

Service
Service
Service



Service Manual

COMPACT
disc
DIGITAL AUDIO

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**CLASS 1
LASER PRODUCT**

SPECIFICATION

General:

Mains voltage : 220V / 50Hz for /20/22
 : 240V / 50Hz for /25
 : 120V / 240V / 50Hz for /21/37 switchable
 : 100V / 50Hz for /26

Power consumption : ≤ 90W at maximum output power
 (mains) : ≤ 9W in stand by

External DC : 12 - 16V

CD:

Frequency response : 20 – 20,000 Hz ±2 dB
 Output level at CD out : 2V ±3 dB at 0dB recording level
 Signal/noise ratio : ≥ 80 dBA
 Distortion : ≤ 0.1% at 1 kHz
 Channel difference : ≤ 2 dB at 1 kHz
 Channel crosstalk : 50 dB max.
 De emphasis : 0 or 15/50µs switched automatically by subcode on the disc

Laser

Output power : ≤ 5 mW max. (3 mW typ.)
 Wavelength : 780 nm

Tuner:

	FM	MW	LW
Tuning range	87,5 – 108 MHz	520 – 1611 kHz (530 – 1700 kHz)	148 – 284 kHz
Aerial input	75 Ω	Ferrite ant. / frame aerial	Ferrite ant. / frame aerial
IF	10,7 MHz ±25 kHz	450 kHz ±1 kHz	450 kHz ±1 kHz
Sensitivity S/N = 26 dBA	5µV (2 µV typ.)	3 mV/m (1,5 mV/m typ.)	4 mV/m (not guaranteed above 250 kHz)
Image rejection ratio	25 dB (40 dB typ.)	28 dB (32 dB typ.)	30 dB (35 dB typ.)
-3 dB limiting point	8µV (4µV typ.)		

Amplifier:

Output power : 3 channel system : L/R WOOFER
 AC supply : at 1 kHz : 2 x 11 W + 0.1 W at 8Ω, D=10%
 : at 110 Hz : 2 x 1 W + 13 W at 8Ω, D=10%
 14,4V DC supply : at 1 kHz : 2 x 7.5W + 0.08W at 8Ω, D=10%
 : at 110 Hz : 2 x 0.5W + 7.5 W at 8Ω, D=10%

Headphone : 6,3mm stereo jack : 16 – 1000Ω

Frequency response : Bass 50 Hz – 200 Hz , left and right channel 150 Hz – 16 kHz (-3dB)

Tone control

Defeat mode : linear
 Pop mode : left and right channel + 6 dB at 7 kHz
 Jazz mode : left and right channel + 6 dB at 200 Hz
 Classic mode : left and right channel + 5 dB at 100 Hz
 : left and right channel + 4 dB at 10 kHz
 DBB : left and right channel + 9 dB at 100 Hz
 : Bass amplifier +10 dB at 120 Hz

Input sensitivity : Line in 300 mV
 Output voltage : CD out 2 V

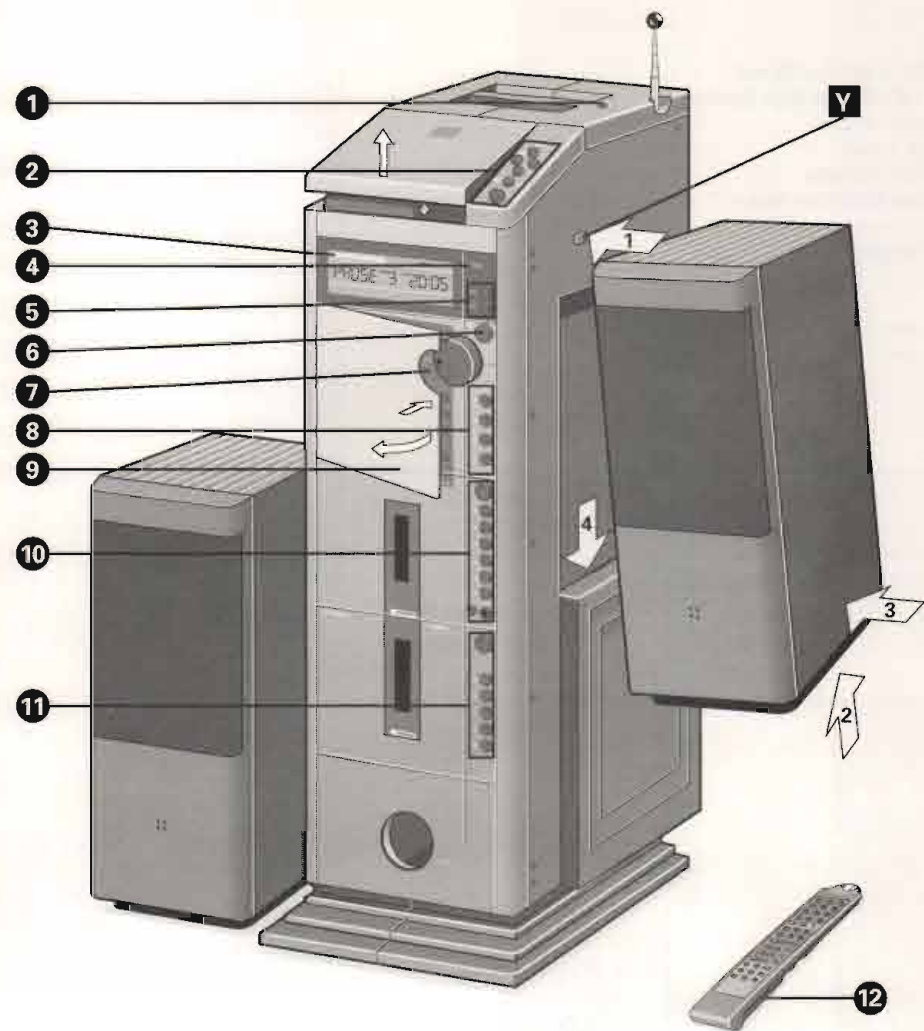
Recorder part:

Tape speed : 4,75 cm/s ±2% in Normal Speed
 : 4,75 cm/s x 1,8 ±12% in High Speed
 Wow & Flutter : ≤ 0.3% in normal speed
 : ≤ 0.4% in high speed
 Winding speed : ≤ 125 s for C60 cassette
 Noise reduction system : Dolby B (Noise Reduction factor: 7 dB typ.)
 Erase / Bias system : AC 80 kHz
 RIF-shift : service solution on request
 Distortion at 250 nWb/m : ≤ 3%
 Channel difference : ≤ 3 dB
 Channel separation : > 20 dB at 1 kHz
 Track separation : > 50 dB at 1 kHz

All measurements in defeat mode.

	IEC I	IEC II	Dubbing NS IEC I / IEC II	Dubbing HS IEC I / IEC II
Frequency resp. -5 dB ¹⁾	90 Hz – 12,5 kHz	90 Hz – 12,5 kHz	90 Hz – 12,5 kHz	90 Hz – 12,5 kHz
Signal to Hiss ratio ²⁾	51 dB	54 dB	51 dB / 54 dB	49 dB / 52 dB
Signal to Noise ratio ²⁾	43 dB	45 dB	43 dB / 45 dB	43 dB / 45 dB
Erase attenuation	60 dB	60 dB	60 dB	60 dB

¹⁾ typical value
²⁾ at 250 nWb/m



CONTROLS & CONNECTIONS

Top and Front panel.

- 1 Stereo headphone socket, 6.3 mm
- 2 CD keyboard:

MODE press so many times until the required function appears in the display.

REPEAT repeats continuously the disc or the programmed tracks.
SHUFFLE plays all tracks (or the programmed tracks in a random order).
SHUFFLE REPEAT repeats the disc (or programmed tracks a random order).
SCAN plays only the beginning of each track (press **PLAY** to start **SCAN**).
NORMAL (no display indication) to defeat the **SHUFFLE**, **REPEAT** and **SCAN** modes.

PREVIOUS/NEXT

- press briefly to jump to a **PREVIOUS** or **NEXT** track.
 - keep depressed to search fast backward **PREVIOUS** or **NEXT** (during playback).

PLAY/PAUSE starts **PLAY** or **PAUSE**.

STOP/CANCEL

- being in the stop position, press **STOP** again to cancel the memory.

OPEN

- to open the CD cover.

- 3 DISPLAY

- 4 IR remote control sensor.

- 5 +/- PRESET to select PRESET stations in the TUNER mode.

- 6 STAND BY/ON

- power on/off button.

- 7 VOLUME control.

- 8 CD - TUNER - AUX - TAPE

- function buttons to select the sound source.

- 9 Programming keyboard:

- press the cover to open.

A ACOUSTIC CONTROL:

DEFEAT defeats **JAZZ/POP/CLASSIC**, **JAZZ** or **POP** or **CLASSIC** tone buttons.
TURBO BASS to boost the bass response, press again to defeat.
SURROUND for a surround sound effect, press again to defeat.
MUTE to reduce the volume temporarily, press again to defeat.

B CLOCK/TIMER SETTING:

-/+ to set the time, timer and sleep time.
START TIMER to adjust the start time.
TIMER STOP to adjust the stop time.
TIME SET to adjust the time.
SLEEP SET to adjust and to activate the sleep function.
CANCEL to defeat the timer and sleep modes.

C CD PROGRAM:

STORE to store the displayed track number.
SELECT TRACK +/- track number selection.
REVIEW to display all stored track numbers.

D TUNER:

PROGRAM-STORE to store the displayed frequency and acoustic control settings.
BANDS band selection
 +/- to tune to a radio station and to select station name characters.
A-Z/0-9 to create station names.
STEREO/MONO FM mono/stereo selection.
FREQUENCY/SND to display either frequency or station name.
SCAN plays in sequence a few seconds of each preset radio station.

E TAPE DECK FUNCTIONS:

TAPE cassette type selection for deck 1:
NORMAL for IEC type I cassettes.
CHROME for IEC type II cassettes.

DUBBING speed selection:
NORMAL for normal speed dubbing.
HIGH for high speed dubbing.

CD SYNCHRO automatic start of a CD recording.
ARCS rewind to the beginning of a tape and then automatic start of a CD recording.

DOLBY NR noise reduction.

AUTO REVERSE/MODE press so many times until the required function appears in the display.

— no reverse.
 ⇐ single reverse.
 ⇐⇐ continuous reverse.

AUTOPLAY non-stop playback of deck 1 and 2.

- 10 Deck 1 keyboard - recording and playback:

EJECT

◀ **PLAY**

PLAY ▶

▶▶ **FAST** fast winding to the right.

◀◀ **FAST** fast winding to the left.

STOP

PAUSE

◀▶ to chance the play direction.

● **RECORD**

- 11 Deck 2 keyboard - playback only:

EJECT

PLAY ▶

F.FWD fast forward wind.

REWIND fast rewind.

STOP

PAUSE

- 12 REMOTE control unit.

Back Panel.

- 13 telescopic aerial with plug, for FM radio.

- 14 EXT. ANTENNA (not on all versions) socket for the telescopic aerial, external FM-aerial or cable antenna system.

- 15 CD OUT sockets for CD-reproduction through e.g. your stereo system.

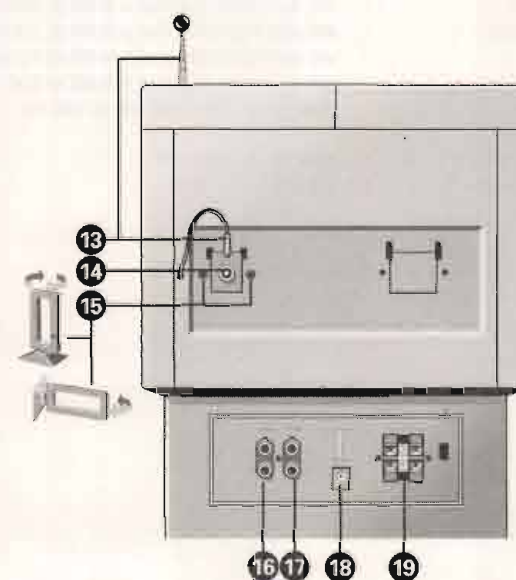
- 16 LINE IN sockets for recording from an amplifier, receiver, recorder, CD-player, etc.

- 17 DC IN socket for 12 V DC car battery supply (- = centre pin).

- 18 SPEAKERS loudspeaker terminals.

- 19 VOLTAGE selector (not on all versions).

- 20 MAINS mains lead.



CLOCK

You can choose 24 hours or 12 hours time indication:

press **TIME SET** and then press **CANCEL**.

In case of 12 hours indication, AM or PM appears on the display. If the clock figures flash, e.g. after a mains breakdown or power interruption, the time setting needs to be readjusted.

TIME SETTING

* Press **TIME SET**: the hours flash.

* Set the hours with the buttons - and +.

Keep the button - or + pressed: after some seconds, the displayed time starts running. When approaching the actual time, release - or + and running stops. After that, press - or + briefly each time; the time is changed step-by-step until you finally reach the correct time.

* Press **TIME SET** again: the minutes flash.

* Set in the same way the minutes with the buttons - and +.

* The clock starts running when pressing the **TIME SET** button again.

TIMER

With the **TIMER** function, the set can be switched on and off. You can use the **TIMER** function:

- to wake you at a preset radio station CD or cassette playback;
- to start and stop a radio (or other) recording during absence.

Start and stop time setting.

* To set the start time, press **START TIMER**: the hours flash.

Use the buttons - and + for setting.

* Press **START TIMER** again: the minutes flash. Use the buttons - and + for setting.

* To set the stop time, press **TIMER STOP**: the hours flash. Use the buttons - and + for setting.

* Press **STOP TIMER** again: the minutes flash. Use the buttons - and + for setting.

* Press **START TIMER** or **TIMER STOP** again to leave the programming mode.

If no stop time has been programmed, the set will start normally and is switched off 2 hours after the preset start time.

If the start and stop time are the same, the set will play for 1 minute.

To delete a preset stop time, first press **TIMER STOP** and then **CANCEL**.

Preparation

* To check the preset time, press **START TIMER** or **TIMER STOP** and the preset time flashes a while.

* Adjust the set for the required function:

- Wake by radio: press function button 8 **TUNER** and select the radio station.
- Wake by CD: press function button 8 **CD** and insert the CD.
- Wake by cassette: press function button 8 **TAPE** and insert the cassette into deck 2.
- Recording from the radio: press function button 8 **TUNER** and select the radio station. Insert a blank cassette into deck 1 and press **PAUSE**. When nobody needs to hear the radio program during recording, reduce the volume.

* For waking, ensure that no headphones are connected (otherwise the loudspeakers are muted) and adjust the volume loud enough to wake you.

Timer on and off

* Press **START TIMER** so many times until "START TIMER" appears on the display.

* The **TIMER** function is only active, if the set is in the **STAND BY** mode. So switch off the set using the **STAND BY/ON** button 6 or using the **SLEEP** function.

* When the adjust start time is reached, the set is switched on in the preset function.

* When the adjust stop time is reached, the set is switched off.

* To defeat the **TIMER** function, first press **START TIMER** and then **CANCEL**.

SLEEP

You can use the sleep function e.g. if you are going to sleep and you want to listen for a while (or to continue a recording for a while). If the sleep time has been set to e.g. 30 minutes, the set remains switched and counts down from 00:30 to 00:00. When reaching 00:00, the set is switched off to the **STAND BY** mode.

Sleep time setting

* Press **SLEEP** longer than 1 second: the hours flash. Use the buttons - and + for setting.

* Press **SLEEP** again longer than 1 second: the minutes flash. Use buttons - and + for setting.

* Press **SLEEP** again longer than 1 second: the sleep time has been set.

If no sleep time has been adjusted, it is automatically set to 1 hour.

Sleep on and off

* By pressing **SLEEP** briefly (less than 1 second), the sleep function is activated and the word **SLEEP** appears in the display.

* If you press **SLEEP** again before the switch-off-moment is reached, count-down will start from the beginning (the full pre-set sleep time period).

* To leave the **SLEEP** mode before the sleep time has expired, press **CANCEL** and the word **SLEEP** disappears from the display.

PROGRAMMING A STATION NAME

A station name of 6 characters can be given to each **PRESET** radio station.

* Select the **PRESET** station using the **PRESET** buttons 5 +/-.

* Press **FREQUENCY/SND** until "STATION NAME" appears in the display 3.

* Press **A-Z/0-9** once; in the display, the character A starts flashing on the first position.

* Within 5 seconds, press - or + so many times, until the required character appears. Available are the characters A-Z, the figures 0-9, a hyphen - and a blank.

* To store that character, press within 10 seconds **A-Z/0-9** again and A starts flashing on the next position.

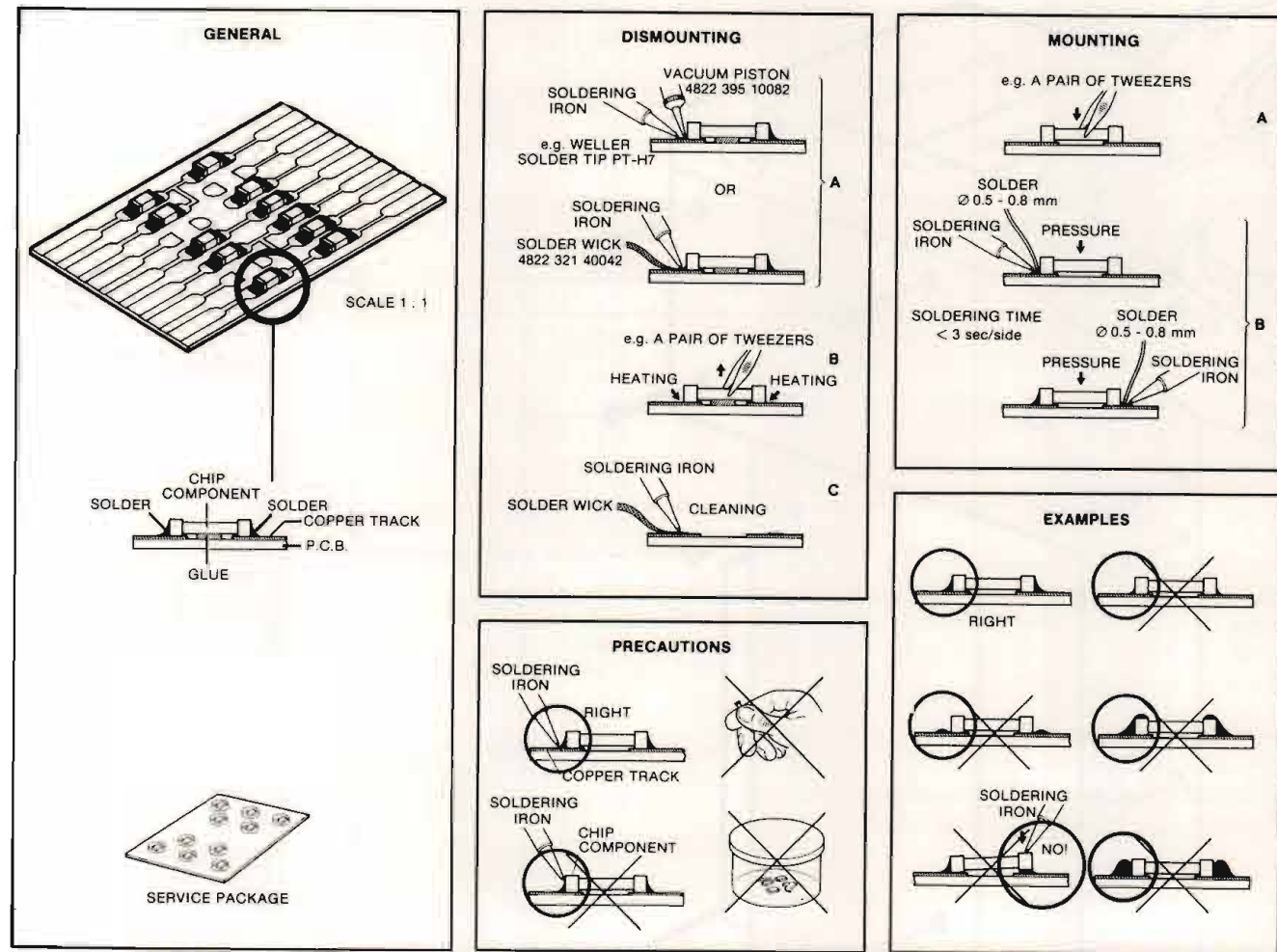
* After the sixth character, the station name is stored. To store a name of less than 6 characters, insert blanks.

* If you change the frequency of a **PRESET** location, the old station name remains unchanged, unless you overwrite it.

* To overwrite a name or character, press **A-Z/0-9** again and again until the character starts flashing, then modify it.

* Press **FREQUENCY/SND** to switch between "FREQUENCY" and "STATION NAME" display indication.

HANDLING CHIP COMPONENTS



(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.

ESD



(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 hetzelfde potentiaal.

(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.

(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.

(S) Varning !

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

(DK) Advarsel !

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

(SF) Varoitus !

Laitte sisältää laserdiodin, joka lähettää näkyvätöntä silmille vaarallista lasersäteilyä.

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

27 012C12

(GB)

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

(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.

(NL)

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

(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.

(F)

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

	Carbon film 0.2 W 70°C 5%		Ceramic plate Tuning ≤ 120 pF NP.0 2%	*a = 2,5 V b = 4 V c = 6,3 V d = 10 V e = 16 V f = 25 V g = 40 V h = 63 V i = 100 V l = 125 V m = 150 V n = 160 V q = 200 V r = 250 V s = 300 V t = 350 V u = 400 V v = 500 V w = 630 V x = 1000 V A = 1,6 V B = 6 V C = 12 V D = 15 V E = 20 V F = 35 V G = 50 V H = 75 V I = 80 V
	Carbon film 0.33 W 70°C 5%		Others -20/+80%	
	Metal film 0.33 W 70°C 5%		10%	
	Carbon film 0.5 W 70°C 5%		10%	
	Carbon film 0.67 W 70°C 5%		1%	
	Carbon film 1.15 W 70°C 5%			
	Chip component		Miniature single	
			Subminiature tantalum ± 20%	

27 037A/C

SERVICE TOOLS

TORX screwdriver set 4822 395 50145
 Audio signal disc 4822 397 30184
 Audio signal disc 3 inch diameter 4822 397 30229
 Test disc 5 (disc without errors) + Test disc 5A
 (disc with dropout errors, black spots and finger prints) 4822 397 30096

TUNER

In AZ9712/00/05/20/25 **ECO 3** tuner board is used.

Schematic diagram see pages 48 - 50
 Assembly drawing see pages 51 - 52
 Adjustment table see page 53

In AZ9712/02/22 **HERA C3** tuner board is used.

Schematic diagram see pages 54 - 56
 Assembly drawing see pages 57 - 58
 Adjustment table see page 59

For **HERA C3** tuner a higher loop voltage is necessary.
 Therefore an additional **voltage multiplier** is used:
 Schematic diagram see **POWER/Selector** part pages 29 -31
 Assembly drawing see **KEY** board pages 41 - 42

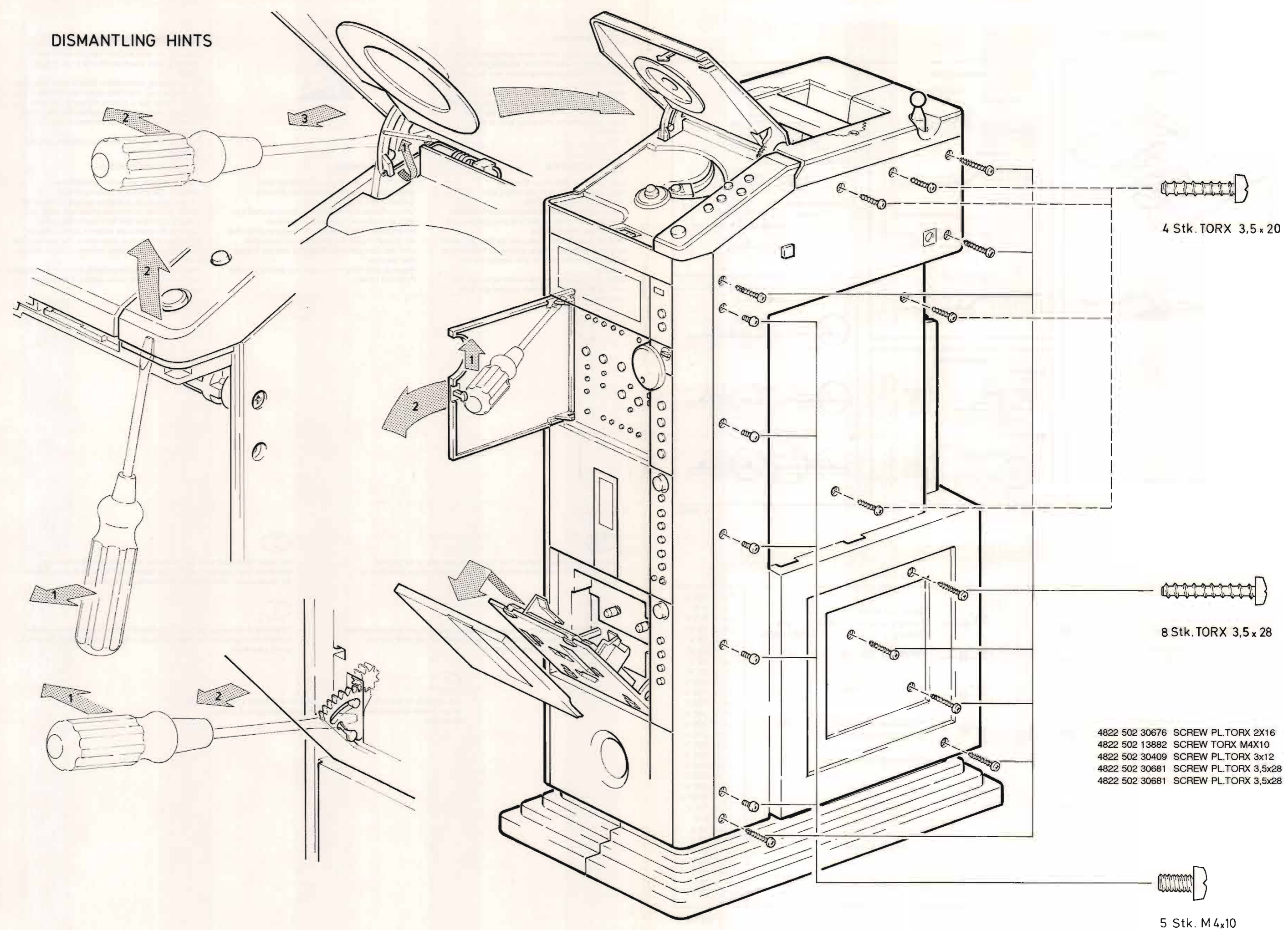
CD

Attention: In case disc drive has to be exchanged by a new one:

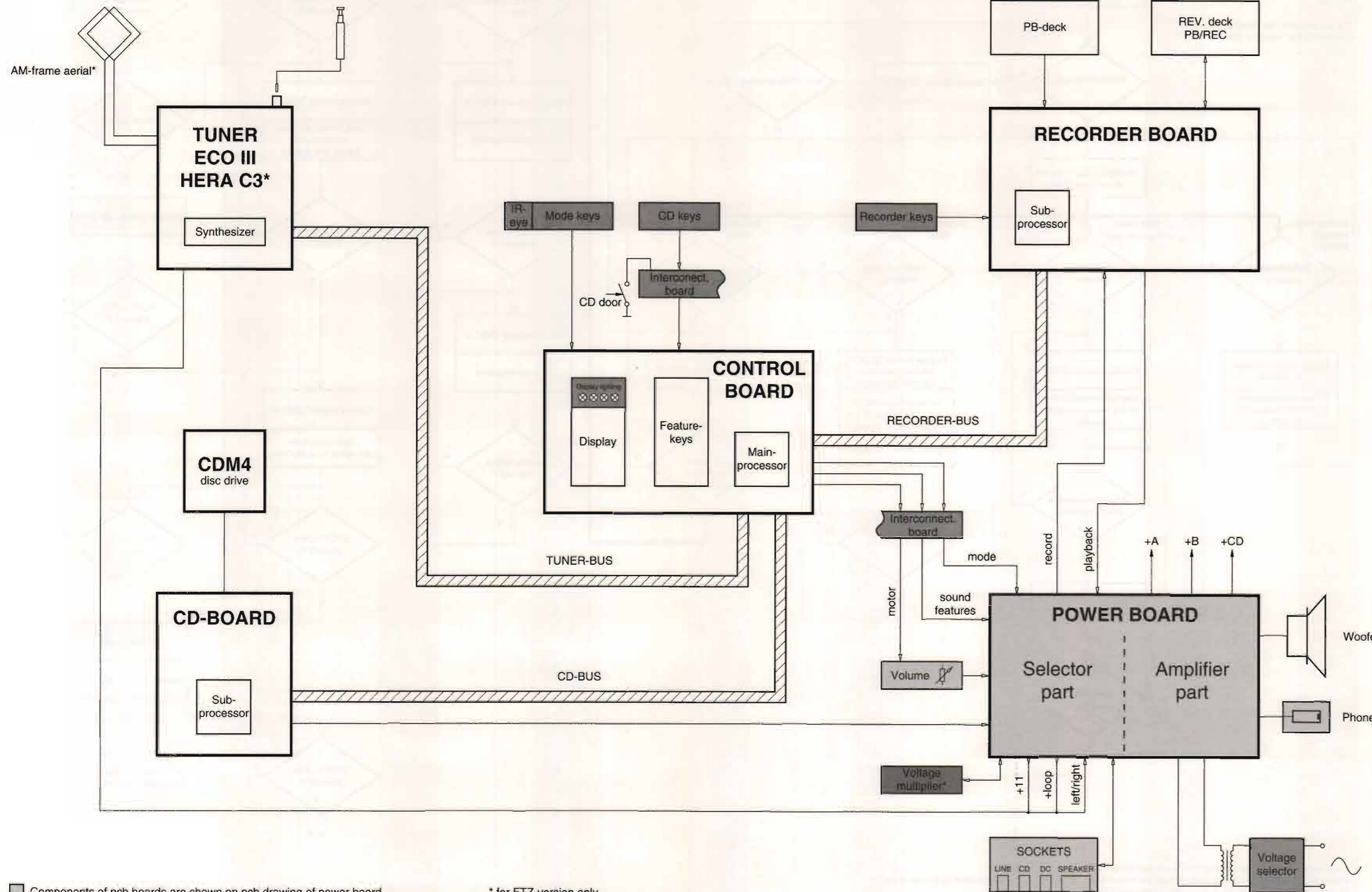
To avoid a damage of the laser diode because of a too high laser current, preadjust R3804 before switching power on:

- 1) Measure resistance of R3803 + R3804.
- 2) Adjust R3804 to $R3803 + R3804 = 1 \text{ kOhm}$

DISMANTLING HINTS



SET BLOCK DIAGRAM



* for FTZ-version only

ABBREVIATIONS (CD-PART)

ACLR	- P interface register clear input	SIN	- Tray switch
AGC	- Automatic gain control	SK	- Serial clock input
AOL-R	- Analogue output left-right	SQRCK	- Subcode Q register
B0-B3	- Control bits for radial circuit	SQRO	- Subcode Q register output
BCK	- Bit clock input	TEST1	- Test control input
BEQ	- Equalizer reference current input	TL	- Track loss output signal
BGC	- DC and LF gain control reference input	TLC	- Output from slice level control
BPA-C	- Display backplane A-C	TTM	- Control voltage for turntable motor
C16M1	- divider input	Vext+	- Supply connection
CAS	- Column address strobe signal input	Vext-	- Supply connection
Cosc1	- Capacitor wobble oscillator	VLCD	- Supply liquid crystal display
Cosc2	- Capacitor wobble oscillator	WE	- Write enable output
CS	- Chip select	WS	- Word select input
D1-D4	- Photodiode currents	XI	- Crystal oscillator input
DASEL1-4	- DAC interface format select	XO	- Crystal oscillator output
DATA	- Data input		
DEC	- Decoupling input internal bypass		
DET	- HF detector voltage input		
DI	- Serial data input		
DISBL	- Display blank		
DISCLK	- Display clock		
DISDAT	- Display data		
DISENA-B	- Disenable A-B		
DIV4	- Divide by 4 input		
DLRCK	- Left/right channel clock		
DO1	- Dual DAC Rch serial data output		
DOBSEL	- Data bit select		
DODS	- Drop out detector suppression		
DRD	- 8/12 cm Disc detection		
DSCK	- Data shift clock to DAC		
EFFK	- EFM frame clock output		
EMP	- Emphasis flag output		
EST2	- Error status 2		
FE	- Focus error signal		
FE lag	- Focus error signal for LAG network		
FS	- Focus starting current		
GCHF	- Gain control input of HF amplifier		
GCLF	- Gain control input for AC and LF amplifiers		
HF	- HF output for DEMOD		
HF-out	- HF amplifier and equalizer voltage output		
HFD	- HF detector output for DEMOD		
IREF	- Current reference		
KBSC0-5	- Keyboard scanning 0-5		
LM	- Laser monitor diode input		
LO	- Laser amplifier current output		
LPF	- PLL loop filter		
MCK	- P interface shift clock input		
MLA	- P interface data latch clock input		
MSD	- P interface serial data input		
PLLH	- PLL on hold output		
PWM	- Disc motor driving output (pulse width modulation)		
RAD	- Radial drive input		
RAD0-7	- Address output		
RADout	- Output of RE ₂ -RE ₁ input		
RAS	- Row address strobe signal output		
RDB1-4	- Data input/output		
RE dig	- Radial error digital		
RE	- Radial error signal (Amplified RE ₂ -RE ₁ currents)		
RE1	- Radial error signal 1 (summation of amplified currents D3 and D4)		
RE2	- Radial error signal 2 (summation of amplified currents D3 and D2)		
REin	- Radial error input		
RElag	- Radial error for LAG network		
Rosc	- Resistor wobble oscillator		
Rwob	- Wobble generator input		
SA1-SC4	- 12 multiplexed outputs		
Sc	- Starting up capacitor input		
SCCK	- Shift clock input for serial subcode data output		
SCINT	- Interrupt output of subcode Q		
SCOE1	- Enable input of subcode T		
Si/RD	- On/off control for laser supply and focus circuit. Ready signal, Starting up procedure successful.		

SERVICE PRESET FREQUENCIES		
preset	frequencies for version: /00/02/05/20/22/25	frequencies for version: /17
	FM	FM
1	87.50 MHz	87.50 MHz
2	97.00 MHz	106.0 MHz
3	98.00 MHz	87.50 MHz
4	99.00 MHz	87.50 MHz
5	108.00 MHz	87.50 MHz
	MW	MW
6	522 kHz	530 kHz
7	567 kHz	530 kHz
8	603 kHz	620 kHz
9	1278 kHz	1370 kHz
10	1494 kHz	1610 kHz
11	1611 kHz	530 kHz
	LW (if available)	LW (if available)
12	148 kHz	148 kHz
13	155 kHz	155 kHz
14	200 kHz	200 kHz
15	275 kHz	275 kHz
16	284 kHz	284 kHz
17	3820 kHz	3820 kHz
18	3900 kHz	3900 kHz
19	11900 kHz	11900 kHz
20	12100 kHz	12100 kHz

table 1

Key activated:	Display shows:	Key activated:	Display shows:
Preset up	3	CD-select-	29
Preset down	1	CD-select+	33
Stand-by	2	Tuner program store	28
CD-select	47	Tuner-	7
Tuner-select	46	Tuner+	30
Tape-select	44	A-Z 0-9	27
Defeat	13	Bands	20
Jazz	12	Stereo/Mono	23
Pop	16	Scan frequency	22
Classic	17	Frequency/SND	31
Surround	18	Normal/Chrome	6
Turbo bass	19	Dubbing normal	4
Mute	32	Dubbing high	5
Clock-	15	CD-synchro	25
Clock+	14	ARCS	24
Timer start	10	Dolby NR	26
Timer stop	8	Autoreverse	21
Time set	9	CD-mode	39
Sleep set	11	CD-next	41
Cancel	0	CD-previous	38
CD-store	35	CD-play	42
CD-review	34	CD-stop	37

Please notice that the TAPE buttons are not included.

table 2

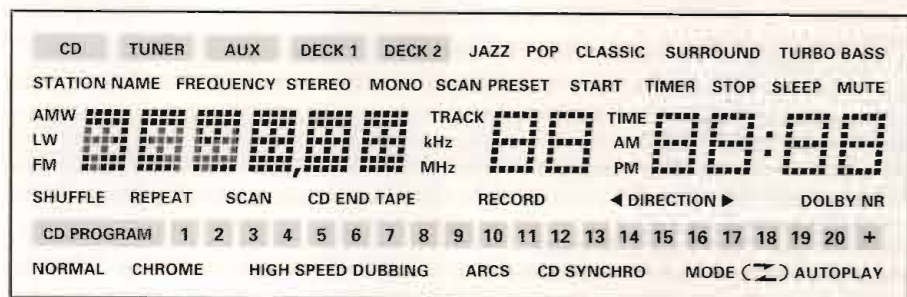
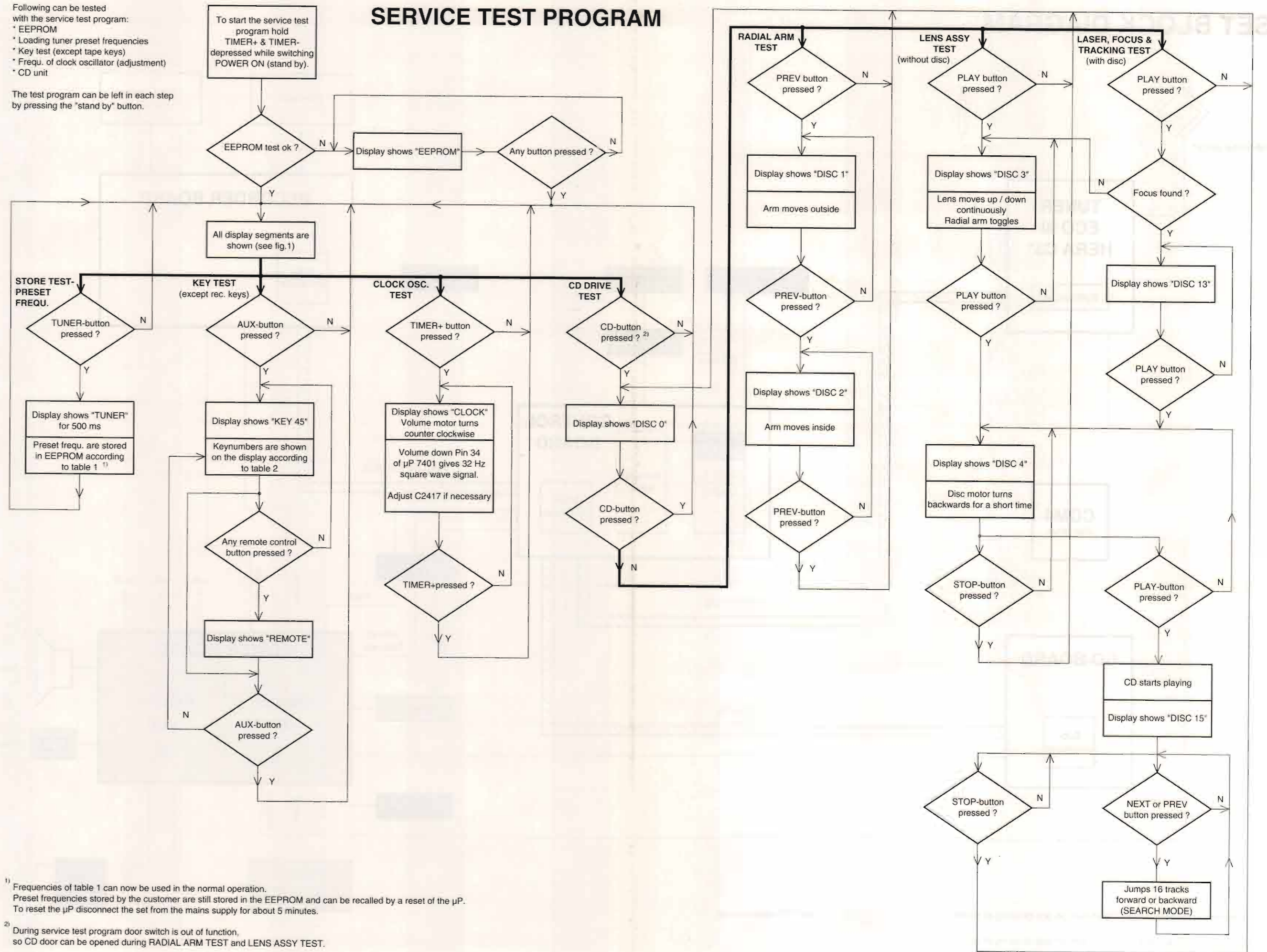


fig. 1

SERVICE TEST PROGRAM

Following can be tested with the service test program:
 * EEPROM
 * Loading tuner preset frequencies
 * Key test (except tape keys)
 * Frequ. of clock oscillator (adjustment)
 * CD unit

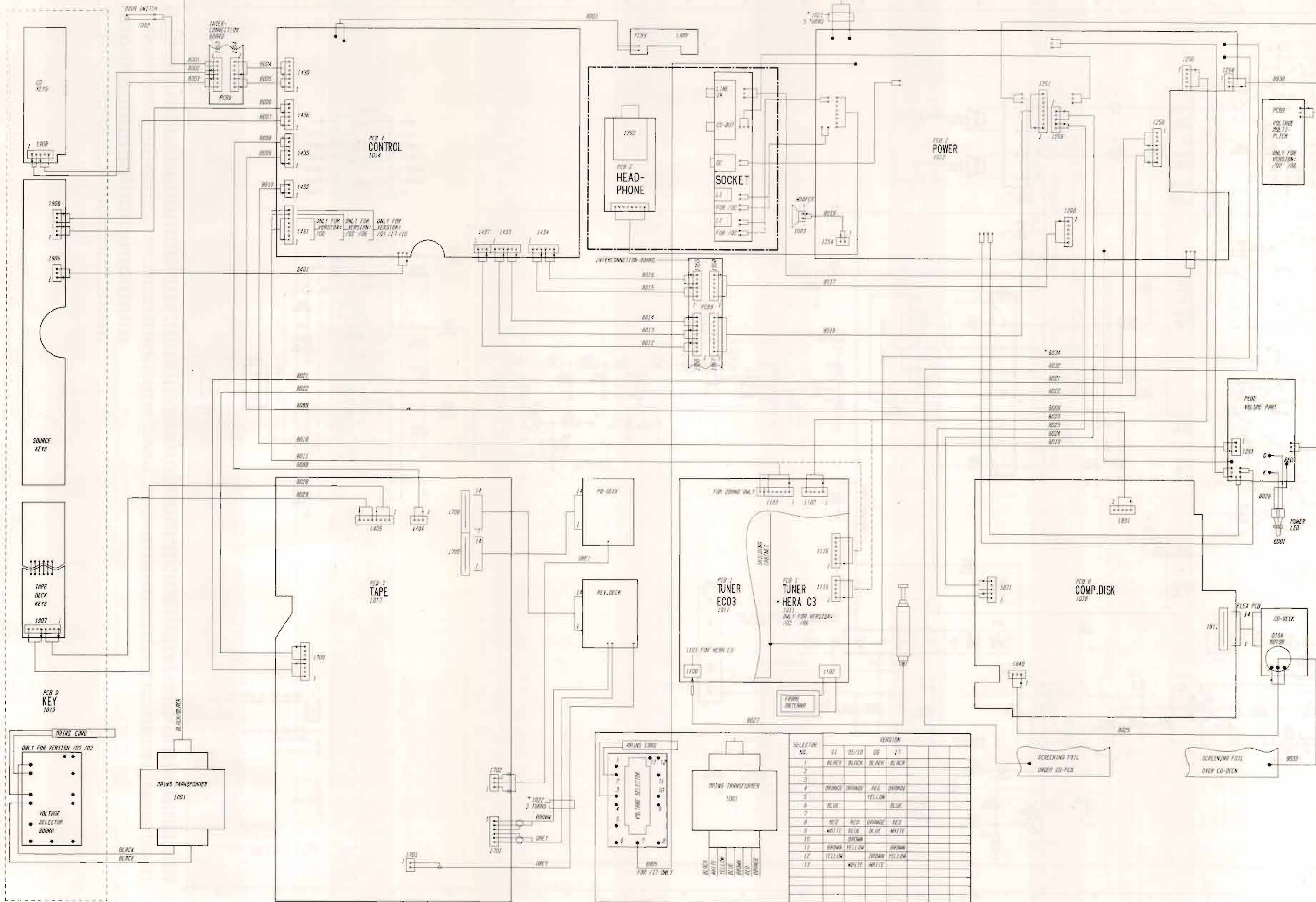
The test program can be left in each step by pressing the "stand by" button.



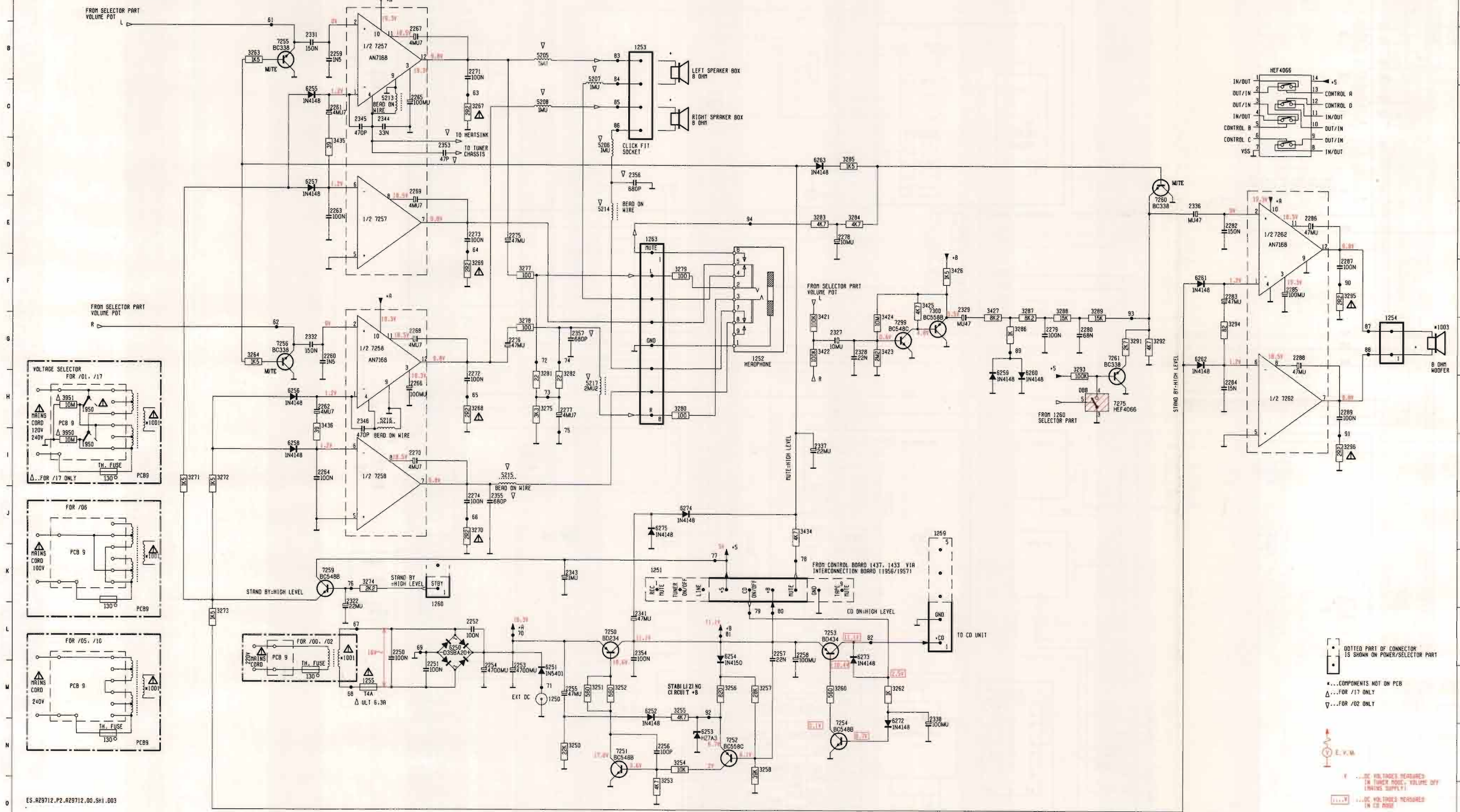
¹⁾ Frequencies of table 1 can now be used in the normal operation. Preset frequencies stored by the customer are still stored in the EEPROM and can be recalled by a reset of the μP . To reset the μP disconnect the set from the mains supply for about 5 minutes.

²⁾ During service test program door switch is out of function, so CD door can be opened during RADIAL ARM TEST and LENS ASSY TEST.

WIRING DIAGRAM



POWER/AMPLIFIER PART

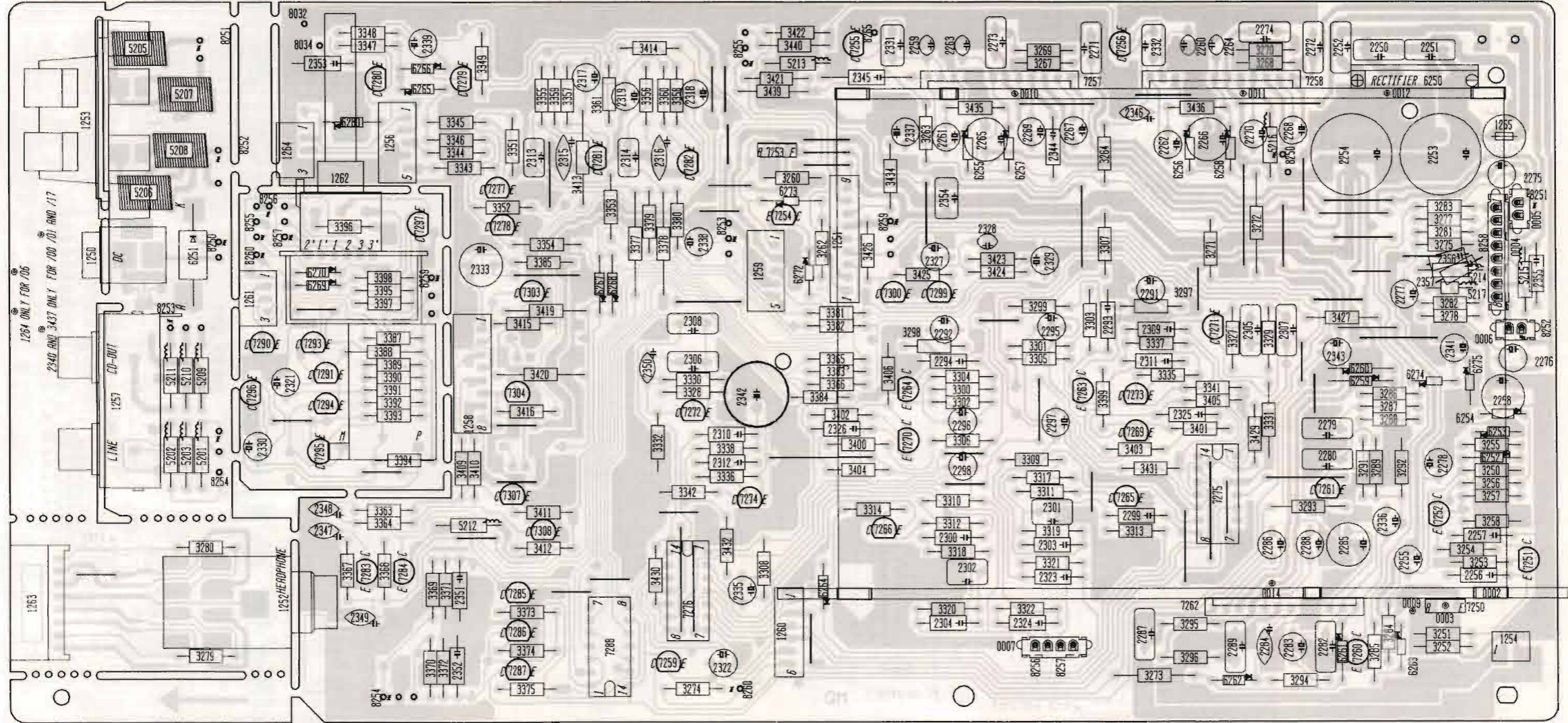


ES.AZ9712.P2.AZ9712.00.SKI.003

1001	L 6	3435	D 6
1001	M 3	3436	H 6
1001	K 3	3950	I 1
1001	H 3	3951	H 1
1003	G25	5205	B10
1250	M10	5206	D11
1251	K11	5207	B11
1252	G13	5208	C10
1253	B11	5213	C 7
1254	G24	5214	E11
1255	M 7	5215	I 9
1259	J16	5216	H 7
1263	E12	5217	H11
1950	H 2	6250	L 8
1950	I 2	6251	M10
2250	L 7	6252	M12
2251	H 8	6253	M12
2252	L 8	6254	L13
2253	H 9	6255	C 6
2254	M 9	6256	H 5
2255	M10	6257	D 6
2256	M12	6258	I 5
2257	L14	6259	G17
2258	L14	6260	G18
2259	B 6	6261	F21
2260	G 6	6262	G21
2261	C 6	6263	D14
2262	H 6	6272	M16
2263	E 6	6273	L15
2264	I 6	6274	J12
2265	C 7	6275	J12
2266	H 7	7250	L11
2267	B 7	7251	N11
2268	G 7	7252	M13
2269	D 7	7253	L15
2270	I 7	7254	N15
2271	B 8	7255	B 5
2272	H 8	7256	O 5
2273	E 8	7257	B 7
2274	J 8	7258	G 7
2275	E 9	7259	K 6
2276	G 9	7260	E20
2277	H10	7261	G20
2278	E15	7262	E22
2279	G18	7275	H19
2280	O19	7289	O16
2282	F21	7300	F16
2283	F21		
2284	H21		
2285	F22		
2286	E23		
2287	F23		
2288	G23		
2289	H23		
2322	K 6		
2327	G 6		
2331	B 6		
2332	G 6		
2336	E21		
2337	I14		
2338	M16		
2341	L11		
2343	K10		
2344	C 7		
2345	C 7		
2346	H 7		
2348	D 6		
2353	L11		
2355	J 9		
2356	D11		
2357	O10		
2350	M10		
2351	M10		
2352	M11		
2353	D12		
2354	M12		
2355	M12		
2356	M13		
2358	M13		
2359	M13		
2360	M15		
2362	M16		
2363	B 5		
2364	G 5		
2367	C 8		
2368	H 8		
2369	F 8		
2370	J 8		
2371	I 3		
2372	I 4		
2373	L 4		
2374	K 7		
2375	H10		
2377	F 9		
2378	G 9		
2379	F12		
2380	H12		
2381	H10		
2382	H10		
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2384	E15		
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2395	F23		
2396	I23		
3421	G14		
3422	G14		
3423	G15		
3424	G15		
3425	F16		
3426	F17		
3427	F17		
3434	J14		

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0007	G11	1261	0 3	2263	H10	2280	F12	2299	F12	2316	H 7	7334	H 7	7353	H 4	3262	H 4	3284	G14	3302	E10	3321	F11	3346	H 5	3364	H 8	3383	F 8	3401	F13	3422	H 8	3443	H 8	5221	F 3	6270	H 7	7261	H14	7280	H 5	7299	D10	8257	H 4
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1251	C 9	2271	H15	2288	H11	2298	H13	2307	H14	2324	H11	7342	G14	7361	H15	3270	H15	3292	F15	3310	H11	3329	H10	3354	H 4	3372	H 8	3391	D 8	3409	F 5	3410	F 5	3430	H 7	5229	F 2	6278	H 7	7269	H13	7288	H 5	7307	D 8	8265	F 3
1252	C 4	2272	H14	2289	H11	2299	H13	2308	H14	2325	H11	7343	H 8	7362	H15	3271	H 8	3293	F15	3311	H11	3330	H10	3355	H 4	3373	H 8	3392	D 8	3410	F 6	3411	F 6	3431	F12	5230	F 2	6279	H 7	7270	H13	7289	H 5	7308	D 8	8266	F 3
1253	H 2	2273	F15	2290	H11	2299	G12	2309	H14	2326	H11	7344	H 8	7363	H15	3272	H15	3294	F15	3312	H11	3331	F11	3356	H 4	3374	H 8	3393	F 5	3411	F 6	3412	F 6	3432	F 8	5231	H 9	6280	H13	7271	H13	7290	H 5	7309	D 8	8267	F 3
1254	G18	2274	H15	2291	H11	2299	H10	2310	H12	2327	H11	7345	H12	7364	H15	3273	H15	3295	F15	3313	F11	3332	H10	3357	H 4	3375	H 8	3394	F 5	3412	C 8	3413	C 8	3433	C10	5232	H 9	6281	H13	7272	H13	7291	H 5	7310	D 8	8268	F 3
1255	H16	2275	F15	2292	H11	2299	H10	2311	H12	2328	H11	7346	F 4	7365	H15	3274	H15	3296	F15	3314	F11	3333	F10	3358	H 4	3376	H 8	3395	D 5	3413	C 8	3414	C 8	3434	C10	5233	H10	6282	H13	7273	H13	7292	H 5	7311	D 8	8269	F 3

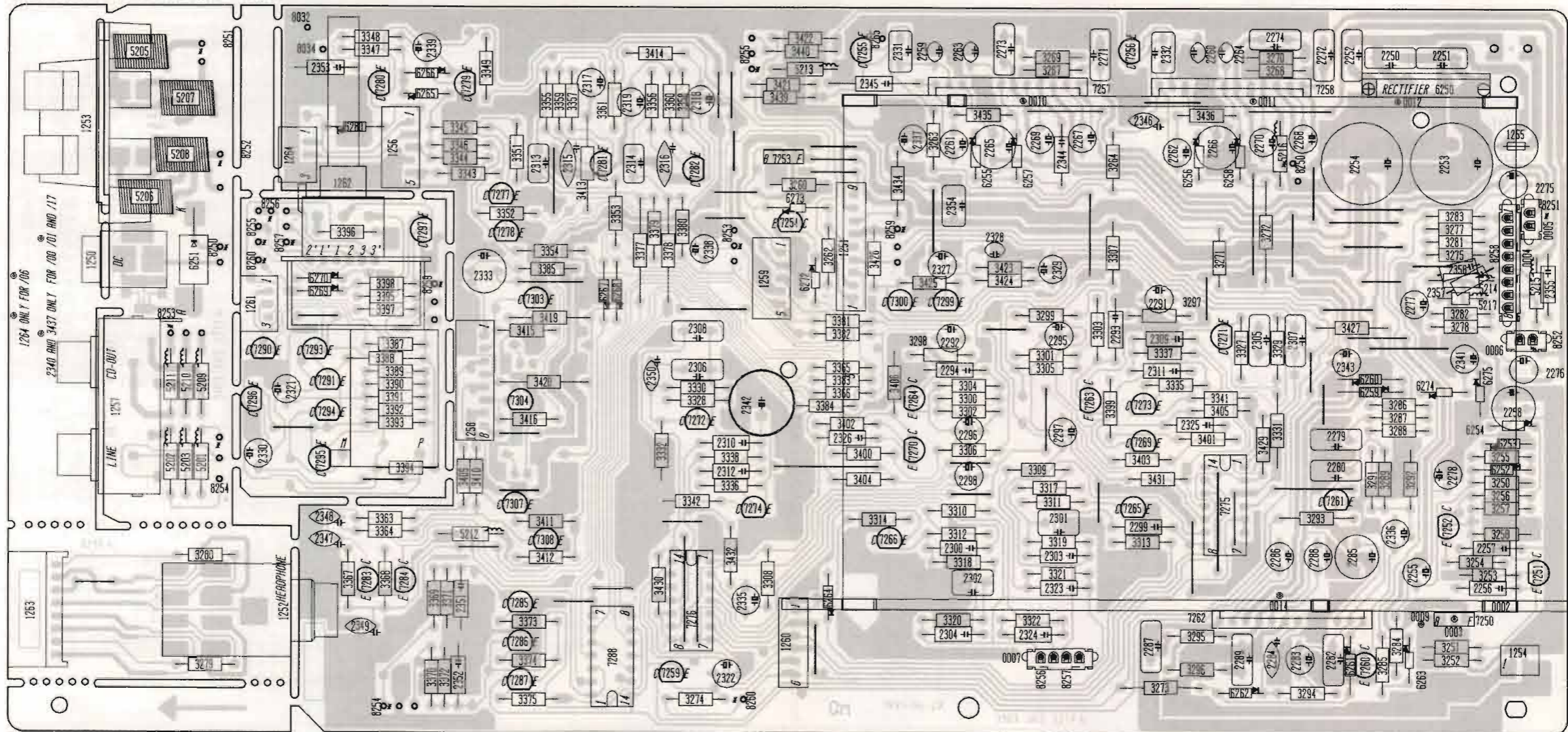
POWER BOARD / COPPERSIDE VIEW / AZ9712



CRU REF: PC-AZ9712.P2.04.AZ9712.02.SERV-A / 91-07-09

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0003	D15	1257	E 2	2259	F10	2272	F18	2295	F11	2312	F 8	3330	F 3	3348	D 4	3358	F15	3280	F 3	3298	D10	3317	F11	3342	F 8	3350	H 8	3378	L 7	3395	C 4	3410	D 8	3436	E13	5217	F15	6266	A 5	7259	F11	7276	D 8	7295	F 4	8253	C 8
0004	C18	1258	E 5	2260	F13	2277	D15	2298	F18	2313	F 8	3331	F10	3350	E 7	3359	C 4	3281	E15	3299	D15	3318	F10	3343	F 8	3351	H 8	3379	L 7	3396	D 5	3411	D 8	3437	E13	5218	F15	6267	A 5	7260	F11	7277	C 6	7296	F 3	8254	D 7
0005	C18	1259	D 8	2261	F10	2278	F15	2297	F11	2314	F 7	3332	F12	3351	H 4	3360	C 9	3282	F13	3300	F10	3319	F11	3344	F 5	3352	H 8	3380	L 7	3397	E12	3412	D 8	3438	E13	5219	F15	6268	A 5	7261	F11	7278	C 6	7297	F 3	8255	H 4
0006	D13	1260	D 8	2262	F12	2279	F14	2298	F10	2315	F 6	3333	D 6	3352	H 3	3361	C 8	3283	F14	3301	F11	3320	F10	3345	F 5	3353	H 8	3381	L 7	3398	E12	3413	D 8	3439	E13	5220	F15	6269	A 5	7262	F11	7279	C 6	7298	F 3	8256	H 4
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0011	H13	1264	H 8	2266	F13	2284	F13	2302	F10	2319	F 7	3337	L 8	3356	H 4	3365	C 8	3287	F14	3305	F14	3324	F11	3349	F 4	3357	H 8	3385	L 7	3402	E12	3417	D 8	3443	E13	5224	F15	6273	A 5	7266	F11	7283	C 6	7302	F 3	8260	H 4
0012	H13	1265	H1A	2267	F11	2285	F14	2303	F11	2320	L 4	3338	H 5	3357	H 4	3366	C 8	3288	F14	3306	F13	3325	F11	3350	F 6	3358	H 8	3386	L 7	3403	E12	3418	D 8	3444	E13	5225	F15	6274	A 5	7267	F11	7284	C 6	7303	F 3	8261	H 4
0014	D13	1267	H1B	2268	F13	2286	F13	2304	F10	2322	D 8	3339	F18	3358	H 4	3367	C 8	3289	F13	3307	F13	3326	F11	3351	F 6	3359	H 8	3387	L 7	3404	E12	3419	D 8	3445	E13	5226	F15	6275	A 5	7268	F11	7285	C 6	7304	F 3	8262	H 4
1250	C 2	2250	H1A	2259	H11	2267	F10	2305	F13	2323	C11	3340	E 8	3359	H 4	3368	C 8	3290	F13	3308	F14	3327	F11	3352	F 6	3360	H 8	3388	L 7	3405	E12	3420	D 8	3446	E13	5227	F15	6276	A 5	7269	F11	7286	C 6	7305	F 3	8263	H 4
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1255	H16	2257	F15	2274	F15	2293	F12	2310	F 8	2328	F11	3345	F 4	3364	H 4	3373	C 8	3295	F15	3313	F12	3332	F12	3357	F 6	3365	H 8	3393	L 7	3410	E12	3425	D 8	3451	E13	5232	F15	6281	A 5	7274	F11	7291	C 6	7310	F 3	8268	H 4

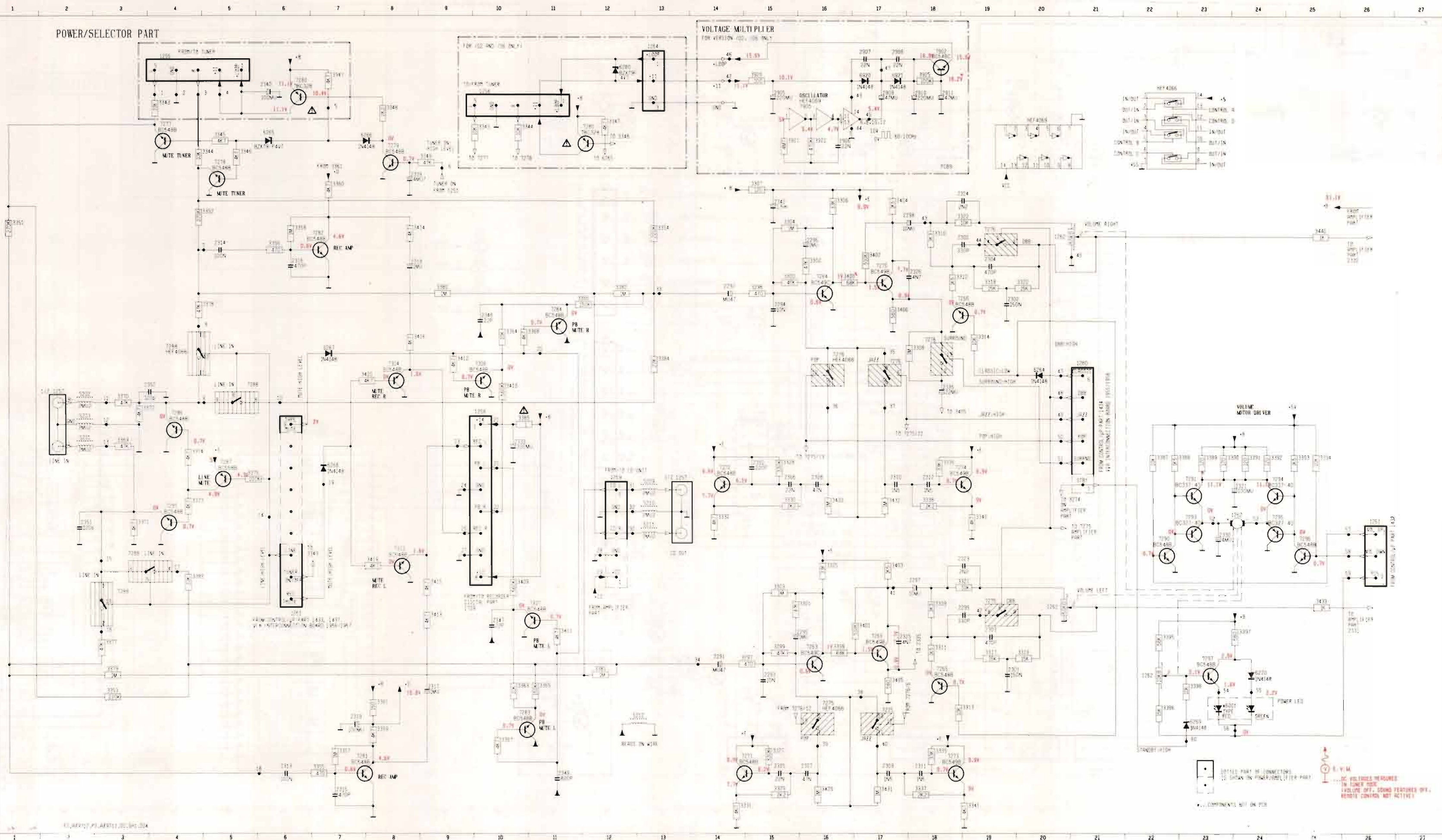
POWER BOARD / COPPERSIDE VIEW / AZ9712



CRU-REF: PC_AZ9712.P2.D4_AZ9712.D2_SERV-A / 91-07-09

POWER/SELECTOR PART

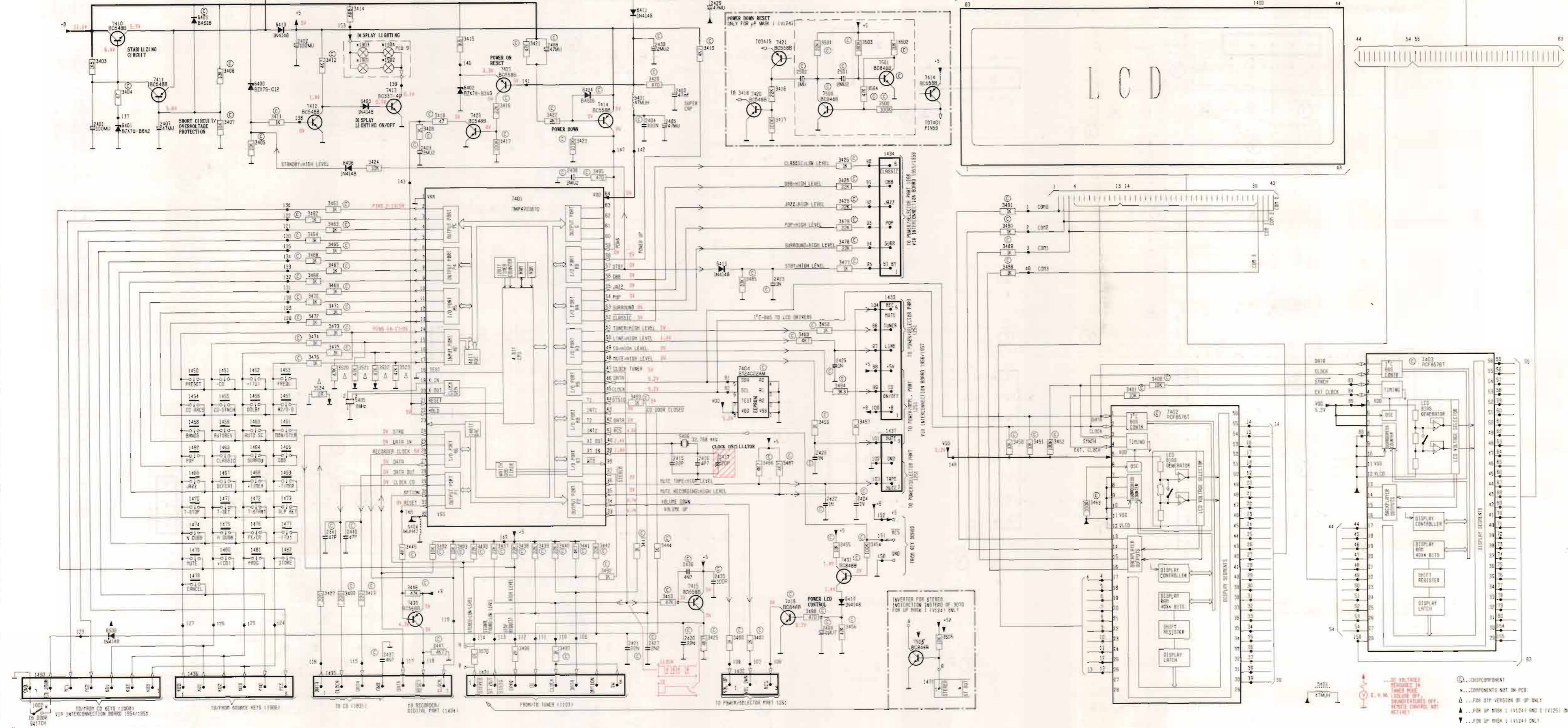
VOLTAGE MULTIPLIER



Component list table with columns for part number, value, and other specifications. The table lists components such as resistors (e.g., 10K, 100K, 1M, 100Ω), capacitors (e.g., 100nF, 10μF, 100μF), diodes (e.g., 1N4148, 1N4001), and transistors (e.g., BC107, BC108, BC109, BC177, BC178, BC179, BC180, BC181, BC182, BC183, BC184, BC185, BC186, BC187, BC188, BC189, BC190, BC191, BC192, BC193, BC194, BC195, BC196, BC197, BC198, BC199, BC200, BC201, BC202, BC203, BC204, BC205, BC206, BC207, BC208, BC209, BC210, BC211, BC212, BC213, BC214, BC215, BC216, BC217, BC218, BC219, BC220, BC221, BC222, BC223, BC224, BC225, BC226, BC227, BC228, BC229, BC230, BC231, BC232, BC233, BC234, BC235, BC236, BC237, BC238, BC239, BC240, BC241, BC242, BC243, BC244, BC245, BC246, BC247, BC248, BC249, BC250, BC251, BC252, BC253, BC254, BC255, BC256, BC257, BC258, BC259, BC260, BC261, BC262, BC263, BC264, BC265, BC266, BC267, BC268, BC269, BC270, BC271, BC272, BC273, BC274, BC275, BC276, BC277, BC278, BC279, BC280, BC281, BC282, BC283, BC284, BC285, BC286, BC287, BC288, BC289, BC290, BC291, BC292, 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CONTROL/UP-PART

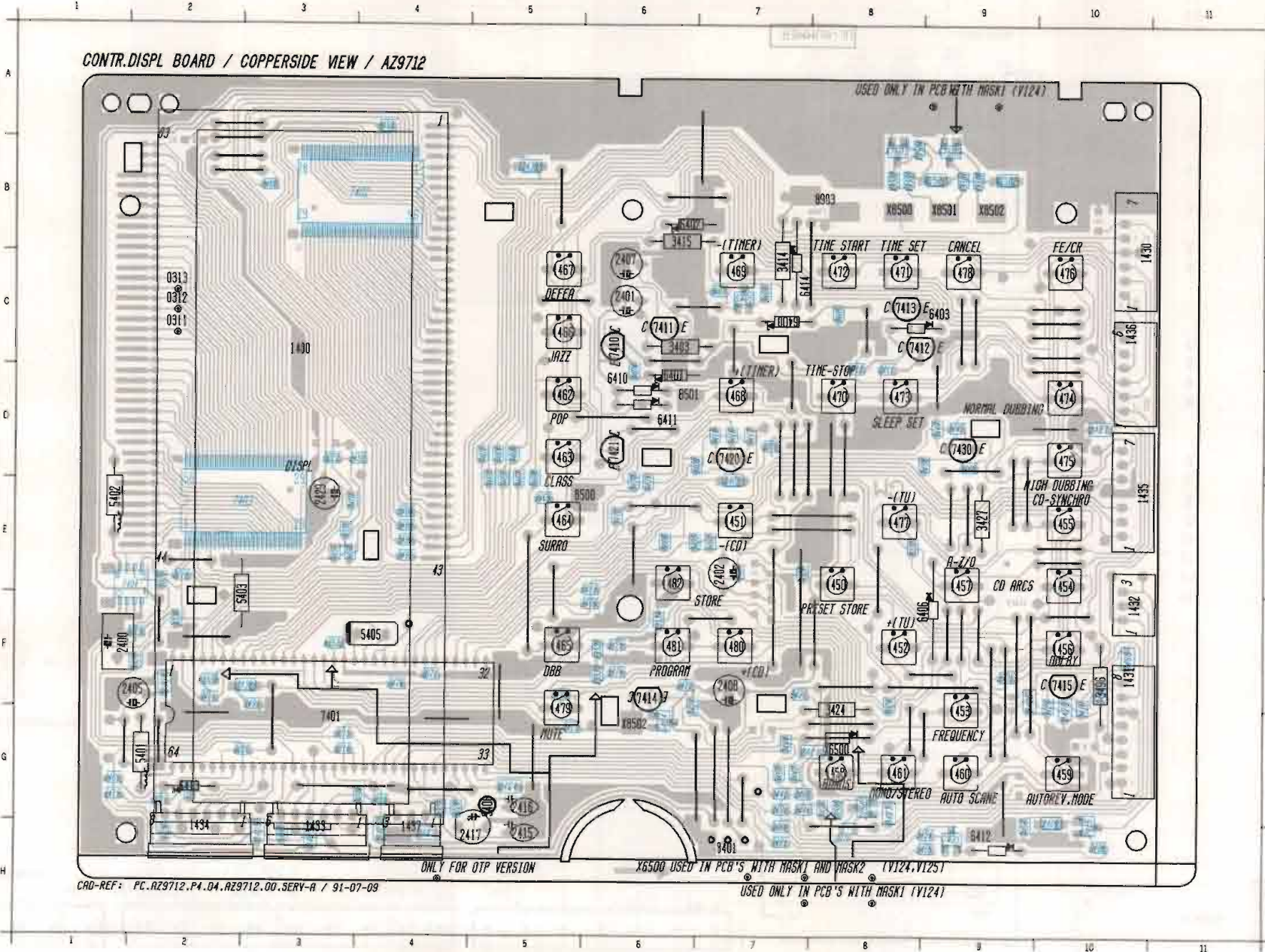
CONTROL/DI SPLAY PART



14001	B 8	3451	J21
14002	B 8	3452	J21
14003	B 8	3453	K22
14004	B 8	3454	L17
14005	D 1	3455	L17
14006	D 25	3456	M17
14007	N 1	3457	L17
14008	N 10	3458	G17
14009	N 15	3459	L16
14010	D 18	3460	H16
14011	D 18	3461	E 7
14012	N 7	3462	E 7
14013	N 4	3463	E 7
14014	L 10	3464	F 7
14015	L 5	3465	F 7
14016	L 5	3466	F 7
14017	L 5	3467	F 7
14018	L 5	3468	F 7
14019	L 4	3469	F 7
14020	L 5	3470	G 7
14021	L 5	3471	G 7
14022	L 5	3472	G 7
14023	L 4	3473	G 7
14024	L 5	3474	H 7
14025	L 5	3475	H 7
14026	L 6	3476	H 7
14027	L 4	3477	H17
14028	L 5	3478	H17
14029	L 5	3479	E17
14030	L 6	3480	H15
14031	L 4	3481	H15
14032	L 5	3482	L 9
14033	L 5	3483	L 9
14034	L 5	3484	L 9
14035	L 4	3485	L19
14036	L 4	3486	L19
14037	L 5	3487	L19
14038	L 5	3488	F20
14039	L 6	3489	F20
14040	L 4	3490	E20
14041	L 5	3491	E20
14042	L 5	3492	L12
14043	L 6	3493	L13
14044	L 4	3494	L13
14045	L 5	3495	L13
14046	L 4	3496	L15
14047	L 5	3497	L15
14048	L 5	3498	N11
14049	L 6	3499	N11
14050	L 6	3500	M16
14051	L 4	3501	L18
14052	L 6	3502	B18
14053	D 9	3503	B17
14054	L 13	3504	L17
14055	L 4	3505	M18
14056	L 4	3506	H 7
14057	L 4	3507	H 8
14058	L 4	3508	H 8
14059	L 4	3509	L 7
14060	L 15	3510	L13
14061	L 15	3511	L14
14062	L 15	3512	L14
14063	L 15	3513	L14
14064	L 15	3514	L14
14065	L 15	3515	L14
14066	L 15	3516	L14
14067	L 15	3517	L14
14068	L 15	3518	L14
14069	L 15	3519	L14
14070	L 15	3520	L14
14071	L 15	3521	L14
14072	L 15	3522	L14
14073	L 15	3523	L14
14074	L 15	3524	L14
14075	L 15	3525	L14
14076	L 15	3526	L14
14077	L 15	3527	L14
14078	L 15	3528	L14
14079	L 15	3529	L14
14080	L 15	3530	L14
14081	L 15	3531	L14
14082	L 15	3532	L14
14083	L 15	3533	L14
14084	L 15	3534	L14
14085	L 15	3535	L14
14086	L 15	3536	L14
14087	L 15	3537	L14
14088	L 15	3538	L14
14089	L 15	3539	L14
14090	L 15	3540	L14
14091	L 15	3541	L14
14092	L 15	3542	L14
14093	L 15	3543	L14
14094	L 15	3544	L14
14095	L 15	3545	L14
14096	L 15	3546	L14
14097	L 15	3547	L14
14098	L 15	3548	L14
14099	L 15	3549	L14
14100	L 15	3550	L14

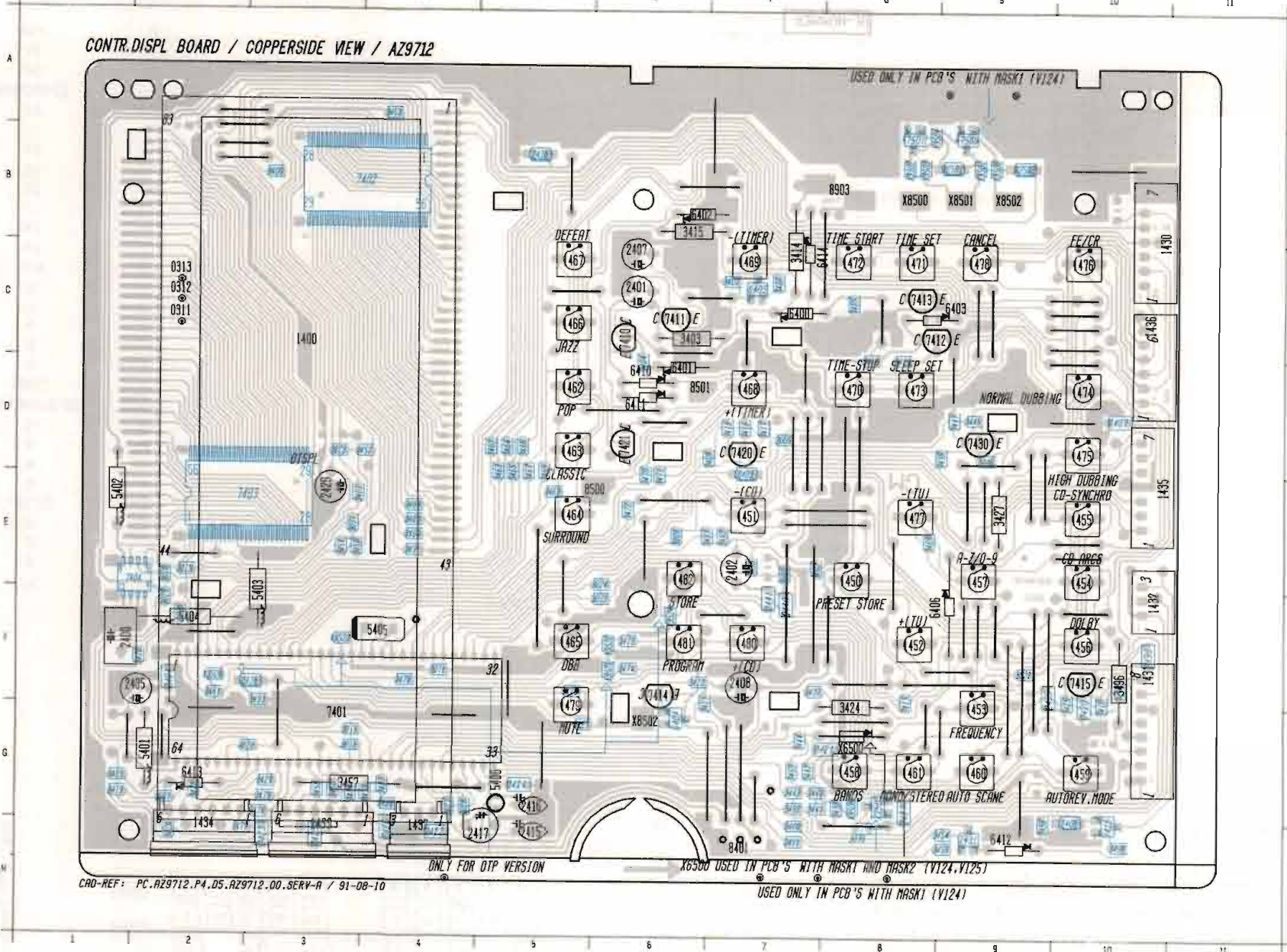
Layout stage .4

0311 C 2	1432 F 10	1450 F 8	1458 F 10	1462 D 5	1468 D 7	1474 D 10	1480 F 7	2405 F 7	2425 F 8	3421 F 9	6400 C 7	8411 D 8	7411 C 8	7421 D 6	X850 C 8	
0312 C 2	1434 H 3	1451 E 7	1457 E 8	1463 D 5	1469 C 7	1475 D 10	1481 F 6	2407 F 3	2408 F 10	3403 F 3	5406 F 10	6401 D 0	8412 H 8	7412 C 8	7430 D 9	X850 B 8
0313 C 2	1434 H 2	1452 F 8	1458 D 8	1464 C 5	1470 D 8	1476 C 10	1482 F 8	2408 F 7	2403 C 6	3401 C 7	5402 C 8	6413 D 2	7413 C 8	7431 H 7	X850 B 9	
1400 C 3	1435 E 10	1453 G 9	1459 B 10	1465 F 5	1471 C 8	1477 E 8	2400 F 1	2415 H 5	3414 C 7	5402 E 1	6403 C 8	8414 C 7	7414 E 6	8500 C 8	X850 B 9	
1430 B 10	1436 C 10	1454 E 10	1460 D 9	1466 C 5	1472 C 8	1478 C 9	2401 C 6	2416 D 5	2415 B 6	5405 F 4	6405 F 8	7401 C 8	7415 F 10	8501 D 8	X850 D 6	
1431 F 10	1437 H 4	1455 E 10	1461 B 8	1467 C 5	1473 D 8	1479 D 5	2402 E 7	2417 H 5	3424 F 8	5406 D 5	6410 D 8	7410 C 8	7420 D 7	8503 B 8		



Layout stage .5

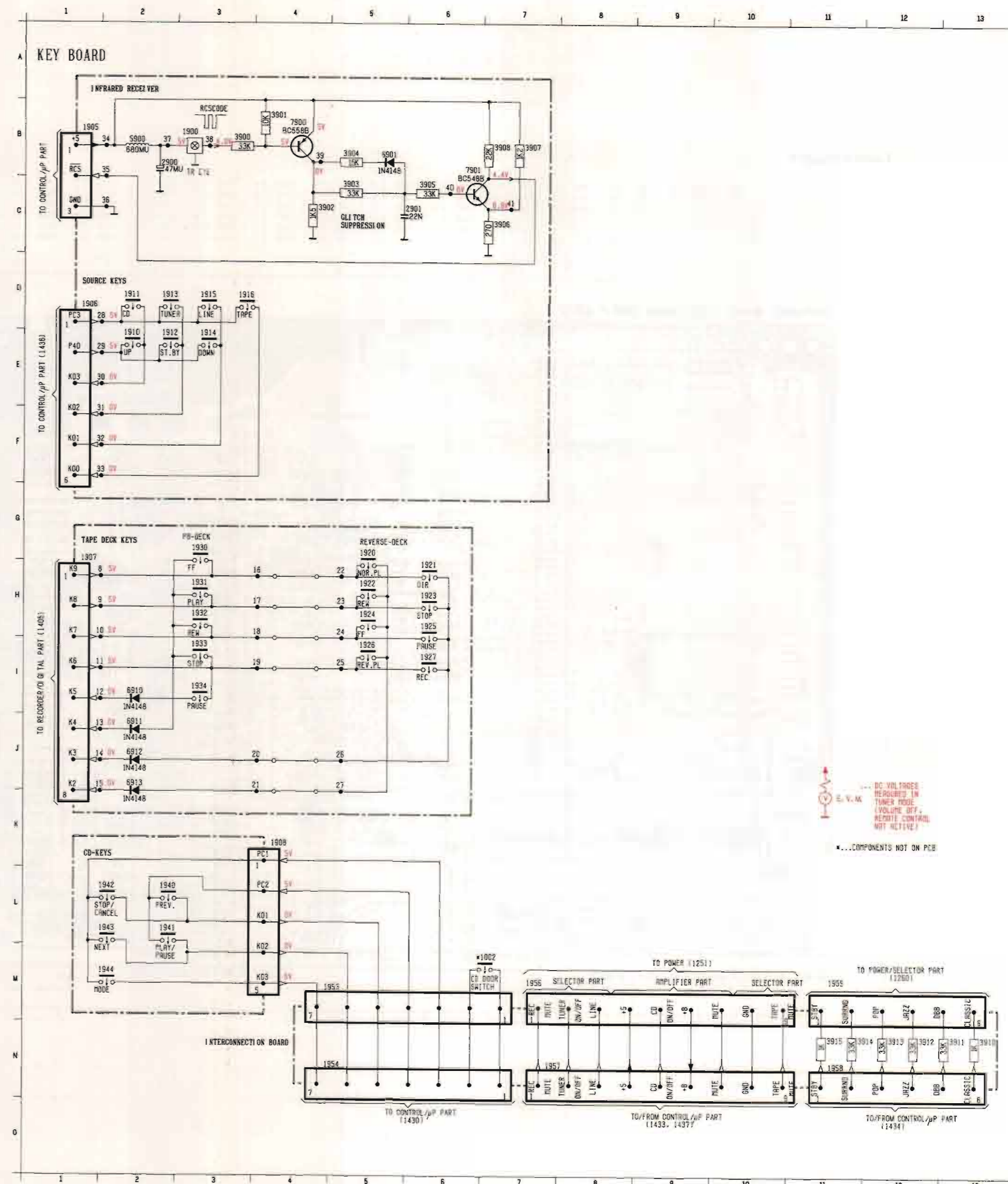
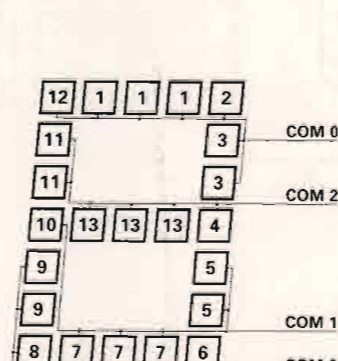
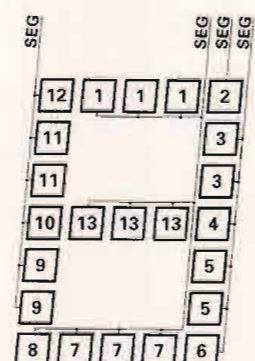
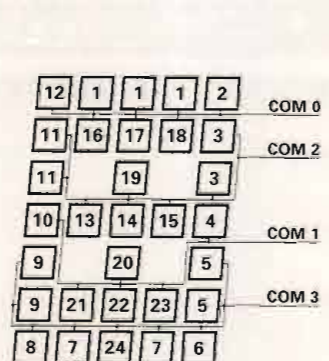
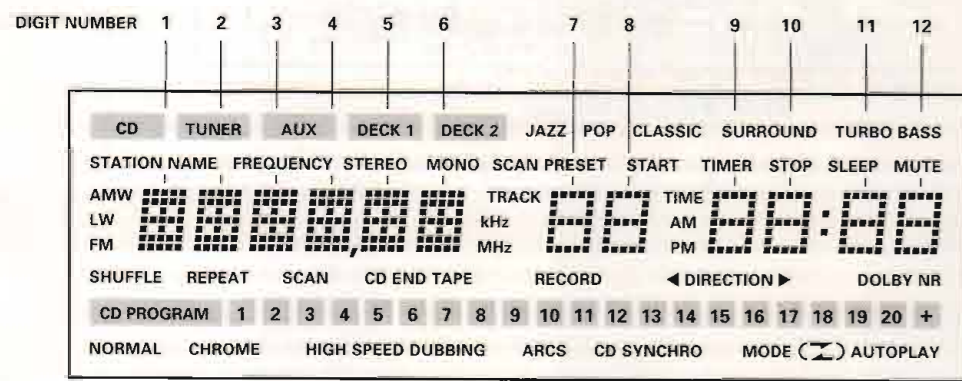
0311 C 2	1433 H 3	1452 F 8	1459 D 10	1465 C 5	1473 D 8	1480 F 7	2407 C 6	3414 C 7	5402 E 1	6402 H 8	8414 C 7	7415 F 10	8503 H 8		
0312 C 2	1434 H 2	1453 D 8	1460 D 9	1467 C 5	1474 D 10	1481 H 6	2408 F 7	3415 B 6	5403 F 3	6403 C 8	7401 D 3	7420 D 7	X850 D 8		
0313 C 2	1435 E 10	1454 E 10	1461 D 8	1468 D 7	1475 D 10	1482 E 6	2415 H 5	3424 F 8	5404 F 2	6406 F 9	7410 C 6	7421 D 6	X850 H 8		
1400 C 3	1436 C 10	1455 E 10	1462 D 5	1469 C 7	1476 C 10	2400 F 1	2416 D 5	3427 E 9	5405 F 4	6410 D 6	7411 C 8	7430 D 8	X850 H 8		
1430 B 10	1437 H 4	1455 F 10	1463 D 5	1470 D 8	1477 E 8	2401 C 6	2417 H 5	3457 D 3	5406 D 5	6411 D 6	7412 C 8	7430 D 8	X850 H 8		
1431 F 10	1450 E 8	1457 E 9	1464 C 5	1471 C 8	1478 C 9	2402 E 7	2429 E 3	3458 F 10	5408 C 7	6412 H 3	7413 C 8	8401 H 7	X850 H 8		
1432 F 10	1451 E 7	1458 D 9	1465 F 5	1472 C 8	1479 D 5	2405 F 2	3403 C 6	5401 D 2	6401 D 8	6413 D 2	7414 F 6	8500 E 8	X850 H 8		



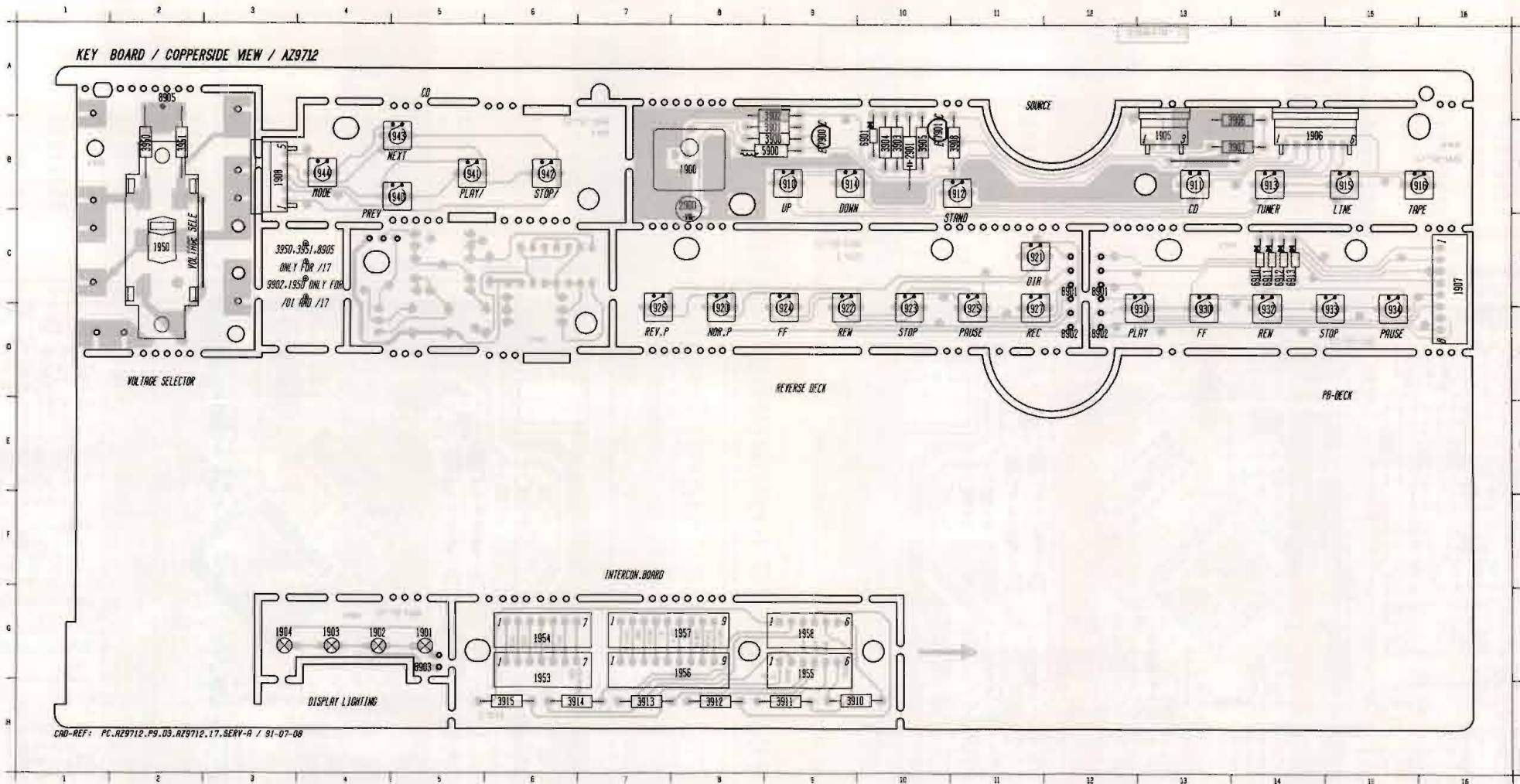
DISPLAY SEGMENT CONNECTION TABLE

PIN LCD	COM 3	COM 1	COM 2	COM 0	DIGIT
4	9	10	11	12	1
5	8	21	13	16	1
6	7	22	14	17	1
7	6	23	15	18	1
8	5	4	3	2	1
9	9	10	11	12	2
10	8	21	13	16	2
11	7	22	14	17	2
12	6	23	15	18	2
13	5	4	3	2	2
39	ARCS	11	10	9	
38	7	8	RECORD	2	7
37	6	5	4	3	7
36	8	7	13	1	7
35	9	10	11	12	7
34	5	4	3	2	6
33	6	23	15	18	6
32	7	22	14	17	6
31	8	21	13	16	6
30	9	10	11	12	6
29	5	4	3	2	5
28	6	23	15	18	5
27	7	22	14	17	5
26	8	21	13	16	5
25	9	10	11	12	5
24	HIGH SPEED	DUBBING			
23	5	4	3	2	4
22	6	23	15	18	4
21	7	22	14	17	4
20	8	21	13	16	4
19	9	10	11	12	4
18	5	4	3	2	3
17	6	23	15	18	3
16	7	22	14	17	3
15	8	21	13	16	3
14	9	10	11	12	3
COM3	40	COM 3			
COM1	41		COM 1		
COM2	42			COM 2	
COM0	43				COM 0
COM0	1				COM 0
COM2	2		COM 2		
COM1	3	COM 1			

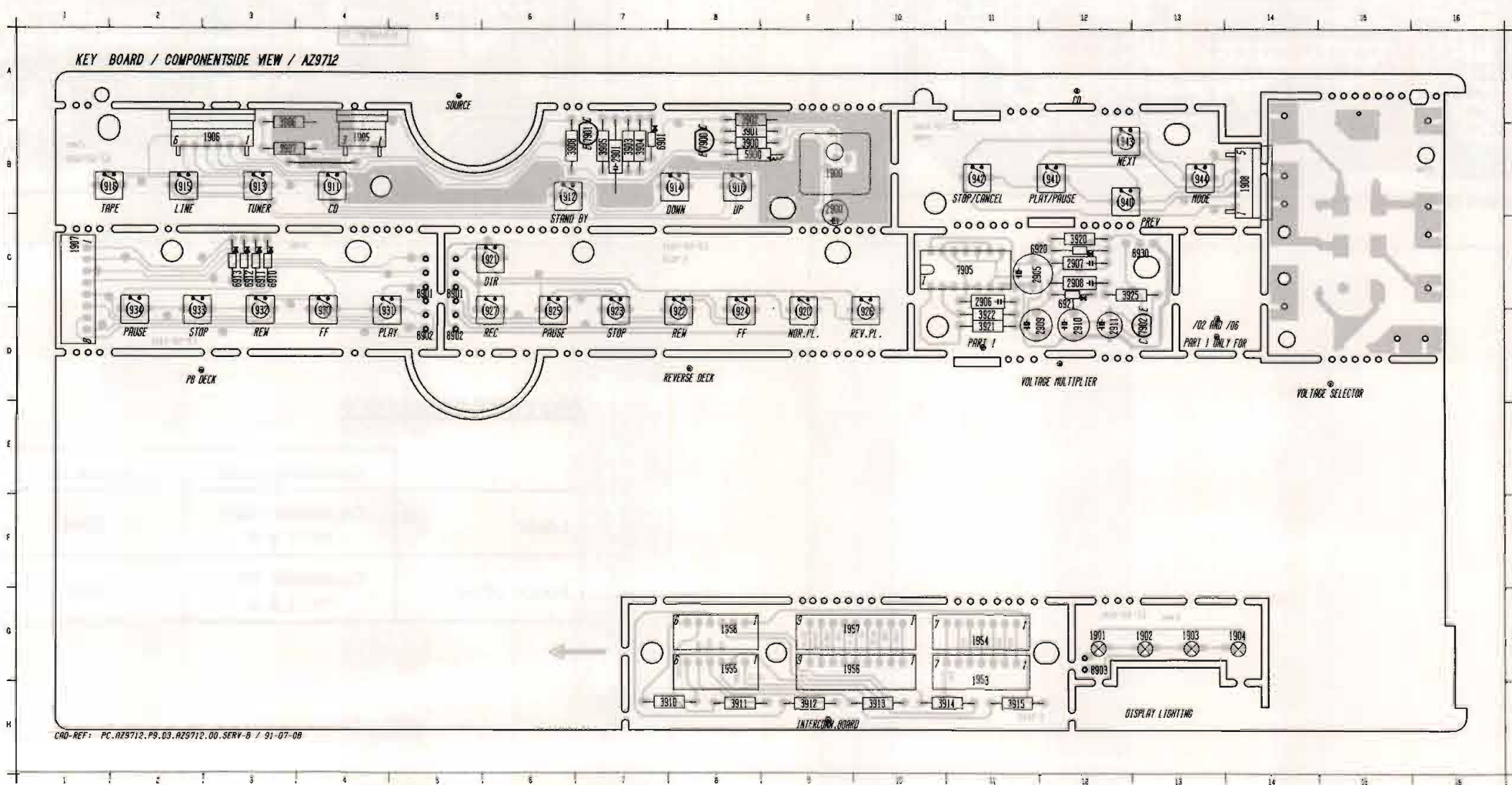
PIN LCD	COM 3	COM 1	COM 2	COM 0	DIGIT
44	MODE)	AUTOPLAY		
45	17	(+	
46	15	18	DOLBY NR	2	12
47	6	5	4	3	12
48	8	7	13	1	12
49	9	10	11	12	12
50	MUTE	TURBO BASS	SLEEP	2	11
51	6	5	4	3	11
52	8	7	13	1	11
53	9	10	11	12	11
54					
83	FM	SHUFFLE	CD PROGRAM	NORMAL	
82	W	M	A	LW	
81	24	20	19	1	1
80	CHROME	REPEAT	STATION NAME	CD	
79	24	20	19	1	2
78	1	2	FREQUENCY	TUNER	
77	24	20	19	1	3
76	3	SCAN	STEREO	AUX	
75	24	20	19	1	4
74	4	.	MONO	DECK 1	
73	24	20	19	1	5
72	24	20	19	1	6
71	CD	MHz	TRACK	DECK 2	
70	5	END	kHz	SCAN	
69	6	TAPE	PRESET	JAZZ	
68	9	10	11	12	8
67	8	7	13	1	8
66	6	5	4	3	8
65	TIME	START	POP	2	8
64	CD SYNCHRO	12	PM	AM	
63	9	10	11	12	9
62	8	7	13	1	9
61	6	5	4	3	9
60	STOP	SURROUND	TIMER	2	9
59	9	10	11	12	10
58	8	7	13	1	10
57	6	5	4	3	10
56	9	10	11	12	10
55	14	.		2	10



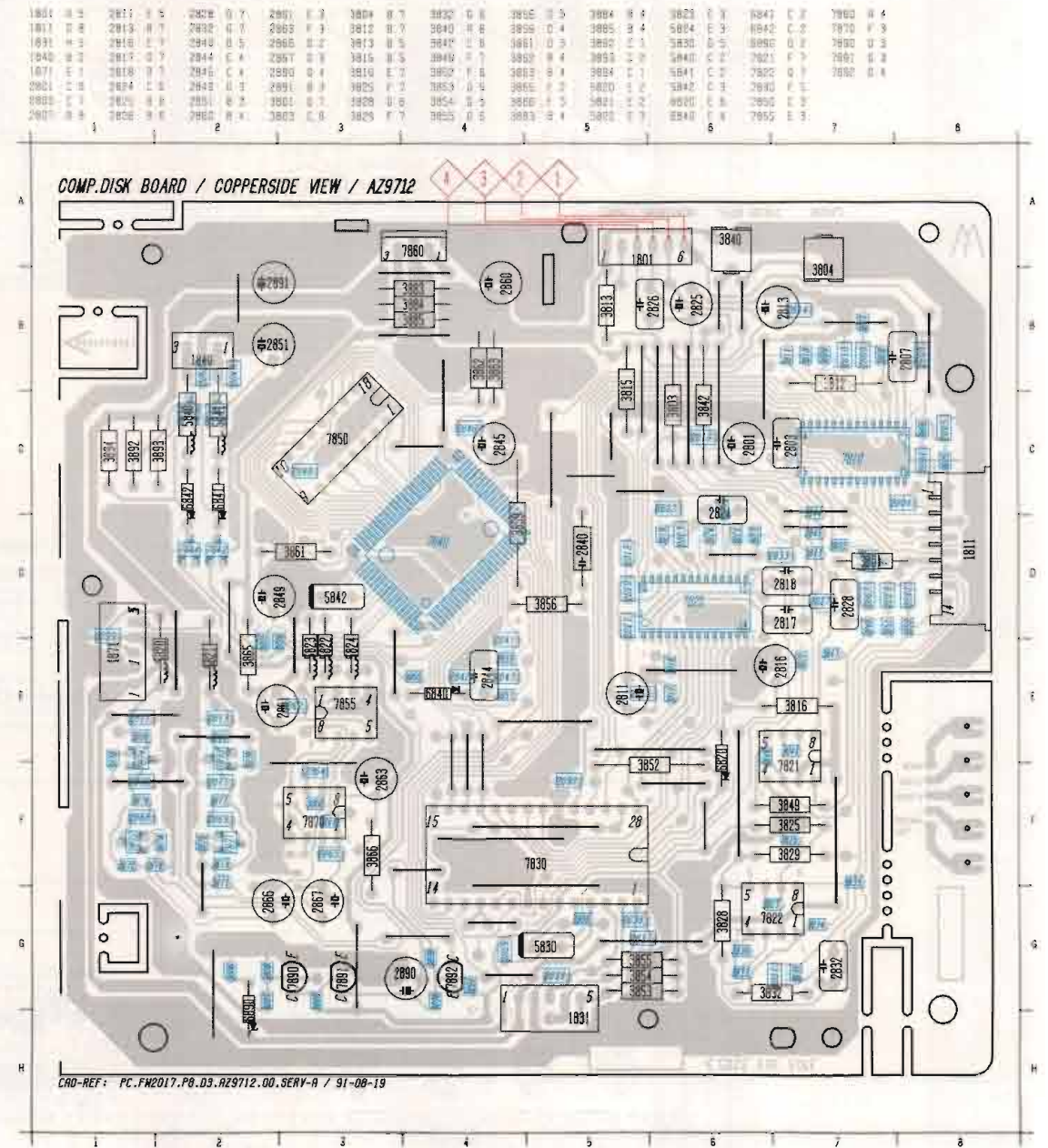
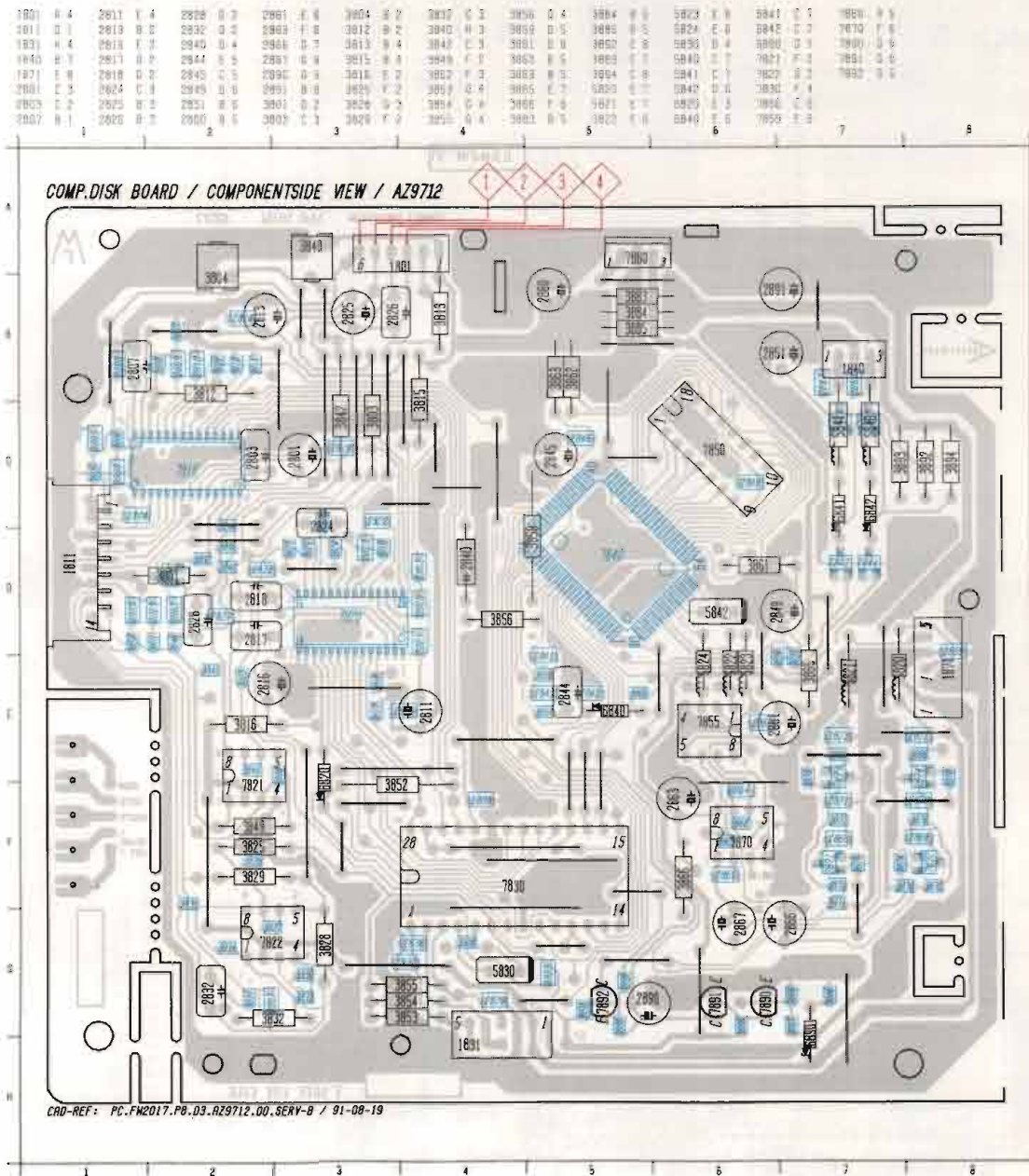
1902	H 6
1900	B 3
1905	B 1
1906	D 1
1907	D 4
1908	A 4
1910	E 2
1911	D 2
1912	E 2
1913	D 2
1914	E 3
1915	D 3
1916	D 3
1920	D 5
1921	H 5
1922	H 5
1923	H 5
1924	H 5
1925	H 5
1926	H 5
1927	I 6
1930	D 3
1931	H 3
1932	H 3
1933	H 3
1934	I 3
1940	L 2
1941	L 2
1942	L 1
1943	L 1
1944	H 1
1953	H 5
1954	N 5
1955	H 1
1956	H 1
1957	N 7
1958	N 11
1960	B 2
1961	C 5
1962	B 3
1963	B 4
1964	C 4
1965	C 5
1966	C 5
1967	C 6
1968	C 7
1969	B 7
1970	H 3
1971	N 3
1972	N 3
1973	N 2
1974	N 2
1975	N 1
1976	N 1
1977	N 1
1978	N 1
1979	N 1
1980	N 1
1981	N 1
1982	N 1
1983	N 1
1984	N 1
1985	N 1
1986	N 1
1987	N 1
1988	N 1
1989	N 1
1990	N 1
1991	N 1
1992	N 1
1993	N 1
1994	N 1
1995	N 1
1996	N 1
1997	N 1
1998	N 1
1999	N 1



1900	B 8	1900	C 8
1901	B 9	1901	C 9
1902	B 4	1902	C 10
1903	B 4	1903	D 10
1904	B 3	1904	D 11
1905	B 13	1905	D 5
1906	B 14	1906	D 6
1907	B 4	1907	D 7
1908	B 3	1908	D 8
1909	B 12	1909	D 9
1910	B 11	1910	D 10
1911	B 11	1911	D 11
1912	B 11	1912	D 12
1913	B 11	1913	D 13
1914	B 8	1914	D 14
1915	B 10	1915	D 15
1916	B 10	1916	D 16
1917	B 8	1917	D 17
1918	B 11	1918	D 18
1919	B 11	1919	D 19
1920	B 11	1920	D 20
1921	B 11	1921	D 21
1922	B 11	1922	D 22
1923	B 11	1923	D 23
1924	B 11	1924	D 24
1925	B 11	1925	D 25
1926	B 7	1926	D 26
1927	B 11	1927	D 27
1928	B 11	1928	D 28
1929	B 11	1929	D 29
1930	B 11	1930	D 30
1931	B 11	1931	D 31
1932	B 11	1932	D 32
1933	B 11	1933	D 33
1934	B 11	1934	D 34
1935	B 11	1935	D 35
1936	B 11	1936	D 36
1937	B 11	1937	D 37
1938	B 11	1938	D 38
1939	B 11	1939	D 39
1940	B 11	1940	D 40
1941	B 11	1941	D 41
1942	B 11	1942	D 42
1943	B 11	1943	D 43
1944	B 11	1944	D 44
1945	B 11	1945	D 45
1946	B 11	1946	D 46
1947	B 11	1947	D 47
1948	B 11	1948	D 48
1949	B 11	1949	D 49
1950	B 11	1950	D 50
1951	B 11	1951	D 51
1952	B 11	1952	D 52
1953	B 11	1953	D 53
1954	B 11	1954	D 54
1955	B 11	1955	D 55
1956	B 11	1956	D 56
1957	B 11	1957	D 57
1958	B 11	1958	D 58
1959	B 11	1959	D 59
1960	B 11	1960	D 60
1961	B 11	1961	D 61
1962	B 11	1962	D 62
1963	B 11	1963	D 63
1964	B 11	1964	D 64
1965	B 11	1965	D 65
1966	B 11	1966	D 66
1967	B 11	1967	D 67
1968	B 11	1968	D 68
1969	B 11	1969	D 69
1970	B 11	1970	D 70
1971	B 11	1971	D 71
1972	B 11	1972	D 72
1973	B 11	1973	D 73
1974	B 11	1974	D 74
1975	B 11	1975	D 75
1976	B 11	1976	D 76
1977	B 11	1977	D 77
1978	B 11	1978	D 78
1979	B 11	1979	D 79
1980	B 11	1980	D 80
1981	B 11	1981	D 81
1982	B 11	1982	D 82
1983	B 11	1983	D 83
1984	B 11	1984	D 84
1985	B 11	1985	D 85
1986	B 11	1986	D 86
1987	B 11	1987	D 87
1988	B 11	1988	D 88
1989	B 11	1989	D 89
1990	B 11	1990	D 90
1991	B 11	1991	D 91
1992	B 11	1992	D 92
1993	B 11	1993	D 93
1994	B 11	1994	D 94
1995	B 11	1995	D 95
1996	B 11	1996	D 96
1997	B 11	1997	D 97
1998	B 11	1998	D 98
1999	B 11	1999	D 99
2000	B 11	2000	D 100

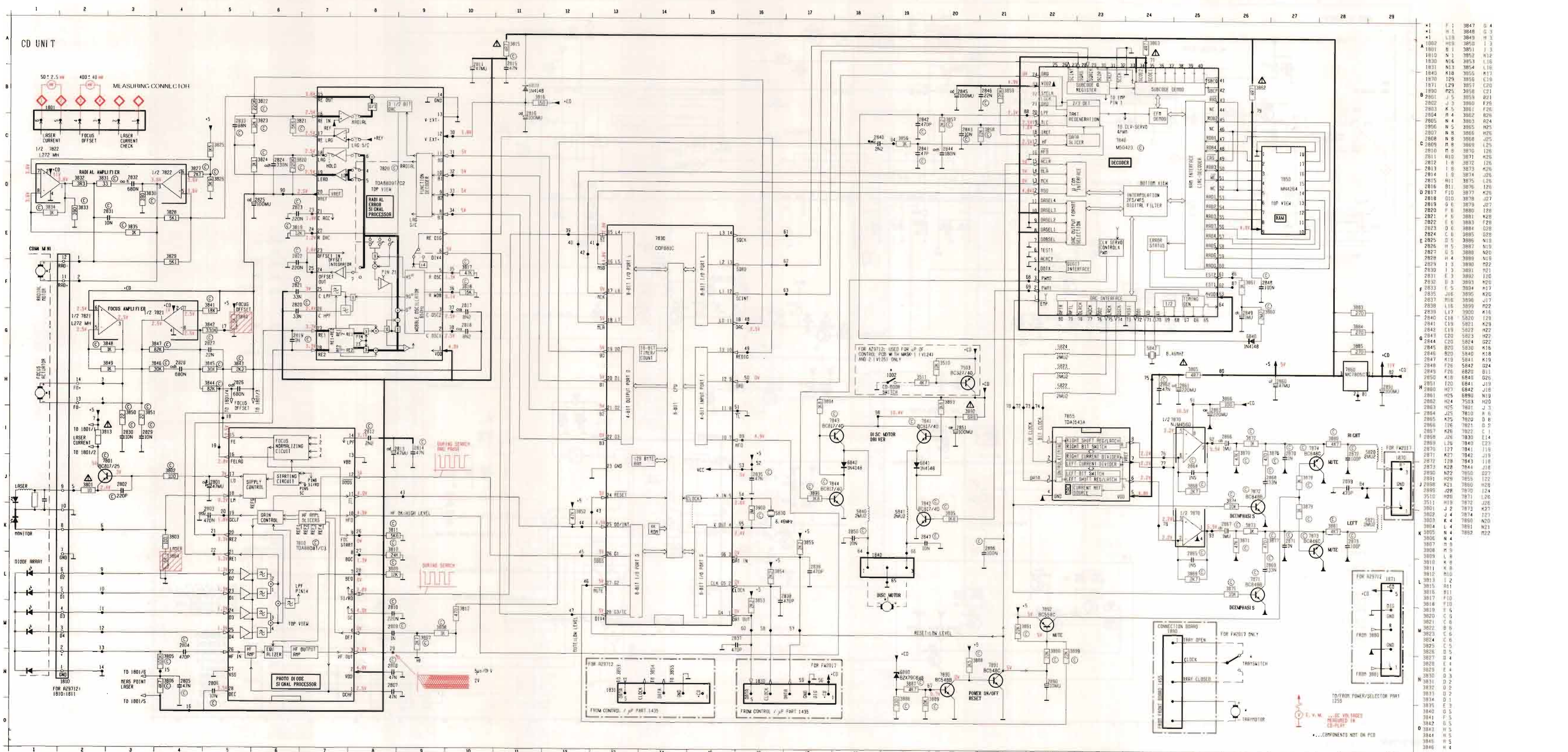


1900	B 8	1900	C 8
1901	B 9	1901	C 9
1902	B 4	1902	C 10
1903	B 4	1903	D 10
1904	B 3	1904	D 11
1905	B 13	1905	D 5
1906	B 14	1906	D 6
1907	B 4	1907	D 7
1908	B 3	1908	D 8
1909	B 12	1909	D 9
1910	B 11	1910	D 10
1911	B 11	1911	D 11
1912	B 11	1912	D 12
1913	B 11	1913	D 13
1914	B 8	1914	D 14
1915	B 10	1915	D 15
1916	B 10	1916	D 16
1917	B 8	1917	D 17
1918	B 11	1918	D 18
1919	B 11	1919	D 19
1920	B 11	1920	D 20
1921	B 11	1921	D 21
1922	B 11	1922	D 22
1923	B 11	1923	D 23
1924	B 11	1924	D 24
1925	B 7	1925	D 25
1926	B 11	1926	D 26
1927	B 11	1927	D 27
1928	B 11	1928	D 28
1929	B 11	1929	D 29
1930	B 11	1930	D 30
1931	B 11	1931	D 31
1932	B 11	1932	D 32
1933	B 11	1933	D 33
1934	B 11	1934	D 34
1935	B 11	1935	D 35
1936	B 11	1936	D 36
1937	B 11	1937	D 37
1938	B 11	1938	D 38
1939	B 11	1939	D 39
1940	B 11	1940	D 40
1941	B 11	1941	D 41
1942	B 11	1942	D 42
1943	B 11	1943	D 43
1944	B 11	1944	D 44
1945	B 11	1945	D 45
1946	B 11	1946	D 46
1947	B 11	1947	D 47
1948	B 11	1948	D 48
1949	B 11	1949	D 49
1950	B 11	1950	D 50
1951	B 11	1951	D 51
1952	B 11	1952	D 52
1953	B 11	1953	D 53
1954	B 11	1954	D 54
1955	B 11	1955	D 55
1956	B 11	1956	D 56
1957	B 11	1957	D 57
1958	B 11	1958	D 58
1959	B 11	1959	D 59
1960	B 11	1960	D 60
1961	B 11	1961	D 61
1962	B 11	1962	D 62
1963	B 11	1963	D 63
1964	B 11	1964	D 64
1965	B 11	1965	D 65
1966	B 11	1966	D 66
1967	B 11	1967	D 67
1968	B 11	1968	D 68
1969	B 11	1969	D 69
1970	B 11	1970	D 70
1971	B 11	1971	D 71
1972	B 11	1972	D 72
1973	B 11	1973	D 73
1974	B 11	1974	D 74
1975	B 11	1975	D 75
1976	B 11	1976	D 76
1977	B 11	1977	D 77
1978	B 11	1978	D 78
1979	B 11	1979	D 79
1980	B 11	1980	D 80
1981	B 11	1981	D 81
1982	B 11	1982	D 82
1983	B 11	1983	D 83
1984	B 11	1984	D 84
1985	B 11	1985	D 85
1986	B 11	1986	D 86
1987	B 11	1987	D 87
1988	B 11	1988	D 88
1989	B 11	1989	D 89
1990	B 11	1990	D 90
1991	B 11	1991	D 91
1992	B 11	1992	D 92
1993	B 11	1993	D 93
1994	B 11	1994	D 94
1995	B 11	1995	D 95
1996	B 11	1996	D 96
1997	B 11	1997	D 97
1998	B 11	1998	D 98
1999	B 11	1999	D 99
2000	B 11	2000	D 100

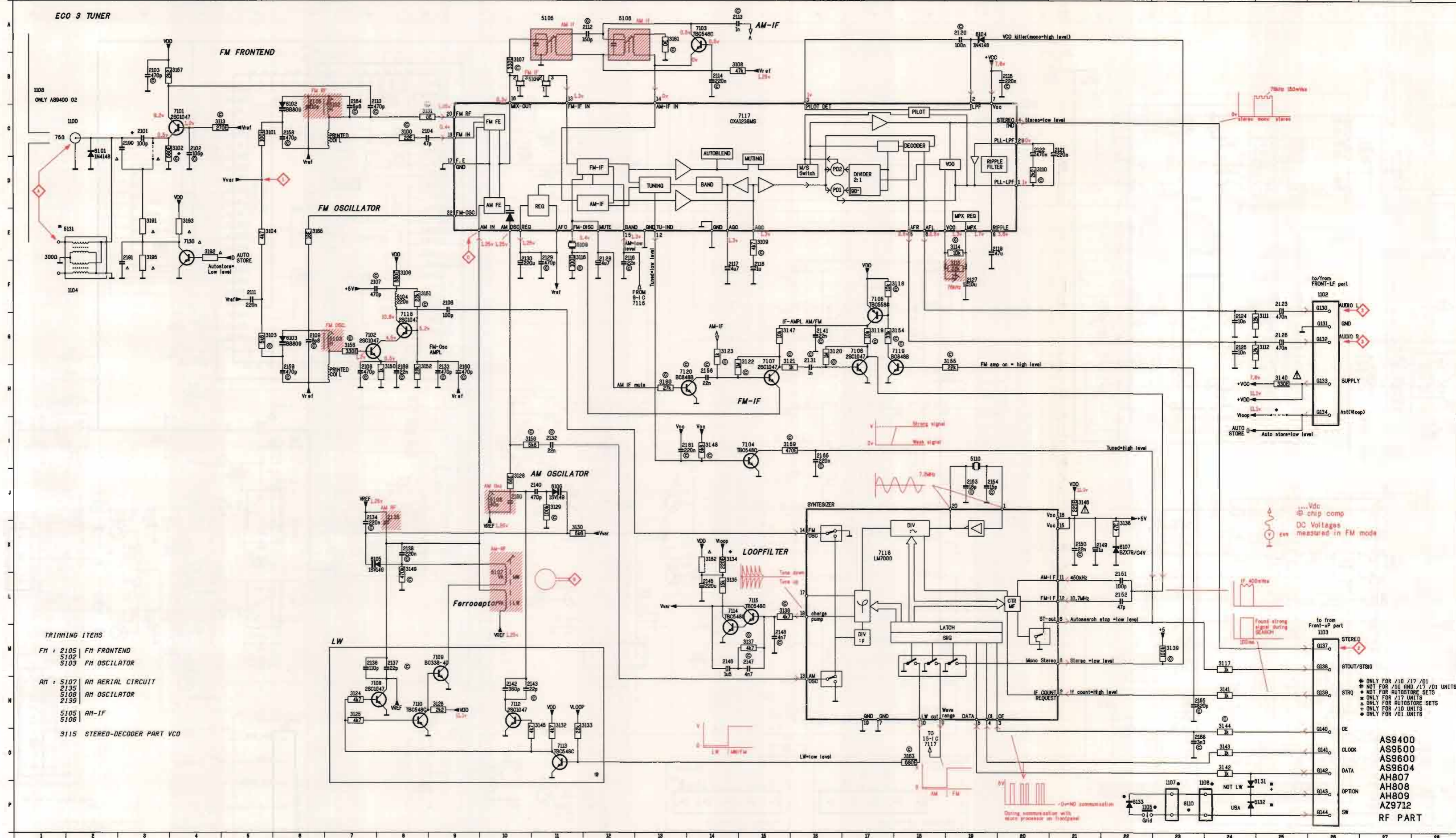


Alignment instructions

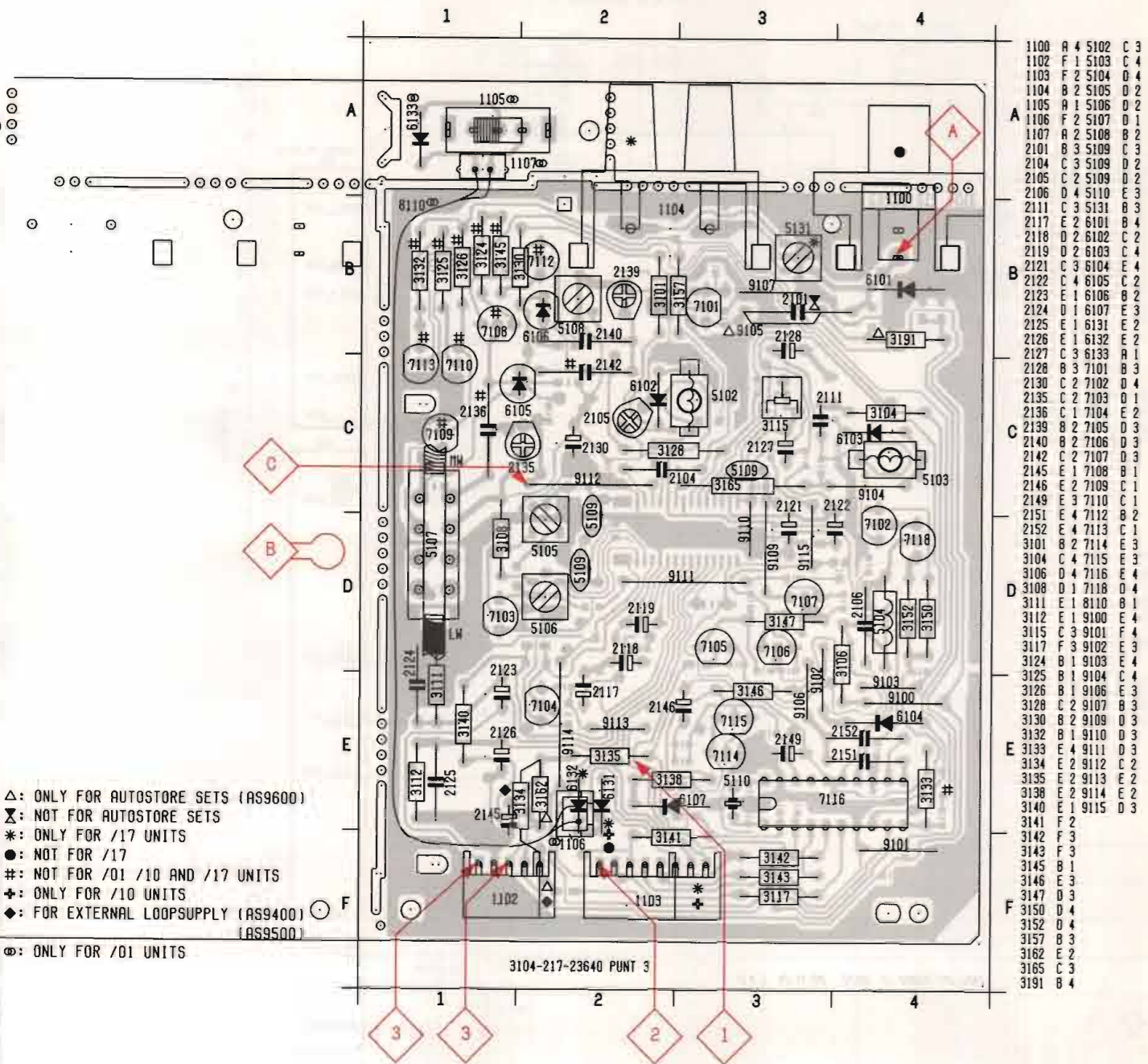
	Measuring point	Adjust with	Value
Laser	Connector 1801 Pin 1 & 2	3804	50mV ± 2,5mV
Focus offset	Connector 1801 Pin 3 & 4	3840	400mV ± 40mV



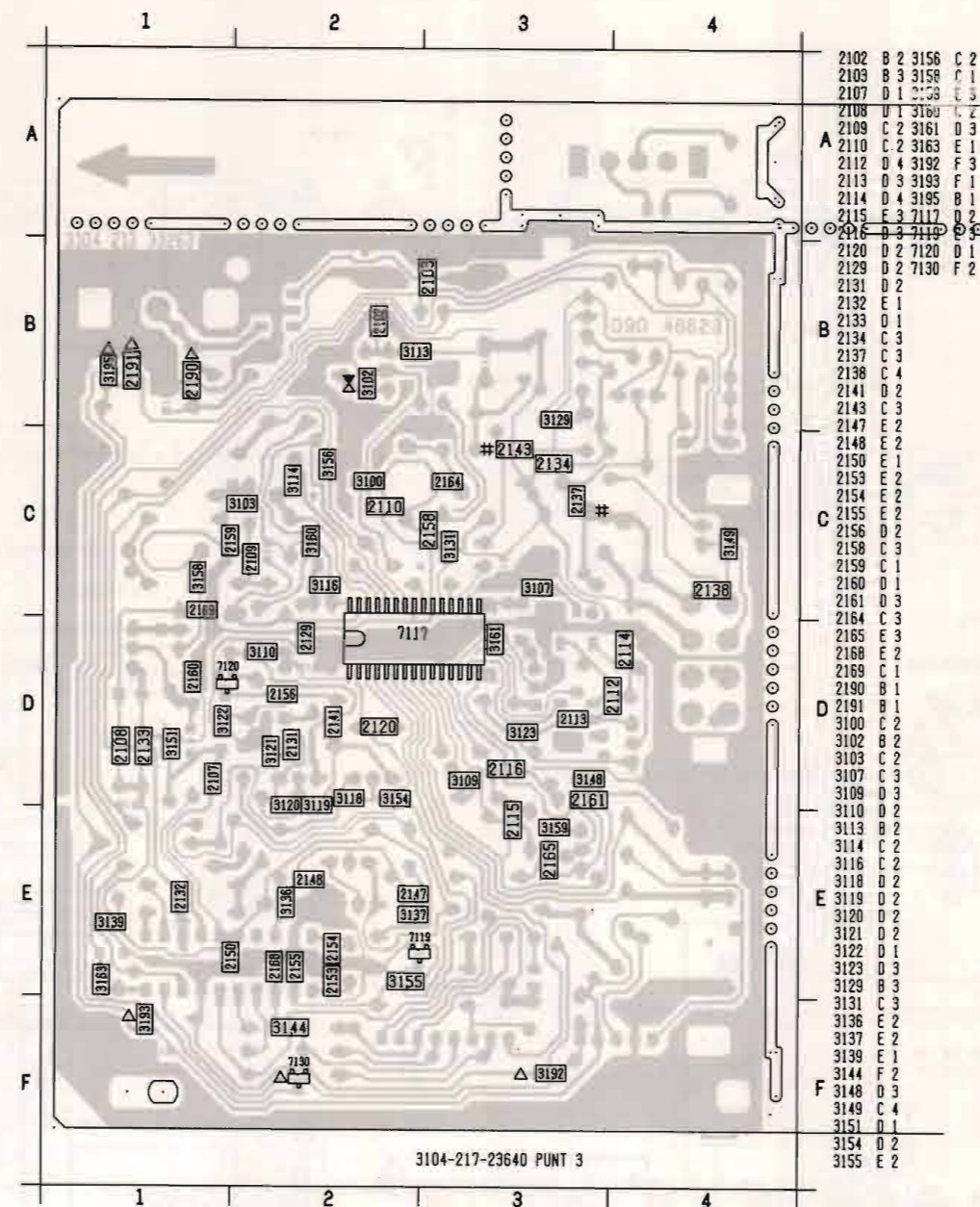
1	F	3847	Q 4	
1	H	3848	Q 3	
1	L	3849	H 3	
1002	H	3850	H 3	
1801	H	3851	J 3	
1810	N	3852	M12	
1830	N16	3853	L16	
1831	N13	3854	L16	
1843	K18	3855	M17	
1870	L29	3856	L16	
1871	L29	3857	C20	
1890	M25	3858	C21	
2801	J	5	3859	C21
2802	J	3	3860	F25
2803	K	5	3861	F26
2804	M	4	3862	R26
2805	N	4	3863	R24
2806	N	5	3865	R25
2807	N	8	3866	R26
2808	N	8	3868	J25
2809	N	8	3869	L25
2810	N	8	3870	L26
2811	N10	3871	K26	
2812	N	8	3872	L26
2813	N	8	3873	K26
2814	I	8	3874	J26
2815	N11	3875	L26	
2816	N11	3876	L26	
2817	F10	3877	K26	
2818	O10	3878	J27	
2819	F	6	3879	J27
2820	F	6	3880	L28
2821	F	6	3881	K28
2822	F	6	3883	F28
2823	D	6	3884	C28
2824	C	6	3885	C28
2825	D	5	3886	M18
2826	H	5	3887	M19
2827	D	5	3888	N20
2828	H	4	3889	M19
2829	I	5	3890	M22
2830	I	3	3891	M21
2831	E	3	3892	L20
2832	D	3	3893	M20
2833	F	5	3894	M17
2835	J16	3895	K20	
2837	M16	3896	J17	
2838	L16	3899	M22	
2839	L17	3900	K16	
2840	C18	3900	L28	
2841	C19	3901	K29	
2842	C19	3902	M22	
2843	C20	3903	M22	
2844	C20	3904	G22	
2845	B20	3905	K16	
2846	B20	3906	K18	
2847	K19	3907	K19	
2848	F26	3908	D24	
2849	F26	3909	B11	
2850	K18	3910	G26	
2851	L20	3911	M19	
2852	H24	3912	D	
2853	H24	3913	J	
2854	J25	3914	H	
2855	K25	3915	D	
2856	L26	3916	D	
2857	K26	3917	C1	
2858	J26	3918	E14	
2859	L26	3919	C23	
2870	L27	3920	L18	
2871	K27	3921	J18	
2872	L28	3922	J18	
2873	K28	3923	J18	
2874	N22	3924	J18	
2875	H29	3925	L22	
2876	H29	3926	H28	
2877	J26	3927	L24	
2878	H20	3928	L26	
2879	H19	3929	H	
2880	L	8	3930	H
2881	K	8	3931	H
2882	N	9	3932	H
2883	N	9	3933	H
2884	L	4	3934	D
2885	H	5	3935	E
2886	D	5	3936	D
2887	F	5	3937	F
2888	H	5	3938	H
2889	H	5	3939	H
2890	H	5	3940	D
2891	F	5	3941	F
2892	H	5	3942	H
2893	H	5	3943	H
2894	H	5	3944	H
2895	H	5	3945	H
2896	H	5	3946	H



ECO 3 TUNER BOARD / Component side view



ECO 3 TUNER BOARD / Copper side view



TUNER Adjustment table

WAVERANGE	INPUT FREQU.	I/P	SET TUNED TO	ADJUST	O/P	SCOPE/METER
VARICAP ALIGNMENT						
FM 87.5 - 108 MHz			108 MHz	5103	1	8 V
			87.5 MHz	check		2.9 +/- 0.3 V
MW 522 - 1611 kHz			1611 kHz	2139	1	8.5 V
LW 148 - 284 kHz			284 kHz	5108		8.5 V
MW 2-band version 522 - 1611 kHz			1611 kHz	2139	1	8.5 V
			522 kHz	5108		1.2 V
FM - RF						
FM	87.5 MHz mod = 1kHz Δf=22.5kHz	A	87.5 MHz	5102	3	max.
			108 MHz mod = 1kHz Δf=22.5kHz	2105		
Stereo decoder						
FM	98 MHz carrier 1mV	A	98 MHz	3115	2	76 +/- 0.2 kHz
AM - IF						
MW	522 kHz * Δf=10kHz (50Hz)	C	522 kHz	5106 5105	3	max. symmetrical
AM - RF						
MW +o	558 kHz	B	558 kHz	5107 (MW)	3	max.
	1494 kHz		1494 kHz	2135		
LW	200 kHz		200 kHz	5107 (LW)		

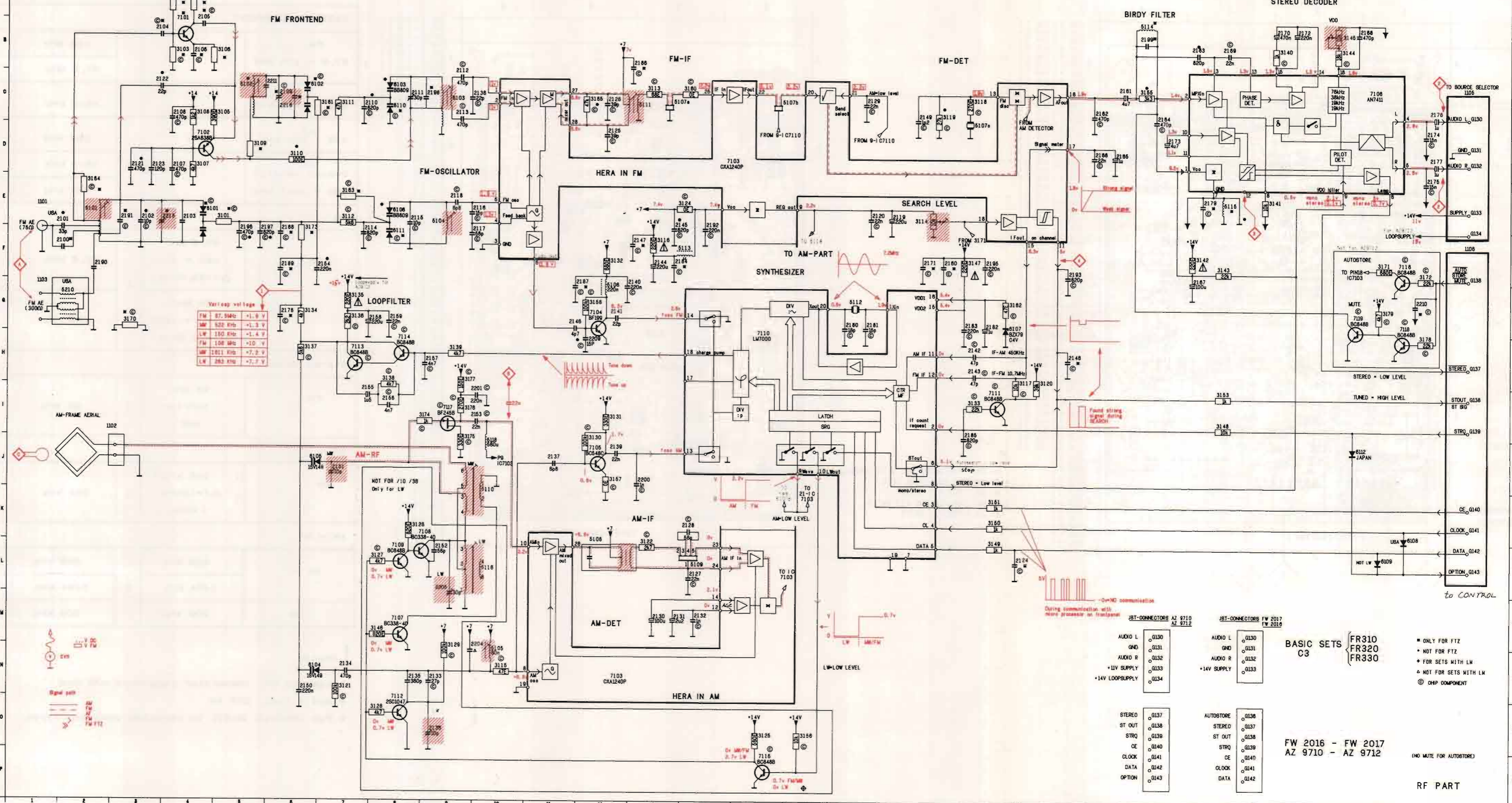
↑ Repeat

* via 100 nF (Generator impedance <75 Ohm)

+ mod = 1kHz, 30% AM

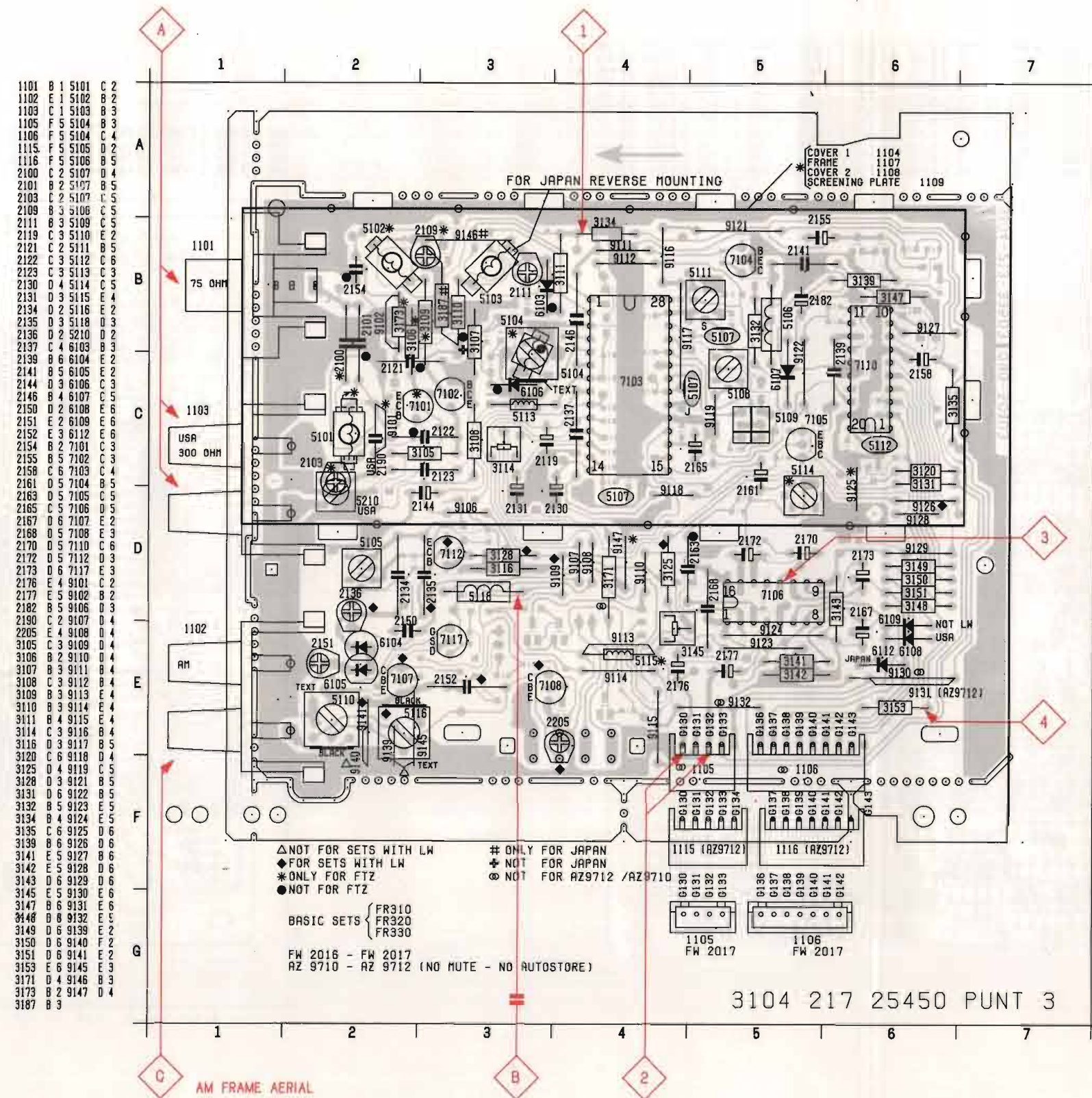
o Put LW-coil (5107) in expected position first.

HERA C3 TUNER



TUNER Adjustment table

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM 87,5 - 108 MHz			108 MHz	5104	1	10V ± 50 mV ⁴⁾ 8V ± 50 mV
			87,5 MHz	check		1,15V ± 250 mV ⁴⁾ 2,7V ± 400 mV
AM (2-band version) 530 - 1700 kHz ¹⁾			1700 kHz	5105	1	7,6V ± 100 mV
			530 kHz	check		1V ± 200 mV
LW 148 - 284 kHz			284 kHz	5105		8,4V ± 200 mV
MW (3-band version) 522 - 1611 kHz ²⁾			1611 kHz	2136		8,5V ± 100 mV
FM - RF ³⁾						
FM	87,5 MHz mod = 1 kHz Δf = 22,5 kHz	A	87,5 MHz	5103 5101 ⁴⁾ 5102 ⁴⁾	2	max.
	108 MHz mod = 1 kHz Δf = 22,5 kHz		2111 2103 ⁴⁾ 2109 ⁴⁾			
FM - IF						
FM	108 MHz Δf = 500 kHz as low as possible		108 MHz	5111	2	symmetrical and max. height
STEREO DECODER						
FM	98 MHz carrier 1 mV	A	98 MHz	3145	3	19 kHz ± 50 Hz
SEARCH SENSITIVITY						
FM	98 MHz carrier 12 μV	A	98 MHz	3114	4	adjust so that voltage switches from low to high
FM	98 MHz carrier 15 μV	A	99 MHz or 97 MHz	check		press DOWN or UP and check that set stops at 98 MHz
FM Autostore ⁵⁾	98 MHz carrier 350 μV	A	99 MHz or 97 MHz	check		press DOWN or UP and check that set stops at 98 MHz
AM - IF						
MW	522 kHz ⁶⁾ Δf = 10 kHz as low as possible	B via 100nF	522 kHz	5108	2	symmetrical and max. height
AM - RF						
MW mod = 1 kHz 30% AM	560 kHz ¹⁾ 558 kHz	C	560 kHz ¹⁾ 558 kHz	5110	2	max.
	1600 kHz ¹⁾ 1494 kHz		2151			
LW mod = 1 kHz 30% AM	155 kHz		155 kHz	5116		max.
	270 kHz		270 kHz	2205		



1101 B 1 5101 C 2
1102 E 1 5102 B 2
1103 C 1 5103 B 3
1105 F 5 5104 B 3
1106 F 5 5104 C 4
1115 F 5 5105 B 5
1116 F 5 5106 B 5
2100 C 2 5107 B 4
2101 B 2 5107 B 5
2103 C 2 5107 C 5
2109 B 3 5106 C 5
2111 B 3 5109 C 5
2119 C 3 5110 E 2
2121 C 2 5111 B 5
2122 C 3 5112 C 6
2123 C 3 5113 C 3
2130 D 4 5114 C 5
2131 D 3 5115 E 4
2134 D 2 5116 E 2
2135 D 3 5118 D 3
2136 D 2 5210 D 2
2137 C 4 6103 B 3
2139 B 6 6103 B 2
2141 A 6 6105 E 2
2144 D 3 6106 C 3
2146 B 4 6107 C 5
2150 D 2 6108 E 6
2151 E 2 6109 E 6
2152 E 2 6112 C 3
2154 E 2 6101 C 3
2155 B 5 7102 C 3
2158 C 6 7103 C 4
2161 D 5 7104 B 5
2163 D 5 7105 C 5
2165 C 7 7106 D 2
2167 D 6 7107 E 2
2168 D 6 7108 E 3
2170 D 5 7110 C 6
2172 D 5 7112 C 3
2173 D 6 7117 E 3
2176 E 4 9101 C 2
2177 E 5 9102 B 2
2182 B 5 9106 D 3
2190 C 2 9107 D 4
2205 E 4 9108 D 4
3105 C 3 9109 D 4
3106 B 2 9110 D 4
3107 B 3 9111 B 4
3108 C 3 9112 B 4
3109 B 3 9113 B 4
3110 D 3 9114 E 4
3111 B 4 9115 E 4
3114 C 3 9116 B 4
3116 D 3 9117 B 5
3120 C 6 9118 D 4
3125 D 4 9119 C 5
3128 B 3 9121 B 5
3131 D 6 9122 B 5
3132 B 4 9123 C 5
3134 B 4 9124 E 5
3135 C 6 9125 D 6
3139 B 6 9126 D 6
3141 E 5 9127 B 6
3142 E 5 9128 D 6
3143 D 6 9129 D 6
3145 E 5 9130 B 5
3147 B 6 9131 E 6
3148 D 6 9132 E 6
3149 D 6 9133 E 2
3150 D 6 9140 F 2
3151 D 6 9141 E 2
3153 E 6 9145 E 3
3171 B 4 9146 E 3
3173 B 2 9147 D 4
3187 B 3

- Δ Repeat
- 1) used in AUSTRALIA, CANADA and USA versions.
- 2) used in European versions.
- 3) For all sets except FTZ versions adjust coil 5101 for nominal position (top of core approx. 3mm from top edge coil).
- 4) only for FTZ versions (metal screening cabinet)
- 5) Connect G136 to GND to switch set into Autostore sensitivity
- 6) via low impedance (5Ω) direct to pin 10 of 7103 (see fig. 1).

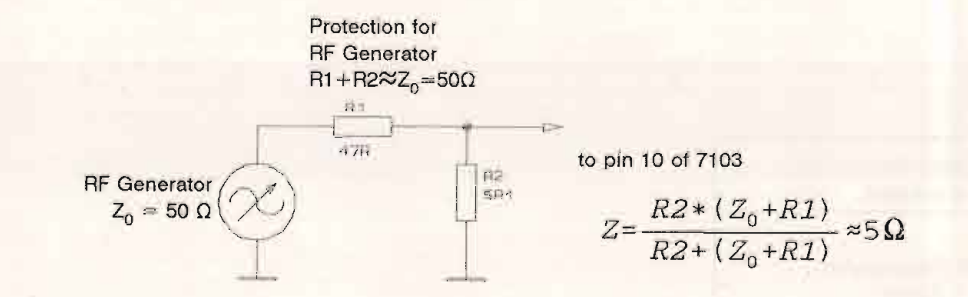
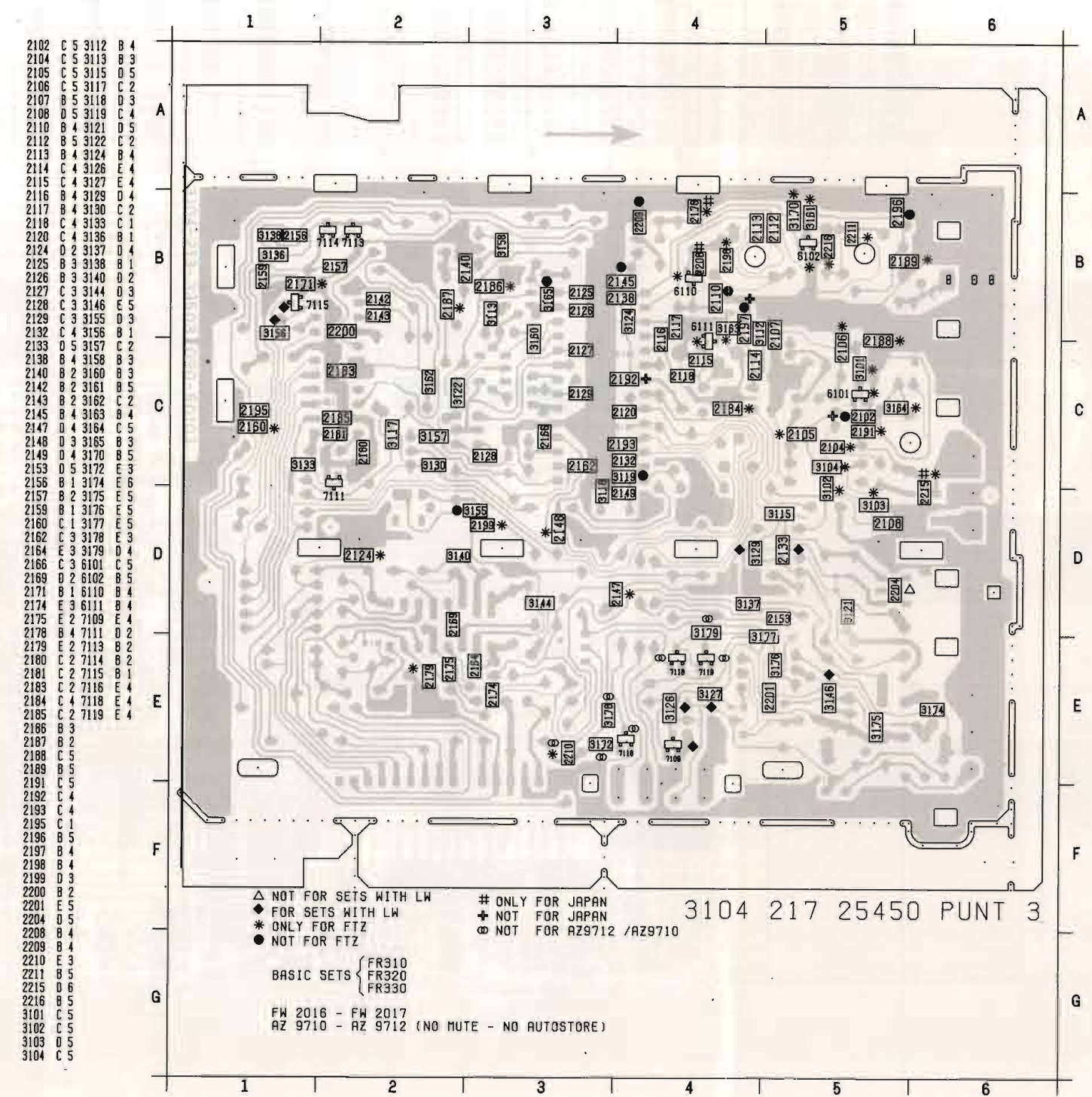
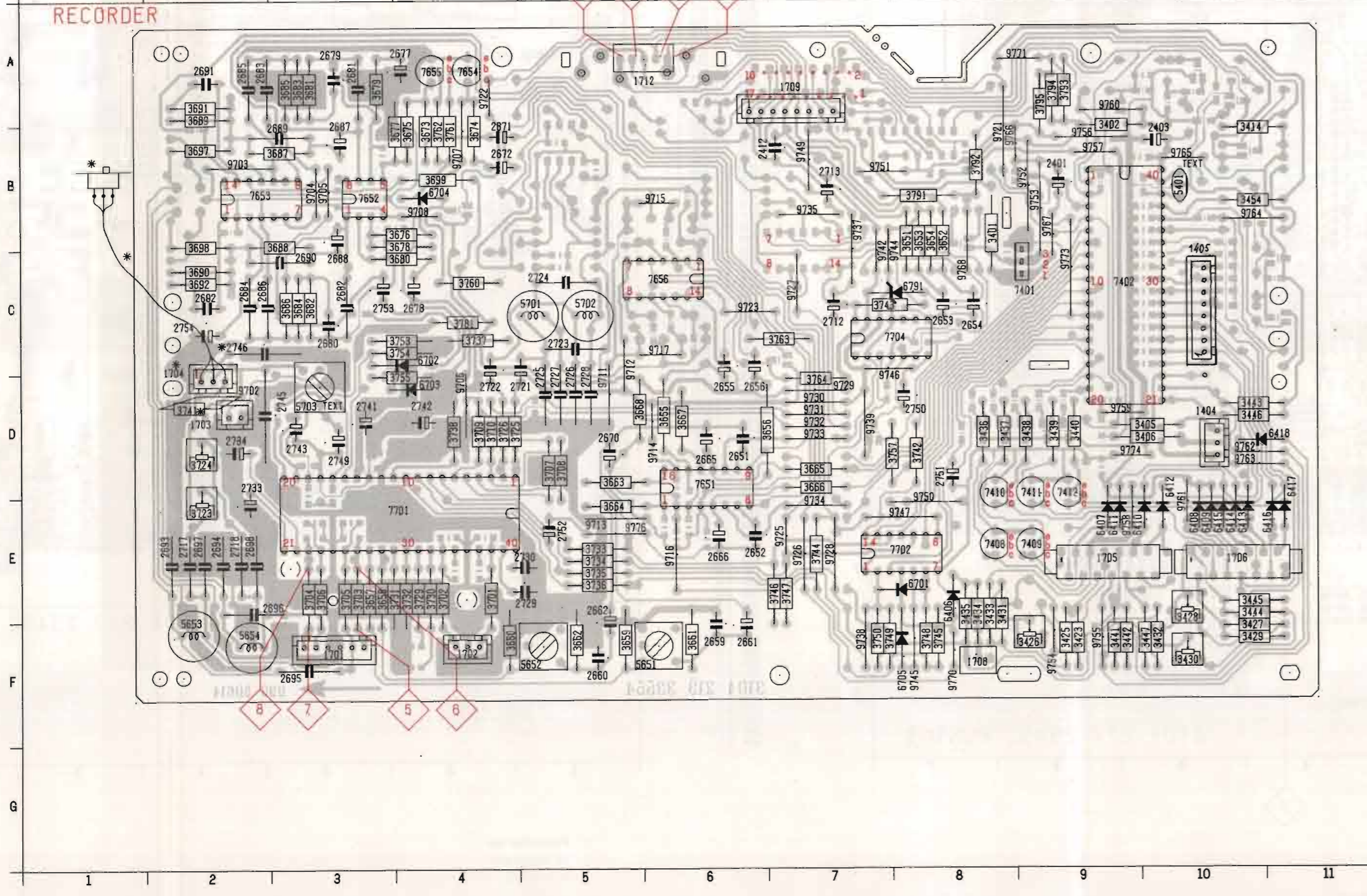


Fig. 1

1404 D10 2401 B 9 2661 F 6 2681 A 3 2692 C 2 2721 D 5 2734 D 2 2754 C 2 3429 F10 3440 D 9 3653 B 8 3664 E 5 3679 A 3 3690 C 2 3706 E 3 3731 E 4 3744 F 7 3760 C 4 5401 B10 6409 E10 6702 C 4 7412 E 9 9703 B 2 9716 E 6 9731 D 7 9746 D 7 9757 B 9 9768 C 8
1405 C10 2403 B10 2662 E 5 2682 C 3 2693 E 2 2722 D 4 2741 D 3 3401 B 8 3430 F10 3441 F 9 3654 B 8 3665 D 7 3680 C 4 3691 A 2 3707 D 5 3732 E 4 3745 F 8 3761 B 4 5651 F 6 6410 E 9 6703 B 2 9704 B 3 9717 C 6 9732 D 7 9747 E 8 9758 B 9 9770 F 8
1701 F 3 2412 B 6 2665 D 6 2683 A 2 2694 C 2 2723 C 5 2742 D 4 3402 B 9 3431 E 8 3442 F 9 3655 D 6 3666 D 7 3681 C 3 3692 C 2 3708 D 5 3733 E 5 3746 F 7 3762 B 4 5652 F 5 6411 E 9 6704 B 3 9705 B 3 9721 B 8 9733 D 7 9747 E 8 9758 B 9 9770 F 8
1702 F 4 2651 D 6 2666 D 6 2684 C 2 2695 F 3 2724 C 5 2743 D 3 3405 D10 3432 F10 3443 D10 3656 D 7 3667 D 6 3682 C 3 3697 B 2 3709 D 4 3734 E 5 3747 F 7 3763 C 7 5653 F 2 6412 D10 6705 F 9 6706 B 2 9706 D 4 9722 A 4 9734 E 9 9748 B 9 9760 B 9 9773 C 9
1703 D 2 2652 E 6 2670 D 5 2685 A 2 2696 E 3 2725 D 5 2746 C 3 3406 D10 3433 E 8 3444 E10 3657 E 3 3668 D 5 3683 C 3 3698 B 2 3710 D 4 3735 E 5 3748 F 8 3764 D 7 5654 F 2 6413 E10 6701 C 9 7654 B 4 9707 B 4 9723 C 6 9735 B 7 9750 E 9 9761 E10 9774 D 9
1704 D 2 2653 C 8 2671 B 4 2686 C 2 2697 E 2 2726 D 5 2746 C 3 3414 B10 3434 E 8 3445 E10 3658 E 3 3673 B 4 3684 C 3 3699 B 4 3723 D 2 3736 C 4 3750 F 7 3781 B 8 5702 C 5 6415 E10 7402 C 6 7656 C 6 9711 D 5 9726 E 7 9738 F 7 9752 B 9 9763 D10
1705 E 9 2654 C 8 2672 B 4 2687 B 3 2698 E 2 2727 D 5 2749 D 8 3425 F 9 3435 E 8 3446 D10 3659 F 5 3674 B 4 3685 C 3 3701 E 4 3724 D 2 3737 C 4 3750 F 7 3781 B 8 5702 C 5 6415 E11 7408 F 8 7701 E 4 9712 C 5 9727 C 7 9739 D 7 9753 B 9 9764 B10
1706 E10 2655 D 6 2677 A 4 2688 C 3 2712 C 7 2728 D 5 2750 D 8 3425 F 9 3436 D 8 3447 F10 3660 F 6 3675 B 4 3686 C 3 3702 C 4 3725 D 2 3738 C 4 3750 F 7 3781 B 8 5702 C 5 6415 E11 7408 F 8 7701 E 4 9712 C 5 9727 C 7 9739 D 7 9753 B 9 9764 B10
1708 F 8 2656 D 6 2678 C 4 2689 B 3 2713 B 7 2729 E 5 2751 F 6 3426 F 9 3437 D 8 3454 B10 3661 F 6 3676 B 4 3687 C 3 3703 F 3 3726 D 4 3741 D 2 3753 C 4 3754 C 4 3793 B 8 5703 C 6 6416 E11 7408 F 8 7701 E 4 9712 C 5 9727 C 7 9739 D 7 9753 B 9 9764 B10
1709 A 7 2659 F 6 2679 A 3 2690 C 3 2717 E 2 2730 E 5 2752 C 4 3427 F10 3438 D 9 3651 B 8 3662 F 5 3677 B 4 3688 C 3 3704 E 3 3729 E 4 3742 C 7 9715 E 9 9728 E 7 9742 C 7 9754 F 9 9765 B10
1712 A 6 2660 F 5 2680 C 3 2691 A 2 2718 E 2 2733 D 2 2753 C 4 3428 F10 3439 D 9 3652 B 8 3663 D 5 3678 C 3 3689 B 2 3705 E 3 3730 C 4 3743 C 7 3757 D 8 3795 A 9 6408 E10 6701 E 8 7411 E 9 9702 D 2 9715 E 6 9730 D 7 9745 F 8 9756 B 9 9767 B 9

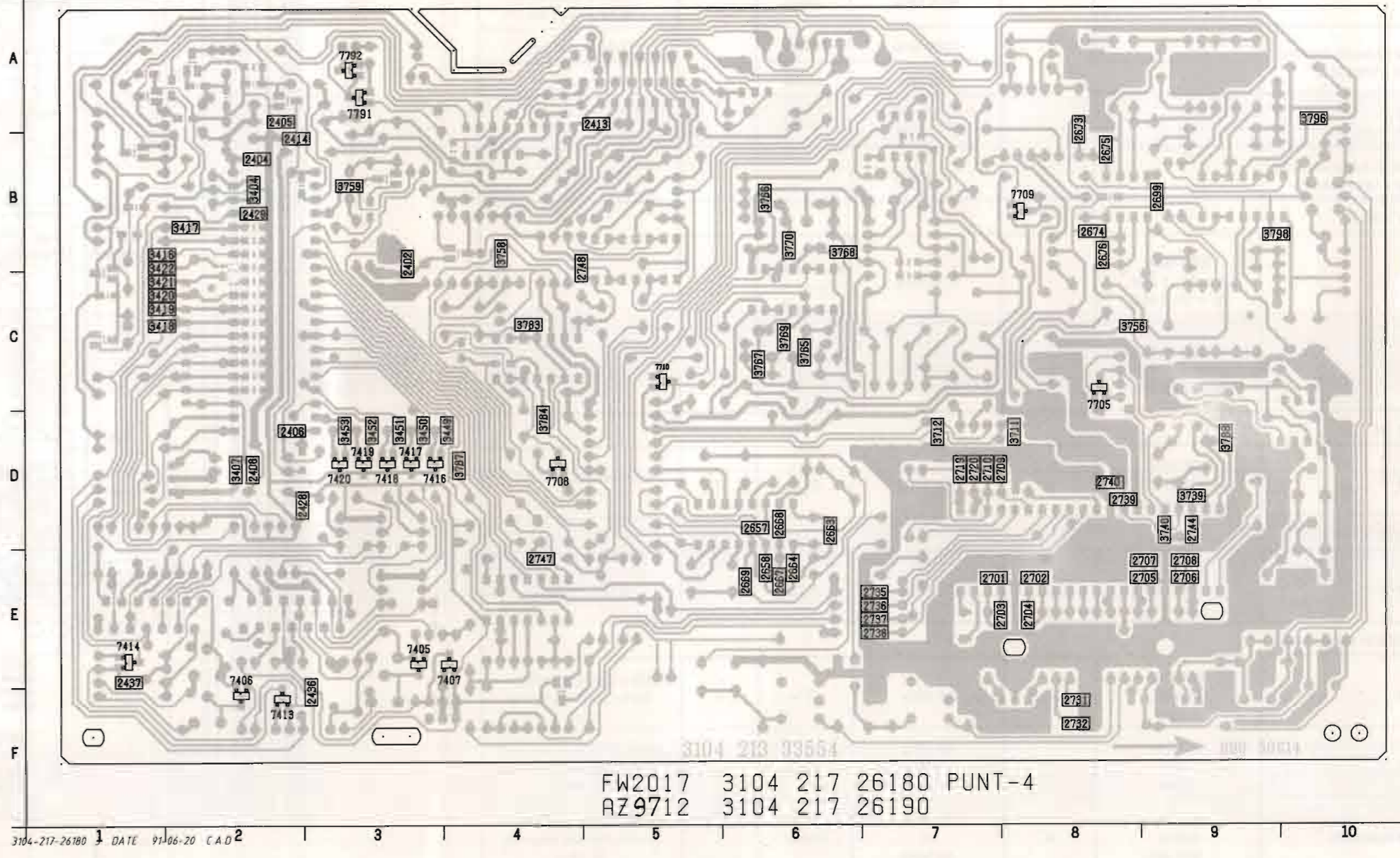
2402 B 3 2408 D 2 2429 B 2 2658 E 6 2668 D 6 2675 B 8 2702 E 8 2706 E 9 2710 D 7 2732 F 8 2738 E 7 2747 E 4 3416 B 1 3420 C 1 3450 D 3 3711 D 8 3756 C 6 3766 B 6 3770 B 6 3788 D 9 7406 E 2 7416 D 3 7420 D 3 7710 C 5
2404 B 2 2413 A 5 2436 F 3 2663 D 6 2669 E 6 2676 B 8 2703 E 7 2707 E 9 2719 D 7 2735 E 7 2739 D 8 2748 B 4 3417 B 2 3421 C 1 3451 D 3 3712 D 7 3758 B 4 3767 C 6 3783 C 4 3786 B10 7407 E 4 7417 D 3 7705 C 8 7791 A 9
2405 A 2 2414 B 2 2437 E 1 2664 E 6 2673 A 8 2699 B 9 2704 E 8 2708 E 9 2720 D 7 2736 E 7 2740 D 8 3404 B 2 3418 C 1 3422 B 1 3452 D 3 3739 D 9 3759 B 3 3768 B 6 3784 D 4 3788 B 9 7413 F 2 7418 D 3 7708 D 4 7792 A 9
2406 D 2 2428 D 2 2657 D 6 2667 E 6 2674 B 8 2701 E 7 2705 E 9 2709 D 7 2731 F 8 2737 E 7 2744 D 9 3407 D 2 3419 C 1 3449 D 4 3453 D 3 3740 D 9 3765 C 6 3769 C 6 3787 D 4 7405 E 3 7414 E 1 7419 D 3 7709 B 8



* Only if the Service Solution for RIF - Switch is required

2746	560 pF Polypropylen
3741	1 kΩ 0,25W
Switch	4822 277 21514

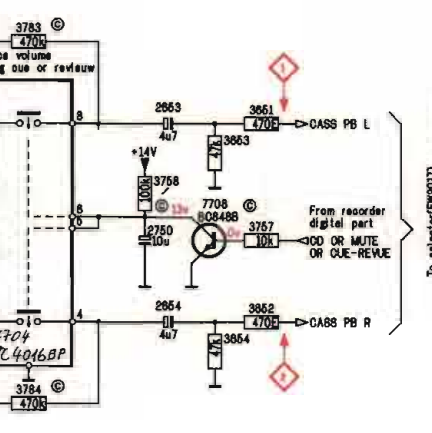
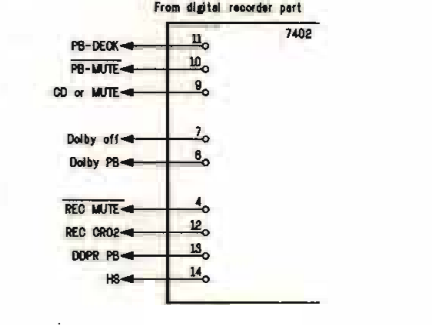
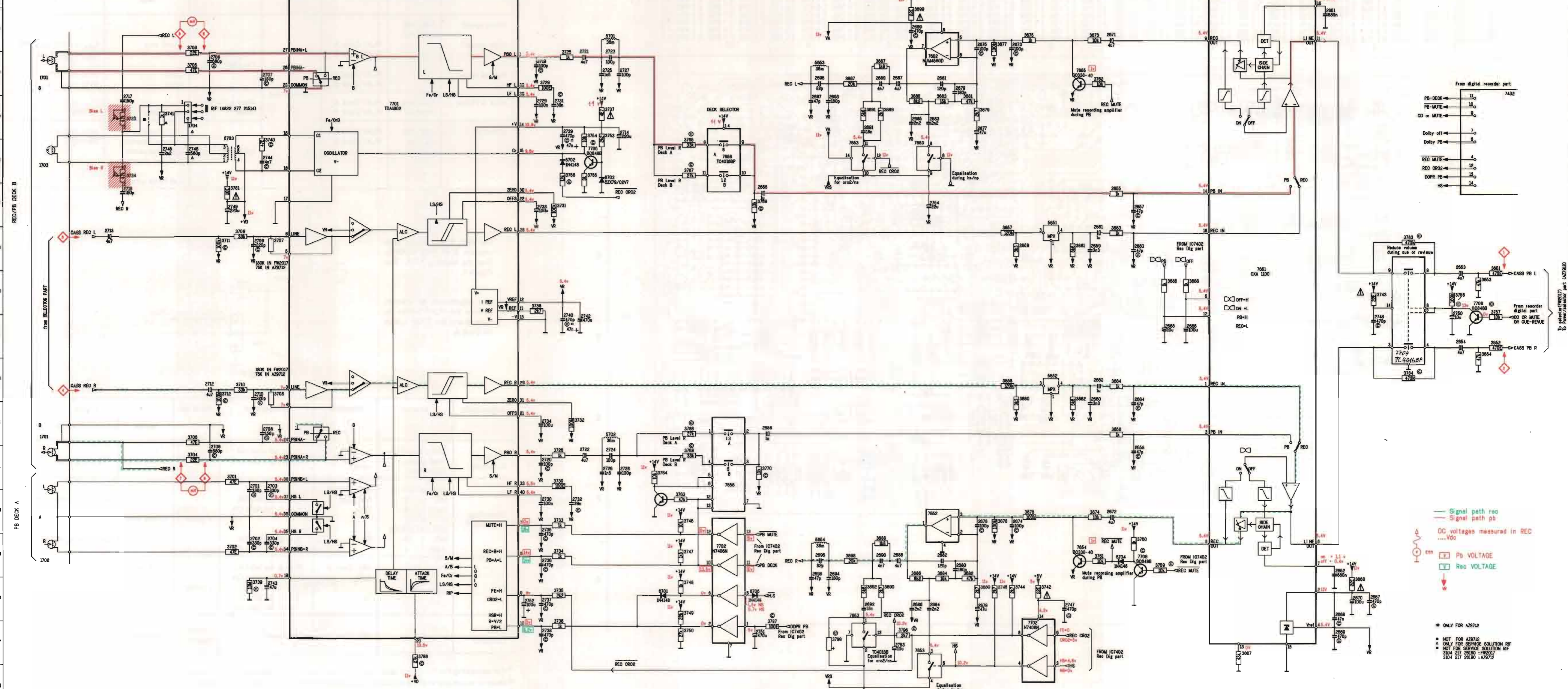
Delete bridge wire 9702



FW2017 3104 217 26180 PUNT-4
AZ9712 3104 217 26190

ANALOG RECORDER PART

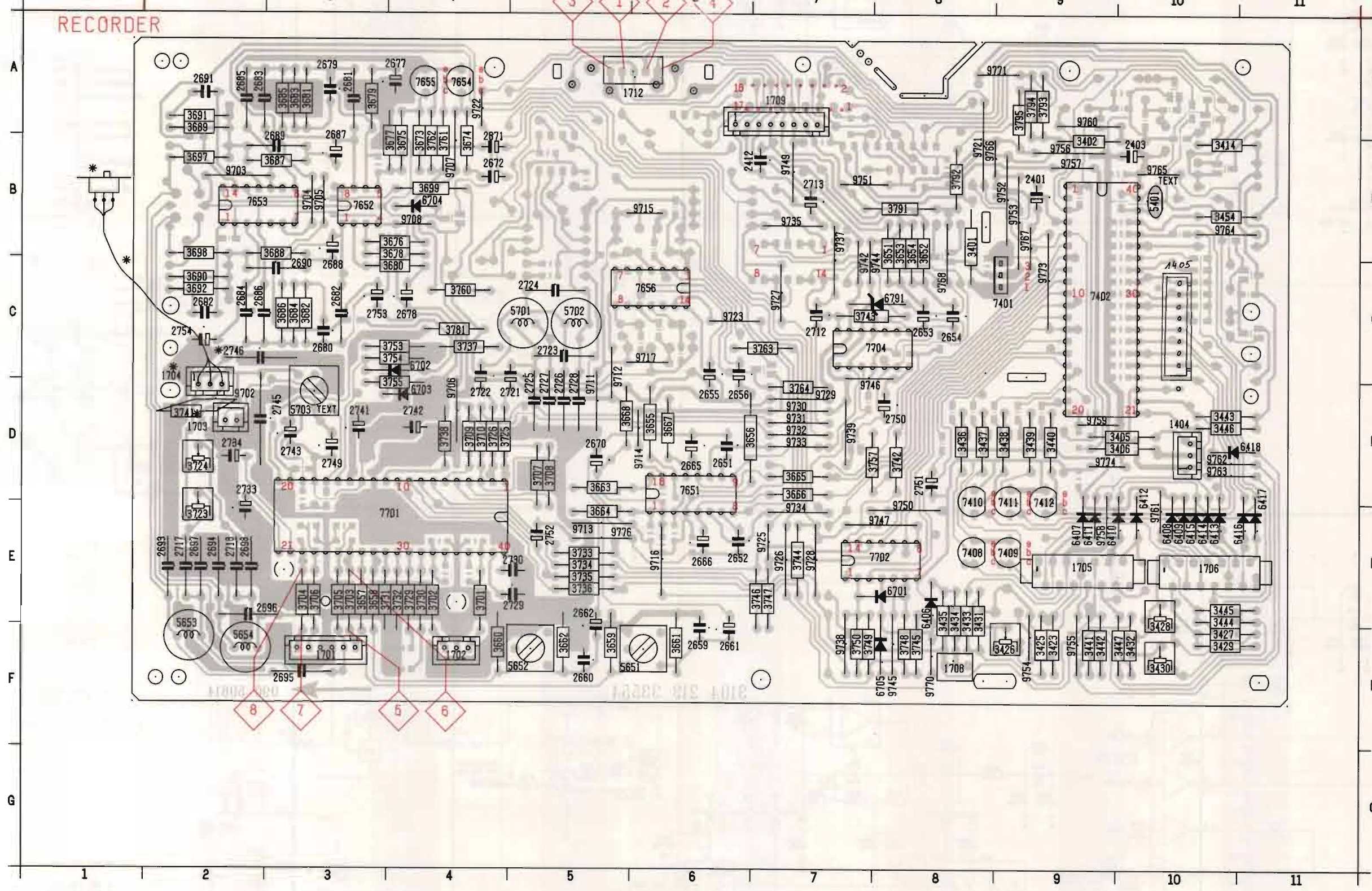
DOUBLE DECK PLAYBACK RECORDING IO



— Signal path rec
— Signal path pb
DC voltages measured in REC ...Vdc
Pb VOLTAGE
Res VOLTAGE

* ONLY FOR A26712
NOT FOR A26712
NOT FOR SERVICE SOLUTION REF
NOT FOR SERVICE SOLUTION REF
3104 217 28180 : FW2017
3104 217 28190 : A26712

1404	D10	2401	B 9	2661	F 6	2681	A 3	2692	C 2	2721	D 5	2734	D 2	2754	C 2	3429	F10	3440	D 9	3653	B 8	3664	E 5	3679	A 3	3690	C 2	3706	E 3	3731	E 4	3744	E 7	3760	C 4	5401	B10	6409	E10	6702	C 4	7412	E 9	9703	B 2	9716	E 6	9731	D 7	9746	D 7	9757	B 9	9768	C 8		
1405	C10	2403	B10	2662	E 5	2682	C 3	2693	E 2	2722	D 4	2741	D 3	2761	B 8	3430	F10	3441	F 9	3654	B 8	3665	D 7	3680	C 4	3691	A 2	3707	D 5	3732	E 4	3745	F 8	3761	B 4	5402	F 5	6410	E 9	6703	D 4	7413	D 6	9704	B 3	9717	C 6	9732	D 7	9747	E 8	9758	D 9	9770	F 8		
1701	F 3	2412	B 6	2665	D 6	2683	C 2	2694	E 2	2723	C 5	2742	D 4	2762	C 4	3402	F 8	3431	F 9	3655	D 6	3666	D 7	3681	A 3	3692	C 2	3708	D 5	3733	E 5	3746	E 7	3762	B 4	5403	F 6	6411	E 8	6704	B 4	7414	D 6	9705	B 3	9718	B 8	9733	D 7	9747	E 8	9759	D 9	9771	F 8		
1702	F 4	2651	D 6	2666	E 6	2684	C 2	2695	F 3	2724	C 5	2743	D 4	2763	D 3	3405	D10	3432	F10	3443	D10	3656	D 7	3667	C 3	3682	C 3	3697	B 2	3709	D 4	3734	F 5	3747	F 7	3763	C 7	5404	F 2	6412	D10	6705	F 8	7415	B 2	9706	D 4	9722	A 4	9734	E 7	9749	B 7	9760	A 9	9773	C 9
1703	D 2	2652	E 6	2670	D 5	2685	A 2	2696	F 3	2725	D 5	2745	D 3	2764	D 3	3406	D10	3433	F10	3444	E10	3657	F 3	3668	D 5	3683	C 3	3698	C 2	3710	D 4	3735	F 5	3748	F 7	3764	D 7	5405	F 2	6413	D10	6706	F 8	7416	C 8	9707	B 4	9723	C 6	9735	B 7	9750	B 8	9761	E10	9774	D 9
1704	D 2	2653	C 8	2671	B 4	2686	C 2	2697	F 2	2726	D 5	2746	D 3	2765	D 3	3411	B10	3434	F10	3445	E10	3658	F 3	3669	B 4	3684	C 3	3699	B 2	3711	D 4	3736	F 5	3749	F 7	3765	D 7	5406	F 2	6414	E10	6707	C 9	9708	A 4	9724	C 9	9736	A 4	9751	B 7	9762	D10	9776	E 5		
1705	E 9	2654	C 8	2672	B 4	2687	B 3	2698	F 2	2727	D 5	2747	D 3	2766	D 3	3423	F 9	3435	F10	3446	D10	3659	F 5	3674	B 4	3685	C 3	3701	F 4	3724	E 2	3737	C 4	3750	F 7	3766	C 4	5407	E10	6708	C 9	9709	A 4	9725	E 7	9737	B 7	9751	B 7	9762	D10	9776	E 5				
1706	E10	2655	D 6	2677	B 4	2688	C 3	2712	C 7	2728	D 5	2750	D 8	2767	D 3	3425	F 9	3436	F10	3447	D10	3660	F 4	3675	B 4	3686	C 3	3702	F 4	3725	D 2	3737	C 4	3750	F 7	3766	C 4	5408	E10	6709	C 9	9710	A 4	9726	E 7	9738	F 7	9752	B 9	9763	D10	9776	E 5				
1707	F 8	2656	D 6	2678	C 4	2689	C 3	2713	B 7	2729	E 5	2751	D 8	2768	D 3	3426	F 9	3437	F10	3448	D10	3661	F 5	3676	B 4	3687	C 3	3703	F 4	3726	D 4	3741	D 2	3754	C 4	3767	A 4	5409	E11	6710	E 8	9711	E 4	9712	C 5	9727	C 7	9739	D 7	9753	B 9	9764	B10				
1708	A 7	2659	F 6	2679	A 3	2690	C 3	2717	E 2	2730	F 5	2752	D 8	2769	D 3	3427	F10	3438	D 9	3449	F10	3662	B 8	3677	D 4	3688	C 3	3704	F 4	3729	E 4	3742	D 8	3755	D 4	3768	A 9	5410	E11	6711	D11	7409	E 9	9712	E 8	9713	E 5	9728	E 7	9742	C 7	9754	F 9	9765	B10		
1709	A 7	2659	F 6	2679	A 3	2690	C 3	2717	E 2	2730	F 5	2752	D 8	2769	D 3	3427	F10	3438	D 9	3449	F10	3662	B 8	3677	D 4	3688	C 3	3704	F 4	3729	E 4	3742	D 8	3755	D 4	3768	A 9	5411	E11	6712	D11	7410	E 8	9713	E 5	9728	E 7	9742	C 7	9754	F 9	9765	B10				
1712	A 6	2660	F 5	2680	C 3	2691	A 2	2716	E 2	2733	D 2	2753	C 3	3428	F10	3439	D 9	3452	D 9	3463	F10	3663	B 8	3678	D 5	3689	A 2	3705	F 4	3730	E 4	3743	C 7	3757	D 8	3769	A 9	5412	E10	6713	E 8	9714	E 5	9729	D 7	9743	F 8	9755	F 9	9766	B 8						



Adjustment table Recorder part

Adjustment	Cassette	Recorder	Measure on	Read on	Adjust	
					with	to
Motor speed	SBC 420 3150 Hz	PLAY Deck A PLAY Deck B	1 or 2 or Speaker out	Frequency Counter	check only 3428	$f_{HS1} = 6000 \text{ Hz} \pm 10\%$ $f_{HS2} = f_{HS1} \pm 1\%$
High speed ¹⁾					3426 3430	$3150 \text{ Hz} \pm 1\%$ $3150 \text{ Hz} \pm 1\%$
Normal speed						
Wow & Flutter	SBC 420 3150 Hz	PLAY Deck A PLAY Deck B		Wow & Flutter meter	check only	$\leq 0,3\%$
Azimuth ²⁾	SBC 420 10 kHz	PLAY Deck A PLAY Deck B		mV-meter	Right hand screw (normal direction) Left hand screw (reverse direction) Left hand screw	max. output left=right

- 1) For High Speed during play connect B of 7407 to GND. Use the testplug 1708. See Figure 1.
- 2) For adjustment of azimuth remove the PLAY button for Deck B and the STOP button for Deck A.

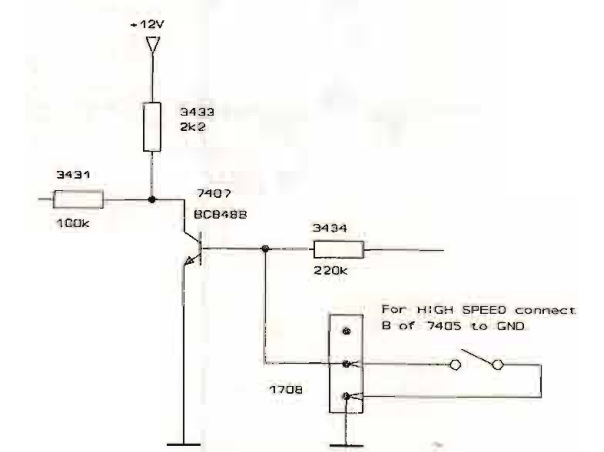
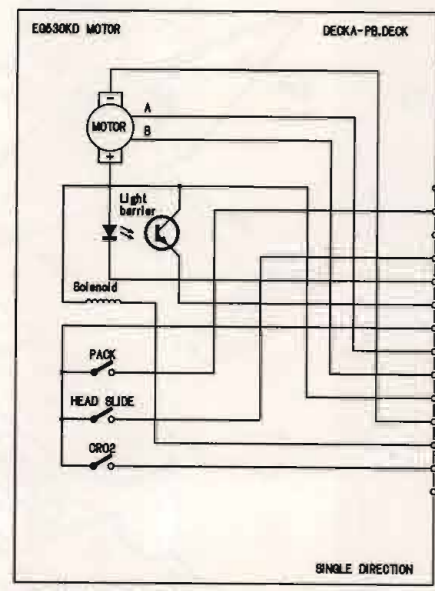


Fig. 1

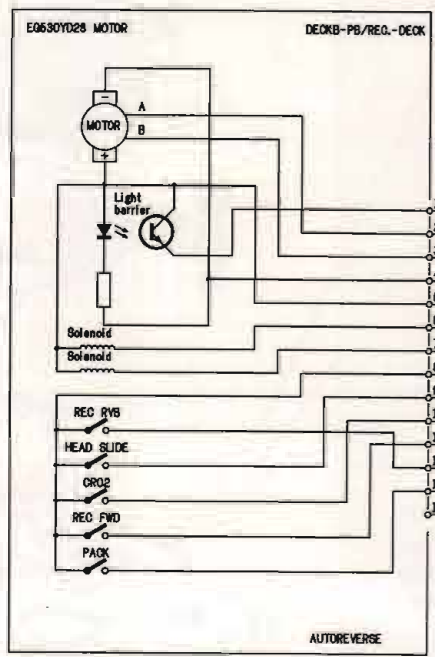
Adjustment	Source	Recorder	Measure on	Read on	Adjust	
					width	to
Playback Sensitivity	Dolby reference level cassette 200 nW/m	PLAY both decks	1 for left channel 2 for right channel	V meter	Check only	$775 \text{ mV} \pm 2 \text{ dB}$
Recording Sensitivity ³⁾	500 mV/ 315 Hz left : 3 right : 4	REC Deck B Dolby off CrO ₂	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.	V meter	Check only	$U_{CrO2} = 2,1 \text{ mV} \pm 2 \text{ dB}^4)$
	500 mV/ 315 Hz left : 3 right : 4	Fe	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.			$U_{Fe} = U_{CrO2} - 3,5 \text{ dB} \pm 1 \text{ dB}$
Bias		REC Deck B CrO ₂	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.	V meter	3723 left 3724 right	$U_{CrO2} = 14,5 \text{ mV}^5)$ $U_{CrO2} = 14,5 \text{ mV}$
		Fe	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.		Check only	$U_{Fe} = U_{CrO2} - 3,5 \text{ dB} \pm 1 \text{ dB}$
Erase Oscillator	-	REC Deck B	Erase head	V meter Counter	Check only	CrO ₂ $33 \text{V} \pm 5 \text{V}$ Fe $22 \text{V} \pm 4 \text{V}$ $f=80 \text{ kHz} \pm 6 \text{ kHz}$

³⁾ For measuring the Recording sensitivity use a low pass filter to attenuate the bias component.
⁴⁾ Make a record and check if recorded signal gives 775 mV on 1 and 2 in playback. Distortion $\leq 3\%$.
⁵⁾ If sensitivity, distortion or frequency response (see specification) are wrong, then readjust bias and check again.

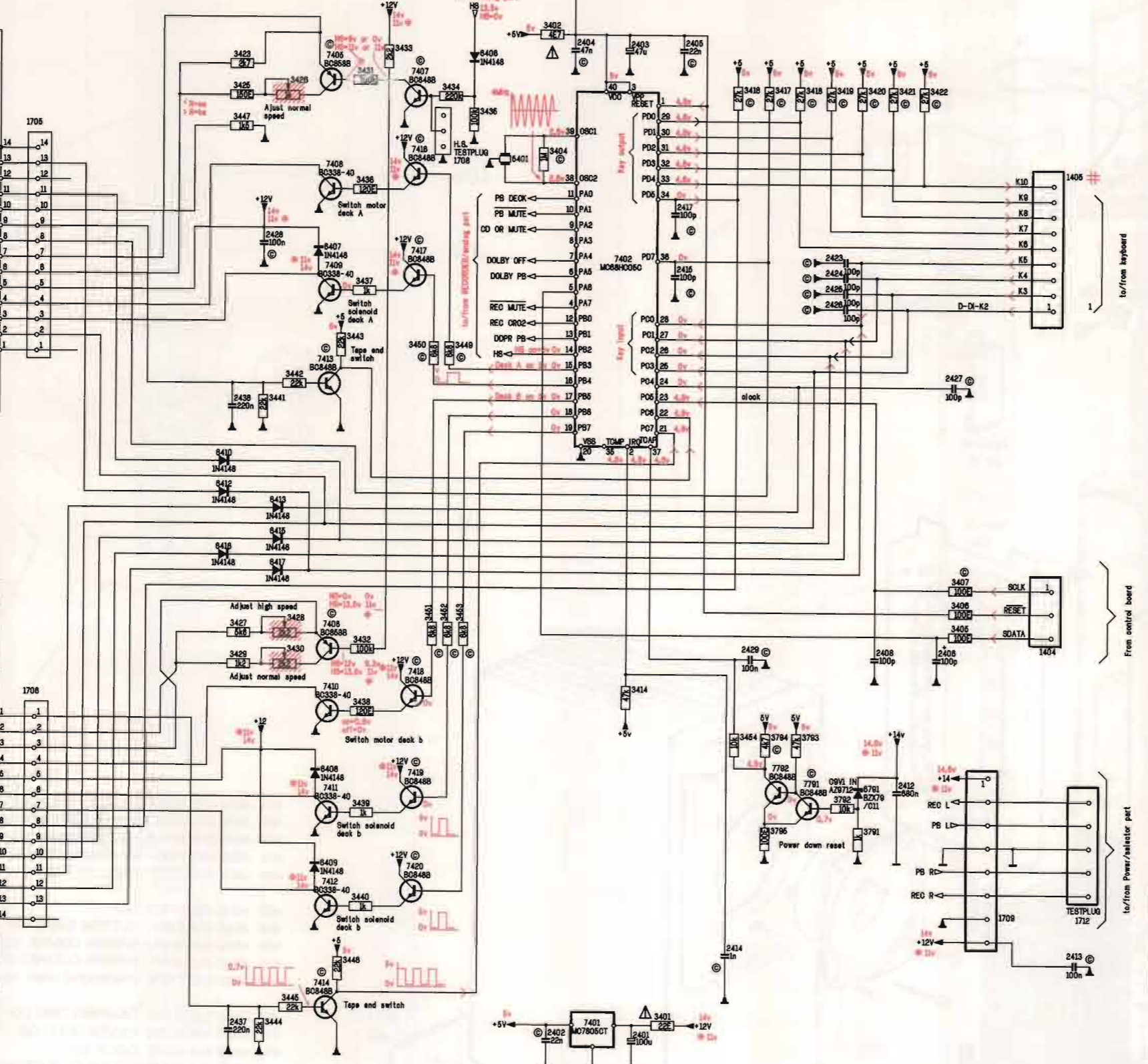
DIGITAL RECORDER PART



QPH-5P81 IN FW2017 AND A29712

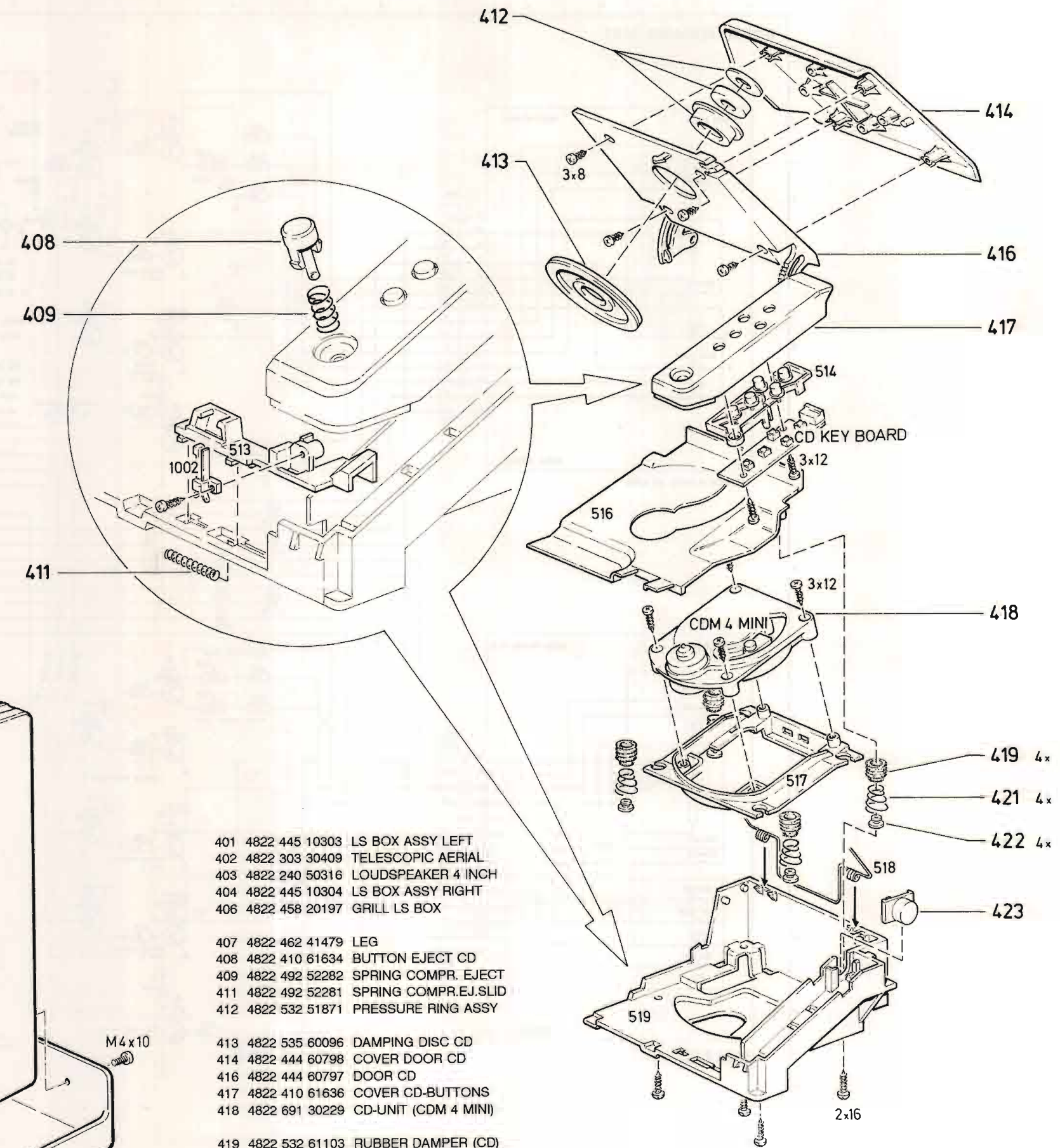
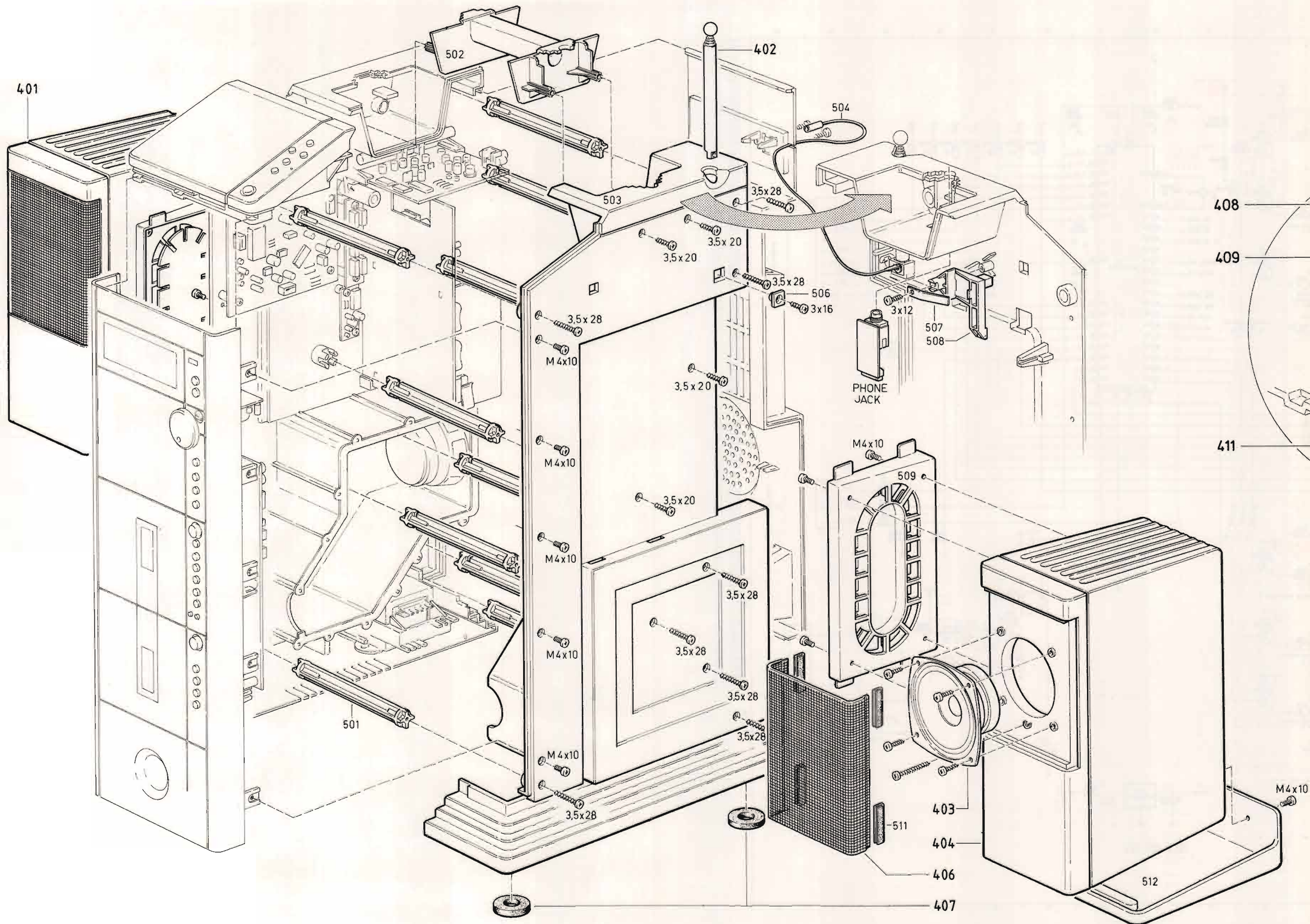


QPH-3800 IN FW2017
QPH-3801 IN A29712



3104 217 26180 : FW2017
3104 217 26180 : A29712
* ONLY FOR A29712

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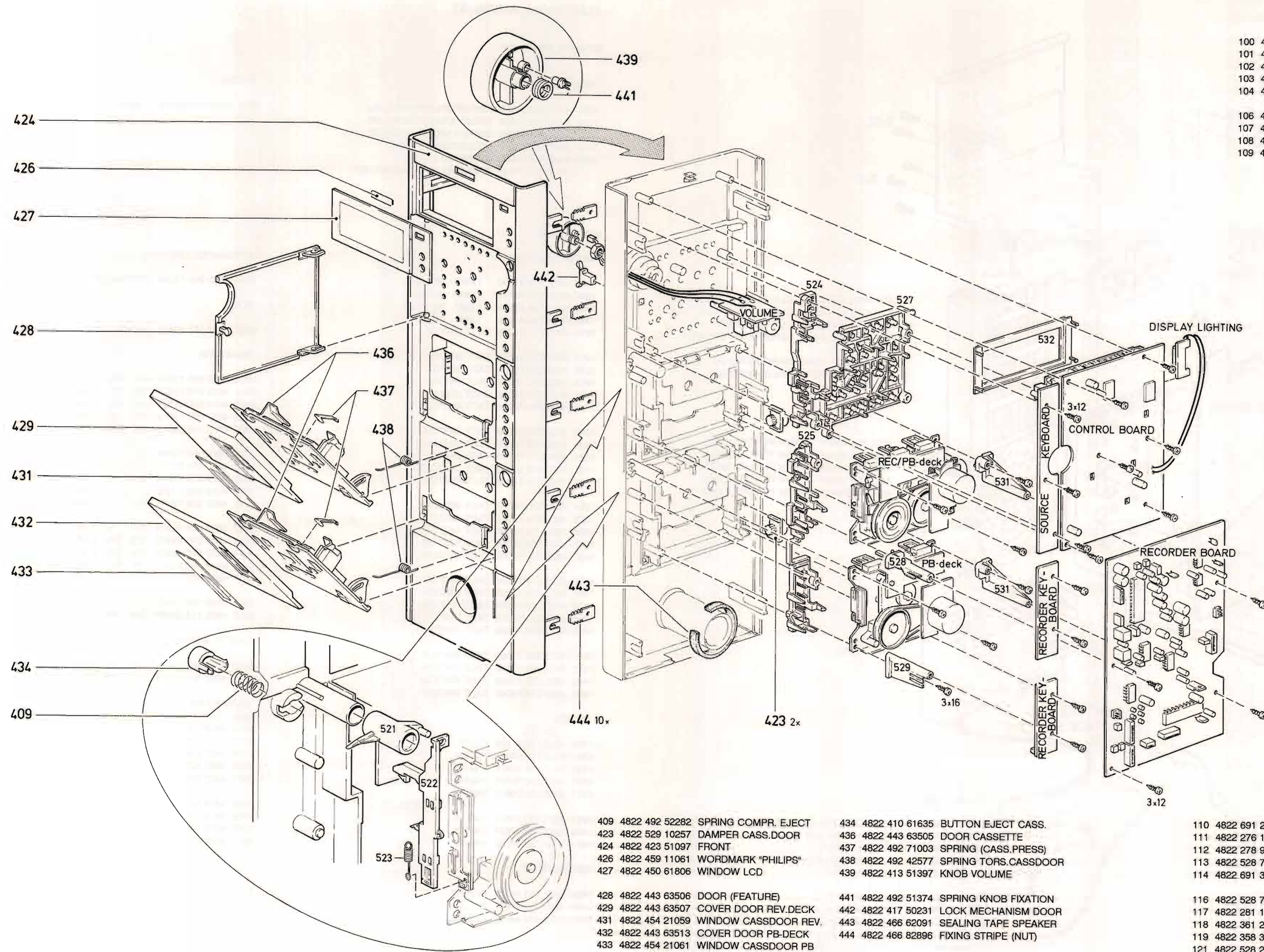


- 401 4822 445 10303 LS BOX ASSY LEFT
- 402 4822 303 30409 TELESCOPIC AERIAL
- 403 4822 240 50316 LOUDSPEAKER 4 INCH
- 404 4822 445 10304 LS BOX ASSY RIGHT
- 406 4822 458 20197 GRILL LS BOX

- 407 4822 462 41479 LEG
- 408 4822 410 61634 BUTTON EJECT CD
- 409 4822 492 52282 SPRING COMPR. EJECT
- 411 4822 492 52281 SPRING COMPR.EJ.SLID
- 412 4822 532 51871 PRESSURE RING ASSY

- 413 4822 535 60096 DAMPING DISC CD
- 414 4822 444 60798 COVER DOOR CD
- 416 4822 444 60797 DOOR CD
- 417 4822 410 61636 COVER CD-BUTTONS
- 418 4822 691 30229 CD-UNIT (CDM 4 MINI)

- 419 4822 532 61103 RUBBER DAMPER (CD)
- 421 4822 492 52283 SPRING COMPR.CD DAMP
- 422 4822 462 71567 DISTANCE HOLDER
- 423 4822 535 70618 DAMPER DOOR CD

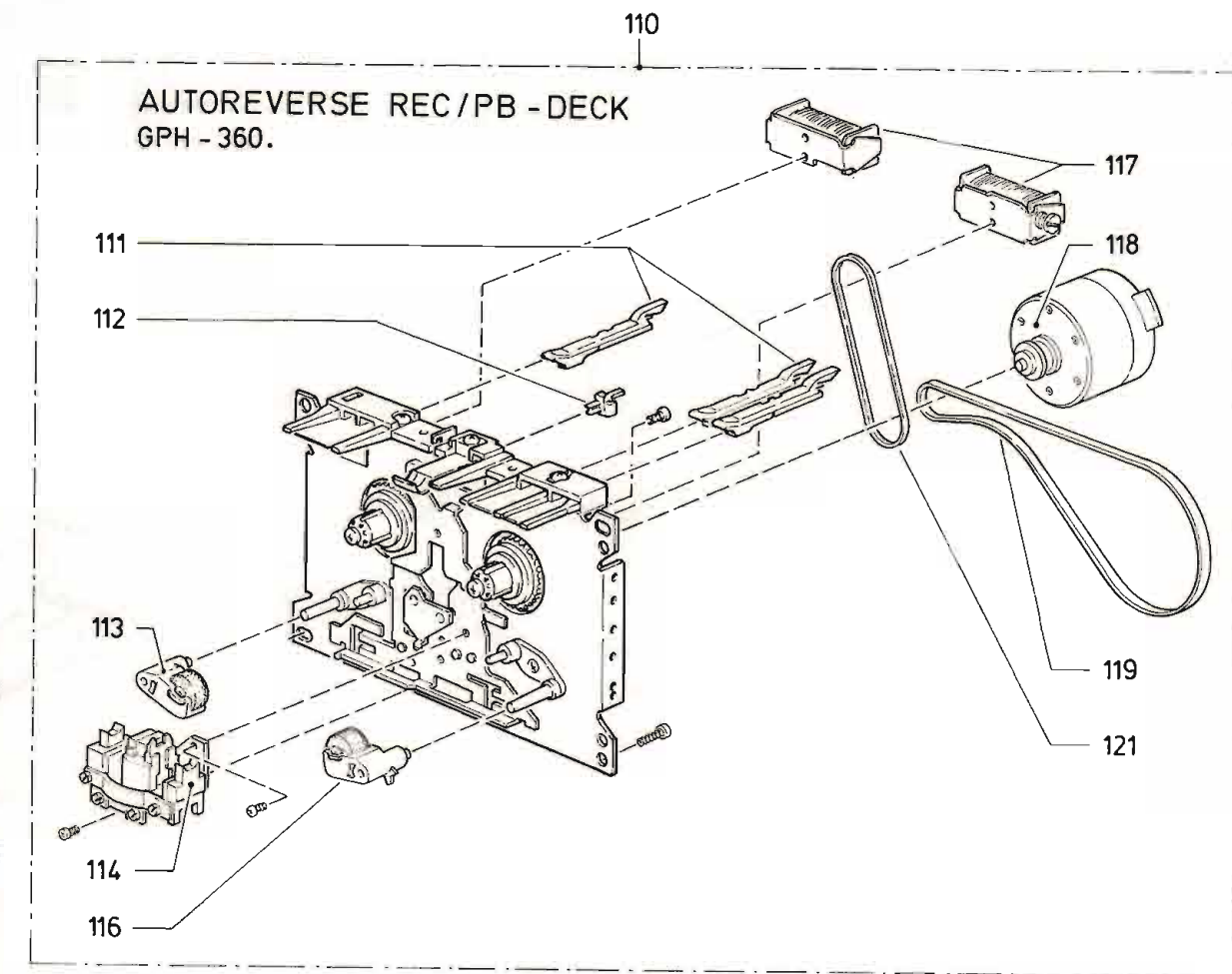
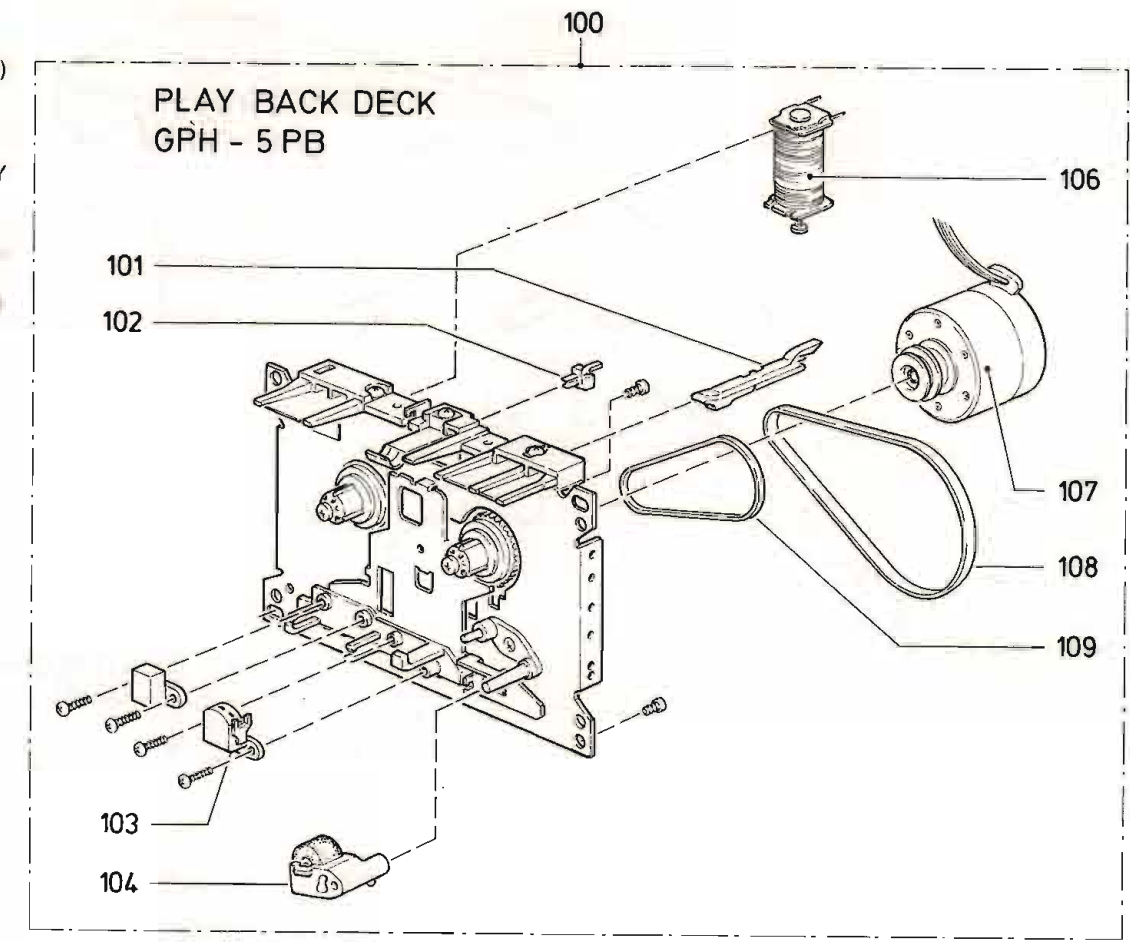


- 409 4822 492 52282 SPRING COMPR. EJECT
- 423 4822 529 10257 DAMPER CASS.DOOR
- 424 4822 423 51097 FRONT
- 426 4822 459 11061 WORDMARK "PHILIPS"
- 427 4822 450 61806 WINDOW LCD
- 428 4822 443 63506 DOOR (FEATURE)
- 429 4822 443 63507 COVER DOOR REV.DECK
- 431 4822 454 21059 WINDOW CASSDOOR REV.
- 432 4822 443 63513 COVER DOOR PB-DECK
- 433 4822 454 21061 WINDOW CASSDOOR PB

- 434 4822 410 61635 BUTTON EJECT CASS.
- 436 4822 443 63505 DOOR CASSETTE
- 437 4822 492 71003 SPRING (CASS.PRESS)
- 438 4822 492 42577 SPRING TORS.CASSDOOR
- 439 4822 413 51397 KNOB VOLUME
- 441 4822 492 51374 SPRING KNOB FIXATION
- 442 4822 417 50231 LOCK MECHANISM DOOR
- 443 4822 466 62091 SEALING TAPE SPEAKER
- 444 4822 466 82896 FIXING STRIPE (NUT)

- 110 4822 691 20715 GPH-3601D TAPE DECK
- 111 4822 276 13076 SWITCH LEAF
- 112 4822 278 90673 SWITCH LEAF
- 113 4822 528 70729 PINCH ROLLER LEFT
- 114 4822 691 30245 ROTATION HEAD ASSY
- 116 4822 528 70728 PINCH ROLLER RIGHT
- 117 4822 281 11061 SOLENOID ASSY
- 118 4822 361 21429 MOTOR EG530YD-2B
- 119 4822 358 31123 DRIVE BELT MOTOR
- 121 4822 528 20725 BELT CLUTCH

- 100 4822 691 20706 PB DECK (GPH5-PB1)
- 101 4822 276 13076 SWITCH LEAF
- 102 4822 278 90673 SWITCH LEAF
- 103 4822 249 30168 HEAD PLAY BACK
- 104 4822 528 70727 PINCH ROLLER ASSY
- 106 4822 281 11059 SOLENOID ASSY
- 107 4822 361 21431 MOTOR EG530KD-2B
- 108 4822 358 31122 DRIVE BELT MOTOR
- 109 4822 528 20724 DRIVE BELT CLUTCH



POWER - BOARD

MISCELLANEOUS

1252	4822 265 20534	PHONE JACK
1253	4822 290 60673	LOUDSPEAKER TERMINAL
1255	4822 071 54002	FUSE T4A
1257	4822 267 31432	SOCKET ASSY CINCH
1262	4822 102 10442	POTMETER MOTOR

DIODES

6250	4822 130 82079	D3SBA20
6251	5322 130 34939	1N5401
6252	4822 130 30621	1N4148
6253	4822 130 34278	BZX79-C6V8
6254	4822 130 30841	1N4150
6255	4822 130 30621	1N4148
6256	4822 130 30621	1N4148
6257	4822 130 30621	1N4148
6258	4822 130 30621	1N4148
6259	4822 130 30621	1N4148
6260	4822 130 30621	1N4148
6261	4822 130 30621	1N4148
6262	4822 130 30621	1N4148
6263	4822 130 30621	1N4148
6264	4822 130 30621	1N4148
6265	4822 130 34174	BZX79-C4V7
6266	4822 130 30621	1N4148
6267	4822 130 30621	1N4148
6268	4822 130 30621	1N4148
6269	4822 130 30621	1N4148
6270	4822 130 30621	1N4148
6272	4822 130 30621	1N4148
6273	4822 130 30621	1N4148
6274	4822 130 30621	1N4148
6275	4822 130 30621	1N4148
6280	4822 130 34174	BZX79-C4V7

TRANSISTORS

7250	4822 130 61236	BD234
7251	4822 130 40937	BC548B
7252	5322 130 60068	BC558C
7253	4822 130 40995	BD434
7254	4822 130 40937	BC548B
7255	4822 130 44121	BC338
7256	4822 130 44121	BC338
7259	4822 130 40937	BC548B
7260	4822 130 44121	BC338
7261	4822 130 44121	BC338
7263	4822 130 44246	BC549C
7264	4822 130 44246	BC549C
7265	4822 130 40937	BC548B
7266	4822 130 40937	BC548B
7271	4822 130 40937	BC548B
7272	4822 130 40937	BC548B
7277	4822 130 40937	BC548B
7278	4822 130 40937	BC548B
7279	4822 130 40937	BC548B
7280	4822 130 44104	BC328
7281	4822 130 40937	BC548B
7282	4822 130 40937	BC548B
7283	4822 130 40937	BC548B
7284	4822 130 40937	BC548B
7285	4822 130 40937	BC548B

7286	4822 130 40937	BC548B
7287	4822 130 44197	BC558B
7290	4822 130 40937	BC548B
7291	4822 130 41344	BC337-40
7293	4822 130 41327	BC327-40

7294	4822 130 41344	BC337-40
7295	4822 130 41327	BC327-40
7296	4822 130 40937	BC548B
7297	4822 130 40937	BC548B
7299	4822 130 44196	BC548C

7300	4822 130 44197	BC558B
7303	4822 130 40937	BC548B
7304	4822 130 40937	BC548B
7307	4822 130 40937	BC548B
7308	4822 130 40937	BC548B

INTEGRATED CIRCUITS

7257	4822 209 81837	AN7168
7258	4822 209 81837	AN7168
7262	4822 209 81837	AN7168
7269	4822 130 40936	BC549B
7270	4822 130 40936	BC549B
7273	4822 130 40936	BC549B
7274	4822 130 40936	BC549B
7275	5322 209 10357	HEF4066B
7276	5322 209 10357	HEF4066B
7288	5322 209 10357	HEF4066B

COILS

5201	4822 157 62552	COIL 2,2 μ H
5202	4822 157 62552	COIL 2,2 μ H
5203	4822 157 62552	COIL 2,2 μ H
5205	4822 157 62255	COIL 18,5 TURNS
5206	4822 157 62255	COIL 18,5 TURNS
5207	4822 157 62255	COIL 18,5 TURNS
5208	4822 157 62255	COIL 18,5 TURNS
5209	4822 157 62552	COIL 2,2 μ H
5210	4822 157 62552	COIL 2,2 μ H
5211	4822 157 62552	COIL 2,2 μ H
5212	4822 157 60147	COIL 2,2 μ H
5213	4822 157 60147	COIL 2,2 μ H
5214	4822 157 60147	COIL 2,2 μ H
5215	4822 157 60147	COIL 2,2 μ H
5216	4822 157 60147	COIL 2,2 μ H
5217	4822 157 62552	COIL 2,2 μ H

RESISTORS

3250	4822 050 22203	22k	1%	0,6W
3253	4822 050 24702	4k7	1%	0,6W
3254	4822 050 21003	10k	2%	0,25W
3255	4822 050 24702	4k7	1%	0,6W
3256	4822 050 28201	820R	1%	0,6W
3257	4822 050 22803	28k	1%	MRS25
3258	4822 050 23903	39k	1%	0,6W
3262	4822 050 21002	1k	1%	0,6W
3263	4822 050 21502	1k5	1%	0,6W
3264	4822 050 21502	1k5	1%	0,6W
3267	4822 116 82366	2R2	5%	
3268	4822 116 82366	2R2	5%	
3269	4822 116 82366	2R2	5%	
3270	4822 116 82366	2R2	5%	
3271	4822 050 21502	1k5	1%	0,6W

POWER - BOARD

RESISTORS

3272	4822 050 21502	1k5	1%	0,6W
3273	4822 050 21502	1k5	1%	0,6W
3274	4822 050 22202	2k2	1%	0,6W
3275	4822 050 23302	3k3	1%	0,6W
3281	4822 116 52186	22R	5%	0,5W
3282	4822 116 52186	22R	5%	0,5W
3283	4822 050 24702	4k7	1%	0,6W
3284	4822 050 24702	4k7	1%	0,6W
3285	4822 050 21502	1k5	1%	0,6W
3286	4822 050 21002	1k	1%	0,6W
3287	4822 116 52303	8k2	5%	0,5W
3288	4822 116 52244	15k	5%	0,5W
3289	4822 116 52244	15k	5%	0,5W
3291	4822 116 52263	2k7	5%	0,5W
3292	4822 050 24702	4k7	1%	0,6W
3293	4822 116 52234	100k	5%	0,5W
3294	4822 050 28209	82R	1%	0,6W
3295	4822 116 82366	2R2	5%	0,5W
3296	4822 116 82366	2R2	5%	0,5W
3297	4822 116 52224	470R	5%	0,5W
3298	4822 116 52224	470R	5%	0,5W
3299	4822 050 24703	47k	1%	0,6W
3300	4822 050 24703	47k	1%	0,6W
3301	4822 050 24703	47k	1%	0,6W
3302	4822 050 24703	47k	1%	0,6W
3303	4822 116 52235	1M	5%	0,5W
3304	4822 116 52235	1M	5%	0,5W
3305	4822 050 13303	33k	1%	0,4W
3306	4822 050 13303	33k	1%	0,4W
3307	4822 050 21201	120R	1%	0,6W
3308	4822 116 52235	1M	5%	0,5W
3309	4822 050 23302	3k3	1%	0,6W
3310	4822 050 23302	3k3	1%	0,6W
3311	4822 050 21502	1k5	1%	0,6W
3312	4822 050 21502	1k5	1%	0,6W
3313	4822 050 21003	10k	2%	0,25W
3314	4822 050 21003	10k	2%	0,25W
3317	4822 116 52244	15k	5%	0,5W
3318	4822 116 52244	15k	5%	0,5W
3319	4822 116 52244	15k	5%	0,5W
3320	4822 116 52244	15k	5%	0,5W
3321	4822 050 21003	10k	2%	0,25W
3322	4822 050 21003	10k	2%	0,25W
3327	4822 116 52272	330k	5%	0,5W
3328	4822 116 52272	330k	5%	0,5W
3329	4822 050 22202	2k2	1%	0,6W
3330	4822 050 22202	2k2	1%	0,6W
3331	4822 050 24702	4k7	1%	0,6W
3332	4822 050 24702	4k7	1%	0,6W
3335	4822 050 13303	33k	1%	0,4W
3336	4822 050 13303	33k	1%	0,4W
3337	4822 050 22202	2k2	1%	0,6W
3338	4822 050 22202	2k2	1%	0,6W
3341	4822 050 24702	4k7	1%	0,6W
3342	4822 050 24702	4k7	1%	0,6W
3343	4822 050 21003	10k	2%	0,25W
3344	4822 050 21003	10k	2%	0,25W
3345	4822 050 24702	4k7	1%	0,6W
3346	4822 050 24702	4k7	1%	0,6W
3347	4822 050 24702	4k7	1%	0,6W

3348	4822 050 22202	2k2	1%	0,6W
3349	4822 050 24703	47k	1%	0,6W
3351	4822 050 22704	270k	1%	0,6W
3352	4822 050 22704	270k	1%	0,6W
3353	4822 050 22204	220k	1%	0,6W
3354	4822 050 22204	220k	1%	0,6W
3355	4822 116 52224	470R	5%	0,5W
3356	4822 116 52224	470R	5%	0,5W
3357	4822 116 52235	1M	5%	0,5W
3358	4822 116 52235	1M	5%	0,5W
3359	4822 050 24702	4k7	1%	0,6W
3360	4822 050 24702	4k7	1%	0,6W
3361	4822 050 21501	150R	1%	0,6W
3363	4822 050 21003	10k	2%	0,25W
3364	4822 050 21003	10k	2%	0,25W
3365	4822 050 21504	150k	1%	0,6W
3366	4822 050 21504	150k	1%	0,6W
3367	4822 050 24702	4k7	1%	0,6W
3368	4822 050 24702	4k7	1%	0,6W
3369	4822 050 24703	47k	1%	0,6W
3370	4822 050 24703	47k	1%	0,6W
3371	4822 050 24702	4k7	1%	0,6W
3372	4822 050 24702	4k7	1%	0,6W
3373	4822 050 24702	4k7	1%	0,6W
3374	4822 050 24702	4k7	1%	0,6W
3375	4822 116 52234	100k	5%	0,5W
3377	4822 050 24703	47k	1%	0,6W
3378	4822 050 24703	47k	1%	0,6W
3379	4822 116 52235	1M	5%	0,5W
3380	4822 116 52235	1M	5%	0,5W
3381	4822 116 52235	1M	5%	0,5W
3382	4822 116 52235	1M	5%	0,5W
3383	4822 050 22203	22k	1%	0,6W
3384	4822 050 22203	22k	1%	0,6W
3385	4822 052 10108	1R	5%	0,33W
3387	4822 050 21003	10k	2%	0,25W
3388	4822 050 21502	1k5	1%	0,6W
3389	4822 050 21201	120R	1%	0,6W
3390	4822 050 21201	120R	1%	0,6W
3391	4822 050 21201	120R	1%	0,6W
3392	4822 050 21201	120R	1%	0,6W
3393	4822 050 21502	1k5	1%	0,6W
3394	4822 050 21003	10k	2%	0,25W
3395	4822 050 25603	56k	1%	0,6W
3396	4822 116 52244	15k	5%	0,5W
3398	4822 050 21003	10k	2%	0,25W
3399	4822 050 26803	68k	1%	0,6W
3400	4822 050 26803	68k	1%	0,6W
3401	4822 050 25104	510k	1%	0,6W
3402	4822 050 25104	510k	1%	0,6W
3403	4822 050 21502	1k5	1%	0,6W
3404	4822 050 21502	1k5	1%	0,6W
3409	4822 050 25604	560k	1%	0,6W
3410	4822 050 25604	560k	1%	0,6W
3411	4822 050 24702	4k7	1%	0,6W
3412	4822 050 24702	4k7	1%	0,6W
3413	4822 050 24702	4k7	1%	0,6W
3414	4822 050 24702	4k7	1%	0,6W
3415	4822 050 24702	4k7	1%	0,6W
3416	4822 050 24702	4k7	1%	0,6W

POWER - BOARD

RESISTORS

3419	4822 050 24702	4k7	1%	0,6W
3420	4822 050 24702	4k7	1%	0,6W
3421	4822 116 52234	100k	5%	0,5W
3422	4822 116 52234	100k	5%	0,5W
3423	4822 050 22205	2M2	1%	0,6W
3424	4822 050 21006	10M	1%	0,6W
3425	4822 050 24702	4k7	1%	0,6W
3426	4822 050 21502	1k5	1%	0,6W
3427	4822 116 52303	8k2	5%	0,5W
3429	4822 116 52235	1M	5%	0,5W
3430	4822 116 52235	1M	5%	0,5W
3431	4822 116 52235	1M	5%	0,5W
3432	4822 116 52235	1M	5%	0,5W
3434	4822 050 24702	4k7	1%	0,6W
3435	4822 050 23909	39R	1%	0,6W
3436	4822 050 23909	39R	1%	0,6W
3439	4822 050 21002	1k	1%	0,6W
3440	4822 050 21002	1k	1%	0,6W
3925	4822 116 52234	100k	5%	0,5W
3251	4822 051 10561	560R	2%	0,25W
3252	4822 051 10561	560R	2%	0,25W
3260	4822 051 10561	560R	2%	0,25W
3277	4822 051 10101	100R	2%	0,25W
3278	4822 051 10101	100R	2%	0,25W
3279	4822 051 10101	100R	2%	0,25W
3280	4822 051 10101	100R	2%	0,25W
3397	4822 051 10561	560R	2%	0,25W
3405	4822 051 10561	560R	2%	0,25W
3406	4822 051 10561	560R	2%	0,25W
2250	5322 121 42386	100nF	5%	63V
2251	5322 121 42386	100nF	5%	63V
2252	5322 121 42386	100nF	5%	63V
2253	4822 124 42334	4700µF	20%	25V
2254	4822 124 42334	4700µF	20%	25V
2255	4822 124 40433	47µF	20%	25V
2256	4822 122 10183	100pF	5%	50V
2257	4822 122 10166	22nF	30%	16V
2258	4822 124 41643	100µF	20%	16V
2259	4822 122 33857	1,5nF	10%	50V
2260	4822 122 33857	1,5nF	10%	50V
2261	4822 124 41577	4,7µF	20%	50V
2262	4822 124 41577	4,7µF	20%	50V
2263	5322 121 42386	100nF	5%	63V
2264	5322 121 42386	100nF	5%	63V
2265	4822 124 41525	100µF	20%	25V
2266	4822 124 41525	100µF	20%	25V
2267	4822 124 41577	4,7µF	20%	50V
2268	4822 124 41577	4,7µF	20%	50V
2269	4822 124 41577	4,7µF	20%	50V
2270	4822 124 41577	4,7µF	20%	50V
2271	5322 121 42386	100nF	5%	63V
2272	5322 121 42386	100nF	5%	63V
2273	5322 121 42386	100nF	5%	63V
2274	5322 121 42386	100nF	5%	63V
2275	4822 124 40433	47µF	20%	25V
2276	4822 124 40433	47µF	20%	25V
2277	4822 124 40433	47µF	20%	25V
2278	4822 124 40435	10µF	20%	50V
2279	5322 121 42386	100nF	5%	63V

CHIP RESISTORS

CAPACITORS

2280	5322 121 42465	68nF	10%	50V
2282	4822 121 41854	150nF	10%	50V
2283	4822 124 40433	47µF	20%	25V
2284	4822 126 11323	15nF	10%	25V
2285	4822 124 41525	100µF	20%	25V
2286	4822 124 40433	47µF	20%	25V
2287	5322 121 42386	100nF	5%	63V
2288	4822 124 40433	47µF	20%	25V
2289	5322 121 42386	100nF	5%	63V
2291	4822 124 41407	0,47µF	20%	50V
2292	4822 124 41407	0,47µF	20%	50V
2293	4822 122 10177	10nF	20%	25V
2294	4822 122 10177	10nF	20%	25V
2295	4822 124 40242	1µF	20%	63V
2296	4822 124 40242	1µF	20%	63V
2297	4822 124 40435	10µF	20%	50V
2298	4822 124 40435	10µF	20%	50V
2299	4822 122 31466	330pF	10%	50V
2300	4822 122 31466	330pF	10%	50V
2301	4822 121 41854	150nF	10%	50V
2302	4822 121 41854	150nF	10%	50V
2303	4822 122 31435	470pF	10%	50V
2304	4822 122 31435	470pF	10%	50V
2305	4822 121 41856	22nF	5%	250V
2306	4822 121 41856	22nF	5%	250V
2307	5322 121 42491	47nF	5%	100V
2308	5322 121 42491	47nF	5%	100V
2309	4822 122 10174	1,5nF	10%	50V
2310	4822 122 10174	1,5nF	10%	50V
2311	4822 122 10174	1,5nF	10%	50V
2312	4822 122 10174	1,5nF	10%	50V
2313	5322 121 42386	100nF	5%	63V
2314	5322 121 42386			

CHIP CAPACITORS

2349	4822 122 30135	820pF	5%	50V
2350	4822 126 10778	220pF	5%	50V
2351	4822 122 31555	120pF	5%	50V
2352	4822 122 31555	120pF	5%	50V
2353	4822 122 10181	47pF	5%	50V
2354	5322 121 42386	100nF	5%	63V
2355	4822 122 31381	680pF	10%	50V
2356	4822 122 31381	680pF	10%	50V
2357	4822 122 31381	680pF	10%	50V

CONTROL - BOARD

MISCELLANEOUS

1400	4822 130 91048	E-5456 LCD
1450	4822 276 13066	TACT SWITCH
1451	4822 276 13066	TACT SWITCH
1452	4822 276 13066	TACT SWITCH
1453	4822 276 13066	TACT SWITCH
1454	4822 276 13066	TACT SWITCH
1455	4822 276 13066	TACT SWITCH
1456	4822 276 13066	TACT SWITCH
1457	4822 276 13066	TACT SWITCH
1458	4822 276 13066	TACT SWITCH
1459	4822 276 13066	TACT SWITCH
1460	4822 276 13066	TACT SWITCH
1461	4822 276 13066	TACT SWITCH
1462	4822 276 13066	TACT SWITCH
1463	4822 276 13066	TACT SWITCH
1464	4822 276 13066	TACT SWITCH
1465	4822 276 13066	TACT SWITCH
1466	4822 276 13066	TACT SWITCH
1467	4822 276 13066	TACT SWITCH
1468	4822 276 13066	TACT SWITCH
1469	4822 276 13066	TACT SWITCH
1470	4822 276 13066	TACT SWITCH
1471	4822 276 13066	TACT SWITCH
1472	4822 276 13066	TACT SWITCH
1473	4822 276 13066	TACT SWITCH
1474	4822 276 13066	TACT SWITCH
1475	4822 276 13066	TACT SWITCH
1476	4822 276 13066	TACT SWITCH
1477	4822 276 13066	TACT SWITCH
1478	4822 276 13066	TACT SWITCH
1479	4822 276 13066	TACT SWITCH
1480	4822 276 13066	TACT SWITCH
1481	4822 276 13066	TACT SWITCH
1482	4822 276 13066	TACT SWITCH

DIODES

6400	4822 130 34197	BZX79-C12 (UAW)
6401	4822 130 34167	BZX79-C6V2
6402	5322 130 31504	BZX79-C20
6403	4822 130 30621	1N4148
6404	5322 130 31928	BAS16
6405	5322 130 31928	BAS16
6406	4822 130 30621	1N4148
6410	4822 130 30621	1N4148
6411	4822 130 30621	1N4148
6412	4822 130 30621	1N4148
6413	4822 130 30621	1N4148
6414	4822 130 30621	1N4148

TRANSISTORS

7410	4822 130 40937	BC548B
7411	4822 130 40937	BC548B
7412	4822 130 40937	BC548B
7413	4822 130 41344	BC337-40
7414	4822 130 44197	BC558B
7415	4822 130 44197	BC558B
7416	5322 130 41982	BC848 (CHIP)
7420	4822 130 40937	BC548B
7421	4822 130 44197	BC558B
7430	4822 130 44197	BC558B
7431	5322 130 41982	BC848 (CHIP)

INTEGRATED CIRCUITS

7401	4822 209 30695	TMP47C1670N-V126 (3)
7402	5322 209 11129	PCF8576T
7403	5322 209 11129	PCF8576T
7404	5322 209 63719	ST24C02

COILS

5401	4822 156 20966	47μH	10%
5402	4822 157 53906	47μH	10%
5403	4822 157 53906	47μH	10%
5405	4822 242 72566	RESONATOR 6,0MHz	
5406	4822 242 81016	CRYSTAL 32,768kHz	

RESISTORS

3403	4822 050 21502	1k5	1%	0,6W
3414	4822 050 26808	6k8	1%	0,6W
3424	4822 050 21003	10k	2%	0,25W
3427	4822 050 22201	220R	2%	0,25W
3496	4822 050 21002	1k	1%	0,6W

CHIP RESISTORS

3002	4822 051 20008	CHIP JUMPER 1206		
3005	4822 051 20008	CHIP JUMPER 1206		
3007	4822 051 20008	CHIP JUMPER 1206		
3008	4822 051 20008	CHIP JUMPER 1206		
3015	4822 051 20008	CHIP JUMPER 1206		
3016	4822 051 20008	CHIP JUMPER 1206		
3019	4822 051 20008	CHIP JUMPER 1206		
3020	4822 051 20008	CHIP JUMPER 1206		
3021	4822 051 20008	CHIP JUMPER 1206		
3022	4822 051 20008	CHIP JUMPER 1206		
3024	4822 051 20008	CHIP JUMPER 1206		
3026	4822 051 20008	CHIP JUMPER 1206		
3027	4822 051 20008	CHIP JUMPER 1206		
3028	4822 051 20008	CHIP JUMPER 1206		
3029	4822 051 20008	CHIP JUMPER 1206		
3030	4822 051 20008	CHIP JUMPER 1206		
3031	4822 051 20008	CHIP JUMPER 1206		
3032	4822 051 20008	CHIP JUMPER 1206		
3070	4822 051 20008	CHIP JUMPER 1206		
3071	4822 051 20008	CHIP JUMPER 1206		
3080	4822 051 20008	CHIP JUMPER 1206		
3400	4822 051 20103	10k	5%	0,1W
3401	4822 051 20103	10k	5%	0,1W
3404	4822 051 20479	47R	5%	0,1W
3405	4822 051 20103	10k	5%	0,1W
3406	4822 051 20103	10k	5%	0,1W
3407	4822 051 20103	10k	5%	0,1W
3408	4822 051 10102	1k	2%	0,25W
3409	4822 051 20221	220R	5%	0,1W
3410	4822 051 20473	47k	5%	0,1W

CONTROL - BOARD

CHIP RESISTORS

3411	4822 051 10102	1k	2%	0,25W
3412	4822 051 20472	4k7	5%	0,1W
3413	4822 051 20221	220R	5%	0,1W
3415	4822 051 10182	1k8	2%	0,25W
3416	4822 051 20223	22k	5%	0,1W
3417	4822 051 20104	100k	5%	0,1W
3418	4822 051 20479	47R	5%	0,1W
3419	4822 051 20472	4k7	5%	0,1W
3420	4822 051 20471	470R	5%	0,1W
3421	4822 051 20473	47k	5%	0,1W
3422	4822 051 20472	4k7	5%	0,1W
3423	4822 051 20104	100k	5%	0,1W
3425	4822 051 20472	4k7	5%	0,1W
3426	4822 051 10102	1k	2%	0,25W
3428	4822 051 20223	22k	5%	0,1W
3436	4822 051 20223	22k	5%	0,1W
3437	4822 051 20223	22k	5%	0,1W
3438	4822 051 20223	22k	5%	0,1W
3439	4822 051 20223	22k	5%	0,1W
3440	4822 051 20223	22k	5%	0,1W
3441	4822 051 20472	4k7	5%	0,1W
3442	4822 051 20223	22k	5%	0,1W
3443	4822 051 10102	1k	2%	0,25W
3444	4822 051 10102	1k	2%	0,25W
3445	4822 051 20472	4k7	5%	0,1W
3446	4822 051 20473	47k	5%	0,1W
3447	4822 051 20472	4k7	5%	0,1W
3450	4822 051 20152	1k5	5%	0,1W
3451	4822 051 20152	1k5	5%	0,1W
3452	4822 051 20104	100k	5%	0,1W
3453	4822 051 20104	100k	5%	0,1W
3454	4822 051 20104	100k	5%	0,1W
3455	4822 051 20103	10k	5%	0,1W
3456	4822 051 20473	47k	5%	0,1W
3461	4822 051 10102	1k	2%	0,25W
3462	4822 051 10102	1k	2%	0,25W
3463	4822 051 10102	1k	2%	0,25W
3464	4822 051 10102	1k	2%	0,25W
3465	4822 051 10102	1k	2%	0,25W
3466	4822 051 10102	1k	2%	0,25W
3467	4822 051 10102	1k	2%	0,25W
3468	4822 051 10102	1k	2%	0,25W
3469	4822 051 10102	1k	2%	0,25W
3470	4822 051 10102	1k	2%	0,25W
3471	4822 051 10102	1k	2%	0,25W
3472	4822 051 10102	1k	2%	0,25W
3473	4822 051 10102	1k	2%	0,25W
3474	4822 051 10102	1k	2%	0,25W
3475	4822 051 10102	1k	2%	0,25W
3476	4822 051 10102	1k	2%	0,25W
3480	4822 051 10102	1k	2%	0,25W
3481	4822 051 10102	1k	2%	0,25W
3482	4822 051 20103	10k	5%	0,1W
3483	4822 051 20103	10k	5%	0,1W
3485	4822 051 20103	10k	5%	0,1W
3486	4822 051 20472	4k7	5%	0,1W
3487	4822 051 20472	4k7	5%	0,1W
3488	4822 051 10102	1k	2%	0,25W
3489	4822 051 10102	1k	2%	0,25W
3490	4822 051 10102	1k	2%	0,25W

3491	4822 051 10102	1k	2%	0,25W
3492	4822 051 10102	1k	2%	0,25W
3493	4822 051 10102	1k	2%	0,25W
3494	4822 051 20332	3k3	5%	0,1W
3495	4822 051 20471	470R	5%	0,1W
3497	4822 051 10102	1k	2%	0,25W
3498	4822 051 20471	470R	5%	0,1W

CAPACITORS

2400	4822 124 42313	47mF	20%	5,5V
2401	4822 124 41643	100μF	20%	16V
2402	4822 124 41643	100μF	20%	16V
2405	4822 124 40433	47μF	20%	25V
2407	4822 124 40433	47μF	20%	25V
2408	4822 124 40433	47μF	20%	25V
2415	4822 126 11948	22pF	5%	50V
2416	4822 126 11947	4,7pF		50V
2417	4822 125 50355	4,2-20pF VARIABLE		
2422	4822 122 31746	1nF	5%	50V
2423	4822 122 31746	1nF	5%	50V
2424	4822 122 31746	1nF	5%	50V
2425	4822 122 31746	1nF	5%	50V
2426	4822 122 31746	1nF	5%	50V
2429	4822 124 40433	47μF	20%	25V

CHIP CAPACITORS

2403	4822 124 10965	2,2μF	20%	6,3V
2404	4822 122 31947	100nF		63V
2409	5322 124 10801	4,7μF		4V
2420	4822 122 33809	22nF	+80/-20%	
2421	4822 122 33809	22nF	+80/-20%	
2427	4822 122 32999	2,2nF	5%	
2430	4822 124 10965	2,2μF	20%	6,3V
2435	5322 122 32531	100pF	5%	50V
2436	4822 122 31784	4,7nF	10%	50V
2437	4822 122 31784	4,7nF	10%	50V
2438	4822 124 10965	2,2μF	20%	6,3V

ECO 3 - TUNER-BOARD

TRANSISTORS

7119	5322 130 41982	BC848 (CHIP)
7120	5322 130 41982	BC848 (CHIP)

INTEGRATED CIRCUITS

7116	4822 209 71331	LM7000
7117	4822 209 73851	CXA1238M

COILS

5102	4822 156 30947	RF COIL 1,5 TURNS
5103	4822 156 30947	RF COIL 1,5 TURNS
5104	4822 157 53192	0,22μH
5105	4822 156 20816	AM-IF 450kHz
5106	4822 158 60511	AM-IF FILTER
5107	4822 526 10466	FERR.ANT.ASSY MW/LW
5108	4822 156 10459	COIL VAR. AM - OSC.
5109	4822 242 73546	FM-DISC.
5110	4822 303 50034	CRYSTAL 7,2 MHz

RESISTORS

3101	4822 116 52234	100k	5%	0,5W
3104	4822 050 24702	4k7	1%	0,6W
3106	4822 050 26801	680R	1%	0,6W
3108	4822 050 24703	47k	1%	0,6W
3111	4822 050 21203	12k	1%	0,6W
3112	4822 050 21203	12k	1%	0,6W
3115	4822 100 11213	22k	30%	POT.
3117	4822 050 21002	1k	1%	0,6W
3124	4822 050 24702	4k7	1%	0,6W
3125	4822 050 24702	4k7	1%	0,6W
3126	4822 050 22202	2k2	1%	0,6W
3128	4822 050 16809	68R	1%	0,4W
3130	4822 050 15602	5k6	1%	0,4W
3132	4822 050 24702	4k7	1%	0,6W
3133	4822 050 22203	22k	1%	0,6W
3134	4822 050 22201	220R	2%	0,25W
3135	4822 116 52244	15k	5%	0,5W
3138	4822 050 14709	47R	1%	0,4W
3140	4822 050 23301	330R	2%	0,25W
3141	4822 050 21002	1k	1%	0,6W
3142	4822 050 21002	1k	1%	0,6W
3143	4822 050 21002	1k	1%	0,6W
3145	4822 050 24702	4k7	1%	0,6W
3146	4822 053 10151	150R	5%	1W
3147	4822 050 21003	10k	2%	0,25W
3150	4822 050 21002	1k	1%	0,6W
3152	4822 050 22203	22k	1%	0,6W
3157	4822 050 22202	2k2	1%	0,6W
3165	4822 050 11809	18R	1%	0,4W

CHIP RESISTORS

3100	4822 051 20229	22R	5%	0,1W
3102	4822 051 20561	560R	5%	0,1W
3103	4822 051 20562	5k6	5%	0,1W
3107	4822 051 20331	330R	5%	0,1W
3109	4822 051 20472	4k7	5%	0,1W
3110	4822 051 20222	2k2	5%	0,1W
3113	4822 051 20271	270R	5%	0,1W
3114	4822 051 20103	10k	5%	0,1W
3116	4822 051 20101	100R	5%	0,1W
3118	4822 051 20103	10k	5%	0,1W

3119	4822 051 20103	10k	5%	0,1W
3120	4822 051 20105	1M	5%	0,1W
3121	4822 051 10102	1k	2%	0,25W
3122	4822 051 20105	1M	5%	0,1W
3123	4822 051 20103	10k	5%	0,1W
3129	4822 051 20104	100k	5%	0,1W
3131	4822 051 20008	CHIP JUMPER 1206		
3136	4822 051 20472	4k7	5%	0,1W
3137	4822 051 20472	4k7	5%	0,1W
3139	4822 051 20104	100k	5%	0,1W
3144	4822 051 10102	1k	2%	0,25W
3148	4822 051 20562	5k6	5%	0,1W
3149	4822 051 20474	470k	5%	0,1W
3151	4822 051 20223	22k	5%	0,1W
3154	4822 051 20333	33k	5%	0,1W
3155	4822 051 20223	22k	5%	0,1W
3156	4822 051 20562	5k6	5%	0,1W
3158	4822 051 20331	330R	5%	0,1W
3159	4822 051 20471	470R	5%	0,1W
3160	4822 051 20153	15k	5%	0,1W
3161	4822 051 20008	CHIP JUMPER 1206		
3163	4822 051 20681	680R	5%	0,1W

CAPACITORS

2101	4822 122 10183	100pF	5%	50V
2104	4822 122 10181	47pF	5%	50V
2105	4822 125 60101	10pF VARIABLE		
2106	4822 122 10183	100pF	5%	50V
2111	4822 121 42408	220nF	5%	63V
2117	4822 124 40246	4,7uF	20%	63V
2118	4822 124 40242	1μF	20%	63V
2119	4822 124 22794	47μF	20%	10V
2121	4822 124 41987	0,22μF	20%	63V
2122	4822 124 40239	0,47μF	20%	63V
2123	4822 124 40239	0,47μF	20%	63V
2124	4822 122 10177	10nF	20%	25V
2125	4822 122 10177	10nF	20%	25V
2126	4822 124 40239	0,47μF	20%	63V
2127	4822 124 40248	10μF	20%	63V
2128	4822 124 40246	4,7uF	20%	63V
2130	4822 124 41554	220μF	20%	10V
2135	4822 125 60101	10pF VARIABLE		
2136	4822 121 51288	100pF	2%	630V
2139	4822 125 60101	10pF VARIABLE		
2140	5322 121 50999	470pF	1%	400V
2142	4822 121 43253	360pF	1%	400V
2145	4822 124 40196	220μF	20%	16V
2146	4822 124 41631	1,5μF	20%	50V
2149	4822 124 40242	1μF	20%	63V
2151	4822 122 10183	100pF	5%	50V
2152	4822 122 10181	47pF	5%	50V
2153	5322 122 32965	18pF	5%	50V
2154	5322 122 32481	15pF	5%	50V
2164	5322 122 32967	5,6pF	5%	50V

CHIP CAPACITORS

2102	5322 122 32531	100pF	5%	50V
2103	4822 122 31727	470pF	5%	63V
2107	5322 122 32268	470pF	10%	50V
2108	4822 122 31727	470pF	5%	63V
2109	5322 122 32269	6,8pF	5%	50V

ECO 3 TUNER - BOARD

CHIP CAPACITORS

2110	4822 122 31727	470pF	5%	63V
2112	4822 122 31808	150pF	10%	50V
2113	5322 122 34123	1nF	10%	50V
2114	4822 122 32927	220nF	10%	63V
2115	4822 122 32927	220nF	10%	63V
2116	4822 122 31797	22nF	10%	63V
2120	4822 122 33496	100nF	10%	63V
2129	5322 122 32268	470pF	10%	50V
2131	5322 122 34123	1nF	10%	50V
2132	5322 122 32654	22nF	10%	63V
2133	4822 122 31727	470pF	5%	63V
2134	4822 122 32927	220nF	10%	63V
2137	5322 122 32658	22pF	5%	50V
2138	4822 122 32927	220nF	10%	63V
2141	5322 122 32654	22nF	10%	63V
2143	4822 122 32482	22pF	5%	63V
2147	4822 122 33339	4,7nF	10%	50V
2148	4822 122 33339	4,7nF	10%	50V
2150	5322 122 32654	22nF	10%	63V
2155	4822 122 33806	820pF	10%	63V
2156	5322 122 32654	22nF	10%	63V
2158	4822 122 31727	470pF	5%	63V
2159	5322 122 32268	470pF	10%	50V
2160	5322 122 32268	470pF	10%	50V
2161	4822 122 32927	220nF	10%	63V
2165	4822 122 32927	220nF	10%	63V
2168	4822 122 33891	3,3nF	10%	63V
2169	5322 122 32654	22nF	10%	63V

HERA C3 TUNER - BOARD

MISCELLANEOUS

1101	4822 267 31128	SOCKET, COAX 75 OHM
1102	4822 267 40668	SOCKET FRAME AERIAL

DIODES

6101	4822 130 81643	BB804
6102	4822 130 81643	BB804
6110	4822 130 81643	BB804
6111	4822 130 81643	BB804

TRANSISTORS

7102	4822 130 60093	2SA838B
7104	4822 130 44154	BF199
7105	4822 130 40937	BC548B
7107	5322 130 44779	BC338-40
7108	5322 130 44779	BC338-40
7109	5322 130 41982	BC848 (CHIP)
7111	5322 130 41982	BC848 (CHIP)
7113	5322 130 41982	BC848 (CHIP)
7114	5322 130 41982	BC848 (CHIP)
7115	5322 130 41982	BC848 (CHIP)
7117	4822 130 41024	BF245B

INTEGRATED CIRCUITS

7103	4822 209 72744	CXA1240P
7106	4822 209 71321	AN7411
7110	4822 209 71331	LM7000

COILS

5101	4822 156 30947	RF COIL 1,5 TURNS
5104	4822 157 63288	FM OSC. COIL
5105	4822 157 63031	AM OSCILLATOR COIL
5106	4822 157 53192	0,22μH
5107	4822 242 72096	CER.FILT.KIT 10,7MHz
5108	4822 157 63029	AM IF COIL
5109	4822 242 71878	CERAM.RES. 450kHz
5110	4822 157 63033	MW AERIAL COIL
5111	4822 157 63163	FM IF COIL
5112	4822 242 72976	QUARTZ 2,7MHz
5113	4822 157 60147	COIL 2,2μH
5114	4822 158 60509	BIRDY FILTER
5115	4822 157 60147	COIL 2,2μH
5116	4822 157 63032	LW AERIAL COIL
5118	4822 152 20699	560μH

RESISTORS

3105	4822 050 23901	390R	1%	0,6W
3106	4822 116 52217	270R	5%	0,5W
3107	4822 050 24702	4k7	1%	0,6W
3111	4822 050 24703	47k	1%	0,6W
3114	4822 100 20166	10k TRIMPOT.		
3116	4822 050 21001	100R	5%	SFR25
3120	4822 050 23903	39k	1%	0,6W
3128	4822 050 24702	4k7	1%	0,6W
3131	4822 050 23301	330R	2%	0,25W
3132	4822 050 26801	680R	1%	0,6W
3134	4822 050 24702	4k7	1%	0,6W
3135	4822 050 22201	220R	2%	0,25W
3139	4822 050 24702	4k7	1%	0,6W
3141	4822 050 21003	10k	2%	0,25W
3142	4822 050 21001	100R	5%	SFR25
3143	4822 050 22203	22k	1%	0,6W
3145	4822 100 20166	10k TRIMPOT.		
3147	4822 050 21801	180R	1%	0,6W
3148	4822 050 21003	10k	2%	0,25W
3149	4822 050 21002	1k	1%	0,6W
3151	4822 050 21002	1k	1%	0,6W
3153	4822 050 21002	1k	1%	0,6W
3173	4822 050 21002	1k	1%	0,6W

CHIP RESISTORS

3101	4822 051 20473	47k	5%	0,1W
3102	4822 051 20333	33k	5%	0,1W
3103	4822 051 10472	4k7	2%	0,25W
3104	4822 051 10102	1k	2%	0,25W
3108	4822 051 10122	1k2	2%	0,25W
3109	4822 051 10101	100R	2%	0,25W
3112	4822 051 20008	CHIP JUMPER 1206		
3113	4822 051 20689	68R	5%	0,1W
3115	4822 051 10479	47R		
3117	4822 051 10103	10k	2%	0,25W
3118	4822 051 20271	270R	5%	0,1W
3121	4822 051 20104	100k	5%	0,1W
3122	4822 051 10272	2k7	2%	0,25W
3124	4822 051 10008	JUMPER		
3126	4822 051 10472	4k7	2%	0,25W
3127	4822 051 20472	4k7	5%	0,1W
3130	4822 051 20104	100k	5%	0,1W
3133	4822 051 20223	22k	5%	0,1W
3136	4822 051 10153	15k	2%	0,25W
3137	4822 051 20562	5k6	5%	0,1W

HERA C3 TUNER - BOARD

CHIP RESISTORS

3138	4822 051 20472	4k7	5%	0,1W
3140	4822 051 10102	1k	2%	0,25W
3144	4822 051 20183	18k	5%	0,1W
3146	4822 051 10821	820R	2%	0,25W
3156	4822 051 10103	10k	2%	0,25W
3157	4822 051 10008	JUMPER		
3158	4822 051 20104	100k	5%	0,1W
3160	4822 051 10008	JUMPER		
3161	4822 051 20473	47k	5%	0,1W
3162	4822 051 20479	47R	5%	0,1W
3163	4822 051 20562	5k6	5%	0,1W
3164	4822 051 20008	CHIP JUMPER 1206		
3170	4822 051 10008	JUMPER		
3174	4822 051 10102	1k	2%	0,25W
3175	4822 051 10331	330R	2%	0,25W
3176	4822 051 20271	270R	5%	0,1W
3177	4822 051 10151	150R	2%	0,25W

CAPACITORS

2100	4822 122 31555	120pF	5%	50V
2103	4822 125 50355	4,2-20pF VARIABLE		
2109	4822 125 50355	4,2-20pF VARIABLE		
2111	4822 125 50355	4,2-20pF VARIABLE		
2115	5322 122 32481	15pF	5%	50V
2119	4822 124 41554	220μF	20%	10V
2123	4822 122 31555	120pF	5%	50V
2130	4822 124 40178	100μF	20%	10V
2131	4822 124 40244	2,2μF	20%	63V
2134	5322 121 50999	470pF	1%	400V
2135	4822 121 43253	360pF	1%	400V
2136	4822 125 60101	10pF VARIABLE		
2137	4822 122 10436	6,8pF	10%	50V
2139	4822 122 10166	22nF	30%	16V
2141	4822 122 31385	22pF	5%	50V
2144	4822 124 41554	220μF	20%	10V
2146	4822 122 32096	4,7pF	10%	50V
2150	4822 121 42408	220nF	5%	63V
2151	4822 125 60101	10pF VARIABLE		
2152	4822 121 43861	56pF	1%	63V
2155	4822 124 41631	1,5μF	20%	50V
2158	4822 124 40196	220μF	20%	16V
2161	4822 124 40246	4,7μF	20%	63V
2165	4822 124 40242	1μF	20%	63V
2167	4822 124 41643	100μF	20%	16V
2168	5322 121 50999	470pF	1%	400V
2170	4822 124 40239	0,47μF	20%	63V
2172	4822 124 42129	0,22μF	20%	63V
2173	4822 124 40246	4,7μF	20%	63V
2176	4822 124 40242	1μF	20%	63V
2177	4822 124 40242	1μF	20%	63V
2180	5322 122 32965	18pF	5%	50V
2181	5322 122 32481	15pF	5%	50V
2182	4822 124 40242	1μF	20%	63V
2198	5322 122 32481	15pF	5%	50V
2205	4822 125 60102	30pF VARIABLE		
2215	5322 122 32967	5,6pF	5%	50V
2216	5322 122 32967	5,6pF	5%	50V

CHIP CAPACITORS

2104	5322 122 32658	22pF	5%	50V
2105	5322 122 32531	100pF	5%	50V
2106	4822 122 31727	470pF	5%	63V
2107	4822 122 31727	470pF	5%	63V
2112	4822 122 31727	470pF	5%	63V
2113	4822 122 31727	470pF	5%	63V
2114	4822 122 32765	820pF	10%	63V
2116	5322 122 32658	22pF	5%	50V
2117	4822 122 32139	12pF	5%	63V
2118	4822 122 31971	10pF	10%	50V
2120	5322 122 32654	22nF	10%	63V
2124	4822 122 31727	470pF	5%	63V
2125	5322 122 33538	150pF	5%	63V
2126	5322 122 33538	150pF	5%	63V
2127	5322 122 32654	22nF	10%	63V
2128	5322 122 32661	56pF	5%	50V
2129	5322 122 32654	22nF	10%	63V
2132	5322 122 34123	1nF	10%	50V
2133	4822 122 31825	27pF	10%	50V
2138	4822 122 32482	22pF	5%	63V
2140	4822 122 32927	220nF	10%	63V
2142	5322 122 32452	47pF	5%	50V
2143	5322 122 32452	47pF	5%	50V
2147	5322 122 32268	470pF	10%	50V
2148	4822 122 31727	470pF	5%	63V
2149	5322 122 33537	1,2pF	5%	63V
2153	5322 122 32654	22nF	10%	63V
2156	4822 122 33339	4,7nF	10%	50V
2157	4822 122 33339	4,7nF	10%	50V
2159	5322 122 32654	22nF	10%	63V
2160	4822 122 31727	470pF	5%	63V
2162	4822 122 32142	270pF	5%	63V
2164	4822 122 33173	560pF	10%	63V
2166	5322 122 32654	22nF	10%	63V
2171	4822 122 31727	470pF	5%	63V
2174	4822 122 33543	15nF	10%	
2175	4822 122 33543	15nF	10%	
2178	4822 122 33173	560pF	10%	63V
2179	5322 122 32654	22nF	10%	63V
2183	4822 122 32927	220nF	10%	63V
2184	4822 122 31727	470pF	5%	63V
2185	4822 122 32765	820pF	10%	63V
2186	4822 122 31727	470pF	5%	63V
2187	4822 122 31727	470pF	5%	63V
2188	4822 122 31727	470pF	5%	63V
2189	4822 122 31965	220pF	5%	
2191	5322 122 32287	4,7pF	5%	50V
2192	4822 122 32927	220nF	10%	63V
2193	4822 122 32765	820pF	10%	63V
2195	4822 122 32927	220nF	10%	63V
2199	5322 122 33538	150pF	5%	63V
2200	5322 122 31647	1nF	10%	63V
2201	4822 122 32927	220nF	10%	63V
2211	5322 122 32448	10pF	5%	50V

RECORDER - BOARD

DIODES

6406	4822 130 30621	1N4148
6407	4822 130 30621	1N4148
6408	4822 130 30621	1N4148
6409	4822 130 30621	1N4148
6410	4822 130 30621	1N4148
6412	4822 130 30621	1N4148
6413	4822 130 30621	1N4148
6415	4822 130 30621	1N4148
6416	4822 130 30621	1N4148
6417	4822 130 30621	1N4148
6701	4822 130 30621	1N4148
6702	4822 130 30621	1N4148
6703	5322 130 34563	BZX79-C2V7
6704	4822 130 30621	1N4148
6705	4822 130 30621	1N4148

6791	4822 130 30862	BZX79-C9V1
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TRANSISTORS

7405	5322 130 41983	BC858B(CHIP)
7406	5322 130 41983	BC858B(CHIP)
7407	5322 130 41982	BC848 (CHIP)
7408	5322 130 44779	BC338-40
7409	5322 130 44779	BC338-40
7410	5322 130 44779	BC338-40
7411	5322 130 44779	BC338-40
7412	5322 130 44779	BC338-40
7413	5322 130 41982	BC848 (CHIP)
7414	5322 130 41982	BC848 (CHIP)
7416	5322 130 41982	BC848 (CHIP)
7417	5322 130 41982	BC848 (CHIP)
7418	5322 130 41982	BC848 (CHIP)
7419	5322 130 41982	BC848 (CHIP)
7420	5322 130 41982	BC848 (CHIP)
7654	5322 130 44779	BC338-40
7655	5322 130 44779	BC338-40
7705	5322 130 41982	BC848 (CHIP)
7708	5322 130 41982	BC848 (CHIP)
7709	5322 130 41982	BC848 (CHIP)
7710	5322 130 41982	BC848 (CHIP)
7791	5322 130 41982	BC848 (CHIP)
7792	5322 130 41982	BC848 (CHIP)

INTEGRATED CIRCUITS

7401	4822 209 80891	MC7805CT
7402	4822 209 30702	MC68HC05-ZC403894P (2)
7651	4822 209 72749	CXA1100P
7652	4822 209 83274	NJM4560D
7653	4822 209 71636	TC4016BP
7656	4822 209 71636	TC4016BP
7701	4822 209 62372	TDA1602A/N3
7702	5322 209 86327	N7406N
7704	4822 209 71636	TC4016BP

COILS

5401	4822 242 72567	FRC4,0MCT
5651	4822 242 73768	MPX-FILTER
5652	4822 242 73768	MPX-FILTER
5653	4822 156 20811	COIL 36μH
5654	4822 156 20811	COIL 36μH
5701	4822 156 20811	COIL 36μH

5702	4822 156 20811	COIL 36μH
5703	4822 156 20946	OSC.COIL 100kHz

RESISTORS

3401	4822 052 10229	22R	5%	0,33W
3402	4822 116 80311	4,7R	5%	NFR
3414	4822 050 24703	47k	1%	0,6W
3423	4822 116 52263	2k7	5%	0,5W
3425	4822 050 21501	150R	1%	0,6W
3426	4822 100 11348	1k POTMETER		
3427	4822 050 15602	5k6	1%	0,4W
3428	4822 100 11391	330R POTMETER		
3430	4822 100 11391	330R POTMETER		
3431	4822 116 52234	100k	5%	0,5W
3432	4822 116 52234	100k	5%	0,5W
3433	4822 050 22202	2k2	1%	0,6W
3434	4822 050 22204	220k	1%	0,6W
3435	4822 116 52234	100k	5%	0,5W
3436	4822 050 21201	120R	1%	0,6W
3437	4822 050 21002	1k	1%	0,6W
3438	4822 050 21201	120R	1%	0,6W
3439	4822 050 21002	1k	1%	0,6W
3440	4822 050 21002	1k	1%	0,6W
3441	4822 050 22203	22k	1%	0,6W
3442	4822 050 22203	22k	1%	0,6W
3443	4822 050 22203	22k	1%	0,6W
3444	4822 050 22203	22k	1%	0,6W
3445	4822 050 22203	22k	1%	0,6W
3446	4822 050 22203	22k	1%	0,6W
3447	4822 050 21502	1k5	1%	0,6W
3454	4822 050 21003	10k	2%	0,25W
3651	4822 116 52224	470R	5%	0,5W
3652	4822 116 52224	470R	5%	0,5W
3653	4822 050 24703	47k	1%	0,6W
3654	4822 050 24703	47k	1%	0,6W
3655	4822 050 21002	1k	1%	0,6W
3656	4822 050 21002	1k	1%	0,6W
3657	4822 050 21204	120k	1%	0,6W
3658	4822 050 21204	120k	1%	0,6W
3659	4822 050 23302	3k3	1%	0,6W
3660	4822 050 23302	3k3	1%	0,6W
3661	4822 050 15602	5k6	1%	0,4W
3662	4822 050 15602	5k6	1%	0,4W
3663	4822 050 21002	1k	1%	0,6W
3664	4822 050 21002	1k	1%	0,6W
3665	4822 050 21002	1k	1%	0,6W
3666	4822 050 21002	1k	1%	0,6W
3667	4822 050			

RECORDER - BOARD

RESISTORS

3690	4822 116 52263	2k7	5%	0,5W
3691	4822 050 15602	5k6	1%	0,4W
3692	4822 050 15602	5k6	1%	0,4W
3697	4822 050 22003	20k	1%	0,6W
3698	4822 050 22003	20k	1%	0,6W
3699	4822 052 10229	22R	5%	0,33W
3701	4822 050 14709	47R	1%	0,4W
3702	4822 050 14709	47R	1%	0,4W
3703	4822 116 52186	22R	5%	0,5W
3704	4822 116 52186	22R	5%	0,5W
3705	4822 050 14709	47R	1%	0,4W
3706	4822 050 14709	47R	1%	0,4W
3707	4822 050 27503	75k	1%	0,6W
3708	4822 050 27503	75k	1%	0,6W
3709	4822 050 13303	33k	1%	0,4W
3710	4822 050 13303	33k	1%	0,4W
3723	4822 100 11392	47k POTMETER		
3724	4822 100 11392	47k POTMETER		
3725	4822 050 21002	1k	1%	0,6W
3726	4822 050 21002	1k	1%	0,6W
3731	4822 116 52234	100k	5%	0,5W
3732	4822 116 52234	100k	5%	0,5W
3733	4822 050 21002	1k	1%	0,6W
3734	4822 050 21002	1k	1%	0,6W
3735	4822 050 22202	2k2	1%	0,6W
3736	4822 050 21002	1k	1%	0,6W
3737	4822 116 80311	4,7R	5%	NFR
3738	4822 050 22702	2k7	1%	0,6W
3739	4822 051 10106	10M	5%	0,25W
3742	4822 052 10229	22R	5%	0,33W
3743	4822 052 10229	22R	5%	0,33W
3744	4822 116 52263	2k7	5%	0,5W
3745	4822 116 52263	2k7	5%	0,5W
3746	4822 050 21003	10k	2%	0,25W
3747	4822 050 21502	1k5	1%	0,6W
3748	4822 050 21002	1k	1%	0,6W
3749	4822 050 22203	22k	1%	0,6W
3750	4822 116 52264	27k	5%	0,5W
3753	4822 050 22202	2k2	1%	0,6W
3754	4822 050 21003	10k	2%	0,25W
3755	4822 050 23002	3k	1%	0,6W
3757	4822 050 21003	10k	2%	0,25W
3760	4822 050 21002	1k	1%	0,6W
3761	4822 050 21003	10k	2%	0,25W
3762	4822 050 21003	10k	2%	0,25W
3763	4822 050 24703	47k	1%	0,6W
3764	4822 050 21003	10k	2%	0,25W
3781	4822 116 80562	10R	5%	NFR
3791	4822 050 21002	1k	1%	0,6W
3792	4822 050 21003	10k	2%	0,25W
3793	4822 050 24703	47k	1%	0,6W
3794	4822 050 24702	4k7	1%	0,6W
3404	4822 051 20105	1M	5%	0,1W
3405	4822 051 10101	100R	2%	0,25W
3406	4822 051 10101	100R	2%	0,25W
3407	4822 051 20101	100R	5%	0,1W
3416	4822 051 20273	27k	5%	0,1W

3417	4822 051 20273	27k	5%	0,1W
3418	4822 051 20273	27k	5%	0,1W
3419	4822 051 20273	27k	5%	0,1W
3420	4822 051 20273	27k	5%	0,1W
3421	4822 051 20273	27k	5%	0,1W

3422	4822 051 20273	27k	5%	0,1W
3429	4822 051 10122	1k2	2%	0,25W
3449	4822 051 20682	6k8	5%	0,1W
3450	4822 051 20682	6k8	5%	0,1W
3451	4822 051 20682	6k8	5%	0,1W

3452	4822 051 20682	6k8	5%	0,1W
3453	4822 051 20682	6k8	5%	0,1W
3687	4822 051 10182	1k8	2%	0,25W
3688	4822 051 10182	1k8	2%	0,25W
3711	4822 051 20104	100k	5%	0,1W

3712	4822 051 20104	100k	5%	0,1W
3729	4822 051 10101	100R	2%	0,25W
3730	4822 051 10101	100R	2%	0,25W
3740	4822 051 20479	47R	5%	0,1W
3756	4822 051 20123	12k	2%	0,1W

3758	4822 051 20104	100k	5%	0,1W
3759	4822 051 20103	10k	5%	0,1W
3765	4822 051 20333	33k	5%	0,1W
3766	4822 051 20273	27k	5%	0,1W
3767	4822 051 20273	27k	5%	0,1W

3768	4822 051 20333	33k	5%	0,1W
3769	4822 051 20103	10k	5%	0,1W
3770	4822 051 20103	10k	5%	0,1W
3783	4822 051 20474	470k	5%	0,1W
3784	4822 051 20474	470k	5%	0,1W

3787	4822 051 20101	100R	5%	0,1W
3788	4822 051 20273	27k	5%	0,1W
3795	4822 051 10101	100R	2%	0,25W
3796	4822 051 20272	2k7	5%	0,1W
3798	4822 051 20104	100k	5%	0,1W

CAPACITORS

2401	4822 124 41525	100μF	20%	25V
2403	4822 124 22794	47μF	20%	10V
2412	5322 121 42498	680nF	5%	63V
2414	4822 122 31746	1nF	5%	50V
2651	5322 121 42498	680nF	5%	63V

2652	5322 121 42498	680nF	5%	63V
2653	4822 124 40246	4,7uF	20%	63V
2654	4822 124 40246	4,7uF	20%	63V
2655	4822 124 40242	1μF	20%	63V
2656	4822 124 40242	1μF	20%	63V

2659	4822 121 43676	3,3nF	5%	50V
2660	4822 121 43676	3,3nF	5%	50V
2661	4822 124 40242	1μF	20%	63V
2662	4822 124 40242	1μF	20%	63V
2665	4822 124 40248	10μF	20%	63V

2666	4822 124 41525	100μF	20%	25V
2670	4822 124 41525	100μF	20%	25V
2671	4822 124 40246	4,7uF	20%	63V
2672	4822 124 40246	4,7uF	20%	63V
2677	4822 124 40433	47μF	20%	25V

2678	4822 124 40433	47μF	20%	25V
2679	4822 121 51356	180nF	10%	63V
2680	4822 121 51356	180nF	10%	63V
2681	4822 122 31555	120pF	5%	50V
2682	4822 122 31555	120pF	5%	50V

RECORDER - BOARD

CAPACITORS

2683	4822 122 10175	2,2nF	10%	50V
2684	4822 122 10175	2,2nF	10%	50V
2685	4822 122 10175	2,2nF	10%	50V
2686	4822 122 10175	2,2nF	10%	50V
2687	4822 124 40246	4,7μF	20%	63V

2688	4822 124 40246	4,7μF	20%	63V
2689	4822 122 10176	4,7nF	10%	50V
2690	4822 122 10176	4,7nF	10%	50V
2691	4822 121 43179	18nF	5%	63V
2692	4822 121 43179	18nF	5%	63V

2693	4822 122 10171	180pF	10%	50V
2694	4822 122 10171	180pF	10%	50V
2695	4822 122 10225	82pF	5%	50V
2696	4822 122 10225	82pF	5%	50V
2697	4822 122 10181	47pF	5%	50V

2698	4822 122 10181	47pF	5%	50V
2712	4822 124 40246	4,7μF	20%	63V
2713	4822 124 40246	4,7μF	20%	63V
2717	5322 122 10237	150pF	10%	50V
2718	5322 122 10237	150pF	10%	50V

2721	4822 124 40246	4,7μF	20%	63V
2722	4822 124 40246	4,7μF	20%	63V
2723	4822 122 10183	100pF	5%	50V
2724	4822 122 10183	100pF	5%	50V
2725	4822 122 10174	1,5nF	10%	50V

2726	4822 122 10174	1,5nF	10%	50V
2727	4822 122 10183	100pF	5%	50V
2728	4822 122 10183	100pF	5%	50V
2729	5322 121 42386	100nF	5%	63V
2730	5322 121 42386	100nF	5%	63V

2733	4822 124 40178	100μF	20%	10V
2734	4822 124 40178	100μF	20%	10V
2741	4822 124 22263	220μF	20%	25V
2742	4822 124 41997	470pF	20%	10V
2743	4822 124 40433	47μF	20%	25V

2745	4822 121 42783	2,2nF	1%	250V
2749	4822 124 22263	220μF	20%	25V
2750	4822 124 40248	10μF	20%	63V
2751	4822 124 41997	470pF	20%	10V
2752	4822 124 41643	100μF	20%	16V

2753	4822 124 40435	10μF	20%	50V
2754	4822 124 41678	22μF	20%	25V
2776	4822 124 40435	10μF	20%	50V

CHIP CAPACITORS

2402	4822 122 31797	22nF	10%	63V
2404	4822 122 32542	47nF	10%	63V
2405	4822 122 31797	22nF	10%	63V
2406	4822 122 31765	100pF	5%	50V
2408	4822 122 31765	100pF	5%	50V

2413	4822 122 33496	100nF	10%	63V
2415	4822 122 31765	100pF	5%	50V
2417	4822 122 31765	100pF	5%	50V
2423	4822 122 31765	100pF	5%	50V
2424	4822 122 31765	100pF	5%	50V

2425	4822 122 31765	100pF	5%	50V
2426	4822 122 31765	100pF	5%	50V
2427	4822 122 31765	100pF	5%	50V
2428	4822 122 33496	100nF	10%	63V
2429	4822 122 33496	100nF	10%	63V

2436	4822 122 32927	220nF	10%	63V
2437	4822 122 32927	220nF	10%	63V
2657	4822 122 31772	47pF		
2658	4822 122 31772	47pF		
2663	4822 122 31772	47pF		

2664	4822 122 31772	47pF		
2667	4822 122 31727	470pF	5%	63V
2668	4822 122 32542	47nF	10%	63V
2669	4822 122 31727	470pF	5%	63V
2673	4822 122 31765	100pF	5%	50V

2674	4822 122 31765	100pF	5%	50V
2675	4822 122 31765	100pF	5%	50V
2676	4822 122 31765	100pF	5%	50V
2699	4822 122 31727	470pF	5%	63V
2701	5322 122 31842	330pF	5%	63V

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Service Information

CORRECTIONS TO THE SERVICE MANUAL

* Specification (page 2)

Values for frequency response of **POP** mode and **JAZZ** mode are interchanged.

correct is: **POP** mode : left and right channel +6dB at 200Hz

JAZZ mode : left and right channel +6db at 7kHz

* Connection & Controls (page 5)

Position numbers in the description of the backpanel – picture are interchanged.

correct is: 17 instead of 15

18 instead of 17

19 instead of 18

20 instead of 19

21 instead of 20

15 frame antenna connection

* Set Block Diagram (page 14)

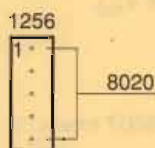
Wire connection "motor" between Control board and volume potentiometer is drawn via "interconnection board".

correct is: direct connection between Control board and volume potentiometer.

* Wiring diagram (page 21)

Indication point of wire 8020 on plug 1256 (Power board) is drawn on the wrong side.

correct is:



* Recorder adjustment table (page 68)

Footnote 2) for azimuth adjustment is wrong for AZ9712.

correct is: 2) For adjustment of azimuth remove door cover pos.429 respectively pos.432

* Partslist Control Board (page 85)

Code number for C2435 mentioned in the partslist is for a wrong chip size.

Correct service code number for C2435 is 4822 122 31765.

CHANGES IN COURSE OF PRODUCTION

- * From week 9141 onwards screening foil glued to plastic cover pos.516 (above CD drive) was cancelled. Instead of this screening foil plastic cover pos. 516 is made of a conducting material.
- * **Loudspeaker boxes**
Because of reliability reasons grill of the loudspeaker boxes (pos. 406) are glued to the cabinets from production week 9139 onwards.
Therefore it is not possible to exchange the loudspeakers of boxes produced from this date onwards.

CONTROL BOARD

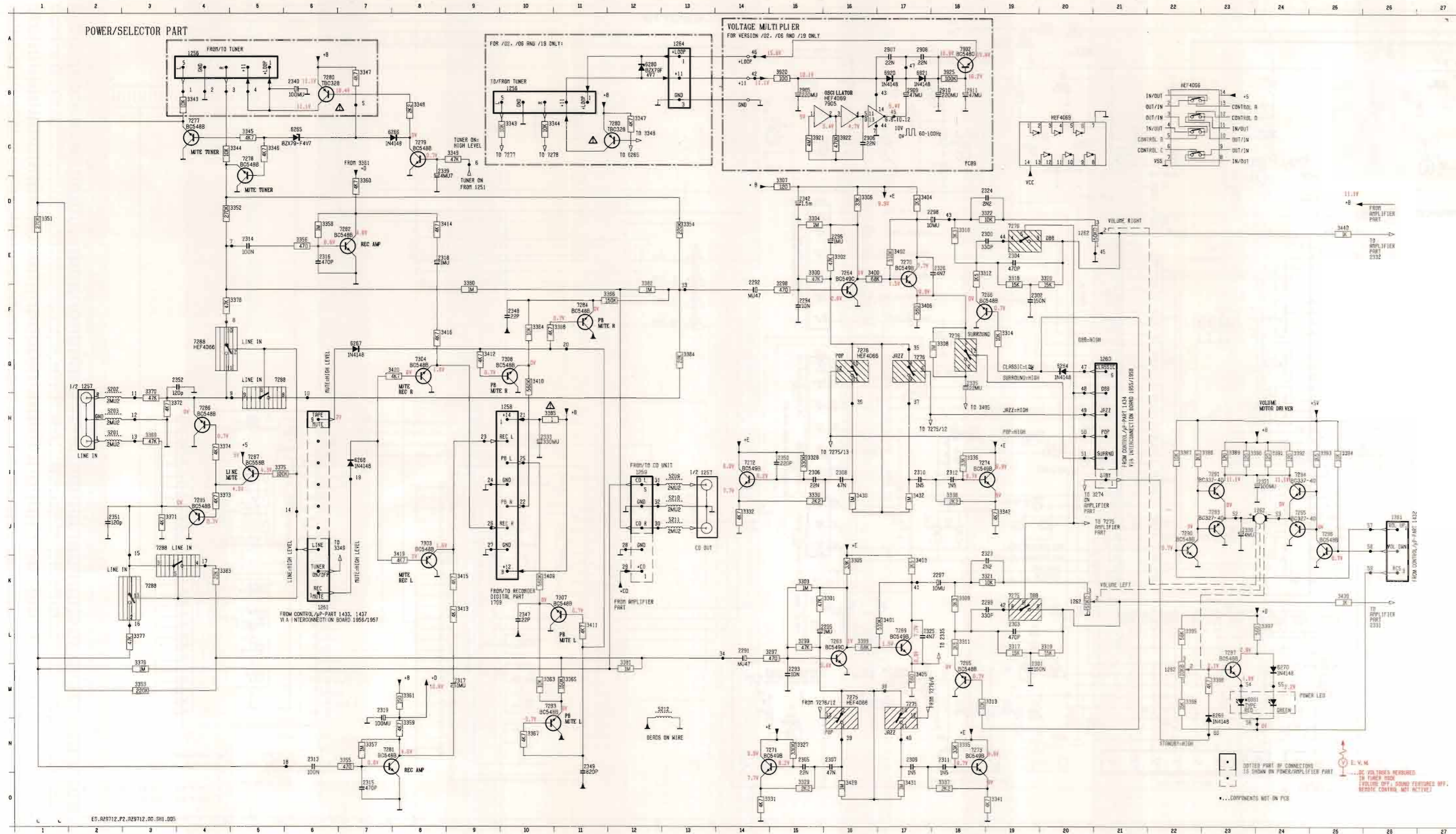
- * From production week 9147 onwards the adjustment of the clock oscillator was cancelled and replaced by a fixed capacitor. trimcap. 2417 cancelled
C2416 changed from 4p7 to 22pF 4822 126 11948
- * From production week 9140 onwards pcb with layout stage .5 was introduced.
- * To reduce P interferences following changes were implemented from pcb stage .5 onwards:
C2422, C2425 and coil 5404 cancelled
R3430 and R3431 added 1k 4822 051 10102
C2440 changed from 47pF to 100nF 4822 122 31947
C2441 changed from 47pF to 100nF 4822 122 31947 } and got another function --> see new circuit diagram
coil 5403 changed from 47μH to 4,7μH 4822 157 51235
R3427 changed from 220R to 1k 4822 051 10102
coil 5401 changed from 47μH to 4,7μH 4822 157 51235
- * To avoid tendency to oscillation on +B supply voltage after change of coil 5403 and C2441 because of μP interferences (see above and new circuit diagram) both components were changed again from production week 9151 onwards.
coil 5403 changed from 4,7μH to 0,47μH 4822 535 97287
C2441 changed from 100nF to 330nF 4822 122 33064
- * To increase base current of TS7415
R3410 changed from 47k to 12k 4822 051 20123 from production week 9147 onwards.

RECORDER BOARD

- * To avoid unwanted stops of the tape transports because of tolerance problems in the "tape end – switch off circuit" the tolerance range of two capacitors were changed from production week 9151 onwards.
C2436 and C2437 changed to 220nF ±10% 4822 126 11492
- * From production week 9207 onwards pcb with layout stage .5 was introduced.
- * To solve latch up problems of IC7701 in playback mode (one channel of deck A has a delayed start up in Pb mode) a diode was added between pin 32 and V_{ref} (pin12) and pin 33 and V_{ref} – with cathodes towards V_{ref} .
(rework from production week 9132 onwards)
This modification is implemented in the pcb layout from stage .5 onwards (D6706).
- * To reduce μP interferences following changes were implemented from production week 9207 onwards:
R3405, R3406 and R3407 changed from 100R to 1k 4822 051 10102
R3464 1k added between pin 36 of IC7402 and pin 8 of socket 1705 (replaces bridge wire 9755)

POWER BOARD

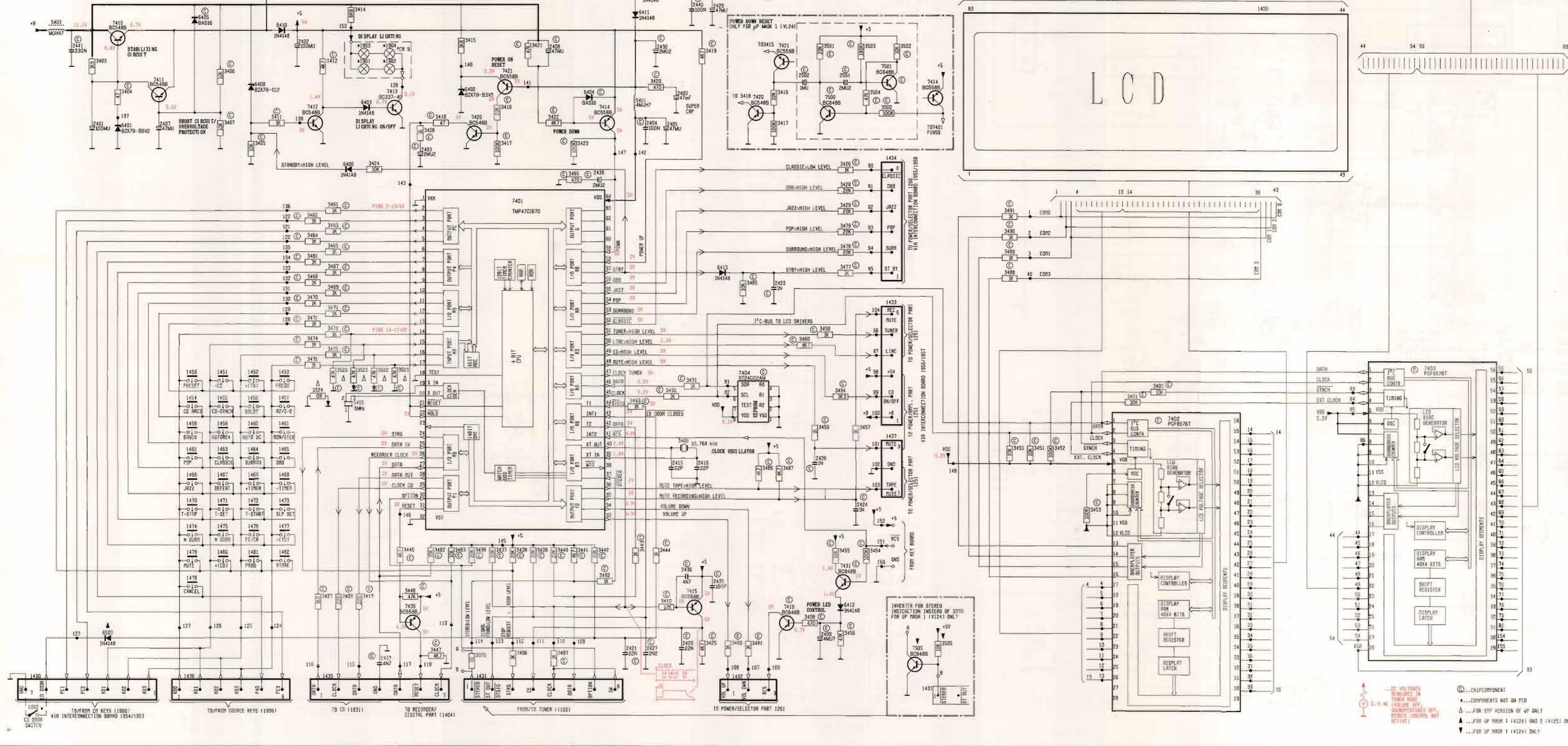
- * Because of tolerance problems volume LED shines sometimes orange instead of red in standby mode. To avoid this phenomenon R3398 was changed from production week 9143 onwards:
R3398 changed from 10k to 4k7 4822 050 24702
- * To avoid rattling sound when "pop" mode is switched on
TS7271 and TS7272 were changed from BC548B to BC549B 4822 130 40936 from production week 9150 onwards.
- * For reasons of standardization stabilizing transistor 7250 was changed from BD234 to BD436 4822 130 60089.
In all versions of AZ9712 also the old type BD234 can be used for service purposes.



6001	R23	3359	N 8
1251	R 6	3360	D 7
1256	R 4	3361	T 4
1257	D 2	3364	#10
1257	I13	3365	M11
1258	M10	3366	F12
1259	I12	3367	M10
1260	D21	3368	F10
1261	D26	3369	H 3
1262	E21	3370	D 3
1262	M23	3371	J 3
1262	M22	3372	H 4
1262	J24	3373	I 4
1264	R13	3374	H 4
2291	I14	3375	J 5
2292	I14	3377	H 5
2293	R18	3376	F 4
2294	F15	3379	L 3
2295	L15	3380	E 9
2296	F19	3381	L12
2297	K18	3382	E12
2298	D18	3383	K 4
2299	K18	3384	D13
2300	F19	3385	H10
2301	L18	3387	L22
2302	F18	3388	L22
2303	L19	3389	L23
2304	E19	3390	L23
2305	N16	3391	I24
2306	I15	3392	I24
2307	N16	3393	L25
2308	I16	3394	L25
2308	N17	3395	L22
2310	I17	3396	M22
2311	N18	3397	L24
2312	I18	3398	M23
2313	N 9	3399	L16
2314	E 5	3400	E16
2315	D 7	3401	L17
2316	E 8	3402	L17
2317	M 9	3403	M17
2318	E 9	3404	D17
2318	M 7	3405	M17
2321	I29	3406	F17
2324	I19	3408	M12
2324	D19	3410	D10
2325	L17	3411	L11
2326	E17	3412	G 9
2330	J23	3413	K 9
2332	H10	3414	D 8
2335	D18	3415	K 9
2338	C 8	3416	F 8
2340	B 6	3419	J 8
2342	D15	3420	D 8
2347	L10	3423	D16
2348	F10	3430	L16
2348	N11	3431	D17
2350	I15	3432	L17
2351	J 2	3433	M25
2352	D 4	3440	D25
2352	D15	3820	D19
2352	C16	3821	C15
2352	M16	3822	C16
2352	M17	3823	D16
2352	E17	3824	H 2
2352	D18	3825	C 2
2352	B18	3826	H 2
2352	L15	3827	M13
2352	E15	3828	L13
2352	E15	3829	M13
2352	K19	3830	M19
2352	E16	3831	O20
2352	F16	3832	C 6
2352	M15	3833	C 8
2352	D15	3834	D 7
2352	K16	3835	I 7
2352	D16	3836	M22
2352	D16	3837	M24
2352	K16	3838	M24
2352	K18	3839	M12
2352	K18	3840	M17
2352	D18	3841	M17
2352	L18	3842	L16
2352	L18	3843	C16
2352	M18	3844	L18
2352	M18	3845	F19
2352	L19	3846	L17
2352	E19	3847	L17
2352	L20	3848	M15
2352	E20	3849	L14
2352	K19	3850	M18
2352	D19	3851	L18
2352	M15	3852	M16
2352	L15	3853	M16
2352	D15	3854	C 4
2352	L15	3855	C 5
2352	L15	3856	C 5
2352	D16	3857	D 7
2352	M16	3858	M16
2352	L16	3859	L16
2352	L16	3860	L16
2352	L16	3861	L16
2352	L16	3862	L16
2352	L16	3863	L16
2352	L16	3864	L16
2352	L16	3865	L16
2352	L16	3866	L16
2352	L16	3867	L16
2352	L16	3868	L16
2352	L16	3869	L16
2352	L16	3870	L16
2352	L16	3871	L16
2352	L16	3872	L16
2352	L16	3873	L16
2352	L16	3874	L16
2352	L16	3875	L16
2352	L16	3876	L16
2352	L16	3877	L16
2352	L16	3878	L16
2352	L16	3879	L16
2352	L16	3880	L16
2352	L16	3881	L16
2352	L16	3882	L16
2352	L16	3883	L16
2352	L16	3884	L16
2352	L16	3885	L16
2352	L16	3886	L16
2352	L16	3887	L16
2352	L16	3888	L16
2352	L16	3889	L16
2352	L16	3890	L16
2352	L16	3891	L16
2352	L16	3892	L16
2352	L16	3893	L16
2352	L16	3894	L16
2352	L16	3895	L16
2352	L16	3896	L16
2352	L16	3897	L16
2352	L16	3898	L16
2352	L16	3899	L16
2352	L16	3900	L16
2352	L16	3901	L16
2352	L16	3902	L16
2352	L16	3903	L16
2352	L16	3904	L16
2352	L16	3905	L16
2352	L16	3906	L16
2352	L16	3907	L16
2352	L16	3908	L16
2352	L16	3909	L16
2352	L16	3910	L16
2352	L16	3911	L16
2352	L16	3912	L16
2352	L16	3913	L16
2352	L16	3914	L16
2352	L16	3915	L16
2352	L16	3916	L16
2352	L16	3917	L16
2352	L16	3918	L16
2352	L16	3919	L16
2352	L16	3920	L16
2352	L16	3921	L16
2352	L16	3922	L16
2352	L16	3923	L16
2352	L16	3924	L16
2352	L16	3925	L16
2352	L16	3926	L16
2352	L16	3927	L16
2352	L16	3928	L16
2352	L16	3929	L16
2352	L16	3930	L16
2352	L16	3931	L16
2352	L16	3932	L16
2352	L16	3933	L16
2352	L16	3934	L16
2352	L16	3935	L16
2352	L16	3936	L16
2352	L16	3937	L16
2352	L16	3938	L16
2352	L16	3939	L16
2352	L16	3940	L16
2352	L16	3941	L16
2352	L16	3942	L16
2352	L16	3943	L16
2352	L16	3944	L16
2352	L16	3945	L16
2352	L16	3946	L16
2352	L16	3947	L16
2352	L16	3948	L16
2352	L16	3949	L16
2352	L16	3950	L16
2352	L16	3951	L16
2352	L16	3952	L16
2352	L16	3953	L16
2352	L16	3954	L16
2352	L16	3955	L16
2352	L16	3956	L16
2352	L16	3957	L16
2352	L16	3958	L16

CONTROL/UP-PART

CONTROL/DI SPLAY PART



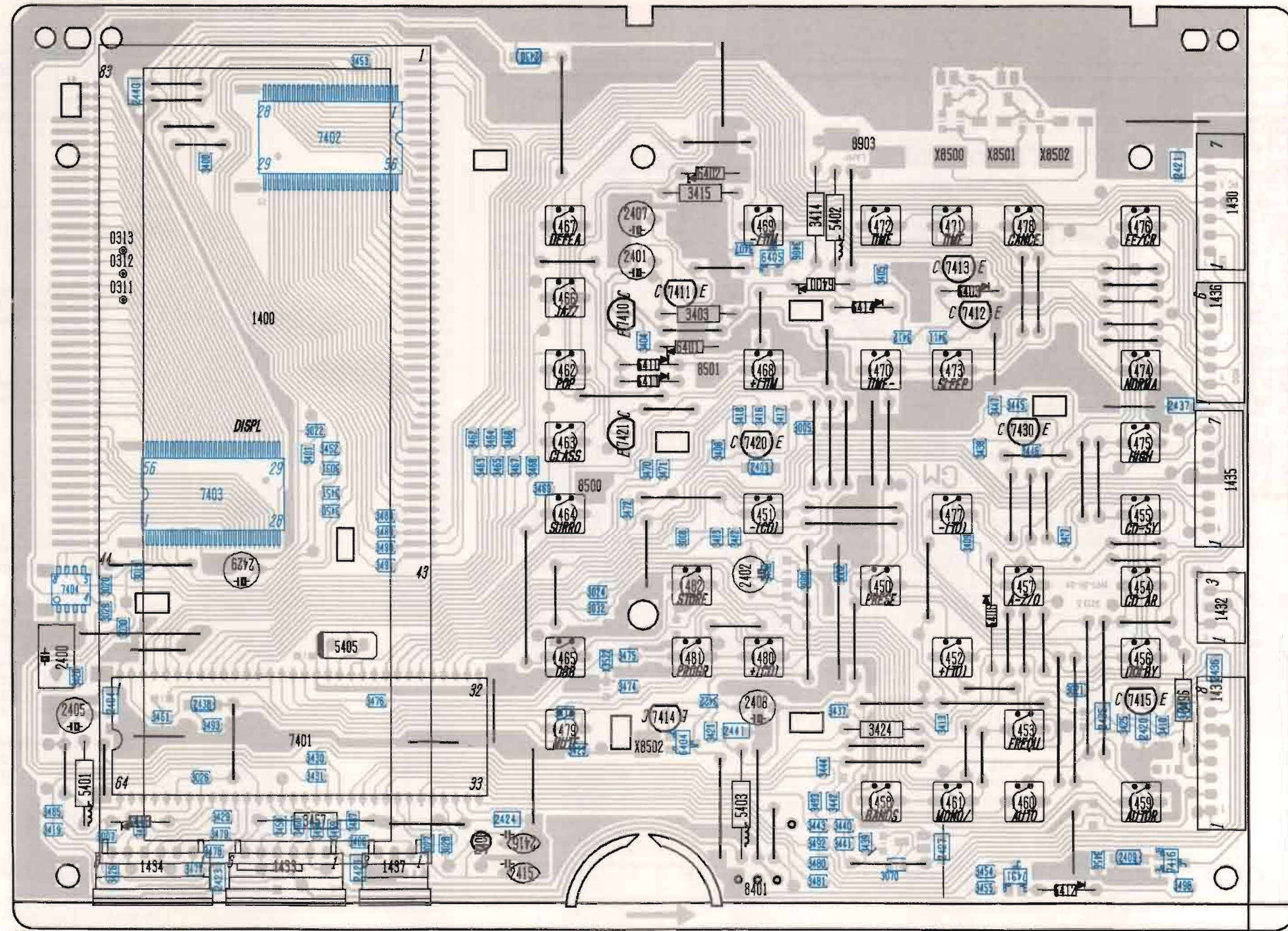
1901	B 6	3452	J21
1902	B 6	3453	K22
1907	B 6	3454	L17
1904	B 6	3455	L17
1902	B 1	3456	L17
1400	Q25	3457	L17
1430	N 1	3458	G17
1431	N10	3459	H16
1432	N15	3460	H16
1433	G18	3461	F 7
1434	D18	3462	F 7
1435	N 7	3463	E 7
1436	N 4	3464	F 7
1437	H18	3465	F 7
1438	H 6	3466	F 7
1451	H 5	3467	F 7
1452	H 5	3468	F 7
1453	H 6	3469	G 7
1454	I 4	3470	G 7
1455	I 5	3471	G 7
1456	I 5	3472	G 7
1457	I 6	3473	G 7
1458	I 4	3474	H 7
1459	I 5	3475	H 7
1460	H 6	3476	H 7
1461	I 6	3477	F17
1462	J 4	3478	F17
1463	J 5	3479	E17
1464	J 5	3480	H15
1465	J 6	3481	H15
1466	J 4	3482	G 9
1467	J 5	3483	L 9
1468	J 5	3485	F15
1469	J 6	3486	J15
1470	K 4	3487	F15
1471	K 5	3488	F20
1472	K 5	3489	F20
1473	K 6	3490	E20
1474	K 4	3491	E20
1475	K 5	3492	L12
1476	K 5	3493	L13
1477	K 6	3494	L17
1478	L 4	3495	D12
1479	L 4	3496	N11
1480	L 5	3497	N11
1481	L 5	3498	N15
1482	L 6	3500	C18
2400	C14	3501	B17
2401	C 2	3502	B19
2402	B 6	3503	B17
2403	F16	3504	C17
3404	C13	3505	M19
2405	C14	3520	H 7
2407	C 4	3521	H 7
2408	B11	3522	H 8
2409	M17	3523	H 8
2415	J14	3524	H 8
2416	J14	3501	C13
2420	M14	3402	R14
2421	M13	3403	W 2
2423	F16	3405	L 7
2424	K17	3406	J14
2428	J16	3400	C 5
2427	N13	3401	C 3
2429	R14	3402	C10
2430	R14	3411	R13
2435	L14	3404	C12
2436	L14	3405	R 4
2437	N 6	3406	D 7
3438	D12	3410	H 9
2444	R14	3411	R13
2441	B 2	3412	M17
2501	B17	3413	F15
2502	B16	3414	H13
3070	M10	3500	M 3
3400	H23	3401	M 3
3403	B 2	3404	H28
3404	C 3	3404	H18
3405	D 5	3410	H 3
3406	H 5	3411	C 4
3407	C 5	3412	C 6
3408	B 9	3413	C 6
3409	H 7	3414	C10
3410	M 4	3415	C10
3411	C 6	3416	B11
3412	B 7	3417	C15
3413	H 7	3418	C10
3414	H 7	3419	B11
3415	B10	3420	C13
3416	C10	3421	B11
3417	D10	3422	C11
3418	C10	3423	D12
3419	B14	3424	D 8
3420	C13	3425	H14
3421	B11	3426	D17
3422	C11	3427	M 7
3423	D12	3428	E17
3424	D 8	3429	E17
3425	H14	3430	H14
3426	D17	3431	H14
3427	M 7	3432	L10
3428	E17	3433	L10
3429	E17	3434	L11
3430	H14	3435	L11
3431	H14	3436	L10
3432	L10	3437	L10
3433	L10	3438	L11
3434	L12	3439	L11
3435	L12	3440	L11
3436	L12	3441	L12
3437	L10	3442	L12
3438	L11	3443	L12
3439	L11	3444	L13
3440	L11	3445	L 6
3441	L12	3446	L 9
3442	L12	3447	N 9
3443	L13	3448	J20
3444	L13	3449	J20
3445	L 6	3450	J20
3446	L 9	3451	J20
3447	N 9		
3448	J20		
3449	J20		
3450	J20		
3451	J20		

*...COMPONENTS NOT ON PCB
 Δ...FOR HTP VERSION OF UP ONLY
 ▲...FOR UP MARK 1 (V124) AND 2 (V125) ONLY
 ▼...FOR UP MARK 1 (V124) ONLY

0311	C 2	1432	F10	1450	E 8	1456	F10	1462	D 5	1468	D 7	1474	D10	1480	F 7	2405	F 2	3403	C 6	5401	G 2	6401	D 6	6412	H 9	7412	C 8	7430	D 9	X850	B 9
0312	C 2	1433	H 3	1451	E 7	1457	E 9	1463	D 5	1469	C 7	1475	D10	1481	F 6	2407	C 6	3414	C 7	5402	C 7	6402	B 6	6413	G 2	7413	C 8	8401	H 7	X850	B 9
0313	C 2	1434	H 2	1452	F 8	1458	D 8	1464	E 5	1470	D 8	1476	C10	1482	E 5	2408	F 7	3415	B 6	5403	G 7	6403	C 8	6414	C 8	7414	F 6	8500	E 6	X850	G 6
1400	C 3	1435	E10	1453	G 9	1459	D10	1465	F 5	1471	C 8	1477	E 8	2400	F 1	2415	H 5	3424	F 8	5405	F 4	6406	F 9	7401	D 3	7415	F10	8501	D 6		
1430	B10	1436	C10	1454	E10	1460	D 9	1466	C 5	1472	C 8	1478	C 9	2401	C 6	2416	G 5	3457	G 3	5406	G 5	6410	D 6	7410	C 6	7420	D 7	8903	B 8		
1431	F10	1437	H 4	1455	E10	1461	G 8	1467	C 5	1473	D 8	1479	G 5	2402	E 7	2429	E 3	3496	F10	6400	C 7	6411	D 6	7411	C 6	7421	D 6	X850	B 8		

2403	D 7	3443	G 7
2404	F 2	3444	G 7
2409	D10	3445	D 9
2420	F10	3446	D 9
2421	B10	3447	D 9
2423	H 3	3450	E 4
2424	G 5	3451	E 4
2426	H 4	3452	D 4
2427	D 8	3453	H 4
2430	A 5	3454	H 9
2435	F 9	3455	H 9
2436	F10	3456	H 9
2437	D10	3458	D 3
2438	F 3	3459	G 4
2440	B 2	3460	D 3
2441	G 7	3461	F 2
3002	E 7	3462	D 5
3005	B 7	3463	D 5
3007	G 2	3464	D 5
3008	E 6	3465	D 5
3019	E 2	3466	D 5
3020	E 2	3467	D 5
3021	F 9	3468	D 5
3022	D 3	3469	F 5
3024	E 6	3470	E 6
3026	G 3	3471	E 6
3027	D 4	3472	E 6
3028	D 4	3473	F 5
3029	F 2	3474	F 6
3030	F 2	3475	F 6
3031	E 4	3476	F 4
3032	F 6	3477	H 2
3070	H 8	3478	G 3
3080	E 7	3479	G 3
3400	B 3	3480	H 7
3401	D 3	3481	H 7
3404	D 6	3482	E 7
3405	C 8	3483	E 6
3406	C 7	3485	G 1
3407	C 7	3486	D 4
3408	D 7	3487	D 4
3409	E 8	3488	E 4
3410	F10	3489	E 4
3411	D 8	3490	E 4
3412	D 8	3491	E 4
3413	F 8	3492	G 7
3416	D 7	3493	F 3
3417	D 7	3493	G 7
3418	D 7	3494	G 3
3419	D 1	3497	F10
3420	F 2	3498	H10
3421	G 6	5404	G 6
3422	F 6	6405	C 1
3423	G 5	7402	B 4
3425	F10	7403	E 3
3426	H 2	7404	E 2
3427	E 9	7416	H10
3428	G 2	7431	H 9
3429	G 3	X352	F 6
3430	G 3		
3431	G 3		
3436	E 7		
3437	F 7		
3438	D 9		
3439	D 8		
3440	G 7		
3441	G 7		
3442	G 7		

CONTR.DISPL BOARD / COPPERSIDE VIEW / AZ9712



CRD-REF: PC.AZ9712.P4.D5.AZ9712.00.SERV-R / 92-01-16

Adjustment table Recorder part

Adjustment	Cassette	Recorder	Measure on	Read on	Adjust	
					with	to
Motor speed	SBC 420 3150 Hz	PLAY Deck A PLAY Deck B	1 or 2 or Speaker out	Frequency Counter	3424 3428	$f_{HS1} = 6300 \text{ Hz} \pm 1\%$ $f_{HS2} = f_{HS1} \pm 1\%$
High speed ¹⁾					3426 3430	$3150 \text{ Hz} \pm 1\%$ $3150 \text{ Hz} \pm 1\%$
Normal speed		PLAY Deck A PLAY Deck B		Wow & Flutter meter	check only	$\leq 0,3\%$
Wow & Flutter	SBC 420 3150 Hz	PLAY Deck A PLAY Deck B		mV-meter	Right hand screw (normal direction) Left hand screw (reverse direction) Left hand screw	max. output left=right
Azimuth ²⁾	SBC 420 10 kHz	PLAY Deck A PLAY Deck B				

SBC 420 4822 397 30071

1) For High Speed during play connect B of 7407 to GND. Use the testplug 1708. See Figure 1.

2) For adjustment of azimuth remove door cover pos.429 respectively pos.432

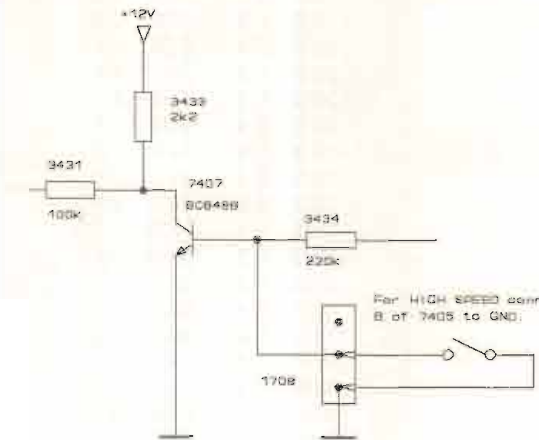


Fig. 1

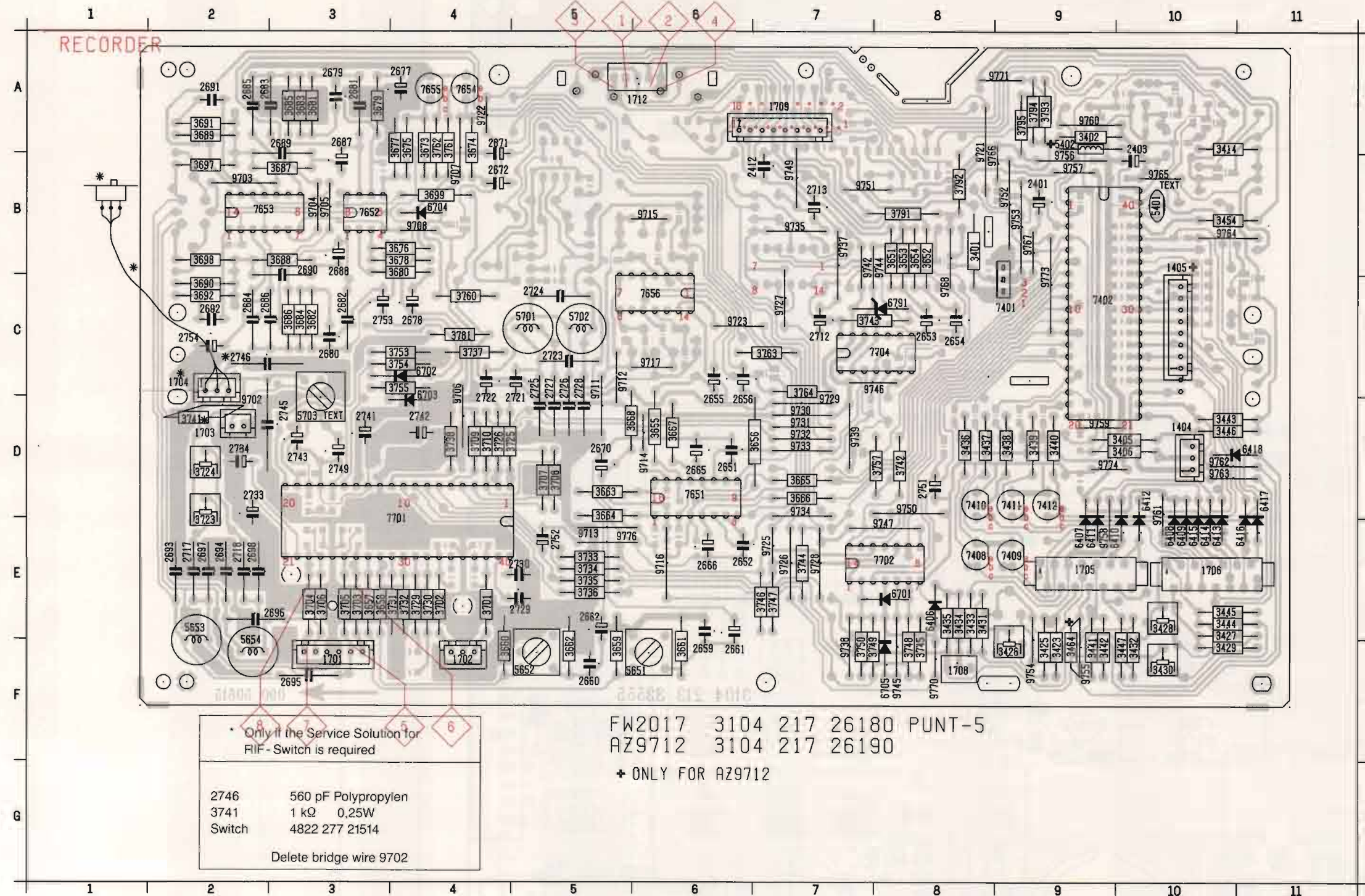
Adjustment	Source	Recorder	Measure on	Read on	Adjust	
					width	to
Playback Sensitivity	Dolby reference level cassette 200 nW/m	PLAY both decks	1 for left channel 2 for right channel	mV meter	Check only	$775 \text{ mV} \pm 2 \text{ dB}$
Recording Sensitivity ³⁾	500 mV/ 315 Hz left : 3 right : 4	REC Deck B Dolby off CrO ₂	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.	mV meter	Check only	$U_{CrO_2} = 2,1 \text{ mV} \pm 2 \text{ dB}^4)$
	500 mV/ 315 Hz left : 3 right : 4	Fe	7 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.			$U_{Fe} = U_{CrO_2} - 3,5 \text{ dB} \pm 1 \text{ dB}$
Bias		REC Deck B CrO ₂	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.	mV meter	3723 left 3724 right	$U_{CrO_2} = 14,5 \text{ mV}^5)$ $U_{CrO_2} = 14,5 \text{ mV}$
		Fe	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.		Check only	$U_{Fe} = U_{CrO_2} - 3,5 \text{ dB} \pm 1 \text{ dB}$
Erase Oscillator		REC Deck B	Erase head	mV meter Counter	Check only	CrO ₂ 33V ± 5V Fe 22V ± 4V f=80kHz ± 6kHz

³⁾ For measuring the Recording sensitivity use a low pass filter to attenuate the bias component.

⁴⁾ Make a record and check if recorded signal gives 775 mV on 1 and 2 in playback. Distortion $\leq 3\%$.

⁵⁾ If sensitivity, distortion or frequency response (see specification) are wrong, then readjust bias and check again.

1404 D10 2401 B 9 2651 F 6 2681 A 3 2692 C 2 2721 D 5 2734 D 2 3401 B 8 3430 F10 3441 F 9 3653 B 8 3654 E 5 3679 A 3 3690 C 2 3706 E 3 3731 E 4 3744 E 7 3760 C 4 5401 B10 6408 E10 6701 E 8 7411 D 9 9702 D 2 9715 B 6 9730 D 7 9745 F 8 9756 B 9 9767 B 9
1405 B10 2403 A10 2652 E 5 2682 C 3 2693 E 2 2722 D 4 2741 D 3 3402 A 9 3431 E 8 3442 F 9 3654 B 8 3655 D 7 3680 C 4 3691 A 3 3692 C 2 3707 D 5 3732 E 4 3745 F 8 3761 A 4 5402 B 9 6409 E10 6702 C 4 7412 D 8 9703 B 2 9716 E 6 9731 D 7 9746 C 8 9757 B 9 9768 C 8
1701 F 3 2412 B 7 2655 D 6 2683 A 2 2694 E 2 2723 C 5 2742 D 4 3405 D10 3432 F10 3443 D10 3655 D 6 3666 D 7 3681 A 3 3692 C 2 3708 D 5 3733 E 5 3746 F 7 3762 A 4 5651 F 9 6410 E10 6703 D 4 7851 D 6 9704 B 3 9717 C 6 9732 D 7 9747 E 8 9758 D 9 9769 A 9
1702 F 4 2651 D 6 2656 E 6 2684 C 2 2695 F 3 2724 C 5 2743 D 3 3406 D10 3433 E 8 3444 E10 3656 D 7 3667 D 6 3682 C 3 3697 B 2 3709 D 4 3734 E 5 3747 F 7 3763 C 7 5652 F 5 6411 E 9 6704 F 8 7852 B 3 9705 C 3 9721 A 8 9733 D 7 9747 E 8 9758 D 9 9769 A 9
1703 D 2 2652 E 6 2670 D 5 2685 A 2 2696 E 3 2725 C 5 2745 D 3 3414 A10 3434 E 8 3445 E10 3657 D 7 3668 D 6 3683 A 3 3698 B 2 3710 D 4 3735 E 5 3748 F 8 3764 D 7 5653 E 2 6412 D10 6705 F 8 7853 B 2 9706 C 4 9722 A 4 9734 D 7 9749 B 7 9760 A 9 9773 C 9
1704 C 2 2653 C 8 2671 A 4 2686 C 2 2697 E 2 2726 C 5 2746 D 3 3423 F 9 3435 E 8 3446 D10 3658 F 5 3674 A 4 3684 C 3 3699 A 3 3701 E 4 3724 D 2 3737 C 4 3750 F 7 3791 B 8 5701 C 5 6414 E10 7401 C 9 7655 A 4 9708 B 4 9725 E 7 9737 B 7 9751 B 7 9762 D10 9776 E 5
1705 E 9 2654 C 8 2672 B 4 2687 A 3 2698 E 2 2727 C 5 2749 D 3 3425 F 9 3436 D 8 3447 F10 3659 F 5 3674 A 4 3685 A 3 3701 E 4 3724 D 2 3737 C 4 3750 F 7 3791 B 8 5701 C 5 6414 E10 7401 C 9 7655 A 4 9708 B 4 9725 E 7 9737 B 7 9751 B 7 9762 D10 9776 E 5
1706 E10 2655 D 6 2677 A 4 2688 B 3 2712 C 7 2728 C 5 2751 D 8 3426 F 9 3437 D 8 3454 F10 3660 F 4 3675 A 4 3686 C 3 3702 E 4 3725 D 5 3738 D 4 3753 C 4 3792 B 8 5702 C 5 6415 E10 7402 C 9 7656 C 6 9711 C 5 9726 E 7 9738 F 7 9752 B 9 9763 D10
1708 F 8 2656 D 6 2678 C 4 2689 A 3 2713 B 7 2729 C 5 2752 E 5 3427 E10 3438 D 9 3464 F 9 3661 F 6 3676 B 4 3687 B 3 3703 E 3 3726 D 4 3741 D 2 3754 C 4 3793 B 8 5703 C 5 6416 E11 7408 F 8 7701 E 4 9712 C 5 9727 C 7 9739 D 7 9753 B 9 9764 B10
1709 A 7 2659 F 6 2679 A 3 2690 A 3 2717 E 2 2730 C 5 2753 E 5 3428 E10 3439 D 9 3651 B 8 3662 F 5 3677 A 4 3688 B 3 3704 E 3 3729 E 4 3742 D 8 3755 C 4 3794 A 9 6406 E 8 6417 D11 7409 F 8 7702 C 8 9713 E 5 9728 E 7 9742 B 7 9754 F 9 9765 B10
1712 A 6 2660 F 5 2680 C 3 2691 A 2 2718 E 2 2733 D 2 2754 C 2 3429 F10 3440 D 9 3652 B 8 3663 D 5 3678 B 4 3689 A 2 3705 E 3 3730 E 4 3743 C 7 3757 D 8 3795 A 9 6407 E 9 6418 D11 7410 D 8 7704 C 8 9714 D 6 9729 D 7 9744 B 8 9755 F 9 9766 B 9



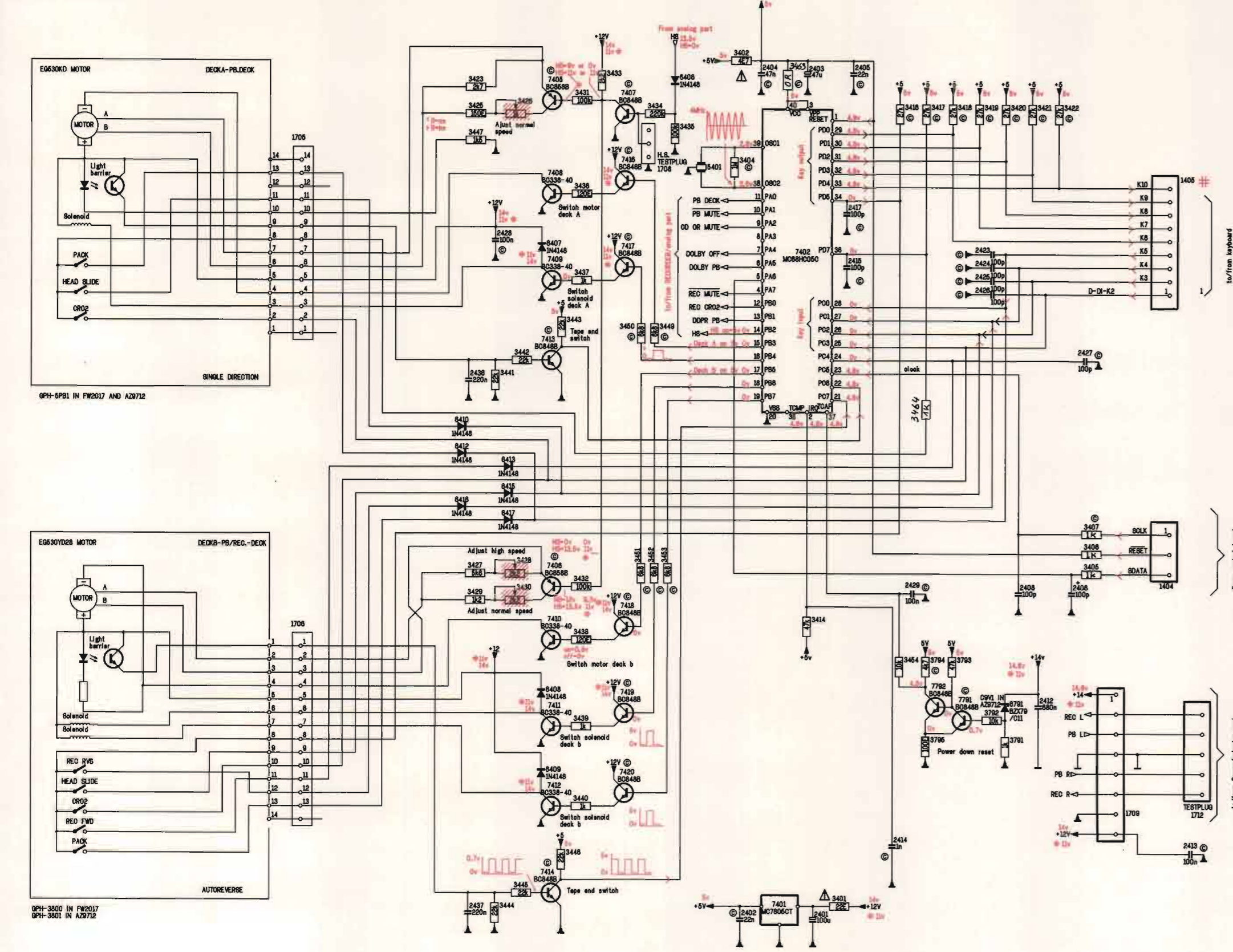
* Only if the Service Solution for RIF-Switch is required

2746 560 pF Polypropylen
3741 1 kΩ 0,25W
Switch 4822 277 21514

Delete bridge wire 9702

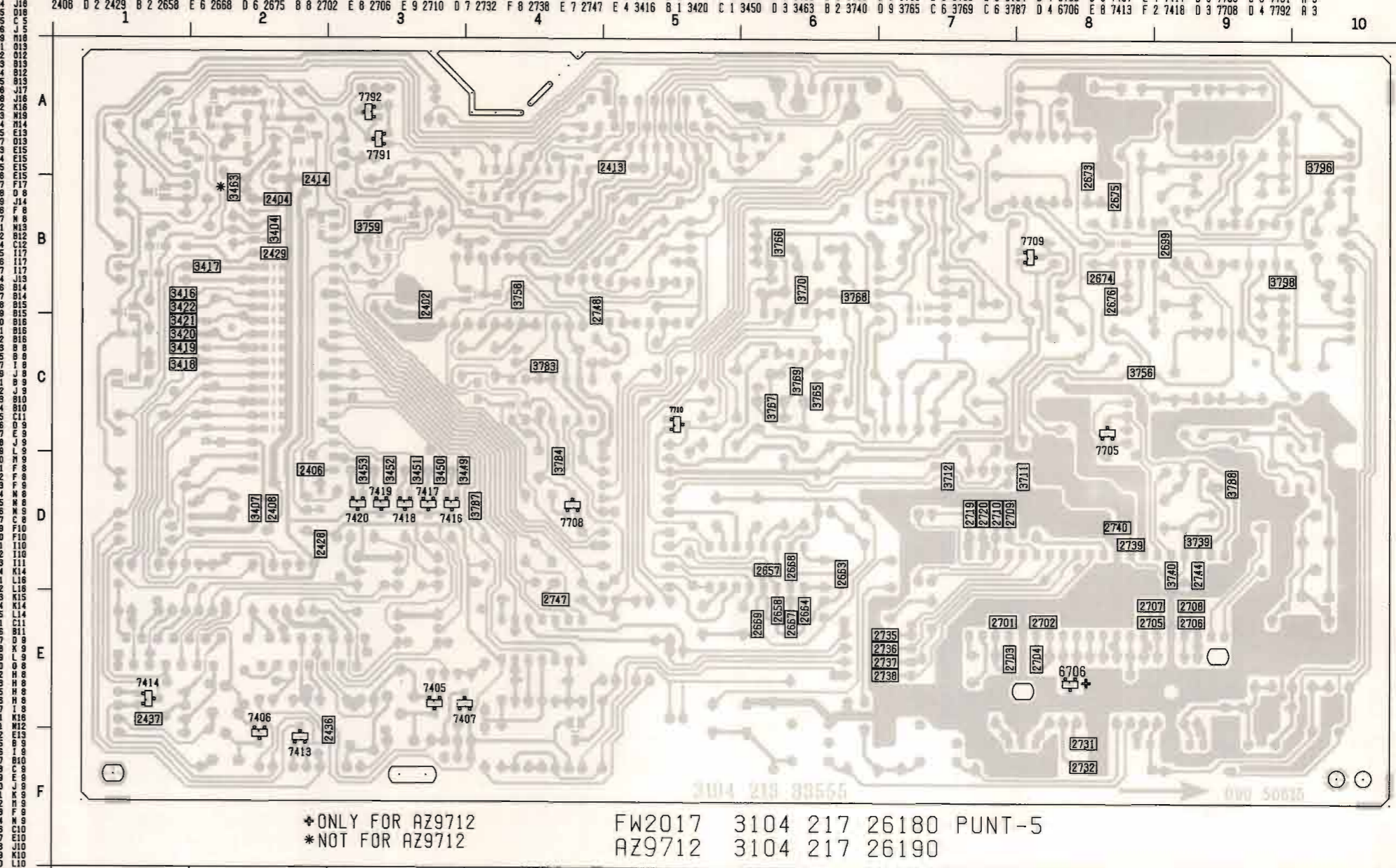
FW2017 3104 217 26180 PUNT-5
AZ9712 3104 217 26190
+ ONLY FOR AZ9712

DIGITAL RECORDER PART



to/from keyboard
to/from board
From control board
to/from Power/selector part

2402 B 3 2413 A 5 2436 E 3 2663 D 6 2669 E 6 2678 B 8 2703 E 7 2707 E 8 2719 D 7 2735 E 7 2739 D 8 2748 B 4 3417 B 2 3421 C 1 3451 D 3 3711 D 8 3756 C 8 3765 B 6 3770 B 6 3788 D 9 7405 E 3 7414 E 1 7419 D 3 7709 B 8
2404 B 2 2414 B 2 2437 E 1 2664 E 6 2673 B 8 2699 B 9 2704 E 8 2708 E 9 2720 D 7 2736 E 7 2740 D 8 3404 B 2 3418 C 1 3422 D 3 3452 D 3 3712 D 8 3758 B 4 3767 C 6 3769 C 4 3784 B 10 7406 E 2 7416 D 3 7420 D 3 7710 C 5
2406 D 2 2428 D 2 2657 D 6 2667 E 6 2674 B 8 2701 E 7 2705 E 8 2709 D 7 2731 F 8 2737 E 7 2744 D 9 3407 D 2 3419 C 1 3449 D 3 3453 D 3 3739 D 9 3756 B 3 3768 D 6 3784 B 4 3798 B 9 7407 E 4 7417 D 3 7705 C 8 7791 A 3
2408 D 2 2429 B 2 2658 E 6 2668 D 6 2675 B 8 2702 E 8 2706 E 9 2710 D 7 2732 F 8 2738 E 7 2747 E 4 3416 B 3 3420 C 1 3450 D 3 3463 B 2 3740 D 9 3765 C 6 3769 C 6 3787 D 4 6706 E 8 7413 F 2 7418 D 3 7708 D 4 7792 A 3



ONLY FOR AZ9712
NOT FOR AZ9712

FW2017 3104 217 26180 PUNT-5
AZ9712 3104 217 26190