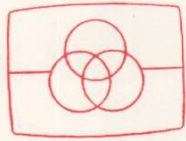


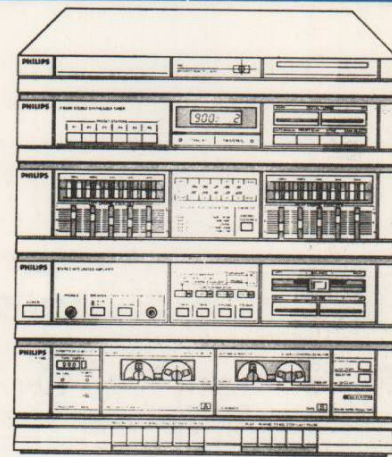
Service Service Service



Free service manuals
Gratis schema's

Digitized by

www.freeservicemanuals.info



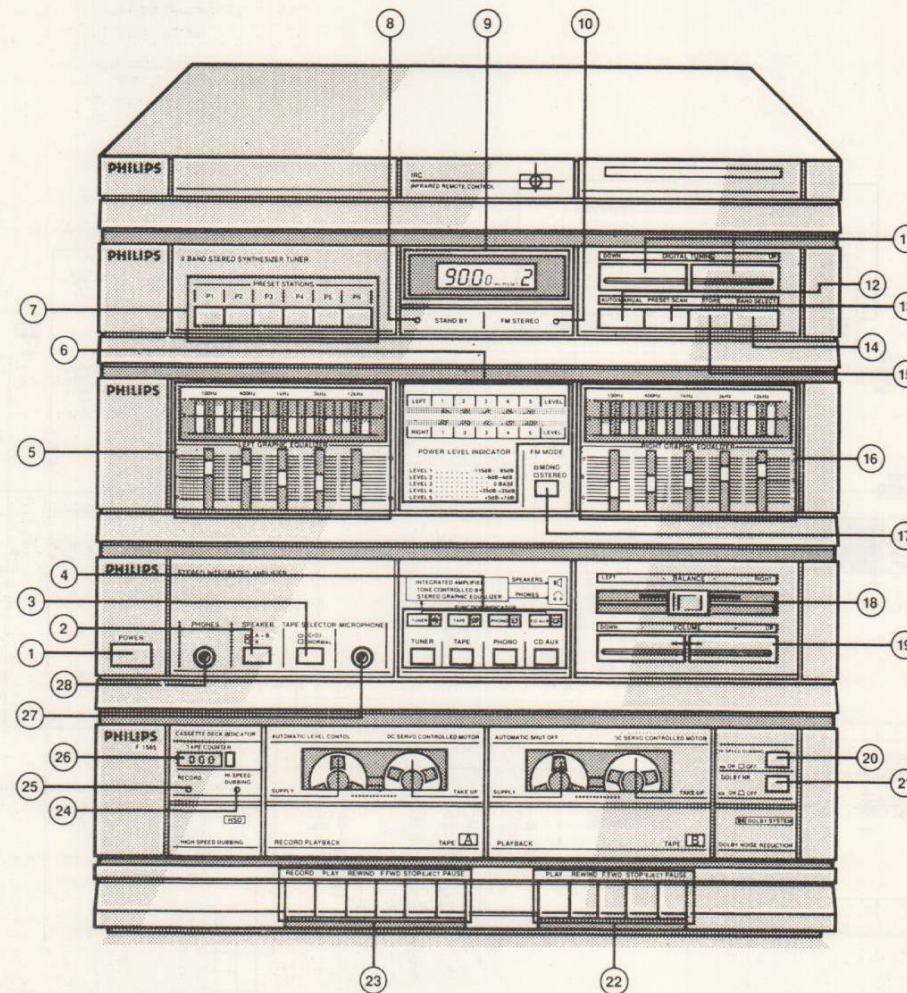
For servicing information regarding the cassette mechanism, refer to Service Manual: Recorder Tape Deck TN-21SW-1482

Service Manual

TABLE OF CONTENTS

	Page
Location of Controls	2
Specifications	3
Receiver Alignment	4
RF Circuit	5,6
PCB Solder side	7,8,11,12,29,30
Adjustment Locations	9
PLL and Remote circuit	13,14
AF Circuit	15-18
Wiring Diagram	19-24
Cassette Record/Play circuit	25,26
Cassette Alignment	27
Mechanical partslist	28
Microphone/power circuit	31,32
Exploded view	33-37
Electrical partslist	38

Location of Controls



- ① ON/OFF - press in to switch the unit on; press again to go to stand by
- ② SPEAKER selector - $\blacktriangle$ for two pairs of speakers A+B; $\blacktriangleright$ for one pair of speakers A only
- ③ TAPE selector - $\blacksquare$ for normal tapes; $\blacktriangle$ for CrO2 tapes
- ④ FUNCTION selectors
TUNER - for the radio
TAPE - for the cassette player
PHONO - for the record player
CD/AUX - for a CD player or other external sources
- ⑤ LEFT GRAPHIC EQUALIZER - adjust the slide controls to suit your listening preference of the left speaker
- ⑥ POWER LEVEL indicator
- ⑦ PRESET STATIONS - for storing and recalling up to 6 AM and 6 FM stations in the memory
- ⑧ STAND BY indicator - lights up when the unit is in stand by
- ⑨ radio display
- ⑩ FM STEREO indicator - lights up on reception of an FM stereo broadcast
- ⑪ TUNING - press UP to tune towards the higher end of the selected band and press DOWN to tune towards the lower end of the selected band
- ⑫ AUTO/MANUAL - choose between automatic or manual tuning
- ⑬ PRESET SCAN - to tune to an other preset station
- ⑭ BAND SELECT - to select AM or FM band
- ⑮ STORE - to store your selected stations (6 on AM and 6 on FM)
- ⑯ RIGHT GRAPHIC EQUALIZERS - adjust the slide controls to suit your listening preference of the right speaker
- ⑰ FM MODE - $\blacksquare$ for stereo reception; $\blacktriangle$ for mono reception
- ⑱ BALANCE - to adjust the balance of the volume between left and right speaker
- ⑲ VOLUME - to adjust the volume
- ⑳ HI-SPEED DUBBING - press to make a high speed copy from deck B to deck A
- ㉑ DOLBY NOISE REDUCTION - to cut out high frequency noise
- ㉒ deck B keyboard, for playback only
PLAY - to start playback
REWIND - to fast rewind the tape
F.FWD - to fast forward the tape
STOP/EJECT - to stop playback and to open the cassette door
PAUSE - for brief interruptions
- ㉓ deck A keyboard, recording and playback
RECORD - for recording
PLAY - to start playback
REWIND - to fast rewind the tape
F.FWD - to fast forward the tape
STOP/EJECT - to stop playback and to open the cassette door
PAUSE - for brief interruptions
- ㉔ HI-SPEED DUBBING indicator - lights up when making a tape copy at high speed
- ㉕ RECORD indicator - lights up when recording
- ㉖ TAPE COUNTER with zero reset button, deck A
- ㉗ input socket for MICROPHONE
- ㉘ PHONES socket for stereo headphones

SPECIFICATION GENERAL

	NOMINAL VALUE	TYPICAL VALUE
Mains voltage	: 120/220/240V	: 120/220/240V

Mains frequency	: 50 Hz	: 50 Hz
Power consumption	: 20W max	: 20W max
Dimensions (WxHxD)	: 16"1/2 x 17"1/8 x 13"1/2	
Weight	: 10 kg	

TUNER. FM SECTION

Tuning range	: 87.5 MHz to 108.5 MHz	: 87.5 MHz to 108.5 MHz
Aerial inputs	: 75 ohm BALANCED	: 75 ohm BALANCED
Sensitivity	: 2uV 26dB quieting	: 4uV 26dB quieting
Suppression IF-AM	: 33dB	: 30dB

DISTORTION T.H.D.

Signal/noise ratio	Stereo	: 0.35%	: 0.7%
	Mono	: 50dB	: 45dB

TUNER. AM SECTION

Wave ranges	MW	: 531 KHz to 1602 KHz	: 536 KHz to 1607 KHz
IF rejection	MW	: 28dB at 600 KHz	: 25dB at 600 KHz
20dB Quieting Sensitivity	MW	: 400uV/m	: 800uV/m

AMPLIFIER

10% T.H.D. Output Power	: 33W	: 30W
Distortion T.H.D.	: 0.3%	: 0.5%
Frequency characteristic		
Bass control	: +6 ~ -10dB +9 ~ -9dB	: $\pm$ 3dB
Terble control	: +6 ~ -10dB +9 ~ -9dB	: $\pm$ 3dB

CASSETTE SECTION

Tape speed	: 17/8 IPS (4.75cm P.S)	: $\pm$ 2%
Wow & Flotter		
S/N ratio	: 0.15%	: 0.35%
Separation	: 50dB	: 45dB
Dolby NR section	: 35dB	: 30dB
Noise reduction (Phono)	: -	: 8.5dB
Bias leakage	: -	: 0.5dB

PHONO SECTION

Input impedamce	: 470K ohm	: 470K ohm
Speed	: 33 1/3 - 45 t/min	: 33 1/3 - 45 t/min
Wow & Flutter	: 0.3%	: 0.3%

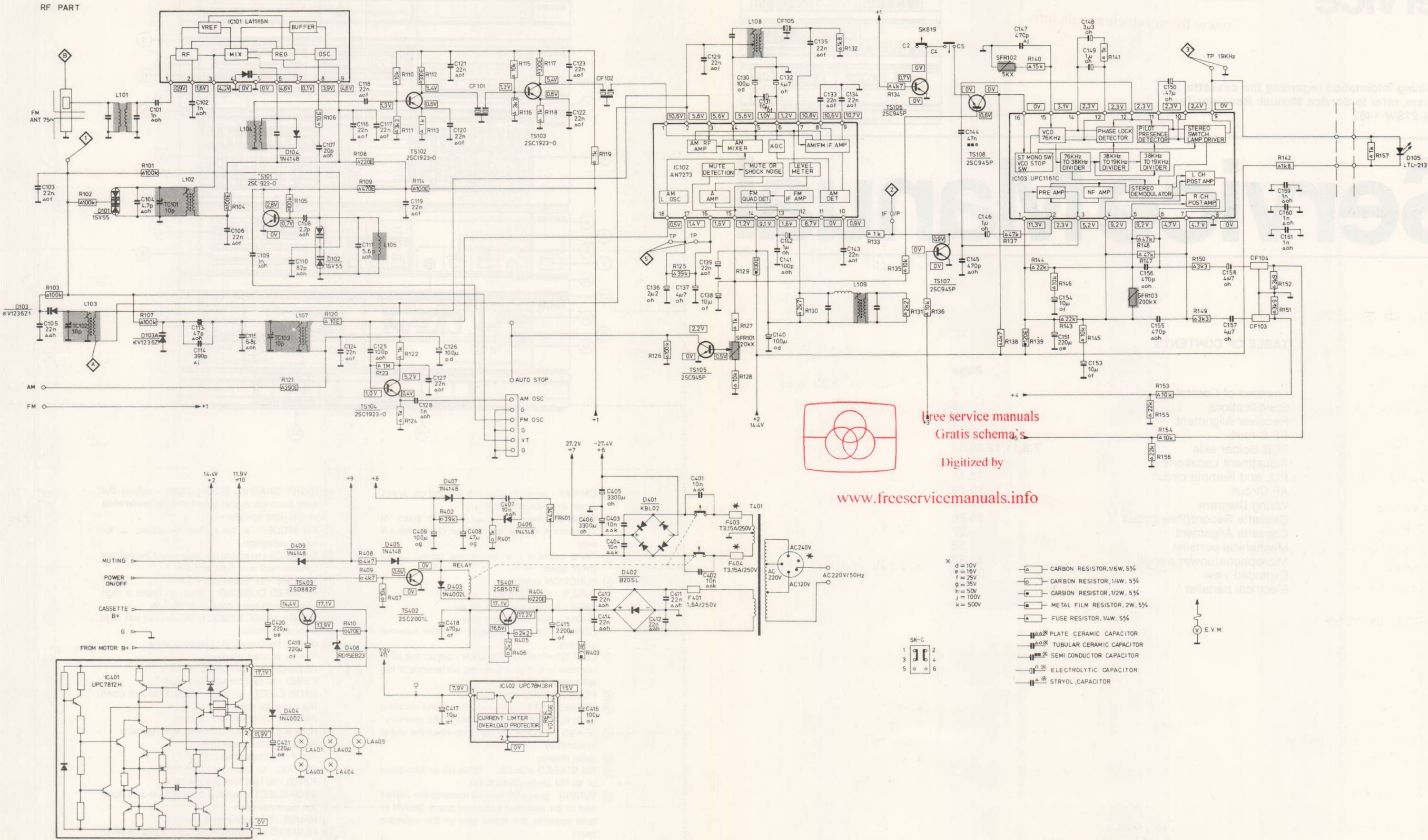
- Signal input must be as low as possible to avoid overload and clipping. (Use highest sensitivity of output indicator.)
- Volume control at maximum, balance and tone controls at mechanical center.
- Standard modulation is 400 Hz at 30% amplitude for AM. 1000 Hz at 22.5 kHz deviation for FM.
- Connect 8 ohm load across speaker jack.

Equipment required:

- AM signal generator
- FM signal generator
- V.M.
- Frequency counter

Radio Alignment

SK.....A	Signal	to	Tune in	adjust	
Position					
AM	450 kHz	A		L108	MAX. 2
AM	531 kHz 1602 kHz 603 kHz 1404 kHz	A	MAX CAP MIN CAP 603 kHz 1404 kHz	L107 TC103 L103 TC102	VT=1.0V±0.1V VT=7.0V±0.1V MAX. 4 1
FM	10.7 MHz	B		L104	MAX. 2
FM	87.5 MHz 108 MHz 90 MHz 106 MHz	B	MAX CAP MIN CAP 90 MHz 106 MHz	L105 L102 TC101	VT=1.1V±0.1V 7.5V MAX. 1 4
FM	98 MHz	B		SFR102	COUNTER 19 kHz MAX.
FM T.H.D	NO SIGNAL	B		L109 R L	VT=0V±.05V DISTORTION TO MIN. 5
FM AUTO TUNING	26 db SIGNAL	B		SFR101	LOCK SENS. =28db±4db 1
FM SEPAR- ATION		B		SFR103	MAX. 1

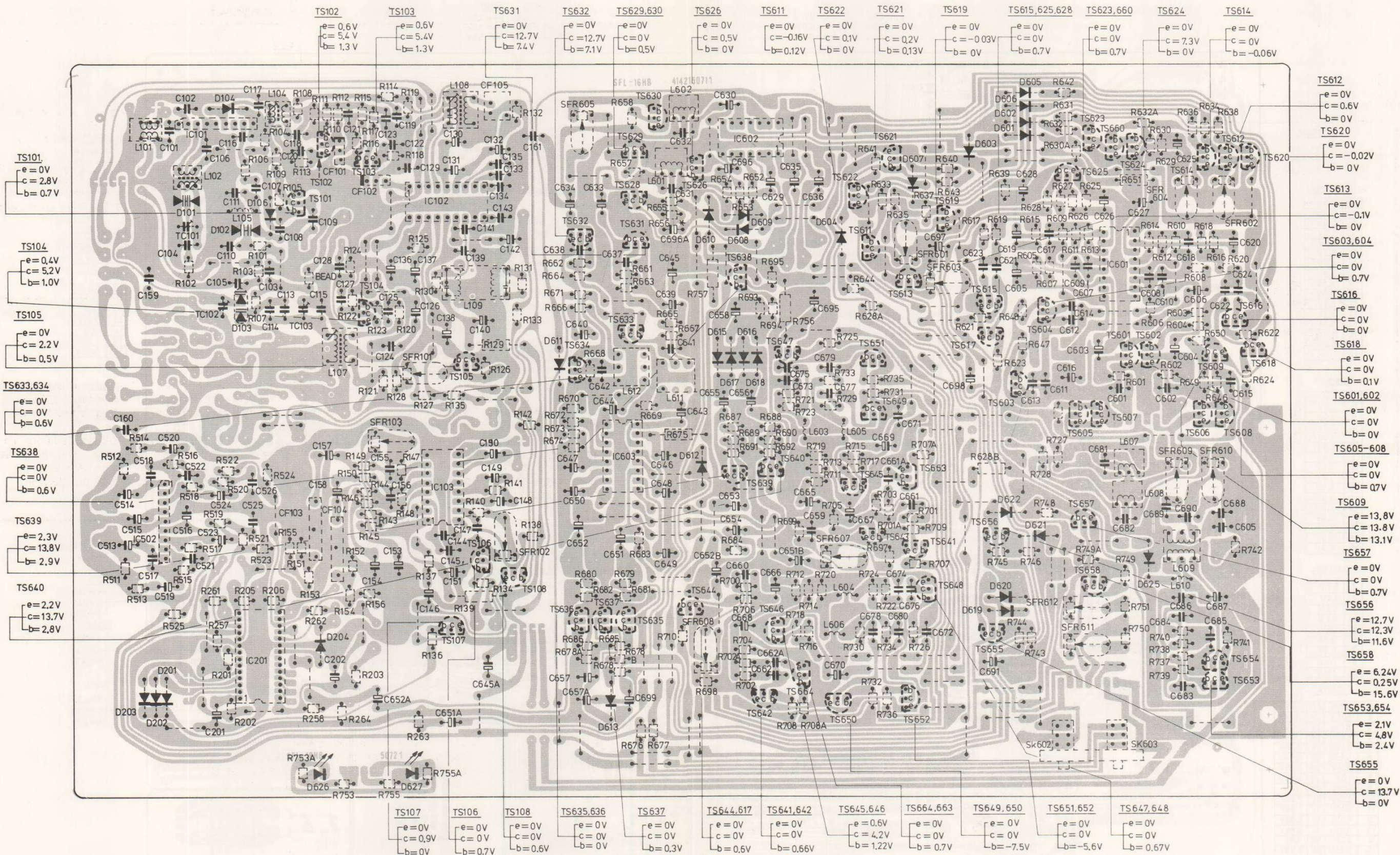


Free service manuals
Gratis schemas
Digitized by
www.freesevicemanuals.info

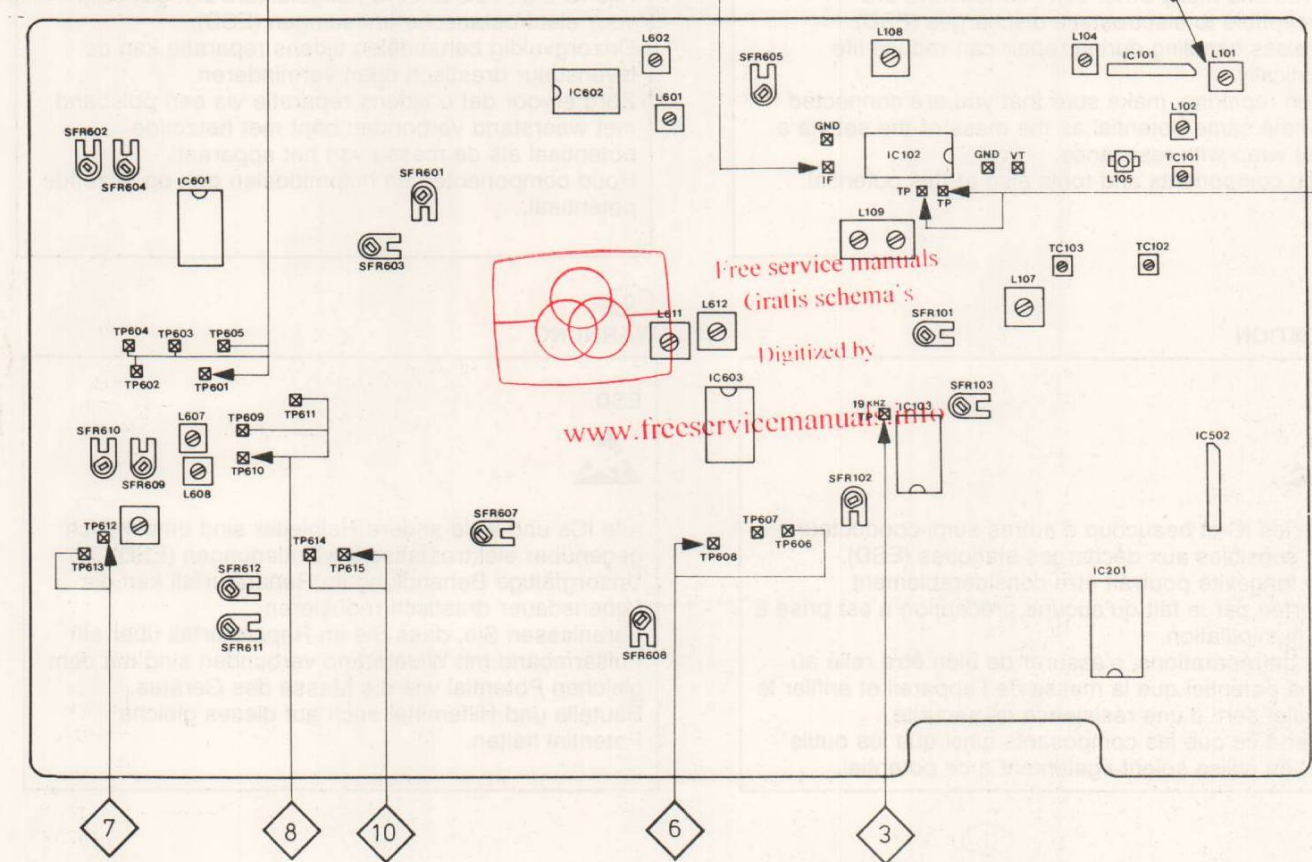
* only for -/01/25

P C Board-Solder Side

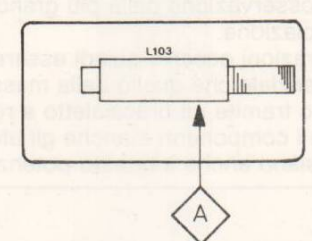
Adjustment Locations



Main P C Board



Antenna P C Board



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
IC101	0.9V	1.6V	4.5V	0V	0V	4.6V	0.1V	3.9V	4.6V																			
IC102 AM	10.6V	5.6V	5.6V	5.6V	1.0V	1.2V	10.8V	10.6V	10.7V	10.3V	0V	1.3V	2.0V	11.2V	0.4V	1.5V	1.5V	5.6V										
FM	8.7V	0.5V	0.5V	0.5V	0V	0.3V	8.6V	8.6V	8.6V	0.9V	0V	8.7V	1.6V	9.1V	1.2V	1.6V	1.4V	0.5V										
IC103	11.3V	2.3V	5.2V	9.2V	9.2V	4.7V	4.7V	0V	0V	2.4V	2.3V	2.3V	2.3V	2.3V	3.1V	0V												
IC201	7.7V	0V	4.3V	0V	0V	0V	7.6V	7.6V	0V	0V	0V	0V	0V	0V	1.7V	1.9V	0V	1.8V	0V	0V	0V	0V	0V	0V	0V	0V	0V	7.9V
IC502	1.2V	0.7V	5.9V	6.9V	0V	12.8V	6.25V	0.7V	1.2V																			
IC601	9.0V	2.2V	0V	2.2V	2.2V	2.2V	2.2V	0V	2.2V		2.2V	2.2V	2.2V	2.2V	0.1	2.2V												
IC602	0.1V	0V	0V	0V	13.2V	13.2V	0V	0V	0V	0V	0V	0.5V	0.5V	13.8V														
IC603	6.7V	13.1V	6.7V	6.7V	0V	6.7V	0.8V	6.7V	6.7V	0.8V	6.7V	0V	1.2V	6.7V	0V	6.7V												

Note: Values indicated in □ are DC Voltages between the chassis ground and the electrical parts.

* only for -/01/25

GB

WARNING

ESD



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.

NL

WAARSCHUWING

ESD



Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.

Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

F

ATTENTION

ESD



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 enfile 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

ESD



Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.

Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.

Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

I

AVVERTIMENTO

ESD



Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).

La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.

Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.

Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB

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

NL

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

D

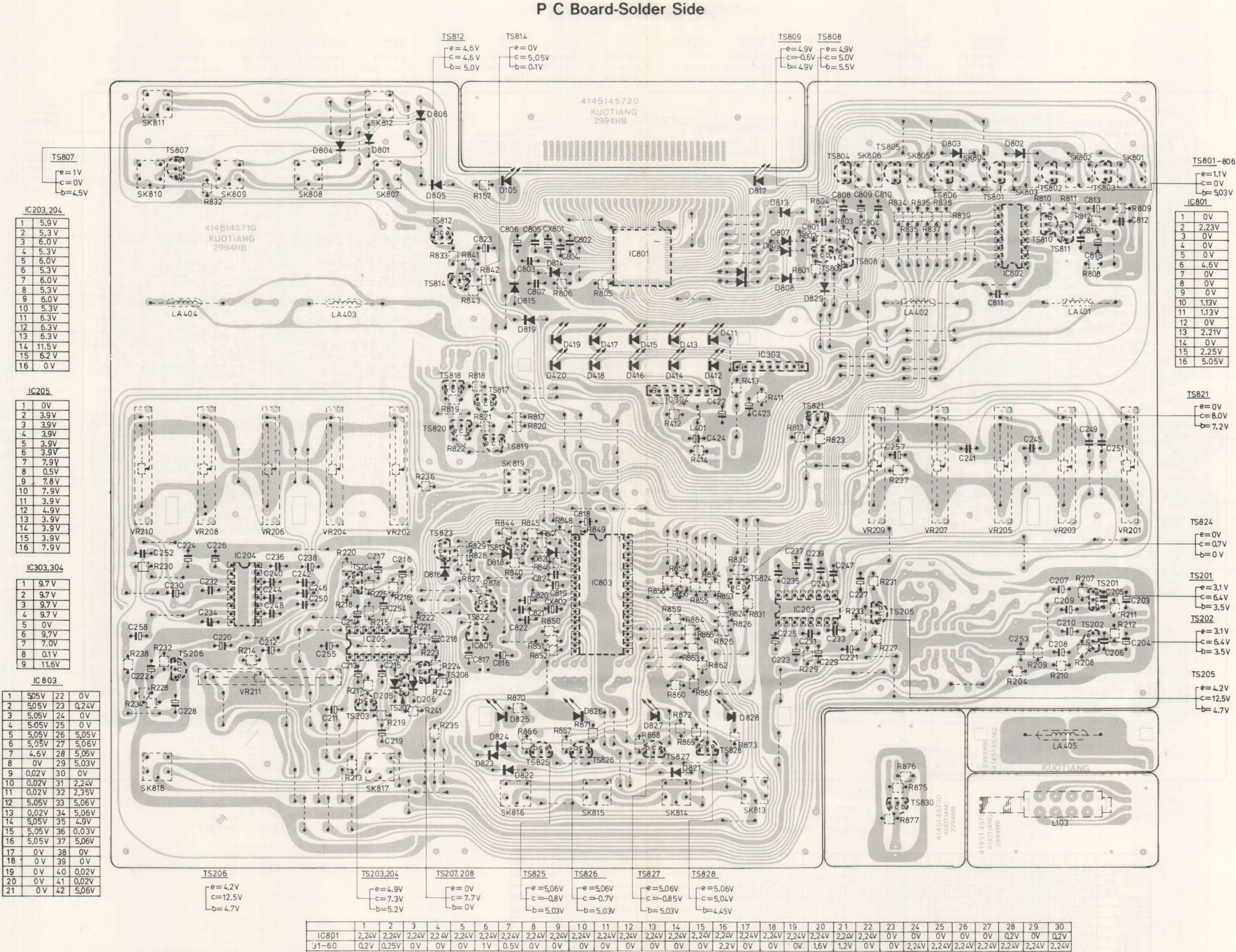
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden.

I

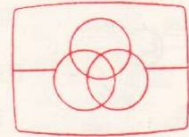
Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambio identici a quelli specificati.

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.

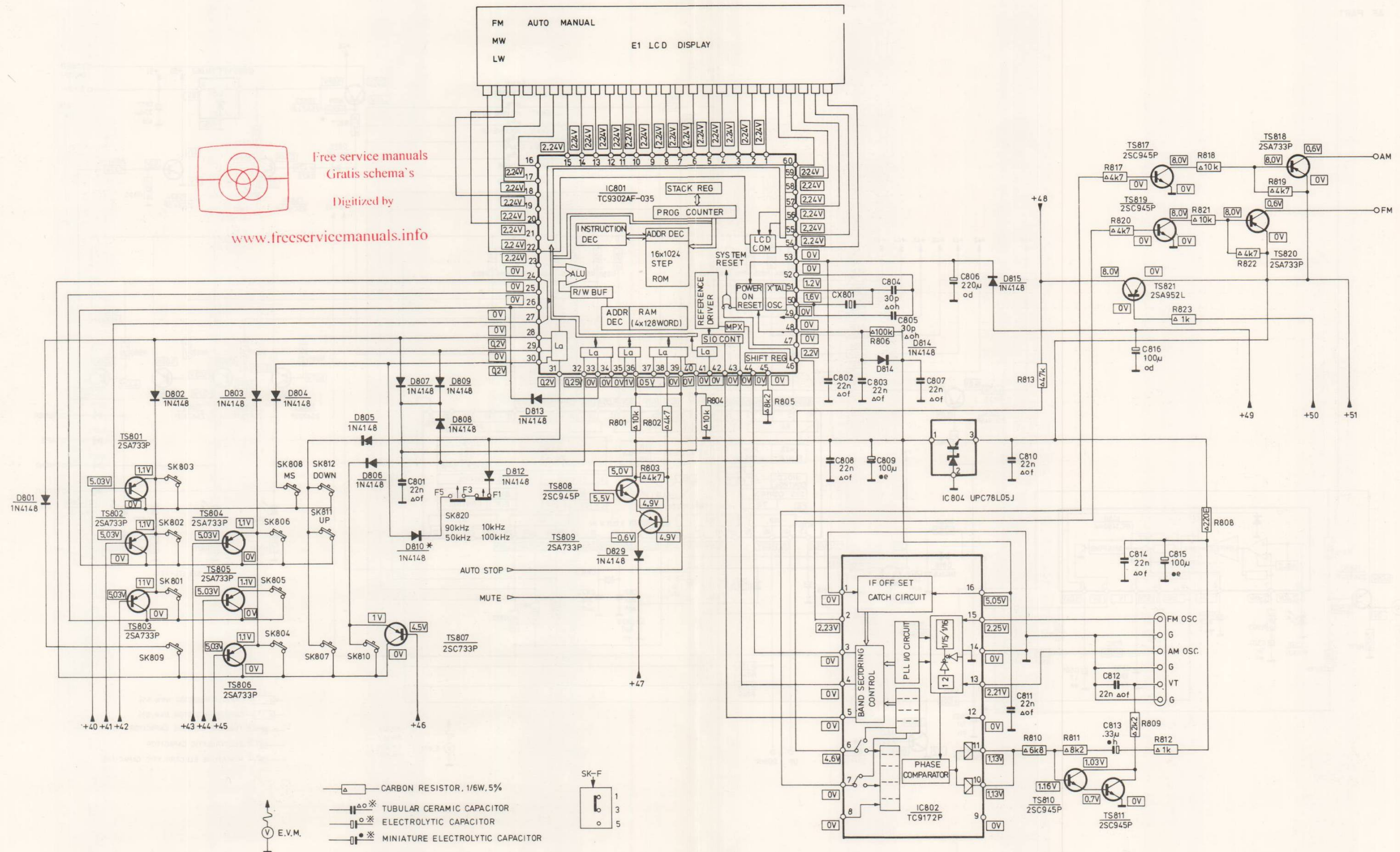


PLL & REMOTE CIRCUIT



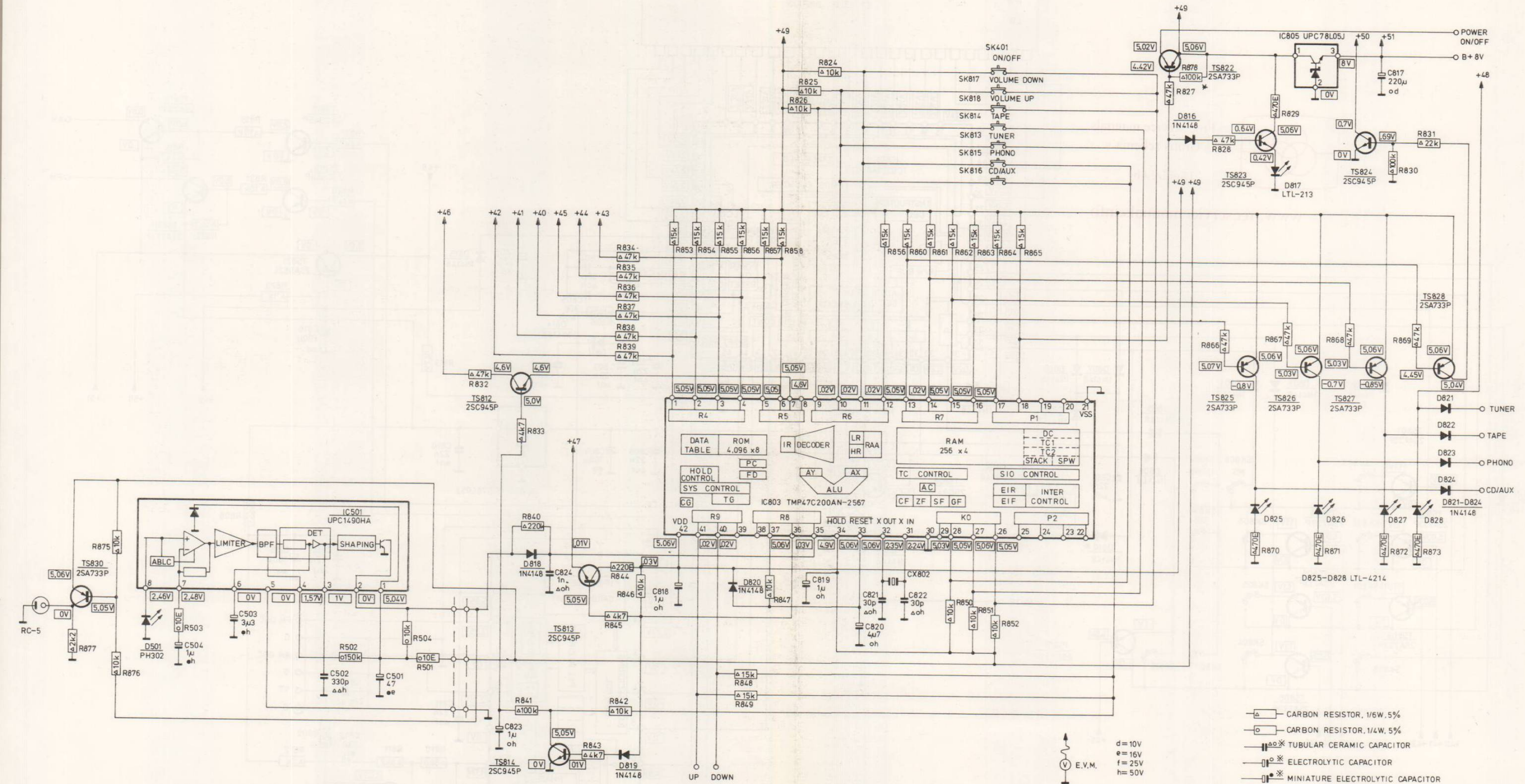
Free service manuals
Gratis schema's
Digitized by

www.freesevicemanuals.info



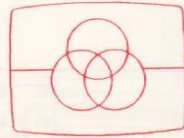
Schematic Diagram

AF PART



* only for -/01/25

Schematic Diagram



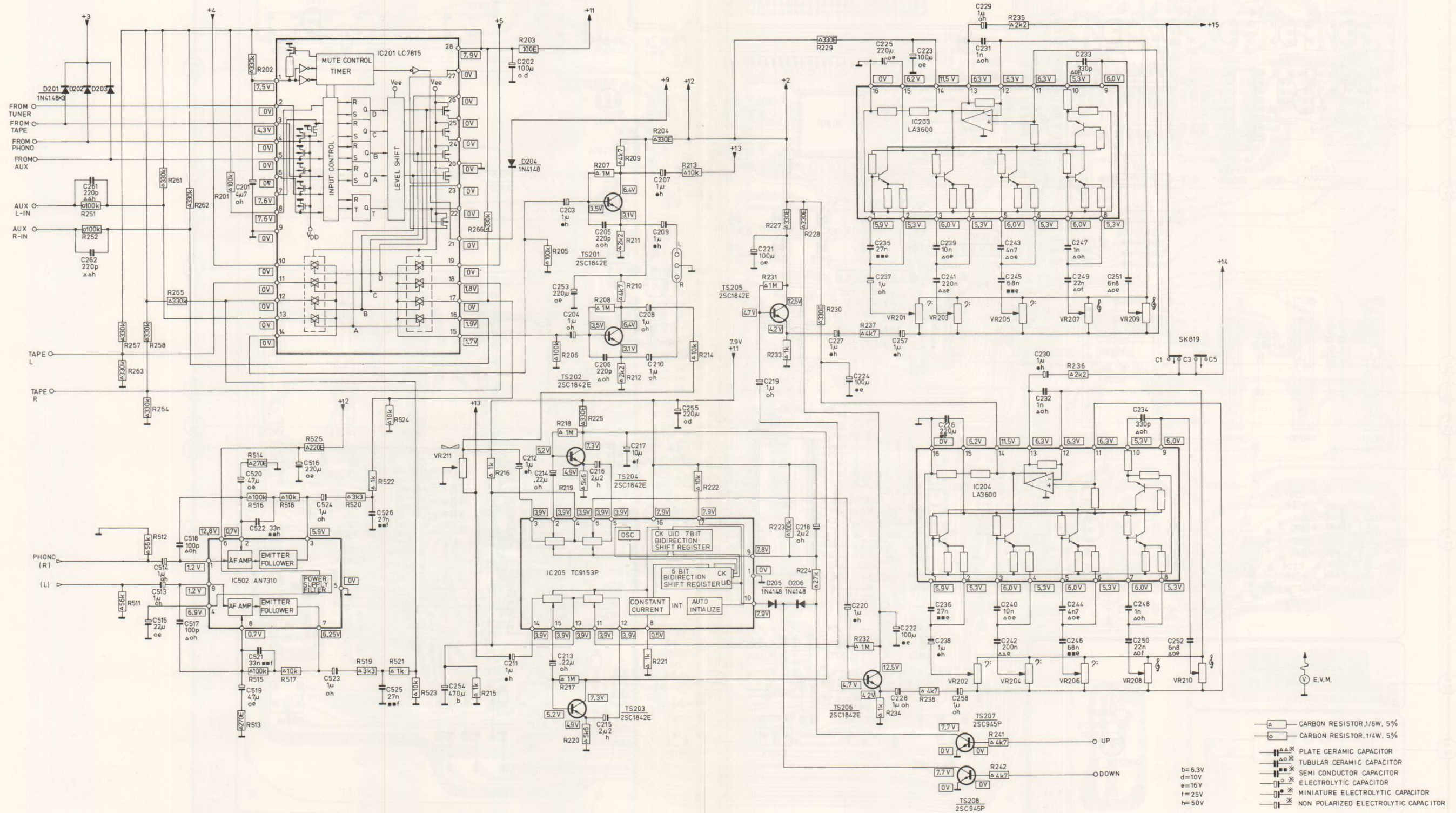
Free service manuals

Gratis schema's

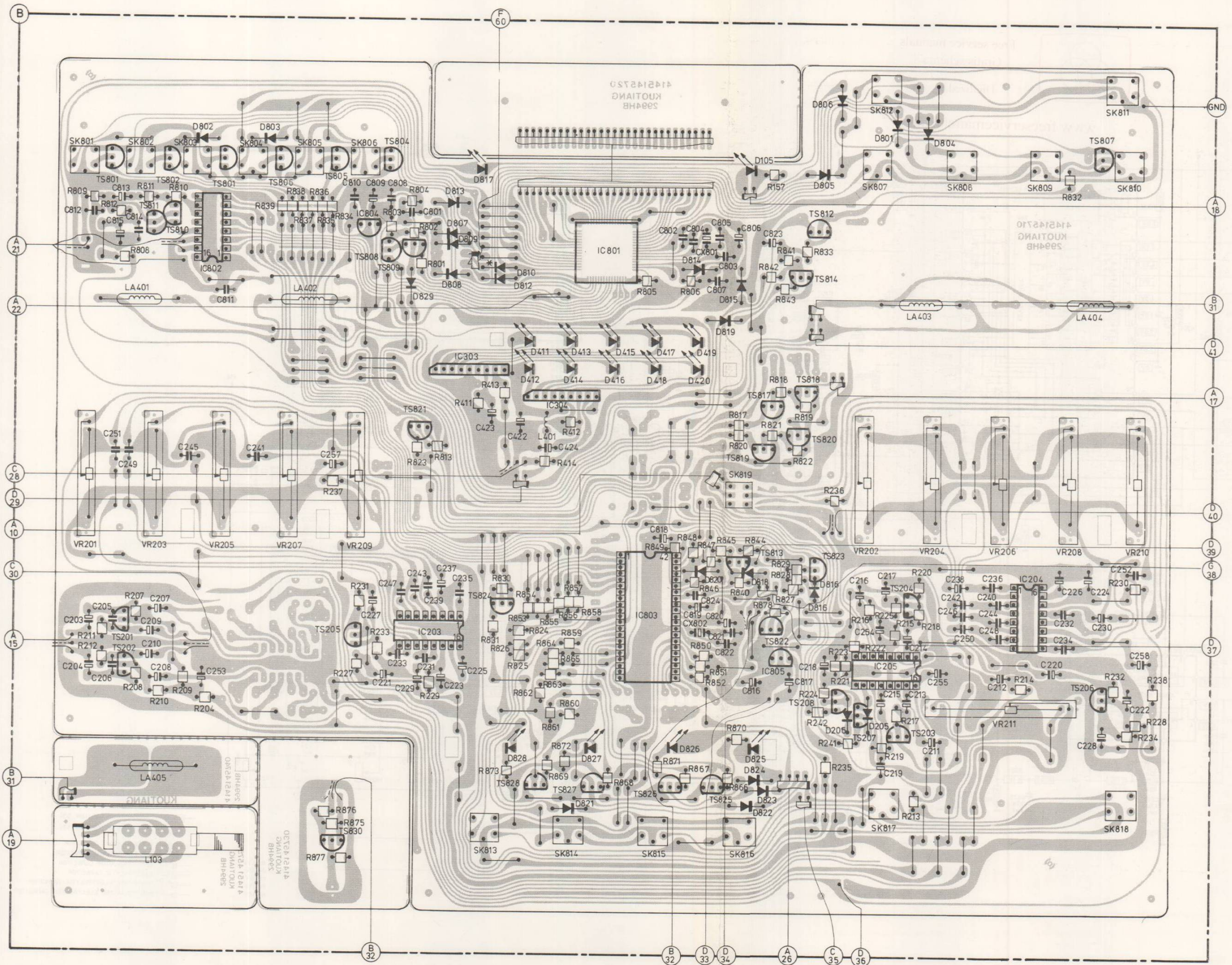
Digitized by

www.freesevicemanuals.info

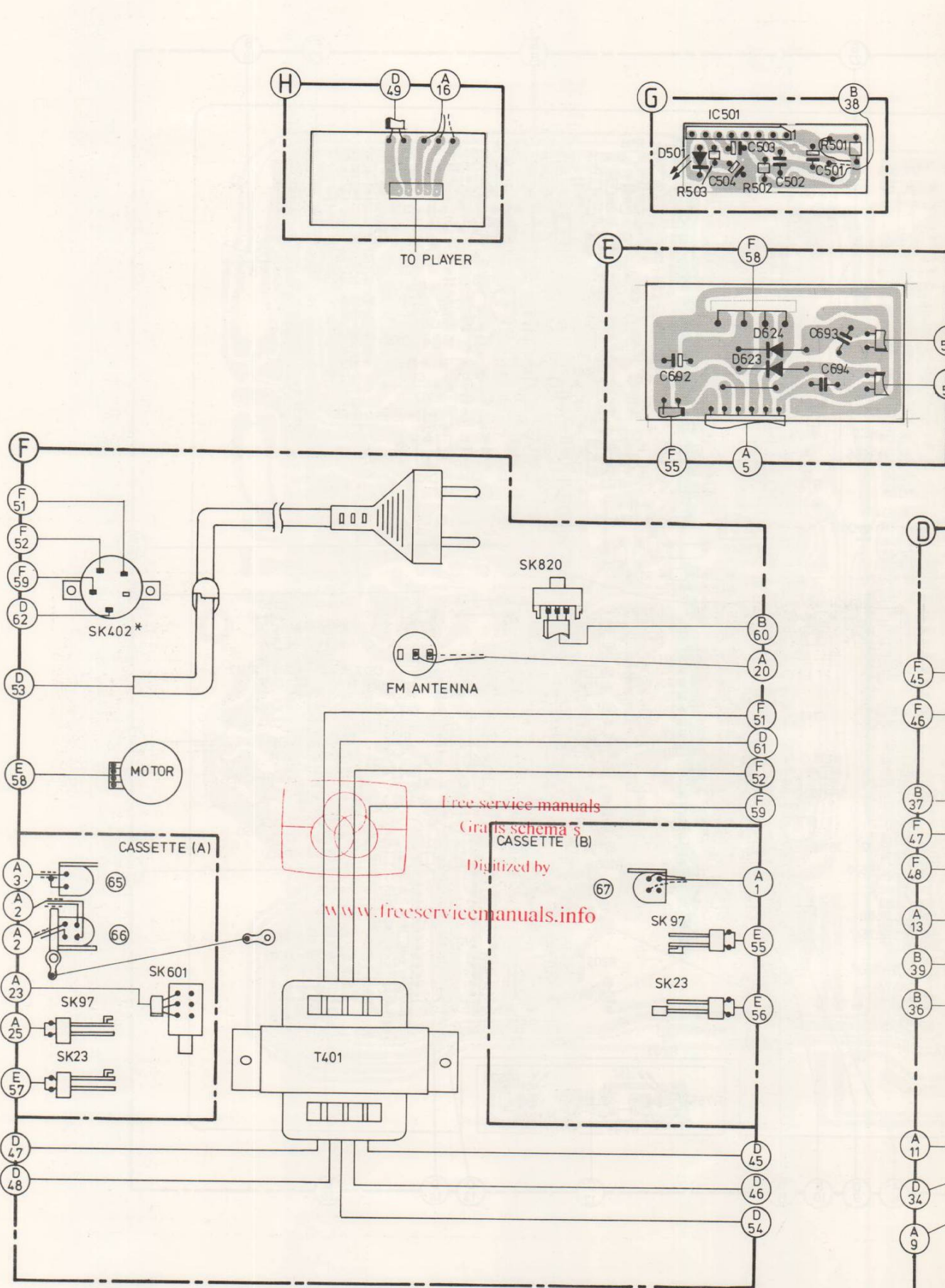
AF PART



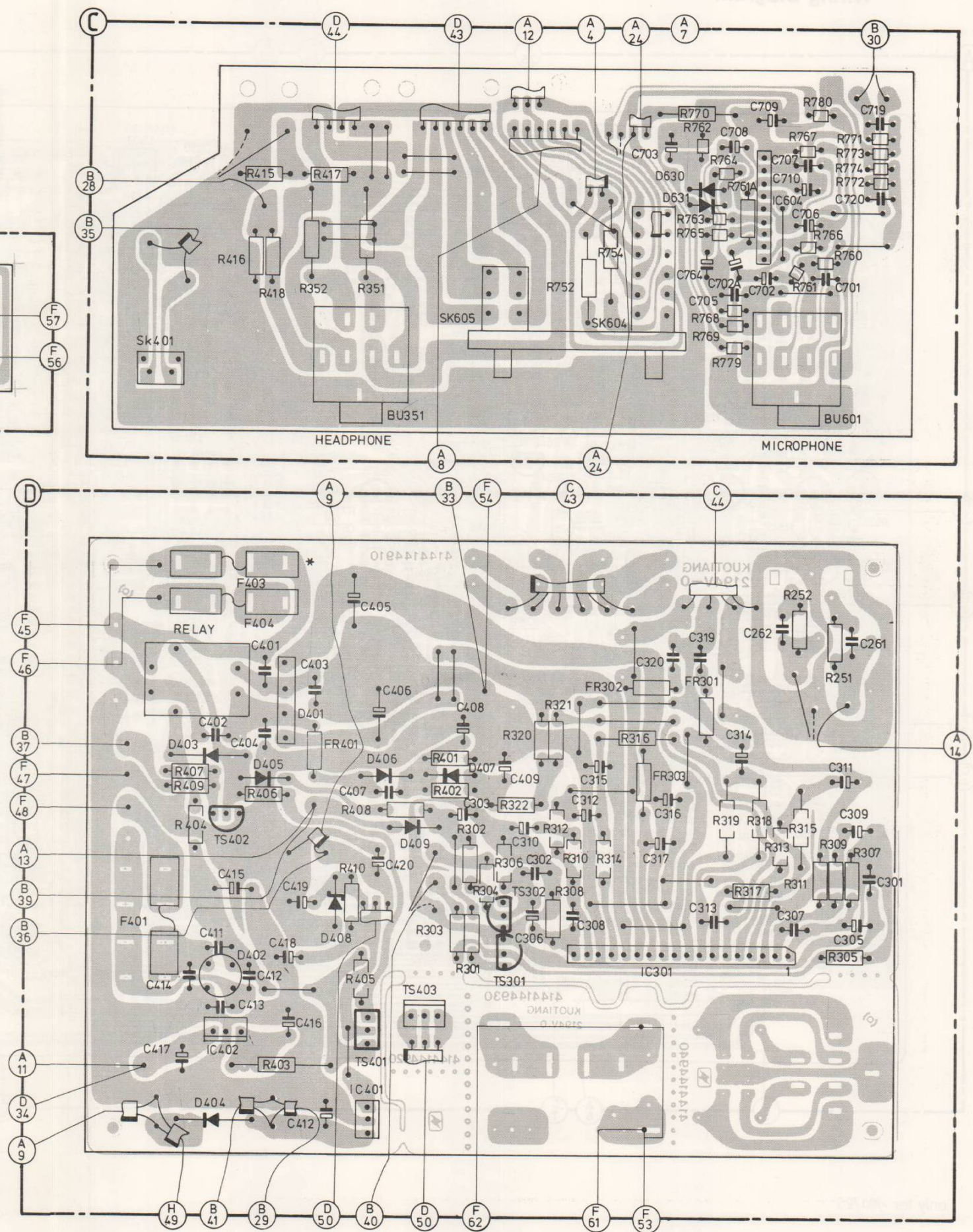
Wiring Diagram

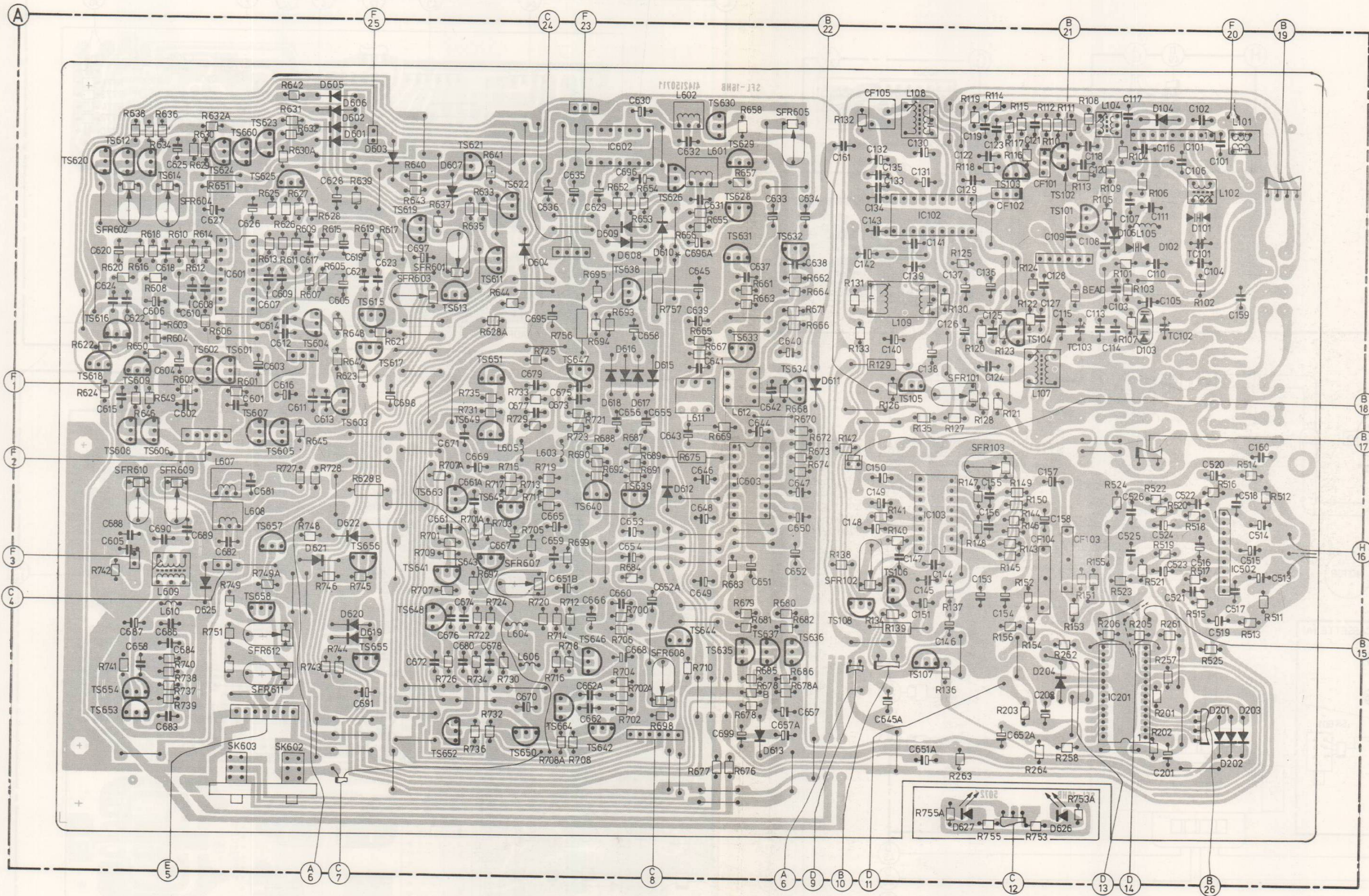


Wiring Diagram



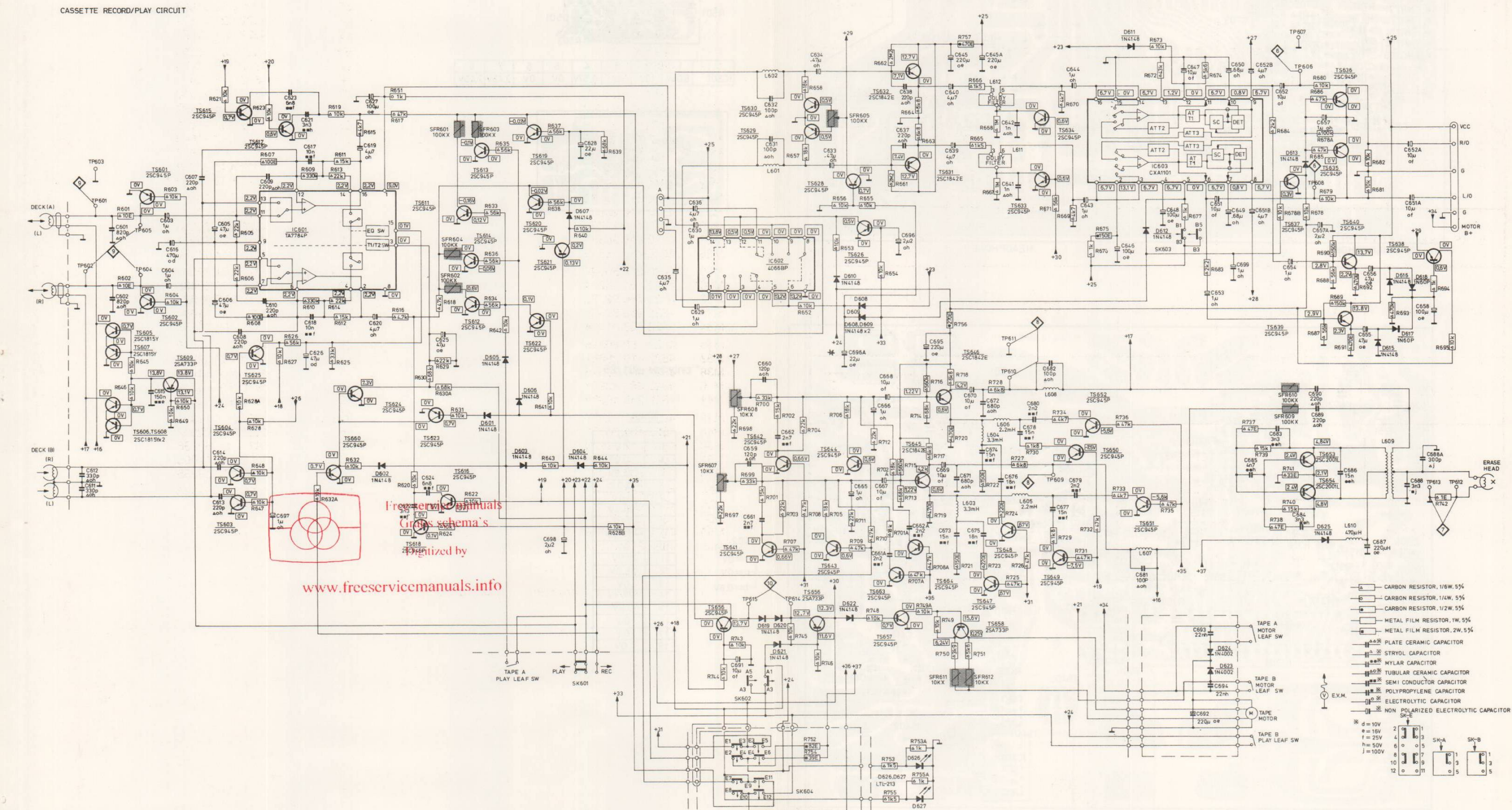
* only for -/01/25





* only for -/01/25

Schematic Diagram



CASSETTE ALIGNMENT & SPEC

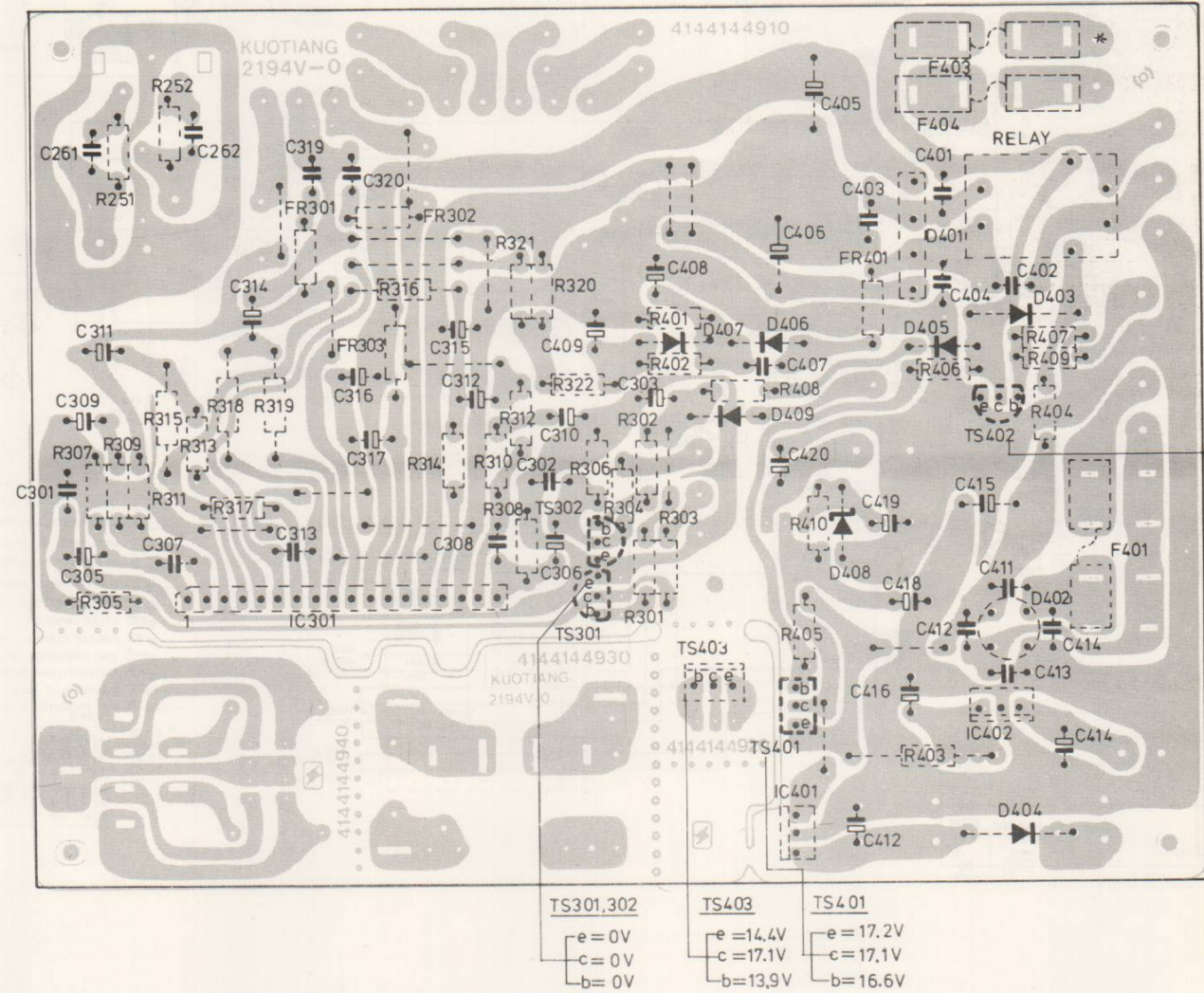
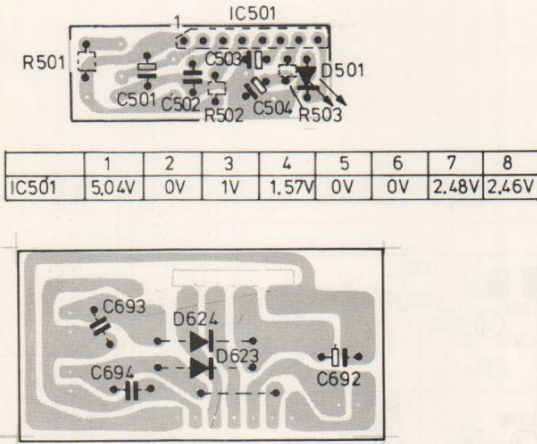
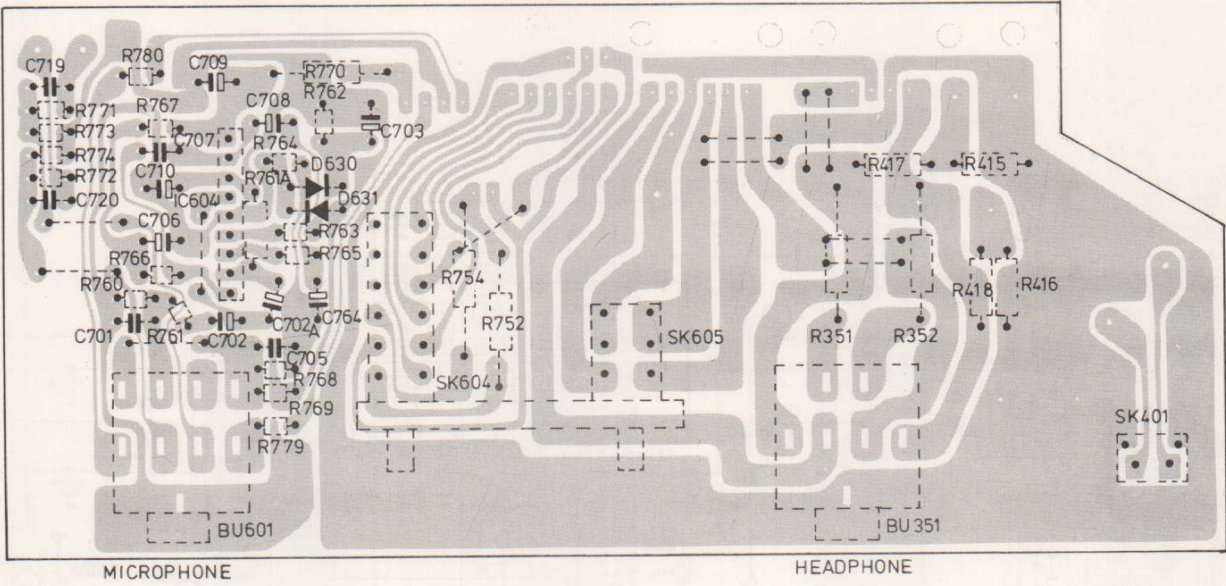
HEAD ANGLE	TEST TAPE SBC 4	PLAYBACK	HEAD ANGLE SCREW	MAX. 5
HIGH SPEED	TEST TAPE SBC 4	PLAYBACK	SFR612	COUNTER 6,3 kHz $\pm 2\%$ 10
NORMAL SPEED	TEST TAPE	PLAYBACK	SFR611	COUNTER 3,15 kHz ± 30 Hz 5
DOLBY LEVEL	TEST TAPE SBC 420 315 Hz 0 dB	PLAYBACK	CASS. DECKA SFR601L SFR602R CASS. DECKB SFR603L SFR604R	OUTPUT= 630 mV 6
BIAS FREQUENCY	NO SIGNAL	RECORD	L109	f=140 KHz 7
BIAS LEAKAGE	NO SIGNAL	RECORD	L607 L608	OUTPUT=30mV 8
DOLBY FILTER	AUX I/P 19 KHz SIGNAL	RECORD	L612 L611	OUTPUT TO MIN 5
R/P LEVEL	TEST TAPE SBC 420 SIDE 2	RECORD	SFR607L SFR608R	OUTPUT=200mV 6
BIAS CURRENT	NO SIGNAL	RECORD	SFR609 SFR610	OUTPUT=42mV 9

MECHANICAL PARTS EXPLODED VIEW A+B

M1	4822 410 26657	51	4822 528 10716
M2	4822 450 61264	52	4822 535 10168
M3	4822 492 70045	53a,b	4822 528 10715
M4	4822 450 61266	54	4822 321 30352
M5	4822 443 62543	56	4822 535 60089
M6	4822 411 61529	57	4822 532 51651
M7	4822 380 30262	58	4822 532 52002
M8	4822 411 61528	59	4822 530 51095
M9	4822 450 61265	61	4822 325 60331
M10	4822 443 62542	62	4822 381 11022
M11	4822 450 61263	63	4822 361 10503
M12	4822 450 61262	64	4822 505 10939
M13	4822 450 61261	66	4822 276 12489
M14	4822 450 61259	67	4822 276 12488
M15	4822 450 61258	68	4822 276 12487
M16	4822 426 51306	69	4822 358 50102
M17	4822 410 26353	71	4822 277 11093
M18	4822 410 26352	72	4822 404 60437
M19	4822 410 26354	73	4822 492 20053
M20	4822 410 26663	74	4822 462 71549
M21	4822 528 20472	76	4822 444 60588
M23	4822 410 26658	77	4822 535 92521
M26	4822 410 26662	78	4822 522 32508
M27	4822 358 30867	79	4822 492 70071
M28	4822 410 26659	81	4822 277 11094
M29	4822 349 50327	82a,b,c,d	4822 251 70311
M30	4822 404 20994	83	4822 404 60435
M32	4822 466 92276	84	4822 535 92524
M33	4822 256 30374	86	4822 532 11684
M34	4822 450 81114	87	4822 466 61163
M35	4822 380 20315	88	4822 535 92519
M37	4822 410 26661	89	4822 492 32906
M38	4822 404 20996	91	4822 277 11092
M40	4822 404 20993	92	4822 530 70354
M41	4822 255 40878	93	4822 535 92518
M43	4822 466 92277	94a,b	4822 277 11091
M44	4822 404 20995	96	4822 535 92522
M50	4822 462 41283	97	4822 404 60436
M51	4822 265 20398	98	4822 277 11095
M53	4822 532 51847	99	4822 277 60255
M54	4822 264 30247	101	4822 535 92523
M55	4822 462 71461		
M58	4822 264 30246		
M59	4822 265 40738		
M60	4822 218 10231		

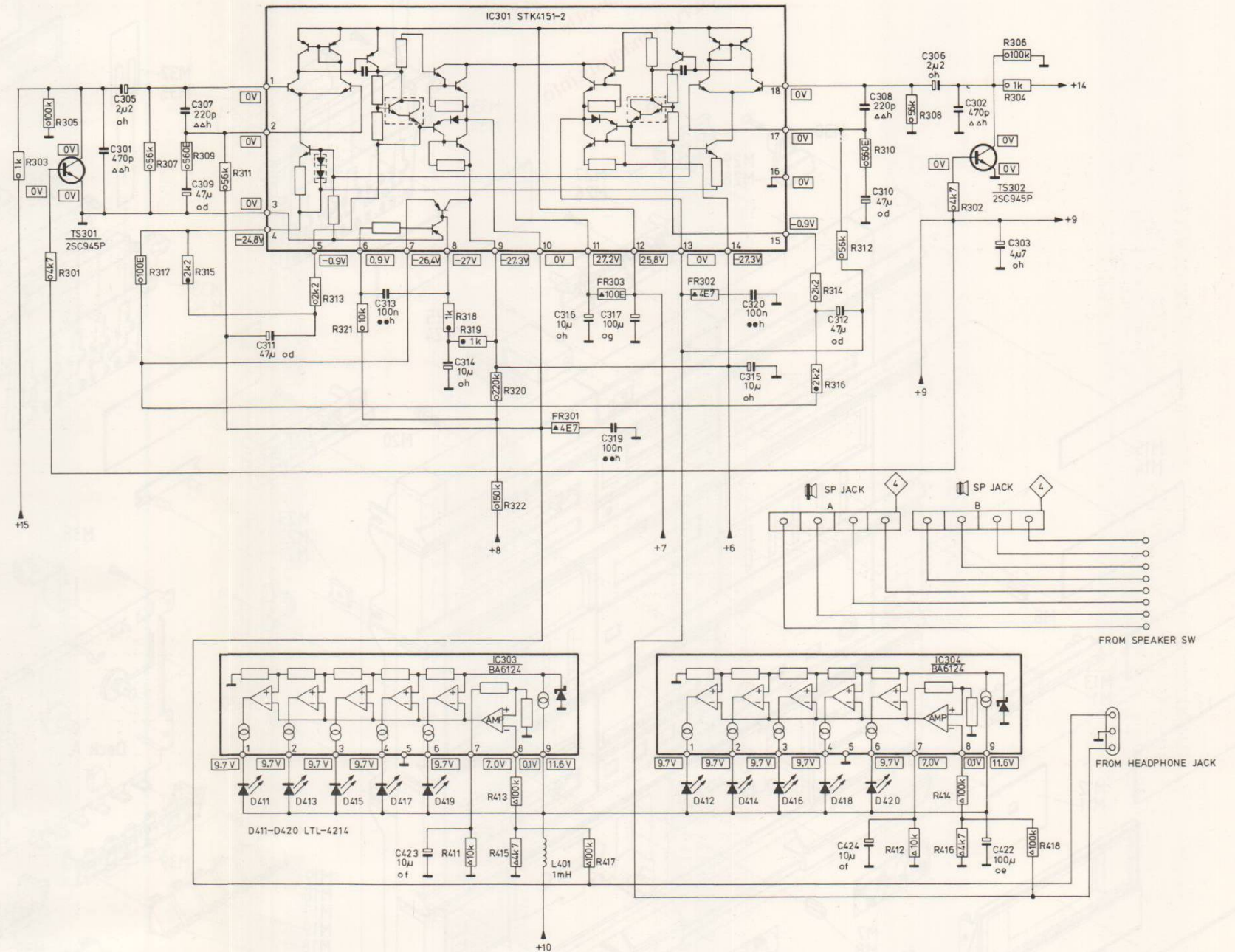
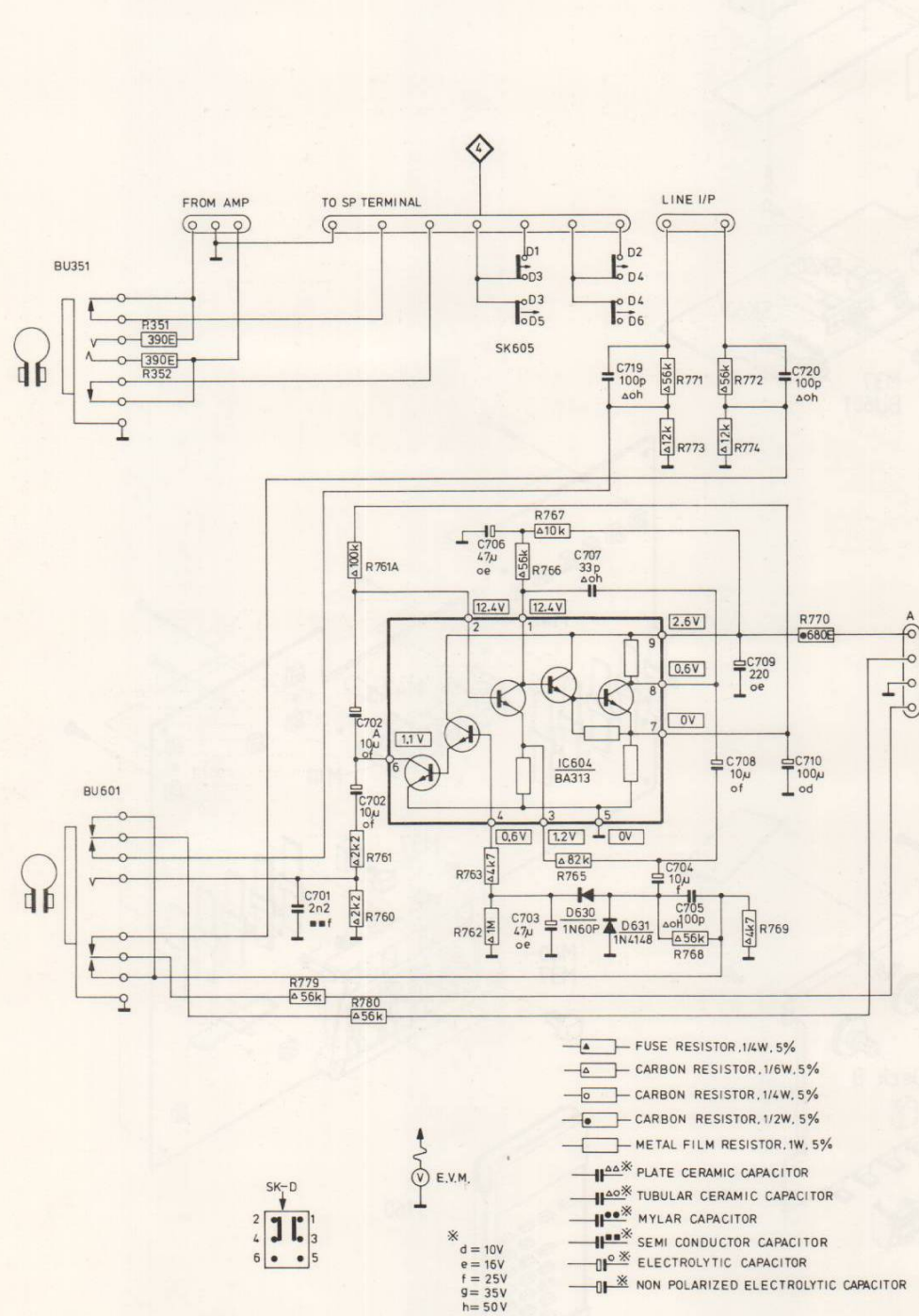
Only the mentioned parts are normal service parts!

MECHANICAL PARTS RECORD PLAYER

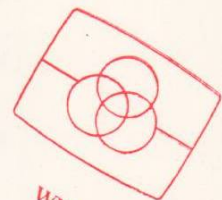


Schematic Diagram

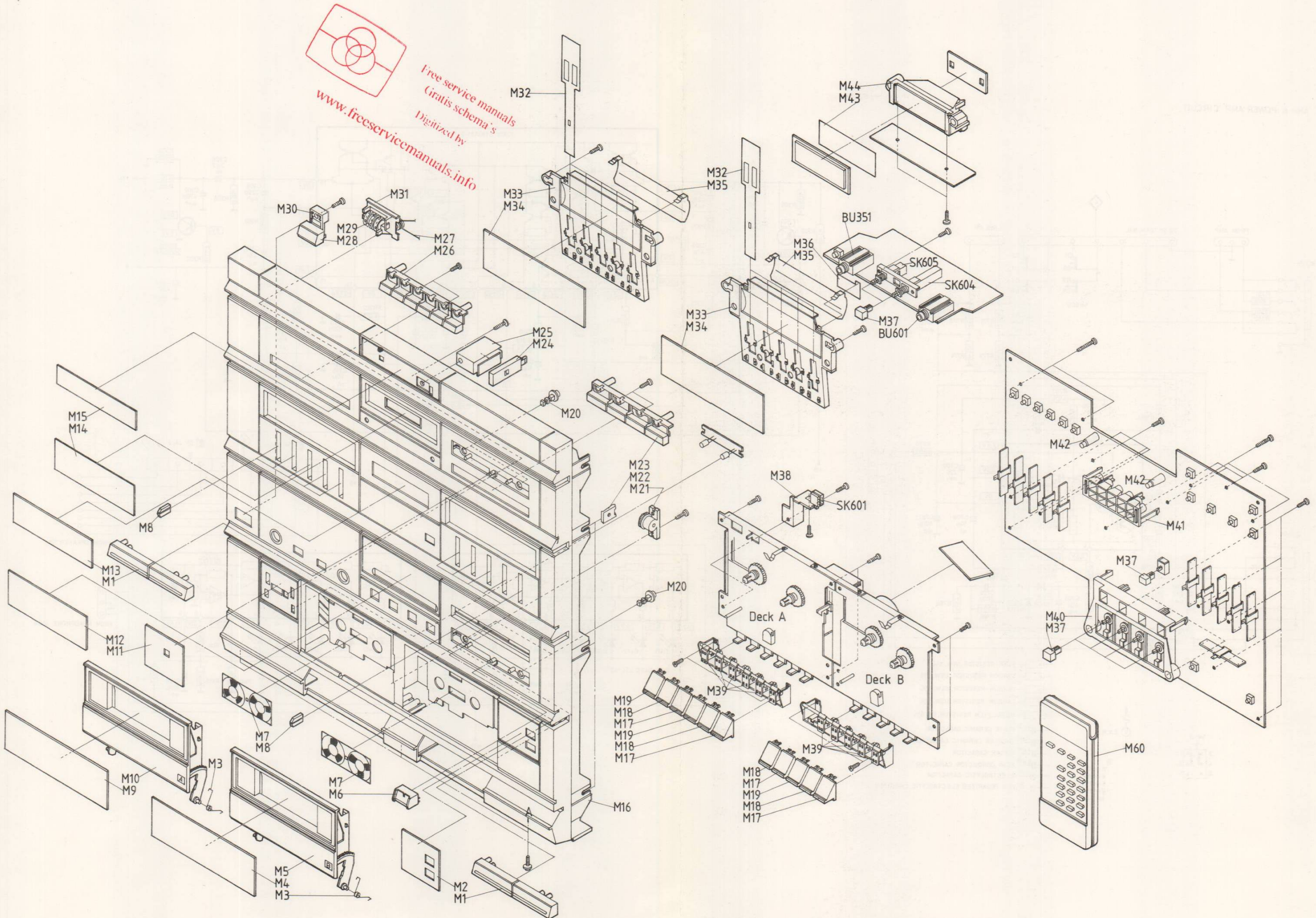
MIC AMP & POWER AMP CIRCUIT



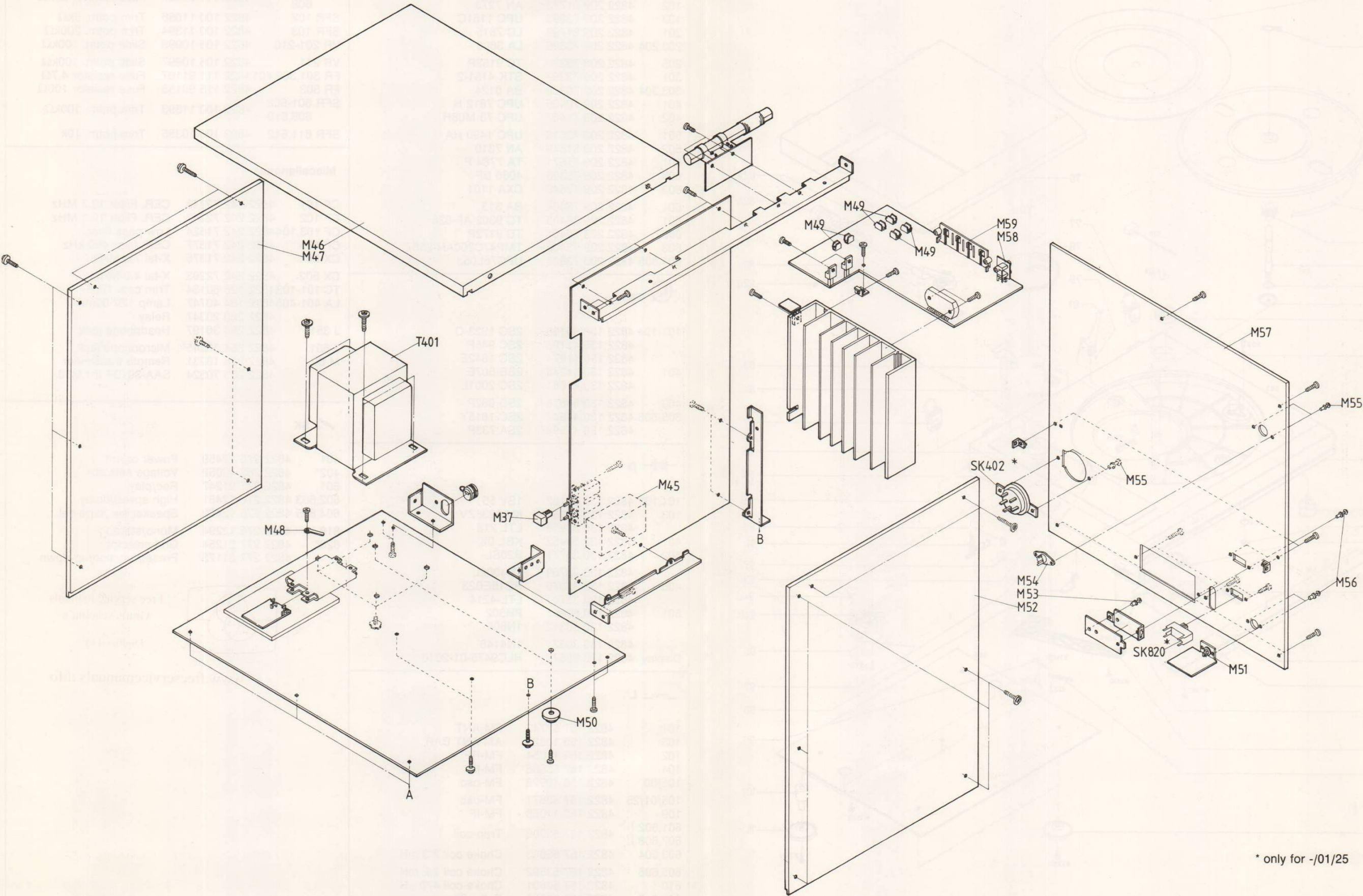
Mechanical Exploded View (A)



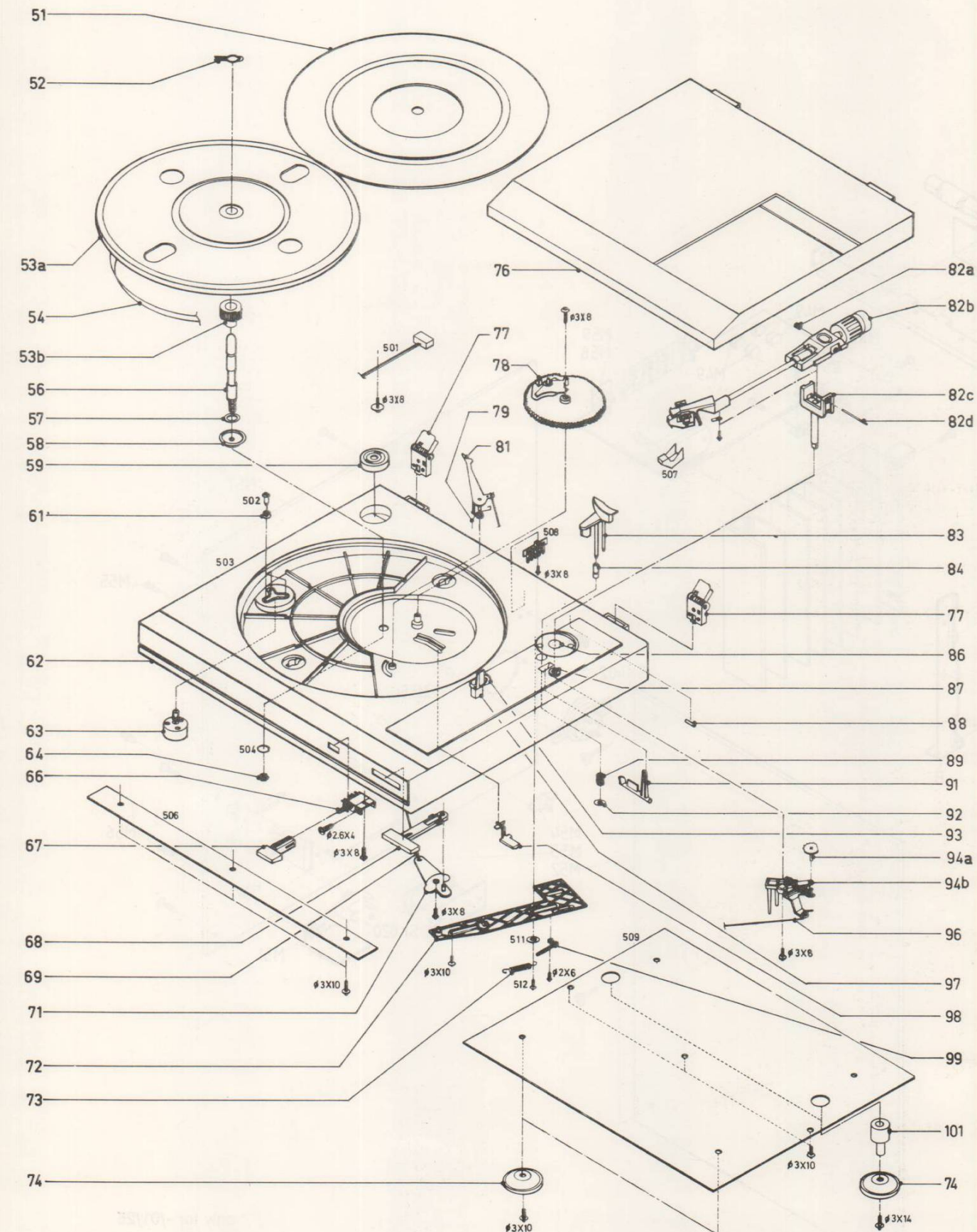
Free service manuals
Gratis schema's
Digitized by
www.freesevicemanuals.info



Mechanical Exploded View (B)



* only for -/01/25



IC

101	4822 209 73395	LA 1186N
102	4822 209 81773	AN 7273
103	4822 209 73393	UPC 1161C
201	4822 209 81799	LC 7815
203,204	4822 209 73396	LA 3600
205	4822 209 73399	TC 9153P
301	4822 209 73397	STK 4151-2
303,304	4822 209 70308	BA 6124
401	4822 209 70405	UPC 7812 H
402	4822 209 71467	UPC 78 M08H
501	4822 209 73518	UPC 1490 HA
502	4822 209 81549	AN 7310
601	4822 209 71871	TA 7784 P
602	4822 209 73398	4066 BP
603	4822 209 72546	CXA 1101
604	4822 209 73404	BA 313
801	4822 209 73403	TC 9302 AF-035
802	4822 209 73401	TC 9172P
803	4822 209 73402	TMP47C200AN-2567
804,805	4822 209 73394	UPC78L05J

TS

101-104	4822 130 60166	2SC 1923-O
	4822 130 41198	2SC 945P
	4822 130 41974	2SC 1842E
401	4822 130 61248	2SB 507E
	4822 130 41651	2SC 2001L
403	4822 130 60678	2SD 882P
605-608	4822 130 41947	2SC 1815Y
	4822 130 41598	2SA 733P

D

101,102	4822 130 31162	1SV 55
103	4822 130 80955	KV 1236ZV
	4822 130 80956	LTL 213
401	5322 130 50452	KBL 02
402	4822 130 33771	B20SL
	4822 130 33769	1N4002L
408	4822 130 31379	RD15EB23
	4822 130 33741	LTL-4214
501	4822 130 80957	PH302
	4822 130 30312	1N60P
	4822 130 30621	1N4148
Display	4822 130 90578	HLC9475-01-2010

L

101	4822 157 52747	FM-ANT
103	4822 158 10828	AM-ANT BAR
102	4822 156 11054	FM-RF
104	4822 157 53605	FM-IF
105/00	4822 156 10928	FM-osc
105/01/25	4822 157 53671	FM-osc
109	4822 156 11058	FM-IF
601,602	4822 157 53606	Trap-coil
607,608		
603,604	4822 157 53603	Choke coil 3.3 mH
605,606	4822 157 53602	Choke coil 2.2 mH
610	4822 157 53601	Choke coil 470 µH
611,612	4822 157 53599	Dolby filter
401,806	4822 152 20617	Choke coil 1 mH
T401/00	4822 146 21356	Power transformer
T401/01/25	4822 148 60198	Power transformer

* only for /01/25

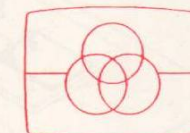
SFR 101,607	4822 111 91497	Fuse resistor 20kΩ
608		
SFR 102	4822 100 11056	Trim potm. 5kΩ
SFR 103	4822 100 11394	Trim potm. 200kΩ
VR 201-210	4822 105 10998	Slide potm. 100kΩ
VR 211	4822 105 10997	Slide potm. 100kΩ
FR 301,302,401	4822 111 91197	Fuse resistor 4,7Ω
FR 303	4822 115 90155	Fuse resistor 100Ω
SFR 601-605	4822 100 11393	Trim potm. 100kΩ
609,610		
SFR 611,612	4822 100 10385	Trim potm. 10k

Miscellaneous

CF 101	4822 242 72243	CER. Filter 10,7 MHz
CF 102	4822 242 72242	CER. Filter 10,7 MHz
CF 103,104	4822 242 71524	Low pass filter
CF 105	4822 242 71877	CER. filter 450 kHz
CX 801	4822 242 71875	X-tal 7.2 MHz
CX 802	4822 242 72293	X-tal 4.0 MHz
TC 101-103	4822 125 60134	Trim cap. 10pF
LA 401-405	4822 134 40747	Lamp 12V-60mA
	4822 280 20347	Relay
J 351	4822 264 30197	Headphone jack
J 601	4822 264 30245	Microphone jack
M 60	4822 218 10231	Remote transmitter
	4822 209 70524	SAA-3010P for M60

SK

401	4822 276 12459	Power on/off
402*	4822 263 40052	Voltage selector
601	4822 277 21247	Rec/play
602,603	4822 276 12461	High speed/dolby
604,605	4822 276 12462	Speaker sw./tape sel.
819	4822 276 12294	Mono/stereo
820*	4822 277 21254	Grid selector
	4822 277 21173	Preset/function/up-down



Free service manuals
Gratis schema's

Digitized by

www.freesevicemanuals.info