V
2115	4822 124 40246	4µ7 20% 63V
2116	4822 121 43144 @	22nF 10% 50V
2116	4822 121 80141 %	10nF 10% 50V
2117	4822 124 41398	1µF 20% 63V
2118	4822 124 41398	1µF 20% 63V
2119	4822 121 43144 @	10nF 10% 50V
2119	4822 121 80141 %	10nF 10% 50V
2120	4822 124 41398	1µF 20% 63V
2121	4822 124 40239	0.47µF 20% 63V
2122	4822 124 40239	0.47µF 20% 63V
2133	4822 126 12672	4.7nF 10% 50V
2135	4822 126 10777	100pF 5% 50V

		
3101	4822 100 20167	50k 30%LIN 0.1W
3102	4822 116 52297	68k 5% 0.5W
3103	4822 116 83863	1k 5% 0.5W
3104	4822 116 52256	2k2 5% 0.5W
3105	4822 116 83864	10k 5% 0.5W
3108	4822 116 52191	33Ω 5% 0.5W
3109	4822 116 52234	100k 5% 0.5W
3110	4822 116 52234	100k 5% 0.5W
3113	4822 116 52252	180k 5% 0.5W
		
5101	4822 157 70513	FM coil
5102	4822 158 70731	MW Ant. Bar
5104	4822 156 30947	1.5 turns coil
5105	4822 157 71145	MW Osc coil
5106	4822 157 70499	AM IFT coil
5107	4822 242 81154	Ceramic filter 10.7MHz
5108	4822 156 11146	AM IFT coil
		
6101	4822 130 30621	1N4148
6102	4822 130 30621	1N4148
		
7101	4822 209 32746	TEA5711T/N2

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

@ for /17  
% for /01/10



COMBI BOARD

MISCELLANEOUS

1221	4822 267 31176	Speaker Socket
1251	4822 267 31593	Headphone
1253	4822 276 12349	Tact Switch
1305	4822 265 20287 Δ	Mains Socket
1305	4822 265 30986 Δ	Mains Socket /17
1306	4822 070 31602 Δ	Fuse 1.6A
1306	5322 253 30116 Δ	Fuse 2.0A /17
1307	4822 272 10366 Δ	Volage selector /01
1500	4822 276 10991	Tact Switch
1530	4822 267 31014	Stereo jack
1550	4822 277 30689	Slider switch
1780	4822 277 20594	Slider switch
1781	4822 276 10991	Tact Switch

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2222	4822 124 40242	1μF 20% 63V
2223	4822 122 10576	1.8nF 10% 16V
2224	4822 124 41643	100μF 20% 16V
2225	4822 124 40433	47μF 20% 25V
2226	4822 124 40433	47μF 20% 25V
2227	4822 121 41854	150nF 5% 63V
2228	4822 124 40184	1000μF 20% 10V
2229	4822 122 33169	680pF 10% 50V
2230	4822 124 42246	470μF 20% 25V
2240	4822 122 33449	47nF 30% 50V
2241	4822 126 12785	47nF TUB 50V
2250	4822 121 51387	10nF 20% 16V
2272	4822 124 40242	1μF 20% 63V
2273	4822 122 10576	1.8nF 10% 16V
2274	4822 124 41643	100μF 20% 16V
2275	4822 126 11585	22nF +80-20% 25V
2276	4822 124 40433	47μF 20% 25V
2277	4822 121 41854	150nF 5% 63V
2278	4822 124 40184	1000μF 20% 10V
2279	4822 122 33169	680pF 10% 50V
2290	4822 122 33449	47nF 30% 50V
2291	4822 126 12785	47nF TUB 50V
2341	4822 124 80141	10nF 10% 50V
2342	4822 124 80141	10nF 10% 50V
2343	4822 124 80141	10nF 10% 50V
2344	4822 124 80141	10nF 10% 50V
2345	5322 121 42386	100nF 5% 63V
2350	4822 124 42119	4700μF 20% 25V
2354	4822 124 22263	220μF 20% 25V
2360	4822 124 41576	2.2μF 20% 50V
2501	4822 124 40246	4.7μF 20% 63V
2502	4822 122 33197	1nF 10% 50V
2503	4822 122 33197	1nF 10% 50V
2504	4822 124 40246	4.7μF 20% 63V
2505	4822 126 12148	2.7nF 10%
2506	5322 121 42465	68nF 5% 63V

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2507	4822 121 51305	15nF 10% 50V
2508	4822 121 51305	15nF 10% 50V
2509	4822 126 13312	6.8nF 20% 16V
2510	4822 126 13312	6.8nF 20% 16V
2511	4822 126 12148	2.7nF 10%
2512	4822 126 12148	2.7nF 10%
2513	4822 122 33197	1nF 10% 50V
2514	4822 122 33197	1nF 10% 50V
2519	4822 124 40246	4.7μF 20% 63V
2520	4822 126 10052	120pF 10%
2521	4822 122 33519	470pF 10% 50V
2522	4822 124 40246	4.7μF 20% 63V
2526	4822 124 40246	4.7μF 20% 63V
2527	4822 122 33197	1nF 10% 50V
2528	4822 122 33197	1nF 10% 50V
2529	4822 124 40246	4.7μF 20% 63V
2532	4822 121 51305	15nF 10% 50V
2533	4822 121 51305	15nF 10% 50V
2534	4822 126 13312	6.8nF 20% 16V
2535	4822 126 13312	6.8nF 20% 16V
2536	4822 126 12148	2.7nF 10%
2537	4822 126 12148	2.7nF 10%
2538	4822 122 33197	1nF 10% 50V
2539	4822 122 33197	1nF 10% 50V
2540	4822 124 41643	100μF 20% 16V
2544	4822 124 40246	4.7μF 20% 63V
2545	4822 126 10052	120pF 10%
2546	4822 122 33519	470pF 10% 50V
2547	4822 124 40246	4.7μF 20% 63V
2557	4822 126 12148	2.7nF 10%
2558	5322 121 42465	68nF 5% 63V
2570	4822 124 40433	47μF 20% 25V
2571	4822 124 41576	2.2μF 20% 50V
2572	4822 122 33519	470pF 10% 50V
2573	4822 122 33197	1nF 10% 50V
2574	4822 124 41576	2.2μF 20% 50V
2575	4822 126 11714	4.7nF 20%
2576	4822 126 11714	4.7nF 20%
2587	4822 124 41643	100μF 20% 16V
2593	4822 124 40246	4.7μF 20% 63V
2598	4822 124 40246	4.7μF 20% 63V
2610	4822 124 41596	22μF 20% 50V
2611	4822 124 41596	22μF 20% 50V
2620	4822 126 11714	4.7nF 20%
2621	4822 126 11714	4.7nF 20%
2700	4822 126 12878	1.5nF 10% 16V
2701	4822 126 11585	22nF +80-20% 25V
2702	4822 124 40433	47μF 20% 25V
2703	4822 126 11585	22nF +80-20% 25V
2704	4822 121 51305	15nF 10% 50V
2705	4822 124 40242	1μF 20% 63V
2706	4822 126 12878	1.5nF 10% 16V

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2708	4822
2709	4822
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2796	4822
2797	4822
2798	4822



2708	4822 124 41643	100µF 20% 16V
2709	4822 122 33519	470pF 10% 50V
2715	4822 122 33197	1nF 10% 50V
2720	4822 126 11585	22nF +80-20% 25V
2730	4822 124 40433	47µF 20% 25V
2737	4822 124 40433	47µF 20% 25V
2738	4822 126 11585	22nF +80-20% 25V
2739	4822 121 51305	15nF 10% 50V
2741	4822 126 12878	1.5nF 10% 16V
2743	4822 124 41643	100µF 20% 16V
2744	4822 122 33519	470pF 10% 50V
2750	4822 126 12878	1.5nF 10% 16V
2751	4822 126 11585	22nF +80-20% 25V
2752	4822 124 40433	47µF 20% 25V
2753	4822 126 11585	22nF +80-20% 25V
2754	4822 121 51305	15nF 10% 50V
2755	4822 124 40242	1µF 20% 63V
2756	4822 126 12878	1.5nF 10% 16V
2758	4822 124 41643	100µF 20% 16V
2759	4822 122 33519	470pF 10% 50V
2760	4822 124 41596	22µF 20% 50V
2761	4822 124 40196	220µF 20% 16V
2762	4822 124 40246	4.7µF 20% 63V
2763	4822 126 11585	22nF +80-20% 25V
2764	4822 121 51387	10nF 20% 16V
2765	4822 122 33197	1nF 10% 50V
2766	5322 122 32052	680pF 10% 100V
2767	5322 122 32052	680pF 10% 100V
2768	5322 122 32052	680pF 10% 100V
2769	5322 122 32052	680pF 10% 100V
2770	4822 124 40242	1µF 20% 63V
2771	4822 122 33197	1nF 10% 50V
2774	4822 121 51304	10nF 10% 50V
2775	4822 126 11714	4.7nF 20%
2776	4822 121 43144	22nF 10% 50V
2787	4822 124 40433	47µF 20% 25V
2788	4822 126 11585	22nF +80-20% 25V
2789	4822 121 51305	15nF 10% 50V
2791	4822 126 12878	1.5nF 10% 16V
2793	4822 124 41643	100µF 20% 16V
2794	4822 122 33519	470pF 10% 50V
2795	4822 121 51387	10nF 20% 16V
2796	4822 124 40246	4.7µF 20% 63V
2797	4822 124 22263	220µF 20% 25V
2798	4822 126 11585	22nF +80-20% 25V



3101	4822 116 83864	10k 5% 0.5W
3102	4822 116 83864	10k 5% 0.5W
3220	4822 116 52206	120Ω 5% 0.5W
3221	4822 116 52211	150Ω 5% 0.5W
3222	4822 116 52224	470Ω 5% 0.5W
3226	4822 116 52191	33Ω 5% 0.5W
3227	4822 052 10478 Δ	4Ω7 5% 0.33W
3240	4822 052 10228 Δ	2Ω2 5% 0.33W
3270	4822 116 52206	120Ω 5% 0.5W
3271	4822 116 52211	150Ω 5% 0.5W
3272	4822 116 52224	470Ω 5% 0.5W
3277	4822 052 10478 Δ	4Ω7 5% 0.33W
3290	4822 052 10228 Δ	2Ω2 5% 0.33W
3372	4822 116 83864	10k 5% 0.5W
3373	4822 116 83864	10k 5% 0.5W
3374	4822 116 83864	10k 5% 0.5W
3375	4822 116 83864	10k 5% 0.5W
3500	4822 102 10447	Potm 50kB x 2
3501	4822 050 11002	1k 1% 0.4W
3502	4822 116 52283	4k7 5% 0.5W
3503	4822 116 52276	3k9 5% 0.5W
3504	4822 116 52211	150Ω 5% 0.5W
3505	4822 116 52263	2k7 5% 0.5W
3506	4822 116 52199	68Ω 5% 0.5W
3507	4822 116 52257	22k 5% 0.5W
3508	4822 116 52257	22k 5% 0.5W
3509	4822 116 52251	18k 5% 0.5W
3510	4822 116 52251	18k 5% 0.5W
3511	4822 116 52251	18k 5% 0.5W
3512	4822 116 52251	18k 5% 0.5W
3513	4822 116 52251	18k 5% 0.5W
3514	4822 116 52251	18k 5% 0.5W
3517	4822 105 11107	50Kx2 20%lin 0.025W
3518	4822 105 11107	50Kx2 20%lin 0.025W
3519	4822 116 83874	220k 5% 0.5W
3521	4822 116 52276	3k9 5% 0.5W
3522	4822 116 52277	39k 5% 0.5W
3525	4822 116 52207	1k2 5% 0.5W
3526	4822 050 11002	1k 1% 0.4W
3527	4822 116 52283	4k7 5% 0.5W
3528	4822 116 52276	3k9 5% 0.5W
3529	4822 116 52211	150Ω 5% 0.5W
3531	4822 116 52199	68Ω 5% 0.5W
3532	4822 116 52257	22k 5% 0.5W
3533	4822 116 52257	22k 5% 0.5W
3534	4822 116 52251	18k 5% 0.5W
3535	4822 116 52251	18k 5% 0.5W
3536	4822 116 52251	18k 5% 0.5W
3537	4822 116 52251	18k 5% 0.5W
3538	4822 116 52251	18k 5% 0.5W
3539	4822 116 52251	18k 5% 0.5W
3540	4822 116 52215	220Ω 5% 0.5W

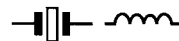
COMBI BOARD



3542	4822 105 11107	50Kx2 20%lin 0.025W
3543	4822 105 11107	50Kx2 20%lin 0.025W
3544	4822 116 83874	220k 5% 0.5W
3546	4822 116 52276	3k9 5% 0.5W
3548	4822 116 52277	39k 5% 0.5W
3550	4822 116 52207	1k2 5% 0.5W
3553	4822 116 52263	2k7 5% 0.5W
3570	4822 116 52244	15k 5% 0.5W
3571	4822 116 52244	15k 5% 0.5W
3572	4822 116 52256	2k2 5% 0.5W
3573	4822 116 52256	2k2 5% 0.5W
3574	4822 116 52234	100k 5% 0.5W
3575	4822 116 52175	100Ω 5% 0.5W
3576	4822 116 52234	100k 5% 0.5W
3577	4822 116 52303	8k2 5% 0.5W
3578	4822 116 52188	27Ω 5% 0.5W
3587	4822 116 52215	220Ω 5% 0.5W
3610	4822 116 52244	15k 5% 0.5W
3611	4822 116 52244	15k 5% 0.5W
3700	4822 116 52296	6k8 5% 0.5W
3701	4822 116 52238	12k 5% 0.5W
3702	4822 116 52219	330Ω 5% 0.5W
3703	4822 116 52303	8k2 5% 0.5W
3704	4822 116 52197	56Ω 5% 0.5W
3705	4822 116 52224	470Ω 5% 0.5W
3707	4822 116 52224	470Ω 5% 0.5W
3708	4822 116 83864	10k 5% 0.5W
3709	4822 116 52239	120k 5% 0.5W
3716	4822 116 52303	8k2 5% 0.5W
3717	4822 116 52256	2k2 5% 0.5W
3718	4822 100 11348	1k 30%lin 0.1W
3720	4822 116 52276	3k9 5% 0.5W
3721	4822 116 52298	680k 5% 0.5W
3722	4822 116 52234	100k 5% 0.5W
3723	4822 116 52298	680k 5% 0.5W
3724	4822 116 52234	100k 5% 0.5W
3729	4822 116 52234	100k 5% 0.5W
3730	4822 116 52234	100k 5% 0.5W
3731	4822 116 52234	100k 5% 0.5W
3732	4822 116 83864	10k 5% 0.5W
3733	4822 116 83864	10k 5% 0.5W
3734	4822 116 83864	10k 5% 0.5W
3735	4822 116 52219	330Ω 5% 0.5W
3736	4822 116 52296	6k8 5% 0.5W
3737	4822 116 52263	2k7 5% 0.5W
3738	4822 116 52289	5k6 5% 0.5W
3739	4822 116 52197	56Ω 5% 0.5W
3740	4822 116 52224	470Ω 5% 0.5W
3741	4822 116 52234	100k 5% 0.5W
3742	4822 116 52224	470Ω 5% 0.5W
3744	4822 116 52239	120k 5% 0.5W
3750	4822 116 52296	6k8 5% 0.5W



3751	4822 116 52238	12k 5% 0.5W
3752	4822 116 52219	330Ω 5% 0.5W
3753	4822 116 52303	8k2 5% 0.5W
3754	4822 116 52197	56Ω 5% 0.5W
3755	4822 116 52224	470Ω 5% 0.5W
3757	4822 116 52224	470Ω 5% 0.5W
3758	4822 116 83864	10k 5% 0.5W
3759	4822 116 52239	120k 5% 0.5W
3760	4822 111 30893	4M7 5% 0.2W
3761	4822 052 10479 Δ	47Ω 5% 0.33W
3762	4822 116 52239	120k 5% 0.5W
3762	4822 116 52245	150k 5% 0.5W /17
3766	4822 116 52303	8k2 5% 0.5W
3767	4822 116 52256	2k2 5% 0.5W
3771	4822 116 52245	150k 5% 0.5W
3772	4822 116 52176	10Ω 5% 0.5W
3773	4822 116 52211	150Ω 5% 0.5W
3773	4822 116 52206	120Ω 5% 0.5W /17
3775	4822 116 52284	47k 5% 0.5W
3785	4822 116 52219	330Ω 5% 0.5W
3786	4822 116 52296	6k8 5% 0.5W
3787	4822 116 52263	2k7 5% 0.5W
3788	4822 116 52289	5k6 5% 0.5W
3789	4822 116 52197	56Ω 5% 0.5W
3790	4822 116 52224	470Ω 5% 0.5W
3791	4822 116 52234	100k 5% 0.5W
3792	4822 116 52224	470Ω 5% 0.5W
3794	4822 116 52239	120k 5% 0.5W
3796	4822 052 10479 Δ	47Ω 5% 0.33W
3797	4822 116 52245	150k 5% 0.5W
3801	4822 116 52257	22k 5% 0.5W
3802	4822 116 52257	22k 5% 0.5W



5101	4822 157 62552	Inductor 2.2μH
5301	4822 157 70003 Δ	Main Choke
5500	4822 157 62552	Inductor 2.2μH
5525	4822 157 62552	Inductor 2.2μH
5531	4822 157 62552	Inductor 2.2μH
5570	4822 157 62552	Inductor 2.2μH
5571	4822 157 62552	Inductor 2.2μH
5572	4822 157 62552	Inductor 2.2μH
5573	4822 157 52983	Inductor 22μH 10%
5574	4822 157 62552	Inductor 2.2μH
5770	4822 156 20946	OSC Coil 100kHz



6341	53
6342	53
6343	53
6344	53
6360	53
6570	48
6571	48
6610	48
6611	48
6803	53



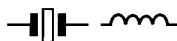
7220	48
7350	48
7370	48
7371	48
7500	48
7503	48
7525	48
7528	48
7570	48
7700	48
7710	48
7720	48
7721	48
7730	48
7731	48
7750	48
7760	48
7770	48

Note : Only the spare parts.

0.025W  
0.025W



3751	4822 116 52238	12k 5% 0.5W
3752	4822 116 52219	330Ω 5% 0.5W
3753	4822 116 52303	8k2 5% 0.5W
3754	4822 116 52197	56Ω 5% 0.5W
3755	4822 116 52224	470Ω 5% 0.5W
3757	4822 116 52224	470Ω 5% 0.5W
3758	4822 116 83864	10k 5% 0.5W
3759	4822 116 52239	120k 5% 0.5W
3760	4822 111 30893	4M7 5% 0.2W
3761	4822 052 10479 Δ	47Ω 5% 0.33W
3762	4822 116 52239	120k 5% 0.5W
3762	4822 116 52245	150k 5% 0.5W /17
3766	4822 116 52303	8k2 5% 0.5W
3767	4822 116 52256	2k2 5% 0.5W
3771	4822 116 52245	150k 5% 0.5W
3772	4822 116 52176	10Ω 5% 0.5W
3773	4822 116 52211	150Ω 5% 0.5W
3773	4822 116 52206	120Ω 5% 0.5W /17
3775	4822 116 52284	47k 5% 0.5W
3785	4822 116 52219	330Ω 5% 0.5W
3786	4822 116 52296	6k8 5% 0.5W
3787	4822 116 52263	2k7 5% 0.5W
3788	4822 116 52289	5k6 5% 0.5W
3789	4822 116 52197	56Ω 5% 0.5W
3790	4822 116 52224	470Ω 5% 0.5W
3791	4822 116 52234	100k 5% 0.5W
3792	4822 116 52224	470Ω 5% 0.5W
3794	4822 116 52239	120k 5% 0.5W
3796	4822 052 10479 Δ	47Ω 5% 0.33W
3797	4822 116 52245	150k 5% 0.5W
3801	4822 116 52257	22k 5% 0.5W
3802	4822 116 52257	22k 5% 0.5W



5101	4822 157 62552	Inductor 2.2μH
5301	4822 157 70003 Δ	Main Choke
5500	4822 157 62552	Inductor 2.2μH
5525	4822 157 62552	Inductor 2.2μH
5531	4822 157 62552	Inductor 2.2μH
5570	4822 157 62552	Inductor 2.2μH
5571	4822 157 62552	Inductor 2.2μH
5572	4822 157 62552	Inductor 2.2μH
5573	4822 157 52983	Inductor 22μH 10%
5574	4822 157 62552	Inductor 2.2μH
5770	4822 156 20946	OSC Coil 100kHz



6341	5322 130 30684 Δ	1N4002GpF
6342	5322 130 30684 Δ	1N4002GpF
6343	5322 130 30684 Δ	1N4002GpF
6344	5322 130 30684 Δ	1N4002GpF
6360	5322 130 30684 Δ	1N4002GpF
6570	4822 130 30621	1N4148
6571	4822 130 30621	1N4148
6610	4822 130 30621	1N4148
6611	4822 130 30621	1N4148
6803	5322 130 30684 Δ	1N4002GpF



7220	4822 209 31544	TA8227P
7350	4822 209 12335	L4941
7370	4822 130 44196	BC548C
7371	4822 130 44196	BC548C
7500	4822 130 44196	BC548C
7503	4822 130 44196	BC548C
7525	4822 130 44196	BC548C
7528	4822 130 44196	BC548C
7570	4822 130 44196	BC548C
7700	4822 209 32918	AN7318S
7710	4822 130 44196	BC548C
7720	4822 130 44197	BC558B
7721	4822 130 44196	BC548C
7730	4822 130 44197	BC558B
7731	4822 130 44196	BC548C
7750	4822 209 32918	AN7318S
7760	4822 130 44196	BC548C
7770	4822 130 40937	BC548B

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

CD1 BOARD

MISCELLANEOUS

86	4822 532 61103	Rubber damper CD
87	4822 532 61104	Distance holder
90	4822 404 10886	Bracket
1830	4822 276 13114	Tact switch. "STORE"
1831	4822 276 13114	Tact switch. "NEXT"
1832	4822 276 13114	Tact switch. "STOP"
1833	4822 276 13114	Tact switch. "MODE"
1834	4822 276 13114	Tact switch. "PREV."
1835	4822 276 13114	Tact switch. "PLAY"
1840	4822 691 30345	RCD-1.3D drive assy
1920	4822 276 13495	Push switch. "DOOR"

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2800	4822 122 33069	33pF 5% 50V
2801	4822 122 33847	10pF 5% 50V
2802	4822 122 33069	33pF 5% 50V
2803	4822 122 33069	33pF 5% 50V
2804	4822 121 51387	10nF 20% 16V
2805	4822 124 40433	47μF 20% 25V
2808	4822 124 40768	0.47μF 20% 100V
2809	4822 124 42447	0.22μF 20% 100V
2810	4822 126 12702	270pF 10% 50V
2811	4822 124 42447	0.22μF 20% 100V
2812	4822 124 40248	10μF 20% 63V
2813	4822 124 40433	47μF 20% 25V
2814	4822 124 40433	47μF 20% 25V
2815	4822 124 40242	1μF 20% 63V
2816	4822 122 33848	47pF 10% 50V
2817	4822 122 33848	47pF 10% 50V
2818	4822 124 40756	1μF 20% 100V
2820	4822 126 12148	2.7nF 20%
2821	4822 124 40768	0.47μF 20% 100V
2822	4822 121 51387	10nF 20% 16V
2823	5322 124 41431	22μF 20% 35V
2824	4822 124 40768	0.47μF 20% 100V
2825	4822 126 12795	1.8nF 20% 16V
2826	4822 124 40433	47μF 20% 25V
2827	4822 126 11585	22nF +80-20% 25V
2828	4822 124 40433	47μF 20% 25V
2829	4822 122 33848	47pF 5% 50V
2830	4822 124 42447	0.22μF 20% 100V
2831	4822 121 51387	10nF 20% 16V
2833	4822 124 40756	1μF 20% 100V
2834	4822 124 40756	1μF 20% 100V
2835	4822 122 33197	1nF 10% 50V
2836	4822 122 33197	1nF 10% 50V
2839	4822 124 40849	330μF 20% 16V
2840	4822 124 40433	47μF 20% 25V
2841	4822 126 10329	68pF 10% 50V
2842	4822 124 40433	47μF 20% 25V
2843	4822 121 51387	10nF 20% 16V

—||—

2844	4822 124 40756	1μF 20% 100V
2845	4822 126 10053	180pF 10% 50V
2846	4822 124 42447	0.22μF 20% 100V
2847	4822 124 40768	0.47μF 20% 100V
2848	4822 124 41407	0.47μF 20% 63V
2849	4822 122 10462	15pF 5%

□

3800	4822 050 15603	56k 1% 0.4W
3801	4822 050 15603	56k 1% 0.4W
3802	4822 050 11003	10k 1% 0.4W
3803	4822 050 11003	10k 1% 0.4W
3804	4822 050 11003	10k 1% 0.4W
3805	4822 050 11003	10k 1% 0.4W
3806	4822 116 52296	6k8 5% 0.5W
3807	4822 116 52296	6k8 5% 0.5W
3808	4822 116 52269	3k3 5% 0.5W
3809	4822 116 52269	3k3 5% 0.5W
3810	4822 116 83864	10k 5% 0.5W
3811	4822 116 52289	5k6 5% 0.5W
3812	4822 116 52251	18k 5% 0.5W
3813	4822 050 11002	1k 1% 0.4W
3814	4822 116 52269	3k3 5% 0.5W
3815	4822 050 11002	1k 1% 0.4W
3816	4822 116 52304	82k 5% 0.5W
3817	4822 116 52277	39k 5% 0.5W
3818	4822 116 52298	680k 5% 0.5W
3819	4822 116 52269	3k3 5% 0.5W
3820	4822 116 52234	100k 5% 0.5W
3821	4822 116 52257	22k 5% 0.5W
3822	4822 116 52244	15k 5% 0.5W
3823	4822 116 52251	18k 5% 0.5W
3824	4822 116 52297	68k 5% 0.5W
3825	4822 116 52283	4k7 5% 0.5W
3826	4822 116 52291	56k 5% 0.5W
3827	4822 116 52296	6k8 5% 0.5W
3828	4822 116 52234	100k 5% 0.5W
3829	4822 116 52234	100k 5% 0.5W
3830	4822 116 52303	8k2 5% 0.5W
3831	4822 116 52234	100k 5% 0.5W
3832	4822 116 52202	82Ω 5% 0.5W
3833	4822 116 52269	3k3 5% 0.5W
3834	4822 116 52283	4k7 5% 0.5W
3835	4822 116 52244	15k 5% 0.5W
3838	4822 116 52291	56k 5% 0.5W
3839	4822 116 52283	4k7 5% 0.5W
3841	4822 116 52234	100k 5% 0.5W
3842	4822 116 52219	330Ω 5% 0.5W
3843	4822 116 52215	220Ω 5% 0.5W
3844	4822 116 52245	150k 5% 0.5W
3845	4822 116 52239	120k 5% 0.5W

□

3846	4822 116 52296	6k8 5% 0.5W
3848	4822 116 52296	6k8 5% 0.5W
3849	4822 116 52296	6k8 5% 0.5W
3850	4822 116 52296	6k8 5% 0.5W
3851	4822 116 52296	6k8 5% 0.5W
3852	4822 116 52296	6k8 5% 0.5W
3853	4822 116 52296	6k8 5% 0.5W
3854	4822 116 52296	6k8 5% 0.5W
3855	4822 116 52296	6k8 5% 0.5W
3856	4822 116 52296	6k8 5% 0.5W
3857	4822 116 52296	6k8 5% 0.5W
3858	4822 116 52296	6k8 5% 0.5W
3859	4822 116 52296	6k8 5% 0.5W
3860	4822 116 52296	6k8 5% 0.5W
3861	4822 116 52296	6k8 5% 0.5W
3862	4822 116 52296	6k8 5% 0.5W
3863	4822 116 52296	6k8 5% 0.5W
3864	4822 116 52296	6k8 5% 0.5W
3865	4822 116 52296	6k8 5% 0.5W
3866	4822 116 52296	6k8 5% 0.5W
3867	4822 116 52296	6k8 5% 0.5W
3868	4822 116 52296	6k8 5% 0.5W
3869	4822 116 52296	6k8 5% 0.5W
3870	4822 116 52296	6k8 5% 0.5W
3871	4822 116 52296	6k8 5% 0.5W
3872	4822 116 52296	6k8 5% 0.5W
3873	4822 116 52296	6k8 5% 0.5W
3874	4822 116 52296	6k8 5% 0.5W
3875	4822 116 52296	6k8 5% 0.5W
3876	4822 116 52296	6k8 5% 0.5W
3877	4822 116 52296	6k8 5% 0.5W
3878	4822 116 52296	6k8 5% 0.5W
3879	4822 116 52296	6k8 5% 0.5W
3880	4822 116 52296	6k8 5% 0.5W
3881	4822 116 52296	6k8 5% 0.5W
3882	4822 116 52296	6k8 5% 0.5W
3883	4822 116 52296	6k8 5% 0.5W
3884	4822 116 52296	6k8 5% 0.5W
3885	4822 116 52296	6k8 5% 0.5W
3886	4822 116 52296	6k8 5% 0.5W
3887	4822 116 52296	6k8 5% 0.5W
3888	4822 116 52296	6k8 5% 0.5W
3889	4822 116 52296	6k8 5% 0.5W
3890	4822 116 52296	6k8 5% 0.5W
3891	4822 116 52296	6k8 5% 0.5W
3892	4822 116 52296	6k8 5% 0.5W
3893	4822 116 52296	6k8 5% 0.5W
3894	4822 116 52296	6k8 5% 0.5W
3895	4822 116 52296	6k8 5% 0.5W
3896	4822 116 52296	6k8 5% 0.5W
3897	4822 116 52296	6k8 5% 0.5W
3901	4822 116 52296	6k8 5% 0.5W



## MISCELLANEOUS PARTLIST

	4822 321 10249	△	Mains Cord /01
	4822 321 10883	△	Mains Cord /17
	4822 321 10954	△	Mains Cord /10
	4822 321 10886	△	Mains Cord /05
	4822 736 22335		IFU GB-S-F-C /01/10
	4822 736 22337		IFU GB-S-F /17
	4822 736 22406		IFU (E.Europe) /14/05
	4822 691 20919		Tape deck assy
	4822 276 12163		Leaf Switch
	4822 124 42246		470 $\mu$ F 20% 25V
	4822 240 30693		Loudspeaker 4 $\Omega$ 3W
	4822 280 10222		Buzzer /17
	4822 240 30693		Loudspeaker 4 $\Omega$ 3W
	4822 280 10222		Buzzer /17
5300	4822 146 31342	△	Transformer
5300	4822 146 31448	△	Transformer /14/05

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

**GB WARNING**

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

**F ATTENTION**

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

**D WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).  
Unvorsichtige Behandlung im Reparaturfall kann 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.

**NL WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).  
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.  
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.  
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**I AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).  
La loro longevità potrebbe essere fortemente ridotta 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.

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

**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 bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

**F**

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

**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 ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

**ESD**



**GB Warning !**

Invisible laser radiation when open.  
Avoid direct exposure to beam.

**S Varning !**

Osynlig laserstrålning när apparaten är öppnad och spårren är urkopplad. Betrakta ej strålen.

**SF Varoitus !**

Avatussa laitteessa ja suojauslaitteiden ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

**DK Advarse !**

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.



Service  
Service  
**Service**

# Service Manual



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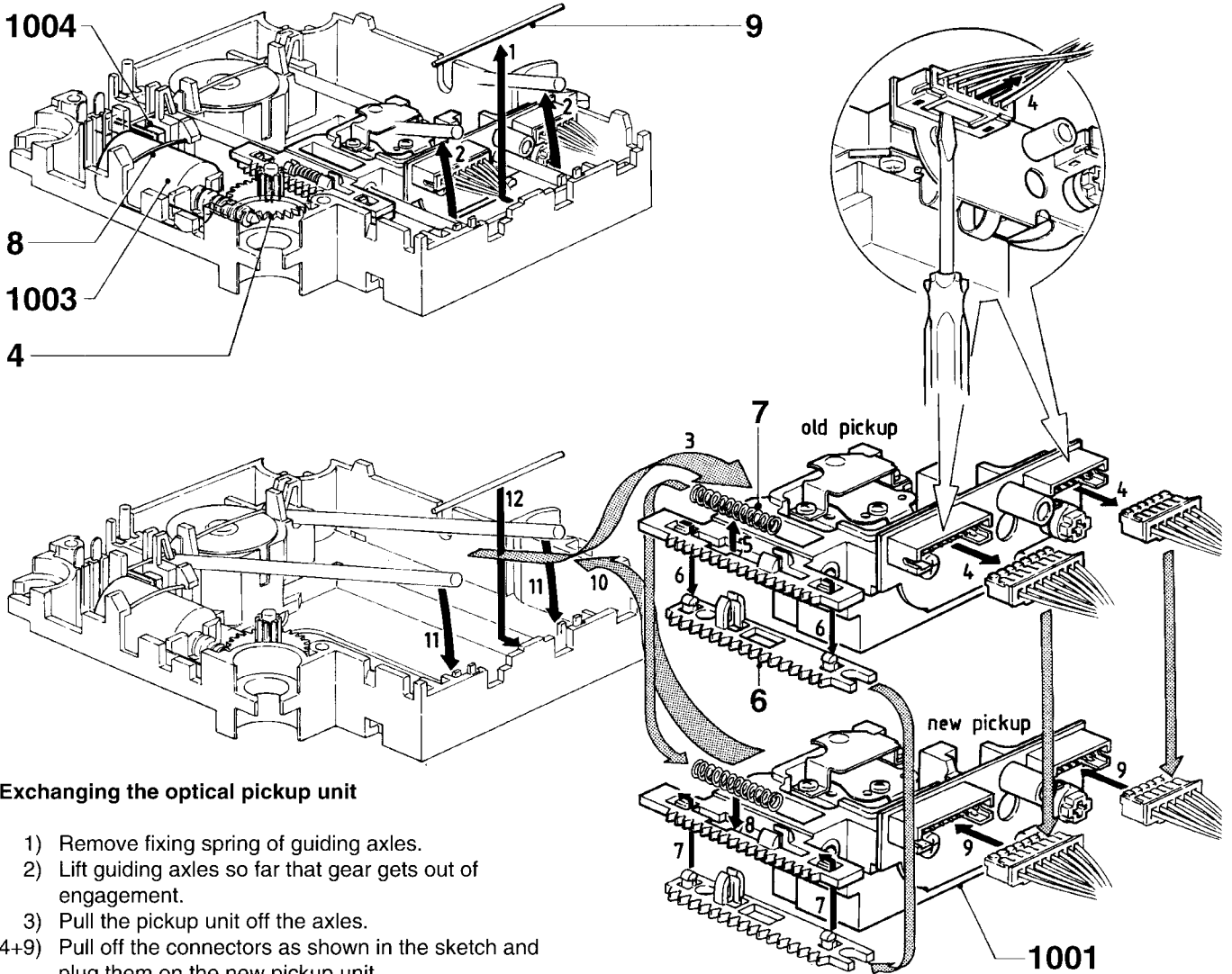
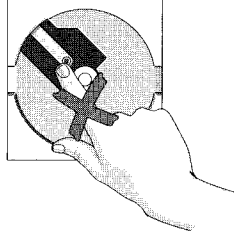
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

**CLASS 1  
LASER PRODUCT**

## Exchange instruction for the OPTICAL PICKUP unit

**WARNINGS: Danger of electrostatic discharge!**  
 The laser diode is more sensitive to ESD than MOS ICs.  
 Therefore take care of ESD-protection whenever working on the disc drive.

Never touch the lens!



### Exchanging the optical pickup unit

- 1) Remove fixing spring of guiding axes.
- 2) Lift guiding axes so far that gear gets out of engagement.
- 3) Pull the pickup unit off the axes.
- 4+9) Pull off the connectors as shown in the sketch and plug them on the new pickup unit.
- 5+6) Remove the toothed bar plus compression spring.
- 7+8) Mount toothed bar and compression spring on new pickup unit.
- 10) Put the new pickup unit on the guiding axes.
- 11) Put guiding axes down to the chassis while positioning the pickup unit so that gear is forced easily into engagement.
- 12) Mount fixing spring of guiding axes.

### IMPORTANT NOTE:

All electrical adjustments have to be carried out new.  
 Follow the adjustment table of the service manual for the relevant set the disc drive is used.  
 The laser current has already been adjusted by the factory.

4822 691 30345 RCD1.3D disc drive assy

4 4822 522 32451 gear wheel  
 6 4822 522 32453 toothed bar  
 7 4822 492 51979 spring, compression  
 8 4822 492 63941 spring, wire (motor)  
 9 4822 492 63942 spring, wire (axes)

1001 4822 218 30768 optical pickup unit RCD1.3  
 1003 4822 361 21113 servomotor assy  
 1004 4822 276 12163 switch, leaf

**Only those parts of which a service code number is stated are service parts.**

## SERVICE HINTS

### Service DISC - HOLDDOWN

The disc must always be fixed well on the turntable.  
If the mechanism has to be dismounted for repair, a separate disc-holddown has to be used ( e.g. service disc-holddown 4822 532 51871 ).  
The CD mechanism then can function normally as in the set.

### REDUCTION of REPAIR PRICE

If the disc drive does not function, in most cases the optical pickup unit will be defect.  
To reduce the actual repair price it is recommended to replace the optical pickup unit only.  
Follow the exchange instruction on the previous page.

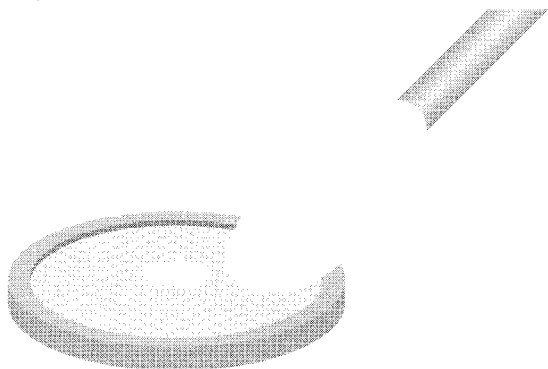
## CLEANING the LENS

**Principle: Avoid cleaning of the lens !**

**DUST particles** are normally no major problem. They can be blown away with oilfree compressed air.

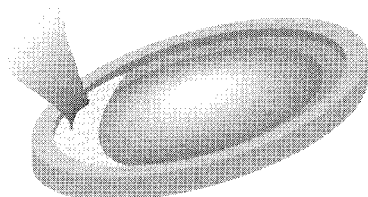
### Finger - prints

If the lens is obviously polluted with finger - prints, it can be cleaned with alcohol or spirit.  
Take a padstick and tip it into alcohol until it is soaked.  
Then clean the surface of the lens by rotating the soaked padstick smoothly.  
The alcohol will dissolve the finger - prints, rotation helps mechanically. Finally the lens will be filled with the dirty cleaning solvent.



Now incline the lens ( disc drive ) and soak the solvent up with absorbent paper.  
The remnants of the solvent will evaporate.

absorbent paper



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