

MANUAL 140

AP 2000 MOBILE

UHF BAND

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Technical description for AP 2000 UHF

RECEIVER(Fig. 1)

Aerial Switch dwg. no. 75624-4E2
(for sets with ext. PA see dwg. 75627-4E2)

The aerial switch is made by a relay, while TR 1 D1 and D2 makes a forward power sensing circuit for the transmitter.

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

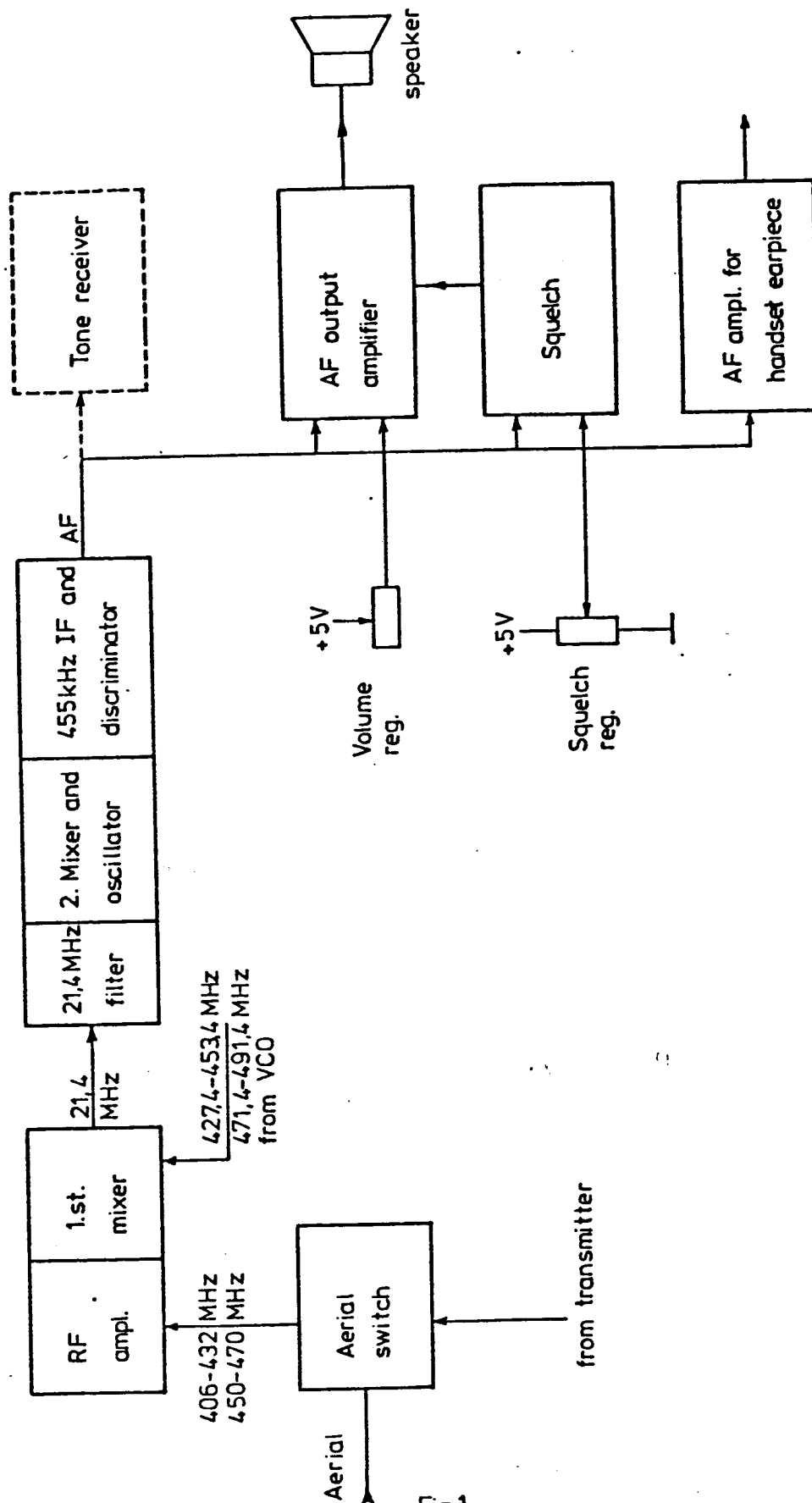
The RF amplifier consists of a bipolar-transistor with several tuned circuits, of this 4 helicoils, to give the necessary selectivity. The first mixer converts the RF-signal 406-432 MHz or 450-470MHz to 21,4 MHz with an oscillator injection of 427,4-453.4 MHz respective 471,4-491,4 MHz on the gate. Matching of the mixer output impedance to the crystal filter is made by the tuned circuit L6.

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 45 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 Q3.

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



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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 C6 and C7 produce the deemphasis.

For the handset earpiece Q4 and Q5 gives the amplification. The squelch circuit consists of an 8 kHz tuned amplifier Q3 followed by a detector D11 and D12. With increasing noise level on the AF-input the voltage on the negative side on C19 will decrease from +5V. Getting lower than the squelch reg. voltage on point 7, the amplifier IC2 switches over to an output voltage of +5V and thus blocking the AF-output through the volume control circuit.

In the key control circuit Q1 and Q2 goes ON when the button in the handset connects point 11 to chassis, thus producing +12V 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 Q3 and Q4 give further suppression of unwanted sidebands and the necessary amplification to reach an output of approx. 30 mW.

6 W power amplifier (75510-4E2)

The 6W power amplifier consists of three stages Q1, Q2 and Q3, where the output level can be regulated by varying the supply voltage for Q1 and Q2.

25 W PA-stage (75627-4E2)

The output from the 25 W PA-stage goes through a forward power-

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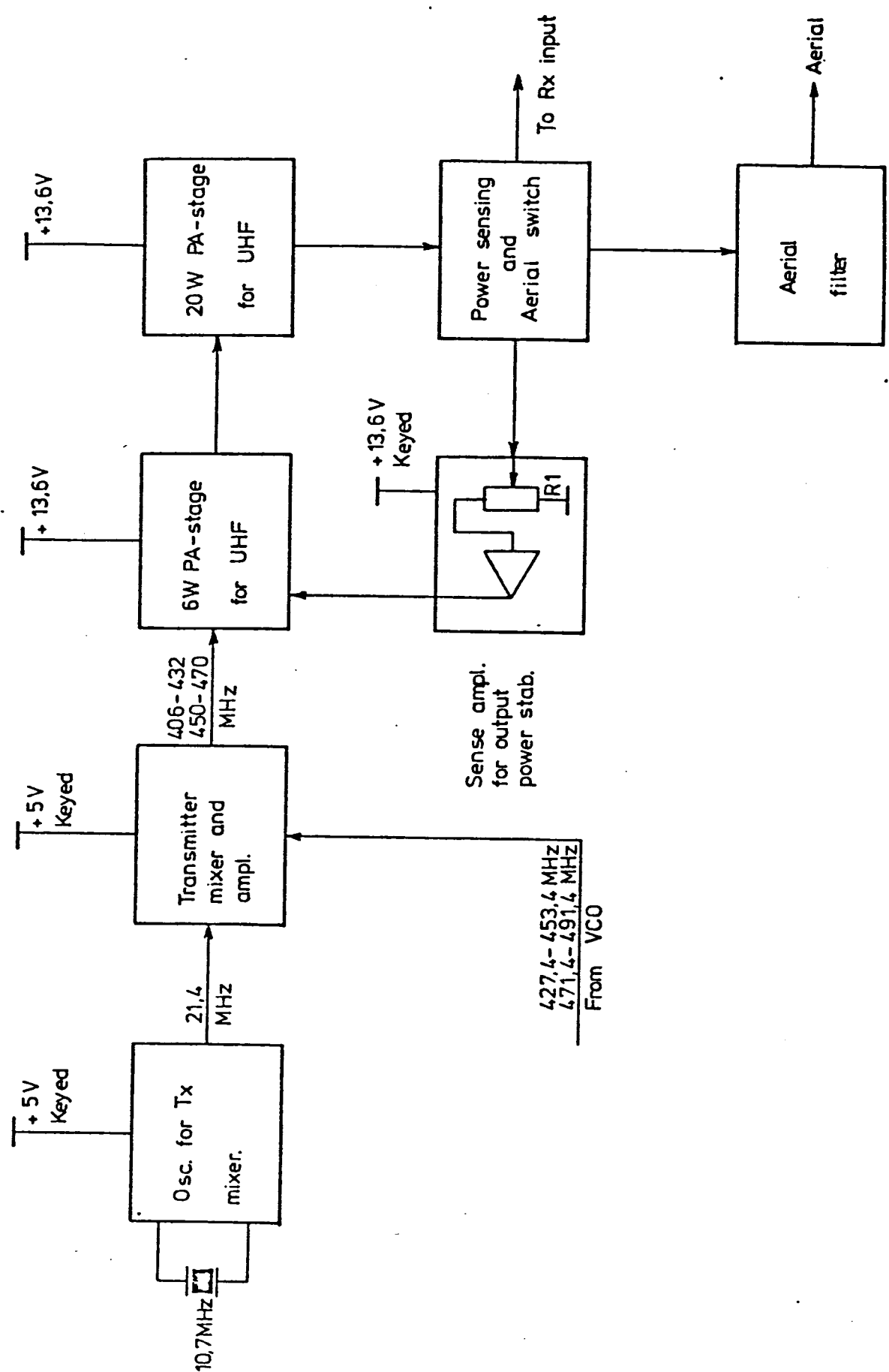


Fig. 2

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sensing circuit to the aerial switch. The output power is adjustable with R2.

Output power stabilizing (76325-4E2)

From the power-sensing circuit 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 voltages (~11 V) the output power will increase with increasing supply voltage, and when the output reaches 25W it will be constant for further increase in supply voltage. The output level for supply voltage greater than approx. 13 V is adjustable with R2 on printboard B 59 .B. 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 W stage and the 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 pair of IC 2 work as a compressor/amplifier to limit the maximum output AF-voltage. When using a variable gain type amplifier as IC 1 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 kc 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. 3).

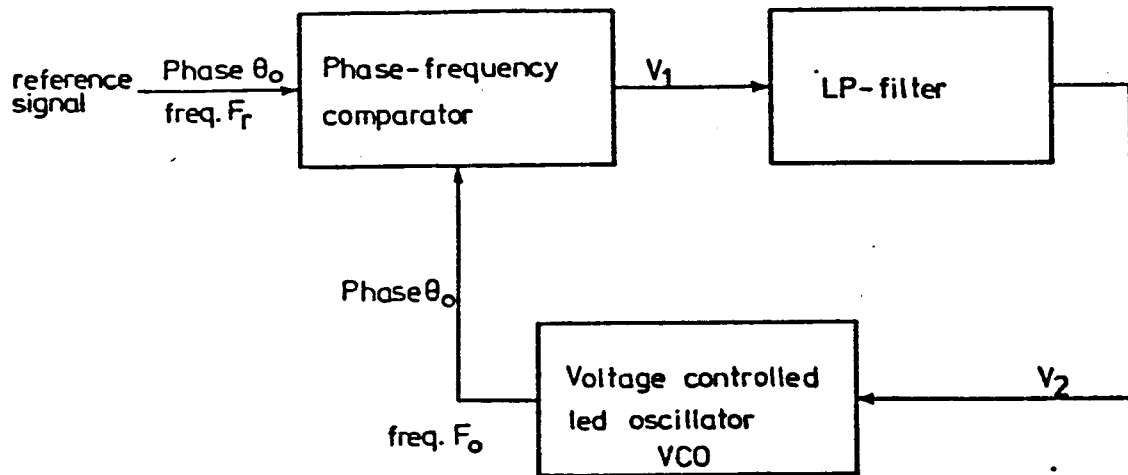


Fig.3 Basic phase locked loop.

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. 4). 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 .

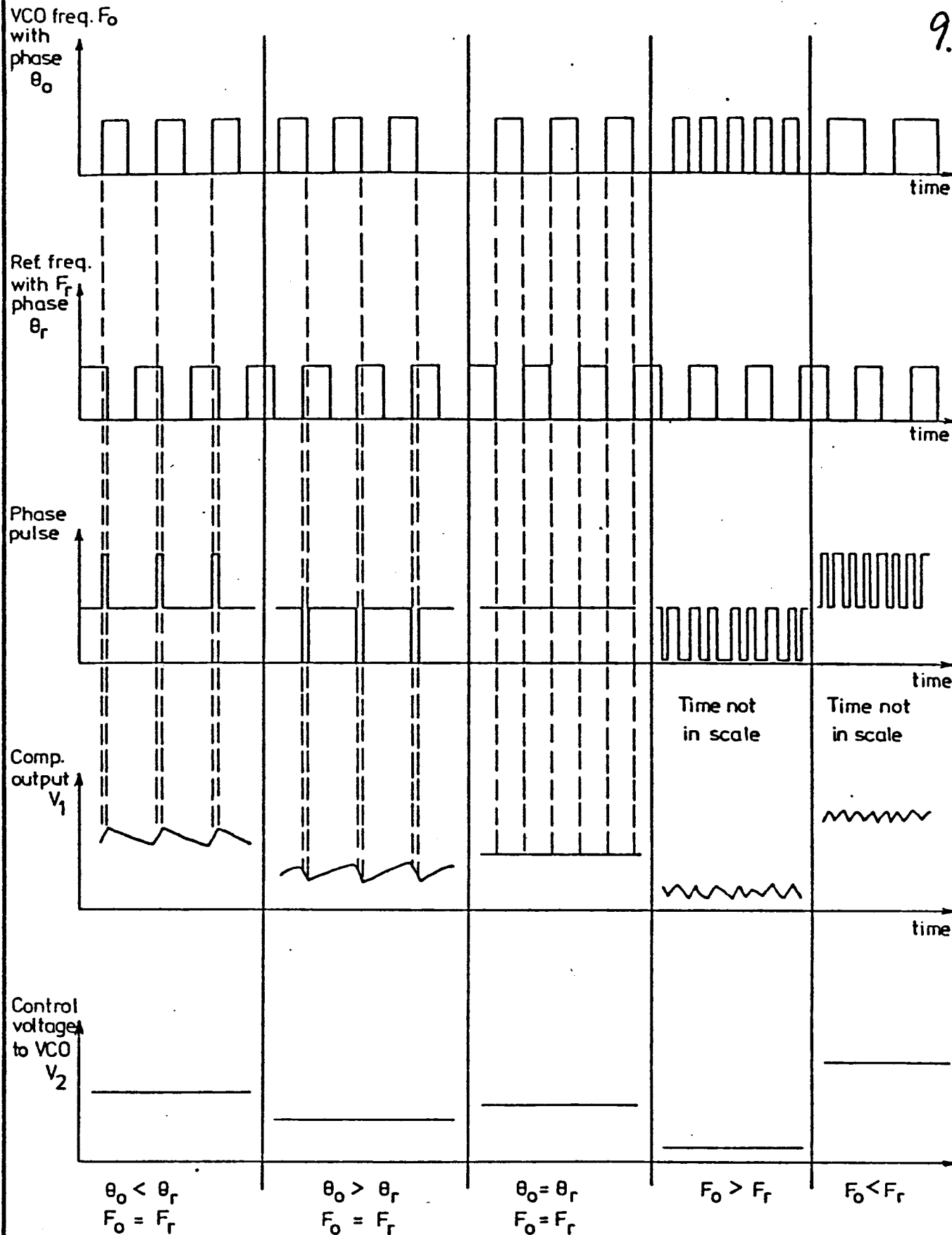
Voltage controlled oscillator

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. 4) and determines the dynamic behaviour (stability, step response) of the loop.

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



SIMPLIFIED OPERATION of frequency and phase comparator

Fig. 4

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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. 4). 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. 5)

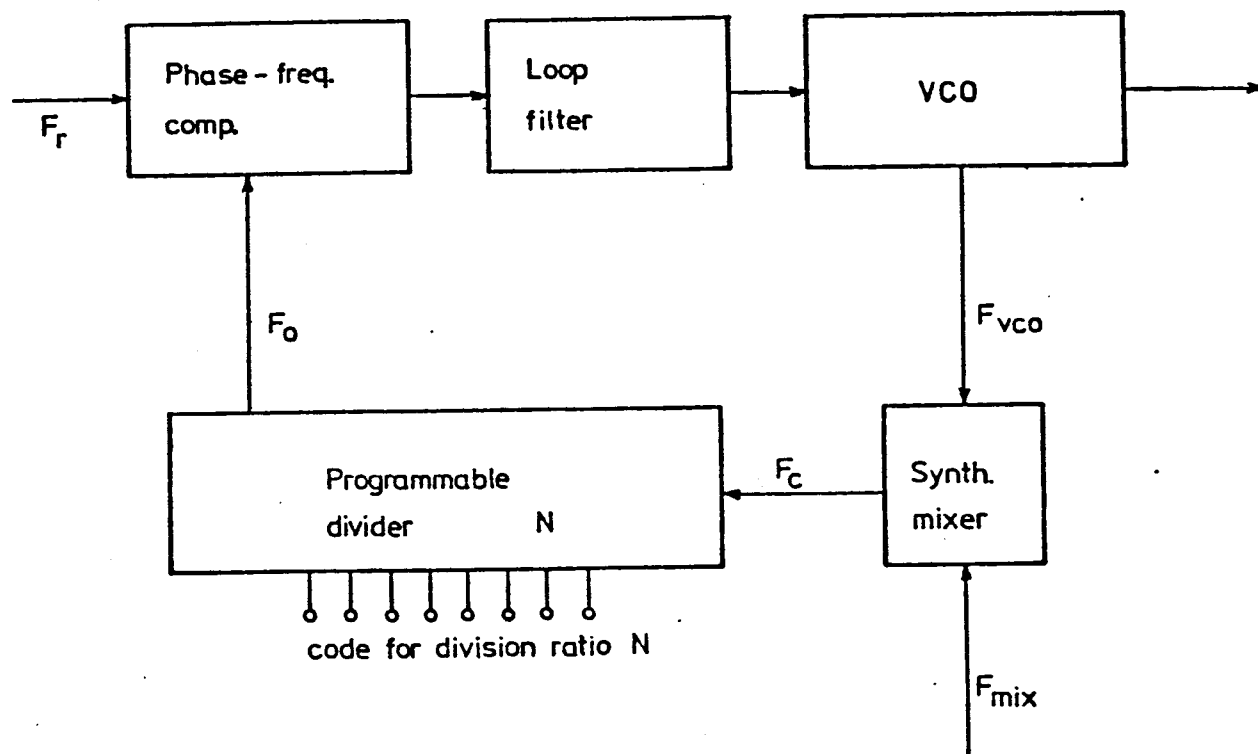


Fig. 5 Synthesizer loop

To build a multichannel synthesizer we have to add some more components (Fig. 5) but the basic function is the same. Here the VCO frequency is converted to a lower frequency F_c suitable

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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 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. 6)

Synthesizer logic (75062-3E2)

The 25 kHz reference frequency is produced by dividing a 400 kHz crystal oscillator (X 1 and Q 4) by 16 in the counter IC 6. 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 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 kHz ripple on the comparator output voltage Q 3 is connected as an active lowpass filter IC 5 is for DC-amplification.

76085-4E2

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 MHz. L5 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. 6) we have:

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

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

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

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 of the receiver frequency:

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):

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

2. Computation of the channel code:

Known is: Crystal frequency F_x and desired receiver frequency F_m .

Rearranging equation (5) gives

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

Example:

$F_x = 19,675 \text{ MHz}, F_m = 455,625 \text{ MHz}$

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

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

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.

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 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.

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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 , 1W 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. 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 mV.

B. 6 W PA-stage (printboard B 45)

Turn the potmeter R2 (print board B59) counter-clockwise to get the output power stabilization out of function. Connect a wattmeter (50 Ω , 10W) to the test installation output and set the supply voltage to 12,0 V. Now tune C 2, C5, C 6, C 10, C 11, C 15 and C 16 in the 6 W stage 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. 8 W. For a 6 W set the potmeter R1 on printboard B57 will adjust the output power.

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.

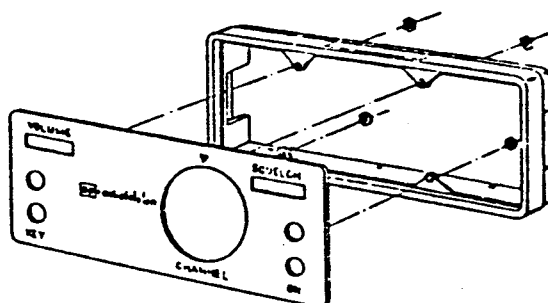
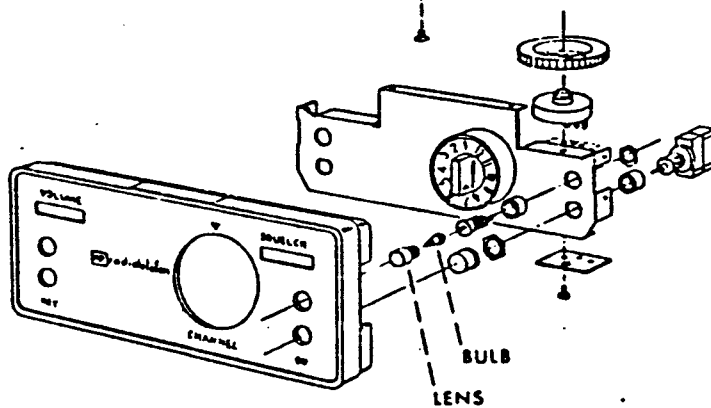
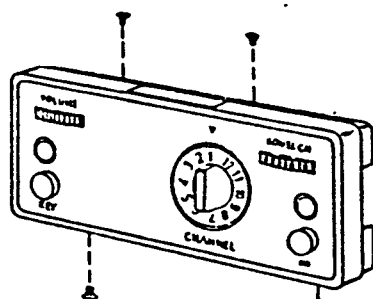
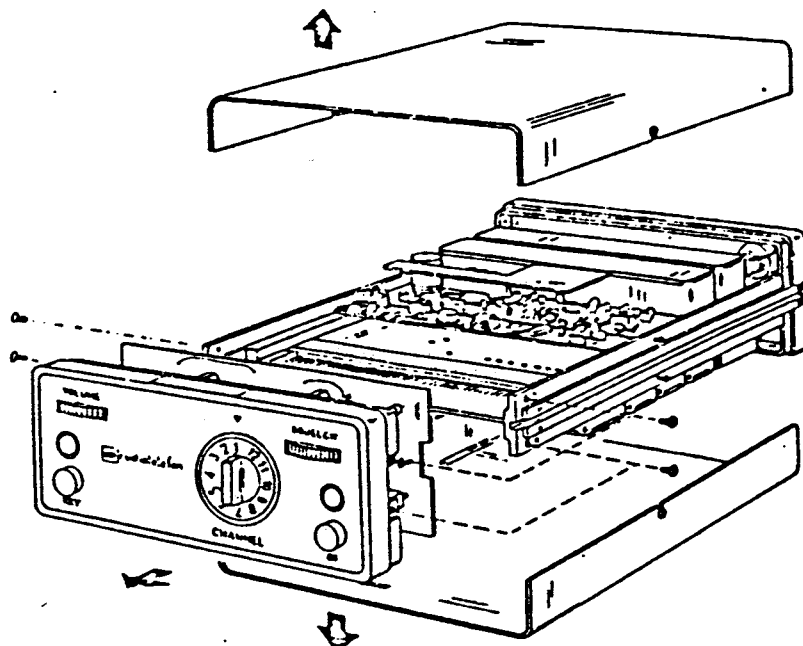
D. 25 W PA-stage (print board B 59)

Push the radio into the 25 W PA-stage, 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 voltage of 12,0 V. Increase the supply voltage to 13,6 V and turn the potmeter R2 on print B 59 clockwise until the output power decrease to 25 W. Check the power regulation by varying the supply voltage from 10,8 V to 16,0 V. By supply voltages lower than 13,6 V, the output power may be a little less than 25 W but for voltages from 13,6 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 10 mV, potmeter R 27 is adjusted to give ± 5 kHz deviation on the modulation meter. Decrease the input level to 1 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 2 V. When the level is decreased to 200 mV R 28 is set to give a deviation of ± 3 kHz.



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Disassembling of AP 2000

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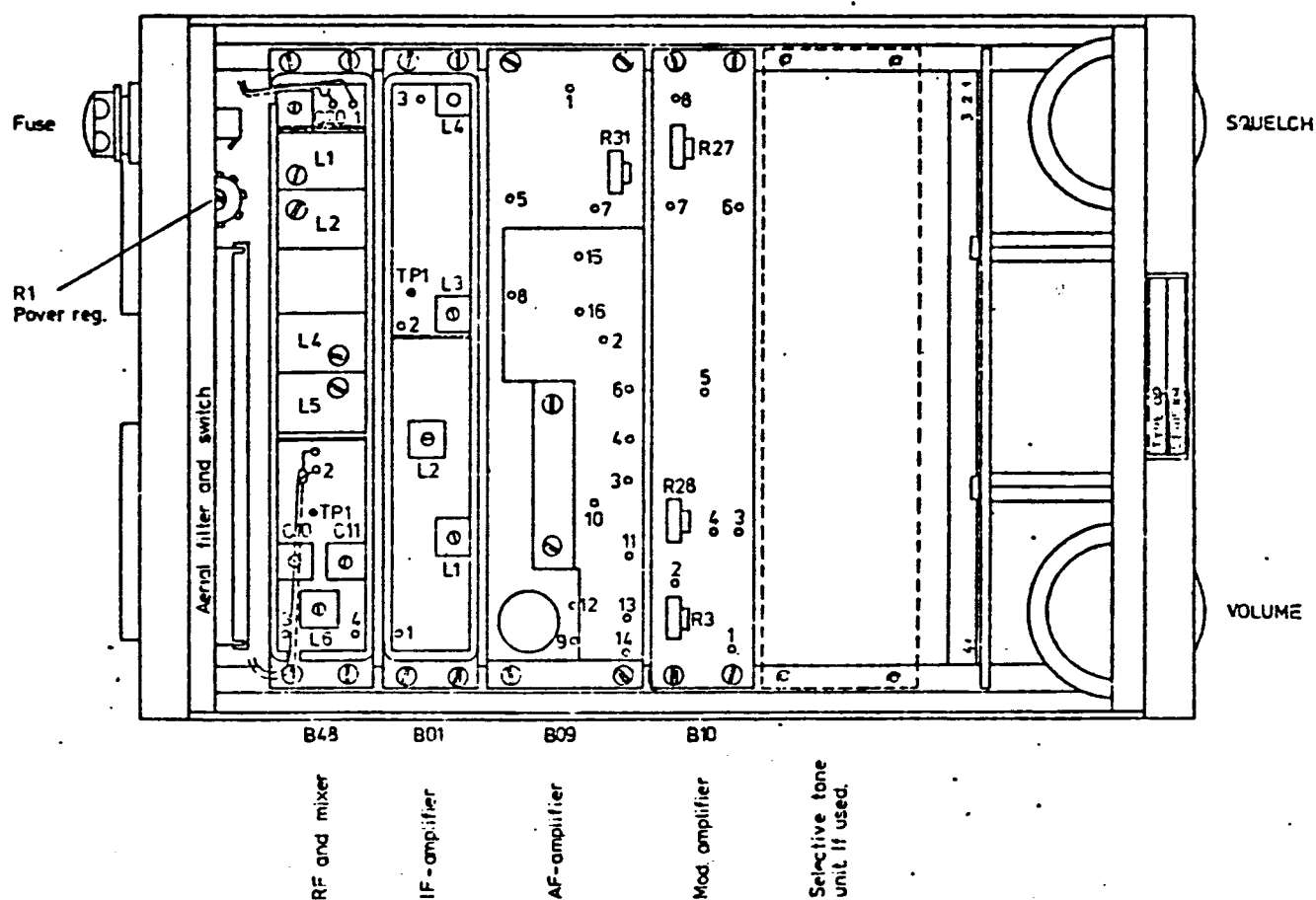
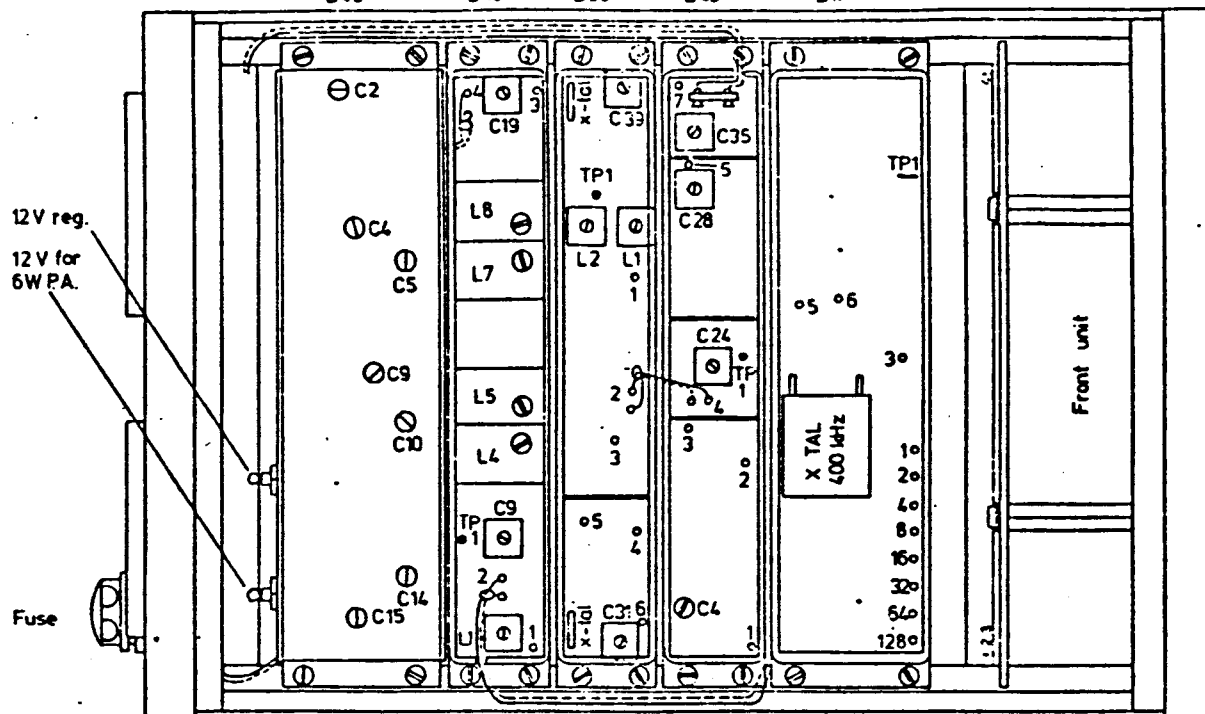
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Answers

Interior view of AP 2000, 6-10 W, UHF band
Part no. 201-030

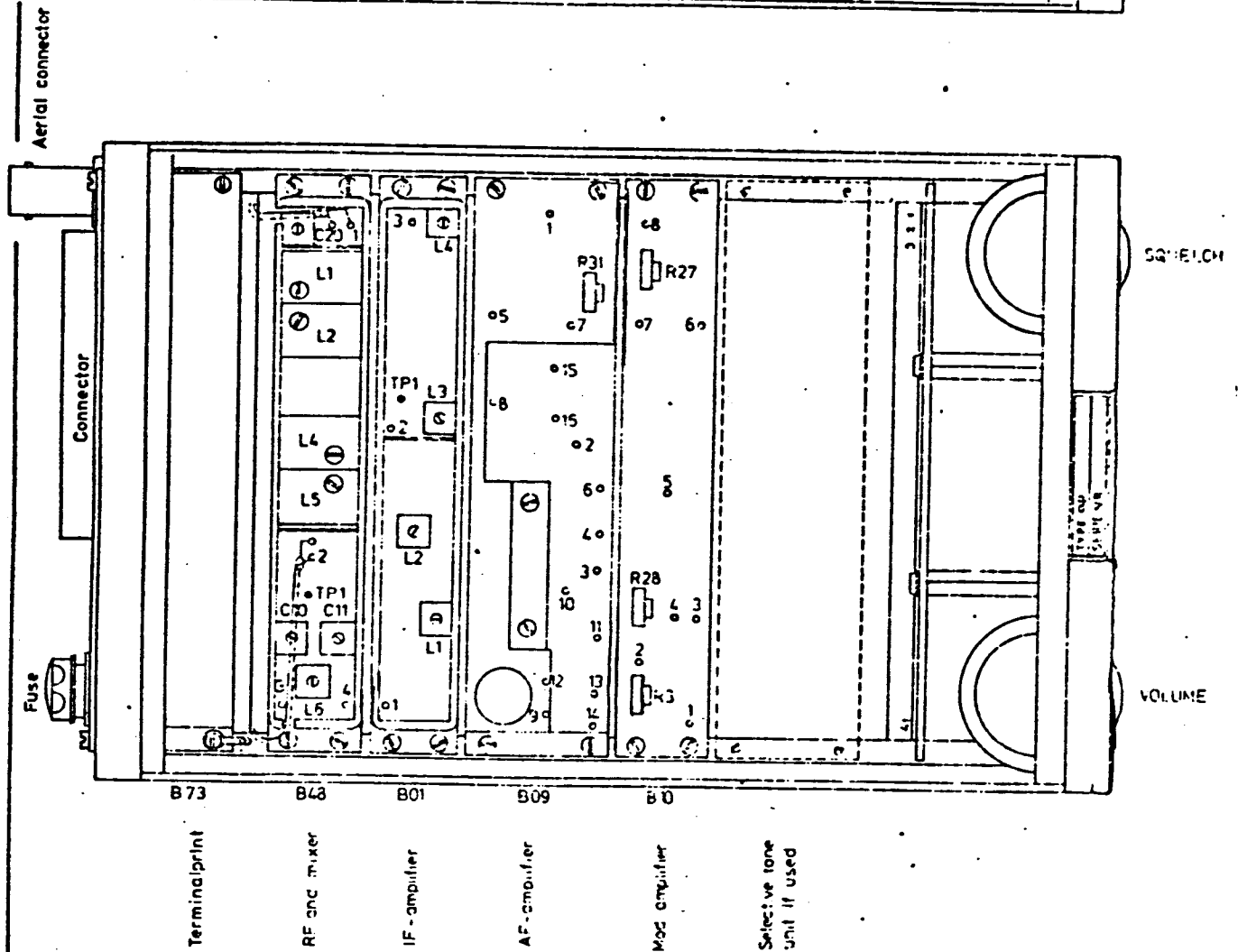
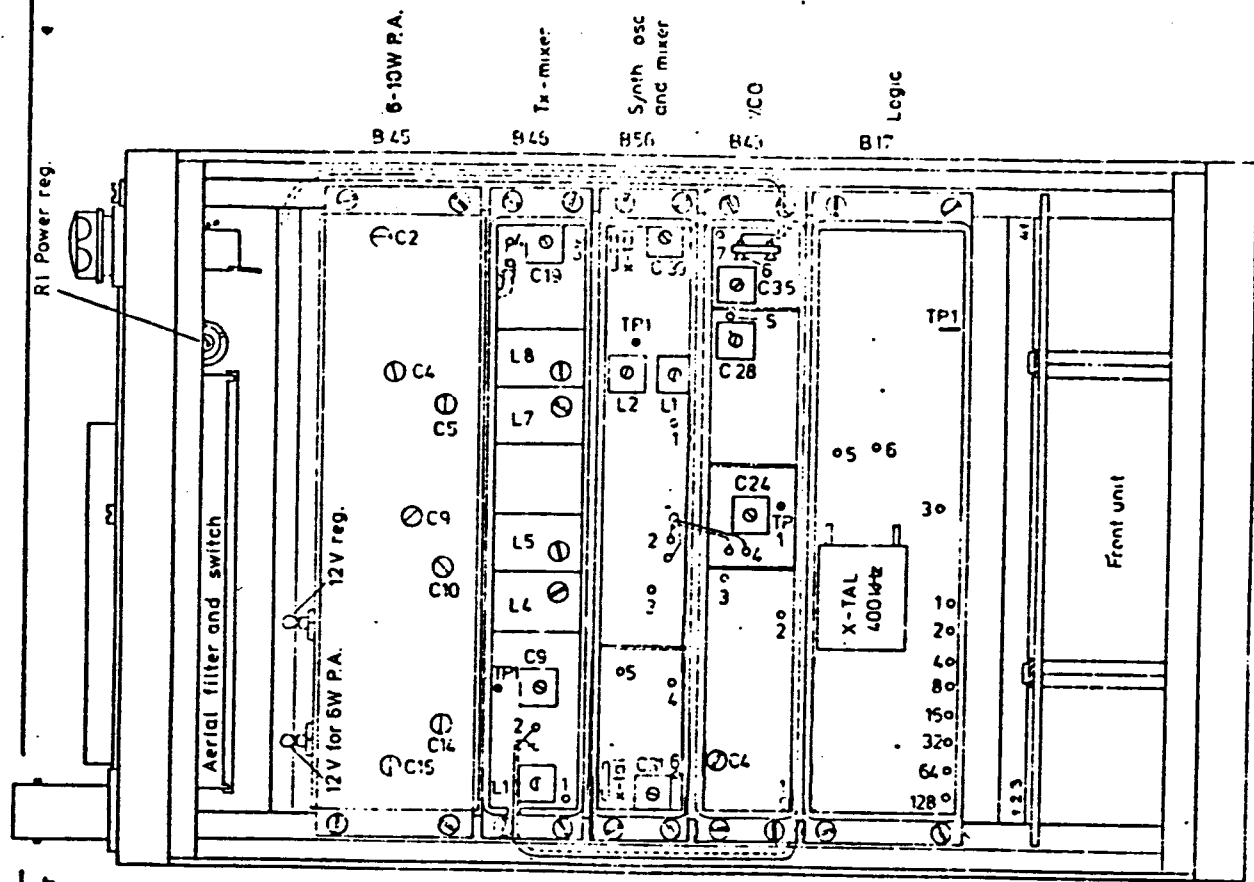
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AP-RADIOTELEFON

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Interior view of AP 2000, 6-10W, UHF band, with print-connector. Part no. 201-034

AP-RADIOTELEFON

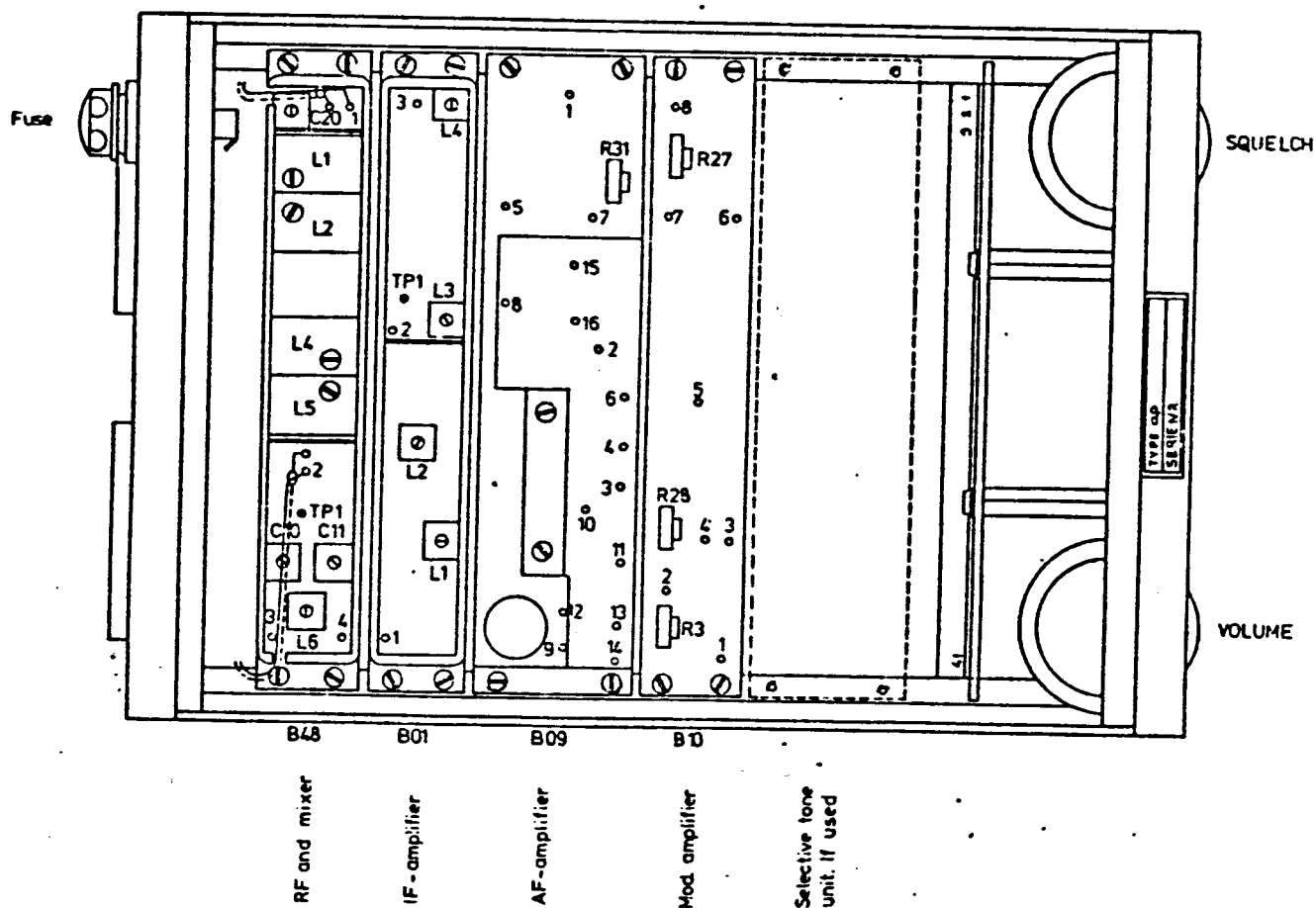
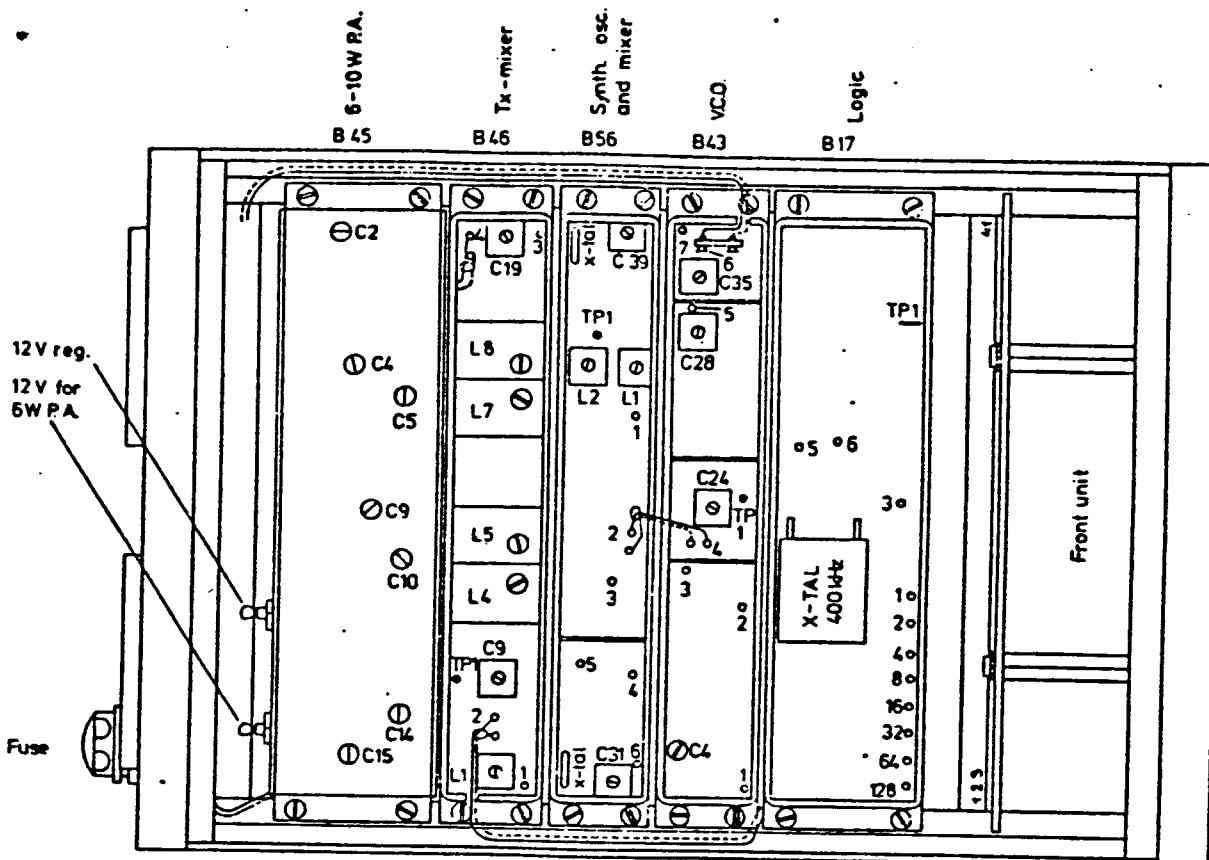
Typ 29-B-76 Rev. 1

NC

Styl. no.

Leg. no.

76330-3E2



Retter:

Interior view of AP 2000, 25W Cont. UHF band.
(25W PA-stage not shown) Part no. 201-027

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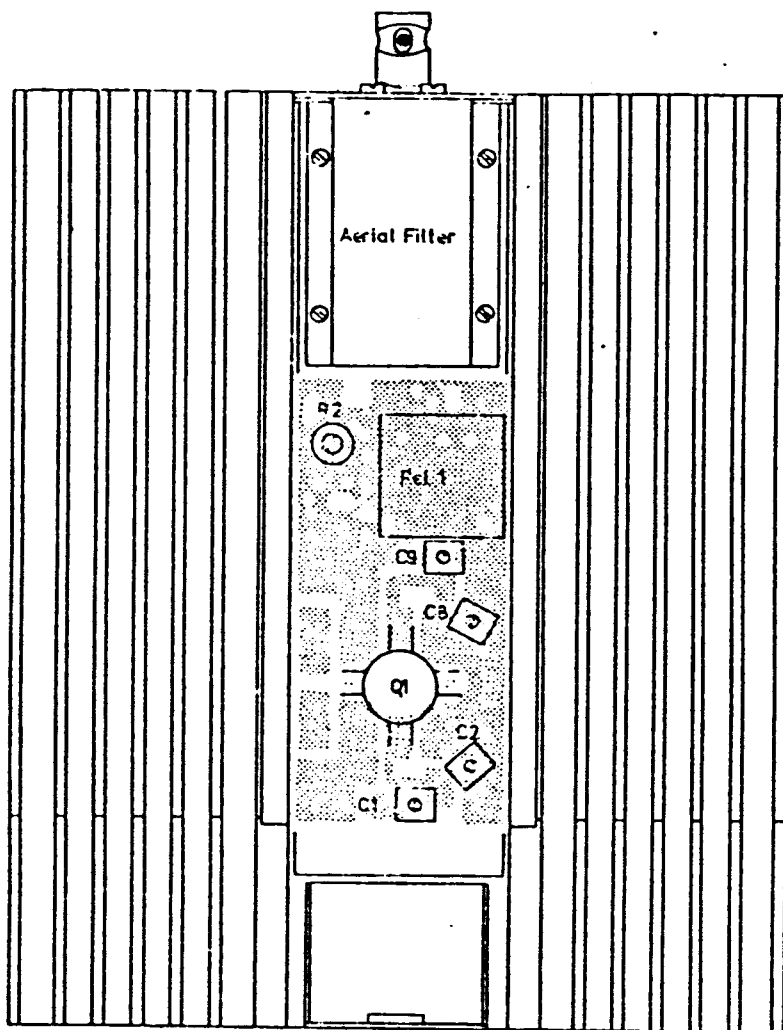
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StyckL nr.:

Tegn. nr.:

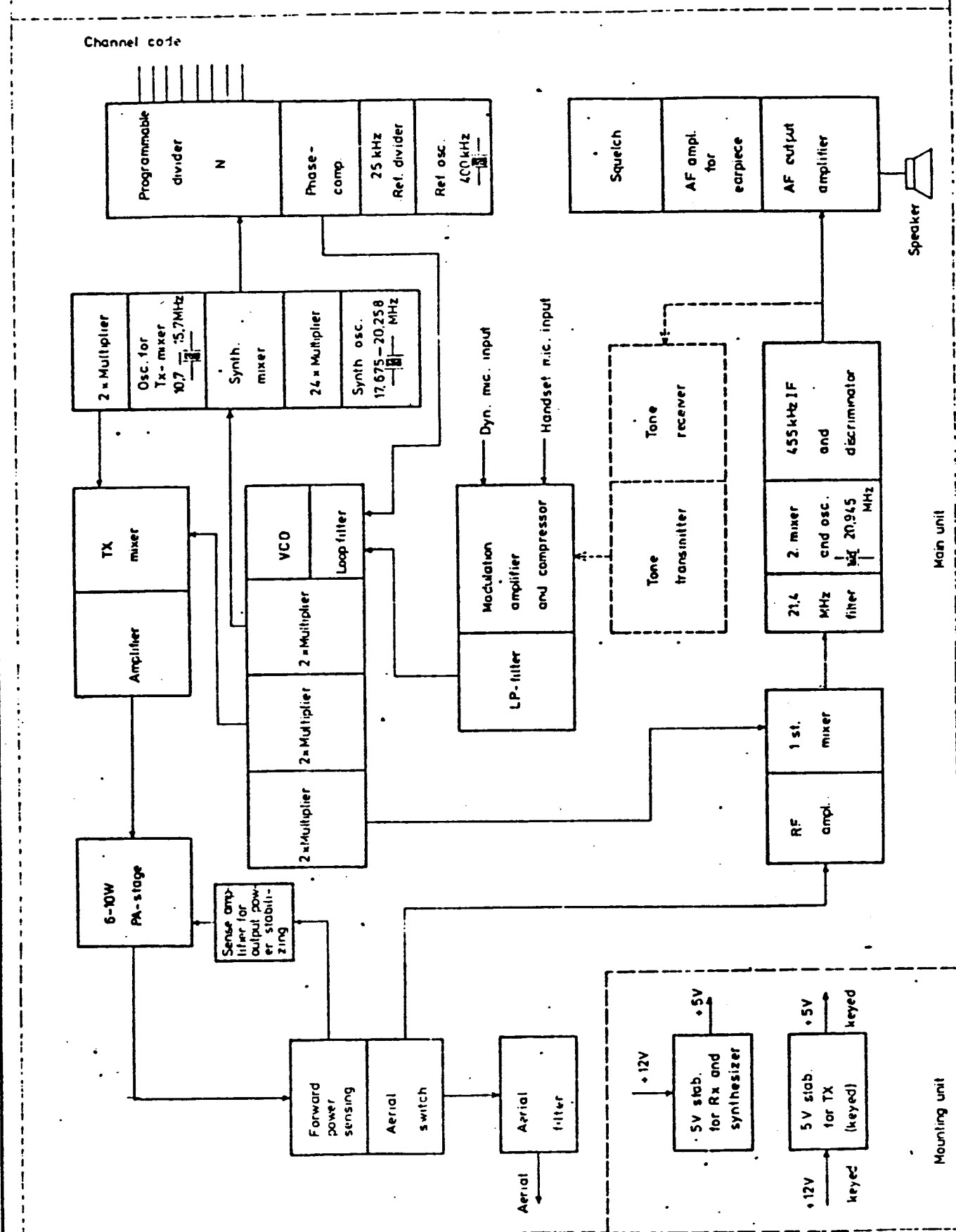
76107-3E2

AP - RADIOTELEFON



Part no.: _____ _____ _____ _____ _____	AP 2000 25 W PA-stage For UHF band AP-RADIOTELEFON	Tegn.: 12-4-76 Kontr.: 12-4-7 _____ NC _____ CH Strykt nr.: _____ Tegn. nr.: 76108-3E 2
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Contains channel selector buttons for key, mains and selective tone equipment.



Rating:

Blockschematic for AP 2000, 6-10 W,
UHF band

AP-RADIOTELEFON

Tegm. 25-11-75 Kontr.:

AC

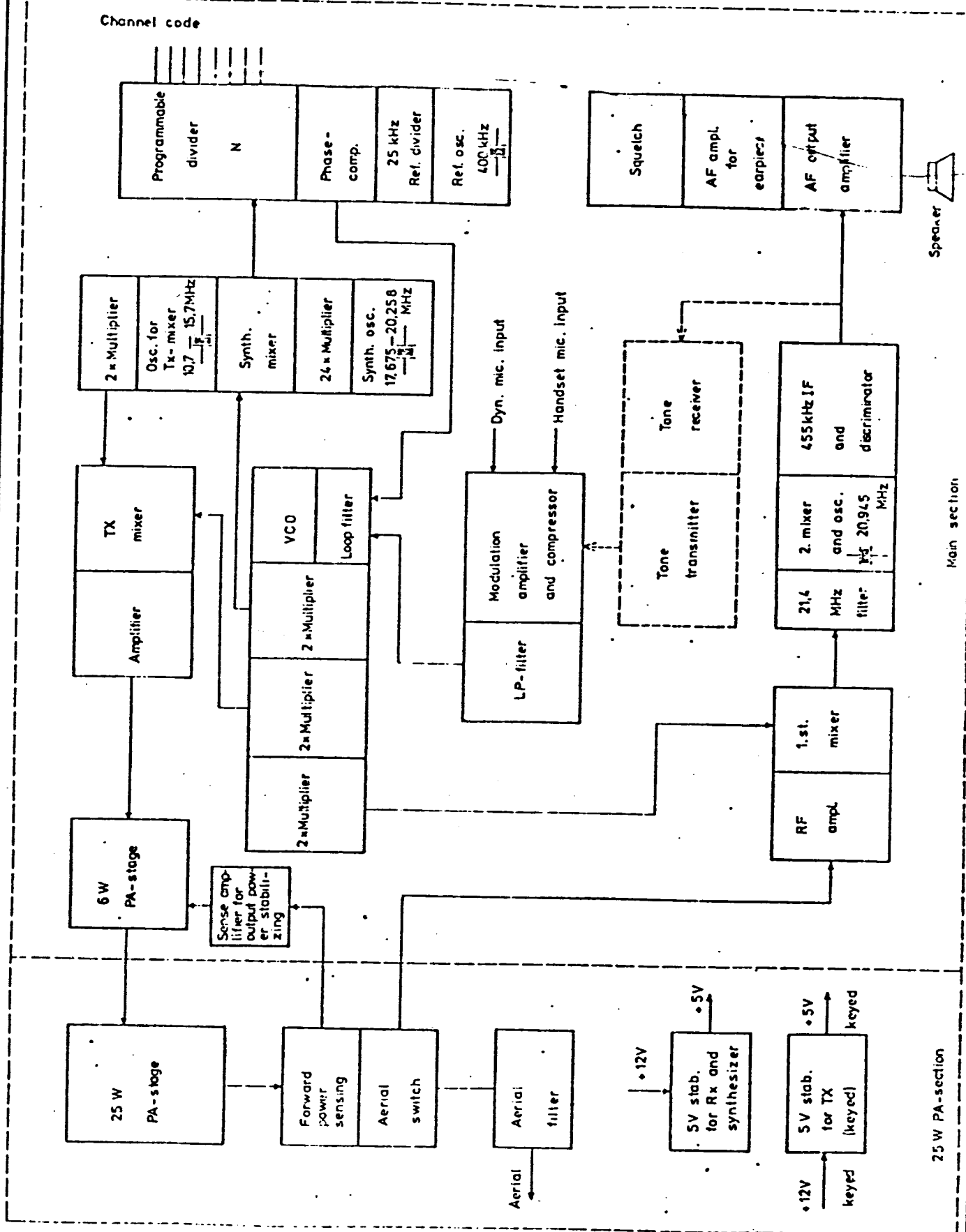
S: y.t.L nr.:

Тегн. 14..

76374-3E2

Front section dependent on the various types

Contains channel selector buttons for key, mains and selective tone equipment.



Blockschematic for AP 2000
25W for UHF band

AP - RADIOTELEFON

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

Styl. nr.:

Խնդր. №.:

75497-3E2

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. = 421,375 MHz
Found from the table $F_x = 18,25833$ MHz
Calculated $N = 183,0032$ as N is an integer
the decimal places are deleted so $N = 183$.

25 kHz Channel spacing

17,1655	17,8000	17,86333	17,96566	18,05000	18,13333	18,21556	18,30000	18,38333	18,46666	18,55000	18,63333	18,71666	18,80000	18,88333	18,96666	19,05000	19,13333	19,21666	19,30000	19,38333	19,46666	19,55000	19,63333	19,71666	19,80000	19,88333	19,96666	20,05000	20,13333	20,21666	20,30000	20,38333	20,46666	20,55000	20,63333	20,71666	20,80000	20,88333	20,96666	21,05000	21,13333	21,21666	21,30000	21,38333	21,46666	21,55000	21,63333	21,71666	21,80000	21,88333	21,96666	22,05000	22,13333	22,21666	22,30000	22,38333	22,46666	22,55000	22,63333	22,71666	22,80000	22,88333	22,96666	23,05000	23,13333	23,21666	23,30000	23,38333	23,46666	23,55000	23,63333	23,71666	23,80000	23,88333	23,96666	24,05000	24,13333	24,21666	24,30000	24,38333	24,46666	24,55000	24,63333	24,71666	24,80000	24,88333	24,96666	25,05000	25,13333	25,21666	25,30000	25,38333	25,46666	25,55000	25,63333	25,71666	25,80000	25,88333	25,96666	26,05000	26,13333	26,21666	26,30000	26,38333	26,46666	26,55000	26,63333	26,71666	26,80000	26,88333	26,96666	27,05000	27,13333	27,21666	27,30000	27,38333	27,46666	27,55000	27,63333	27,71666	27,80000	27,88333	27,96666	28,05000	28,13333	28,21666	28,30000	28,38333	28,46666	28,55000	28,63333	28,71666	28,80000	28,88333	28,96666	29,05000	29,13333	29,21666	29,30000	29,38333	29,46666	29,55000	29,63333	29,71666	29,80000	29,88333	29,96666	30,05000	30,13333	30,21666	30,30000	30,38333	30,46666	30,55000	30,63333	30,71666	30,80000	30,88333	30,96666	31,05000	31,13333	31,21666	31,30000	31,38333	31,46666	31,55000	31,63333	31,71666	31,80000	31,88333	31,96666	32,05000	32,13333	32,21666	32,30000	32,38333	32,46666	32,55000	32,63333	32,71666	32,80000	32,88333	32,96666	33,05000	33,13333	33,21666	33,30000	33,38333	33,46666	33,55000	33,63333	33,71666	33,80000	33,88333	33,96666	34,05000	34,13333	34,21666	34,30000	34,38333	34,46666	34,55000	34,63333	34,71666	34,80000	34,88333	34,96666	35,05000	35,13333	35,21666	35,30000	35,38333	35,46666	35,55000	35,63333	35,71666	35,80000	35,88333	35,96666	36,05000	36,13333	36,21666	36,30000	36,38333	36,46666	36,55000	36,63333	36,71666	36,80000	36,88333	36,96666	37,05000	37,13333	37,21666	37,30000	37,38333	37,46666	37,55000	37,63333	37,71666	37,80000	37,88333	37,96666	38,05000	38,13333	38,21666	38,30000	38,38333	38,46666	38,55000	38,63333	38,71666	38,80000	38,88333	38,96666	39,05000	39,13333	39,21666	39,30000	39,38333	39,46666	39,55000	39,63333	39,71666	39,80000	39,88333	39,96666	40,05000	40,13333	40,21666	40,30000	40,38333	40,46666	40,55000	40,63333	40,71666	40,80000	40,88333	40,96666	41,05000	41,13333	41,21666	41,30000	41,38333	41,46666	41,55000	41,63333	41,71666	41,80000	41,88333	41,96666	42,05000	42,13333	42,21666	42,30000	42,38333	42,46666	42,55000	42,63333	42,71666	42,80000	42,88333	42,96666	43,05000	43,13333	43,21666	43,30000	43,38333	43,46666	43,55000	43,63333	43,71666	43,80000	43,88333	43,96666	44,05000	44,13333	44,21666	44,30000	44,38333	44,46666	44,55000	44,63333	44,71666	44,80000	44,88333	44,96666	45,05000	45,13333	45,21666	45,30000	45,38333	45,46666	45,55000	45,63333	45,71666	45,80000	45,88333	45,96666	46,05000	46,13333	46,21666	46,30000	46,38333	46,46666	46,55000	46,63333	46,71666	46,80000	46,88333	46,96666	47,05000	47,13333	47,21666	47,30000	47,38333	47,46666	47,55000	47,63333	47,71666	47,80000	47,88333	47,96666	48,05000	48,13333	48,21666	48,30000	48,38333	48,46666	48,55000	48,63333	48,71666	48,80000	48,88333	48,96666	49,05000	49,13333	49,21666	49,30000	49,38333	49,46666	49,55000	49,63333	49,71666	49,80000	49,88333	49,96666	50,05000	50,13333	50,21666	50,30000	50,38333	50,46666	50,55000	50,63333	50,71666	50,80000	50,88333	50,96666	51,05000	51,13333	51,21666	51,30000	51,38333	51,46666	51,55000	51,63333	51,71666	51,80000	51,88333	51,96666	52,05000	52,13333	52,21666	52,30000	52,38333	52,46666	52,55000	52,63333	52,71666	52,80000	52,88333	52,96666	53,05000	53,13333	53,21666	53,30000	53,38333	53,46666	53,55000	53,63333	53,71666	53,80000	53,88333	53,96666	54,05000	54,13333	54,21666	54,30000	54,38333	54,46666	54,55000	54,63333	54,71666	54,80000	54,88333	54,96666	55,05000	55,13333	55,21666	55,30000	55,38333	55,46666	55,55000	55,63333	55,71666	55,80000	55,88333	55,96666	56,05000	56,13333	56,21666	56,30000	56,38333	56,46666	56,55000	56,63333	56,71666	56,80000	56,88333	56,96666	57,05000	57,13333	57,21666	57,30000	57,38333	57,46666	57,55000	57,63333	57,71666	57,80000	57,88333	57,96666	58,05000	58,13333	58,21666	58,30000	58,38333	58,46666	58,55000	58,63333	58,71666	58,80000	58,88333	58,96666	59,05000	59,13333	59,21666	59,30000	59,38333	59,46666	59,55000	59,63333	59,71666	59,80000	59,88333	59,96666	60,05000	60,13333	60,21666	60,30000	60,38333	60,46666	60,55000	60,63333	60,71666	60,80000	60,88333	60,96666	61,05000	61,13333	61,21666	61,30000	61,38333	61,46666	61,55000	61,63333	61,71666	61,80000	61,88333	61,96666	62,05000	62,13333	62,21666	62,30000	62,38333	62,46666	62,55000	62,63333	62,71666	62,80000	62,88333	62,96666	63,05000	63,13333	63,21666	63,30000	63,38333	63,46666	63,55000	63,63333	63,71666	63,80000	63,88333	63,96666	64,05000	64,13333	64,21666	64,30000	64,38333	64,46666	64,55000	64,63333	64,71666	64,80000	64,88333	64,96666	65,05000	65,13333	65,21666	65,30000	65,38333	65,46666	65,55000	65,63333	65,71666	65,80000	65,88333	65,96666	66,05000	66,13333	66,21666	66,30000	66,38333	66,46666	66,55000	66,63333	66,71666	66,80000	66,88333	66,96666	67,05000	67,13333	67,21666	67,30000	67,38333	67,46666	67,55000	67,63333	67,71666	67,80000	67,88333	67,96666	68,05000	68,13333	68,21666	68,30000	68,38333	68,46666	68,55000	68,63333	68,71666	68,80000	68,88333	68,96666	69,05000	69,13333	69,21666	69,30000	69,38333	69,46666	69,55000	69,63333	69,71666	69,80000	69,88333	69,96666	70,05000	70,13333	70,21666	70,30000	70,38333	70,46666	70,55000	70,63333	70,71666	70,80000	70,88333	70,96666	71,05000	71,13333	71,21666	71,30000	71,38333	71,46666	71,55000	71,63333	71,71666	71,80000	71,88333	71,96666	72,05000	72,13333	72,21666	72,30000	72,38333	72,46666	72,55000	72,63333	72,71666	72,80000	72,88333	72,96666	73,05000	73,13333	73,21666	73,30000	73,38333	73,46666	73,55000	73,63333	73,71666	73,80000	73,88333	73,96666	74,05000	74,13333	74,21666	74,30000	74,38333	74,46666	74,55000	74,63333	74,71666	74,80000	74,88333	74,96666	75,05000	75,13333	75,21666	75,30000	75,38333	75,46666	75,55000	75,63333	75,71666	75,80000	75,88333	75,96666	76,05000	76,13333	76,21666	76,30000	76,38333	76,46666	76,55000	76,63333	76,71666	76,80000	76,88333	76,96666	77,05000	77,13333	77,21666	77,30000	77,38333	77,46666	77,55000	77,63333	77,71666	77,80000	77,88333	77,96666	78,05000	78,13333	78,21666	78,30000	78,38333	78,46666	78,55000	78,63333	78,71666	78,80000	78,88333	78,96666	79,05000	79,13333	79,21666	79,30000	79,38333	79,46666	79,55000	79,63333	79,71666	79,80000	79,88333	79,96666	80,05000	80,13333	80,21666	80,30000	80,38333	80,46666	80,55000	80,63333	80,71666	80,80000	80,88333	80,96666	81,05000	81,13333	81,21666	81,30000	81,38333	81,46666	81,55000	81,63333	81,71666	81,80000	81,88333	81,96666	82,05000	82,13333	82,21666	82,30000	82,38333	82,46666	82,55000	82,63333	82,71666	82,80000	82,88333	82,96666	83,05000	83,13333	83,21666	83,30000	83,38333	83,46666	83,55000	83,63333	83,71666	83,80000	83,88333	83,96666	84,05000	84,13333	84,21666	84,30000	84,38333	84,46666	84,55000	84,63333	84,71666	84,80000	84,88333	84,96666	85,05000	85,13333	85,21666	85,30000	85,38333	85,46666	85,55000	85,63333	85,71666	85,80000	85,88333	85,96666	86,05000	86,13333	86,21666	86,30000	86,38333	86,46666	86,55000	86,63333	86,71666	86,80000	86,88333	86,96666	87,05000	87,13333	87,21666	87,30000	87,38333	87,46666	87,55000	87,63333	87,71666	87,80000	87,88333	87,96666	88,05000	88,13333	88,21666	88,30000	88,38333	88,46666	88,55000	88,63333	88,71666	88,80000	88,88333	88,96666	89,05000	89,13333	89,21666	89,30000	89,38333	89,46666	89,55000	89,63333	89,71666	89,80000	89,88333	89,96666	90,05000	90,13333	90,21666	90,30000	90,38333	90,46666	90,55000	90,63333	90,71666	90,80000	90,88333	90,96666	91,05000	91,13333	91,21666	91,30000	91,38333	91,46666	91,55000	91,63333	91,71666	91,80000	91,88333	91,96666	92,05000	92,13333	92,21666	92,30000	92,38333	92,46666	92,5
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SPECIFICATION

for Quartz Crystal Unit

AP 25

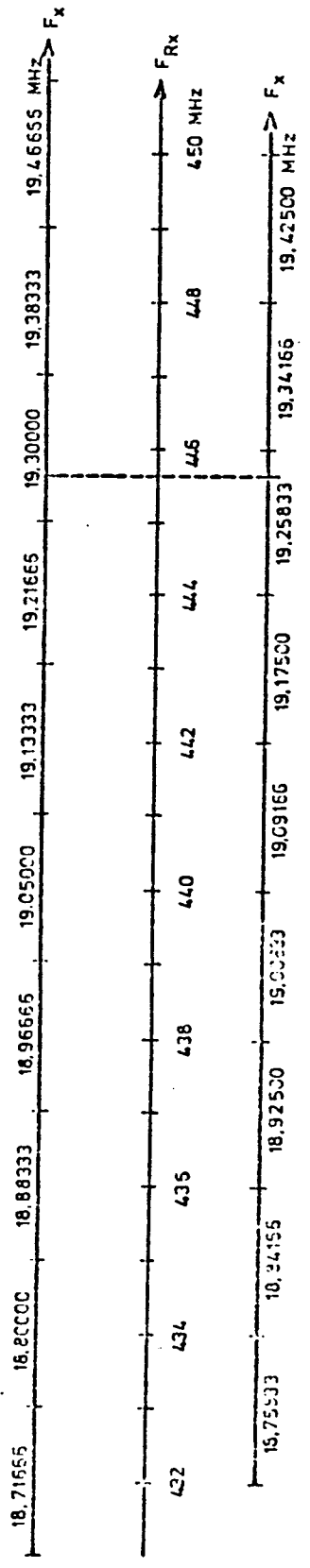
Mode of operation: F_{Rx} higher than or equal to F_{Tx}

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 $\times 20^\circ\text{C}$ to $\pm 70^\circ\text{C}$
7. Drive level : 1 mW
8. Equivalent series resistance : Max. 40 Ω
9. Marking : AP 25 frequency in MHz

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

Example:

Known receiver freq. = 445,650 MHz
 Found from the table $F_x = 19,25833$ MHz
 Calculated $N = 194,0032$ as N is an integer
 the decimal places are deleted so $N = 194$.



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 (20 pF)
5. Calibration tolerance : ± 15 ppm at 25°C
6. Temperature tolerance : ± 10 ppm $\times 20^\circ\text{C}$ to $\pm 70^\circ\text{C}$
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

25kHz Channel spacing

Bellet:
 15-2-77 NC

Standard crystals for AP 2000
 UHF band, medium range: 2. For channels
 ending with 00, 25, 50, 75 khz

AP-RADIOTELEFON W

Tegn.: 27-10-76 Kontr.: 27-10-76
 AC CHB
 Stykl. nr.:
 Tegn. nr.: 76212-152

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

SPECIFICATION

for Quartz Crystal Unit

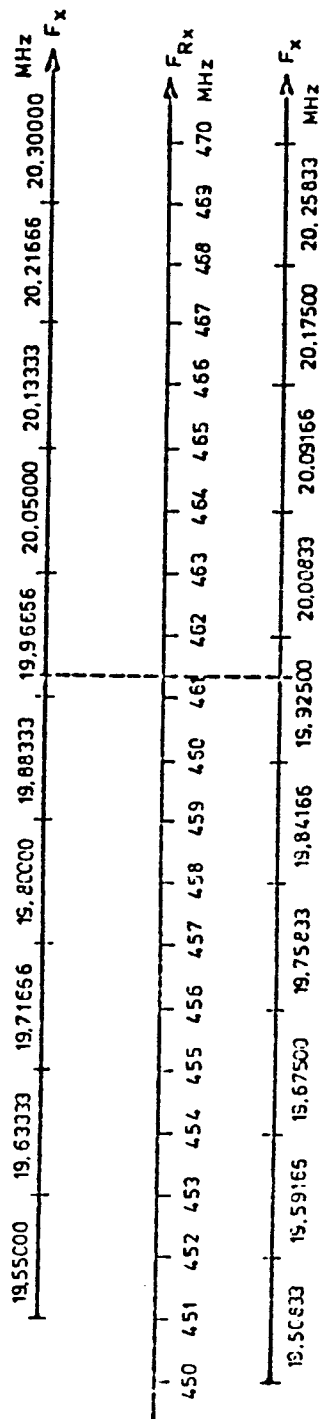
AP 25

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 $\pm 70^\circ\text{C}$
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 $\pm 70^\circ\text{C}$
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
 $F_{Tx \text{ max.}} = 10,7 + \frac{F_{Rx} - F_{Tx}}{2}$ Spec. AP 22

25 kHz Channel spacing

Hellet: 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

Tegn.: 30-10-75
 EH

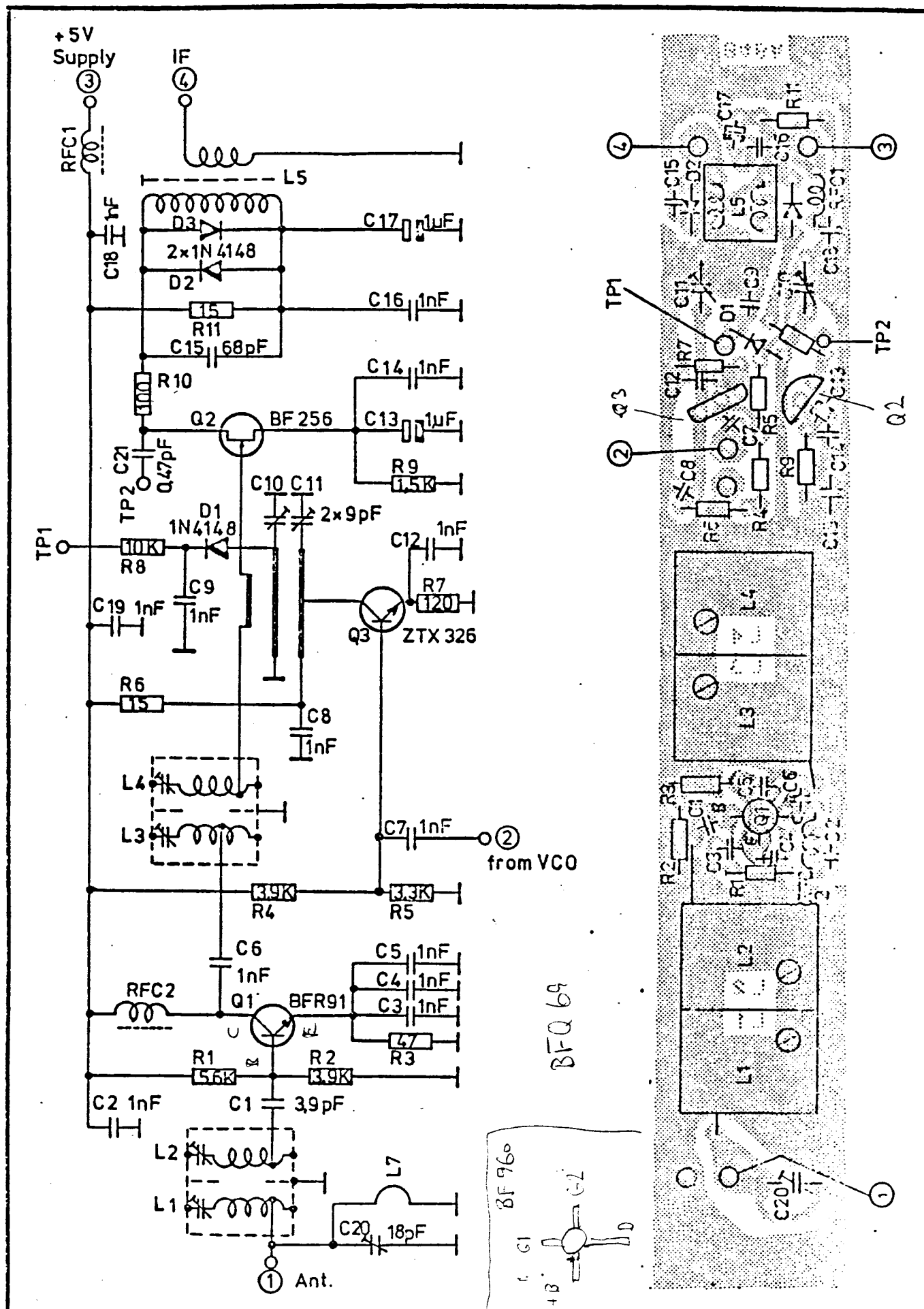
Kontr.: 30-10-75
 CHB

Siykl. nr.:

Tegn. nr.:

75500 - / E2

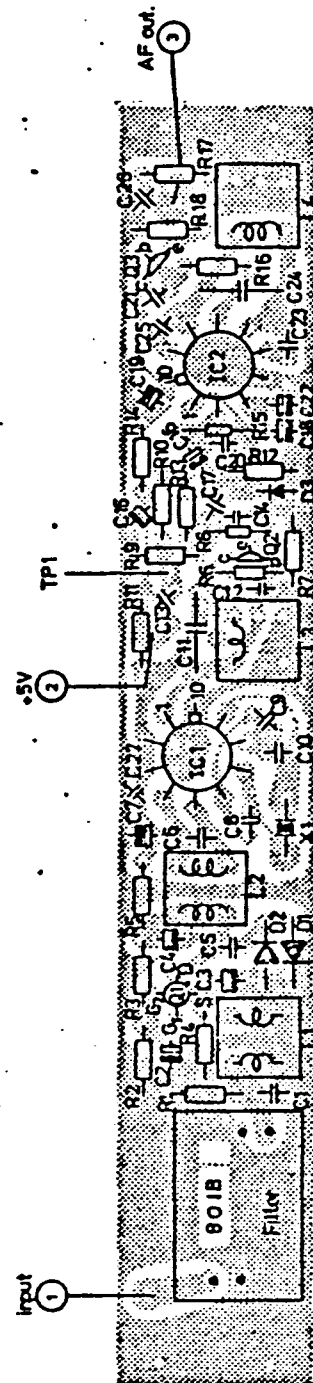
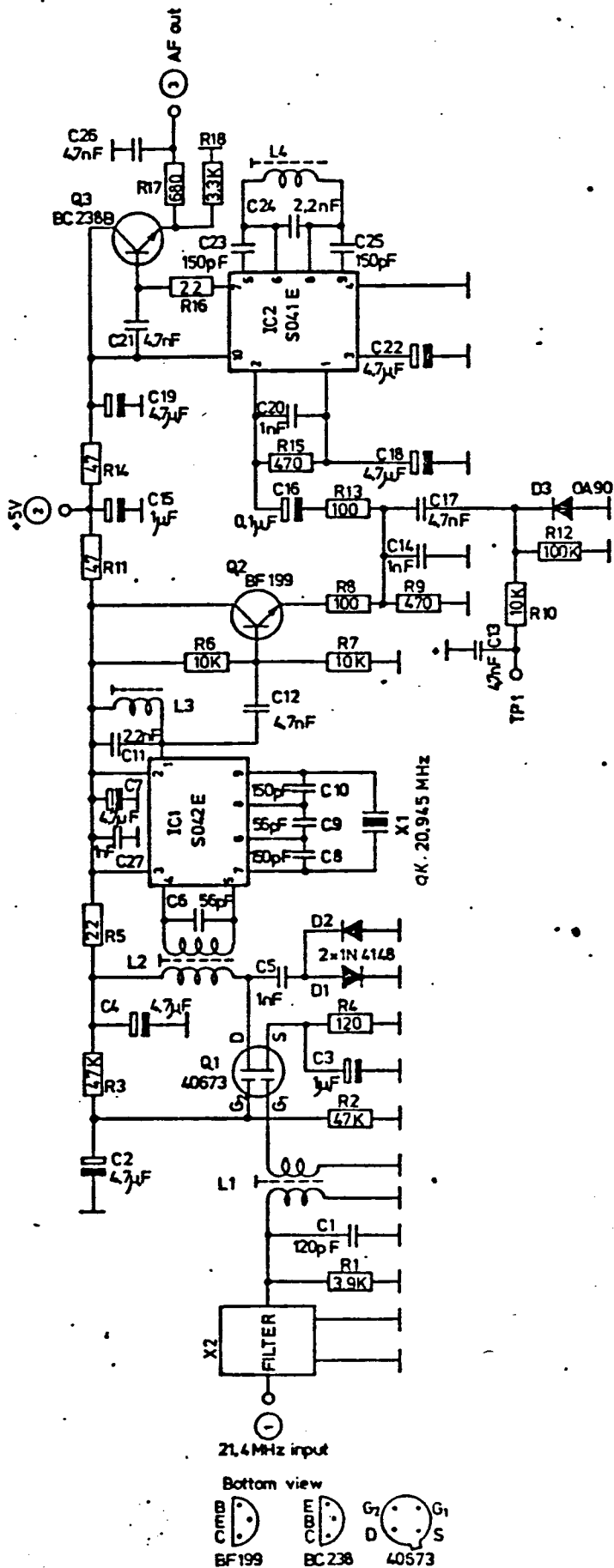
AP-RADIOTELEFON M



Rettet: 21-4-77 BJ/ac _____ _____ _____ _____ _____	RF AMPLIFIER AND MIXER F. UHF PRINT BOARD B48A 1 ΔP-RADIOTELEFON M	Tegn.: 29-10-75 NC Stykl. nr.: 75476-4S 2 Tegn. nr.: 75476-4E 2	Kontr.: 29-10-75 BJ
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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
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	11-433	3,9 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	11-442	1 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:		Tegn.: Kontr.:
					Stykl. nr.: 75476-4S2



Retent:

21,4 MHz IF

Print B01B1

AP-RADIOTELEFON

Tegn.: 28-2-75

Konr.:

AC

StykL nr.:

Tegn. nr.:

75076 - 3E2

AP-RADIOTELEFON

34.

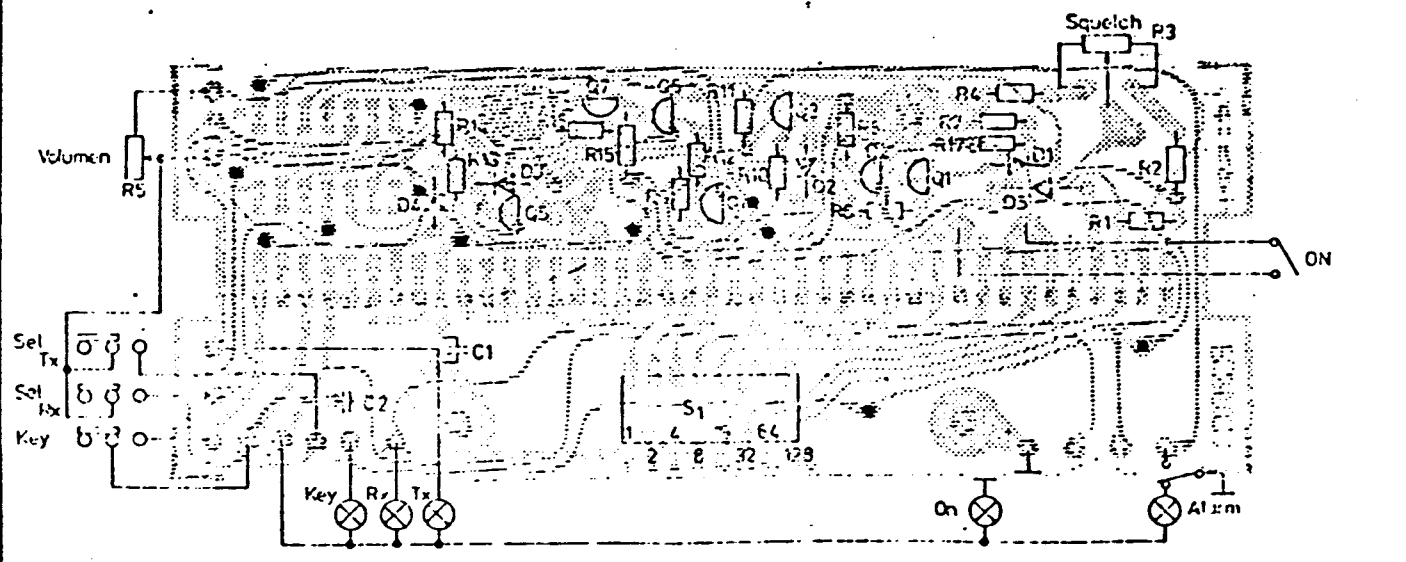
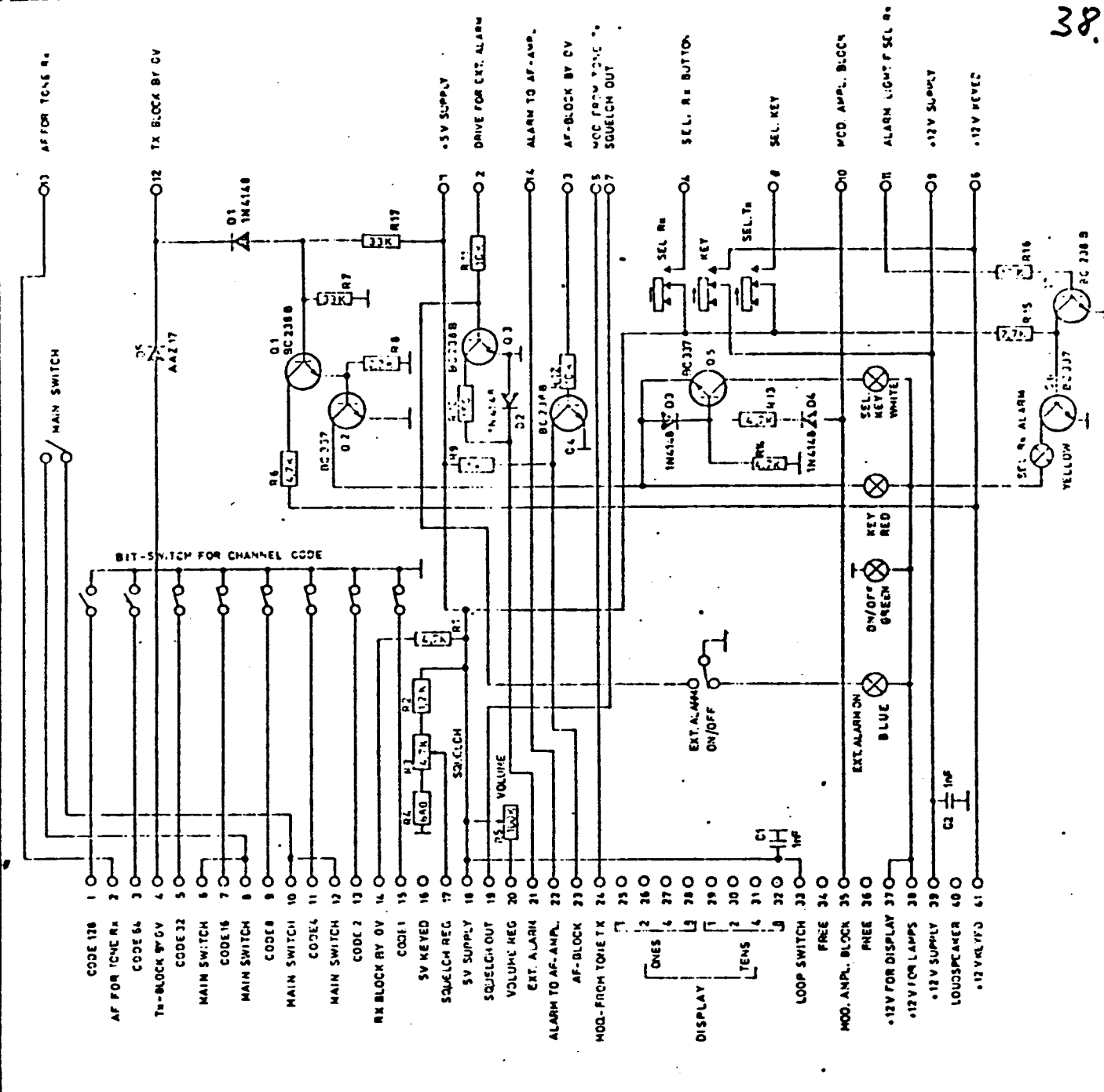
Nr.	Kode	Data	Nr.	Kode	Data
R1	13-290	3,9 KΩ 1/8W CR 16	C19	11-504	4,7 μF/10V Tant.
R2	13-302	47 KΩ " "	C20	11-409	1 nF Ker.
R3	13-302	47 KΩ " "	C21	11-416	4,7 nF "
R4	13-272	120 Ω " "	C22	11-504	4,7 μF/10V Tant.
R5	13-263	22 Ω " "	C23	11-404	150 pF Ker.
R6	13-295	10 KΩ " "	C24	11-461	2,2 nF MKM
R7	13-295	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	403	120 pF Ker.			
C2	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	11-404	150 pF Ker.	X2	11-854	21,4 Mhz
C9	11-396	56 pF "			
C10	11-404	150 pF "			
C11	11-461	2,2 nF MKM			
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 B 1 Tilhører tegn. nr.: 75076-3E2			Rettet:		Tegn.: Kontr.: Stykl. nr.: 75076-4S2

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

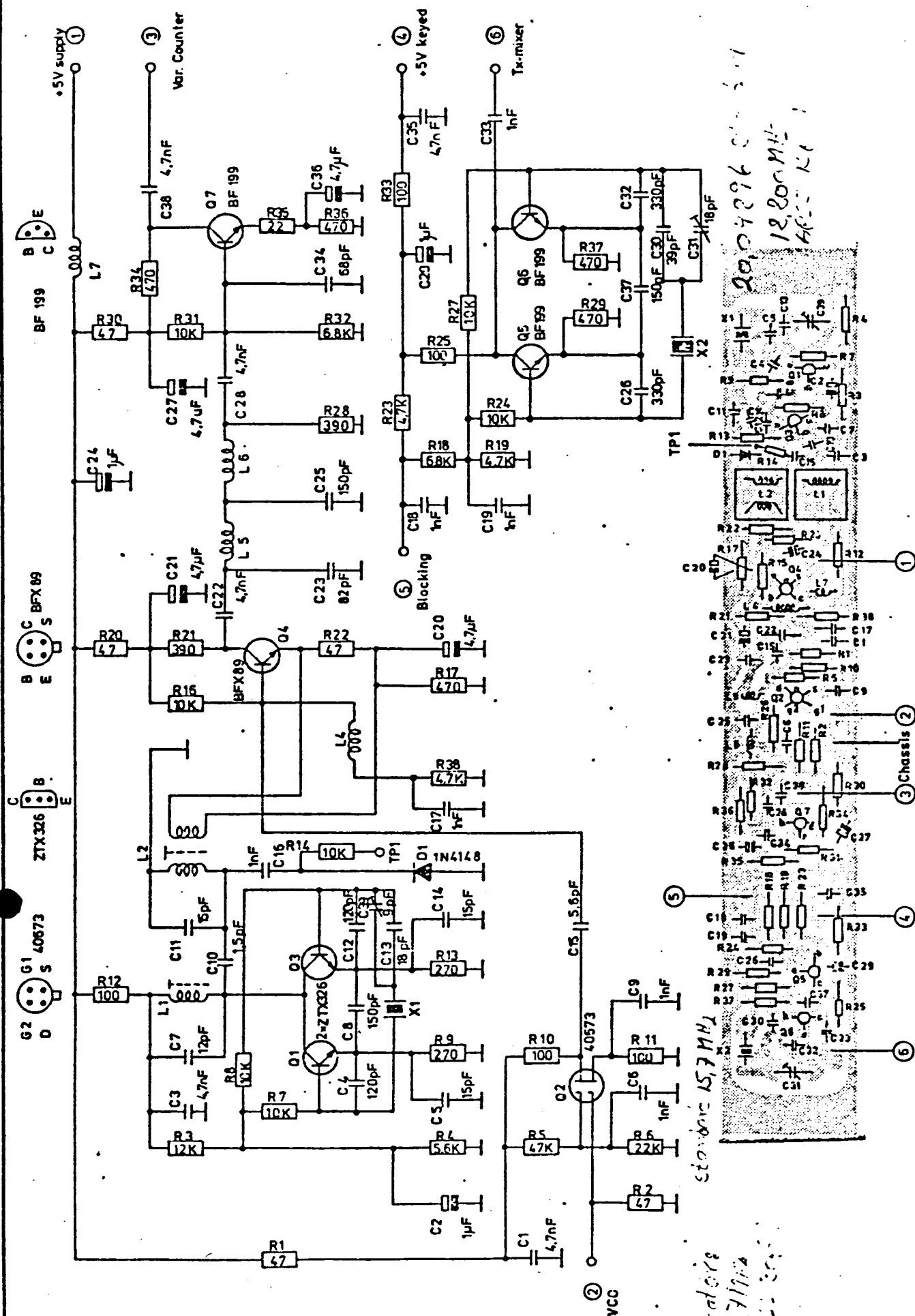
Nr.	Kode	Data	Nr.	Kode	Data
C30	11-416	4,7 nF Ker.			
D1	04-062	1N4148			
D2	04-062	1N4148			
D3	04-062	1N4148			
D4	04-062	1N4148			
D5	04-062	1N4148			
D6	04-062	1N4148			
D7	04-062	1N4148			
D8	04-062	1N4148			
D9	04-062	1N4148			
D10	04-062	1N4148			
D11	04-062	1N4148			
D12	04-062	1N4148			
D13	04-002	AAZ17			
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 D 1 Tilhører tegn. nr.: 75017-3E2			Tegn.: Kontr.: Stykl. nr.: 75017-4S2		



Nr	Kode	Data	Nr	Kode	Data
C38	11-416	4,7 nF Ker.			
C39	19-329	9 pF Tri.			
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			
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			Tegn.:		
Print board B 56 R 1			Stykl. nr.:		
Tilthorer tegn. nr. 75628-3E2			Kontr.:		
			75628-4S2		

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-267	47 Ω 1/8W CR 10	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	11-409	1 nF "
R10	13-271	100 Ω " "	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 10	C15	11-370	5,6 pF "
R17	13-279	470 Ω " "	C16	11-409	1 nF "
R18	13-293	6,8 K Ω " "	C17	11-409	1 nF "
R19	13-291	4,7 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	11-390	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	11-330	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					Tegn.:
Print board B 56 B 1					Kontr.:
Tilhører tegn. nr: 75628-3E2					Stykl. nr.: 75628-4S2



Remarks:

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

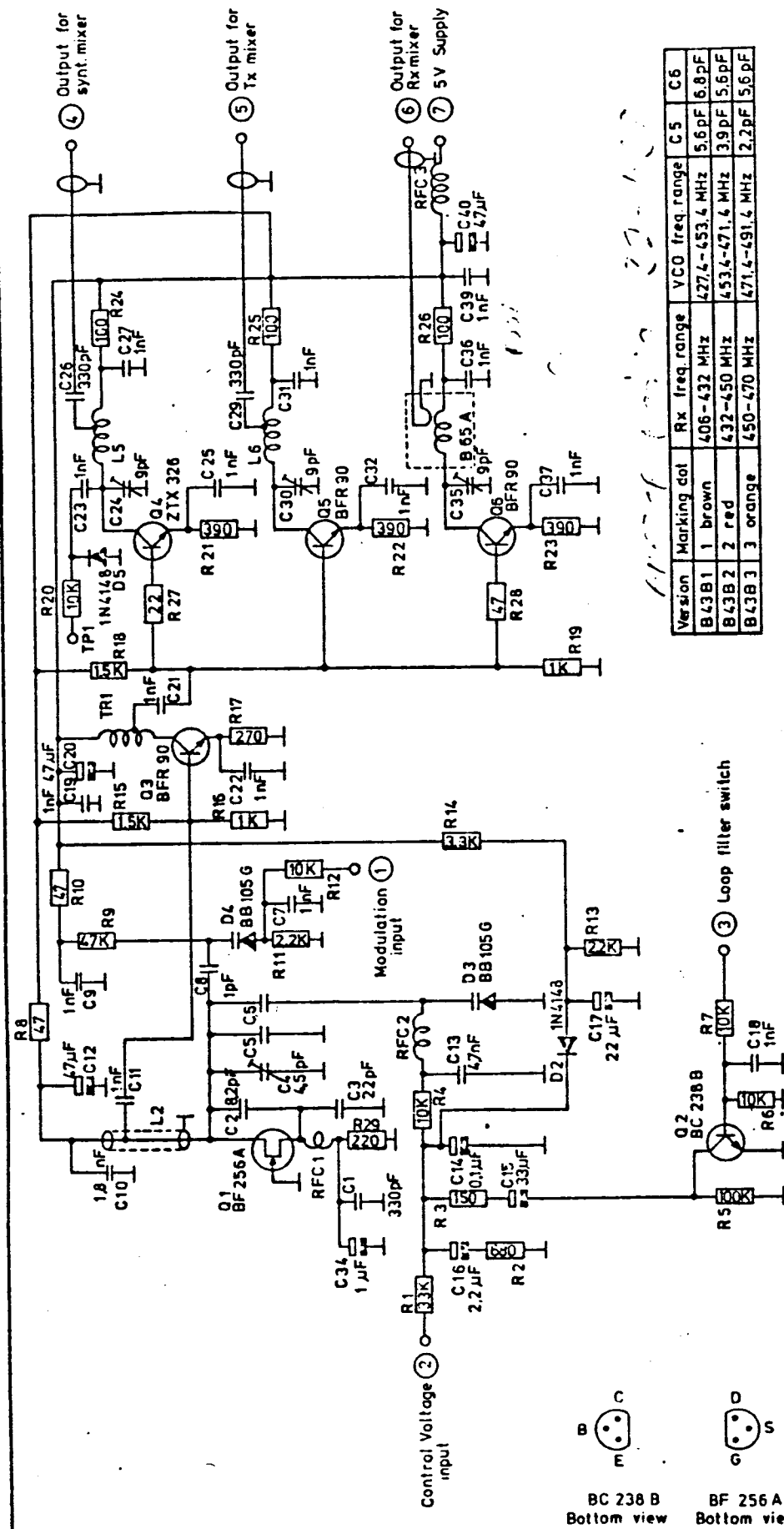
Tegn.: 19-12-75	Konstr.: 23-1-75
Stryd. nr.:	CHB
Tegn. nr.:	75570 257

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	19-113	BF256A Philips			
Q2	19-093	BC238B			
Q3	19-114	BFR90			
Q4	19-115	ZTX326			
Q5	19-114	BFR90			
Q6	19-114	BFR90			
L2		75523-4E2			
L5		76082-4E2			
L6		76082-4E2			
TR1		75288-4E2			
RFC 1	04-114	6,8 μ H			
RFC 2	04-114	6,8 μ H			
RFC 3	04-117	100 μ H			
Voltage controlled oscillator for UHF Print board B43B 1,2,3 and Print board Tilhører tegn. nr.: 76024-3E2			B65A 1		
			tegn.: Stykl. nr.: Kontr.: 76024-4S2		

AP-RADIOTELEFON

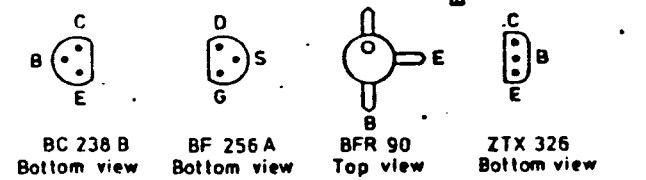
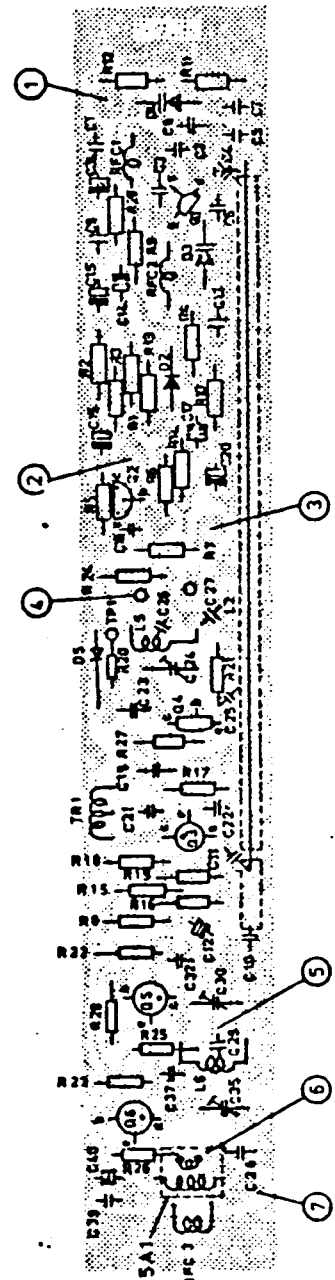
Nr.	Kode	Data	Nr.	Kode	Data
R1	13-300	33 K Ω 1/8W CR 16	C6/3	11-370	5,6 pF Ker.
R2	13-281	680 Ω " "	C7	11-409	1 nF "
R3	13-273	150 Ω " "	C8	11-361	1 pF "
R4	13-295	10 K Ω " "	C9	11-409	1 nF "
R5	13-306	100 K Ω " "	C10	11-441	1,8 nF chip "
R6	13-295	10 K Ω " "	C11	11-409	1 nF "
R7	13-295	10 K Ω " "	C12	11-509	47 μ F/6,3V Tant.
R8	13-267	47 Ω " "	C13	11-416	4,7 nF Ker.
R9	13-302	47 K Ω " "	C14	11-515	0,1 μ F/35 V Tant.
R10	13-267	47 Ω " "	C15	11-508	33 μ F/10 V "
R11	13-287	2,2 K Ω " "	C16	11-503	2,2 μ F/25 V "
R12	13-295	10 K Ω " "	C17	11-507	22 μ F/25 V "
R13	13-287	2,2 K Ω " "	C18	11-409	1 nF Ker.
R14	13-289	3,3 K Ω " "	C19	11-409	1 nF Ker.
R15	13-285	1,5 K Ω " "	C20	11-509	47 μ F/6,3V Tant
R16	13-283	1 K Ω " "	C21	11-409	1 nF Ker.
R17	13-276	270 Ω " "	C22	11-442	1 nF chip "
R18	13-285	1,5 K Ω " "	C23	11-409	1 nF "
R19	13-283	1 K Ω " "	C24	19-329	9 pF Trim.
R20	13-382	10 K Ω $\frac{1}{4}$ W CR 25	C25	11-442	1 nF chip Ker.
R21	13-278	390 Ω 1/8W CR 16	C26	11-406	330 pF "
R22	13-278	390 Ω " "	C27	11-442	1 nF chip "
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	11-442	1 nF chip Ker.
R27	13-263	22 Ω " "	C32	11-442	1 nF " "
R28	13-267	47 Ω " "	C33		
R29	13-275	220 Ω " "	C34	11-517	1 μ F/25 V Tant.
C1	11-406	330 pF Ker.	C35	19-329	9 pF Trim.
C2	11-374	8,2 pF "	C36	11-442	1 nF chip Ker.
C3	11-385	22 pF "	C37	11-442	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 μ F/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 B65A 1					Tegn.: Kontl.: Stykl. nr.: 76024-4S2



Version	Marking dot	Rx freq. range	VCO freq. range	C5	C6
B43B1	1 brown	408-432 MHz	427.4-453.4 MHz	5.6pF	6.8pF
B43B2	2 red	432-450 MHz	453.4-471.4 MHz	3.9pF	5.6pF
B43B3	3 orange	450-470 MHz	471.4-491.4 MHz	2.2pF	5.6pF



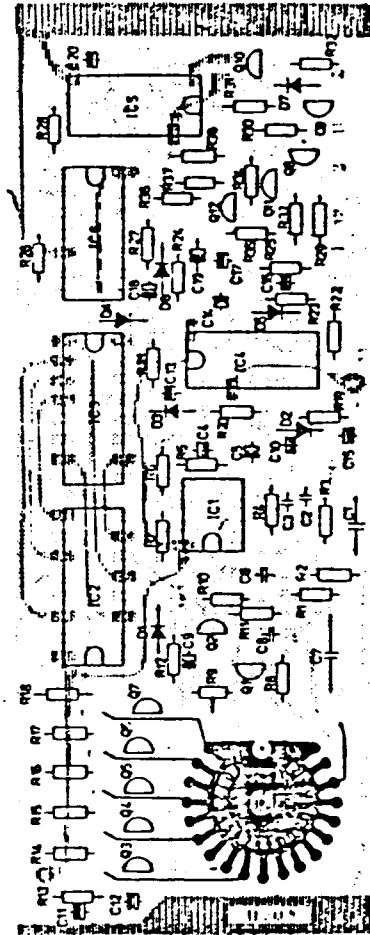
B65A1

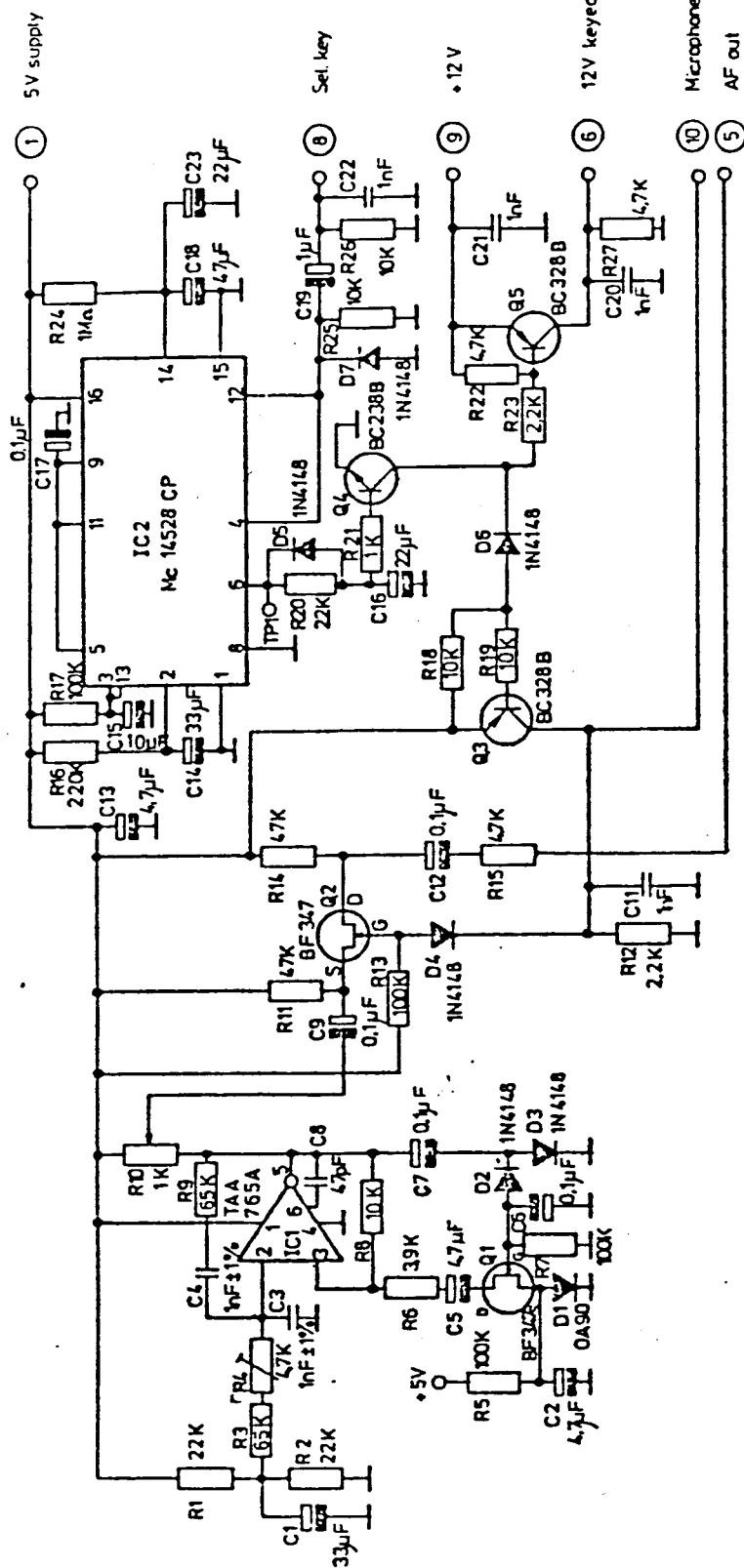


Notation: 13-4-77 CHB/C

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

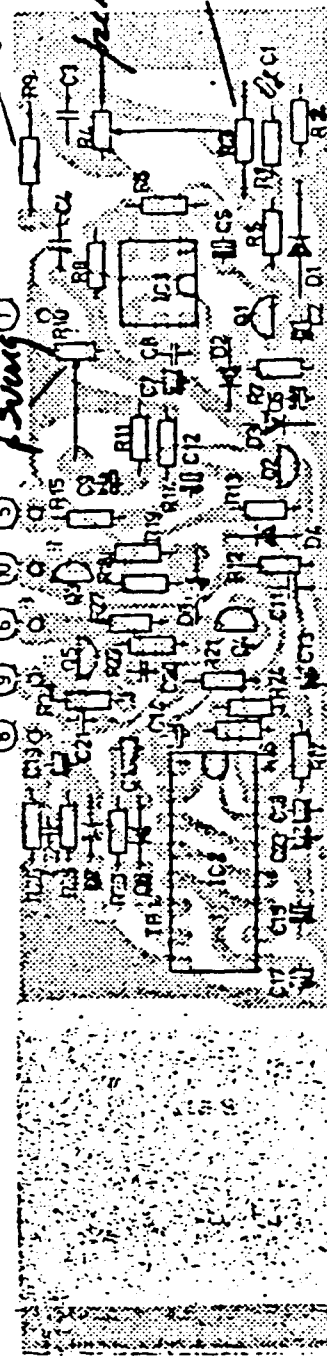
Tegn.: 22-1-76 NC Kontr.: 22-1-76 CHB
Stykd. nr.:
Tegn. nr.:





7.1 TPA

100k 1750 Hz



23 scans

Retel:
7-3-77 LT/NC
21-3-77-HJ

1-tone transmitter with timing circuit

Print board B61B1

AP-RADIOTELEFON

Tegn.: 9-1-75
AC

Stykt. nr.:

Tegn. nr.:

76008 - 3E2

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			
IC4	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 17 B 1+B 22 A 1			Stykl. nr.:		
Tilhører tegn. nr.: 75062-3E 2			Kontr.:		
			75062-4S 2		

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-295	10 K Ω 1/8WCR16	R38	13-302	47 K Ω 1/8WCR16
R2	13-295	10 K Ω " "	R39	13-306	100 K Ω " "
R3	13-279	470 Ω " "	R40	13-287	2,2 K Ω " "
R4	13-307	120 K Ω " "	R41	13-299	22 K Ω " "
R5	13-283	1 K Ω " "	R42	13-291	4,7 k Ω " "
R6	13-275	220 Ω " "	R43	13-271	100 Ω " "
R7	13-295	10 K Ω " "	R44	13-382	10 K Ω $\frac{1}{4}$ W CR25
R8	13-295	10 K Ω " "			
R9	13-295	10 K Ω " "	C1	11-385	22 pF Ker
R10	13-295	10 K Ω " "	C2	11-416	4,7 nF "
R11	13-295	10 K Ω " "	C3	11-416	4,7 nF "
R12	13-295	10 K Ω " "	C4	11-404	150 pF "
R13	13-295	10 K Ω " "	C5	11-409	1 nF "
R14	13-295	10 K Ω " "	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 μ F/10V Tant
R23	13-259	10 Ω " "	C15	11-416	4,7 nF Ker
R24	13-283	1 K Ω " "	C16	11-481	10 nF Pol.
R25	13-283	1 K Ω " "	C17	11-478	6,8 nF "
R26	13-291	4,7 K Ω " "	C18	11-476	2,2 nF "
R27	13-291	4,7 K Ω " "	C19	11-508	33 μ F/10V Tant
R28	13-291	4,7 K Ω " "	C20	11-504	4,7 μ F/10V "
R29	13-299	22 K Ω " "	C21	11-409	1 nF Ker
R30	13-299	22 K Ω " "	C22	11-401	100 pF "
R31	13-271	100 Ω " "	C23	11-504	4,7 μ F/10V Tant
R32	13-287	2,2 K Ω " "	C24	11-394	47 pF Ker
R33	13-295	10 K Ω " "	C25	11-444	560 pF "
R34	13-299	22 K Ω " "	C26	11-444	560 pF "
R35	13-313	27 K Ω " "	C27	11-504	4,7 μ F/10V Tant
R36	13-287	2,2 K Ω " "	C28	11-444	560 pF Ker.
R37	13-300	33 K Ω " "	C29	11-509	47 μ F/6,3V Tant

Synthesizer 1001C

Print board B 17 B. 1+B 22 A 1

Tegn.:

Stykl. nr.:

75000-45 2

AP-RADIOTELEFON

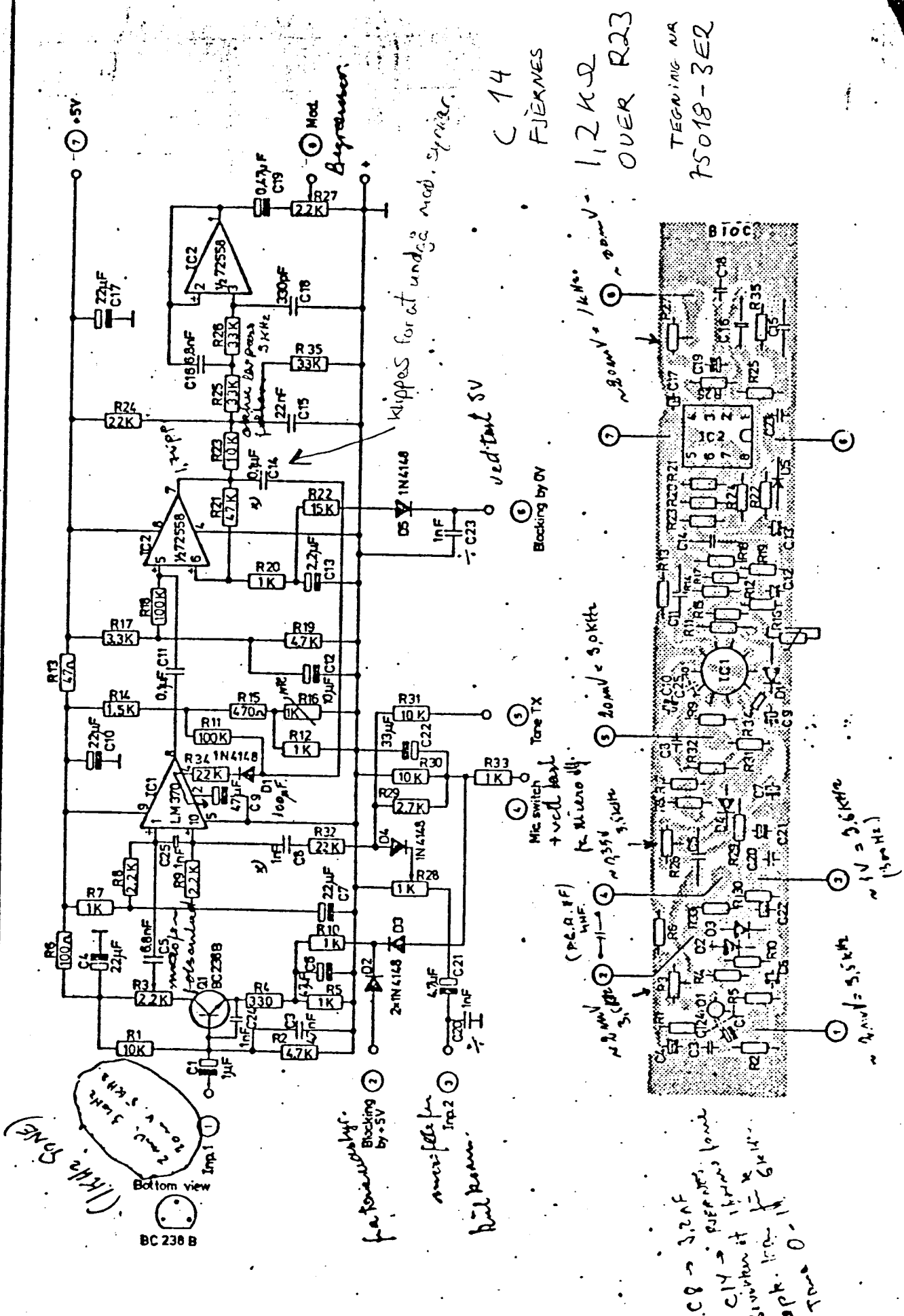
Nr.	Kode	Data	Nr.	Kode	Data
R1	13-295	10 KΩ 1/8W CR 10	C4	11-507	22 μF/16V Tant.
R2	13-291	4,7 KΩ " "	C5	11-466	6,8 nF Ker.
R3	19-255	2,2 KΩ Trim.	C6	11-509	47 μF/6,3V Tant.
R4	13-277	330 Ω 1/8W CR. 16	C7	11-507	22 μF/16V "
R5	13-283	1 KΩ " "	C8	11-409	1 nF Ker.
R6	13-271	100 Ω " "	C9	11-509	47 μF/6,3V Tant.
R7	13-283	1 KΩ " "	C10	11-507	22 μF/16V "
R8	13-287	2,2 KΩ " "	C11	11-470	0,1 μF MKH
R9	13-287	2,2 KΩ " "	C12	11-506	10 μF/25V Tant.
R10	13-283	1 KΩ " "	C13	11-503	2,2 μF/25V "
R11	13-306	100 KΩ " "	C14	11-470	0,1 μF MKH
R12	13-283	1 KΩ " "	C15	11-351	22 nF Laco
R13	13-267	47 Ω " "	C16	11-465	6,8 nF MKH
R14	13-285	1,5 KΩ " "	C17	11-507	22 μF/16V Tant.
R15	13-279	470 Ω " "	C18	11-430	330 pF N750 Ker.
R16	13-664	1 KΩ NTC	C19	11-501	0,47 μF/35V Tant.
R17	13-289	3,3 KΩ 1/8W CR 16	C20	11-409	1 nF Ker.
R18	13-306	100 KΩ " "	C21	11-504	4,7 μF/10V Tant.
R19	13-291	4,7 KΩ " "	C22	11-508	33 μF/10V Tant.
R20	13-283	1 KΩ " "	C23	11-409	1 nF Ker.
R21	13-307	47 KΩ " "	C24	11-409	1 nF "
R22	13-297	15 KΩ " "	C25	11-409	1 nF "
R23	13-295	10 KΩ " "			
R24	13-299	22 KΩ " "	D1	04-062	1N4148
R25	13-300	33 KΩ " "	D2	04-062	1N4148
R26	13-300	33 KΩ " "	D3	04-062	1N4148
R27	19-2 5	2,2 KΩ Trim.	D4	04-062	1N4148
R28	19-252	1 KΩ " "	D5	04-062	1N4148
R29	13-288	2,7 KΩ 1/8W CR 16			
R30	13-295	10 KΩ " "	Q1	19-093	BC 238B
R31	13-295	10 KΩ " "			
R32	13-299	22 KΩ " "	IC1	09-005	LM 370
R33	13-283	1 KΩ " "	IC2	09-075	SN 72558 p
R34	13-299	22 KΩ " "			
R35	13-300	33 KΩ " "			
C1	11-502	1 μF/35V Tant.			
C3	11-416	4,7 nF Ker.			
Modulation amplifier Print board B 1C C 1 Tilhører tegn. nr.: 75018-3E2			Rettet:		Tegn.: Kontr.: Stykl. nr.: 75018-4S2

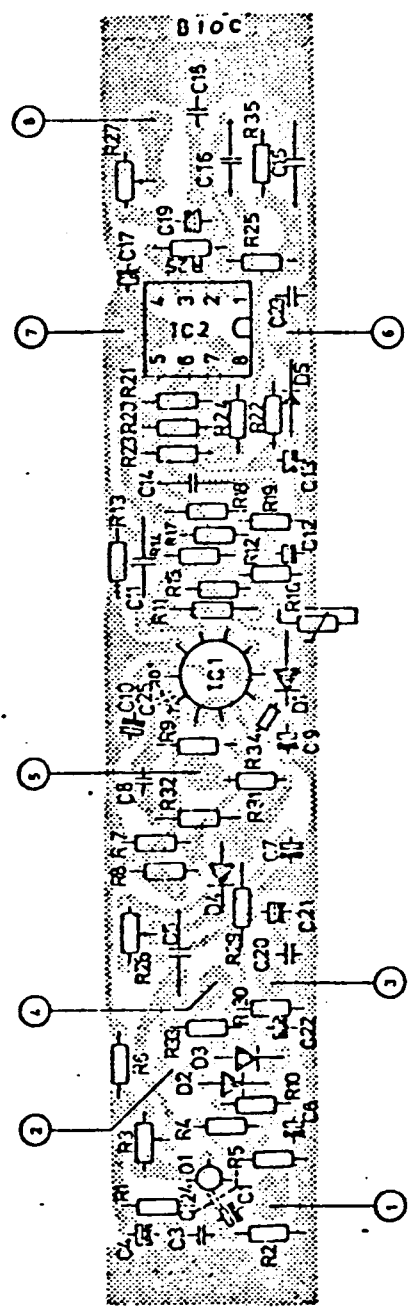
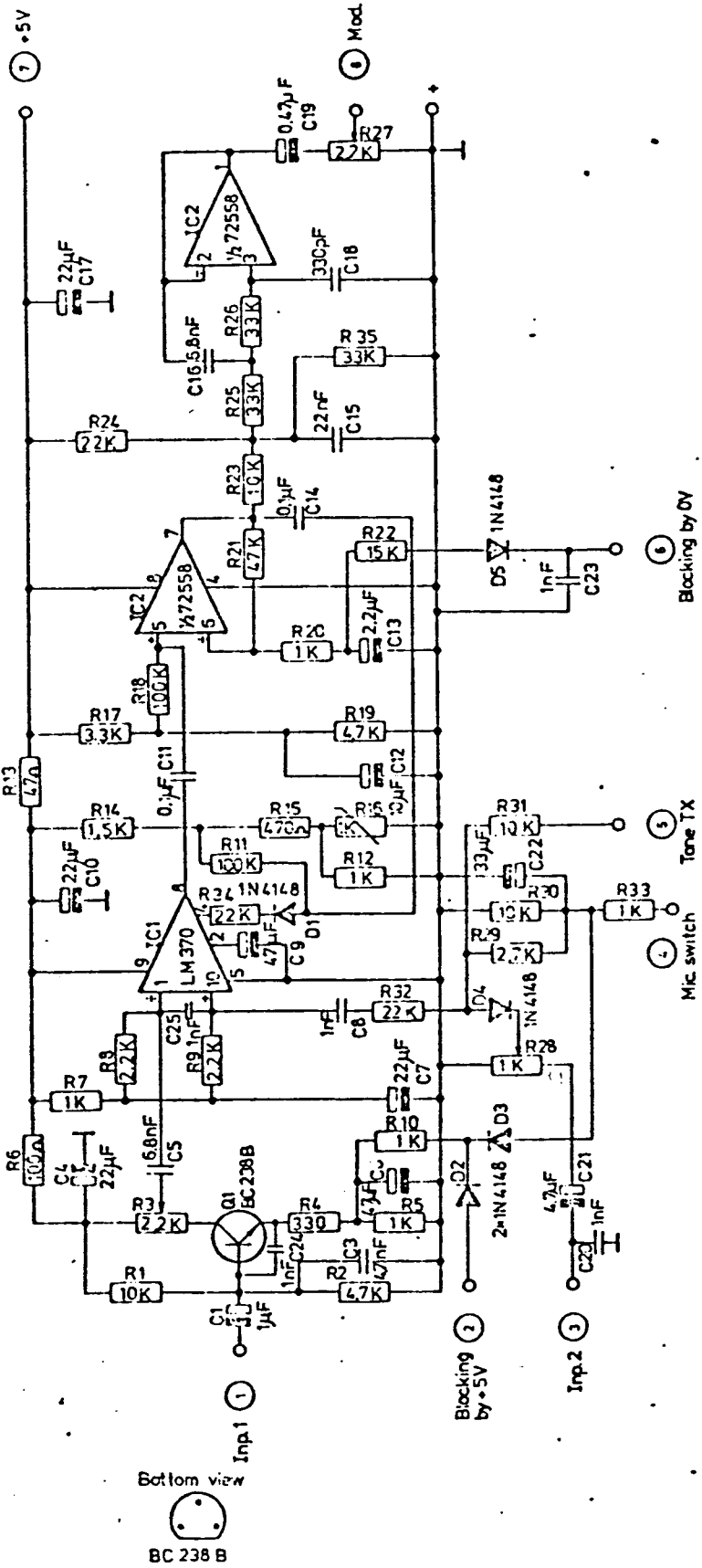
Parti:	7-9-78 JH/NC
	1-2-77 RJ

Modulation amplifier
Print board B10C1

AP-RADIOTELEFON 79112-3E2

Tegn.: B-1-75	Konv.:
Stykt. nr.:	78
Tegn. nr.:	75018-3E2





Part list:
7-9-75 JH/NC
1-2-77 HJ

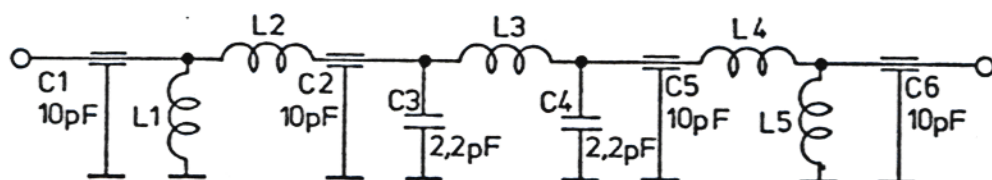
Modulation amplifier
Print board B10C 1

AP-RADIOTELEFON

Tegn.: 8-1-75	Kont.:
AC	
Styl. nr.:	
Tegn. nr.:	
75018-3E2	

AP-RADIOTELEFON

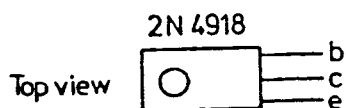
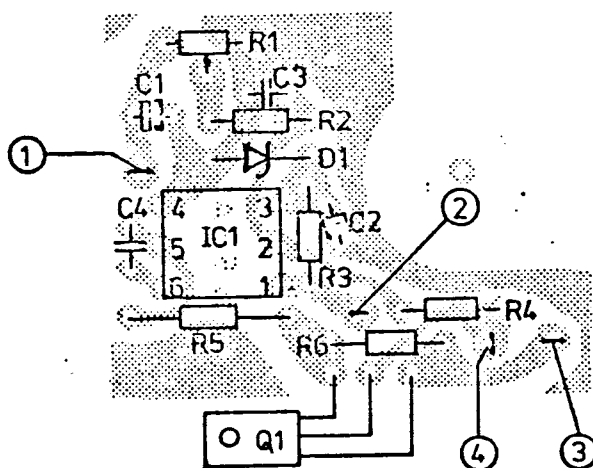
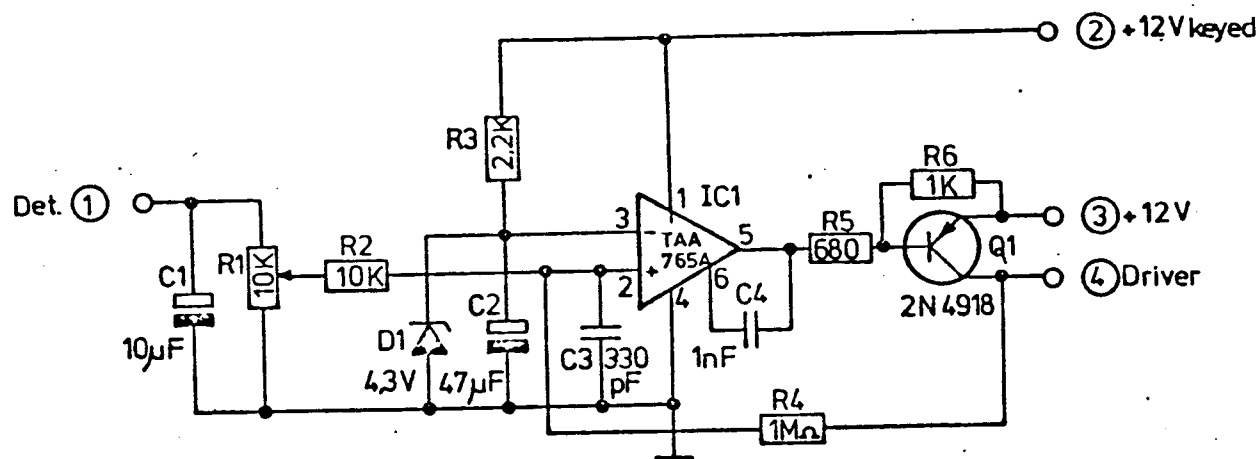
Nr.	Kode	Data		Nr.	Kode	Data	
C1	11-447	10 pF	Ker.				
C2	11-447	10 pF	"				
C3	11-363	2,2 pF	"				
C4	11-363	2,2 pF	"				
C5	11-447	10 pF	"				
C6	11-447	10 pF	"				
L1		75618-4E2					
L2		75613-4E2					
L3		75612-4E2					
L4		75613-4E2					
L5		75618-4E2					
6 W aerial filter UHF				Rettet:		Tegn.: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



Rettet:	Aerialfilter UHF	Tegn.:29-12-75	Kontr.:
		NC-AC	
		Stykl. nr.:	
		AP-RADIOTELEFON 1/2	Tegn. nr.:
			75623 - 4E2

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	19-258	10 K Ω Trim.			
R2	13-295	10 K Ω 1/8W CR 16			
R3	13-287	2,2 K Ω " "			
R4	13-312	1 M Ω " "			
R5	13-368	680 Ω $\frac{1}{4}$ W CR 25			
R6	13-283	1 K Ω 1/8W CR 16			
C1	11-506	10 μ F/25V Tant.			
C2	11-509	47 μ F/6,3V "			
C3	11-406	330 pF Ker.			
C4	11-409	1 nF "			
D1	04-045	4,3 V Zener			
Q1	19-176	2N4918			
IC1	09-003	TAA765A			
Sense amplifier for output power stabilizing of internal PA Print board B 57.A 1					
Tilhører tegn. nr.: 75622-4E2					
				Tegn.:	Stykl. nr.:
				Kontr.:	75622-4S2



Rolltot: 21-4-77 JH/ry

Sense amplifier for output power stabilizing of internal PA. Print board B 57 A 1

Tegn.: 29-12-75

Kontr.:

AC

Stykl. nr.:

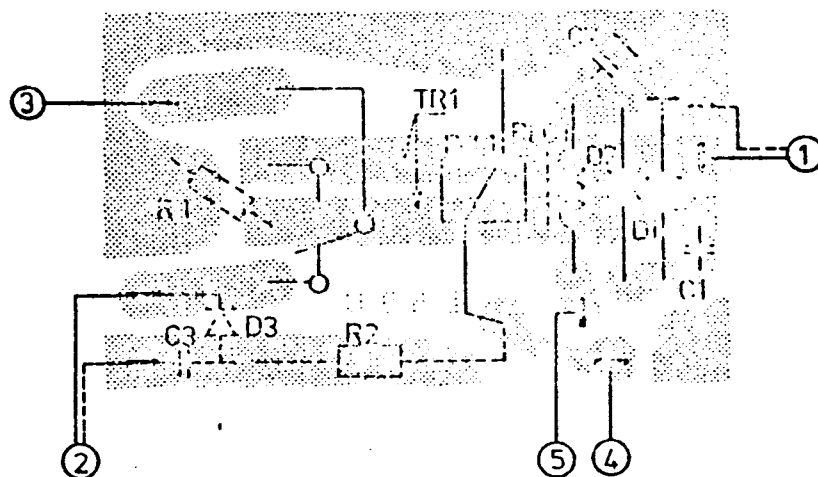
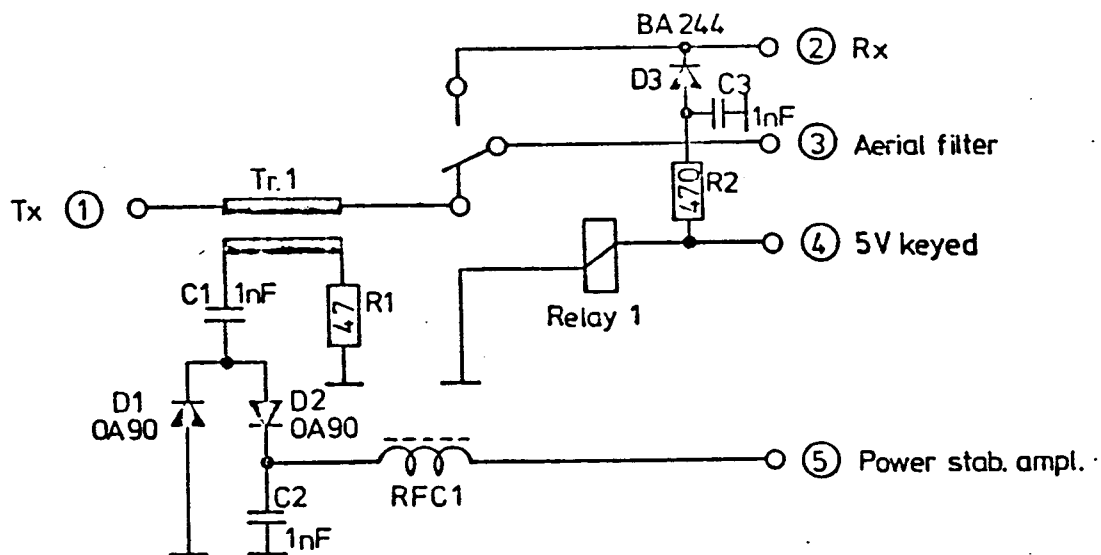
Tegn. nr.:

75622-4E2

AP-RADIOTELEFON 1/5

AP-RADIOTELEFON

AF-RADIO TELEFON									
Nr.	Kode	Data	Nr.	Kode	Data				
R1	13-356	47 Ω $\frac{1}{4}$ W CR 25							
R2	13-366	470 Ω " " " "							
C1	11-409	1 nF Ker.							
C2	11-409	1 nF "							
C3	11-409	1 nF "							
D1	04-036	0A90							
D2	04-036	0A90							
D3	04-008	BA244							
RFC 1		75290-4E2							
Rel. 1	17-058	W-4K 115 Ω							
6 W aerial switch and power detector Print board B 58 B 1 Tilhører tegn. nr.: 75624-4E2			Rettet:		<table><tr><td>Tegn.:</td><td>Stykl. nr.:</td></tr><tr><td>Kontr.:</td><td>75624-4S2</td></tr></table>	Tegn.:	Stykl. nr.:	Kontr.:	75624-4S2
Tegn.:	Stykl. nr.:								
Kontr.:	75624-4S2								



Hettet: 8-2-77 JH/AC

6W aerial switch and power detector
for UHF. Print board B58 B1

Tegn.: 29-12-75

Kontr.:

AC

Stykl. nr.:

Tegn. nr.:

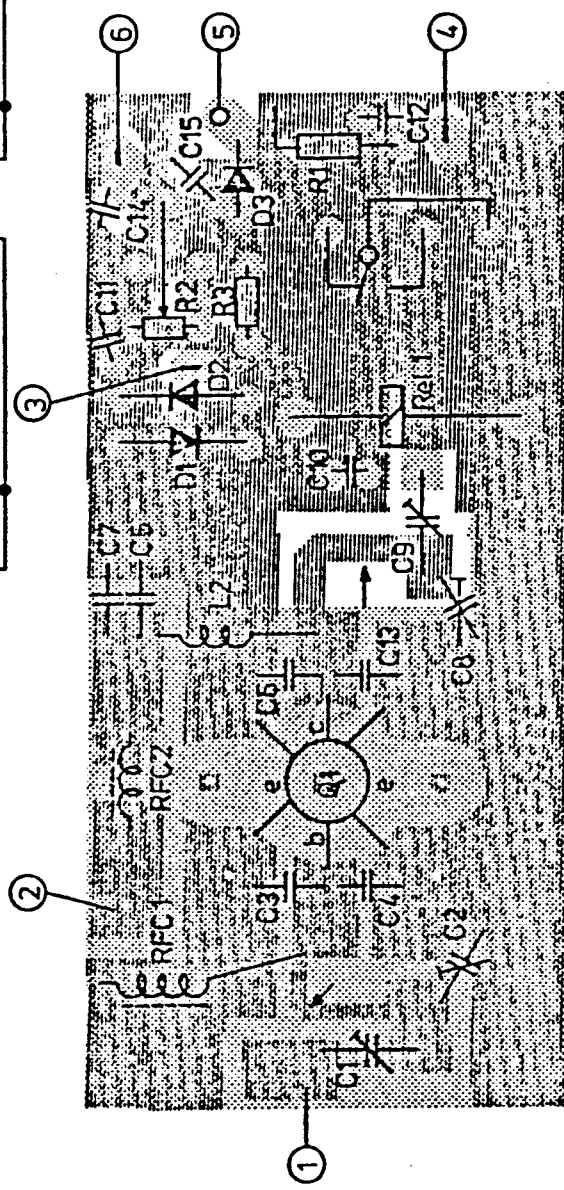
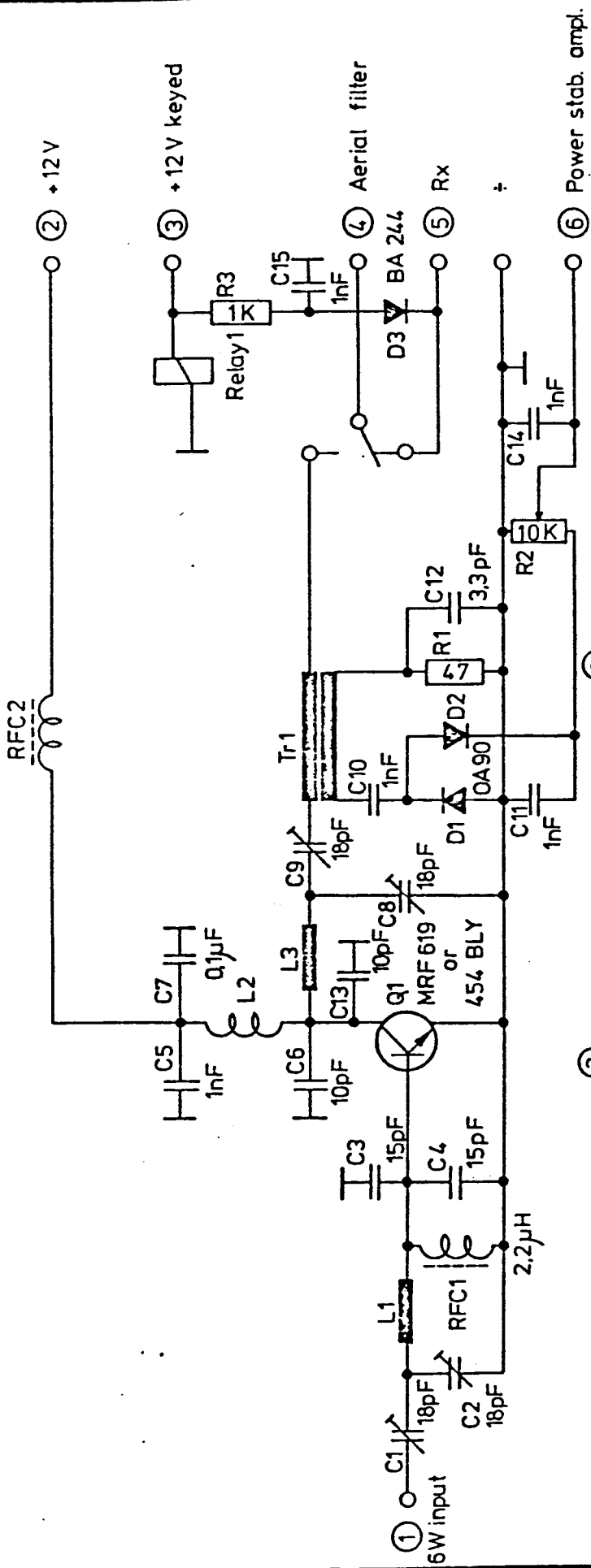
75624-4E2

AP-RADIOTELEFON 1/2

AP-RADIOTELEFON

56.

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 $\frac{1}{8}$ 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	19-330	18 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 "			
D1	04-036	OA 90			
D2	04-036	OA 90			
D3	04-008	BA 244			
Q1	19-177	MRF 619 or 454BLX			
RFC-1	04-111	2,2 μ H			
RFC-2		75290-4E2			
L2		75619-4E2			
Rel. 1	17-057	W-7K 570 Ω			
PA 25 W UHF, aerial switch and power detector. Print board B59D 1			Tegn.:		Stykl. nr.:
Tilhører tegn. nr.: 75627-4E2			Kontr.:		75627-4S2



REMARK:
In a duplex set, the relay
is not mounted.

Rettlet:

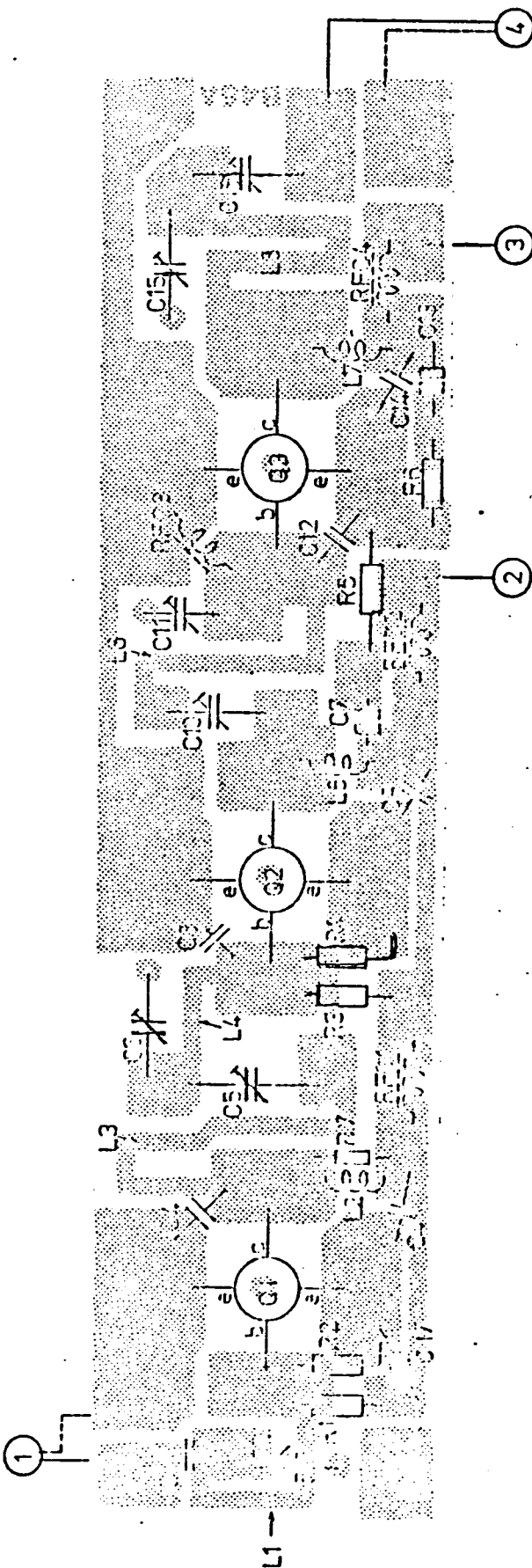
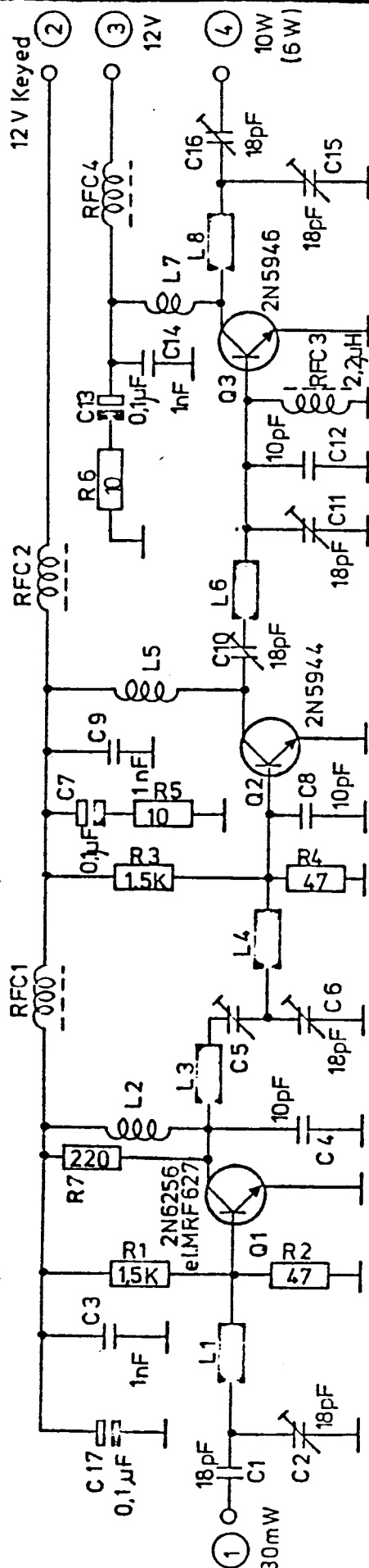
PA 25W UHF, aerial switch and
power detector. Print board B59 D 1

AP-RADIOTELEFON ¼

Tegn.: 17-11-76 AC	Kontr.:
Stykl. nr.: 75627-4E2	
Tegn. nr.: 75627-4E2	

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-285	1,5 KΩ 1/8W CR 16	RFC		75290-4E2
R2	13-267	47 Ω " "	1		
R3	13-285	1,5 KΩ " "	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 μF 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 μF Tant.			
C14	11-409	1 nF Ker.			
C15	19-330	18 pF Trim.			
C16	19-330	18 pF "			
C17	11-500	0,1 μF Tant.			
Q1	19-123	MRF627			
Q2	19-162	2N5944			
Q3	19-163	2N5946			
L2		75615-4E2			
L5		75619-4E2			
L7		75619-4E2			
6 W PA-stage UHF			Rettet:		
Print board B 45 A 1			Tegn.:		
Tilhører tegn. nr. 75510-4E2			Stykl. nr.:		
			Kontroll:		



Hollot:

6 W P.A. UHF B 45A1

Tegn.: 31-10-75

Kontr.:

EH

Stykl. nr.:

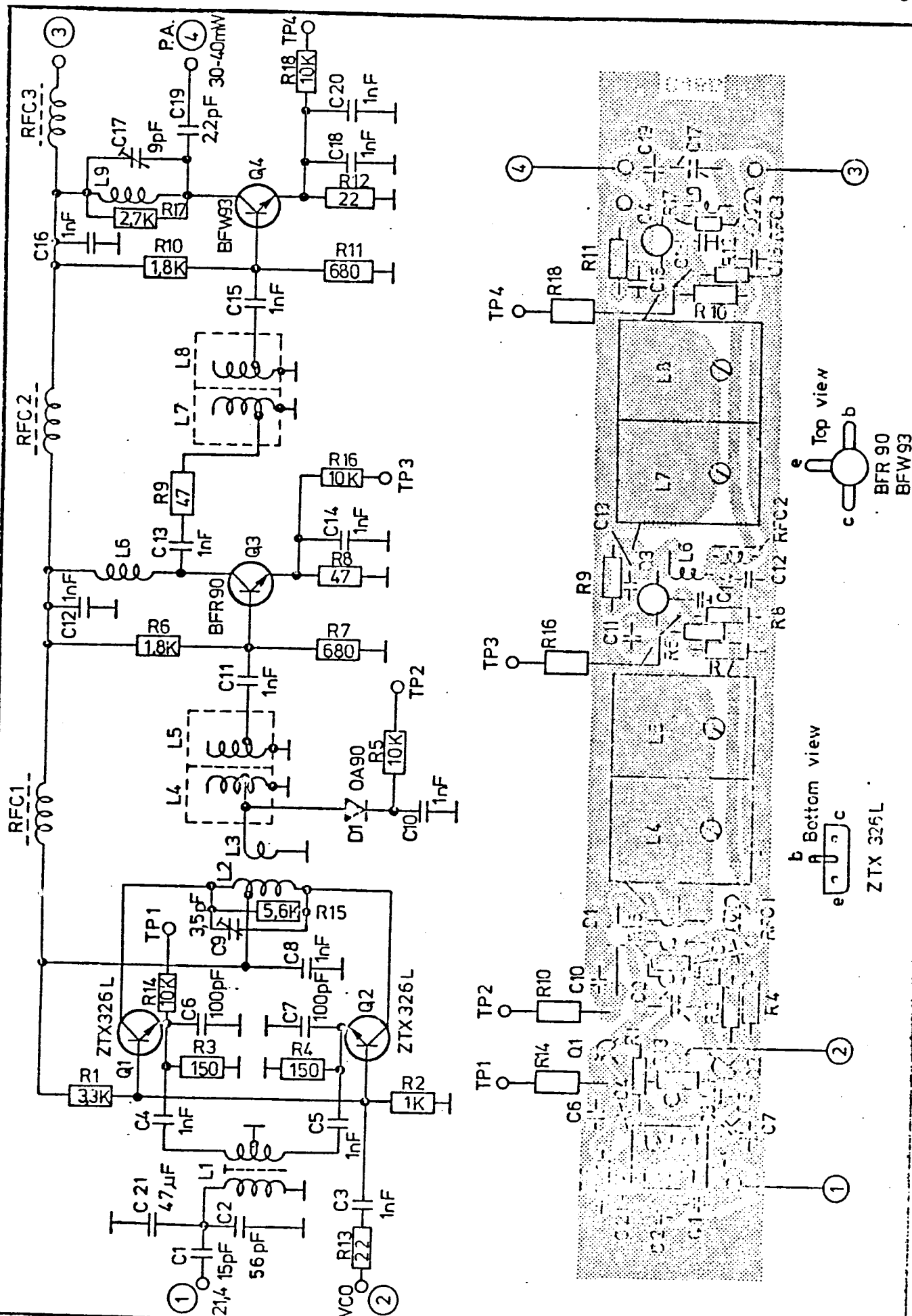
Tegn. nr.:

75510 / 52

AP-RADIOTELEFON A

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	13-292	5,6 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 B 1 Tilberør. tegn. nr. 75511-4E2			Rettet:		Tegn.: Stykl. nr.: Kontr.: 75511-4E2



Rellet: 9-2-77 HJ.

TX mixer UHF
Print board B46 B 1

AP-RADIOTELEFON

Tegn.: 3-11-75
AC

Kontr.:

Stykl. nr.:

Tegn. nr.:

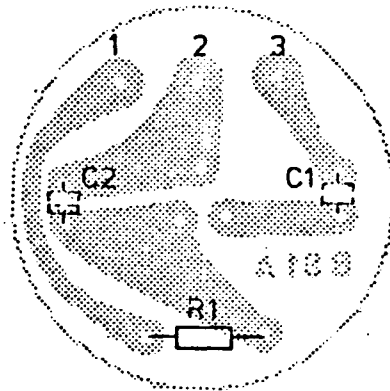
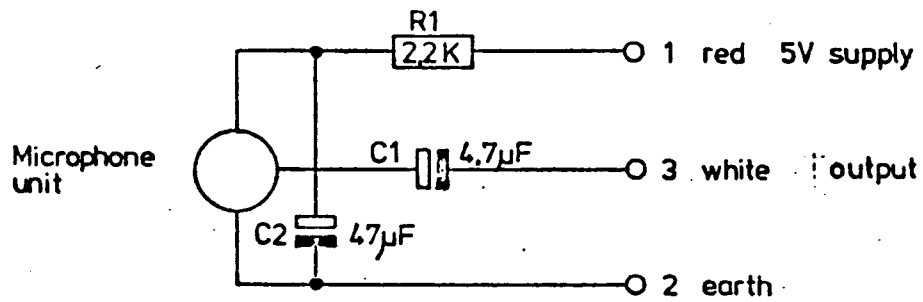
75511-4F2

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-287	2,2 K Ω 1/8W CR16			
C1	11-504	4,7 μ F/10 Tantal			
C2	11-509	47 μ F/6,3 V Tant.			
	13-062	Mic. EM-10LB			
Microphone 213-020			Rettet:		Tegn.: . Kontr.: 77127-1F2

Stykl. nr.:

77127-1F2



Rettet:

Microphone 213-020
Print board B 81 A1

AP-RADIOTELEFON ½

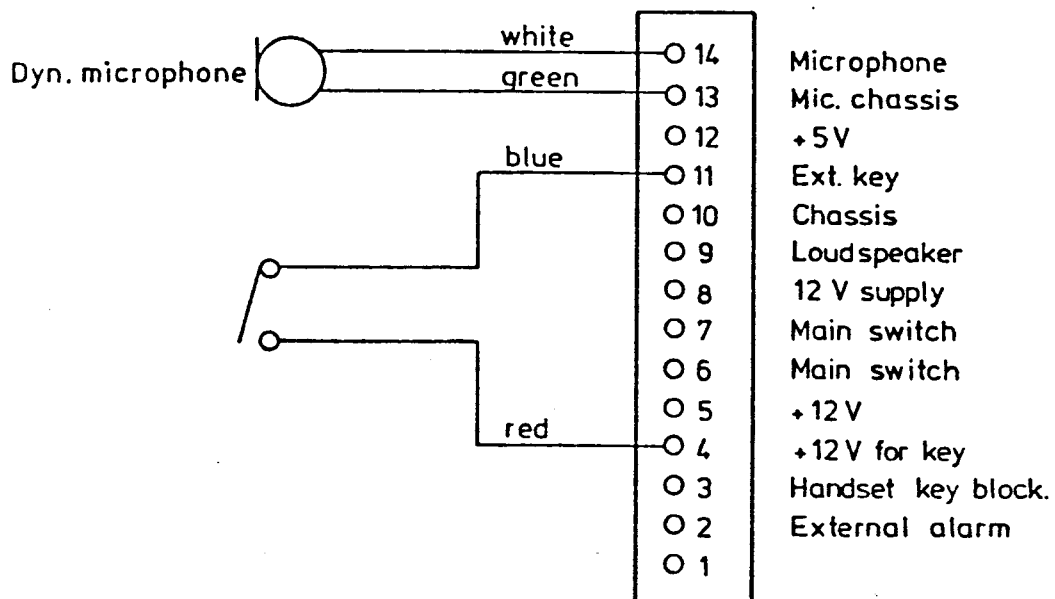
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AC

Kontr.:

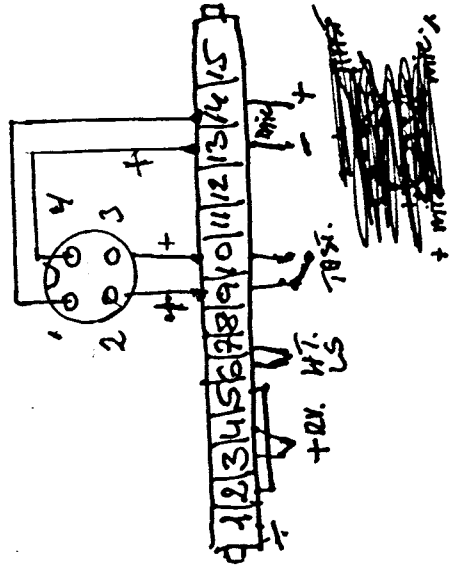
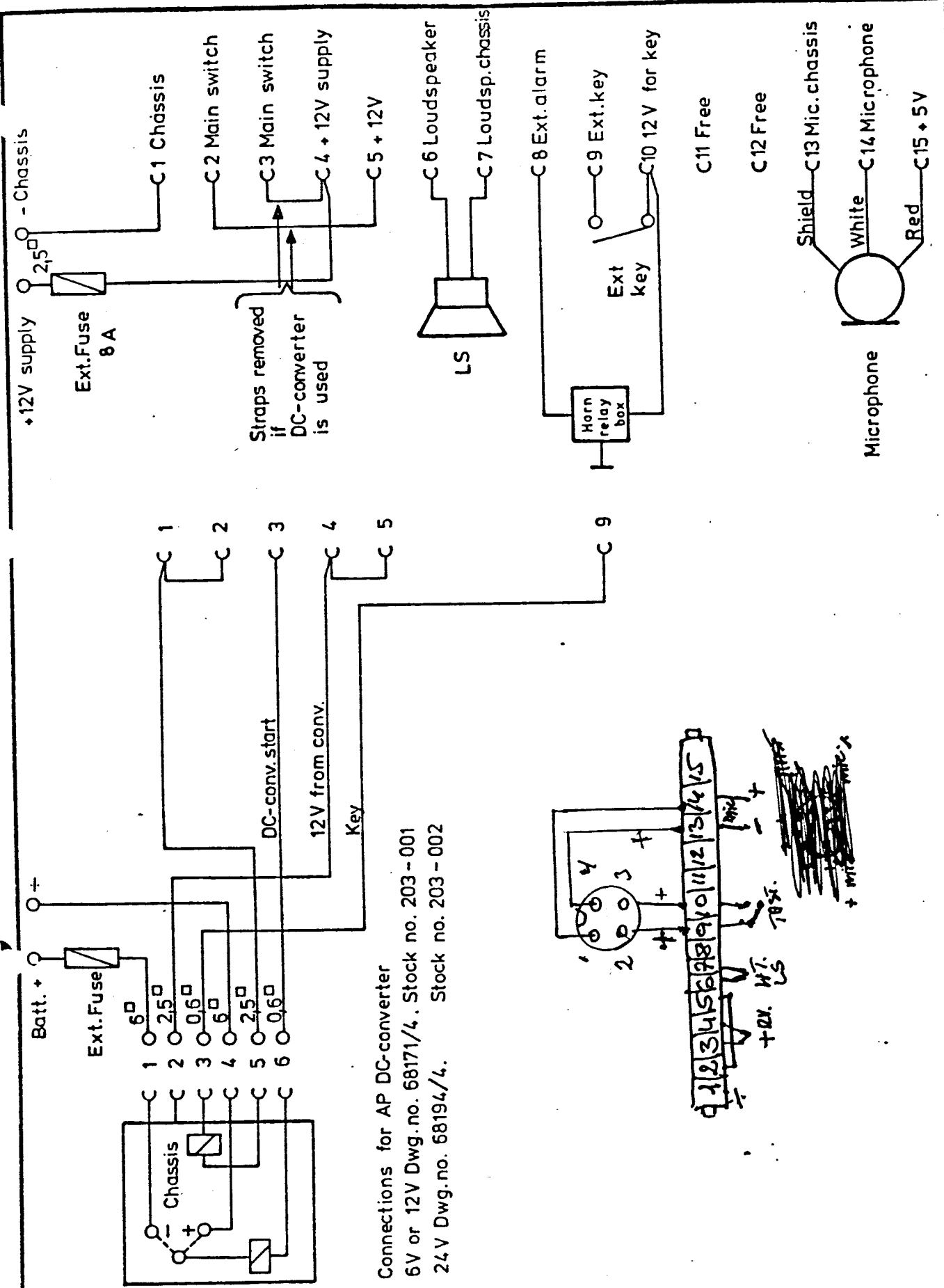
Stykl. nr.:

Tegn. nr.:

77127 - 4E2



Rettet: _____ _____ _____ _____ _____ _____	Installation for close talk microphone, AP 2000	Tegn.: 4 - 11 - 76	Kontr.:	
		AC		
	Stykl. nr.:		Tegn. nr.:	
	AP-RADIOTELEFON 1/5		76327 - 4E2	



Reitet:
30-3-77 LT/NC

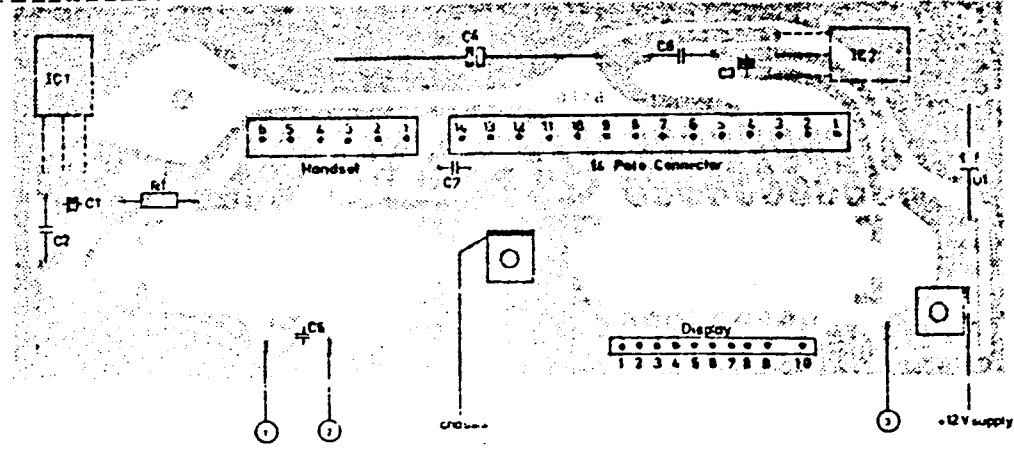
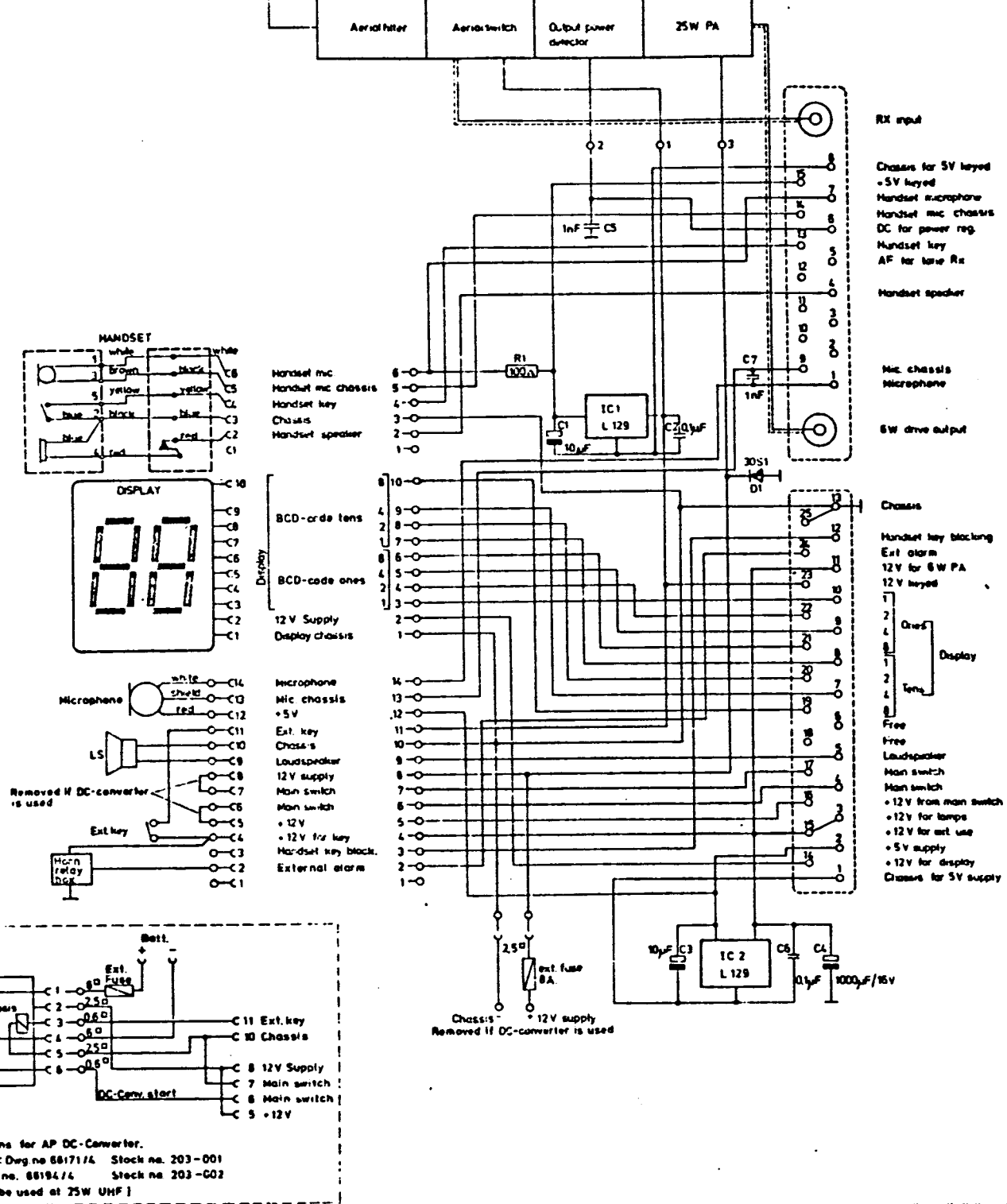
Installation for AP 2000 with
printconnector

AP-RADIOTELEFON ½

Tegn.: 10-1-77 HJ.	Kontr.: 12-1-77 BJ.
Stykl. nr.:	
Tegn. nr.:	77001-4E2.

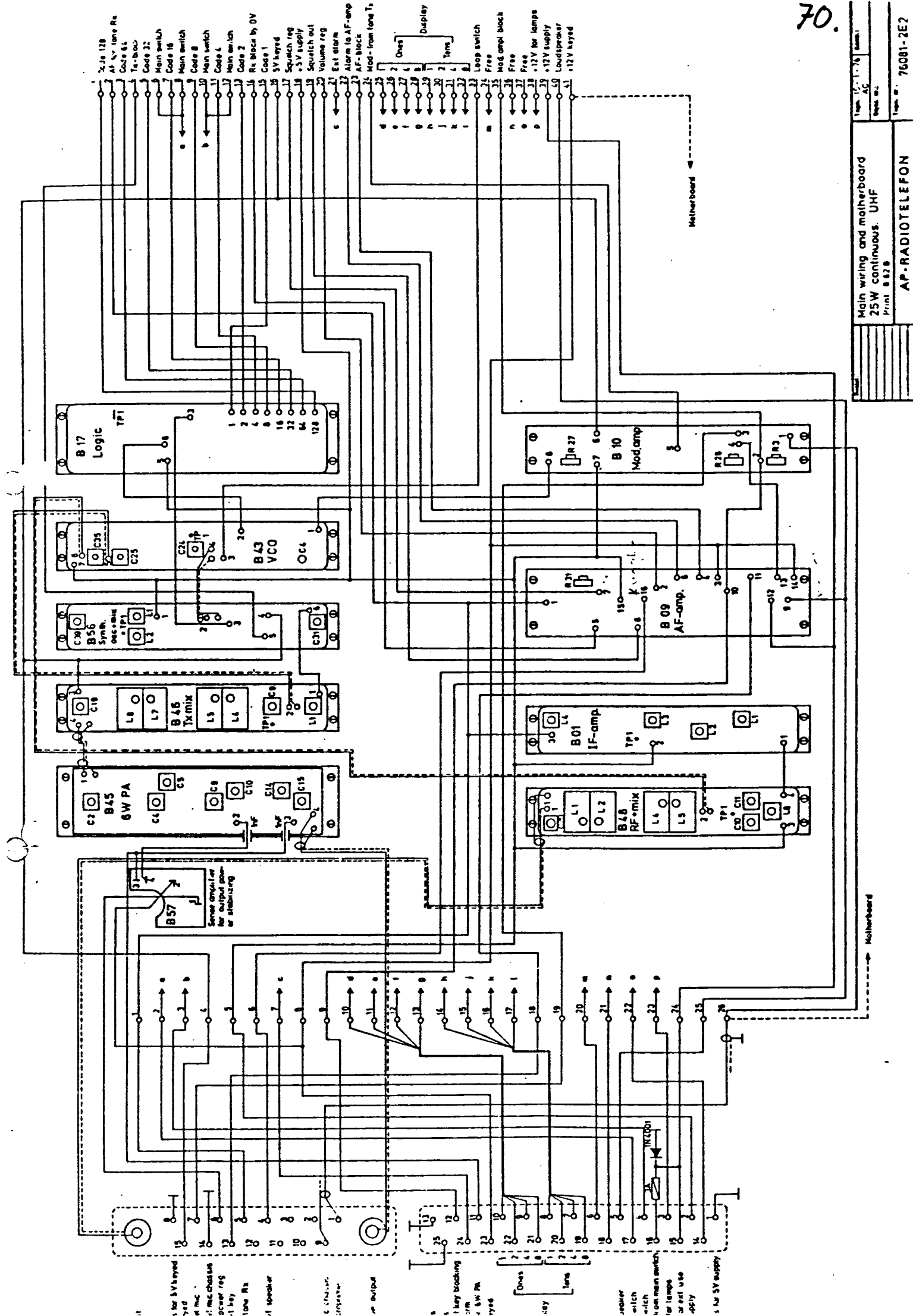
AP-RADIOTELEFON

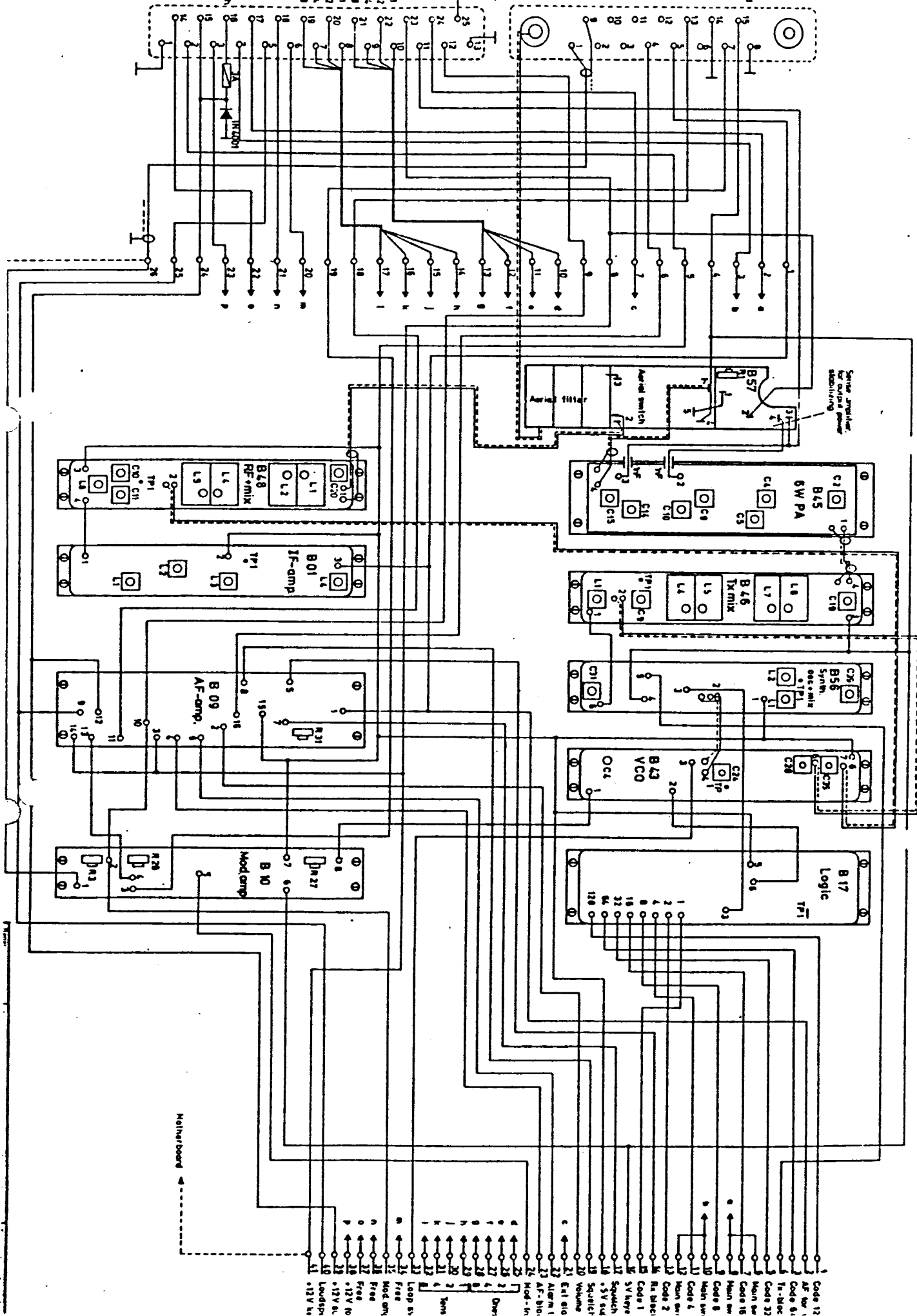
Nr.	Kode	Data	Nr.	Kode	Data
R1	13-359	100 Ω $\frac{1}{4}$ W CR 16			
C1	11-506	10 μ F/25V Tant.			
C2	11-353	0,1 μ F Laco			
C3	11-506	10 μ F/25V Tant.			
C4	05-030	1000 μ F/16V Elko			
C5	11-409	1 nF Ker.			
C6	11-353	0,1 μ F Laco.			
C7	11-409	1 nF Ker.			
D1	04-040	30S1			
IC1	09-081	TDA 1405			
IC2	09-081	TDA 1405			
Installation for AP 2000, ext PA			Tegn.:		
Print board B 14 B 1			Stykl. nr.:		
Tilhører tegn. nr.: 75058-2E2			Kontr.:		
			75058-4S2		



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 Elko			
C5	11-353	0,1 μ F Laco			
C6	11-409	1 nF ker.			
D1	04-040	30S1			
IC1	09-081	TDA 1405			
IC2	09-081	TDA 1405			
Installation for AP 2000 int. Print board B 54 B 2 PA Tilhører tegn. nr.: 75061-2E2			Rettet:		Tegn.: Kontr.:
					Stykl. nr.: 75061-4S2

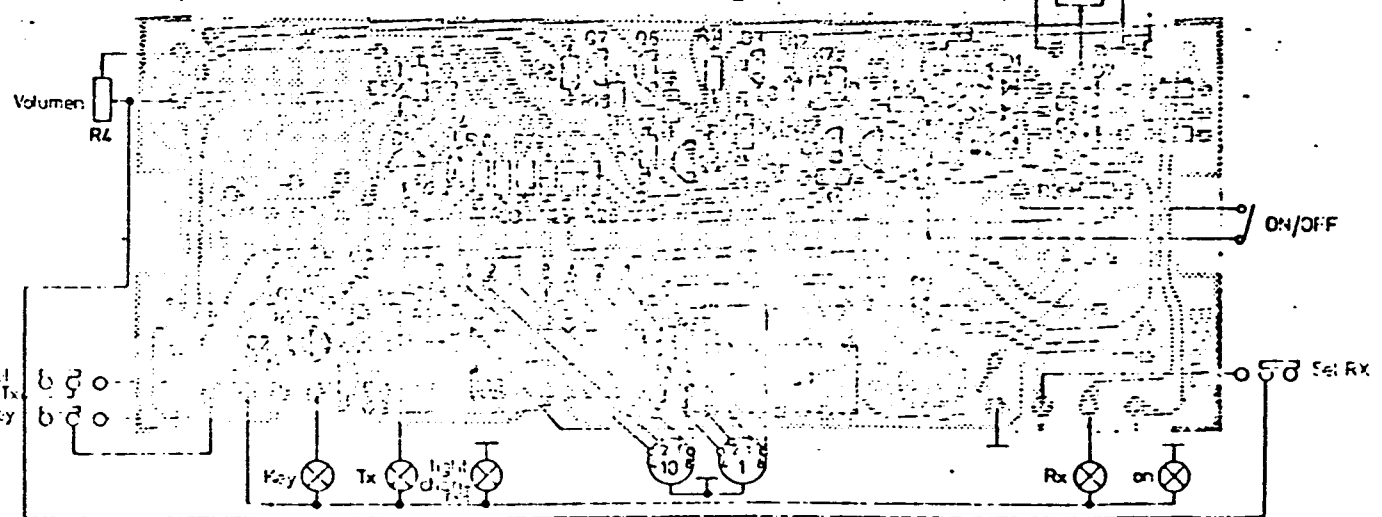




AP-RADIOTELEFON

73.

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-284	1,2 KΩ 1/8 W CR16	C1	11-409	1nF Ker.
R2	16-022	4,7 KΩ Potm.	C2	11-409	1nF Ker.
R3	13-281	680 Ω 1/8 W CR16			
R4	16-023	100 KΩ Lin.Potm.	D1	04-002	AAZ17
R5	13-295	10 KΩ 1/8 W CR16	D2	04-002	AAZ17
R6	13-291	4,7 KΩ " "	D3	04-062	1N4148
R7	13-291	4,7 KΩ " "	D4	04-062	1N4148
R8	13-291	4,7 KΩ " "	D5	04-062	1N4148
R9	13-283	1 KΩ " "	D6	04-062	1N4148
R10	13-273	150 Ω " "	D7	04-062	1N4148
R11	13-295	10 KΩ " "	D8	04-062	1N4148
R12	13-295	10 KΩ " "	D9	04-062	1N4148
R13	13-291	4,7 KΩ " "	D10	04-062	1N4148
R14	13-291	4,7 KΩ " "	D11	04-062	1N4148
R15	13-288	2,7 KΩ " "	D12	04-062	1N4148
R16	13-295	10 KΩ " "	D13	04-062	1N4148
R17	13-287	2,2 KΩ " "			
R18	13-300	33 KΩ " "	Q1	19-093	BC238B
R19	13-288	2,7 KΩ " "	Q2	19-093	BC238B
R20	13-288	2,7 KΩ " "	Q3	19-093	BC238B
R21	13-295	10 KΩ " "	Q4	19-093	BC238B
R22	13-295	10 KΩ " "	Q5	19-096	BC337
R23	13-295	10 KΩ " "	Q6	19-096	BC337
R24	13-295	10 KΩ " "	Q7	19-093	BC238B
R25	13-295	10 KΩ " "	Q8	19-096	BC337
R26	13-295	10 KΩ " "	Q9	19-093	BC238B
R27	13-295	10 KΩ " "	Q10	19-095	BC327
R28	13-295	10 KΩ " "			
R29	13-295	10 KΩ " "	IC1	09-066	SN74S188N
R30	13-295	10 KΩ " "	IC2	09-051	SN74184N
R31	13-295	10 KΩ " "			
R32	13-300	33 KΩ " "			
R33	13-283	1 KΩ " "			
R34	13-291	4,7 KΩ " "			
R35	13-302	47 KΩ " "			
R36	13-302	47 KΩ " "			
Control Circuit for 32 channel frontsection 12. Print B38C1 Tilhører tegn. nr.: 75207-3E2			Rettet:		Tegn.: Kontr.:
					Stykl. nr.: 75207-4S2



15-6-75 MC/LT
 21-2-77 AC/LT

CONTROL CIRCUIT FOR 32 CHANNELS, FRONTSECTION 12
PRINT B 38 C 1

Tegaz: 6-5-75 Kontor: 7 5-75
AC LT
Styl. nr.:

Teyn. N.:

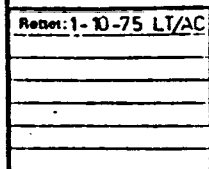
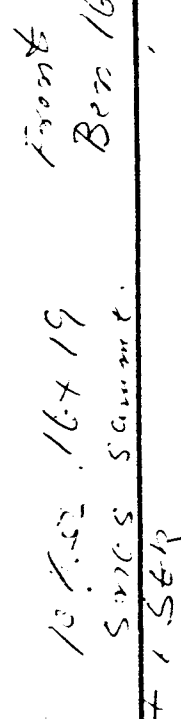
AP-RADIOTELEFON

75207-3 E 2

AP-RADIOTELEFON

75.

Nr.	Kode	Data	Nr.	Kode	Data				
R1	13-291	4,7 KΩ 1/8 W CR16	IC1	09-067	HM1-0168				
R2	13-281	680 Ω " "	IC2	09-067	HM1-0168				
R3	16-022	4,7 KΩ Potm.							
R4	13-284	1,2 KΩ " "							
R5	16-023	100 KΩ Lin.Potm.							
R6	13-291	4,7 KΩ 1/8 W CR16							
R7	13-300	33 KΩ " "							
R8	13-287	2,2 KΩ " "							
R9	13-283	1 KΩ " "							
R10	13-273	150 Ω " "							
R11	13-295	10 KΩ " "							
R12	13-295	10 KΩ " "							
R13	13-291	4,7 KΩ " "							
R14	13-291	4,7 KΩ " "							
R15	13-288	2,7 KΩ " "							
R16	13-295	10 KΩ " "							
C1	11-409	1 nF Ker.							
C2	11-409	1 nF Ker.							
D1	04-002	AAZ17							
D2	04-002	AAZ17							
D3	04-062	1N4148							
D4	04-062	1N4148							
D5	04-062	1N4148							
D6	04-062	1N4148							
D7	04-002	AAZ17							
Q1	19-096	BC337							
Q2	19-093	BC238B							
Q3	19-093	BC238B							
Q4	19-093	BC238B							
Q5	19-096	BC337							
Q6	19-096	BC337							
Q7	19-093	BC238B							
Control circuit for 12 channel frontsection 11. Print B21C1 Tilberer tegn. nr.: 75084-3E2			Rettet:		<table><tr><td>Tegn.:</td><td>Stykl. nr.:</td></tr><tr><td>Kontr.:</td><td>75084-4S2</td></tr></table>	Tegn.:	Stykl. nr.:	Kontr.:	75084-4S2
Tegn.:	Stykl. nr.:								
Kontr.:	75084-4S2								



AP-RADIOTELEFON

75084-3E2

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-291	4,7 K Ω 1/8 W CR16			
R2	13-284	1,2 K Ω " "			
R3	16-022	4,7 K Ω Potm.			
R4	13-281	680 Ω " "			
R5	16-023	100 K Ω Lin.Potm.			
R6	13-291	4,7 K Ω 1/8 W CR16			
R7	13-300	33 K Ω " "			
R8	13-287	2,2 K Ω " "			
R9	13-283	1 K Ω " "			
R10	13-273	150 Ω " "			
R11	13-295	10 K Ω " "			
R12	13-295	10 K Ω " "			
R13	13-291	4,7 K Ω " "			
R14	13-291	4,7 K Ω " "			
R15	13-288	2,7 K Ω " "			
R16	13-295	10 K Ω " "			
R17	13-300	33 K Ω " "			
C1	11-409	1 nF Ker.			
C2	11-409	1 nF Ker.			
D1	04-062	1N4148			
D2	04-062	1N4148			
D3	04-062	1N4148			
D4	04-062	1N4148			
D5	04-002	AAZ17			
Q1	19-093	BC238B			
Q2	19-096	BC337			
Q3	19-093	BC238B			
Q4	19-093	BC238B			
Q5	19-096	BC337			
Q6	19-096	BC337			
Q7	19-093	BC238B			
Control Circuit for 1 channel, frontsection 04. Print E20C1			Rettet:		Tegn.:
Tilhører tegn. nr.: 75083-3E2					Kontr.:
					Stykl. nr.: 75083-4S2