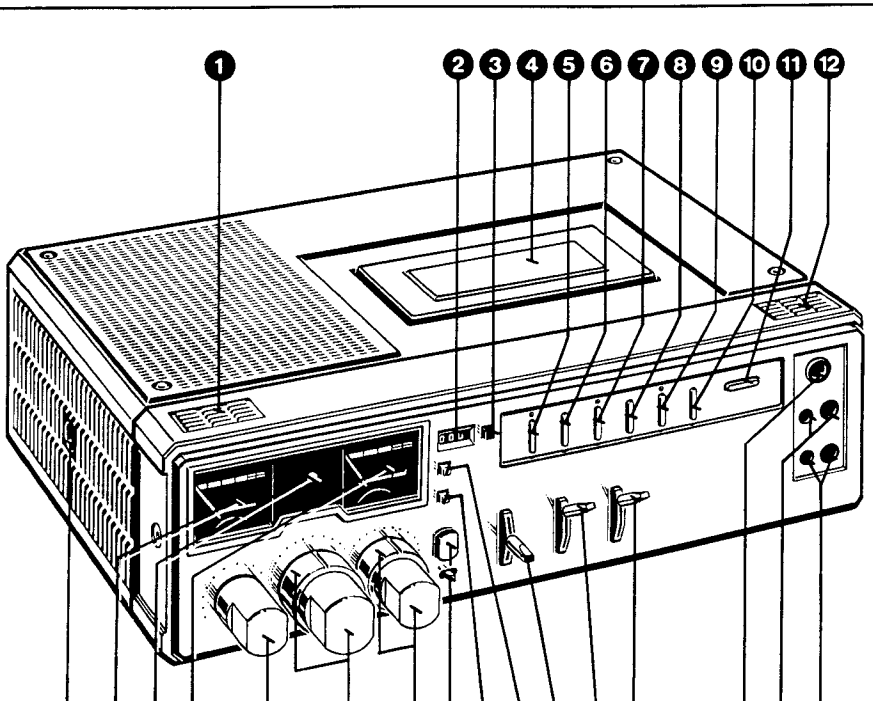
Service Manual



27 447A12

SPECIFICATIONS:

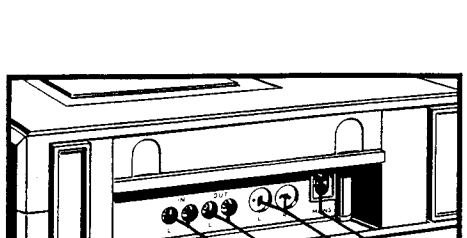
Mains voltage	: 110 V-127 V-220 V-240 V
Mains frequencies	: 50-60 Hz
Power consumption	: 22 W
Number of tracks	: 2x2 stereo
Tape speed	: 4.76 cm/sec.
Speed deviation	: ± 2%
Wow and flutter	: 0.3%
Fast-wind time C60 cassette:	90 sec.
Signal/noise ratio	: ⩾ 45 dB

Frequency range	: **80-10.000 Hz within 8 dB**
Output power	: 2x2 W D ⩽ 10%
Erase frequency	: 50 kHz ± 20%
Input sensitivity:	
Micro	: 0.5 mV/2 kΩ
Line	: 60 mV/200 kΩ
Output impedance:	
Headphone	: 8-620 Ω
LS	: 4 Ω
Line out	: 500 mV - 1 V/10 kΩ

CONNECTIONS AND CONTROLS:

1	L	„electret mic. left"	Mi-1
2		„tape counter"	
3	Reset	„reset button of tape counter"	
4		„cassette lid"	
5		„rec."	SK-201
6		„rew."	SK-202
7		„play"	SK-203
8		„F.F."	SK-204
9		„pause"	SK-205
10		„stop"	SK-206
11		„eject"	
12	R	„electret mic. right"	Mi-101
13	R	„external mic. right"	BU-6
14	L	„external mic. left"	BU-5
15		„headphones"	BU-11
16	S.O.S.	„sound on sound switch"	SK-5
17	Aut/Man	„automatic/manual switch"	SK-4

18		„mode switch"	SK-3
19		„battery check switch"	SK-7
20		„scale illumination switch"	SK-6
21		„post fading"	SK-8
22		„volume/on/off"	R-30,R-130 SK-1
23		„recording"	R-51,R-151
24		„pitch control"	R-7
25	VU_R	„recording output level right, battery check"	I101
26		„power L.E.D."	D15
27	VU_L	„recording output level left"	I1
28		„remote control"	BU-12
29		„line in"	BU-1, BU-2
30		„line out"	BU-3, BU-4
31		„external speakers"	BU-7, BU-8
32		„power supply"	BU-9, SK-0



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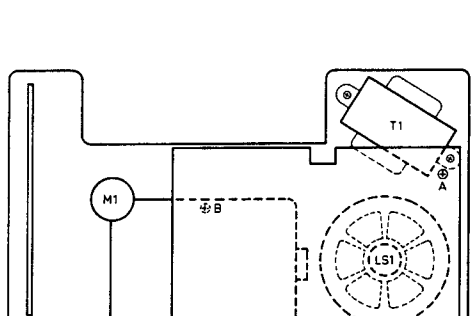


Fig. 1

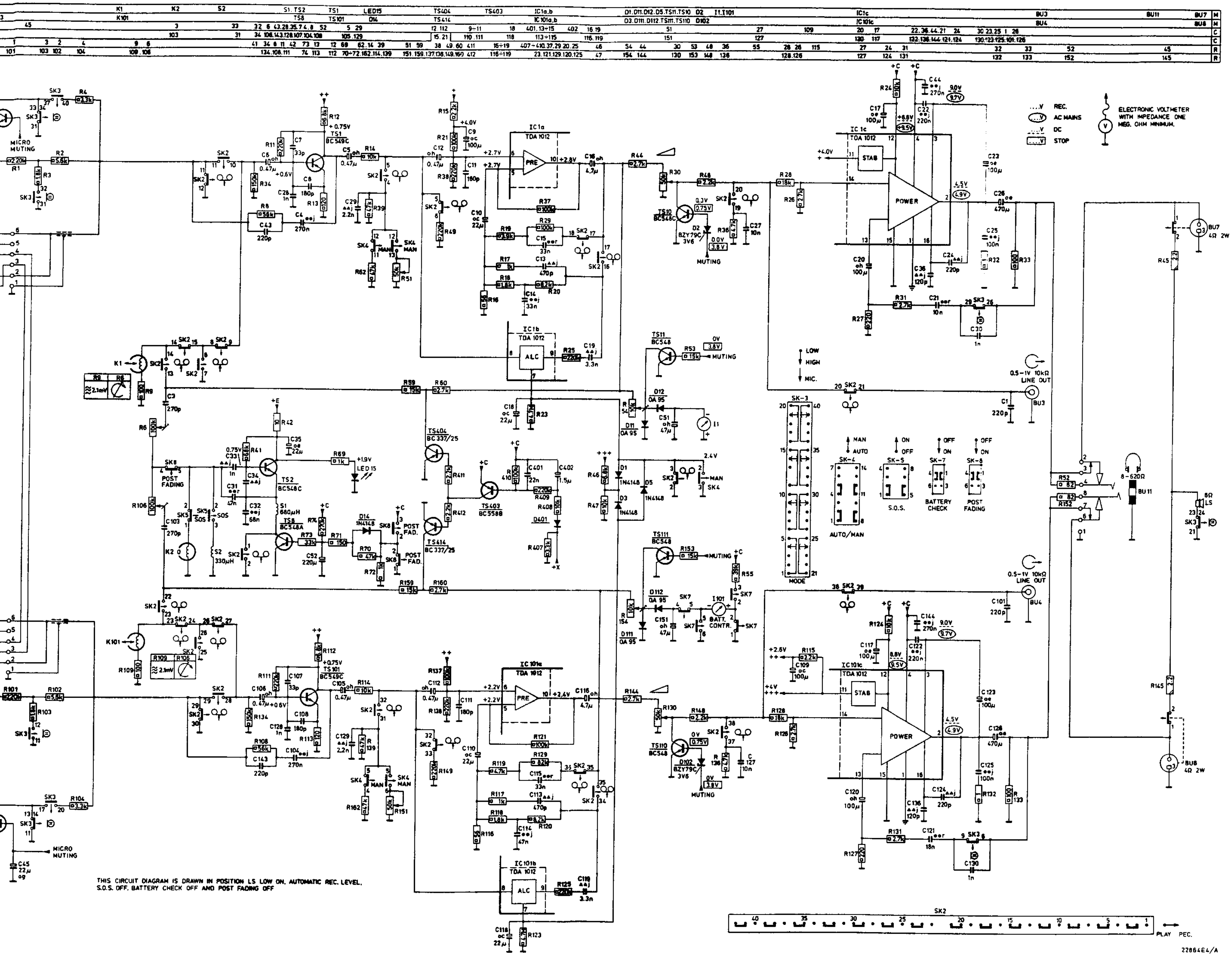
24 860 B12

CS 79 525

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

Subject to modification
4822 725 14591
Printed in The Netherlands

PHILIPS

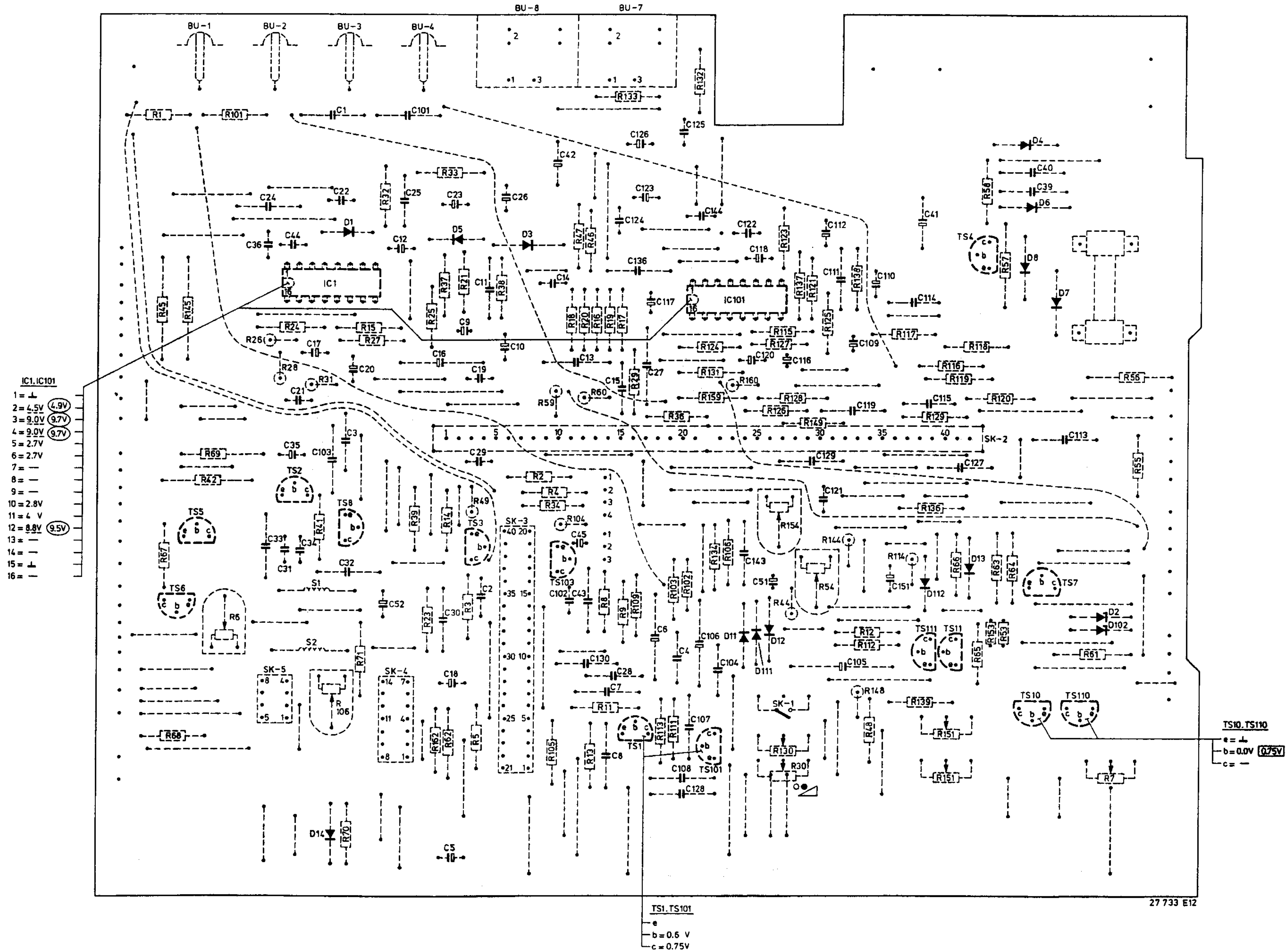


THIS CIRCUIT DIAGRAM IS DRAWN IN POSITION LS LOW ON, AUTOMATIC REC. LEVEL, S.O.S. OFF, BATTERY CHECK OFF AND POST FADING OFF

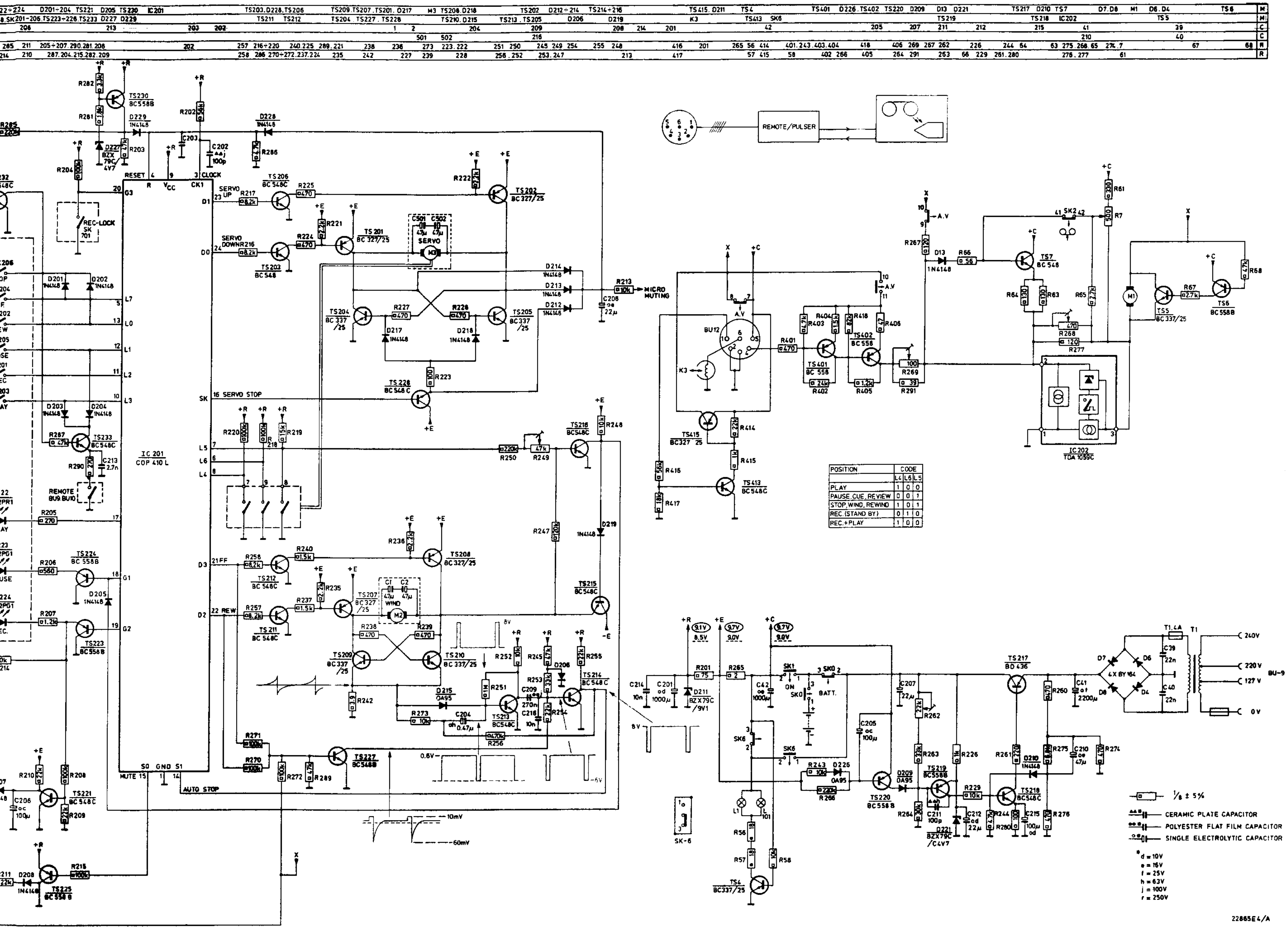
22864E4/A

CS 79 526

MISC	BU-1 BU-2.TS2 IC1 D1.BU-3 BU-4 D5 BU-8.D3 BU-7 IC101 TS4 D4.6÷8
MISC	TS6.5 SK-5 S1.2 D14.TS8 SK-4 TS3 SK-3 TS103 TS1 TS101 D11.111.12.SK-1 D112.TS111.11.D13 TS10.7 TS110.D2.102
C	24.36.44.35 21.17.1 22.20 12.25.101 16 23 19.9÷11.29.26 14.42 13 15.136.123÷126.27.117.144 122.118.120.116.129.112.111.109.119.110 114.41.115 127 39.40 113
C	33 31 34 103.32.3 52 30.18.5 2 102.45.43.130.8.7.28 6 4.128.106÷108.104.143 51 121 105 151
R	1.45 145 101 24 15 32 25.37.33.21 38 47.46.16÷20 133 132.124 123.115.137.121 138 58 57
R	67 42.69 26.28 31.41 27 39 14 3.49 2.4.34.59.104 60.8 9.29.109 103.36.102.131.159.134.106.160.154.125÷128.149.54.144 114.136.129.116÷120.63÷66 56.55
R	68 6 106 70 71 23.62.162 5 105 13 11 113.111 130.30.44 148.12.112.48 139 151 53.153 61 7

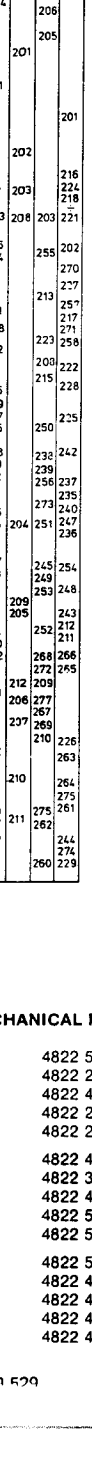


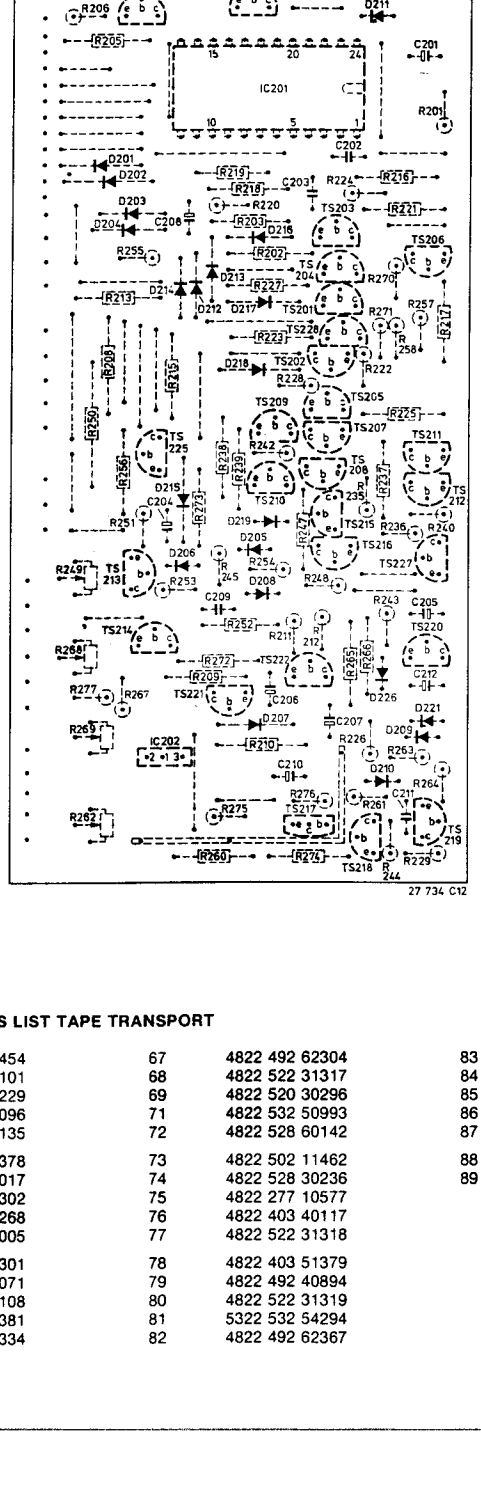
CS 79 527

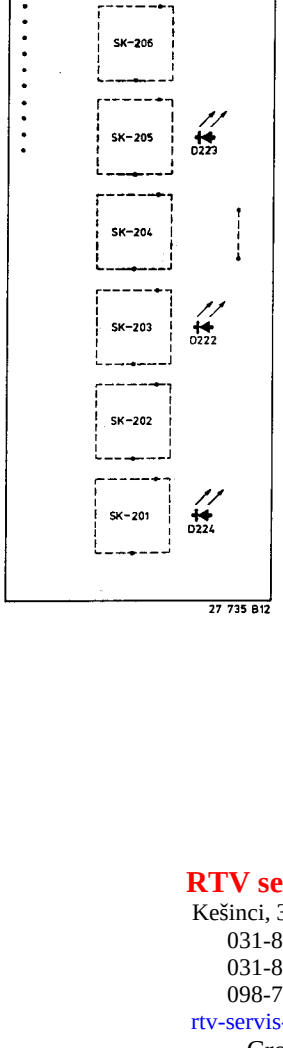


POSITION	CODE		
	L4	L6	L5
PLAY	1	0	0
PAUSE, CUE, REVIEW	0	0	1
STOP, WIND, REWIND	1	0	1
REC. (STAND BY)	0	1	0
REC. + PLAY	1	0	0

CS 79 528







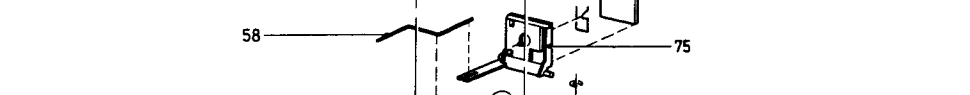


Fig. 2

CHANICAL PARTS LIST TAPE TRANSPORT

4822 502 11454	67	4822 492 62304	83	4822 218 10133
4822 249 10101	68	4822 522 31317	84	4822 492 62301
4822 492 51229	69	4822 520 30296	85	4822 325 60038
4822 249 40096	71	4822 532 50993	86	4822 492 61989
4822 249 40135	72	4822 528 60142	87	4822 492 62303
4822 403 51378	73	4822 502 11462	88	4822 358 30294
4822 358 34017	74	4822 528 30236	89	4822 520 10446
4822 492 62302	75	4822 277 10577		
4822 532 50268	76	4822 403 40117		
4822 520 40005	77	4822 522 31318		
4822 528 20301	78	4822 403 51379		
4822 403 51071	79	4822 492 40894		
4822 462 71108	80	4822 522 31319		
4822 403 51381	81	5322 532 54294		
4822 492 51334	82	4822 492 62367		

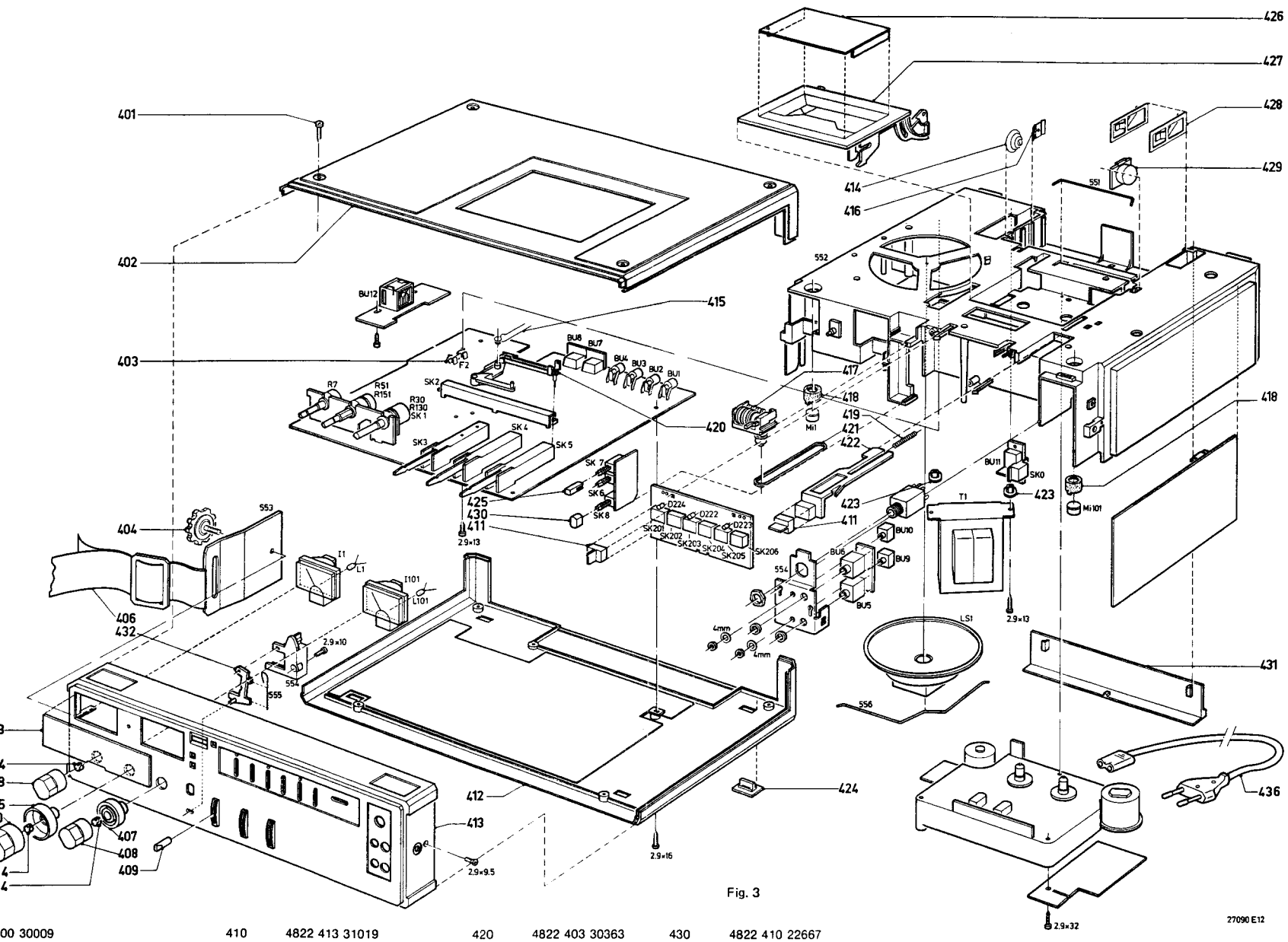
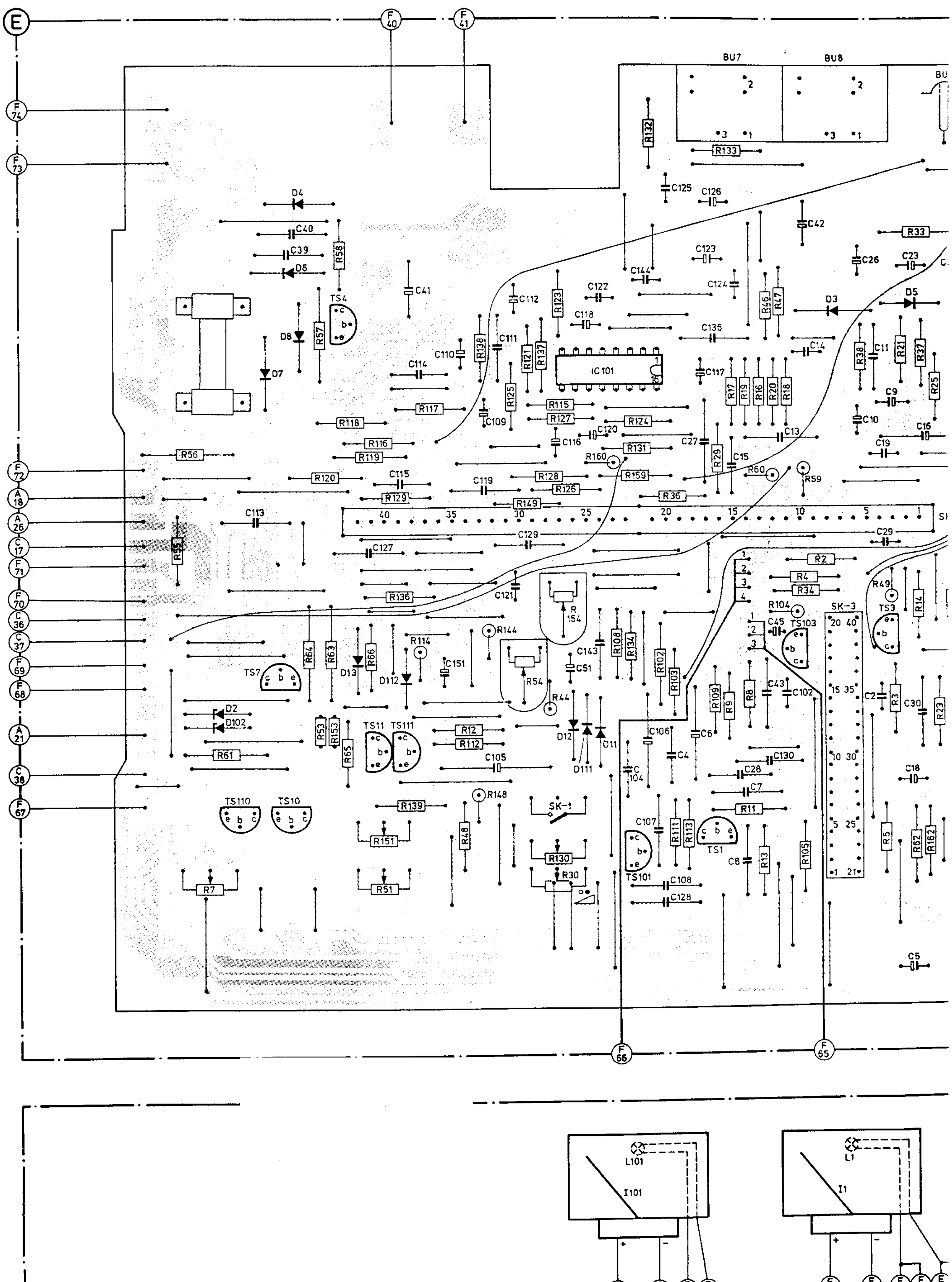


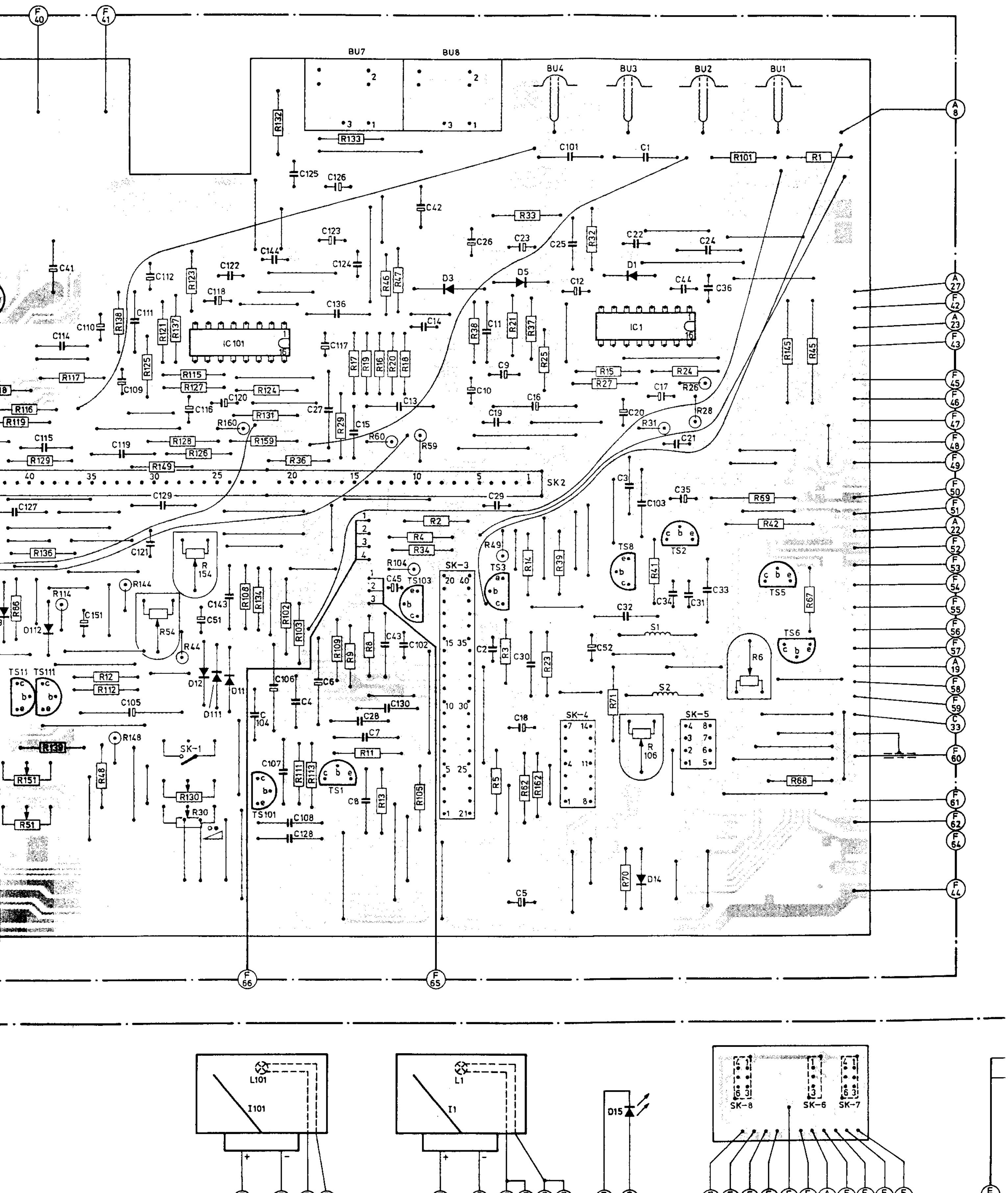
Fig. 3

00 30009	410	4822 413 31019	420	4822 403 30363	430	4822 410 22667
43 30449	411	4822 410 22473	421	4822 358 30292	431	4822 443 60853
43 30448 Only for /18	412	4822 443 60759	422	4822 410 40205	432	4822 403 30364
56 30142	413	4822 443 50356	423	4822 460 20317	433	4822 450 60213
22 31316	414	4822 492 61311	424	4822 462 40473	434	4822 492 51374
13 41027	415	4822 492 31734	425	4822 410 22666	436	4822 321 10105
58 30293	416	4822 290 80228	426	4822 381 10534	436	4822 321 10235 Only for /05
13 41026	417	4822 349 50126	427	4822 443 60896		
13 31018	418	4822 462 71146	428	4822 290 80282		
11 50507	419	4822 492 51228	429	4822 535 70618		

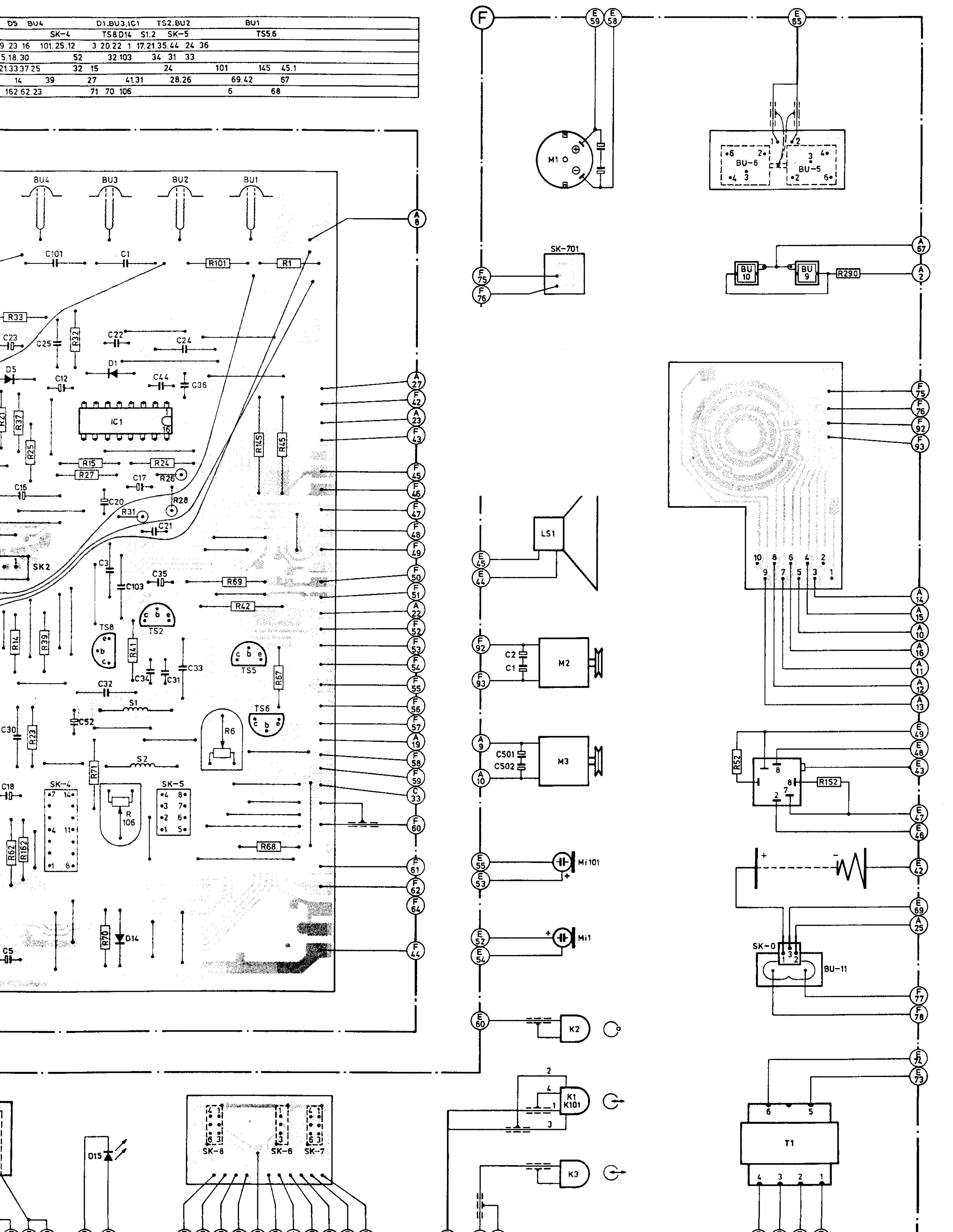
MISC	D6÷8.D4 TS4 IC101 BU7 BU8.D3 D5 BU4
MISC	D102.2.TS110 TS7.10 D13.TS11.111.D112 SK-1.D12.111.11 TS101 TS1 TS103 SK-3 TS3
C	113 40.39 127 115.41.114 110.119.109.111.112.129.116.120.118.122 144.117.27.123÷126.136.15 13 42.14 26.29.9÷11.19 23 16 1
C	151 105 121 51 143.104.106÷108.128.4 6 28.7.8.130.43.45.102 2 5.18.30
R	57 58 138 121.137.115.123 124.132 133 16÷20.46.47 38 21.33.37.25
R	55.56 63÷66.116÷120.129.136.114 144.54.149.125÷128.154.160.106.134.159.131.102.36.103 109.29.9 8.60 104.59.34.4.2 49.3 14
R	7 61 153.53.65 151 139 48.112.12.148 44.30.130 111.113 11 13 105 5 162.62.23



IC101 BU7 BU8.D3 D5 BU4 D1.BU3.IC1 TS2.BU2 BU1
3.TS11.111.D112 SK–1.D12.111.11 TS101 TS1 TS103 SK–3 TS3 SK–4 TS8.D14 S1.2 SK–5 TS5.6
127 115.41.114 110.119.109.111.112.129.116.120.118.122 144.117.27.123÷126.136.15 13 42.14 26.29.9÷11.19 23 16 101.25.12 3 20.22 1 17.21.35.44 24 36
151 105 121 51 143.104.106÷108.128.4 6 28.7.8.130.43.45.102 2 5.18.30 52 32.103 34 31 33
138 121.137.115.123 124.132 133 16÷20.46.47 38 21.33.37.25 32 15 24 101 145 45.1
16÷120.129.136.114 14454.149.125÷128154.160.106.134.159.131.102.36.103 109.29.9 8.60 104.59.34.4.2 49.3 14 39 27 41.31 28.26 69.42 67
151 139 48.112.12.148 44.30.130 111.113 11 13 105 5 162.62.23 71 70 106 6 68



D5 BU4 D1.BU3.IC1 TS2.BU2 BU1
SK-4 TS8.D14 S1.2 SK-5 TS5.6
9 23 16 101.25.12 3 20.22 1 17.21.35.44 24 36
5.18.30 52 32.103 34 31 33
21.33.37.25 32 15 24 101 145 45.1
14 39 27 41.31 28.26 69.42 67
162.62.23 71 70 106 6 68



L PARTS LIST

		-TS-		
	4822 130 31049	BC327-40		4822 130 41327
	4822 130 31399	BC337-40		4822 130 41344
	4822 130 30414	BC548		4822 130 40938
	4822 130 34174	BC548C		4822 130 44196
	4822 130 30862	BC549		4822 130 40964
	5322 130 30342	BC549C		4822 130 44246
	5322 130 34574	BC558B		4822 130 44197
	4822 130 30621	BD330		5322 130 44752
	5322 130 34834	BD438		4822 130 40995
	4822 130 31438	BC558C		4822 130 44196
	4822 130 30191	BC337-25		4822 130 40981
		-Miscellaneous-		
	4822 209 80785	BU5-BU6		4822 265 20182
	4822 209 80786	BU9-BU10		4822 265 20183
	4822 209 80425	BU11/SK0		4822 267 40417
		Conn. 1		4822 265 30229
		Conn. 2		4822 265 30228
		F1		4822 253 30023
		LS1		4822 240 40084
	4822 157 50968	Mi1-Mi101		4822 242 30086
	4822 158 10525	M1		4822 361 20196
		M2		4822 361 20197
		M3		4822 361 20198
		Mains cord for /00		4822 321 10105
		Mains cord for /05		4822 321 10235
100k lin	4822 100 10052	Plug 1		4822 265 30217
50k log	4822 101 50246	Plug 2		4822 265 30216
	4822 101 20589	SK2		4822 277 30663
47k lin	4822 100 10076	SK3		4822 277 30664
22k lin	5322 101 44041	SK201-SK202-SK203		4822 276 10717
470 lin	4822 100 10023	SK204-SK205-SK206		
	5322 116 54214	T1		4822 145 30254
	4822 102 10181	SK4		4822 277 10609
	4822 100 10035	SK5		4822 277 10608
	5322 116 54923	SK6		4822 277 20736
	4822 101 20625	SK7-SK8		4822 277 20737
	4822 100 10073	BU12		4822 267 10099
		I1		4822 347 10284
		L1-L101	6.3 V 50 mA	4822 134 40473
		I101		4822 347 10283
		BU1÷4,7,8		4822 460 20318
10% 400 V	4822 121 40408			
10% 400 V	4822 121 40411			
10% 250 V	4822 121 41161			
25 V	4822 124 40415			

equire that the set be restored to its original
parts which are identical with those specified,

ité exigent que l'appareil soit remis à l'état
nt utilisées les pièces de rechange identiques

(NL) Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie 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 i pezzi di ricambio identici a quelli specificati.

(GB) MAINTENANCE

The cassette mechanism requires periodic cleaning and lubrication of the principal points.

1. To be cleaned with alcohol or spirit:
   - Head Rec/PB
   - Erase head
   - Capstan
   - Pressure roller
   - Belts and pulleys

   To clean head, pressure roller and capstan it is also allowed to use a cleaning cassette (drop in cassette (SBC114 - 4822 389 20015).
2. Lubrication instructions
   - Refer to exploded view, Fig. 2.

(F) ENTRETIEN

Le mécanisme de cassette doit être nettoyé à intervals réguliers et lubrifié en ses points cardinaux.

1. Nettoyer à l'alcool ou à l'alcool éthylique
   - Tête enregistrement/reproduction
   - Tête effacement
   - Cabestan
   - Galet presseur
   - Courroies et poulies

   La cassette "drop-in" (SBC114 - 4822 389 20015) pourra aussi servir au nettoyage des têtes, du galet presseur et du cabestan.
2. Instructions de lubrification
   - Voir en Fig. 2 dessin de l'éclaté mécanique.

(I) MANUTENZIONE

La parte meccanica del registratore deve essere sottoposta periodicamente a pulizia e lubrificazione.

1. Parti da pulire con alcool o spirito:
   - Testina di registrazione/riproduzione
   - Testina di cancellazione
   - Capstan
   - Rullo pressore
   - Cinghie e pulegge

   Per pulire le testine, il rullo pressore e il capstan può essere usata la cassetta SBC114 - 4822 389 20015.
2. Istruzioni per la lubrificazione
   - Riferirsi al disegno esploso, Fig. 2.

(NL) ONDERHOUD

Het cassette mechanisme dient **periodiek schoongemaakt** en op de belangrijkste punten gesmeerd te worden.

1. Schoonmaken met alcohol of spiritus
   - opname/weergave kop
   - wiskop
   - toonas
   - drukrol
   - snaren en poelies

   Voor het reinigen van kop, drukrol en toonas kan ook de "drop-in" cassette (SBC114 - 4822 389 20015) worden gebruikt.
2. Smeervoorschrift
   - zie exploded view tekeni: g Fig. 2.

(D) WARTUNG

Der Cassettenmechanismus soll in regelmässigen Zeitabständen gereinigt und an den bedeutendsten Stellen mit Fett versehen werden.

1. Reinigen mit Alkohol oder Spiritus
   - Aufnahme/Wiedergabekopf
   - Löschkopf
   - Tonwelle
   - Andruckrolle
   - Seile und Seilrollen

   Zum Reinigen von Kopf, Andruckrolle und Tonwelle kann auch Cassette SBC114 (Code-Nr. 4822 389 20015) eingelegt werden

(GB) Because, generally speaking, MOS IC's are very sensitive to overload and too high voltages, measurements should be carried out with greatest possible care.
For further instructions, see the directions enclosed in the separate IC-packages.

(F) Parce qu'en général, les IC MOS sont très sensibles à la surcharge et à des tensions trop élevées, il faudra procéder aux mesures avec le plus grand soin.
Pour plus de détails, voir les instructions accompagnant l'emballage des IC.

(NL) Omdat MOS IC's in het algemeen zeer gevoelig zijn voor overbelasting en te hoge spanning dient bij het meten de grootst mogelijke zorgvuldigheid in acht genomen te worden. Zie voor verdere instructies de bijsluiter in de verpakking van de IC's.

(D) Da MOS IC's im allgemeinen sehr empfindlich gegen Überbelastung und zu hohe Spannung sind, muss man beim Messen äusserst vorsichtig vorgehen.
Für weitere Weisungen siehe den beigefügten Zettel in der Verpackung der IC's.

(I) Dato che gli IC MOS sono molto sensibili alla sovracarica e alle tensioni troppo alte, occorrerà procedere alle misure con particolare cautela.
Per altu particolari riferirsi alla istruzioni comprese nell' imballagio di ogni IC

(GB) SERVICE HINTS

WARNING

When the apparatus is connected to the mains and the back cover has been removed, then there is risk of touching the mains voltage.
The mains voltage is then connected to the primary side of the transformer, via print tracks on the print.
The points where the mains voltage is connected to the print are marked with the ϟ sign.

1. Removal of cabinet parts (refer to Fig. 3)

a. To dismantle the recorder for servicing, first remove the potentiometer knobs and switch knobs.
   Subsequently, take out the 6 fixing screws from the bottom, the 4 screws from the top and the 2 screws from the side.
b. The main PC-board may now be tilted after having taken out the screws marked A (refer to Fig. 1).
c. To remove the tape transport from the cabinet, take out the 3 screws marked B (refer to Fig. 1).
d. The transformer is fixed to the cabinet by means of 2 screws.
e. The cassette-lid window may be removed by pushing it upwards from the rear of the opened cassette-lid.
f. To remove the cassette-lid, push the lugs on the inner side of the open lid slightly inwards. The cassette-lid may now be lifted out.
g. After removal of the cassette-lid, the cassette-lid damping (item 129: refer to Fig. 3) may now also be taken out.

2. Replacement of tape-transport parts (refer to Fig. 2)

a. To replace the pressure roller, remove item 63 and item 66.
b. To replace the head plate, depress the plate near the lugs and take it out in an oblique upward direction.

   Note:
   See to it that the 3 balls (item 60) do not get lost.

ADJUSTMENTS AND CHECKS

Height of the recording/playback head K1, Fig. 2

— Switch off the supply voltage.
— Slide adjusting jig 4822 402 60245 over the capstan while pressure roller 62 is slightly pulled back.
— The jig must be slid over the capstan to an extent that it is in line with the erase head guides.
— The R/P-head must now be so adjusted that the jig slides exactly between the tape guides of the two heads.

Azimuth adjustment recording/playback head K1, Fig. 2.

The azimuth is adjustable with torx screw 51.
For alignment, the 8 kHz section of cassette SBC133 (4822 397 30039) can be used.
In start position the 8 kHz signal must be adjusted for maximum output voltage at BU7/8.
If necessary, re-adjust volume control so that the output voltage is well readable.

Fast-wind friction

The friction force can be measured with the friction measurement cassette 4822 395 30054 (811/CTM) in position "start".
The measurement value must be:
— Fast-wind side 40-50 gcm.
— Rewind-side 2-5 gcm.
The play take-up torque is adjusted with R249.
Attention:
The voltage across motor M2 is not allowed to exceed 3 V.

Tape speed

With wow-and-flutter meter
— Connect the set to a wow-and-flutter meter (BU7/8).
— Set in position "playback" with the 3150 Hz section of cassette SBC133.
— The speed is adjustable with R268.
  Maximum permissible deviation ± 2%.
— Besides, the wow-and-flutter value can be read with this meter. It may be 0.35% maximum.

Checking the lace-up and the capstan adjustment
— Recorder in the position "playback" with the mirror cassette inserted.
— When the tape at the capstan moves upwards or downwards, adjust the capstan to be perpendicular by means of item 74 on the flywheel pivot bearing (Fig. 2).
— The tape should be straight and smooth between the tape guides and along the capstan.
  Small deviations from this pattern are permissible, because they do not have an effect for normal cassettes.

Adjusting the flywheel play
— The flywheel play should not be noticeable, but may not exceed 0.2 mm.
  Adjust by turning item 73 (Fig. 2).

ARATIEWENKEN

WING

paraat is verbonden met netspanning
vand is verwijderd bestaat er aanrakings-
netspanning.
ng is dan verbonden via printsporen op
le primaire zijde van de transformator.
ar de netspanning op de print is aange-
rkenbaar aan het teken ϟ

delen (Fig. 3)

itkasten van het apparaat eerst de knop-
e potentiometers en de schakelaars ver-
Vervolgens de 6 bevestigingsschroeven
derkant, de 4 schroeven van de boven-
2 schroeven van de zijkant verwijderen.
rint kan gekanteld worden nadat de
A, Fig. 1, verwijderd zijn.
opwerk uit de kast te nemen moeten de
n B, Fig. 1, verwijderd worden.
met behulp van 2 schroeven in de kast

r van de kassetteklep kan verwijderd
or deze, met geopende klep, aan de
omhoog te drukken.
erwijderen van de kassetteklep de lippen
nenzijde iets naar binnen buigen zodat
eklep er uitgelicht kan worden.
setteklep verwijderd is kan ook de kas-
emping pos. 129, Fig. 3, verwijderd

onderdelen (Fig. 2)

is te vervangen na verwijderen van pos.
66.
schuif is te vervangen door de schuif bij
te drukken en schuin naar voren van
rk te nemen.

:
de 3 kogeltjes pos. 60 niet zoekraken.

EN EN KONTROLES

w kop K1, Fig. 2

voedingsspanning van het apparaat

nstelmal 4822 402 60245 over de toon-
jl de drukrol 62 iets teruggetrokken

et zover over de toonas geschoven
t deze zich in het verlengde van de wis-
leiders bevindt.
o moet zodanig ingesteld worden, dat
cies tussen de bandgeleiders van beide
uift.

Azimuth-instelling o/w kop K1, Fig. 2

De azimuth wordt ingesteld met torxschroef 51.
Voor instelling kan het 8 kHz deel van de cassette SBC133 gebruikt worden (4822 397 30039).
In de positie start moet het 8 kHz signaal op maximum uitgangsspanning op BU7/8 afgeregeld worden.
Indien nodig de volumeregeling bijregelen tot de uitgangsspanning goed afleesbaar is.

Opspoelfrictie

De frictiekracht kan worden gemeten met de frictiemeetcassette 4822 395 30054 (811/CTM) in positie "start".
De meetwaarde moet zijn:
— Opspoelzijde 40-50 gcm.
— Afspoelzijde 2-5 gcm.
De opspoelfrictie wordt met R249 afgeregeld.

Let op!
De spanning over motor (M2) mag de 3 V niet overschrijden.

Bandsnelheid

Met Wow en flutter meter
— Sluit het apparaat aan op de wow- en fluttermeter (BU7/8).
— Apparaat in stand "weergave" met het 3150 Hz deel van testcassette SBC133.
— Met R268 kan de snelheid worden afgesteld. Maximaal toelaatbare afwijking ± 2%.
— Tevens kan op deze meter de jengelwaarde worden afgelezen. Deze mag maximaal 0,35% bedragen.

Kontrole van de bandloop en toonasinstelling.
— Apparaat in stand weergave met de spiegelcassette.
— Wanneer de band bij de toonas naar boven of naar beneden gaat moet de toonas loodrecht worden ingesteld op het vliegwieltaatslager (m.b.v. pos. 74 Fig. 2).
— De band moet recht en gestroomlijnd tussen de bandgeleiders en langs de toonas lopen. Kleine afwijkingen in dit patroon zijn toelaatbaar, omdat dit bij normale cassettes geen invloed heeft.

Instelling van de vliegwielspeling
— De vliegwielspeling moet voelbaar zijn maar mag niet meer dan 0.2 mm bedragen. Instellen door pos. 73 te verdraaien (Fig. 2).

(F) CONSEILS REPARATION

ATTENTION

Si l'appareil est branché à la tension secteur et que le panneau arrière est ôté, il y a danger de toucher la tension secteur.
La tension secteur est alors reliée au côté primaire du transformateur à travers les traces sur la platine.
Les points auxquels la tension secteur est reliée sont reconnaissables au symbole ϟ

1. Pièces du boîtier (Fig. 3)

a. Avant d'extraire l'appareil, enlever les boutons des potentiomètres et les commutateurs. Dévisser ensuite les 6 vis de fixation au bas et les 4 vis au haut ainsi que les 2 vis latérales.
b. La platine principale pourra être rabattue après que les vis A aient été enlevées (Fig. 1).
c. Les 3 vis B (Fig. 1) doivent être enlevées pour pouvoir extraire la mécanique du boîtier.
d. Le transfo est fixé per 2 vis au boîtier.
e. On peut enlever la fenêtre du rabat de cassette en la pressant vers le haut alors que le rabat est ouvert.
f. Recourber quelque peu les languettes vers l'intérieur afin de pouvoir soulever et extraire le rabat de cassette.
g. Lorsque le rabat de cassette est enlevé, le dispositif d'amortissement du rabat, rep. 129, Fig. 3, pourra également être enlevé.

2. Pièces de la mécanique (Fig. 2)

a. Après avoir enlevé les rep. 62 et 66 le galet presseur pourra être ôté.
b. La coulisse des têtes peut être enlevée en la pressant à l'endroit des languettes et en l'extrayant obliquement devant la mécanique.

Remarque:
Faire attention de ne pas perdre les 3 billes rep. 60.

REGLAGES ET CONTROLES

Réglage de la hauteur de la tête enreg./repro., Fig. 2

— Couper la tension d'alimentation.
— Glisser le gabarit de réglage 4822 402 60245 sur le cabestan tout en repoussant légèrement le galet presseur 62.
— Le gabarit doit être glissé sur le cabestan 108 jusqu'à ce que ce dernier soit dans le prolongement des guide bande de la tête d'effacement.
— Régler à présent la tête enreg./repro. de façon que le gabarit puisse se placer exactement entre les guide bande des deux têtes.

Azimuth de la tête enreg./repro. K1, Fig. 2

L'azimuth est réglable grâce à la vis torx 51.
Pour le réglage, utiliser le côté 8 kHz de la cassette SBC133 (4822 397 30039).
En position start (de démarrage) le signal de 8 kHz doit être aligné pour un maximum de tension de sortie sur BU7/8.
Au besoin, ajuster la commande de volume jusqu'à ce que la tension de sortie soit bien lisible.

Friction d'embobinage

La force nécessaire à l'enroulement est mesurable par la cassette 4822 395 30054 (811/CTM) en position "start".
La valeur doit être de:
— Côté enroulement 40-50 gcm;
— Côté dévidé: 2-5 gcm.
La friction de bobinage est réglable par R249.

Attention!
La tension sur le moteur (M2) ne doit pas dépasser les 3 V.

Vitesse de défilement

A l'aide d'un instrument de mesure de pleurage et scintillement
— Brancher l'appareil à l'instrument de mesure (BU7/8).
— Positionner l'appareil sur "reproduction", la section 3150 Hz de la cassette d'essai SBC133 étant dans l'appareil.
— La vitesse est réglable par R268. Marge max. admissible ± 2%.
Le taux de pleurage peut aussi être lu sur l'instrument.
Il ne doit pas dépasser 0,35%.

Contrôle de l'entraînement de la bande et réglage du cabestan.
— Appareil dans la position de reproduction avec la cassette à miroir.
— Lorsque la bande près du cabestan monte ou baisse, le cabestan doit être réglé perpendiculairement à l'aide du rep. 74 sur le palier du volant (Fig. 2).
— La bande doit défiler bien droit et régulièrement entre les guides-bandes et le long du cabestan. De petits écarts à cet égard sont admissibles, parce que ceci n'a aucune influence pour les cassettes normales.

Réglage du jeu du volant
— Le jeu du volant doit être perceptible, mais ne doit pas dépasser 0,2 mm. A régler à l'aide de rep. 73 (Fig. 2).

PARATURHINWEISE

Gerät an das Netz angeschlossen ist und
annung führt und ausserdem die Rück-
nommen ist, besteht Netzspannungsbe-
fahr.
annung liegt über Leiterbahnen auf der
tungsplatine an der primären Seite des
tors.
an denen die Netzspannung an die Pla-
hlossen ist, führen das Markierungs-

eteile (Bild 3)

as Gerät dem Gehäuse entnommen wird,
Knöpfe der Potentiometer und der Schal-
ziehen. Anschliessend sind die 6 Be-
gsschrauben auf der Unterseite, die
uben auf der Oberseite und die 2 Schrau-
der Seitenwand auszuschrauben.
ptprintplatte lässt sich kippen, nachdem
rauben A (Bild 1) gelöst worden sind.
nahme des Laufwerks aus dem Gehäuse
die 3 Schrauben B (Bild 1) gelöst werden.
nsformator ist mittels 2 Schrauben im Ge-
efestigt.
ster der Cassettenfachklappe lässt sich
en durch Hochdrücken in geöffneter Stel-
der Rückseite.
Ausbau der Cassettenfachklappe die Zun-
der Innenseite ein wenig einwärts biegen,
sich die Cassettenfachklappe ausheben

e Cassettenfachklappe abgenommen wor-
lässt sich auch die Cassettenfachklappen-
orrichtung Pos. 129 (Bild 3) entfernen.

kteile (Bild 2)

ruckrolle lässt sich nach Beseitigung der
en 63 und 66 auswechseln.
fschieber lässt sich auswechseln, dadurch
Schieber an den Zungen eingedruckt
räg vorwärts vom Laufwerk genommen

ung:
chten, dass die 3 Kügelchen Pos. 60 nicht
gehen.

NGEN UND PRÜFUNGEN

es A/W-Kopfes K1, Abb. 2

sespannung des Apparats ausschalten.
tellehre 4822 402 60245 auf die Ton-
schieben, während die Andruckrolle 62
rückgezogen wird.
e ist so weit auf die Tonachse zu schie-
s sie sich in der Verlängerung der Lösch-
dführungen befindet.
-Kopf ist so einzustellen, dass die Lehre
vischen die Bandführungen der beiden
hiebt.

Azimuteinstellung des A/W-Kopfes K1, Abb. 2

Das Azimut wird mit der Torxschraube 51 eingestellt. Für Einstellung kann 8-kHz-Teil der Cassette SBC133 (4822 397 30039) benutzt werden.
In der Start-Stellung muss das 8-kHz-Signal auf maximale Ausgangsspannung an BU7/8 abgeglichen werden. Wenn nötig, die Lautstärkeregelung nachregeln, bis die Ausgangsspannung gut ablesbar ist.

Aufwickelfriktion

Die Friktionskraft kann mit der Friktionsmesscassette 4822 395 30054 (811/CTM) in der Start-Stellung gemessen werden.
Der Messwert soll betragen:
— Aufwickelseite 40 ... 50 g.cm.
— Abwickelseite 2 ... 5 g.cm.
Die Wiedergabe-Aufwickelfriktion wird mit R249 eingestellt.

Achtung!
Die Spannung über Motor M2 soll 3 Volt nicht überschreiten.

Bandgeschwindigkeit

Mit Gleichlaufmessgerät
— Den Apparat an das Gleichlaufmessgerät anschliessen (BU7/8).
— Gerät in Wiedergabestellung mit dem 3150-Hz-Teil der Testcassete SBC133.
— Mit R268 ist die Geschwindigkeit einstellbar. Maximal zulässige Abweichung ± 2%.
Auch lässt sich auf diesem Messgerät der Wert der Gleichlaufschwankungen ablesen, der höchstens 0,35% betragen darf.

Kontrolle des Bandlaufs und der Tonwelleneinstellung
— Gerät in Stellung Wiedergabe, mit der Spiegelcassette.
— Falls das Band bei der Tonwelle nach oben oder nach unten geht, muss die Tonwelle mit Pos. 74 auf dem Schwungradlager (Abb. 2) senkrecht eingestellt werden.
— Das Band muss gerade und genau fluchtend zwischen den Bandführungen und an der Tonwelle entlang laufen.
— Minimale Abweichungen sind hierbei zulässig, weil dies bei normalen Cassetten keine nachteiligen Folgen hat.

Einstellung des Schwungradspiels
— Das Schwungradspiel muss fühlbar sein aber darf nicht mehr als 0,2 mm betragen. Einstellen mit Pos. 73 (Abb. 2).

(I) METODO DI RIPARAZIONE

ATTENZIONE

Quando l'apparecchio è collegato alla tensione di rete e il coperchio posteriore è stato tolto, bisogna fare attenzione a non toccare la tensione di rete.
Questa è collegata al primario del trasformatore attraverso il circuito stampato.
I punti dove la tensione d'alimentazione è collegata al circuito stampato sono contrassegnati da ϟ

Smontaggio

1. Smontaggio delle parti del mobile (vedere Fig. 3)

a. Per smontare il registratore, togliere prima le manopole dei potenziometri e dei pulsanti. Successivamente togliere le 6 viti di fissagio della parte inferiore, le 4 viti della parte superiore e le 2 viti dei pannelli laterati.
b. Dopo aver tolto le viti A (vedere Fig. 1) la piastra principale può essere rimossa.
c. Dopo aver tolto le 3 viti B (vedere Fig. 1) la piastra registratore può essere tolta dal mobile.
d. Il trasformatore è fissato al mobile con 2 viti.
e. La finestrella del copri-cassetta può essere tolta premendo verso l'alto dalla parte posteriore del copri-cassetta aperto.
f. Per togliere il copri-cassetta, spingere le linguette, sul lato del copri-cassetta, leggermente verso l'interno.
Il copri-cassetta può essere tolto.
g. Dopo aver rimosso il copri-cassetta, può essere tolto anche il meccanismo di apertura cassetta (pos. 129 - Fig. 3).

2. Sostituzione di parti relative al trasporto nastro (vedi Fig. 2)

a. Per sostituire il rullo pressore, togliere pos. 63 e pos. 66.
b. Per sostituire la piastra della testina, premere la piastra vicina alle linguette e toglierla sollevandola obliquamente.

Nota:
Fare attenzione di non perdere le 3 sferette (pos. 60).

REGOLAZIONE E CONTROLLI

Regolazione dell'altezza della testina di reg/rip K1, Fig. 2

— Togliere la tensione d'alimentazione.
— Far slittare la dima 4822 402 60245 sul capstan 72 mentre il rullo pressore 62 è leggermente spinto indietro.
— La dima deve essere fatta slittare in modo che il suo prolungemento si trovi in linea con le guide delle testina di cancellazione.
La testine reg/rip può ora essere regolata.
La dima deve trovarsi tra le guide delle due testine.

Regolazione dell'azimuth della testina di reg/rip K1, Fig. 2

L'azimuth è regolabile con la vite 51.
Per l'allineamento, può essere usata la parte incisa a 8 kHz della cassetta SBC133 (4822 397 30097).
In posizione riproduzione il segnale a 8 kHz deve essere regolato per la massima tensione in uscita alla presa BU7/8.
Se necessario, regolare il potenziometro del volume fino a che la tensione uscita è leggibile in modo chiaro.

Frizione d'avvolgimento veloce

La forza della frizione deve essere regolata con la cassetta 4822 395 30054 (811/CTM) in posizione "riproduzione".
Il valore deve essere:
— Bobina di destra 40-50 grcm.
— Bobina di sinistra 2-5 grcm.
— La frizione di avvolgimento è regolabile con R249.

Nota:
La tensione sul motore (M2) non deve essere superiore ai 3 V.

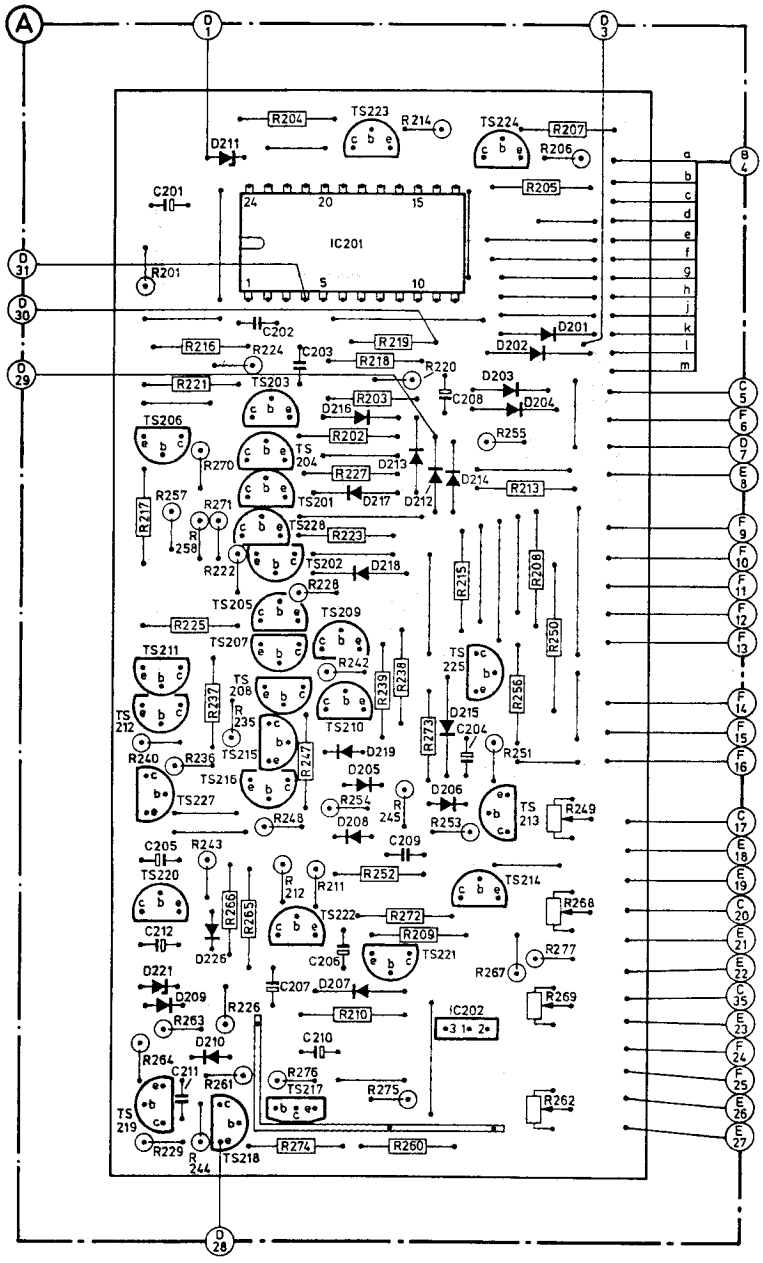
Velocità del nastro

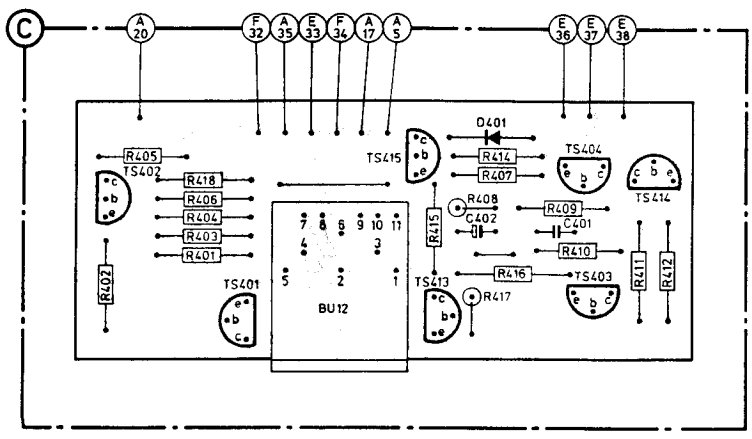
Con un misuratore di wow e flutter
— Collegare l'apparecchio ad un misuratore di wow e flutter (BU7/8).
— Mettere il registratore in posizione "Riproduzione" inserendo la parte incisa a 3150 Hz della cassetta SBC133.
— Regolare la velocità con R268.
La variazione massima consentita à ± 2%.
— A parte il valore di wow e flutter letto sullo strumento, questo può essere il 0,35% in più.

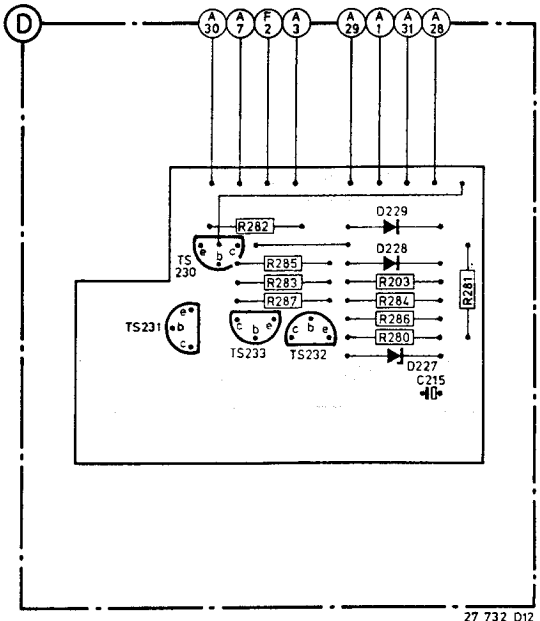
Controllo del bloccaggio e regolazione del cabestan
— Piastra di registrazione in posizione "riproduzione" con la cassetta a specchio inserita.
— Quando il nastro sul capstan si muove o verso l'alto o verso il basso, regolare il capstan affinchè sia perpendicolare per mezzo della pos. 74 sulla bussola pel perno del volano pos. 74 (Fig. 2).
— Il nastro deve scorrere diritto e piatto tra le guide nastro e il capstan.
Piccole variazioni di questo tipo sono ammesse perchè non hanno alcun effetto su cassette normali.

Regolazione del gioco del volano
— Il gioco deve essere visibile ma non deve superare i 0,2 mm.
Regolare ruotando pos. 73 (Fig. 2).

MISC	TS206.211.212.D211.TS228.201÷205.IC201.TS223.D212 ÷ 219.TS224.D201÷204 SK201÷206 D222÷224
MISC	TS227.220.D221.226.TS215.216.TS207÷210.222 TS221.D205÷208.IC202.TS225.213.214
MISC	TS402.219.D209.210 TS401.218.217 BU401 TS415.413 D401 TS404.403 TS414 TS231÷233 D227÷229
C	201 202 203 208.204
C	205.212.211 207 210.206 209 402 401 215
R	201.217 270.216.221÷228.202÷204.218÷220.214 215 213.205÷208
R	240.243.257.258.271.235÷237.248.247.242.239.238 245.273 249 ÷ 256.200
R	229.244.401÷406.418.263÷266.261.274÷276.209÷212.272.260.414÷417.267÷269.408÷412.277.262 282.285.283.287 203.284.286.280 281







Service
Service
Service **Information**

1982-09-14

D6920

A82-116

ode numbers:

utton 410	is	4822 413 31019
	must be	4822 413 41025
R30/R130/SK1	is	4822 101 50246
	must be	4822 102 20085
D15 "power led" }		GL2PR1-colour red
D224 "REC led"	is	4822 130 31399
D223 "pause led"		GL2HY1-colour yellow
	is	4822 130 31715
D222 "play led"		GL2PG1-colour green
	is	4822 130 31049
R-7 pitch potentiometer	is	4822 101 20625
AV-socket" BU-12	is	4822 267 10099
	must be	4822 267 40429
BU-11 "headphone socket"	is	4822 267 10099
quare fixing nut for item 404 has code number		4822 505 10665
tem number 553 carrying handle is now available as normal code no.		4822 466 70454

justments/Remarks

Adjustment of R262 (mains supply)
Adjust R262 for +C voltage = 9,7 V ± 0,1 V.

Adjustment of VU-meter L1 - L101
Apply a signal of ≈ 100 mV - 315 Hz to BU-1,2;
Disable the bias by connecting the base of TS8 to ground.
Adjust R51-R151 (REC-Manual) for 0,44 mV across R9 and R109; then adjust R54 and R154 for 0 dB on VU-meters L1 and L101, restore the bias.

Accidental erasure of recordings
D6920 in position Rec-Pause, recorded cassette in cassette compartment. If the stop button is now depressed, part of the tape will be erased.
Cause: From the Rec/Pause position the erase head moves, while erasing, along the tape to its rest position.
Prevention: Connect a second diode 1N4148 in series with D205 to pin 18 IC201 (see bridging wire) and apply an electrolytic capacitor 10 µ/16 V from the cathode of D205 to ground.

If a control unit such as the EM1920 is connected to the D6920 via BU-12 (AV-socket), R269 (instead of R268) will determine the tape speed which also has to be 4,76 cm/s ± 2%. (R7-pitch control in mid-position).
The adjustment procedure is the same as that for the R268.

If the mains supply is switched off during playback, the cassette lid cannot be opened.
This problem can be solved by switching on the mains supply again.

Changes in the course of production

— In the first production batch WR00, loose terminal sockets were applied for BU-1, 2, 3, 4, 7, 8.
BU-1, 2, 3, 4 with code number 4822 267 30302.
BU-7, 8 with code number 4822 267 40257.
Later this was replaced by a bar-shaped socket-unit containing BU-1, 2, 3, 4, 7, 8 with code number 4822 460 20318.

— WR00 - week 148 — R5, R105 changed to 2K7
Reason: solution to several electret sensitivities.

— WR00 - week 206 — capacitor of 56 pF (ΔΔj) parallel to R37
Reason: suppression of the tendency to oscillate of the left preamplifier.

— WR00 - week 208 — TS8 changed to BC548C
R73 changed to 15 k
C32 changed to 120 nF (●●j).
Reason: increased erase damping when post fading

— WR01 - Week 211 — New PCB-lay out for control PCB A (see drawing 27732D).
The components of PCB D have now been accommodated on PCB A and consequently PCB D has been deleted. (see Fig. 1 and Fig. 2).
Reason: rationalisation + correction of PCB.

— WR01 - Week 211 — C162 of 56 pF (ΔΔj) parallel to R121.
Reason: Suppression of tendency to oscillate of right preamplifier.

— WR01 - Week 214 — C36/C136 changed to 560 pF (ΔΔj).
Reason: adaptation in accordance with the Post Office's regulations of B.R.D.

— WR02 - week 219 — R49/R149 must be changed to 4M7.
Reason: suppression of the tendency to oscillate

— WR03 - week 229 — New erase head with code number 4822 249 40125
TS8 changed to BC548A
R73 changed to 23 k
C32 changed to 82 nF (●●r)
C1/C101 changed to 1 nF (ΔΔj)
C61/C161 of 6n8 (■ Δf) added between collector of TS11/TS111 and minus.
Note: The connections of the new erase head are reversed compared with the old erase head.
Reason: Better erase damping for CR02

Changes in components:

Switch SK-2, code number 4822 277 30663, is supplied without internal spring.
Reason: Elimination of critical opposing force on the control mechanism.

Printed in the Netherlands

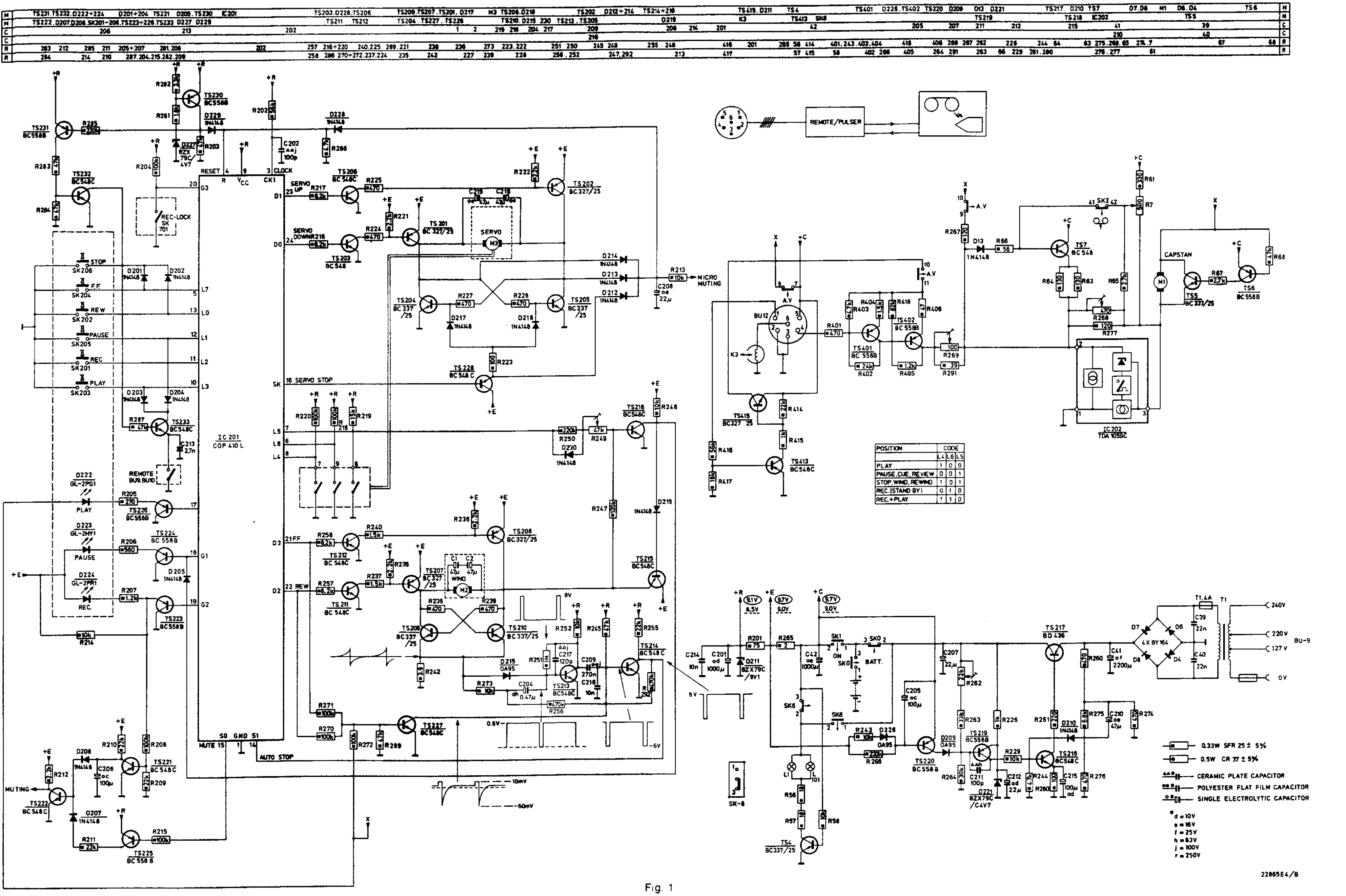


Fig. 1

CS 83 858

Service
Service
Service Information

1983-03-07

D6920

A83-102

Already published: A82-116, A83-105

Continuation of A82-116

WR03, week 234
R293 = 10 kΩ was added between the base of TS203 and ground and R294 = 10 kΩ was added between the base of TS206 and ground.
Reason: The servo motor causes shorts.

WR03, week 235
R277 was changed from CR-25 to MR-25, 1%, code number 4822 116 51222.
Reason: Reduction of tape-speed drift.

WR04, week 238
The following electric components have been changed:
C14 to 18 n ●●w
C114 to 22 n ●●w
C15 to 27 n ●●w
C32 to 82 n ●●r
C46/C146 to 4n7 △△j
C55/C155 to 1n △△j
R11/R111 to 330 kΩ
R13 to 82 Ω
R113 to 68 Ω
R19 to 4k3
R119 to 3k9
R20/R120 to 6k8
R29/R129 to 150 kΩ
R38 to 150 kΩ
R59/R159 to 10 kΩ
R61 to 82 Ω
R65 to 330 Ω
R66 to 39 Ω
R73 to 33 k
R266 to 100 k
R403 to 75 k
R415 to 470 Ω
C28/C128 has been deleted.
TS8 has been changed into BC548A.
TS3/TS103 must be mounted the other way round, i.e. interchange emitter and collector.

New components (see also circuit diagram fig. 1 and wiring diagram fig. 2)

R76/R176 = 1k5 SFR25
C60/C160 = 3n3/50 V 4822 122 10165
C61/C161 = 6n8/25 V 4822 122 31434
Other record/playback head, code number 4822 249 10179 (also see Service Information A83-105).
Reason: Improving the frequency characteristic to 12.5 kHz within 8 dB.

WR04, week 242
TS8 has been changed to BC548C.
R70 has been changed to 33 k
R73 has been changed to 15 k
Reason: Improving the erase damping during post fading with BASF super chrome II.

WR04, week 249
R267 has been changed to 137 Ω MR25 with code number 5322 116 54483.
R268 has been changed to 1k = 4822 100 10021.
Connect resistor R299 = 680 Ω, connected in series with electrolytic capacitor C299 = 330 μF/16 V (plus to R299) in the following way:
see wiring frame (A) of the Service Manual or of Service information A82-116; connect the negative terminal of C299 to (E18) and the remaining wire of R299 to (C17).
Reason: Tape speed was instable.

WR05, week 302
Introduction of the four-track head (4822 249 10185). Several electric components have been changed in behalf of this four-track head (also see Service Information A83-105).

WR06, week 302
Introduction of a new mains socket (new supplier). The service part with code number 4822 267 40417 will not be changed.

WR06, week 308
Addition of C220 = 10 n △△h
between IC202 point 1 and point 2.
Reason: Reduction of tape speed difference between mains- and battery operation.

In case of changing the mains voltage (see wiring diagram fig. 2) adapt also the type plate.

Correction to Service Information A82-116:

See "Adjustments/Remarks": Disable the bias by connecting the base of TS2 to ground.

Fig. 1

CS 86 974

MISC	IC202 TS216 D230.TS231 D224 D288 D222.201.202.SK202.TS232 D223.TS226	
	TS217.218 D210.209.226. TS220.215. D208.207.TS222. D219.205.TS207÷210 D229 IC201.TS230.233. D227.203.204.211 TS223.224	
	TS219.206 D221.TS201÷203 TS212.211.225 TS205.204.D213.218.217.214.TS227.D212. 215. TS228 TS221.214.213	
C	215 210 211.207.212.205 206 219 208 218 202 213 204 201.214.217.209 216	
R	260.274÷276 268 269.212.267.291.277.268 249 247 250.239.238.218.219.220.213.282÷285.204.202.281 287 205÷207 214	
	261 263÷266 243.221.222.210.211.235÷237 242 215÷217 286 272 203 252.245 255 209.208	
	280 244 229 226 225 225 240 257.258.289.228.271.270.227 223 273 292.256 261	

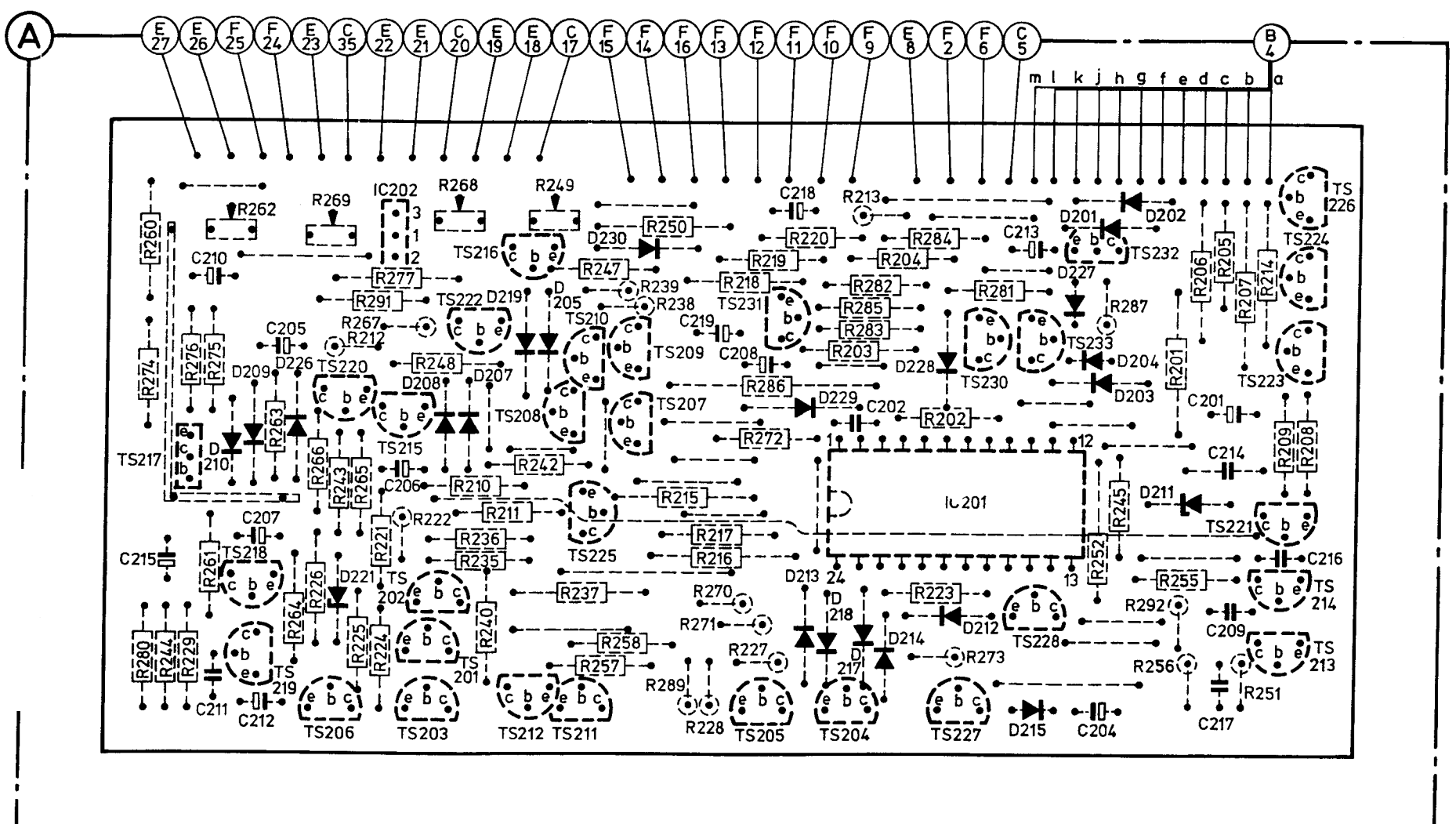
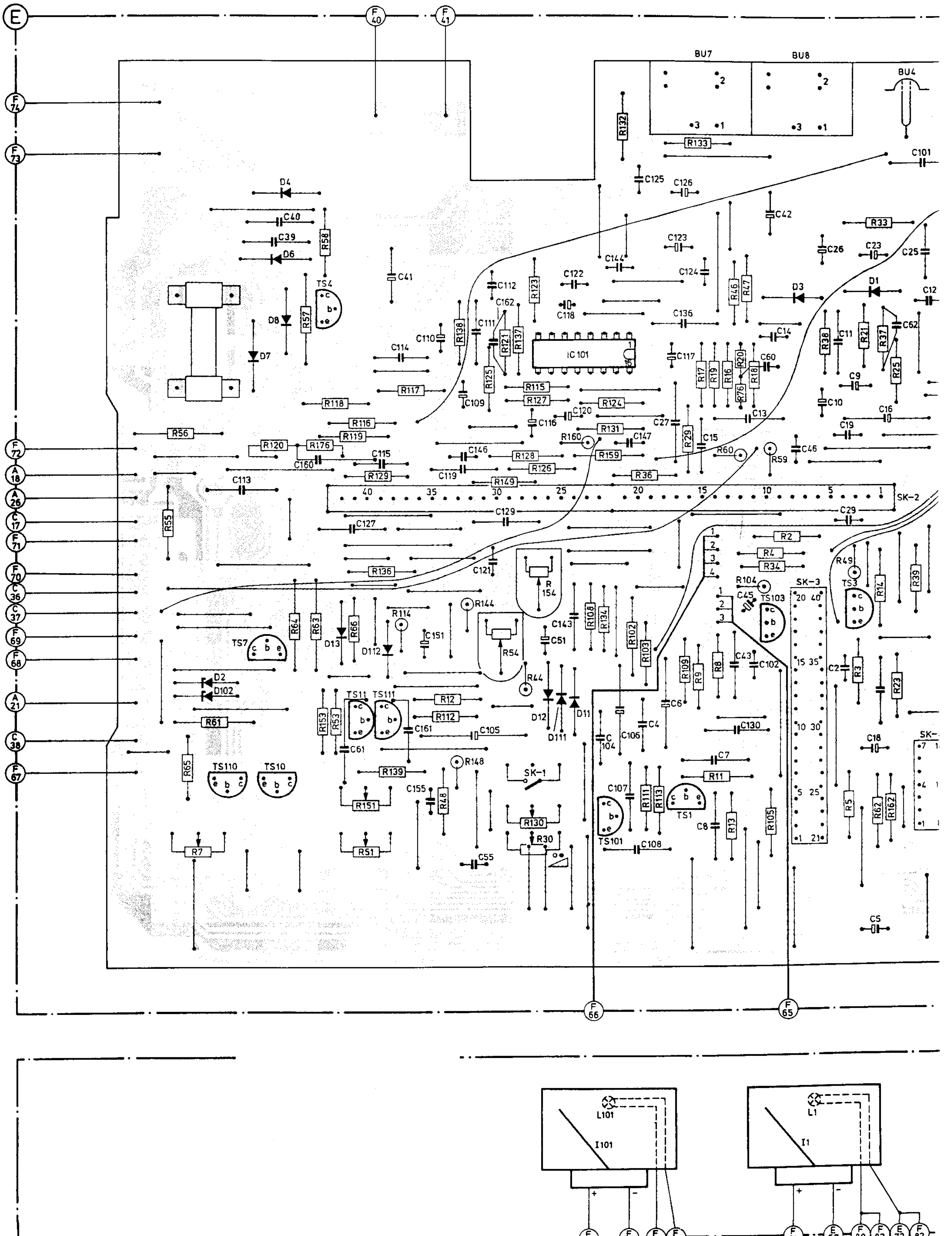


Fig. 2

29 415 C12

CS 83 859

MISC	D6÷8.D4 TS4 IC101 BU7 BU8.D3 D5 BU4
MISC	D102.2.TS110 TS7.10 D13.TS11.111.D112 SK−1.D12.111.11 TS101 TS1 TS103 SK−3 TS3 SK−4
C	113 40.39.160 127 115.41.114 55.110.119.109.111.112.129.116.120.118.122 144.117.27.123÷126.136.15 13 42.14.60 26.29.9÷11.19 23 16 101.25.1
C	61.161 151 155 105 121.162 51 143.104.106÷108.128.4 6.147 28.7.8.130.43.45.102 2 5.18.30 62
R	57 58 138 121.137.115.123 124.132 133 16÷20.46.47 38 21.33.37.25
R	55.56 63÷66.116÷120.129.136.114 144.54.149.125÷128.154.160.106.134.159.131.102.36.103 109.29.9 8.60 104.59.34.4.2 49.3 14 39
R	7 61 153.53.65.176 151 139 48.112.12.148 44.30.130 111.113 11 13 105 5 162.62.23



-8D4 TS4 IC101 BU7 BU8.D3 D5 BU4 D1.BU3.IC1 TS2.BU2 BU1

0 D13.TS11.111.D112 SK-1.D12.111.11 TS101 TS1 TS103 SK-3 TS3 SK-4 TS8.D14 S1.2 SK-5 TS5.6

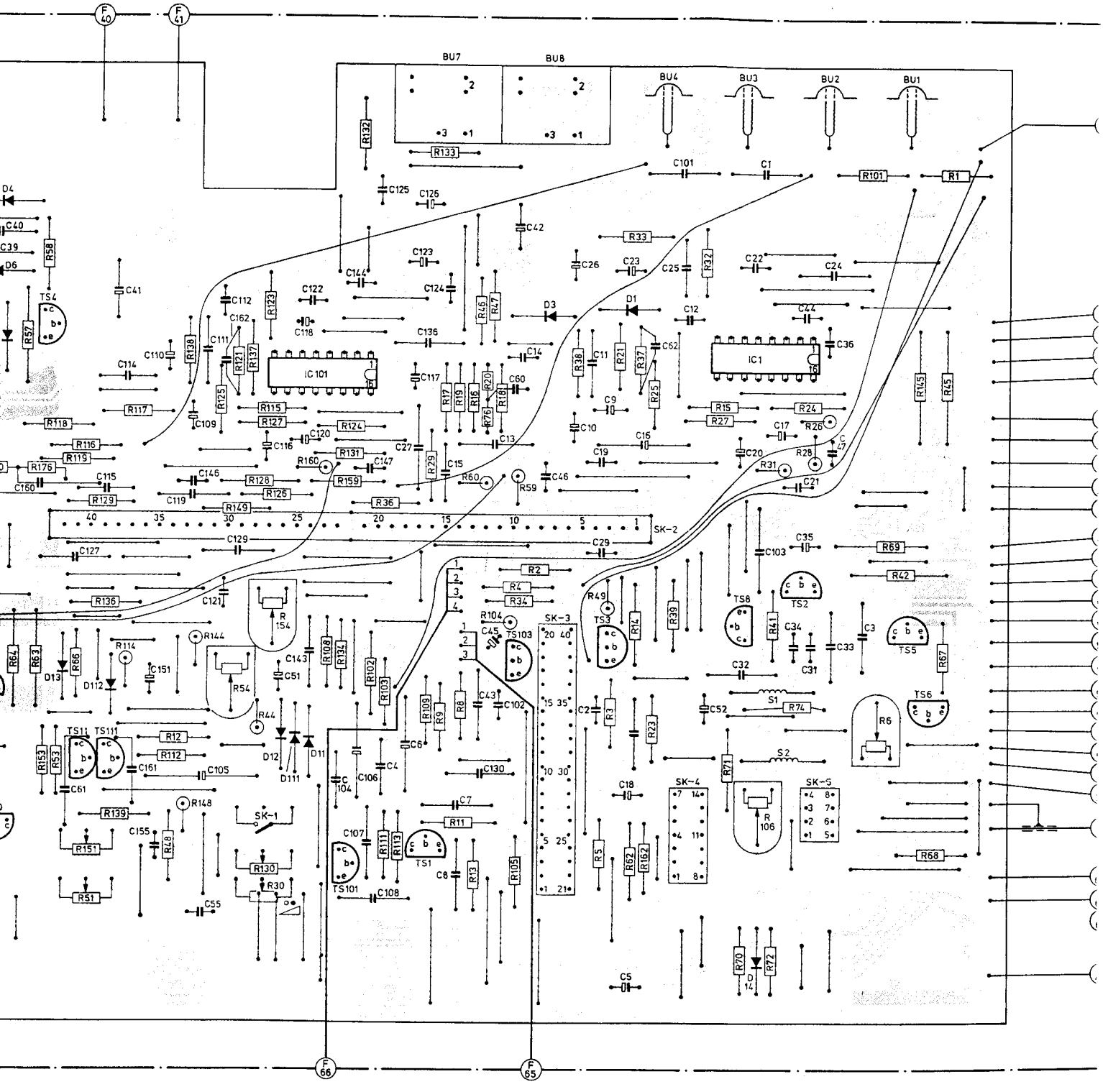
39.160 127 115 41.114 55.110.119.109.111.112.129.116.120.118.122 144.117.27.123÷126.136.15 13 42.14.60 26.29.9÷11.19 23 16 101.25.12 3 20.22 1 17.21.35.44 24 36

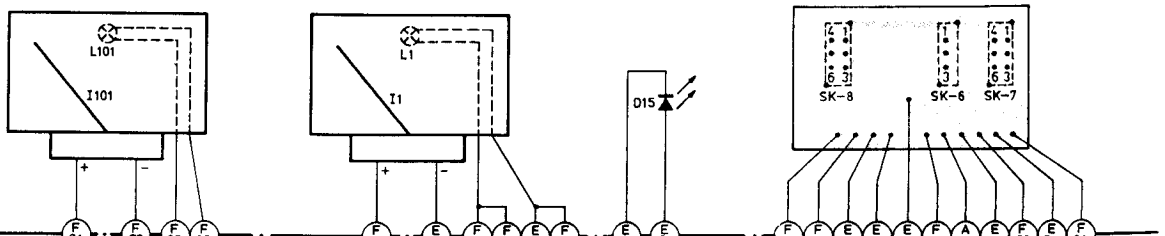
61.161 151 155 105 121.162 51 143.104.106÷108.128.4 6.147 28.7.8.130.43.45.102 2 5.18.30 62.52 32.103 34 31 33 47

57 58 138 121.137.115.123 124.132 133 16÷20.46.47 38 21.33.37.25 32 15 24 101 145 45.1

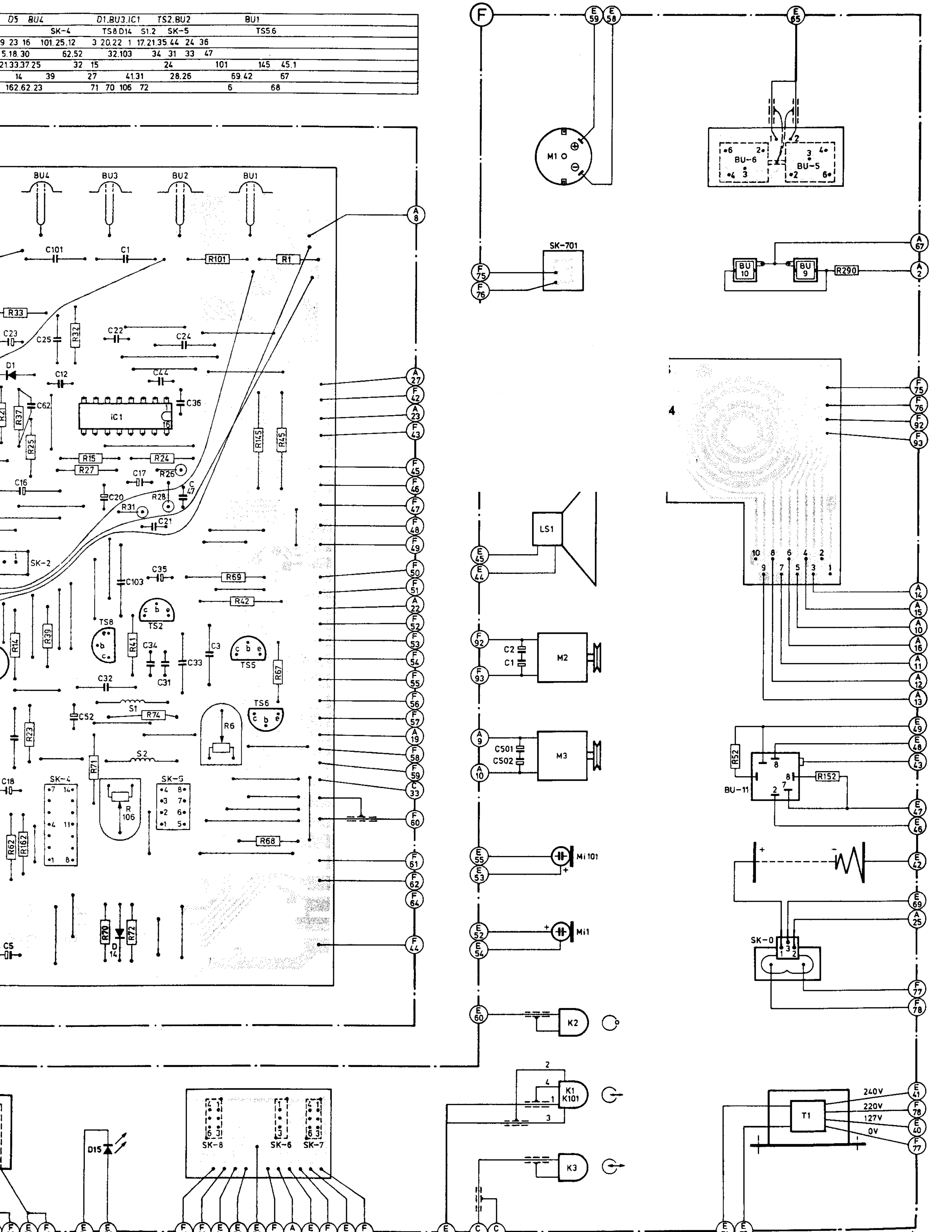
63÷66.116÷120.129.136.114 144.54.149.125÷128.154.160.106.134.159.131.102.36.103 109 29 9 8.60 104.59.34.4.2 49.3 14 39 27 41.31 28.26 69.42 67

153.53.65.176 151 139 48.112.12.148 44.30.130 111.113 11 13 105 5 162.62.23 71 70 106 72 6 68





D5 BU4 D1.BU3.IC1 TS2.BU2 BU1
SK-4 TS8.D14 S1.2 SK-5 TS5.6
9 23 16 101.25.12 3 20.22 1 17.21.35.44 24 36
5.18.30 62.52 32.103 34 31 33 47
21.33.37.25 32 15 24 101 145 45.1
14 39 27 41.31 28.26 69.42 67
162.62.23 71 70 106 72 6 68



Service Service Service Information

1983-02-22

D6920

A83-105

Already published A82-116

Survey of record/playback heads applied in the course of production.

As from production start (apparatus code WR-00)

In sets provided with tapedeck unit RS-2 with WT code 00-06, a record/playback head with service code 4822 249 10101 has been applied.
For adjustments, see Service Manual.

As from apparatus code WR-04

(also see code WT-07 on tapedeck unit RS-2)
the record/playback head has been changed to code number 4822 249 10179.
For mechanical adjustments refer to the Service Manual sub Adjustments and Checks.
For electrical adjustments: adjust the bias by means of R6/106 until the voltage on R9/109 is 2.5 mV ± 30%.

Reason: a) improved frequency characteristic
b) decrease in channel differences during record and playback.

As from apparatus code WR-05

(also see code WT-00 on tapedeck unit RS-15)
the record/playback head has been changed into a 4-track head with code number 4822 249 10185.
After WT-05 pulse head K3 is omitted because one track of the new head is used as a pulse track.

Adjustments

Mechanical

see Service Manual "Adjustments and Checks".

Electrical

Adjust the bias by means of R6/R106 until the voltage across R9/109 is 2.2 mV ± 30%.

Reason: improved record/playback quality of the pulse shapes for audiovisual sound registration.

Remark

The following changes should be introduced in the electric circuit to optimize the record/playback characteristic and sensitivities, if desired.

C3/C103	has been changed to	820p	■▲g
C13	has been changed to	560p	△△j
C113	has been changed to	680p	△△j
C27/C127	has been changed to	15N	■▲f
C7/C107	has been changed to	10p	△△j
C15/C115	has been changed to	39N	●●u
R6/R106	has been changed to	47k	4822 100 10079
C14/C114	has been changed to	10N	△△h
C60/C160	has been changed to	10N	△△h
R59/R159	has been changed to	18k	
R29/R129	has been changed to	100k	
R76	has been changed to	1k8	
R19	has been changed to	3k	
R119	has been changed to	2k7	

For connection of the new 4-track head see Fig. 1.

Remark

Interrupt the copper tracks at position A and -B (see Fig. 1) before using this head.

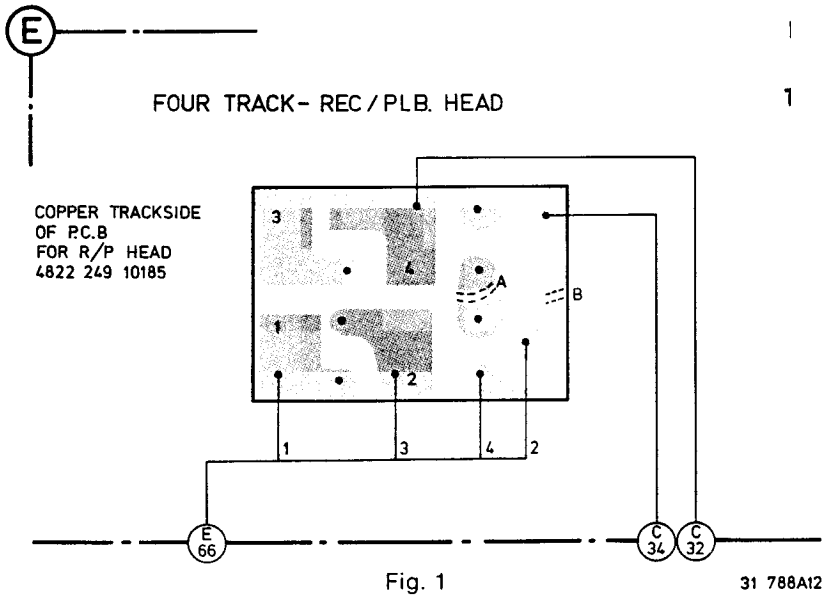


Fig. 1

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Information

1983-11-03

D6920/00/05/18 (Mark I)
D6920/30/35/48 (Mark II)

A83-140

Re: Audio-visual sound registration units, in combination with the above-mentioned versions of the D6920, which function according to the dissolve system.

When the D6920 Mark I with production code WR-05 or higher or the Mark II,both equipped with the 4-track head, are used in combination with the above system, a crosstalk problem may occur.
The system operates as follows:
a synchronization signal (frequency modulated or pulse-shaped) is "written", via the 4-track head, on the pulse track (=track 4) for synchronization of music or commentary with the desired slide. There are however, systems whereby use is made of signals with a very large amplitude, causing annoying direct crosstalk from the pulse track to both audio tracks. This is especially annoying when one wishes to record the synchronization pulses while listening to music or commentary, because the pulses will drown the music and the commentary due to the direct crosstalk. For at direct crosstalk the pulse signal is directly "mixed" by the recorder,which is in the play mode, with the signal on the audio tracks.

The solution to this problem is building in the "Freehead" pulse head which was also applied in the D6920 mark I up to production code WR 05.

Conversion instructions, **mechanically:**

- Shorten the mounting plate of the 4-track head 2 mm at the left-hand side.
- Place the head in the space to the left of the 4-track head.
- Clamp the head with bracket 4822 403 51488 (use the right-hand screw of the erase head).Codenumber of the freehead is: 4822 249 40135.

Electrically:

- Loosen the wiring of the pulse track from the 4-track head and connect it to the pulse head.
- Connect the ground connection of the pulse track to the right-hand pin on the new head.