CD Stereo Radio Recorder

AZ1030

all versions

Service
Service
Service

Service Manual

COMPACT disc DIGITAL AUDIO

TABLE OF CONTENTS

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

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PCS 104 234

PHILIPS

TECHNICAL SPECIFICATIONS

GENERAL

Mains voltage	-/00/05/1014	230 V
	-/01/11	120 / 230 V
	-/17	120 V
Mains frequency	-/00/05/1014	50 Hz
	-/01/11	50 / 60 Hz
	-/17	60 Hz
Battery	mains	9 V (R20 x 6)
Power consumption		5 W
Dimension (W x H x D)		435 x 252 x 170 mm
Weight		3.4 Kg

AMPLIFIER

Output power	mains	2 x 1.4 W
	battery	2 x 1.6 W
Speaker impedance		2 x 4 ohm
Frequency response		100 Hz - 10 kHz (±3dB)

TUNER - FM SECTION

Tuning range	87.5 - 108 MHz
IF frequency	10.7 MHz ± 0.2 MHz
Sensitivity	14 dBf at 26dB S/N
Selectivity	45 dB at 300kHz
IF rejection	65 dB
Image rejection	26 dB

TUNER - AM SECTION

Tuning range	MW	522 - 1607 kHz
	-/17	520 - 1730 kHz
IF frequency		468 kHz ± 3 kHz
Sensitivity	MW	1500 µV/m at 26dB S/N
Selectivity	MW	20 dB
IF rejection	MW	60 dB
Image rejection	MW	32 dB

AUDIO CASSETTE RECORDER

Number of tracks		2 stereo
Tape speed		4.76 cm/sec ± 3%
Wow & flutter		< 0.48 JIS UWTD
Fast wind/rewind C60		< 120 sec.
Frequency response	P/B	125 - 8000 Hz
S/N ratio		≥ 40 dB

COMPACT DISC

Frequency response		:	100 Hz - 10 kHz
S/N ratio		:	60 dB
Channel difference	1 kHz	:	< 3 dB
Channel crosstalk	1 kHz	:	40 dB
Laser wavelength		:	780 ± 20 nm
Laser light power		:	< 0.5 mW

SERVICE TOOLS

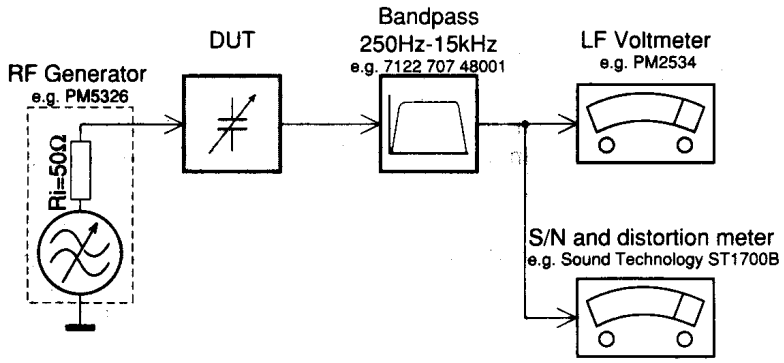
TORX T10 screwdriver with shaftlength 150mm.....4822 395 50423
TORX screwdriver set SBC 163.....4822 295 50145

Audio signal disc SBC 429.....4822 397 30184
Playability test disc SBC 444.....4822 397 30245
Test disc 5 (disc without errors) +
Test disc 5A (disc with dropout errors, black spots and fingerprints)
SBC 426/426A.....4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30 dB level without "pause").....4822 397 30155

Universal test cassette Fe SBC 420. .4822 397 30071

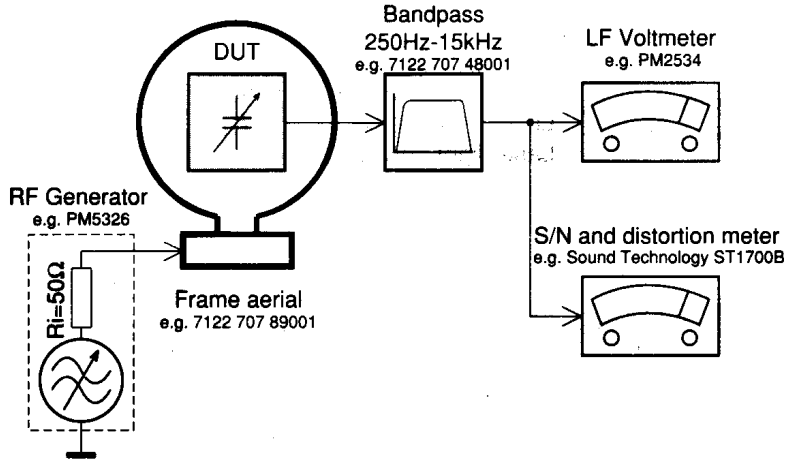
SERVICE MEASUREMENTS

Tuner FM



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

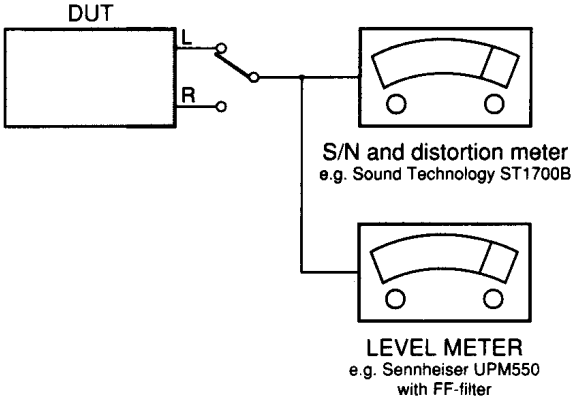
Tuner AM (MW,LW)



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

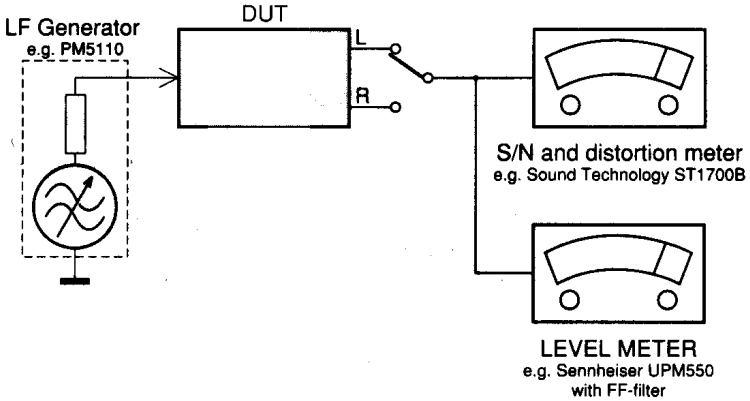
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)



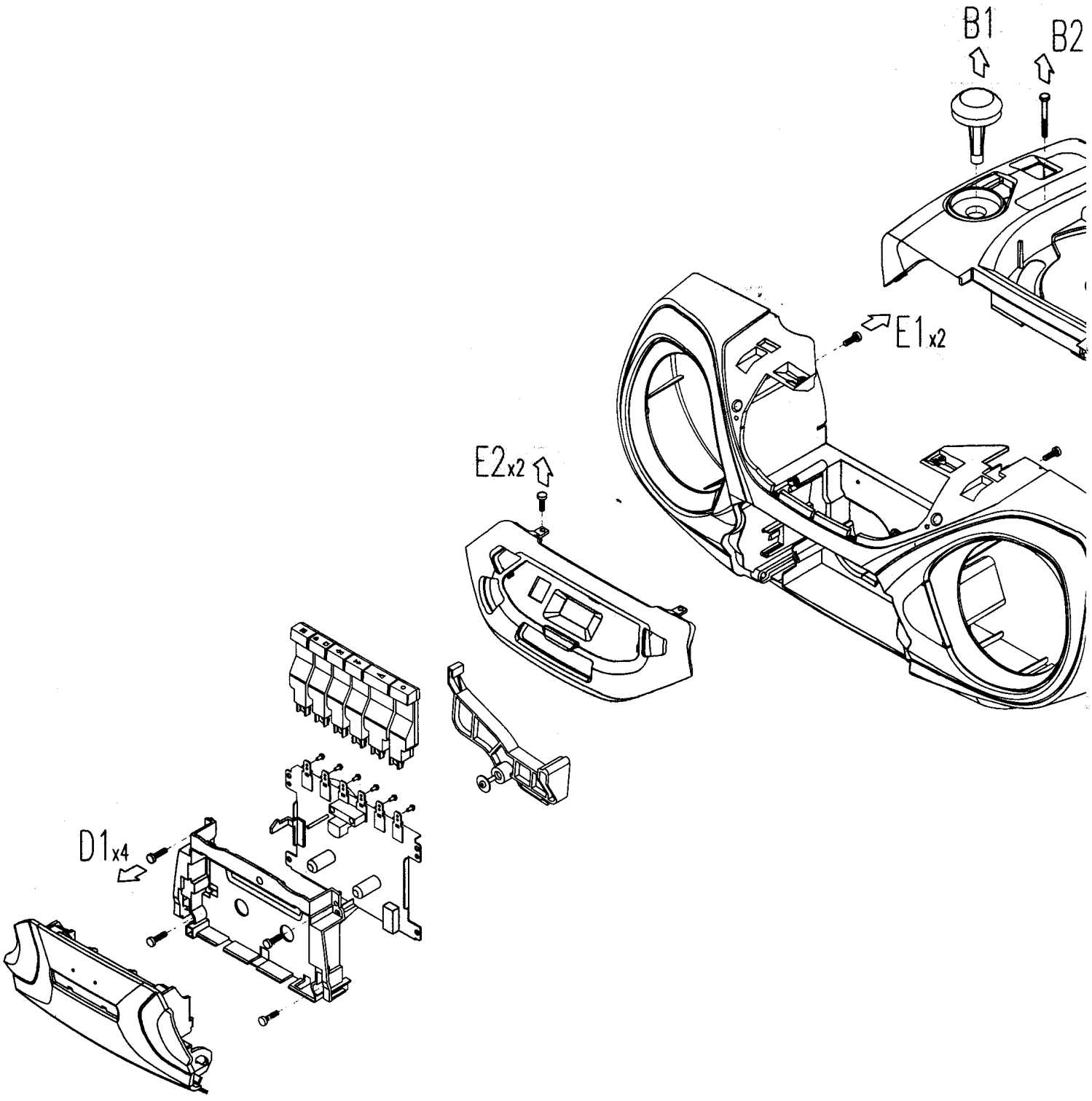
RECORDER

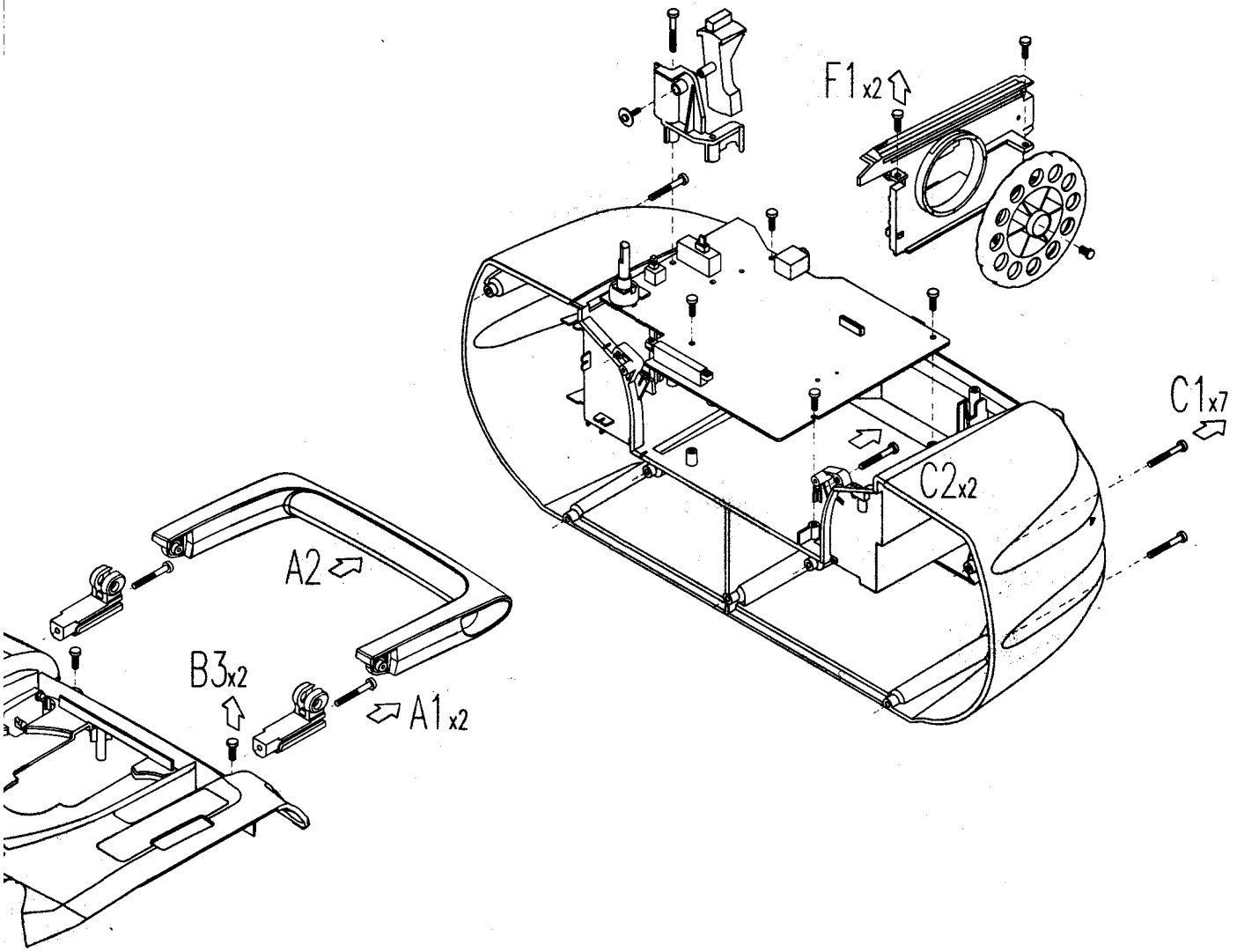
Use Universal Test Cassette **Fe** SBC420 4822 397 30071



DISASSEMBLY DIAGRAM

A. To remove Handle
B. To remove Top Panel
C. To remove Front Cabinet Assy
D. To remove Tape Deck
E. To remove Front Panel
F. To remove Tuner Board




F1x2
C1x7
C2x2
A2
B3x2
A1x2

SERVICE TESTPROGRAM

To enter Service Testprogram hold ***PLAY & STOP*** buttons depressed while switching CD mode on.

* To leave Service Testprogram switch CD mode off.
* Door switch is ignored → CD door can be opened.

Display shows version number of the µ P - software. [88]

Slide servo, Radial servo, Focus servo, Disc motor and Laser are switched off.
Mute is switched on via decoder IC.

DISPLAY TEST

NEXT button pressed? N / Y

Display shows all segments and flags for checking open circuits. see figure 1

NEXT button pressed? N / Y

Display shows figure 2. All alternate pins (2, 4, ..) of the display are activated for checking shortcircuits.

STOP button pressed? N / Y

fig. 1

fig. 2

CD SERVO TEST

PLAY button pressed? N / Y

STOP button pressed in any step returns to begin of Service Testprogram.

Display shows [1]

PLAY button pressed? N / Y

SLIDE test

NEXT button pressed? N / Y
Slide moves outside as long as button is hold depressed.

PREV. button pressed? N / Y
Slide moves inside as long as button is hold depressed or until inner-switch is activated.

DISC MOTOR test

MODE button pressed? N / Y
Disc motor turns clockwise as long as button is hold depressed. (accelerate)

FOCUS search

Display shows [-2] objective moves up&down disc motor for 160ms "on"

FOCUS found? N / Y

To check Focus over the whole disc area Slide - and Discmotor can also be activated in *FOCUS* - test.

Display shows [2] disc motor turns.

PLAY button pressed? N / Y

automatic adjustment of TRACK BALANCE

Display shows [3] → [3o]

3 while autom. *track balance adjustment* is active
3o as soon as *track balance adjustment* finished.
o (1 - 6) indicates the actual setting.

MODE button pressed? Y / N
PLAY button pressed? N / Y

automatic adjustment of FOCUS GAIN

Display shows [4] → [4o]

4 while autom. *focus gain adjustment* is active
4o as soon as *focus gain adjustment* finished.
o (1 - 6) indicates the actual setting.

MODE button pressed? Y / N
PLAY button pressed? N / Y

automatic adjustment of TRACK GAIN

Display shows [5] → [5o] track servo switched on

5 while autom. *track gain adjustment* is active
5o as soon as *track gain adjustment* finished.
o (1 - 6) indicates the actual setting.

If the margin settings 0 or 7 are setting is possibly out of the adj → check disc drive and/or elect

MODE button pressed? Y / N
PLAY button pressed? N / Y

RADIAL test

Display shows [6] → Play mode MUTE is switched off

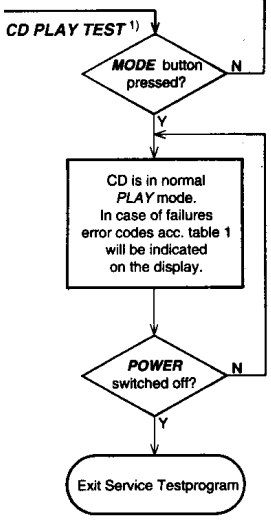
NEXT button pressed? N / Y
CUE - mode jumps in steps of 16 tracks forward

PREV button pressed? N / Y
REVIEW - mode jumps in steps of 16 tracks backwards

Purpose of RADIAL test:

To check if the Audio signal is reproduced.
Subcode info is ignored during this test →
If the CD player functions well in this testmode, but not in the normal Play mode check quality of the eye-pattern signal.

servtest EVA, 030399



1) The *CD PLAY TEST* is intended to be used for continuously playing a disc in order to detect intermittend or not reproducible failures. The error code indicates where the failure can be found.

CD ERROR codes

Error number	*Error description*	*Error type*
E0	**Focus Error** Triggered when the focus is lost for more than 250ms during playing the CD.	W
E2	**Slide-in error** Generated when the inner-switch did not close within approx. 4s when the pick up is moved inside. Inner-switch or slide motor problems.	W
E3	**Slide-out error** Generated when the inner-switch did not open within approx. 250ms when the pick up is moved from the inner position outside. Inner-switch or slide motor problems.	W
E5	**Jump error.** Triggered when the servo processor counts too less tracks in a defined time during JUMPS. This can be caused by a disturbed HF-signal (the tracks cannot be recognized exactly), slide motor problems, track servo problems or scratched discs.	W
E6	**Subcode Error** No valid subcode for 300ms during *PLAY*.	W
E7	**PLL lock error** When the PLL did not lock after 10 retries then this warning message is generated and the servo is stopped and restarted (as if the user would have pressed *STOP* and then *PLAY* immediately) to recover.	W
F0	**Focus Search Error** Triggered when the focus could not be found within 3s when starting up the CD.	F
F2	**Fatal Subcode Error** No valid subcode for more than 4s during *PLAY*.	F

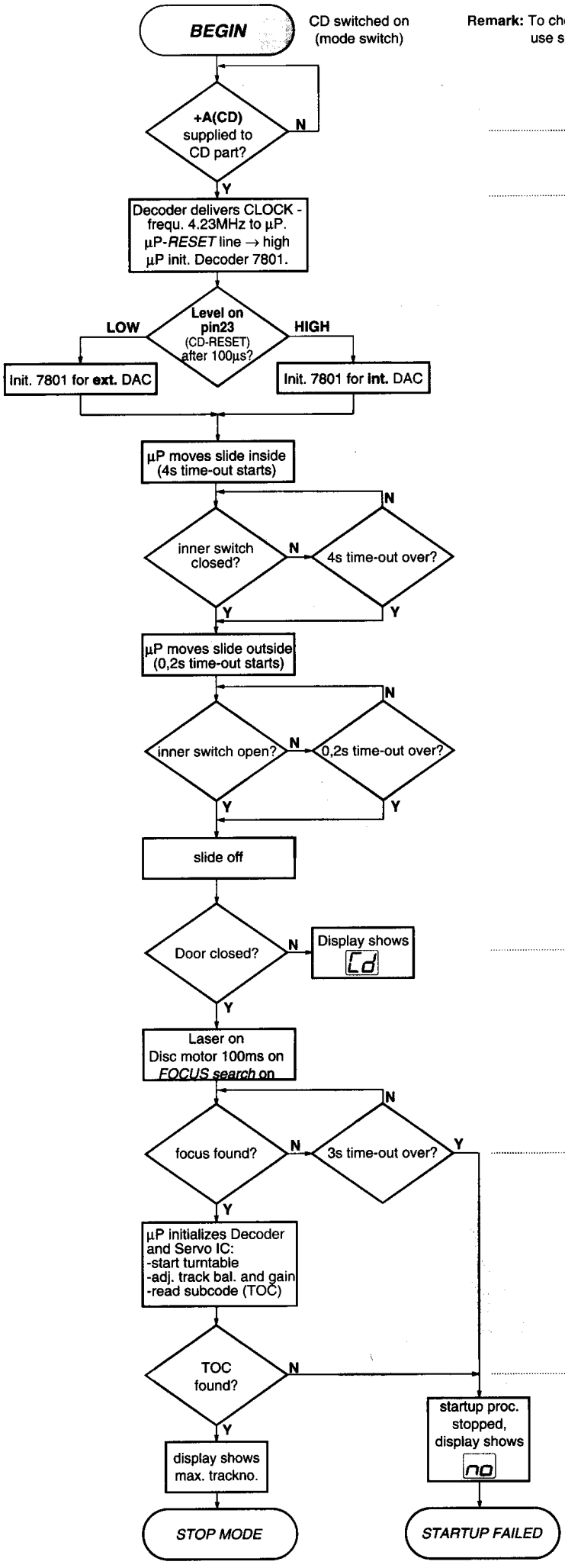
table 1

Error type: W = Warning → set continues operation, message remains on the display until next error occurs or any key is pressed.

F = Fatal Error → set stops operation, message remains on the display.
(The set can only be operated again via a *reset*)

displayed the required
ıstment range.
onic circuitry

CD STARTUP PROCEDURE



Remark: To check focus servo, slide servo, track servo and turntable use service test program

- Battery empty?
- check **+A,**
- mode switch o.k.?

check:
- +A(CD), +B(CD), +LASER, +M,
- time constant of reset circuit
- Pin 32 of µP 7800 HIGH ?
- Pin 30 of µP 7800, if 4.23 MHz o.k.

check: - door switch

check:
- Laser light on ?
  Check pin 38 of 7803 and *LASER CONTROL* circuit
- Focus Servo

check:
- Motor control pin 27 of Decoder 7801 and Disc Motor driver 7805
- HF Signal by using service testprogram

CDstartup EVA, 060997

Abbreviations and Pin-descriptions of CD ICs

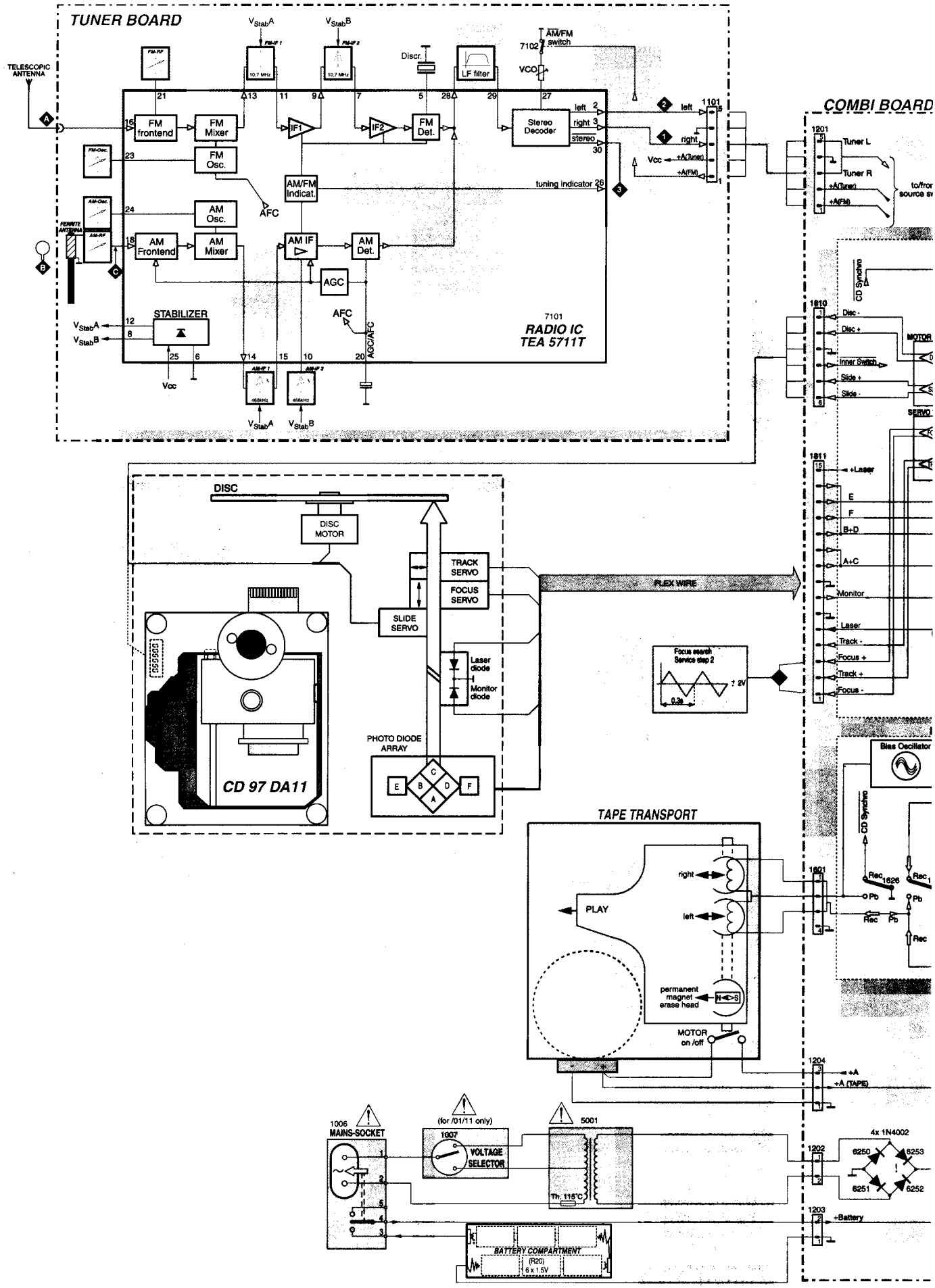
SERVO PROCESSOR M62475FP

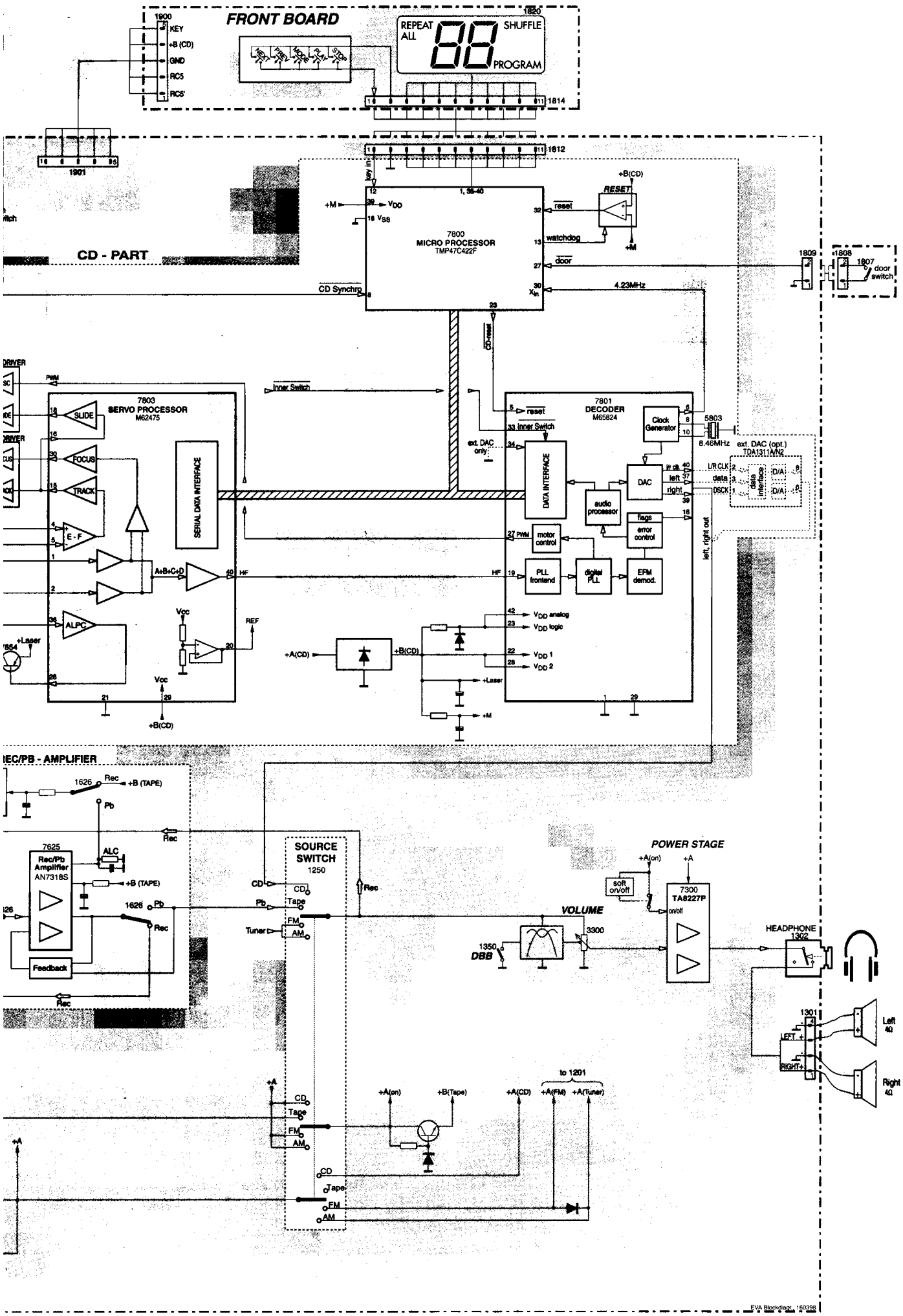
Pin	*Name*	*Direction*	*Description*
1-3	A, B, C	Diode array → Servo processor	Current input (central photo diode signal input)
4-5	E, F	Diode array → Servo processor	Current input (satellite photo diode signal input)
6	SGT	Servo processor → Track error ampl. Input	Signal generator output to track servo, sends 1700Hz for adjustment procedure
7	TE -	-	Inverting input of track error amplifier
8	TEGain	-	Gain control pin of track error amplifier
9	TG1	-	Track Gain 1 - switch: controls the gain of the track servo amplifier
10	TE out	-	Track Error amplifier output
11	TC/Shock	-	Track Cross/Shock detector input
12	TS +	-	Non inverting input of track servo amplifier
13	TG2	not connected	Track Gain 2 - switch: controls the gain of the track servo amplifier
14	TS -	-	Inverting input of side servo amplifier
15	TS out	Servo processor → Servo driver	Output of track servo amplifier
16	SS +	-	Non inverting input of slide servo amplifier
17	SS -	-	Inverting input of slide servo amplifier
18	Slide out	Servo processor → Motor driver	Output of slide servo amplifier
19	DET. FILTER	-	Pin for connection of DETection FILter capacitor of *ADJUST LOGIC*
20	BIAS	Servo processor → external electronic	Reference Voltage output Vcc/2 of internal BIAS-generator
21	GND	-	Ground connection pin (negative supply)
22	MLA/DIS	µp → Servo processor	Serial interface Microprocessor Latch control/DIScharge control for adjustment
23	JP1/SG	µp → Servo processor	Serial interface Jump control line/Signal Generator input line for adjustment
24	MCK	µp → Servo processor	Serial interface Clock input line
25	MSD	µp → Servo processor	Serial interface Data input line
26	D_{out}	Servo processor → µp	Serial interface Data output line
27	C_{LPF}	-	Pin for connection of Low Pass Filter capacitor of *ADJUST LOGIC*
28	I_{REF}	-	Reference current input
29	V_{CC}	-	Positive supply connection pin (4V - 5.5V)
30	FS_{OUT}	Servo processor → Servo driver	Output of focus servo amplifier
31	FS -	-	Inverting input of focus serco amplifier
32	FEGain	-	Gain control pin of focus error amplifier
33	FE -	-	Inverting input of focus error amplifier
34	SGF	Servo processor → Focus error ampl. Input	Signal generator output to focus servo, sends 1300Hz for adjustment procedure
35	C_{FSR}	-	Charge capacitor for Focus Search triangle-generator
36	ALPC +	-	Non inverting input of Automatic Laser Power amplifier
37	ALPC -	-	Inverting input of Automatic Laser Power Control amplifier
38	$ALPC_{OUT}$	Servo processor → Laser driver	Output of Automatic Laser Power Control amplifier
39	MRC	-	Connection pin for capacitor of Mirror detector
40	HF	Servo processor → Decoder	Output of HF amplifier
41	HFI	-	Inverting input of HF amplifier
42	ABC	-	Sum output of amplified A, B and C input (central photo diode signal input) to external ac-coupling capacitor

SERVO PROCESSOR M65824FP

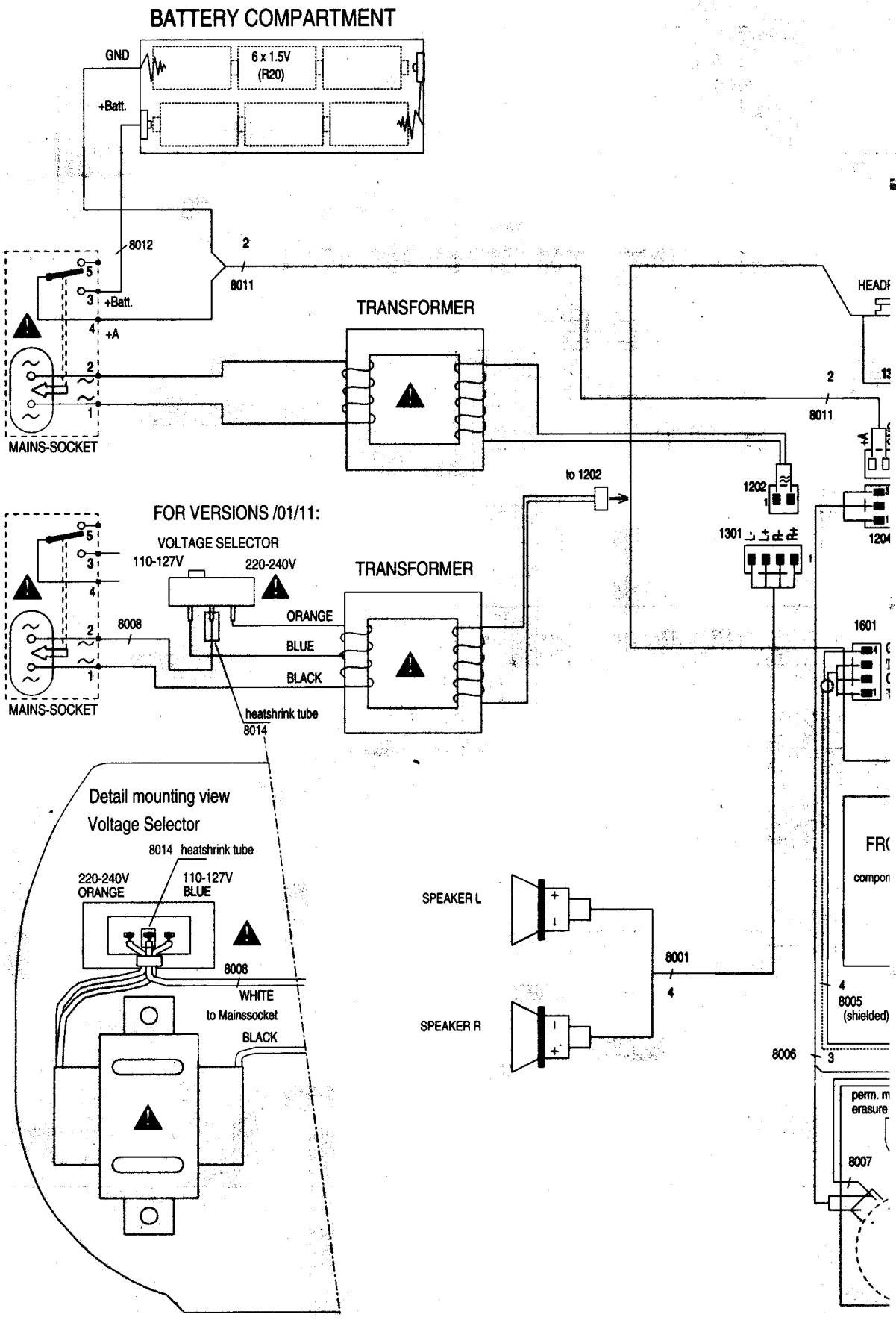
Pin	*Name*	*Direction*	*Description*
1	Anal. V_{SS}	-	Analog system ground
2	ADJCLK	not connected	Clock output for servo adjustment; f=88.2kHz
3	LOCK	not connected	Lock monitor / low disc rotation output
4	CKSEL	-	System clock selection. Low=8.4672MHz, high=16.9344MHz
5	RESET	µp → Signal processor	System reset (low level = active)
6	C423	Signal processor → µp	4.2336MHz clock output
7	C846	not connected	8.4672MHz clock output
8	XI	X-Tal → Signal processor	Crystal oscillator input
9	DVSS	-	Digital system ground
10	XO	Signal processor → X-Tal	Crystal oscillator output
11	TEST	-	Normal / Test selection input. Testmode = high
12	SBCO	not connected	Subcode serial output
13	SCCK	-	Shift clock input for subcode data read
14	SYCLK	not connected	Frame lock status output. Lock = high
15	EFFK	not connected	EFM frame clock output. Duty = 50%
16	KILLB	not connected	Digital silence mute output. Digital zero = low
17	EST1	not connected	Error monitor output 1
18	EST2	not connected	Error monitor output 2
19	HF	Servo processor → Signal processor	HF signal input
20	TLC	-	Slice level control signal output
21	LPF	-	PLL loop filter
22	Dig. V_{DD}	-	Digital interface power supply
23	DSPS	-	Digital system power supply
24	SBQS	not connected	Interrupt signal to read out subcode Q data. Read = low
25	CRCF	not connected	Subcode Q-channel Cyclic Redundance Check Flag output. CRC o.k. = high level
26	SCAND	not connected	Subcode sync signal detection. Sync = high
27	PWM	Signal processor → Motor driver	Disc motor driving (Pluse Width Modulation) output
28	DVDD2	-	Digital interface power supply 2
29	DVSS2	-	Digital system ground 2
30	MCK	µp → Signal processor	µp interface shift Clock input
31	MSD	µp ↔ Signal processor	µp interface Serial Data I/O line
32	MLAB	µp → Signal processor	µp interface Latch clock input (internal 22k pull up resistor)
33	EXP1	→ Signal processor	Versatile input pin (internal 4.7k pull up resistor)
34	EXP2	→ Signal processor	Versatile input pin (internal 4.7k pull up resistor)
35	CGREF	→ Signal processor	Charge-pump for LPF reference current input
36	AMPREF	not connected	Op-amp for LPF reference voltage setting
37	LOUT/DO	Signal processor →	Audio signal output (left channel) / Ext. DAC mode: Audio serial data output
38	LNEG	not connected	Charge pump output (left channel) / Ext.DAC mode: Wordclock output
39	ROUT/DSCK	Signal processor →	Audio signal output (right channel) / Ext. DAC mode: Data shift clock output
40	RNEG/LRCK	Signal processor →	Charge pump output (right channel) / Ext.DAC mode: L/R clock output
41	IREF	-	Current reference
42	Anal. V_{DD}	-	Analog system power supply

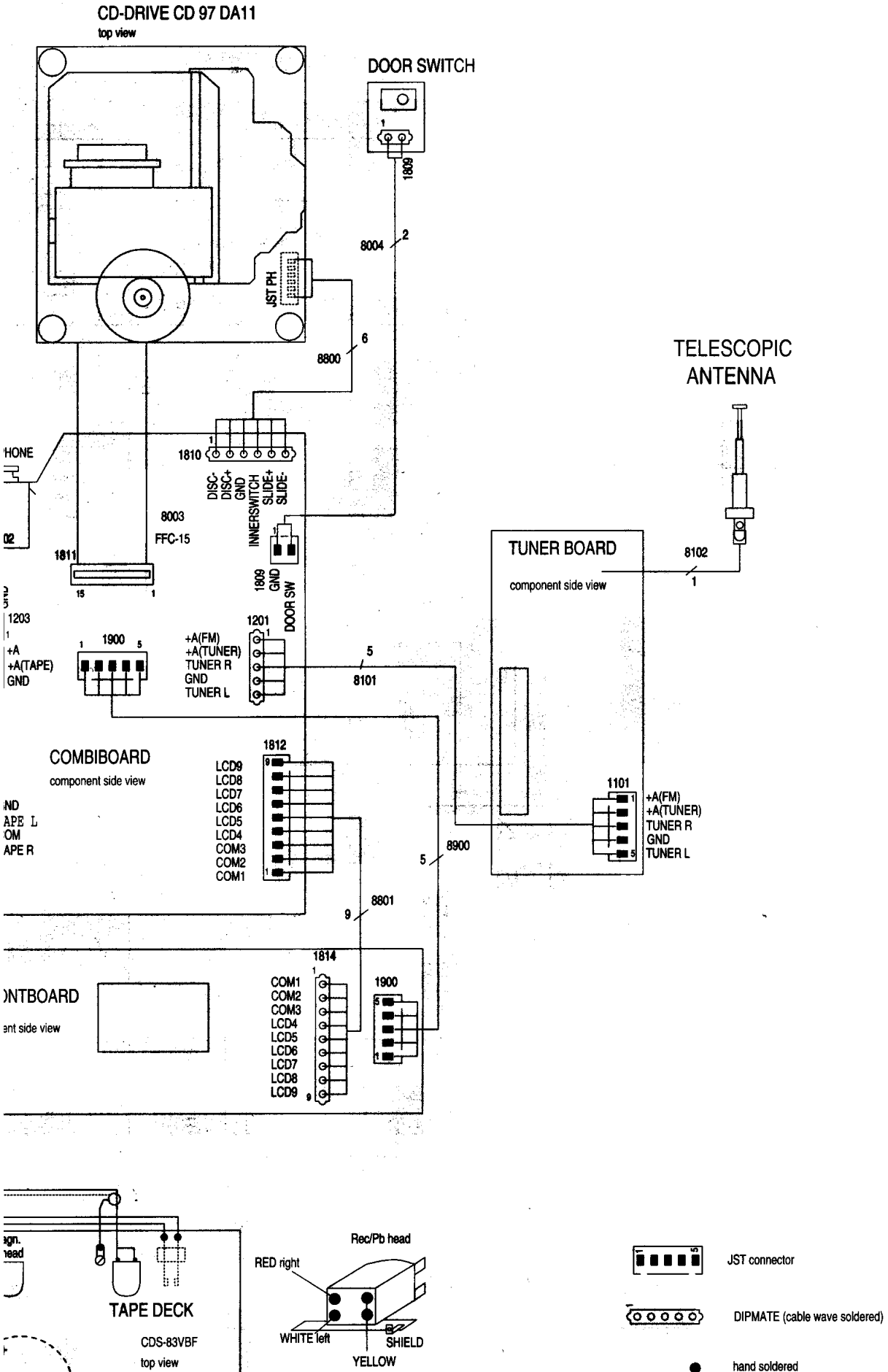
BLOCK DIAGRAM



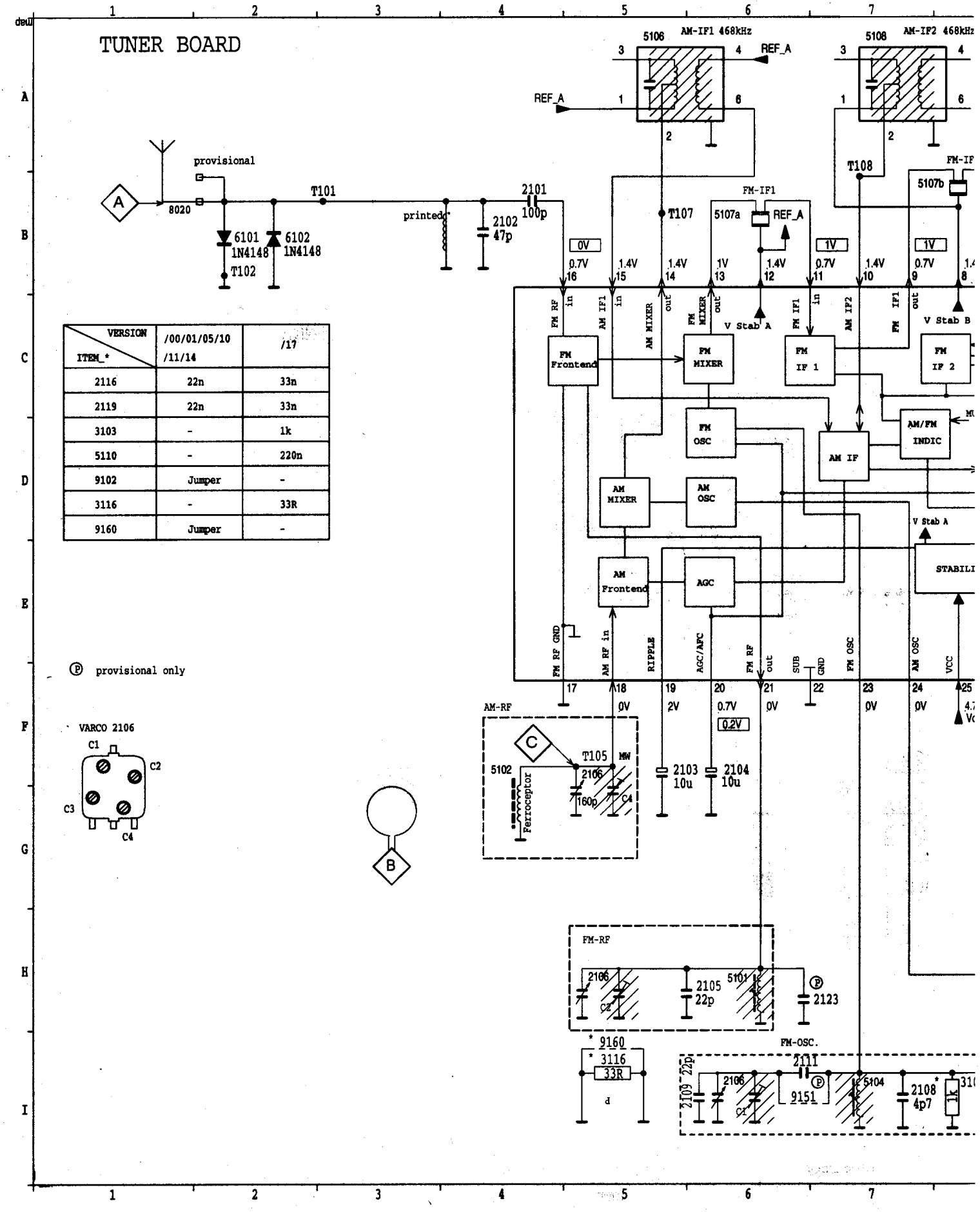

FRONT BOARD
1900
KEY
+B (CD)
GND
RC5
RC5'
1820
REPEAT ALL
SHUFFLE
PROGRAM
1814
1812
1901
CD - PART
7800
MICRO PROCESSOR
TMP47C422F
RESET
reset
watchdog
door
CD Synchro
4.23MHz
1809
1808
1807
door switch
7803
SERVO PROCESSOR
M62475
SLIDE
FOCUS
TRACK
E - F
ALPC
SERIAL DATA INTERFACE
Inner Switch
7801
DECODER
M65824
Clock Generator
5803
8.46MHz
ext. DAC (opt.)
TDA1311A/N2
DATA INTERFACE
audio processor
DAC
flags
error control
motor control
PLL frontend
digital PLL
EFM demod.
left, right out
A+B+C+D
HF
REF
+Laser
+M
+A(CD)
+B(CD)
VDD analog
VDD logic
VDD 1
VDD 2
REC/PB - AMPLIFIER
1626
Rec
+B (TAPE)
Pb
7625
Rec/Pb Amplifier
AN7318S
ALC
Feedback
SOURCE SWITCH
1250
CD
Tape
FM
AM
Tuner
POWER STAGE
soft on/off
7300
TA8227P
VOLUME
DBB
1350
3300
HEADPHONE
1302
1301
Left 4Ω
Right 4Ω
to 1201
+A(on)
+B(Tape)
+A(FM)
+A(Tuner)
EVA Blockdiagr. 160398

WIRING DIAGRAM

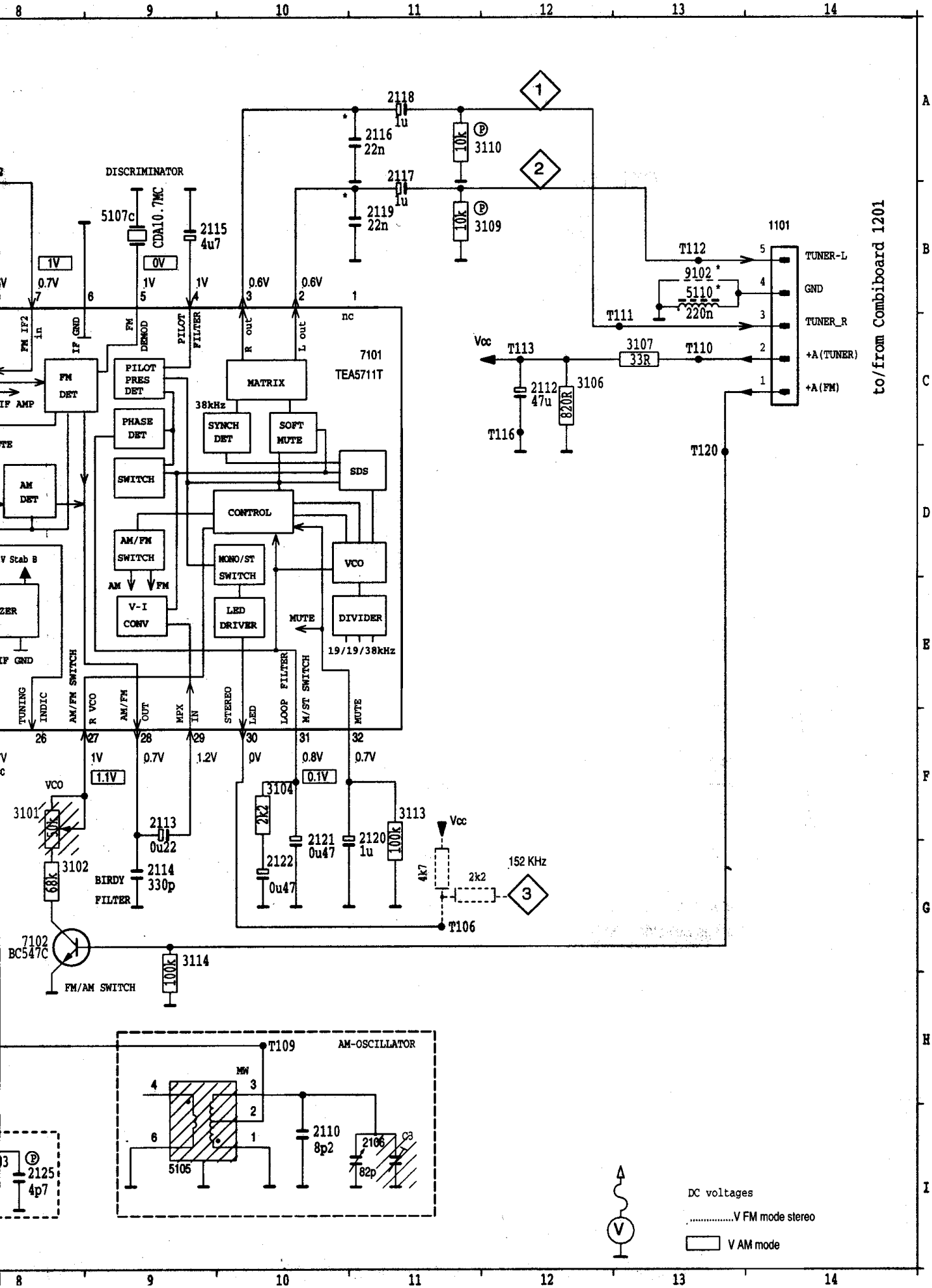



CD-DRIVE CD 97 DA11
top view
DOOR SWITCH
1809
8004
2
JST PH
8800
6
TELESCOPIC
ANTENNA
1810
DISC-
DISC+
GND
INNERSWITCH
SLIDE+
SLIDE-
8003
FFC-15
1811
15
1
1809
GND
DOOR SW
TUNER BOARD
component side view
8102
1
1203
1900
1201
+A(FM)
+A(TUNER)
TUNER R
GND
TUNER L
5
8101
COMBIBOARD
component side view
1812
LCD9
LCD8
LCD7
LCD6
LCD5
LCD4
COM3
COM2
COM1
1101
+A(FM)
+A(TUNER)
TUNER R
GND
TUNER L
5
8900
8801
9
1814
1900
COM1
COM2
COM3
LCD4
LCD5
LCD6
LCD7
LCD8
LCD9
TAPE DECK
CDS-83VBF
top view
Rec/Pb head
RED right
WHITE left
SHIELD
YELLOW
JST connector
DIPMATE (cable wave soldered)
hand soldered

TUNER BOARD - CIRCUIT DIAGRAM

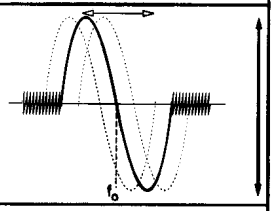
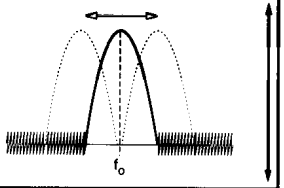
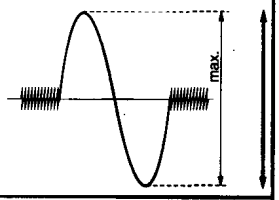
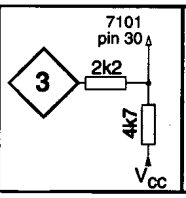
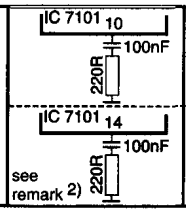
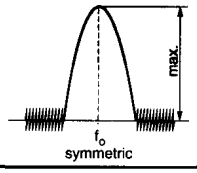
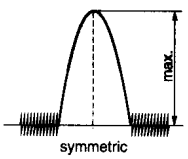


VERSION / ITEM_*	/00/01/05/10 /11/14	/17
2116	22n	33n
2119	22n	33n
3103	-	1k
5110	-	220n
9102	Jumper	-
3116	-	33R
9160	Jumper	-



1101	B14
2101	B 4
2102	B 4
2103	F 5
2104	F 6
2105	H 5
2106	F 5
2106	H 5
2106	I 6
2106	I11
2108	I 7
2109	I 6
2110	I10
2111	I 6
2112	C12
2113	F 9
2114	G 9
2115	B 9
2116	A10
2117	A11
2118	A11
2119	B10
2120	F10
2121	F10
2122	G10
2123	H 6
2125	I 8
3101	F 8
3102	G 8
3103	I 8
3104	F10
3106	C12
3107	C13
3109	B11
3110	A11
3113	F11
3114	G 9
3116	I 5
5101	H 6
5102	G 4
5104	I 7
5105	I 9
5106	A 5
5107a	B 6
5107b	B 7
5107c	B 9
5108	A 7
5110	B13
6101	B 2
6102	B 2
7101	C11
7102	G 8
9102	B13
9151	I 6
9160	I 5
T101	B 3
T102	B 2
T105	F 5
T106	G11
T107	B 5
T108	A 7
T109	H10
T110	C13
T111	C13
T112	B13
T113	C12
T116	C12
T120	D13

TUNER ADJUSTMENT TABLE

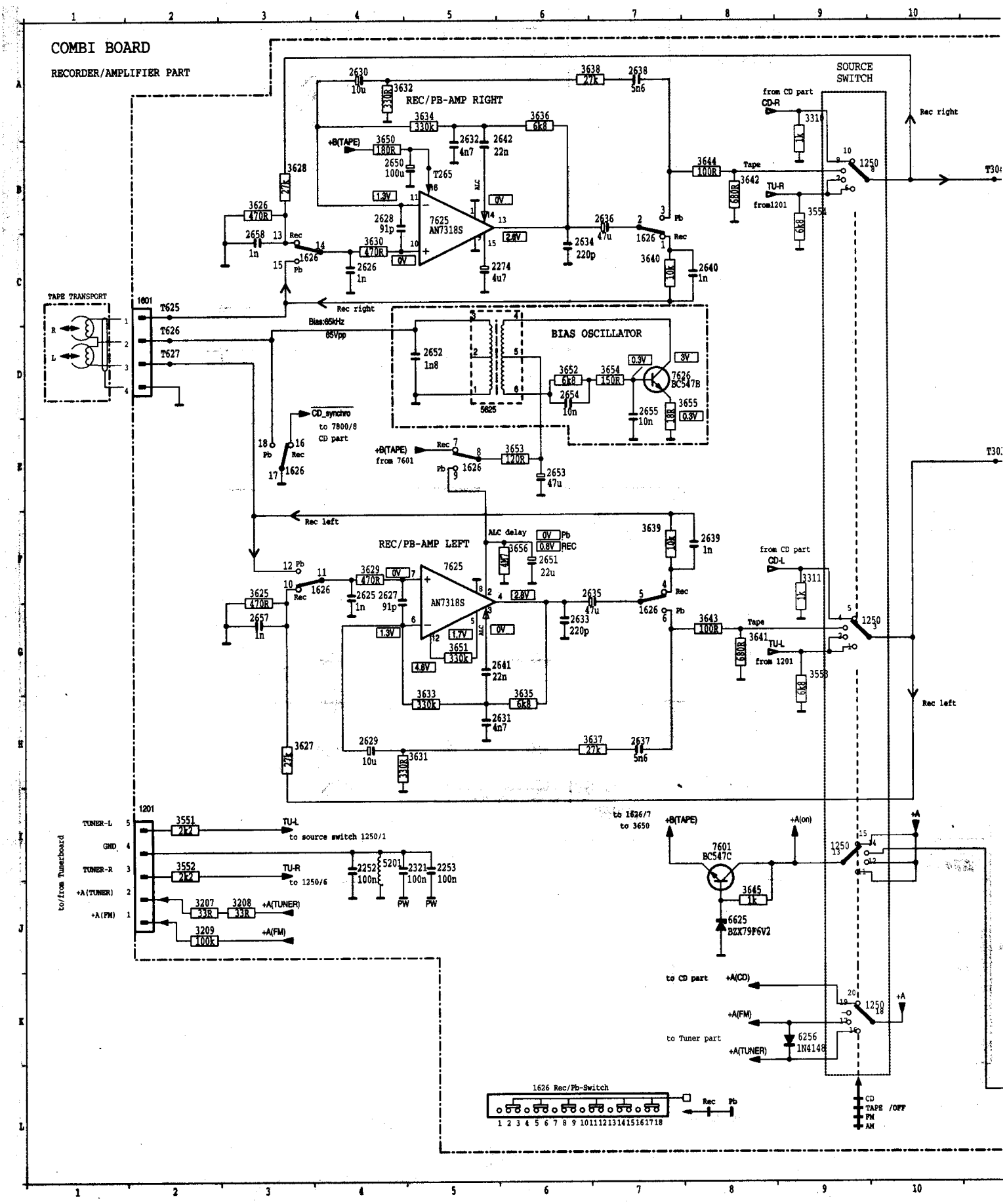
Waverange	Input Frequency	Input	Set tuned to	Adjust	Measure on	Scope / Counter
OSCILLATOR						
FM 87,5 - 108 MHz	87,35 MHz 108,25 MHz	A Δf = ±500kHz V_{RF} = 100µV	lower band end upper band end	5104 2106 C1	1 or 2	
MW 525 - 1607 kHz (530 - 1710 kHz) [1]	512 kHz (520 kHz) 1635 kHz (1730 kHz)	C Δf = ±30kHz V_{RF} = 100µV	lower band end upper band end	5105 2106 C3	1 or 2	
FM - RF						
FM 87,5 - 108 MHz	87,5 MHz 108 MHz	A Δf = ±500kHz V_{RF} = 10µV	87,5 MHz 108 MHz	5101 2106 C2	1 or 2	
VCO						
FM	98 MHz	A continuous wave V_{RF} = 1 mV	98 MHz	3101	3	
AM - IF						
AM	468 kHz connect pin 24 of IC 7101 (AM Osc) with short wire to ground	C Δf = ±15kHz V_{RF} = 10mV		5106 5108	1 or 2	
AM -RF						
MW	560 kHz 1500 kHz	B Δf = ±30kHz V_{RF} as low as possible	560 kHz 1500 kHz	5102 (ferroceptor coil) 2106 C4	1 or 2	

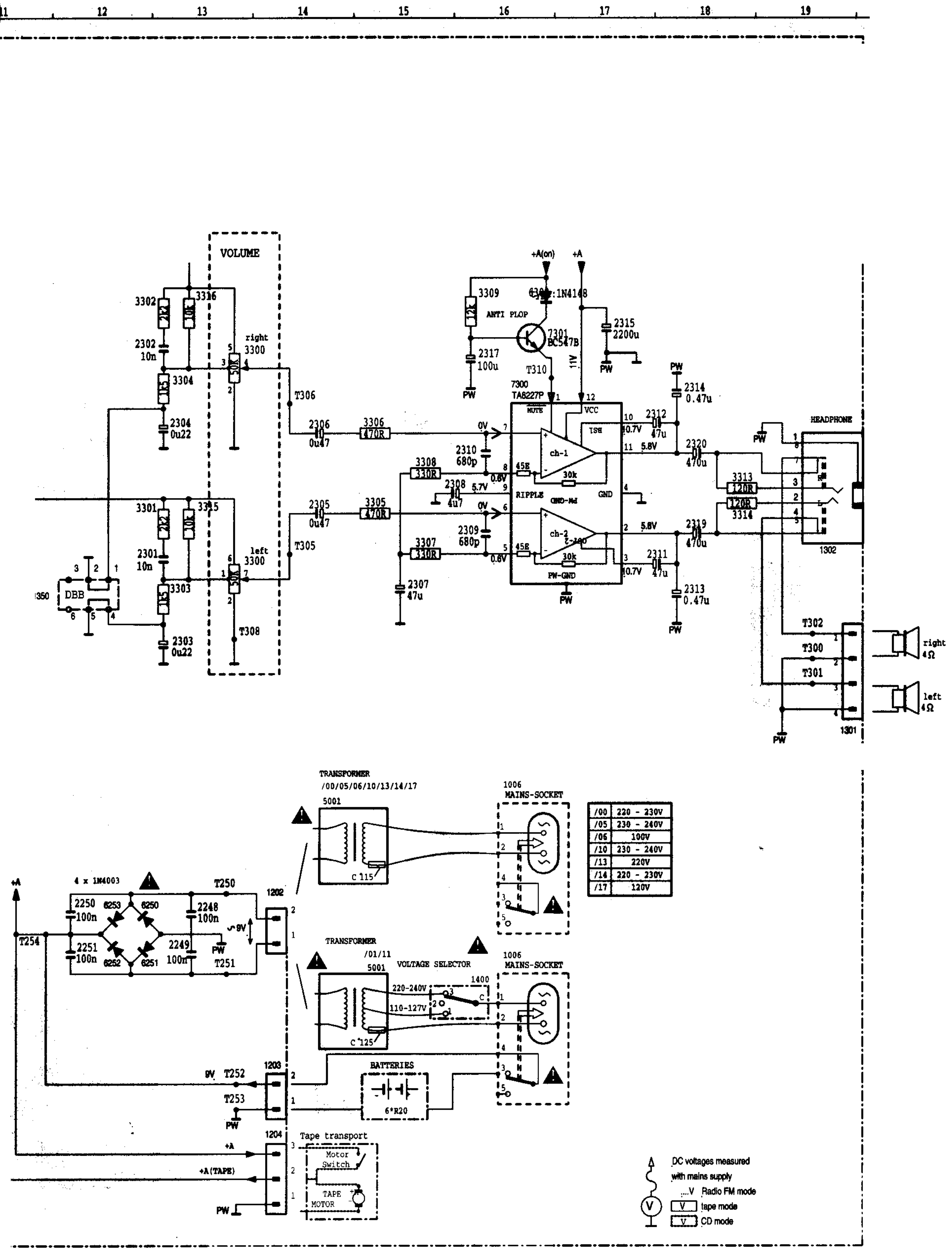
repeat

[1] for USA /17

[2] RC-network serves for damping the IF-filter while adjusting the other one.

COMBI BOARD - CIRCUIT DIAGRAM
RECORDER / AMPLIFIER PART

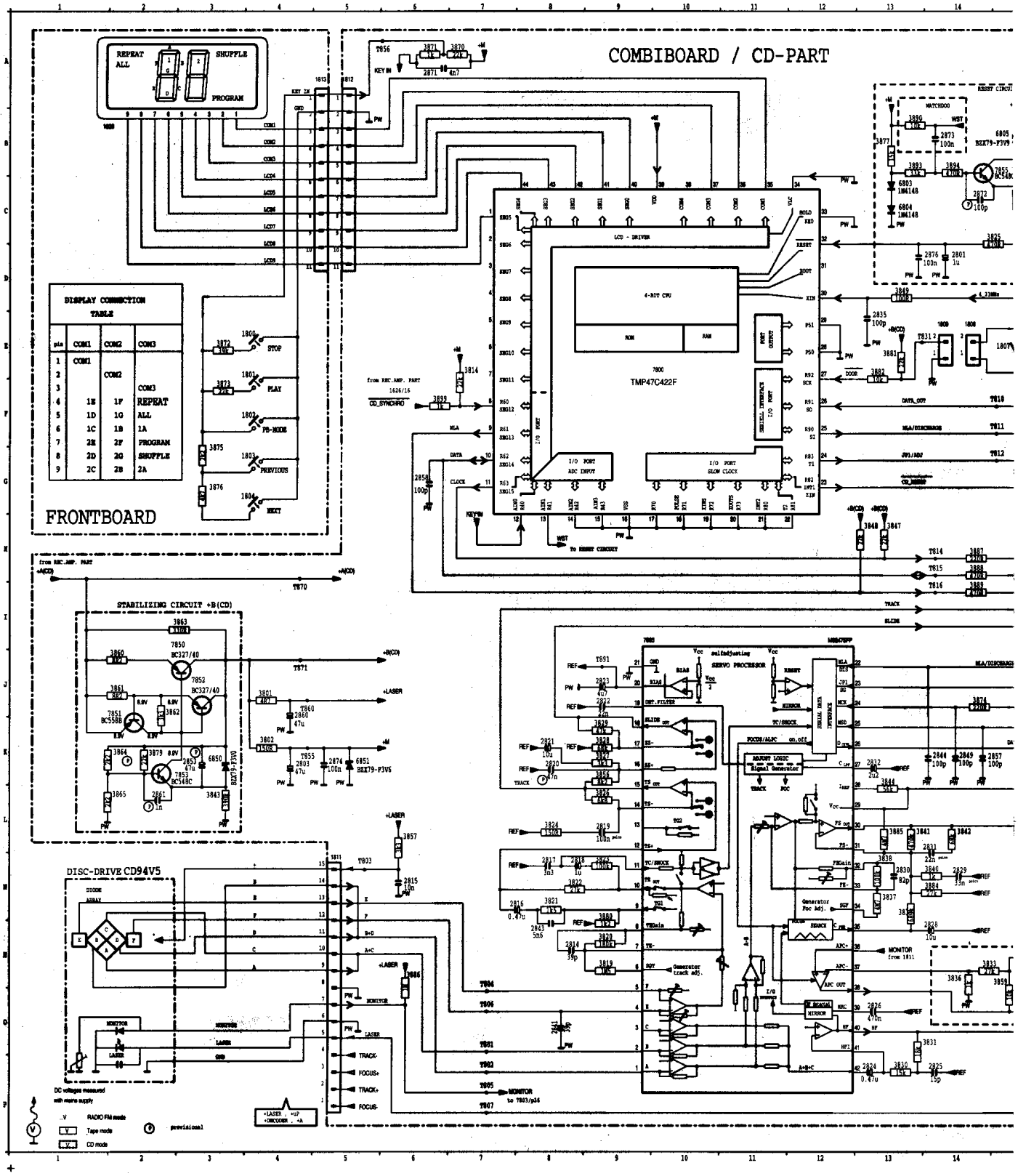


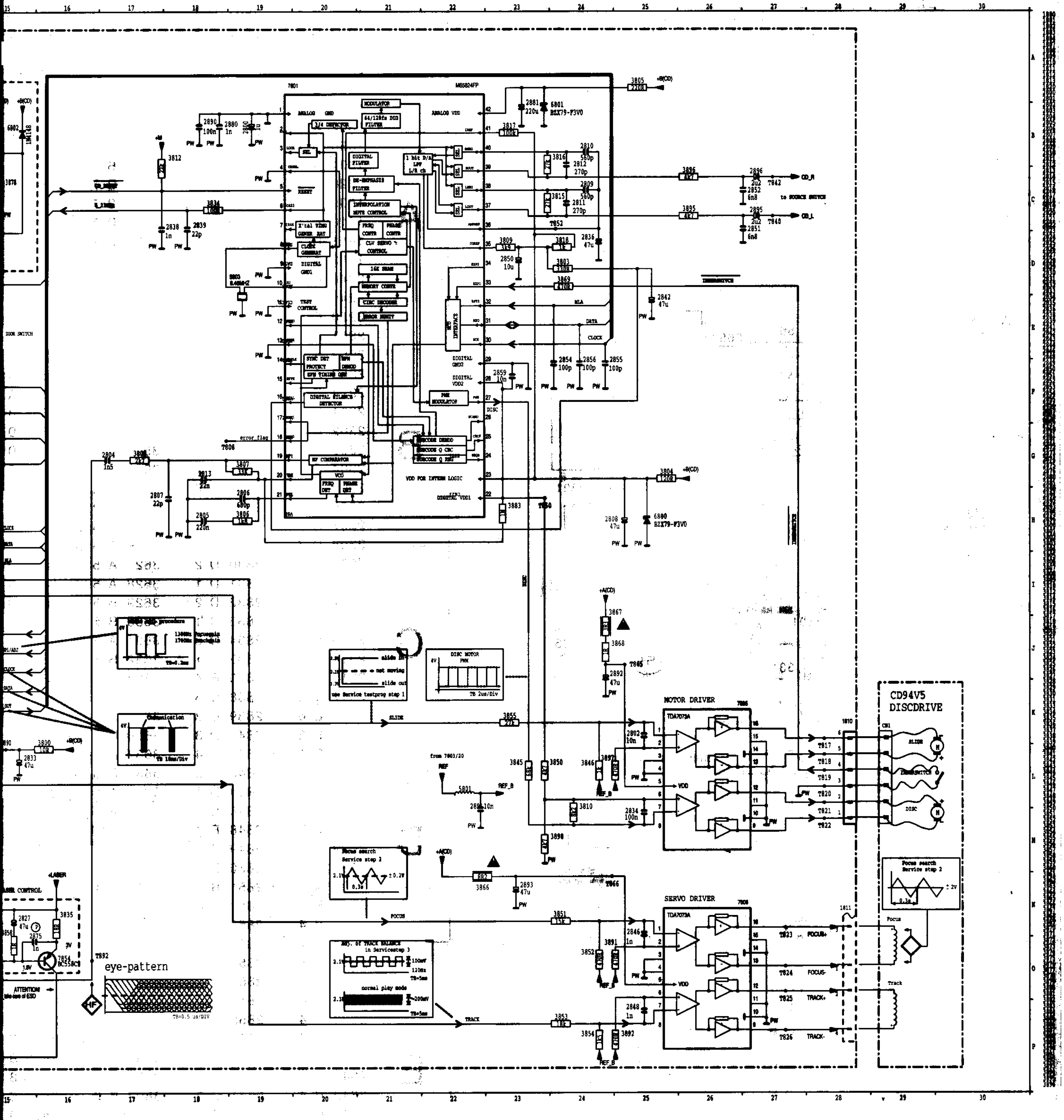


/00	220 - 230V
/05	230 - 240V
/06	100V
/10	230 - 240V
/13	220V
/14	220 - 230V
/17	120V

1201	I 2	7625	F 5
1202	I14	7625	B 5
1203	K14	7626	D 7
1204	K14	T250	I13
1250	G10	T251	J13
1250	B10	T252	K13
1250	I 9	T253	K13
1250	K10	T254	I11
1301	G19	T265	B 5
1302	F19	T300	F19
1350	F11	T301	G19
1601	C 2	T302	F19
1626	C 7	T303	E11
1626	G 7	T304	B11
1626	E 5	T305	E14
1626	F 4	T306	D14
1626	C 3	T308	F13
1626	E 3	T310	D16
2248	I13	T625	C 2
2249	I13	T626	D 2
2250	I12	T627	D 2
2251	I12		
2252	I 4		
2253	I 5		
2274	C 6		
2301	F12		
2302	C12		
2303	F13		
2304	D13		
2305	E14		
2306	D14		
2307	F15		
2308	E16		
2309	E16		
2310	E16		
2311	F18		
2312	D18		
2313	F18		
2314	D18		
2315	C17		
2317	D16		
2319	E18		
2320	D18		
2321	I 5		
2625	F 4		
2626	C 4		
2627	F 4		
2628	B 4		
2629	H 4		
2630	A 4		
2631	H 6		
2632	B 5		
2633	G 6		
2634	C 6		
2635	F 7		
2636	B 7		
2637	H 7		
2638	A 7		
2639	F 8		
2640	C 8		
2641	G 6		
2642	B 6		
2650	B 4		
2651	F 6		
2652	D 5		
2653	E 6		
2654	D 6		
2655	D 7		
2657	G 3		
2658	C 3		
3207	J 2		
3208	J 3		
3209	J 2		
3300	D14		
3300	F14		
3301	E12		
3302	C12		
3303	F13		
3304	D13		
3305	E15		
3306	D15		
3307	E15		
3308	E15		
3309	C16		
3310	A 9		
3311	F 9		
3313	E18		
3314	E18		
3315	E13		
3316	C13		
3551	I 2		
3552	I 2		
3553	G 9		
3554	B 9		
3625	F 3		
3626	B 3		
3627	H 3		
3628	B 3		
3629	F 4		
3630	C 4		
3631	H 5		
3632	A 5		
3633	H 5		
3634	A 5		
3635	H 6		
3636	A 6		
3637	H 7		
3638	A 7		
3639	F 7		
3640	C 7		
3641	G 8		
3642	B 8		
3643	G 8		
3644	B 8		
3645	J 8		
3650	B 4		
3651	G 5		
3652	D 6		
3653	E 6		
3654	D 7		
3655	D 8		
3656	F 6		
5201	I 4		
5625	D 5		
6250	I12		
6251	J12		
6252	J12		
6253	I12		
6256	K 9		
6300	C16		
6625	J 8		
7300	D16		
7301	C16		
7601	I 8		

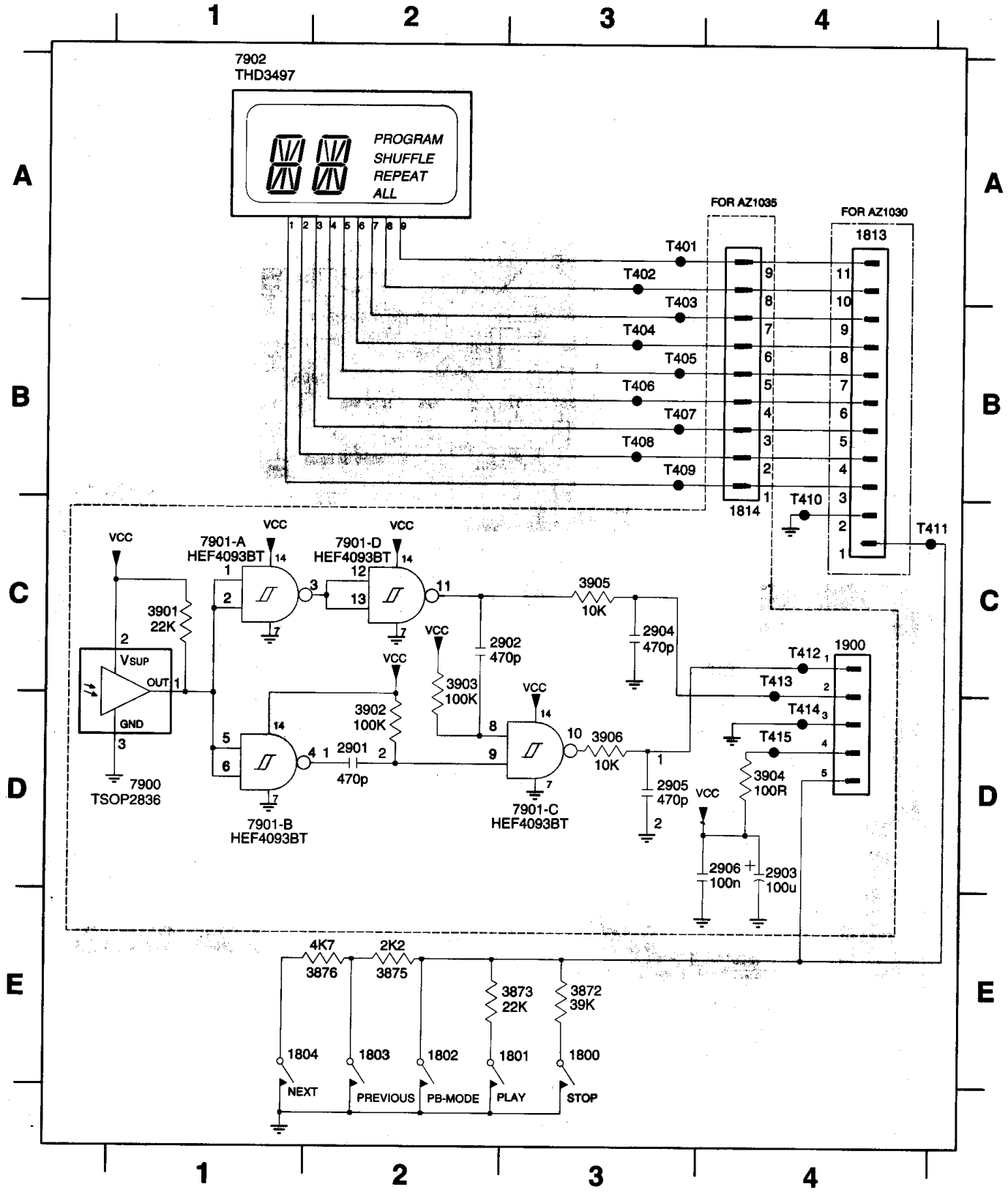
COMBI BOARD - CIRCUIT DIAGRAM




7801
M65824FP
ANALOG VDD
ANALOG GND
MODULATOR
64/128fs DIG FILTER
3/4 DETECTOR
DIGITAL FILTER
1 bit D/A LPF L/R ch
DE-EMPHASIS FILTER
INTERPOLATION MUTE CONTROL
X'tal TIME GENER RAT
CLOCK GENERAT
FREQ CONTR
PHASE CONTR
CLV SERVO CONTROL
16K SRAM
MEMORY CONTR
CIRC DECODER
ERROR MONIT
SYNC DET PROTECT
EFM TIMING GEN
EFM DEMOD
DIGITAL SILENCE DETECTOR
PWM MODULATOR
SUBCODE DEMOD
SUBCODE Q CRC
SUBCODE Q REG
RF COMPARATOR
VCO
FREQ DET
PHASE DET
µCOM INTERFACE
DIGITAL GND1
DIGITAL GND2
DIGITAL VDD2
DIGITAL VDD1
VDD FOR INTERN LOGIC
TEST CONTROL
RESET
error_flag
CD_L
CD_R
to SOURCE SWITCH
MLA
DATA
CLOCK
DISC
SLIDE
FOCUS
TRACK
BZX79-F3V0
5803 8.4672MHz
3/4 procedure
Communication
TB 10ms/Div
DISC MOTOR PWM
TB 2us/Div
slide in
not moving
slide out
use Service testprog step 1
from 7803/20
REF
REF_B
+A(CD)
+B(CD)
MOTOR DRIVER
TDA7073A
SERVO DRIVER
Focus search Service step 2
Adj. of TRACK BALANCE in Servicestep 3
normal play mode
eye-pattern
TB=0.5 us/DIV
LASER CONTROL
+LASER
7854 BC558C
ATTENTION! take care of ESD
CD94V5 DISCDRIVE
SLIDE
DISC
Focus
Track
FOCUS+
FOCUS-
TRACK+
TRACK-
DOOR SWITCH

FRONT BOARD - CIRCUIT DIAGRAM

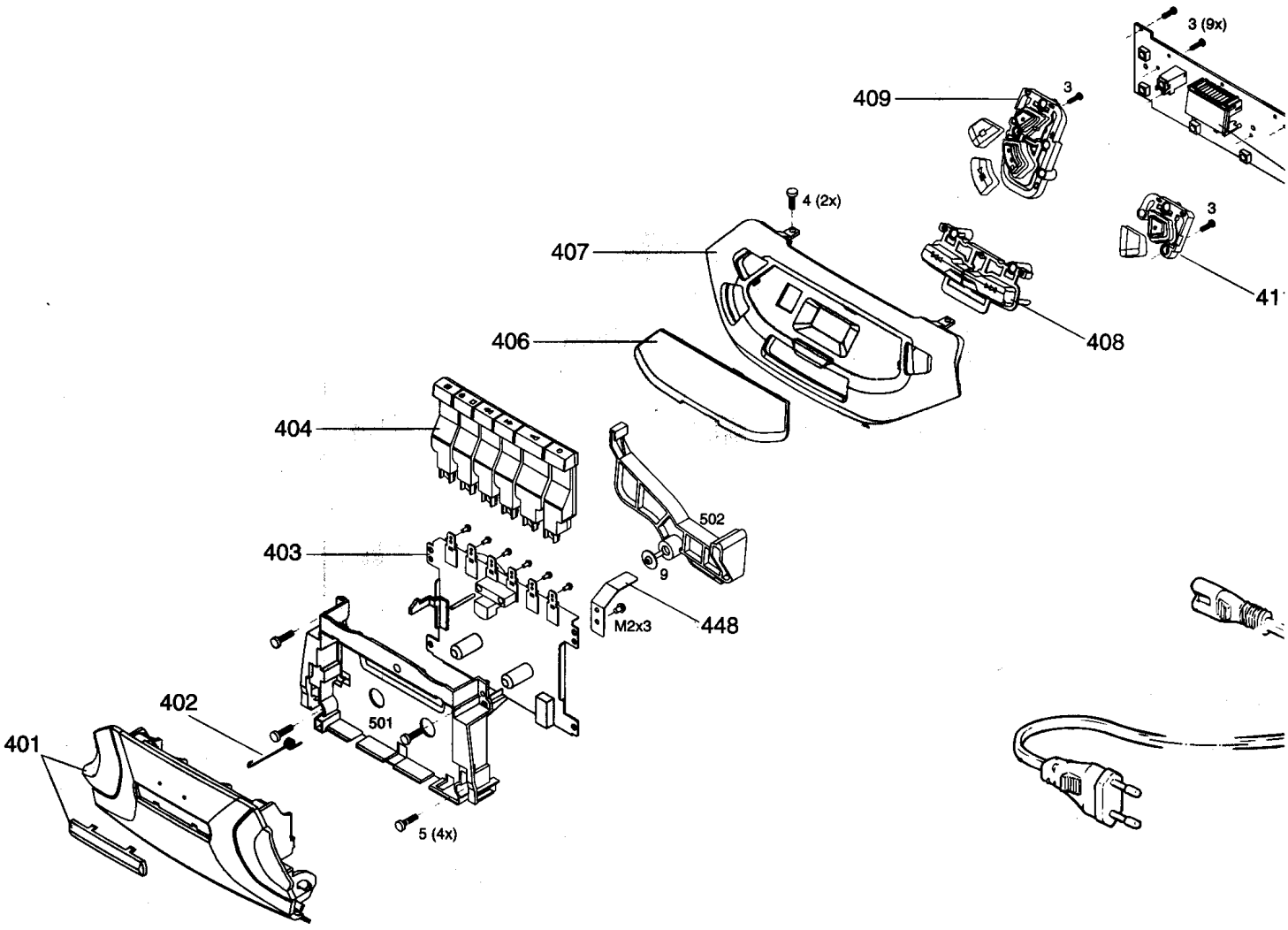
1800 E3	1813 A4	2903 D4	3873 E2	3903 D2	7901-A C1	T401 A3	T406 B3	T411 C4
1801 E3	1814 C4	2904 C3	3875 E2	3904 D4	7901-B D1	T402 A3	T407 B3	T412 C4
1802 E2	1900 C4	2905 D3	3876 E2	3905 C3	7901-C D3	T403 B3	T408 B3	T413 C4
1803 E2	2901 D2	2906 D4	3901 C1	3906 D3	7901-D C2	T404 B3	T409 B3	T414 D4
1804 E2	2902 C2	3872 E3	3902 D2	7900 D1	7902 A1	T405 B3	T410 C4	T415 D4

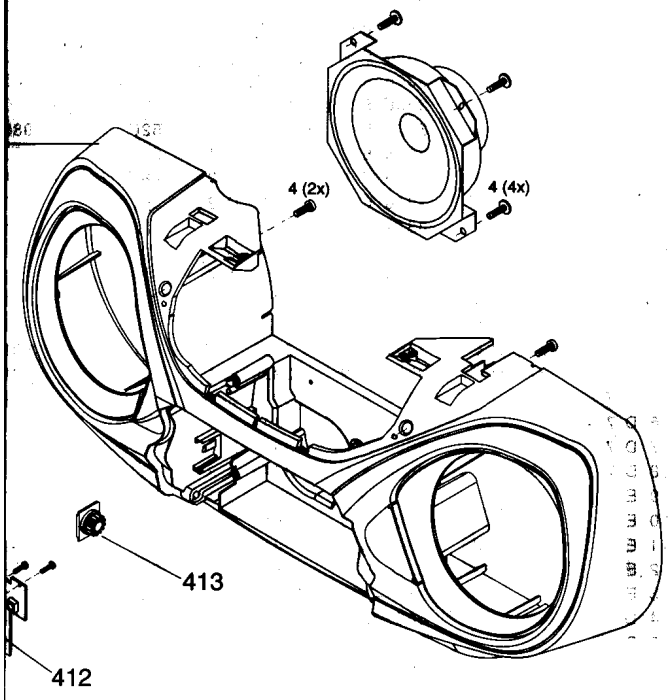


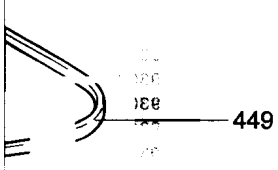
EXPLODED VIEW DIAGRAM - CABINET

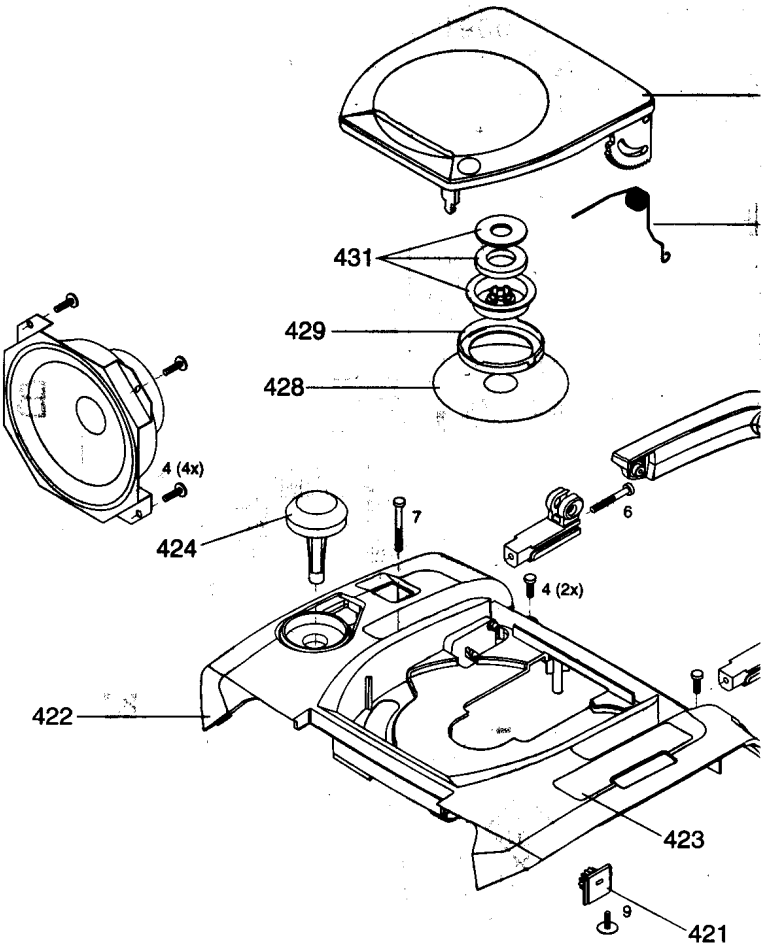
SCREW LIST
1. M2 x 5.5
2. M2.5 x 6
3.Torx 2 x 8
4.Torx 3 x 10
5. Torx 3 x 12
6. Torx 3 x 25
7. Torx 3 x 30
8. T P/W 3 x 16
9. Plas 2.6 x 10

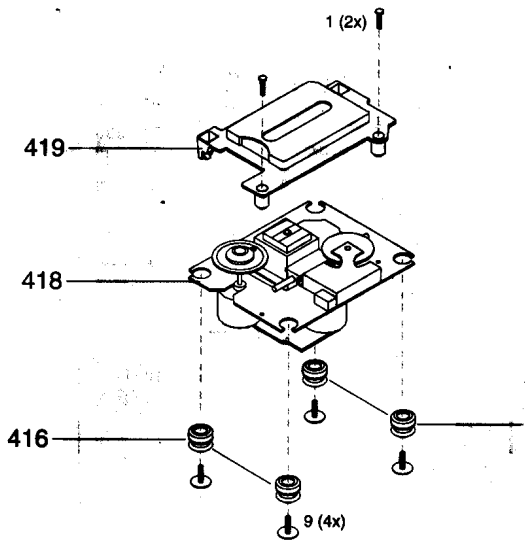
414

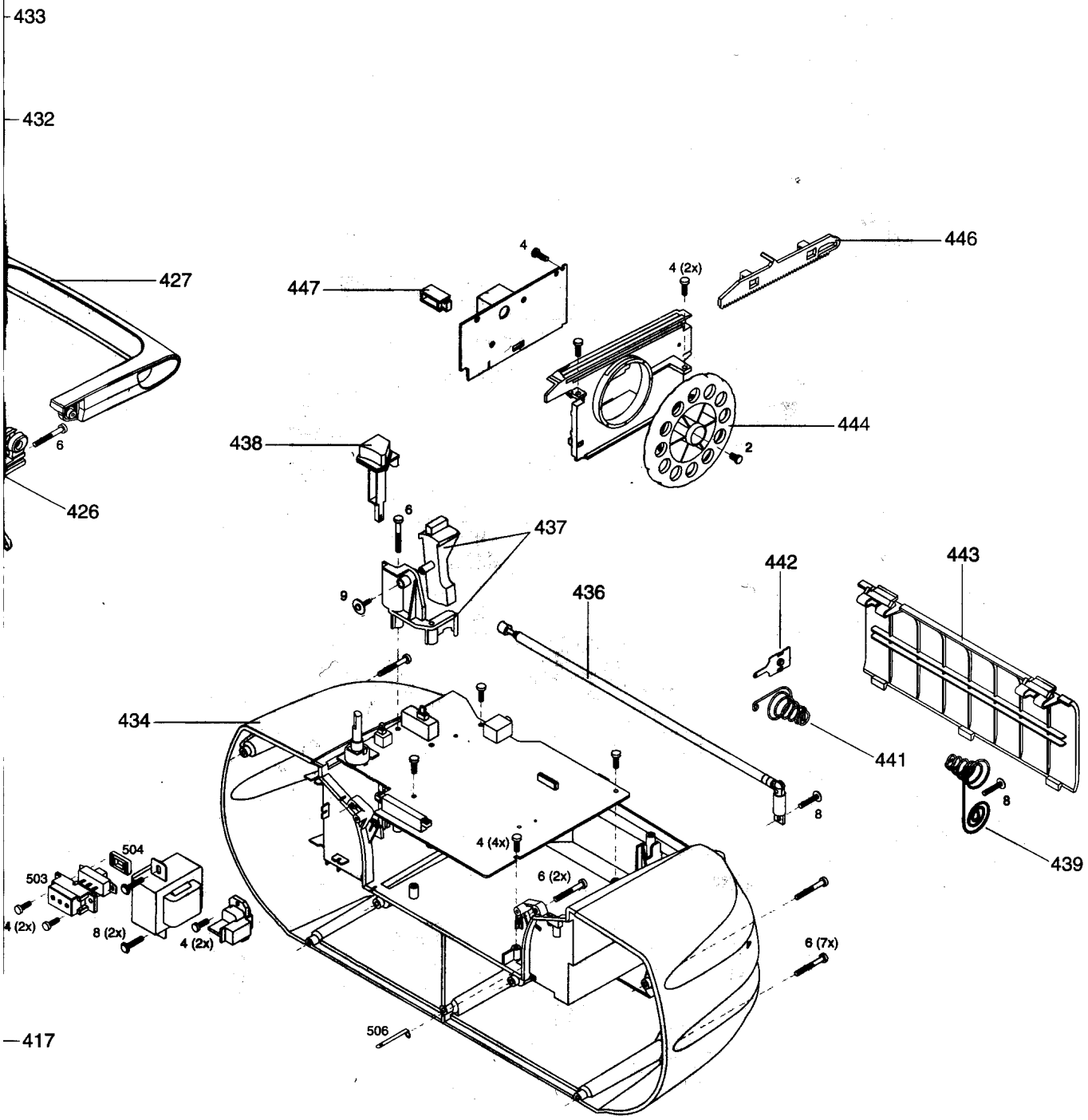



4 (2x)
4 (4x)
413
412


449


431
429
428
4 (4x)
424
7
6
4 (2x)
422
423
9
421


1 (2x)
419
418
416
9 (4x)


433
432
427
426
6
447
4
4 (2x)
446
444
2
438
6
437
9
436
442
443
441
8
439
434
4 (4x)
6 (2x)
6 (7x)
504
503
4 (2x)
8 (2x)
4 (2x)
506
417

MECHANICAL PARTSLIST - CABINET

401	314011759300	Cassette Door Assy
402	482249242709	Cass Door Spring
403	482269110612	Tape Deck Mechanism
404	314011429720	Key Set Cass
406	314011432250	Front Lens (Not for -/17)
406	314011432240	Front Lens (For -/17)
407	314011430200	Front Panel
408	314011429690	Keyset Search
409	314011759020	Keyset Assy Stop/Play
411	314011759030	Knob Assy Mode
412	314011430280	Bracket LCD
413	482252910322	Dampr Assy
414	314011759190	Front Cabinet Assy
416	482252910387	Damper Rubber (40 DEG)
417	482252910386	Damper Rubber (30 DEG)
418	482269110747	CD DA11 Drive Assy
419	482244201096	Cover CD
421	482252910322	Damper Assy
422	314011432290	Top Cabinet (Not for -/17)
422	314011432280	Top Cabinet (For -/17)
423	314011321900	Lens Tuning (Not for -/17)
423	314011322290	Lens Tuning (For -/17)
424	314011429740	Knob Volume
426	482240210856	Bracket Handle
427	314011429770	Handle
428	482253560096	Disc
429	482253213153	Ring (CD LID)
431	482253212798	Pressure Ring
432	314011100750	Spring CD
433	314011432320	Door CD
434	314011429650	Cabinet Rear
436	482230314038	Telescopic Aerial
437	314011759180	Knob Mode Assy
438	314011758970	Knob DBB Assy
439	482249251733	Spring Compression
441	482249251961	Spring Compression
442	314011121360	Contact Plate
443	314011433220	Door Battery
444	314011429790	Wheel Tuning
446	314011429800	Pointer
447	482225690463	Holder Ferrite Bar
448	482249211061	Spring Recording
449	482232110249	Mains Cord (For -/00/01/11/14)
449	482232110886	Mains Cord (For -/05)
449	482232110954	Mains Cord (For -/10)
449	482232111466	Mains Cord (For -/17)
	314011000130	Badge Philips
	314011526900	Instruction Manual (For -/00/05)
	314011526910	Instruction Manual (For -/01/10/11)
	314011526980	Instruction Manual (For -/14)
	314011526720	Instruction Manual (For -/17)

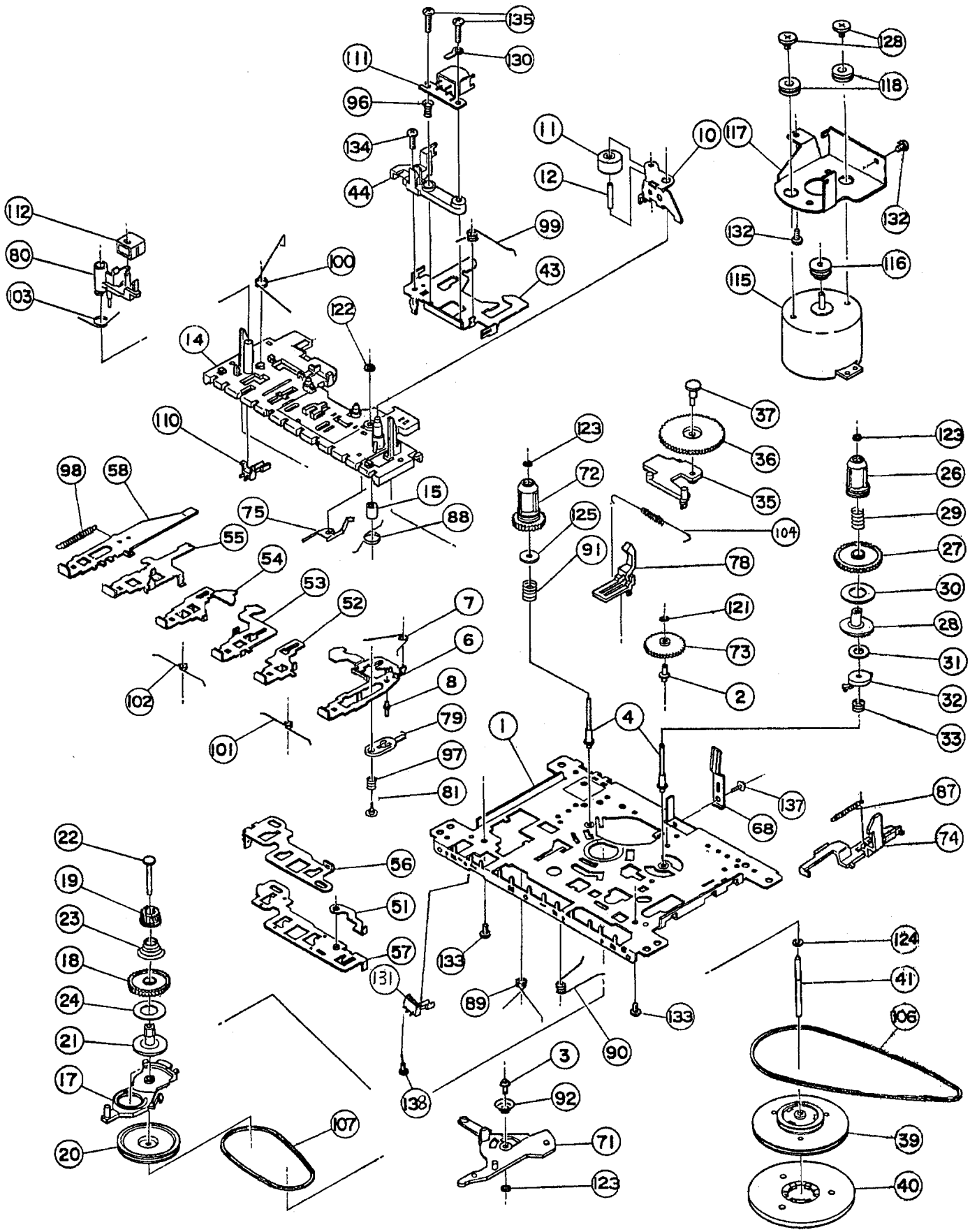
Note : **Only these parts mentioned in the list are normal service parts.**

MECHANICAL PARTSLIST - TAPE DECK

10	4822 528 70849	Pinch Roller Arm (B)
11	4822 528 70695	Pinch Roller Assy
74	4822 403 70968	Eject Hook (A)
106	4822 358 31325	Main Belt 45.2 x 1.2
107	4822 358 31124	Sub Belt 44.7 x 1.2
110	4822 278 90721	Leaf Switch
111	4822 249 30218	MS18R-AKONI
112	4822 249 40306	E. Head
115	4822 361 21565	Motor EG-530AD-9B
116	4822 528 81497	Motor Pulley

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

KPLODED VIEW DIAGRAM - TAPE DECK



ELECTRICAL PARTSLIST - COMBI BOARD

- CAPACITORS -

2101	482212233195	100pF 10% 50V
2102	482212233848	47pF 5% SL 50V
2103	482212440248	10µF 20% 63V
2104	482212440248	10µF 20% 63V
2105	482212233191	22pF 5% 50V
2106	482212550681	Var Capacitor
2108	482212210465	4,7pF 10% 50V
2109	482212232147	22pF 2% N470 100V
2110	482212612229	8,2pF N750 50V
2112	482212440433	47µF 20% 25V
2113	482212440746	0,22µF 20% 63V
2114	482212612787	330pF 10% Y5V 50V
2115	482212440769	4,7µF 20% 100V
2116	482212141856	22nF 5% 250V
2116	532212142489	33NF 5% 250V
2117	482212421913	1µF 20% 63V
2118	482212421913	1µF 20% 63V
2119	482212141856	22nF 5% 250V
2119	532212142489	33NF 5% 250V
2120	482212421913	1µF 20% 63V
2121	482212441407	0,47µF 20% 63V
2122	482212441407	0,47µF 20% 63V
2248	532212142386	100nF 5% 63V
2249	532212142386	100nF 5% 63V
2250	532212142386	100nF 5% 63V
2251	532212142386	100nF 5% 63V
2252	482212612882	100nF +80-20% 50V
2253	482212612882	100nF +80-20% 50V
2274	482212440769	4,7µF 20% 100V
2301	482212151387	10nF 20% 16V
2302	482212151387	10nF 20% 16V
2303	482212440746	0,22µF 20% 63V
2304	482212440746	0,22µF 20% 63V
2305	482212441407	0,47µF 20% 63V
2306	482212441407	0,47µF 20% 63V
2307	482212440433	47µF 20% 25V
2308	482212440769	4,7µF 20% 100V
2309	482212210466	220pF 10% 50V
2310	482212210466	220pF 10% 50V
2311	482212440433	47µF 20% 25V
2312	482212440433	47µF 20% 25V
2313	482212441407	0,47µF 20% 63V
2314	482212441407	0,47µF 20% 63V
2315	482212314025	2200µF 20% 16V
2317	482212440207	100µF 20% 25V
2319	482212480195	470µF 20% 10V
2320	482212480195	470µF 20% 10V
2321	482212612882	100nF +80-20% 50V
2625	482212233197	1nF 10% 50V
2626	482212233197	1nF 10% 50V

- CAPACITORS -

2627	482212613507	91pF 5% 50V
2628	482212613507	91pF 5% 50V
2629	482212440248	10µF 20% 63V
2630	482212440248	10µF 20% 63V
2631	482212143856	4,7nF 5% 250V
2632	482212143856	4,7nF 5% 250V
2633	482212210466	220pF 10% 50V
2634	482212210466	220pF 10% 50V
2635	482212440433	47µF 20% 25V
2636	482212440433	47µF 20% 25V
2637	482212142469	5,6nF 5% 250V
2638	482212142469	5,6nF 5% 250V
2639	482212233197	1nF 10% 50V
2640	482212233197	1nF 10% 50V
2641	482212611585	22nF +80-20% Y5V 25V
2642	482212611585	22nF +80-20% Y5V 25V
2650	482212441584	100µF 20% 10V
2651	482212481151	22µF 50V
2652	482212110685	1.8nF 10% 50V
2653	482212440433	47µF 20% 25V
2654	482212151387	10nF 20% 16V
2655	482212151387	10nF 20% 16V
2657	482212233197	1nF 10% 50V
2658	482212233197	1nF 10% 50V
2800	482212421913	1µF 20% 63V
2801	482212421913	1µF 20% 63V
2802	482212151387	10nF 20% 16V
2803	482212481286	47µF 20% 16V
2804	482212612878	1,5nF 10% 16V
2805	482212142408	220nF 5% 63V
2806	482212614316	680pF 10% 50V Y5P
2807	482212233191	22pF 5% 50V
2808	482212440433	47µF 20% 25V
2809	482212210459	560pF 10% 50V
2810	482212210459	560pF 10% 50V
2811	482212612702	270pF 10% Y5P 50V
2812	482212612702	270pF 10% Y5P 50V
2813	482212612339	2,2nF 10% Y5R
2814	482212613677	39pF 5% 50V
2815	482212151387	10nF 20% 16V
2816	482212441407	0,47µF 20% 63V
2817	482212210577	3,3nF 10% 16V
2818	482212421913	1µF 20% 63V
2819	532212142386	100nF 5% 63V
2821	482212440248	10µF 20% 63V
2822	482212611585	22nF +80-20% Y5V 25V
2823	482212440769	4,7µF 20% 100V
2824	482212441407	0,47µF 20% 63V
2825	482212210462	15pF 5% NP0
2826	482212151252	470nF 5% 63V

ELECTRICAL PARTSLIST - COMBI BOARD

- CAPACITORS -

2827	482212440433	47µF 20% 25V
2828	482212440248	10µF 20% 63V
2829	532212142489	33nF 5% 250V
2830	482212210319	82pF 5% 50V
2831	482212141856	22nF 5% 250V
2832	482212422652	2,2µF 20% 50V
2833	482212440433	47µF 20% 25V
2834	482212612882	100nF +80-20% 50V
2835	482212233195	100pF 10% 50V
2836	482212440433	47µF 20% 25V
2838	482212233197	1nF 10% 50V
2839	482212233191	22pF 5% 50V
2841	482212613677	39pF 5% 50V
2842	482212440433	47µF 20% 25V
2843	482212613098	5,6nF 20% 16V
2844	482212233195	100pF 10% 50V
2846	482212233197	1nF 10% 50V
2848	482212233197	1nF 10% 50V
2849	482212233195	100pF 10% 50V
2850	482212440248	10µF 20% 63V
2851	482212613312	6,8nF 20% Y5R 16V
2852	482212613312	6,8nF 20% Y5R 16V
2854	482212233195	100pF 10% 50V
2855	482212233195	100pF 10% 50V
2856	482212233195	100pF 10% 50V
2857	482212233195	100pF 10% 50V
2858	482212233195	100pF 10% 50V
2859	482212151387	10nF 20% 16V
2860	482212440433	47µF 20% 25V
2871	482212611714	4,7nF 20%
2873	482212612882	100nF +80-20% 50V
2874	482212612882	100nF +80-20% 50V
2876	482212612882	100nF +80-20% 50V
2880	482212233197	1nF 10% 50V
2881	482212411912	220µF 20% 6,3V
2890	482212612882	100nF +80-20% 50V
2891	482212151387	10nF 20% 16V
2892	482212440433	47µF 20% 25V
2893	482212440433	47µF 20% 25V
2895	482212422652	2,2µF 20% 50V
2896	482212422652	2,2µF 20% 50V

- RESISTORS -

3101	482210020167	50K 30% LIN 0,1W
3102	482211652297	68K 5% 0,5W
3103	482205011002	1K00 1% 0,4W
3104	482211652256	2K2 5% 0,5W
3106	482211652231	820R 5% 0,5W

- RESISTORS -

3107	482211652191	33R 5% 0,5W
3113	482211652234	100K 5% 0,5W
3114	482211652234	100K 5% 0,5W
3116	482211652191	33E 5% 0,5W
3207	482211652191	33R 5% 0,5W
3208	482211652191	33R 5% 0,5W
3209	482211652234	100K 5% 0,5W
3300	482210111826	50K 20% LIN 0.025W
3301	482211652256	2K2 5% 0,5W
3302	482211652256	2K2 5% 0,5W
3303	482211652243	1K5 5% 0,5W
3304	482211652243	1K5 5% 0,5W
3305	482211683883	470R 5% 0,5W
3306	482211683883	470R 5% 0,5W
3307	482211652219	330R 5% 0,5W
3308	482211652219	330R 5% 0,5W
3309	482211652238	12K 5% 0,5W
3310	482205011002	1K 1% 0,4W
3311	482205011002	1K 1% 0,4W
3313	482211652206	120R 5% 0,5W
3314	482211652206	120R 5% 0,5W
3315	482205021003	10K 1% 0,6W
3316	482205021003	10K 1% 0,6W
3551	482211652256	2K2 5% 0,5W
3552	482211652256	2K2 5% 0,5W
3553	482211683961	6K8 5%
3554	482211683961	6K8 5%
3625	482211683883	470R 5% 0,5W
3626	482211683883	470R 5% 0,5W
3627	482211652264	27K 5% 0,5W
3628	482211652264	27K 5% 0,5W
3629	482211683883	470R 5% 0,5W
3630	482211683883	470R 5% 0,5W
3631	482211652219	330R 5% 0,5W
3632	482211652219	330R 5% 0,5W
3633	482211652272	330K 5% 0,5W
3634	482211652272	330K 5% 0,5W
3635	482211683961	6K8 5%
3636	482211683961	6K8 5%
3637	482211652264	27K 5% 0,5W
3638	482211652264	27K 5% 0,5W
3639	482205021003	10K 1% 0,6W
3640	482205021003	10K 1% 0,6W
3641	482211652228	680R 5% 0,5W
3642	482211652228	680R 5% 0,5W
3643	482211652175	100R 5% 0,5W
3644	482211652175	100R 5% 0,5W
3645	482205011002	1K 1% 0,4W
3650	482211652213	180R 5% 0,5W
3651	482211652272	330K 5% 0,5W

ELECTRICAL PARTSLIST - COMBI BOARD

- RESISTORS -

3652	482211683961	6K8	5%		
3653	482211652206	120R	5%	0,5W	
3654	482211683868	150R	5%	0,5W	
3655	482211652184	18R	5%	0,5W	
3656	482211130893	4M7	5%	0,2W	
3800	482211652176	10R	5%	0,5W	
3801	482205024708	4R7	1%	0,6W	
3802	482211683868	150R	5%	0,5W	
3803	482211652219	330R	5%	0,5W	
3804	482211652206	120R	5%	0,5W	
3805	482211683872	220R	5%	0,5W	
3806	482211652249	1K8	5%	0,5W	
3807	482205023303	33K	1%	0,6W	
3808	482211652263	2K7	5%	0,5W	
3809	482211652276	3K9	5%	0,5W	
3810	482211652303	8K2	5%	0,5W	
3812	482211652257	22K	5%	0,5W	
3814	482211652257	22K	5%	0,5W	
3815	482211652264	27K	5%	0,5W	
3816	482211652264	27K	5%	0,5W	
3817	482211652234	100K	5%	0,5W	
3818	482205011002	1K	1%	0,4W	
3819	482211711825	1M5	5%		
3820	482211652252	180K	5%	0,5W	
3821	482211652243	1K5	5%	0,5W	
3822	482211652264	27K	5%	0,5W	
3823	482211652234	100K	5%	0,5W	
3824	482211683868	150R	5%	0,5W	
3825	482211683883	470R	5%	0,5W	
3826	482211683961	6K8	5%		
3827	482211652269	3K3	5%	0,5W	
3828	482211652297	68K	5%	0,5W	
3829	482211683884	47K	5%	0,5W	
3830	482211652244	15K	5%	0,5W	
3831	482211652251	18K	5%	0,5W	
3833	482211652264	27K	5%	0,5W	
3834	482211652175	100R	5%	0,5W	
3835	482211652184	18R	5%	0,5W	
3836	482205011002	1K	1%	0,4W	
3837	482211130893	4M7	5%	0,2W	
3838	482211652234	100K	5%	0,5W	
3839	482211652298	680K	5%	0,5W	
3840	482205011002	1K	1%	0,4W	
3841	482211652285	470K	5%	0,5W	
3842	482211652297	68K	5%	0,5W	
3843	482211683881	390R	5%	0,5W	
3844	482211652291	56K	5%	0,5W	
3845	482211652297	68K	5%	0,5W	
3846	482205011002	1K	1%	0,4W	
3847	482211652257	22K	5%	0,5W	

- RESISTORS -

3848	482211652257	22K	5%	0,5W	
3849	482211652175	100R	5%	0,5W	
3850	482211652283	4K7	5%	0,5W	
3851	482211652244	15K	5%	0,5W	
3852	482211683883	470R	5%	0,5W	
3853	482211652251	18K	5%	0,5W	
3854	482211652243	1K5	5%	0,5W	
3855	482211652264	27K	5%	0,5W	
3856	482211652303	8K2	5%	0,5W	
3857	482211652269	3K3	5%	0,5W	
3858	482211680176	1R	5%	0,5W	
3859	482205021003	10K	1%	0,6W	
3860	482211712798	8,2R	5%	0,25W	
3861	482211712798	8,2R	5%	0,25W	
3862	482211652269	3K3	5%	0,5W	
3863	482211652219	330R	5%	0,5W	
3864	482211652256	2K2	5%	0,5W	
3865	482211652256	2K2	5%	0,5W	
3866	482205210828	8R2	5%	0,33W	
3867	482205210338	3R3	5%	0,33W	
3868	482211680176	1R	5%	0,5W	
3869	482211683883	470R	5%	0,5W	
3870	482211652257	22K	5%	0,5W	
3871	482205011002	1K	1%	0,4W	
3874	482211683872	220R	5%	0,5W	
3877	482211652244	15K	5%	0,5W	
3878	482211652228	680R	5%	0,5W	
3880	482211652207	1K2	5%	0,5W	
3881	482211652257	22K	5%	0,5W	
3882	482205021003	10K	1%	0,6W	
3883	482211683866	1M	5%	0,5W	
3884	482211652264	27K	5%	0,5W	
3885	482211130893	4M7	5%	0,2W	
3886	482211683866	1M	5%	0,5W	
3887	482211683872	220R	5%	0,5W	
3888	482211683883	470R	5%	0,5W	
3889	482211683883	470R	5%	0,5W	
3890	482205021003	10K	1%	0,6W	
3891	482211683883	470R	5%	0,5W	
3892	482211683883	470R	5%	0,5W	
3893	482205023303	33K	1%	0,6W	
3894	482211683883	470R	5%	0,5W	
3895	482211652283	4K7	5%	0,5W	
3896	482211652283	4K7	5%	0,5W	
3897	482211683883	470R	5%	0,5W	
3898	482211652283	4K7	5%	0,5W	
3899	482205011002	1K	1%	0,4W	

ELECTRICAL PARTSLIST - COMBI BOARD

- COILS & FILTERS -

5101	482215770513	Coil FM
5102	242253594985	Coil 64µH 5%
5104	482215711843	Coil MD7B-01F
5105	482215771145	Coil 270µH
5106	482215770499	Coil IFT AM
5107	482224281154	Filter KMFC5058-Z
5108	482215611146	Coil IFT AM
5110	482215711838	Coil 0,22µH 10%
5201	482215770826	Coil 2,4µH
5625	482215710371	Coil Var 100kHz
5801	482215770826	Coil 2,4µH
5803	482224273557	Filter CST8,46MTW-TF01

- DIODES -

6101	482213030621	Diode 1N4148
6102	482213030621	Diode 1N4148
6250	482213031878	Diode 1N4003G
6251	482213031878	Diode 1N4003G
6252	482213031878	Diode 1N4003G
6253	482213031878	Diode 1N4003G
6256	482213030621	Diode 1N4148
6300	482213030621	Diode 1N4148
6625	482213034167	Diode BZX79-B6V2
6800	482213031881	Diode BZX79-B3V0
6801	482213031881	Diode BZX79-B3V0
6802	482213030621	Diode 1N4148
6803	482213030621	Diode 1N4148
6804	482213030621	Diode 1N4148
6805	319801053980	Diode BZX79-B3V9
6850	482213031881	Diode BZX79-B3V0
6851	532213034834	Diode BZX79-C3V6

- IC & TRANSISTORS -

7101	482220932746	IC TEA5711T/N2
7102	482213044503	Trans BC547C
7300	482220931544	IC TA8227P
7301	482213040959	Trans BC547B
7601	482213044503	Trans BC547C
7625	482220932918	IC AN7318S
7626	482213040959	Trans BC547B
7800	482220915932	IC TMP47C422F
7801	482220916076	IC M65824FP/ES5.0
7803	482220990496	IC M62475FP
7805	482220932852	IC TDA7073A/N2
7806	482220932852	IC TDA7073A/N2
7850	932200363676	Trans TBC327-40
7851	482213044568	Trans BC557B
7852	932200363676	Trans TBC327-40

- IC & TRANSISTORS -

7853	482213044503	Trans BC547C
7854	933650090126	Trans BC557C
7855	482213044503	Trans BC547C

- MISCELLANEOUS -

1002	482224010254	Loudspeaker
1003	482224010254	Loudspeaker
1006	482226520318	Mains Socket (Not for -/17)
1006	482226520706	Mains Socket (For -/17)
1102	242254944211	Ferrite Bar 5x13x55
1250	482227711739	Slide Switch
1302	242202605076	Headphone Socket
1350	482227612648	Push Switch
1400	482227721794	Voltage Selector (For -/01/11)
1626	482227711504	Push Switch
1807	482227613963	CD Door Switch
5001	⚠ 482214610877	Transformer (For -/00/05/14)
5001	⚠ 482214610875	Transformer (For -/01/11)
5001	⚠ 482214610874	Transformer (For -/10)
5001	482214610876	Transformer (For -/17)
8003	482232012637	Flexible Foil 15p 70mm

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

ELECTRICAL PARTSLIST - FRONT BOARD

- RESISTORS -

3872	48221 683882	39K	5%	0,5W
3873	48221 652257	22K	5%	0,5W
3875	48221 652256	2K2	5%	0,5W
3876	48221 652283	4K7	5%	0,5W

- MISCELLANEOUS -

1800	482227613114	Push Switch
1801	482227613114	Push Switch
1802	482227613114	Push Switch
1803	482227613114	Push Switch
1804	482227613114	Push Switch
1820	932214649682	LCD Display THD3497DPRDPN

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