

# Dual

## Service-Anleitung Service Manual Instructions de Service

# CT 7060

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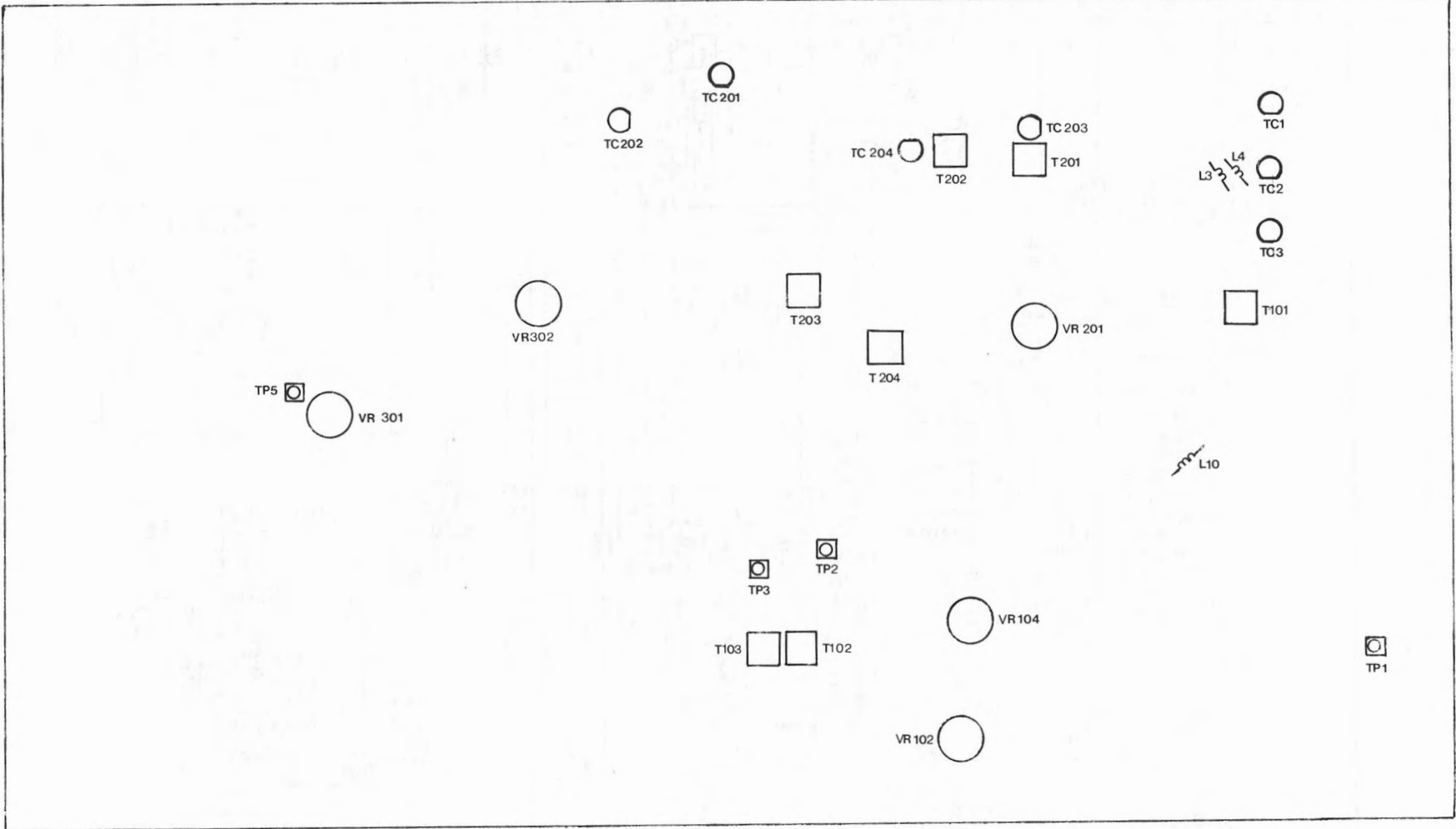
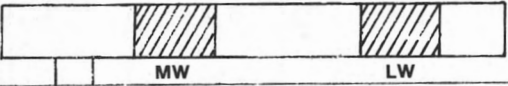
| Technische Daten<br>(typische Werte)   | Specifications<br>(typical values)                                       | Caractéristiques<br>techniques<br>(valeurs types)                          | Dati tecnici<br>(valori tipici)  | Dual CT 7060                                    |
|--|--|--|--|---|
| <b>Empfangsbereiche</b><br>FM (UKW)<br>AM (MW)<br>AM (LW)                    | <b>Reception wavebands</b><br>FM (VHF)<br>AM (MW)<br>AM (LW)             | <b>Games de fréquences</b><br>FM (OC)<br>AM (PO)<br>AM (GO)                | <b>Campi di ricezione</b><br>FM (OUC)<br>AM (onde medie)<br>AM (onde lunghe) | 87 – 108 MHz<br>522 – 1611 kHz<br>153 – 279 kHz |
| <b>Empfindlichkeit</b> (an 75 Ω)<br>FM – Mono (26 dB)<br>FM – Stereo (46 dB) | <b>Sensitivity</b> (at 75 Ω)<br>FM – mono (26 dB)<br>FM – stereo (46 dB) | <b>Sensibilité</b> (à 75 ohms)<br>FM – Mono (26 dB)<br>FM – Stéréo (46 dB) | <b>Sensibilità</b> (su 75 ohm)<br>FM – mono (26 dB)<br>FM – stereo (46 dB)   | 0,9 μV<br>30 μV                                 |
| <b>Trennschärfe</b> FM stat./dyn.  | <b>FM selectivity</b> stat./dyn.   | <b>Sélectivité</b> FM stat./dyn.   | <b>Selettività</b> FM stat./din.   | 80/70 dB  |
| <b>Geräuschspannungsabstand</b>  | <b>Signal/noise ratio</b>  | <b>Rapport signal/bruit</b>  | <b>Rapporto segnale disturbo</b>   | 70 dB   |
| <b>Netzspannung</b><br>Model Europa<br>Model USA/Kanada                      | <b>Mains voltage</b><br>European model<br>US/Canadian model              | <b>Voltage secteur</b><br>Modèle Europe<br>Modèle USA/Canada               | <b>Tensione di rete</b><br>modello Europa<br>modello Stati Uniti/Canada      | 230 V/50 Hz<br>120 V/60 Hz                      |
| <b>Maße</b><br>(Breite × Höhe × Tiefe)                                       | <b>Dimensions</b><br>(width × height × depth)                            | <b>Dimensions</b><br>(largeur × hauteur × profondeur)                      | <b>Dimensioni</b><br>(larghezza × altezza × profondità)                      | 440 × 82 × 245 mm                               |

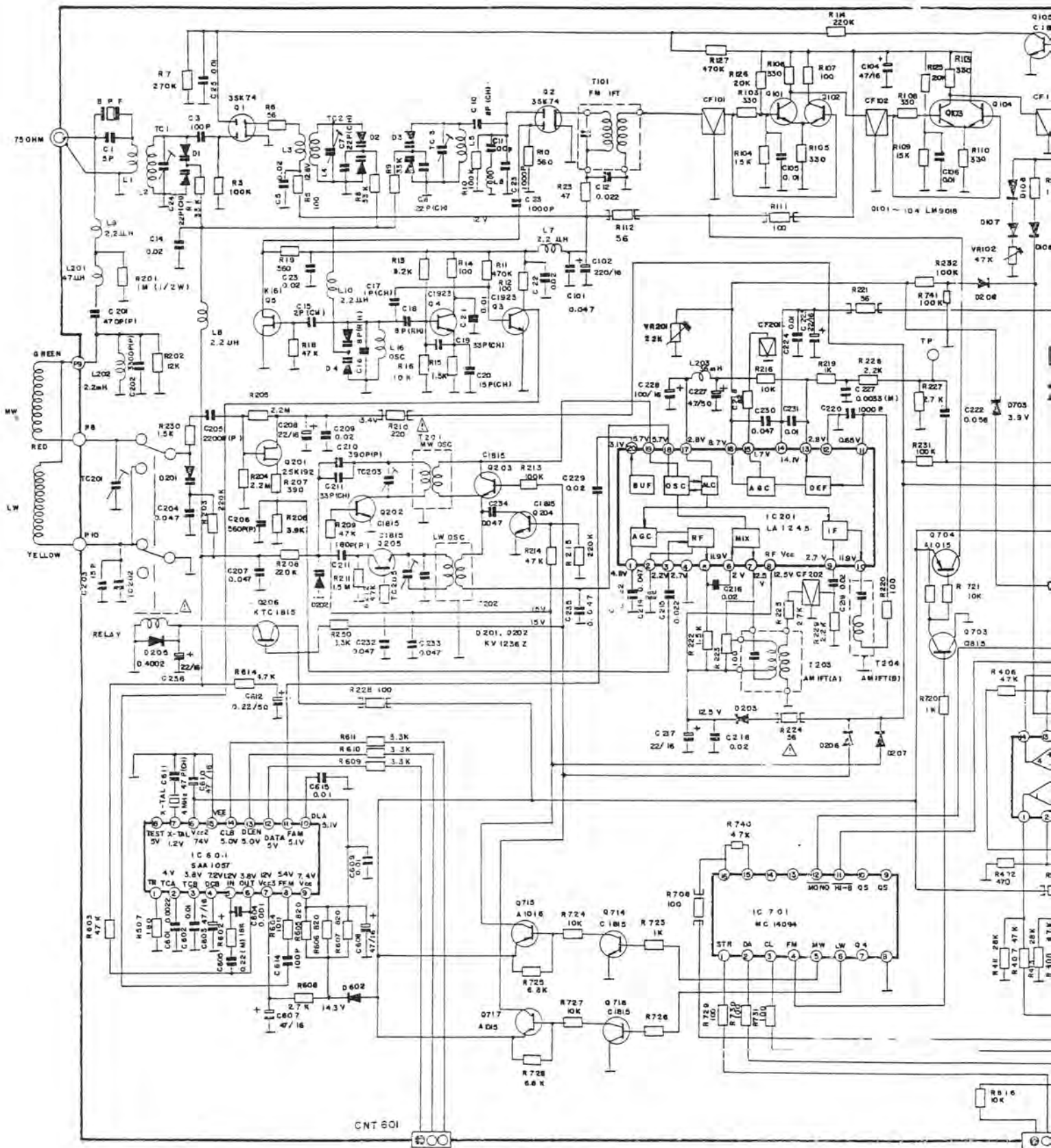
## Abgleichanleitung CT 7060

| Signalquelle                                | Einstellung Gerät                                      | Einstellung Signalquelle   | Meßgerät Anschluß                                    | Abgleichposition                          | Abgleich, Bemerkung                 |
|---|--|--|--|---|-------------------------------------|
| <b>FM-Oszillator</b>                        |  |  |  |   |                                     |
|   | 108 MHz  |  | DC Voltmeter an TP 1                                 | L 10                                      | 8,3 V DC $\pm$ 0,2 V                |
|   | 87,5 MHz   |  |  |   | Kontrolle: 2,0–2,5 V DC             |
| <b>FM-ZF Vorkreis</b>                       |  |  |  |   |                                     |
| FM-Meßsender an 75 Ohm Antenneneingang      | Senderfreie Frequenz<br>ca. 98 MHz                     | 0–1 mV<br>Hub $\pm$ 40 kHz<br>Mod. 1 kHz<br>ca. 98 MHz auf Deckung                 | Klirrfaktormeßbrücke<br>Oszilloskop an<br>NF-Ausgang | T 101                                     | NF-Maximum                          |
|   |  |  |  | T 102                                     |                                     |
|   | 90 MHz   | ca. 90 MHz auf Deckung   |  | T 103                                     | NF und Klirrfaktor<br>Minimum       |
|   | 105 MHz  | ca. 105 MHz auf Deckung  |  | L 1/L 2, L 3/L 4, L 5<br>TC 1, TC 2, TC 3 | NF-Maximum                          |
| Vorkreisabgleich wiederholen                |  |  |  |   |                                     |
| <b>FM-ZF (Feinabgleich)</b>                 |  |  |  |   |                                     |
| Antenne an 75 Ohm Antenneneingang           | Starken FM-Sender auf seiner Sollfrequenz empfangen    |  | DC-Voltmeter an: TP 2–TP 3                           | T 103                                     | DC-Maximum und DC-Minimum ermitteln |
|   |  |  |  | T 103                                     | Spannungsmitte einstellen           |
|   |  |  |  | T 102                                     | 0 V $\pm$ 1 mV DC                   |
|   |  |  |  | Abgleich wiederholen                      |                                     |
| <b>Pilotfrequenz 76 kHz, Kanaltrennung</b>  |  |  |  |   |                                     |
| FM-Meßsender an 75 Ohm Antenneneingang      | Senderfreie Frequenz ca. 98 MHz<br>HI-Blend-Taste: Aus | ca. 98 MHz auf Deckung<br>Hub $\pm$ 40 kHz,<br>Mod. 1 kHz<br>1–2 mV, ohne Pilotton | Frequenzzähler an TP 5                               | VR 301                                    | 76 kHz $\pm$ 50 Hz                  |
|   |  | mit 19 kHz Pilot   | NF-Voltmeter, Oszilloskop an NF-Ausgang              | VR 302                                    | Maximale Kanaltrennung              |
| <b>Unterdrückung Pilottonreste (19 kHz)</b> |  |  |  |   |                                     |
| FM-Meßsender an 75 Ohm Antenneneingang      | Senderfreie Frequenz ca. 98 MHz                        | Senderfreie Frequenz ca. 98 MHz auf Deckung<br>1–2 mV, 19 kHz, Pilot ein           | NF-Voltmeter Oszilloskop an NF-Ausgang               | T 302 (l.k)                               | Minimum                             |
|   |  |  |  | T 301 (r.k)                               |                                     |
| <b>Suchlaufschwelle, FM-Signalanzeige</b>   |  |  |  |   |                                     |
| FM-Meßsender an 75 Ohm Antenneneingang      | Senderfreie Frequenz ca. 98 MHz                        | ca. 98 MHz auf Deckung<br>Hub $\pm$ 40 kHz,<br>Mod 1 kHz<br>10 $\mu$ V             | Kontrolle am Display                                 | VR 101                                    | „TUNED“ Anzeige muß aufleuchten     |
|   |  |  |  | VR 102                                    | Achter Signalbalken muß aufleuchten |
| <b>AM-Oszillator</b>                        |  |  |  |   |                                     |
|   | 522 kHz  |  | DC-Voltmeter an TP 1                                 | T 201                                     | 0,65 V DC $\pm$ 0,05 V              |
|   | 1611 kHz   |  |  | TC 203                                    | 9,0 V DC $\pm$ 0,4 V                |
|   | 153 kHz  |  |  | T 202                                     | 1,6 V DC $\pm$ 0,05 V               |
|   | 279 kHz  |  |  | TC 204                                    | 5,4 V DC $\pm$ 0,4 V                |
| <b>AM-ZF Vorkreis</b>                       |  |  |  |   |                                     |
| AM-Meßsender an 75 Ohm Antenneneingang      | 999 kHz  | 20 $\mu$ V–1 mV, 1 kHz,<br>Mod. 30 %<br>999 kHz                                    | NF-Voltmeter Oszilloskop an NF-Ausgang               | T 203, T 204                              | Maximum                             |
|   | 594 kHz  | 594 kHz  |  | MW Ferritantenne                          |                                     |
|   | 1404 kHz   | 1404 kHz   |  | TC 201                                    |                                     |
|   | 162 kHz  | 162 kHz  |  | LW Ferritantenne                          |                                     |
|   | 252 kHz  | 252 kHz  |  | TC 202                                    |                                     |
| <b>AM-Signalanzeige</b>                     |  |  |  |   |                                     |
| AM-Meßsender an 75 Ohm Antenneneingang      | 999 kHz  | 100 $\mu$ V, 1 kHz<br>Mod. 30 %<br>999 kHz   | Kontrolle am Display                                 | VR 201                                    | Achter Signalbalken muß aufleuchten |

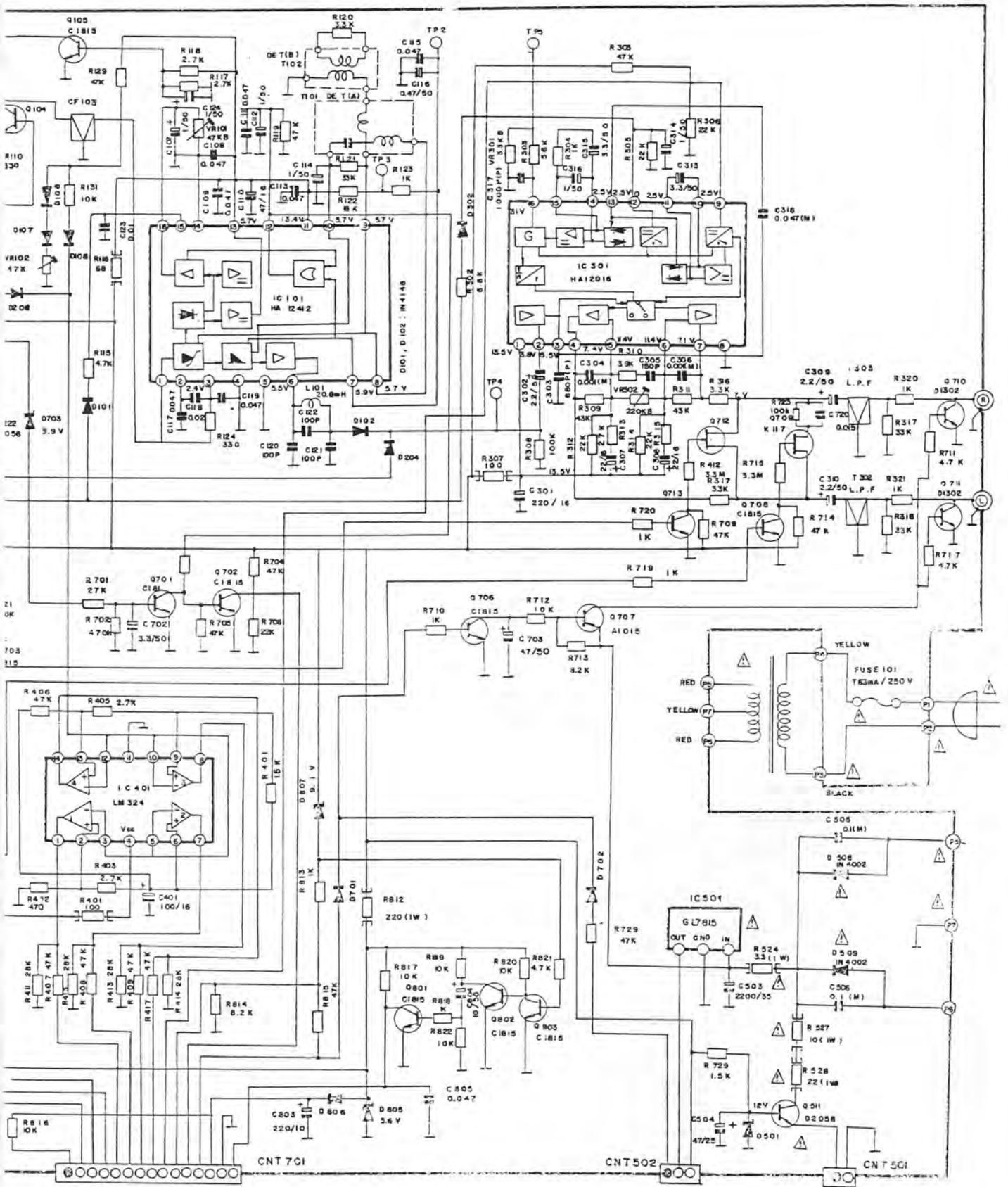
## Tuning Instructions for CT 7060

| Signal source   | Equipment setting  | Signal source setting  | Connection of measuring instrument          | Item to be tuned                          | Tuning, Remarks                     |
|---|--|--|---|---|-------------------------------------|
| <b>FM oscillator</b>                                      |  |  |   |   |                                     |
|   | 108 MHz  |  | DC voltmeter to TP 1                        | L 10                                      | 8.3 V DC $\pm$ 0.2 V                |
|   | 87.5 MHz   |  |   |   | Check: 2.0 - 2.5 V DC               |
| <b>FM IF, input circuit</b>                               |  |  |   |   |                                     |
| FM signal generator to 75-ohm antenna input               | Frequency without transmitters approx. 98 MHz                            | 0 - 1 mV, Shift $\pm$ 40 kHz, Mod. 1 kHz, Tune to approx. 98 MHz                     | Harmonic detector oscilloscope to AF output | T 101                                     | AF maximum                          |
|   |  |  |   | T 102                                     |                                     |
|   | 90 MHz   | Tune to approx. 90 MHz   |   | T 103                                     | AF and harmonic distortion minimum  |
|   | 105 MHz  | Tune to approx. 105 MHz  |   | L 1/L 2, L 3/L 4, L 5<br>TC 1, TC 2, TC 3 | AF maximum                          |
|   |  |  |   | Repeat input-circuit tuning               |                                     |
| <b>FM IF (fine tuning)</b>                                |  |  |   |   |                                     |
| Antenna to 75-ohm antenna input                           | Receive strong FM transmitter at its nominal frequency                   |  | DC voltmeter to: TP 2 - TP 3                | T 103                                     | Determine DC maximum and DC minimum |
|   |  |  |   | T 103                                     | Adjust power mean                   |
|   |  |  |   | T 102                                     | 0 V $\pm$ 1 mV DC                   |
|   |  |  |   | Repeat tuning                             |                                     |
| <b>Pilot frequency 76 kHz, channel separation</b>         |  |  |   |   |                                     |
| FM signal generator to 75-ohm antenna input               | Frequency without transmitters approx. 98 MHz Waveguide shutter key: OFF | Tune to approx. 98 MHz, Shift $\pm$ 40 kHz, Mod. 1 kHz, 1 - 2 mV, without pilot tone | Frequency counter to TP 5                   | VR 301                                    | 76 kHz $\pm$ 50 Hz                  |
|   |  | with 19-kHz pilot  | AF voltmeter, oscilloscope to AF output     | VR 302                                    | Maximum channel separation          |
| <b>Suppression of residual pilot frequencies (19 kHz)</b> |  |  |   |   |                                     |
| FM signal generator to 75-ohm antenna input               | Frequency without transmitters approx. 98 MHz                            | Frequency without transmitters Tune to approx. 98 MHz 1 - 2 mV, 19-kHz pilot ON      | AF voltmeter, oscilloscope to AF output     | T 302 (left channel)                      | Minimum                             |
|   |  |  |   | T 301 (right channel)                     |                                     |
| <b>Search threshold, FM signal indicator</b>              |  |  |   |   |                                     |
| FM signal generator to 75-ohm antenna input               | Frequency without transmitters approx. 98 MHz                            | Tune to approx. 98 MHz, Shift $\pm$ 40 kHz, Mod. 1 kHz 10 $\mu$ V                    | Check the display                           | VR 101                                    | "TUNED" display must light up       |
|   |  |  |   | VR 102                                    | Eighth signal bar must light up     |
| <b>AM oscillator</b>                                      |  |  |   |   |                                     |
|   | 522 kHz  |  | DC voltmeter to TP 1                        | T 201                                     | 0.65 V DC $\pm$ 0.05 V              |
|   | 1611 kHz   |  |   | TC 203                                    | 9.0 V DC $\pm$ 0.4 V                |
|   | 153 kHz  |  |   | T 202                                     | 1.6 V DC $\pm$ 0.05 V               |
|   | 279 kHz  |  |   | TC 204                                    | 5.4 V DC $\pm$ 0.4 V                |
| <b>AM IF, input circuit</b>                               |  |  |   |   |                                     |
| AM signal generator to 75-ohm antenna input               | 999 kHz  | 20 $\mu$ V - 1 mV, 1 kHz Mod. 30% 999 kHz  | AT voltmeter, oscilloscope to AF output     | T 203, T 204                              | Maximum                             |
|   | 594 kHz  | 594 kHz  |   | AM ferrite-rod antenna                    |                                     |
|   | 1404 kHz   | 1404 kHz   |   | TC 201                                    |                                     |
|   | 162 kHz  | 162 kHz  |   | LW ferrite-rod antenna                    |                                     |
|   | 252 kHz  | 252 kHz  |   | TC 202                                    |                                     |
| <b>AM signal indicator</b>                                |  |  |   |   |                                     |
| AM signal generator to 75-ohm antenna input               | 999 kHz  | 100 $\mu$ V, 1 kHz Mod. 30% 999 kHz  | Check the display                           | VR 201                                    | Eighth signal bar must light up     |

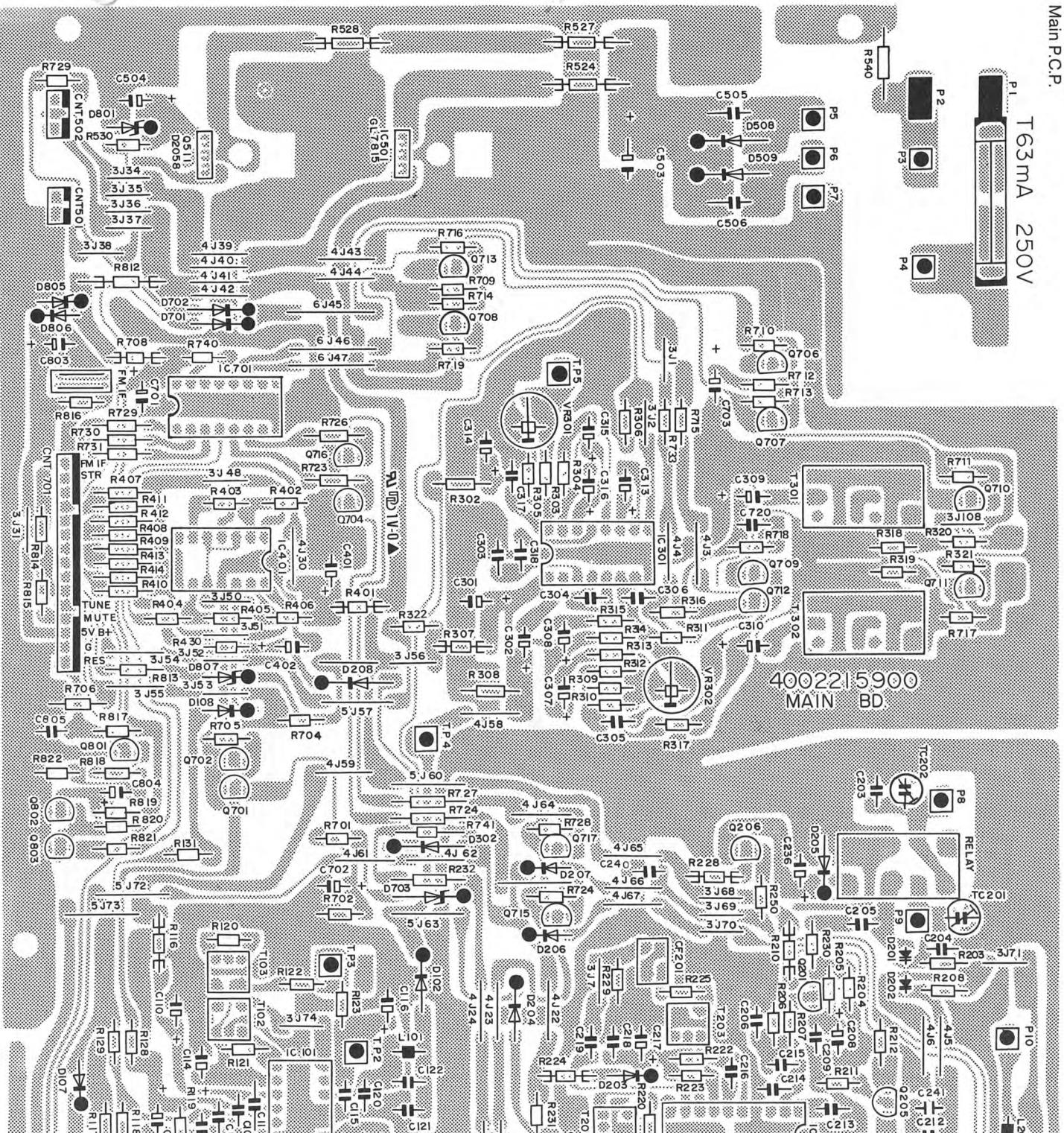
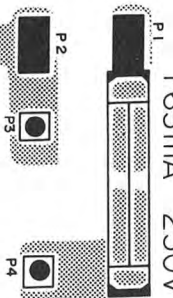




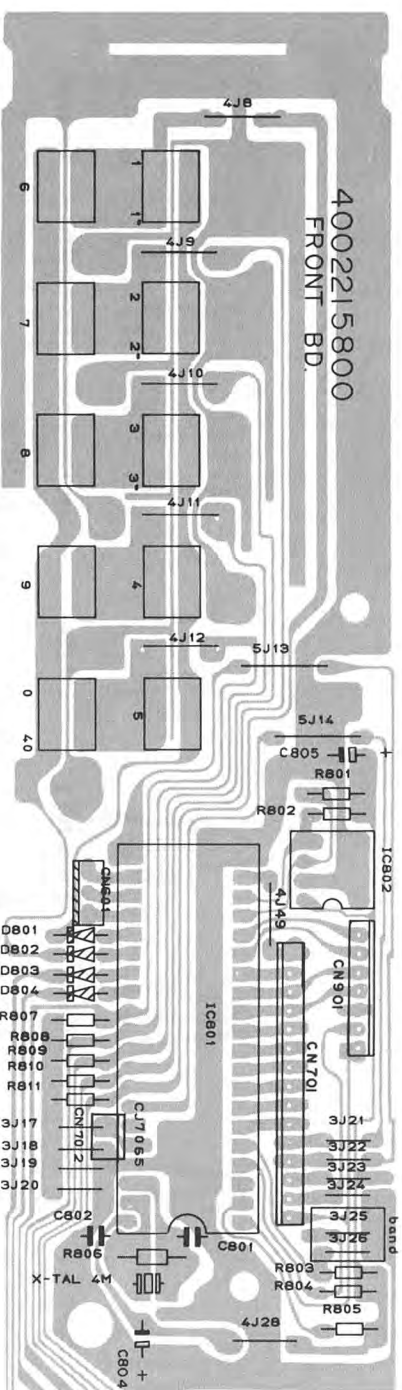




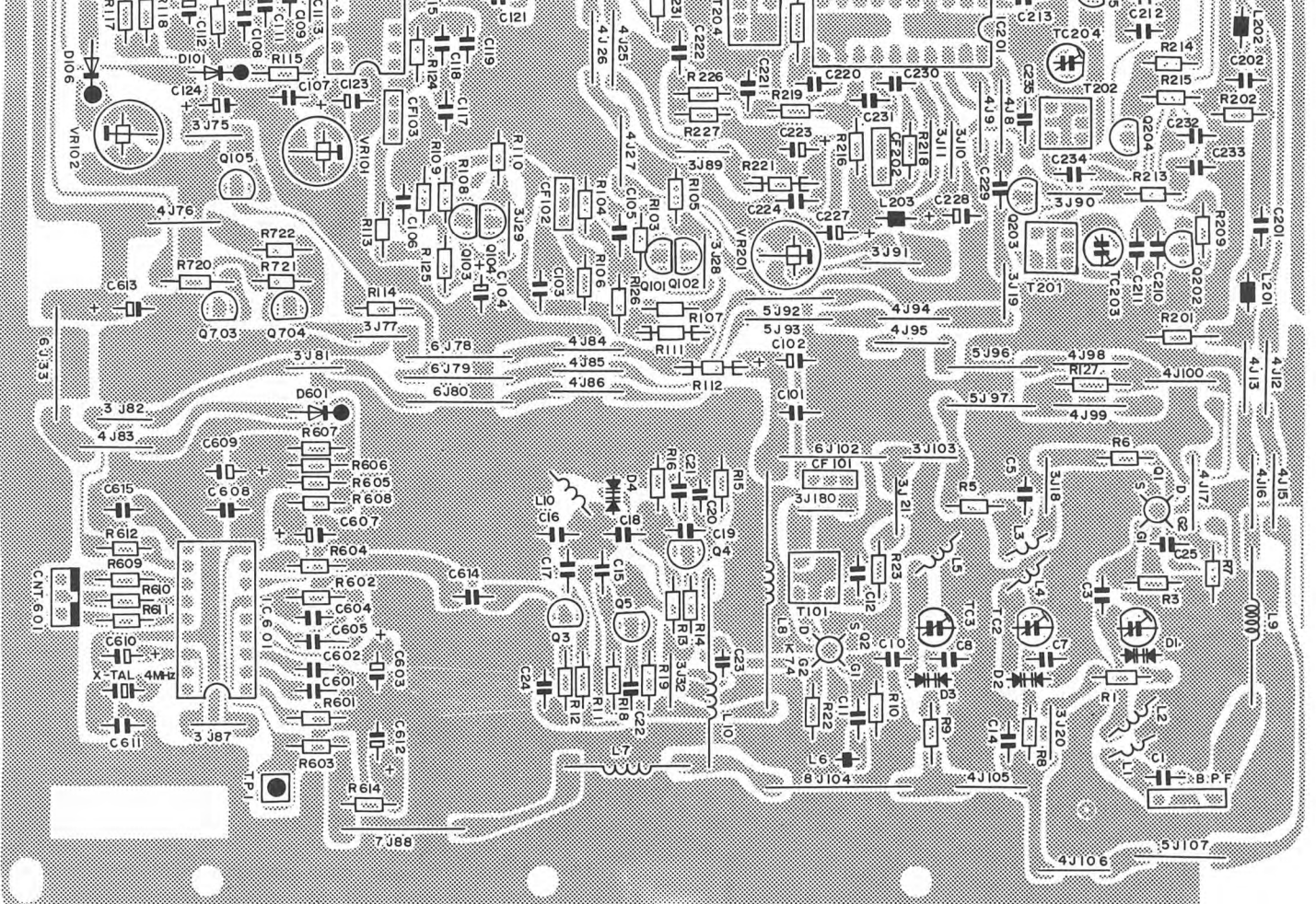
T63mA 250V



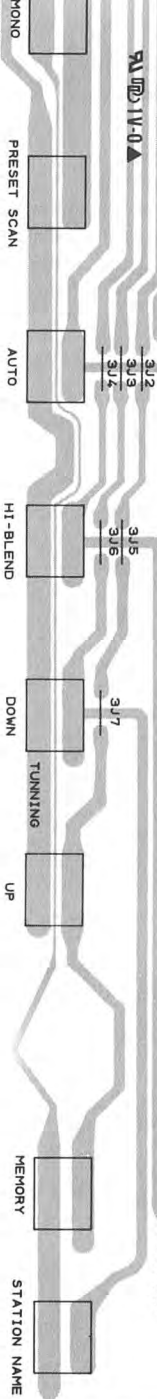
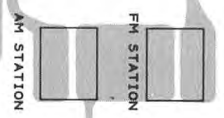
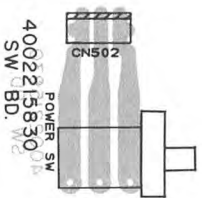
Frontplatte  
Front P.C.B.



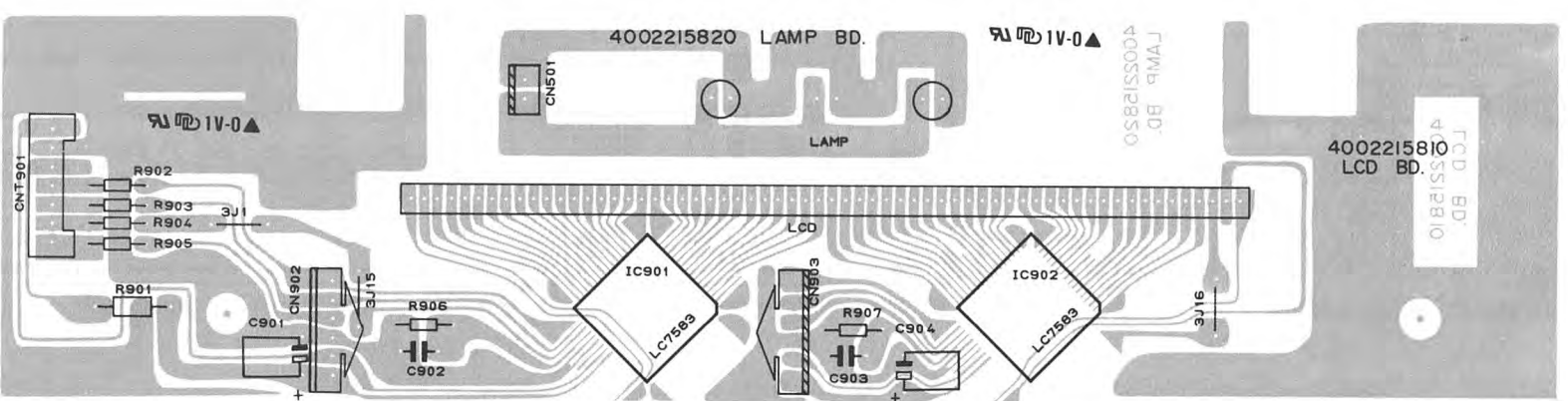




|        |     |     |
|--------|-----|-----|
| band   | J25 | J26 |
| Europe | X   | X   |
| Korea  | O   | X   |
| Korea  | X   | O   |
| U.S.A. | O   | O   |



LCD-Platte  
LCD P.C.B.

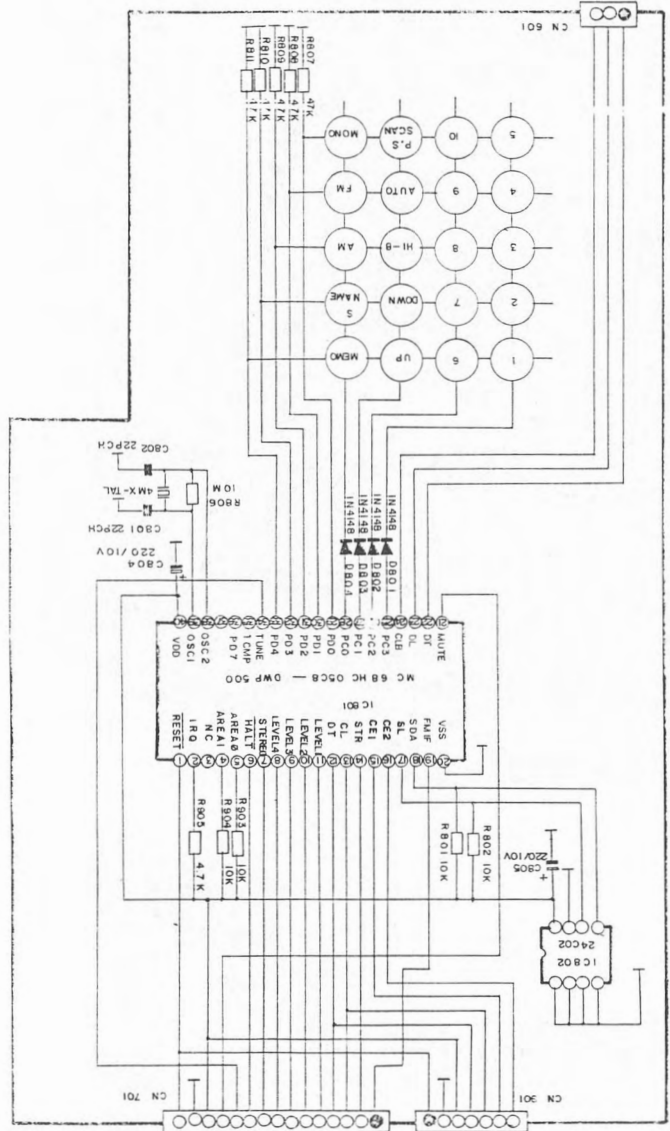
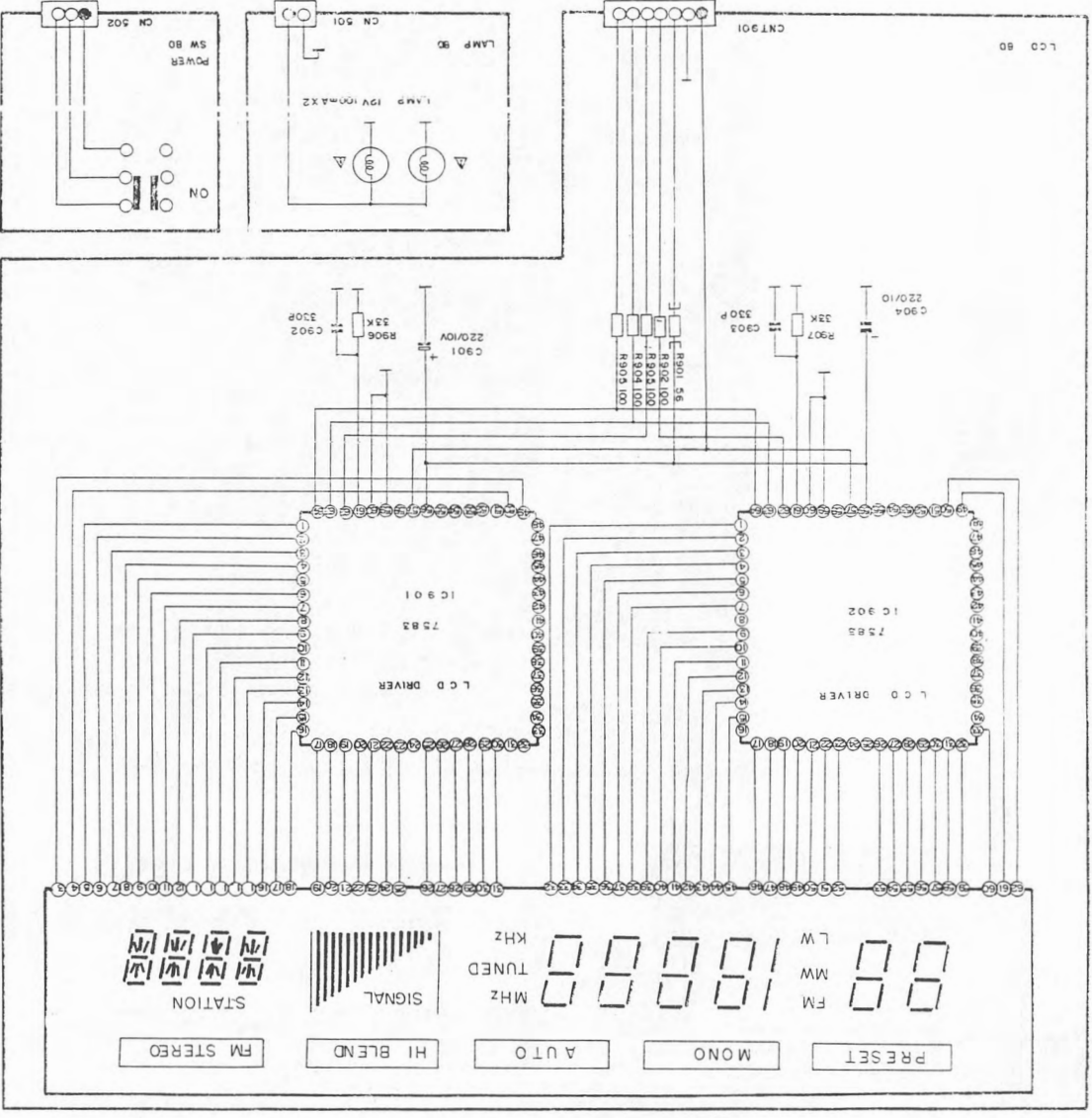


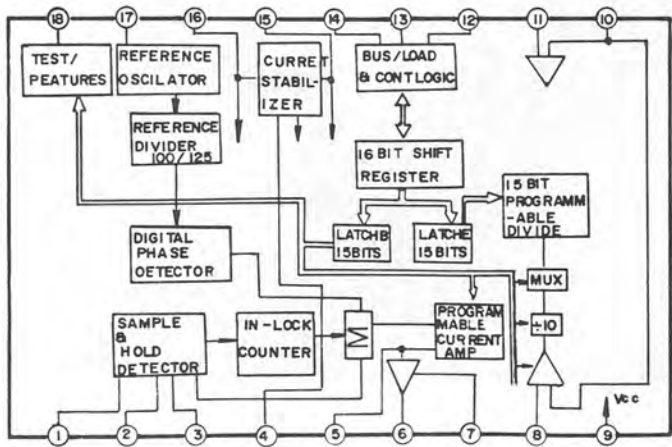
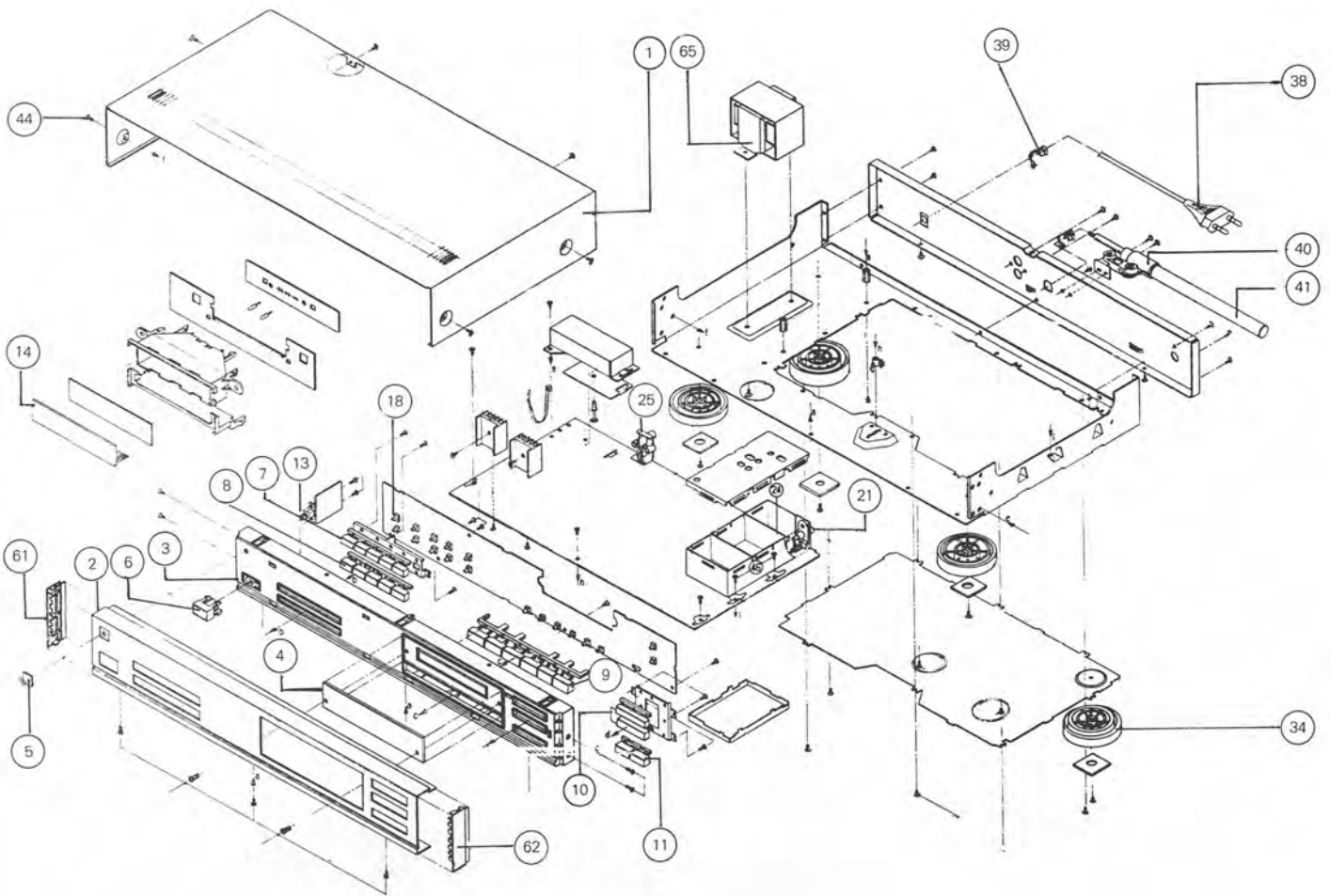
4002215810  
LCD BD.

FWB BD.  
4005512850

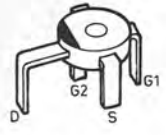
4002215820 LAMP BD.



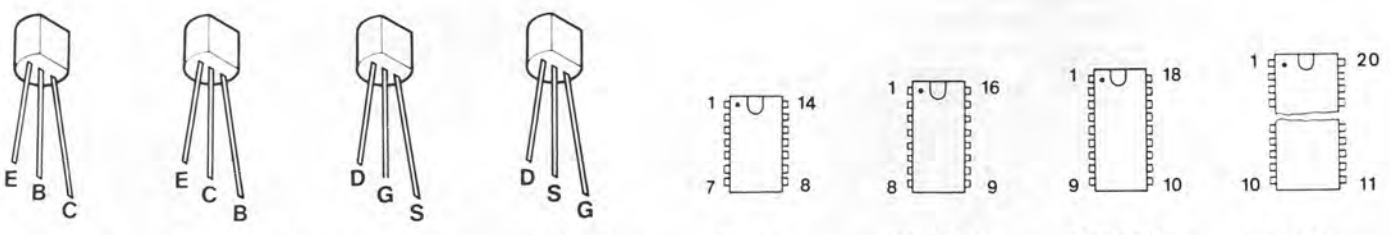




SAA 1057



3 SK74L



LM 9018 F      KTA 1015 Y  
KTC 1815 Y  
KTC 1923 Y      2 SK 117 Y      KTK 161 Y      LM 324      HA 12016  
HA 12412  
MC 14094      SAA 1057      LA 1245

Ersatzteile · Replacement parts · Pièces détachées · CT 7060

| Pos.               | Art.-Nr. | Bezeichnung                    |
|--------------------|----------|--------------------------------|
| 1                  | 283 678  | Gehäuseblech                   |
| 2                  | 284 798  | Frontblende                    |
| 3                  | 284 791  | Frontträger                    |
| 4                  | 284 792  | Fenster                        |
| 5                  | 283 750  | Dual-Zeichen                   |
| 6                  | 283 665  | Netztaсте                      |
| 7                  | 284 793  | Tasten 1-5                     |
| 8                  | 284 794  | Tasten 6-0                     |
| 9                  | 284 795  | Tasten 6-fach                  |
| 10                 | 284 344  | Taste A                        |
| 11                 | 284 314  | Taste 2-fach                   |
| 13                 | 284 318  | Schalter                       |
| 14                 | 284 786  | Display                        |
| 18                 | 280 197  | Schalter                       |
| 21                 | 282 346  | Antennenbuchse                 |
| 25                 | 282 347  | Cinchbuchse 1-fach             |
| 34                 | 283 710  | Gerätefuß                      |
| 38                 | 243 750  | Netzkabel Europa               |
| 39                 | 237 548  | Kabeldurchführung              |
| 40                 | 282 349  | Antennenhalter                 |
| 41                 | 282 350  | MW/LW Antenne                  |
| 44                 | 282 523  | Schraube 3x8                   |
| 59                 | 282 344  | Lampe                          |
| 61                 | 284 796  | Seitenteil L                   |
| 62                 | 284 797  | Seitenteil R                   |
| 65                 | 282 216  | Transformator                  |
| <b>Grundplatte</b> |          |                                |
| L 1                | 284 779  | Spule FM                       |
| L 2                | 282 221  | Spule                          |
| L 3                | 284 780  | Spule FM RF                    |
| L 4                | 282 221  | Spule                          |
| bis                |          |                                |
| L 5                | 282 221  | Spule                          |
| L 7                | 282 191  | Spule 2,2 UH                   |
| bis                |          |                                |
| L 9                | 282 191  | Spule 2,2 UH                   |
| L 10               | 283 327  | Diode 1 SS 132                 |
| L 101              | 282 194  | Spule 20,8 UH                  |
| L 201              | 282 192  | Spule 47 UH                    |
| L 202              | 282 195  | Spule 2,2 MH                   |
| L 203              | 282 325  | Spule 36 MH                    |
| T 101              | 284 781  | Spule FM IFT                   |
| T 102              | 282 183  | Spule DET                      |
| T 103              | 284 184  | Spule DET                      |
| T 201              | 282 326  | Spule MW OSC                   |
| T 202              | 282 327  | Spule LW OSC                   |
| T 203              | 282 189  | Spule AM IFT                   |
| T 204              | 282 188  | Spule AM IFT                   |
| T 301              | 282 321  | Spule MPX                      |
| T 302              | 282 321  | Spule MPX                      |
| CF 101             | 284 782  | Keramikfilter SFE 10,7 MS 3 GH |
| CF 102             | 284 783  | Keramikfilter SFE 10,7 MK 1 K  |
| CF 201             | 282 198  | Keramikfilter SFP 455          |
| CF 202             | 284 784  | Keramikfilter BFU 450 C 4 N    |
| D 1                | 282 320  | Diode KV 1310 A-3              |
| bis                |          |                                |
| D 4                | 282 320  | Diode KV 1310 A-3              |
| D 101              | 223 906  | Diode 1 N 4148                 |
| bis                |          |                                |
| D 108              | 223 906  | Diode 1 N 4148                 |
| D 201              | 282 223  | Diode KV 1236                  |
| bis                |          |                                |
| D 202              | 282 223  | Diode KV 1236                  |
| D 203              | 223 906  | Diode 1 N 4148                 |
| bis                |          |                                |
| D 204              | 223 906  | Diode 1 N 4148                 |
| D 205              | 226 501  | Diode 1 N 4002                 |

| Pos.               | Art.-Nr. | Bezeichnung            |
|--------------------|----------|------------------------|
| D 206              | 282 223  | Diode KV 1236          |
| bis                |          |                        |
| D 208              | 282 223  | Diode KV 1236          |
| D 302              | 223 906  | Diode 1 N 4148         |
| D 508              | 226 501  | Diode 1 N 4002         |
| bis                |          |                        |
| D 509              | 226 501  | Diode 1 N 4002         |
| D 601              | 223 906  | Diode 1 N 4148         |
| bis                |          |                        |
| D 702              | 223 906  | Diode 1 N 4148         |
| D 703              | 283 552  | Diode DZ 5,6           |
| D 801              | 282 063  | Diode DZ 12 BM         |
| D 805              | 283 552  | Diode DZ 5,6           |
| D 806              | 223 906  | Diode 1 N 4148         |
| D 807              | 282 062  | Diode DZ 9,1 BM        |
| IC 101             | 268 204  | IC HA 12412            |
| IC 201             | 282 167  | IC LA 1245             |
| IC 301             | 264 541  | IC HA 12016            |
| IC 401             | 261 352  | IC LM 324              |
| IC 501             | 283 679  | IC GD 7815             |
| IC 601             | 274 730  | IC SAA 1057            |
| IC 701             | 276 039  | IC MC 14094 BCP C-MOS  |
| Q 1                | 282 210  | Transistor 3 SK 74 L   |
| bis                |          |                        |
| Q 2                | 282 210  | Transistor 3 SK 74 L   |
| Q 3                | 282 171  | Transistor KTC 1923 Y  |
| Q 4                | 282 169  | Transistor KTK 161 Y   |
| Q 5                | 282 171  | Transistor KTC 1923 Y  |
| Q 101              | 282 172  | Transistor LM 9018 F   |
| bis                |          |                        |
| Q 104              | 282 172  | Transistor LM 9018 F   |
| Q 105              | 282 076  | Transistor KTC 1815 Y  |
| Q 201              | 284 785  | Transistor KTK 192     |
| Q 202              | 282 076  | Transistor KTC 1815 Y  |
| bis                |          |                        |
| Q 206              | 282 076  | Transistor KTC 1815 Y  |
| Q 511              | 283 667  | Transistor 2 SD 2058 Y |
| Q 701              | 282 076  | Transistor KTC 1815 Y  |
| bis                |          |                        |
| Q 703              | 282 076  | Transistor KTC 1815 Y  |
| Q 704              | 282 077  | Transistor KTA 1015 Y  |
| Q 706              | 282 076  | Transistor KTC 1815 Y  |
| Q 707              | 282 077  | Transistor KTA 1015 Y  |
| Q 708              | 282 076  | Transistor KTC 1815 Y  |
| Q 709              | 282 075  | Transistor 2 SK 117 Y  |
| Q 710              | 284 787  | Transistor KTD 1302    |
| bis                |          |                        |
| Q 711              | 284 787  | Transistor KTD 1302    |
| Q 712              | 282 075  | Transistor 2 SK 117 Y  |
| Q 713              | 282 076  | Transistor KTC 1815 Y  |
| bis                |          |                        |
| Q 714              | 282 076  | Transistor KTC 1815 Y  |
| Q 715              | 282 077  | Transistor KTA 1015 Y  |
| Q 716              | 282 076  | Transistor KTC 1815 Y  |
| Q 717              | 282 077  | Transistor KTA 1015 Y  |
|                    | 281 411  | Quarz 4 MHz            |
|                    | 282 176  | Relay RZ 12            |
| <b>Frontplatte</b> |          |                        |
| D 801              | 223 906  | Diode 1 N 4148         |
| bis                |          |                        |
| D 804              | 223 906  | Diode 1 N 4148         |
| IC 801             | 284 788  | IC µP DWP 500          |
| IC 802             | 284 789  | IC 24 C 02             |
| <b>LCD-Platte</b>  |          |                        |
| IC 901/902         | 283 717  | IC LC 7583             |
|                    | 283 578  | Bedienungsanleitung    |
|                    | 283 706  | Faltschachtel          |
|                    | 283 662  | Einlage                |

Änderungen vorbehalten! Subject to change! Sous réserve de modification!