

MANUAL 2126-19

UHF, 25 W - MTD

Duplex

Public telephone

Service.

Contents AP 2000 - 2126 - 19

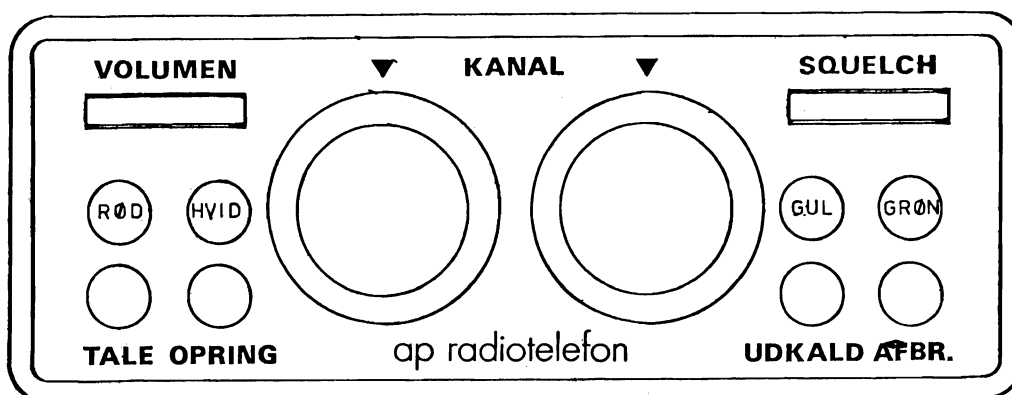
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BETJENING AF OFFENTLIG BILTELEFON.



1. Tænd for apparatet ved at trykke på knappen "Afbr.". Grøn lampe lyser. Lys i kanal vælger (+ evt. display).

2. Opkald

Stil kanalvælgeren på den ønskede kaldekanal og tryk på knappen "opring". Opkaldstonen sendes nu automatisk i ca. 1 sek., hvid lampe lyser og et nyt opkald kan først foretages efter 10 sek.

Centralen svarer, kanalvælgeren drejes hen på den opgivne kanal.

Samtalen føres enten ved anvendelse af mikrotelefonens tast eller apparatets tastknap mrk. "Tale". Den røde lampe indikerer tast.

Når samtalen er slut, trykkes på knappen "opring", og kanalvælgeren stilles tilbage på kaldekanalen.

3. Lytte/vente position

Kanalvælgeren stilles på kaldekanalen. Knappen "udkald" trykkes ind, hvorved højttaleren blokeres. Såvel tale-tast som oprings-tast er nu blokeret, evt. display er slukket og den gule lampe lyser.

4. Modtagelse af et opkald.

Ved modtagelse af et opkald afgives en akustisk alarm via højttaleren (varighed 1-2 sek.). Den gule lampe blinker, og en evt. tilsluttet extern alarm går i funktion. Den gule lampe vedbliver at blinke, og apparatets tast er stadig blokeret.

5. Besvarelse af et opkald.

Ved bevarelse af et opkald betjenes først knappen "udkald". Herved slukkes den blinkende gule lampe og evt. display tænder. Højttaleren kobles til, og tastblokeringen ophæves. Med anvendelse af apparatet tast mrk. "Tale", eller mikrotelefonens tast, besvares opkaldet. Kanalvælgeren stilles på den opgivne samtalekanal, og samtalen kan føres. Samtalen afsluttes med et tryk på knappen "opring".

6. Opkald fra lytte-/venteposition.

Apparatet står i venteposition, dvs. gul lampe lyser og evt. display er slukket. Højttaler og samtlige tastfunktioner er blokeret.

Knappen "udkald" betjenes, hvorved den gule lampe slukker, evt. display tænder, højttaleren kobles til, og tastblokeringen ophæves.

Opkaldet foretages som under pkt. 2.

Det bemærkes, at et opkald ikke kan foretages, medmindre højttaleren først er i funktion for kontrollytning af kaldekanal.

Technical description for AP 2000 UHF

RECEIVER (FIG. 1)

Aerial Switch dwg. no.75624-4E2

(for sets with ext. PA see dwg. no. 75627-4E2)

The aerial switch is made by a relay, while TR 1 D 1 and D 2 makes a forward power sensing circuit for the transmitter. This circuit is used for power regulation.

RF-amplifier and 1st mixer (75476-4E2)

The RF-amplifier consists of a bipolar transistor with several tuned circuits, of this 4 helicoils, to give the necessary selectivity. This first mixer converts the RF-signal 406-432 MHz or 450-470 MHz to 21,4 MHz with an oscillator injection of 427,4-453,4 MHz respective 471,4-491,4 MHz on the gate. Matching of the mixer output impedance to the crystal filter is made by the tuned circuit L 6.

21,4 MHz and 455 kHz IF (75076-3E2)

The 21,4 MHz crystal filter is followed by a dual-gate Mos-amplifier which gives approximately 20 dB gain. This stage is followed by the second mixer which converts 21,4 MHz to the low IF 455 kHz. The second mixer consists of an integrated doublebalanced transistor mixer, in which one section is used as the crystal oscillator. An emitter follower with some RC low-pass sections feeds the signal to IC 2, which is an integrated high gain amplifier/limiter and quadrature detector. The coil L 4 is the detector phase shift network. AF output is supplied by the emitter follower Q 3.

AF-amplifier, squelch and key circuit (75017-3E2)

The AF-signal goes through an amplifier stage Q 6 to the volume control circuit. Here, the diodes D 1, D 2 and D 3 act as an electronic attenuator regulated by the diode current. This circuit is also used for external AF-blocking and squelch. An integrated AF output amplifier is used for the 3 W loudspeaker output and here the feedback-capacitors C 6 and C 7 produce the deemphasis.

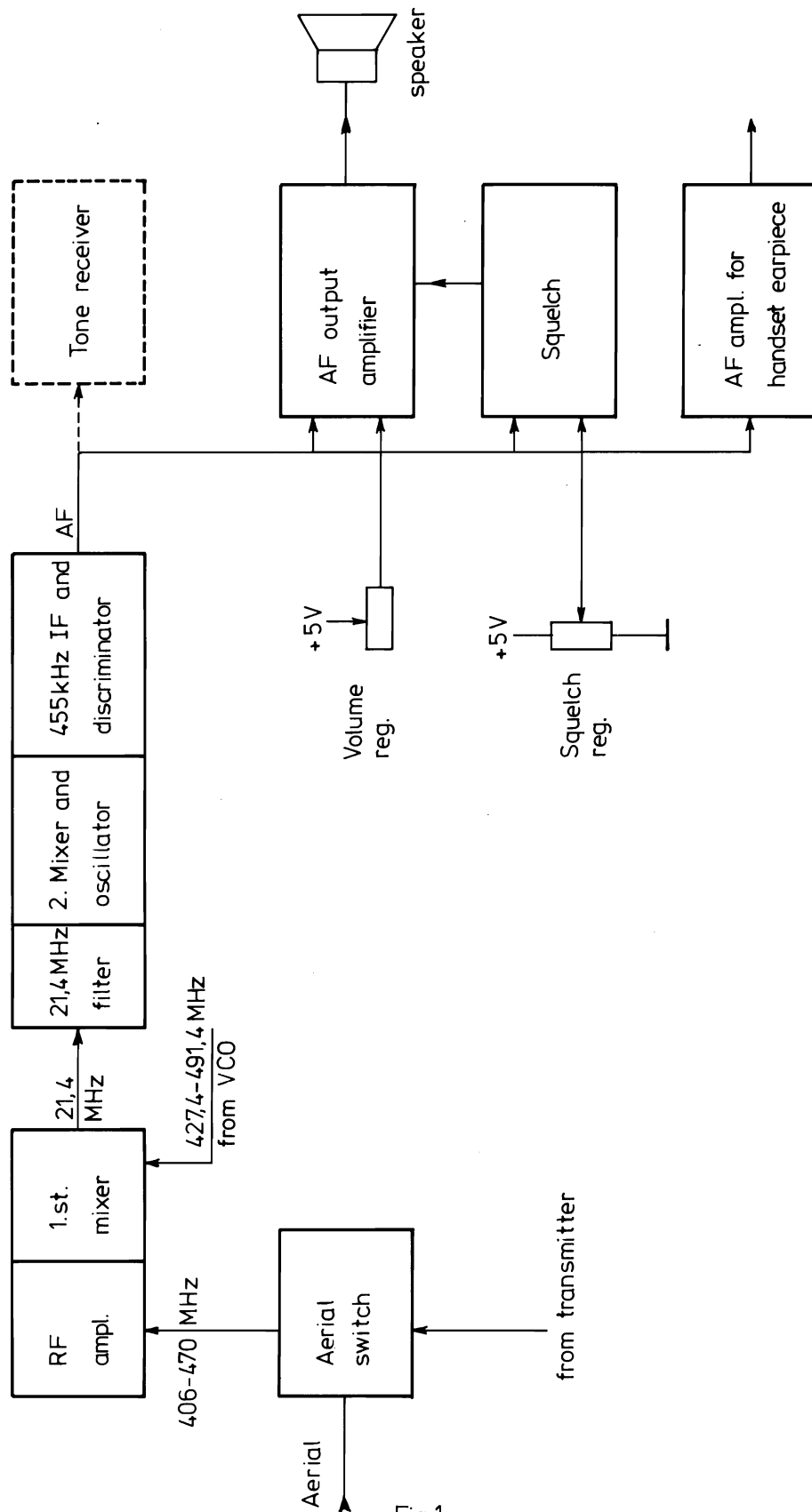


Fig.1

| | | | | |
|-----------------------------|--|--|----------------------|--------------------|
| Rettet: | Technical description for AP 2000 UHF Receiver | | Tegn.: 26-3-76 AC | Kontr.: 1-4-76 CHB |
| | AP-RADIOTELEFON 1/2 | | Page: 2 | |
| | | | Tegn. nr.: 76085-4E2 | |
| | | | | |
| | | | | |

For the handset earpiece Q 4 and Q 5 gives the amplification. The squelch circuit consists of an 8 kHz tuned amplifier Q 3 followed by a detector D 11 and D 12. With increasing noise level on the AF-input the voltage on the negative side on C 19 will decrease from + 5 V. Getting lower than the squelch reg. voltage on point 7, the amplifier IC 2 switches over to an output voltage of + 5 V and thus blocking the AF-output through the volume control circuit. In the key control circuit Q 1 and Q 2 goes ON when the button in the handset connects point 11 to chassis, thus producing + 12 V on point 14. A positive voltage applied on point 10 will inhibit this function.

TRANSMITTER (FIG. 2)

Transmitter mixer and amplifier (75511-4E2)

Because the VCO has a frequency 21,4 MHz higher than the operating Rx-frequency this is fed to the transmitter mixer and converted to the desired transmitting frequency. For simplex operation the necessary 21,4 MHz signal comes from a combined crystal oscillator/doubler (75628-3E2). Thus the crystal will be 10,7 MHz. For good suppression of VCO - and 21,4 MHz injection the Tx-mixer is a balanced transistor type. The two amplifier stages Q 3 and Q 4 give further suppression of unwanted sidebands and necessary amplification to reach an output of approx. 30 mW.

6-10 W power amplifier (75510-4E2)

This power amplifier consists of three stages Q 1, Q 2 and Q 3, where the output level can be regulated by varying the supply voltage for Q 1 and Q 2. The regulation voltage is taken, from the forward power sensing circuit. Situated on print board B 58 C 1.

10-25 W PA-stage (75627-4E2)

This amplifier consists of one stage Q 1, and is driven from the 6-10 W amplifier. The output of Q 1 goes through a forward power-sensing circuit to the aerial switch. The output is adjustable with R 2.

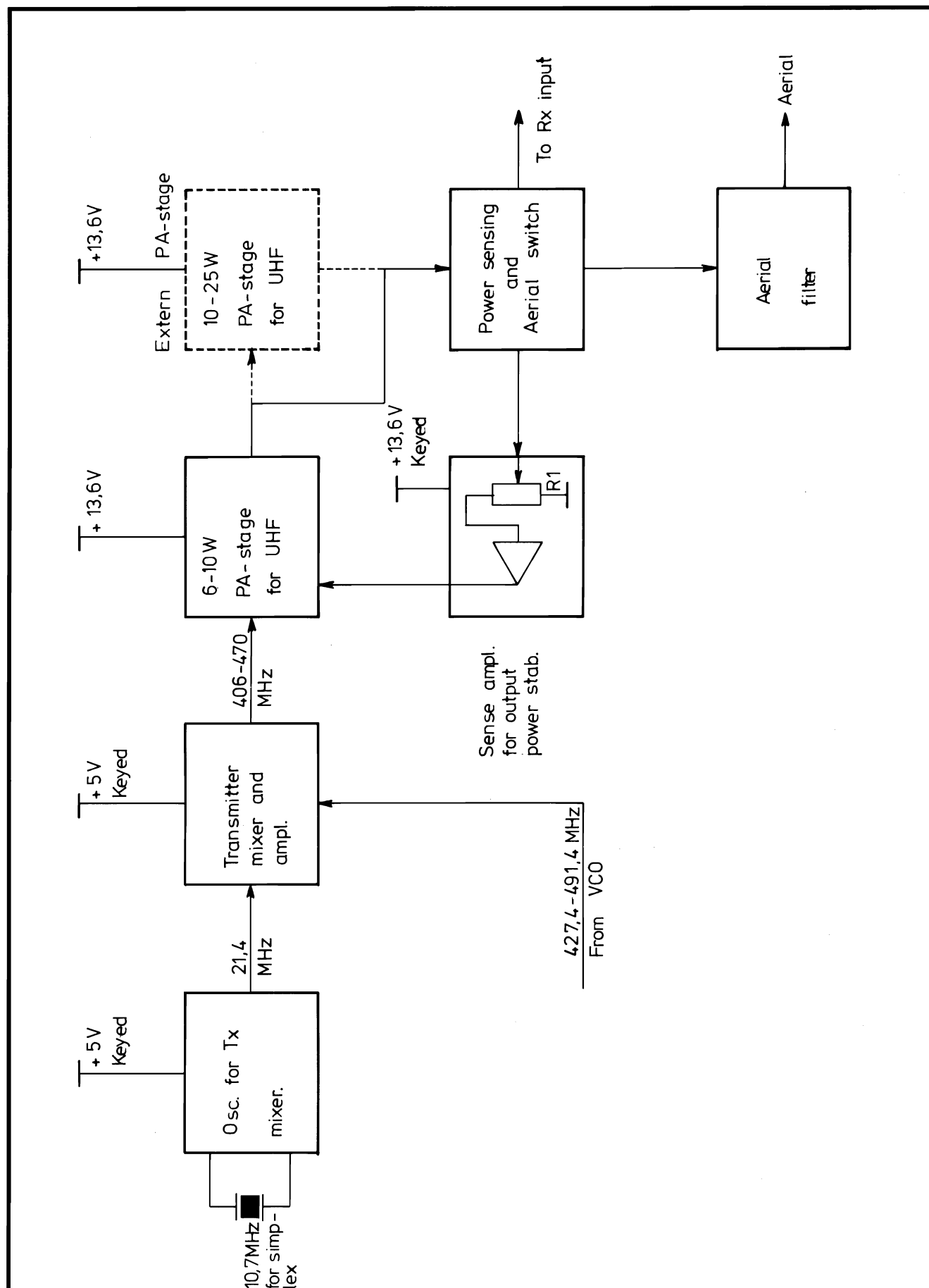


Fig.2

| | | | |
|---------------------------------|---|---|-----------------------|
| Rettet: | Technical decription for AP 2000 UHF Transmitter AP-RADIOTELEFON 1/2 | Tegn.: 26- 3- 75 AC Page: 4 Tegn. nr.: 76085- 4E 2 | Kontr.: 1-4-76 CHB |
|---------------------------------|---|---|-----------------------|

Output power stabilizing (76325-4E2) and (75622-4E2)

From the power-sensing a DC voltage proportional to the forward power is led to an amplifier. Here it is compared to a zener-voltage, and if it is greater than this threshold level, the amplifier IC 1 will give a lower output voltage for the supply of Q 1 and Q 2 (75510-4E2), thus reducing the drive level. This will act in the following manner:

For low supply voltage (~11 V) the output power will increase with increasing supply voltage, and when the output reaches the desired value it will be constant for further increase in the supply voltage. The output level for supply voltages greater than approx. 13 V is adjustable with R 2 on print board B 59 for power outputs between 10-25 W and R 1 on print board B 57 for power outputs between 6-10 W. Note that the oscillator for Tx-mixer, the transmitter mixer and amplifier, and sense amplifier have keyed supply lines, while the final transistor in the 6-10 W stage and the 10-25 W stage are supplied independent of the key.

Aerial filter (75623-4E2)

The aerial filter is a low-pass filter for suppression of the harmonics from the transmitter.

Modulation amplifier (75018-3E2)

The modulation amplifier has a preamplifier Q 1 for the most sensitive input (input 1). Using the less sensitive input 2, the Mic. switch terminal shall have + 5 V so that Q 1 will be blocked via D 3. D 4 will be conducting and feed the AF-signal to IC 1. For selective tone transmission the tone Tx input is used while Q 1 is blocked via D 2. D 5 is used for blocking of the modulation amplifier while receiving in simplex mode. IC 1 and the first part of IC 2 work as a compressor/amplifier to limit the maximum output AF-voltage. When using a variable gain type amplifier as IC1 it is possible to avoid the distortion for high AF-levels, which occurs in a conventional clipper-circuit. The other amplifier in IC 2 is used as a 3 kHz active low-pass filter. A tuning diode in the VCO is used for modulation.

FREQUENCY SYNTHESIZER CIRCUIT

Basic phase lock loop operation

A simple phase locked loop consists of 3 elements, a phase comparator, a filter and the VCO (Fig. 1).

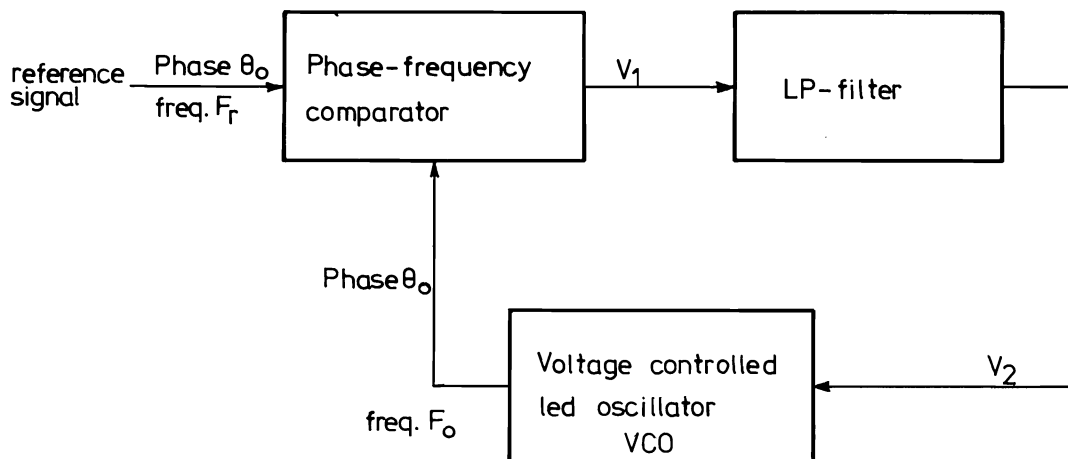


Fig.1 Basic phase locked loop.

Phase-frequency comparator

If the VCO-frequency $F_o = F_r$, the comparator gives out a DC-level proportional to the phase difference between F_o and F_r (Fig. 2). We have $V_1 = K_1 \times (\theta_r - \theta_o)$ where K_1 is a constant. When there is a frequency difference between F_o and F_r , V_1 will be low for F_o greater than F_r and high for F_o less than F_r .

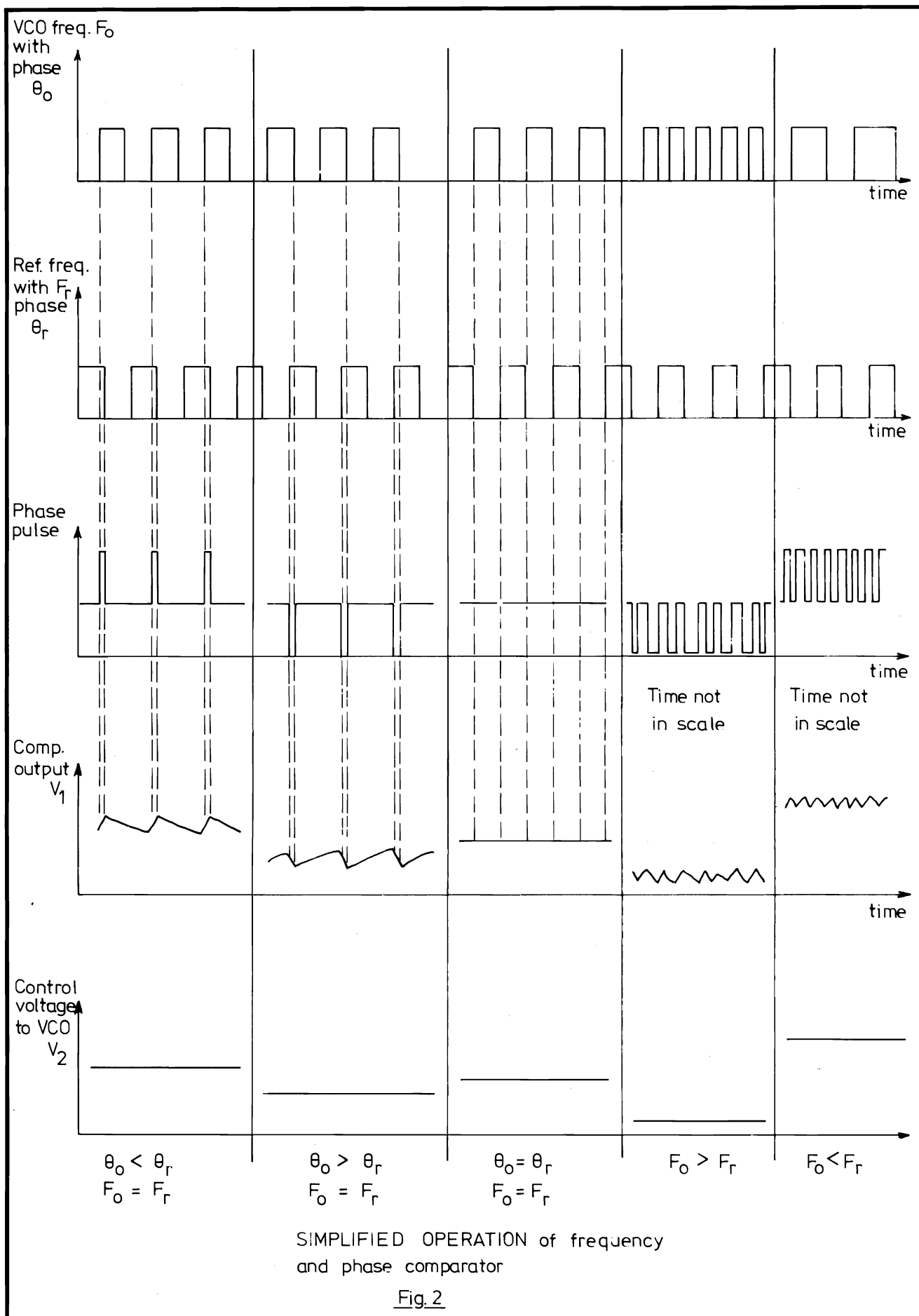
Voltage controlled oscillator

This can be a LC-oscillator whose frequency is controlled with a varicap. $F_o = K_2 \times V_1$ where K_2 is a constant.

LP-filter

This filter removes the ripple on V_1 (Fig. 2) and determines the dynamic behaviour (stability, step response) of the loop.

Let us consider a situation where the loop is out of lock and



Rettet:

Figure for synthesizer description

Tegn.: 2-6-77
AC

Kontr.: 1-4-76
CHB

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AP-RADIOTELEFON 1/2

Tegn. nr.:
77229-4E2

F_o is greater than F_r . The comparator output voltage V_1 will contain the normal ripple with frequency F_r and a beat note, but the mean DC level ($= V_2$ after the filter) will be low (Fig. 2). Thus the VCO frequency will decrease and at the time F_o reaches F_r the loop will go in lock. Now $F_o = F_r$ and the phase difference will assume a level for V_2 sufficient to hold the VCO frequency in lock with F_r . If the tuning of the VCO is changed (such as by varying the value of the tuning capacitor) the frequency F_o from the VCO will attempt to change. This will result in a change in phase angle between F_o and F_r , resulting in a change in DC-level of V_1 which will act to maintain frequency lock. In this way tuning of the VCO will change the ripple and the DC-level on V_1 but as long as lock is maintained F_o will be equal F_r .

A multichannel synthesizer (Fig. 3)

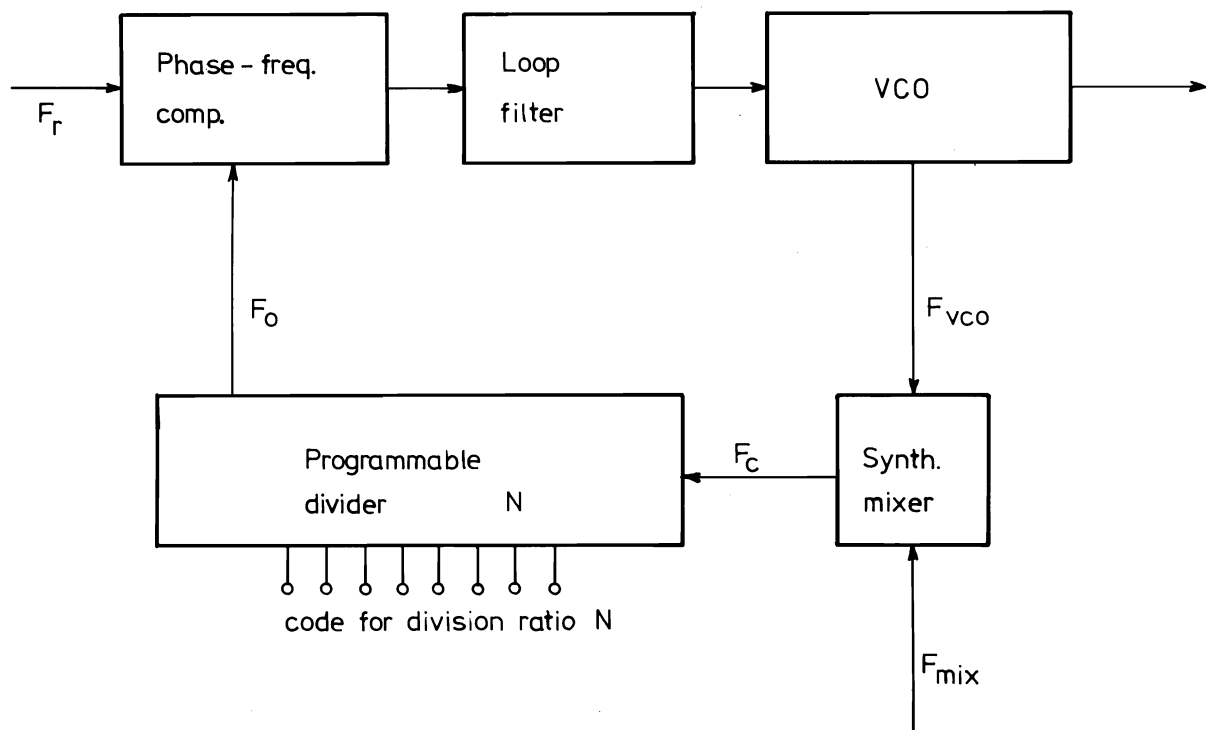


Fig. 3 Synthesizer loop

To build a multichannel synthesizer we have to add some more components (Fig. 3) but the basic function is the same. Here the VCO frequency is converted to a lower frequency F_c suitable

for the digital divider. $F_c = F_{vco} - F_{mix}$ (1). When the loop is in lock the incoming frequencies F_r and F_o are equal, but they can have a phase difference. $F_o = F_r$ (2). The programmable divider divides frequency F_c with a number N , which can be selected by a binary code. $F_c = N \times F_o$ (3).

Combining equations (1), (2) and (3) give

$$F_{vco} = F_{mix} + N \times F_r \quad (4).$$

By changing the division ratio N we can get lot of VCO-frequencies with the spacing F_r , and the stability depends only on F_{mix} and F_r which can be crystal oscillators.

The synthesizer circuit in AP 2000 (Fig. 4)

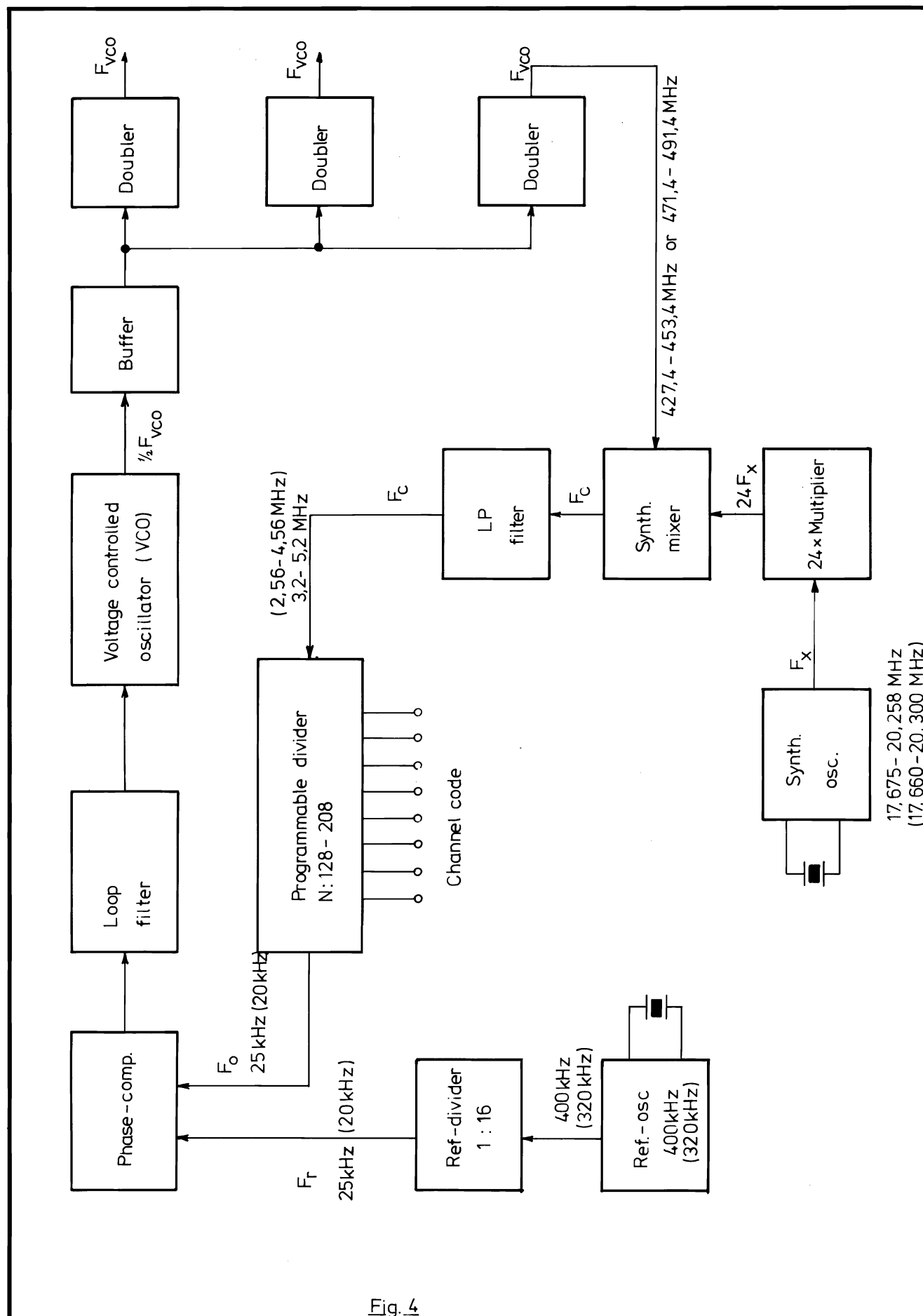
Synthesizer logic (75062-3E2 25 kHz and 77201-3E2 20 kHz)

The 25 (20) kHz reference frequency is produced by dividing a 400 (320) kHz crystal oscillator (X 1 and Q 4) by 16 in the counter IC6. The output signal to the programmable divider is amplified in Q 1 and Q 2, while the two gates from IC 1 shape the waveform to narrow pulses. IC 2 and IC 3 form the programmable divider, where the division ratio N is the binary number on the eight channel code lines. The numbers on the codes lines correspond to the binary value of each line. In this way a division ratio $N = 168$ will have a channel code:

| | | | | | | | | |
|---------------------|-----|----|----|----|---|---|---|---|
| Number on code line | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| Binary value | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| Code for $N = 168$ | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |

where 0 means 0 V and 1 means + 5 V.

The two cascaded counters IC 2 and IC 3 count down from 168. When the counters reach zero a borrow pulse is generated and used to preset the number 168, thus starting a new count cycle. The very narrow borrow pulses with a repetition rate of 25 (20) kHz are used as input to the frequency-phase comparator IC 4. The comparator output voltage V_1 (Fig.2) can be seen on a test point TP 1. To suppress the 25 (20) kHz ripple on the comparator output voltage Q 3 is connected as an active lowpass filter IC 5 is for DC-amplification.



| | | | |
|---------|---|-------------------------------|---------|
| Rettet: | Figure for synthesizer description,UHF 25 (20) kHz | Tegn.: 2 - 6 - 77 AC | Kontr.: |
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| | | Tegn. nr.: 77229 - 4E2 | |
| | | AP-RADIOTELEFON $\frac{1}{2}$ | |
| | | | |

Voltage controlled oscillator (76024-3E2)

The transistor Q 2 is used to switch between two loop filters. When Q 2 is 'ON' the slow filter R 1, R 3 and C 15 are in function while R 1, R 2 and C 16 give the loop a fast step response for Q 2 'OFF'. The fast loop filter is only used in connection with automatic channel scanning. Diode D 2 is used to clamp the control voltage thus preventing too great VCO frequency excursions when the loop is out of lock. The frequency of oscillator Q 1 is controlled by tuning diode D 3 while diode D 4 is for modulation. To avoid excessive loading of the oscillator it is followed by a wideband bufferstage Q 3. Transistors Q 4 to Q 6 make the three output multipliers with tuned collector circuits.

Synthesizer mixer (75628-3E2)

In the synthesizer mixer Q 1 and Q 3 act as a combined crystal oscillator/doubler. Since the crystal frequency is about 20 MHz and the tuned circuits L 1 and L 2 are tuned to the second harmonic of the 40 MHz collector frequency, the input frequency to the mixer Q 4 is about 80 MHz. The VCO-signal goes through the dual gate Mos-transistor buffer Q 2 which gives high backward isolation but no amplification. Reaching the base of Q 4 the VCO-signal is mixed with the sixth harmonic of the 80 MHz to give an output signal of 3,2 - 5,2 (2,56 - 4,56) MHz. L 5 and L 6 are part of a 10 MHz low-pass filter connected to the amplifier stage Q 7.

Channel code

From the blockschematic of the synthesizer circuit (Fig. 4) we have:

$$F_{VCO} = 24 F_x + N \times 0,025 (0,020) \text{ MHz where } 128 \leq N \leq 208.$$

The VCO frequency lies 21,4 MHz above the receiver frequency leading to:

$$\text{Receiver frequency } F_m = 24 F_x + N \times 0,025 (0,020) - 21,4 \text{ MHz} \quad (5)$$

Here N is the division ratio and F_x is the synthesizer mixer crystal. F_x is found from the drawings 75499-4E2, 75500-4E2 and 76132-4E2. For a single channel set you can choose between two standard crystals being equally good. Considering a multi-channel set, in most cases only one standard crystal will fit the desired frequency range.

1. Computation example of the receiver frequency for 25 kHz set:

Known is: Crystal frequency F_x and channel code.

Example: $F_x = 19,675 \text{ MHz}$

Code: 1 0 0 1 0 0 1 1

Division ratio $N = 128 + 16 + 2 + 1 = 147$

Using equation (5):

$$\underline{F_{Rx}} = 24 \times 19,675 + (147 \times 0,025) - 21,4 = \underline{454,475} \text{ MHz}$$

2. Computation of the channel code:

Known is: Crystal frequency F_x and desired receiver frequency F_{Rx} .

Rearranging equation (5) gives

$$N = \frac{F_{Rx} - 24 F_x + 21,4}{0,025}$$

Example: $F_x = 19,675 \text{ MHz}$, $F_{Rx} = 455,625 \text{ MHz}$

$$N = (455,625 - 24 \times 19,675 + 21,4) / 0,025 = 193$$

$$N = 128 + 64 + 0 + 0 + 0 + 0 + 0 + 1$$

Channel code 1 1 0 0 0 0 0 1

NOTE: Because of the special synthesizer oscillator circuit, it has been necessary to specify the crystal X1 with a parallel capacity of 15pF. If you use a crystal specified with 30pF parallel capacity, the frequency should be about 250 ppm lower than the standard frequency given on the drawings 75499-4E2, 75500-4E2, and 76312-4E2.

Exactly the same procedure is used when the set is intended for 20 kHz channel spacing.

The synthesizer mixer x-tal for 20 kHz spacing is found on the dwg.: 77105-4E2, 77106-4E2, 77107-4E2, 77194-4E2, 77195-4E2 and 77196-4E2.

Frekvenser og koder for UHF offentlig biltelefon
med frontsektion nr. 19.

Synthesemixerkrystal: MHz 20,04896 Spec. AP 25

Sendermixerkrystal : MHz 15,7 Spec. AP 22

| Kanal | Modt. | Sender | Kode f.kanalv. | | | | | | | | Delefh. | Kanalkode | | | | | | | | Prom |
|-------|---------|---------|----------------|---|---|---|---|---|---|---|---------|-----------|----|----|----|---|---|---|----|------|
| nr. | MHz | MHz | 8 | 4 | 2 | 1 | 8 | 4 | 2 | 1 | N | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | inp. |
| 01 | 463,000 | 453,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 129 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 01 |
| 02 | 463,025 | 453,025 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 130 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 02 | |
| 03 | 463,050 | 453,050 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 131 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 03 | |
| 04 | 463,075 | 453,075 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 132 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 04 | |
| 05 | 463,100 | 453,100 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 133 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 05 | |
| 06 | 463,125 | 453,125 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 134 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 06 | |
| 07 | 463,150 | 453,150 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 135 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 07 | |
| 08 | 463,175 | 453,175 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 136 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 08 | |
| 09 | 463,200 | 453,200 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 137 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 09 | |
| 10 | 463,225 | 453,225 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 138 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 16 | |
| 11 | 463,250 | 453,250 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 139 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 17 | |
| 12 | 463,275 | 453,275 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 140 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 18 | |
| 13 | 463,300 | 453,300 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 141 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 19 | |
| 14 | 463,325 | 453,325 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 142 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 20 | |
| 15 | 463,350 | 453,350 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 143 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 21 | |
| 16 | 463,375 | 453,375 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 144 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 22 | |
| 17 | 463,400 | 453,400 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 145 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 23 | |
| 18 | 463,425 | 453,425 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 146 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 24 | |
| 19 | 463,450 | 453,450 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 147 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 25 | |
| 20 | 463,475 | 453,475 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 148 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 32 | |
| 21 | 463,500 | 453,500 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 149 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 33 | |
| 22 | 463,525 | 453,525 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 150 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 34 | |
| 23 | 463,550 | 453,550 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 151 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 35 | |
| 24 | 463,575 | 453,575 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 152 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 36 | |
| 25 | 463,600 | 453,600 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 153 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 37 | |
| 26 | 463,625 | 453,625 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 154 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 38 | |
| 27 | 463,650 | 453,650 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 155 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 39 | |
| 28 | 463,675 | 453,675 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 156 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 40 | |
| 29 | 463,700 | 453,700 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 157 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 41 | |
| 30 | 463,725 | 453,725 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 158 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 48 | |

| Kanal | Modt. | Sender | Kode f. kanalv. | | Deldfh. | Kanalkode | | | | | | | | Prom |
|-------|---------|---------|-----------------|---------|---------|-----------|----|----|----|---|---|---|---|------|
| nr. | MHz | MHz | 8 4 2 1 | 8 4 2 1 | N | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 | inp. |
| 31 | 463,750 | 453,750 | 0 0 1 1 | 0 0 0 1 | 159 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 49 |
| 32 | 463,775 | 453,775 | 0 0 1 1 | 0 0 1 0 | 160 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 50 |
| 33 | 463,800 | 453,800 | 0 0 1 1 | 0 0 1 1 | 161 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 51 |
| 34 | 463,825 | 453,825 | 0 0 1 1 | 0 1 0 0 | 162 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 52 |
| 35 | 463,850 | 453,850 | 0 0 1 1 | 0 1 0 1 | 163 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 53 |
| 36 | 463,875 | 453,875 | 0 0 1 1 | 0 1 1 0 | 164 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 54 |
| 37 | 463,900 | 453,900 | 0 0 1 1 | 0 1 1 1 | 165 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 55 |
| 38 | 463,925 | 453,925 | 0 0 1 1 | 1 0 0 0 | 166 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 56 |
| 39 | 463,950 | 453,950 | 0 0 1 1 | 1 0 0 1 | 167 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 57 |
| 40 | 463,975 | 453,975 | 0 1 0 0 | 0 0 0 0 | 168 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 64 |
| 41 | 464,000 | 454,000 | 0 1 0 0 | 0 0 0 1 | 169 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 65 |
| 42 | 464,025 | 454,025 | 0 1 0 0 | 0 0 1 0 | 170 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 66 |
| 43 | 464,050 | 454,050 | 0 1 0 0 | 0 0 1 1 | 171 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 67 |
| 44 | 464,075 | 454,075 | 0 1 0 0 | 0 1 0 0 | 172 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 68 |
| 45 | 464,100 | 454,100 | 0 1 0 0 | 0 1 0 1 | 173 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 69 |
| 46 | 464,125 | 454,125 | 0 1 0 0 | 0 1 1 0 | 174 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 70 |
| 47 | 464,150 | 454,150 | 0 1 0 0 | 0 1 1 1 | 175 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 71 |
| 48 | 464,175 | 454,175 | 0 1 0 0 | 1 0 0 0 | 176 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 72 |
| 49 | 464,200 | 454,200 | 0 1 0 0 | 1 0 0 1 | 177 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 73 |
| 50 | 464,225 | 454,225 | 0 1 0 1 | 0 0 0 0 | 178 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 80 |
| 51 | 464,250 | 454,250 | 0 1 0 1 | 0 0 0 1 | 179 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 81 |
| 52 | 464,275 | 454,275 | 0 1 0 1 | 0 0 1 0 | 180 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 82 |
| 53 | 464,300 | 454,300 | 0 1 0 1 | 0 0 1 1 | 181 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 83 |
| 54 | 464,325 | 454,325 | 0 1 0 1 | 0 1 0 0 | 182 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 84 |
| 55 | 464,350 | 454,350 | 0 1 0 1 | 0 1 0 1 | 183 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 85 |
| 56 | 464,375 | 454,375 | 0 1 0 1 | 0 1 1 0 | 184 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 86 |
| 57 | 464,400 | 454,400 | 0 1 0 1 | 0 1 1 1 | 185 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 87 |
| 58 | 464,425 | 454,425 | 0 1 0 1 | 1 0 0 0 | 186 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 88 |
| 59 | 464,450 | 454,450 | 0 1 0 1 | 1 0 0 1 | 187 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 89 |
| 60 | 464,475 | 454,475 | 0 1 1 0 | 0 0 0 0 | 188 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 96 |
| 61 | 464,500 | 454,500 | 0 1 1 0 | 0 0 0 1 | 189 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 97 |
| 62 | 464,525 | 454,525 | 0 1 1 0 | 0 0 1 0 | 190 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 98 |
| 63 | 464,550 | 454,550 | 0 1 1 0 | 0 0 1 1 | 191 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 99 |
| 64 | 464,575 | 454,575 | 0 1 1 0 | 0 1 0 0 | 192 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| 65 | 464,600 | 454,600 | 0 1 1 0 | 0 1 0 1 | 193 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 101 |
| 66 | 464,625 | 454,625 | 0 1 1 0 | 0 1 1 0 | 194 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 102 |
| 67 | 464,650 | 454,650 | 0 1 1 0 | 0 1 1 1 | 195 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 103 |
| 68 | 464,675 | 454,675 | 0 1 1 0 | 1 0 0 0 | 196 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 104 |
| 69 | 464,700 | 454,700 | 0 1 1 0 | 1 0 0 1 | 197 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 105 |

| Kanal | Modt. | Sender | Kode f.Kanalv. | Delefh. | Kanalkode | Prom |
|-------|---------|---------|-----------------|---------|----------------------|------|
| nr. | MHz | MHz | 8 4 2 1 8 4 2 1 | N | 128 64 32 16 8 4 2 1 | inp. |
| 70 | 464,725 | 454,725 | 0 1 1 1 0 0 0 0 | 198 | 1 1 0 0 0 1 1 0 | 112 |
| 71 | 464,750 | 454,750 | 0 1 1 1 0 0 0 1 | 199 | 1 1 0 0 0 1 1 1 | 113 |
| 72 | 464,775 | 454,775 | 0 1 1 1 0 0 1 0 | 200 | 1 1 0 0 1 0 0 0 | 114 |
| 73 | 464,800 | 454,800 | 0 1 1 1 0 0 1 1 | 201 | 1 1 0 0 1 0 0 1 | 115 |
| 74 | 464,825 | 454,825 | 0 1 1 1 0 1 0 0 | 202 | 1 1 0 0 1 0 1 0 | 116 |
| 75 | 464,850 | 454,850 | 0 1 1 1 0 1 0 1 | 203 | 1 1 0 0 1 0 1 1 | 117 |
| 76 | 464,875 | 454,875 | 0 1 1 1 0 1 1 0 | 204 | 1 1 0 0 1 1 0 0 | 118 |
| 77 | 464,900 | 454,900 | 0 1 1 1 0 1 1 1 | 205 | 1 1 0 0 1 1 0 1 | 119 |
| 78 | 464,925 | 454,925 | 0 1 1 1 1 0 0 0 | 206 | 1 1 0 0 1 1 1 0 | 120 |
| 79 | 464,950 | 454,950 | 0 1 1 1 1 0 0 1 | 207 | 1 1 0 0 1 1 1 1 | 121 |
| 80 | 464,975 | 454,975 | 1 0 0 0 0 0 0 0 | 208 | 1 1 0 1 0 0 0 0 | 128 |

Ved kodning af prom:

De resterende prom input ord kodes ikke, hvorved apparatet er
Blokeret for kanaler 00 og 81.....99.

Prom mærkes med nr. 2.

DIVISION RATIO AND CHANNELCODE

The division ratio N corresponds to the 8 - bit channel code in this way.

| | | | | | | | | |
|---------------------------------------|-------------------------------|----|----|----|---|---|---|---|
| Bit number | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Value of each bit | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| Example: channel code = | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| N = 193 | = 128+ 64 + 0 + 0+ 0+ 0+ 0+ 1 | | | | | | | |
| Logic 1 = +5 Volts. Logic 0 = 0 Volts | | | | | | | | |

| Div. ratio | Channel code | | | | | | | |
|------------|--------------|----|----|----|---|---|---|---|
| N | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| 128 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 129 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 130 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 131 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 132 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 133 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 134 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 135 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 136 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 137 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 138 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 139 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 140 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 141 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| 142 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| 143 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 144 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 145 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 146 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 147 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 148 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 149 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| 150 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| 151 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| 152 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 153 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 154 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |
| 155 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 156 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| 157 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| 158 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| 159 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 160 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 161 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 162 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 163 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 164 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 165 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 166 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 167 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |

| Div. ratio | Channel code | | | | | | | |
|------------|--------------|----|----|----|---|---|---|---|
| N | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| 168 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 169 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 170 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 171 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 172 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| 173 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| 174 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
| 175 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 176 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 177 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 178 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 179 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 180 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| 181 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
| 182 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| 183 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 184 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| 185 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
| 186 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
| 187 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 188 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
| 189 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| 190 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| 191 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 192 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 193 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 194 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 195 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 196 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 197 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 198 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| 199 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 |
| 200 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 201 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 202 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 203 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
| 204 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| 205 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 |
| 206 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| 207 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
| 208 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |

Funktionsbeskrivelse af 5-tonet modtager CCIR print B 60A

Indgangssignal:

Dekoderen modtager et signal bestående af 5 toneimpulser. Et opkald vil modtages korrekt, såfremt den enkelte tones varighed er større end 50 ms, og en eventuel pause mellem to toner ikke overstiger 250 ms.

Funktion ved modtagelse af et "korrekt" opkald:

Opkaldets første toneimpuls når forstærkeren A2 gennem det aktive filter A1. Her forstærkes signalet så meget, at den selektive kreds L1, C7 påvirkes med et firkantsignal (4 V pp) selv ved minimum indgangssignal (50 mV). Tælleren IC3 er nulstillet, d.v.s. ben 3 er logisk 1, Q3 er "ON" og udtaget svarende til første tone er fastholdt. Spændingen over tonespolen bliver detekteret af transistoren Q2 og udgangene af NA1 og NA2 bliver logisk 0. I det øjeblik indgangssignalet skifter til næste tone, falder spændingen på TP1 og udgangen af NA2 bliver logisk 1. Tælleren IC3 går et trin frem, således at det nu er Q4 som er "ON". Hermed er tonespolen igen i resonans, spændingen på TP1 stiger og udgangen af NA2 bliver logisk "0".

Således fortsættes indtil toneimpuls nr. 5 slutter, hvorved tælleren ben 1 bliver logisk 1. Schmitt-trigger NA1 nulstiller tælleren således at dekodeeren er klar til at modtage et nyt opkald 250 ms efter slutningen af sidste rigtige tone.

Indikering af opkald:

Et opkald indikeres med en alarmtone i højttaleren. Her bestemmer NA3 i forbindelse med R21 og C14 varigheden af denne tone (ca. 1 sek medens NA4 er oscillatoren (ca. 1000 Hz). Yderligere vil FF2 blive resat således at ben 13 på IC6 er logisk 1 uanset hvad stillingen var før opkaldet. FF1 bliver sat således at ben 1 er logisk 1 og ben 2 er logisk 0. Herved starter blinkoscillatoren NA5 og transistoren Q10 går "ON" for aktivering af en extern alarm. Gaten NA6 sørger for at den selektive lampe blinker, og Q11 og Q12 holder højttaleren og tastfunktionen blokeret. Ved betjening af apparatets selektive knap kommer en positiv puls på terminal nr. 4 hvorved FF1 og FF2 skifter stilling. Derved ophæves alle blokeringer og indikatorlampen slukker. Et fornyet tryk på den selektive knap vil sætte FF1 til logisk 0 på ben 1 og FF2 vil skifte stilling. Herved tænder Q9 for den selektive lampe, og såvel apparatets lavfrekvensdel som senderdel blokeres.

Funktion ved modtagelse af et mangelfuldt/forkert opkald:

Hvis f.eks. opkaldets 2. toneimpuls har en forkert frekvens vil tælleren blive stående med ben 2 på logisk 1. Hverken denne toneimpuls eller de følgende vil give nogen spænding over tonespolen, og efter 250 ms vil NA1 sørge for at nulstille tælleren igen.

Funktionsbeskrivelse af ltone sender med
timing for offentlig biltelefon print B 61A

Forstærkeren IC6 er koblet som en Wien-bro oscillator, hvis frekvens kan finjusteres med R4. Transistoren Q2 afbryder signalets vej til modulatorforstærkeren når det ikke skal bruges. Kredsen IC2 indeholder to monostabile multivibratorer. Den ene C15, R17 og udgang ben 6 har en tid på ca. 1 sek. medens den anden C18, C23, R24 og udgang ben 9 giver tiden 10 sek.

En positiv puls på terminal 8 starter begge multivibratorer og en positiv spænding fra ben 6 taster senderen og lukker op for tonen i 1 sek. I de følgende 10 sek. blokerer den anden multivibrator for fornyet tast.

DUPLEXFILTER FOR UHF BAND 450 - 470 MHz.

DESCRIPTION:

This duplexfilter is of the bandreject type, using five capacitively tuned coaxial cavities.

The filter is combined of 2 cavities in the high frequency side and 3 cavities in the low frequency side. It is specially built for The Public telephone service (MTD) 453 - 463 MHz) but may be used within the band 450 - 470 MHz when $F_{Tx} < F_{Rx}$.

The filter is supplied factory-tuned to the specified frequencies.

TECHNICAL DATA.

MTD system mobile station:

| | |
|---------------------------------|---------------|
| Tx frequency range: | 453 - 455 MHz |
| Rx frequency range: | 463 - 465 MHz |
| Attenuation high frq. side : | min. 55 dB |
| Attenuation low frq. side : | min. 75 dB |
| Insertion loss high frq. side : | max. 0,8 dB |
| Insertion loss low frq. side : | max. 0,9 dB |
| Transmitter Power : | max. 40 w |
| Weight | 2,7 kg |

Tuning instructions for AP 2000 UHF

1. Tuning of the synthesizer circuit

A. Synthesizer oscillator

Connect a high input resistance DC-voltmeter to TP 1 on print board B 56. By tuning coils L1 and L2 to max., a reading of approx. 1,7 V should be obtained. The coil L3 is later used for frequency adjustment.

B. Phase locked loop

If the set contains more than one channel, turn the channel selector to a channel with frequency in the middle of the used band. Check the channel code with a voltmeter on points 1, 2,64, 128 on print board B 17. Computation of the channel code is contained in the technical description of the synthesizer circuit. Note that there are three types of VCO's corresponding to the following Rx-frequencies 406-432 MHz, 432-450 MHz, 450-470 MHz check that the right type is used for the desired frequency range. The marking is noted on the VCO-diagram. Set the trimmers C24, C30 and C35 to the center position and then connect a counter to point 5 (coaxcable). The VCO should now be set to about the right frequency (with C4). Connect a DC-voltmeter to TP 1 and tune C 24 to maximum reading (about 1 VDC). Move the voltmeter to point 2 on the VCO print board and an oscilloscope (sensitivity 1 V/div.) to test point TP 1 on the logic print (print board B 17). Adjust the VCO trimmer until the loop goes in lock. The loop is in lock when a stable 25 kHz ripple sawtooth is appearing on the scope, and the voltage on the voltmeter increases while turning the VCO trimmer clockwise. Adjust the VCO so that the loop voltage is 3 V. This loop voltage corresponds to min. 25 (20) kHz ripple on TP 1. Now when the loop is in lock a slight tuning of C 24 should be done to control that the voltage on TP 1 still is maximum.

For multichannel sets, turn the channel selector to the lowest and highest frequency and check that the loop still goes in lock. Considering a set with the max. possible bandwidth 2 MHz, the loop voltage shall lie between 2 and 4 V going from the lowest channel to the highest in such a manner that increasing voltage corresponds to increasing frequency.

C. Rx-frequency.

Select the mid-frequency channel and connect a 500 MHz counter to the VCO-output point 5. The reading will be Rx-frequency + 21,4 MHz and for fine tuning of the Rx-frequency, use C 39 on synthesizer mixer print board B 56.

2. Tuning of the receiver.

A. 21,4 MHz and 455 kHz IF (print board B01).

Connect a 21,4 MHz sweep generator (a 10,7 MHz sweep generator normally contains sufficient second harmonics to be used on 21,4 MHz to point TP 2 on the RF and mixer print board B 48 and the (DC) probe on point TP 1 on the IF print board B 01. Adjust L 6 (print B 48) and L 1 (print B 01) for minimum ripple. L 2 is tuned to max. amplitude while L 3 is tuned to best possible symmetry. Use the lowest possible input level to prevent limiting in the mixer. Connect the probe to the AF output from the detector (a suitable point is pin 1 on the ampl. print B 09) and adjust L 4 in the IF to max. discriminator slope and the best linearity.

B. RF amplifier and mixer (print board B 48)

With the voltmeter on TP 1 (print board B 48) the capacitors B 43 - C 35, B 48 - C 10 and C 11 are adjusted to max. deflection (approx. 2 V DC). With the signal generator connected to the receiver input, C 20, L 1, L 2, L 3 and L 4 are now tuned to give optimum sensitivity.

C. AF-amplifier, squelch and key circuit (print board B 09).

Adjust the output level for the handset earpiece to 60 mV with potmeter R 31. (3,5 kHz dev., 1 kHz modulation).

Alternative method for tuning of Rx front and IF
without a sweep generator

Adjust C 10 and C 18 as described under 'B'. Tune the RF-signal generator either to 21,4 MHz or to the receiving frequency and connect it to TP 2 in the RF-amplifier. The horizontal deflection voltage from an oscilloscope should be used to modulate (FM) the signal generator. Now the IF can be tuned as previously described. By connecting the signal generator (tuned to the receiving frequency) to the aerial input, all the capacitors in the RF-amplifier and mixer can be tuned to max. deflection with the probe on TP 1 in the IF amplifier.

3. Tuning of the transmitter

A. Transmitter mixer and amplifier (print board B 46)

Turn the capacitors C 9 and C 17 to max. capacitance and tune the helicoils L 4, L 5, L 7 and L 8 to max. frequency (screw up the four alignment screws). Remove the VCO signal and connect a wattmeter (50 Ω , 1 W range) to pin 4, then key the transmitter. The 21,4 MHz* injection to the transmitter mixer is tuned with L 1 (print B 46) to max. Dc-voltage on TP 1 - approx. 0,4 V. If the Tx-mixer crystal is higher than 10,7 MHz, the capacitor C 21 is removed. Reconnect the VCO signal and tune the capacitor C 30 on print B 43 to max. DC-voltage on TP 1 print B 46 approx. 0,5 V. Decrease the capacitance of C 9 slowly until the first time a max. of about 0,4 V_{DC} is indicated on TP 2. Now tune L 4 until the voltage on TP 2 decreases. Move the voltmeter to TP 3 and tune L 5 and L 4 to max. reading approx. 0,55 V_{DC}. Tune L 7 until a decrease in the reading on TP 3 is seen. L 8 and L 7 should now be tuned to max. DC-voltage on TP 4 approx. 0,75 V. C 17 can now be tuned to max. output on the wattmeter. Finally a slight tuning of C 9, L 4, L 5, L 7, L 8 and C 17 should be done in order to get max. output power approx. 30 mW.

* When $F_{Tx} = F_{Rx}$ (x-tal < 10,7 MHz) C 2 or C 21 have to be removed.

B. 6-10 W PA-stage (print board B 45)

Turn the power regulation potmeter R 1 counterclockwise to get the output power stabilization out of function. Connect a wattmeter (50 Ω , 10 W) to the test installation output and set the supply voltage to 12,0 V. Now tune C 2, C 5, C 6, C 10, C 11, C 15 and C 16 to max. output power. Then a fine adjustment of C 17 on the transmitter amplifier print B 07 should be done. Finally the tuning should be repeated once or twice in order to get the max. possible output power approx. 12 W. The potmeter R 1 on print board B 57 will adjust the output power for any desired value between 6-10 W.

C. Transmitter frequency

Connect a counter to the wattmeter and adjust the transmitter frequency with the capacitor C 31 in the Tx-oscillator print board B 56.

D. 10-25 W PA-stage (print board B 59 extern PA-stage)

Push the radio into the power cassette, connect the wattmeter (50 Ω , 25 W) and adjust C 1, C 2, C 8 and C 9 to max. output power with a supply voltages of 12,0 V. Increase the supply voltage to 13,6 V and turn the potmeter R 2 on print B 59 clockwise until the power decreases to the desired value. Check the power regulation by varying the supply voltage from 10,8 V to 16,0 V. In the case of 25 W set the output power may be a little less than 25 W at supply voltages below 13,2 V, but for voltages from 13,2 V and up the output power shall be held constantly on 25 W.

E. Modulation amplifier (print board B 10)

Connect a modulation meter to the transmitter and a tone generator to the microphone input 1. The generator must have a low output impedance.

Turn the 3 potentiometers to centre position and set the generator to 1000 Hz. With an input level of 20 mV, potmeter R 27 is adjusted to give ± 5 kHz deviation on the modulation meter. Decrease the input level to 2 mV and adjust potmeter R 3 to a deviation of ± 3 kHz. Repeat the procedure to check and fine adjust R 27 and R 3 if necessary. If the station is equipped with a handset, R 27 is adjusted to ± 5 kHz with an input level (1000 Hz) of 4 V. When the level is decreased to 400 mV R 28 is set to give a deviation of ± 3 kHz.

Justering af 5-tonet tonemodtager CCIR

Print B 60A

Tonemodtagerens indgang forsynes med en spænding på 100 mV med frekvensen 1540 Hz (tone 6). Ledningen for tone nr. 1 loddes på tonespolens udtag nr. 6. Med udtagsspolens kerne og potentiometret R9 justeres spændingen på TP 1, således at tone 6 giver ca. 4,5V DC medens tone 6 \pm 3% giver 1 V DC.

Herefter indstilles den ønskede kode ved at lodde ledningerne fra Q3 -- Q7 på spolens udtag. Her svarer udtag nr. 5 til tone 5 o.s.v. medens udtag nr. 11 er repetitionstonen.

Alarmkredsløbene kan afprøves ved at sætte + 5V på tællerens ben 1.

Tonerække efter CCIR

| <u>Tone</u> | <u>Frekvens</u> |
|-------------|-----------------|
| 1 | 1124 |
| 2 | 1197 |
| 3 | 1275 |
| 4 | 1358 |
| 5 | 1446 |
| 6 | 1540 |
| 7 | 1640 |
| 8 | 1747 |
| 9 | 1860 |
| 0 | 1981 |
| rep. 11 | 2110 |

Justering af 1tonet tonesender med timing for offentlig biltelefon print B 61A

Sæt +5V på TP1. Senderen er nu tastet, Q2 er åben og med R10 kan frekvensssvinget justeres til \pm 3,5 kHz. Med en tæller på frekvens-svingmeterets udgang justeres frekvensen ved hjælp af R4 til 2400 Hz. Ledningen til TP1 fjernes og tiderne 1 sek. og 10 sek. kan kontrolleres ved at se på Ic 2's ben 6 og 11. Min. oscillator output (Ic 1 ben 6) ca. 150 mV.

Alignment procedure.

UHF duplex filter for Public telephone service (MTD).

Normally the filter will be factory-adjusted by means of a R & S polyscope, but adjustment can also be done by using a transmitter and receiver tuned to the proper frequencies.

Equipment necessary for tuning and test.

1. Transmitter with all the specified frequencies.
2. Receiver with output indicator for all specified frequencies.
3. Signal generator with calibrated attenuator.
4. Directional power meter.
5. 50 Ω dummy load.

The rejection frequencies are adjusted first by means of the following set-up.

The signalgenerator is connected to the ant. terminal and the receiver to the low frequency terminal. The 50 Ω dummy to the high frequency terminal. The signal generator and the receiver is set to 466,0 MHz and the resonator L 4 is tuned to minimum signal into the receiver. The receiver is then switched to 463,0 MHz and the resonator L 5 is tuned to minimum. The resonator L 3 is tuned the same way to the frequency 464,5 MHz.

Now the set-up is switched to the high frequency side, that is the receiver to the high frequency terminal, the dummy to the low frequency terminal. The receiver and signal generator is set to 454,8 MHz and the resonator L 2 tuned to min. Resonator L 1 is tuned to 453,0 MHz.

Now all rejection circuits are tuned and the adjustment of the compensation circuit is next.

The transmitter is connected to the antenna terminal via a reflectormeter. The 50 Ω dummy is connected to the low frequency terminal.

The reflected power on the frequency 454 MHz is adjusted to min. by adjusting the compensation coils L 6, L 7 and L 8.

The reflected power at the band limits is now checked. It should be of equal value at both sides and less than 5%.

The adjustment is repeated for the high frequency side with the dummy on the high frequency terminal. The two trimmer capacitors C 2 and C 3 are adjusted to min. reflection.

After the compensation adjustment the attenuation is controlled using the same set-up as used for adjusting the rejection.

The attenuation or isolation is checked by means of the receiver and a signal generator. This is measured as the difference in attenuation setting when the filter is in the circuit and when the generator is connected directly to the receiver.

This attenuation should be checked on all specified frequencies. The insertion loss should be less than 0,9 dB in both sides.

When the filter is tuned by means of a polyscope,
curves similar to those in fig.1 must be achieved.

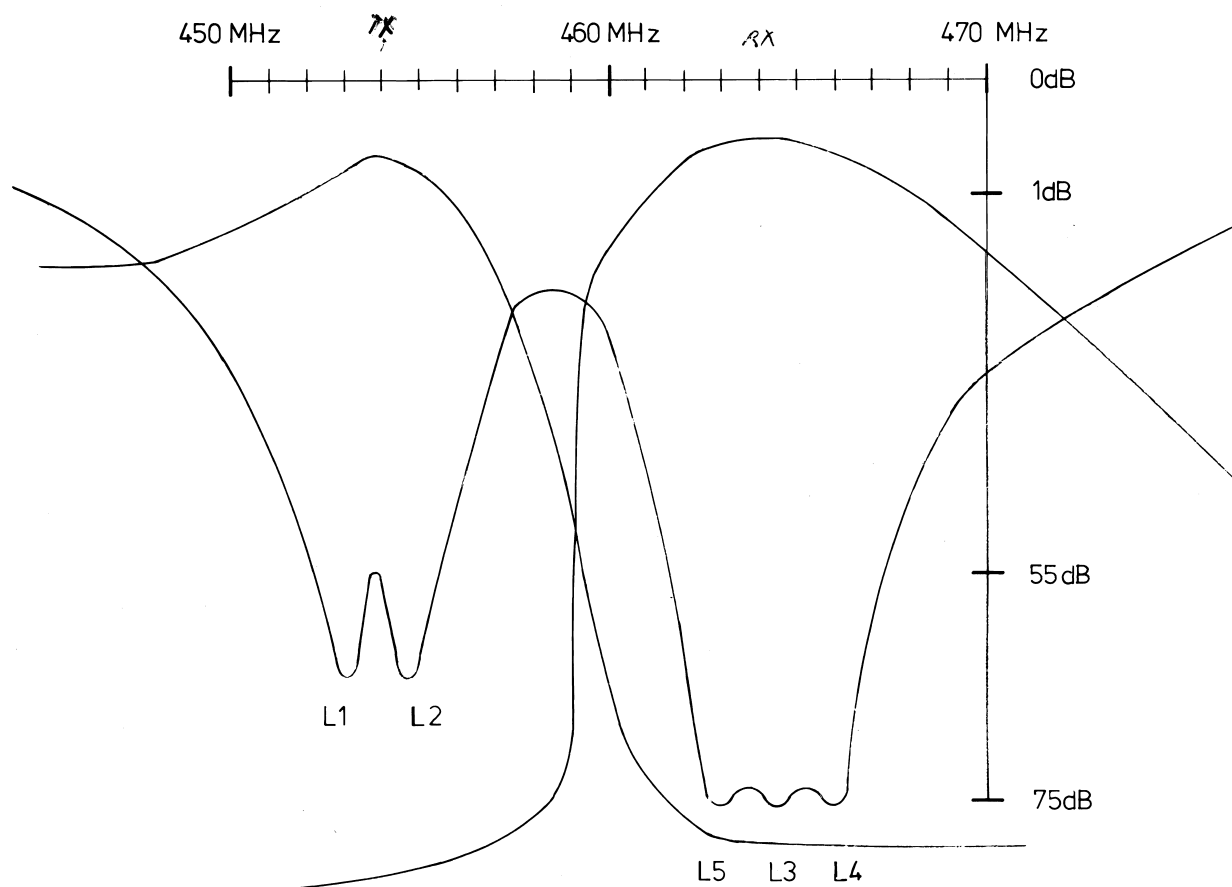


Fig. 1

Adjustment frequencies

Resonator L1: 453,0 MHz
 —||— L2: 454,8 MHz
 —||— L3: 464,5 MHz
 —||— L4: 466,0 MHz
 —||— L5: 465,0 MHz

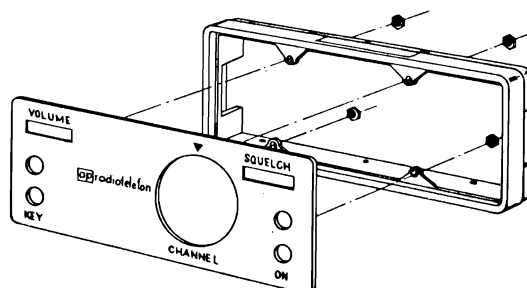
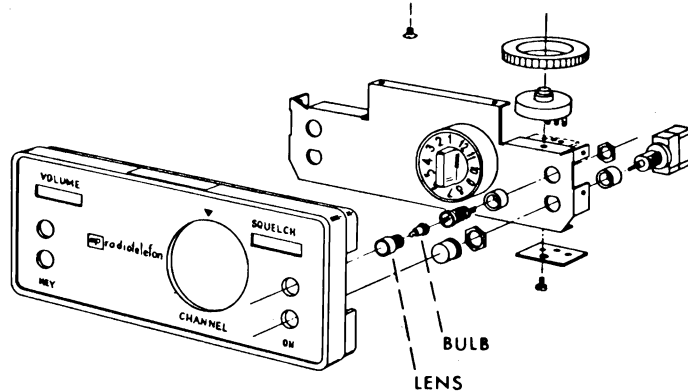
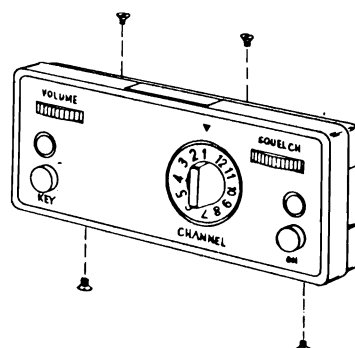
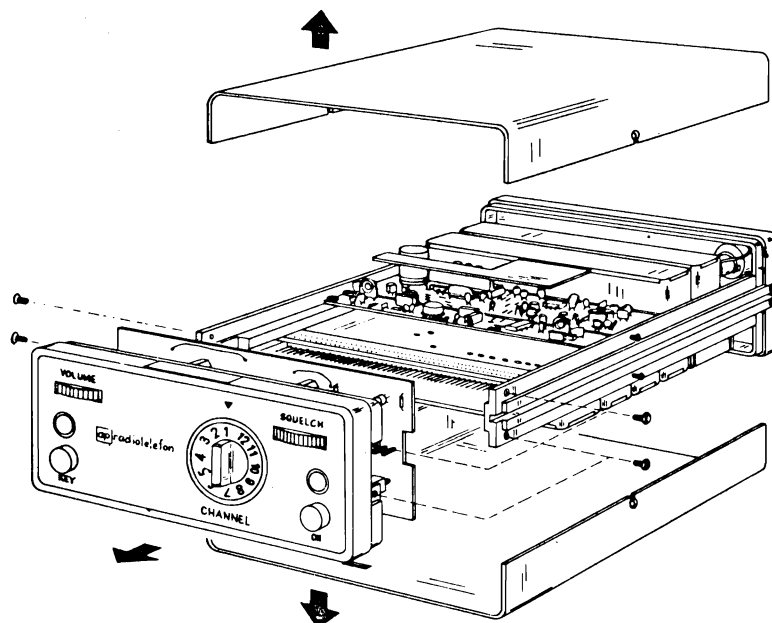
Tx center frequency 454,0MHz

Rx center frequency 464,0MHz

| | | | |
|-------------------|--|-----------------|------------------|
| Rettet: | Adjustment frequencies for UHF duplexfilter MTD | Tegn.: 11-10-76 | Kontr.: 12-10-76 |
| | | AC | JS |
| | | Stykl. nr.: | |
| | | Tegn. nr.: | |
| | | 76271-4E2 | |
| AP-RADIOTELEFON ½ | | | |

Kabellængder for duplexanlæg

For at undgå forringelse af modtagerfølsomheden ved duplex kan kabellængden mellem anlæg og duplexfilter ikke være vilkårlig. Dette gælder især 2 m anlæg. Som standard monteres ophæng med 90 cm kabler. Ønskes længere kabler skal flg. totallængder anvendes: 150 cm eller 210 cm. Dette kan også opnås ved at anvende forlængerkabler på 60 cm eller 120 cm. De samme længder kan anvendes på UHF.



Rettet: 29-11-76 H.J.

Disassembling of AP 2000

AP-RADIOTELEFON ¼

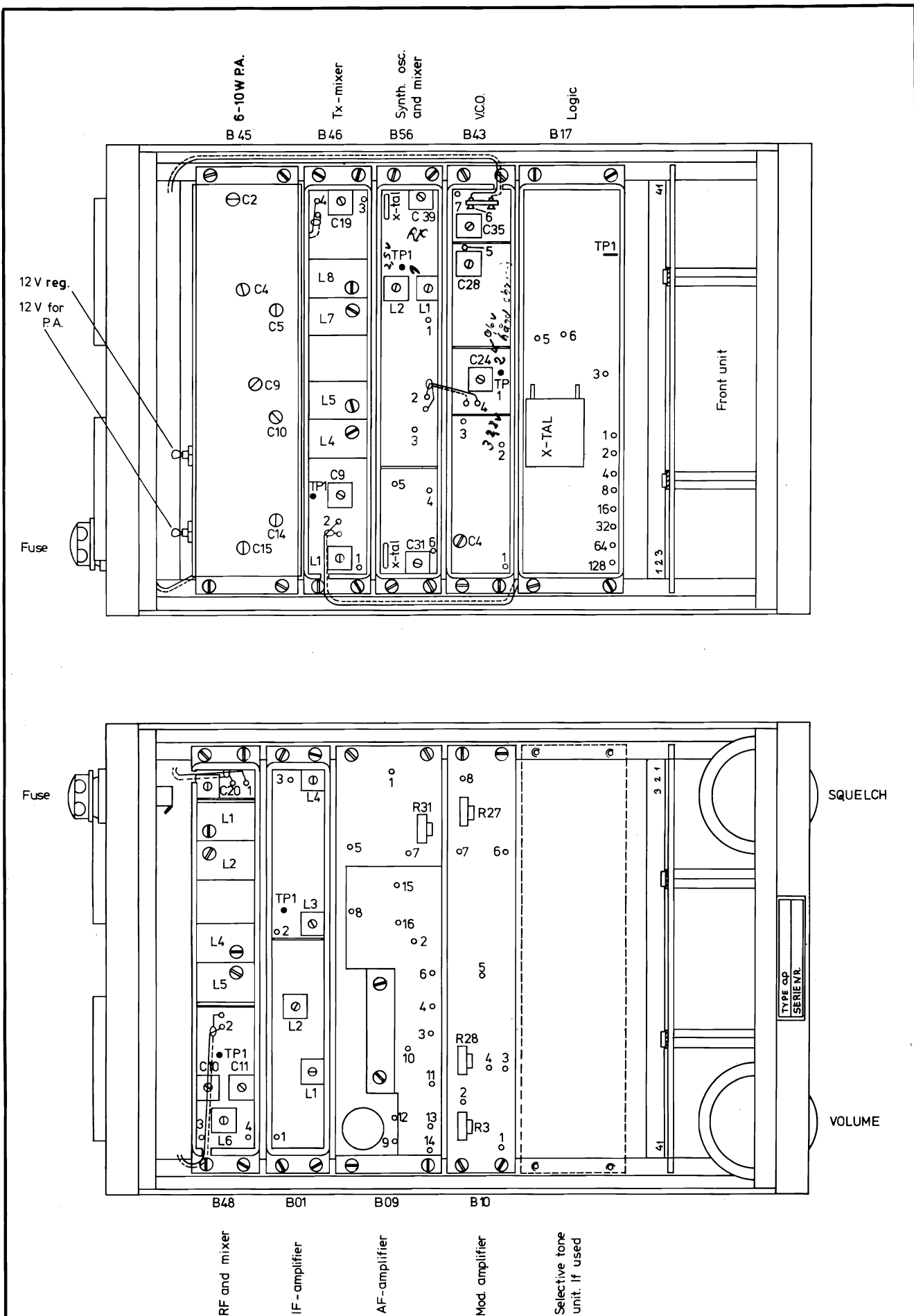
Tegn.: 10-8-76
AC

Kontr.:

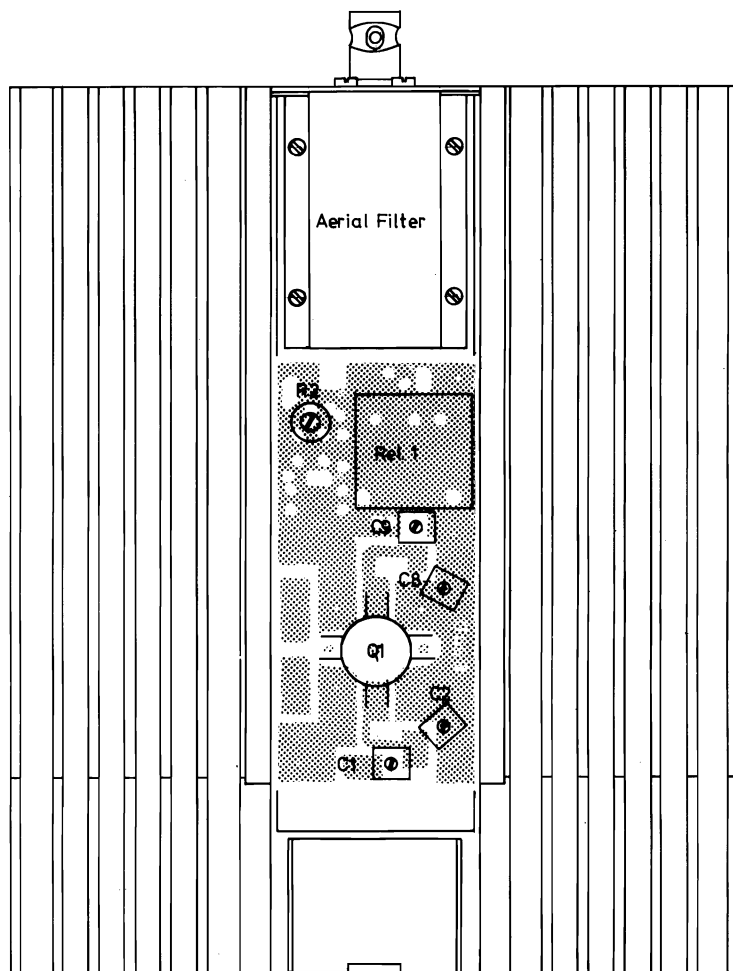
Stykl. nr.:

Tegn. nr.:

76218 - 4M2



| | | | |
|----------------------|--|-----------------------|-----------|
| Rettet: 2-6-78 JS/AC | Interior view of AP 2000,10-25W Con. UHF band. (Ext. PA-stage not shown) Part no. 201-027 | Tegn.: 13-4 -76 AC | Kontr.: |
| | | Stykl. nr.: | |
| | AP - RADIOTELEFON | Tegn. nr.: | 76107-3E2 |
| | | | |



Rettet: 2-6-78 JS/AC

Interior view of UHF
Ext. PA-stage

AP-RADIOTELEFON

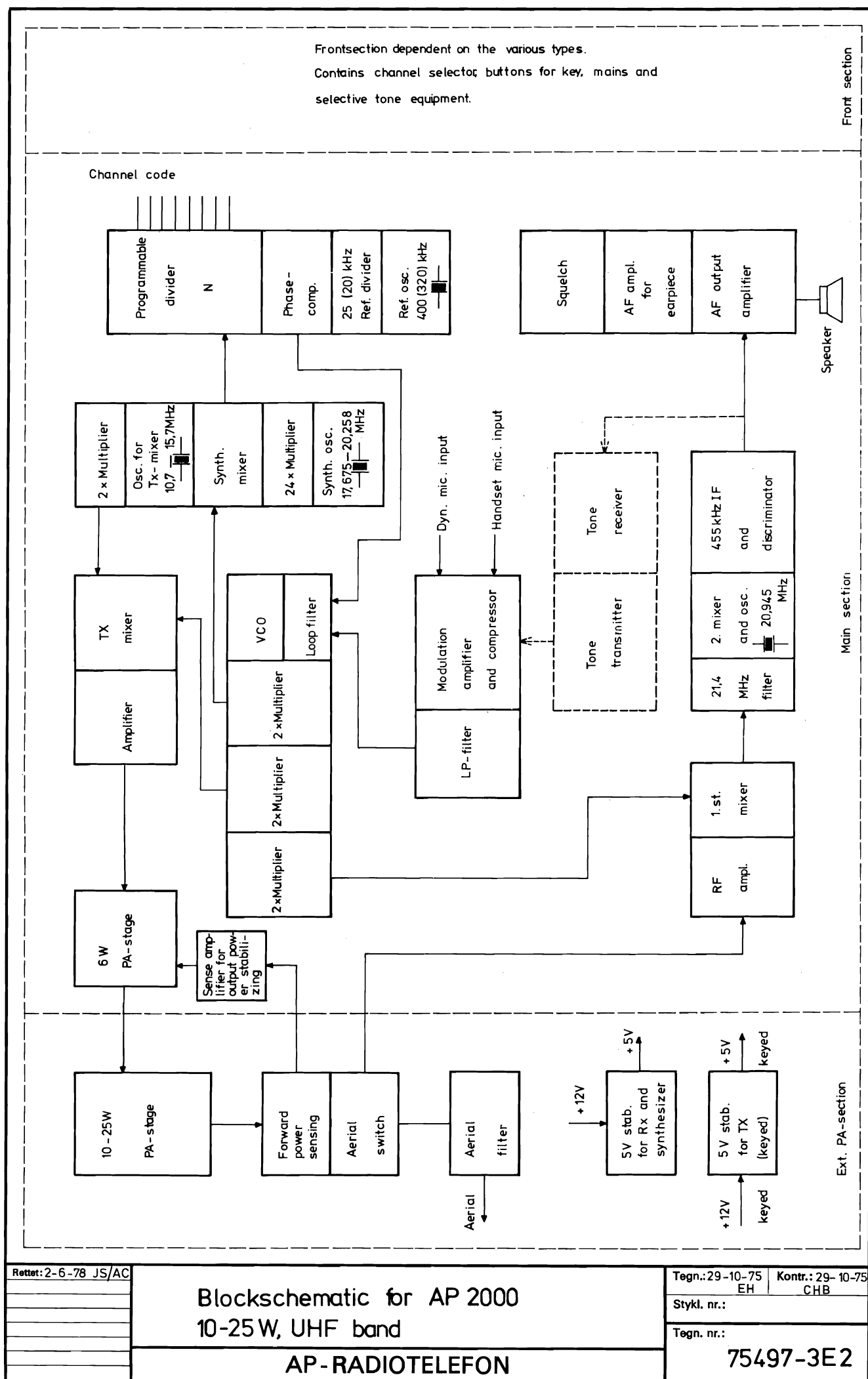
Tegn.: 12-4-76
NC

Kontr.: 12-4-76
CHB

Stykl. nr.:

Tegn. nr.:

76108-3E 2



Retter: 2-6-78 JS/AC

Blockschematic for AP 2000
10-25 W, UHF band

AP-RADIOTELEFON

Tegn.: 29-10-75 EH Kontr.: 29-10-75 CHB

Stykl. nr.:

Tegn. nr.:

75497-3E2

| |
|--------------------|
| Rettet: 27-2-76 AC |
| 15-2-77 NC |
| |
| |
| |
| |

| |
|--|
| Standard crystals for AP2000 |
| UHF band, high range: 3. For channels ending with 00, 25, 50, 75 kHz |
| AP-RADIOTELEFON ¼ |

| | |
|-----------------------|-------------------------|
| Tegn.: 30-10-75 EH | Kontr.: 30-10-75 CHB |
| Stykl. nr.: | |
| Tegn. nr.: | 75500-4E2 |

Mode of operation: F_{Rx} higher than or equal to F_{Tx}

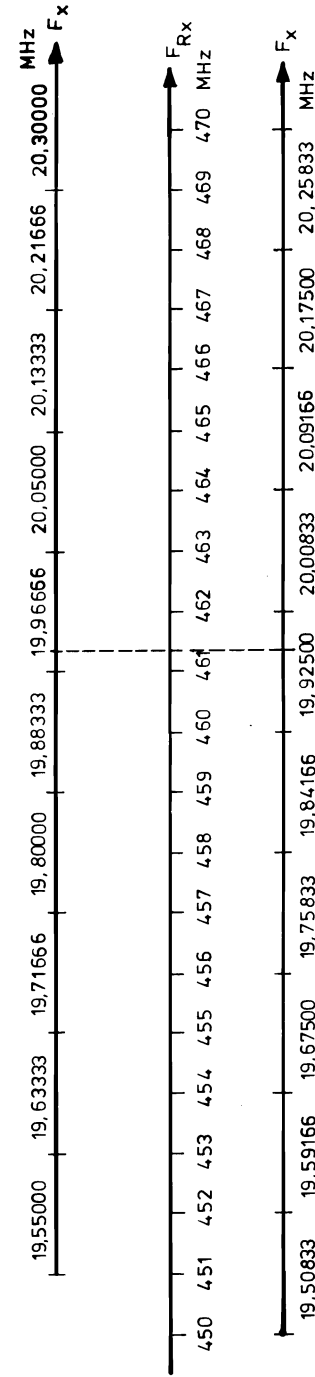
SPECIFICATION for Quartz Crystal Unit AP 25

1. Mode of operation : AT-Fundamental
2. Holder : HC-42/U
3. Frequency range : 10-22 MHz
4. Resonance : Parallel (15 pF)
5. Calibration tolerance : ± 10 ppm at 25°C
6. Temperature tolerance : ± 5 ppm % 20°C to + 70°C
7. Drive level : 1 mW
8. Equivalent series resistance : Max. 40 Ω
9. Marking : AP 25 frequency in MHz

$$\text{Division ratio } N = \frac{F_{Rx} + 21,4 - 24 F_x}{0,025}$$

Example:

Known receiver freq. = 461,325 MHz
Found from the table $F_x = 19,96666$ MHz
Calculated $N = 141,0064$ as N is an integer
the decimal places are deleted so $N = 141$.

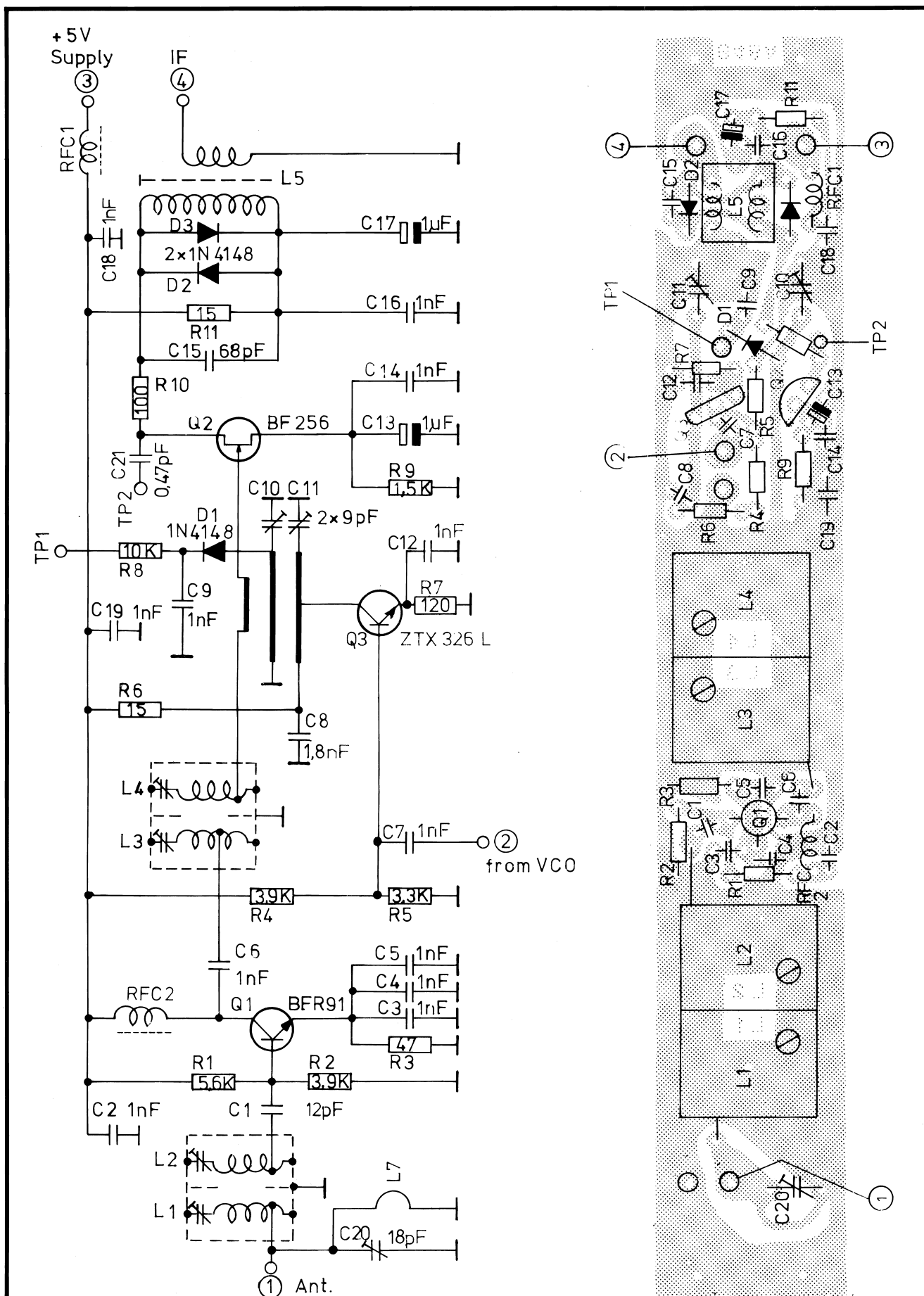


Transmitter mixer oscillator

SPECIFICATION for Quartz Crystal Unit AP 22

1. Mode of operation : AT-Fundamental
2. Holder : HC-42/U
3. Frequency range : 10-22 MHz
4. Resonance : Parallel (30 pF)
5. Calibration tolerance : ± 15 ppm at 25°C
6. Temperature tolerance : ± 10 ppm % 20°C to + 70°C
7. Drive level : 1 mW
8. Equivalent series resistance : Max. 40 Ω
9. Marking : AP 22 frequency in MHz

Calculation of the crystal frequency for the transmitter mixer oscillator
 $F_{Tx \text{ mix.}} = 10,7 + \frac{F_{Rx} - F_{Tx}}{2}$ Spec. AP 22



Rettet: 21-4-77 BJ/AC
 31-5-77 LT/AC
 26-8-77 POR/AC

RF AMPLIFIER AND MIXER F. UHF
 PRINT BOARD B48A 1

AP-RADIOTELEFON 1/2

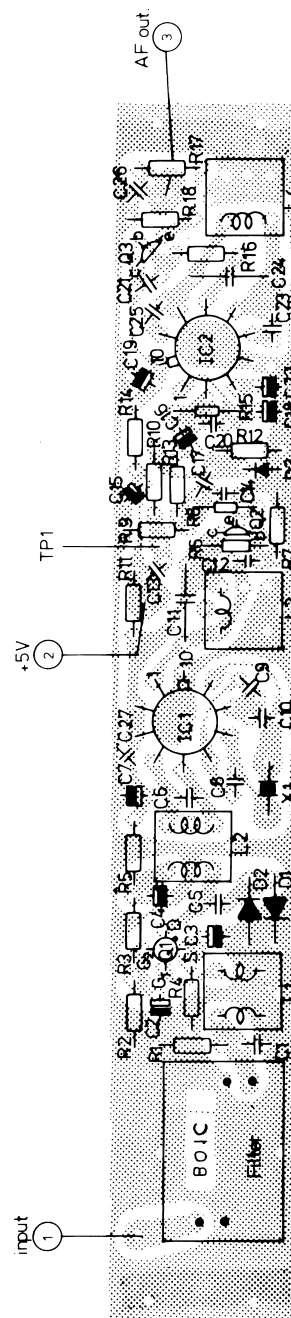
Tegn.: 29-10-75 NC Kontr.: 29-10-75 BJ

Stykl. nr.: 75476-4S 2

Tegn. nr.: 75476-4E 2

AP-RADIOTELEFON

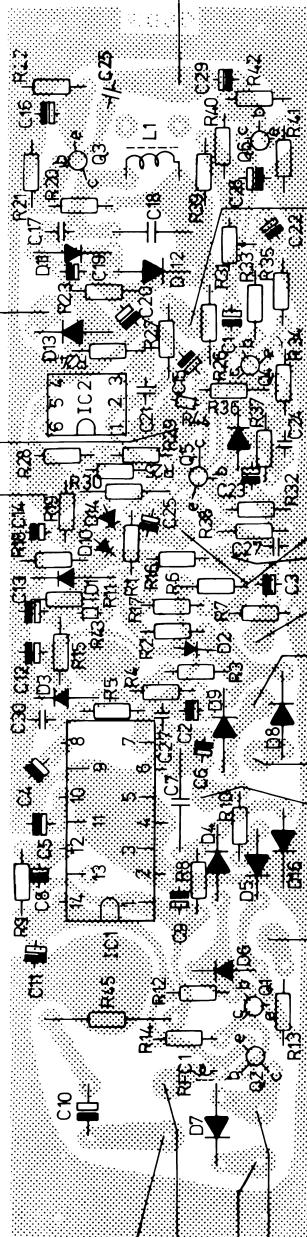
| Nr. | Kode | Data | Nr. | Kode | Data |
|---|--------|----------------|---------|--------|---|
| R1 | 13-292 | 5,6 kΩ 1/8 w | D1 | 04-062 | 1N 4148 |
| R2 | 13-290 | 3,9 kΩ " | D2 | 04-062 | 1N 4148 |
| R3 | 13-267 | 47 Ω " | D3 | 04-062 | 1N 4148 |
| R4 | 13-290 | 3,9 kΩ " | | | |
| R5 | 13-289 | 3,3 kΩ " | | | |
| R6 | 13-261 | 15 Ω " | Q1 | 19-116 | BFR 91 |
| R7 | 13-272 | 120 Ω " | Q2 | 19-113 | BF 256 A Philips |
| R8 | 13-295 | 10 kΩ " | Q3 | 19-115 | ZTX 326 L |
| R9 | 13-285 | 1,5 kΩ " | | | |
| R10 | 13-271 | 100 Ω " | | | |
| R11 | 13-261 | 15 Ω " | L1 | | 75472-4E2 |
| | | | L2 | | 75474-4E2 |
| | | | L3 | | 75473-4E2 |
| | | | L4 | | 75472-4E2 |
| | | | L5 | | 75285-4E2 |
| C1 | 11-379 | 12 pF ker. | | | |
| C2 | 11-409 | 1 nF " | | | |
| C3 | 11-409 | 1 nF " | | | |
| C4 | 11-409 | 1 nF " | RFC-1 | | 75290-4E2 |
| C5 | 11-409 | 1 nF " | | | |
| C6 | 11-409 | 1 nF " | RFC-2 | | 77155-4E2 |
| C7 | 11-409 | 1 nF " | | | |
| C8 | 11-441 | 1,8 nF chip | | | |
| C9 | 11-409 | 1 nF " | | | |
| C10 | 19-329 | 9 pF Trim. | | | |
| C11 | 19-329 | 9 pF " | | | |
| C12 | 11-409 | 1 nF Ker. | | | |
| C13 | 11-502 | 1 μF/35V Tant. | | | |
| C14 | 11-409 | 1 nF Ker. | | | |
| C15 | 11-397 | 68 pF " | | | |
| C16 | 11-409 | 1 nF " | | | |
| C17 | 11-502 | 1 μF/35V Tant. | | | |
| C18 | 11-409 | 1 nF Ker. | | | |
| C19 | 11-409 | 1 nF " | | | |
| C20 | 19-330 | 18 pF Trim. | | | |
| C21 | 11-360 | 0,47 pF ker. | | | |
| RF-mixer UHF Print board B 48 A 1 Tilhører tegn. nr.: 75476-4E2 | | | Rettet: | | <div>Tegn.:</div> <div>Kontr.:</div> <div>Stykl. nr.: 75476-4S2</div> |



75076 - 3E2

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|-------------------|---------|--------|---|
| R1 | 13-290 | 3,9 KΩ 1/8W CR 16 | C19 | 11-504 | 4,7 μF/10V Tant. |
| R2 | 13-302 | 47 KΩ " " | C20 | 11-409 | 1 nF Ker. |
| R3 | 13-302 | 47 KΩ " " | C21 | 11-416 | 4,7 nF " |
| R4 | 13-272 | 120 Ω " " | C22 | 11-504 | 4,7 μF/10V Tant. |
| R5 | 13-263 | 22 Ω " " | C23 | 11-404 | 150 pF Ker. |
| R6 | 13-295 | 10 KΩ " " | C24 | 11-461 | 2,2 nF MKM |
| R7 | 13-295 | 10 KΩ " " | C25 | 11-404 | 150 pF Ker. |
| R8 | 13-271 | 100 Ω " " | C26 | 11-416 | 4,7 nF " |
| R9 | 13-279 | 470 Ω " " | C27 | 11-409 | 1 nF " |
| R10 | 13-295 | 10 KΩ " " | D1 | 04-062 | 1N4148 |
| R11 | 13-267 | 47 Ω " " | D2 | 04-062 | 1N4148 |
| R12 | 13-306 | 100 KΩ " " | D3 | 04-036 | 0A90 |
| R13 | 13-271 | 100 Ω " " | | | |
| R14 | 13-267 | 47 Ω " " | Q1 | 19-128 | 40673 |
| R15 | 13-279 | 470 Ω " " | Q2 | 19-104 | BF199 |
| R16 | 13-263 | 22 Ω " " | Q3 | 19-093 | BC238B |
| R17 | 13-281 | 680 Ω " " | | | |
| R18 | 13-289 | 3,3 KΩ " " | IC1 | 09-007 | S042E |
| | | | IC2 | 09-006 | S041E |
| C1 | 11-403 | 120 pF Ker. | | | |
| C2 | 11-504 | 4,7 μF/10V Tant. | L1 | | 75282-4E2 |
| C3 | 11-502 | 1 μF/35V " | L2 | | 75281-4E2 |
| C4 | 11-504 | 4,7 μF/10V " | L3 | | 75280-4E2 |
| C5 | 11-409 | 1 nF Ker. | L4 | | 75279-4E2 |
| C6 | 11-396 | 56 pF " | | | |
| C7 | 11-504 | 4,7 μF/10V Tant. | X1 | 11-815 | AP 22 20,945 Mhz |
| C8 | 11-413 | 150 pF N750 Ker. | X2 | 11-854 | 21,4 Mhz |
| C9 | 11-396 | 56 pF Ker. | | | |
| C10 | 11-413 | 150 pF N750 Ker. | RFC- | 06-001 | Ferritperle- |
| C11 | 11-461 | 2,2 nF MKM | 1 | | Philips |
| C12 | 11-416 | 4,7 nF Ker. | | | |
| C13 | 11-416 | 4,7 nF " | | | |
| C14 | 11-409 | 1 nF " | | | |
| C15 | 11-502 | 1 μF/35V Tant. | | | |
| C16 | 11-500 | 0,1 μF/35V " | | | |
| C17 | 11-416 | 4,7 nF Ker. | | | |
| C18 | 11-504 | 4,7 μF/10V Tant. | | | |
| 21,4 MHz IF Print B 01 C 1 Tilhører tegn. nr.: 75076-3E2 | | | Rettet: | | Tegn.: Kontr.: Stykl. nr.: 75076-4S2 |



75017-3E2

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|-----|--------|------------------|-----|--------|-------------------|
| R1 | 13-299 | 22 KΩ 1/8W CR 16 | R38 | 13-277 | 330 Ω 1/8W CR 16 |
| R2 | 13-289 | 3,3 KΩ " " | R39 | 13-271 | 100 Ω " " |
| R3 | 13-289 | 3,3 KΩ " " | R40 | 13-306 | 100 KΩ " " |
| R4 | 13-295 | 10 KΩ " " | R41 | 13-283 | 1 KΩ " " |
| R5 | 13-304 | 68 KΩ " " | R42 | 13-303 | 56 KΩ " " |
| R6 | 13-306 | 100 KΩ " " | R43 | 13-663 | 15 KΩ NTC |
| R7 | 13-295 | 10 KΩ " " | R44 | 13-271 | 100 Ω 1/8W CR 16 |
| R8 | 13-271 | 100 Ω " " | R45 | 13-409 | 1 Ω 1/2W CR 37 |
| R9 | 13-271 | 100 Ω " " | C1 | 11-502 | 1 μF/35V Tant. |
| R10 | 13-281 | 680 Ω " " | C2 | 11-502 | 1 μF/35V " |
| R11 | 13-291 | 4,7 KΩ " " | C3 | 11-502 | 1 μF/35V " |
| R12 | 13-295 | 10 KΩ " " | C4 | 11-509 | 47 μF/6,3V " |
| R13 | 13-276 | 270 Ω " " | C5 | 11-509 | 47 μF/6,3V " |
| R14 | 13-292 | 5,6 KΩ " " | C6 | 11-500 | 0,1 μF/35V " |
| R15 | 13-283 | 1 KΩ " " | C7 | 11-350 | 10 nF Laco |
| R16 | 13-283 | 1 KΩ " " | C8 | 11-507 | 22 μF/16V Tant. |
| R17 | 13-271 | 100 Ω " " | C9 | 11-502 | 1 μF/35V " |
| R18 | 13-297 | 15 KΩ " " | C10 | 05-024 | 220 μF/16V Elko |
| R19 | 13-275 | 220 Ω " " | C11 | 11-502 | 1 μF/35V Tant. |
| R20 | 13-295 | 10 KΩ " " | C12 | 11-504 | 4,7 μF/10V " |
| R21 | 13-291 | 4,7 KΩ " " | C13 | 11-502 | 1 μF/35V " |
| R22 | 13-277 | 330 Ω " " | C14 | 11-506 | 10 μF/25V " |
| R23 | 13-302 | 47 KΩ " " | C15 | 11-509 | 47 μF/6,3V " |
| R24 | 13-295 | 10 KΩ " " | C16 | 11-504 | 4,7 μF/10V " |
| R25 | 13-302 | 47 KΩ " " | C17 | 11-416 | 4,7 nF Ker. |
| R26 | 13-271 | 100 Ω " " | C18 | 11-465 | 6,8 nF MKH |
| R27 | 13-295 | 10 KΩ " " | C19 | 11-501 | 0,47 μF/35V Tant. |
| R28 | 13-281 | 680 Ω " " | C20 | 11-506 | 10 μF/25V " |
| R29 | 13-277 | 330 Ω " " | C21 | 11-409 | 1 nF Ker. |
| R30 | 13-299 | 22 KΩ " " | C22 | 11-500 | 0,1 μF/35V Tant. |
| R31 | 19-255 | 2,2 KΩ Trim. | C23 | 11-506 | 10 μF/25V " |
| R32 | 13-302 | 47 KΩ 1/8W CR 16 | C24 | 11-416 | 4,7 nF Ker. |
| R33 | 13-297 | 15 KΩ " " | C25 | 11-519 | 3,3 μF/16V Tant. |
| R34 | 13-310 | 330 KΩ " " | C26 | 11-404 | 150 pF Ker. |
| R35 | 13-271 | 100 Ω " " | C27 | 11-409 | 1 nF " |
| R36 | 13-295 | 10 KΩ " " | C28 | 11-506 | 10 μF/25V Tant. |
| R37 | 13-311 | 680 KΩ " " | C29 | 11-504 | 4,7 μF/10V " |

AF-amplifier, squelch and key circuit
 Print board B 09 D 1
 Tilhører tegn. nr.: 75017-3E2

Tegn.:

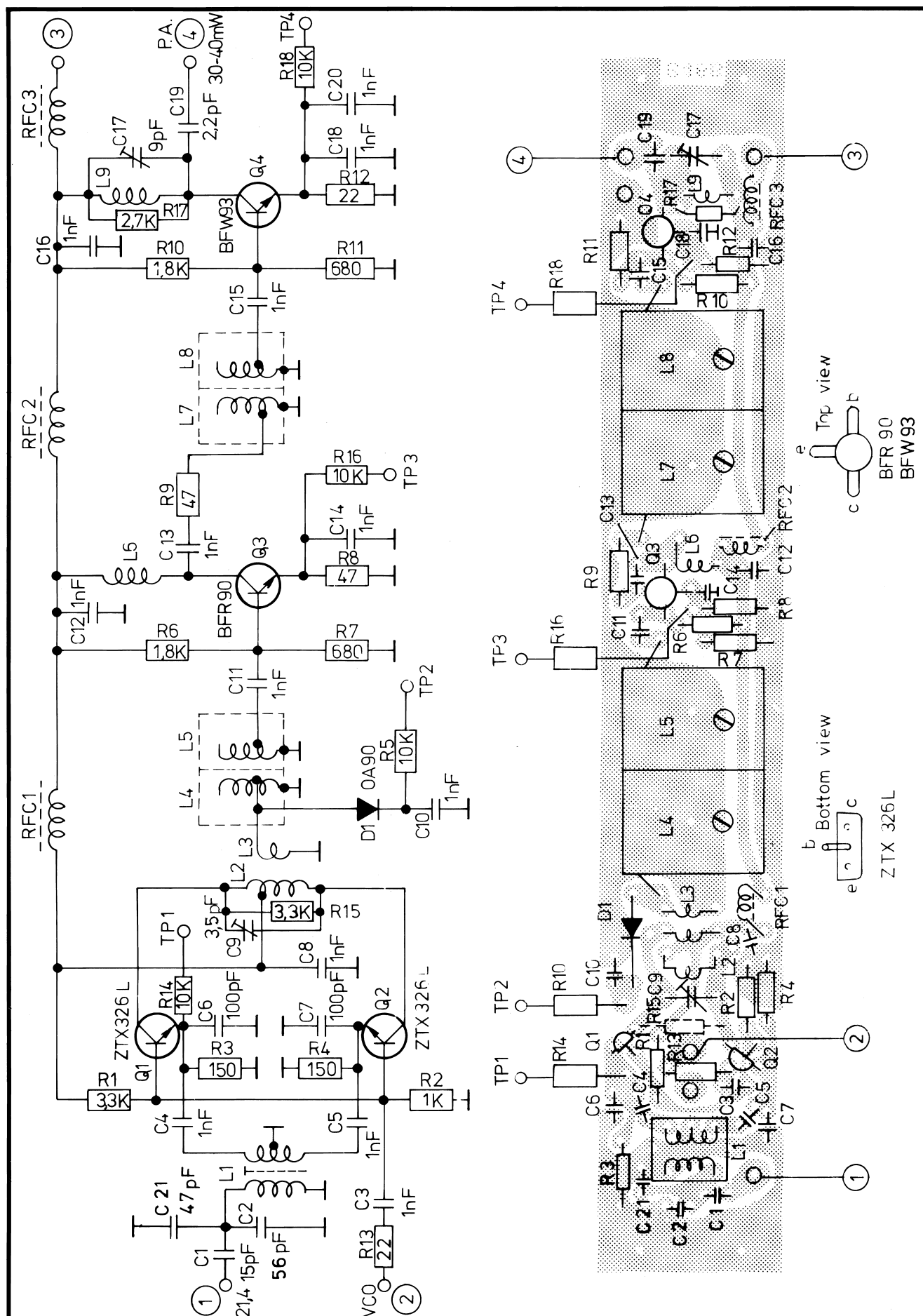
Stykl. nr.:

Kontr.:

75017-4S2

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|---|--------|-------------------|---------|------|--------------------------------------|
| C30 | 11-416 | 4,7 nF ker. | | | |
| C31 | 11-409 | 1 nF " | | | |
| C32 | 11-409 | 1 nF " | | | |
| D1 | 04-062 | 1N4148 | | | |
| D2 | 04-062 | 1N4148 | | | |
| D3 | 04-062 | 1N4148 | | | |
| D4 | 04-062 | 1N4148 | | | |
| D5 | 04-062 | 1N4148 | | | |
| D6 | 04-062 | 1N4148 | | | |
| D7 | 04-062 | 1N4148 | | | |
| D8 | 04-062 | 1N4148 | | | |
| D9 | 04-062 | 1N4148 | | | |
| D10 | 04-062 | 1N4148 | | | |
| D11 | 04-062 | 1N4148 | | | |
| D12 | 04-062 | 1N4148 | | | |
| D13 | 04-062 | 1N4148 | | | |
| D14 | 04-062 | 1N4148 | | | |
| D15 | 04-062 | 1N4148 | | | |
| D16 | 04-062 | 1N4148 | | | |
| Q1 | 19-093 | BC 238B | | | |
| Q2 | 19-095 | BC 327 | | | |
| Q3 | 19-093 | BC 238B | | | |
| Q4 | 19-093 | BC 238B | | | |
| Q5 | 19-093 | BC 238B | | | |
| Q6 | 19-093 | BC 238B | | | |
| IC1 | 09-004 | TBA 641B11 | | | |
| IC2 | 09-003 | TAA 765A | | | |
| RFC 1 | 04-114 | 74016-4E2 drossel | | | |
| L1 | | 75295-4E2 | | | |
| AF-amplifier, squelch and key circuit. Print board B 09 D1 Tilhører tegn. nr.: 75017-3E2 | | | Rettet: | | <div>Tegn.:</div> <div>Kontr.:</div> |
| | | | | | Stykl. nr.: 75017-4S2 |



Rettet: 9-2-77 HJ.
11-6-79 JH.

TX mixer UHF
Print board B46C 1

AP-RADIOTELEFON ¼

Tegn.: 3-11-75
AC

Kontr.:

Stykl. nr.:

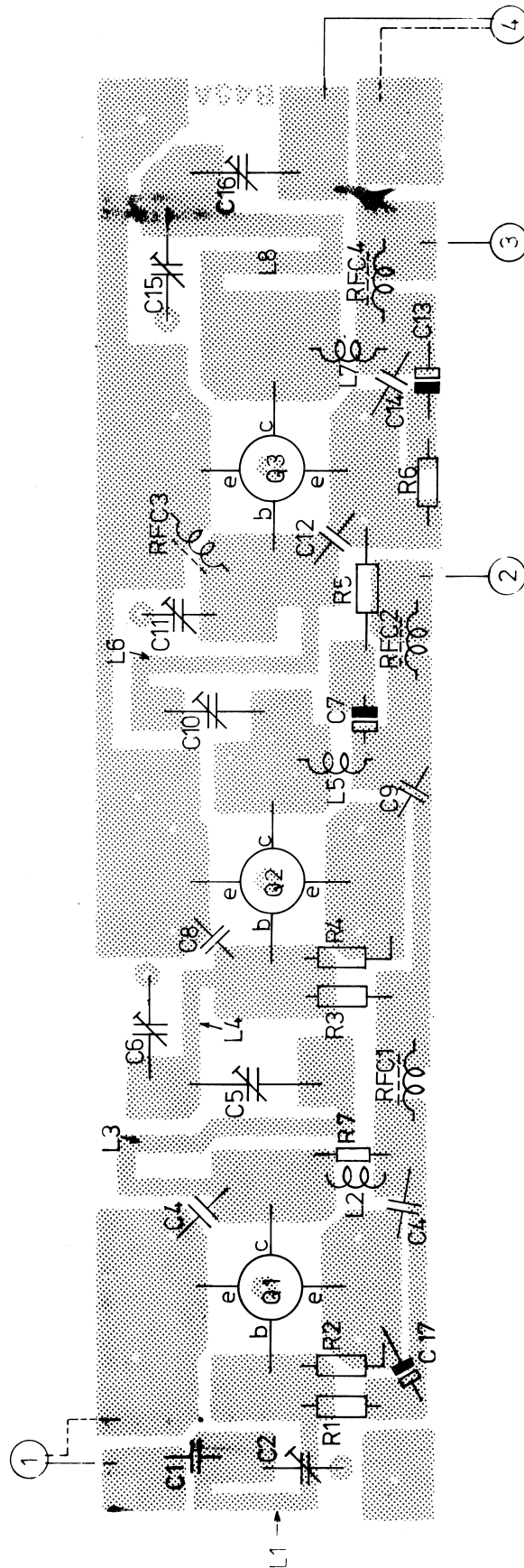
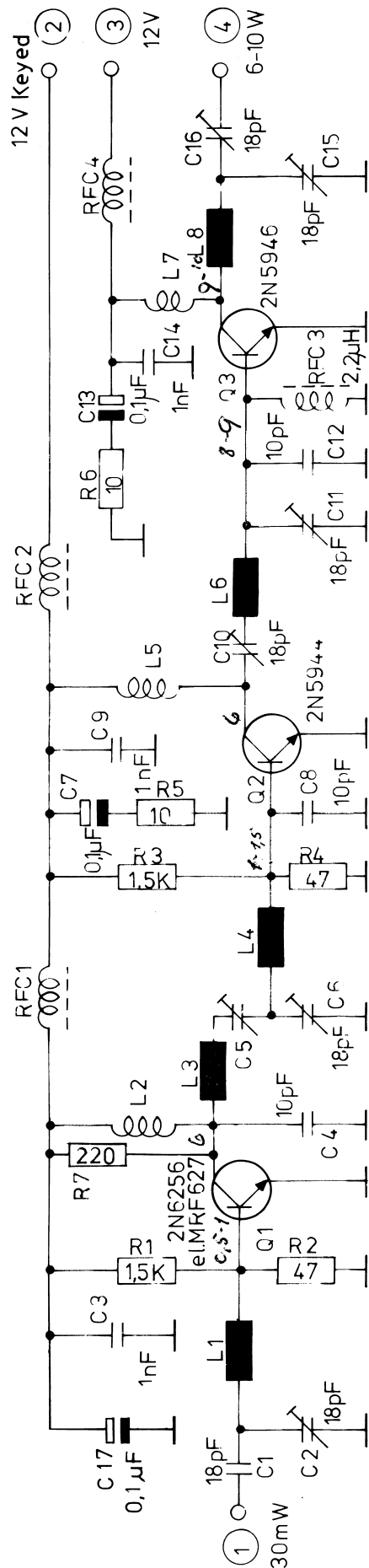
Tegn. nr.:

75511-4E2

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|---|--------|-------------------------------------|---------|--------|---|
| R1 | 13-289 | 3,3 K Ω 1/8W CR 16 | C19 | 11-363 | 2,2 pF Ker. |
| R2 | 13-283 | 1 K Ω " " | C20 | 11-442 | 1 nF " |
| R3 | 13-273 | 150 Ω " " | C21 | 11-394 | 47 pF " |
| R4 | 13-273 | 150 Ω " " | D1 | 04-036 | 0A90 |
| R5 | 13-382 | 10 K Ω $\frac{1}{4}$ W CR 25 | | | |
| R6 | 13-286 | 1,8 K Ω 1/8W CR 16 | Q1 | 19-115 | ZTX326L |
| R7 | 13-281 | 680 Ω " " | Q2 | 19-115 | ZTX326L |
| R8 | 13-267 | 47 Ω " " | Q3 | 19-114 | BFR90 |
| R9 | 13-267 | 47 Ω " " | Q4 | 19-119 | BFW93 |
| R10 | 13-286 | 1,8 K Ω " " | | | |
| R11 | 13-281 | 680 Ω " " | L1 | | 76009-4E2 |
| R12 | 13-263 | 22 Ω " " | L2 | | 2x75616-4E2 |
| R13 | 13-263 | 22 Ω " " | L3 | | 75616-4E2 |
| R14 | 13-382 | 10 K Ω $\frac{1}{4}$ W CR 16 | L4 | | 75603-4E2 |
| R15 | 13-289 | 3,3 K Ω 1/8W CR 16 | L5 | | 75602-4E2 |
| R16 | 13-382 | 10 K Ω $\frac{1}{4}$ W CR 25 | L6 | | 75614-4E2 |
| R17 | 13-288 | 2,7 K Ω 1/8W CR 16 | L7 | | 75603-4E2 |
| R18 | 13-382 | 10 K Ω $\frac{1}{4}$ W CR 25 | L8 | | 75602-4E2 |
| | | | L9 | | 75617-4E2 |
| C1 | 11-381 | 15 pF Ker. | | | |
| C2 | 11-396 | 56 pF " | RFC | | 75290-4E2 |
| C3 | 11-409 | 1 nF " | 1 | | |
| C4 | 11-409 | 1 nF " | RFC | | 75290-4E2 |
| C5 | 11-409 | 1 nF " | 2 | | |
| C6 | 11-401 | 100 pF " | RFC | | 75290-4E2 |
| C7 | 11-401 | 100 pF " | 3 | | |
| C8 | 11-409 | 1 nF " | | | |
| C9 | 19-346 | 3,5 pF Trim. | | | |
| C10 | 11-409 | 1 nF Ker. | | | |
| C11 | 11-409 | 1 nF " | | | |
| C12 | 11-409 | 1 nF " | | | |
| C13 | 11-409 | 1 nF " | | | |
| C14 | 11-442 | 1 nF " | | | |
| C15 | 11-409 | 1 nF " | | | |
| C16 | 11-409 | 1 nF " | | | |
| C17 | 19-329 | 9 pF Trim. | | | |
| C18 | 11-442 | 1 nF Ker. | | | |
| Tx-mixer UHF Print board B 46 C 1 Tilhører tegn. nr.: 75511-4E2 | | | Rettet: | | Tegn.: Kontr.: Stykl. nr.: 75511-4S2 |

Spändiger mält med diodekabel



Rettet: 2-6-78 JS/AC

6-10W PA UHF B 45 A 1

AP-RADIOTELEFON ½

Tegn.: 31-10-75
EH

Kontr.:

Stykl. nr.:

Tegn. nr.:

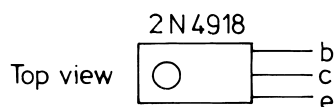
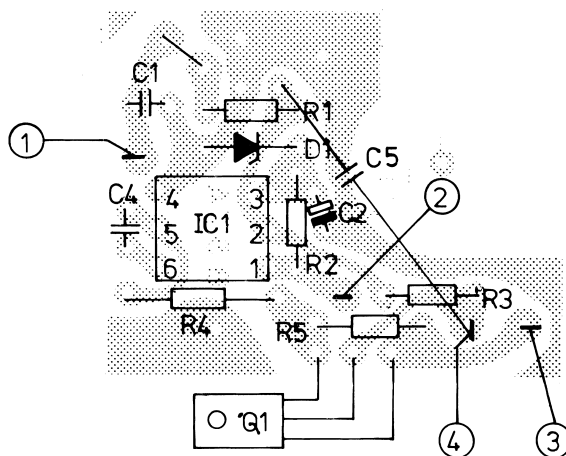
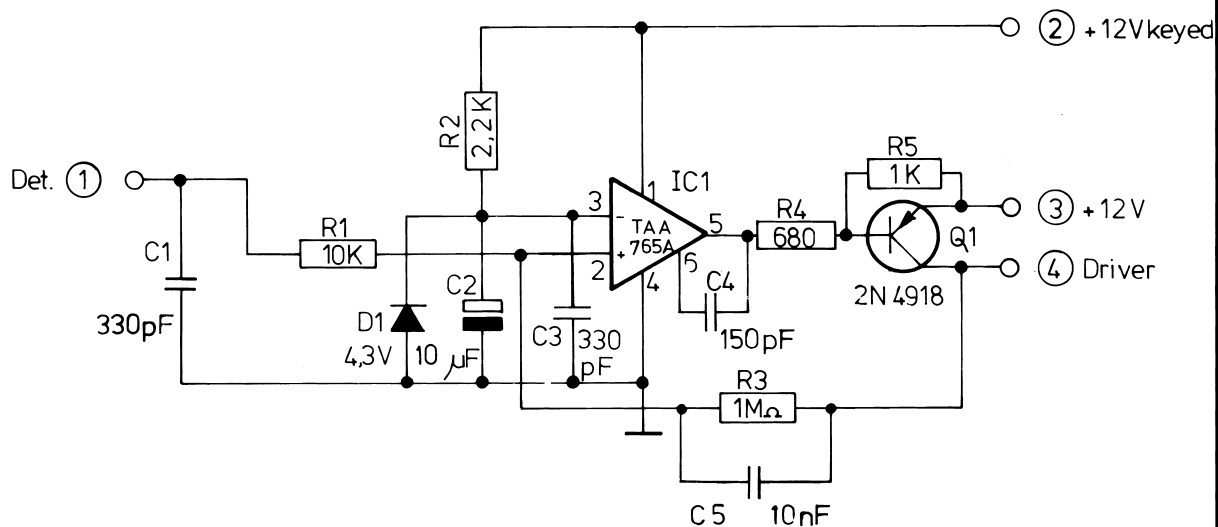
75510-4E2

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|---|--------|---------------------------|---------|------|--|
| R1 | 13-285 | 1,5 K Ω 1/8W CR 16 | RFC | | 75290-4E2 |
| R2 | 13-267 | 47 Ω " " | 1 | | |
| R3 | 13-285 | 1,5 K Ω " " | RFC | | 75290-4E2 |
| R4 | 13-267 | 47 Ω " " | 2 | | |
| R5 | 13-259 | 10 Ω " " | RFC | | 75290-4E2 |
| R6 | 13-259 | 10 Ω " " | 3 | | |
| R7 | 13-362 | 220 Ω 1/4W CR 25 | RFC | | 75290-4E2 |
| | | | 4 | | |
| C1 | 11-434 | 18 pF Ker. | | | |
| C2 | 19-330 | 18 pF Trim. | | | |
| C3 | 11-409 | 1 nF Ker. | | | |
| C4 | 11-376 | 10 pF " | | | |
| C5 | 19-330 | 18 pF Trim. | | | |
| C6 | 19-330 | 18 pF " | | | |
| C7 | 11-500 | 0,1 μ F Tant. | | | |
| C8 | 11-376 | 10 pF Ker. | | | |
| C9 | 11-409 | 1 nF " | | | |
| C10 | 19-330 | 18 pF Trim. | | | |
| C11 | 19-330 | 18 pF " | | | |
| C12 | 11-376 | 10 pF Ker. | | | |
| C13 | 11-500 | 0,1 μ F Tant. | | | |
| C14 | 11-409 | 1 nF Ker. | | | |
| C15 | 19-330 | 18 pF Trim. | | | |
| C16 | 19-330 | 18 pF " | | | |
| C17 | 11-500 | 0,1 μ F Tant. | | | |
| Q1 | 19-123 | MRF627 | | | |
| Q2 | 19-162 | 2N5944 | | | |
| Q3 | 19-163 | 2N5946 | | | |
| L2 | | 75615-4E2 | | | |
| L5 | | 75619-4E2 | | | |
| L7 | | 75619-4E2 | | | |
| 6-10 W, PA-stage UHF Print board B 45 A 1 Tilhører tegn. nr.: 75510-4E2 | | | Rettet: | | <div>Tegn.:</div> <div>Stykl. nr.:</div> <div>Kontr.:</div> <div>75510-4S2</div> |

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|-----------------------------------|---------|------|-------------|
| R1 | 13-356 | 47 Ω $\frac{1}{4}$ W CR 25 | | | |
| R2 | 19-258 | 10 K Ω Trim. | | | |
| R3 | 13-283 | 1 K Ω 1/8 CR 16 | | | |
| C1 | 19-330 | 18 pF Trim. | | | |
| C2 | 19-330 | 18 pF " | | | |
| C3 | 11-381 | 15 pF ker. | | | |
| C4 | 11-381 | 15 pF " | | | |
| C5 | 11-409 | 1 nF " | | | |
| C6 | 11-376 | 10 pF " | | | |
| C7 | 11-353 | 0,1 μ F Laco | | | |
| C8 | 19-346 | 3,5 pF Trim. | | | |
| C9 | 19-330 | 18 pF " | | | |
| C10 | 11-409 | 1 nF ker. | | | |
| C11 | 11-409 | 1 nF " | | | |
| C12 | 11-366 | 3,3 pF " | | | |
| C13 | 11-376 | 10 pF " | | | |
| C14 | 11-409 | 1 nF " | | | |
| C15 | 11-409 | 1 nF " | | | |
| C16 | 11-423 | 8,2 pF NPO " | | | |
| D1 | 04-036 | OA 90 | | | |
| D2 | 04-036 | OA 90 | | | |
| D3 | 04-008 | BA 244 | | | |
| Q1 | 19-177 | MRF 619 or 454BLY | | | |
| RFC- 1 | 04-111 | 2,2 μ H | | | |
| RFC- 2 | | 75290-4E2 | | | |
| L2 | | 75619-4E2 | | | |
| Rel. 1 | 17-057 | W-7K 570 Ω | | | |
| Rel. | 17-058 | MD/K - 14 PASI | | | |
| 10-25 W PA-stage UHF, aerial switch and power detector. Print board B 59F1, 2 and 3 Tilhører tegn. nr.: 75627-4E2 | | | Tegn.: | | Stykl. nr.: |
| | | | Kontr.: | | 75627-4S2 |



Rettet: 21-4-77 BJ/ac
16-3-79 BJ

Sense amplifier for output power stabilizing
of external PA
Print board B57B 2

AP-RADIOTELEFON 1/2

Tegn.: 3-11-76
AC

Kontr.:

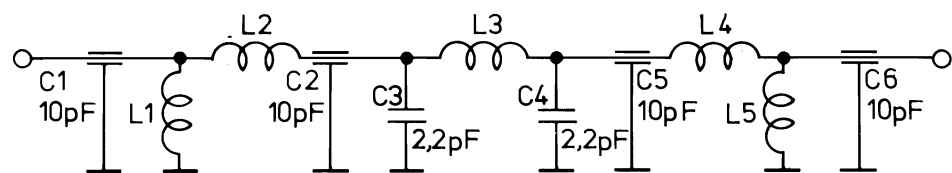
Stykl. nr.:

Tegn. nr.:

76325 - 4E2

AP-RADIOTELEFON

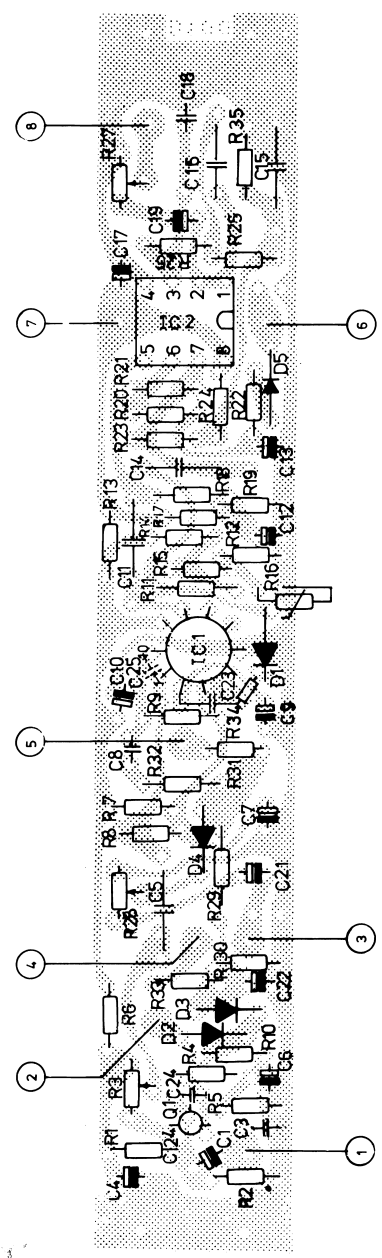
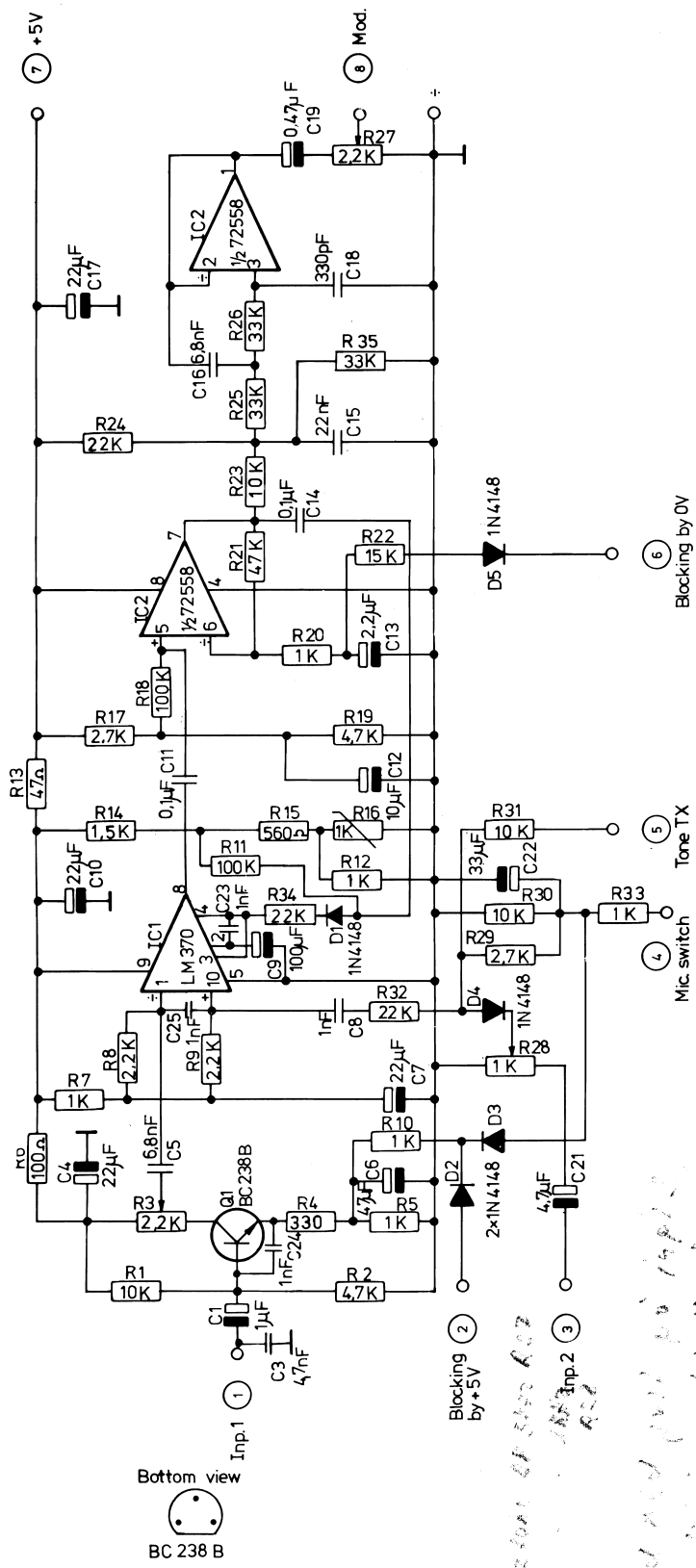
| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|------------------------------------|---------|------|-------------|
| R1 | 13-295 | 10 K Ω 1/8W CR 16 | | | |
| R2 | 13-287 | 2,2 K Ω " " | | | |
| R3 | 13-312 | 1 M Ω " " | | | |
| R4 | 13-368 | 680 Ω $\frac{1}{4}$ W CR 25 | | | |
| R5 | 13-283 | 1 K Ω 1/8W CR 16 | | | |
| C1 | 11-406 | 330 pF Ker. | | | |
| C2 | 11-506 | 10 μ F/25V Tant. | | | |
| C3 | 11-406 | 330 pF Ker. | | | |
| C4 | 11-404 | 150 pF " | | | |
| C5 | 11-481 | 10 nF Pol. | | | |
| D1 | 04-045 | 4,3 V Zener | | | |
| Q1 | 19-176 | 2N4918 | | | |
| IC1 | 09-003 | TAA765A | | | |
| Sense amplifier for output power stabilizing of external PA. Print board B 57 B 2 Tilhører tegn. nr.: 76325-4E2 | | | Tegn.: | | Stykl. nr.: |
| | | | Kontr.: | | 76325-4S2 |



| | | | |
|---------|---------------------|-----------------|---------|
| Rettet: | Aerialfilter UHF | Tegn.: 29-12-75 | Kontr.: |
| | | NC-AC | |
| | | Stykl. nr.: | |
| | | Tegn. nr.: | |
| | | 75623 - 4E2 | |
| | AP-RADIOTELEFON 1/8 | | |

AP-RADIOTELEFON

| Nr. | Kode | Data | | Nr. | Kode | Data | |
|-------------------------------|--------|-----------|------|---------|------|---------|-------------|
| C1 | 11-447 | 10 pF | Ker. | | | | |
| C2 | 11-447 | 10 pF | " | | | | |
| C3 | 11-363 | 2,2 pF | " | | | | |
| C4 | 11-363 | 2,2 pF | " | | | | |
| C5 | 11-447 | 10 pF | " | | | | |
| C6 | 11-447 | 10 pF | " | | | | |
| L1 | | 75618-4E2 | | | | | |
| L2 | | 75613-4E2 | | | | | |
| L3 | | 75612-4E2 | | | | | |
| L4 | | 75613-4E2 | | | | | |
| L5 | | 75618-4E2 | | | | | |
| 6 W aerial filter UHF | | | | Rettet: | | Tegn.: | Stykl. nr.: |
| Tilhører tegn. nr.: 75623-4E2 | | | | | | Kontr.: | 75623-4S2 |

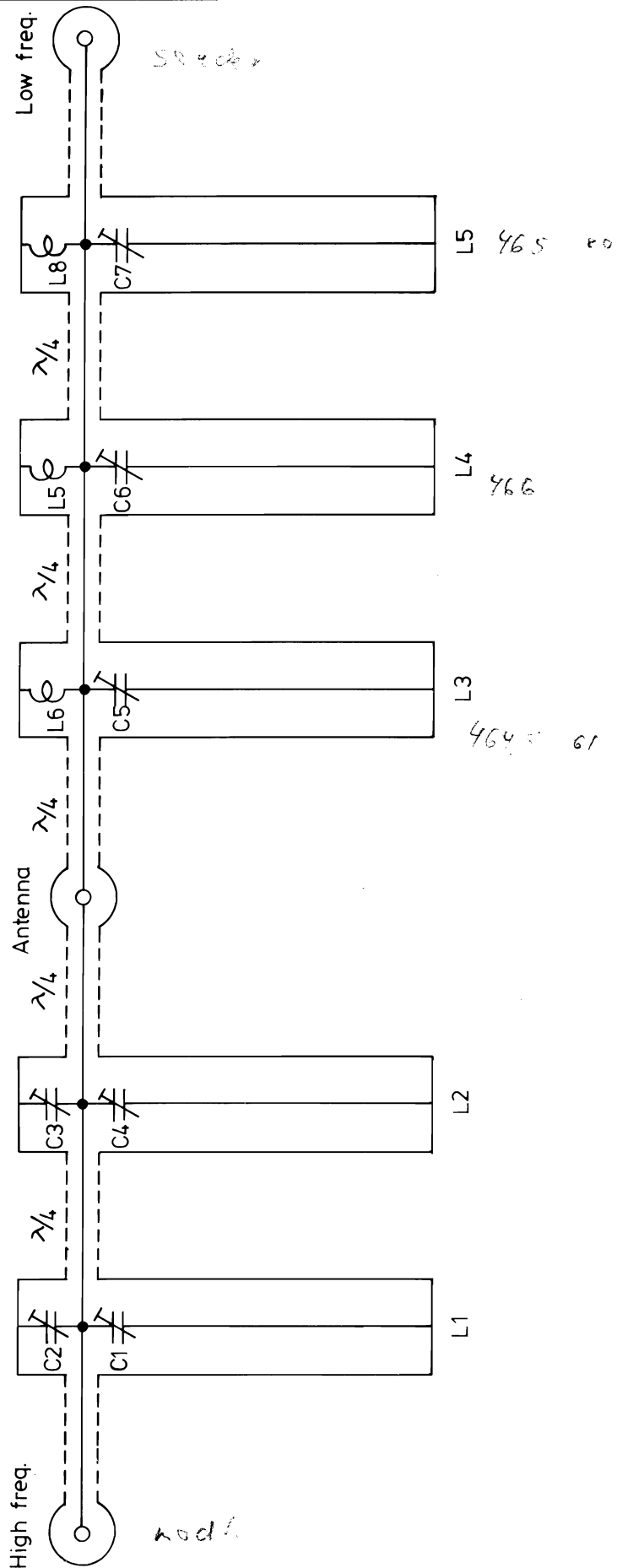


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 4x 100K 100K 100K 100K
 4x 100K 100K 100K 100K
 4x 100K 100K 100K 100K

| | | |
|--|---|--|
| Rettet: 7-9-76 JH/NC 1-2-77 HJ 27-5-77 LT/AC 9-6-77 LT/AC 22-6-77 JH/AC 9-2-78 HJ | Modulation amplifier Print board B10D1 AP-RADIOTELEFON | Tegn.: 8-1-75 AC Stykl. nr.: Tegn. nr.: 75018-3E2 |
|--|---|--|

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|-------------------|---------|--------|--------------------------------------|
| R1 | 13-295 | 10 KΩ 1/8W CR 16 | C1 | 11-502 | 1 μF/35V Tant. |
| R2 | 13-291 | 4,7 KΩ " " | C3 | 11-416 | 4,7 nF ker. |
| R3 | 19-255 | 2,2 KΩ Trim. | C4 | 11-507 | 22 μF/16V Tant. |
| R4 | 13-277 | 330 Ω 1/8W CR 16 | C5 | 11-466 | 6,8 nF ker. |
| R5 | 13-283 | 1 KΩ " " | C6 | 11-509 | 47 μF/6,3V Tant. |
| R6 | 13-271 | 100 KΩ " " | C7 | 11-507 | 22 μF/16V " |
| R7 | 13-283 | 1 KΩ " " | C8 | 11-409 | 1 nF ker. |
| R8 | 13-287 | 2,2 KΩ " " | C9 | 11-510 | 100 μF/3V Tant. |
| R9 | 13-287 | 2,2 KΩ " " | C10 | 11-507 | 22 μF/16V " |
| R10 | 13-283 | 1 KΩ " " | C11 | 11-470 | 0.1 μF MKH |
| R11 | 13-306 | 100 KΩ " " | C12 | 11-506 | 10 μF/25V Tant. |
| R12 | 13-283 | 1 KΩ " " | C13 | 11-503 | 2,2 μF/25V " |
| R13 | 13-267 | 47 Ω " " | C14 | 11-470 | 0.1 μF MKH |
| R14 | 13-285 | 1,5 KΩ " " | C15 | 11-489 | 22 nF " |
| R15 | 13-280 | 560 Ω " " | C16 | 11-465 | 6,8 nF " |
| R16 | 13-664 | 1 KΩ NTC | C17 | 11-507 | 22 μF/16V Tant. |
| R17 | 13-288 | 2,7 KΩ 1/8W CR 16 | C18 | 11-430 | 330 pF N750 ker. |
| R18 | 13-306 | 100 KΩ " " | C19 | 11-501 | 0,47 μF/35V Tant. |
| R19 | 13-291 | 4,7 KΩ " " | C20 | | |
| R20 | 13-283 | 1 KΩ " " | C21 | 11-504 | 4,7 μF/10V Tant. |
| R21 | 13-307 | 47 KΩ " " | C22 | 11-508 | 33 μF/10V " |
| R22 | 13-297 | 15 KΩ " " | C23 | 11-409 | 1 nF ker. |
| R23 | 13-295 | 10 KΩ " " | C24 | 11-409 | 1 nF " |
| R24 | 13-299 | 22 KΩ " " | C25 | 11-409 | 1 nF " |
| R25 | 13-300 | 33 KΩ " " | | | |
| R26 | 13-300 | 33 KΩ " " | D1 | 04-062 | 1N4148 |
| R27 | 19-255 | 2,2 KΩ Trim. | D2 | 04-062 | 1N4148 |
| R28 | 19-252 | 1 KΩ " " | D3 | 04-062 | 1N4148 |
| R29 | 13-288 | 2,7 KΩ 1/8W CR 16 | D4 | 04-062 | 1N4148 |
| R30 | 13-295 | 10 KΩ " " | D5 | 04-062 | 1N4148 |
| R31 | 13-295 | 10 KΩ " " | | | |
| R32 | 13-299 | 22 KΩ " " | Q1 | 19-093 | BC 238B |
| R33 | 13-283 | 1 KΩ " " | | | |
| R34 | 13-299 | 22 KΩ " " | IC1 | 09-005 | LM 370 |
| R35 | 13-300 | 33 KΩ " " | IC2 | 09-075 | SN 72558 p |
| R36 | | | | | |
| Modulation amplifier Print board B 10 D1 Tilhører tegn. nr.: 75018-3E2 | | | Rettet: | | <div>Tegn.:</div> <div>Kontr.:</div> |
| | | | | | Stykl. nr.: 75018-4S2 |



Rettet:

UHF Duplexfilter

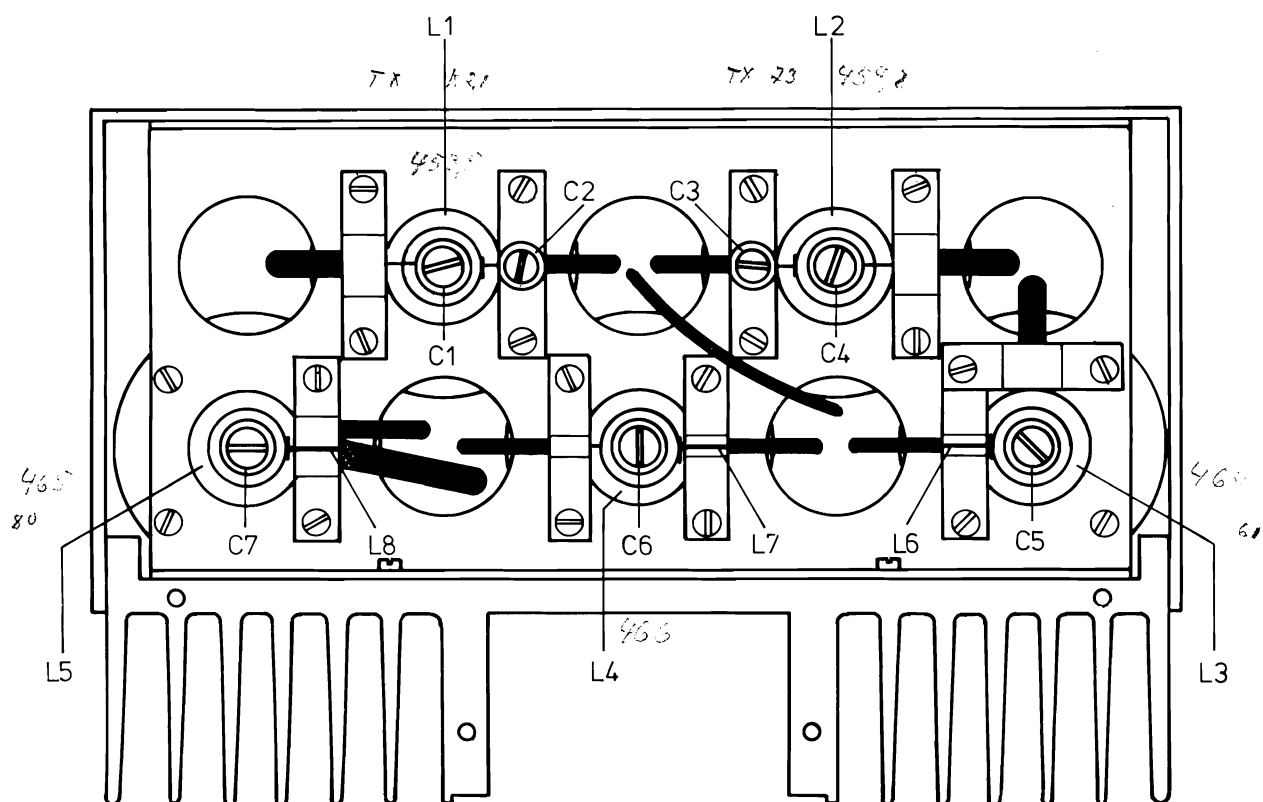
Tegn.: 11-10-76
AC

Kontr.: 12-10-76
JS

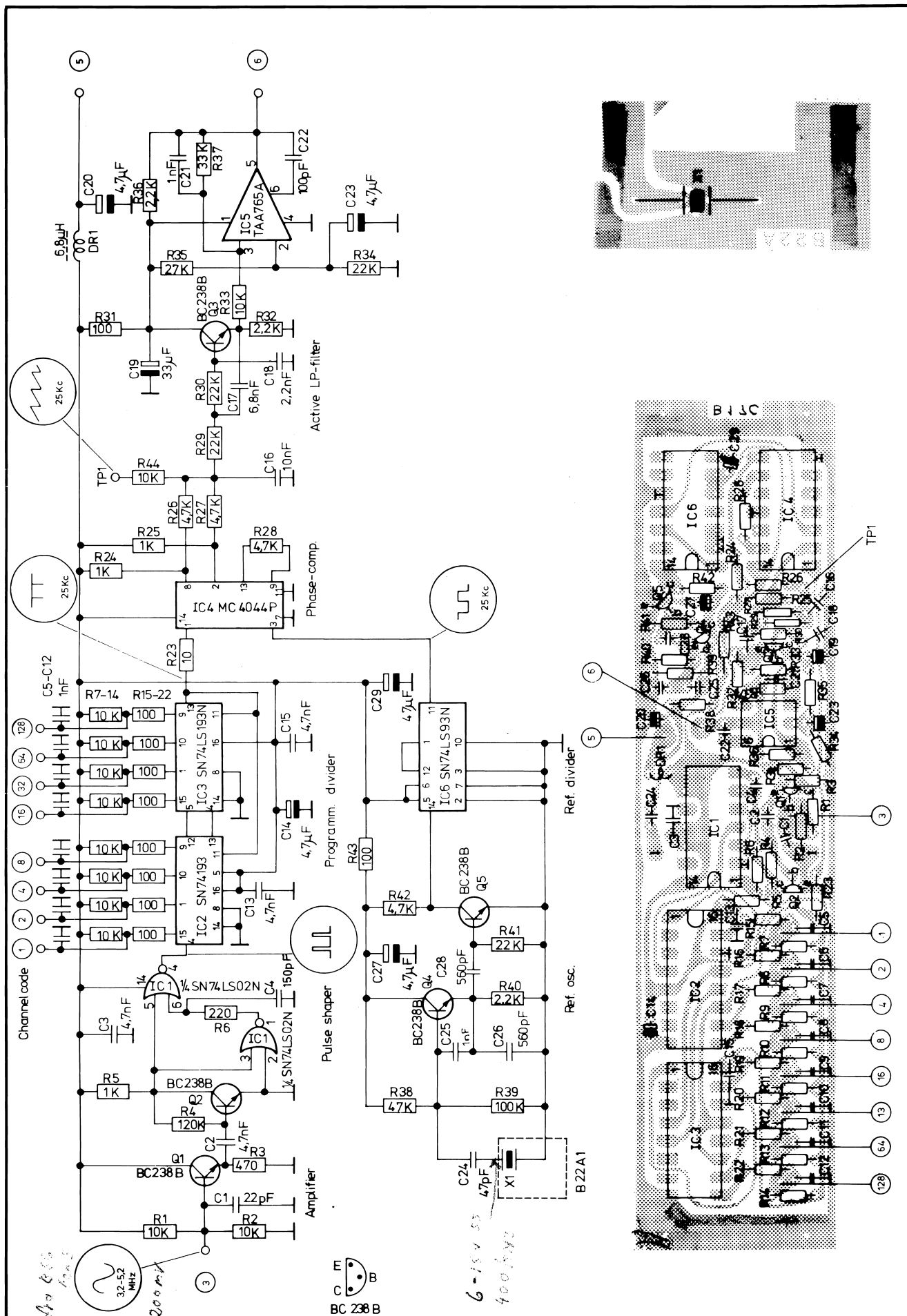
Stykl. nr.:

AP-RADIOTELEFON 1/2

Tegn. nr.:
76272 - 4E2



| | | | |
|---------|--|-----------------------|------------------------|
| Rettet: | UHF Duplexfilter Tuning section | Tegn.: 12-10-76 AC | Kontr.: 12-10-76 JS |
| | | Stykl. nr.: | |
| | | Tegn. nr.: | |
| | | 76273-4E2 | |
| | | AP-RADIOTELEFON ¼ | |



Rettet: 1-4-77 AC/HJ
 26-4-77 AC/LT
 28-9-77 AC/JH
 8-5-78 JH/AC

Synthesizer logic 25 kHz
 Print board B17C 1 + B 22 B 1
AP-RADIOTELEFON

Tegn.: 18-2-75
 AC
 Stykl. nr.:
 Tegn. nr.:

Kontr.:

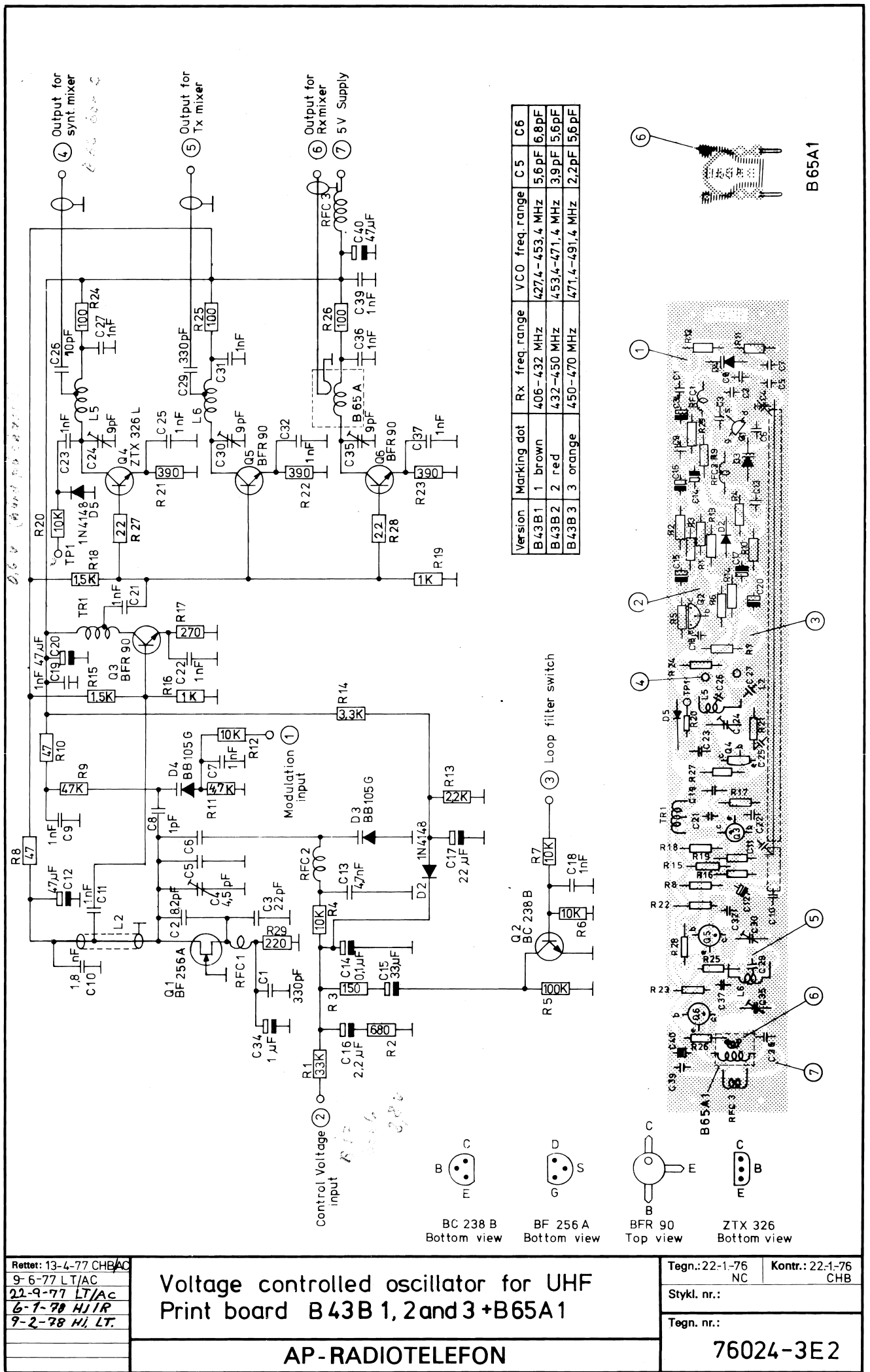
75062-3E2

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|-------------------------------|--------|----------------|-----|---------|------------------|
| R1 | 13-295 | 10 KΩ 1/8WCR16 | R38 | 13-302 | 47 KΩ 1/8WCR16 |
| R2 | 13-295 | 10 KΩ " " | R39 | 13-306 | 100 KΩ " " |
| R3 | 13-279 | 470 Ω " " | R40 | 13-287 | 2,2 KΩ " " |
| R4 | 13-307 | 120 KΩ " " | R41 | 13-299 | 22 KΩ " " |
| R5 | 13-283 | 1 KΩ " " | R42 | 13-291 | 4,7 kΩ " " |
| R6 | 13-275 | 220 Ω " " | R43 | 13-271 | 100 Ω " " |
| R7 | 13-295 | 10 KΩ " " | R44 | 13-382 | 10 KΩ 1/4 W CR25 |
| R8 | 13-295 | 10 KΩ " " | | | |
| R9 | 13-295 | 10 KΩ " " | C1 | 11-385 | 22 pF Ker |
| R10 | 13-295 | 10 KΩ " " | C2 | 11-416 | 4,7 nF " |
| R11 | 13-295 | 10 KΩ " " | C3 | 11-416 | 4,7 nF " |
| R12 | 13-295 | 10 KΩ " " | C4 | 11-404 | 150 pF " |
| R13 | 13-295 | 10 KΩ " " | C5 | 11-409 | 1 nF " |
| R14 | 13-295 | 10 KΩ " " | C6 | 11-409 | 1 nF " |
| R15 | 13-271 | 100 Ω " " | C7 | 11-409 | 1 nF " |
| R16 | 13-271 | 100 Ω " " | C8 | 11-409 | 1 nF " |
| R17 | 13-271 | 100 Ω " " | C9 | 11-409 | 1 nF " |
| R18 | 13-271 | 100 Ω " " | C10 | 11-409 | 1 nF " |
| R19 | 13-271 | 100 Ω " " | C11 | 11-409 | 1 nF " |
| R20 | 13-271 | 100 Ω " " | C12 | 11-409 | 1 nF " |
| R21 | 13-271 | 100 Ω " " | C13 | 11-416 | 4,7 nF " |
| R22 | 13-271 | 100 Ω " " | C14 | 11-504 | 4,7 μF/10V Tant |
| R23 | 13-259 | 10 Ω " " | C15 | 11-416 | 4,7 nF Ker |
| R24 | 13-283 | 1 KΩ " " | C16 | 11-481 | 10 nF Pol. |
| R25 | 13-283 | 1 KΩ " " | C17 | 11-478 | 6,8 nF " |
| R26 | 13-291 | 4,7 KΩ " " | C18 | 11-476 | 2,2 nF " |
| R27 | 13-291 | 4,7 KΩ " " | C19 | 11-508 | 33 μF/10V Tant |
| R28 | 13-291 | 4,7 KΩ " " | C20 | 11-504 | 4,7 μF/10V " |
| R29 | 13-299 | 22 KΩ " " | C21 | 11-409 | 1 nF Ker |
| R30 | 13-299 | 22 KΩ " " | C22 | 11-401 | 100 pF " |
| R31 | 13-271 | 100 Ω " " | C23 | 11-504 | 4,7 μF/10V Tant |
| R32 | 13-287 | 2,2 KΩ " " | C24 | 11-394 | 47 pF Ker |
| R33 | 13-295 | 10 KΩ " " | C25 | 11-409 | 1 nF " |
| R34 | 13-299 | 22 KΩ " " | C26 | 11-444 | 560 pF " |
| R35 | 13-313 | 27 KΩ " " | C27 | 11-504 | 4,7 μF/10V Tant |
| R36 | 13-287 | 2,2 KΩ " " | C28 | 11-444 | 560 pF Ker. |
| R37 | 13-300 | 33 KΩ " " | C29 | 11-509 | 47 μF/6,3VTant. |
| Synthesizer logic | | | | Tegn.: | Stykl. nr.: |
| Print board B 17 C 1-B 22 C 1 | | | | Kontr.: | 75062-48 2 |
| Tilhører tegn. nr.: 75062-3E | | | | | |

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|--------------------------------|--------|---------------|-------------|------|------|
| Q1 | 19-093 | BC 238B | | | |
| Q2 | 19-093 | BC 238B | | | |
| Q3 | 19-093 | BC 238B | | | |
| Q4 | 19-093 | BC 238B | | | |
| Q5 | 19-093 | BC 238B | | | |
| IC1 | 09-077 | SN74LS02N | | | |
| IC2 | 09-052 | SN74193N | | | |
| IC3 | 09-076 | SN74LS193N | | | |
| TC4 | 09-008 | MC4044P | | | |
| IC5 | 09-003 | TAA765A | | | |
| IC6 | 09-078 | SN74LS93N | | | |
| RFC1 | 04-114 | 74016-4E | | | |
| X1 | 11-816 | AP 21 400 Khz | | | |
| Synthesizer logic | | | Tegn.: | | |
| Print board B 17C 1+B 22 C 1 | | | Stykl. nr.: | | |
| Tilhører tegn. nr.: 75062-3E 2 | | | Kontr.: | | |
| | | | 75062-4S 2 | | |



Rettet: 13-4-77 CHB/AC
 9-6-77 LT/AC
 22-9-77 LT/AC
 6-1-78 HJ/R
 9-2-78 HJ/LT

Voltage controlled oscillator for UHF
 Print board B43B 1, 2 and 3 + B65A1

AP-RADIOTELEFON

Tegn.: 22-1-76 NC
 Kontr.: 22-1-76 CHB

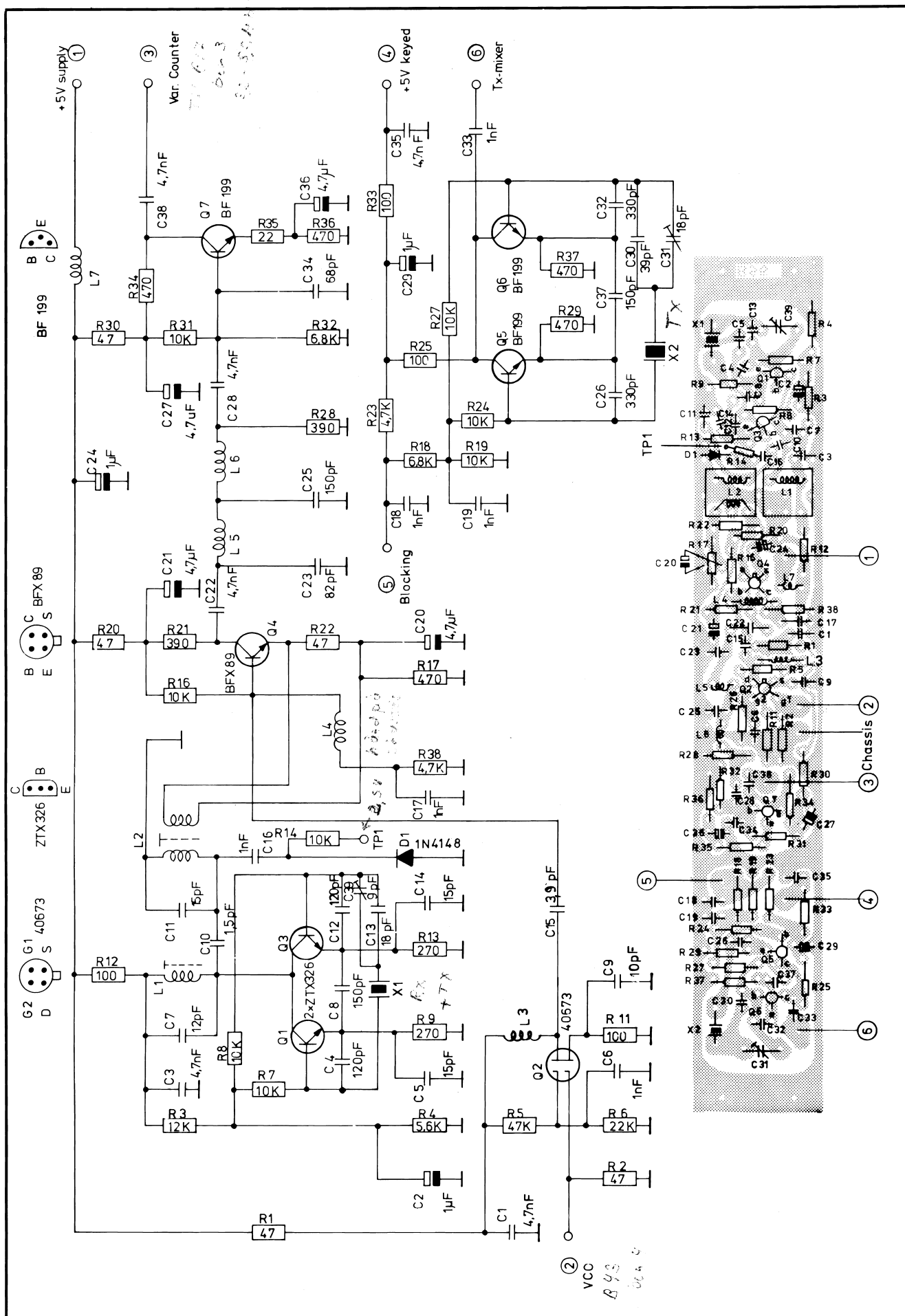
Stylk. nr.:
 Tegn. nr.:
 76024-3E2

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|-------------------|------|--------|---|
| R1 | 13-300 | 33 KΩ 1/8W CR 16 | C6/3 | 11-370 | 5,6 pF Ker. |
| R2 | 13-281 | 680 Ω " " | C7 | 11-409 | 1 nF " |
| R3 | 13-273 | 150 Ω " " | C8 | 11-361 | 1 pF " |
| R4 | 13-295 | 10 KΩ " " | C9 | 11-409 | 1 nF " |
| R5 | 13-306 | 100 KΩ " " | C10 | 11-441 | 1,8 nF chip " |
| R6 | 13-295 | 10 KΩ " " | C11 | 11-409 | 1 nF " |
| R7 | 13-295 | 10 KΩ " " | C12 | 11-509 | 47 μF/6,3V Tant. |
| R8 | 13-267 | 47 Ω " " | C13 | 11-416 | 4,7 nF Ker. |
| R9 | 13-302 | 47 KΩ " " | C14 | 11-500 | 0,1 μF/35 V Tant. |
| R10 | 13-267 | 47 Ω " " | C15 | 11-508 | 33 μF/10 V " |
| R11 | 13-291 | 4,7 KΩ " " | C16 | 11-503 | 2,2 μF/25 V " |
| R12 | 13-295 | 10 KΩ " " | C17 | 11-507 | 22 μF/25 V " |
| R13 | 13-287 | 2,2 KΩ " " | C18 | 11-409 | 1 nF Ker. |
| R14 | 13-289 | 3,3 KΩ " " | C19 | 11-409 | 1 nF Ker. |
| R15 | 13-285 | 1,5 KΩ " " | C20 | 11-509 | 47 μF/6,3V Tant. |
| R16 | 13-283 | 1 KΩ " " | C21 | 11-409 | 1 nF Ker. |
| R17 | 13-276 | 270 Ω " " | C22 | 11-409 | 1 nF " |
| R18 | 13-285 | 1,5 KΩ " " | C23 | 11-409 | 1 nF " |
| R19 | 13-283 | 1 KΩ " " | C24 | 19-329 | 9 pF Trim. |
| R20 | 13-382 | 10 KΩ 1/4 W CR 25 | C25 | 11-409 | 1 nF Ker. |
| R21 | 13-278 | 390 Ω 1/8W CR 16 | C26 | 11-376 | 10 pF " |
| R22 | 13-278 | 390 Ω " " | C27 | 11-409 | 1 nF " |
| R23 | 13-278 | 390 Ω " " | C28 | | |
| R24 | 13-271 | 100 Ω " " | C29 | 11-406 | 330 pF " |
| R25 | 13-271 | 100 Ω " " | C30 | 19-329 | 9 pF Trim. |
| R26 | 13-271 | 100 Ω " " | C31 | 11-409 | 1 nF Ker. |
| R27 | 13-263 | 22 Ω " " | C32 | 11-409 | 1 nF " |
| R28 | 13-263 | 22 Ω " " | C33 | | |
| R29 | 13-275 | 220 Ω " " | C34 | 11-502 | 1 μF/25 V Tant. |
| C1 | 11-406 | 330 pF Ker. | C35 | 19-329 | 9 pF Trim. |
| C2 | 11-374 | 8,2 pF " | C36 | 11-409 | 1 nF Ker. |
| C3 | 11-385 | 22 pF " | C37 | 11-409 | 1 nF " |
| C4 | 19-319 | 4,5 pF Trim. | C38 | | |
| C5/1 | 11-370 | 5,6 pF Ker. | C39 | 11-409 | 1 nF " |
| C5/2 | 11-433 | 3,9 pF " | C40 | 11-509 | 47 μF/6,3V Tant. |
| C5/3 | 11-439 | 2,2 pF NPO Ker. | | | |
| C6/1 | 11-373 | 6,8 pF " | | | |
| C6/2 | 11-370 | 5,6 pF " | | | |
| Voltage controlled oscillator for UHF Print board B43B 1,2,3, and Print board Tilhører tegn. nr.: 76024-3E2 B65A 1 | | | | | Tegn.: Kontr.: Stykl. nr.: 76024-4S2 |

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|---|--------|---------------------|---|------|------|
| D2 | 04-062 | 1N4148 | | | |
| D3 | 04-009 | BB105G | | | |
| D4 | 04-009 | BB105G | | | |
| D5 | 04-062 | 1N4148 | | | |
| Q1 | 19-129 | BF256A Philips | | | |
| Q2 | 19-093 | BÇ238B | | | |
| Q3 | 19-114 | BFR90 | | | |
| Q4 | 19-115 | ZTX326L | | | |
| Q5 | 19-114 | BFR90 | | | |
| Q6 | 19-114 | BFR90 | | | |
| L2 | | 75523-4E2 coaxcable | | | |
| L5 | 25-068 | 76082-4E2 | | | |
| L6 | 25-068 | 76082-4E2 | | | |
| TR1 | 25-007 | 75288-4E2 | | | |
| RFC 1 | 04-114 | 6,8 µH | | | |
| RFC 2 | 04-114 | 6,8 µH | | | |
| RFC 3 | 04-117 | 100 µH | | | |
| Voltage controlled oscillator for UHF Print board B43B 1,2,3 and Print board Tilhører tegn. nr.:76024-3E2 | | | Tegn.: Kontr.: Stykl. nr.: 76024-4S2 | | |
| B65A 1 | | | | | |



Rettet: 30-8-77 JH/AC
10-2-78 HJ LT
8-6-78 JH/AC

Synthesizer mixer and Tx-oscillator UHF
Print board B56 C 1

AP-RADIOTELEFON

Tegn.: 19-12-75 EH Kontr.: 23-1-76 CHB
Stykl. nr.:

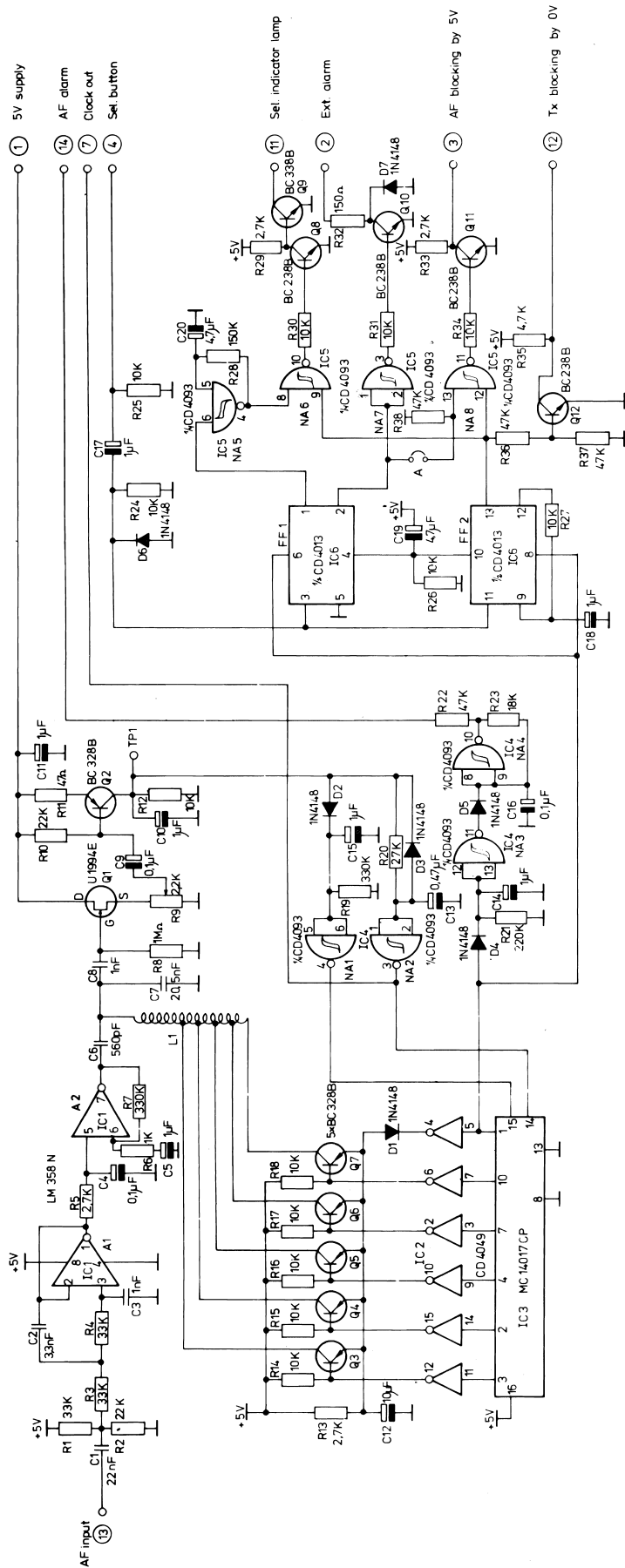
Tegn. nr.: 75628-3E2

AP-RADIOTELEFON

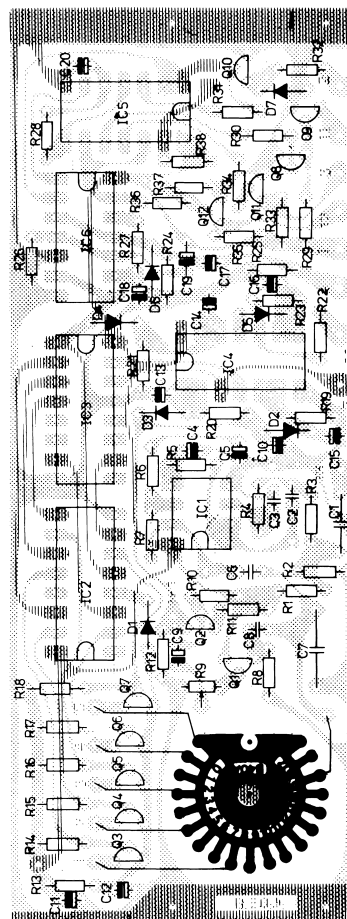
| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|-------------------------------------|-----|---------|-----------------------|
| R1 | 13-267 | 47 Ω 1/8W CR 16 | C1 | 11-416 | 4,7 nF Ker. |
| R2 | 13-267 | 47 Ω " " | C2 | 11-502 | 1 μ F/35V Tant. |
| R3 | 13-296 | 12 K Ω " " | C3 | 11-416 | 4,7 nF Ker. |
| R4 | 13-292 | 5,6 K Ω " " | C4 | 11-403 | 120 pF " |
| R5 | 13-302 | 47 K Ω " " | C5 | 11-381 | 15 pF " |
| R6 | 13-299 | 22 K Ω " " | C6 | 11-409 | 1 nF " |
| R7 | 13-295 | 10 K Ω " " | C7 | 11-379 | 12 pF " |
| R8 | 13-295 | 10 K Ω " " | C8 | 11-404 | 150 pF " |
| R9 | 13-276 | 270 Ω " " | C9 | 11-376 | 10 pF " |
| | | | C10 | 11-362 | 1,5 pF " |
| R11 | 13-271 | 100 Ω " " | C11 | 11-381 | 15 pF " |
| R12 | 13-271 | 100 Ω " " | C12 | 11-403 | 120 pF " |
| R13 | 13-276 | 270 Ω " " | C13 | 11-434 | 18 pF " |
| R14 | 13-382 | 10 K Ω $\frac{1}{4}$ W CR 25 | C14 | 11-381 | 15 pF " |
| R16 | 13-295 | 10 K Ω 1/8W CR 16 | C15 | 11-433 | 3,9 pF " |
| R17 | 13-279 | 470 Ω " " | C16 | 11-409 | 1 nF " |
| R18 | 13-293 | 6,8 K Ω " " | C17 | 11-409 | 1 nF " |
| R19 | 13-295 | 10 K Ω " " | C18 | 11-409 | 1 nF " |
| R20 | 13-267 | 47 Ω " " | C19 | 11-409 | 1 nF " |
| R21 | 13-278 | 390 Ω " " | C20 | 11-504 | 4,7 μ F/10V Tant. |
| R22 | 13-267 | 47 Ω " " | C21 | 11-504 | 4,7 μ F/10V " |
| R23 | 13-291 | 4,7 K Ω " " | C22 | 11-416 | 4,7 nF Ker. |
| R24 | 13-295 | 10 K Ω " " | C23 | 11-399 | 82 pF " |
| R25 | 13-271 | 100 Ω " " | C24 | 11-502 | 1 μ F/35V Tant. |
| R27 | 13-295 | 10 K Ω " " | C25 | 11-404 | 150 pF Ker. |
| R28 | 13-278 | 390 Ω " " | C26 | 11-430 | 330 pF N750 " |
| R29 | 13-279 | 470 Ω " " | C27 | 11-504 | 4,7 μ F/10V Tant. |
| R30 | 13-267 | 47 Ω " " | C28 | 11-416 | 4,7 nF Ker. |
| R31 | 13-295 | 10 K Ω " " | C29 | 11-502 | 1 μ F/35V Tant. |
| R32 | 13-293 | 6,8 K Ω " " | C30 | 11-393 | 39 pF Ker. |
| R33 | 13-271 | 100 Ω " " | C31 | 19-330 | 18 pF Trim. |
| R34 | 13-279 | 470 Ω " " | C32 | 11-430 | 330 pF N750 Ker. |
| R35 | 13-263 | 22 Ω " " | C33 | 11-409 | 1 nF " |
| R36 | 13-279 | 470 Ω " " | C34 | 11-397 | 68 pF " |
| R37 | 13-279 | 470 Ω " " | C35 | 11-416 | 4,7 nF " |
| R38 | 13-291 | 4,7 K Ω " " | C36 | 11-504 | 4,7 μ F/10V Tant. |
| | | | C37 | 11-404 | 150 pF Ker. |
| Synthesizer mixer and Tx-oscillator UHF Print board B 56 C 1 Tilhører tegn. nr.: 75628-3E2 | | | | Tegn.: | Stykl. nr.: |
| | | | | Kontr.: | 75628-4S2 |

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|---|-----|------|---|
| C38 | 11-416 | 4,7 nF Ker. | | | |
| C39 | 19-329 | 9 pF Trim. | | | |
| D1 | 04-062 | 1N4148 | | | |
| Q1 | 19-115 | ZTX 326 | | | |
| Q2 | 19-128 | 40673 | | | |
| Q3 | 19-115 | ZTX 326 | | | |
| Q4 | 19-102 | BFX89 | | | |
| Q5 | 19-104 | BF199 | | | |
| Q6 | 19-104 | BF199 | | | |
| Q7 | 19-104 | BF199 | | | |
| L1 | | 75594-4E2 | | | |
| L2 | | 75595-4E2 | | | |
| L3 | | 76079-4E2 | | | |
| L4 | | 76079-4E2 | | | |
| L5 | 04-114 | 6,8 μ H | | | |
| L6 | 04-114 | 6,8 μ H | | | |
| L7 | 04-114 | 6,8 μ H | | | |
| X1 | | Frequency dependent on desired band spec. AP 25 | | | |
| X2 | | Frequency dependent on mode of operation (simplex) duplex etc.) spec. AP 22 | | | |
| Synthesizer mixer and Tx-oscillator UHF Print board B 56 C 1 Tilhører tegn. nr.: 75628-3E2 | | | | | <div>Tegn.:</div> <div>Kontr.:</div> <div>Stykl. nr.: 75628-4S2</div> |



De 1 NAZ 1.1 ben 11 NA3 huis horn ved hvent optoid



| | | | |
|-------------------|--------------------------|-------------|-----------|
| Part: | 5-tone receiver for CCIR | Tag: 7-1-76 | Rev: 1 |
| | Print board B 60A1 | AC | |
| | | Syst. nr: | |
| | | Tag. nr: | 76006-2E2 |
| AP-RADIOTELEFON 4 | | | |

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|---|--------|---------------------------|---------|--------|--------------------------------------|
| R1 | 13-300 | 33 K Ω 1/8W CR 16 | R38 | 13-302 | 47 K Ω 1/8W CR 16 |
| R2 | 13-299 | 22 K Ω " " | | | |
| R3 | 13-300 | 33 K Ω " " | C1 | 11-489 | 22 nF MKH |
| R4 | 13-300 | 33 K Ω " " | C2 | 11-414 | 3,3 nF ker. |
| R5 | 13-288 | 2,7 K Ω " " | C3 | 11-409 | 1 nF " |
| R6 | 13-283 | 1 K Ω " " | C4 | 11-500 | 0,1 μ F/35V tant. |
| R7 | 13-310 | 330 K Ω " " | C5 | 11-502 | 1 μ F/35V " |
| R8 | 13-312 | 1 M Ω " " | C6 | 11-407 | 560 pF ker. |
| R9 | 19-258 | 2,2 K Ω Potm. stå. | C7 | 11-651 | 20,5 nF styr. |
| R10 | 13-299 | 22 K Ω 1/8W CR 16 | C8 | 11-409 | 1 nF ker. |
| R11 | 13-267 | 47 Ω " " | C9 | 11-500 | 0,1 μ F/35V tant. |
| R12 | 13-295 | 10 K Ω " " | C10 | 11-502 | 1 μ F/35V " |
| R13 | 13-288 | 2,7 K Ω " " | C11 | 11-502 | 1 μ F/35V " |
| R14 | 13-295 | 10 K Ω " " | C12 | 11-506 | 10 μ F/25V " |
| R15 | 13-295 | 10 K Ω " " | C13 | 11-501 | 0,47 μ F/25V " |
| R16 | 13-295 | 10 K Ω " " | C14 | 11-502 | 1 μ F/35V " |
| R17 | 13-295 | 10 K Ω " " | C15 | 11-502 | 1 μ F/35V " |
| R18 | 13-295 | 10 K Ω " " | C16 | 11-500 | 0,1 μ F/35V " |
| R19 | 13-310 | 330 K Ω " " | C17 | 11-502 | 1 μ F/35V " |
| R20 | 13-313 | 27 K Ω " " | C18 | 11-502 | 1 μ F/35V " |
| R21 | 13-309 | 220 K Ω " " | C19 | 11-504 | 4,7 μ F/10V " |
| R22 | 13-302 | 47 K Ω " " | C20 | 11-504 | 4,7 μ F/10V " |
| R23 | 13-298 | 18 K Ω " " | | | |
| R24 | 13-295 | 10 K Ω " " | D1 | 04-062 | 1N4148 |
| R25 | 13-295 | 10 K Ω " " | D2 | 04-062 | 1N4148 |
| R26 | 13-295 | 10 K Ω " " | D3 | 04-062 | 1N4148 |
| R27 | 13-295 | 10 K Ω " " | D4 | 04-062 | 1N4148 |
| R28 | 13-308 | 150 K Ω " " | D5 | 04-062 | 1N4148 |
| R29 | 13-288 | 2,7 K Ω " " | D6 | 04-062 | 1N4148 |
| R30 | 13-295 | 10 K Ω " " | D7 | 04-062 | 1N4148 |
| R31 | 13-295 | 10 K Ω " " | | | |
| R32 | 13-273 | 150 Ω " " | | | |
| R33 | 13-288 | 2,7 K Ω " " | | | |
| R34 | 13-295 | 10 K Ω " " | | | |
| R35 | 13-291 | 4,7 K Ω " " | | | |
| R36 | 13-302 | 47 K Ω " " | | | |
| R37 | 13-302 | 47 K Ω " " | | | |
| 5-tone receiver for CCIR Print board B 60 A 1 Tilhører tegn. nr.: 76006-2E2 | | | Rettet: | | <div>Tegn.:</div> <div>Kontr.:</div> |
| | | | | | Stykl. nr.: 76006-4S2 |

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|---|--------|-----------|---------|------|--------------------------------------|
| Q1 | 19-127 | U1994E | | | |
| Q2 | 19-082 | BC328B | | | |
| Q3 | 19-082 | BC328B | | | |
| Q4 | 19-082 | BC328B | | | |
| Q5 | 19-082 | BC328B | | | |
| Q6 | 19-082 | BC328B | | | |
| Q7 | 19-082 | BC328B | | | |
| Q8 | 19-117 | BC238B | | | |
| Q9 | 19-085 | BC338B | | | |
| Q10 | 19-117 | BC238B | | | |
| Q11 | 19-117 | BC238B | | | |
| Q12 | 19-117 | BC238B | | | |
| IC1 | 09-080 | LM358N | | | |
| IC2 | 09-071 | CD4049 | | | |
| IC3 | 09-070 | CD4017AE | | | |
| IC4 | 09-072 | CD4093BE | | | |
| IC5 | 09-072 | CD4093BE | | | |
| IC6 | 09-074 | CD4013AE | | | |
| L1 | 18-677 | 75425-4E2 | | | |
| 5-tone receiver for CCIR Print board B 60 A 1 Tilhører tegn. nr.: 76006-2E2 | | | Rettet: | | <div>Tegn.:</div> <div>Kontr.:</div> |
| | | | | | Stykl. nr.: 76006-4S2 |

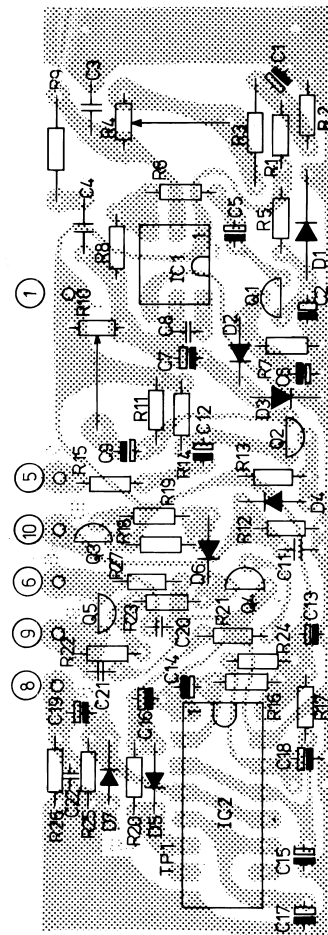
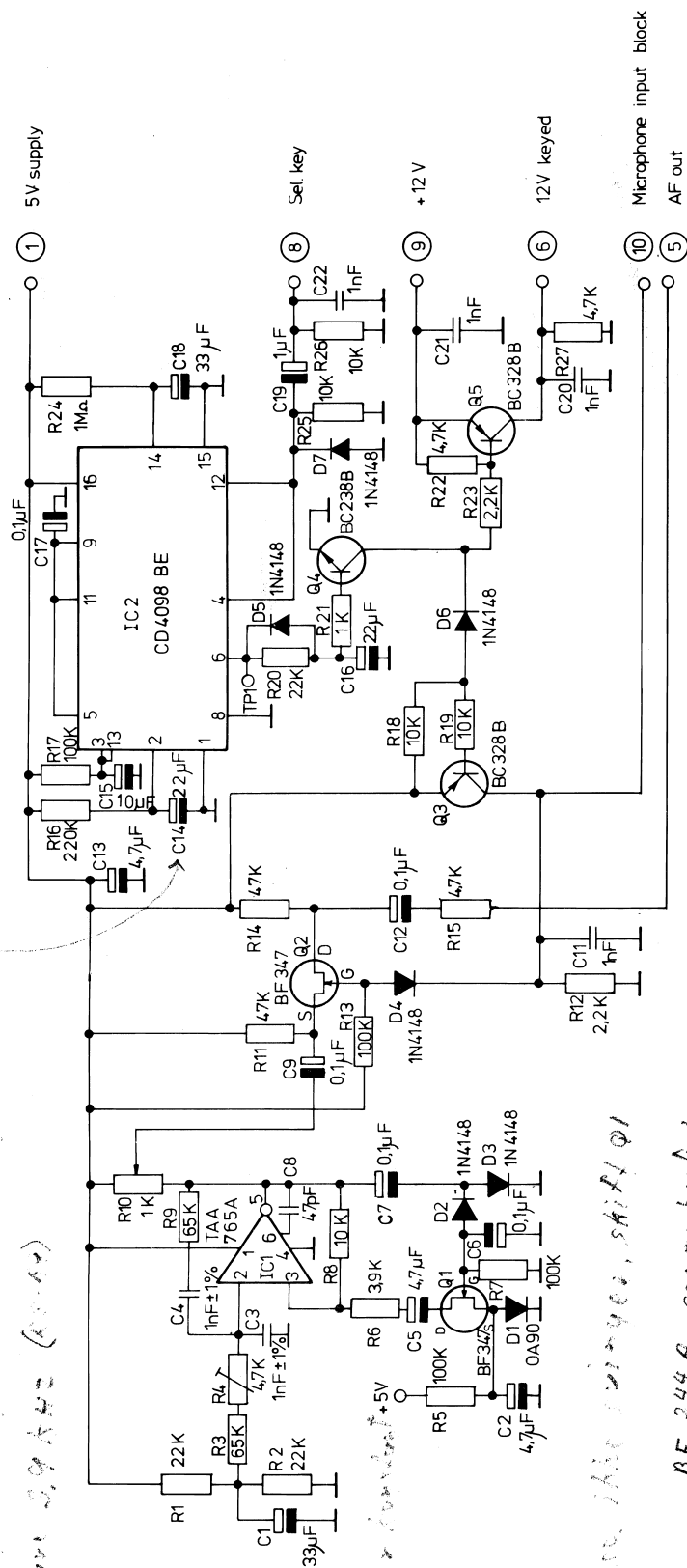
evl. 38uF
tomlondide Terev. 1. 7. 92

IC 1 2,4 MHz generator (VHF)
iVHF udyan 2,9 MHz (K-44)

oxo. kura komandant +5V

hvit o. o. 1A1c vinger, shift 1 Q1

BF 244 A same b. 600k.
Sun RF 942



| |
|----------------|
| Rettet: |
| 7-3-77 LT/NC |
| 21-3-77-HJ |
| 19-1-79 JH/AC |
| 3-8-79 POR/AMC |

1-tone transmitter with timing circuit

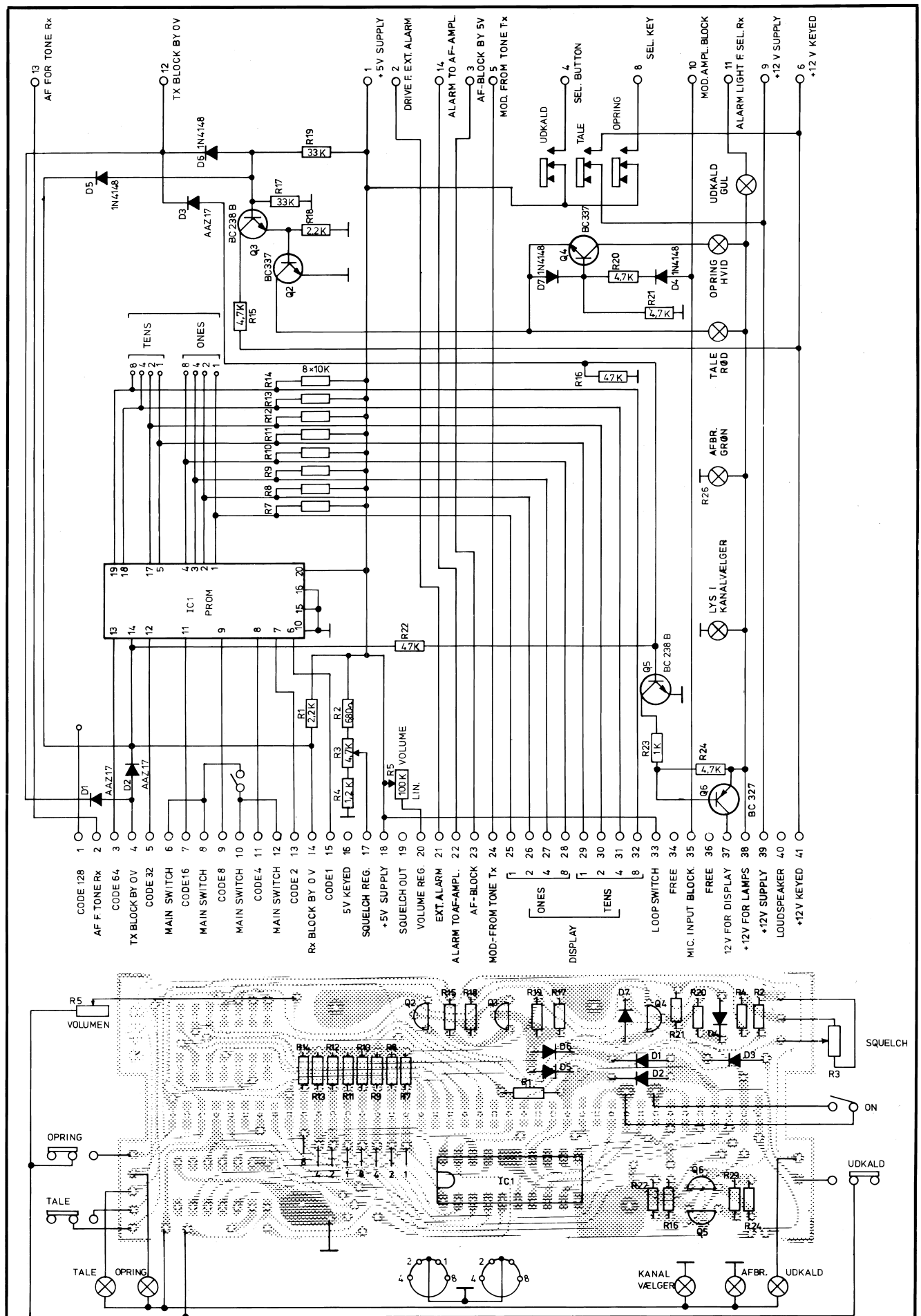
Print board B61B1

AP-RADIOTELEFON

| | |
|---------------|---------|
| Tegn.: 9-1-75 | Kontr.: |
| AC | |
| Stykl. nr.: | |
| Tegn. nr.: | |
| 76008-3E2 | |

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|---|--------|--------------------|---------|--------|--------------------------------------|
| R1 | 13-299 | 22 KΩ 1/8W CR 16 | C10 | | |
| R2 | 13-299 | 22 KΩ " " | C11 | 11-409 | 1 nF ker. |
| R3 | 13-106 | 65 KΩ 0,5% Dale | C12 | 11-500 | 0,1 μF/35V tant. |
| R4 | 19-256 | 4,7 KΩ trim.pot. | C13 | 11-504 | 4,7 μF/10V " |
| R5 | 13-306 | 100 KΩ 1/8W CR 16 | C14 | 11-507 | 22 μF/16V " |
| R6 | 13-290 | 3,9 KΩ " " | C15 | 11-506 | 10 μF/25V " |
| R7 | 13-306 | 100 KΩ " " | C16 | 11-507 | 22 μF/16V " |
| R8 | 13-295 | 10 KΩ " " | C17 | 11-500 | 0,1 μF/35V " |
| R9 | 13-106 | 65 KΩ 0,5% Dale | C18 | 11-508 | 33 μF/10V |
| R10 | 19-253 | 1 KΩ trim.pot. | C19 | 11-502 | 1 μF/35V " |
| R11 | 13-302 | 47 KΩ 1/8W CR 16 | C20 | 11-409 | 1 nF ker. |
| R12 | 13-287 | 2,2 KΩ " " | C21 | 11-409 | 1 nF " |
| R13 | 13-306 | 100 KΩ " " | C22 | 11-409 | 1 nF " |
| R14 | 13-302 | 47 KΩ " " | | | |
| R15 | 13-291 | 4,7 KΩ " " | | | |
| R16 | 13-309 | 220 KΩ " " | D1 | 04-036 | 0A90 |
| R17 | 13-306 | 100 KΩ " " | D2 | 04-062 | 1N4148 |
| R18 | 13-295 | 10 KΩ " " | D3 | 04-062 | 1N4148 |
| R19 | 13-295 | 10 KΩ " " | D4 | 04-062 | 1N4148 |
| R20 | 13-299 | 22 KΩ " " | D5 | 04-062 | 1N4148 |
| R21 | 13-283 | 1 KΩ " " | D6 | 04-062 | 1N4148 |
| R22 | 13-291 | 4,7 KΩ " " | D7 | 04-062 | 1N4148 |
| R23 | 13-287 | 2,2 KΩ " " | | | |
| R24 | 13-312 | 1 MΩ " " | Q1 | 19-106 | BF347 |
| R25 | 13-295 | 10 KΩ " " | Q2 | 19-106 | BF347 |
| R26 | 13-295 | 10 KΩ " " | Q3 | 19-082 | BC328B E-line |
| R27 | 13-291 | 4,7 KΩ " " | Q4 | 19-117 | BC238B E-line |
| | | | Q5 | 19-082 | BB328B E-line |
| C1 | 11-508 | 33 μF/10V tant. | | | |
| C2 | 11-504 | 4,7 μF/10V " | IC1 | 09-003 | TAA 765A |
| C3 | 11-410 | 1 nF $\pm 1\%$ NPO | IC2 | 09-099 | CD 4098 BE |
| C4 | 11-410 | 1 nF $\pm 1\%$ NPO | | | |
| C5 | 11-504 | 4,7 μF/10V tant. | | | |
| C6 | 11-500 | 0,1 μF/35V " | | | |
| C7 | 11-500 | 0,1 μF/35V " | | | |
| C8 | 11-394 | 47 pF ker. | | | |
| C9 | 11-500 | 0,1 μF/35V tant. | | | |
| 1-tone transmitter with timing circuit. Print board B 61 B Tilhører tegn. nr.: 76008-3E2 | | | Rettet: | | <div>Tegn.:</div> <div>Kontr.:</div> |
| | | | | | Stykl. nr.: 76008-4S2 |



Rottet:
 31-8-76 LT/ NC
 21-3-77 HJ
 12-4-77 LT/AC
 22-6-77 JH/AC
 31-10-77 IM/AC
 23-1-78 LT/AMC

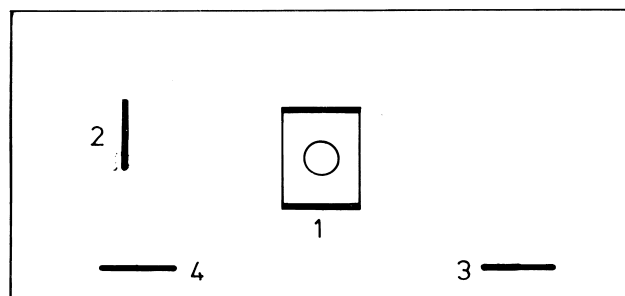
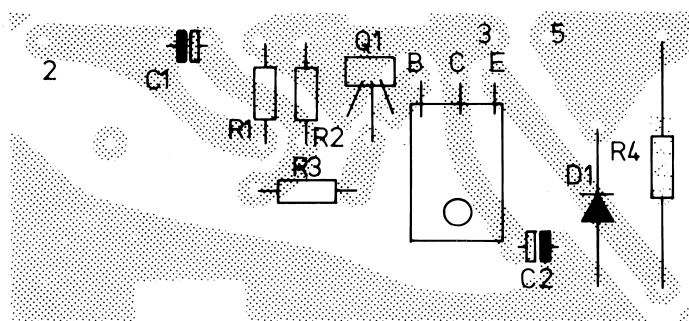
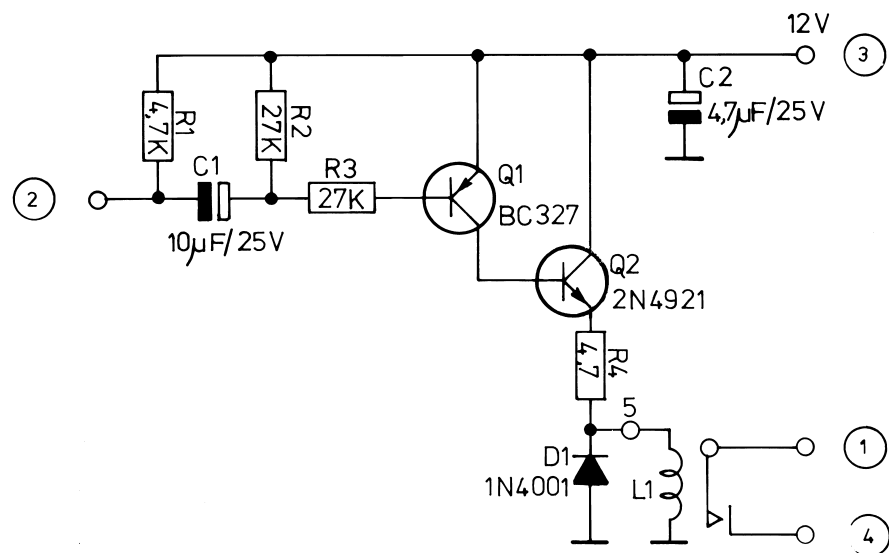
CONTROL CIRCUIT FOR PUBLIC MOBILE TELEPHONE
 FRONTSECTION 15, PRINT B 49B 1 (prom no.1)
 FRONTSECTION 19, PRINT B 49B 2 (prom no.2)

AP-RADIOTELEFON

Tegn.: 11-12-75
 AC
 Kontr.: LT
 Stylk. nr.:
 Tegn. nr.:
 75590-3E2

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|---|--------|-------------------|---------|--------|--------------------------------------|
| R1 | 13-287 | 2,2 KΩ 1/8 W CR16 | Q4 | 19-096 | BC337 |
| R2 | 13-281 | 680 Ω " " | Q5 | 19-093 | BC238B |
| R3 | 16-022 | 4,7 KΩ Potm. | Q6 | 19-095 | BC327 |
| R4 | 13-284 | 1,2 KΩ 1/8 W " | IC1 | 09-073 | SN74S470N |
| R5 | 16-023 | 100 KΩ Lin.Potm. | | | |
| R6 | | | | | |
| R7 | 13-295 | 10 KΩ " " | | | |
| R8 | 13-295 | 10 KΩ " " | | | |
| R9 | 13-295 | 10 KΩ " " | | | |
| R10 | 13-295 | 10 KΩ " " | | | |
| R11 | 13-295 | 10 KΩ " " | | | |
| R12 | 13-295 | 10 KΩ " " | | | |
| R13 | 13-295 | 10 KΩ " " | | | |
| R14 | 13-295 | 10 KΩ " " | | | |
| R15 | 13-291 | 4,7 KΩ " " | | | |
| R16 | 13-302 | 47 KΩ " " | | | |
| R17 | 13-300 | 33 KΩ " " | | | |
| R18 | 13-287 | 2,2 KΩ " " | | | |
| R19 | 13-300 | 33 KΩ " " | | | |
| R20 | 13-291 | 4,7 KΩ " " | | | |
| R21 | 13-291 | 4,7 KΩ " " | | | |
| R22 | 13-302 | 47 KΩ " " | | | |
| R23 | 13-283 | 1 KΩ " " | | | |
| R24 | 13-291 | 4,7 KΩ " " | | | |
| D1 | 04-002 | AAZ17 | | | |
| D2 | 04-002 | AAZ17 | | | |
| D3 | 04-002 | AAZ17 | | | |
| D4 | 04-062 | 1N4148 | | | |
| D5 | 04-062 | 1N4148 | | | |
| D6 | 04-062 | 1N4148 | | | |
| D7 | 04-062 | 1N4148 | | | |
| Q1 | | | | | |
| Q2 | 19-096 | BC337 | | | |
| Q3 | 19-093 | BC238B | | | |
| Control Circuit for public mob. Telephone frontsection 15/19 Tilhører tegn. nr.: 75590-3E2 | | | Rettet: | | <div>Tegn.:</div> <div>Kontr.:</div> |
| | | | | | Stykl. nr.: 75590-4S2 |



Relay box

Rettet: 23-3-76 AQLT

Extern timing for hornrelay
Print board B 34 B 1

AP-RADIOTELEFON 1/2

Tegn.: 21-4-75
AC

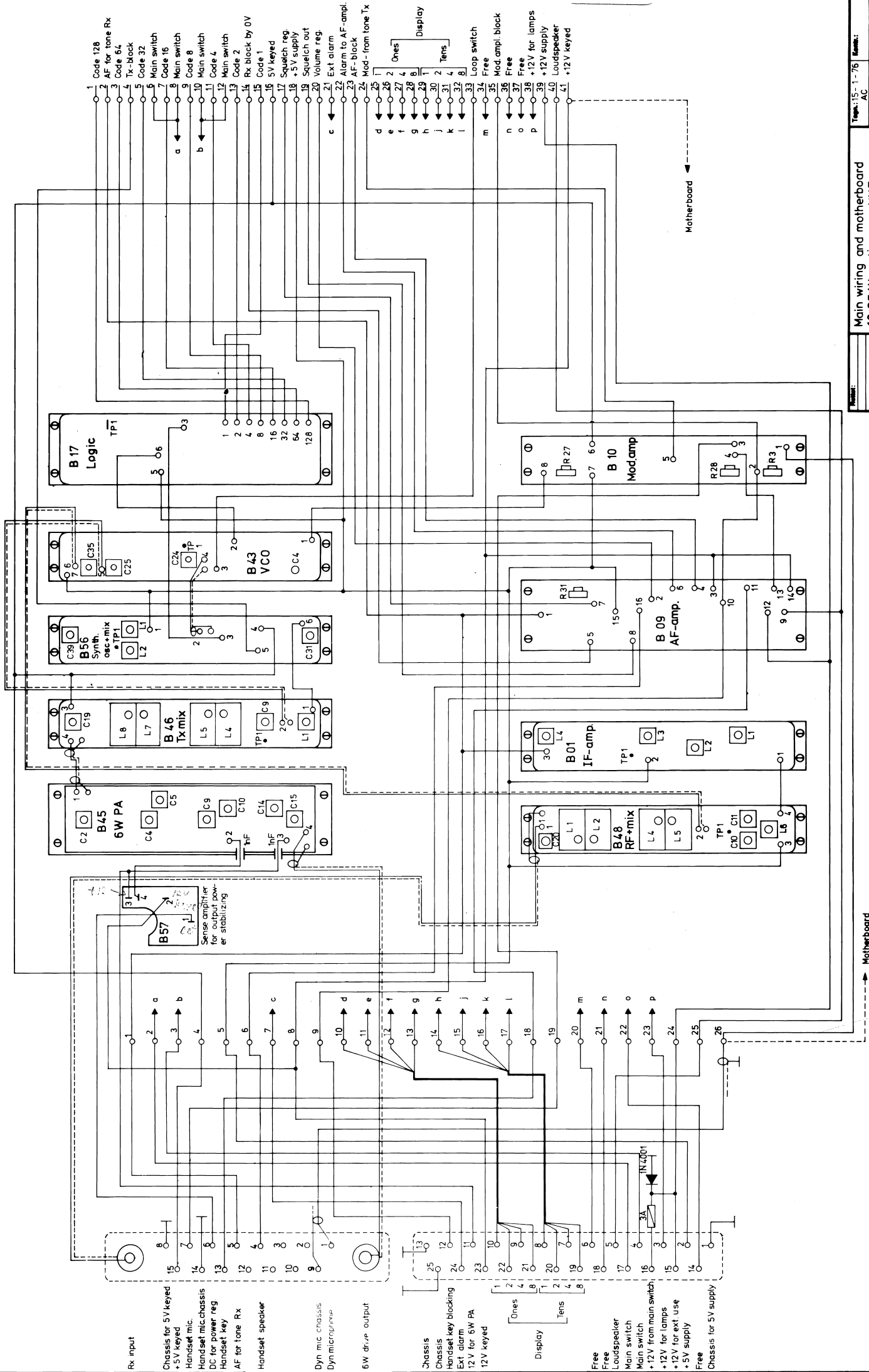
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TJ

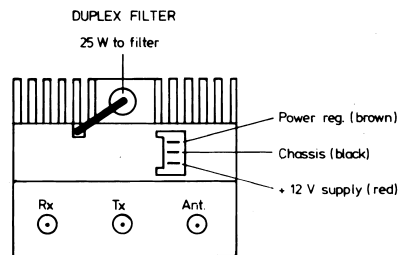
Stykl. nr.: 75169-4S2

Tegn. nr.: 75169-4E2

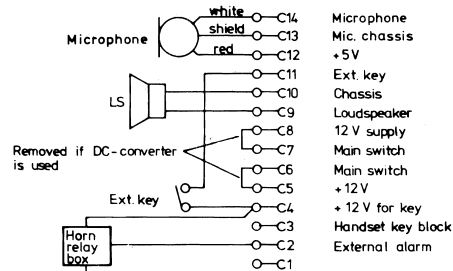
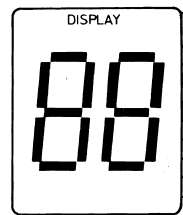
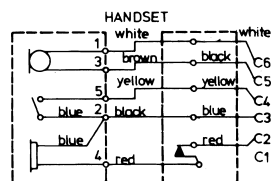
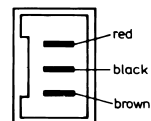
AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|--------------------------|---------|------|--------------------------------------|
| R1 | 13-291 | 4,7 K Ω 1/8W CR16 | | | |
| R2 | 13-313 | 27 K Ω " " | | | |
| R3 | 13-313 | 27 K Ω " " | | | |
| R4 | 13-687 | 4,7 Ω 6 W Dale | | | |
| C1 | 11-506 | 10 μ F/25V Tant. | | | |
| C2 | 11-505 | 4,7 μ F"25V " | | | |
| D1 | 04-060 | 1N4001 | | | |
| Q1 | 19-095 | BC327 | | | |
| Q2 | 19-175 | 2N4921 | | | |
| L1 | 17-054 | Relæ 274-10 | | | |
| Extern timing hornrelay Print board B 34 B 1 Tilhører tegn. nr.: 75169-4E2 | | | Rettet: | | <div>Tegn.:</div> <div>Kontr.:</div> |
| | | | | | Stykl. nr.: 75169-4S2 |





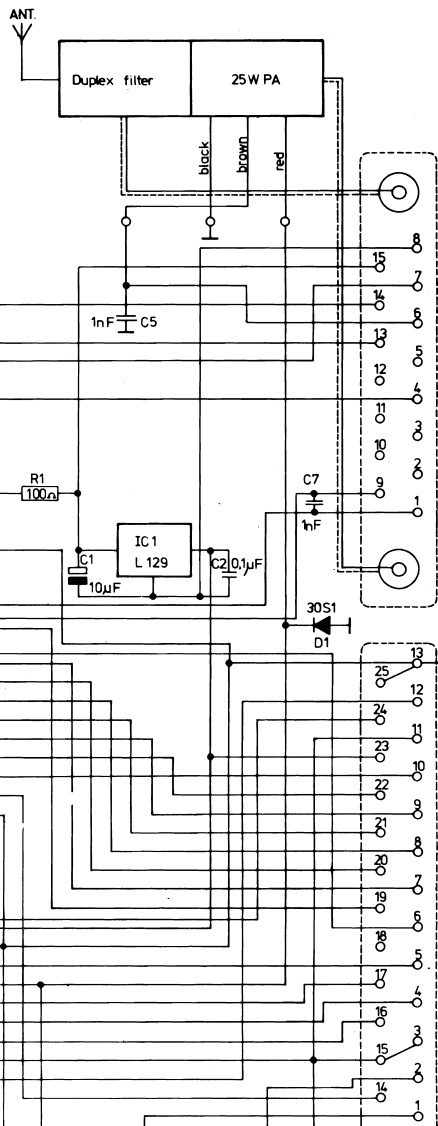
PLUG FOR DUPLEX FILTER



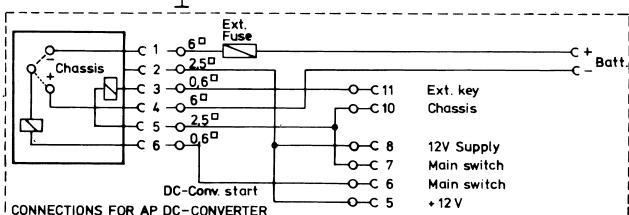
Handset mic.
Handset mic. chassis
Handset key
Chassis
Handset speaker

BCD-code tens
BCD-code ones
12 V Supply
Display chassis

Microphone
Mic. chassis
+5V
Ext. key
Chassis
Loudspeaker
12 V supply
Main switch
Main switch
+12V
+12 V for key
Handset key block.
External alarm



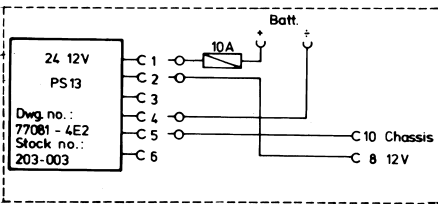
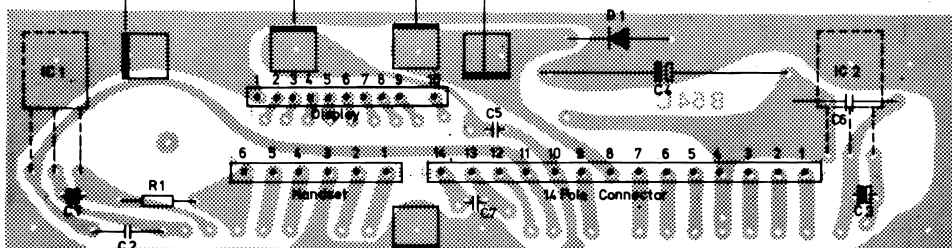
RX input
Chassis for 5V keyed
+5V keyed
Handset microphone
Handset mic. chassis
DC for power reg.
Handset key
AF for tone Rx
Handset speaker
Microphone chassis
Microphone
6W drive output
Chassis
Handset key blocking
Ext. alarm
12V for 6W PA
12V keyed
Ones
Tens
Free
Free
Loudspeaker
Main switch
Main switch
+12 V from main switch
+12 V for lamps
+12 V for ext. use
+5V supply
+12 V for display
Chassis for 5V supply



6V or 12V: Dwg. no. 68171/4 Stock no. 203-001
24V: Dwg. no. 68194/4 Stock no. 203-002
(Can not be used at 25W UHF)

Chassis for 25W PA
DC for Power reg.
12V for 25W PA
12V Supply

Chassis - +12V supply
Removed if DC-converter or regulator PS 13 is used



Notes: 16-3-77 TP/A
22-4-77 LT/AC
3-5-77 AC/TP

Installation for public mobile telephone. Print board B54C1

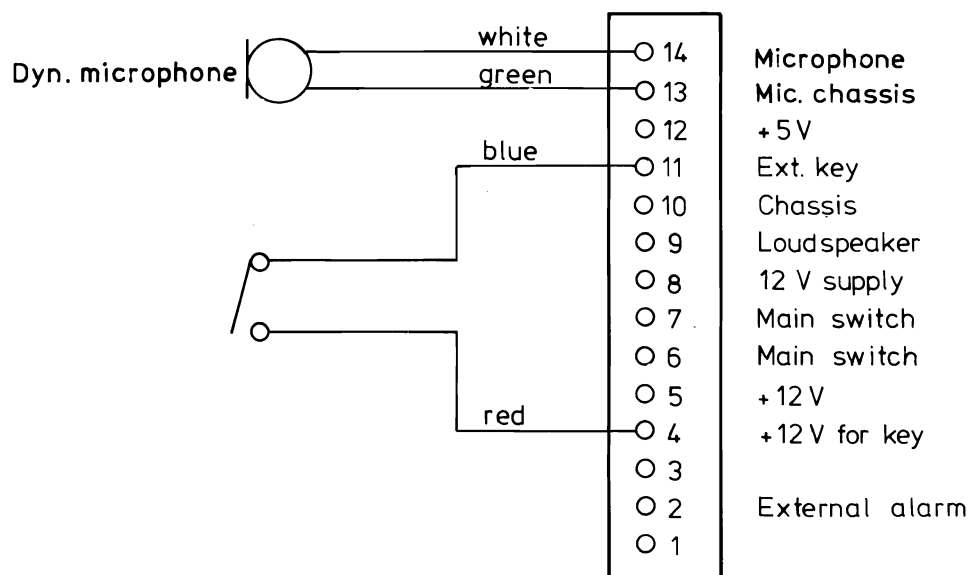
AP-RADIOTELEFON

Tags: 18-12-75
AC

Boyd. nr.:
Tags. nr.: 75620-2E2

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|------------------------------------|---------|------|--------------------------------------|
| R1 | 13-359 | 100 Ω $\frac{1}{4}$ W CR 25 | | | |
| C1 | 11-506 | 10 μ F/25V Tant. | | | |
| C2 | 11-353 | 0,1 μ F Laco. | | | |
| C3 | 11-506 | 10 μ F/25V Tant. | | | |
| C4 | 05-030 | 1000 μ F/16V Elco. | | | |
| C5 | 11-409 | 1 nF Ker. | | | |
| C6 | 11-353 | 0,1 μ F Laco. | | | |
| C7 | 11-409 | 1 nF Ker. | | | |
| D1 | 04-040 | 30S1 | | | |
| Installation for public mobile telephone, Print board B 54 C1 Tilhører tegn. nr.: 75620-2E2 | | | Rettet: | | <div>Tegn.:</div> <div>Kontr.:</div> |
| | | | | | Stykl. nr.: 75620-4S2 |



Rettet:

Installation for close talk
microphone, AP 2000

Tegn.: 4-11-76
AC

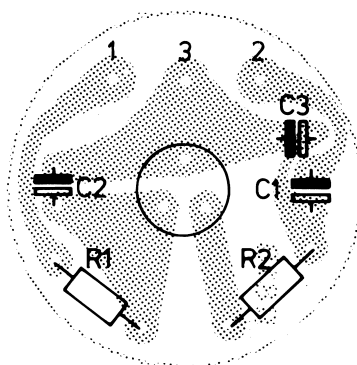
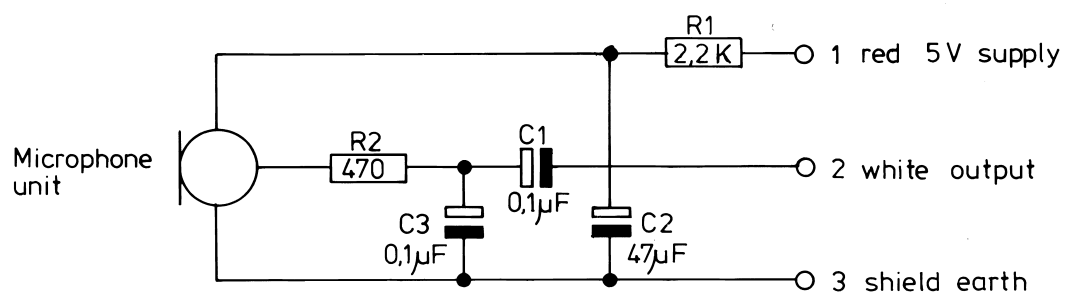
Kontr.:

Stykl. nr.:

AP-RADIOTELEFON 1/2

Tegn. nr.:

76327-4E2



Rettet:

25-5-77 LT/AC

Microphone 213-020

Print board B 81 B1

Tegn.: 4-3-77
AC

Kontr.:

Stykl. nr.:

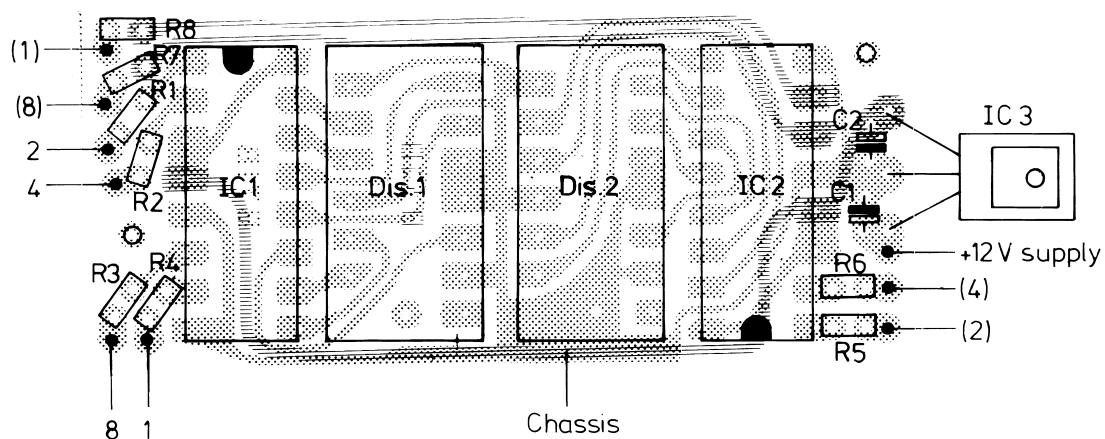
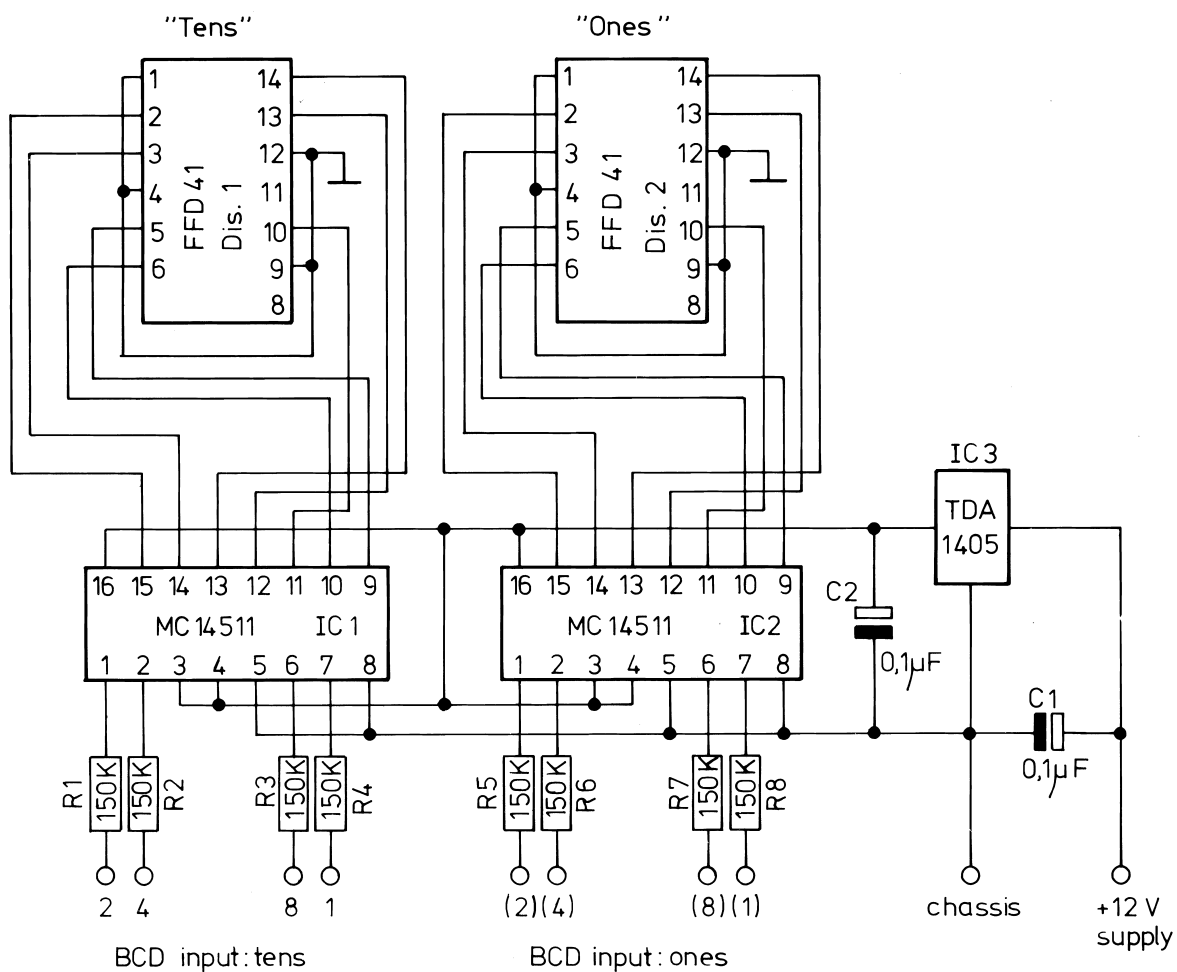
Tegn. nr.:

77127-4E2

AP-RADIOTELEFON 1/5

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|---------------------------|---------|------|--------------------------|
| R1 | 13-287 | 2,2 K Ω 1/8W CR 16 | | | |
| R2 | 13-279 | 470 Ω " " | | | |
| C1 | 11-500 | 0,1 μ F/35 V tant. | | | |
| C2 | 11-509 | 47 μ F/6,3 V " | | | |
| C3 | 11-500 | 0,1 μ F/35 V " | | | |
| | 13-062 | Mic. EM-10LB | | | |
| Microphone 213-020 Print board B 81 B1 Tilhører tegn. nr.: 77127-4E2 | | | Rettet: | | Tegn.: Kontr.: |
| | | | | | Stykl. nr.: 77127-4S2 |



Rettet: 30-8-77 LD/

Display and decoder for AP 2000
Print board B71B 1

AP-RADIOTELEFON 1/8

Tegn.: 6-7-76
AC

Kontr.:

Stykl. nr.:

Tegn. nr.:

76171 - 4E2

AP-RADIOTELEFON

| Nr. | Kode | Data | Nr. | Kode | Data |
|--|--------|-----------------------|---------|------|--------------------------------------|
| R1 | 13-308 | 150 kΩ 1/8W CR16 | | | |
| R2 | 13-308 | 150 kΩ " " | | | |
| R3 | 13-308 | 150 kΩ " " | | | |
| R4 | 13-308 | 150 kΩ " " | | | |
| R5 | 13-308 | 150 kΩ " " | | | |
| R6 | 13-308 | 150 kΩ " " | | | |
| R7 | 13-308 | 150 kΩ " " | | | |
| R8 | 13-308 | 150 kΩ " " | | | |
| C1 | 11-515 | 0,1 μF/35V Tant. mini | | | |
| C2 | 11-515 | 0,1 μF/35V " " | | | |
| IC1 | 09-068 | MC14511 | | | |
| IC2 | 09-068 | MC14511 | | | |
| Display and decoder Print board B 71 B 1 Tilhører tegn. nr.: 76171-4E2 | | | Rettet: | | <div>Tegn.:</div> <div>Kontr.:</div> |
| | | | | | Stykl. nr.: 76171-4S2 |