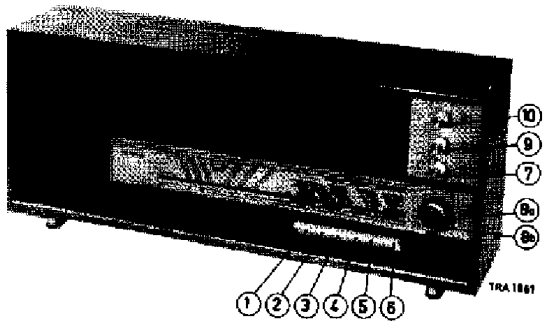
# SERVICE NOTES

## RADIO

## 4227AT/00/01/17/19




1. Mains switch / Netschakelaar / Interrupteur / Netzschalter / Interruptor de red — SK-N
2. PU switch / PU-schakelaar / Commande de PU / TA-Schalter / Conmutador de PU — SK-T
3. LW switch / LG-schakelaar / Commande de GO / LW-Schalter / Conmutador de OL — SK-L
4. MW switch / MG-schakelaar / Commande de PO / MW-Schalter / Conmutador de OM — SK-M
5. SW switch / KG-schakelaar / Commande de OC / KW-Schalter / Conmutador de OC — SK-K
6. FM switch / FM-schakelaar / Commande de FM / UKW-Schalter / Conmutador de FM — SK-U
7. Volume control / Volumeregelaar / Contrôle de volume / Lautstärkeregler / Control de volumen — R37/38
8. Tuning / Afstemming / Syntonisation / Abstimmung / Sintonía
9. Bass control / Lage-tonenregelaar / Contrôle de tonalité (graves) / Bassregler / Control de tono (bajo) — R 56
10. Treble control / Hoge-tonenregelaar / Contrôle de tonalité (haut) / Höhenregler / Control de tono (alto) — R 54

| SPECIFICATION | | SPECIFICATIE | SPECIFICATION | SPEZIFIKATION | | ESPECIFICACION |
|---|---|---|---|---|---|---|
| Loudspeaker | AD 3700HMD/06(25 Ω) | Luidspreker | Haut-parleur | Lautsprecher | AD 3700HMD/06 (25 Ω) | Altavoz |
| IF-FM | 10,7 Mc/s | MF-FM | FI-FM | ZF-UKW | 10,7 Mc/s | FI-FM |
| IF-AM | 452 kc/s (/00/01/17)<br>460 kc/s (/19) | MF-AM | FI-AM | ZF-AM | 452 kc/s (/00/01/17)<br>460 kc/s (/19) | FI-AM |
| Mains voltage | 117/220 V | Netspanning | Tension de réseau | Netzspannung | 117/220 V | Tensiones de red |
| Consumption | 15 W | Verbruik | Consommation | Verbrauch | 15 W | Consumo |
| Output | 2,5 W | Uitgangsvermogen | Puissance de sortie | Ausgangsleistung | 2,5 W | Potencia de salida |
| Dimensions | 508x215x155 mm | Afmetingen | Dimensions | Abmessungen | 508x215x155 mm | Dimensiones |

WAVE RANGES - GOLFGEBIEDEN - GAMMES D'ONDES - WELLENBEREICHE - MARGENES DE ONDAS

| | | | | |
|---|---|---|---|---|
| FM - FM - FM - UKW - FM | : | 87,5 - 108 | Mc/s | |
| LW - LG - GO - LW - OL | : | 150 - 260 | kc/s | (2000 - 1150 m) |
| MW - MG - PO - MW - OM | : | 517 - 1622 | kc/s | ( 577 - 185 m) |
| SW - KG - OC - KW - OC | : | 5,95 - 12,2 | kc/s | ( 50 - 25 m) |

TRANSISTORS - DIODES

| | | | | | |
|---|---|---|---|---|---|
| TS1 - AF121 | TS5 - AF121 | TS9 - AC126 | GR1 - AA119 | GR4 - AA119 | L1,2 - 8089D/00 |
| TS2 - AF125 | TS6 - AF121 | TS10) - 2-AC128 | GR2 - AA119 | GR6 - BZY59 | |
| TS3 - AF125 | TS7 - AC125 | TS11) | GR3 - AA119 | GR7 - BZY61 | |
| TS4 - AF121 | TS8 - AC125 | | | | |

| SERVICE INFORMATION | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|



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| | Wave range<br>Golfgebied<br>Gamme d'onde<br>Wellenbereich<br>Margen de ondas | Pointer<br>Wijzer<br>Aiguille<br>Zeiger<br>Aguja | Frequency<br>Frequentie<br>Fréquence<br>Frequenz<br>Frecuencia | Signal<br>Signaal<br>Signal<br>Signal<br>Señal | Detune<br>Verstemmen<br>Desaccorder<br>Verstimmen<br>Desintonizar | Adjust<br>Afregelen<br>Régler<br>Abgleichen<br>Ajústense | Indication<br>Aanwijzing<br>Indication<br>Anzeige<br>Indicación |
|---|---|---|---|---|---|---|---|
| IF-AM<br>MF-AM<br>FI-AM<br>ZF-AM<br>FI-AM | MW-MG-PO-MW-OM | F | 460 kc/s (/19)<br>(mod. 400 c/s) | bTS5 via 33 kpF | S30-S26 | S31-S35-S30 | Max. output |
| | | | 452 kc/s (/00/01/17)<br>(mod. 400 c/s) | bTS4 via 33 kpF | | S25,26 | |
| | | | | S11/R10 via 33 kpF | | S11 | Min. output |
| | Repeat - Herhalen - Répéter - Wiederholen - Repítanse | | | | | | |
| RF-AM<br>HF-AM<br>HF-AM<br>HF-AM<br>RF-AM | MW-MG-PO-MW-OM | E | 600 kc/s | S11/R10 via 33 kpF | | S19,S14 | Max. output |
| | | D | 1500 kc/s | | | C32,C25 | |
| | LW-LG-GO-LW-OL | E | 166 kc/s | | | C31,S12 | |
| | | D | 260 kc/s | | | C24 | |
| | SW-KG-OC-KW-OC | E | 6,45 Mc/s | | | S20,S16 | |
| | | D | 11,8 Mc/s | | | C33,C26 | |
| | Repeat - Herhalen - Répéter - Wiederholen - Repítanse | | | | | | |
| IF-FM<br>MF-FM<br>FI-FM<br>ZF-UKW<br>FI-FM | FM | C | 10,7 Mc/s<br>mod.freq.50 c/s<br>$\Delta F$ Fo $\Delta F$<br>$2\Delta f$=200 kc/s | bTS5 via 10 kpF | S34,S27,S24 | S32,S29,S27 | Max. * |
| | | | | bTS4 via 10 kpF | S21 | S22,S24 | |
| | | | | bTS2 via 10 kpF | | S21,S413 | |
| | | | | | | S34 | symm. S-curve |
| | Repeat - Herhalen - Répéter - Wiederholen - Repítanse | | | | | | |
| RF-FM<br>HF-FM<br>HF-FM<br>HF-UKW<br>RF-FM | FM | B | 88,2 Mc/s | via 2x60 Ω → ⊓⊓ | | S4,S7 | Max. output |
| | | A | 107,4 Mc/s | | | C6,C11 | |
| | Repeat - Herhalen - Répéter - Wiederholen - Repítanse | | | | | | |

*

With oscilloscope. It should be connected across C92. For this detach C98 at its positive side.

Met oscilloscoop. Deze moet worden aangesloten over C92. Hierbij moet C98 aan de + zijde worden losgemaakt.

A l'aide de oscilloscope. Il doit être connecté aux bornes de C92. C98 doit être détaché du côté positif.

Mit Oszillografen. Dieser muss über C92 angeschlossen werden. Hierzu muss C98 an der Plusseite gelöst werden.

Ajustar mediante un oscilógrafo. Este tiene que conectarse sobre C92. C98 tiene a tal fine que soltarse al lado positivo.

<u>AM suppression - AM-onderdrukking - Suppression AM - AM-Unterdrückung - Supresión de AM</u>

Apply a 10,7 Mc/s signal, amplitude modulated with 1000 c/s (30%) to the base of TS4. Attenuate the input signal until 1 kc/s is still just audible. Then adjust to minimum with R74.

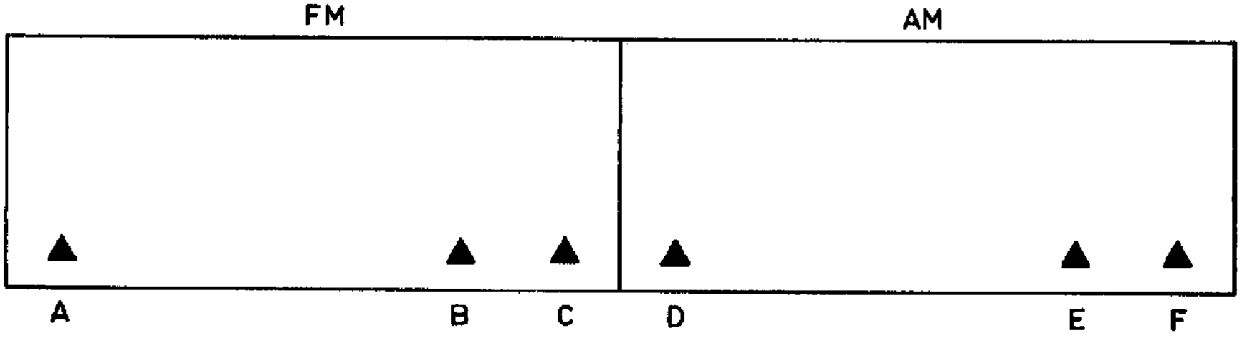
Een signaal van 10,7 Mc/s amplitude gemoduleerd met 1000 c/s (30%), toevoeren aan de basis van TS4. Het ingangssignaal verzwakken tot 1 kc/s nog juist hoorbaar is. Nu met R74 op minimum afregelen.

Appliquer un signal de 10,7 MHz amplitude modulée avec 1000 Hz (30%) a la base de TS4. Atténuer le signal d'entrée jusqu'à ce que 1 kHz soit encore juste audible. Régler ensuite au minimum à l'aide de R74.

Signal von 10,7 MHz, Amplitude moduliert mit 1000 Hz (30%). Das Signal der Basis von TS4 zuführen. Eingangssignal abschwächen, bis 1 kHz noch gerade hörbar ist. Nun mit R74 auf Minimum abgleichen.

Señal de 10,7 Mc/s, amplitud modulada con 1000 c/s (30%) aplicar a la base de TS4. Atenuar la señal de entrada hasta que 1000 c/s son justamente oíbles. Ahora ajustar mediante R74 al mínimo.

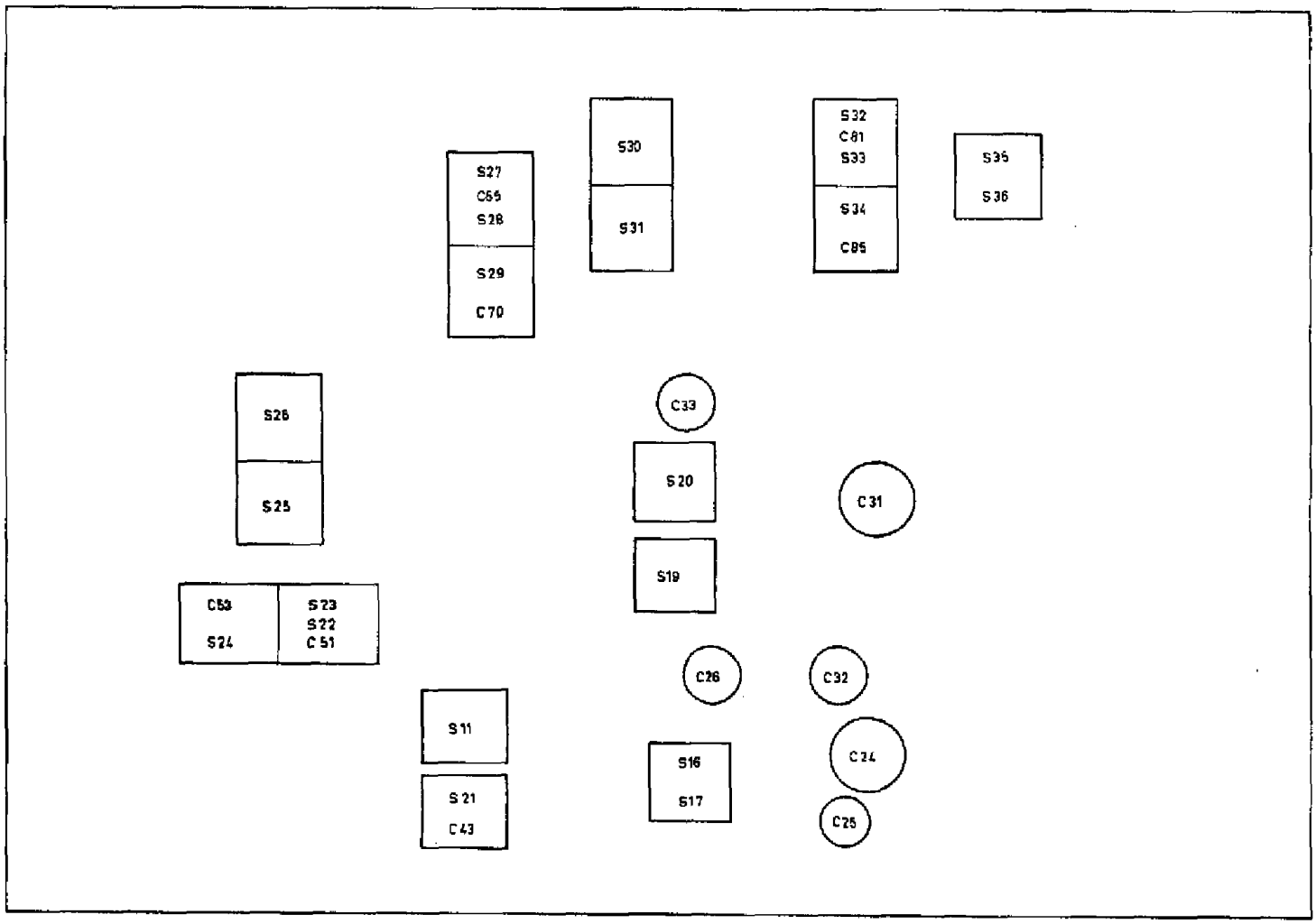
JGB/PG



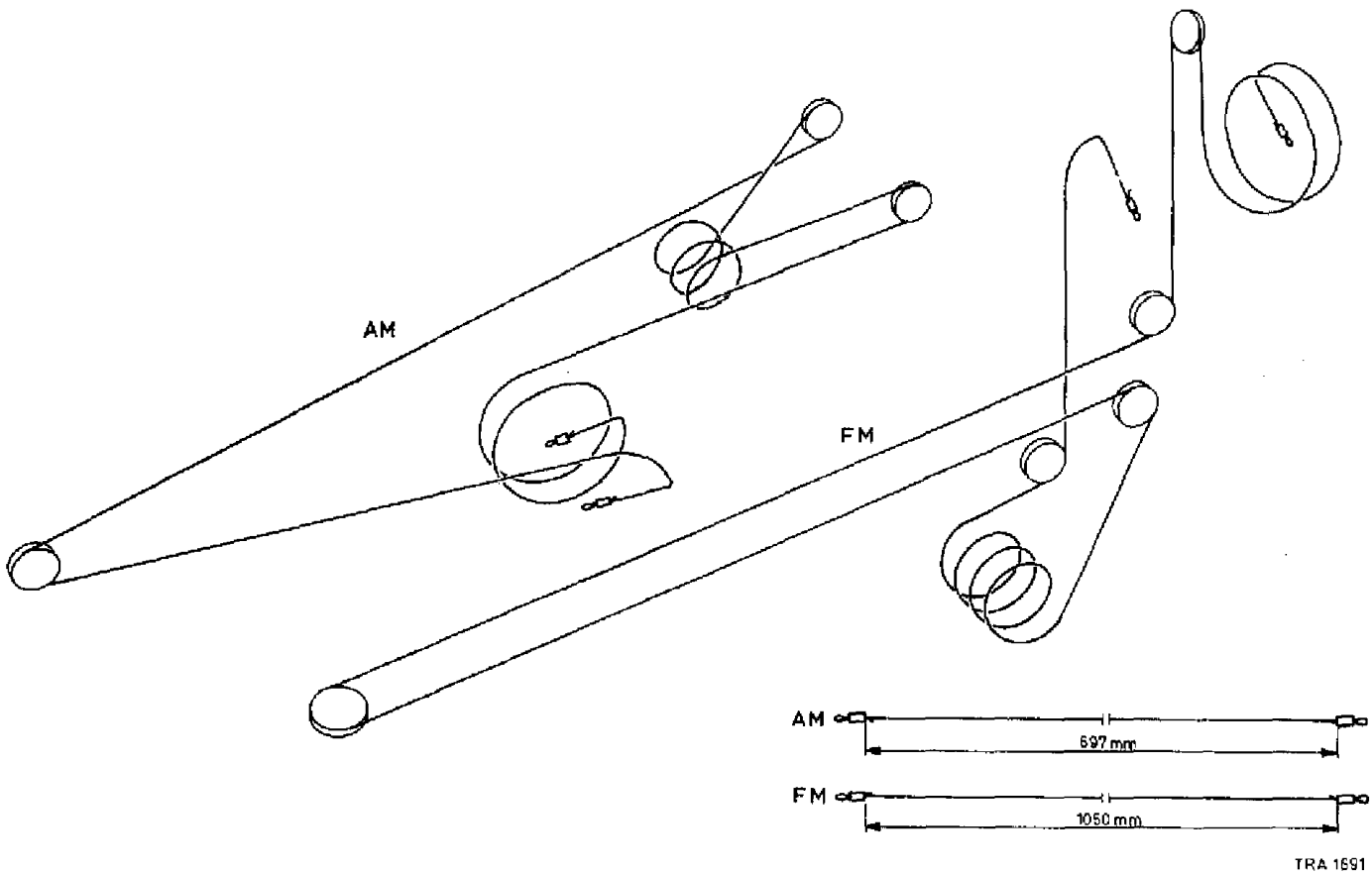

TRA1735

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1,5 | 22 | pF | 4822 069 00905 | C20 | 270 | pF-125 V | 4822 069 00573 | C41,54 | 1 | kpF- 25 V | C 285 AA/S1K | C63 | 25 | µF-6,4 V | 909/A25 | C98 | 4 | µF-40 V | 909/X4 |
| C2,3 | 4,7 | kpF | 4822 069 00627 | C21,42 | 3,5 | kpF- 63 V | 4822 069 01086 | C44 | 22 | kpF-250 V | 4822 069 01087 | C64 | 100 | µF-6,4 V | 909/A100 | C100 | 250 | µF-40 V | 911/X250 |
| C4 | 150 | pF | 4822 069 00555 | C22 | 33 | kpF-250 V | 4822 069 01099 | C45,56 | 4 | µF- 10 V | 909/X4 | C67 | 47 | kpF-250 V | 4822 069 01101 | C104 | 50 | µF-25 V | 909/C50 |
| C6 | 10 | pF | 4822 069 00886 | C23 | 22 | pF-500 V | 4822 069 00967 | C46,61 | 3,9 | pF-500 V | 4822 069 00979 | C68 | 0,1 | µF-250 V | 4822 069 01105 | R10 | 10 | mA-22 V | 927/VD0,8x60 |
| C7 | 2,7 | pF | 4822 069 00809 | C24,31 | 60 | pF | 4822 069 00921 | C47 | 50 | µF- 25 V | 909/C50 | C71,82 | 1 | kpF- 25 V | C 285 AA/S1K | R16,74 | 1 | kΩ | 4822 211 01235 |
| C8 | 470 | pF | 4822 069 01082 | C25,26 | 20 | pF | 4822 069 00871 | C49,50 | 47 | kpF-250 V | 4822 069 01101 | C73,91 | 25 | µF- 25 V | 909/C25 | R88,92 | NTC | -50 Ω | 4822 071 00639 |
| C9,14 | 4,7 | kpF | 4822 069 00627 | C28 | 560 | pF-125 V | 4822 069 00575 | C52,66 | 3 | kpF- 63 V | 4822 069 00632 | C74 | 22 | kpF-250 V | 4822 069 01087 | R96 | 680 | Ω-2 W | 900/T680E |
| C10 | 12 | pF | 4822 069 00869 | C29 | 12 | pF-500 V | 4822 069 00972 | C55,72 | 15 | kpF-250 V | 4822 069 01015 | C77,80 | 47 | kpF-250 V | 4822 069 01101 | R97 | 300 | Ω-5,5W | 938/A300E |
| C11 | 4 | pF | 4822 069 01045 | C32,33 | 20 | pF | 4822 069 01139 | C58,75 | 0,22 | µF-250 V | 4822 069 01123 | C84,99 | 100 | µF-6,4 V | 909/A100 | R99 | 20 | Ω-5,5W | 938/A20E |
| C12 | 33 | pF | 4822 069 00856 | C34 | 300 | pF-125 V | 4822 069 00814 | C60 | 2,5 | µF- 16 V | 909/W2,5 | C88,89 | 22 | kpF-250 V | 4822 069 01087 | L1,2 | 12 | µH-100 mA | 955/D12x100 |
| C13 | 39 | pF | 4822 069 00811 | C40 | 330 | pF-125 V | 4822 069 00639 | C62,78 | 10 | µF- 16 V | 909/W10 | C95 | 500 | µF-2,5 V | 4822 069 00824 | Z1 | 100 | mA | 974/V100 |

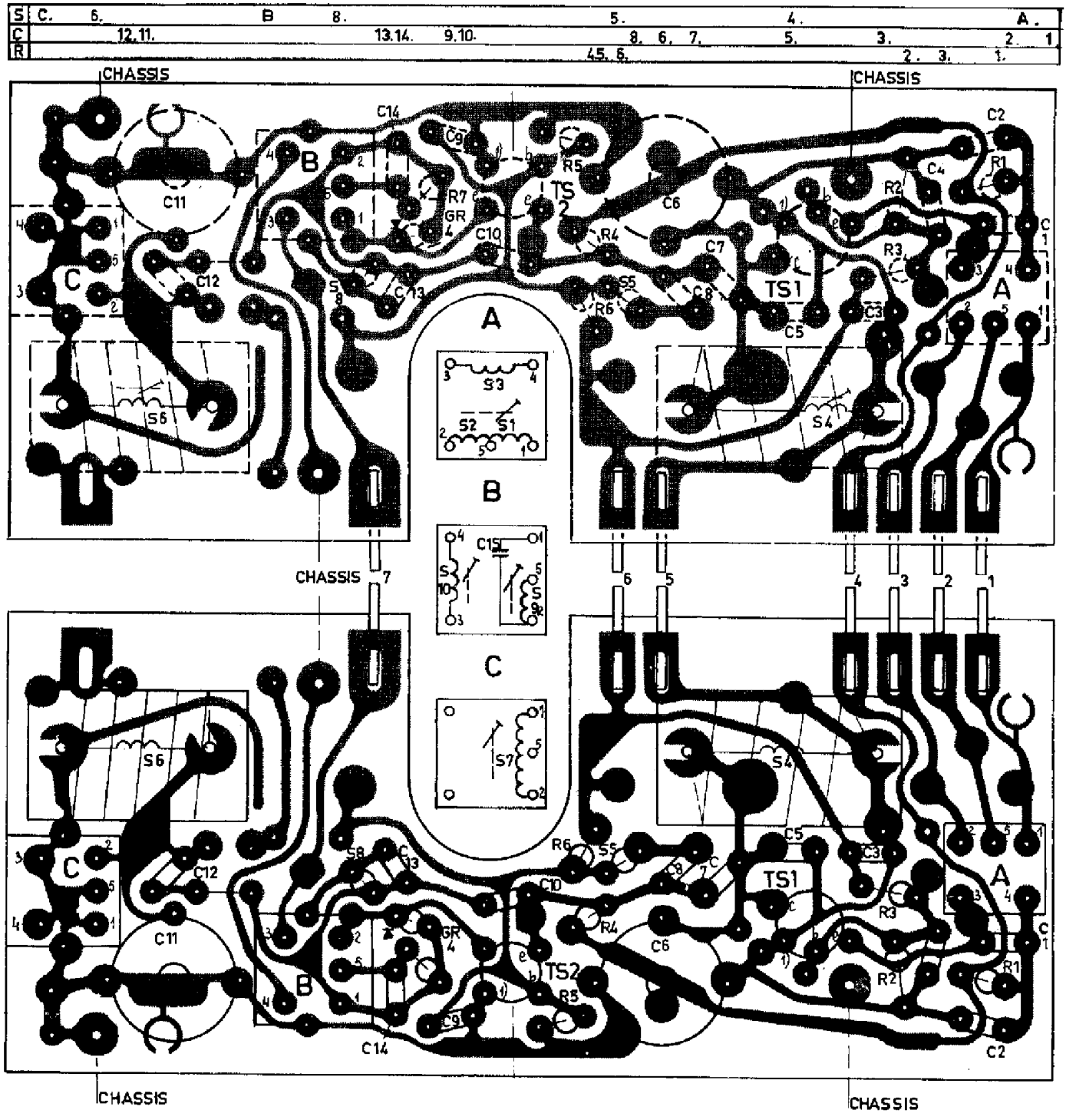
JCB/PG



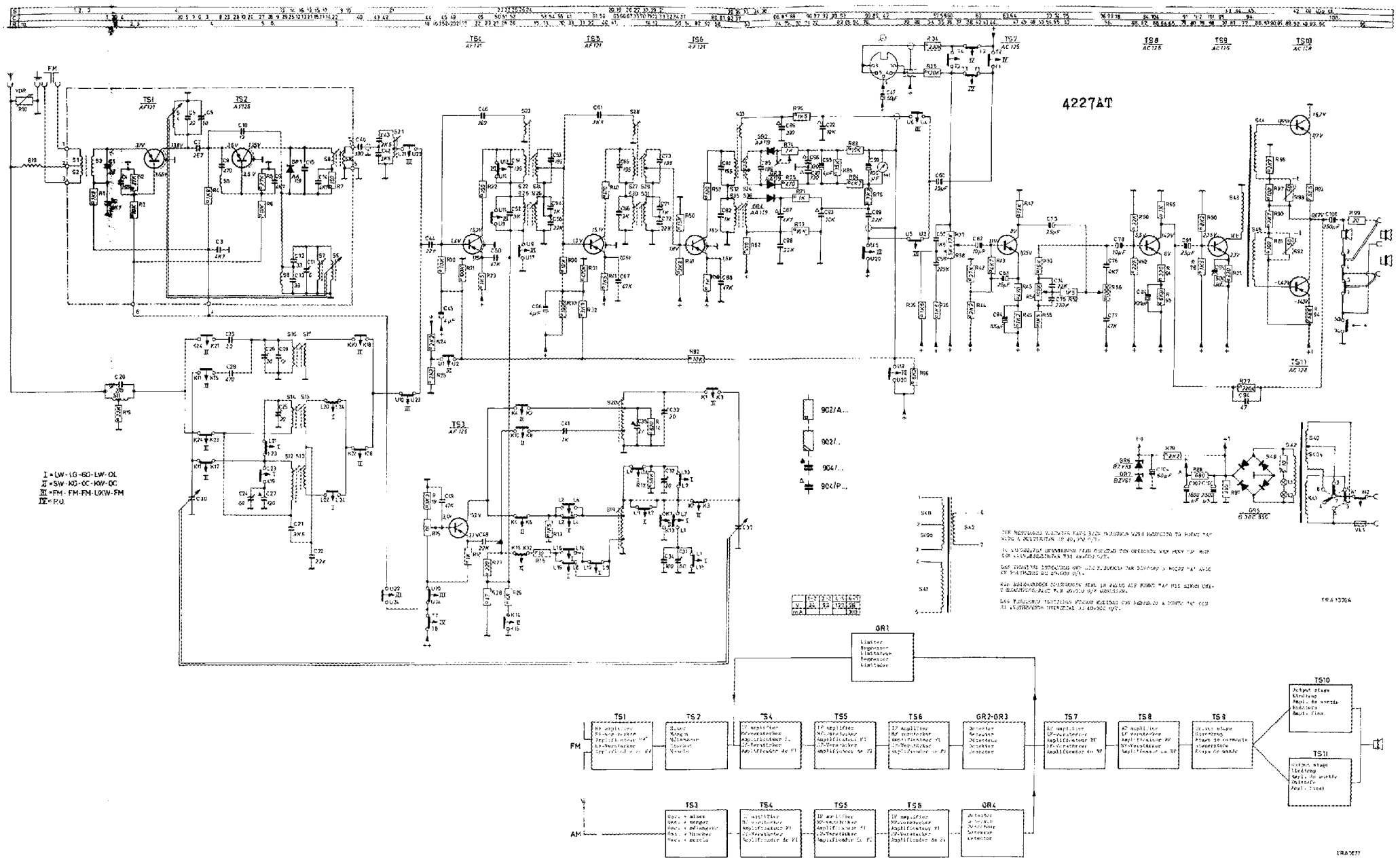

TRA1680

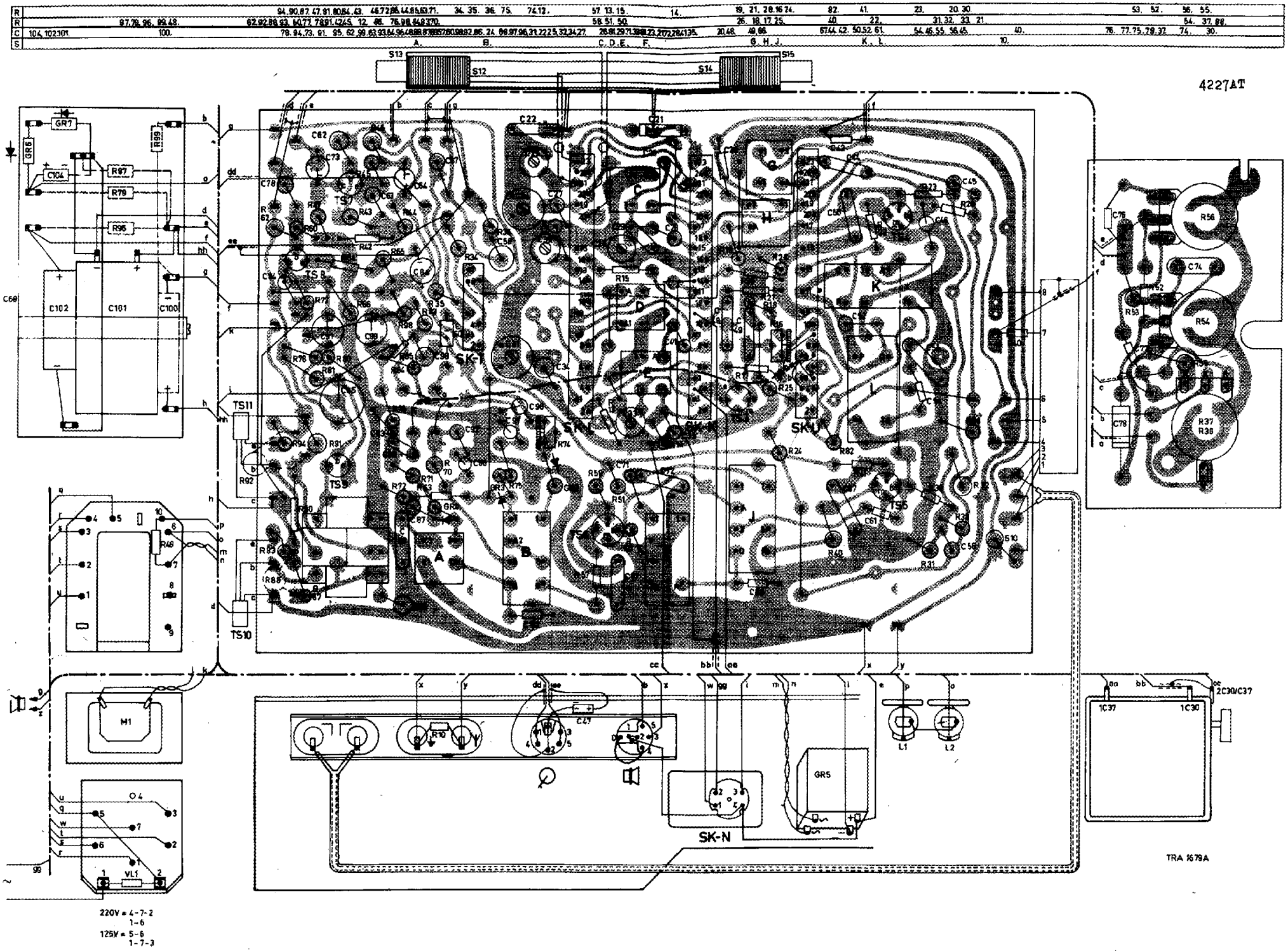


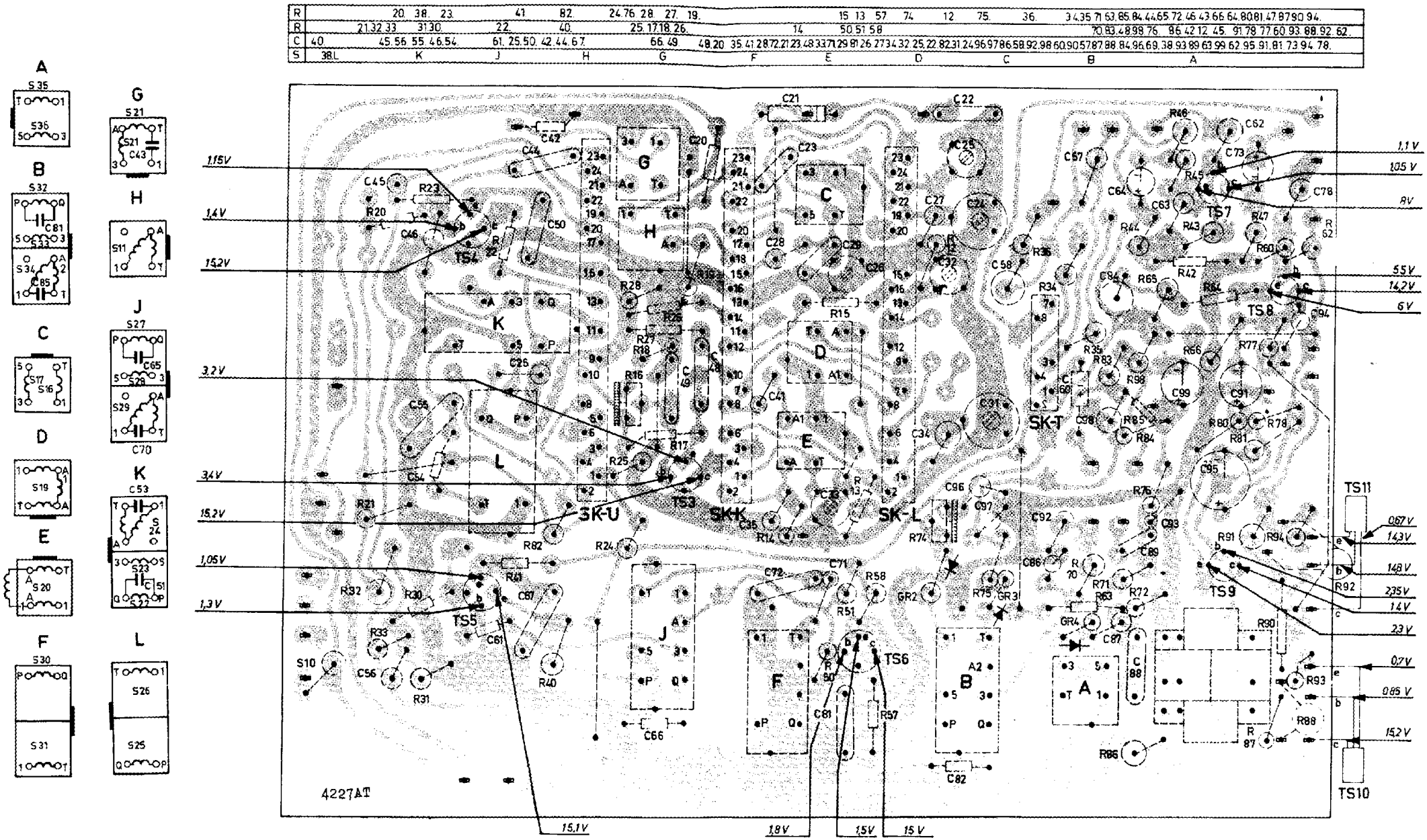

TRA 1691


S C. 6. B 8. 5. 4. A.
C 12.11. 13.14. 9.10. 8. 6. 7. 5. 3. 2. 1
R 4.5. 6. 2. 3. 1.
CHASSIS
CHASSIS
C14
C9
R5
TS 2
C2
C4
R1
R2
C11
R7
GR
C10
C6
R4
C7
R3
C1
C12
S8
C13
S5
R6
C8
TS1
C3
C5
A
B
C
S6
S3
S2
S1
S4
C15
S10
S9
CHASSIS
7
6
5
4
3
2
1
S7
TS2
CHASSIS
CHASSIS

TRA1678


4227AT
I = LW - LG - GO - LW - OL
II = SW - KO - OC - KW - OC
III = FM - FM-FM - UKW - FM
IV = P.U.
902/A...
902/..
904/...
904/P...
GR1
TS1
TS2
TS3
TS4
TS5
TS6
GR2-GR3
TS7
TS8
TS9
TS10
TS11
GR4
FM
AM


4227AT
TRA 1679A
220V = 4-7-2
1-6
125V = 5-6
1-7-3
SK-N
2C30/C37
1C37
1C30


R 20. 38. 23. 41 82. 24.76.28. 27. 19. 15 13 57 74 12 75. 36. 3 4.35 71 63.85.84.44.65.72.46.43.66.64.80.81.47.87.90.94.
R 21.32.33 31.30. 22. 40. 25.17.18.26. 14 50.51.58 70.83.48.98.76. 86.42.12.45. 91.78.77.60.93.88.92.62.
C 40. 45.56.55.46.54. 61.25.50.42.44.67 66.49. 48.20 35.41.28.72.21.23.48.33.71.29.81.26.27.34.32.25.22.82.31.24.96.97.86.58.92.98.60.90.57.87.88.84.96.69.38.93.89.63.99.62.95.91.81.73.94.78.
S 38L K J H G F E D C B A
1,15V
1,4V
15,2V
3,2V
3,4V
15,2V
1,05V
1,3V
1,1V
1,05V
8V
5,5V
14,2V
6V
0,67V
1,43V
1,48V
2,35V
14V
23V
0,7V
0,85V
15,2V
15,1V
1,8V
1,5V
15V
4227AT
TS4
TS5
TS6
TS7
TS8
TS9
TS10
TS11
SK-U
SK-K
SK-L
SK-T
S35
S36
S32
C81
S33
S34
C85
S17
S16
S19
S20
S30
S31
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C43
S11
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C65
S28
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