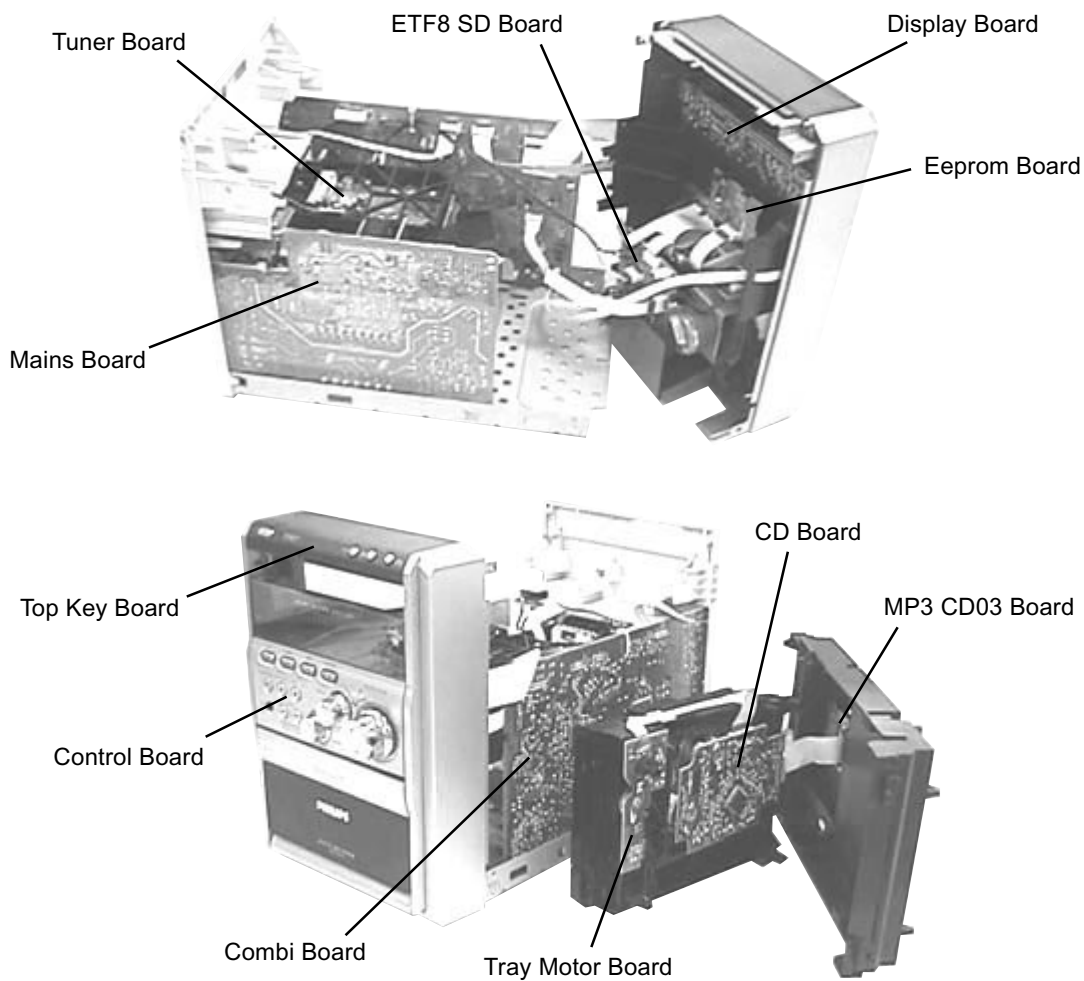


LOCATION OF PC BOARDS



VERSION VARIATIONS:

Type /Versions:	MCM8									
	/21	/22	/25	/30	/37					
Features & Board in used:										
Aux in / CDR in	x	x	x	x	x					
Line Out										
Video Out										
Surround Out										
Subwoofer Out										
Digital Out										
Digital in										
Matrix Surround										
RDS/NEWS		x	x							
Dolby Pro Logic (DPL)										
Incredible Surround	x	x	x	x	x					
Karaoke Features										
Voltage Selector	x									
ECO Power Standby (Clock Display Off)	x									

SPECIFICATIONS

GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21/21M
 120V for /37
 220V for /33
 220-230V for /22/25
 230-240V for /30
 Mains frequency : 50/60Hz
 Power consumption : 60W at $\frac{1}{8} P_{rated}$
 65W at $\frac{1}{8} P_{rated}$ /21/21M
 < 15W at Standby (Demo mode off)
 < 0.5W at ECO Standby
 < 1.0W at ECO Standby /21/21M
 Clock accuracy : < 4 seconds per day
 Dimension centre unit : 175 x 252 x 350mm

TUNER:

FM

Tuning range : 87.5-108MHz
 Grid : 50kHz
 100kHz for /37
 IF frequency : 10.7MHz $\pm$ 25kHz
 Aerial input : 75 ohm coaxial
 300 ohm click fit for /37
 Sensitivity at 26dB S/N : < 7uV
 Selectivity at 600kHz bandwidth : > 25dB
 Image rejection : > 25dB [> 75dB]
 Distortion at RF=1mV, dev. 75kHz : < 3%
 -3dB Limiting point : < 8uV
 Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

Tuning range : 531-1602kHz
 530-1700kHz for /21/21M/37
 Grid : 9kHz
 10kHz for /21/21M/37
 IF frequency : 450kHz $\pm$ 1kHz
 Aerial input : Frame aerial
 Sensitivity at 26dB S/N : < 4.4mV/M
 Selectivity at 18kHz bandwidth : > 18dB
 IF rejection : > 45dB
 Image rejection : > 28dB
 Distortion at RF=50mV, M=80% : < 5%

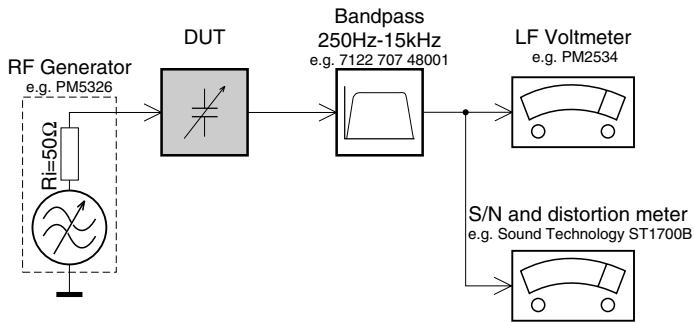
AMPLIFIER:

Output power (6 ohm, 1kHz, 10% THD)
 L & R : 2 x 75W RMS

Frequency response within -3dB : 50Hz-16kHz
 Bass : 60Hz $\pm$ 3 Steps
 Treble : 12kHz $\pm$ 3 Steps
 Incredible Surround : On / Off

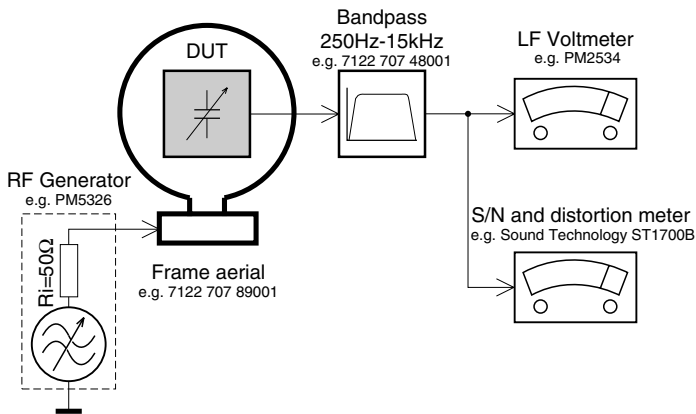
MEASUREMENT SETUP

Tuner FM



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

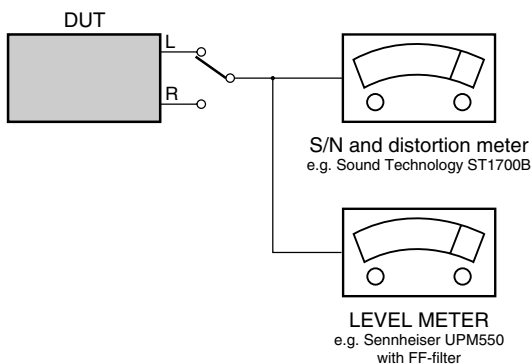
Tuner AM (MW,LW)



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

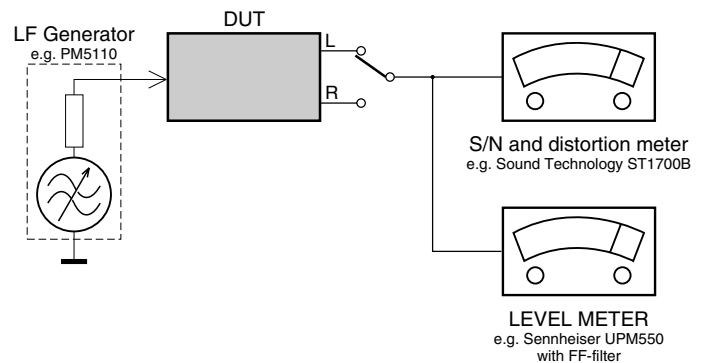
CD

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



Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



SERVICE AIDS

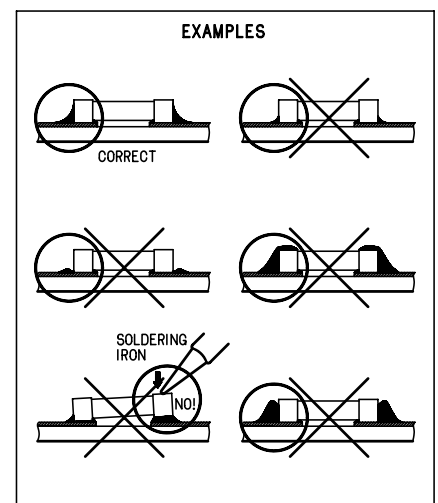
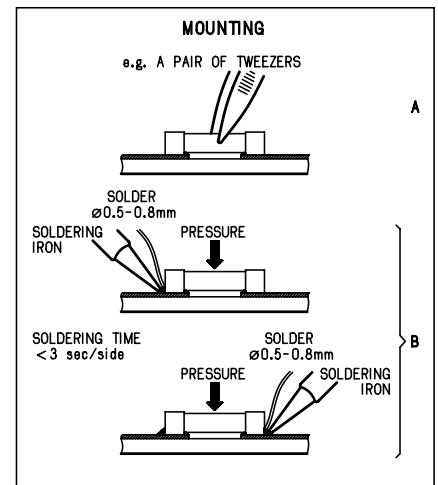
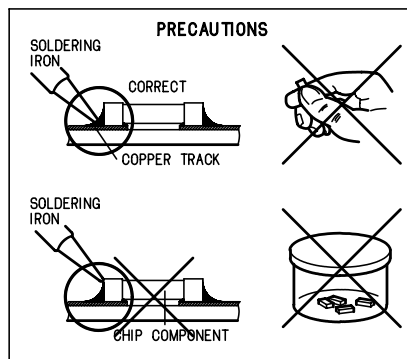
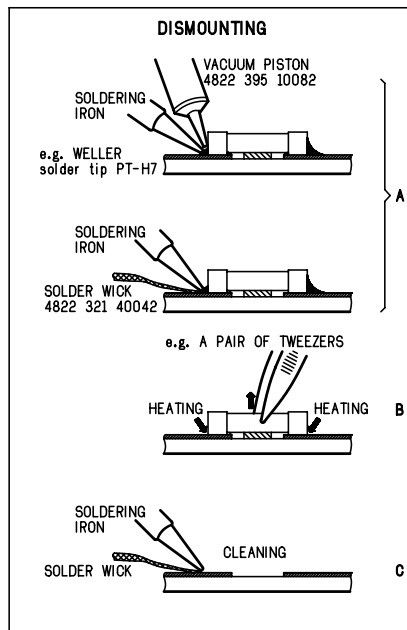
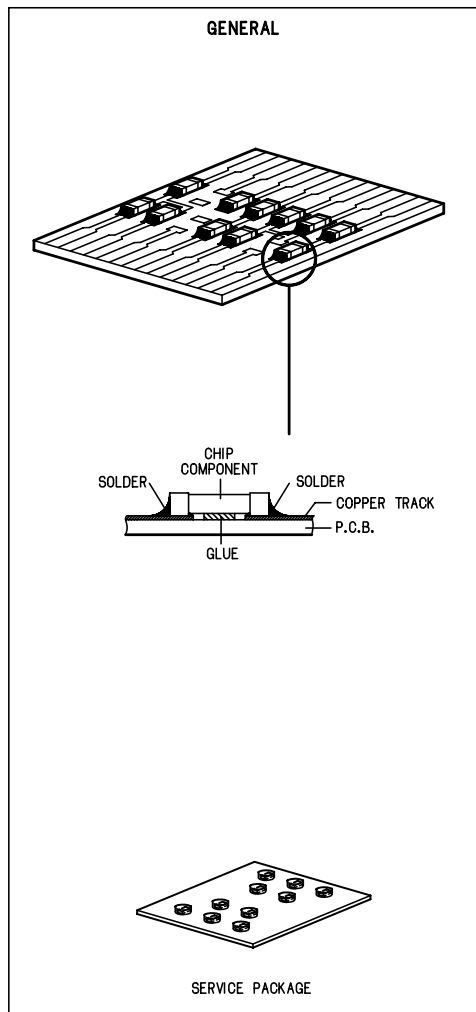
Service Tools:

Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6 - T20	4822 395 50145
Torx driver T10 extended	4822 395 50423

Compact Disc:

SBC426/426A Test disc 5 + 5A	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
Dolby Pro-logic Test Disc	4822 395 10216

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).

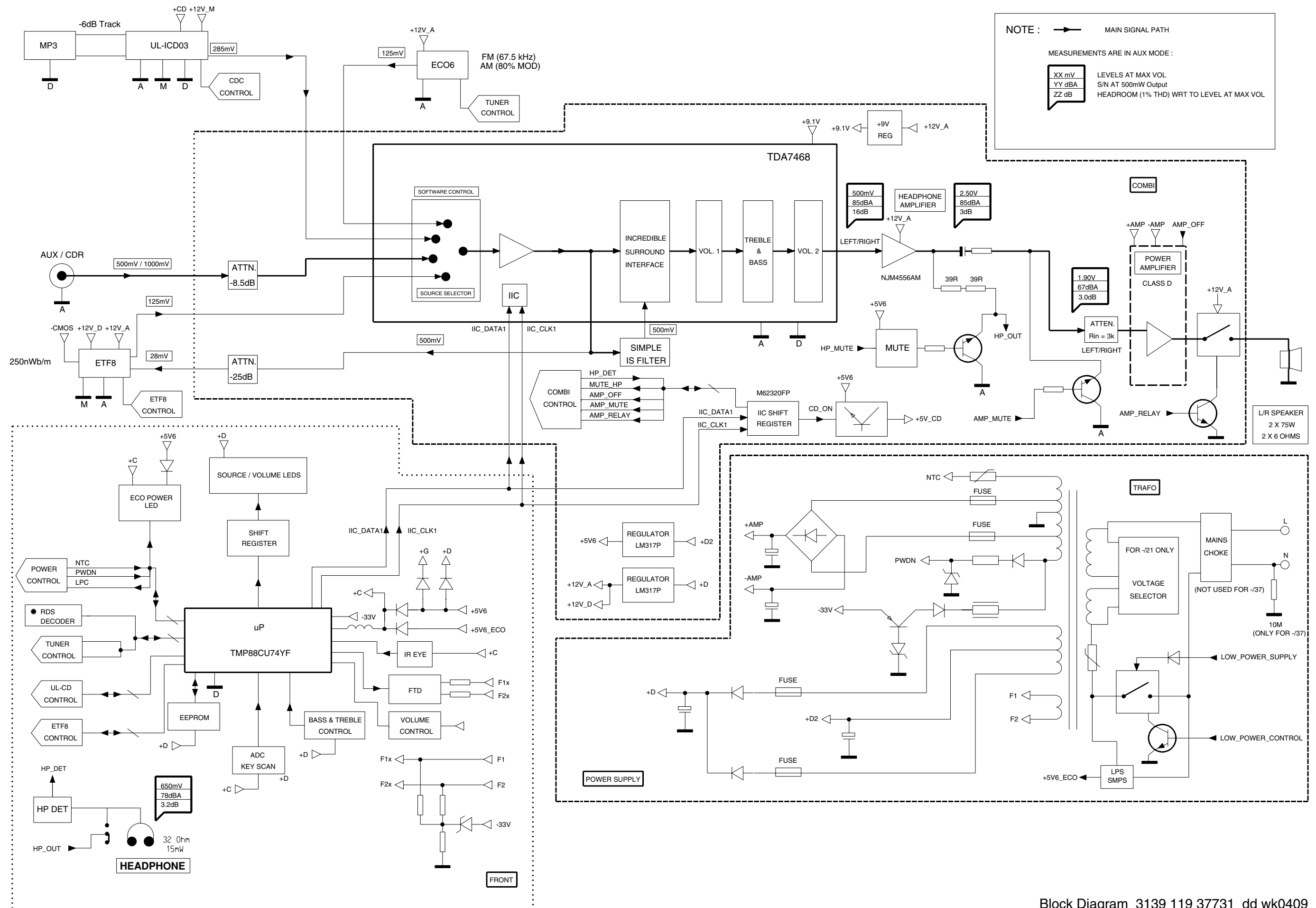
Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

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.

(

SET BLOCK DIAGRAM



FRONT BOARD

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Control part - Circuit Diagram Part 1 6-9

Control part - Circuit Diagram Part 2 6-10

Eeprom part - Layout & Circuit diagram 6-11

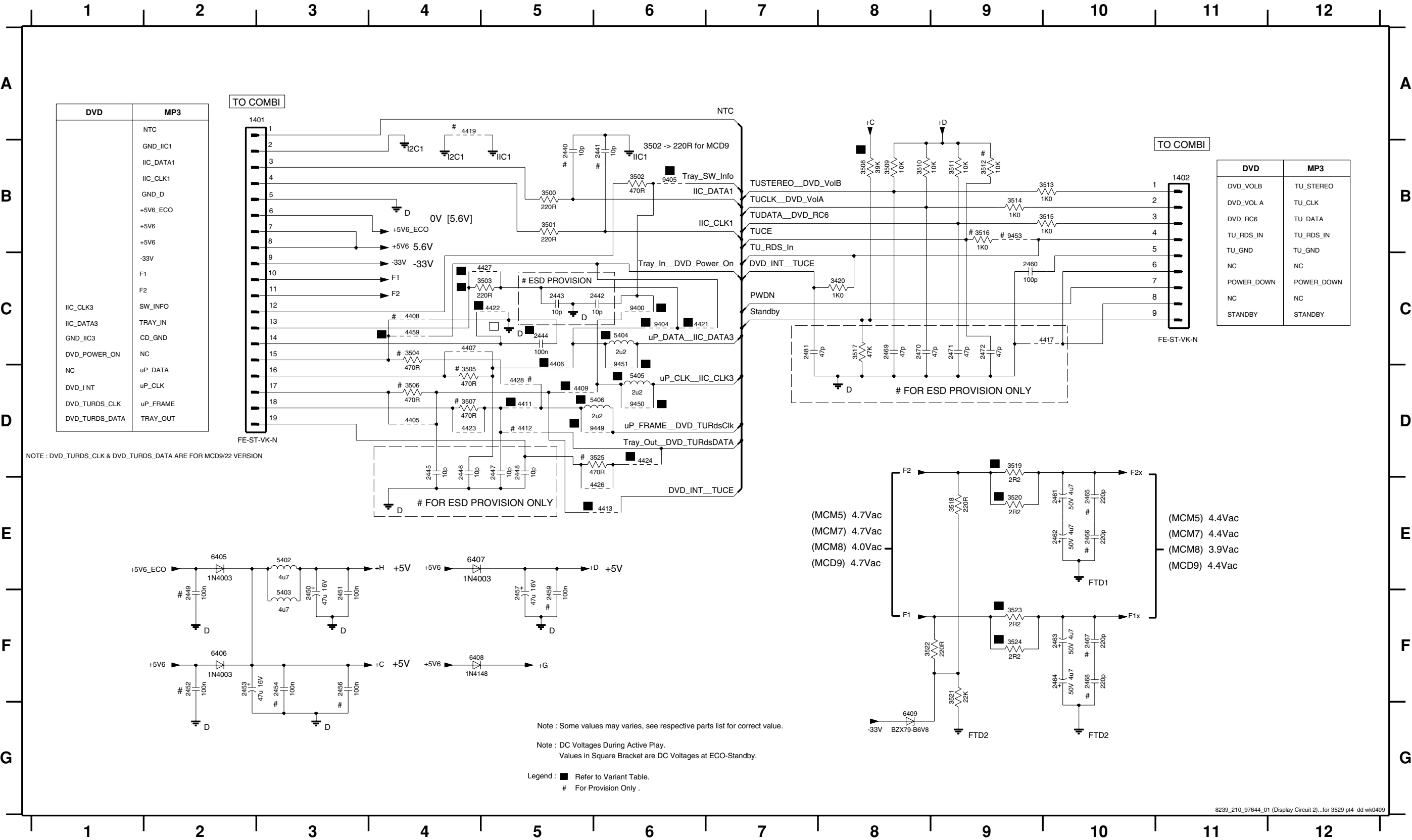
Karaoke part - Component & Chip Layout 6-12

Karaoke part - Circuit Diagram 6-13

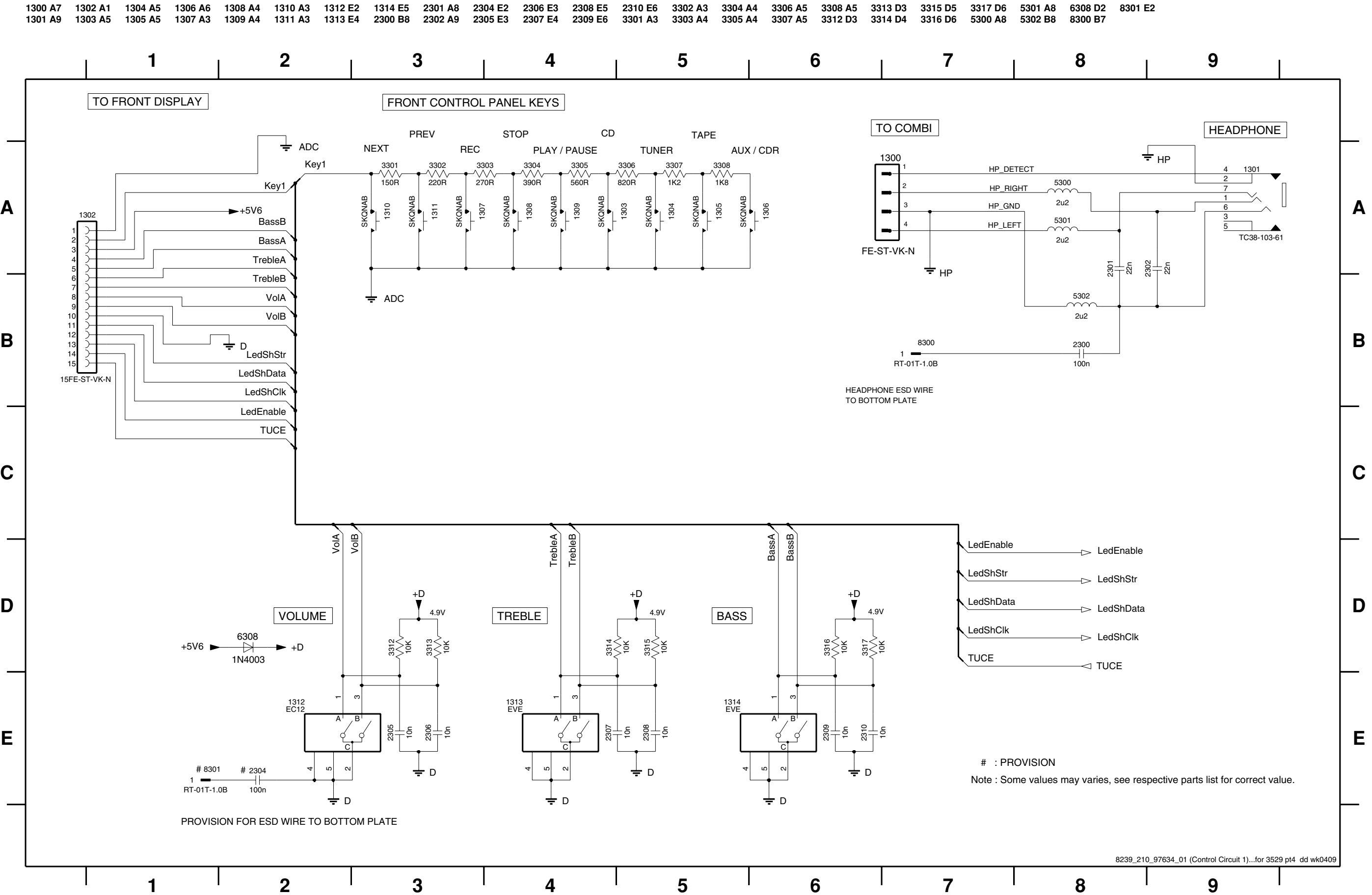
Electrical parts list 6-14

DISPLAY BOARD - CIRCUIT DIAGRAM PART 2

1401 A3	2442 C6	2446 D4	2450 F3	2454 F3	2460 C9	2464 F10	2468 F10	2472 C9	3501 B5	3505 D4	3509 B8	3513 B10	3517 C8	3521 F9	3525 D6	4408 C4	4413 E6	4422 C5	4427 C5	5403 F3	6405 E2	6409 G8	9449 D6
1402 B11	2443 C5	2447 D5	2451 F3	2456 F3	2461 E10	2465 E10	2469 C8	2481 C7	3502 B6	3506 D4	3510 B8	3514 B9	3518 E9	3522 F8	4405 D4	4409 D5	4417 C10	4423 D4	4428 D5	5404 C6	6406 F2	9400 C6	9450 D6
2440 B5	2444 C5	2448 D5	2452 F2	2457 F5	2462 E10	2466 E10	2470 C8	3420 C8	3503 C5	3507 D4	3511 B9	3515 B10	3519 D9	3523 F9	4406 D5	4411 D5	4419 A4	4424 D6	4459 C4	5405 D6	6407 E4	9404 C6	9451 D6
2441 B6	2445 D4	2449 F2	2453 F2	2459 F5	2463 F10	2467 F10	2471 C9	3500 B5	3504 C4	3508 B8	3512 B9	3516 B9	3520 E9	3524 F9	4407 C4	4412 D5	4421 C6	4426 E6	5402 E3	5406 D6	6408 F4	9405 B6	9453 B9

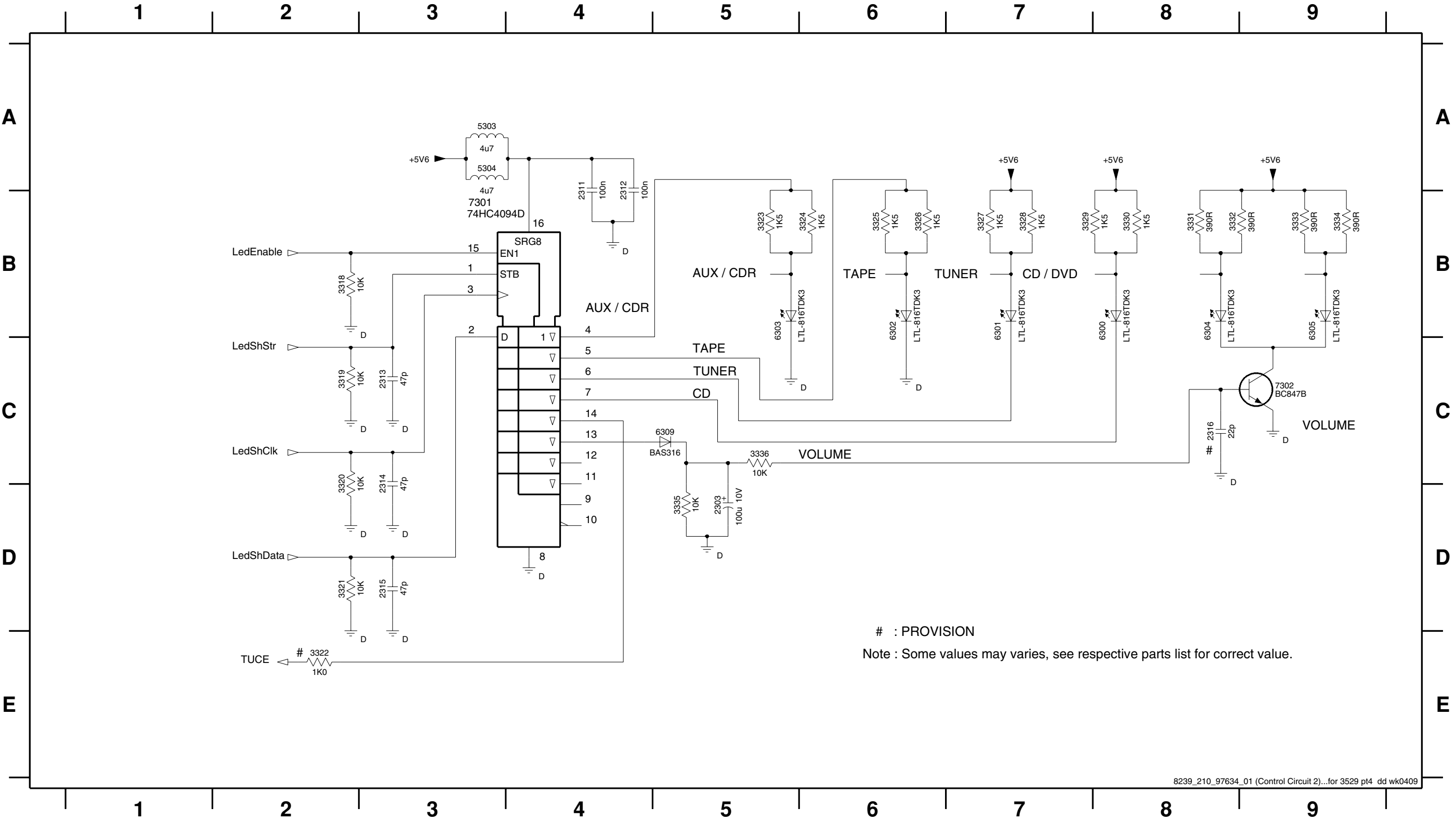


CONTROL BOARD - CIRCUIT DIAGRAM PART 1



CONTROL BOARD - CIRCUIT DIAGRAM PART 2

2303 D5 2312 A4 2314 C3 2316 C8 3319 C2 3321 D2 3323 B5 3325 B6 3327 B7 3329 B7 3331 B8 3333 B9 3335 D5 5303 A3 6300 B8 6302 B6 6304 B8 6309 C5 7302 C9
2311 A4 2313 C3 2315 D3 3318 B2 3320 C2 3322 E2 3324 B6 3326 B6 3328 B7 3330 B8 3332 B8 3334 B9 3336 C5 5304 A3 6301 B7 6303 B5 6305 B9 7301 B3



ETF8 TAPE MODULE

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CONNECTORS ASSIGNMENTS:

CONNECTOR 1701

○	1	REC-L
○	2	REC-R
○	3	GND A
○	4	TAPE-L
○	5	+12V
○	6	TAPE-R
○	7	-CMOS

INTERCONNECTION TO AF BOARD

Record input left
Record input right
AF Ground
Playback output left
D.C. supply (+12V) for AF electronics
Playback output right
Negative d.c. supply (-9V) for controlling JFET J111

CONNECTOR 1703

○	1	GND M
○	2	+MOTOR

INTERCONNECTION TO AF BOARD

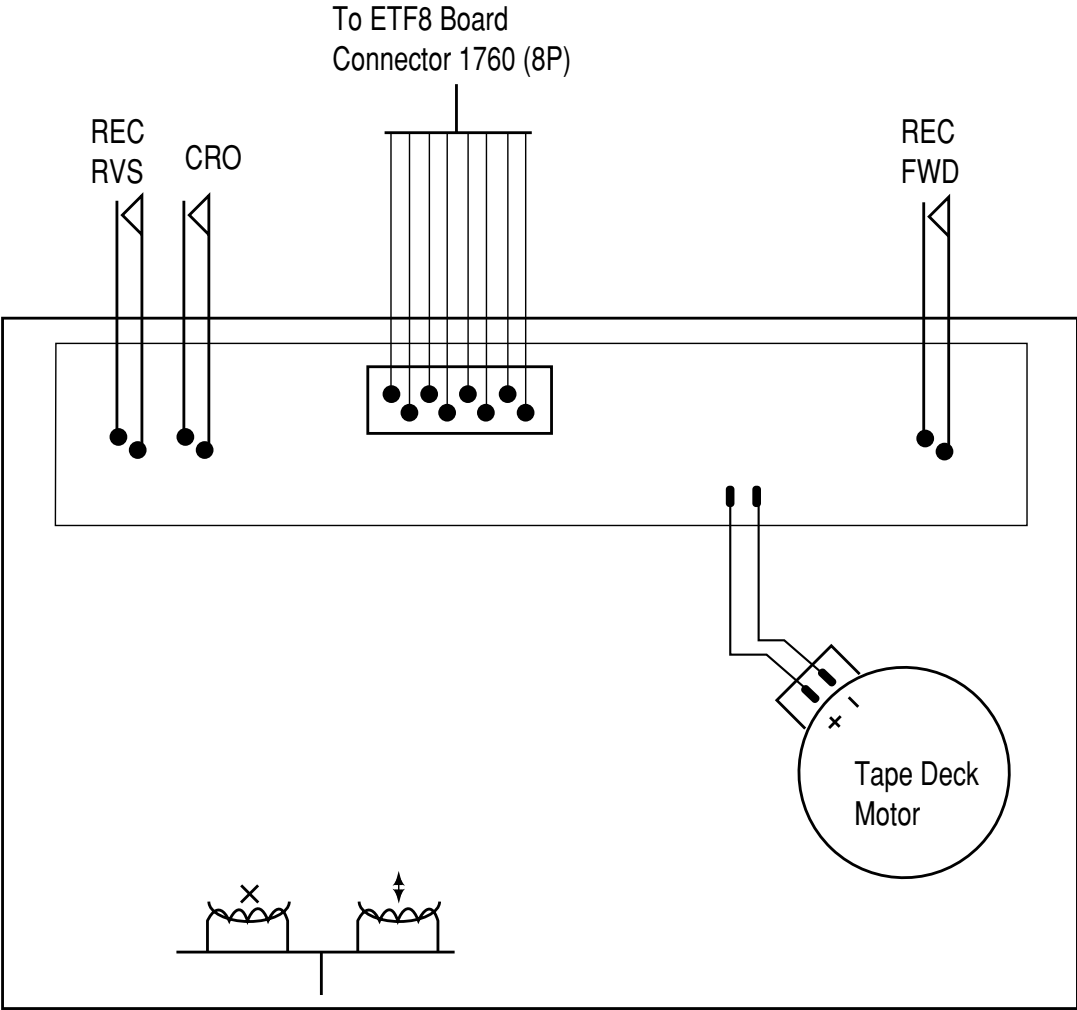
Motor Ground
D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706

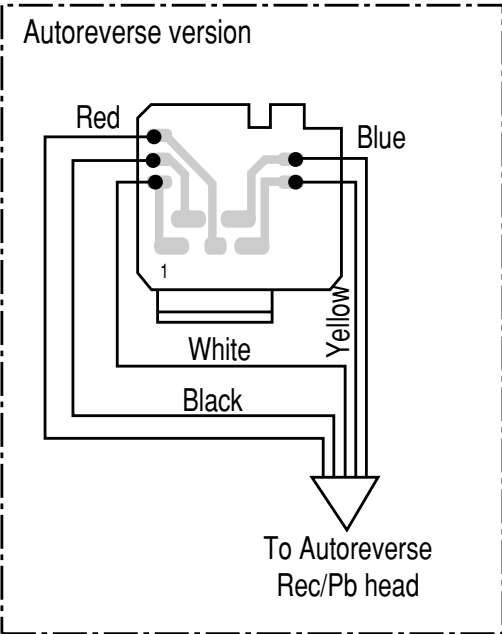
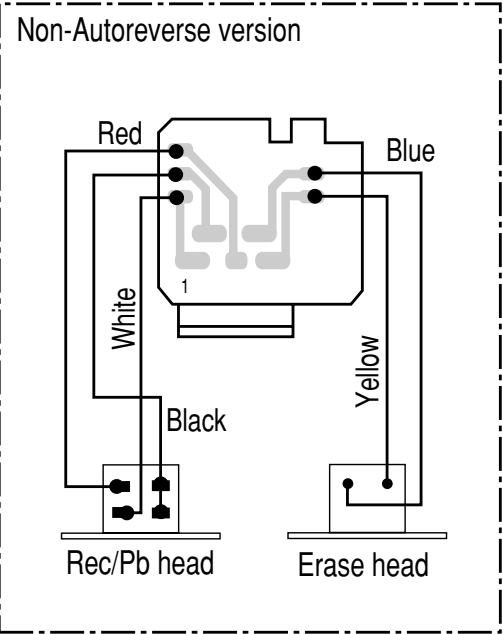
○	1	CR_IN
○	2	AD1
○	3	+5V
○	4	GND_P
○	5	CLK
○	6	DATA
○	7	STROBE

INTERCONNECTION TO FRONT BOARD

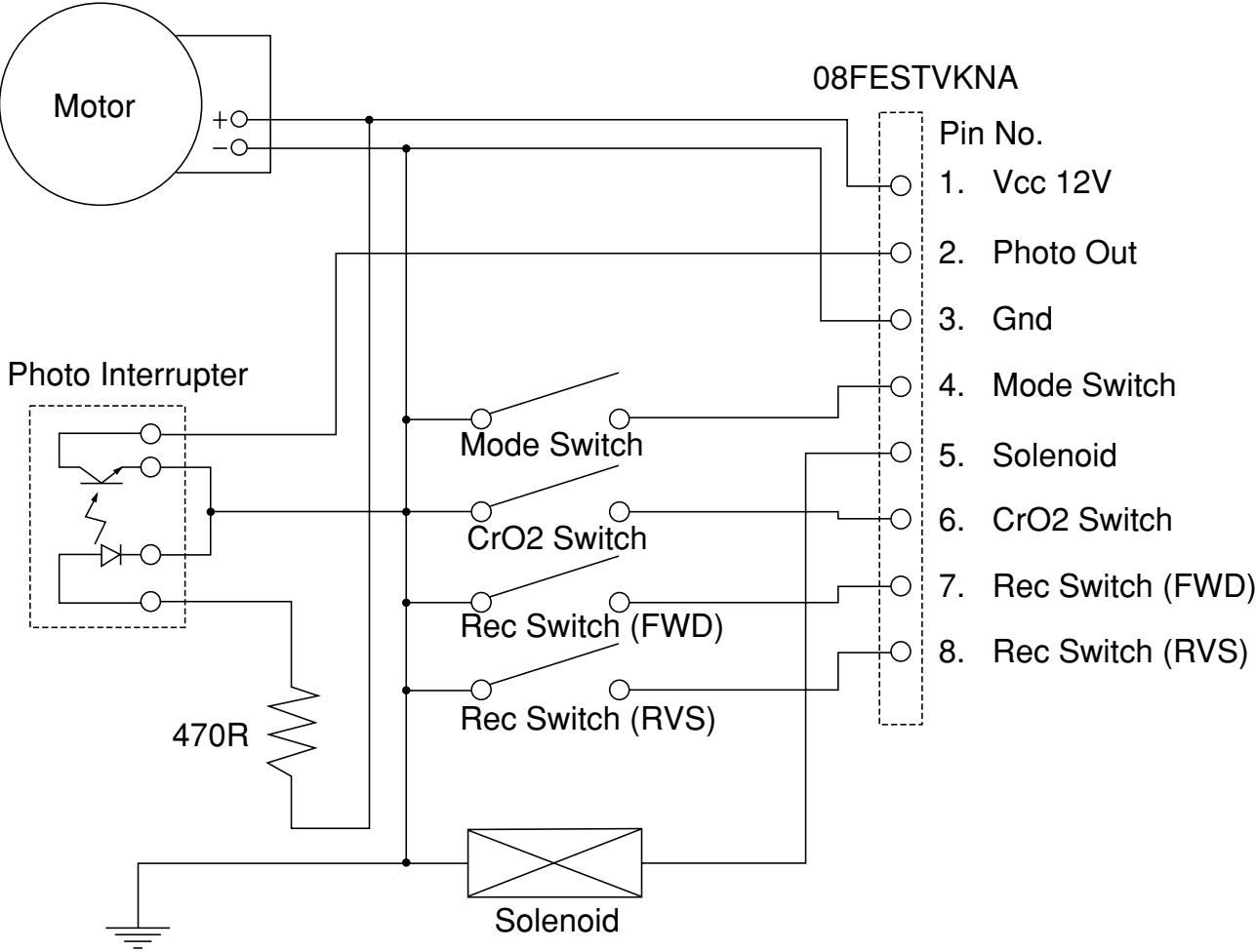
TAPE DECK WIRING



To ETF8 Board
Connector 1710 (5P)



TAPE MECHANISM ELECTRONICS

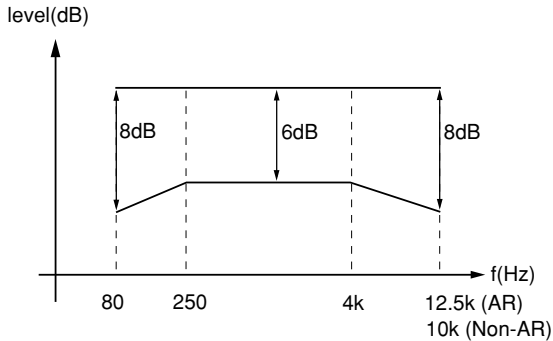


TAPE ADJUSTMENT & CHECK TABLE

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
MOTOR SPEED	SBC420 3150Hz	PLAY	1 or 2 LEFT RIGHT	frequency counter	check	3150Hz +/- 2%
WOW & FLUTTER	SBC420 3150Hz	PLAY		W&F-meter	check	< 0.4 % DIN
ADJUST AZIMUTH	SBC420 10kHz	PLAY FWD		mV-meter	left hand screw	max. output level & left=right
		PLAY REV ^			right hand screw	
PLAYBACK FREQ. RESPONSE	SBC420	PLAY		mV-meter	check	limits see fig. 1 *
CHECK RECORD/PLAYBACK FREQUENCY AND DISTORTION						
Inject 8.85mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	SBC419A or SBC420	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 28mV via 3 or 4	SBC419A or SBC420	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	THD-meter	check	< 3% *

SBC419A : 4822 397 30069
SBC420 : 4822 397 30071

^ For Auto-reverse version only
* If high frequencies are not within limits, decrease bias and re-measure.
If distortion is too high, increase bias and re-measure



BLOCK DIAGRAM
Universal Loader / ICD03 PhonIC MP3

