

General:

The equipment is homologated in several countries where the technical requirements are based on the CEPT Recommendation T/R 17.

Frequency range:	146 - 174 MHz
Principle:	Digital frequency synthesizer
Number of channels:	Max. 80
Channel spacing:	25 kHz or 20 kHz
RF-bandwidth:	typ. 2 MHz at 1 dB reduction
Mode of operation:	Simplex, semi-duplex and duplex
Supply voltage:	12 V DC chassis negative - nom. 13,2V. DC-DC converter available for 6V, 24V and 12V chassis positive operation. A 220V AC supply is available too.
Supply voltage variations:	10,8V to 15,6V
Operation Temperature:	% 25°C to + 60°C
Frequency stability:	typ. +10 ppm for the above specified temperature and supply voltage variations
Loudspeaker:	External 4Ω
Microphone:	1 kΩ condenser microphone or 200Ω dynamic close talk micro- phone with push-button
Antenna impedance:	50Ω
Power consumption:	At 13,2 V reception approx. 0,25 A transmission { 25W approx. 5,5A 6W " 2,0A

Receiver:

Sensitivity:	typ. 0,4μV ($\frac{1}{2}$ E.M.F.) for 20 dB SINAD.
Adjacent channel sensitivity:	typ. 75 dB (CEPT Method)
Spurious and image rejection:	typ. 80 dB (CEPT Method)
Intermodulation attenuation:	typ. 71 dB (CEPT Method)
Undesired conducted power:	typ. 0,5 nW
Deemphasis:	Following 6dB per octave curve from 0,3 to 3 KHz within +1-3dB relative level at 1000 Hz

Output for microtelephone:

Hum and noise:

Function of limiter:

Transmitter:

Power output:

Spurious outputs and harmonics:

Adjacent channel power:

Frequency deviation:

Preemphasis:

Harmonic distortion:

Hum and noise:

Distortion, 13,2V supply voltage

1mW in 300Ω

Typ. 50 dB (CEPT Method)

Less than 1dB variation in output voltage for RF-input levels between 1μV and 100 mV EMF

without external PA: 6W₊ 0,5 dB from % 25°C to + 60°C and supply voltages between 10,8V and 15,6V

with external PA: 25W + 0dB % 2dB from % 25°C to + 60°C and supply voltages between 10,8V and 15,6V

typ. each less than 2μW into 50Ω

typ. 85dB below the output power

max. ± 5 kHz

Following 6dB per octave curve from 0,3 to 3 kHz within +1-3dB relative level at 1000 Hz

typ. 1 per cent at ± 3kHz deviation and 1000 Hz modulation frequency

typ. 50 dB relative ± 3kHz deviation and 1000 Hz modulation frequency (CEPT Method)

RECEIVER (Fig. 1)

Aerial switch (75010-4E2 or 75011-4E2)

The aerial switch is made by a relay, while C1, TR1 and D1 makes a forward power sensing circuit for the transmitter. (In a duplex set, the relay is not mounted).

RF-amplifier and 1st mixer (75015-4E2)

The RF amplifier consists of a Dual-gate Mos-transistor with several tuned circuits to give the necessary selectivity. The first mixer converts the RF-signal 147 - 174 Mc to 21,4 Mc with an oscillator injection of 168,4 - 195,4 Mc on gate 2. Matching of the mixer output impedance to the crystal filter is made by the turned circuit L 6.

21,4 Mc and 455 kc IF (75076-3E2)

The 21,4 Mc 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 Mc to the low IF 455 kc. 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

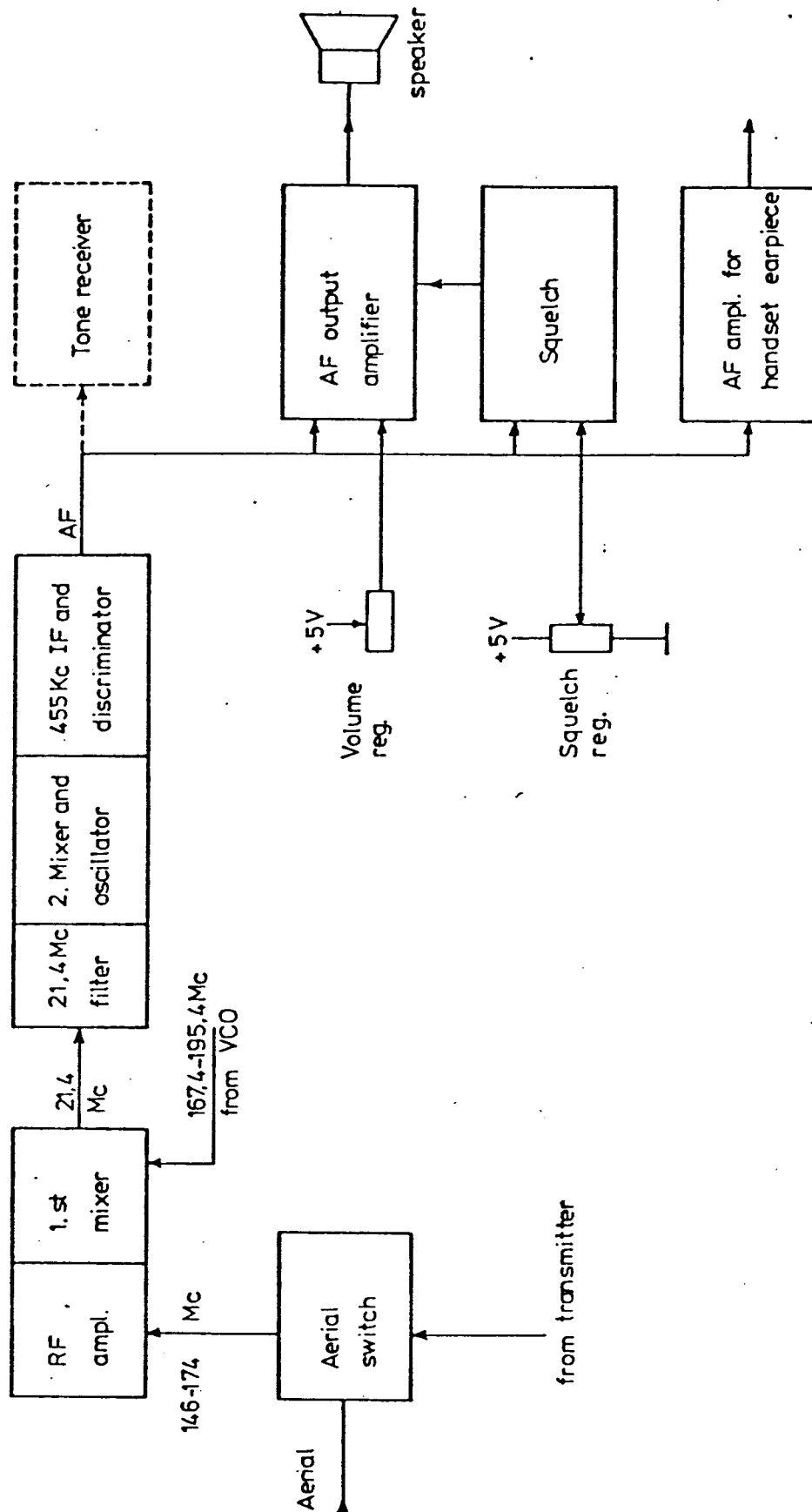


Fig. 1

Rettet: 	Technical description for AP 2000, 2 m band	Tegn.: 30-4-75 AC	Kontr.:
	AP-RADIOTELEFON ½	Tegn. nr.: 75204-4E2	Page: 2

An integrated AF output amplifier is used for the 5 W 1000-speaker output and here the feedback-capacitors C 6 and C 7 produce the deemphasis.

For the handset earpiece Q 4 and Q 5 makes an amplifier while D 15 is for blocking. The squelch circuit consists of an 8 kc 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 (75014-4E2)

Because the VCO has a frequency 21,4-Mc higher than the operating RX-frequency this signal is fed to the transmitter mixer and converted to the desired transmitting frequency. For simplex operation the necessary 21,4 Mc signal comes from a combined crystal oscillator/doubler. Thus the crystal will be 10,7 Mc. For good suppression of VCO - and 21,4 Mc injection the TX-mixer is a balanced diode type. The three amplifier stages Q 1, Q 2 and Q 3 give further suppression of unwanted sidebands and the necessary amplification to reach an output of approx. 150 mW.

6 W power amplifier (75013-4E2)

The 6 W power amplifier consists of two stages Q 1 and Q 2, where the output level can be regulated by varying the supply voltage for Q 1.

25 W PA-stage (75009-4E2)

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

75204-4E2

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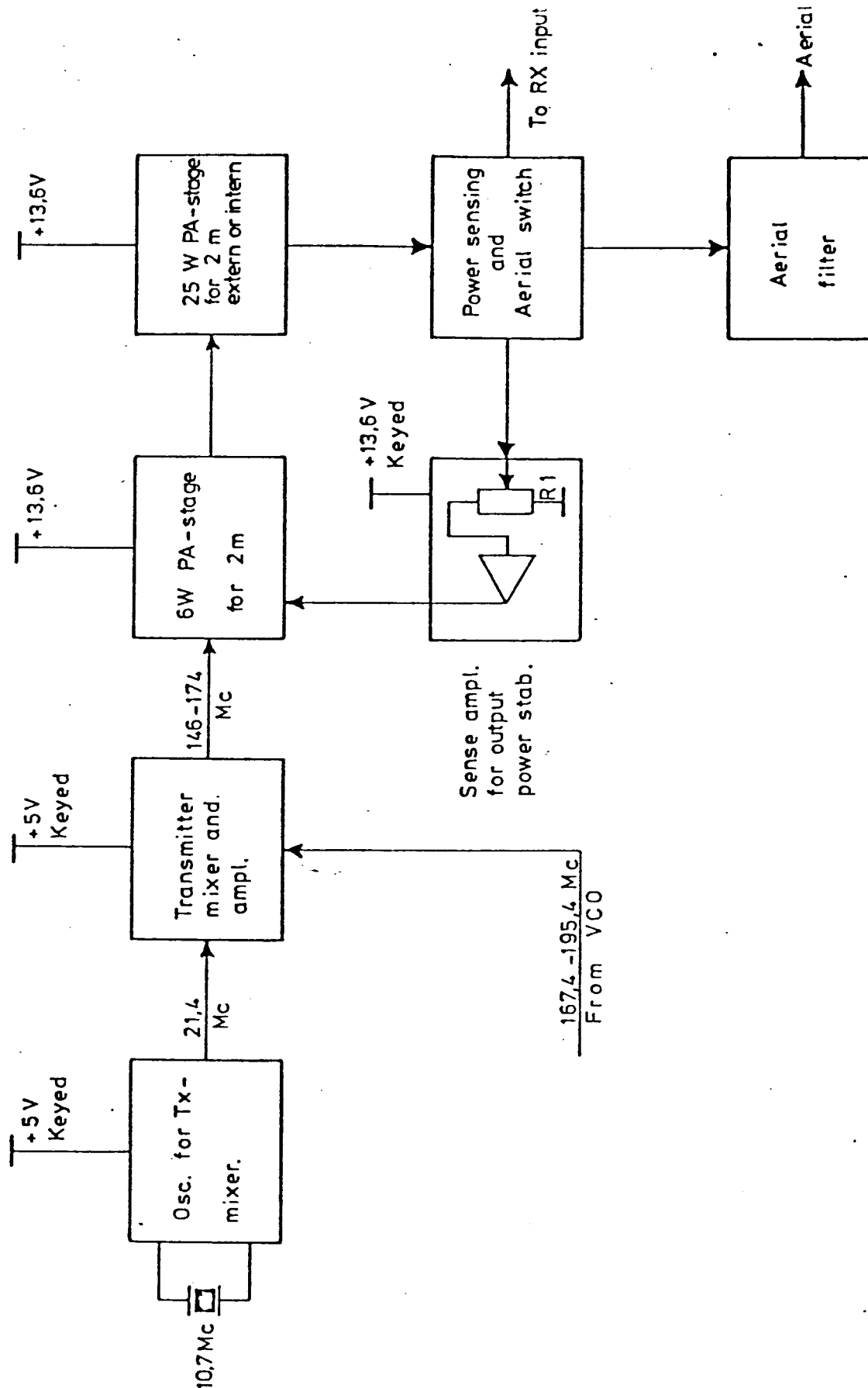


Fig. 2

Rettet:	Technical decription for AP 2000, 2m band	Tegn.: 30-4-75 E.H.	Kontr.:
		Page: 4	
	AP-RADIOTELEFON %	Tegn. nr.: 75204-4E2	

Output power stabilizing 75622-4E2 and 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 less base-current for Q 1, and thus reduce the voltage for driver transistor Q 1 in the 6 W stage. 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 25 W it will be constant for further increase in supply voltage. The output level for supply voltage greater than approx. 13 V is adjustable with R 1. 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. If external PA is used R1 is located in there.

Aerial filter (75016-4E2)

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 and D 4 will be conducting for the input 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 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.

Basic phase lock loop operation

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

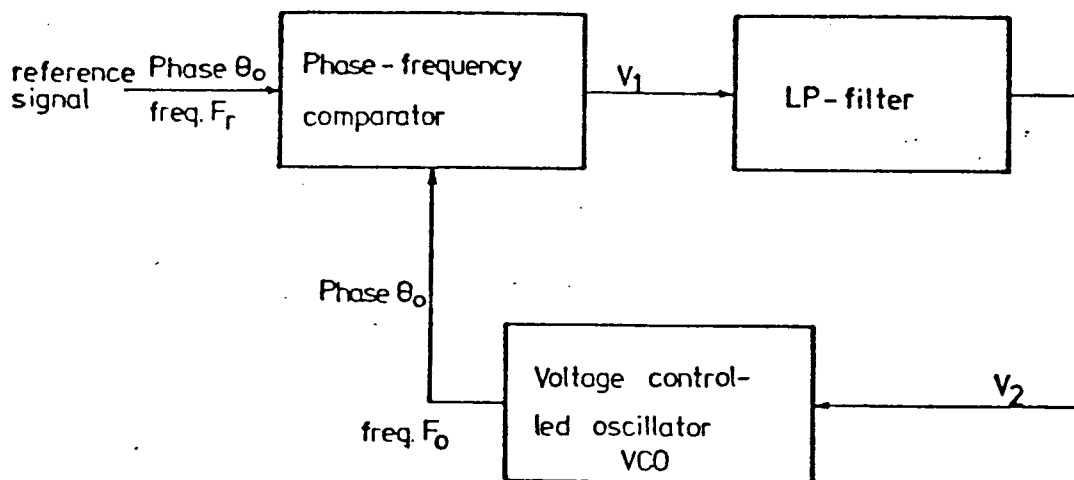


Fig.3 Basic phase locked loop.

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 .

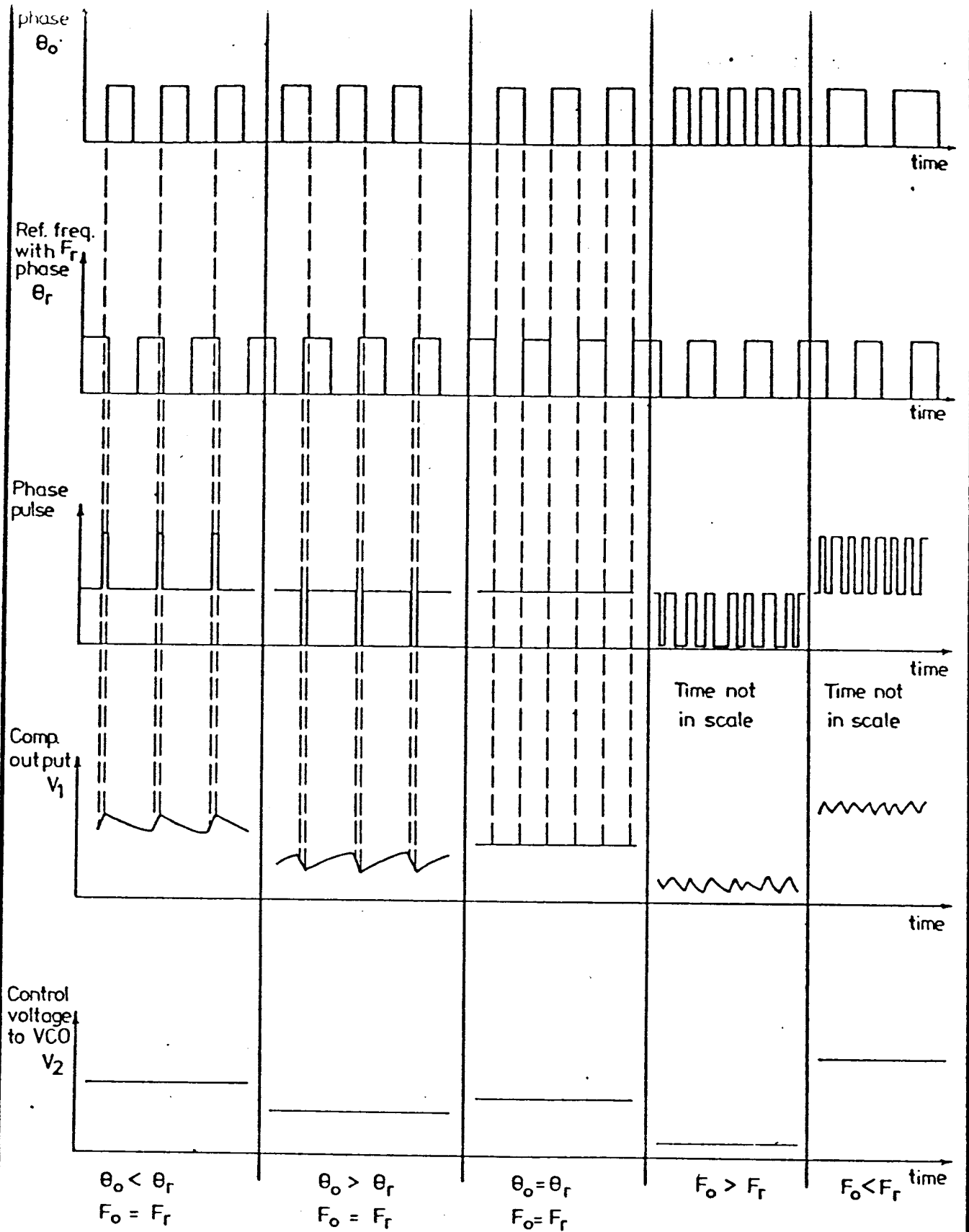
Voltage controlled oscillator

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

Rettet:	Figure for synthesizer description	Tegn.: 13-5-75 AC	Kontr.:
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		AP-RADIOTELEFON ⅓	

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)

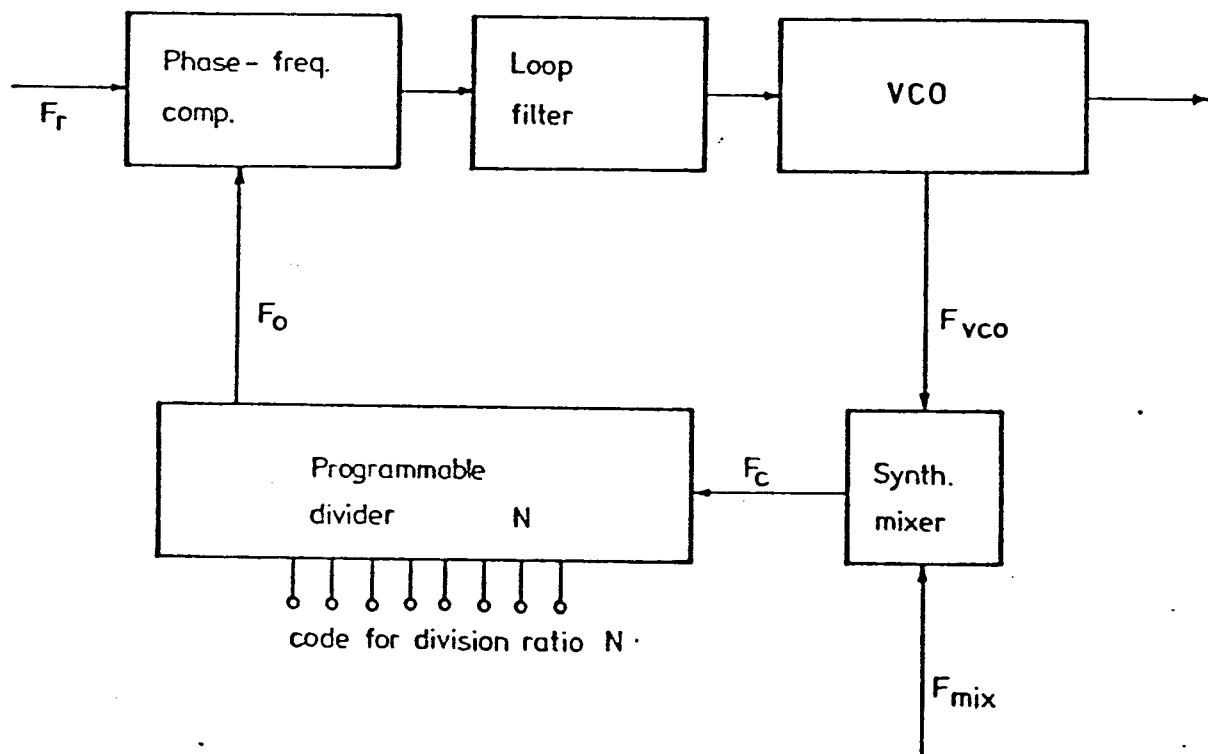


Fig. 5 Synthesizer loop

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

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 a 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 (75o62-3E2)

The 25 kc reference frequency is produced by dividing a 400 kc crystal oscillator (X 1 and Q 4) by 16 in the counter IC 6.

The input 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 code 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 0V 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 kc 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 kc ripple on the comparator output voltage Q 3 is connected as an active lowpass filter. IC 5 is for DC-amplification.

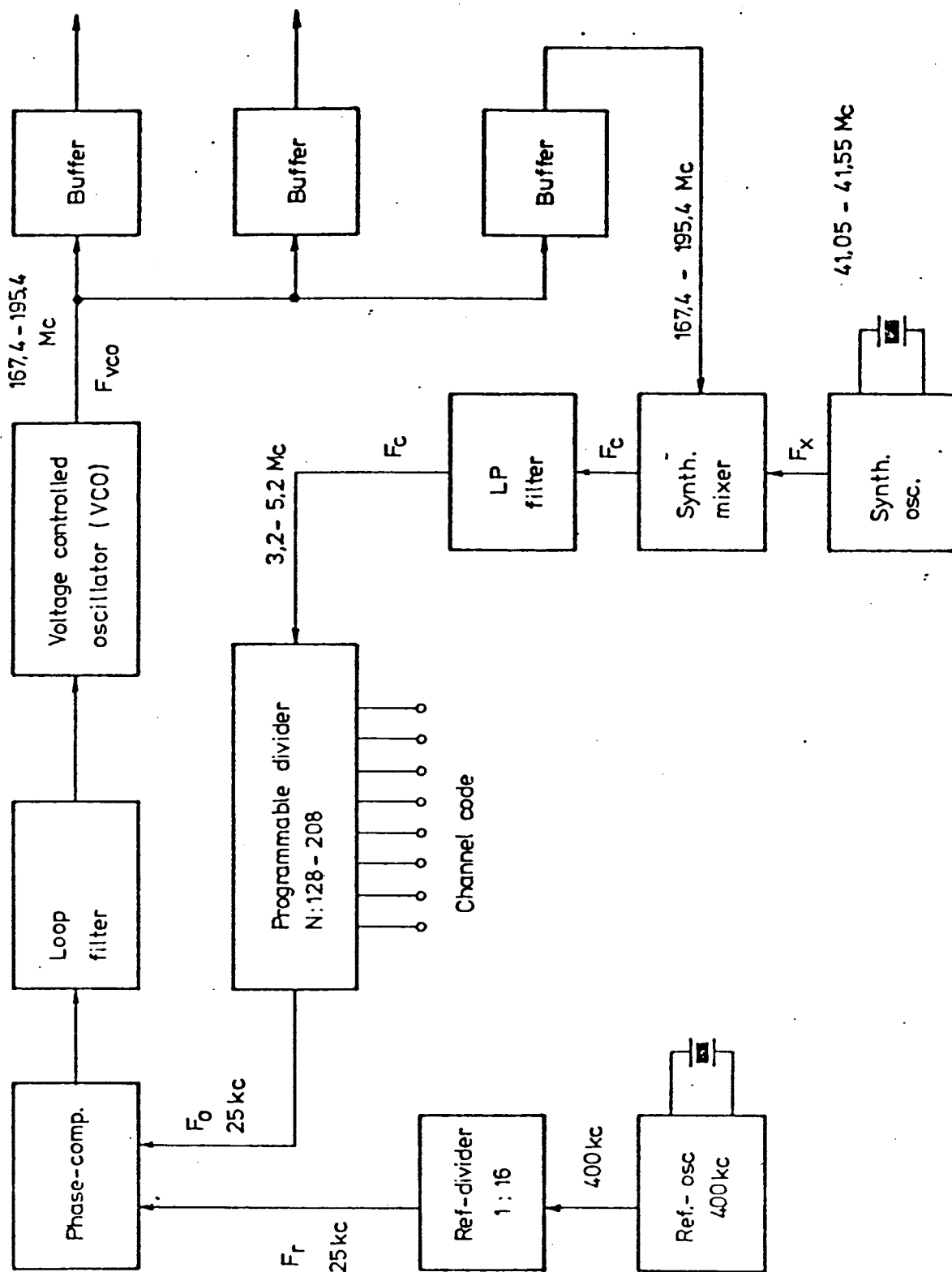


Fig 6

Rettet:	Figure for synthesizer description	Tegn.:13-5-75 AC	Kontr.:
		Page: 10	
	AP-RADIOTELEFON ½	Tegn. nr.:	
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Voltage controlled oscillator (75082-3E2)

The transistor Q 1 is used to switch between two loop filters. When Q 1 is 'ON' the slow filter R 1, R 3 and C 2 are in function while R 1, R 2 and C 1 give the loop a fast step response for Q 1 'OFF'. The fast loop filter is only used in connection with automatic channel scanning. Diode D 1 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 2 is controlled by tuning diode D 2 while diode D 3 is for modulation. Transistors Q 3 to Q 7 make the three output buffers with ferrite core transformers L 3 to L 5.

Synthesizer mixer (75019-3E2)

In the synthesizer mixer Q 1 is a 40 Mc oscillator with third overtone crystal X 1. This frequency is fed via L 1 to the mixer transistor Q 2. The VCO-signal goes through the dual gate Mos-transistor buffer Q 4 which gives high backward isolation but no amplification. Reaching the base of Q 2 the VCO-signal is mixed with the fourth harmonic of the 40 Mc to give an output signal of 3,2 - 5,2 Mc. DR 1 and DR 2 are part of a 10 Mc low-pass filter connected to the amplifier stage Q 3.

Channel code

From the blockschematic of the Synthesizer circuit (Fig. 6) we have:

$$F_{VCO} = 4 F_x + N \times 0,025 \text{ Mc where } 128 < N < 208.$$

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

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

Here N is the division ratio and F_x is the synthesizer mixer crystal.

DIVISION RATIO AND CHANNEL CODE

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

Tuning instructions for AP 2000, 2 m

1. Tuning of the synthesizer circuit

A. Synthesizer oscillator

Connect a high input resistance DC-voltmeter to TP 1 on print board B 11. By tuning coil L 1 to max. a reading of approx. 3 V should be obtained. The coil L 2 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 two types of VCO, one for the range 146-160 Mc and the other for RX-frequencies 160 - 174 Mc, and check that the right type is used for the desired frequency range. The marking is noted on the VCO-diagram. Connect the voltmeter to point 1 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 kc 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 kc ripple on TP 1. For multi-channel 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 Mc, 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 200 Mc counter to the VCO-output point 5. The reading will be RX frequency + 21,4 Mc and for fine tuning of the RX-frequency, use coil L 2 on synthesizer mixer print board B 11.

2. Tuning of the receiver

A. 21,4 Mc and 455 kc IF (print board B 01)

Connect a 21,4 Mc sweep generator (a 10,7 Mc sweep generator normally contains sufficient second harmonics to be used on 21,4 Mc) to point TP 1 on the RF and mixer print board B 08 and the (DC) probe on point TP 1 on the IF print board B 01. Adjust L 6 (print B 08) 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 second 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 08)

With the voltmeter on TP 2 (print board B 08) C 17 and C 18 are adjusted to max. deflection (approx. 1 V DC). With the signal generator connected to the receiver input C 2, C 3, C 6, C 9 and C 10 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 kc dev., 1 kc modulation.)

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

Adjust C 17 and C 18 as desired under 'B'. Connect the RF-signal generator output to TP 1 in the RF-amplifier and use the horizontal deflection voltage from an oscilloscope for modulation (FM) of the generator. Now the IF can be tuned as previously described. By connecting the signal generator output 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 07)

The transmitter shall be keyed. The oscillator injection to the transmitter mixer is tuned with L 1 (print B 07) to max. DC-voltage on TP 1. Turn the capacitors C 2, C 6, C 11, C 13 and C 18 to max. capacitance. Connect the voltmeter to the can of transistor Q 2 (can is connected to emitter) and tune C 2 and C 6 to max. reading. Remove the cable from the transmitter-amplifier output (pin 4) and replace it with a wattmeter (50 ohms, range 1 W). Now tune C 11, C 13 and C 18 and readjust C 2 and C 6 to get max. output power (approx. 150 mW). When X-tal = 10,7 MHz, C24 is removed. When X-tal > 10,7 MHz, C22 is removed. When X-tal < 10,7 MHz, both capacitor are used.

B. 6 W PA-stage (print board B 06) or 25 W PA-stage (B79A)

Turn the potmeter R 1 (print board B 57 counter-clockwise to get the output power stabilization out of function. Connect a wattmeter (50 Ω , 10 or 50 W) to the test installation output and set the supply voltage to 12,0 V. Now tune all the trimmers in the PA-stage to max. output power and finish with a fine adjustment of C 18 on the transmitter amplifier print B 07.

C. Transmitter frequency

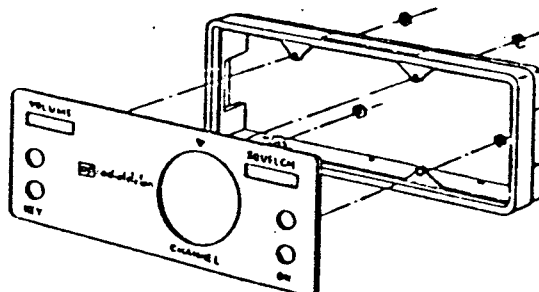
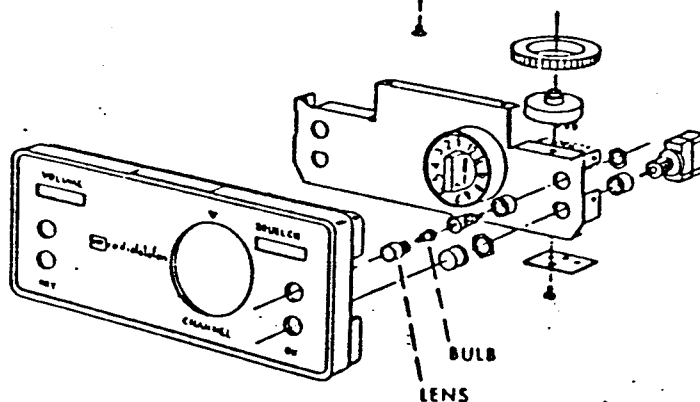
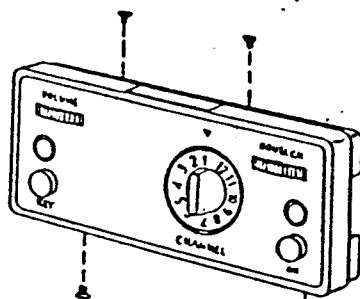
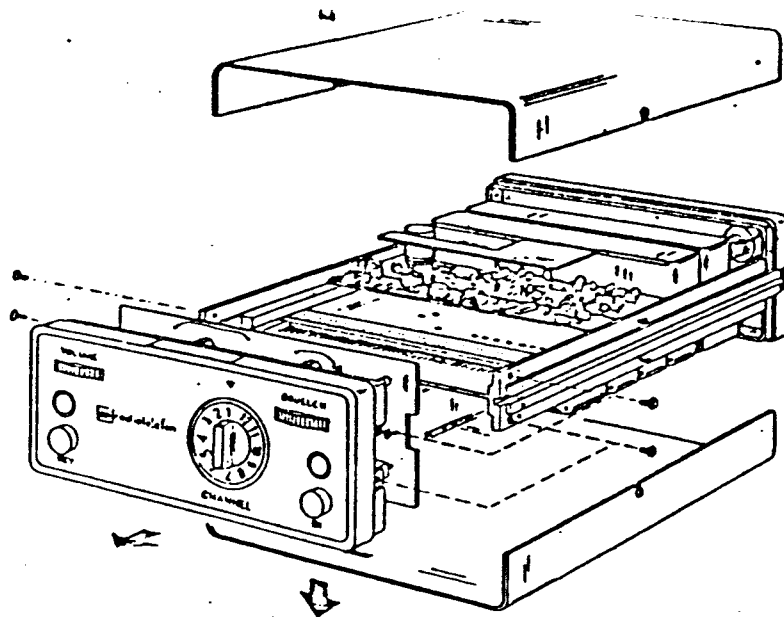
Connect a counter to the wattmeter and adjust the transmitter frequency with the capacitor C 29 in the Tx-oscillator print board B 11.

D. 25 W PA-stage (print board B 02-external)

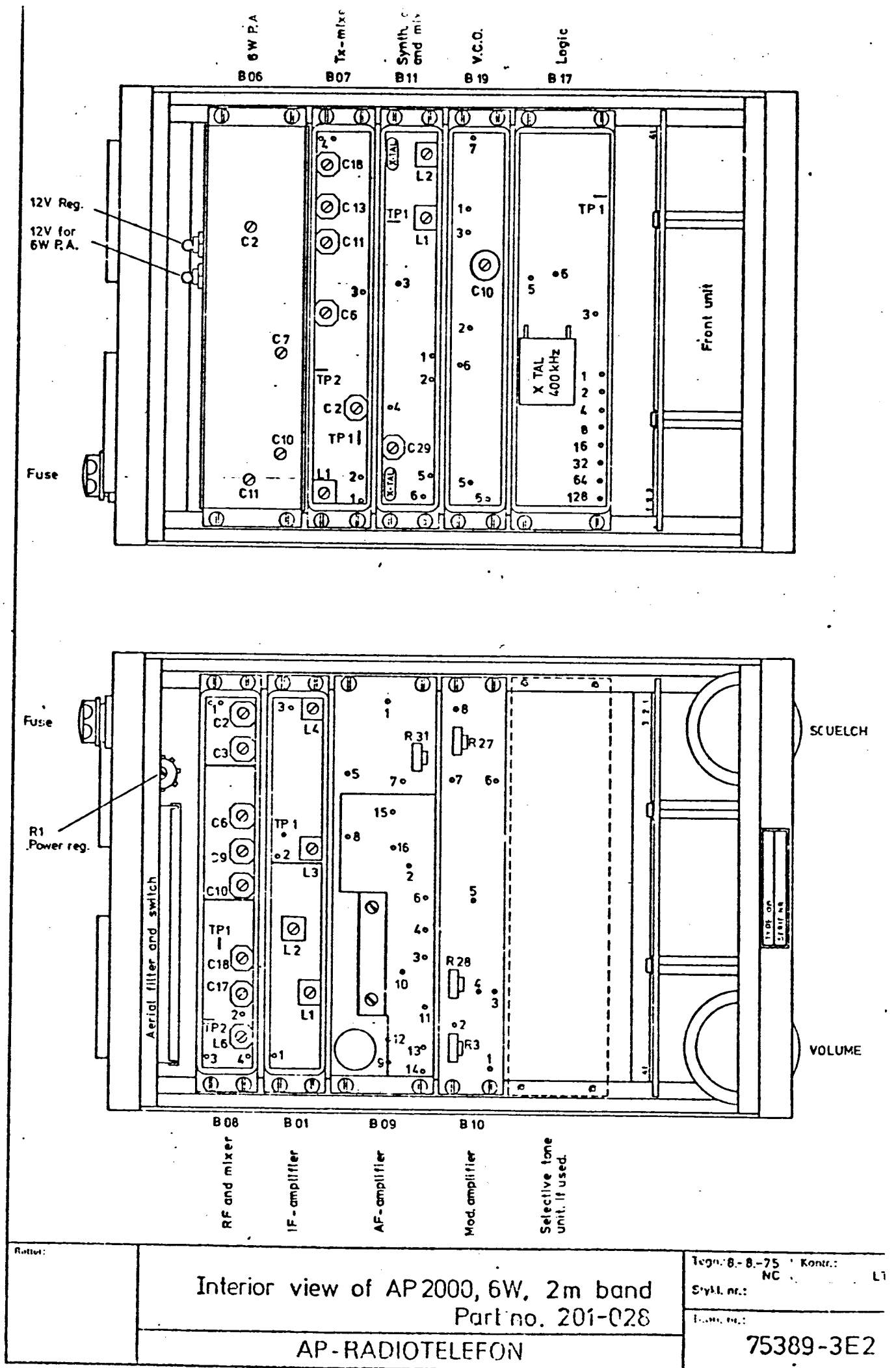
Push the radio into the 25 W PA-stage, connect the wattmeter (50 Ω , 25 W) and adjust C 1, C 2, C 5 and C 6 to maximum output power with a supply voltage of 12,0 V. Increase the supply voltage to 13,6 V and turn the potmeter R 1 clockwise until the output power decreases to 25 W. Check the power regulation by supply voltages lower than 13,6 V, the output power may be a little less than 25 W but for tensions from 13,6 V and up the output power shall be held constant on 25 W.

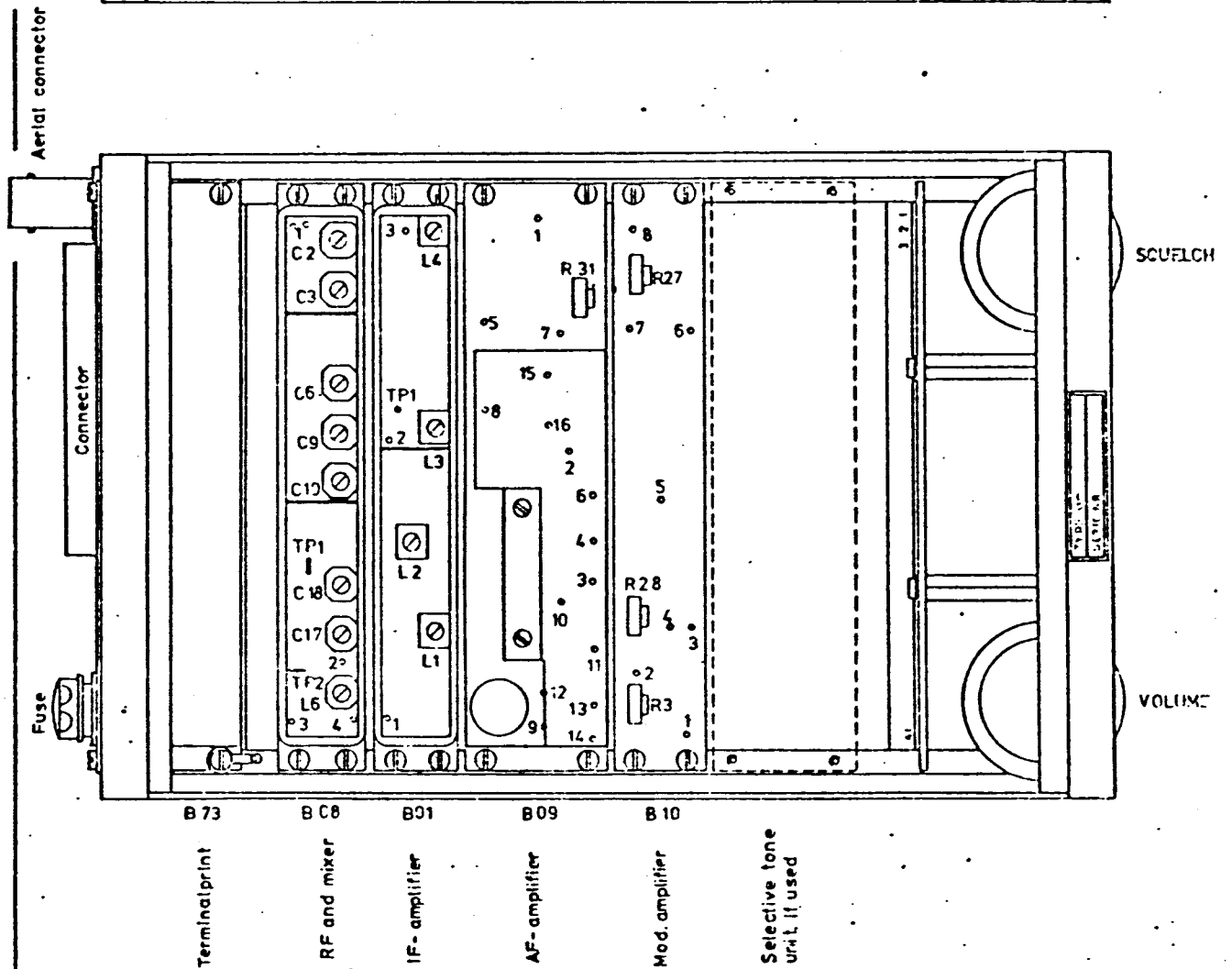
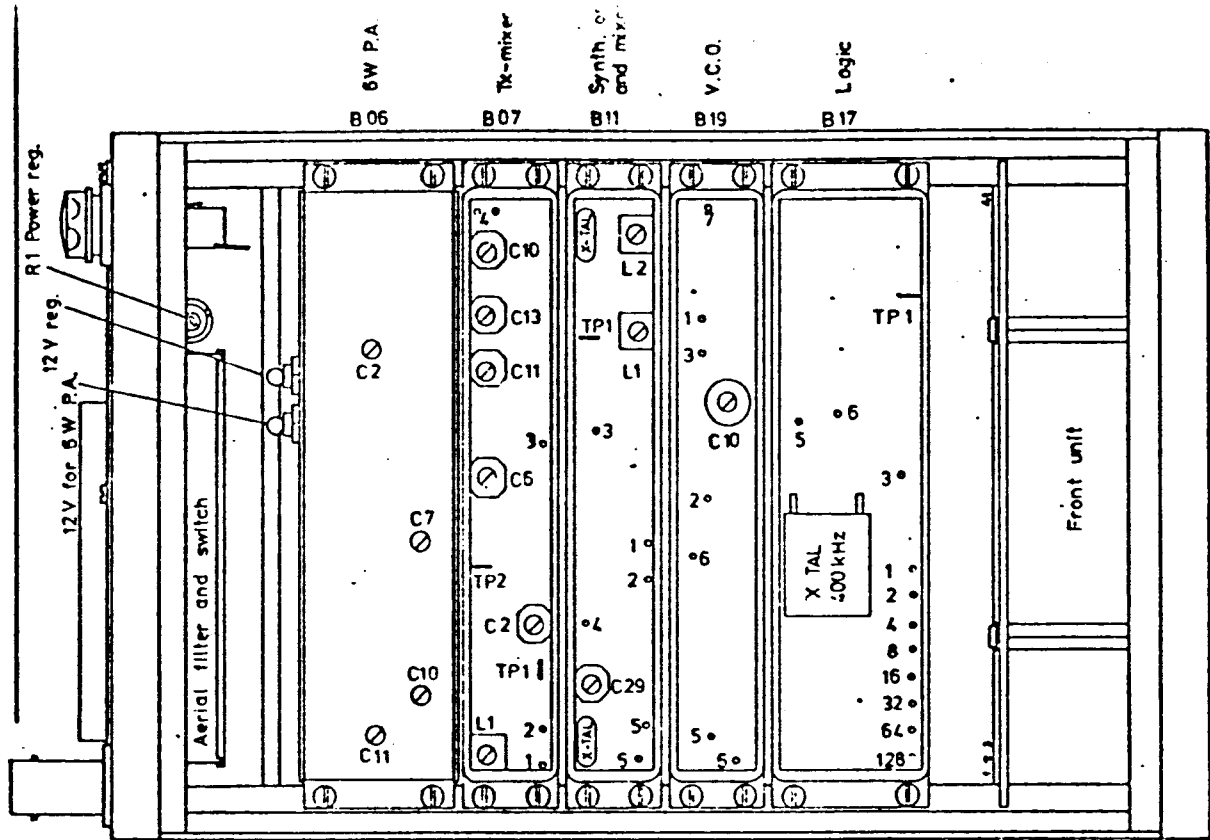
E. Modulation amplifier (print board B 10)

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 (1000Hz) of 2 V. When the level is decreased to 200 mV R 28 is set to give a deviation of ± 3 kHz.



Rettel: 29-11-76 HJ.	Disassembling of AP 2000	Tegn.: 10-8-76 AC	Kontr.:
		Stykl. nr.:	
	AP-RADIOTELEFON ½		Tegn. nr.: 76218 - 4M2

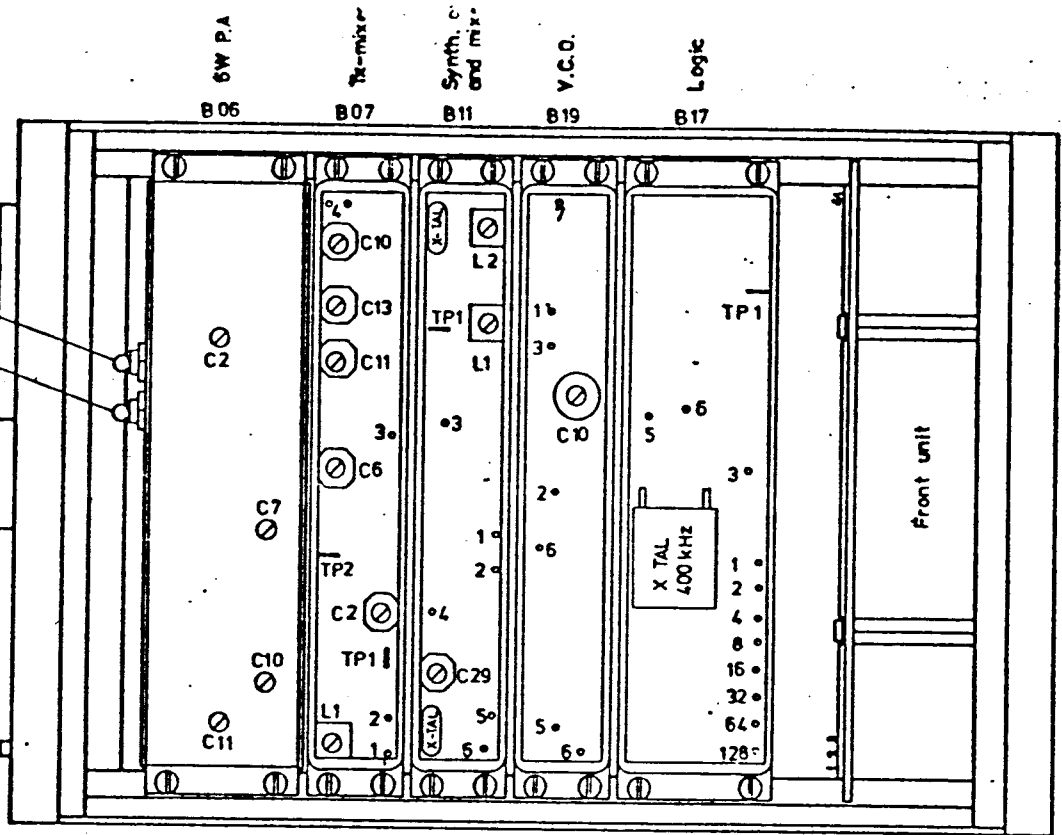




Notes:	Interior view of AP 2000, 6W, with print-conn 2m band.	Techn. 29-11-76 NC	Contr.:
	Part no. 201-031	Styl. nr.:	
	AP-RADIOTELEFON	Techn. nr.:	76379-3E2

12V reg.
12V for
6W P.A.

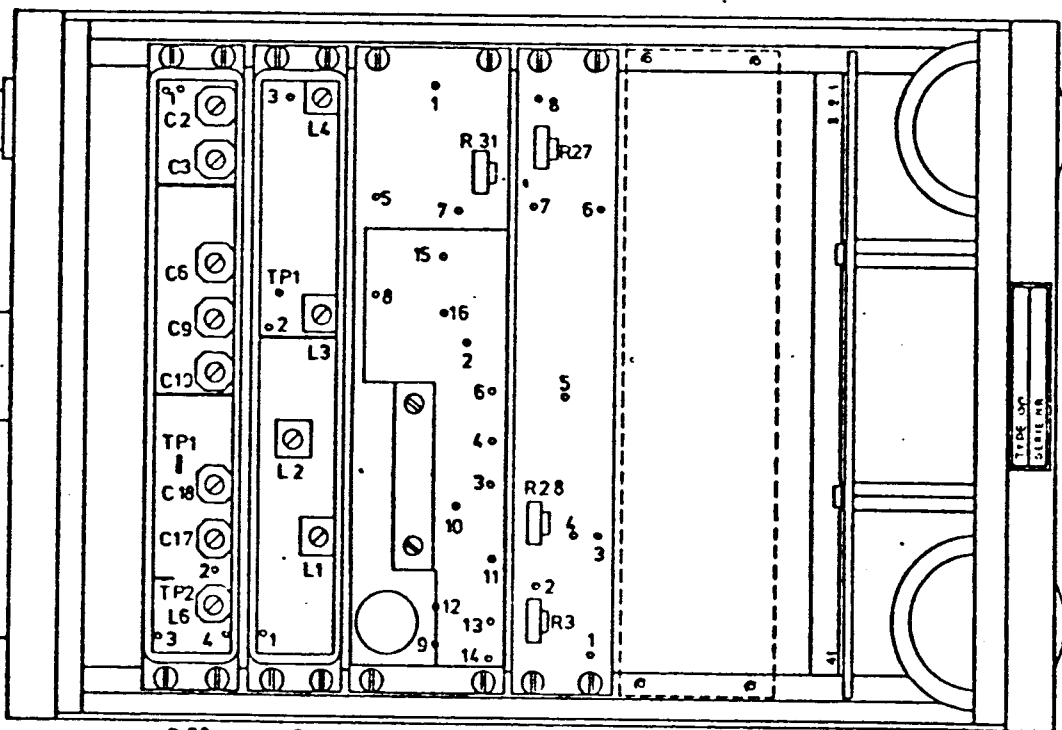
Fuse



Fuse

SQUELCH

VOLUME

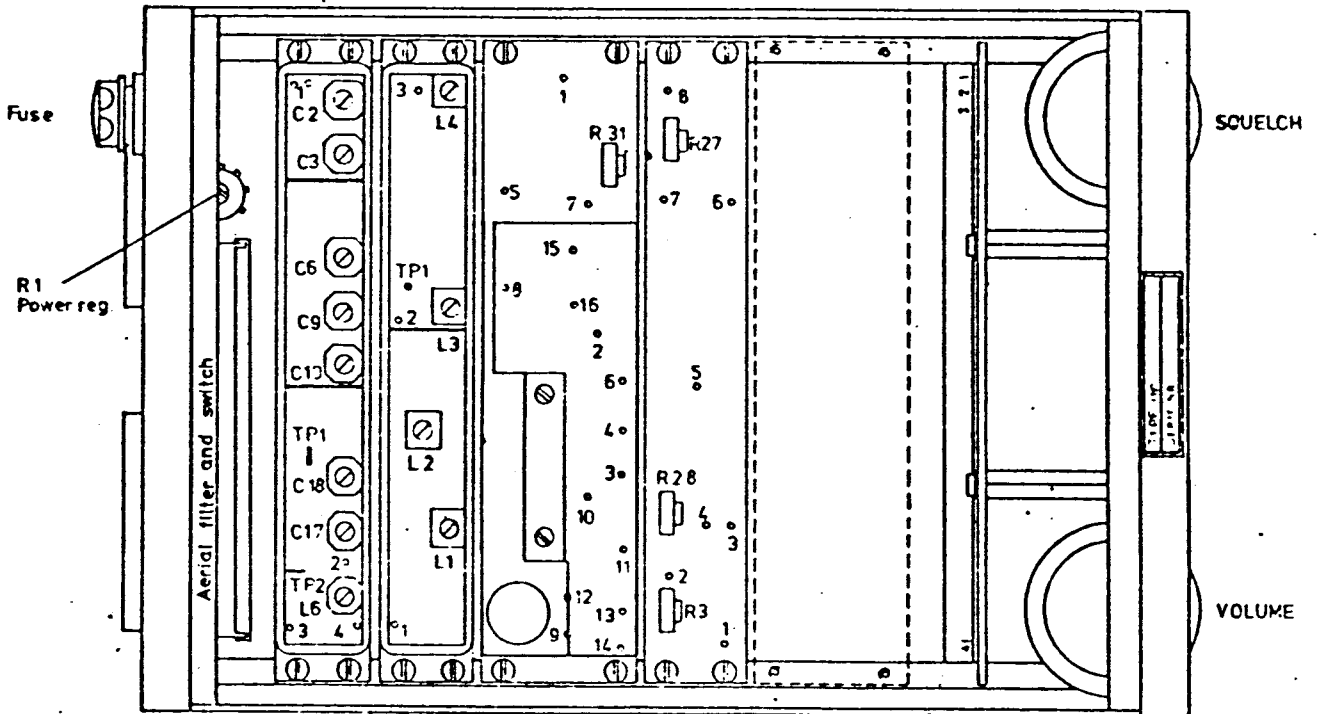
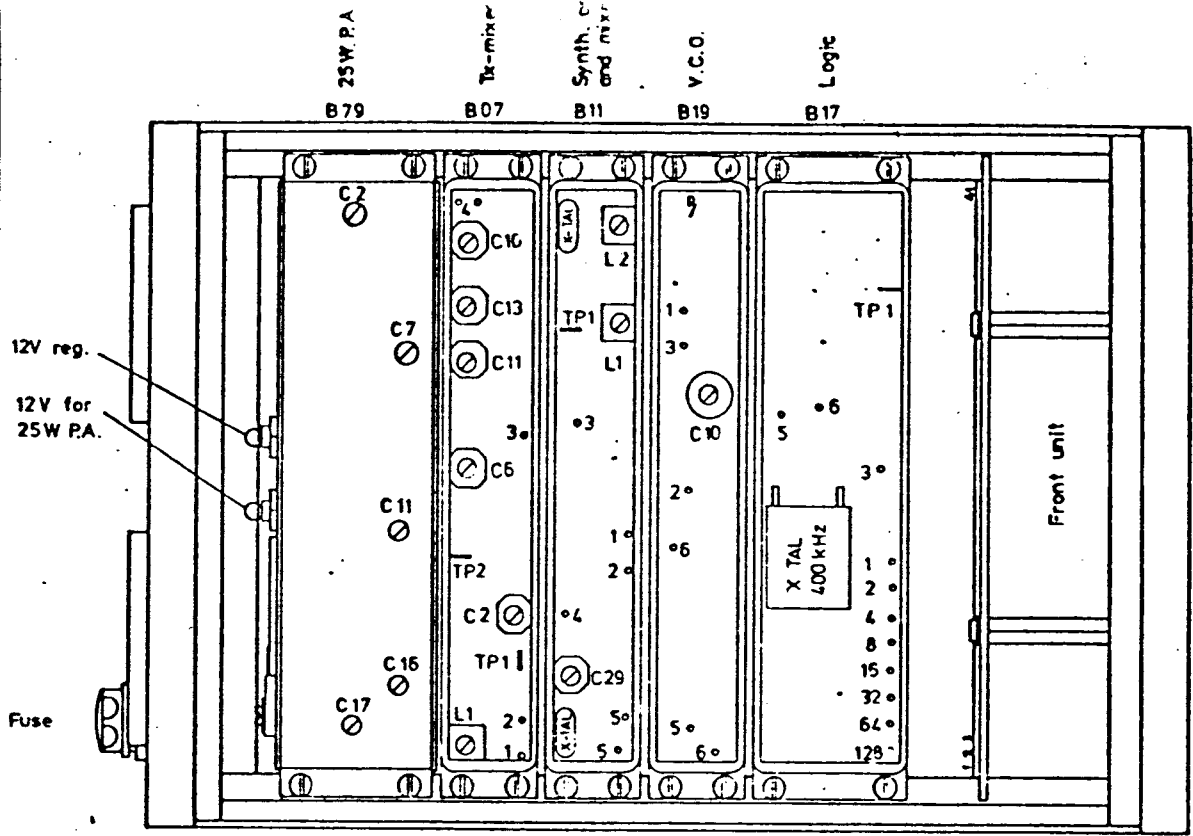


Robot:

Interior view of AP2000, 25W Cont. 2m
band (25W P.A.-stage not shown) Part no 201-025

AP-RADIOTELEFON

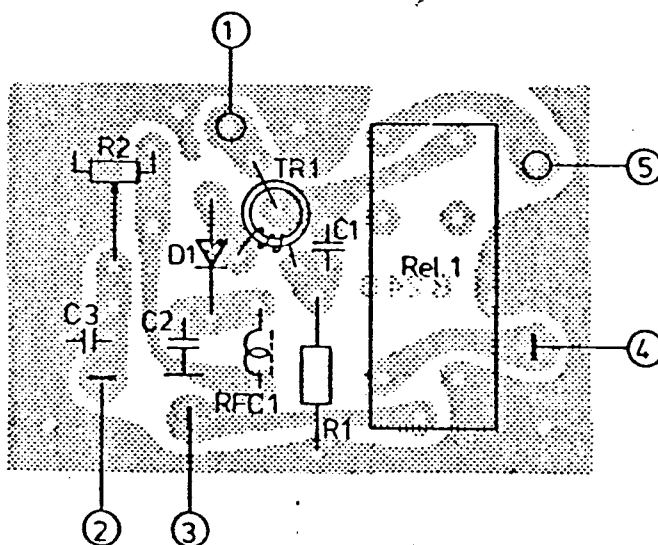
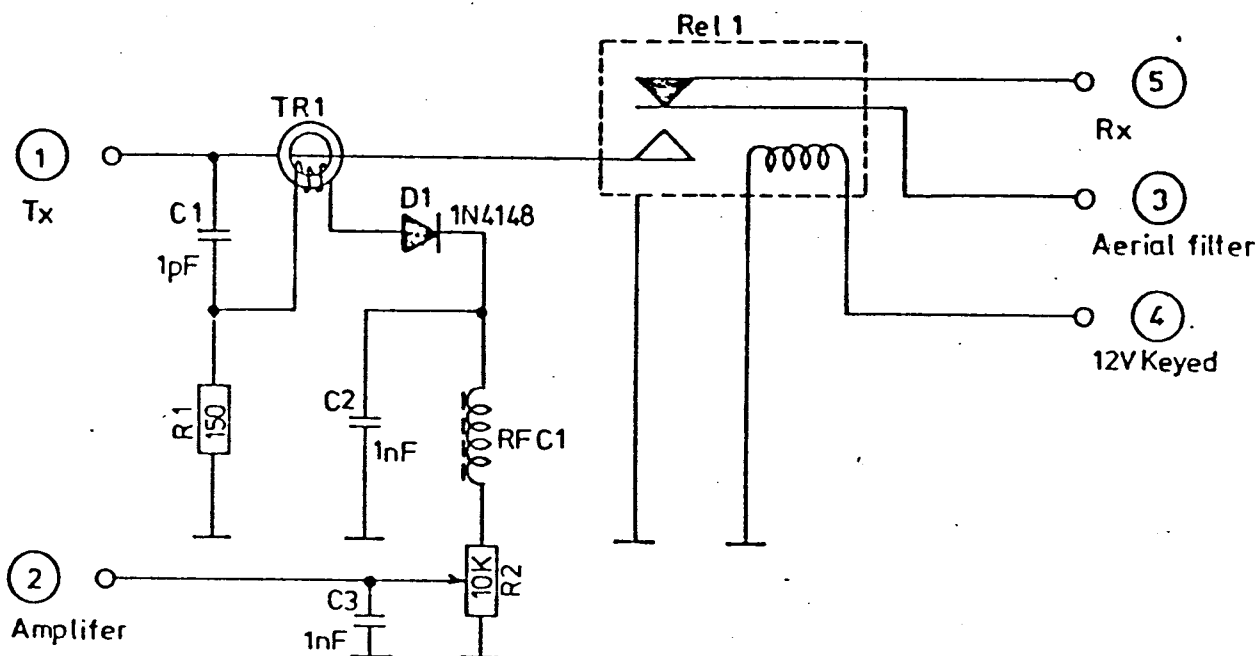
Tegn. 21-8-75
EH
Kontr.:
Stykt. nr.:
Tegn. nr.:
75390-3E2



Notes: 	Interior view of AP2000, 25 W intermitt. 2m band Part no. 201-036 AP-RADIOTELEFON	Techn. 19-11-76 Kontr.: NC Syll. nr.: Techn. nr.: 76358-3E2
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Front sec.





Remarks: In a duplex set, the relay is not mounted (B 24 B 3)

Rettet:	25 W Aerial switch for 2m. external PA Print board B 24B2 and B 24B3	Tegn.:1-7-75 EH.	Kontr.:
		Stykl. nr.:	
		Tegn. nr.:	
		75010 - 4E2	
	AP-RADIOTELEFON ½		

ON = 0
OFF = I

Ved underliggende VCO. (under) 800. 164 MHz RX - 173.4 MHz TX (173.4) (173.4) 164 MHz
N = $F_{Tx} - (4 \times F_x) = 173.4 - 164 = 9.4$ MHz
 $F_{Tx \text{ mix}} = F_{Tx} - F_x = 173.4 - 164 = 9.4$ MHz

Synth. mixer x-tal Fx

SPECIFICATION
for Quartz Crystal Unit

AP 20

1. Mode of operation : 3rd overtone
2. Holder : HC-42/U
3. Frequency range : 40-48 MHz
4. Adjustment tolerance : ± 10 ppm at 25°C
5. Temperature tolerance : ± 10 ppm $\times 20^\circ\text{C}$ to $+70^\circ\text{C}$
6. Drive level : 1 mW
7. Load : 0.5 μH
8. Shunt capacitance (C_0) : 5 pF max.
9. Equivalent series resistance : 40 Ω max.
10. Marking : AP 20 frequency in MHz

Calculation of the division ratio N

$$N = \frac{F_{Rx} - 4 \times F_x + 21.4}{0.025}$$

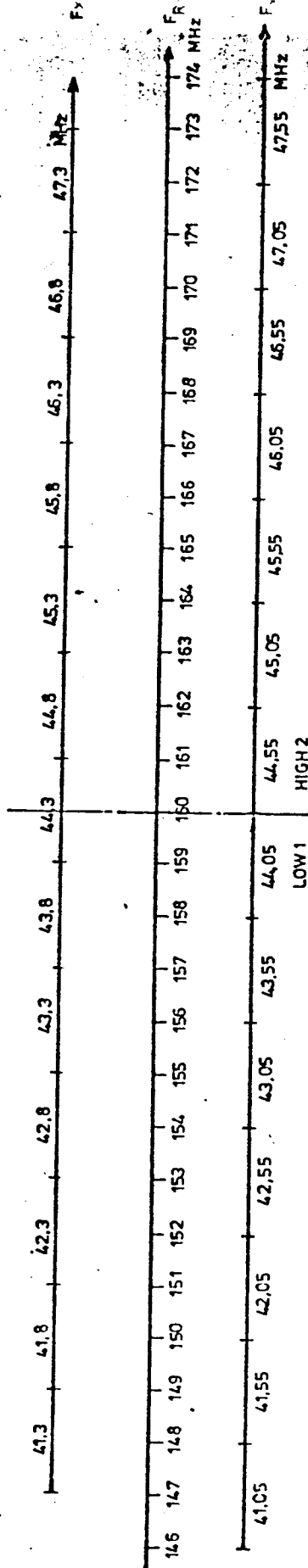
Example:

$$F_x = 42.05 \text{ MHz}, F_{Rx} = 151.625 \text{ MHz}$$

$$N = \frac{151.625 - 4 \times 42.05 + 21.4}{0.025} = 193$$

(Ved underliggende 800) 2

$$F_{Tx \text{ mix}} = 10.7 + F_{Tx} - F_{Rx}$$



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 $\times 20^\circ\text{C}$ to $+70^\circ\text{C}$
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

$$F_{Tx \text{ mix}} = 10.7 + F_{Rx} - F_{Tx} \text{ Spec. AP 22}$$

Normal mode of operation: F_{Rx} higher than or equal to F_{Tx} . However F_{Rx} can be lower than F_{Tx} if $F_{Tx} - F_{Rx}$ is less than 5 MHz.

1 MHz \div 4 MHz. VCO 1600 UNDER.

Retel: 14-2-77 NC

Standard crystals for AP2000 2m band
low range: 1, high: 2
For channel frequencies ending with
00, 25, 50, 75, kHz

AP-RADIOTELEFON X

Tegn.: 16-5-75 Kontr.:
AC
Stykl. nr.:
Tegn. nr.: 75237-4E2

26

TAXA København

TX mob Kanalfr.	TX-mobil Krystalfr.	dele forhold	TX-basis Kanalfr.	RX-mobil Krystalfr.	VCO
162.10	10.131.250	Kanal 1 132	171.10	13.366.667	192,5
162.35	10.146.875	Kanal 2 142	171.35	13.387.500	192,7
162.55	10.159.375	Kanal 3 150	171.55	13.404.170	192,9
162.50	10.166.250	Kanal 4 148	171.50	13.400.000	192,9
162.125	10.132.813	Kanal 5 133	171.125	13.368.750	192,52
162.375	10.148.437	Kanal 6 143	171.375	13.389.583	192,77
162.275	10.142.187	Kanal 7 139	171.275	13.381.250	192,67
162.475	10.154.687	Kanal 8 147	171.475	13.397.916	192,87
162.675	10.167.187	Kanal 9 155	171.675	13.414.583	193,1
162.700	10.168.750	Kanal 10 156	171.700	13.416.666	193,1
163,075		11 171	172,075		193,47
162.725	10.170.312	Kanal 12 (57)	171.725	13.418.750	(193,125
162,875 RH.	Senderblander Xtal	15,2 MHz	171.875	KODE 163.	
	Syntese Xtal	47,3 MHz			

RINGBILEN København

164,3	10.268.750	Kanal 1	173,3	13.550.000
164,5	10.281.250	Kanal 2	173,5	13.566.667
164,15	10.259.375	Kanal 3	173,15	13.537.500
164,55	10.284.375	Kanal 4	173,55	13.570.833

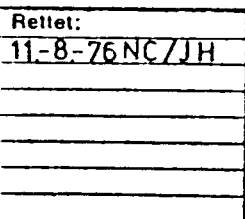
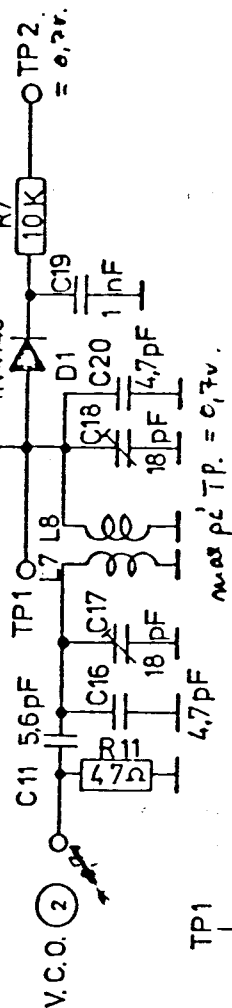
N

VEST TAXA København

162.525	189	171.525	VCO
162.575	191	171.575	192,925
			192,975

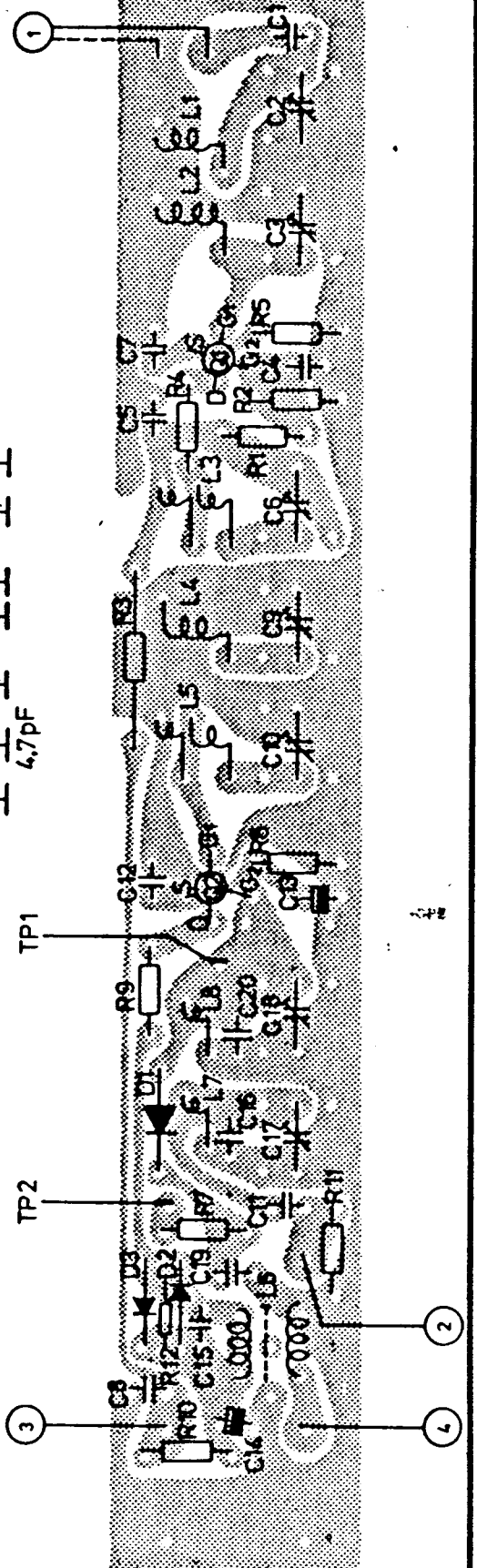
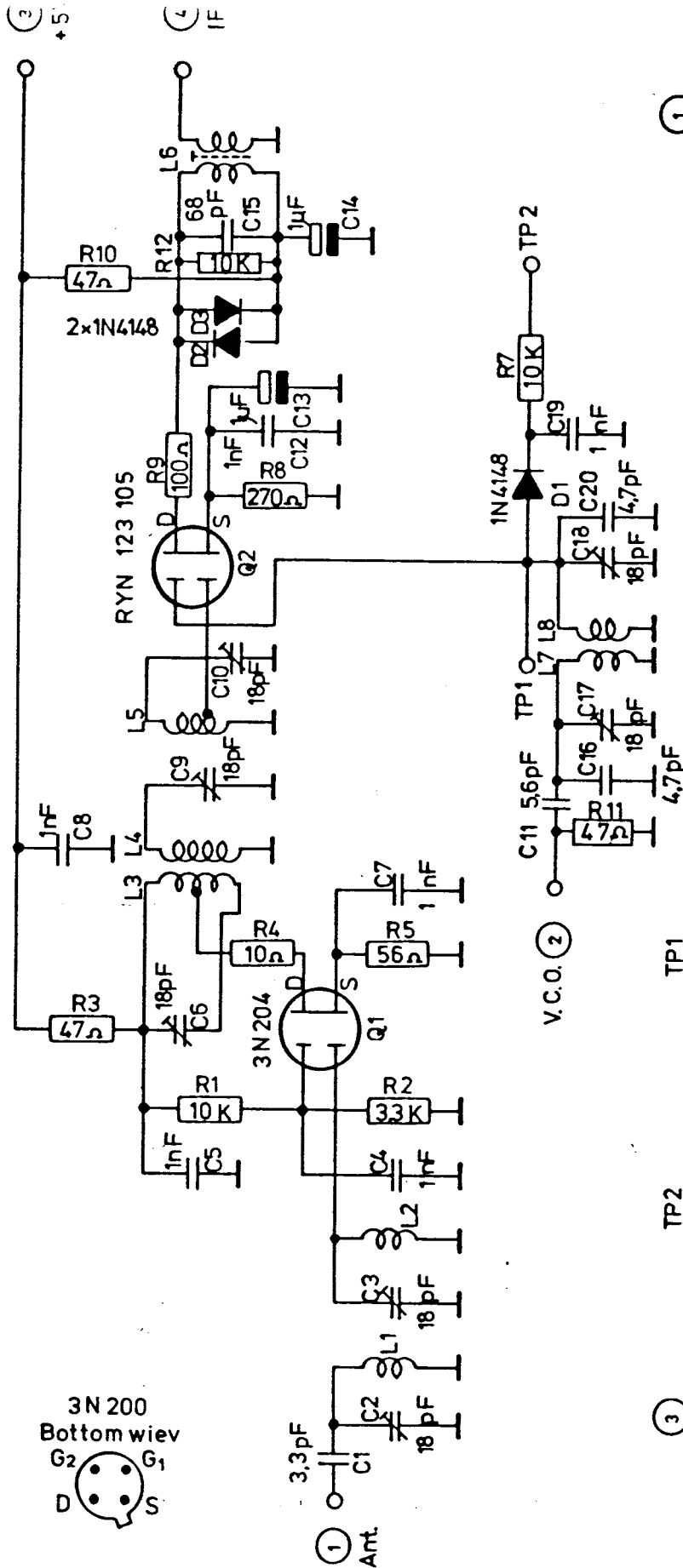
Senderblander 15,2

Synth. X-tal ~~47,05~~ 47,05



Tegn.: 9-1-75 AC	Kontr.:
Stykl. nr.:	
Tegn. nr.: 75015-4E2	

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-295	10 KΩ 1/8W CR 16	Q1	19-185	3N 204
R2	13-289	3,3 KΩ " "	Q2	19-118	BFR 84
R3	13-267	47 Ω " "			
R4	13-259	10 Ω " "	L1		75331-4E2
R5	13-268	56 Ω " "	L2		75331-4E2
R6	13-287	2,2 KΩ " "	L3		75328+75329-4E2
R7	13-295	10 KΩ	L4		75330-4E2
R8	13-267	47 Ω " "	L5		75328+75329-4E2
R9	13-271	100 Ω " "	L6		76222-4E2
R10	13-267	47 Ω " "	L7		75328-4E2
R11	13-267	47 Ω " "	L8		75328-4E2
R12	13-295	10 KΩ " "			
C1	11-366	3,3 pF Ker.			
C2	19-330	18 pF Trim.			
C3	19-330	18 pF "			
C4	11-409	1 nF Ker.			
C5	11-409	1 nF "			
C6	19-330	18 pF Trim.			
C7	11-409	1 nF Ker.			
C8	11-409	1 nF "			
C9	19-330	18 pF Trim.			
C10	19-330	18 pF "			
C11	11-370	5,6 pF Ker.			
C12	11-409	1 nF "			
C13	11-502	1 μF/35V Tant.			
C14	11-502	1 μF/35V "			
C15	11-397	68 pF Ker.			
C16	11-368	4,7 pF "			
C17	19-330	18 pF Trim.			
C18	19-330	18 pF "			
C19	11-409	1 nF Ker.			
C20	11-368	4,7 pF "			
D1	04-062	1N4148			
D2	04-062	1N4148			
D3	04-062	1N4148			
RF amplifier and mixer 2 m Print board B 08 B 1 Tilhører tegn. nr.: 75015-4E2			Rettet:		<div>Tegn.: Stykl. nr.: 75015-4S2</div> <div>Kontr.:</div>



Rettet:
 11-8-76 NC/JH
 1-7-77 JH/AC
 8-5-78 JH/AC
 27-9-79 POR/AC
 25-10-79 POR
 12-2-81 LBU

RF Amplifier and mixer for 2 m
 Print board B08 C1,2

AP-RADIOTELEFON ½

Tegn.: 9-1-75
 AC

Kontr.:

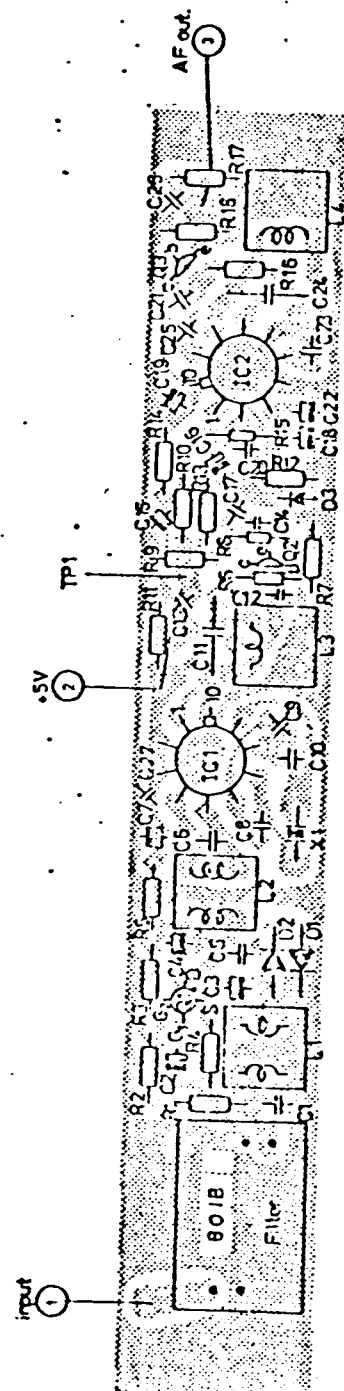
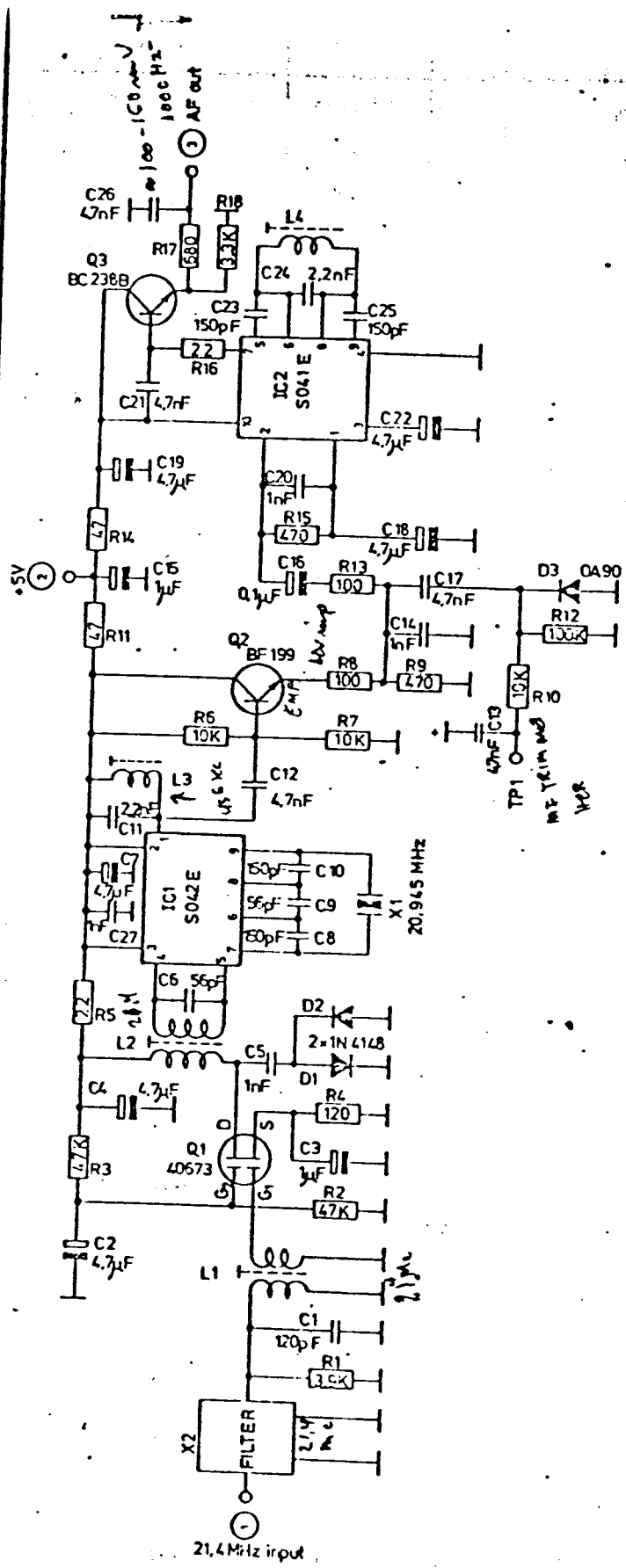
Stykl. nr.:

Tegn. nr.:

75015-4E2

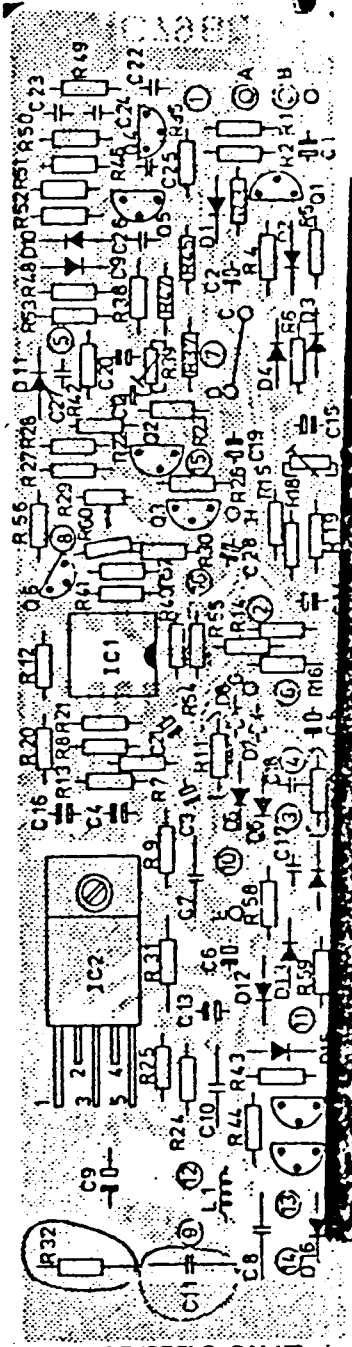
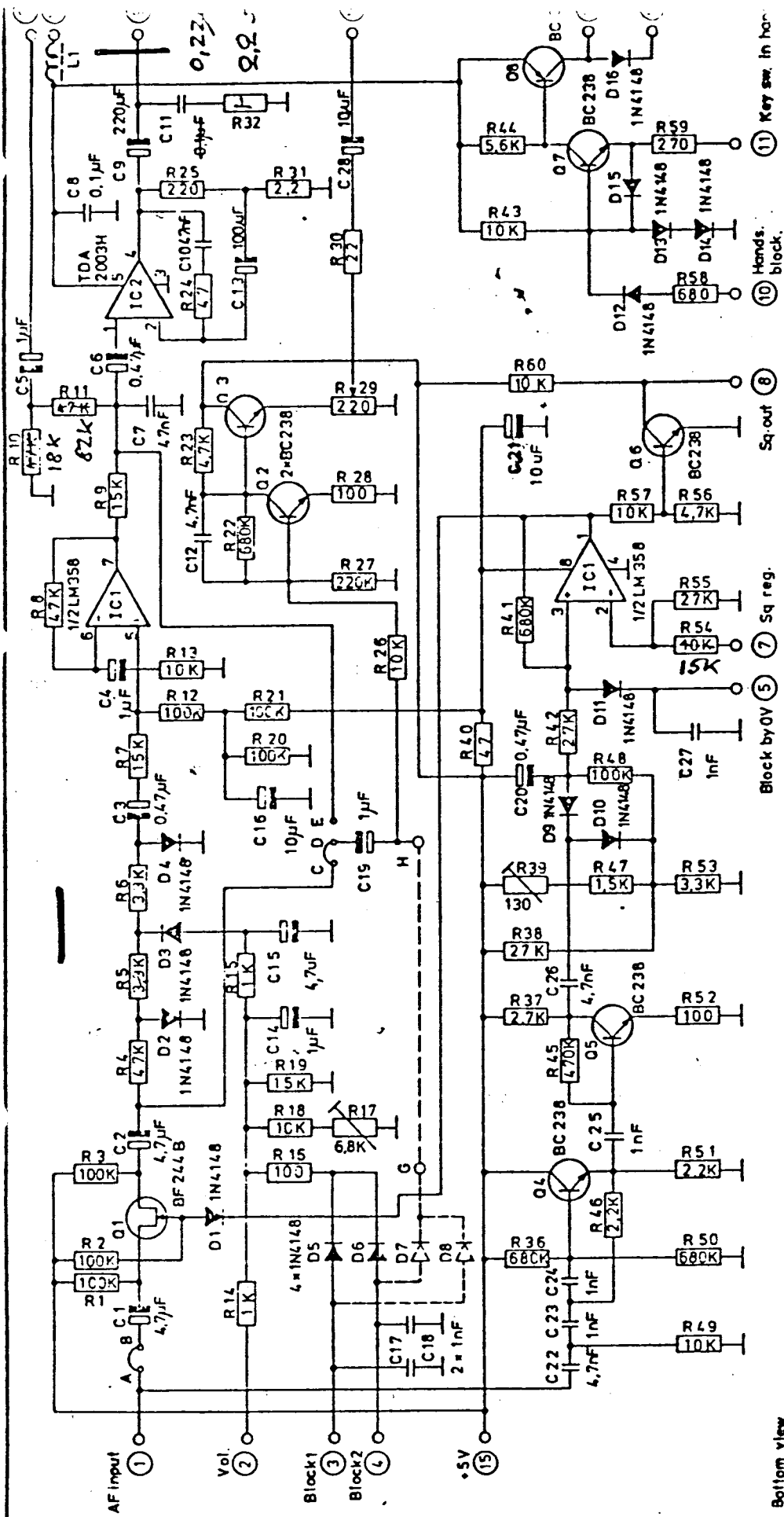
AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-295	10 KΩ 1/8W CR 16	Q1	19-185	3N 204
R2	13-289	3,3 KΩ " "	Q2	19-134	RYN 123 105 udmålt
R3	13-267	47 Ω " "			
R4	13-259	10 Ω " "	L1		75331-4E2
R5	13-268	56 Ω " "	L2		75331-4E2
R6			L3		75328+75329-4E2
R7	13-295	10 KΩ	L4		75330-4E2
R8	13-276	270 Ω " "	L5		75328+75329-4E2
R9	13-271	100 Ω " "	L6		76222-4E2
R10	13-267	47 Ω " "	L7/1		75328-4E2
R11	13-267	47 Ω " "	L8/1		75328-4E2
R12	13-295	10 KΩ " "	L7/2		80122-4E2
C1	11-366	3,3 pF Ker.	L8/2		80122-4E2
C2	19-330	18 pF Trim.			
C3	19-330	18 pF "			
C4	11-409	1 nF Ker.			
C5	11-409	1 nF "			
C6	19-330	18 pF Trim.			
C7	11-409	1 nF Ker.			
C8	11-409	1 nF "			
C9	19-330	18 pF Trim.			
C10	19-330	18 pF "			
C11	11-370	5,6 pF Ker.			
C12	11-409	1 nF "			
C13	11-502	1 μF/35V Tant.			
C14	11-502	1 μF/35V "			
C15	11-397	68 pF Ker.			
C16	11-368	4,7 pF "			
C17	19-330	18 pF Trim.			
C18	19-330	18 pF "			
C19	11-409	1 nF Ker.			
C20	11-368	4,7 pF "			
D1	04-062	1N4148			
D2	04-062	1N4148			
D3	04-062	1N4148			
RF amplifier and mixer 2 m Print board B 08 C 1+2 Tilhører tegn. nr.: 75015-4E2			Rettet:		<div>Tegn.:</div> <div>Stykl. nr.:</div> <div>Kontr.:</div> <div>75015-4S2</div>



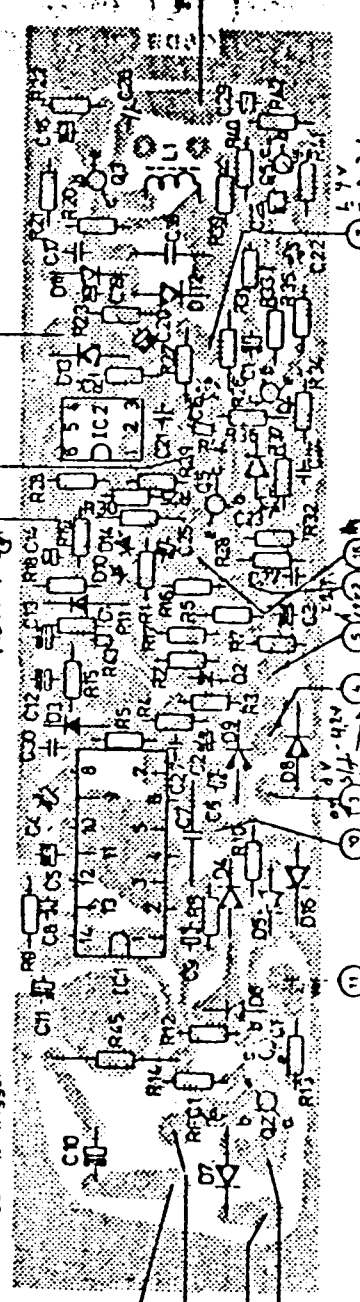
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	<div>AP-RADIOTELEFON</div>	<div> <div>Tegn. nr.:</div> <div>75076-3E2</div> </div>

MARTS
1981



Bottom view
B
E
BC238
BC237

AF and squelch		Tegn.: BC		Kontr.:	
Print board C79B1 EL. 079 D1.		Stykt. nr.:		80073 - 3E2	
AP-RADIOTELEFON		Tegn. nr.:			



12-5-52

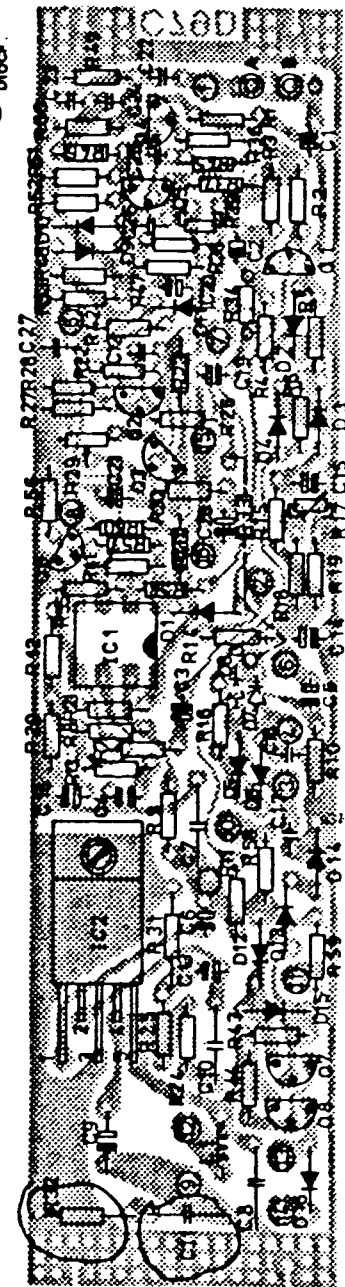
Tegn.: E-1-75	Komr.:
AC	
Stryk. nr.:	
Tegn. nr.:	
75017-3E2	

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.			
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



8772 JBS
DGS

BC 238
BC 327

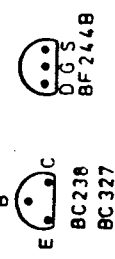
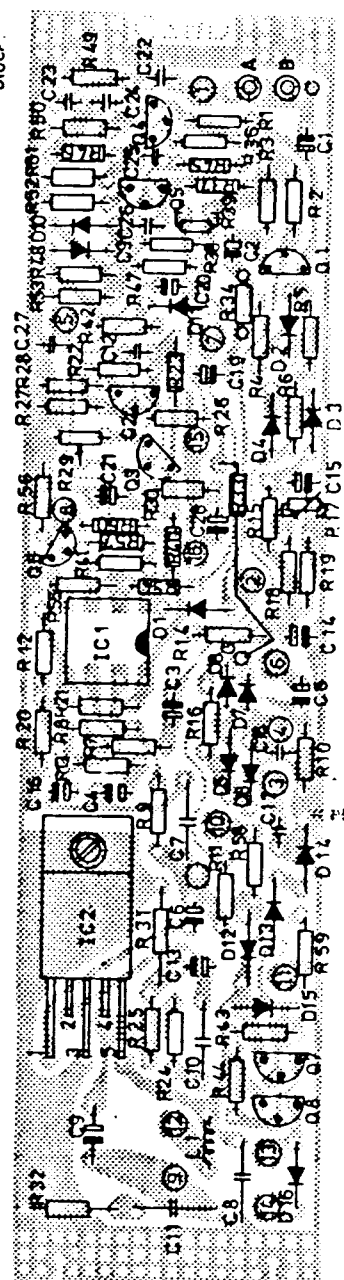
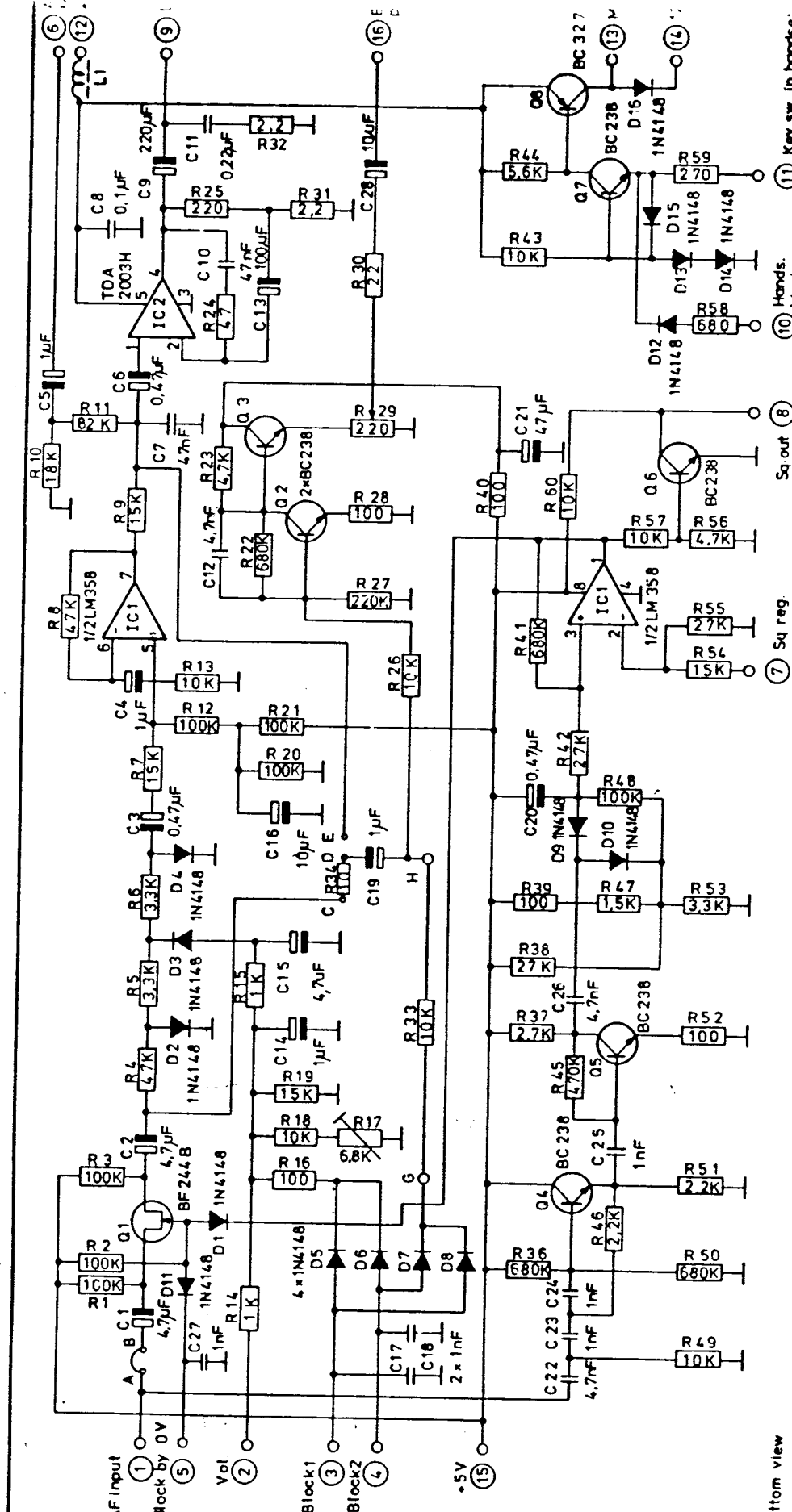
80073 - 3E2

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
C15	11-504	4,7 μ F/10 V Tant.	Q6	19-093	BC238
C16	11-506	10 μ F 25 V "	Q7	19-093	BC238
C17	11-409	1 nF Ker.	Q8	19-095	BC327
C18	11-409	1 nF "			
C19	11-502	1 μ F 35 V Tant.	L1	25-009	RFC
C20	11-501	0,47 μ F 35 V "			
C21	11-509	47 μ F 6,3V "	IC1	09-080	LM358
C22	11-416	4,7 nF Ker.	IC2	09-210	TDA2003H
C23	11-409	1 nF "			
C24	11-409	1 nF "			
C25	11-409	1 nF "			
C26	11-416	4,7 nF "			
C27	11-409	1 nF "			
C28	11-506	10 μ F 25 V Tant.			
D1	04-062	1N4148			
D2	04-062	1N4148			
D3	04-062	1N4148			
D4	04-062	1N4148			
D5	04-062	1N4148			
D6	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	19-087	BF244B			
Q2	19-093	BC238			
Q3	19-093	BC238			
Q4	19-093	BC238			
Q5	19-093	BC238			
AF and squelch Print board C79D1 Tilhører tegn. nr.: 80073-3E2			Rettet:		<div>Tegn.: Stykl. nr.: 80073-4S2</div> <div>Kontr.:</div>

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-306	100 KΩ 1/8 W CR16	R39	13-271	100 Ω 1/8 W CR16
R2	13-306	100 KΩ " "	R40	13-271	100 Ω " "
R3	13-306	100 KΩ " "	R41	13-311	680 KΩ " "
R4	13-302	47 KΩ " "	R42	13-313	27 KΩ " "
R5	13-289	3,3 KΩ " "	R43	13-295	10 KΩ " "
R6	13-289	3,3 KΩ " "	R44	13-292	5,6 KΩ " "
R7	13-297	15 KΩ " "	R45	13-315	470 KΩ " "
R8	13-302	47 KΩ " "	R46	13-287	2,2 KΩ " "
R9	13-297	15 KΩ " "	R47	13-285	1,5 KΩ " "
R10	13-298	18 KΩ " "	R48	13-306	100 KΩ " "
R11	13-305	82 KΩ " "	R49	13-295	10 KΩ " "
R12	13-306	100 KΩ " "	R50	13-311	680 KΩ " "
R13	13-295	10 KΩ " "	R51	13-287	2,2 KΩ " "
R14	13-283	1 KΩ " "	R52	13-271	100 Ω " "
R15	13-283	1 KΩ " "	R53	13-289	3,3 KΩ " "
R16	13-271	100 Ω " "	R54	13-297	15 KΩ " "
R17	13-662	6,8 KΩ NTC 642	R55	13-313	27 KΩ " "
R18	13-295	10 KΩ 1/8 W CR16	R56	13-291	4,7 KΩ " "
R19	13-297	15 KΩ " "	R57	13-295	10 KΩ " "
R20	13-306	100 KΩ " "	R58	13-281	680 Ω " "
R21	13-306	100 KΩ " "	R59	13-276	270 Ω " "
R22	13-311	680 KΩ " "	R60	13-295	10 KΩ " "
R23	13-291	4,7 KΩ " "			
R24	13-267	47 Ω " "	C1	11-504	4,7 μF 10 V Tant.
R25	13-275	220 Ω " "	C2	11-504	4,7 μF 10 V "
R26	13-295	10 KΩ " "	C3	11-501	0,47 μF 35 V "
R27	13-309	220 KΩ " "	C4	11-502	1 μF 35 V "
R28	13-271	100 Ω " "	C5	11-502	1 μF 35 V "
R29	19-266	220 Ω Trim.	C6	11-501	0,47 μF 35 V "
R30	19-263	22 Ω 1/8 W CR16	C7	11-493	47 nF MKH
R31	13-347	2,2 Ω 1/4 W CRL6	C8	11-490	0,1 μF "
R32	13-347	2,2 Ω " "	C9	05-024	220 μF 16 V Ellyt
		1/8 W CR16	C10	11-493	47 nF MKH
R34	13-259	10 Ω " "	C11	11-497	0,22 μF MKT
R36	13-311	680 KΩ " "	C12	11-416	4,7 nF Ker.
R37	13-288	2,7 KΩ " "	C13	11-510	100 μF 3 V Tant.
R38	13-313	27 KΩ " "	C14	11-502	1 μF 35 V "
AF and squelch Print board C79D1 Tilhører tegn. nr.: 80073-3E2			Rettet:		Tegn.: Stykl. nr.: Kontr.: 80073-4S2



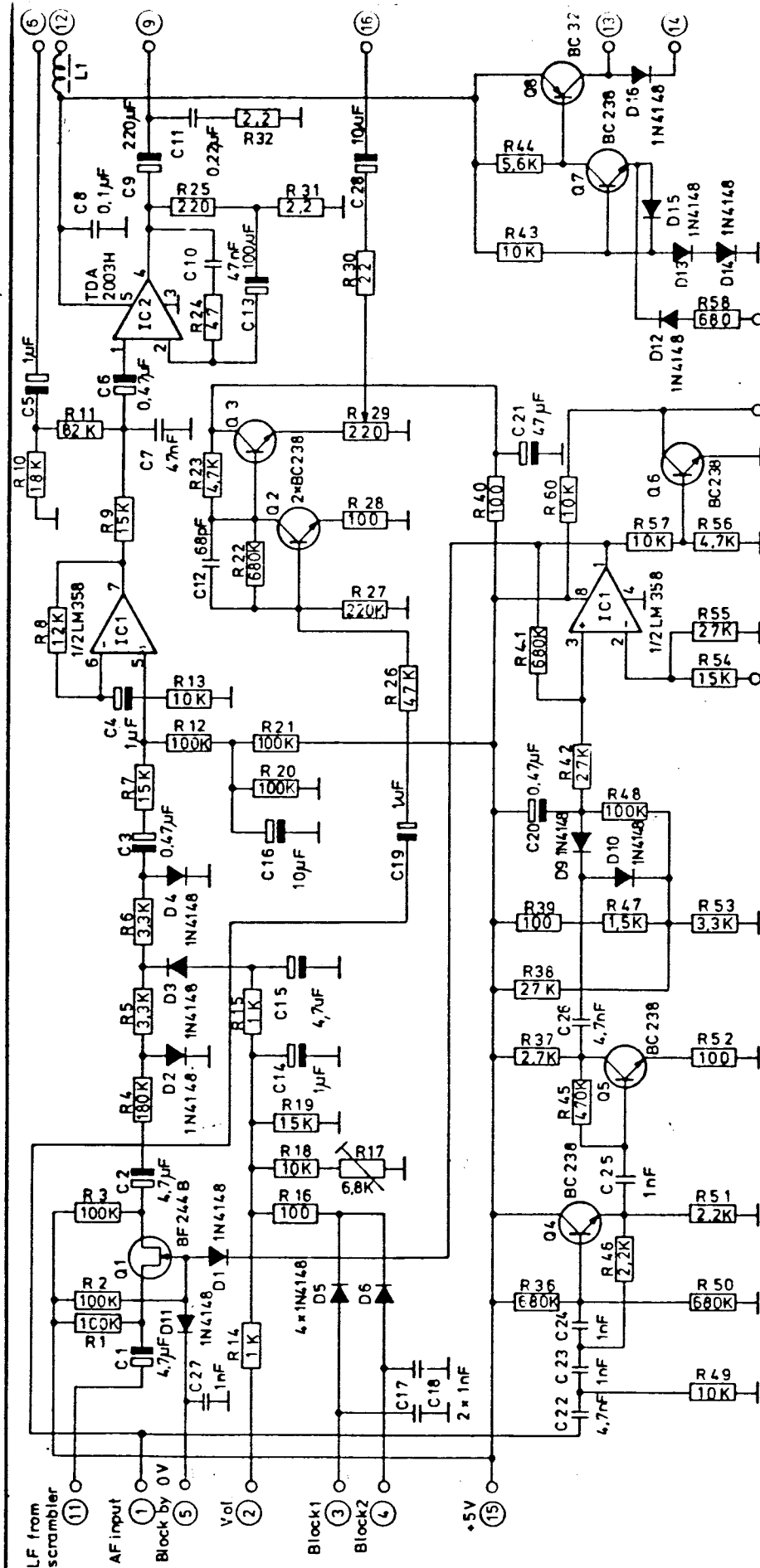
Ref: 9-4-81LBU 4-5-81 LB	AF and squelch Print board C79D2 AP-RADIOTELEFON	Tegn.: BC 9-6-80 Stykl. nr.: Tegn. nr.: 80165 - 3E2
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AP-RADIOTELEFON

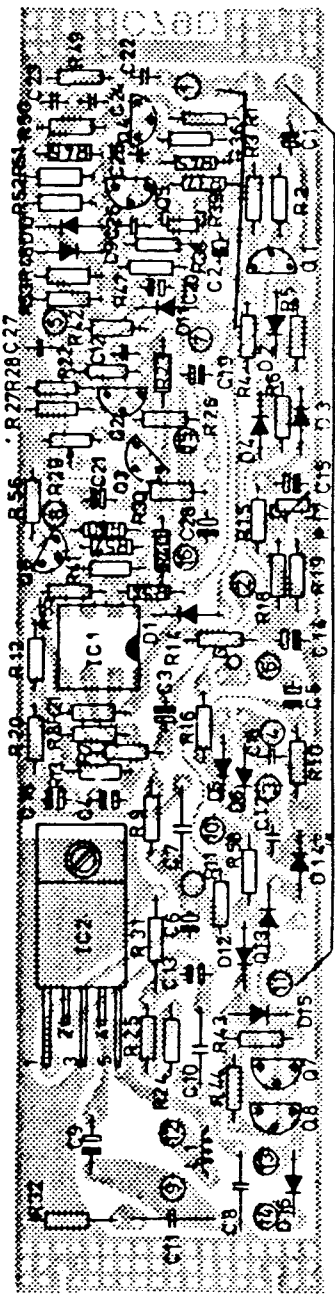
Nr.	Kode	Data	Nr.	Kode	Data
R1	13-306	100 KΩ 1/8 W CR16	R39	13-271	100 Ω 1/8 W CR16
R2	13-306	100 KΩ " "	R40	13-271	100 Ω " "
R3	13-306	100 KΩ " "	R41	13-311	680 KΩ " "
R4	13-302	47 KΩ " "	R42	13-313	27 KΩ " "
R5	13-289	3,3 KΩ " "	R43	13-295	10 KΩ " "
R6	13-289	3,3 KΩ " "	R44	13-292	5,6 KΩ " "
R7	13-297	15 KΩ " "	R45	13-315	470 KΩ " "
R8	13-302	47 KΩ " "	R46	13-287	2,2 KΩ " "
R9	13-297	15 KΩ " "	R47	13-285	1,5 KΩ " "
R10	13-298	18 KΩ " "	R48	13-306	100 KΩ " "
R11	13-305	82 KΩ " "	R49	13-295	10 KΩ " "
R12	13-306	100 KΩ " "	R50	13-311	680 KΩ " "
R13	13-295	10 KΩ " "	R51	13-287	2,2 KΩ " "
R14	13-283	1 KΩ " "	R52	13-271	100 Ω " "
R15	13-283	1 KΩ " "	R53	13-289	3,3 KΩ " "
R16	13-271	100 Ω " "	R54	13-297	15 KΩ " "
R17	13-662	6,8 KΩ NTC 642	R55	13-313	27 KΩ " "
R18	13-295	10 KΩ 1/8 W CR16	R56	13-291	4,7 KΩ " "
R19	13-297	15 KΩ " "	R57	13-295	10 KΩ " "
R20	13-306	100 KΩ " "	R58	13-281	680 Ω " "
R21	13-306	100 KΩ " "	R59	13-276	270 Ω " "
R22	13-311	680 KΩ " "	R60	13-295	10 KΩ " "
R23	13-291	4,7 KΩ " "			
R24	13-267	47 Ω " "	C1	11-504	4,7 μF 10 V Tant.
R25	13-275	220 Ω " "	C2	11-504	4,7 μF 10 V "
R26	13-295	10 KΩ " "	C3	11-501	0,47 μF 35 V "
R27	13-309	220 KΩ " "	C4	11-502	1 μF 35 V "
R28	13-271	100 Ω " "	C5	11-502	1 μF 35 V "
R29	19-266	220 Ω Trim.	C6	11-501	0,47 μF 35 V "
R30	19-263	22 Ω 1/8 W CR16	C7	11-493	47 nF MKH
R31	13-347	2,2 Ω 1/4 W CRL6	C8	11-490	0,1 μF "
R32	13-347	2,2 Ω " "	C9	05-024	220 μF 16 V Ellyt
R33	13-295	10 KΩ 1/8 W CR16	C10	11-493	47 nF MKH
R34	13-259	10 Ω " "	C11	11-497	0,22 μF MKT
R36	13-311	680 KΩ " "	C12	11-416	4,7 nF Ker.
R37	13-288	2,7 KΩ " "	C13	11-510	100 μF 3 V Tant.
R38	13-313	27 KΩ " "	C14	11-502	1 μF 35 V "
AF and squelch Print board C79D2 Tilhører tegn. nr.: 80165-3E2			Rettet:		Tegn.: Stykl. nr.: Kontr.: 80165-4S2

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
C15	11-504	4,7 μ F/10 V Tant.	Q6	19-093	BC238
C16	11-506	10 μ F 25 V "	Q7	19-093	BC238
C17	11-409	1 nF Ker.	Q8	19-095	BC327
C18	11-409	1 nF "			
C19	11-502	1 μ F 35 V Tant.	L1	25-009	RFC
C20	11-501	0,47 μ F 35 V "			
C21	11-509	47 μ F 6,3V "	IC1	09-080	LM358.
C22	11-416	4,7 nF Ker.	IC2	09-210	TDA2003H
C23	11-409	1 nF "			
C24	11-409	1 nF "			
C25	11-409	1 nF "			
C26	11-416	4,7 nF "			
C27	11-409	1 nF "			
C28	11-506	10 μ F 25 V Tant.			
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	004-062	1N4148			
D16	04-062	1N4148			
Q1	19-087	BF244B			
Q2	19-093	BC238			
Q3	19-093	BC238			
Q4	19-093	BC238			
Q5	19-093	BC238			
AF and squelch Print board C79D2 Tilhører tegn. nr.: 80165-3E2			Rettet:		<div>Tegn.:</div> <div>Kontr.:</div>
					Stykl. nr.: 80165-4S2



⑦ Sq reg.
⑧ Sq out
⑩ Hands block



Bottom view
B
E
C
BC 238
BC 327

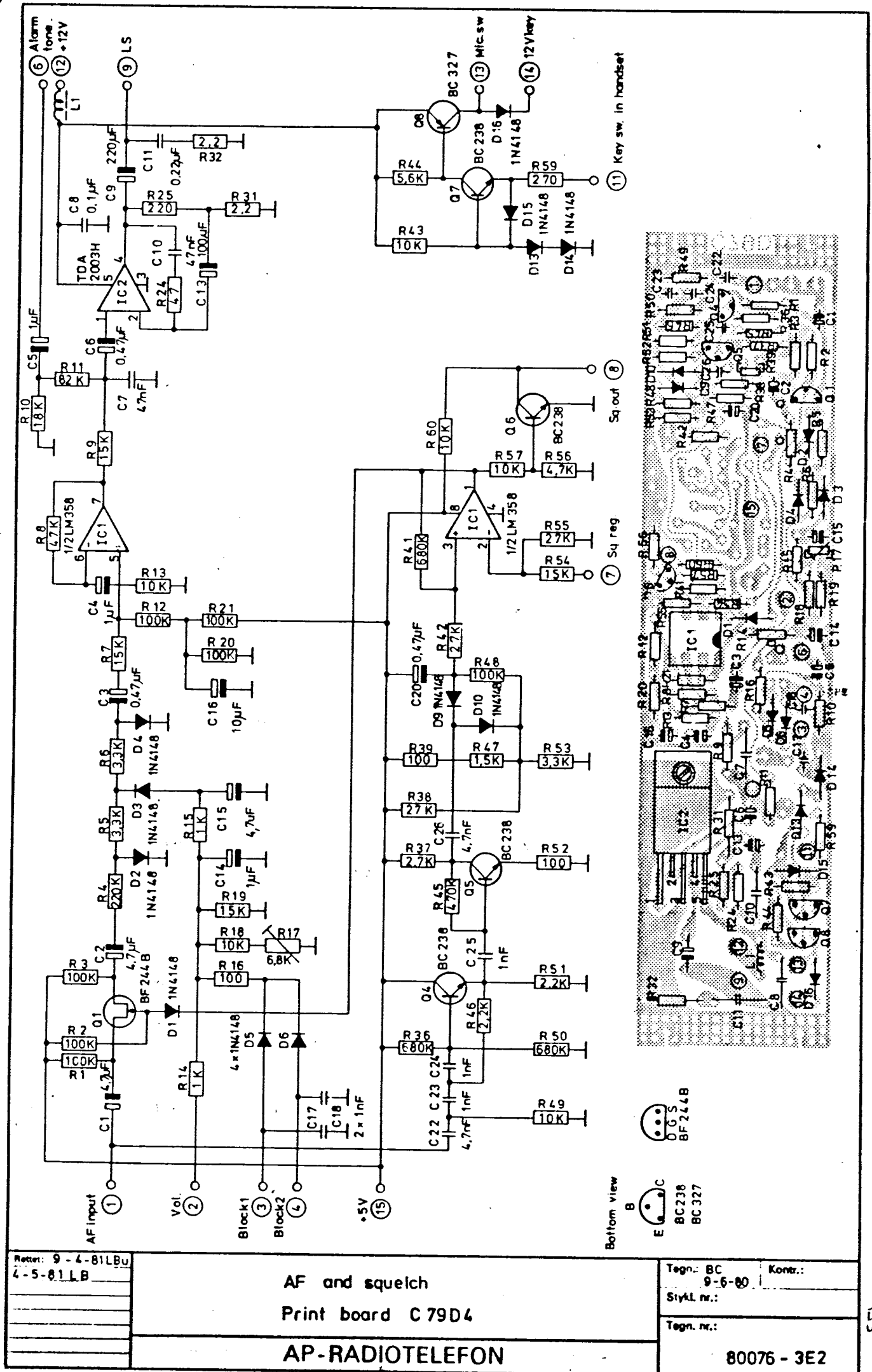
Retter: 9-4-81LBU 4-5-81 LB	AF and squelch	Tegn. BC 9-6-80	Kontr.:
	Print board C 79D3	Strykl. nr.:	
	AP-RADIOTELEFON	Tegn. nr.:	80078 - 3E2

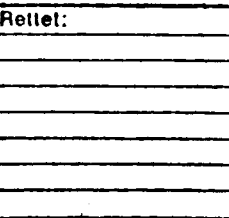
AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
C18	11-409	1 nF Ker.	L1	25-009	RFC
C19	11-502	1 μ F/35 V Tant.			
C20	11-501	0,47 μ F/35 V "	IC1	09-080	LM358
C21	11-509	47 μ F/6,3V "	IC2	09-210	TD Δ 2003H
C22	11-416	4,7 nF Ker.			
C23	11-409	1 nF "			
C24	11-409	1 nF "			
C25	11-409	1 nF "			
C26	11-416	4,7 nF "			
C27	11-409	1 nF "			
C28	11-506	10 μ F/25 Tant,			
D1	04-062	1N4148			
D2	04-062	1N4148			
D3	04-062	1N4148			
D4	04-062	1N4148			
D5	04-062	1N4148			
D6	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	19-087	BF244B			
Q2	19-093	BC238			
Q3	19-093	BC238			
Q4	19-093	BC238			
Q5	19-093	BC238			
Q6	19-093	BC238			
Q7	19-093	BC238			
Q8	19-095	BC327			
AF and squelch Print board C79 D3 Tilhører tegn. nr.: 80078-3E2			Rettet:		<div>Tegn.: Stykl. nr.: 80078-4S2</div> <div>Kontr.:</div>

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-306	100 KΩ 1/8 W CR16	R41	13-311	680 KΩ 1/8 W CR16
R2	13-306	100 KΩ " "	R42	13-313	27 KΩ " "
R3	13-306	100 KΩ " "	R43	13-295	10 KΩ " "
R4	13-314	180 KΩ " "	R44	13-292	5,6 KΩ " "
R5	13-289	3,3 KΩ " "	R45	13-315	470 KΩ " "
R6	13-289	3,3 KΩ " "	R46	13-287	2,2 KΩ " "
R7	13-297	15 KΩ " "	R47	13-285	1,5 KΩ " "
R8	13-296	12 KΩ " "	R48	13-306	100 KΩ " "
R9	13-297	15 KΩ " "	R49	13-295	10 KΩ " "
R10	13-298	18 KΩ " "	R50	13-311	680 KΩ " "
R11	13-305	82 KΩ " "	R51	13-287	2,2 KΩ " "
R12	13-306	100 KΩ " "	R52	13-271	100 Ω " "
R13	13-295	10 KΩ " "	R53	13-289	3,3 KΩ " "
R14	13-283	1 KΩ " "	R54	13-297	15 KΩ " "
R15	13-283	1 KΩ " "	R55	13-313	27 KΩ " "
R16	13-271	100 Ω " "	R56	13-291	4,7 KΩ " "
R17	13-662	6,8 KΩ NTC 642	R57	13-295	10 KΩ " "
R18	13-295	10 KΩ 1/8 W CR16	R58	13-281	680 Ω " "
R19	13-297	15 KΩ " "	R60	13-295	10 KΩ " "
R20	13-306	100 KΩ " "	C1	11-504	4,7 μF/ 10 V Tant.
R21	13-306	100 KΩ " "	C2	11-504	4,7 μF/ 10 V Tant.
R22	13-311	680 KΩ " "	C3	11-501	0,47 μF/35 V ""
R23	13-291	4,7 KΩ " "	C4	11-502	1 μF/35 V "
R24	13-267	47 Ω " "	C5	11-502	1 μF/35 V "
R25	13-275	220 Ω " "	C6	11-501	0,47 μF/35 V "
R26	13-302	47 KΩ " "	C7	11-493	47 nF MKH
R27	13-309	220 KΩ " "	C8	11-490	0,1 μF "
R28	13-271	100 Ω " "	C9	05-024	220 μF/16 V Ellyt
R29	19-266	220 Ω Trim.	C10	11-493	47 nF MKH
R30	19-263	22 Ω 1/8 W CR16	C11	11-497	0,22 μF MKT
R31	13-347	2,2 Ω 1/4 W CR25	C12	11-397	68 pF Ker.
R32	13-347	2,2 Ω " "	C13	11-510	100 μF/3V Tant.
R36	13-311	680 KΩ 1/8 W CR16	C14	11-502	1 μF/35V "
R37	13-288	2,7 KΩ " "	C15	11-504	4,7 μF/10V "
R38	13-313	27 KΩ " "	C16	11-506	10 μF/25 V "
R39	13-271	100 Ω " "	C17	11-409	1 nF Ker.
R40	13-271	100 Ω 1/8 W CR16			
AF and squelch Print board C 79 D3 tilhører tegn. nr.: 80078-3E2			Rettet:		Tegn.: Kontroll: Stykl. nr.: 80078-4S2



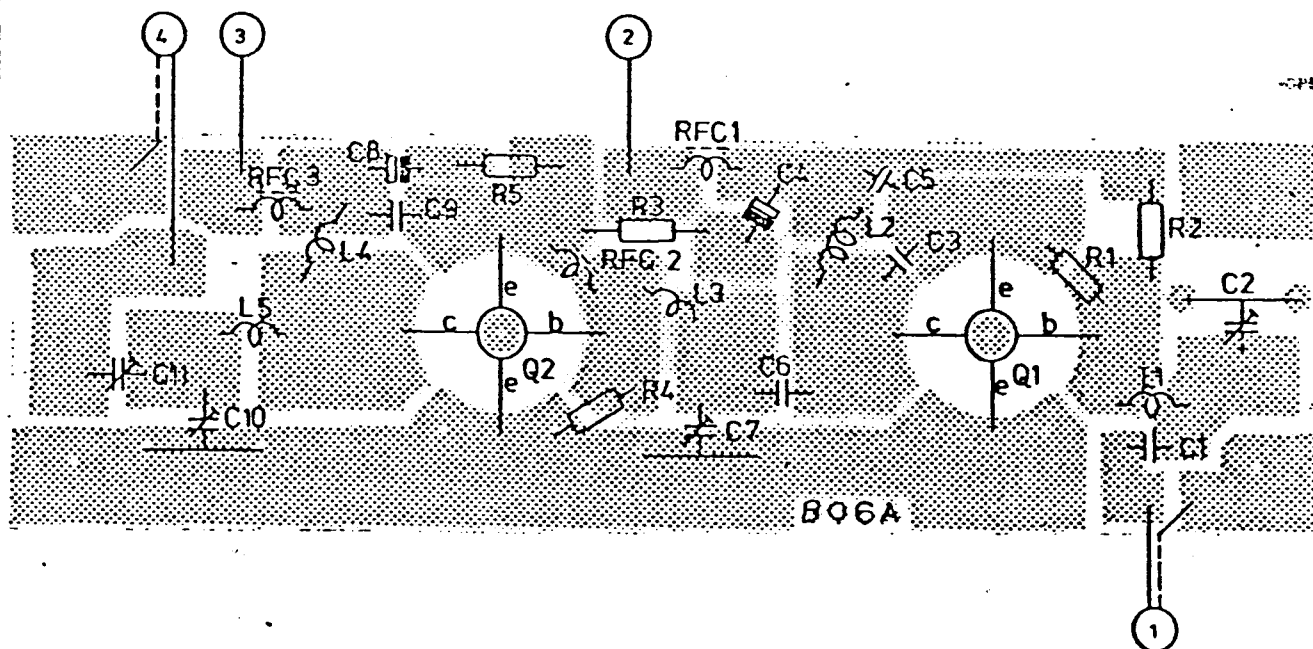
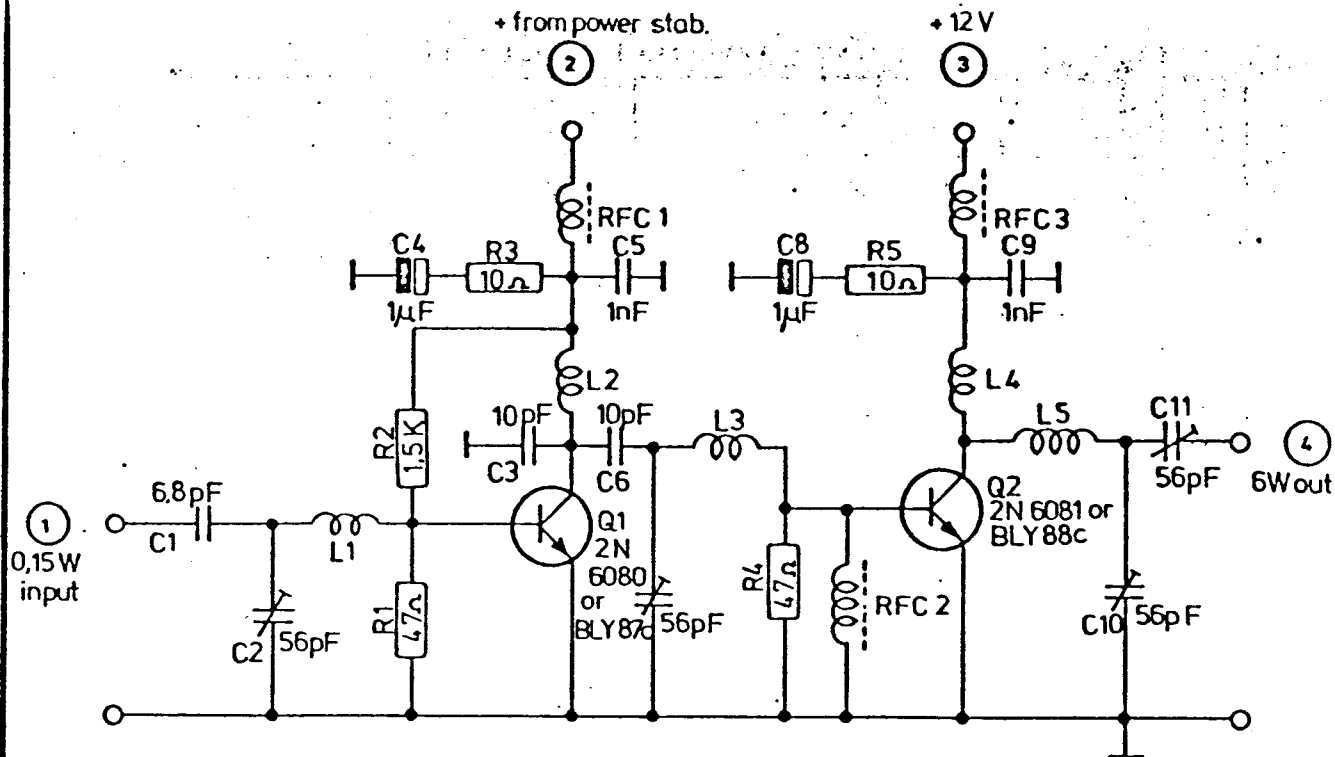


AP-RADIOTELEFON ⅔

75014-4E2 61

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data				
R1	13-282	820 Ω 1/8W CR 16	D1	04-003	AA143				
R2	13-285	1,5 K Ω " "	D2	04-003	AA143				
R3	13-267	47 Ω " "	D3	04-003	AA143				
R4	13-272	120 Ω " "	D4	04-003	AA143				
R5	13-282	820 Ω " "	D5	04-062	1N4148				
R6	13-285	1,5 K Ω " "							
R7	13-267	47 Ω " "	Q1	19-102	BFX89				
R8	13-266	39 Ω " "	Q2	19-102	BFX89				
R9	13-275	220 Ω " "	Q3	19-124	MRF 604				
R10	13-283	1 K Ω " "							
R11	13-257	4,7 Ω " "	RFC1		75290-4E2				
R12	13-382	10 K Ω " "							
			TR1		75289-4E2				
C1	11-388	27 pF Ker.	TR2		75289-4E2				
C2	19-330	18 pF Trim.							
C3	11-394	47 pF Ker.	L1		75517-4E2				
C4	11-409	1 nF "	L2		75327-4E2				
C5	11-409	1 nF "	L3		75323+75325-4E2				
C6	19-330	18 pF Trim.	L4		75323+75325-4E2				
C7	11-409	1 nF Ker.	L5		75326-4E2				
C8			L6		75323+75324-4E2				
C9									
C10	11-409	1 nF Ker.							
C11	19-330	18 pF Trim.							
C12	11-409	1 nF Ker.							
C13	19-330	18 pF Trim.							
C14	11-368	4,7 pF Ker.							
C15	11-409	1 nF "							
C16	11-409	1 nF "							
C17	11-385	22 pF "							
C18	19-330	18 pF Trim.							
C19	11-409	1 nF Ker.							
C20	11-363	2,2 pF "							
C21	11-376	10 pF "							
C22	11-401	100 pF "							
C23	11-409	1 nF "							
C24	11-396	56 pF "							
Tranmitter mixer and amplifier Print board B 07 B 1 Tilhører tegn. nr.: 75014-4E2			Rettet:		<table><tr><td>Tegn.:</td><td>Stykl. nr.:</td></tr><tr><td>Kontr.:</td><td>75014-4S2</td></tr></table>	Tegn.:	Stykl. nr.:	Kontr.:	75014-4S2
Tegn.:	Stykl. nr.:								
Kontr.:	75014-4S2								

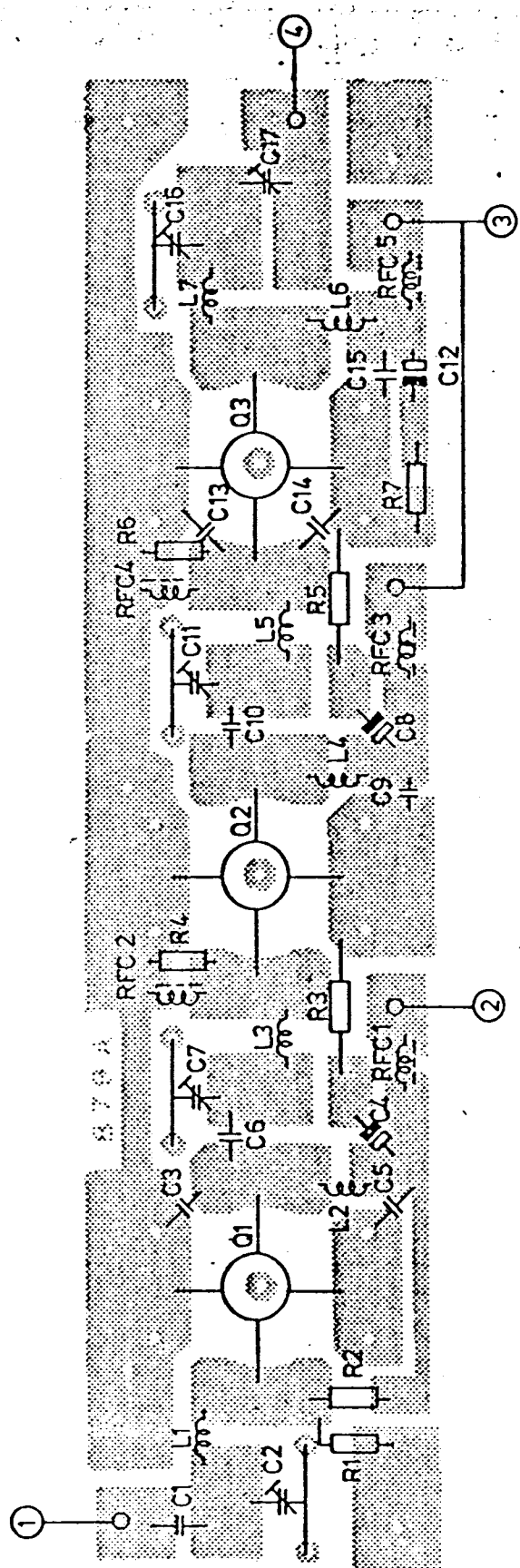
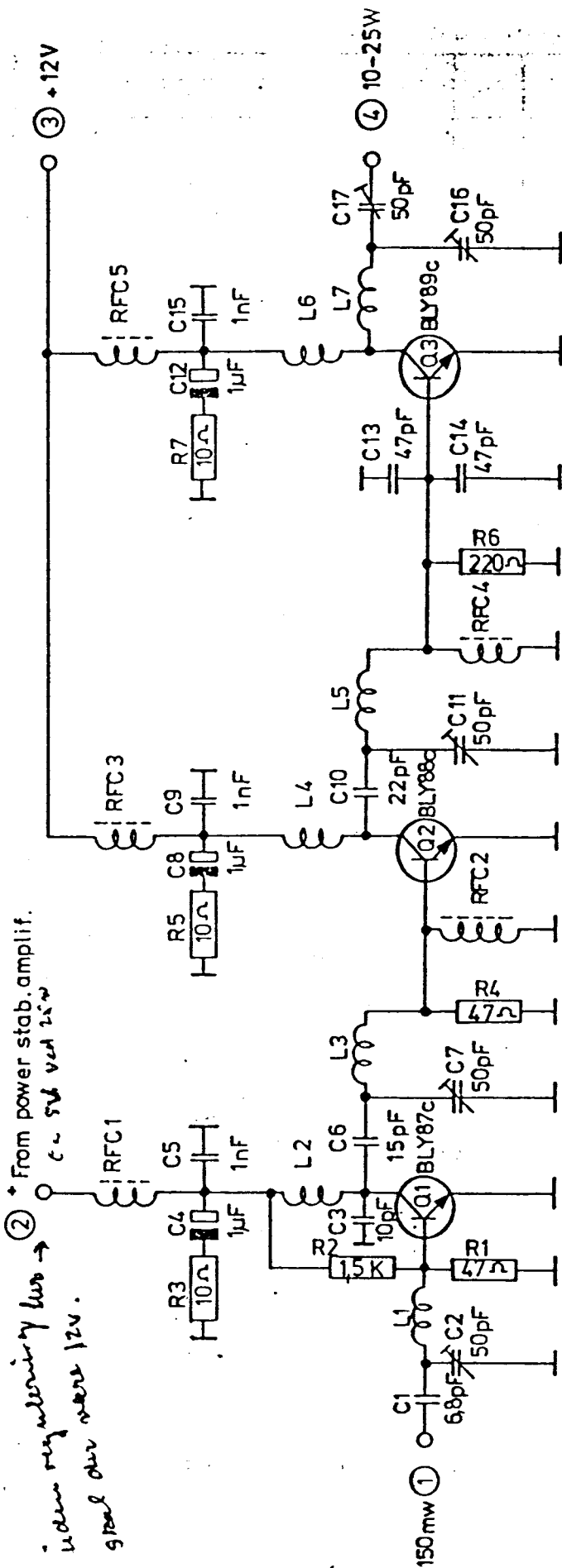


Rettet:	6 W PA-stage for 2m	Tegn.: 6-1-75	Kontr.:
	Print board B06A 1	AC	
		Stykl. nr.:	
	AP-RADIOTELEFON ½	Tegn. nr.:	75013-4E2 63

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-267	47 Ω 1/8W CR 16			
R2	13-285	1,5 K Ω " "			
R3	13-259	10 Ω " "			
R4	13-267	47 Ω " "			
R5	13-259	10 Ω " "			
C1	11-373	6,8 pF Ker.			
C2	19-332	56 pF Trim.			
C3	11-376	10 pF Ker.			
C4	11-502	1 μ F/35V Tant.			
C5	11-409	1 nF Ker.			
C6	11-376	10 pF "			
C7	19-332	56 pF Trim.			
C8	11-502	1 μ F/35V Tant.			
C9	11-409	1 nF Ker.			
C10	19-332	56 pF Trim.			
C11	19-332	56 pF "			
Q1		2N6080 or BLY87c			
Q2		2N6081 or BLY88c			
RFC1		75290-4E2			
RFC2		75290-4E2			
RFC3		75290-4E2			
L1		75320-4E2			
L2		75320-4E2			
L3		75318-4E2			
L4		75320-4E2			
L5		75319-4E2			
6 W PA-stage for 2m Printboard B 06 A 1 Tilhører tegn. nr.: 75013-4E2			Rettet:		<div>Tegn.:</div> <div>Kontr.:</div>
					Stykl. nr.: 75013-4S2

viden regulerings krets →
 i den 500 V 25W
 12V.
 150mw

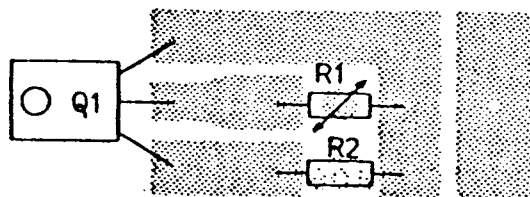
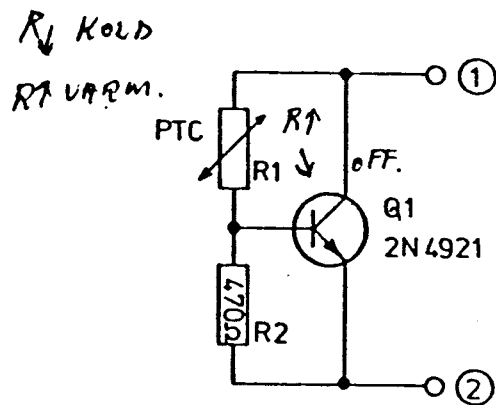


Rettet: 	25W internal P.A. 2m Print B 79A 1 AP-RADIOTELEFON ½	Tegn.: 27-10-76 H.J. Stykl. nr.: Tegn. nr.:	Kontr.: 76307- 4E2
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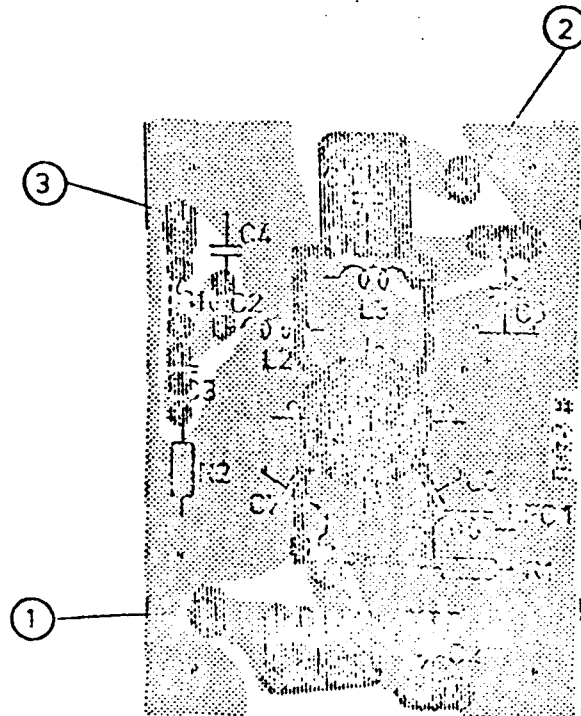
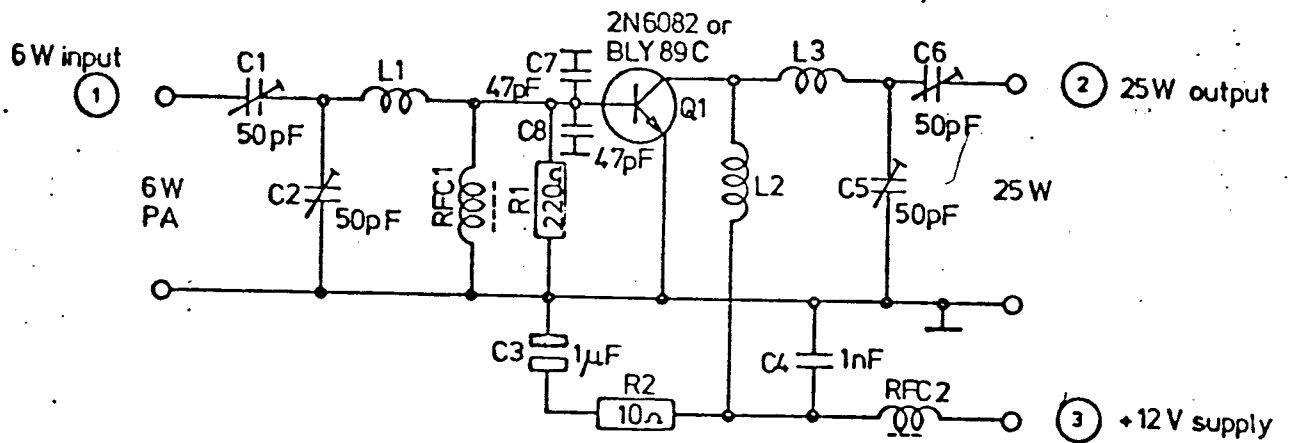
AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-267	47 Ω 1/8 W	RFC		
R2	13-285	1,5 k Ω "	1		75290-4E2
R3	13-259	10 Ω "	RFC		
R4	13-267	47 Ω "	2		75290-4E2
R5	13-259	10 Ω "	RFC		
R6	13-275	220 Ω "	3		75290-4E2
			RFC		
C1	11-373	6,8 pF Ker.	4		75290-4E2
C2	19-334	50 pF Trim.	RFC		
C3	11-376	10 pF Ker.	5		75290-4E2
C4	11-502	1 μ F/35 V Tant.			
C5	11-409	1 nF Ker.			
C6	11-381	15 pF "			
C7	19-334	50 pF Trim.			
C8	11-502	1 μ F/35 V Tant.			
C9	11-409	1 nF Ker.			
C10	11-385	22 pF "			
C11	19-334	50 pF Trim			
C12	11-502	1 μ F/35 V Tant.			
C13	11-394	47 pF Ker.			
C14	11-394	47 pF "			
C15	11-409	1 nF "			
C16	19-334	50 pF Trim.			
C17	19-334	50 pF "			
Q1	19-121	BLY 87 c			
Q2	19-122	BLY 88 c			
Q3	19-111	BLY 89 c			
L1		75320-4E2			
L2		75320-4E2			
L3		75318-4E2			
L4		75320-4E2			
L5		75318-4E2			
L6		75320-4E2			
L7		75318-4E2			
25 W internal P.A. 2m Print board B 79 A 1 Tilhører tegn. nr.: 76307-4E2			Rettet:		Tegn.: Kontr.: Stykl. nr.: 76307-4S2

nam med kontakt 1.4.11m.



Rettet:	Thermal protection of 25W internal PA Print board B80A 1	Tegn.: 5-11 -76 AC	Kontr.:
		Stykl. nr.:	
	AP-RADIOTELEFON 1/2	Tegn. nr.:	
		76328 - 4E2	



Rottet: 17-3-77 JH/AG

Extern 25W PA-stage for 2m
Print board B02A 1

Tegn.: 2-1-75
AC

Kontr.:

Stykl. nr.:

68

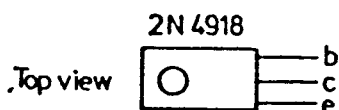
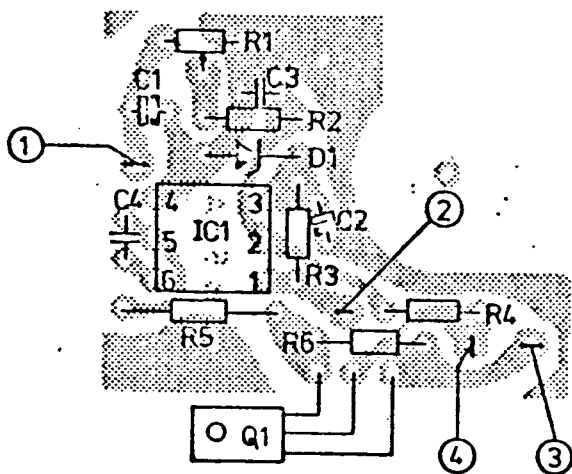
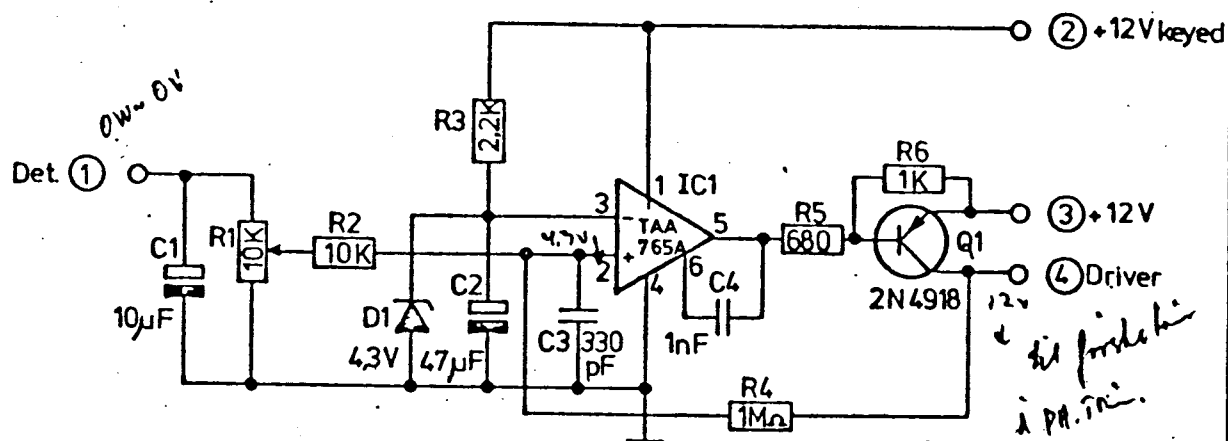
AP-RADIOTELEFON 1/2

Tegn. nr.:

75009-4E2

AP-RADIOTELEFON

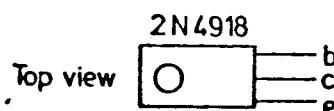
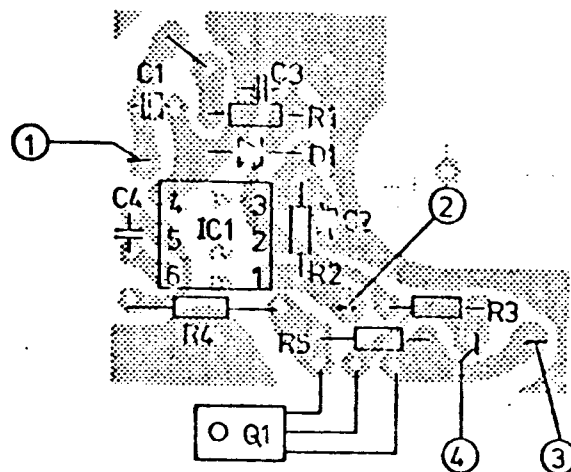
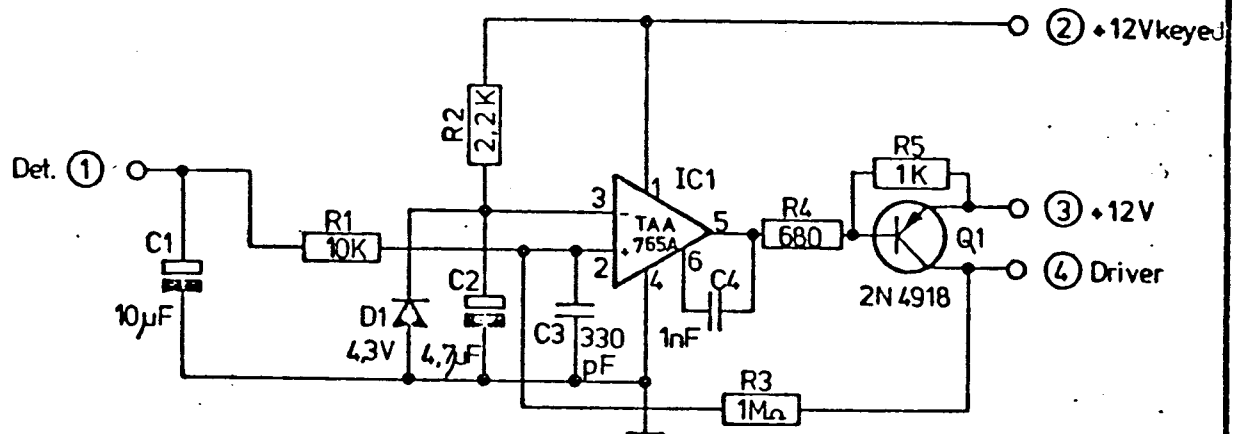
Nr.	Kode	Data	Nr.	Kode	Data
R1	13-362	220 Ω $\frac{1}{4}$ W CR 25			
R2	13-350	10 Ω " "			
C1	19-334	50 pF Trim.			
C2	19-334	50 pF "			
C3	11-502	1 μ F/35V Tant.			
C4	11-409	1 nF Ker.			
C5	19-334	50 pF Trim.			
C6	19-334	50 pF "			
C7	11-394	47 pF Ker.			
C8	11-394	47 pF "			
Q1	19-111 19-164	BLY89C or 2N6082			
L1		75317-4E2			
L2		75316-4E2			
L3		75315-4E2			
RFC-1		75290-4E2			
RFC-2		75290-4E2			
Extern PA-stage for 2 m Print board B 02 A 1 Tilhører tegn. nr.: 75009-4E2			Rettet:		<div>Tegn.: Stykl. nr.:</div> <div>Kontr.: 75009-4S2</div>



Rettet: 21-4-77 JH/r	Sense amplifier for output power stabilizing of internal PA. Print board B 57 A1	Tegn.: 29-12-75	Kontr.:
		AC	
	AP-RADIOTELEFON	Stykl. nr.:	70
		Tegn. nr.:	75622-4E2

AP-RADIOTELEFON

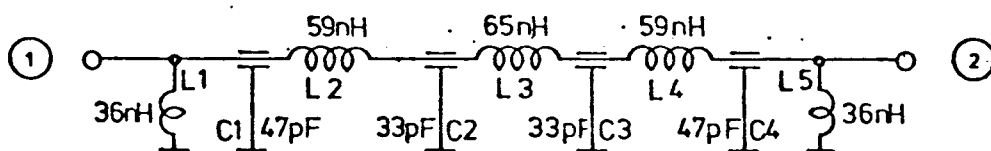
Nr.	Kode	Data	Nr.	Kode	Data
R1	19-258	10 K Ω Trim.			
R2	13-295	10 K Ω 1/8W CR 16			
R3	13-287	2,2 K Ω " "			
R4	13-312	1 M Ω " "			
R5	13-368	680 Ω $\frac{1}{4}$ W CR 25			
R6	13-283	1 K Ω 1/8W CR 16			
C1	11-506	10 μ F/25V Tant.			
C2	11-509	47 μ F/6,3V "			
C3	11-406	330 pF Ker.			
C4	11-409	1 nF "			
D1	04-045	4,3 V Zener			
Q1	19-176	2N4918			
IC1	09-003	TAA765A			
71					
Sense amplifier for output power stabilizing of internal PA Print board B 57 A 1				Tilhører tegn. nr.: 75622-4E2	
				Tegn. nr.: 75622-4S2	



Rettet:	Sense amplifier for output power stabilizing of external PA Print board B57A 2	Tegn.: 3-11-76 AC	Kontr.:
		Stykl. nr.:	
	AP-RADIOTELEFON	Tegn. nr.:	76325-1E2 7L

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	11-506	10 μ F/25V Tant.			
C2	11-505	4,7 μ F/25V "			
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 external PA. Print board B 57 A 2 Tilhører tegn. nr.: 76325-4E2			<div> <div>Tegn.:</div> <div>Kontr.:</div> </div> <div> <div>Stykl. nr.: 73</div> <div>76325-4S2</div> </div>		



Rettot:

Aerial filter for 2 m

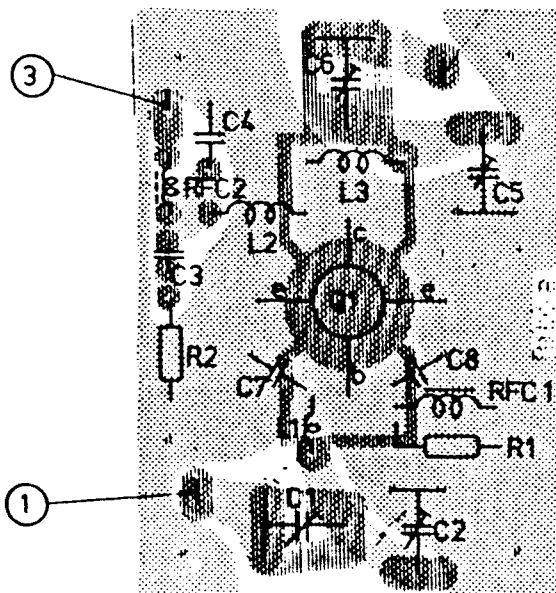
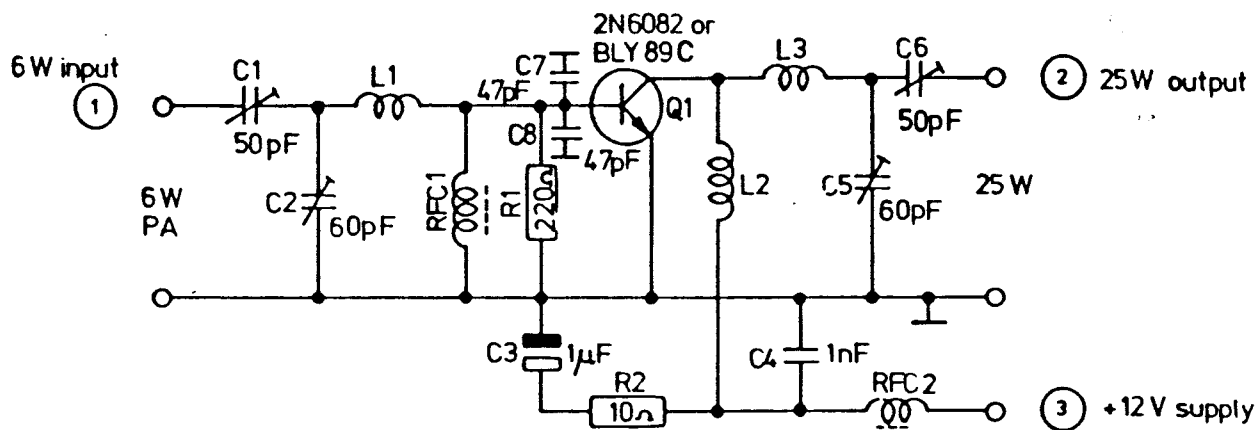
Tegn.: 9-1-75
AC

Kontr.:

Sykl. nr.:

74

Tegn. nr.:



Rettet: 17-5-79 JH/AC
26-4-79 PQR/AC

Extern 10-25WPA-stage for 2m
Print board B02C1

Tegn.: 2-1-75
AC

Kontr.:

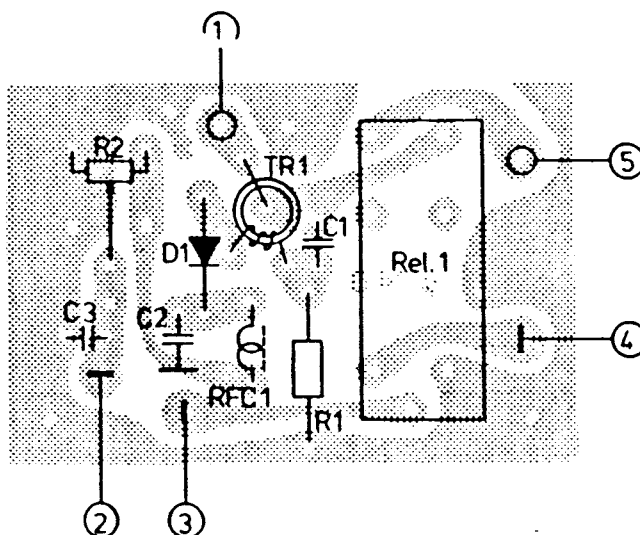
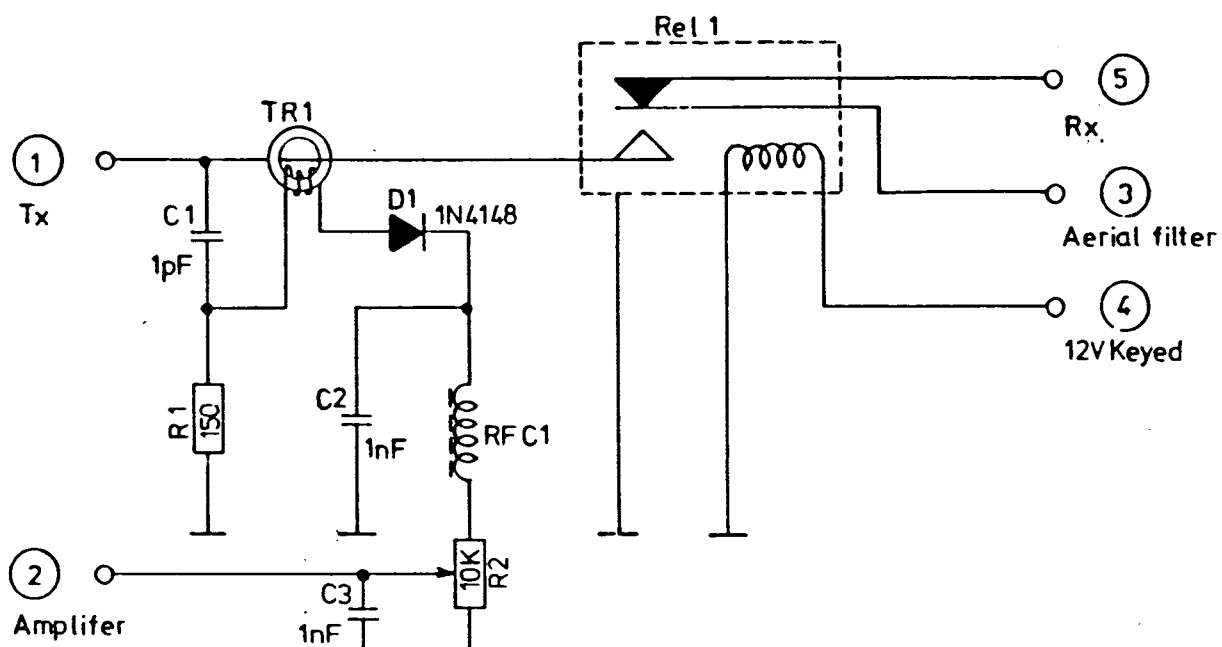
Stykl. nr.:

147

Tegn. nr.:

75009-4E2

AP-RADIOTELEFON ½



B 24 C2 relay RS-12V
 B 24 C3 without relay
 B 24 C5 relay RS- 6V

Rettet:
 23-2-78 AMC/TM

Aerial switch for 2m, external PA
 Print board B 24 C 2,3 and 5

AP-RADIOTELEFON ½

Tegn.: 1-7-75
 EH.

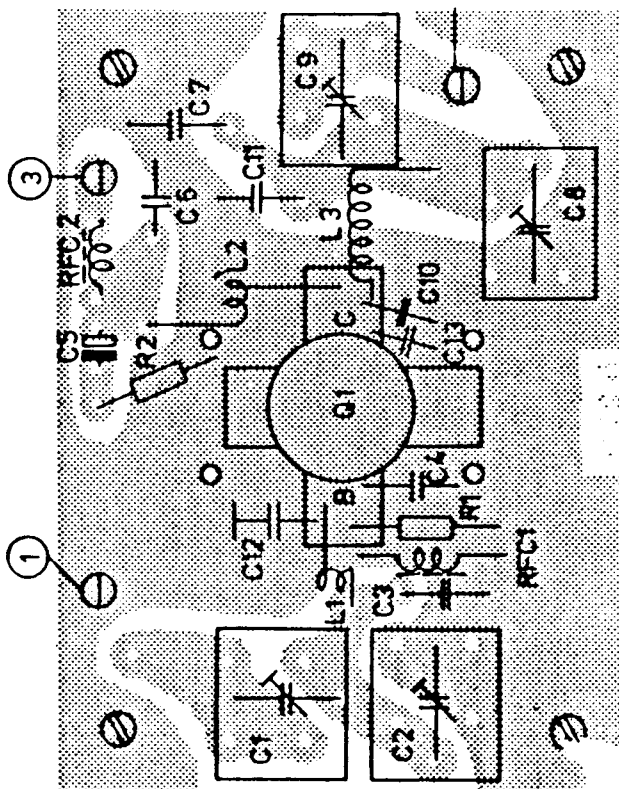
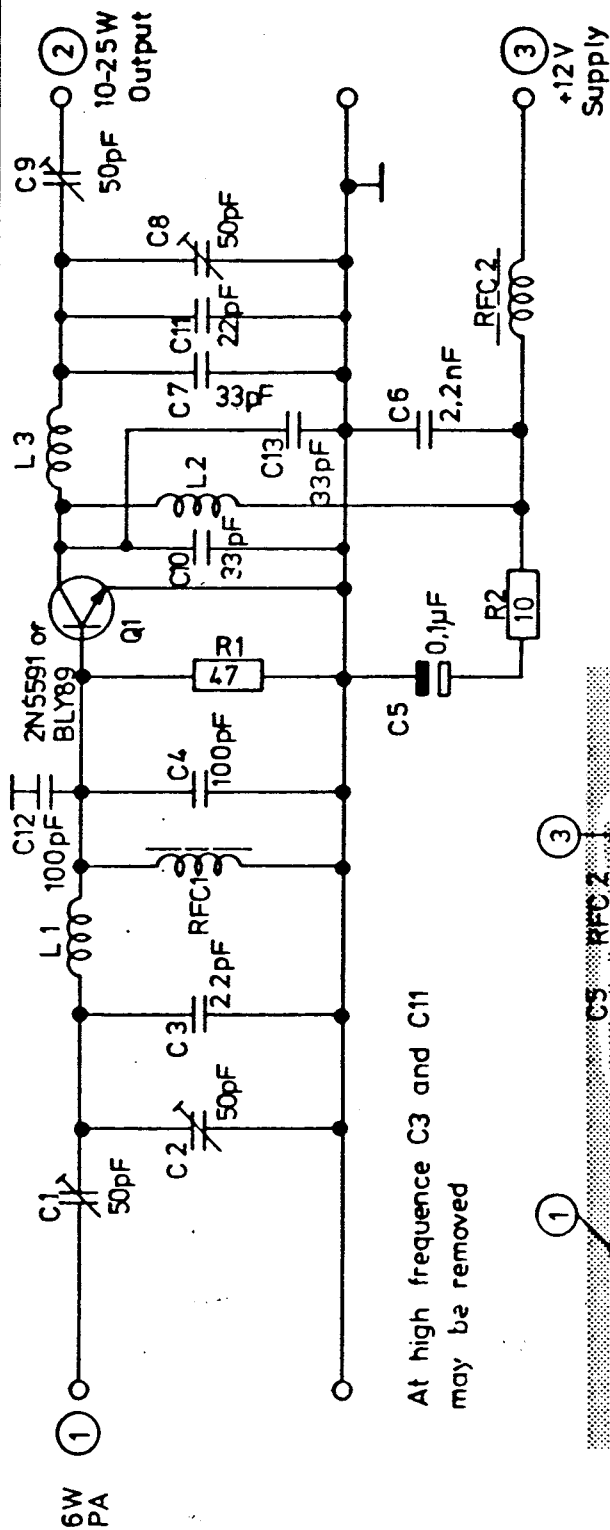
Kontr.:

Stykl. nr.:

149

Tegn. nr.:

75010 - 4E2

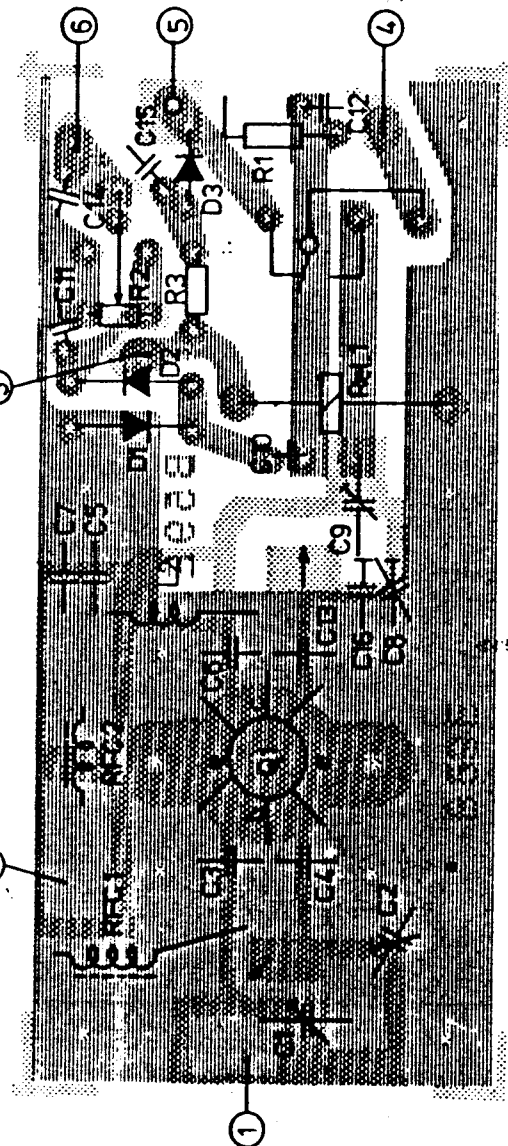
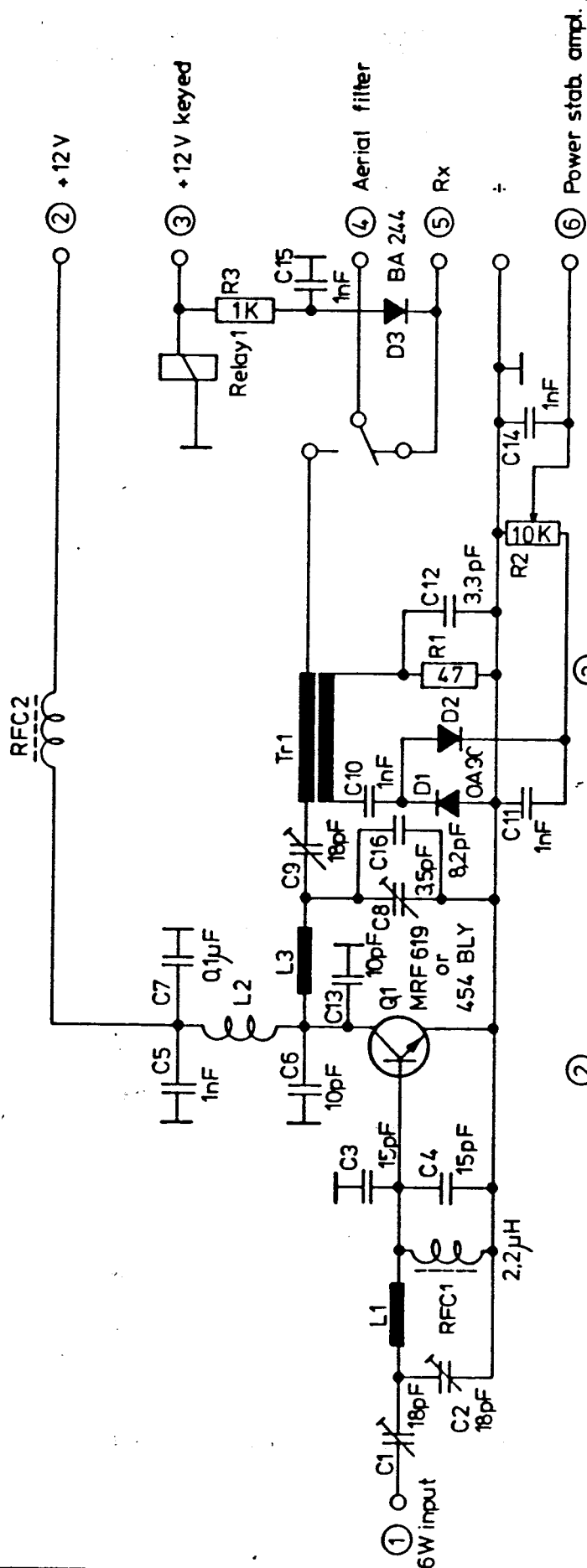


Retlet: 6-8-75 AC
 28-10-75 EH/BJ
 9-3-75 AC/BJ
 18-2-77 AC/BJ
 9-1-78 AC/IM
 7-4-78 AMC/JH
 16-6-78 JS/AC

Extern 10-25W PA-stage for 4m
 Print Board B27E1

AP-RADIOTELEFON 4

Tegn.: 11-4-75 E.H.
 Kontr.: 9-6-75 BJ.
 Stykl. nr.: 153
 Tegn. nr.: 75152-4E2



B59E1 relay W-7K 570 Ω
 B59E2 without relay
 B59E3 relay M/DK-14

Rettet: 9-1-78 ACB
 23-2-78 AMC/IM
 2-6-78 JS/AC

10-25W PA UHF, aerial switch and
 power detector. Print board B59F1,2 and 3

AP-RADIOTELEFON ¼

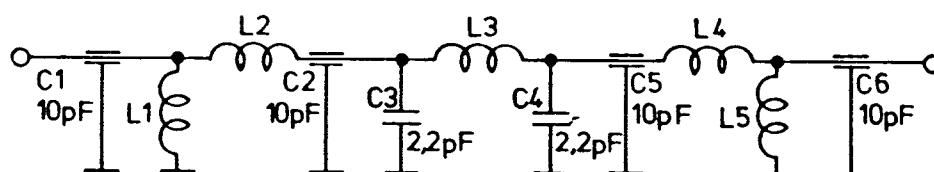
Tegn.: 17-11-76
 AC

Stykl. nr.: 75627-4E2 159

Tegn. nr.: 75627-4E2

AP-RADIOTELEFON

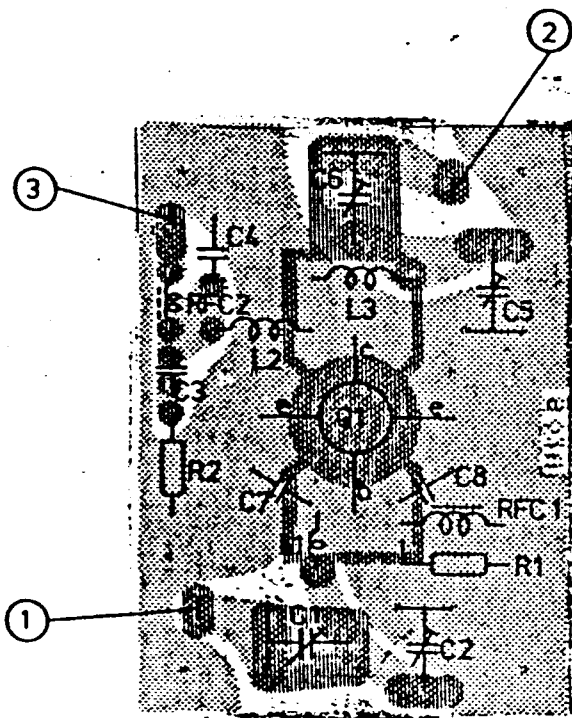
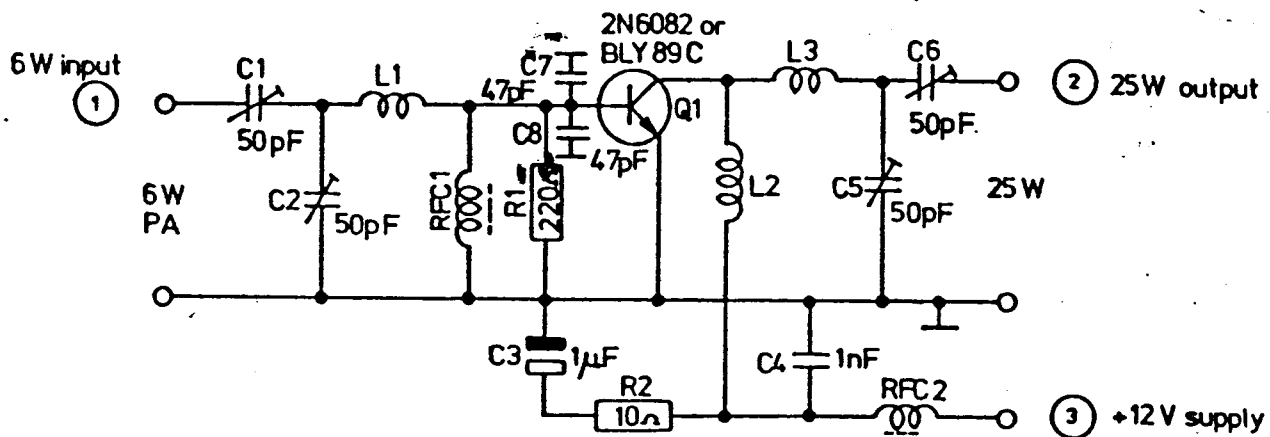
Nr.	Kode	Data	Nr.	Kode	Data
R1	13-356	47 Ω $\frac{1}{4}$ W CR 25			
R2	19-258	10 K Ω Trim.			
R3	13-283	1 K Ω 1/8 CR 16			
C1	19-330	18 pF Trim.			
C2	19-330	18 pF "			
C3	11-381	15 pF ker.			
C4	11-381	15 pF "			
C5	11-409	1 nF "			
C6	11-376	10 pF "			
C7	11-353	0,1 μ F Laco			
C8	19-346	3,5 pF Trim.			
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 454BLX			
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.:	
			Kontroll:	75627-4S2	



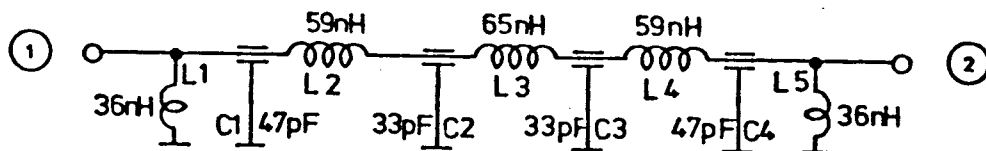
Rettet:	Aerialfilter UHF	Tegn.: 29-12-75	Kontr.:
		NC-AC	
		Stykl. nr.:	161
		Tegn. nr.:	75623-4E2
		AP-RADIOTELEFON ⅓	

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

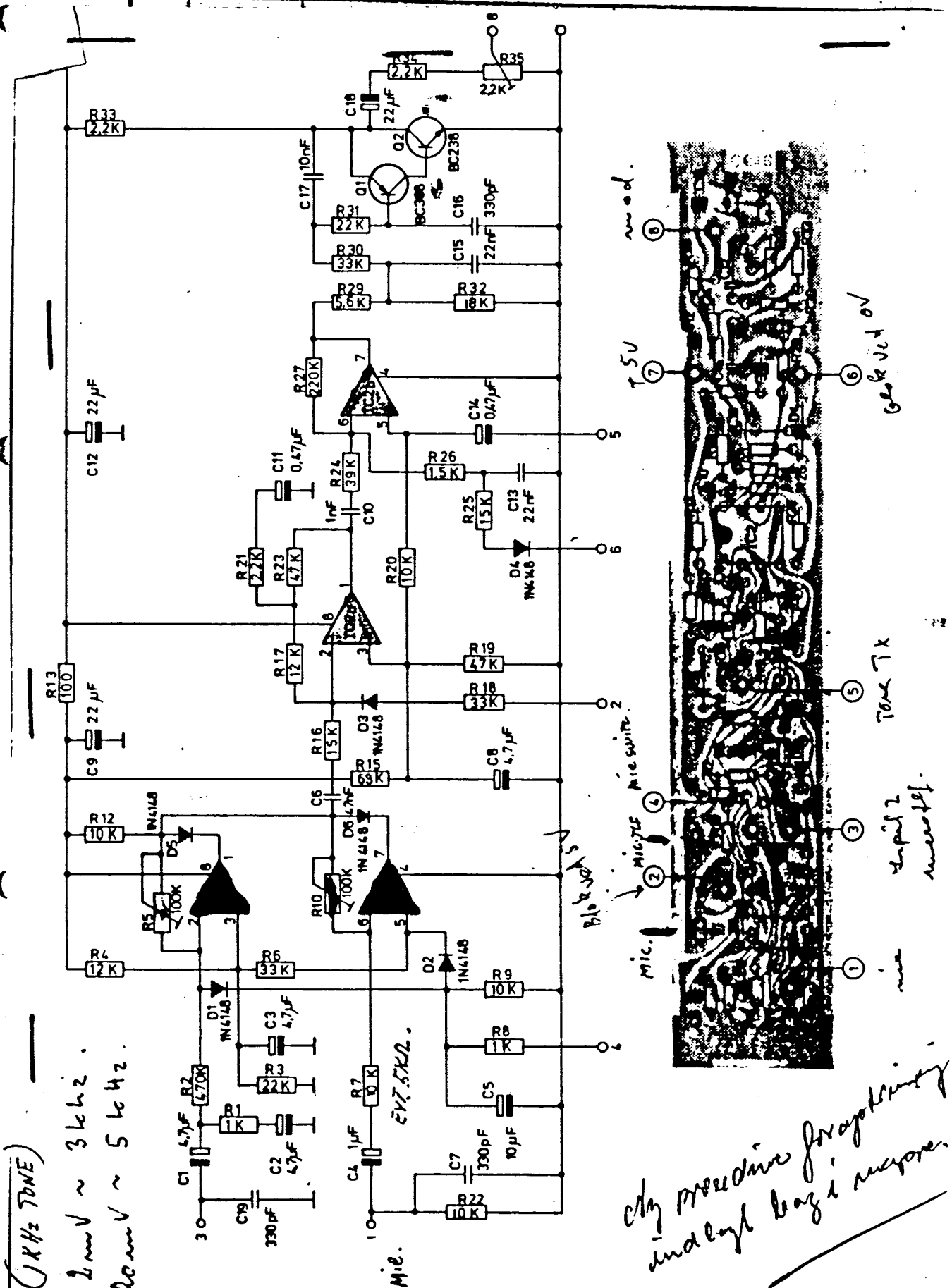


Rettel: 17-3-79 JH/RC 	Extern 25W PA-stage for 2m Print board B02C1 AP-RADIOTELEFON	Tegn.: 2-1-75 AC Stykl. nr.: Tegn. nr.: 75009-4E2	Kontr.:
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Rettet:	Aerial filter for 2m	Tegn.: 9-1-75	Kontr.:
		AC	
		Stykl. nr.:	
		Tegn. nr.:	
		75016-4E2	
AP-RADIOTELEFON 1/2			

AP-RADIOTELEFON



AP-RADIOTELEFON ..

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-283	1 KΩ 1/8 W CR16	C1	11-504	4,7 μF/10 V Tant.
R2	13-315	470 KΩ " "	C2	11-504	4,7 μF/10 V Tant.
R3	13-285	1,5 KΩ " "	C3	11-504	4,7 μF/10 V Tant.
R4	13-283	1 KΩ " "	C4	11-502	1 μF/35 V Tant.
R5	19-263	100 KΩ Trim.	C5	11-506	10 μF/25 V Tant.
R6	13-300	33 KΩ 1/8 W CR16	C6	11-493	47 nF MKH
R7	13-295	10 KΩ " "	C7	11-406	330 pF Ker.
R8	13-283	1 KΩ " "	C8	11-504	4,7 μF/10 V Tant.
R9	13-295	10 KΩ " "	C9	11-507	22 μF/16 V Tant.
R10	19-263	100 KΩ Trim.	C10	11-409	1 nF Ker.
R11			C11	11-501	0,47μF/35 V Tant.
R12	13-295	10 KΩ 1/8 W CR16	C12	11-507	22 μF/16 V Tant.
R13	13-271	100 Ω " "	C13	11-489	22 nF MKH
R14			C14	11-501	0,47μF/35 V Tant.
R15	13-304	68 KΩ " "	C15	11-488	6,8 nF MKH
R16	13-297	15 KΩ " "	C16	11-397	68 pF N750 Ker.
R17	13-299	22 KΩ " "	C17	11-486	2,2 nF MKH
R18	13-300	33 KΩ " "	C18	11-507	22 μF/16V Tant.
R19	13-302	47 KΩ " "	C19	11-406	330 pF Ker.
R20	13-295	10 KΩ " "	D1	04-062	1N4148
R21	13-287	2,2 KΩ " "	D2	04-062	1N4148
R22	13-295	10 KΩ " "	D3	04-062	1N4148
R23	13-302	47 KΩ " "	D4	04-062	1N4148
R24	13-301	39 KΩ " "	D5	04-062	1N4148
R25	13-297	15 KΩ " "	D6	04-062	1N4148
R26	13-285	1,5 KΩ " "			
R27	13-309	220 KΩ " "	Q1	19-084	BC 308B
R28			Q2	19-117	BC 238
R29	13-299	22 KΩ " "			
R30	13-308	150 KΩ " "	IC1	09-080	LM 358N
R31	13-306	100 KΩ " "	IC2	09-080	LM 358N
R32	13-306	100 KΩ " "			
R33	13-287	2,2 KΩ " "			
R34	13-291	4,7 KΩ " "			
R35	19-255	2,2 KΩ Trim.			

Modulation amplifier
Print board C 61 C1
Tilhører tegn. nr.: 79112-3E2

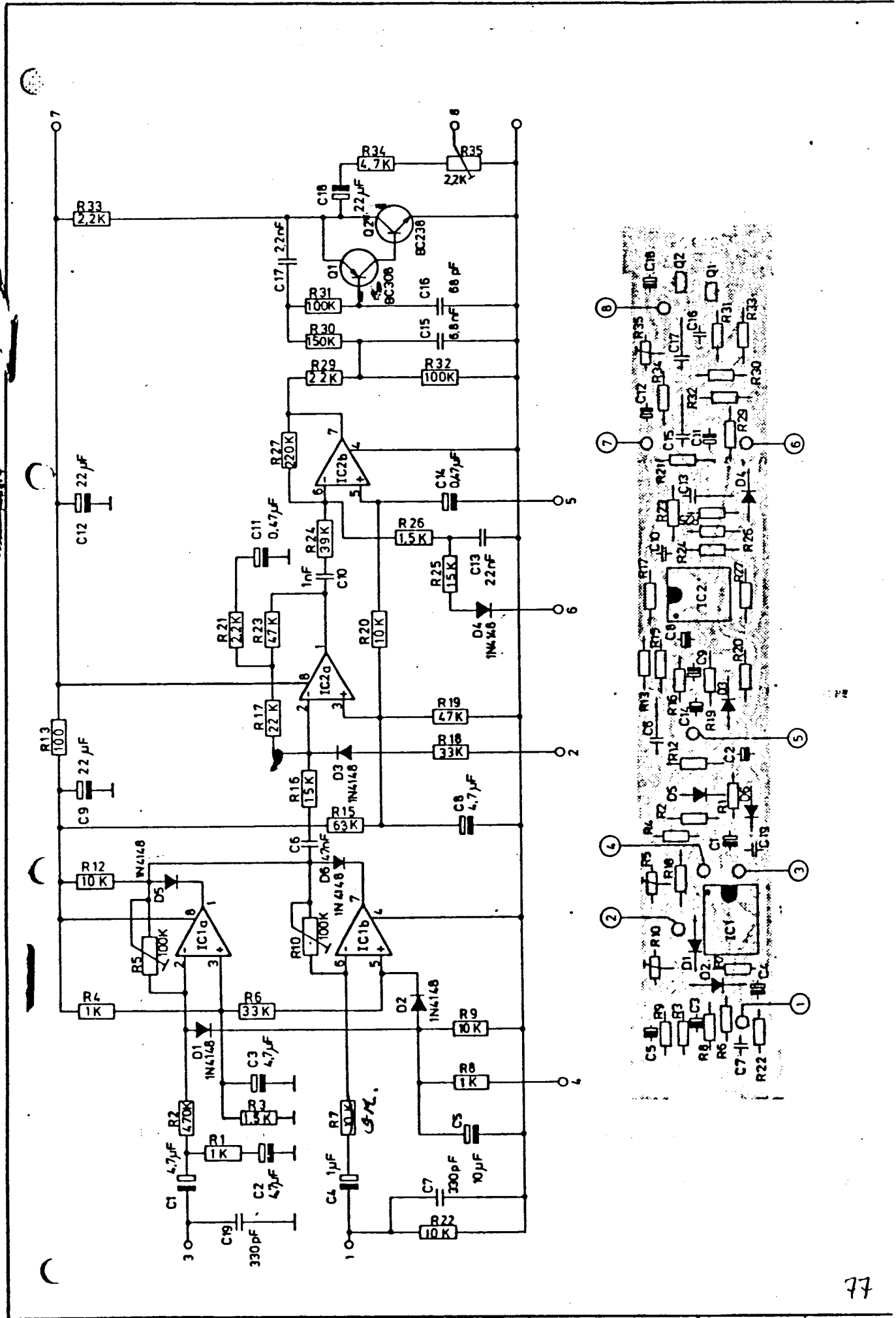
Rettet:

Tegn.:

Stykl. nr.

Kontl.:

79112-4S2



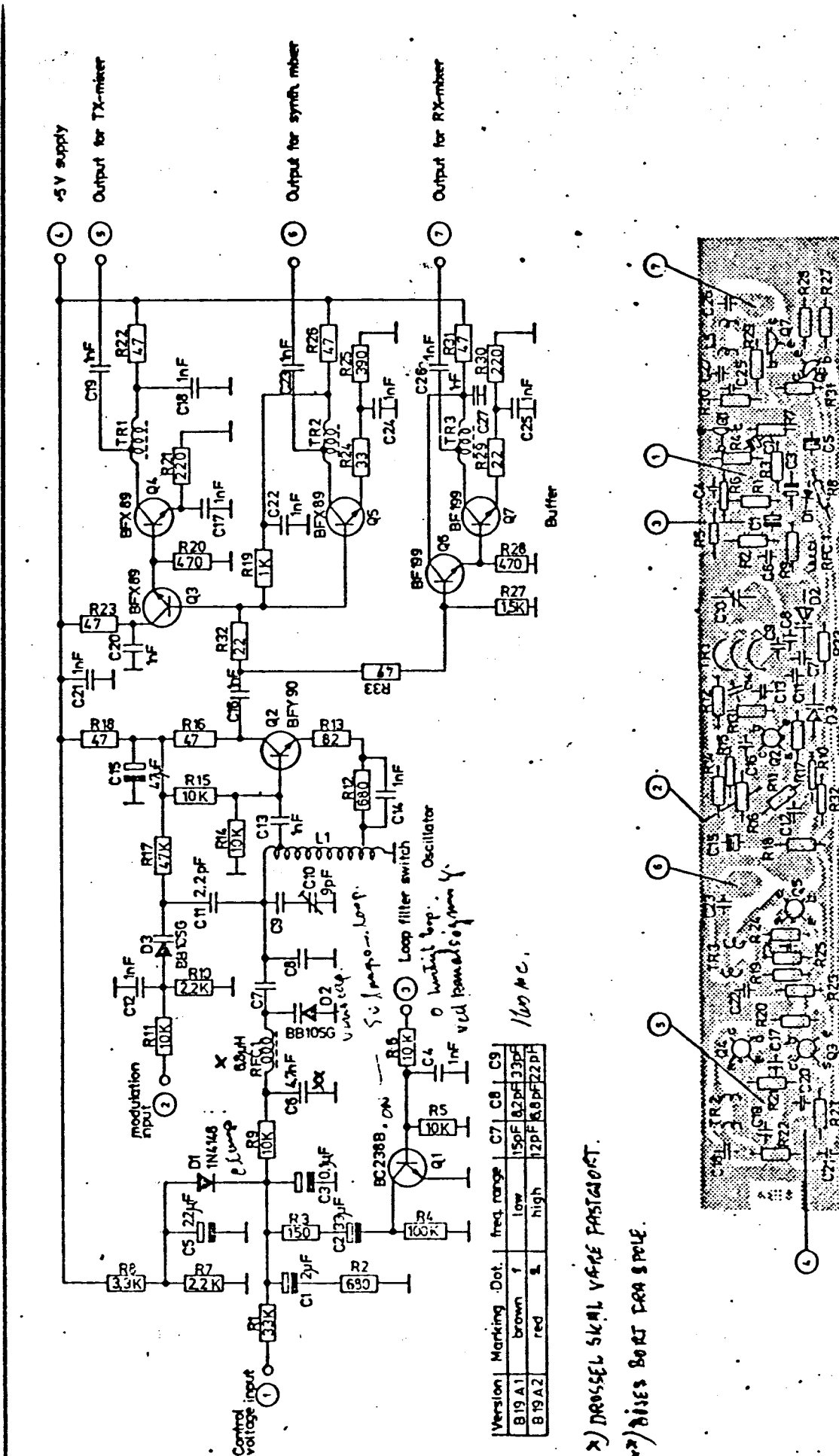
Ротар: 2-10-79 AC/58
 10-1-90 BC/58
 12-1-90 BC/58

Modulation amplifier Print board C61C1

Тегн.: 3-7-79 BC
 Стил. нр.:
 Тегн. нр.:
 Контр.:

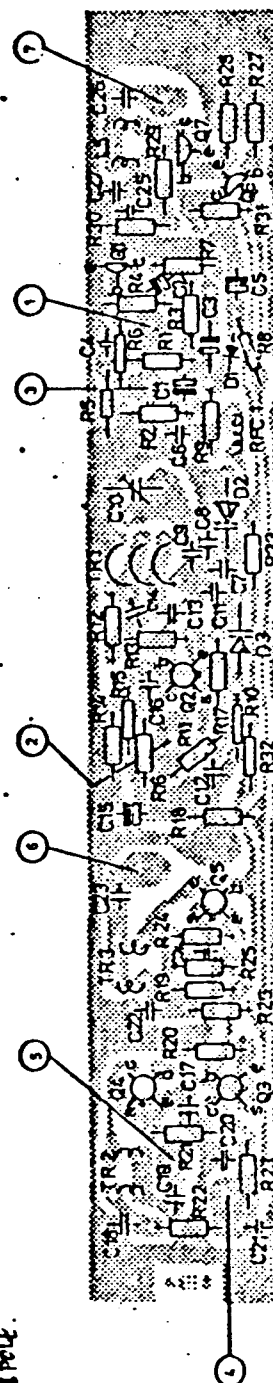
AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-295	10 KΩ 1/8W CR 16	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.: Stykl. nr.: Kontr.: 75018-4S2



X) DROUSEL SKAL VARE FASTGJØRT.

2) RISES BORT PRA SPELE.



Rollot: 26-6-75 E11

Voltage controlled oscillator for 2m.
Print board B19 A 1,2

AP-RADIOTELEFON

Tegn.: 7-3-75

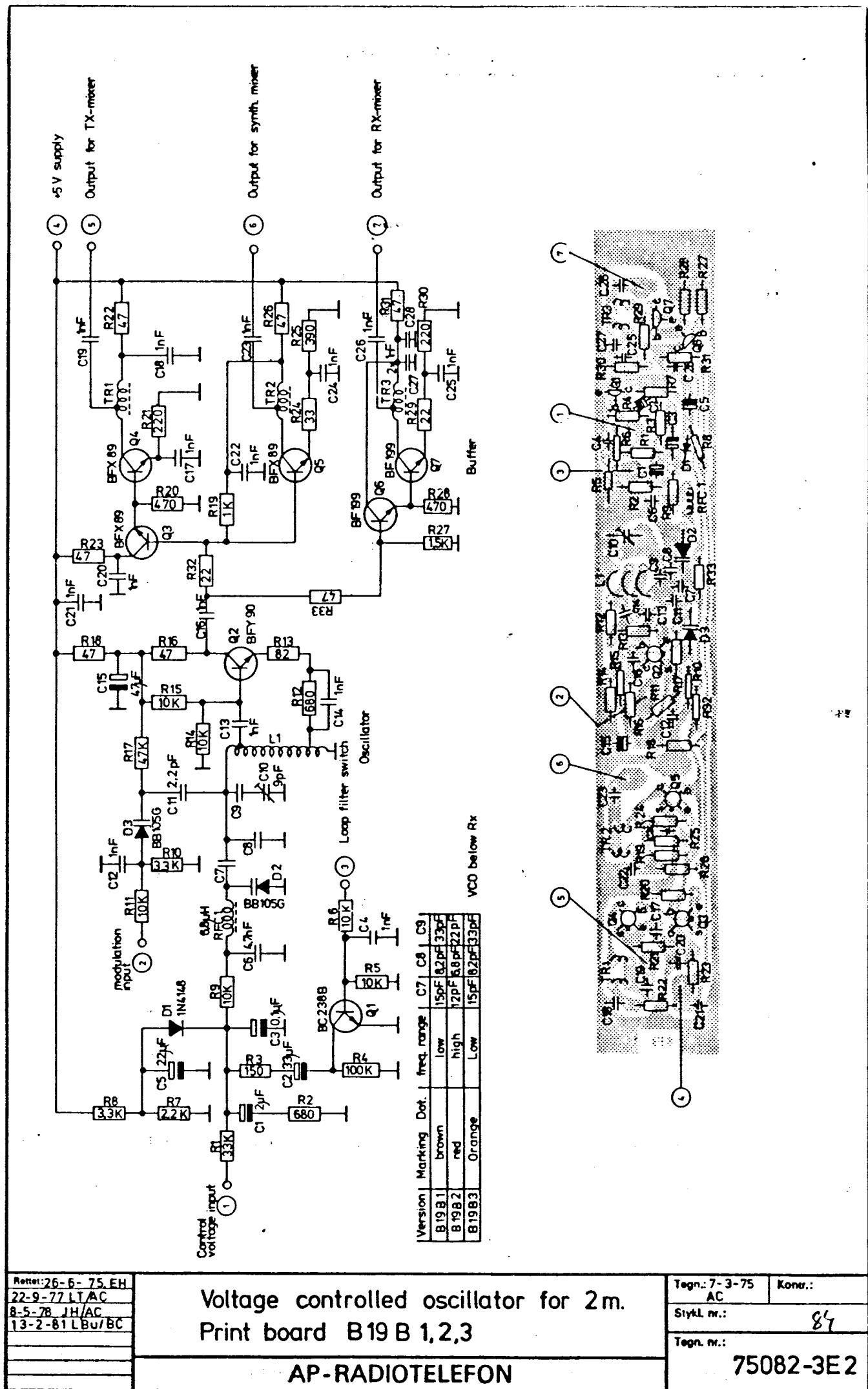
Stykl. nr.:

Tegit. nr.:

Komr.:

83

75082-3E2



Rettel: 26-6-75.EH
 22-9-77.LT/AC
 8-5-78.JH/AC
 13-2-81.LBu/BC

Voltage controlled oscillator for 2m.
 Print board B19 B 1,2,3

AP-RADIOTELEFON

Tegn.: 7-3-75

Konr.:

Stykl. nr.:

84

Tegn. nr.:

75082-3E2

Ved underliggende VCO udregnes x-taller og frekvenser således:

VCO-frekvensen F_{VCO} udregnes efter:

$$F_{VCO} = F_{RX} - 21,4 \text{ MHz}$$

Synthesemixerkrystaller udregnes efter:

$$F_X = \frac{F_{RX} - (N \times 0,025) - 21,4}{3} \quad 25 \text{ kHz kanalafs}$$

Deleforholdet N er da:

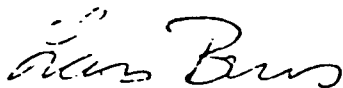
$$N = \frac{F_{RX} - 3 F_X - 21,4}{0,025}$$

$$\text{hvor } 3F_X + N \times 0,025 = F_{VCO}$$

Senderblanderkrystal ap 22:

$$F_X = \frac{F_{TX} - F_{RX} + 21,4}{2}$$

Med venlig hilsen



Lars Buus

underliggende VCO for 2m.

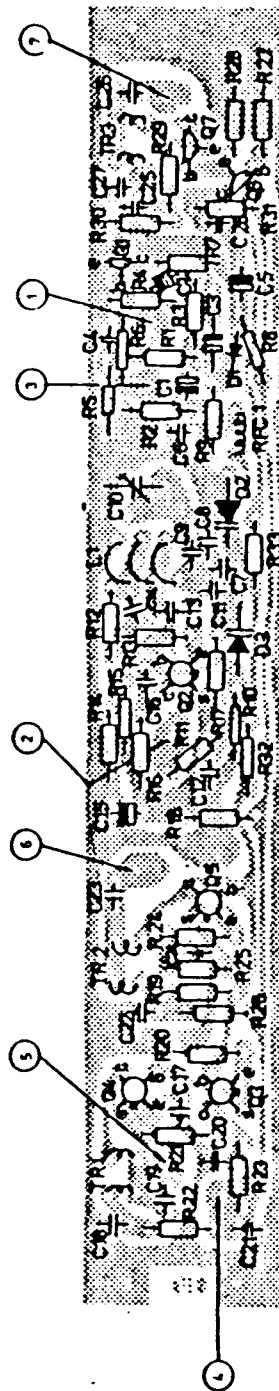
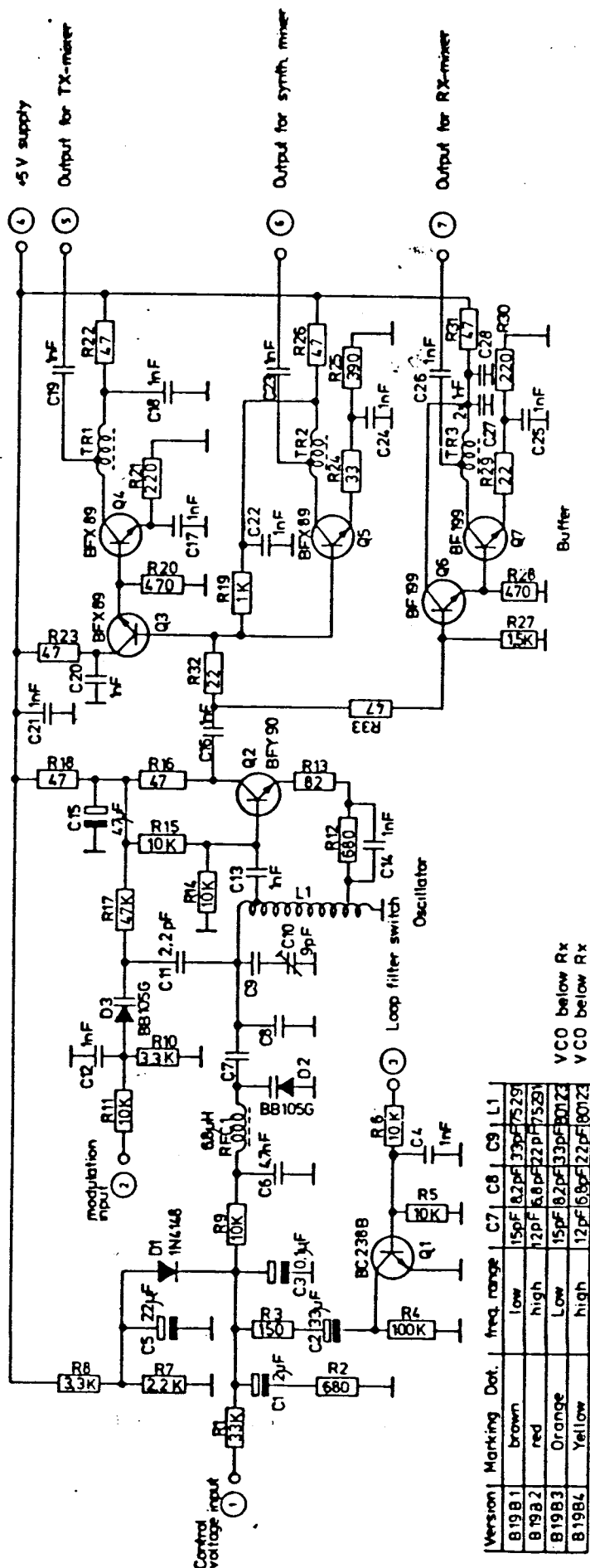
Renr: 26-6-75 EH
22-9-77 LTAC
8-5-78 JH/AC
13-2-81 LBu/bc
27-7-81 LBu/bc

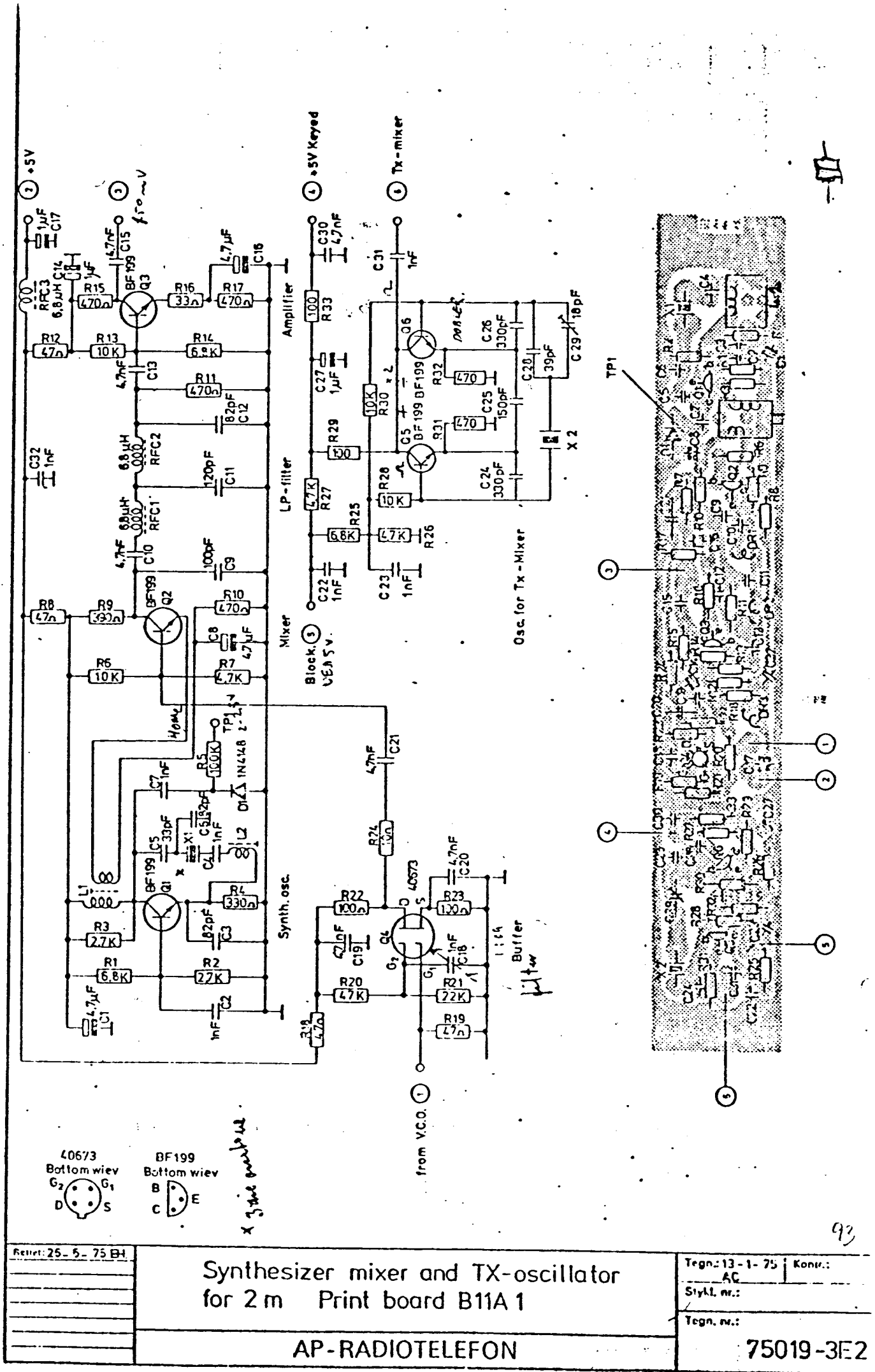
Voltage controlled oscillator for 2m.
Print board B19 B 1,2,3,4

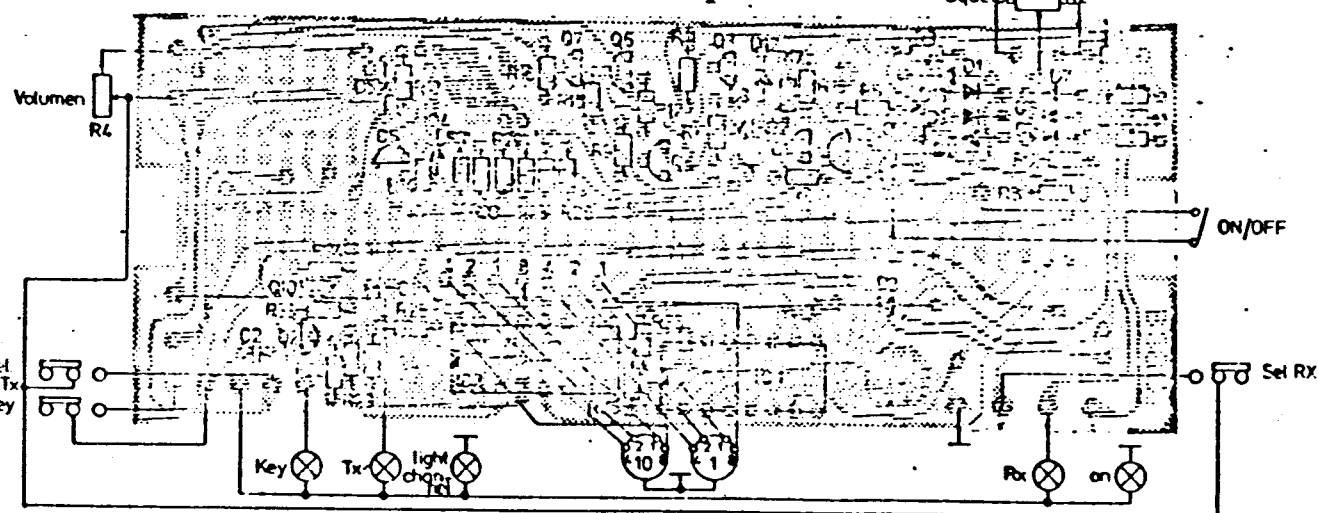
AP-RADIOTELEFON

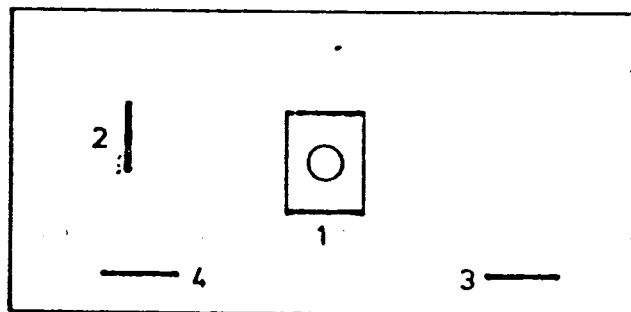
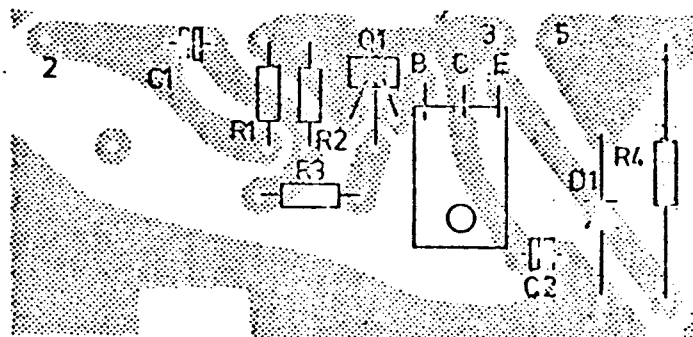
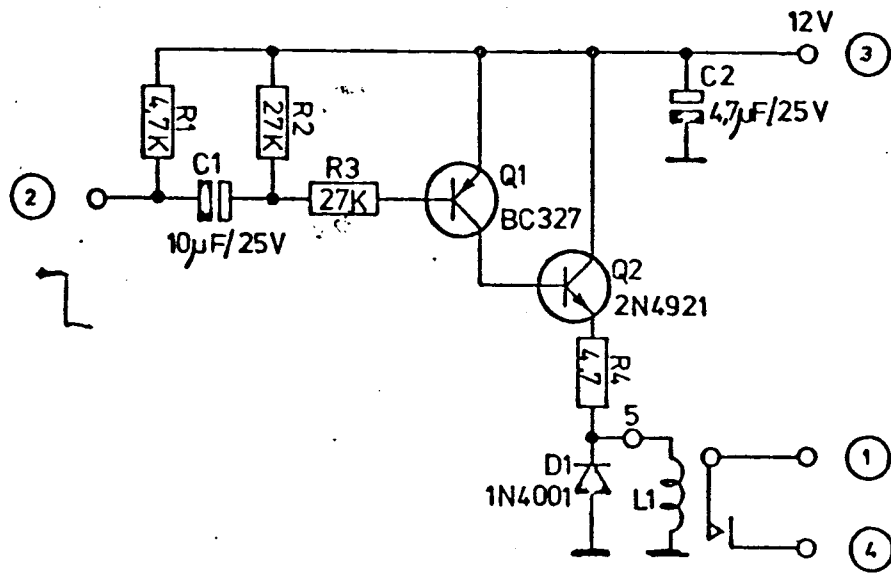
Tegn.: 7-3-75
AC
Stykt. nr.: 28
Tegn. nr.:

75082-3E2









Relay box

Hottol: 23-3-76 AOU

Extern timing for hornrelay
Print board B 34 B 1

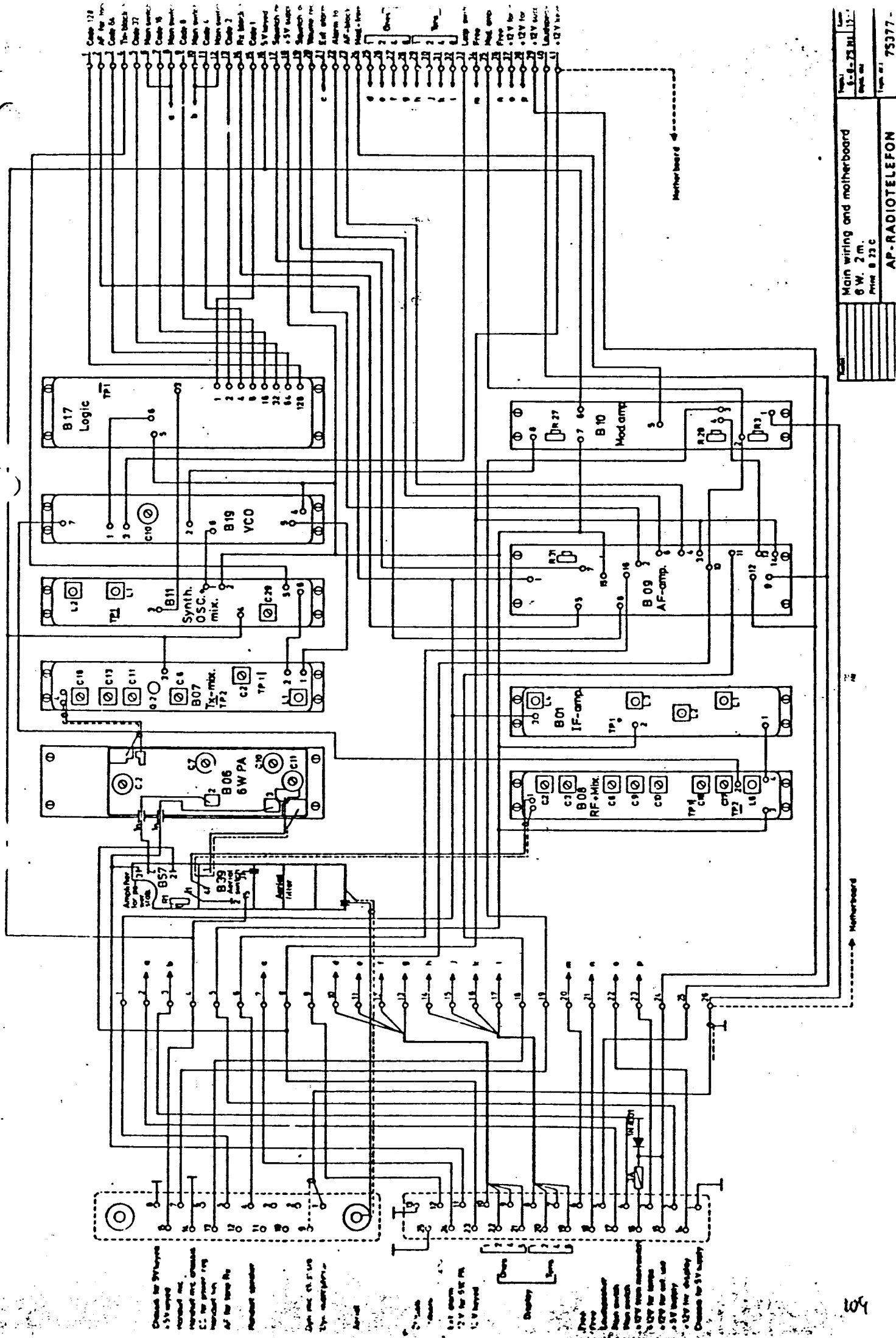
Tegn.: 21-4-75
AC

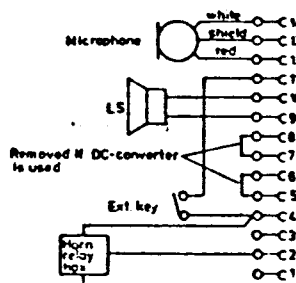
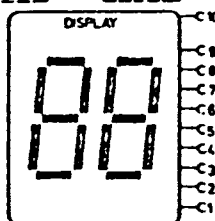
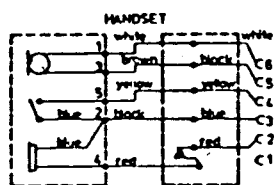
Kontr.: 21-4-75
TJ

Stykl. nr.: 75169-4S2 102

AP-RADIOTELEFON 7

Tegn. nr.: 75169-4E2

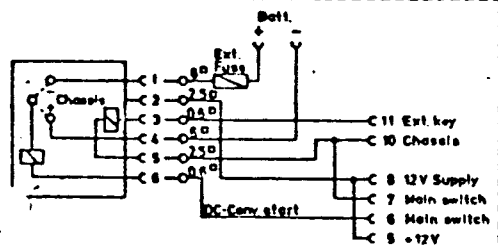




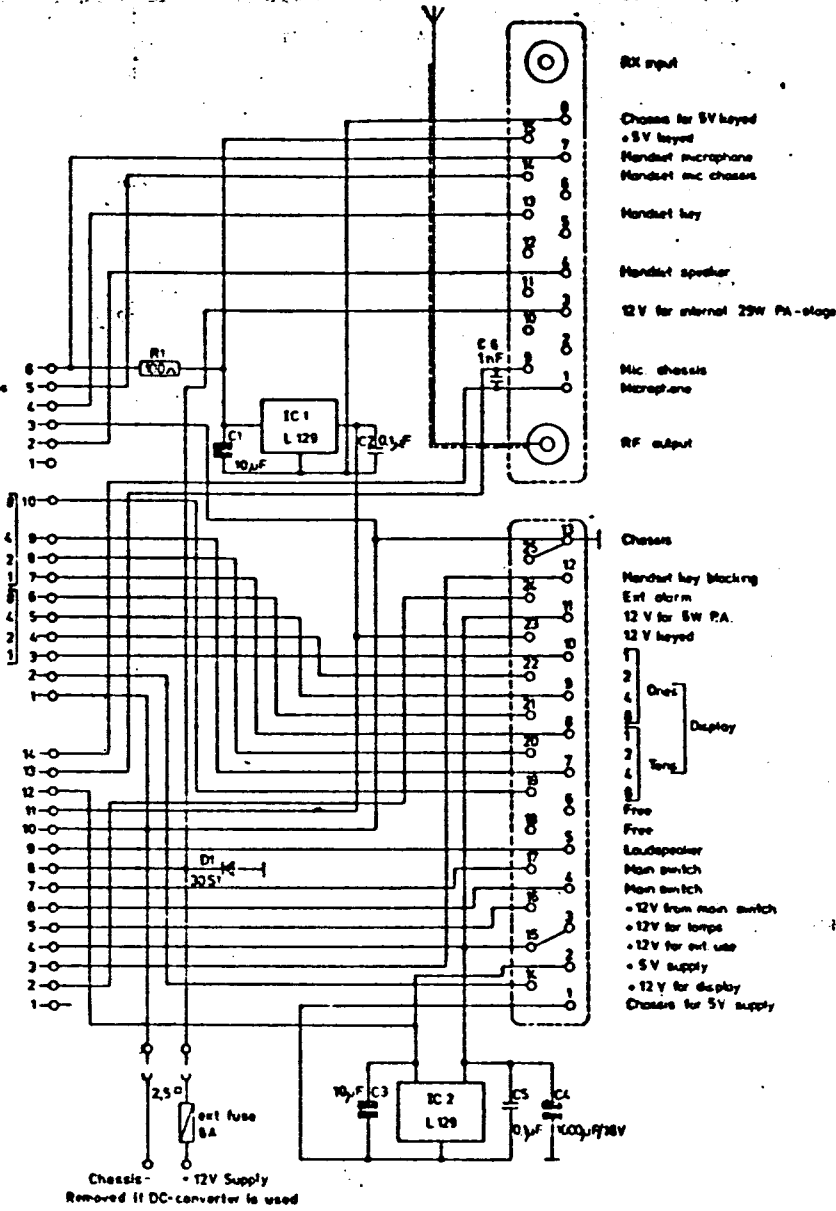
Handset mic
Handset mic chassis
Handset key
Chassis
Handset speaker

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

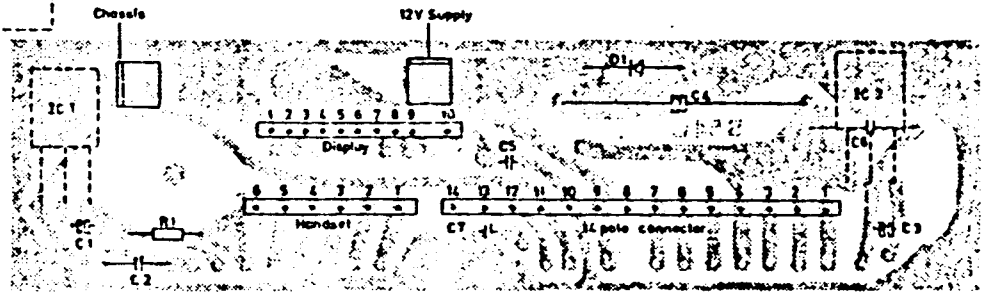
Microphone
Mic chassis
+5V
Ext key
Chassis
Loudspeaker
12 V supply
Main switch
Main switch
+12V
+12V for key
Handset key block
External alarm

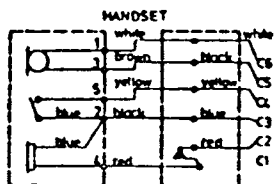


Connections for AP DC-Converter
6V or 12V: Dwg. no. 68171/4 Stock no. 203-001
24V: Dwg. no. 68194/4 Stock no. 203-002
(Can not be used at 25W UHF)

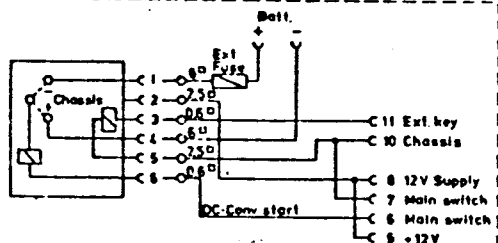
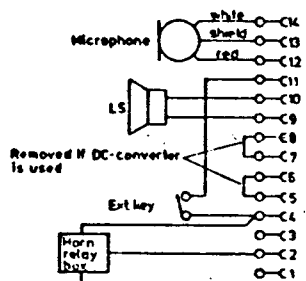
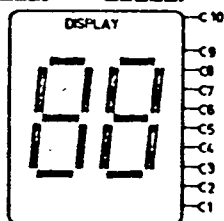


BX input
Chassis for 5V keyed
+5V keyed
Handset microphone
Handset mic chassis
Handset key
Handset speaker
12V for internal 25W PA-stage
Mic chassis
Microphone
RF output
Chassis
Handset key blocking
Ext alarm
12 V for 5W PA
12 V keyed
Dres
Tong
Free
Free
Loudspeaker
Main switch
Main switch
+12V from main switch
+12V for lamps
+12V for ext. use
+5V supply
+12V for display
Chassis for 5V supply

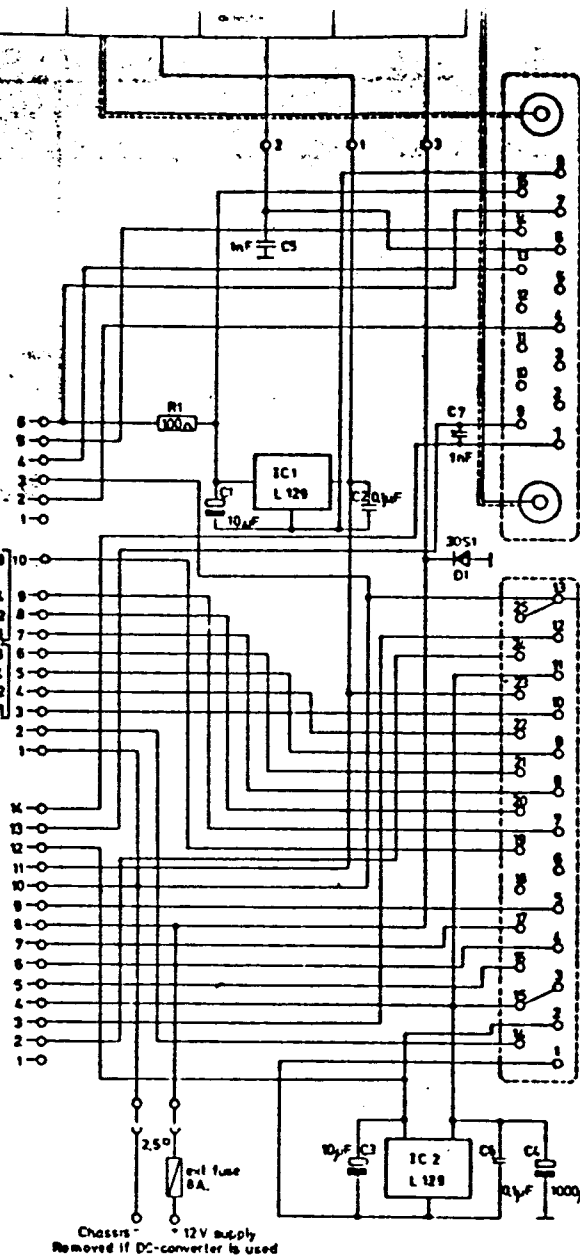




Handset mic chassis
Handset key
Chassis
Handset speaker



Connections for AP DC-Converter.
6V or 12V: Dwg no. 88171/4 Stock no. 203-001
24V: Dwg no. 88194/4 Stock no. 203-002
(Can not be used at 25W UHF)



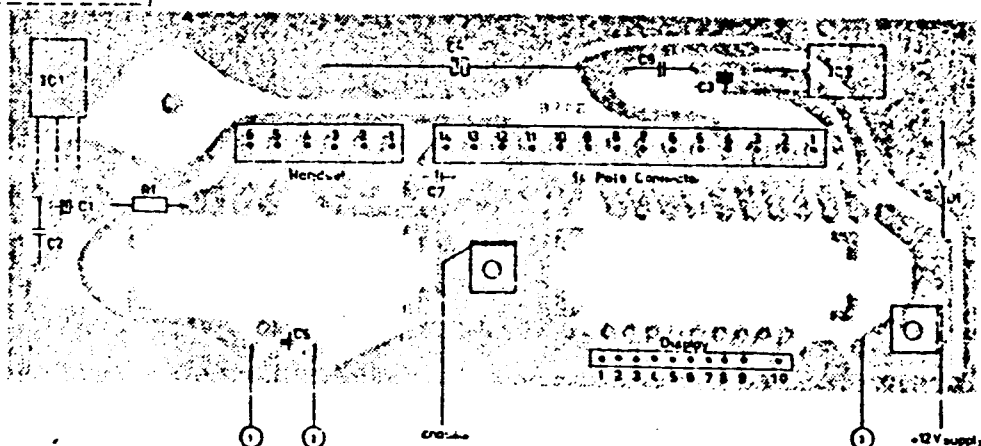
Ext input
Chassis for SV keyed
+SV keyed
Handset microphone
Handset mic chassis
DC for pager reg
Handset key
AF for tone Rx
Handset speaker

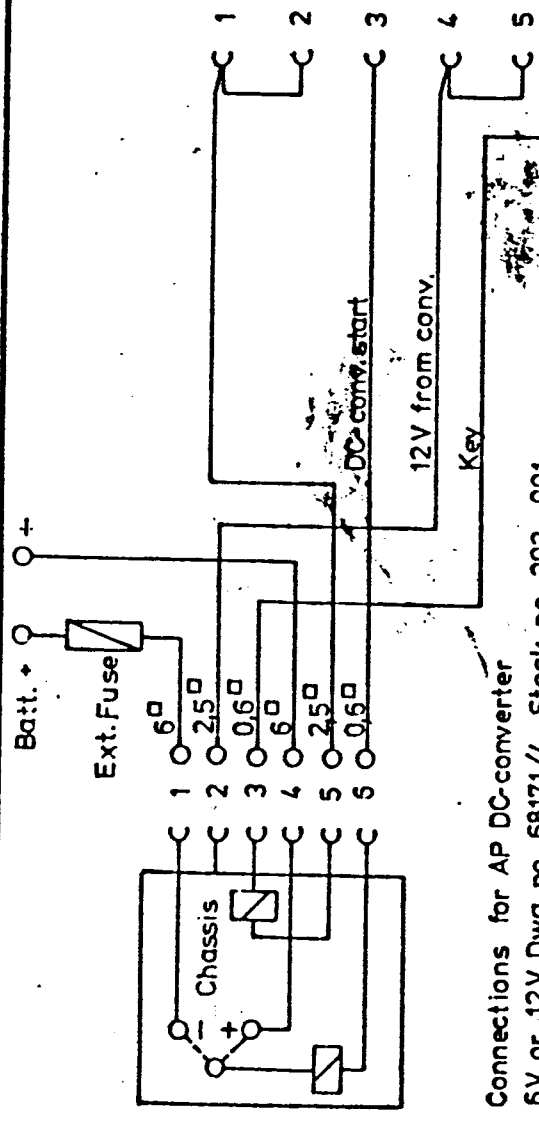
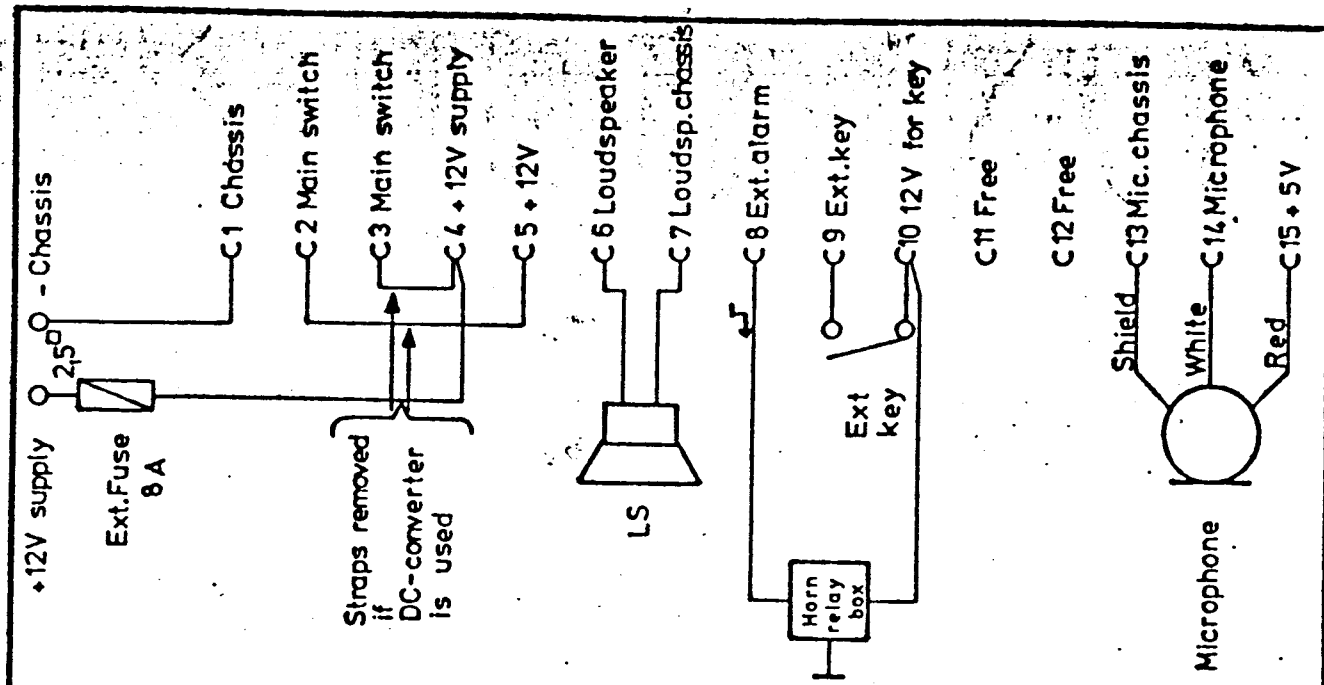
Mic. chassis
Microphone

6W drive output

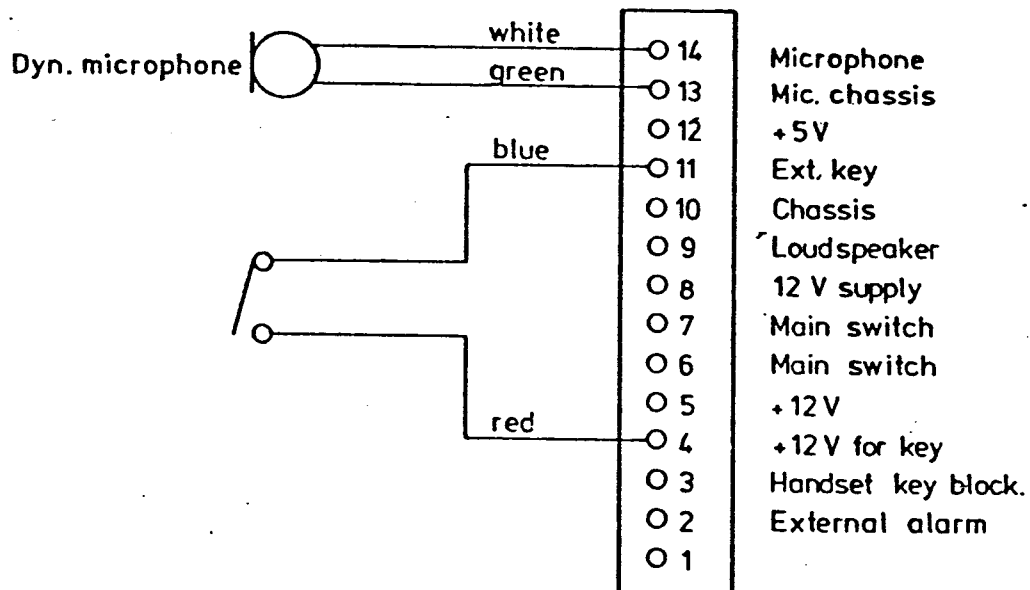
Chassis
Handset key blocking
Ext alarm
12V for 6W PA
12V keyed

Free
Free
Loudspeaker
Main switch
Main switch
+12V from main switch
+12V for lamps
+12V for ext use
+SV supply
+12V for display
Chassis for SV supply

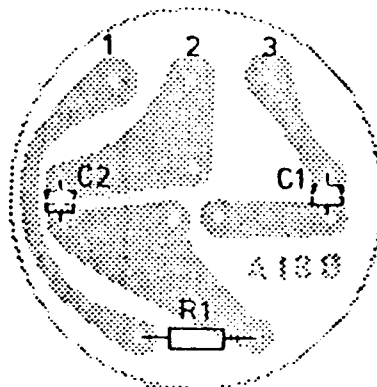
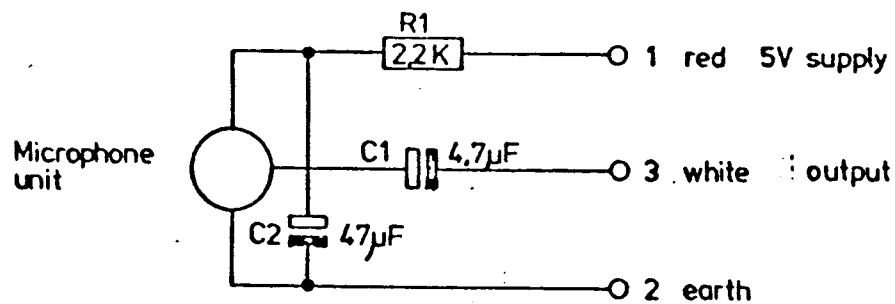




Rottlet: 30-3-77 LT/NC	Installation for AP 2000 with printconnector AP-RADIOTELEFON	Tegn.: 10-1-77 HJ. Stykl. nr.:	Kontr.: 12-1-77 BJ. 113 Tegn. nr.: 77001-4E2
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Rettet:	Installation for close talk microphone, AP 2000	Tegn.: 4-11-76 AC	Kontr.:
		Stykl. nr.:	114
		Tegn. nr.:	76327-4E2
		AP-RADIOTELEFON 1/2	



Reitet:

Microphone 213-020
Print board B 81 A1

AP-RADIOTELEFON 1/2

Tegn.: 4-3-77
AC

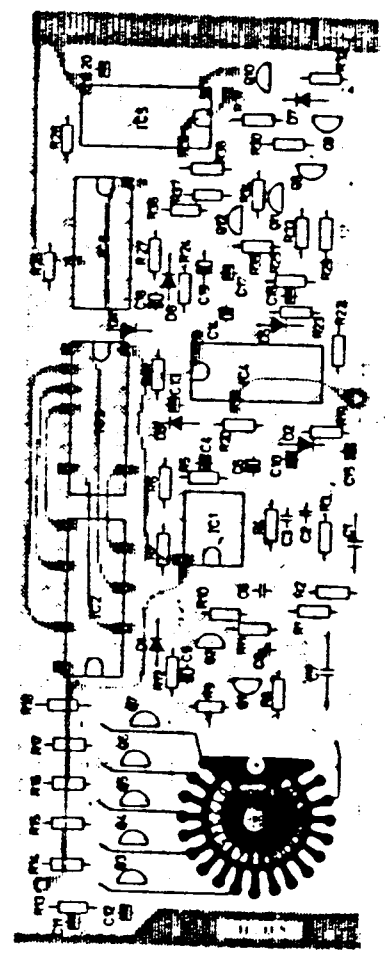
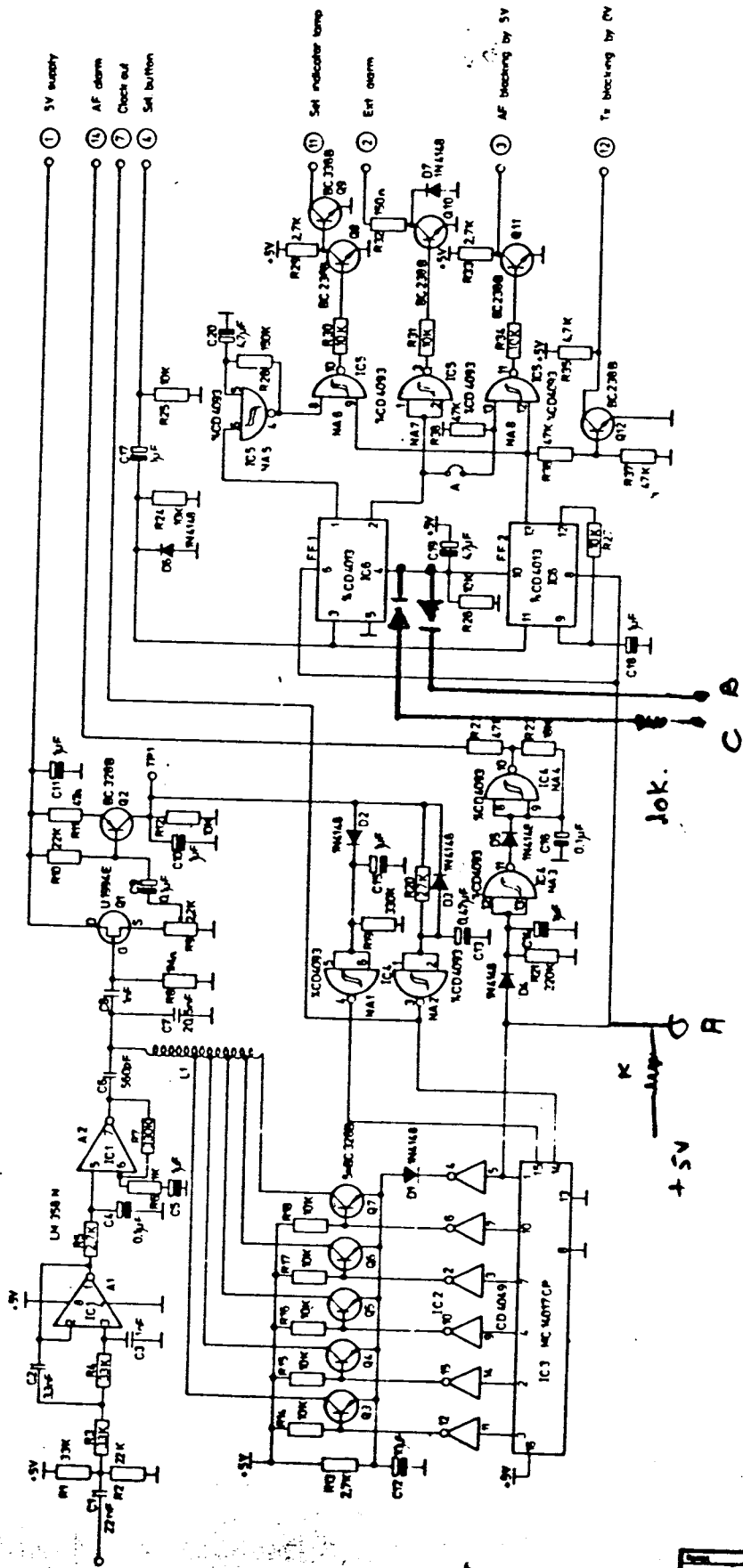
Kontr.:

Stykl. nr.:

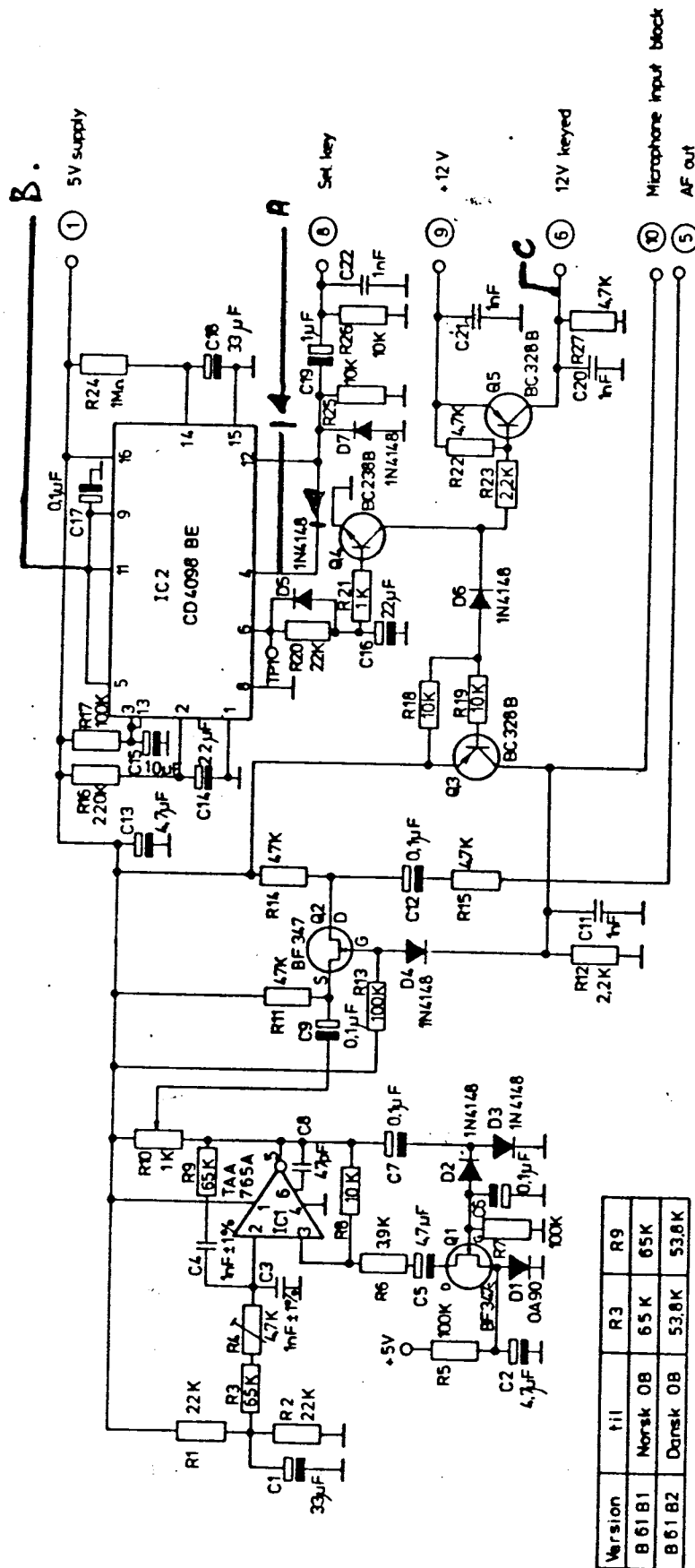
115

Tegn. nr.:

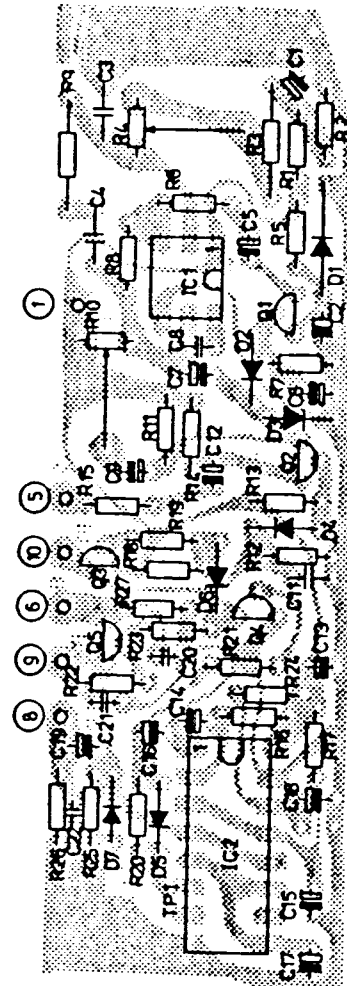
77127-4E2



5% TAXA KANAL 12.



Version	R1	R3	R9
B 61 B1	Norsk 08	65 K	65 K
B 61 B2	Dansk 08	53.8 K	53.8 K



Retter:
7-3-77 LT/NC
21-3-77 HJ
19-1-79 JH/AC
2-8-79 POR/AMC

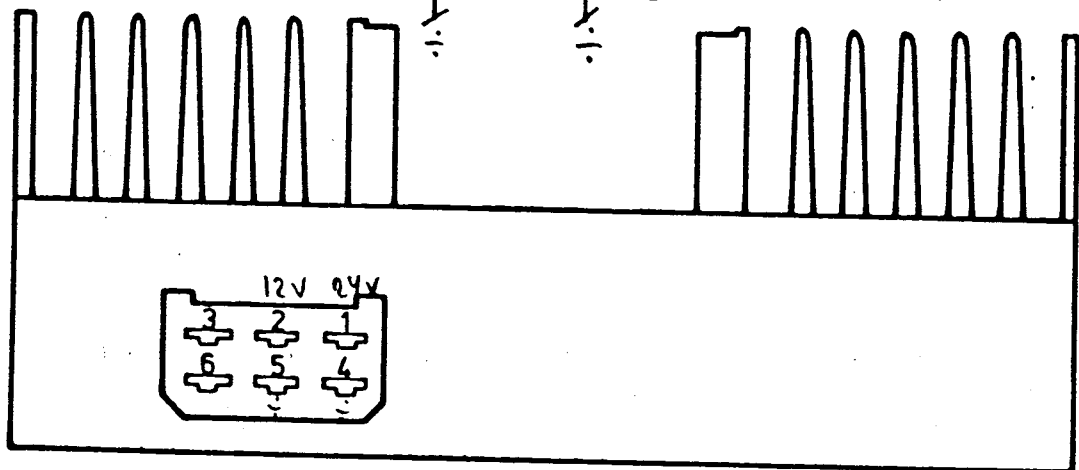
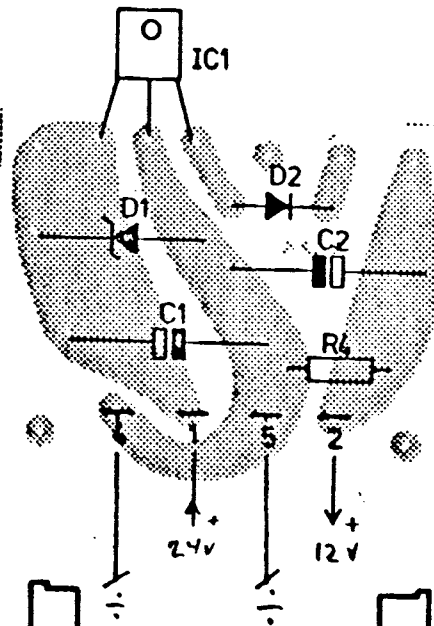
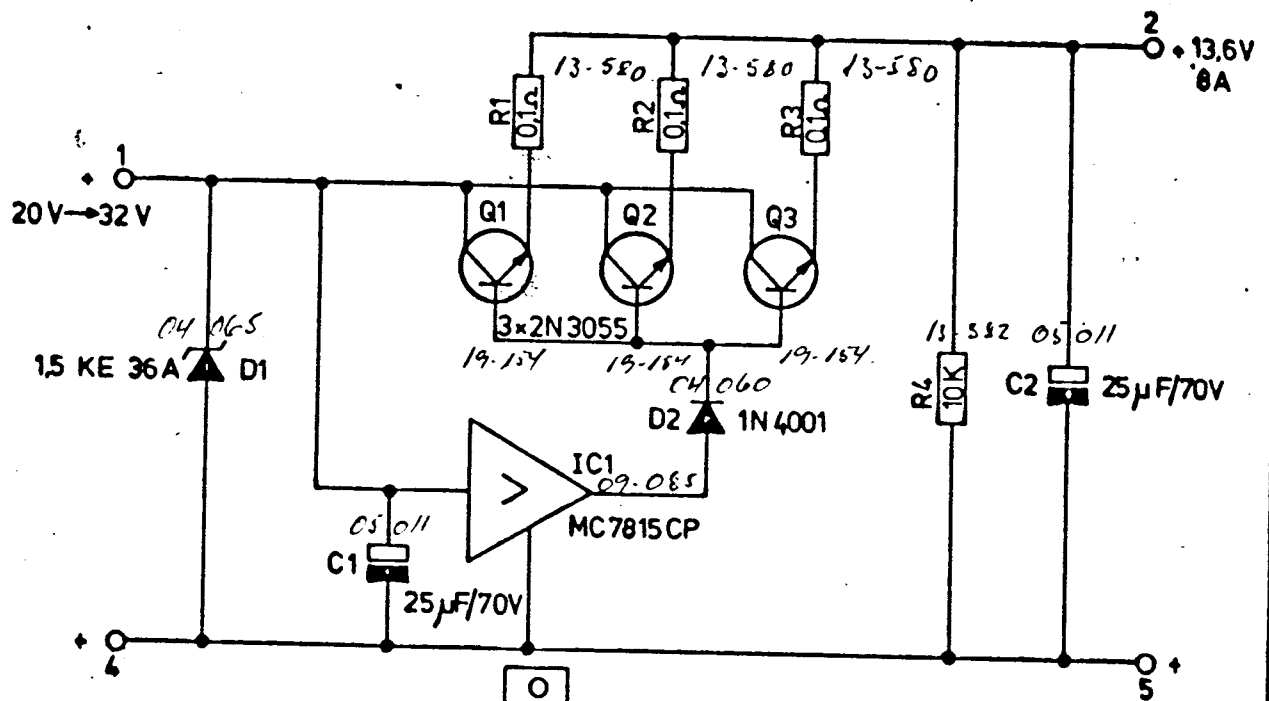
1-tone transmitter with timing circuit
Print board B61B1,B2

AP-RADIOTELEFON

Tegn.: 9-1-75
AC
Sijl. nr.:
Tegn. nr.:

76008-

L. SCHWANK. MANUEK. 132.



BELAST. 1V MED. 4H = 3.5Ω ~ 50W

Rettet: 14-3-77 TP/AC	24/12 V Regulering PS 13. Stock no. 203-003	Tegn.: 2-2-76	Kontr.:
6-6-77 BJ/AC	Print board B82 A1	AC	
		Stykl. nr.:	77081-4S2 119
		Tegn. nr.:	77081-AE2
	AP-RADIOTELEFON 1/2		

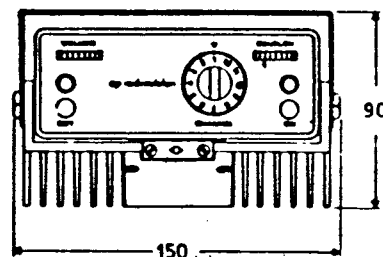
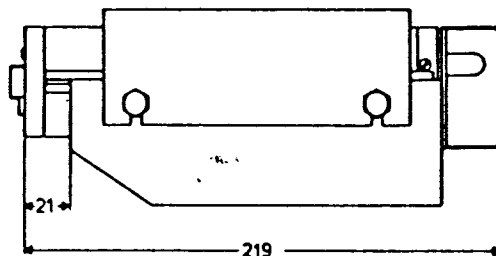
CARRYING BAGS - SUMMARY

Frequency band	Radio unit	Carrying bag	RF-power as portable	RF-power with ext. 12 V	Battery lifetime as portable at 10% key.
4 m	6W 201-029 25W 201-037 Intermitt.	<i>Super PA. Unit</i> 215-015	2W 6W	6W 25W	10 hours 7 hours
2 m	6W 201-028 25W 201-036 Intermitt.	<i>Super PA. Unit</i> 215-015	2W 6W	6W 25W	10 hours 7 hours
UHF	6W 201-030 10W 201-030	215-015	2W 2W	6W 10W	10 hours 10 hours
4 m	25W 201-026 continuous	215-016 with PA-stage	6W	25W	7 hours
2 m	25W 201-025 continuous	215-017 with PA-stage	6W	25W	7 hours
UHF	25W 201-027 continuous	215-018 with PA-stage	5W	25W	7 hours
Danish Norwegian 80 channel UHF MTD	25W 201-027	215-018 with PA-stage	5W	25W	6 hours
80 channel UHF MTD with scan.	25W 201-032	215-019 extended and with PA-stage <i>For LFMGET.</i>	5W	25W	6 hours
65 channel 2 m Norwegian Public telephone	25W 201-025	215-017 with PA-stage	6W	25W	6 hours
Norwegian 2m dual Rx	15W 201-046	215-020			
Finnish public telep.	15W 201-044	without PA-stage	6W	15W	6 hours

Dimensions and weights in millimeters and kg.

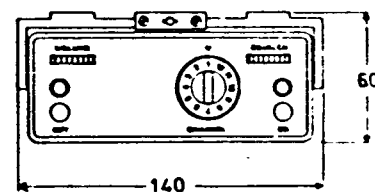
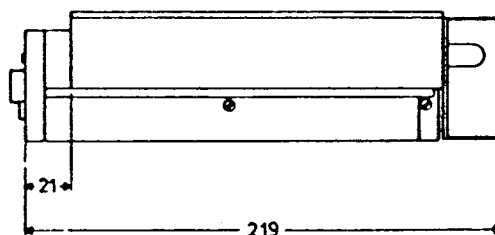
Cassette station with external PA-stage 25W continuous

Total weight: 3,1 kg



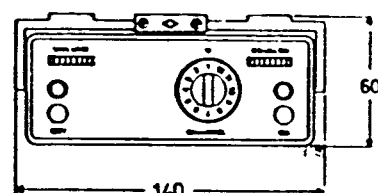
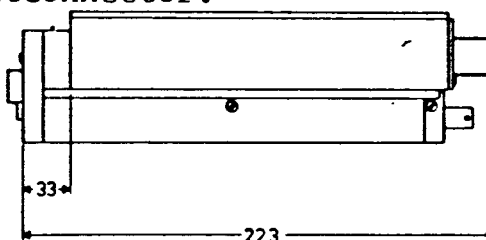
Cassette station without external PA-stage 6W and 25W/UHF 10W intermittent

Total weight: 2,2 kg



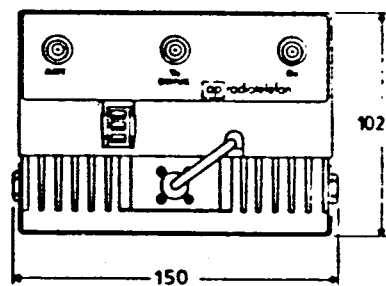
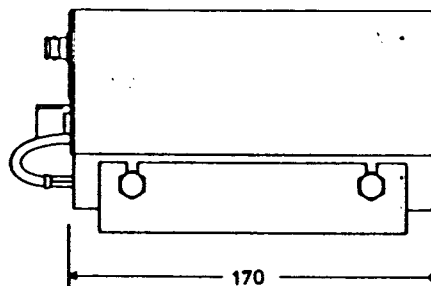
Cassette station without external PA-stage 6W and 25W/UHF 10W intermittent, with printconnector.

Total weight: 2,2 kg



Duplexfilter with external PA-stage

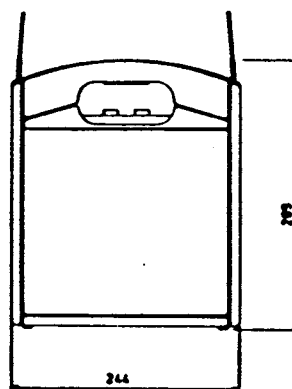
Total weight: 3,1 kg

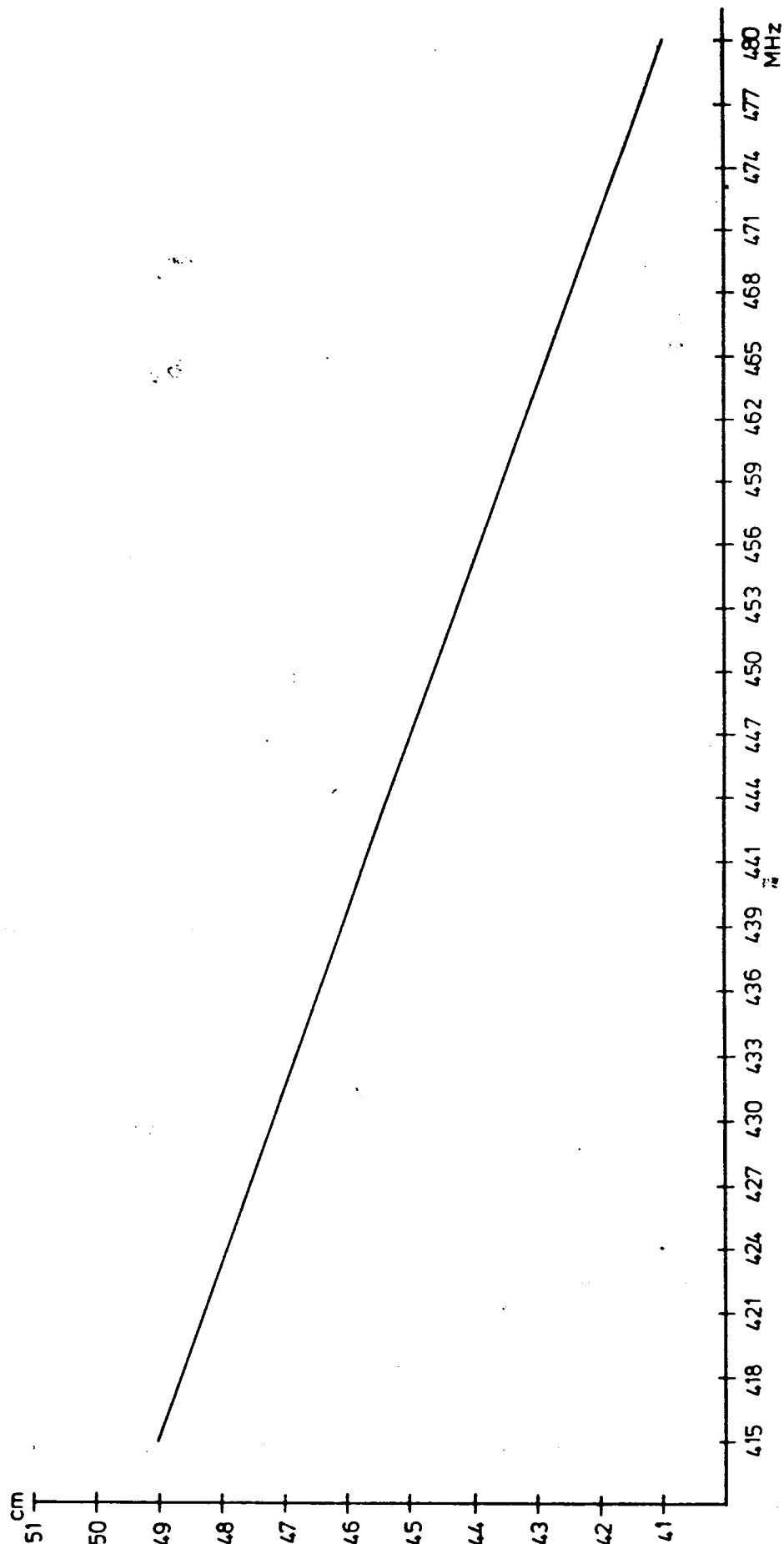
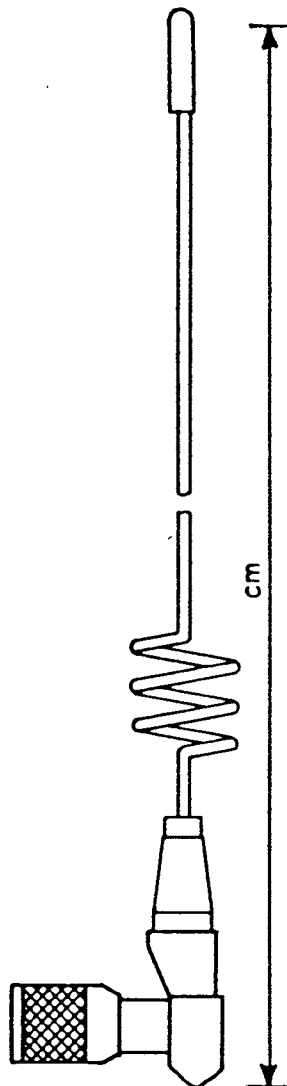


Portable station

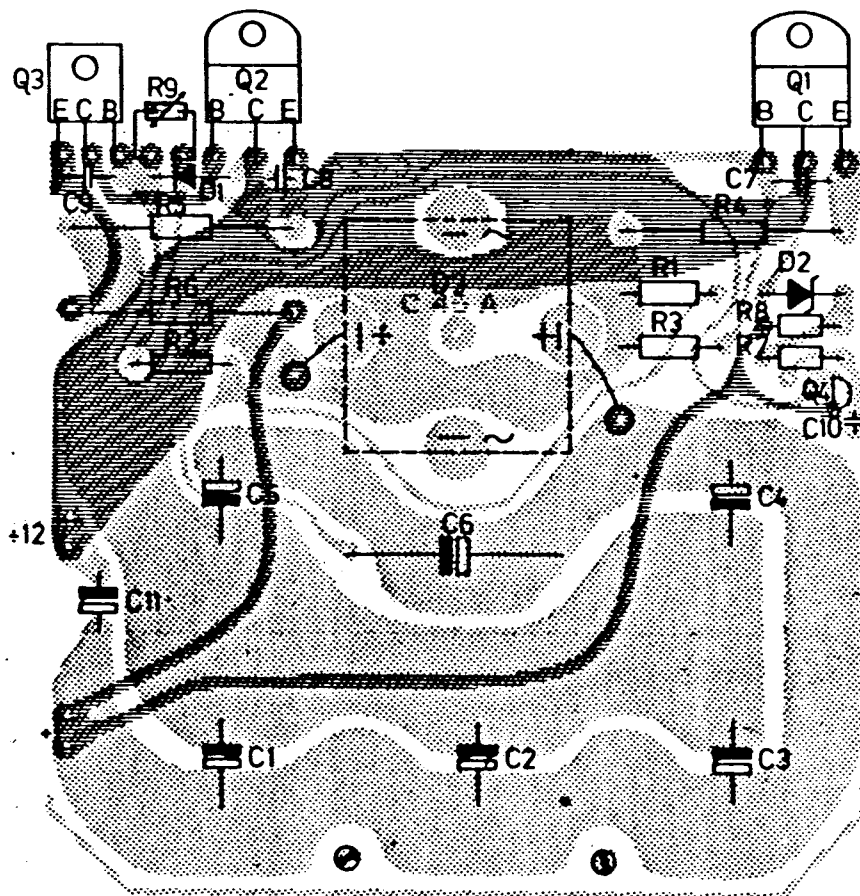
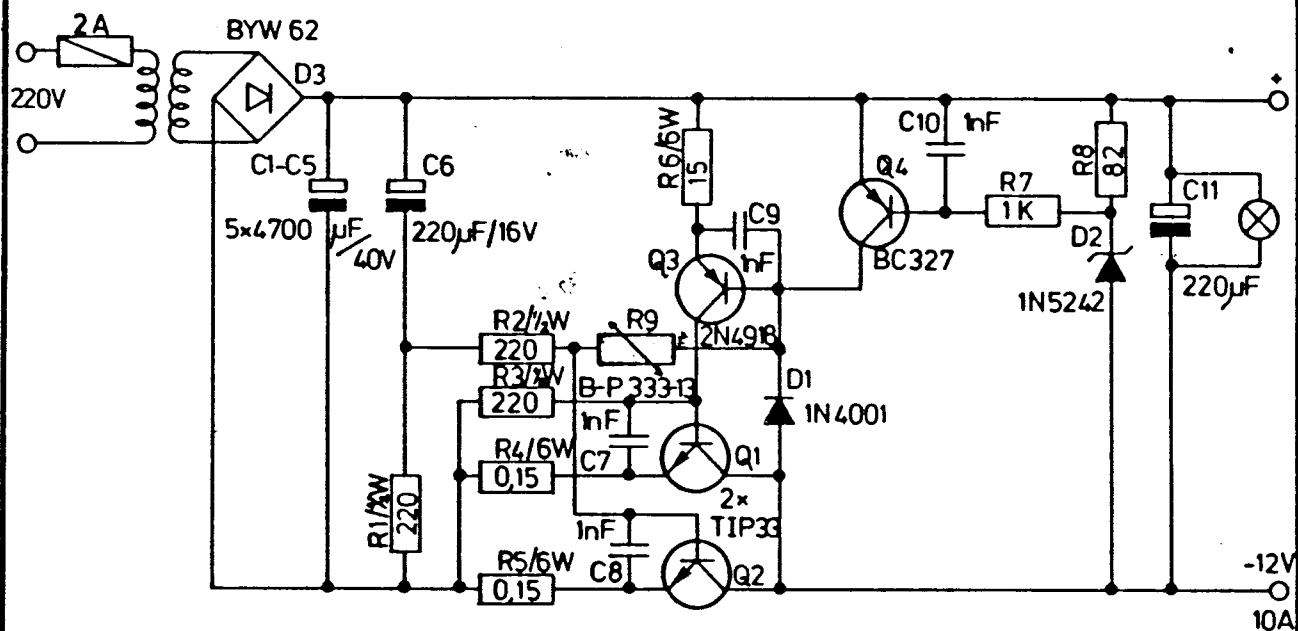
Total weight with
batteri unit: 5,2 kg

Cassette station alone: 1,5 kg
Cassette dimensions: 50x170x200 mm.





Rettet: _____ _____ _____ _____ _____ _____ _____	Antenna length for carryingbags UHF band		Tegn.: 9-5-78 AMC	Kontr.:
	01-129		Stykl. nr.:	
	AP-RADIOTELEFON 7s		Tegn. nr.:	
			78074-4E2 132	



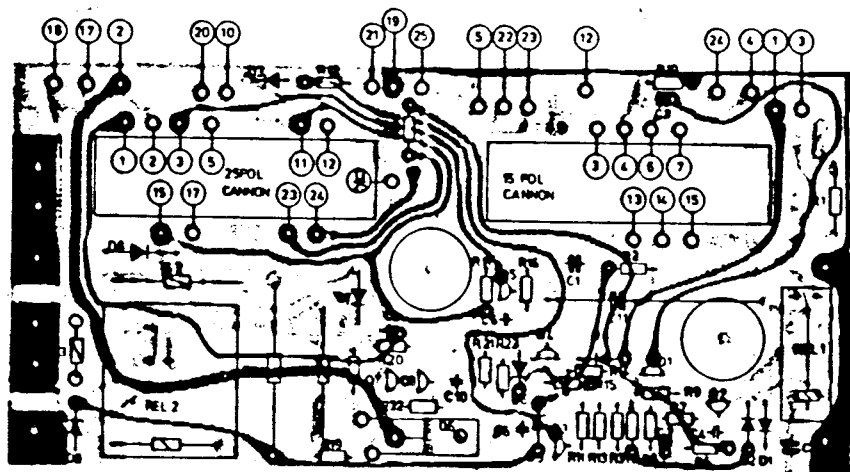
Rettet: _____ _____ _____ _____ _____ _____ _____	Strømforsyning for bæretaske 218-050	Tegn.: 20-2-79 AMC	Kontr.: 27-2-79 IM
		Stykl. nr.:	
	AP-RADIOTELEFON 1/2	Tegn. nr.:	
		79031 - 4E2 135	

Strømforsyning 218-050

Data for strømforsyning for bæretaske:

Input spænding	: 200 - 240 V 50 Hz
Input strøm	: Max. 1 A
Output spænding	: 12 - 13 V DC
Output strøm	: Max. 10 A
Max. temperatur på kasse	: 90° C
Max. belastning	: 10 A i et minut og 1 A i fem min.
Middel strøm ved 25° C og 220 V	: 3,5 A.

79032-4E2



AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1	13-359	100 Ω 1/4W	REL2	17-041	MSK 12 PASI
R2	13-275	220 Ω 1/8W			
R3	13-287	2,2 K Ω "	D1	04-062	1N4148
R4	13-294	8,2 K Ω "	D2	04-062	1N4148
R5	13-283	1 K Ω "	D3	04-062	1N4148
R6	13-283	1 K Ω "	D4	04-062	1N4148
R7	13-272	120 K Ω "	D5	04-062	1N4148
R8	13-280	560 K Ω "	D6	04-045	BZX83-C4V3
R9	13-295	10 K Ω "	D7	04-060	1N4001
R10	13-295	10 K Ω "	D8	04-040	30S1
R11	13-295	10 K Ω "	D9	04-0628	1N4148
R12	13-295	10 K Ω "			
R13	13-283	1 K Ω "	Q1	19-093	BC238B
R14	13-295	10 K Ω "	Q2	19-093	BC238B
R15	13-295	10 K Ω "	Q3	19-095	BC327
R16	13-283	1 K Ω "	Q4	19-093	BC238B
R17	13-283	1 K Ω "	Q5	19-095	BC327
R18	13-291	4,7 K Ω "	Q6	19-176	2N4918
R19	13-283	1 K Ω "	Q7	19-093	BC238B
R20	13-291	4,7 K Ω "	Q8	19-093	BC238B
R21	13-283	1 K Ω "			
R22	13-275	220 Ω "	S1	18-013	0,5 A MT
R23	13-270	82 Ω "	S2	18-014	10 A MT
R24	13-584	10 Ω 5W	S3		0,1 mm kobbertråd
C1	11-505	4,7 μ F/25 V Tant			
C2	11-505	4,7 μ F/25 V Tant			
C3	11-505	4,7 μ F/25 V Tant			
C4	11-409	1 nF Ker			
C5	11-409	1 nF Ker			
C6	11-409	1 nF Ker			
C7	11-509	47 μ F/6,3V Tant			
C9	11-505	4,7 μ F 25 V Tant			
C10	11-406	330 pF Styr			
C11		500 μ F 16 V Tant			
REL1	17-059	RS 6 = V			
Wiring for carrying bag no. 215-015 and 215-020 B 78 D1 Tilhører tegn. nr.: 78123-2E2			Rettet:		<div>Tegn.: Stykl. nr.:</div> <div>Kontr.: 78123-4S2</div>