

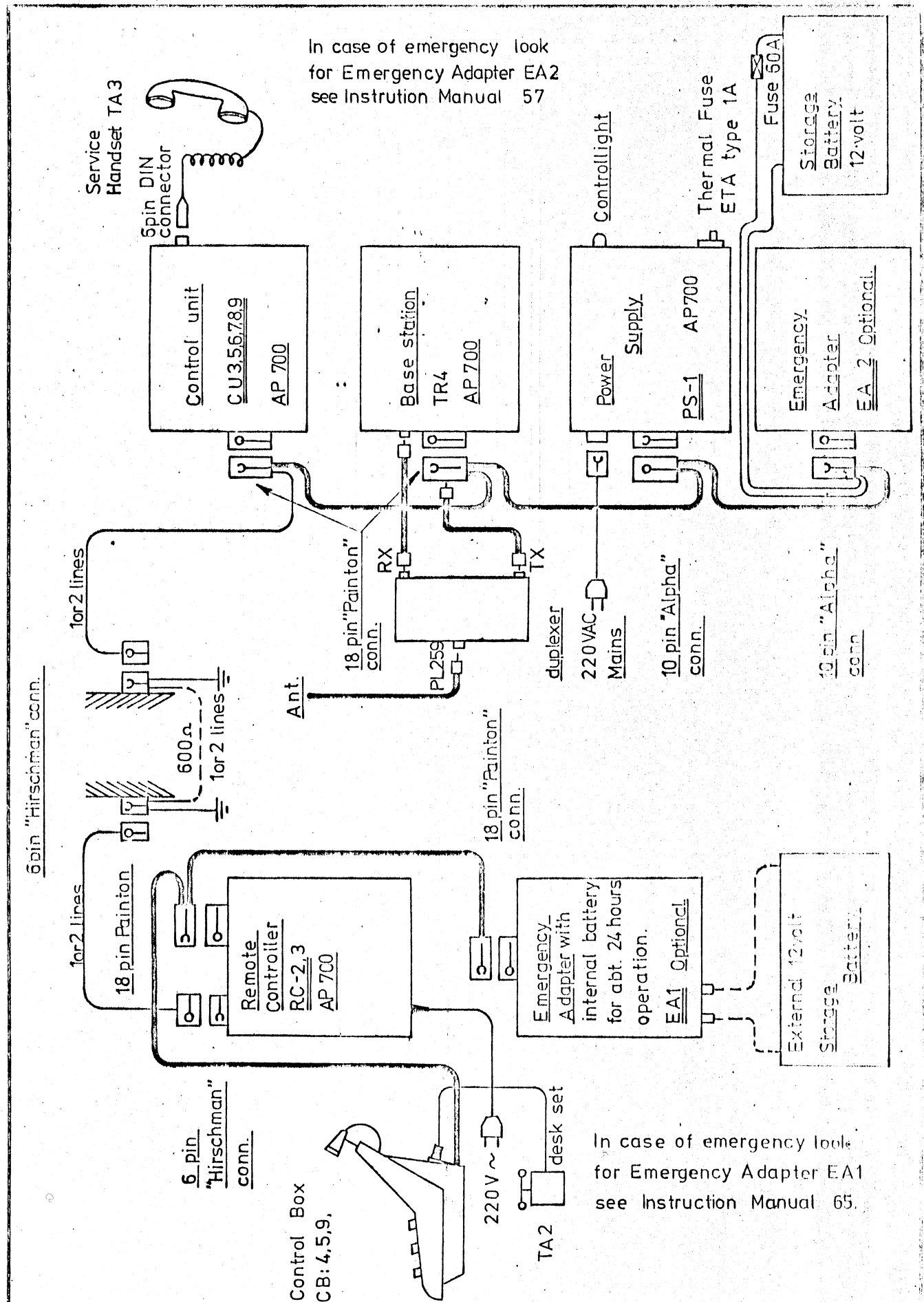
**Remote contr.
base station
duplex
Manual 66**

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Rettet: 19-8-74 HJ

DUPLEX REMOTE CONTROLLED
BASESTATION AP 700 LAY-OUT.

AP-RADIOTELEFON

Tegn.: 1310.70 BEP Kontr.: 13.10.70 A.F.

Stykl. nr.:

Tegn. nr.:

73390-4E

7
AF—Amplifier AP 343 for loudspeaker dwg. no 70283-4E

Capacity balance—see compensation list 70329/4

Hybrid resistance balance

The hybrid unit is only used for one telephone line operation—AP 406/1 dwg. no. 73333-4E

Connector for control box

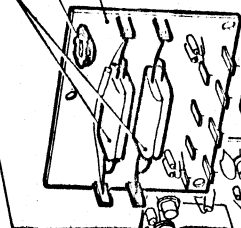
Line connector

LINE TRAFU
2 × 150 Ω / 2 × 300 Ω
AF Amplifier with
AVC for telephone line operation
R6 Line sensitivity
from RX

Tone Rx tuning
capacitor C13 (tone 1)
R22 (tone 1) level control

Test point TP 51 (15V DC)

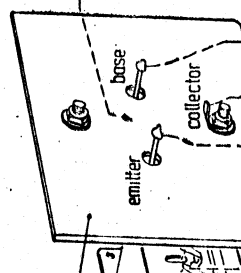
dwg. no. 74228-3E



Regulation
transistor Q2

Line current
regulation
transistor Q5

P1 Voltage
Regulation



base

collector

emitter

green/white

blue

red

Heat sink

Power Transformer

black (chassis)

Fuse 0.25 A
Slow Blow

Optional mains plug
with ground

3 cored
power line

Mains supply 220V AC only

P2 Key line current (12 ma)

P3 Repeater line current
(4.5 ma)

Test point TP 52 (15V DC)

Tone Rx tuning capacitor C26 (tone 2)

R33 (tone 2) level control

Q8 Ground collector for tone 2 tuning

Rettet:

Remote controller RC2 and RC3
Duplex with repeater

AP-RADIOTELEFON A_{1/8}

Tegn.: 29-8-74

Kontr.: 29-8-74

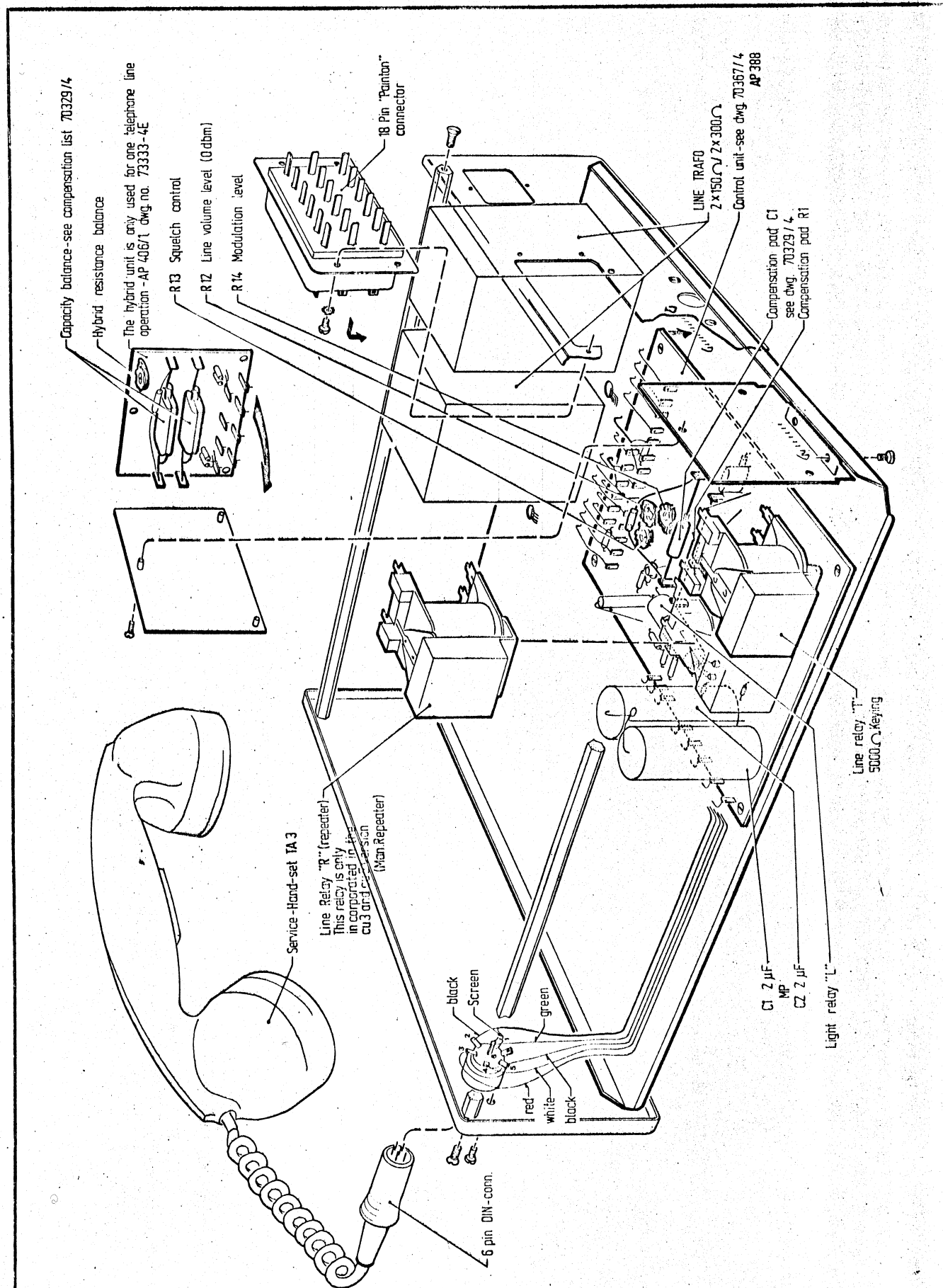
A.C.

E.F.

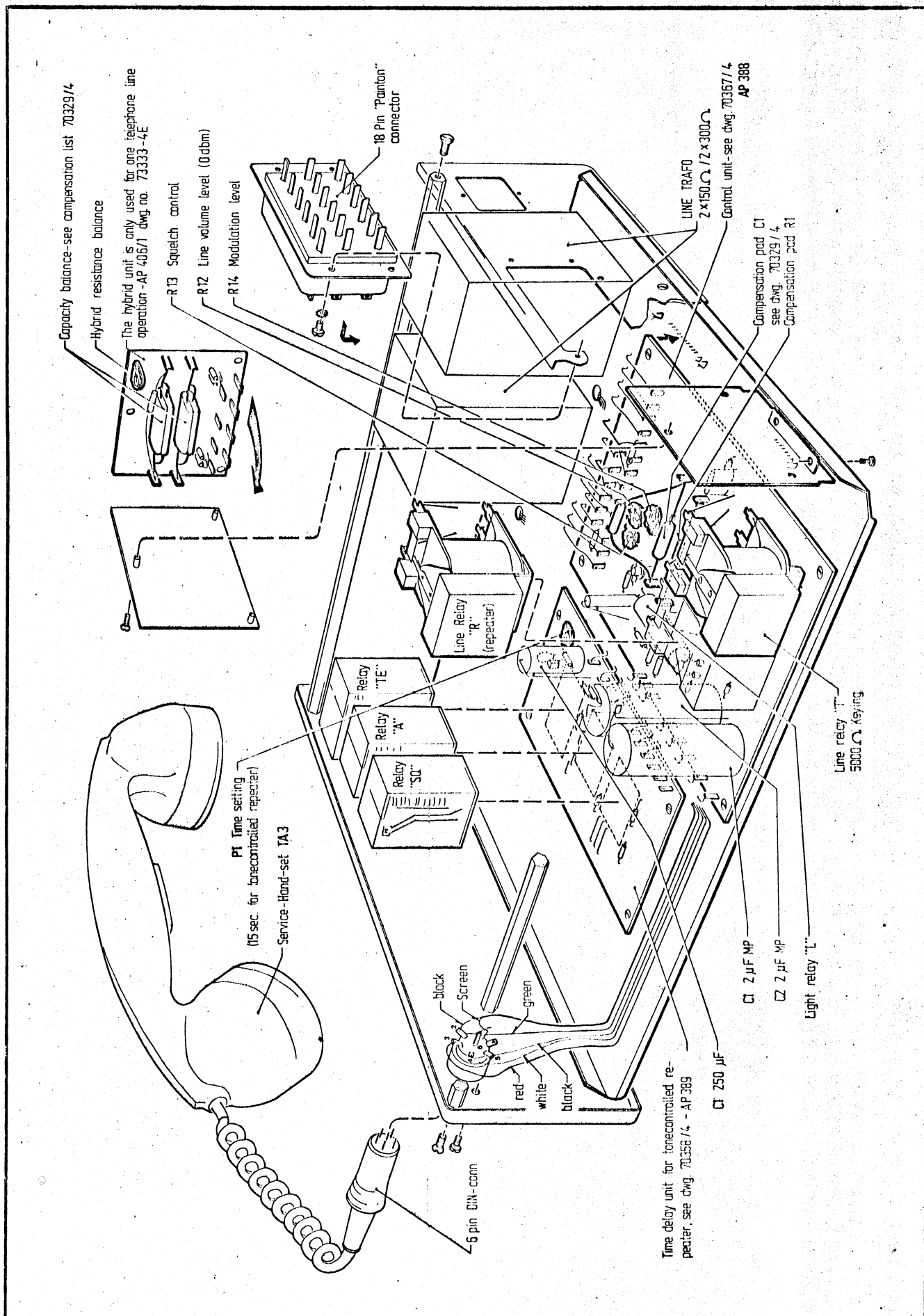
Stykl. nr.:

Tegn. nr.:

74371-4E



Hettet: 	Control unit CU3 - CU5 - CU8 - CU9 Duplex with manuel repeater AP-RADIOTELEFON A/s	Tegn.: 29-8-74 AC Stykl. nr.: Tegn. nr.:	Kontr.: 29-8-74 E.F. 74372 -4E
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<p>Rettet:</p>	<p>Control unit CU6 - CU7</p> <p>Duplex man./tone-controlled repeater</p> <p>AP-RADIOTELEFON 74370-4E</p>	<p>Tegn.: 29-8-74</p> <p>AC</p> <p>Stykl. nr.:</p> <p>Tegn. nr.:</p>	<p>Kontr.: 29-8-74</p> <p>EE</p> <p>74370-4E</p>
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Functional description

of the

Remote controlled system for duplex base station AP 700

The system consists of:

Control Box: CB-4, CB-5, CB-9

CB-4: For duplex without selective call.

See Dwg. No. 73315-3E.

CB-5: For duplex, selective call.

See Dwg. No. 73317-3E.

CB-9: For duplex, selective call and repeater function.

See Dwg. No. 73318-3E.

Remote Controller: RC-2, RC-3

RC-2: For duplex operation via 2 telephone lines.

See Dwg. No. 70382-4.

RC-3: For duplex operation via 1 telephone line.

See Dwg. No. 71031-4.

Control Unit: CU-3, CU-5, CU-6, CU-7, CU-8, CU-9

CU-3: Duplex/2 lines with repeater function.

See Dwg. No. 73329-3E.

CU-5: For duplex/1 line with repeater function.

See Dwg. No. 73323-3E.

CU-6: Duplex/2 lines with manual/tone controlled repeater function.

See Dwg. No. 70465-4.

CU-7: Duplex/1 line with manual/tone controlled repeater function.

See Dwg. No. 71060-4.

CU-8: Duplex/2 lines without repeater function.

See Dwg. No. 73302-3E.

Control Unit:

CU-9: Duplex/1 line without
repeater function.

See Dwg. No. 74131-3E.

For a general view
see Dwg. No. 73390-4E.

The remote controller, RC-2, RC-3, consists of 2 power supplies. The one, 13.6 V, to supply the various circuits in the RC, the CB, and in case the system is supplied with an emergency adapter, EA-1, to keep the batteries in the EA-1 fully charged. (See functional description EA-1.)

The other supply, 60 V, to supply a constant current generator, used to transfer the keying and squelch functions to the CU via the telephone line.

The squelch-pot in the CB is connected between pin 5 and pin 6 of the 18 pin 'Painton' connector on the RC and regulates the current of the constant current generator, 2N4314, so that the loop current in the telephone line can be varied from 5 to 30 mA. Loop resistances within 0 - 2000 Ω do not influence this current.

With duplex/2 lines, the squelch, keying and repeater functions are fed over the line in the microphone circuit, while the line in the loudspeaker circuit is DC current free.

The current is passed on to the telephone line via the normally closed contacts 't' of the 'T' relay.

If the keyswitch in the CB is depressed, 13.6 V, is placed on pin 14 of the 'Painton' connector of the RC, activating the 'T'-relay on pcb 'A'.

One of its contact sets shifts the base circuit of the 2N4314. The loop current is set via trimmer P2 to 6mA ^{x)}, and the current passed to the telephone line via the normally open contacts 't'.

x) Note: With repeater function installed, the loop current for keying is set to 12 mA and for repeater function to 6 mA.

Now the current runs in the reversed direction in respect to the direction with standby and squelch. The repeater function, if the CB is equipped with this, and when depressed, places 13.6 V on pin 13 of the Painton connector activating the 'R'-relay, which in turn activates the 'T'-relay via the 'r' contacts. The 2N4314 is set to another prefixed (trimpot P3) current.

The RC-2, RC-3, is also equipped with 2 AF-amplifiers. The one with a power output of 2 Watts is used to amplify the AF-signal on the telephone line to the speaker. The other amplifier has an automatic gain control and is used to amplify the microphone signal to 0 dBm on the telephone line. (In a duplex/1 line system, there is placed a hybrid circuit between the transformers to prevent cross-talk. This is factory adjusted.) The automatic gain control holds the AF-signal at 0 dBm even if the microphone circuit is overloaded with 30 dB.

Another circuit in the RC is the modulation indicator. This circuit indicates that there is an AF-signal on the telephone line(s) in either direction.

The tone receiver in the RC is used to indicate via a lamp and bell that the station has been called. The bell operates as long as the last tone of the call remains on, the lamp stays lit until reset by depressing the keyswitch.

On the opposite end of the telephone line, the Control Unit, CU, is connected.

The CU is supplied from the base station's power supply, see Dwg. No. 70277/4.

With Squelch, the 5 - 30 mAmp. current is connected via the primary of the line transformer and diode to the lamp of a 'lamp-photocell module'. The current value is here inverted to a resistance value, which via the squelch control transistor is connected to the squelch circuit of the base station. In series with this circuit is placed a trimpot, adjusting the operation mode of the squelch.

When the keyswitch of the CB is depressed, the 'T'-relay in the CU is activated via another diode (current direction reversed).

(The lamp in the 'lamp-photocell module' is extinguished, locking the squelch circuit.) Contact 't' makes connection between pin 11 and pin 17 of the 18 pin 'Painton' connector, activating the transmitter of the base station.

In case the system is equipped with repeater function, see Dwg. No. 73329-3E for CU-3, Dwg. No. 73323-3E for CU-5, Dwg. No. 70465-4 for CU-6, Dwg. No. 71060-4 for CU-7.

In the CU-3, 5, 6, 7 the 'R'-relay is activated when the repeater function switch is depressed in the CB, and via the 'r' contact and 't' normally closed contact 13.6 V is placed on pin 14 of the 18 pin 'Painton' connector, activating the base station as a repeater station.

The zener-diode placed between relays 'R' and 'T' takes care that with 6 mAmp loop current only the 'R'-relay activates and with 12 mAmps the 'T' and 'R'-relays activate.

To compensate for the length of the telephone line(s) a line compensation pad is used in the RC and in the CU. For the correct values of the components see Dwg. No. 70329-4.

The trimpot in the modulation circuit is used to adjust the correct modulation level.

If the system is equipped with emergency power operation, the base station's power supply has to be supplied with an emergency adapter EA-2.

Duplex remote control adjustment instruction

Instruments needed: RF-generator, AF-oscilloscope, AF-millivoltmeter, loads of $600\ \Omega$, AF-generator.

Comprises: the types R3 (dwg. 71031/4 (3)), CU5, CU7 and CU9 which are respectively line control unit and control unit for transmitter and receiver.

The compensation values are to be installed for both units comprising RC3 and the CU-unit. The adjustment can only take place with the telephone line in question connected to the equipment.

AF-line level adjustment from CU-unit

With the CU-unit connected to the base station TR4 an RF signal is connected to the receiver input with a deviation of ΔF 3.5 kc modulated with 1000 Hz. To pin 12 and 13 on the 18 pin 'Painton' connector an AC voltmeter together with an oscilloscope are connected. With an unloaded line the volume potentiometer is adjusted to 1.55 volt RMS. By means of a $600\ \Omega$ resistor loading the voltage should drop 6 dB or to 0 dBm = 0.775 V. On the scope a sinusoid should be seen.

This adjustment should be carried out before the unit is connected to the line.

Adjustment of the hybrid-balance in the CU-unit

Pretending exact hybrid-balance capacitor is installed on print circuit AP 406 (see dwg. 70329/4) a voltmeter with oscilloscope is connected to print circuit AP 388 pin number 15 as the 'hot' and 17 as chassis. Then by means of the preset potentiometer value $2.2\ k\Omega$ on print circuit AP 406 an adjustment for hybrid-balance should be obtained, that means min. deflection on the AC-meter. Shown on the oscilloscope the two sinusoids should then compensate each other. If the hybrid attenuation is less than 26 dB measured between input (AP 388 pin 16 and 18) and output (AP 388 pin 15 and 17) from the transformers another value for hybrid compensation must be tried out.

Adjustment of the hybrid-balance in the RC3-unit (dwg. 71031/4)

The level from the RC3 unit is fixed from the factory to be 0 dBm or 0.775 V across 600 Ω . This can be checked between the pins 3 and 5 on the line socket by means of a 600 Ω resistor.

If the control console is provided with selective call tone 1 (980 Hz) can be used. Without selective call an AF-generator with 1000 Hz is connected to the microphone input with a level of about 0.6 mV. An outside attenuation pad might be used fixed directly on the microphone input to prevent hum.

An AC-voltmeter with oscilloscope is connected to the receiver line transformer pin 3 and 8. By means of the potentiometer R5 on print circuit AP 406 an adjustment for min. deflection should be obtained. On the oscilloscope the two sinusoids should then compensate each other. The obtained attenuation measured between the output and input transformers pin 3 and 8 should be better than 26 dB. If this is not obtained a phase displacement might be the reason and another value for compensation must be tried out. The phase displacement can be observed by the oscilloscope.

These telephone line relationships are not easy to predict. In serious cases the hybrid circuit might oscillate and it might help to stop this by an adjustment on R5 on printed circuit AP 405. In such a situation it is important to keep the AF-level for the telephone as low as possible.

Data

Remote controlled base-station power consumption from
emergency batteries. (Measured with fully charged
batteries)

1. Base station (25 W type)

Stand-by sq. locked.....200 mA
" sq. open.....385 mA
" in manual repeater mode.....240 mA
Transmitter keyed.....3,2 Amp.
Keyed in repeater.....3,3 Amp.

2. Remote controller

Stand-by sq. locked.....230 mA
" sq. open.....440 mA
" man. repeater mode.....500 mA
" with sel. call indicated.....500 mA
Transmitter keyed modulated.....500 mA
" " unmodulated.....420 mA
" " man. repeater mode.....500 mA
" " by tone keys.....510 mA

Rettet:	REMOTE CONTR. BASESTATION POWER CONSUMPTION FROM 12 VOLT BATTERY.	Tegn.: 14.10.70	Kontr.: 14.10.70
		BEP	E.F.
		Stykl. nr.:	
		Tegn. nr.:	
		70360/4	

Data

Remote controlled base-station power consumption 220 VAC.

1. Base station (25 Watt type)

Mains power consumption (220 VAC) with emergency adapter (EA 2) battery fully charged.

Stand-by sq. locked.....150 mA
" sq. open.....165 mA
" repeater mode.....155 mA
Transmitter keyed.....475 mA
Keyed in repeater.....485 mA

2. Remote controller RC1

Mains power consumption (220 VAC) with emergency adapter (EA 1) battery fully charged.

Stand-by sq. locked..... 72 mA
" sq. open..... 87 mA
" repeater mode..... 98 mA
" sel. called with indication..... 96 mA
Keyed unmodulated - modulated.....88 mA-100 mA
" via manual repeater.....100 mA
" via tone " 72 mA
Tone keying.....103 mA

Rettet:	REMOTE CONTR. BASESTATION POWER CONSUMPTION FROM 220 VAC.	Tegn.: 14.10.70	Kontr.: 14.10.70
		BEP	E.F.
		Stykl. nr.:	
		Tegn. nr.: 70361/4	

Line Length	Loop resistance	Compensation values f. line C: values	Compensation values f. line R: values	Compensation values f. hybrid C: values Duplex remote control
0,0 km	0 Ω	0 pF	68 k Ω	880 nF
0,5 km	82 Ω	0 pF	56 k Ω	880 nF
1,5 km	246 Ω	0 pF	47 k Ω	540 nF
2,5 km	410 Ω	200 pF	47 k Ω	400 nF
3,5 km	574 Ω	800 pF	39 k Ω	300 nF
4,5 km	738 Ω	1300 pF	33 k Ω	240 nF
5,5 km	902 Ω	2000 pF	33 k Ω	220 nF
6,5 km	1066 Ω	3300 pF	27 k Ω	205 nF
7,5 km	1230 Ω	5000 pF	27 k Ω	200 nF
8,5 km	1394 Ω	6500 pF	27 k Ω	200 nF
9,5 km	1558 Ω	10000 pF	27 k Ω	200 nF

Values listed are for telephone cables (0,2 mm) of 36 nF and 164 Ω (loop resistance) pr. km

For coil loaded cables the response is more flat and values about zero km might be used.

Rettet:

Compensation list for
Remote control.

AP-RADIOTELEFON

Tegn.: U.K.

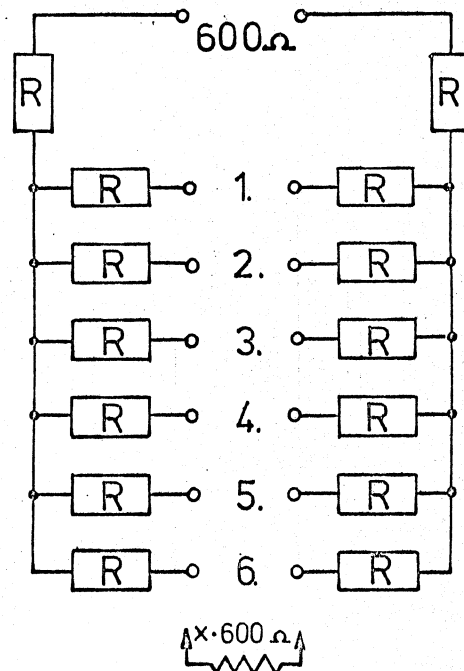
Kontr.: E.F.
25-9-70

Stykl. nr.:

Tegn. nr.:

70329/4

AP 700 Base Station

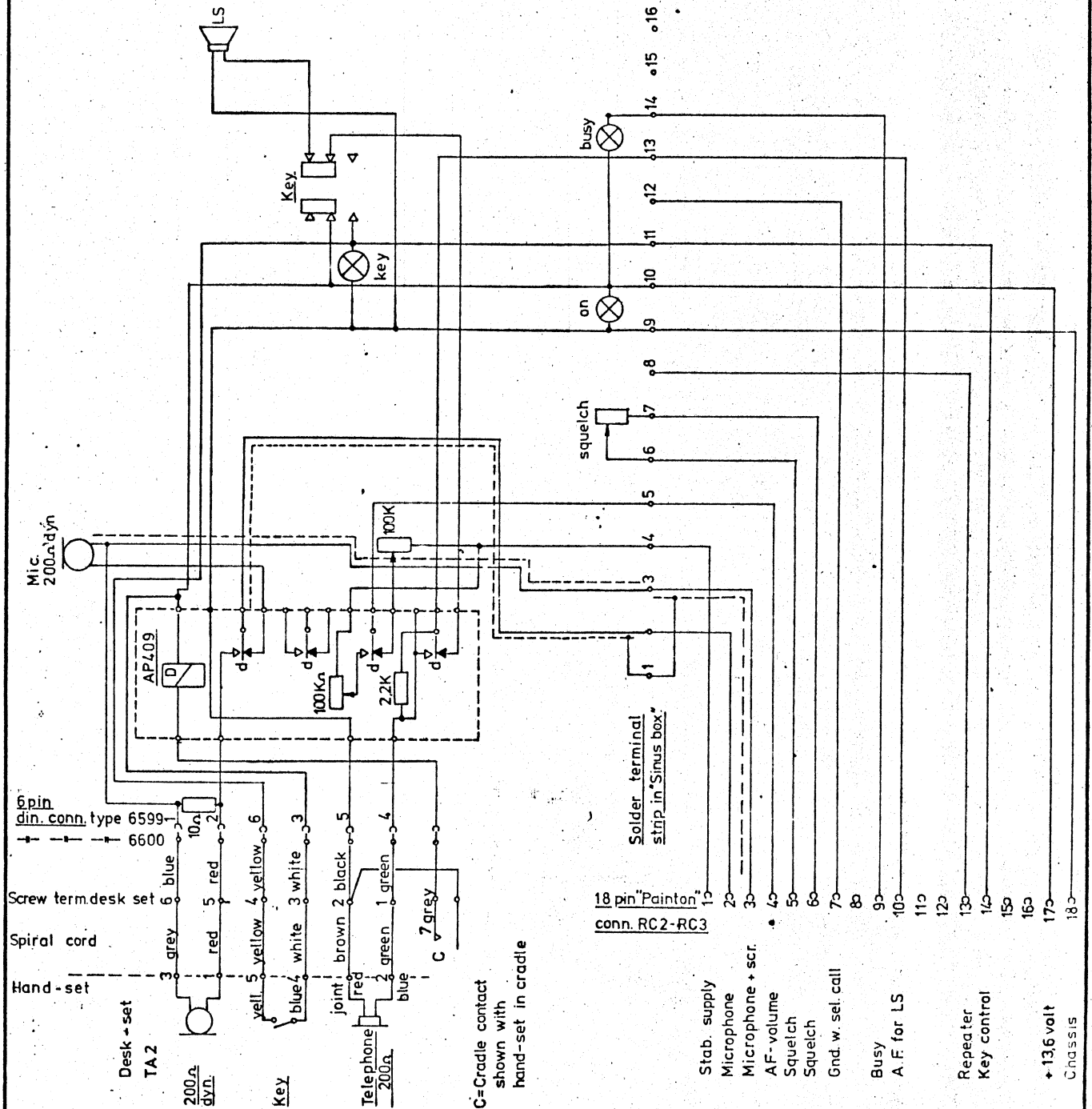


Remote Controllers

Numbers of RC'S	Values of $R = \Omega$	Attenuation dB	Max. line length (0,2mm ² 36 nF per kilometer).
1	0	0	10 Km
2	100 Ω	6 dB	5 Km
3	150 Ω	10 dB	3 Km
4	180 Ω	12 dB	2,5 Km
5	200 Ω	14 dB	2 Km
6	215 Ω	15,6 dB	1,6 Km

Note: With several Remote Controllers in parallel the squelch function has to be annulled.

Rottet: _____ _____ _____ _____ _____ _____ _____	SEVERAL REMOTE CONTROLLERS IN PARALLEL.	Tegn.: 12.10.70 BEP	Kontr.: 12.10.70 E.F.
AP-RADIOTELEFON		Stykl. nr.: Tegn. nr.: 70355/4	



Rottet: 28-1-74 H.P.
30-1-74 H.P.

SINUS CONTROL BOX FOR DUPLEX, REMOTE.

CB4

AP-RADIOTELEFON

Tegn.: 30-8-73
A.C.

Kontr.: 30-8-73
EF

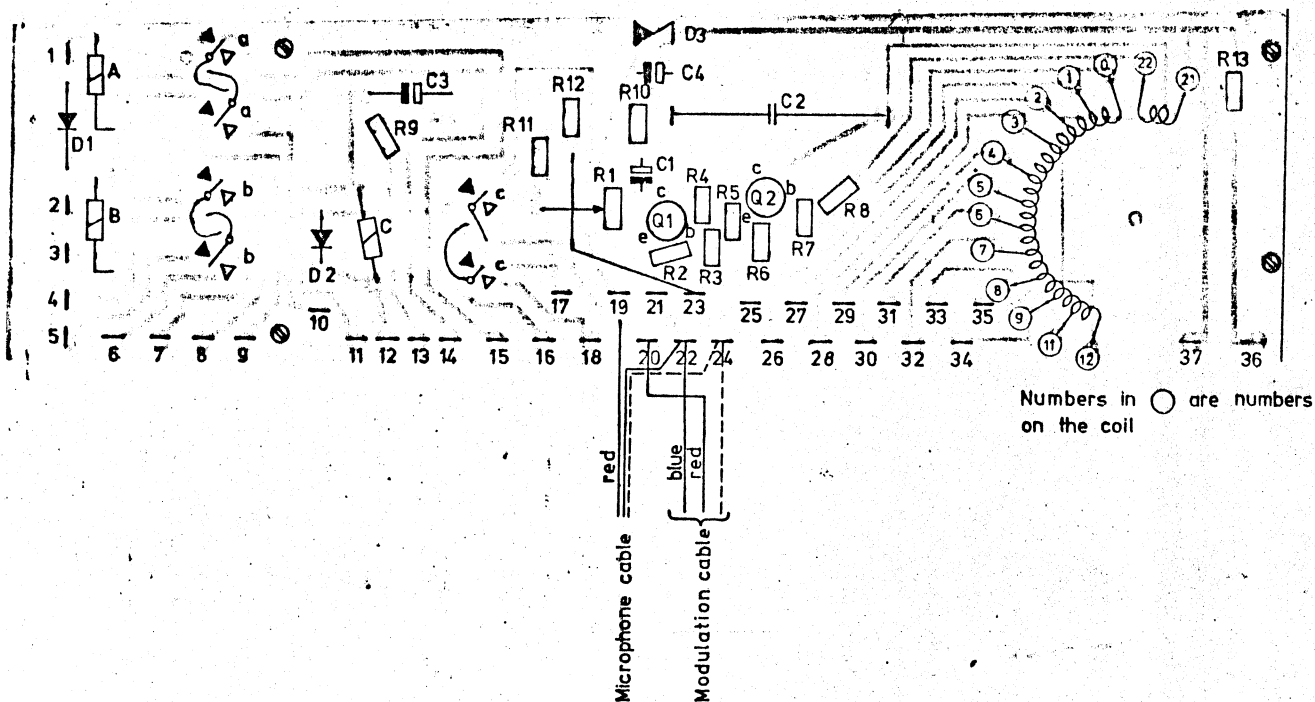
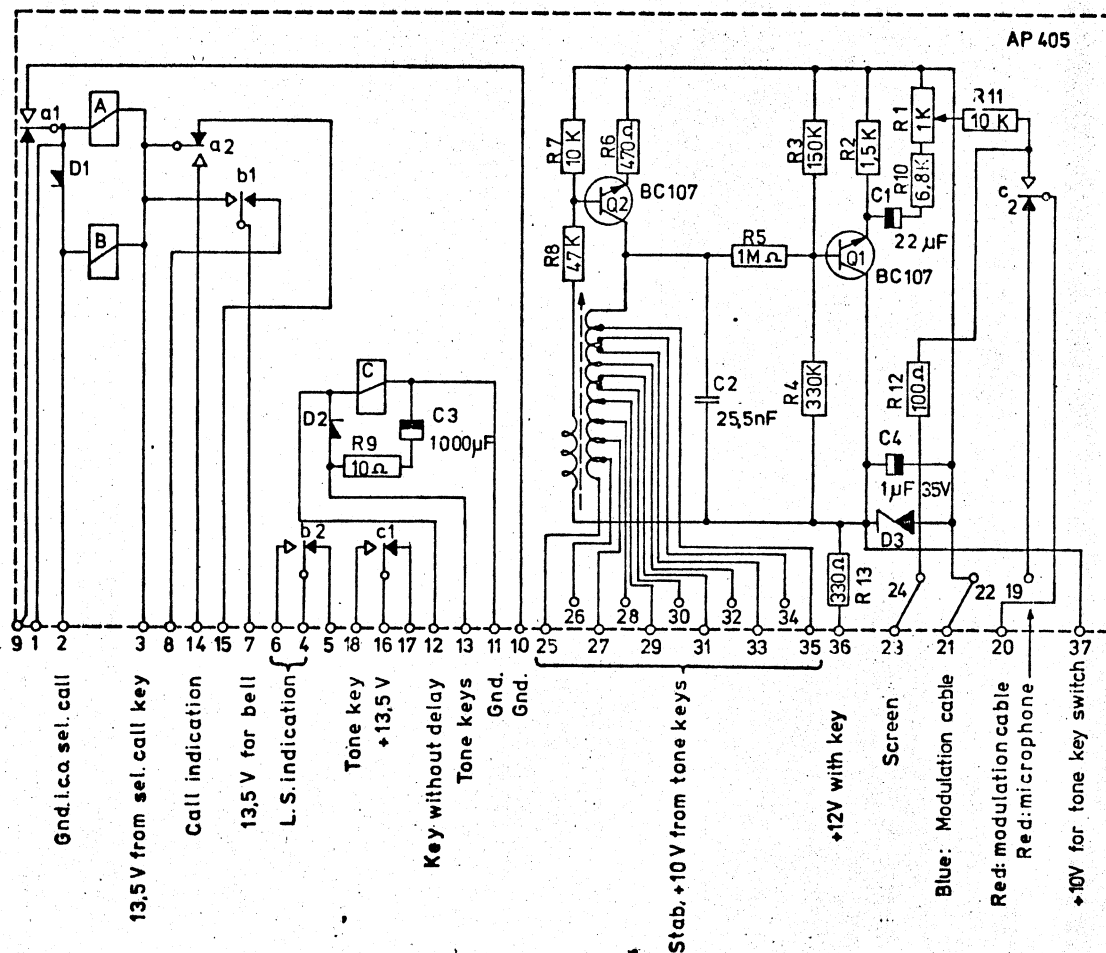
Stykl. nr.:

Tegn. nr.:

73315 -3E



AP-RADIOTELEFON



Rettet: 1-3-74 JAN

Tone generator and Relay panel for
Sinus control box.

Print Board AP 405a/1

Tegn.: 13-11-72
NC.

Kontr.: 13-11-72
HM

Stykl. nr.: 71034-4S

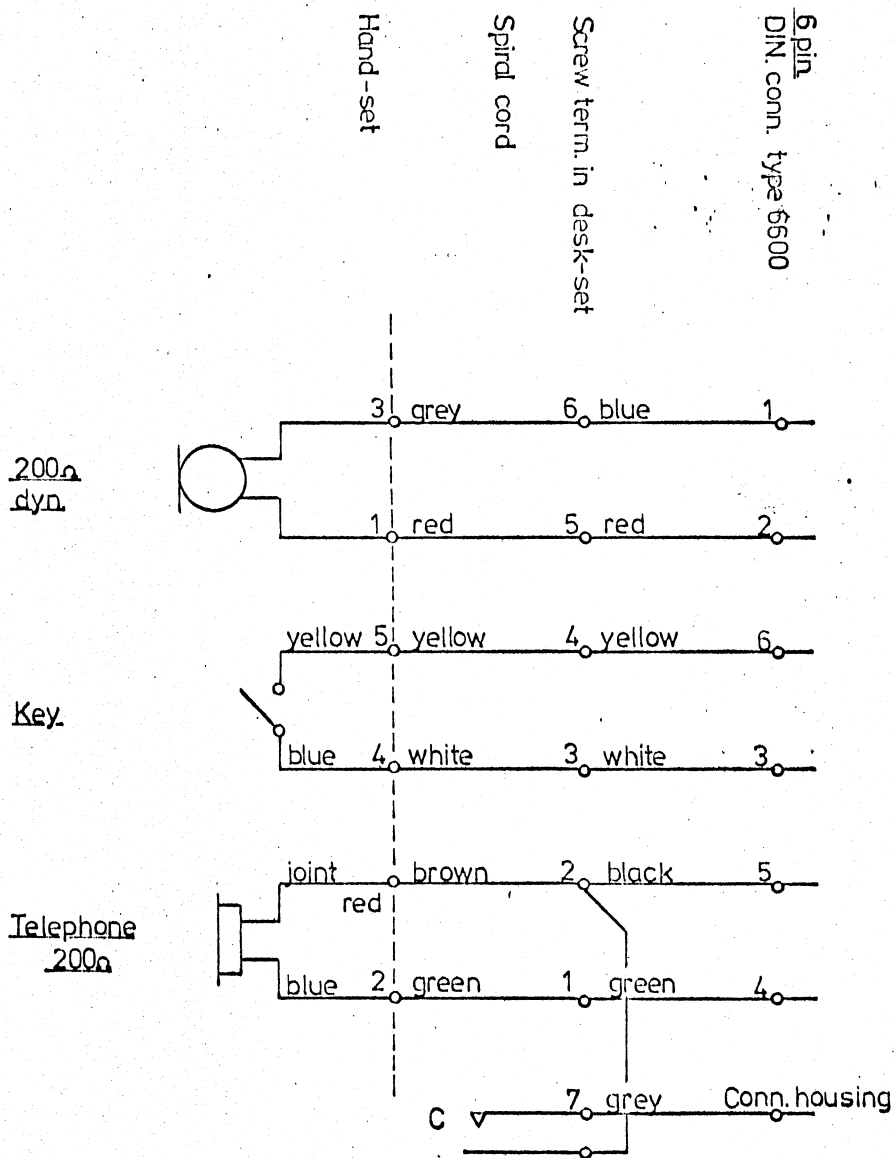
Tegn. nr.:

AP-RADIOTELEFON

71034 / 4

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R 1		1 k Ω trim.pot.			
R 2		1,5 k Ω			
R 3		150 k Ω			
R 4		330 k Ω			
R 5		1 M Ω			
R 6		470 Ω			
R 7		10 k Ω			
R 8		47 k Ω			
R 9		10 Ω			
R10		6,8 k Ω			
R11		10 k Ω			
R12		100 Ω			
R13		330 Ω			
C 1		22 μ F/16V tant.			
C 2		25,5 nF styr.			
C 3		1000 μ F/16V elko.			
C 4		1 μ F/35V tant.			
D 1		1N 4001			
D 2		1N 4001			
D 3		Zener MZF 10 or 1N 5240			
Q 1		BC 107 B			
Q 2		BC 107 B			
A		Relæ MO 720-B104			
B		Relæ MO 720-B104			
C		Relæ MO 720-B104			
		:			
		:			
Tonegenerator AP 405a/1			Rettet:		Tegn.:
Tilhører tegn. nr.: 71034-4E			28.2.74		Kontr.:
					Stykl. nr.:
					71034-4E



C=Cradle contact shown with hand-set in cradle

Netto:

Desk-set TA 2

AP-RADIOTELEFON A/s

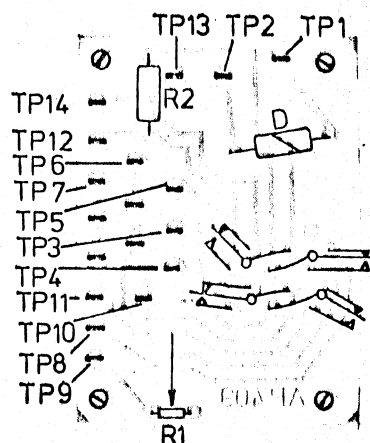
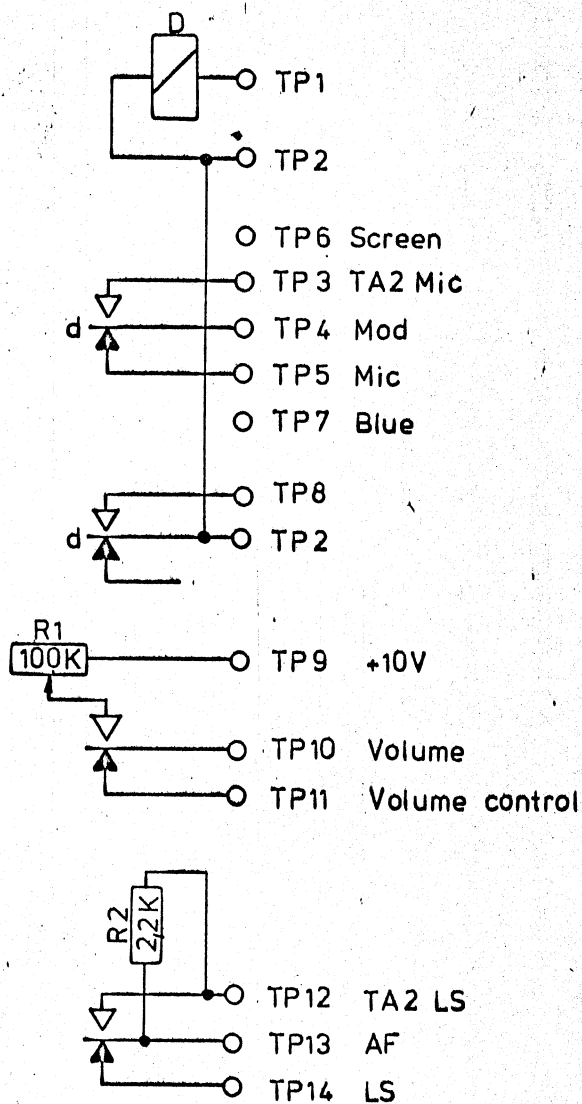
Tegn.: 30-1-74
A.C.

Kontroll: 30-1-74
A.C.

Stykl. nr.:

Tegn. nr.:

74028-4E



Rettet:

Switch panel for desk-set AP409/1

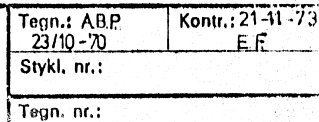
Tegn.:
3-10-74 H.J.

Kontr.:
3-10-74 E.F.

Stykl. nr.:

AP-RADIOTELEFON A/s

Tegn. nr.:
74437-4E



7038214

Power supply AP370
-A-



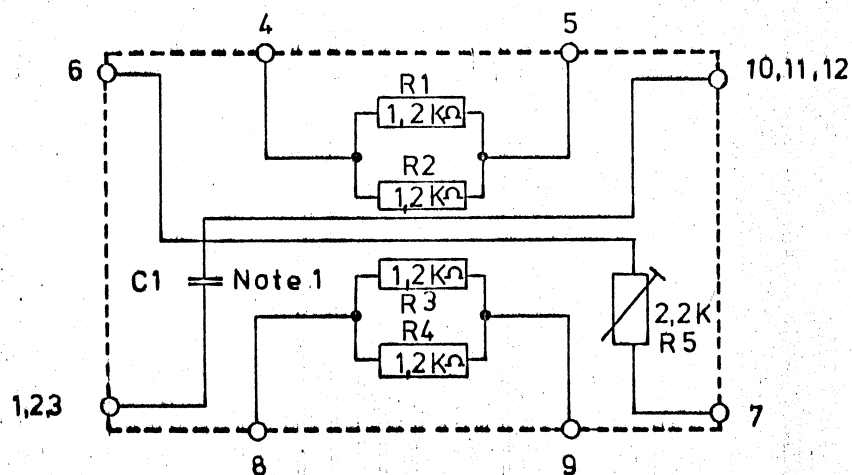
Remote controller RC3
Duplex with repeater over 1 telephone line

Kontr.: 21.11.7.0

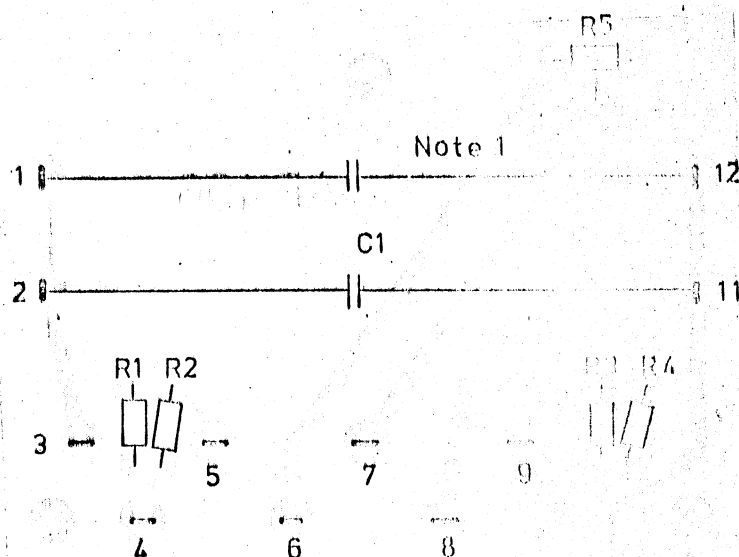
EF

7103111

Tegn.: UK.	Kontr.: 21.11.7.
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Note 1: See hybrid compensation values dwg. 70329-4



Rettet:

Hybrid unit AP 406/1
for duplex remote control.

Tegn.: 20-9-73
HP

Kontr.: 20-9-73
E.F

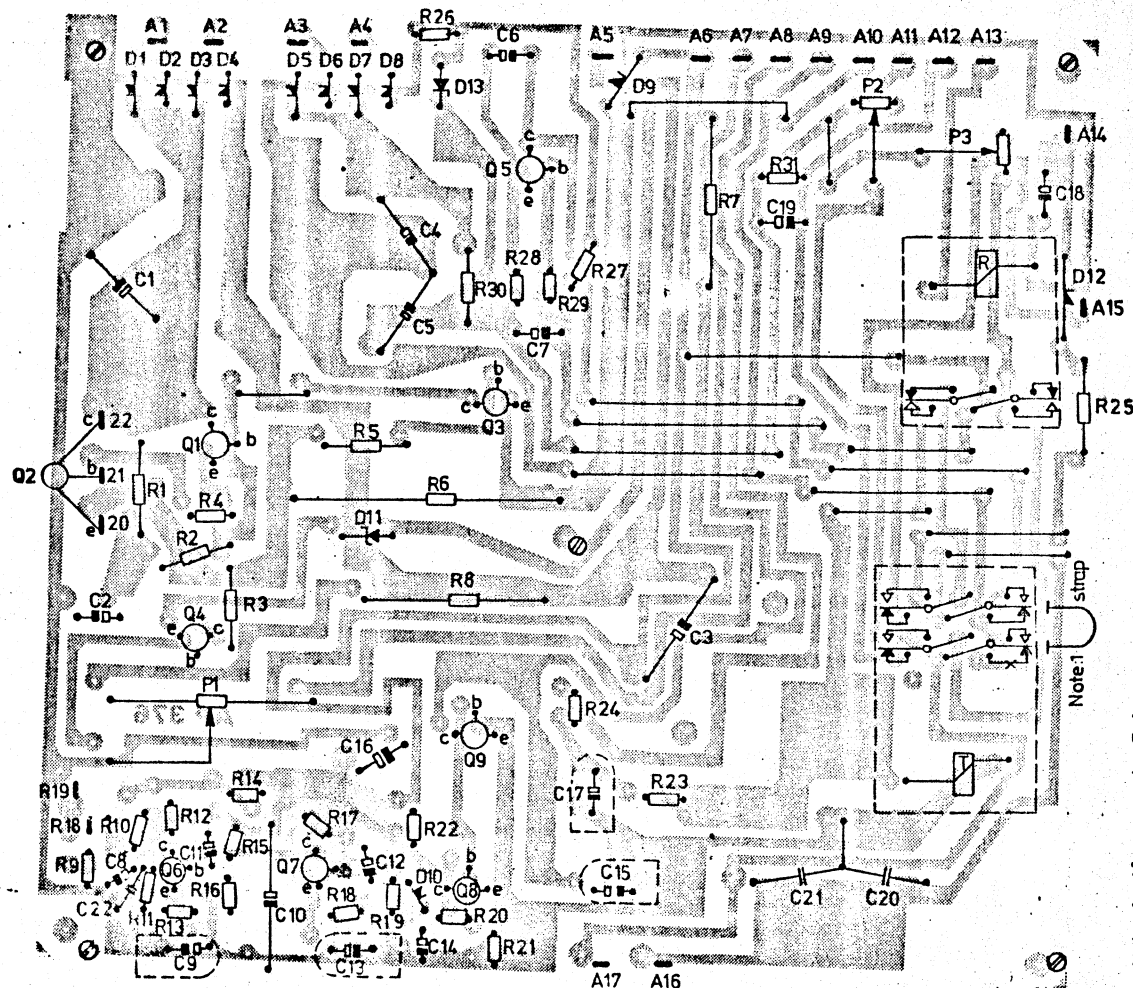
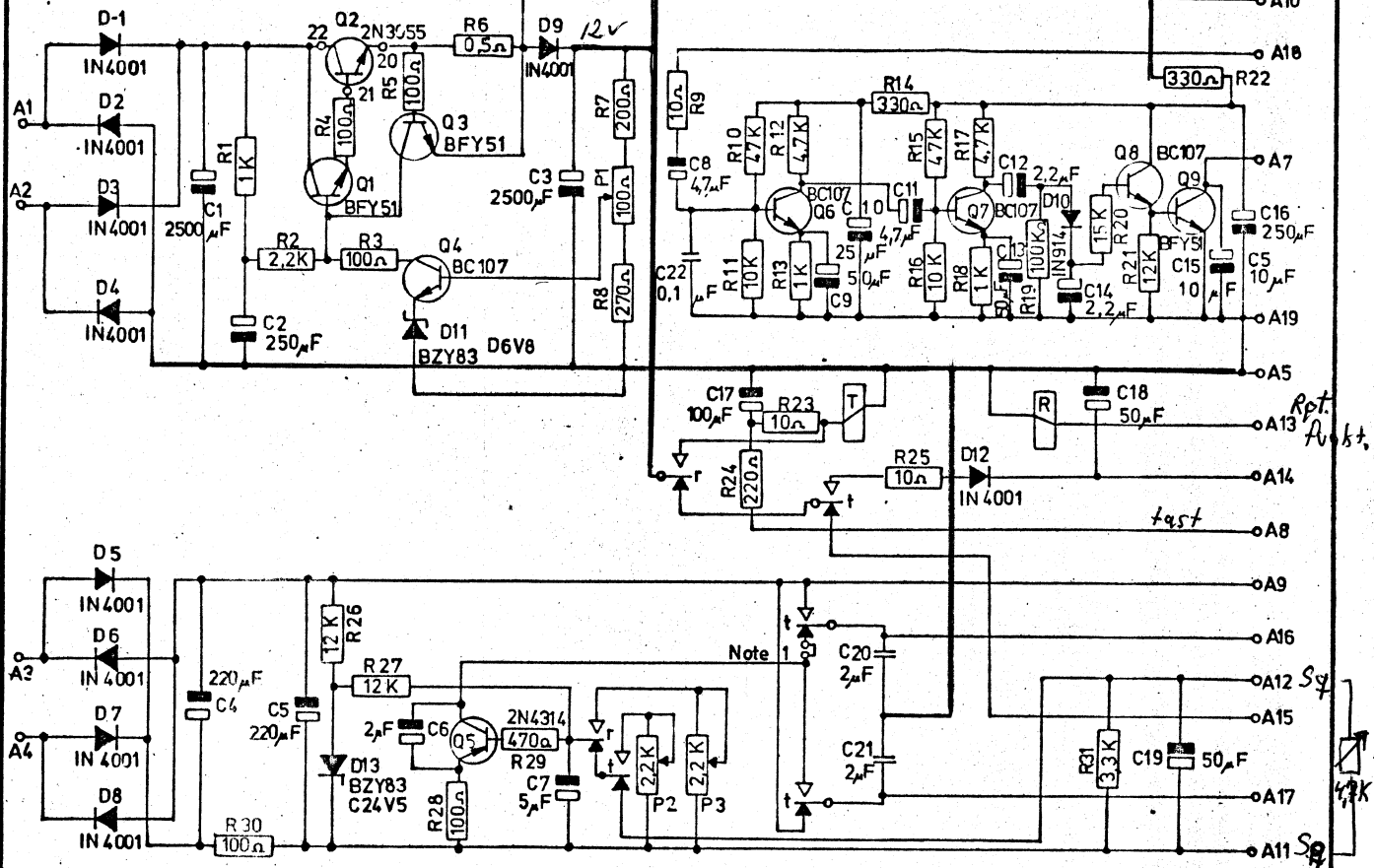
Stykl. nr.: 73333-4E.

Tegn. nr.: 73333-4E.

AP-RADIOTELEFON 4

Nr.	Kode	Data	Nr.	Kode	Data
R 1		1,2 k Ω			
R 2		1,2 k Ω			
R 3		1,2 k Ω			
R 4		1,2 k Ω			
R 5		2,2 k Ω preset			
C 1		matched f.line			
Hybrid unit AP 406/1 for Duplex Remote Control Tilhører tegn. nr.: 73333-4E			Rettet:		<div>Tegn.: HP</div> <div>Kont.: EF</div>
					Stykl. nr.: 73333-4S

Relay T: Siemens N0717-B110
Relay R: Siemens M0720-B104



Rettet: 15-2-74 JAN
11-3-74 AC
2-10-74 AC

REMOTE CONTROLLER.

PRINT BOARD "A" AP 376/1

Tegn.: 22.9.70
BEP

Kontr.: 22.9.70
E.F.

Stykl. nr.: 70325/4

Tegn. nr.:

70324/4

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1		1 Kohm $\frac{1}{4}$ W	D1		1N4001
R2		2,2 Kohm "	D2		1N4001
R3		100 ohm "	D3		1N4001
R4		100 ohm "	D4		1N4001
R5		100 ohm "	D5		1N4001
R6		0,5 ohm 5 W	D6		1N4001
R7		200 ohm 1 W	D7		1N4001
R8		270 ohm $\frac{1}{2}$ W	D8		1N4001
R9		10 ohm $\frac{1}{4}$ W	D9		1N4001
R10		47 Kohm "	D10		1N914
R11		10 Kohm "	D11		BZY 83 6,8v zen.
R12		4,7 Kohm "	D12		1N4001
R13		1 Kohm "	D13		BZY 83 24,5v zen.
R14		330 ohm "	Q1		BFY 51
R15		47 Kohm "	Q2		2N 3055
R16		10 Kohm "	Q3		BFY 51
R17		4,7 Kohm "	Q4		Bc 107 b
R18		1 Kohm "	Q5		2N 4314
R19		100 Kohm "	Q6		Bc 107 b
R20		15 Kohm "	Q7		Bc 107 b
R21		12 Kohm "	Q8		Bc 107 b
R22		330 ohm "	Q9		BFY 51
R23		10 ohm "	Rel		
R24		220 ohm "	-R		MO 720 - B104
R25		10 ohm "	Rel		
R26		12 Kohm "	-T		NO 717 - B110
R27		12 Kohm "			
R28		100 ohm "	P1		100 ohm pot
R29		470 ohm "	P2		2,2 Kohm pot
R30		100 ohm "	P3		2,2 Kohm pot
R31		3,3 Kohm "			
C1		2500 mF/25v lyt			
C2		250 mF/35v lyt			
C3		2500 mF/25v lyt			
C4		220 mF/100v lyt			
C5		220 mF/100v "			
C6		2 mF/100v lyt			
C7		4,7 mF/25v tant.			
C8		4,7 mF/25v "			
C9		50 mF/16v lyt			
C10		25 mF/25v "			
C11		4,7 mF/25v tant.			
C12		2,2 mF/25v "			
C13		50 mF/16v "			
C14		2,2 mF/25v "			
C15		10 mF/35v lyt			
C16		250 mF/35v "			
C17		100 mF/16v "			
C18		50 mF/16v "			
C19		50 mF/16v "			
C20		2 mF/250v MP			
C21		2 mF/250v MP			
C22		0,1 mF/12v ker.			
Remote Controller RC			Rettet:		Tegn.: L.B
Print Board "A" AP 376/1					Kontr.:
Tilhører tegn. nr.: 70324/4					Stykl. nr.: 70325/4

A.V.C. AMP. AP 343

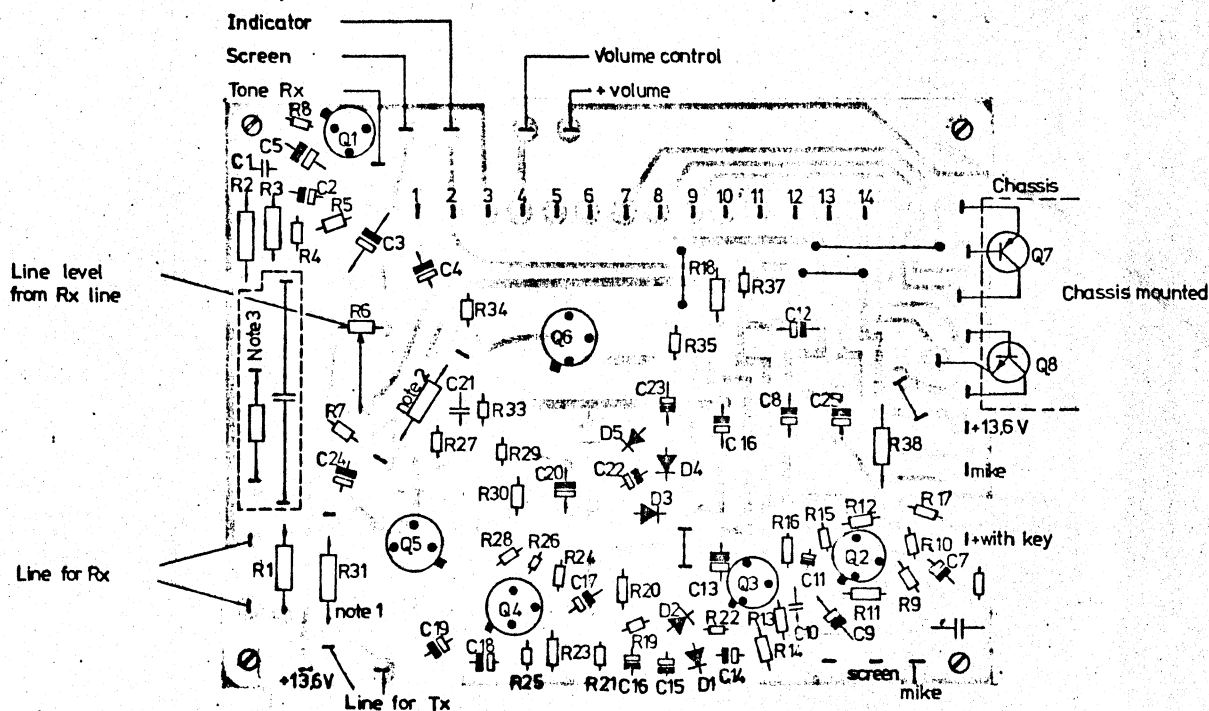
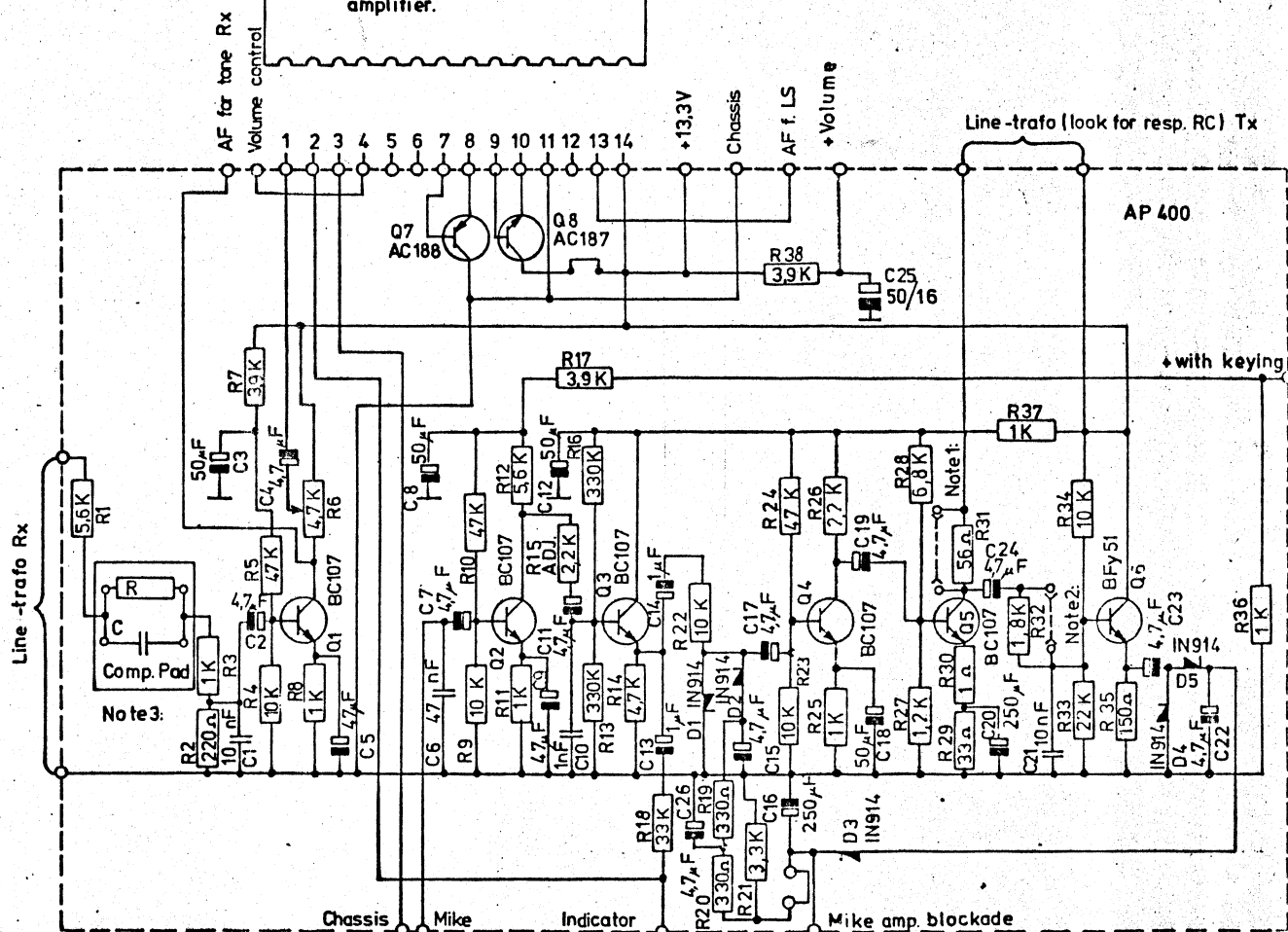
See dwg. no: 70283/4

Automatic volume controlled
amplifier.

Note 1: Strapped at Duplex for 1 line.

Note 2: Strapped at Duplex for 2 lines

Note 3: Line compensation values see dwg. no. 70329/4



Rettet: 8-3-74 AC.

AF- AMPLIFIER FOR RC2-RC3 DUPLEX CONTROLLER

PRINT BOARD AP 400/1

AP-RADIOTELEFON

Tegn.: BEP
19.10.70

Kontr.:
19.10.70

Stykl. nr.: 70365/4

Tegn. nr.:

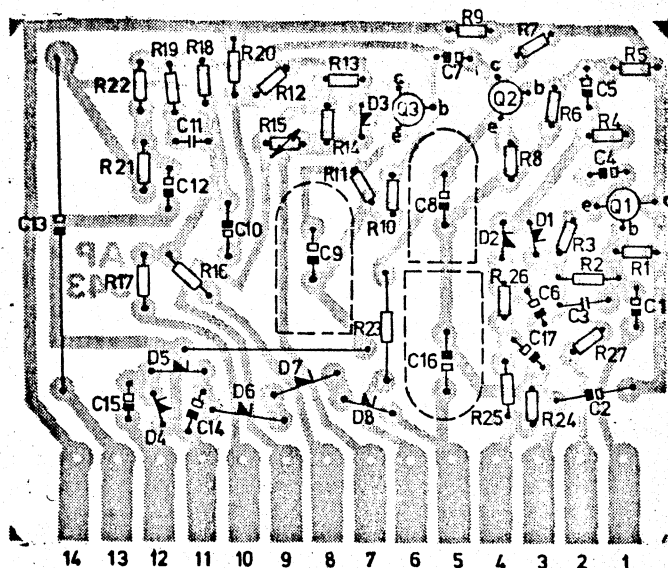
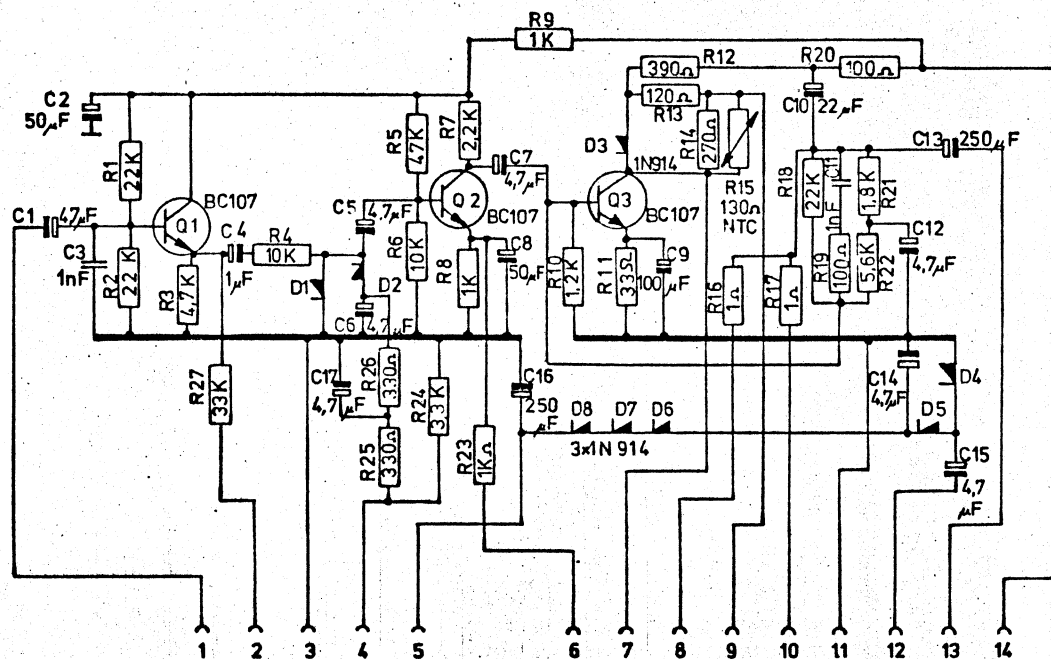
70363/4

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R 1		5,6 kΩ $\frac{1}{4}$ w	R37		1 kΩ $\frac{1}{4}$ w
R 2		220 Ω $\frac{1}{4}$ w	R38		3,9 kΩ $\frac{1}{4}$ w
R 3		1 kΩ $\frac{1}{4}$ w			
R 4		10 kΩ $\frac{1}{4}$ w			
R 5		47 kΩ $\frac{1}{4}$ w	C 1		4,7 nF ker.
R 6		4,7 kΩ trim.pot.	C 2		4,7 μF/25V tant.
R 7		3,9 kΩ $\frac{1}{4}$ w	C 3		47 μF/16V frako.
R 8		1 kΩ $\frac{1}{4}$ w	C 4		4,7 μF/25V tant.
R 9		10 kΩ $\frac{1}{4}$ w	C 5		47 μF/6,3V tant.
R10		47 kΩ $\frac{1}{4}$ w	C 6		47 nF/12V
R11		1 kΩ $\frac{1}{4}$ w	C 7		4,7 μF/25V tant.
R12		5,6 kΩ $\frac{1}{4}$ w	C 8		47 μF/16V frako.
R13		330 kΩ $\frac{1}{4}$ w	C 9		4,7 μF/6,3V tant.
R14		4,7 kΩ $\frac{1}{4}$ w	C10		1 nF ker.
R15		2,2 kΩ $\frac{1}{4}$ w	C11		4,7 μF/25V frako.
R16		330 kΩ $\frac{1}{4}$ w	C12		47 μF/16V frako.
R17		3,9 kΩ $\frac{1}{4}$ w	C13		1 μF/35V tant.
R18		33 kΩ $\frac{1}{4}$ w	C14		1 μF/35V tant.
R19		330 Ω $\frac{1}{4}$ w	C15		4,7 μF/25V frako.
R20		330 Ω $\frac{1}{4}$ w	C16		220 μF/ 6V frako.
R21		3,3 kΩ $\frac{1}{4}$ w	C17		4,7 μF/25V frako.
R22		10 kΩ $\frac{1}{4}$ w	C18		47 μF/6,3V frako.
R23		10 kΩ $\frac{1}{4}$ w	C19		4,7 μF/25V tant.
R24		47 kΩ $\frac{1}{4}$ w	C20		220 μF/ 6V frako.
R25		1 kΩ $\frac{1}{4}$ w	C21		4,7 nF ker.
R26		2,2 kΩ $\frac{1}{4}$ w	C22		4,7 μF/25V tant.
R27		1,2 kΩ $\frac{1}{4}$ w	C23		4,7 μF/25V tant.
R28		6,8 kΩ $\frac{1}{4}$ w	C24		4,7 μF/25V tant.
R29		33 Ω $\frac{1}{4}$ w	C25		47 μF/16V
R30		1 Ω $\frac{1}{4}$ w			
R31		56 Ω $\frac{1}{4}$ w			
R32		1,8 kΩ $\frac{1}{4}$ w			
R33		22 kΩ $\frac{1}{4}$ w			
R34		10 kΩ $\frac{1}{4}$ w			
R35		150 Ω $\frac{1}{4}$ w			
R36		1 kΩ $\frac{1}{4}$ w			
AF-amplifier for RC 2 - RC 3 Duplex Controller Print AP 400 Tilhører tegn. nr.: 70363-3E			Rettet:		<div>Tegn.:</div> <div>Stykl. nr.:</div> <div>Kontr.:</div> <div>70365-4S</div>

AF-RADIO TELEFON

Nr.	Kode	Data	Nr.	Kode	Data
D 1		1N 4148			
D 2		1N 4148			
D 3		1N 4148			
D 4		1N 4148			
D 5		1N 4148			
Q 1		BC 107			
Q 2		BC 107			
Q 3		BC 107			
Q 4		BC 107			
Q 5		BC 107			
Q 6		BFY 51			
Q 7		AC 188			
Q 8		AC 188			
AF-amplifier for RC 2 - RC 3 Duplex Controller Print AP 400 Tilhører tegn. nr.: 70363-3E			Rettet:		Tegn.: Kontr.:
					Stykl. nr.: 70365-4S



Rettet:

AUTOMATIC VOLUME CONTROLLED AMPLIFIER FOR
REMOTE CONTROLLER. PRINT BOARD AP 343/1

Tegn.: 10.9.70
BEP

Kontr.: 10.9.70
E.F.

Stykl. nr.: 70286/4

Tegn. nr.:

70283/4

AP-RADIOTELEFON

Alignment procedure for sequence tonereceiver AP 351.

The capacitors of the chosen code numbers in accordance to the scheme (see dwg.no.70180/4.) are to be installed, first code at C7, second at C13 and third at O20. Place the trim.pot. meters R11, R22 and R33 to center position.

An AF-generator tuned to the chosen frequency in connection with a signal generator is connected to the VHF-receiver. The deviation is adjusted in accordance to the scheme. A VTVM in range 3 Volt is connected to TP 50. The core of S1 is adjusted to max. deflection. By means of R11 the size of the deflection is adjusted to 1,5 Volt hereby another max. adjustment must be tried on the iron core of S1 and the deflection readjusted to 1,5 Volt. First tone should be adjusted and the same procedure is followed for tone two and three where R22, S2 and R33, S3 have to be used.

To obtain the tuning of tone two and three a separate power supply of each tone section has to be made, to obtain this, a connection between + 10V and the house of the respective transistor- Q7 and Q11 has to be made.

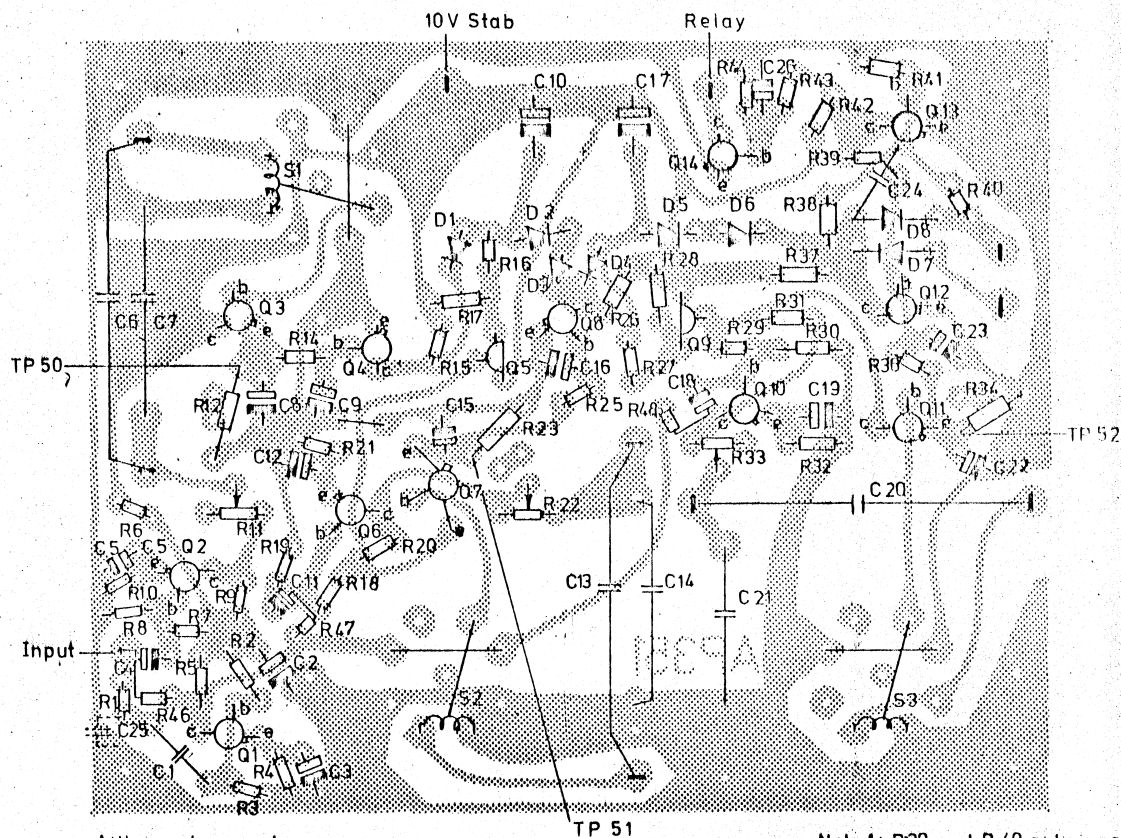
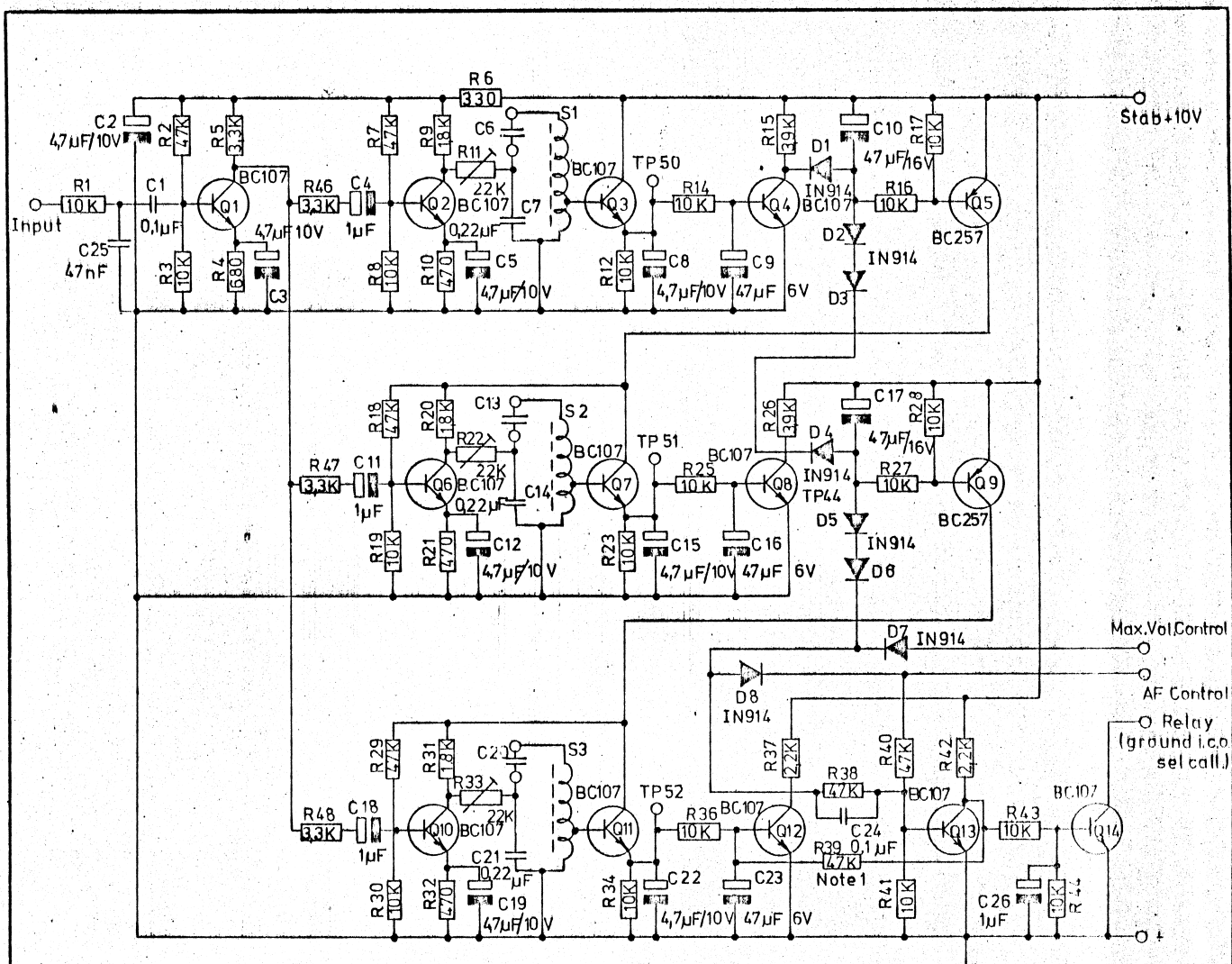
For tonereceivers, comprising only one or two tones, the procedure is the same as mentioned above.

E. Folling 31-7-70.

AP-RADIOTELEFON

Tone	Frequency in %s	Values for "Siemens" pot. core 22/13 N28 A315	Values for "Philips" pot. core 22/13 - 387 AOA - μ e 150	Values for "Siemens" pot. core 22/13 N28 A315	Values for "Philips" pot. core 22/13 AOA μ e 150	Frequency Deviation in K c/s
		Tone-receiver C7 and C13 pF	Tone-receiver C7 and C13 pF	Tone-transmitter C1 and C2 pF	Tone-transmitter C1 and C2 in pF	
0	980	23500	16900	21000	16000	1,2
1	1190	15500	11400	13800	10700	1,4
2	1380	11200	8300	10100	7900	1,65
3	1600	8300	6200	7300	5800	1,9
4	1800	6500	4900	5600	4500	2,2
5	2010	5200	3900	4400	3500	2,5
6	2220	4200	3200	3500	2800	2,8
7	2410	3600	2700	2900	2300	3,1
8	2590	3100	2300	2400	1950	3,3
9	2820	2600	2000	1900	1600	3,5

Rettet: 	C values for tone-receiver		Tegn.: A.B.P.	Kontr.: EF
	AP 351, and tonetransmitter AP 369		13/10-70	13-10-70
			Stykl. nr.:	
	AP-RADIOTELEFON		Tegn. nr.:	70180/4



Allignment procedure
look for description no. 70176-4
and C values no. 70180-4

Note 1: R39 and R40 only incorporated
at squelch controlled sel. call.

Retter 18-9-73 HP
28-5-74 HP
7-10-75 EIVEF

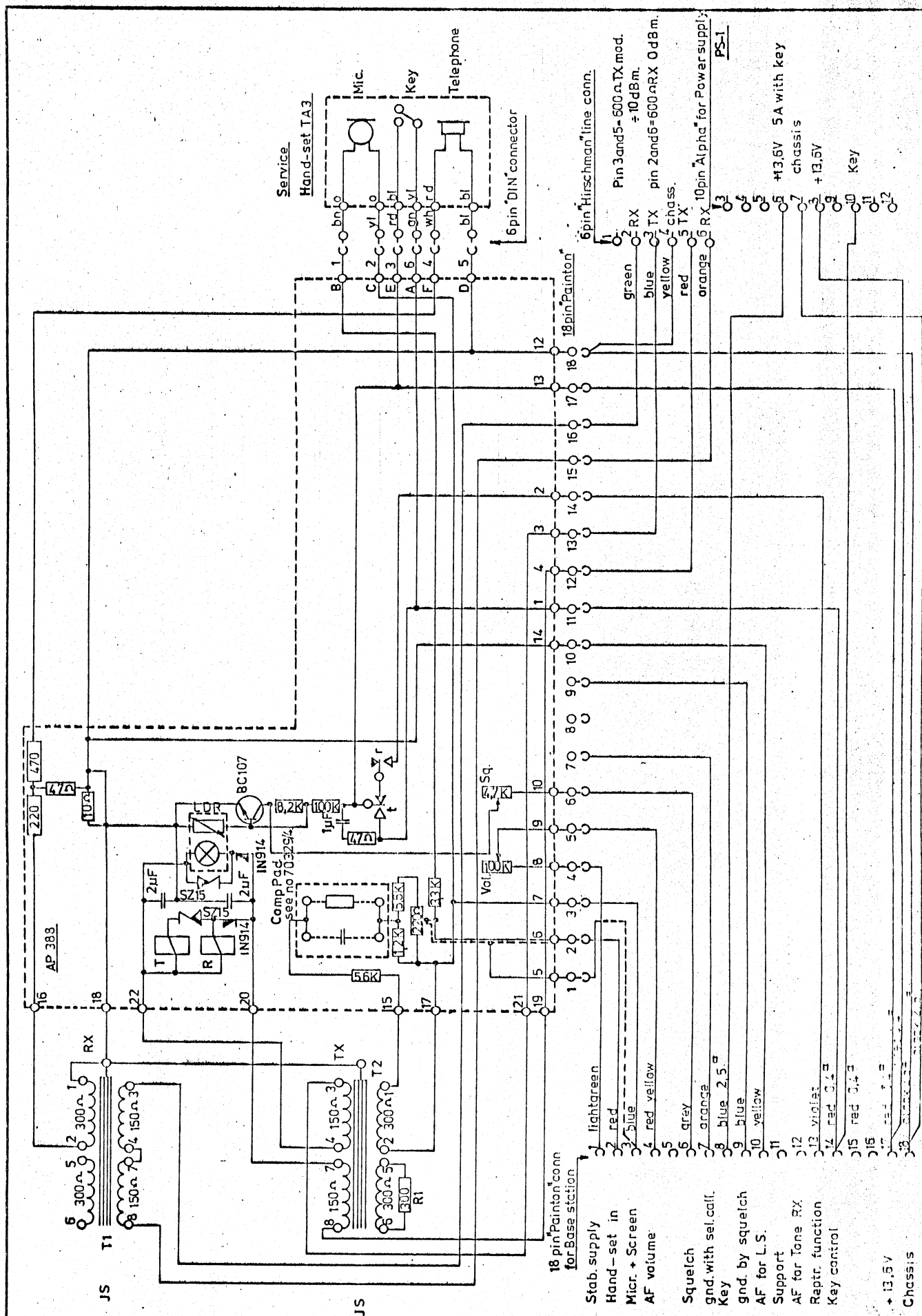
Sequence tone receiver for 3 tones
Printboard AP 35/3 AP 700

Tegn.: 27-6-73 Kontr.: 27-6-73
HP
Stykl. nr.: 70212-45.

AP-RADIO TELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R 1		10 kΩ $\frac{1}{4}$ w	R39		47 kΩ $\frac{1}{4}$ w
R 2		47 kΩ $\frac{1}{4}$ w	R40		47 kΩ $\frac{1}{4}$ w
R 3		10 kΩ $\frac{1}{4}$ w	R41		10 kΩ $\frac{1}{4}$ w
R 4		680 Ω $\frac{1}{4}$ w	R42		2,2 kΩ $\frac{1}{4}$ w
R 5		3,3 kΩ $\frac{1}{4}$ w	R43		10 kΩ $\frac{1}{4}$ w
R 6		330 Ω $\frac{1}{4}$ w	R44		10 kΩ $\frac{1}{4}$ w
R 7		47 kΩ $\frac{1}{4}$ w	R46		3,3 kΩ $\frac{1}{4}$ w
R 8		10 kΩ $\frac{1}{4}$ w	R47		3,3 kΩ $\frac{1}{4}$ w
R 9		1,8 kΩ $\frac{1}{4}$ w	R48		3,3 kΩ $\frac{1}{4}$ w
R10		470 Ω $\frac{1}{4}$ w			
R11		22 kΩ pot.			
R12		10 kΩ $\frac{1}{4}$ w	C 1		0,1 μF/12V ker.
R13			C 2		4,7 μF/10V tant.
R14		10 kΩ $\frac{1}{4}$ w	C 3		4,7 μF/10V tant.
R15		3,9 kΩ $\frac{1}{4}$ w	C 4		1 μF/35V tant.
R16		10 kΩ $\frac{1}{4}$ w	C 5		4,7 μF/10V tant.
R17		10 kΩ $\frac{1}{4}$ w	C 6		matched f. code
R18		47 kΩ $\frac{1}{4}$ w	C 7		0,22 μF MKH
R19		10 kΩ $\frac{1}{4}$ w	C 8		4,7 μF/10V tant.
R20		1,8 kΩ $\frac{1}{4}$ w	C 9		47 μF/ 6V tant.
R21		470 Ω $\frac{1}{4}$ w	C10		100 μF/15V lyt.
R22		22 kΩ pot.	C11		1 μF/35V tant.
R23		10 kΩ $\frac{1}{4}$ w	C12		4,7 μF/10V tant.
R24			C13		matched f. code
R25		10 kΩ $\frac{1}{4}$ w	C14		0,22 μF MKH
R26		3,9 kΩ $\frac{1}{4}$ w	C15		4,7 μF/10V tant.
R27		10 kΩ $\frac{1}{4}$ w	C16		47 μF/ 6V tant.
R28		10 kΩ $\frac{1}{4}$ w	C17		100 μF/15V lyt.
R29		47 kΩ $\frac{1}{4}$ w	C18		1 μF/35V tant.
R30		10 kΩ $\frac{1}{4}$ w	C19		4,7 μF/10V tant.
R31		1,8 kΩ $\frac{1}{4}$ w	C20		matched f. code
R32		470 Ω $\frac{1}{4}$ w	C21		0,22 μF MKH
R33		22 kΩ pot.	C22		4,7 μF/10V tant.
R34		10 kΩ $\frac{1}{4}$ w	C23		47 μF/ 6V tant.
R35			C24		0,1 μF/12V ker.
R36		10 kΩ $\frac{1}{4}$ w	C25		47 nF/12V ker.
R37		2,2 kΩ $\frac{1}{4}$ w	C26		1 μF/35V tant.
R38		47 kΩ $\frac{1}{4}$ w			
Sequence tone receiver for 3 tonet Print AP 351/3. Tilhører tegn. nr.: 70212-3E			Rettet:		Tegn.: Stykl. nr.: Kontr.: 70212-4S

Nr.	Kode	Data	Nr.	Kode	Data
S 1		L 221 tg. 71312-4			
S 2		L 221 tg. 71312-4			
S 3		L 221 tg. 71312-4			
D 1		1N 914			
D 2		1N 914			
D 3		1N 914			
D 4		1N 914			
D 5		1N 914			
D 6		1N 914			
D 7		1N 914			
D 8		1N 914			
Q 1		BC 107			
Q 2		BC 107			
Q 3		BC 107			
Q 4		BC 107			
Q 5		BC 257			
Q 6		BC 107			
Q 7		BC 107			
Q 8		BC 107			
Q 9		BC 257			
Q10		BC 107			
Q11		BC 107			
Q12		BC 107			
Q13		BC 107			
Q14		BC 107			
Sequence tone receiver for 3 tonet Print AP 351/3 Tilhører tegn. nr.: 70212-3E			Rettet:		<div>Tegn.:</div> <div>Kontr.:</div>
					Stykl. nr.: 70212-4S



Retetti:

CONTROL UNIT FOR DUPLEX/2 LINES.

MAN. CONTR. REPEATER FUNCTION

Art: CU-3

Tegn.: 18-9-73

Konstr.: 18-9-73

Stykl. nr.: 73329-45.

Tegn. nr.1

Nr.	Kode	Data	Nr.	Kode	Data
T 1		Linetrafo 42aK/3966			
T 2		Linetrafo 42aK/3966			
R 1		270 Ω			
		partlist see 388 Drawing. no. 70367/3			
Control unit for Duplex 12 lines man.contr.Repeater function art: CU 3 Tilhører tegn. nr.: 73329-3E			<div> <div>Tegn.: HP</div> <div>Kontr.: EF</div> </div> <div> Stykl. nr.: 73329-4E </div>		

Rating:

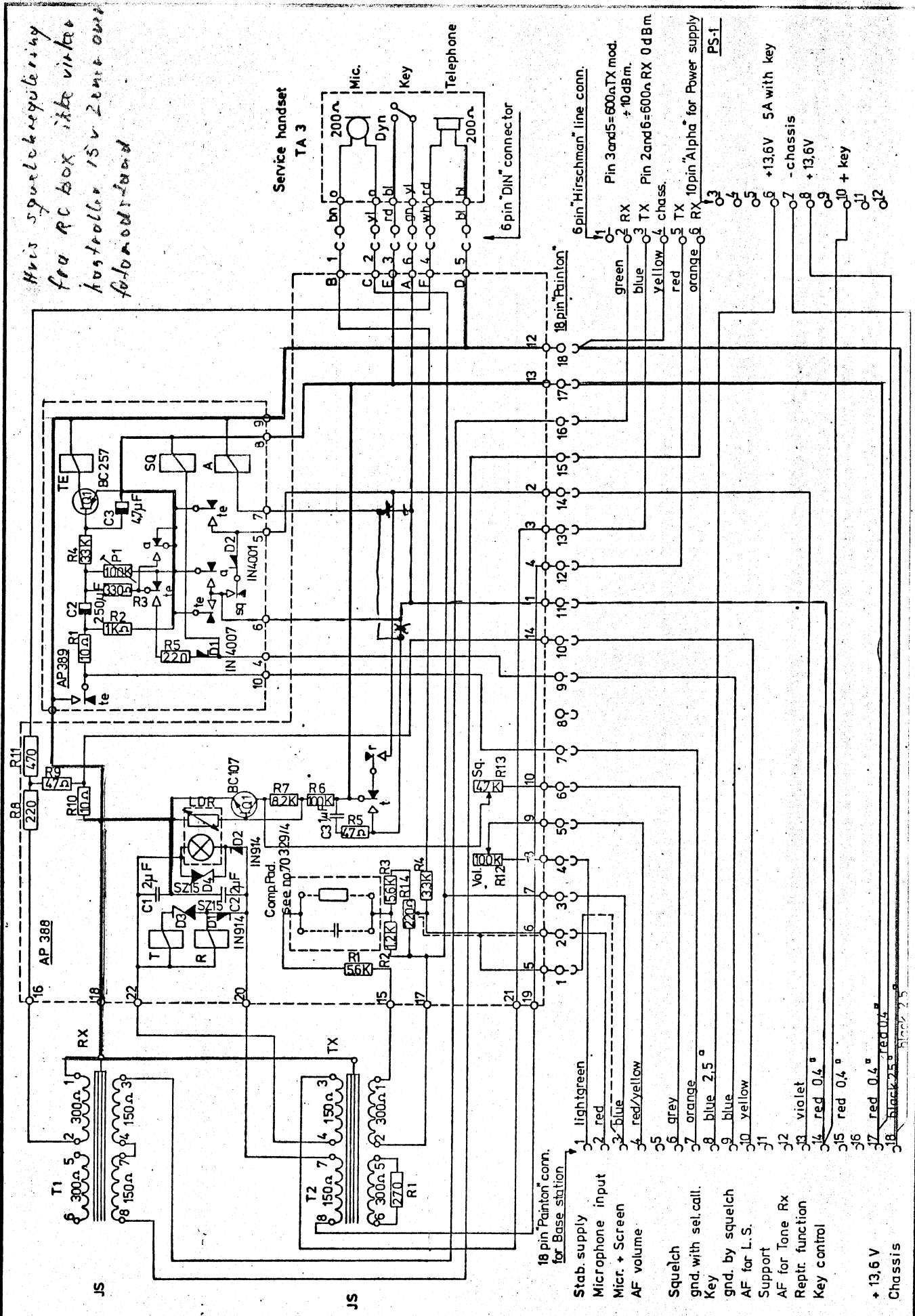
CU5

72222 25



Nr.	Kode	Data	Nr.	Kode	Data
T 1		Linetrafo 42aK/3966			
T 2		Linetrafo 42aK/3966			
		partlist see 406 Drawing no. 73333-4E			
		partlist see 388 Drawing no. 70367/4			
Control unit for Duplex, 1 line manual controlled repeater function Tilhører tegn. nr.: CU 5 73323-3E			<div> <div>Tegn.: HP</div> <div>Kontr.: EF</div> </div> <div>Stykl. nr.: 73323-45</div>		

*This squelch regulating
for PC box like vintage
controller 15V Zener over
folow modified*



Rettet: 23-8-73 AC
19-2-74 HP
12-3-74 JAN

CONTROL UNIT FOR DUPLEX/2 LINES, TONE/
MAN. CONTR. REPEATER FUNCTION. Art: CU-6

AP-RADIOTELEFON

Tegn.: A.B.P.
25.11.70
Kontr.: 6-9-73
EF

Stykl. nr.: 70465-4S

Tegn. nr.:

70465/4

Nr.	Kode	Data	Nr.	Kode	Data				
TL		Linetrafo 42aK/3966							
T2		Linetrafo 42aK/3966							
R1		270~ Partlist see 388 Drawing no. 70367/4 Partlist see 389 Drawing no. 70358/4							
Control unit for Duplex/2line Tone/Man.Contr. Art:CU-6 Tilhører tegn. nr.: 70465/4			Rettet:		<table><tr><td>Tegn. H.P.</td><td>Stykl. nr.:</td></tr><tr><td>Kont. E.F.</td><td>70465-4S</td></tr></table>	Tegn. H.P.	Stykl. nr.:	Kont. E.F.	70465-4S
Tegn. H.P.	Stykl. nr.:								
Kont. E.F.	70465-4S								

Service Microtelephone

Mic.

Key

telephone

blue

red

red

yellow-blue

yellow

black

black

blue

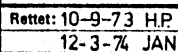
yellow

red

blue

6 pin DIN connector

6599



CU7

Tegn.: 27.1.71
A.B.P.

Kontr.: *EB*

Stykl. nr.: 71060-45

Tegn. nr.:

71060 / 4

Nr.	Kode	Data	Nr.	Kode	Data
T 1		Linetrafo 42aK/3966			
T 2		Linetrafo 42aK/3966 partlist see 406 Drawing no. 73333-4E partlist see 388 Drawing no. 70367/3 partlist see 389 Drawing no. 70358/3			
Control unit for Duplex, 1 line, tone/manual controlled repeater function Tilhører tegn. nr.: CU 7 71060-3E			<div> <div>Tegn.: HP</div> <div>Kont.: EF</div> </div> <div> Stykl. nr.: 71060-45 </div>		

Nr.	Kode	Data	Nr.	Kode	Data
T 1		Linetrafo 42aK/3966			
T 2		Linetrafo 42aK/3966			
R1		270 Ω partlist see 388 Drawing no. 70367/3			
Control unit for Duplex, 2 line=			Rettet:		Tegn.: HP
4 wires, art: CU 8					Kopier: EF
Tilhører tegn. nr.: 73302-3E			Stykl. nr.: 73302-4S		

Control unit for Duplex, 1 Line

AP-RADIOTELEFON

CU9

Tegn.: 6-9-73
HP

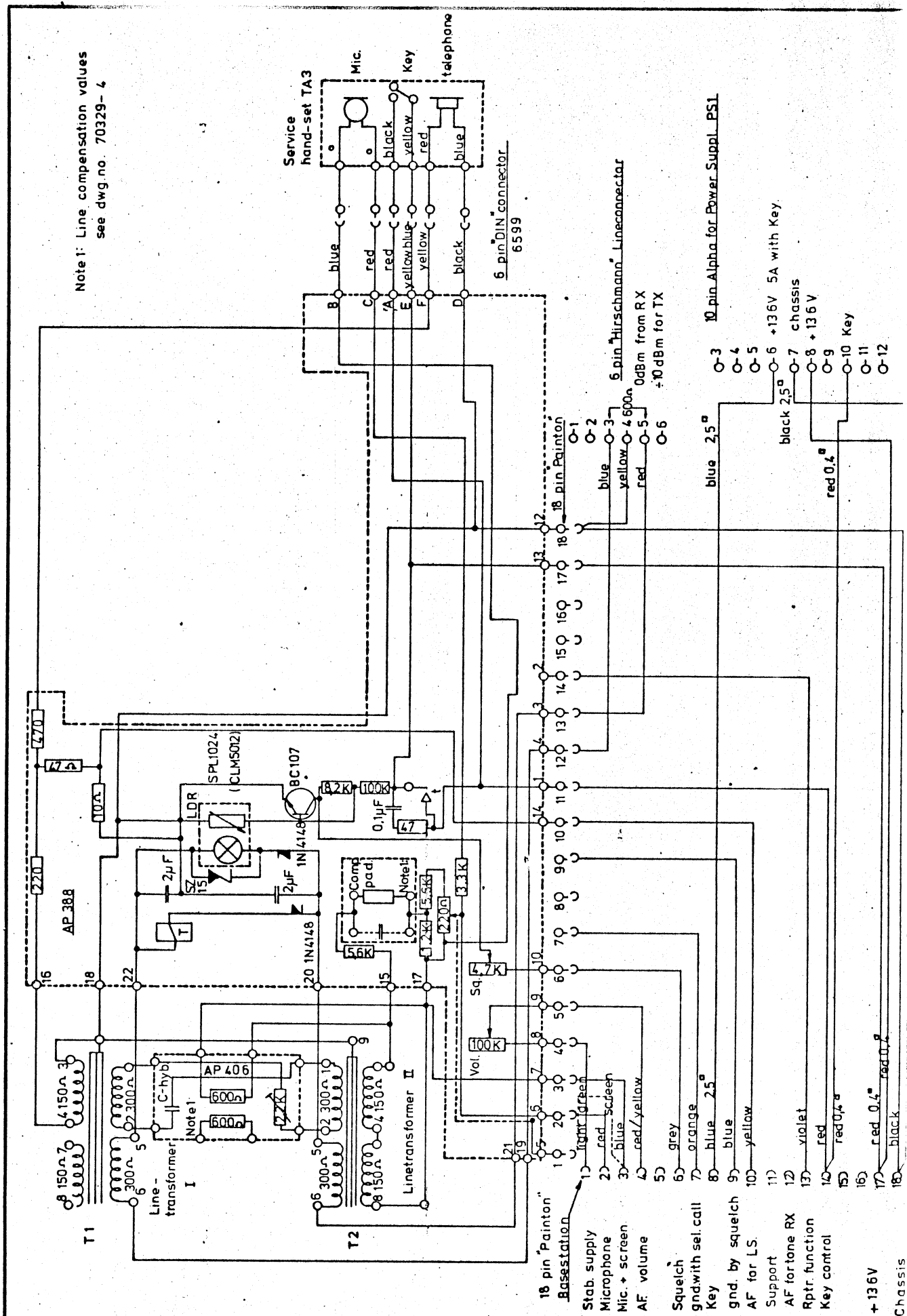
Stykl. nr.: 74131-4S

Tegn. nr.:

74131-3E

Kontr.: 6-9-7:
EE

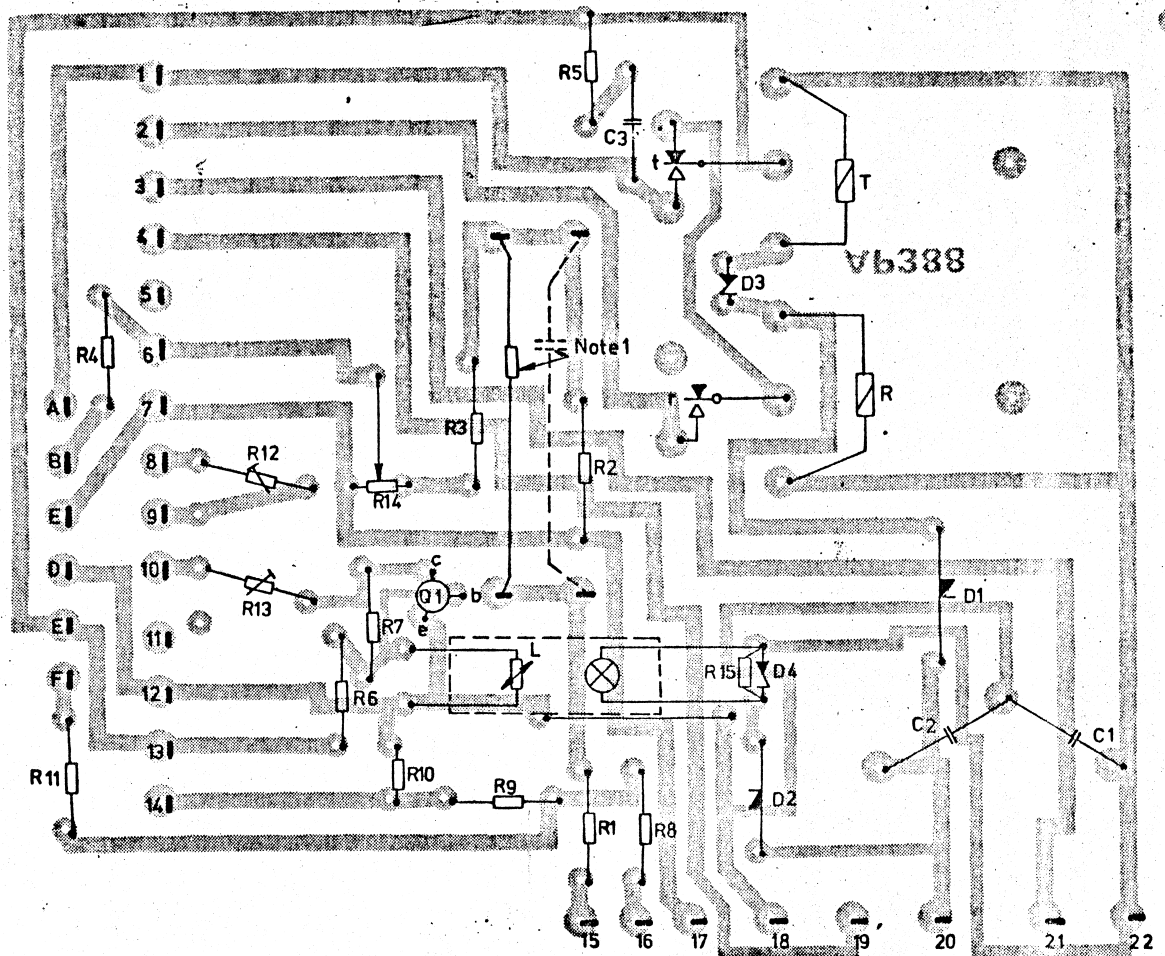
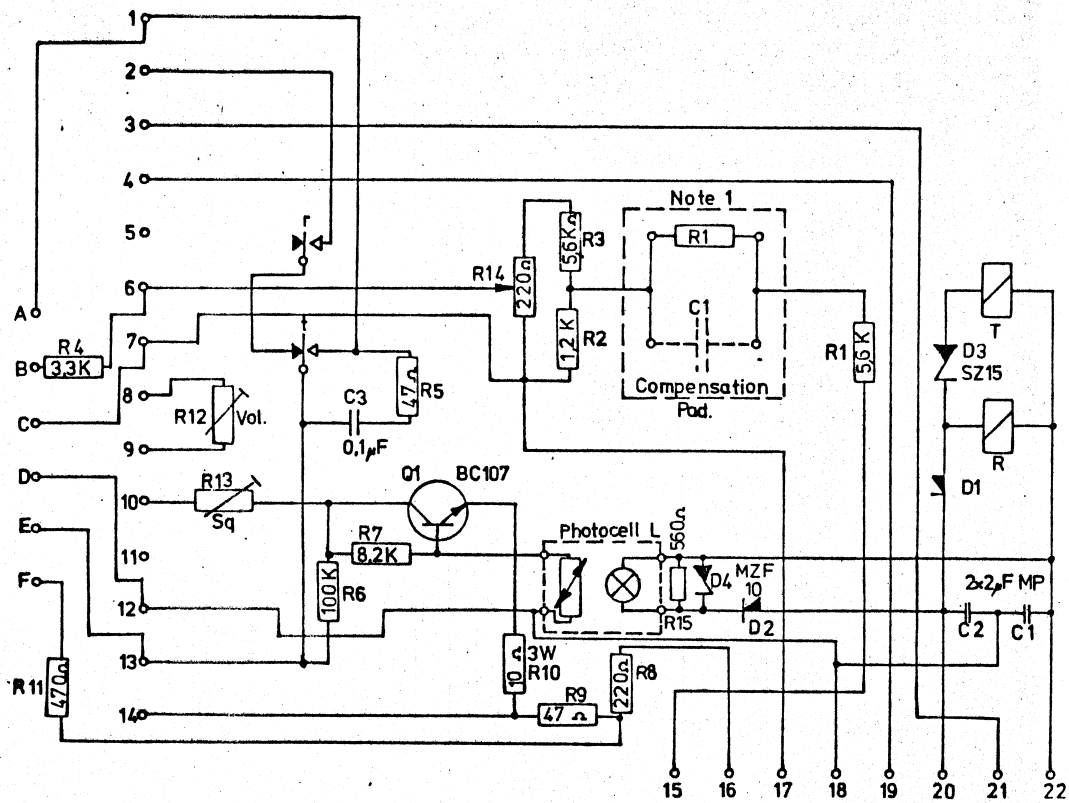
31-4S



AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
T 1		Linetrafo 42aK/3966			
T 2		Linetrafo 42aK/3966			
		partlist see 406 Drawing no. 73333-4E			
		partlist see 388 Drawing no. 70367/4			
Control unit for Duplex, 1 line CU 9			Rettet:		Tegn.: Stykl. nr.:
Tilhører tegn. nr. 74131-3E					Kontr.: 74131-4S

Note 1: Line compensation values
see dwg. 70329/4



Rettet: 22-6-76 AQ/POR

CONTROL UNIT PRINT BOARD AP 388/1/2

AP-RADIOTELEFON

Tegn.: 23.10.70
BEP

Kontr.: 23.10.70
EF

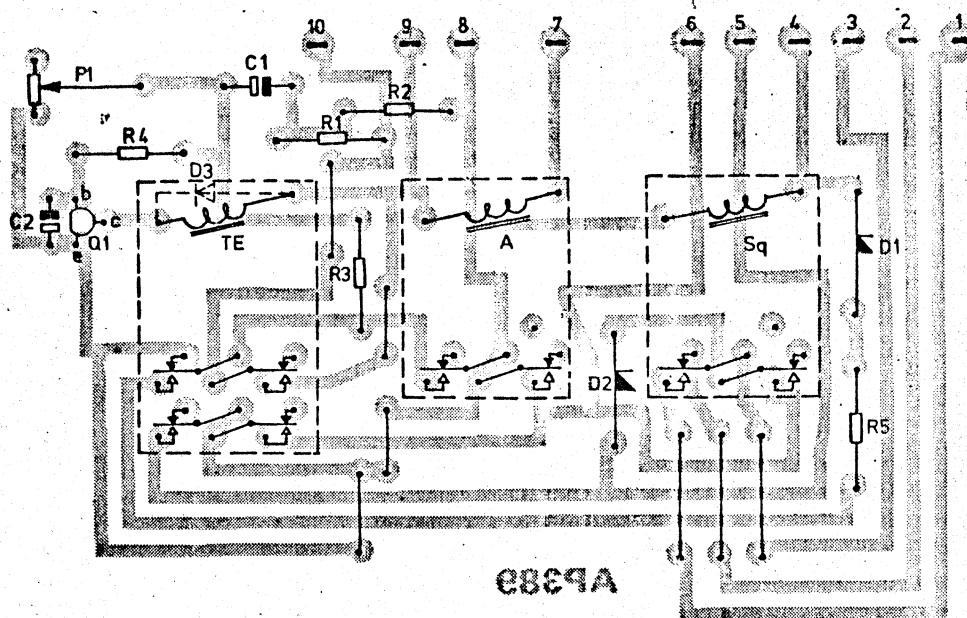
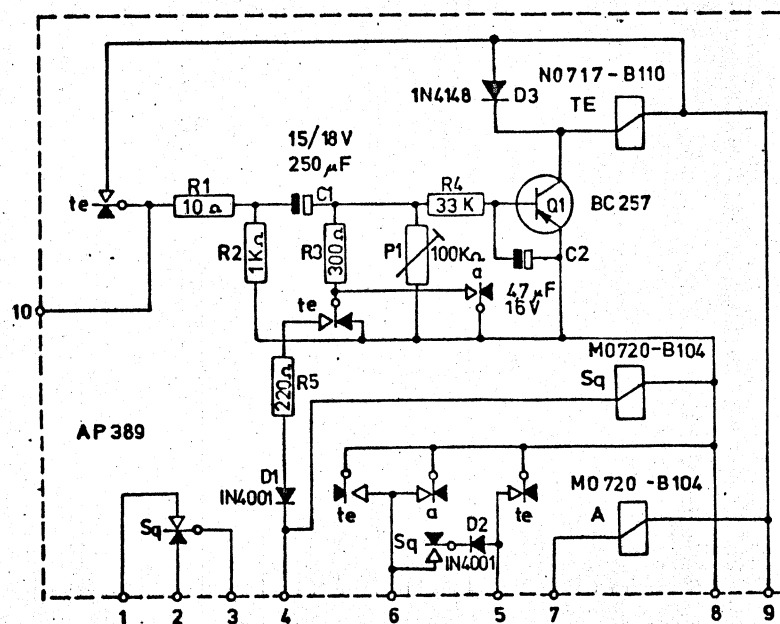
Stykl. nr.: 70368/4

Tegn. nr.:

70367/4

AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R1		5,6 K Ω $\frac{1}{4}$ W			
R2		1,2 K Ω "			
R3		5,6 K Ω "			
R4		3,3 K Ω "			
R5		47 Ω "			
R6		100 K Ω "			
R7		8,2 K Ω "			
R8		220 Ω "			
R9		47 Ω "			
R10		10 Ω 3"W			
R11		470 Ω $\frac{1}{4}$ W			
R12		100 K Ω "			
R13		5 K Ω "			
R14		220 Ω "			
R15		560 Ω "			
C1		2,2 μ F/250 V MP			
C2		2,2 μ F/250 V MP			
C3		0,1 μ F pol.			
D1		1N914			
D2		1N914			
D3		SZ15 zener			
D4		MZF 10			
Q1		BC107B			
Rel- R		Line relay 5 K Ω			
Rel- T		Line relay 5 K Ω			
Rel- I		Light relay			
Control unit Print board AP 388/1/2 Tilhører tegn. nr.: 70367-3E			Rettet:		<div>Tegn.:</div> <div>Stykl. nr.:</div> <div>Kontr.:</div> <div>70367-4S</div>



Rettet: 12-3-74 JAN
17-5-74 JAN

TIME DELAY UNIT FOR TONE CONTROLLED
REPEATER. PRINT BOARD AP 389/1

AP-RADIOTELEFON

Tegn.: 14 10 70 Kontr.: 14 10 70
BEP EF

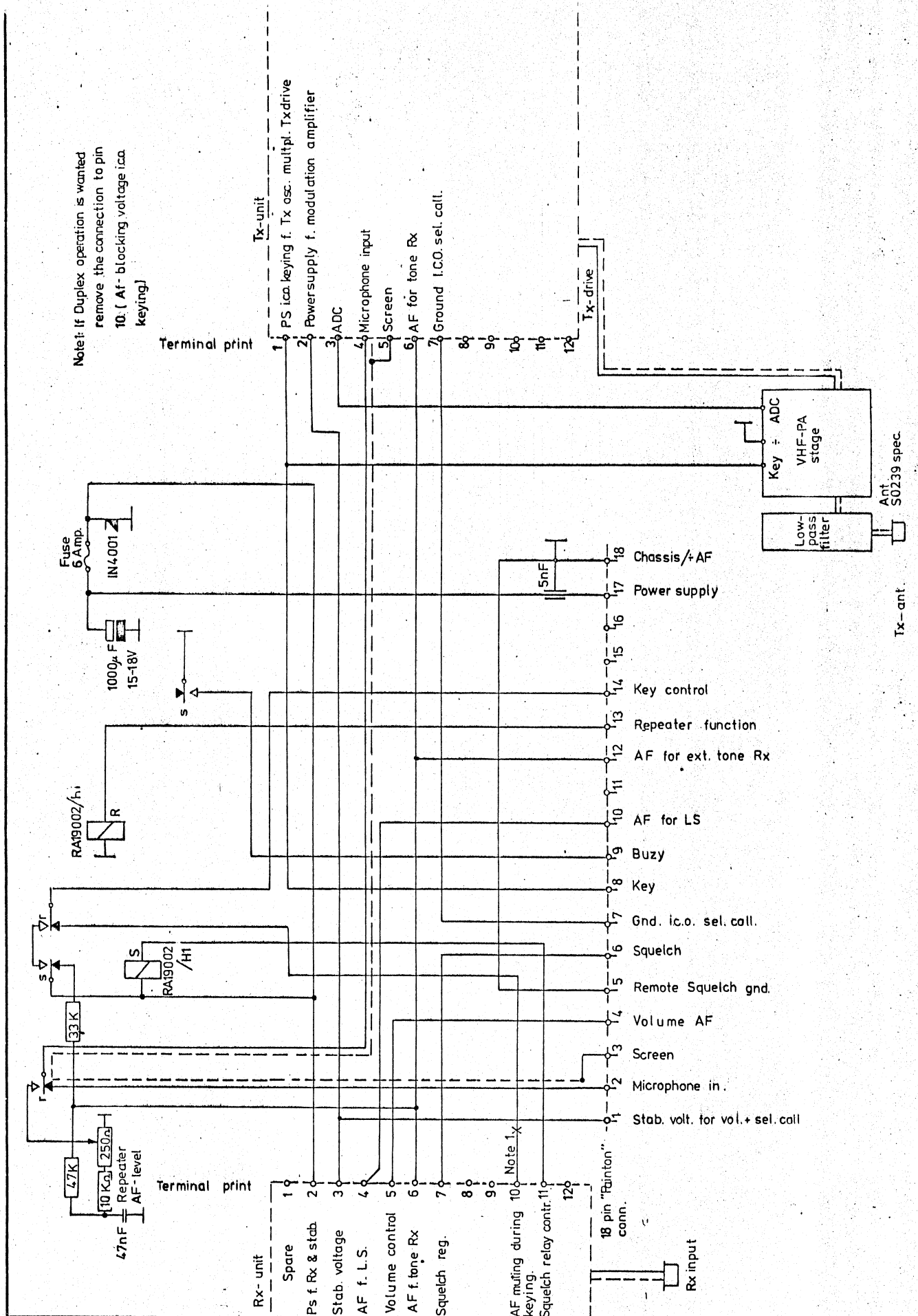
Stykl. nr.: 70359/4

Tegn. nr.:

70358/4

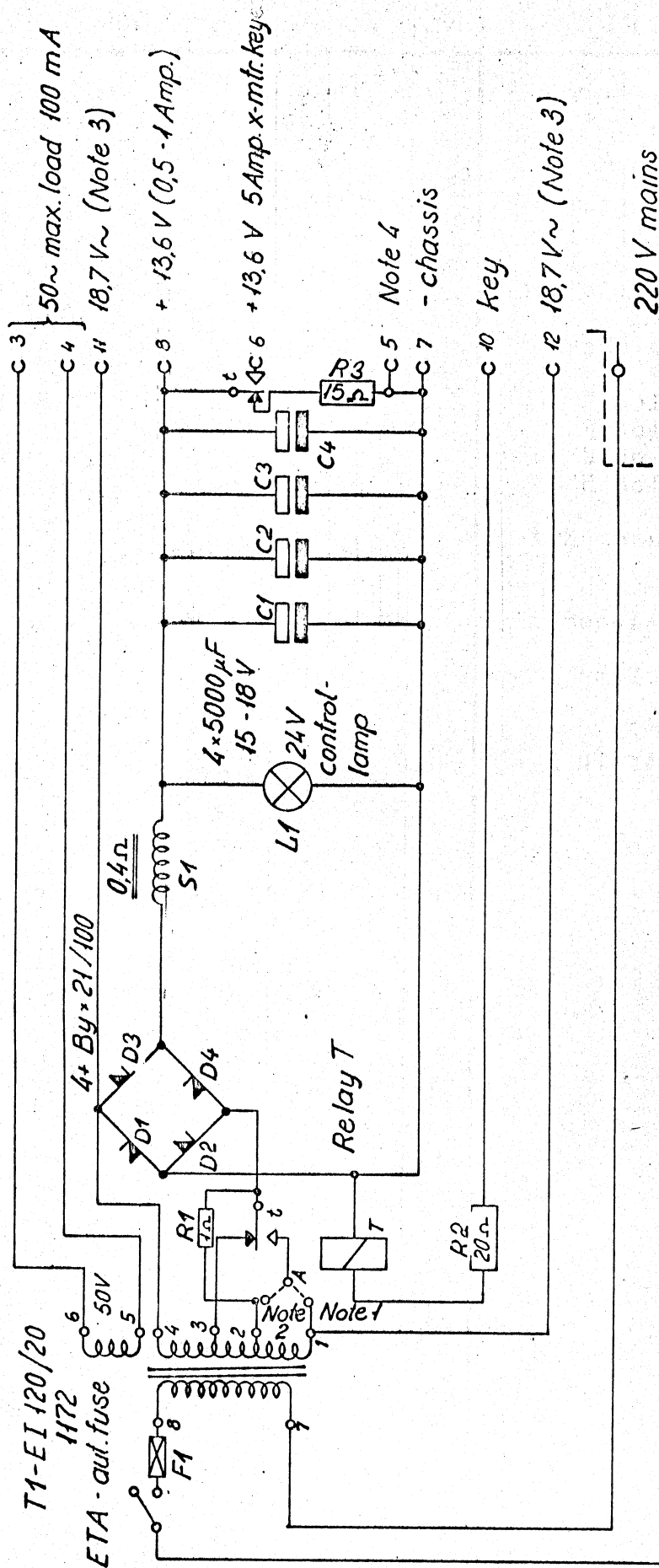
AP-RADIOTELEFON

Nr.	Kode	Data	Nr.	Kode	Data
R 1		10 Ω $\frac{1}{4}$ w			
R 2		1 k Ω $\frac{1}{4}$ w			
R 3		300 Ω $\frac{1}{4}$ w			
R 4		33 k Ω $\frac{1}{4}$ w			
R 5		220 Ω $\frac{1}{4}$ w			
C 1		250 μ F/15-18V ell.			
C 2		4,7 μ F/16V tant.			
P 1		100 k Ω trim.pot.			
D 1		Motorola 1N 4001			
D 2		1N 4001			
D 3		1N 4148			
Re lay					
TE		Siemens NO717-B110			
Sq		Siemens MO720-B104			
A		Siemens MO720-B104			
Q 1		BC 257			
Time delay unit for tone control repeater Print Board AP 389/1 Tilhører tegn. nr.: 70358/4			Rettet: 13-3-74 JAN 17-5-74 JAN		Tegn.: Kontr.: Stykl. nr.: 70359/4

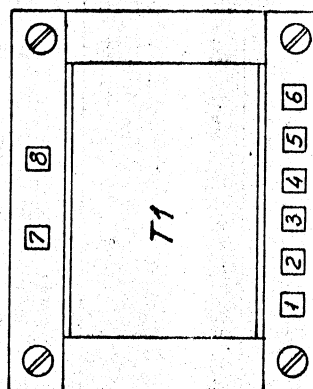


Rettet:	BASESTATION WITH REPEATER, SEL. CALL AND DUPLEX OPERATION. AP700. TRY		Tegn.: 10.11.70 BEP	Kontr.: 10.11.70 E.F.
			Stykl. nr.:	
			Tegn. nr.:	
	AP-RADIOTELEFON		70415/4	

10 pin "Alfa" conn. (female)



- Note 1: With 25 W connect A to pin 1
 Note 2: With 6 W connect A to pin 2
 Note 3: May not be used with galvanic connection to the 13.6 V DC.
 Note 4: Remove strap if power supply shall be used in connection with a emergency adapter.



Notice: As the PS when not in connection with an emergency adapter, can destroy the base station. The PS should be tagged clearly that the strapping (Note 4) is removed.

Erstatter 68146/4

Rettet:

AP 700 PS1
 Power supply for base station

AP-RADIOTELEFON

Tegn.: UK.

Kontr.:

1/9-70 E.F.

Stykl. nr.:

70245/4

Tegn. nr.:

70240/4

Nr.	Kode	Data	Nr.	Kode	Data
R1		1 ohm 3 W			
R2		20 ohm "			
R3		15 ohm 15 W			
C1		5000 mF/15-18v			
C2		5000 mF/15-18v			
C3		5000 mF/15-18v			
C4		5000 mF/15-18v			
S1		0,4 ohm choke			
D1		BY 21/100 R			
D2		BY 21/100 R			
D3		BY 21/100 N			
D4		BY 21/100 N			
F1		Aut. Fuse ETA			
Rel -T		V23006-A0008-A192			
L1		24v/3W lamp			
T1		EI 120/20 1172 trafo			
Power Supply for Base Station PS1 AP 700 Tilhører tegn. nr.: 70240/4			Rettet:		Tegn.: EB Kontr.:
					Stykl. nr.: 70245/4