

March '84

24



User's manual

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9. PARTS LISTS

INTRODUCTION

SHIPMATE RS 7100 is a marine VHF radio telephone which is designed to comply with all needs for quality and flexibility within communication in fishing, merchant and naval fleets.

RS 7100 has a frequency band from 156.025 MHz to 157.425 MHz and 150.625 to 162.025 MHz for international channels and 155.000 - 163.000 MHz for private channels.

Fully equipped RS 7100 has 55 international channels, 99 private channels, 4 weather channels (US and Canada), 3 sets of US channels and yachting and fishing channels for several countries.

All channels, except the 99 private channels, have been coded into the microprocessor program of RS 7100 at the factory. The 99 private channels have to be coded into a separate "private" PROM, which can be placed in the radio telephone.

RS 7100 has a modular design with all modules provided with contact plugs which secure quick service and troubleshooting.

RS 7100 has a rugged construction with a high pressure diecast metal cabinet which gives great mechanical strength and watertightness with all operations and control functions placed on the front.

As an advanced feature the main station can be connected to a total of 6 remote stations enabling you to install a radio telephone anywhere needed.

If in addition to the main station there are remote stations, one of the stations is nominated priority station, it need not necessarily be the main station but may as well be one of the remote stations.

The power supply for RS 7100 main stations is 10-30 VDC but as optional extra a 220/110/24 VDC power converter can be delivered.

The power supply for the 19" module and the remote stations is standard 220/110 VAC with automatic switch over to 24V battery, if any, or 10-30 VDC.

To comply with the need for flexible installation
RS 7100 is produced in 3 versions:

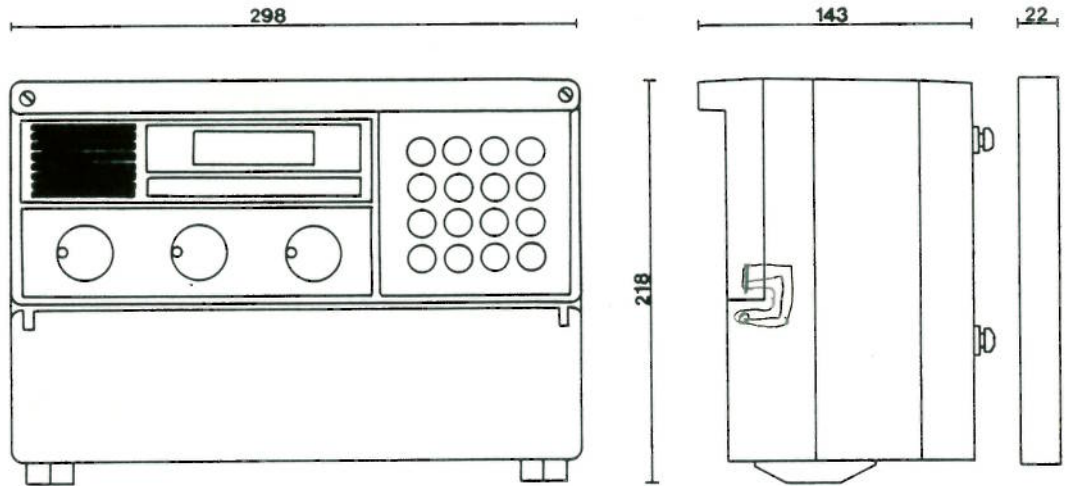
- Main station for wall mounting.
- 19" module for rack mounting
- Main station with separate control panel for
flush mounting, where the cabinet can be placed
elsewhere within the cable length.

2. SPECIFICATIONS

2. SPECIFICATIONS

2.1. General RS 7100 main unit

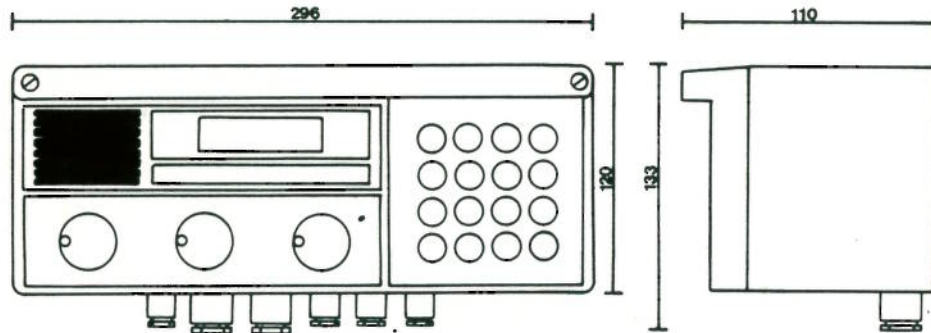
MAIN STATION



Channels	: 55 international marine channels 99 private channels available. 3 sets of US channels. (Leisure, Commercial, Government). 4 weather channels (US and CANADA) Yachting and fishing channels for several countries.
Mode of operation	: Duplex/Simplex
Temperature range	: - 15° to 55°C
Humidity	: 0 - 95% rel.
Vibrations	: 0 - 50 Hz, 1g.
Supply voltage	: 10-31 VDC Optional 110/220V AC
Dual watch	: Channel 16 plus an operator selected channel
Aut. ch. 16	: Separate key for channel 16
Power consumption	: Receiving 12W Transmitting 90W
Weight	: 6,640 kg
Dimensions	: H 218, W 298, D 147 mm

2.2. RS7110 Remote unit

REMOTE STATION



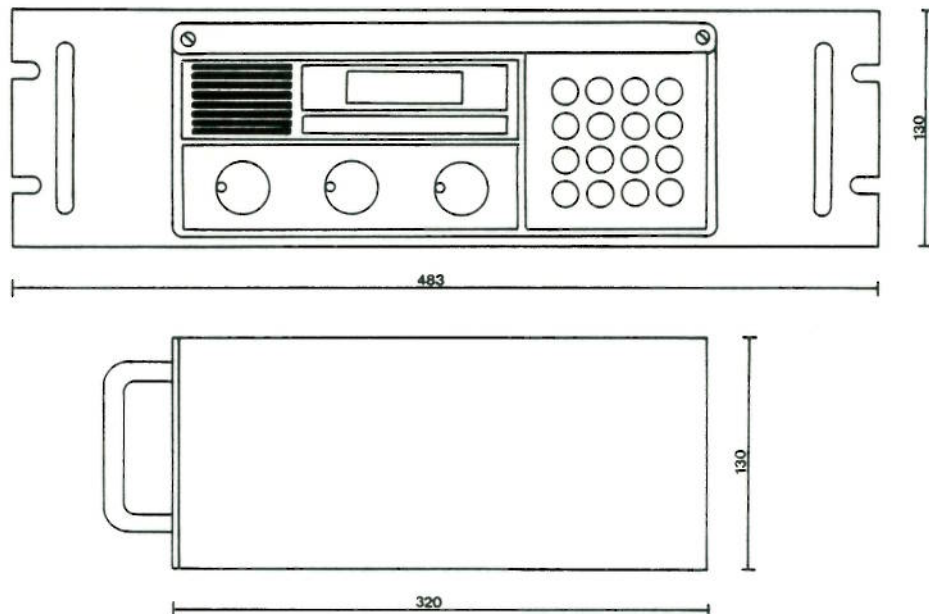
Dimensions : H 120, W 298, D 108 mm

Weight : 1.2 kg

2.3. RS7120 19" Module

MAIN STATION

19" RACK



Supply voltage : 110/220 VAC or 10-30 VDC

Dimensions : H 133, W 483, D 340 mm

Weight : 9.9 kg

All other specifications as RS7100 main unit.

2.4. RECEIVER

International freq. band	:	156.025 - 157.425 MHz 160.625 - 162.025 MHz
Private freq. band	:	155.000 - 163.000 MHz
Stability	:	$< 10 \times 10^{-6}$
Sensitivity	:	0.3 μ V 1/2 EMk 12dB SINAD equivalent to 0.3 μ V 1/2 EMk 20dB SINAD PSOF Weight
Selectivity	:	< 70 dB
Spurious response	:	< 70 dB
Intermodulation	:	< 70 dB
Audio power	:	2W in 8 ohm, 4W in 2 x 8
Telephone line	:	-20dBm a 600 ohm
Selcall alarm	:	Visual and acoustic, option.
CQ alarm	:	Visual and acoustic, option.

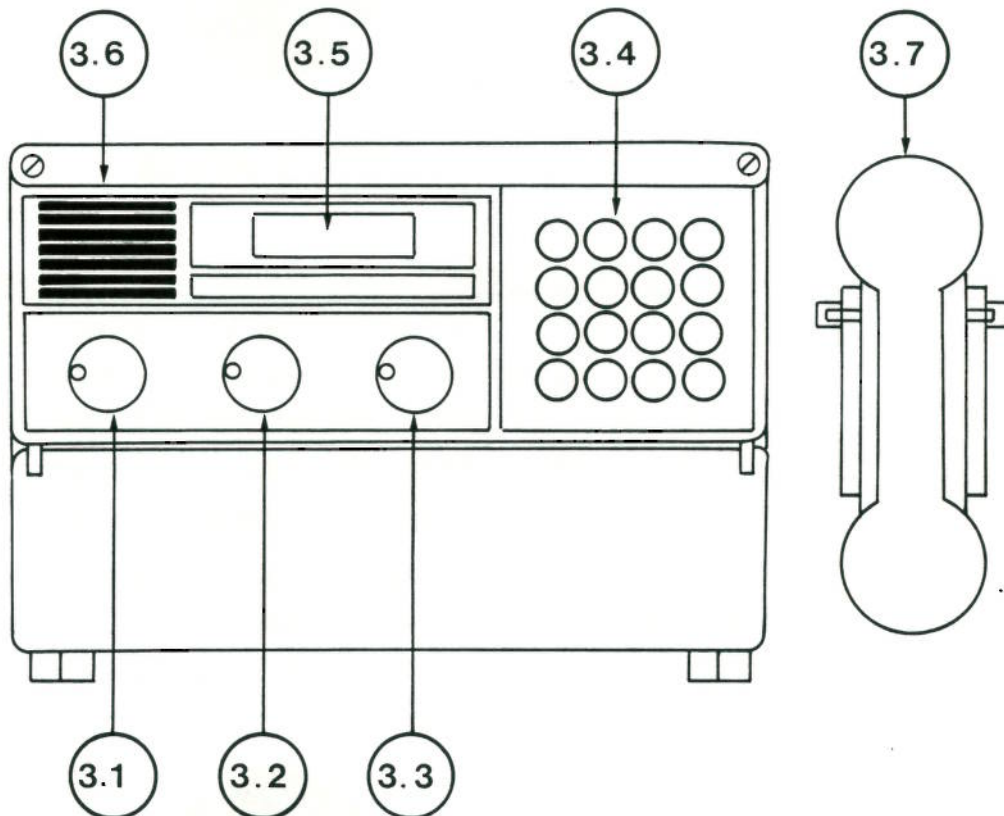
2.5. TRANSMITTER

International freq. band	:	156.025 - 157.425 MHz
Private freq. band	:	
Duplex	:	155.000 - 157.425 MHz
Simplex	:	155.000 - 163.000 MHz
Stability	:	$< 10 \times 10^{-6}$
Power output	:	25W and 1W stabilized
Channel spacing	:	25 KHZ 12,5 KHz option
Max. deviation	:	± 5 KHz with compressor
Modulation	:	6 dB/octave preemph. (1
Spurious emission	:	$\div 80$ dBc or $< 0.25 \mu$ W

All specifications according to CEPT.

3. OPERATION

3. OPERATION



3.1. ON/OFF SWITCH and VOLUME CONTROL

Turning the knob clockwise the radio telephone is turned on. The volume of the internal loudspeaker (and external loudspeaker if fitted) is controlled by the same knob. The volume control will have no effect on the handset earphone level (will maintain at 1 mW level).

3.2. SQUELCH and TRANSMITTING EFFECT

To cancel out the receiver noise in periods with no signal on the radio telephone the squelch control knob should be turned clockwise until noise cut-off occurs. The output power of the radio telephone will be 1W when knob is pulled out, and 25W when the knob is pushed in. The display will show the topical transmitter power, when the transmitter is operated.



High
Low  POWER

3.3. DIMMER CONTROL and SHIFT to US CHANNELS

The dimmer control operates the light intensity in the channel display and the keyboard. When the knob is pushed in, the radio telephone will receive and transmit on international channels, and when the knob is pulled out the radio telephone will use US channels.

NB! By pulling the knob the US channels can only be obtained in radio telephones for US, other radio telephones will remain on international channels no matter the position of the knob.



INT
US  CH

3.4 KEYBOARD (Easy touch)

3.41 0 - 9 CHANNEL SELECTING



The keys with numbers from 0-9 are used to key in the channel numbers. Channel numbers with only one digit are keyed in directly.

Channel numbers consisting of two digits are keyed in with the "10" digit first and the "1" digit immediately after. The time between first and second digit shall not exceed approximately 1 second.

If a prohibited channel is attempted keyed in, the channel display will flash and show the keyed number for about 1 second, and then return to the last legal channel used.

If the dual watch function was set before pressing the channel keys, it will be switched off by using one of the channel keys.

3.42 P PRIVATE CHANNELS

The key P has only effect if the radio telephone is equipped with a "private" PROM. Choosing of private channels takes place in the same way as selecting of other channels, namely by pressing P and then the channel number. The display will show a P and the channel number.

If there is no "private" PROM or the keyed channel does not exist or the chosen channel is prohibited, the panel will show the pressed channel number flashing and then after approximately 1 second return to the last legal channel used. If the dual watch function was set before using P , it will be switched off.

3.43 16 CHANNEL 16 KEY

When the CH 16 key is pressed the radio telephone will operate on the calling and distress channel. The channel display will indicate 16. The radio telephone will remain operating on channel 16 until another channel is selected.

3.44 DUAL WATCH KEY

When the dual watch key is pressed the receiver will switch between channel 16 and a user selected channel at 0.1 and 1.8 seconds intervals.

Before setting dual watch be sure that the handset is in the cradle, and the squelch knob is turned to noise cut-off, otherwise the radio telephone will stay locked on channel 16.

One of the following steps will switch off the dual watch function:

- a second press on the dual watch key
- a press on the P key
- a press on a channel selector key
- taking the handset out of the cradle

NB! The dual watch function is prohibited in some countries.

3.45 LOCAL

The capacity for total extension of the radio telephone is one main station and 6 remote (local) stations. Each station will have its own number, and it is possible to give priority to any station. It need not necessarily be the main station, but may as well be one of the remote stations. Number 1 has priority.

The priority station has preference to all other stations, i.e. connection to an operating station will be cut-off when you start using the priority station. After finishing the use of the priority station, the connection to the station will be reestablished on the same channel as before the interruption, if Handset is still off hook!

When a user wants to operate a remote station it can be done in one of the following ways:

1. If the local key is pressed and the handset remains in the cradle, it is possible to listen to the channel keyed in, or - if a new channel number is not keyed in - to the latest channel used by that station.

All functions but the transmit function are available in this way, i.e. the remote station will operate like the main station, until the local key is pressed at another station in the set.

2. If the handset is taken out of the cradle the local station will function as a main station which means it can receive and transmit. All functions will be available in the same way as on the main station. In this case it is not necessary to press the local key. The remote station will lock up the set until the handset is replaced in the cradle, or the priority station takes over.

When the set is occupied by a station, the priority station can only take control of the set by lifting of the handset out of the cradle.

When a station is in use, all other stations will show OCC (occupied) on the display and simultaneously the channel number used will be shown.

If the main station is switched off the remote stations will be switched off as well.

As soon as the main station is switched on, it will return the control to the remote station in use prior to the switch off and on the same channel. This will happen although the handset is in the cradle.

Switching on a local station after a switch off, it automatically returns to the channel used prior to the switch off

3.46 SPECIAL KEY

The special key can be activated only when a channel has been keyed in and the dual watch and transmitter functions have been switched off.

The results from the use of the special key are shown on the display for 2-3 seconds after which the display will return to the channel keyed in.

The functions of the special key are the same for both the main station and the remote stations.

The following special functions can be keyed in:

SPEC. 11

This function can be used on both the main and the remote stations, and it indicates the PROM 1 version number of the station in question. The version number is shown on the display of the station in question.

SPEC. 12

The PROM 2 version number of the main station is shown on the display.

SPEC. 13

Checks correct functioning of the transmitter and receiver by transmitting at a frequency in intervals of abt. 1/2 second. If nothing is received during transmission the transmitter/receiver is out of order. The fault will be coded out on the display.

SPEC. 14

When keying in this function all segments of the display are lit (for abt. 3 seconds).

SPEC. 21-27

Indicate the number of transmission errors between the main and the remote stations since latest reset. The last digit of the number indicates the station number (1-7) in question. If the main station number is 3 and you key in 23 all transmission errors between the main station and the remote stations are displayed. If you key in another number for instance SPEC. 21

(station number 1) the display shows the number of transmission errors between the main station and station number 1.

If you key in a nonexisting number or if the connection has been cut the display will show P88.

SPEC. 28

Reset of all transmission error counters.

SPEC. 10, SPEC. 90 and SPEC. 91 are used for servicing the system. To gain access to these service functions you must first key in SPEC. 57.

SPEC. 57

Access to service functions.

SPEC. 10

Reset of system

SPEC. 90

Test of RAM in main station. The test takes place from the main station.

SPEC. 91

Test of RAM in remote stations. The test can be carried out on each individual remote station or from the main station.

NB! Displaying takes place on the displays of the remote stations only.

3.47 TEST/RESET KEY

On pressing TEST/RESET key the first time selcall and CQ/ALARM are tested internally. On the display CALL and CQ will be flashing, and a howl will be heard from the loudspeaker for about 5 seconds.

On pressing above key a second time selcall and CQ/ALARM are reset.

Calling from a coast station will have same effect as a test and you reset by pressing TEST/RESET.

3.48 SELCALL

On the display the figure CALL indicates that a selective tone call has been received, either from the test key or from a coast station.

By selcall a howl will be heard in the loudspeaker for about 5 seconds. The figure CALL on the display will remain flashing until it is switched off by pressing the TEST/RESET key.

3.49 CQ/ALARM

Indicates on the display that a CQ/ALARM is given either from the test key or from a coast station.

By CQ alarm, a howl will be heard in the loudspeaker for about 5 seconds. The figure CQ on the display will remain flashing until it is switched off by pressing the TEST/RESET key.

3.5 DISPLAY



The display is shown above with its possible readings.

25W : indicates the transmitting - Tx Power is 25W
1W : indicates the transmitting - Tx Power is 1W
US : Operates on US channels
INT : Operates on international channels
P : private channels
88 : the channel number
CALL : indicates a selcall
CQ : indicates CQ alarm
OCC : indicates that a remote station is operating
DW : indicates that the dual watch function is on

3.6 LOUDSPEAKER

Internal loudspeaker and external if fitted, are controlled by the volume control knob.

3.7 HANDSET

For transmitting the handset is taken out of its cradle, and the transmit button in the handset is pressed (the transmit button cannot be activated when handset is in its cradle).

The transmitting power will be shown on the display (1W or 25W).

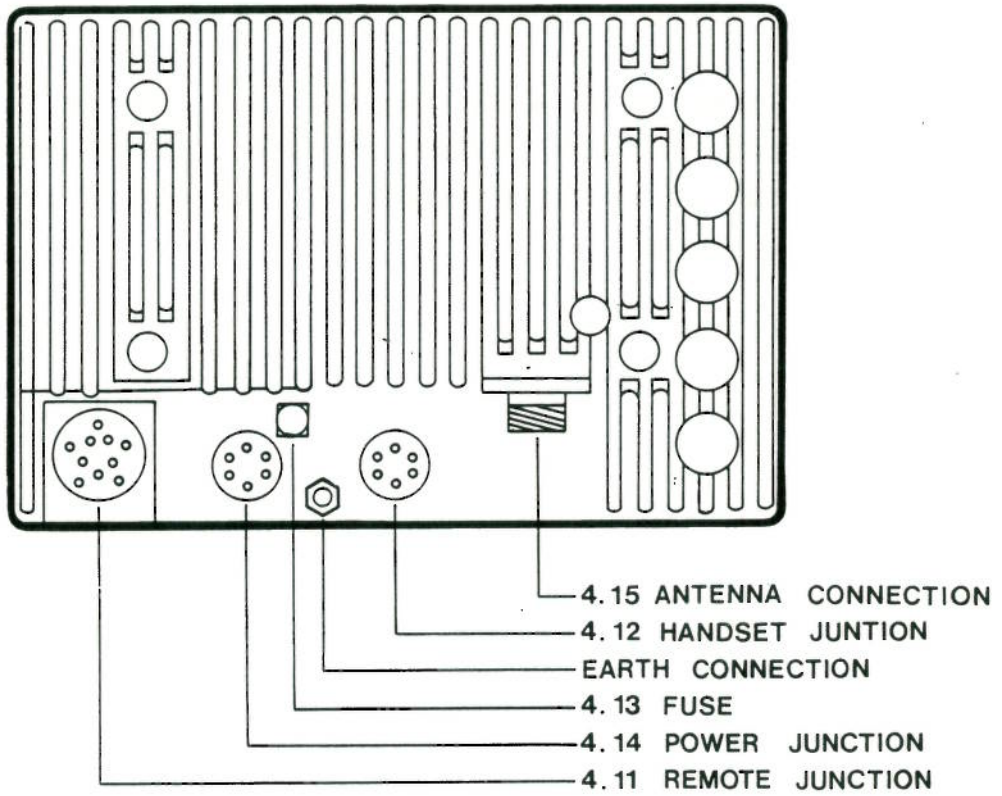
If a channel shift is attempted while the transmitter is operating, the transmitter will stop working while shifting.

If the dual watch function was set, it will be switched off when the handset is taken out of its cradle.

NB! It is not possible to transmit on prohibited channels.

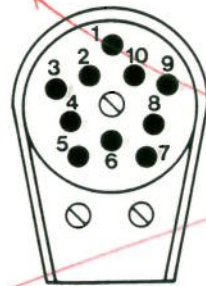
4. INSTALLATION

4.1 CONNECTIONS



4.11 REMOTE STATIONS

REMOTE STATION PLUG (MAIN STATION)

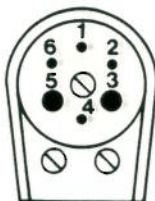


- PIN 1 : RX LOOP
- PIN 2 : 13,6V
- PIN 3 : LINE AF
- PIN 4 : LINE MICROPHONE SIGNAL
- PIN 5 : TX LOOP
- PIN 6 : TX LOOP
- PIN 7 : GND 13,6V
- PIN 8 : RX LOOP
- PIN 9 : LINE MICROPHONE SIGNAL
- PIN 10 : LINE AF

A total number of 6 remote stations can be connected to the main station.
See system overview, numbering example and circuit description.

4.12 HANDSET

HANDSET PLUG



- PIN 1 : HEADPHONE
- PIN 2 : CRADDLE
- PIN 3 : HEADPHONE
- PIN 4 : MICROPHONE
- PIN 5 : MICROPHONE
- PIN 6 : PTT

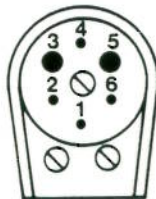
The handset is connected to the main station by means of 6 pins handset plug.

4.13 FUSE

15 amp.

4.14 POWER CONNECTION

POWER PLUG



- PIN 1 : SELCALL RELAY (-)
- PIN 2 : EXT. SPEAKER
- PIN 3 : BATTERY (-)
- PIN 4 : EXT. SPEAKER GND
- PIN 5 : BATTERY (+)
- PIN 6 : SELCALL RELAY (+)
13,6V

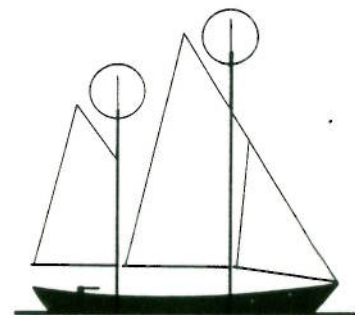
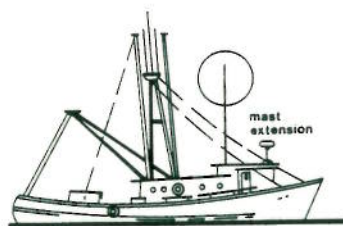
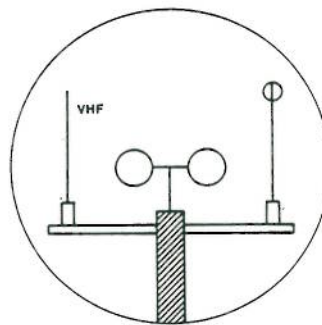
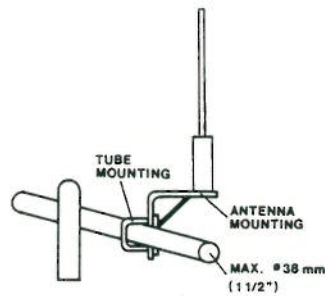
Power is connected by means of the 6 pins power plug that also contains a possible connection of selcall and external loudspeaker.

4.15 ANTENNA

To achieve a good signal be sure that the antenna is mounted as high and free as possible, otherwise screening from steel rigging and longwire antennas may disturb the signal. Wet sail may have a screening effect too.

Also the antenna should be mounted as far away as possible from noise sources such as radar and other electrical equipment.

For antenna connection cable type RG 213/U (old number RG 8/U) should be used. If the distance from the antenna to the main station is short (not exceeding 4 metres cable type RG 58/U can be used.



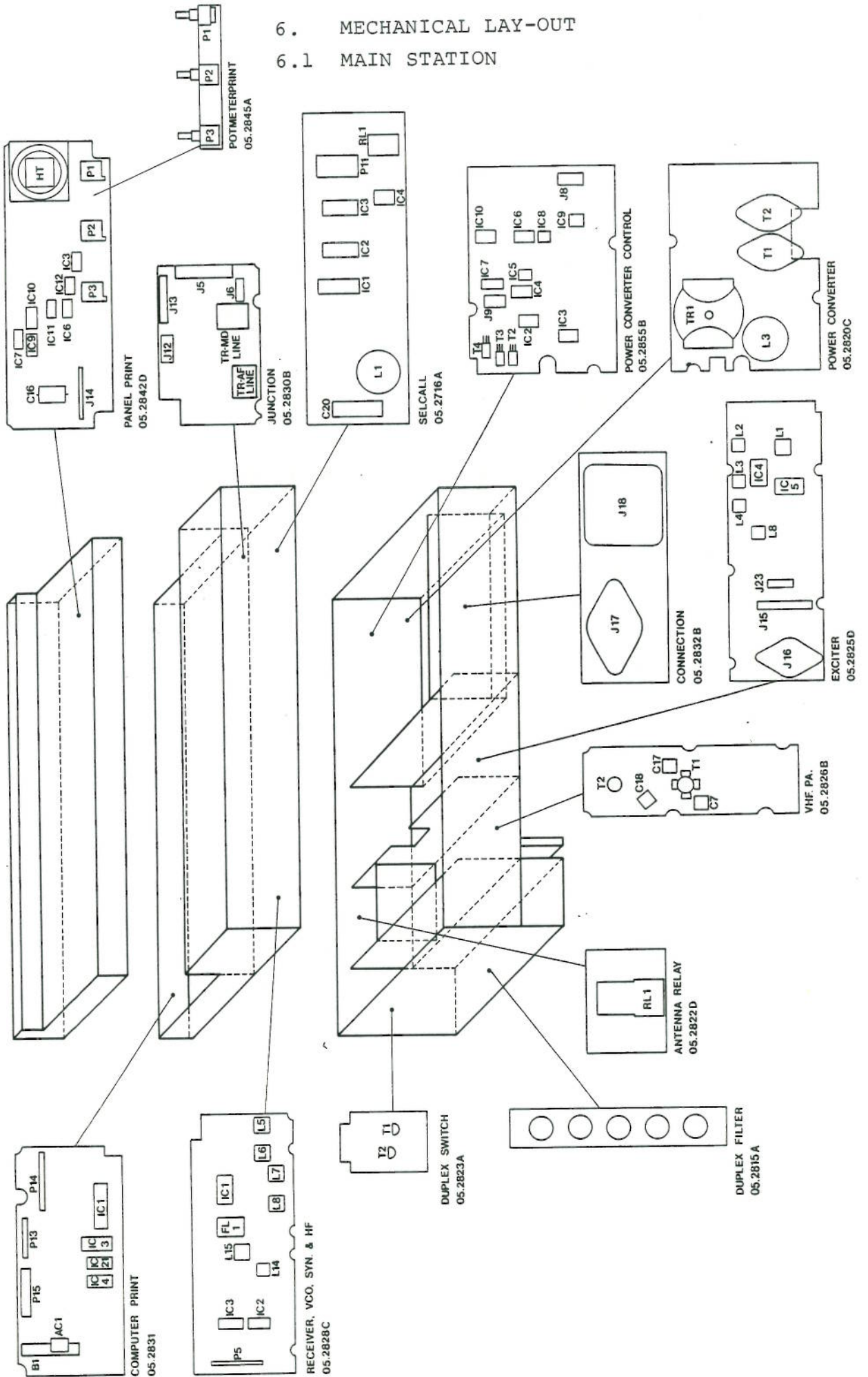
5. FREQUENCY TABLE

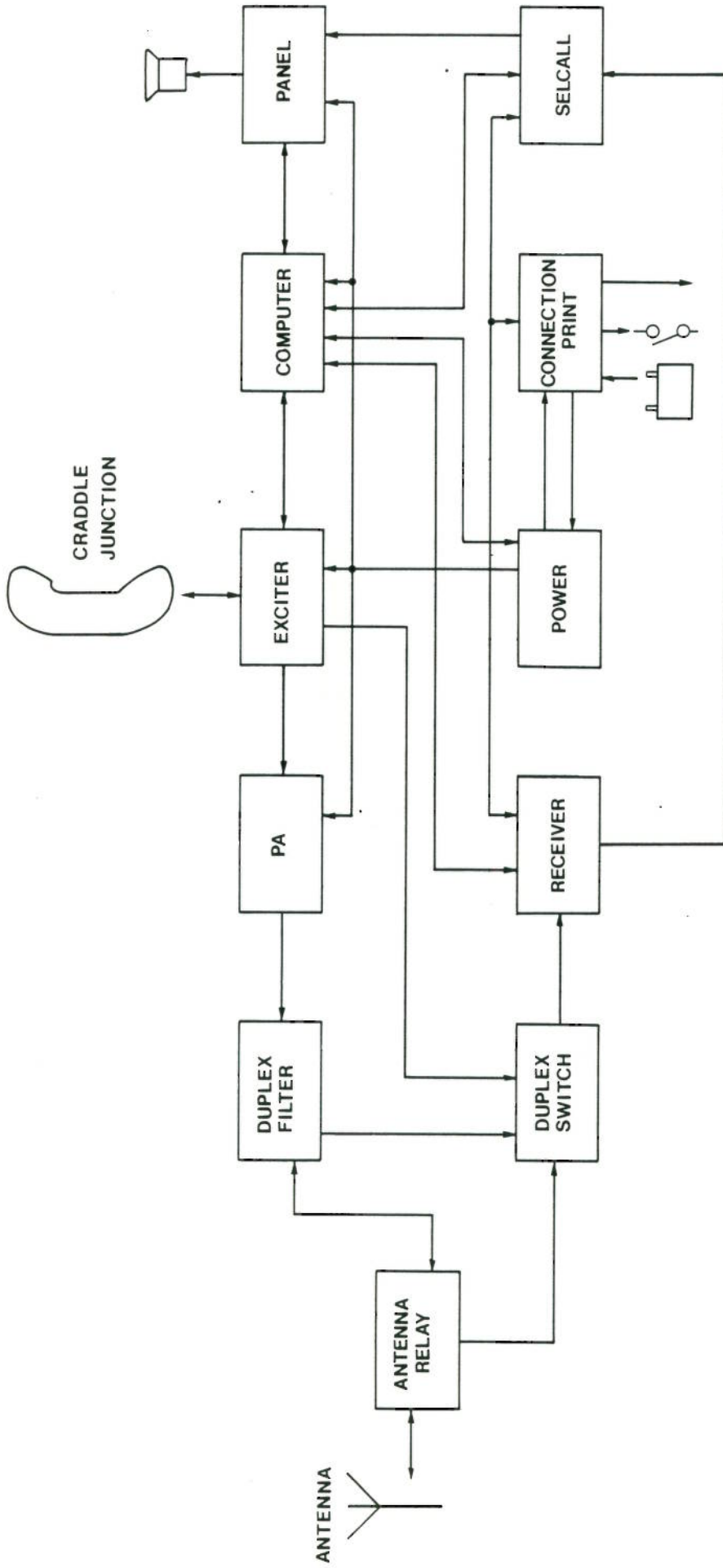
Channel	Tx-freq. Mhz	Rx-freq. Mhz	Channel	Tx-freq. Mhz	Rx-freq. Mhz	Channel	Tx-freq. Mhz	Rx-freq. Mhz
1	156.050	160.650	16	156.800	156.800	60	156.025	160.625
1	156.050	160.700	16	156.850	156.850	60	156.075	160.675
2	156.100	160.750	17	156.900	161.500	61	156.125	160.725
2	156.100	160.800	17	156.950	161.550	61	156.175	160.775
3	156.150	160.850	18	157.000	161.600	62	156.225	160.825
3	156.150	160.900	18	157.050	161.650	62	156.275	160.875
4	156.200	160.950	19	157.100	161.700	63	156.325	160.925
4	156.200	161.000	19	157.150	161.750	63	156.375	156.375
5	156.250	161.050	20	157.200	161.800	64	156.425	156.425
5	156.250	161.100	20	157.250	161.850	64	156.475	156.475
6	156.300	161.150	21	157.300	161.900	65	156.525	156.525
6	156.300	161.200	21	157.350	161.950	65	156.575	156.575
7	156.350	161.250	22	157.400	162.000	66	156.625	156.625
7	156.350	161.300	22			66	156.675	156.675
8	156.400	161.350	23			67	156.725	156.725
8	156.400	161.400	23			67		
9	156.450	161.450	24			68		
9	156.450	161.500	24			68		
10	156.500	161.550	25			69		
10	156.500	161.600	25			69		
11	156.550	161.650	26			70		
11	156.550	161.700	26			70		
12	156.600	161.750	27			71		
12	156.600	161.800	27			71		
13	156.650	161.850	28			72		
13	156.650	161.900	28			72		
14	156.700	161.950	28			73		
14	156.700	162.000	28			73		
15	156.750	162.050	28			74		
15	156.750	162.100	28			74		

6. MECHANICAL LAY-OUT

6.1 MAIN STATION

MECHANICAL LAY OUT MAIN STATION



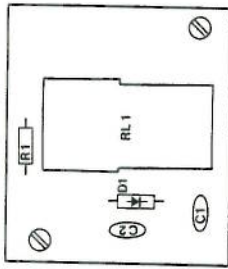


POWER
 SUPPLY
 SELCALL
 ALARM RELAY
 REMOTE
 STATIONS

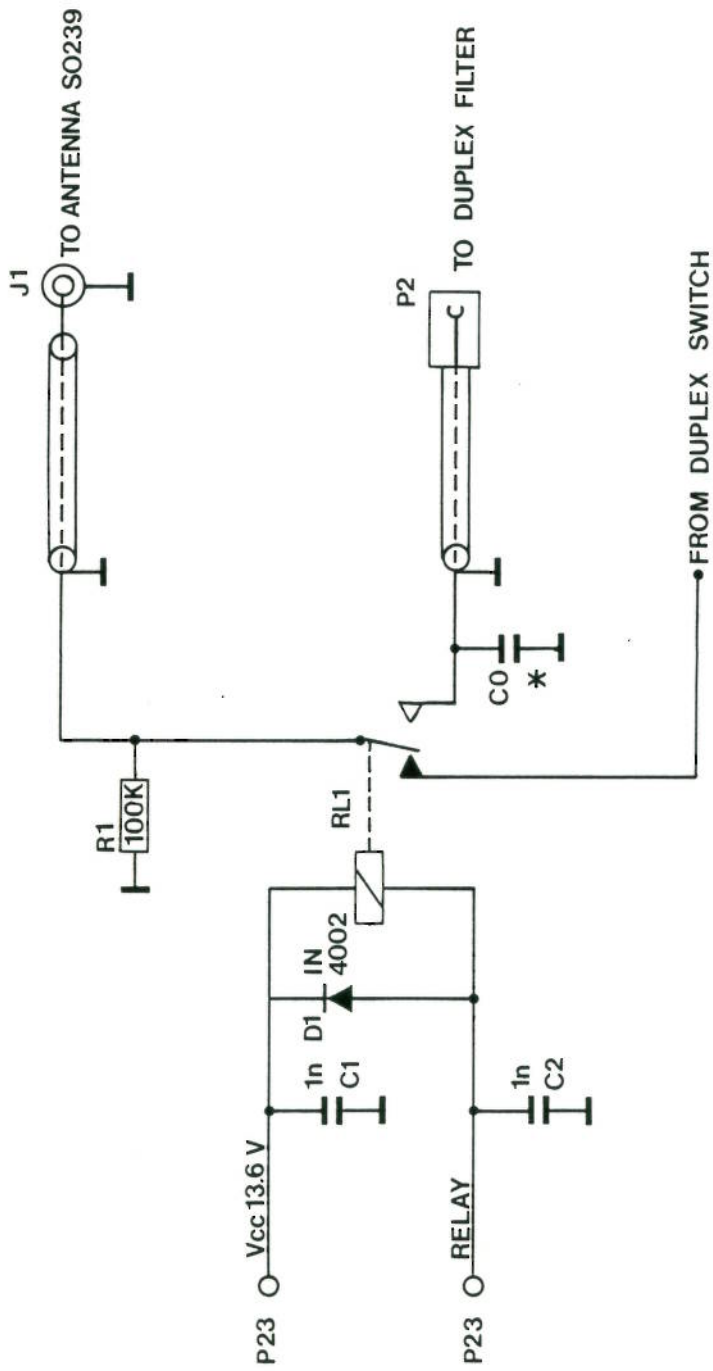
BLOCK DIAGRAM

DIAGRAM No. 92.7084

RETTET DEN. 2-12-83



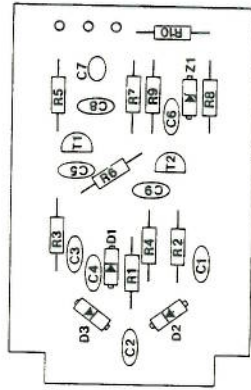
ANTENNERELAY 2822D
DRAWING No. : 80.2822D
840302



* SELECTED BY FACTORY

ANTENNARELAY 2822D

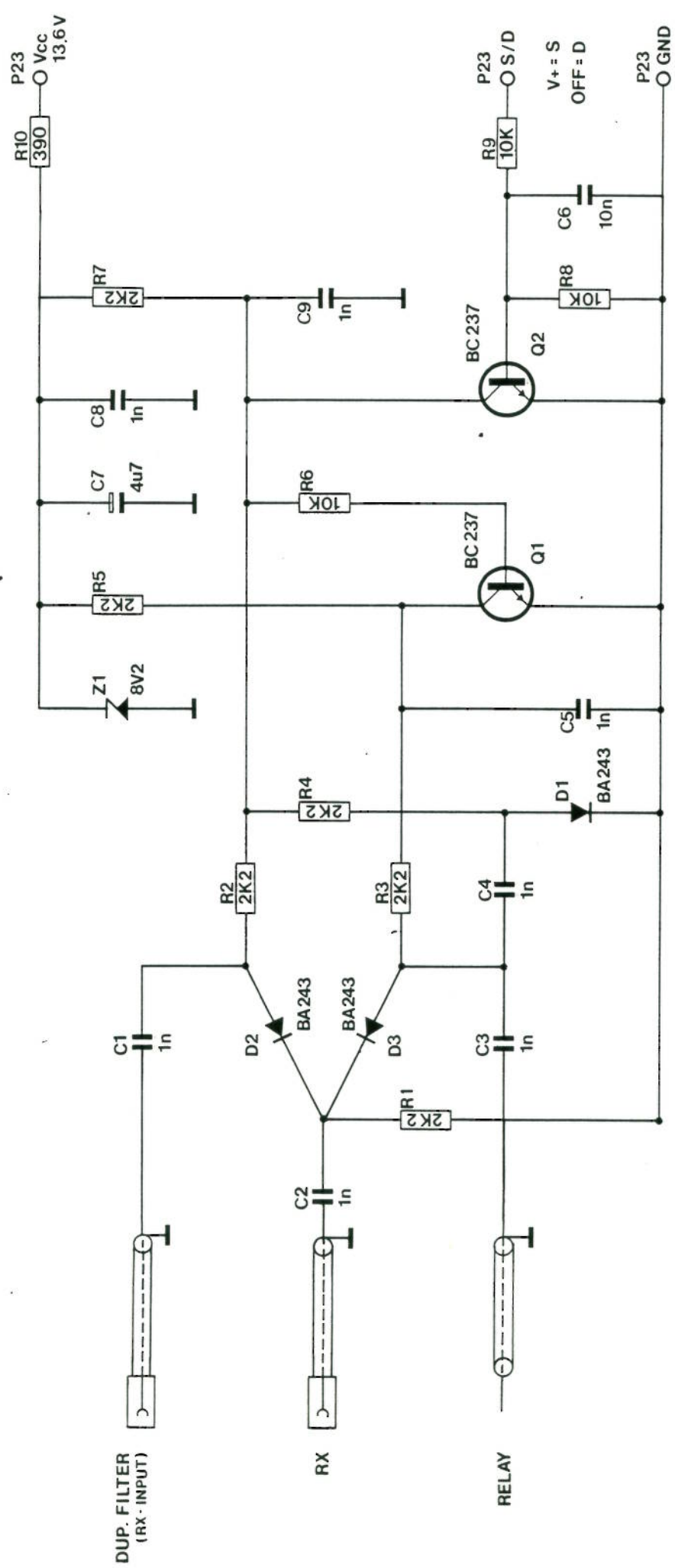
DIAGRAM No.: 92.7069
840302



DUPLEX SWITCH 2823A

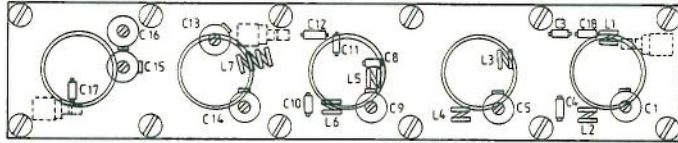
DRAWING No. 80 2823A

Revised 12-9-83

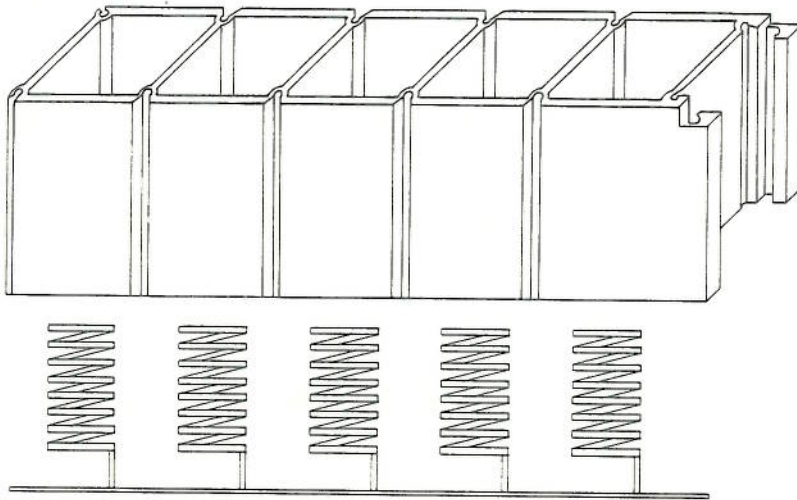


RS 7100 DUPLEX SWITCH 2823A

DIAGRAM No. 92.7055
840302

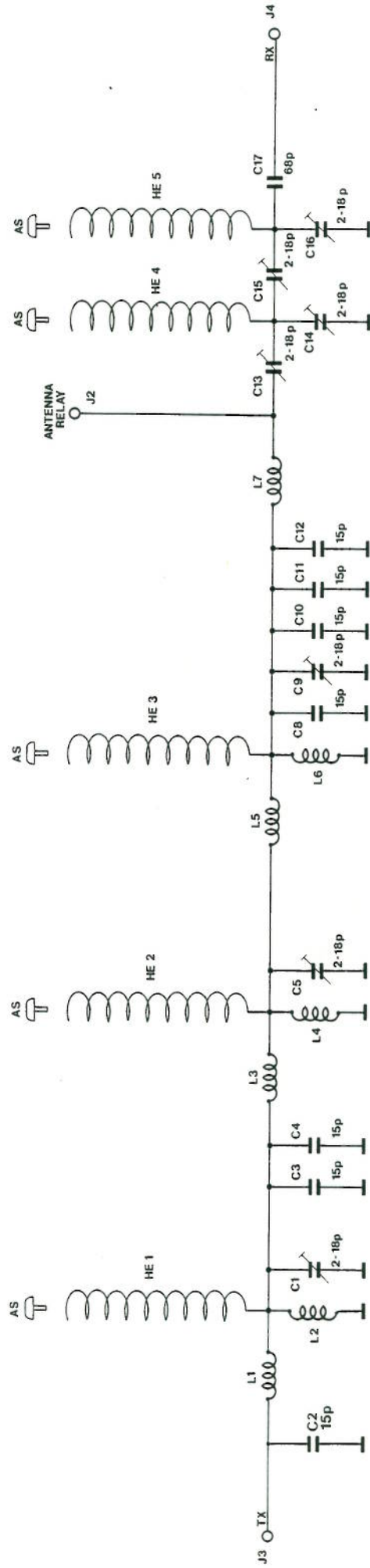


DUPLEX FILTER 2815
 DRAWING No. 80.2815
 Rettet 25-10-83

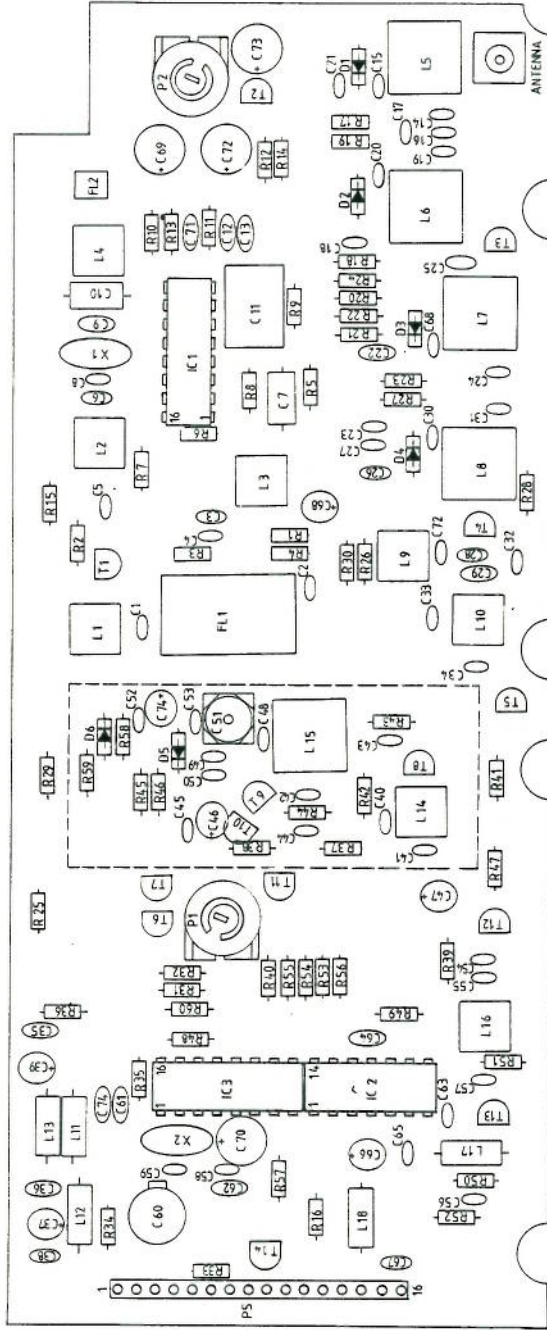


DUPLEX FILTER 2815
 DRAWING No. 80.2815

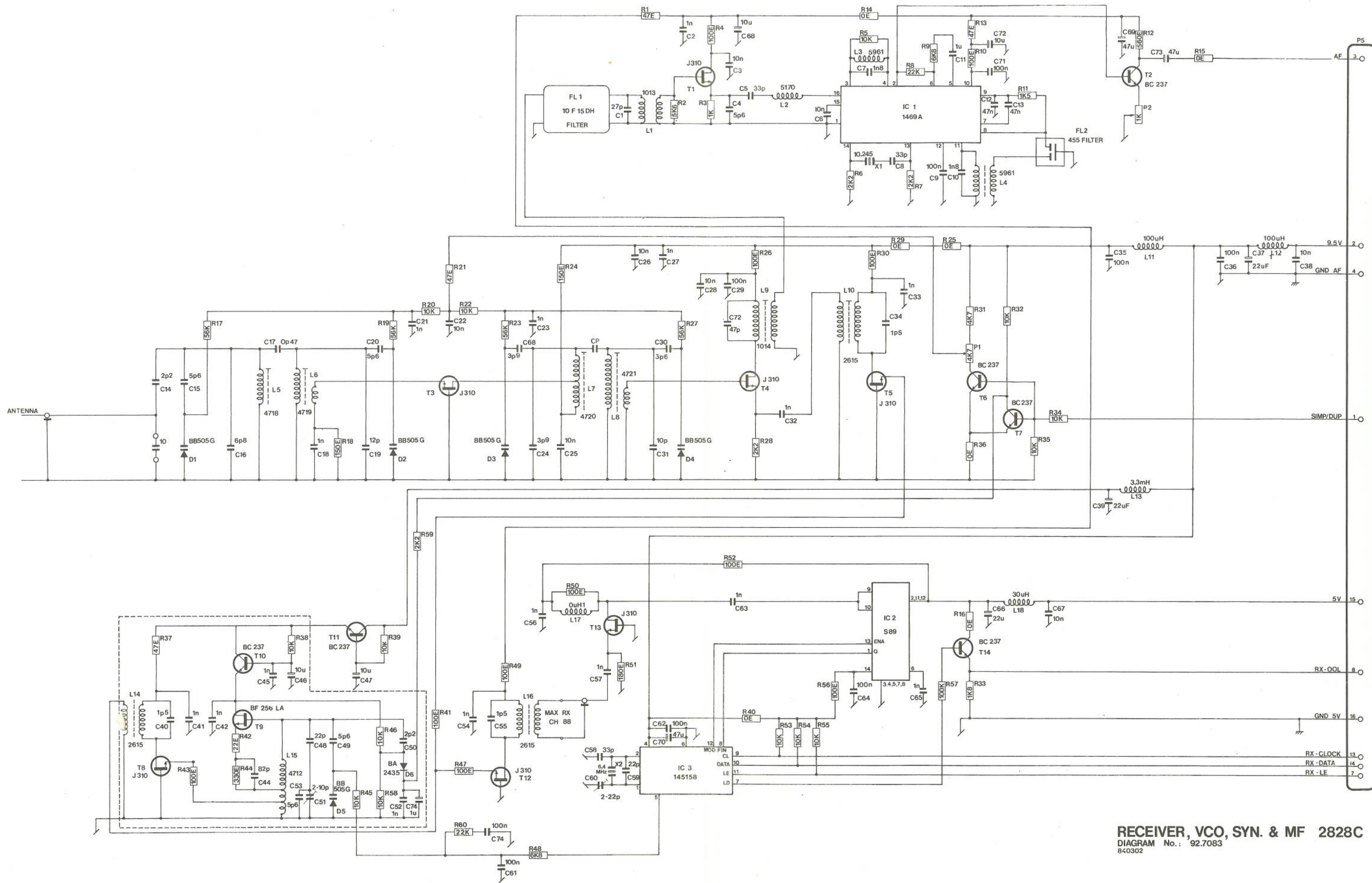
AS = ADJUSTMENT SCREW



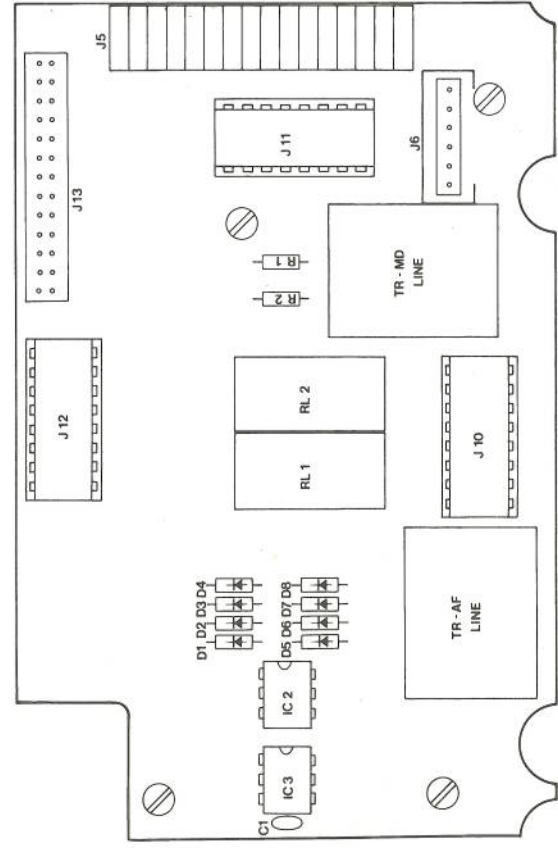
DUPLEX FILTER 2815A
DIAGRAM No. : 92.7085
840302



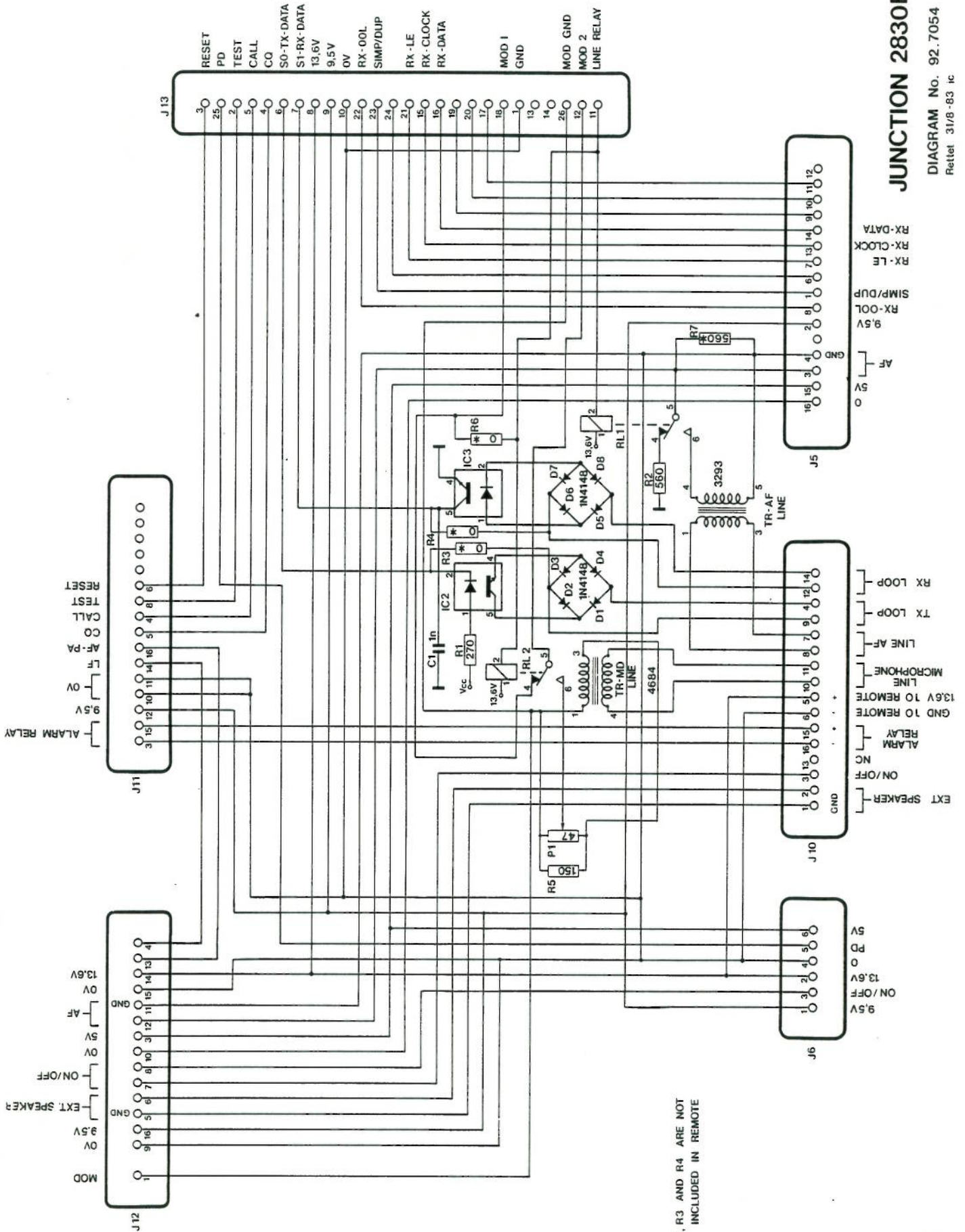
RECEIVER 2828C
 DRAWING No. 802828C
 840302



RECEIVER, VCO, SYN. & MF 2828C
 DIAGRAM No.: 92.7083
 840302



JUNCTION 2830B
DRAWING No.: 80.2830



* R7, R6, R3 AND R4 ARE NOT INCLUDED IN REMOTE

JUNCTION 2830B

DIAGRAM No. 92.7054
Retlet 31/8-83 lc

- 3 ○ RESET
- 25 ○ PD
- 2 ○ TEST
- 5 ○ CALL
- 4 ○ CO
- 6 ○ S0-TX-DATA
- 7 ○ S1-RX-DATA
- 8 ○ 13.6V
- 9 ○ 9.5V
- 10 ○ 0V
- 22 ○ RX-OOL
- 23 ○ SIMP/DUP
- 24 ○
- 21 ○ RX-LE
- 15 ○ RX-CLOCK
- 16 ○ RX-DATA
- 19 ○
- 20 ○
- 17 ○
- 18 ○
- 1 ○ MOD 1
- 13 ○ GND
- 14 ○
- 26 ○ MOD GND
- 12 ○ MOD 2
- 11 ○ LINE RELAY

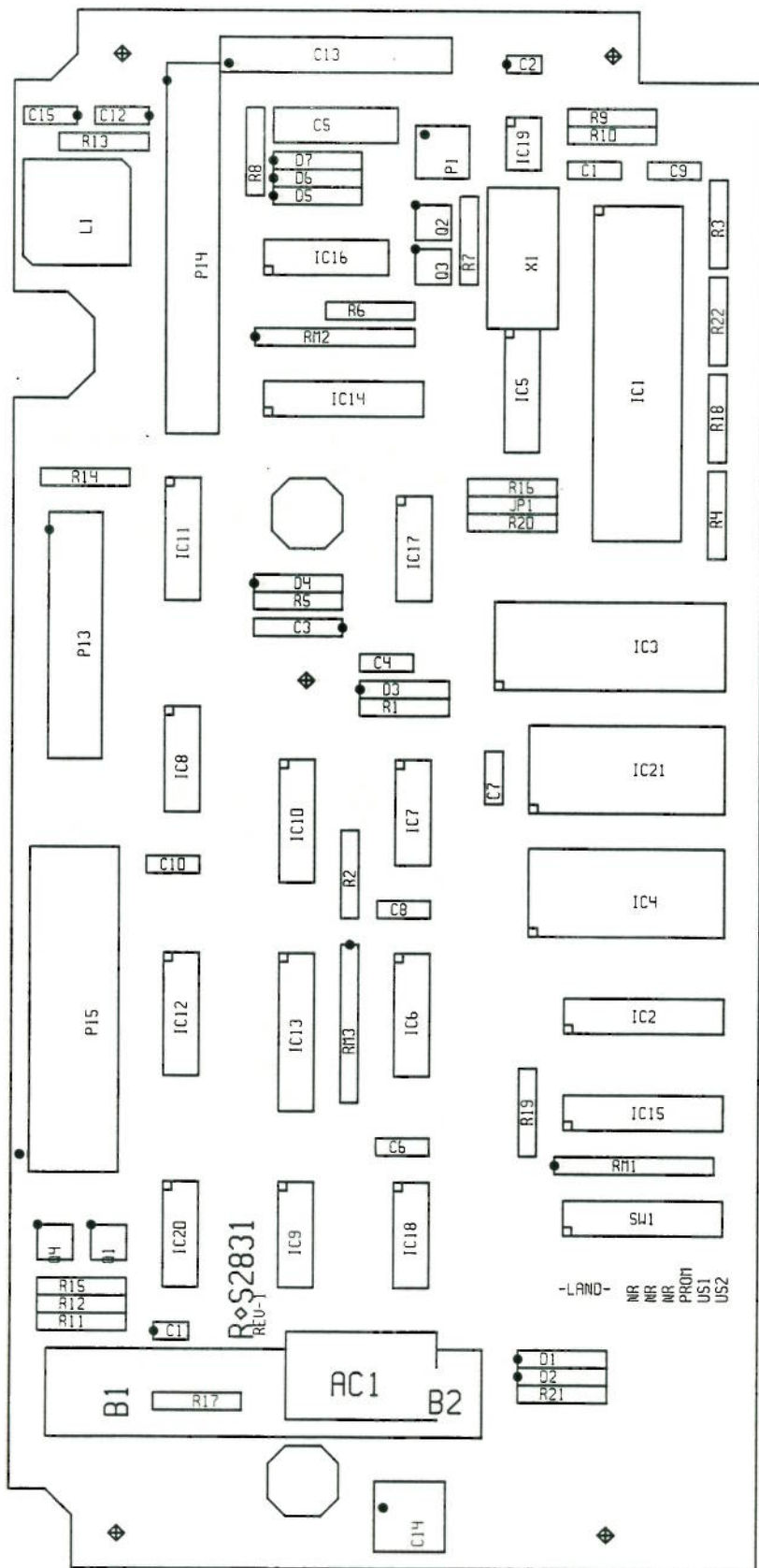
- 3 ○ RESET
- 15 ○
- 12 ○
- 10 ○
- 11 ○
- 14 ○
- 16 ○
- 18 ○
- 19 ○
- 13 ○ 9.5V
- 17 ○ 0V
- 1 ○ AF-PA
- 2 ○ CALL
- 4 ○ TEST
- 5 ○ RESET
- 6 ○

- 1 ○ MOD
- 9 ○ 9.5V
- 16 ○
- 5 ○
- 8 ○ EXT SPEAKER
- 7 ○ ON/OFF
- 11 ○ 5V
- 12 ○ AF
- 13 ○ 0V
- 14 ○ 13.6V
- 4 ○

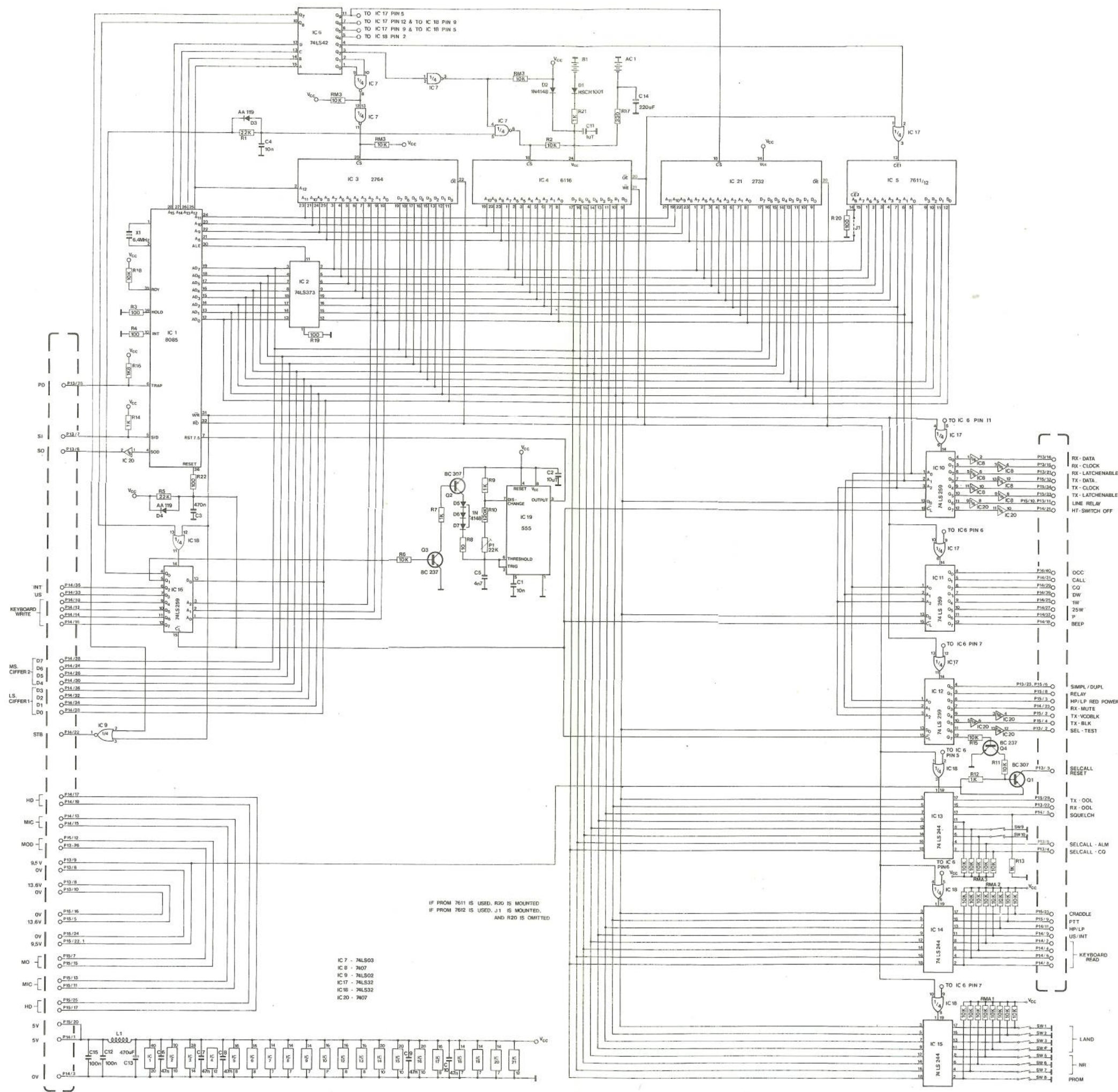
- 16 ○ GND
- 15 ○ 5V
- 14 ○ AF
- 13 ○ 9.5V
- 12 ○ RX-OOL
- 11 ○ SIMP/DUP
- 10 ○ RX-LE
- 9 ○ RX-CLOCK
- 8 ○ RX-DATA
- 7 ○
- 6 ○
- 5 ○
- 4 ○
- 3 ○
- 2 ○
- 1 ○

- 1 ○ EXT SPEAKER
- 2 ○ ON/OFF
- 3 ○ ALARM RELAY
- 4 ○ 13.6V TO REMOTE
- 5 ○ GND TO REMOTE
- 6 ○ LINE
- 7 ○ MICROPHONE
- 8 ○ LINE AF
- 9 ○ TX LOOP
- 10 ○ RX LOOP
- 11 ○
- 12 ○
- 13 ○
- 14 ○

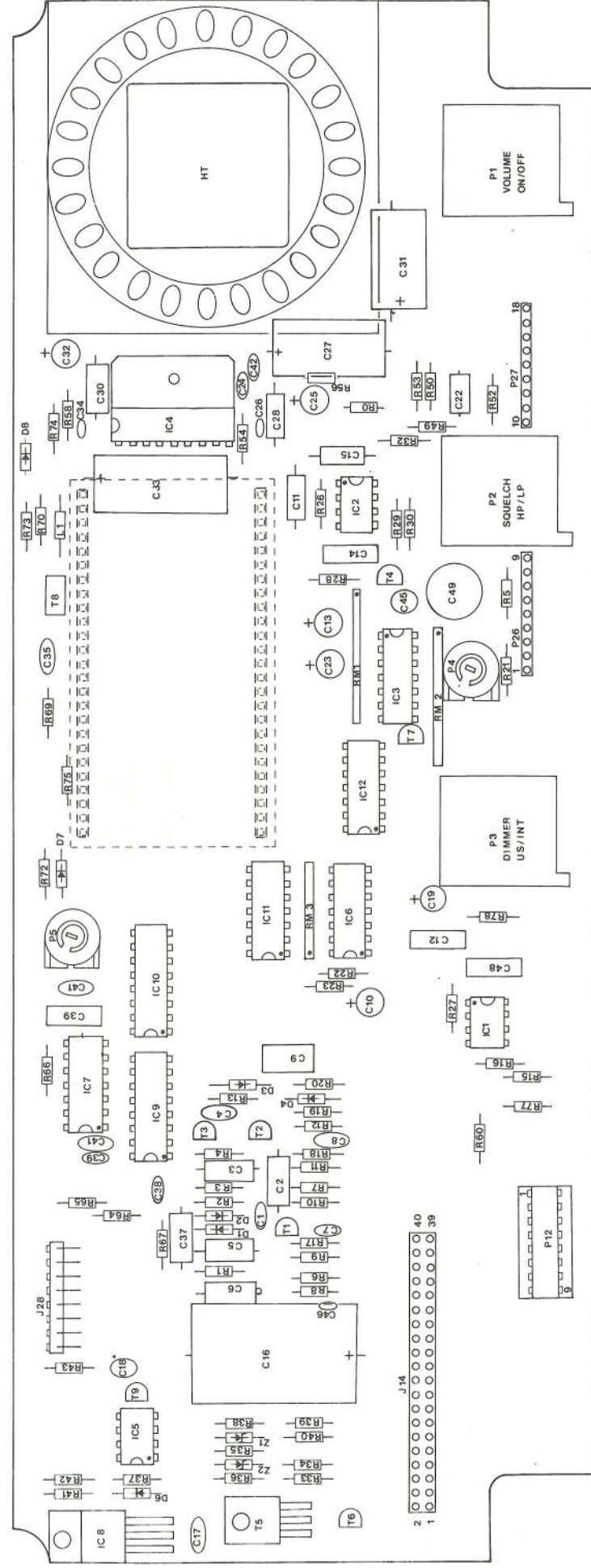
- 1 ○ 9.5V
- 2 ○ ON/OFF
- 3 ○ 13.6V
- 4 ○ PD
- 5 ○ 5V
- 6 ○



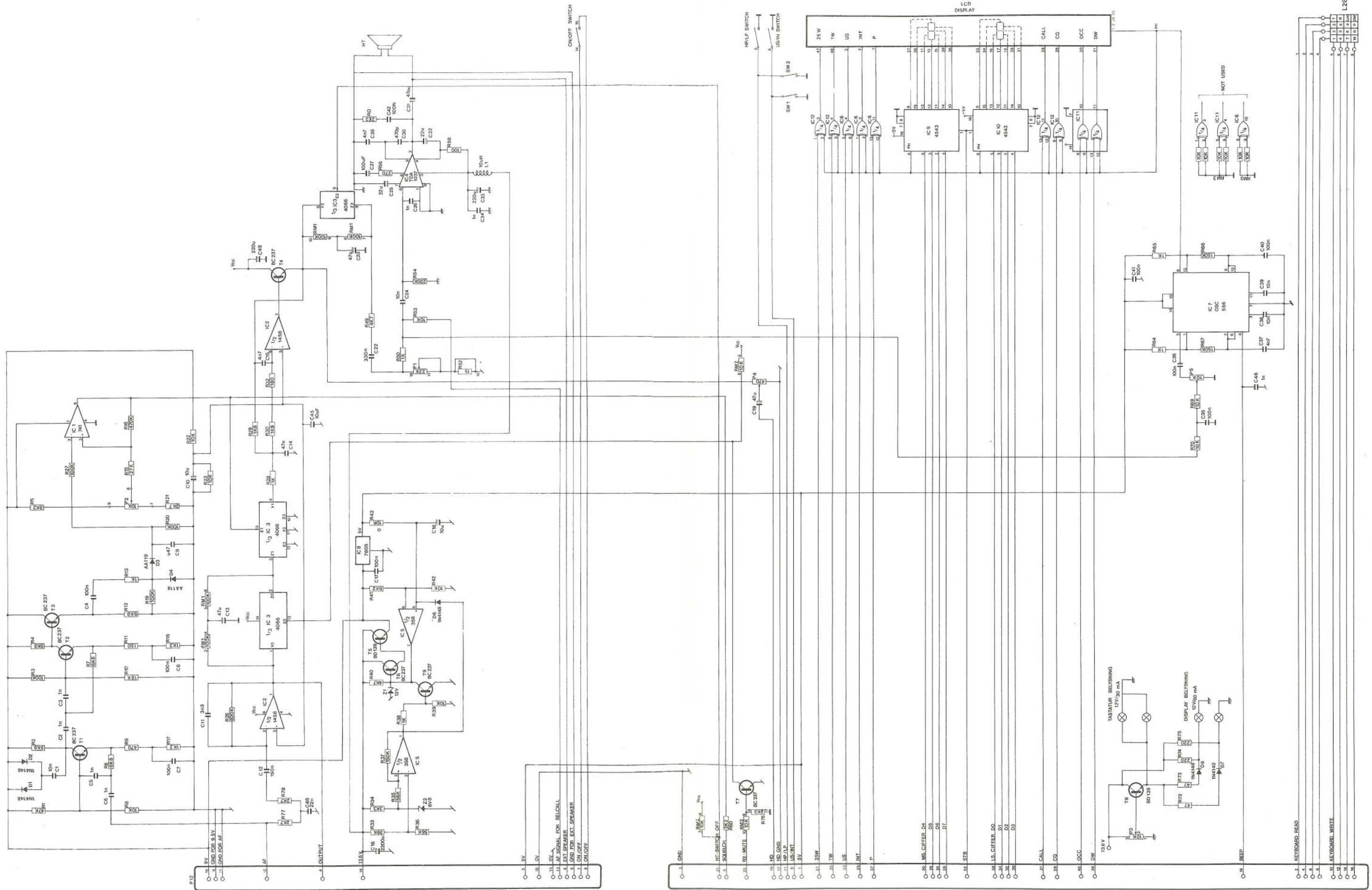
COMPUTER PRINT 2831
 DRAWING No: 80 2831



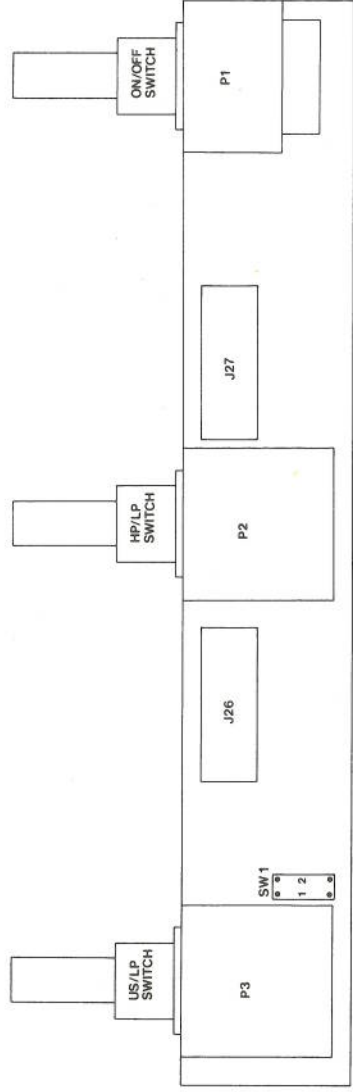
COMPUTER 2831
 DIAGRAM No. 92.7070
 840302



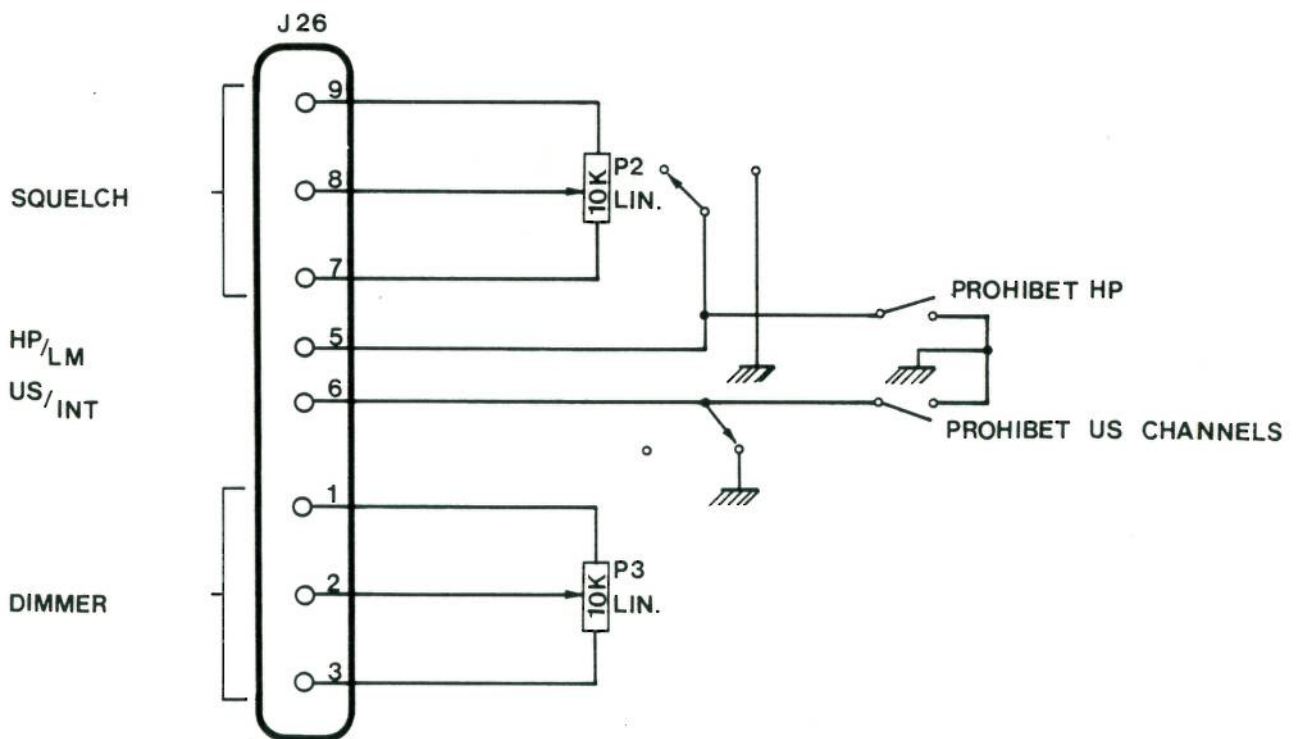
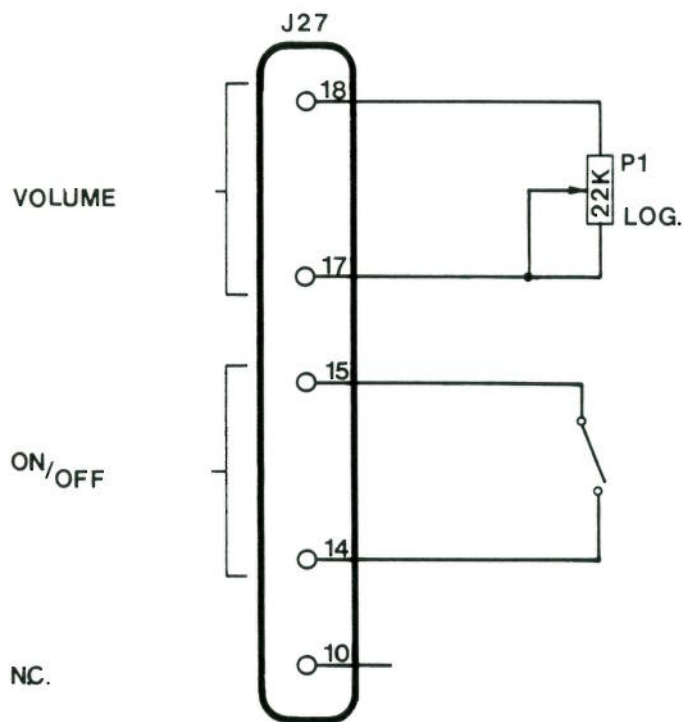
PANELPRINT 2842 D
 DRAWING No.: 80.2842D
 840302



PANELPRINT 2842D
 DIAGRAM No.: 92.7072
 840302

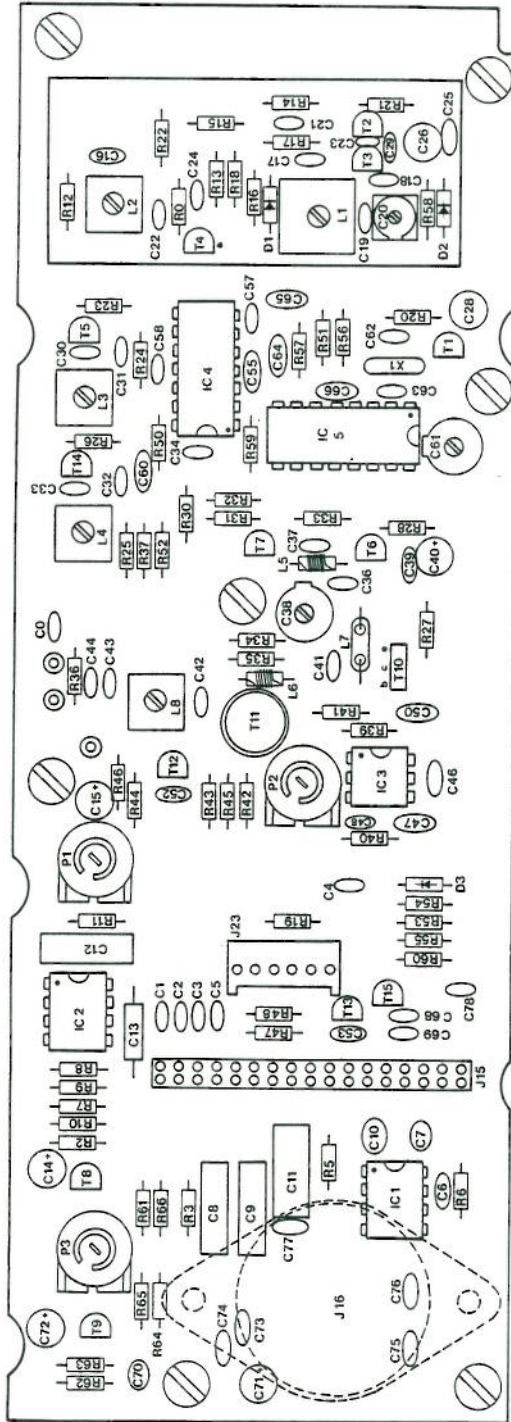


POTMETERPRINT 2845A
DRAWING No. 80.2845

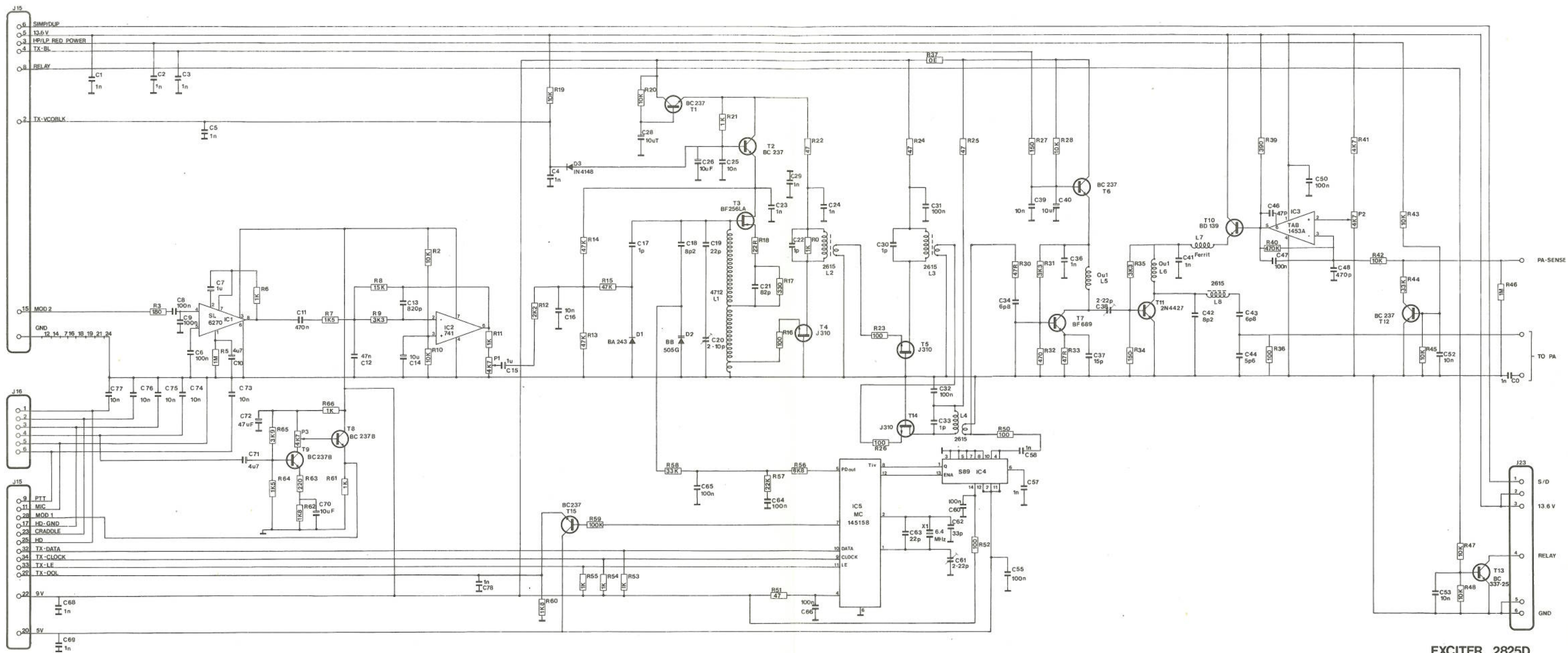


SHOWN IN HP. AND INT. POSITION

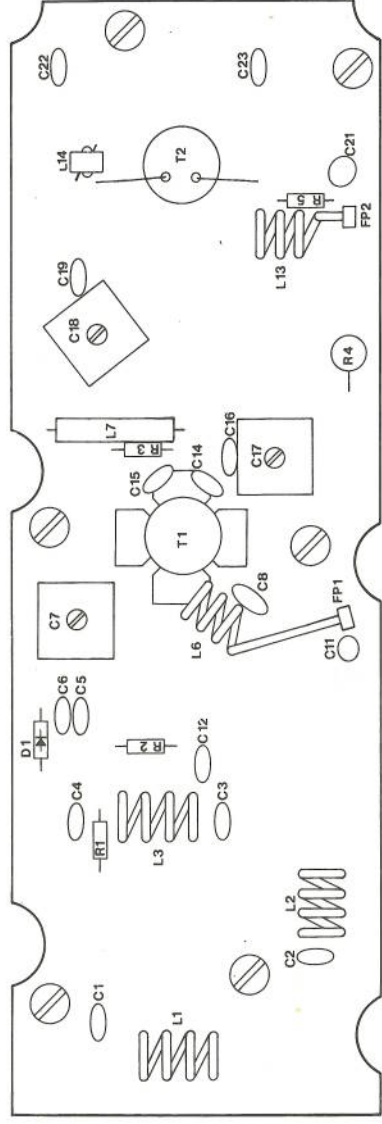
POTMETERMODUL 2845A
 DIAGRAM No.92.7137



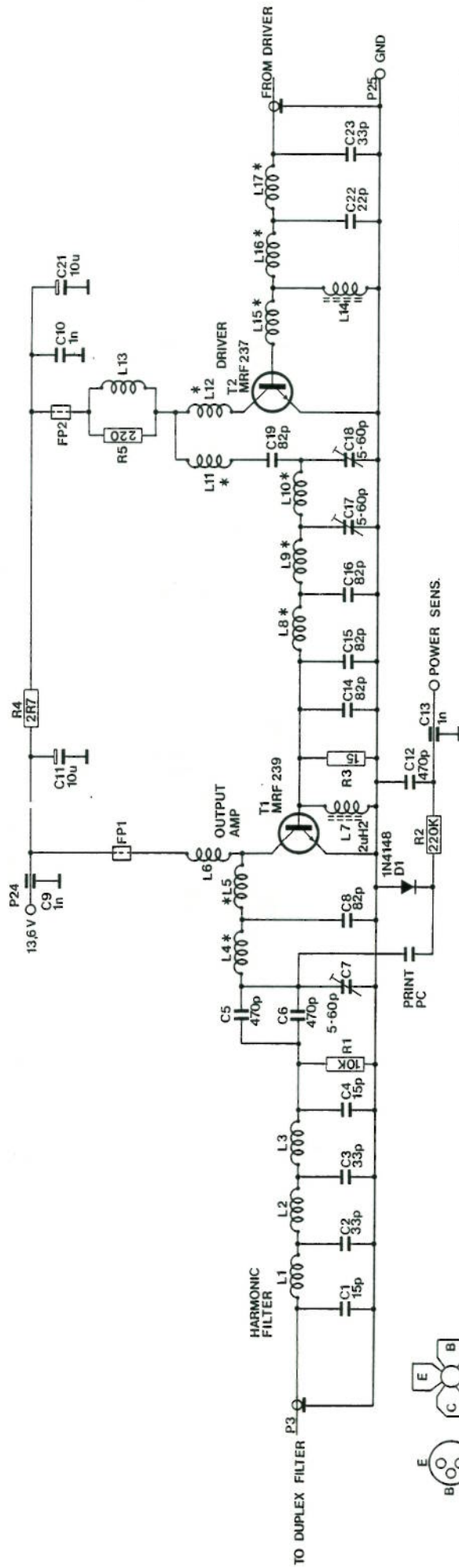
EXCITER 2825 D
 DRAWING No. : 80.2825 D
 840302



EXCITER 2825D
 DIAGRAM No. 92.7071
 840302

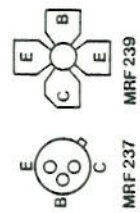


VHF. PA. 2826 B
DRAWING No.: 80,2826 B
84-0302

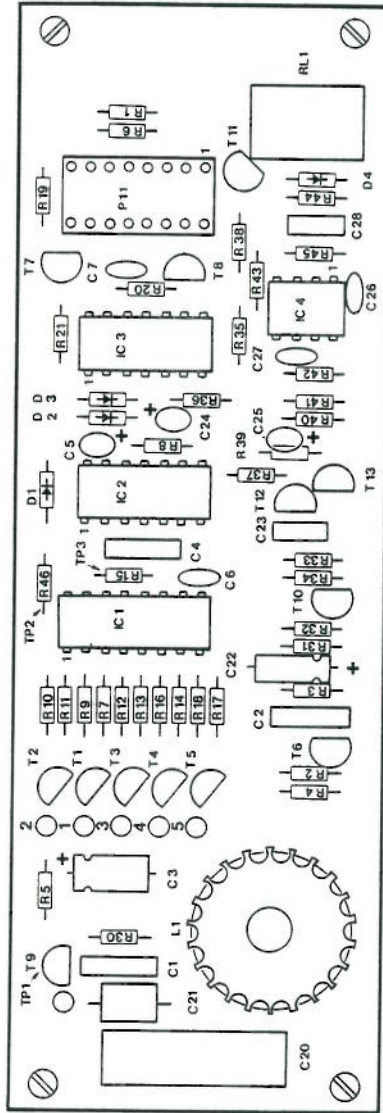


VHF. PA. 2826B

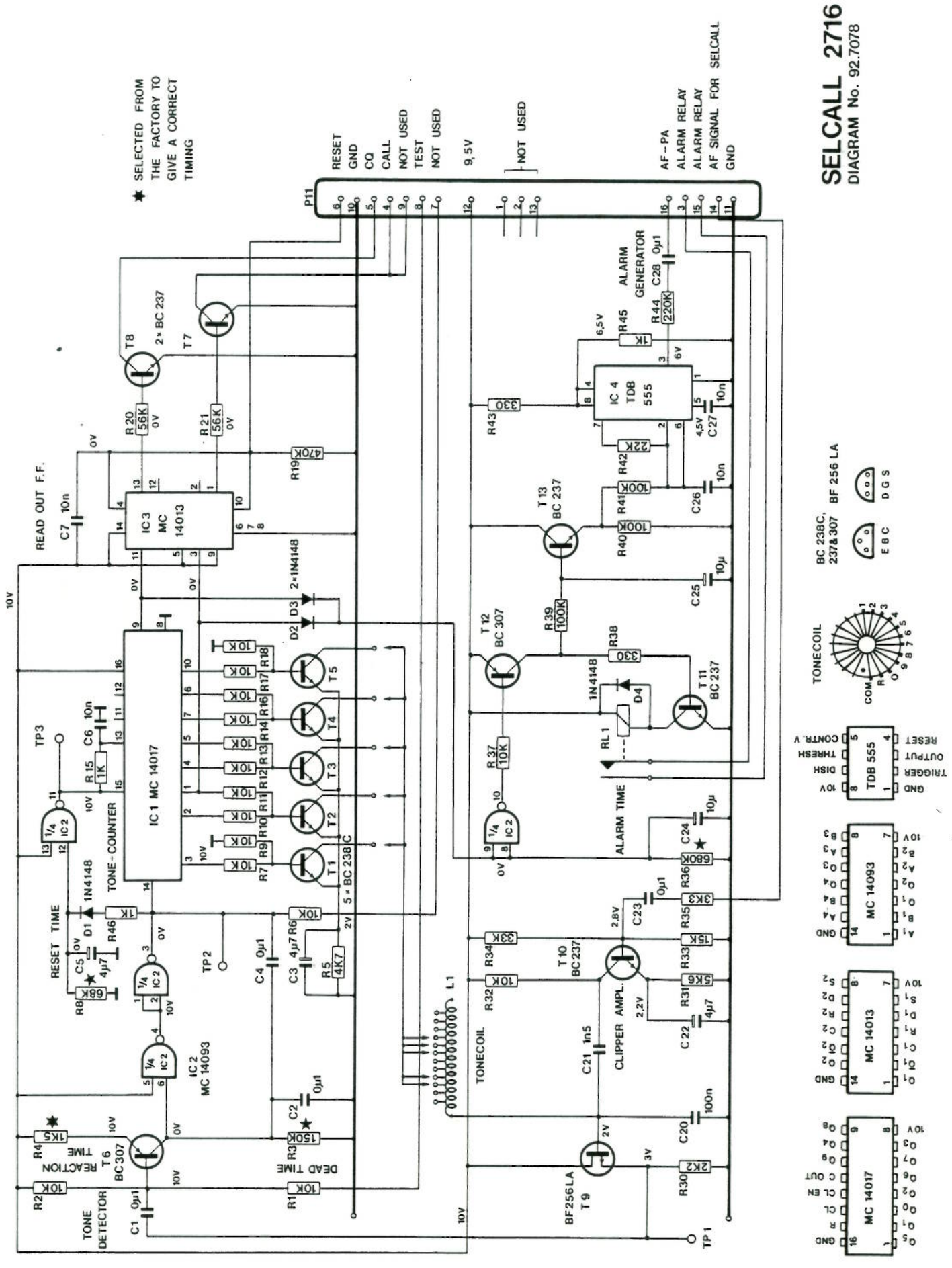
DIAGRAM No. 92.7073
840302



* PC INDUCTORS

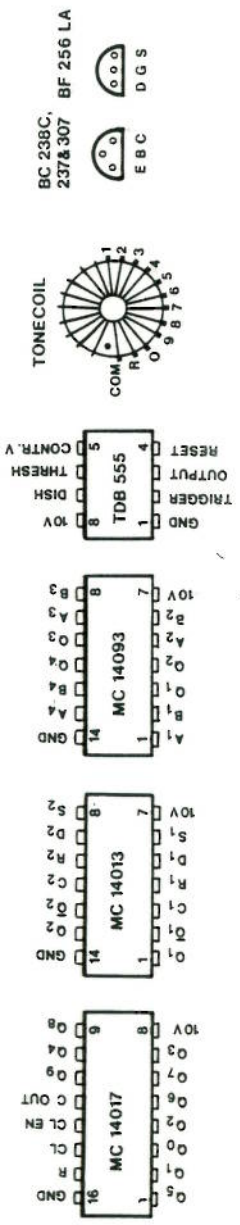


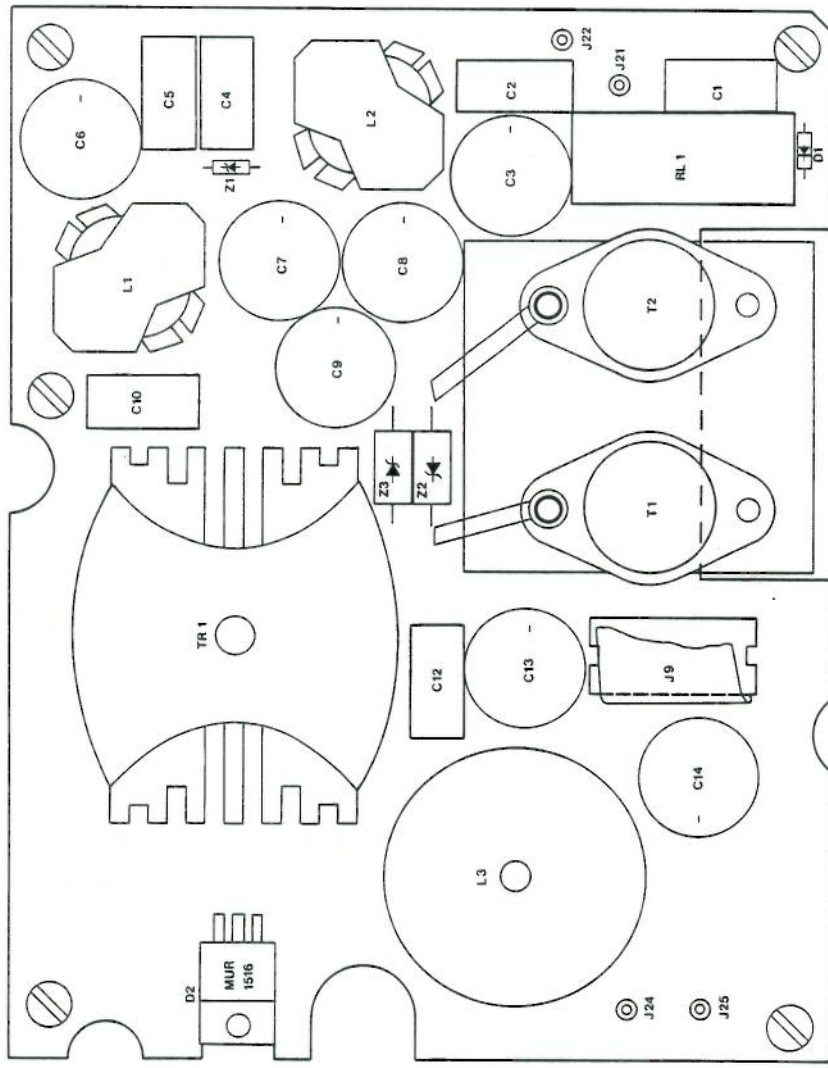
SELCALL 2716
DRAWING No. 80.2716



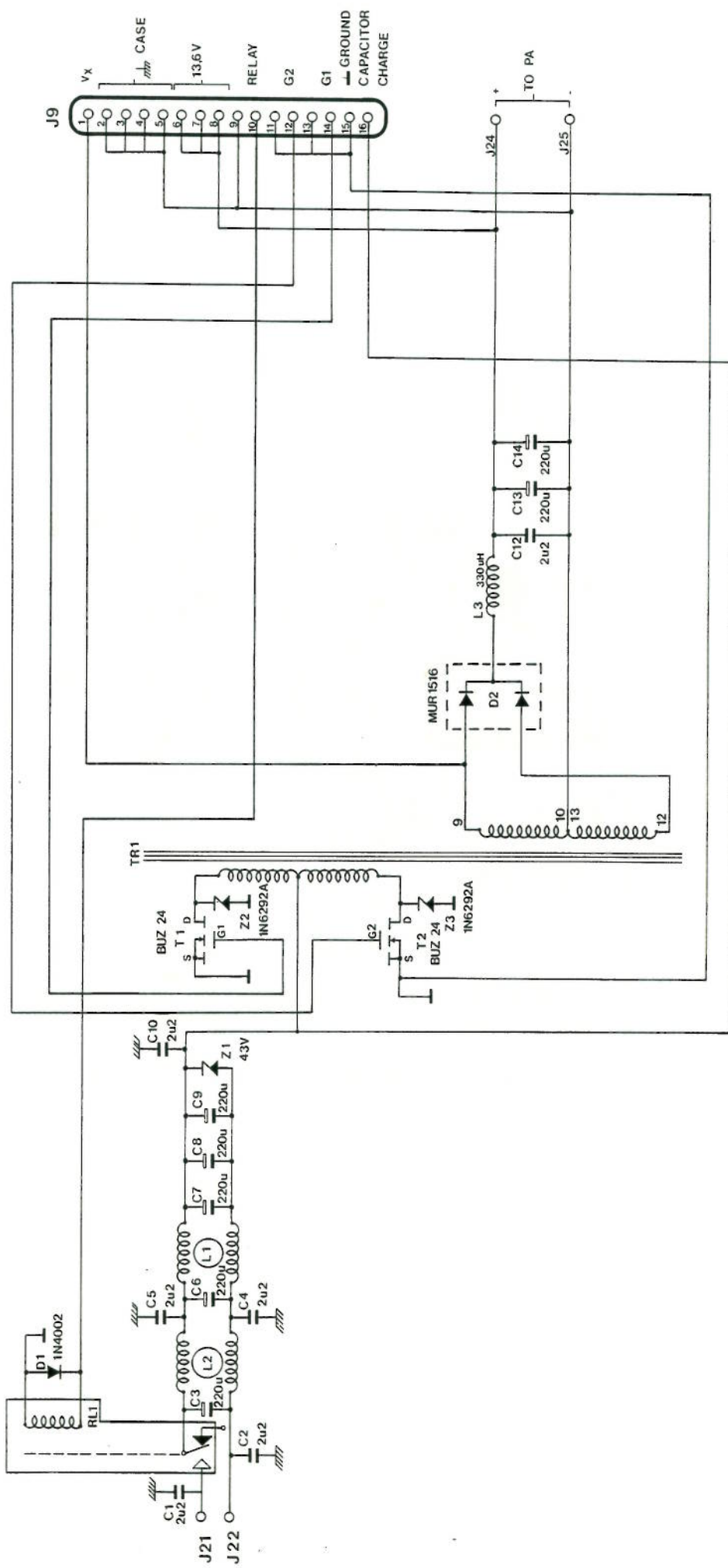
★ SELECTED FROM THE FACTORY TO GIVE A CORRECT TIMING

SELCALL 2716
DIAGRAM No. 92.7078

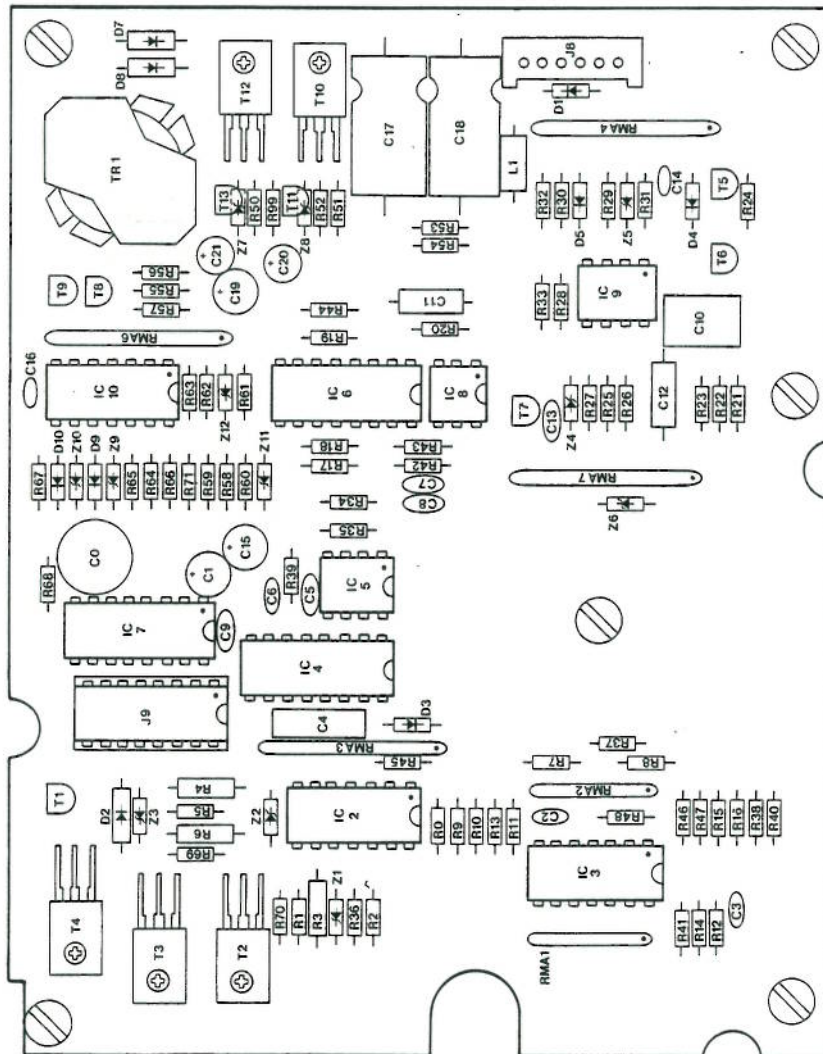




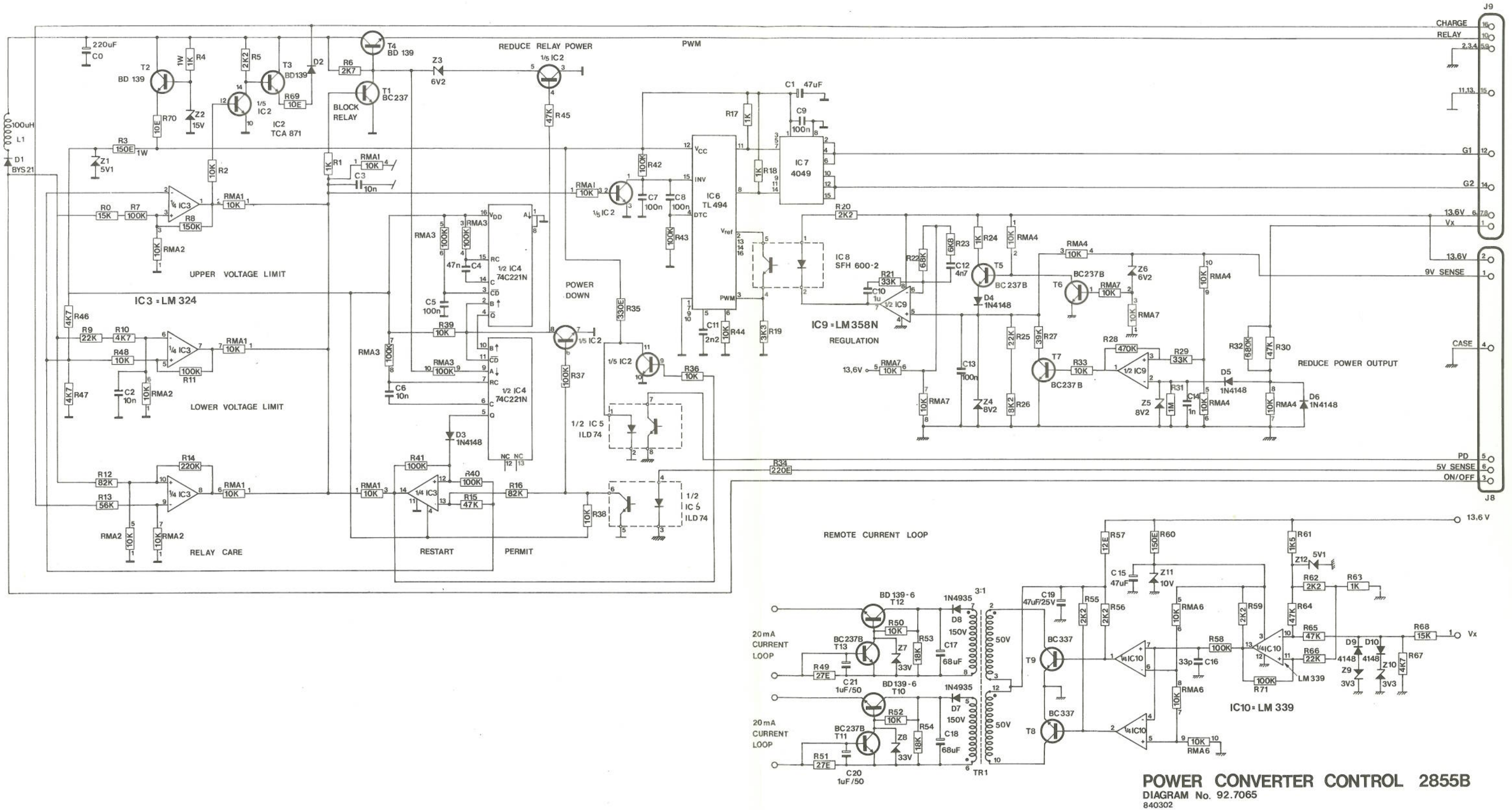
POWER CONVERTER 2820 C
 DRAWING No. : 80.2820 C
 840302



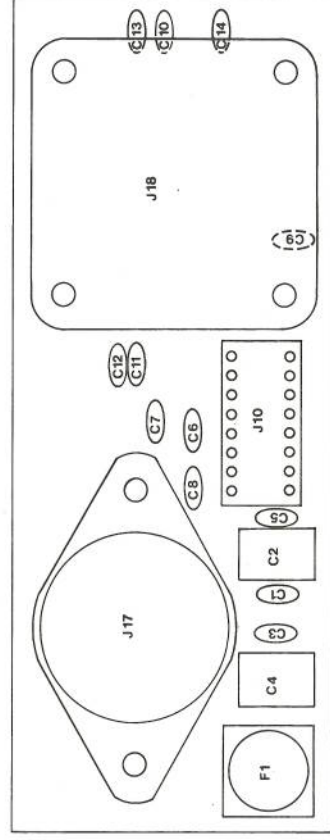
POWER CONVERTER 2820C
 DIAGRAM No.: 92.7066
 840302



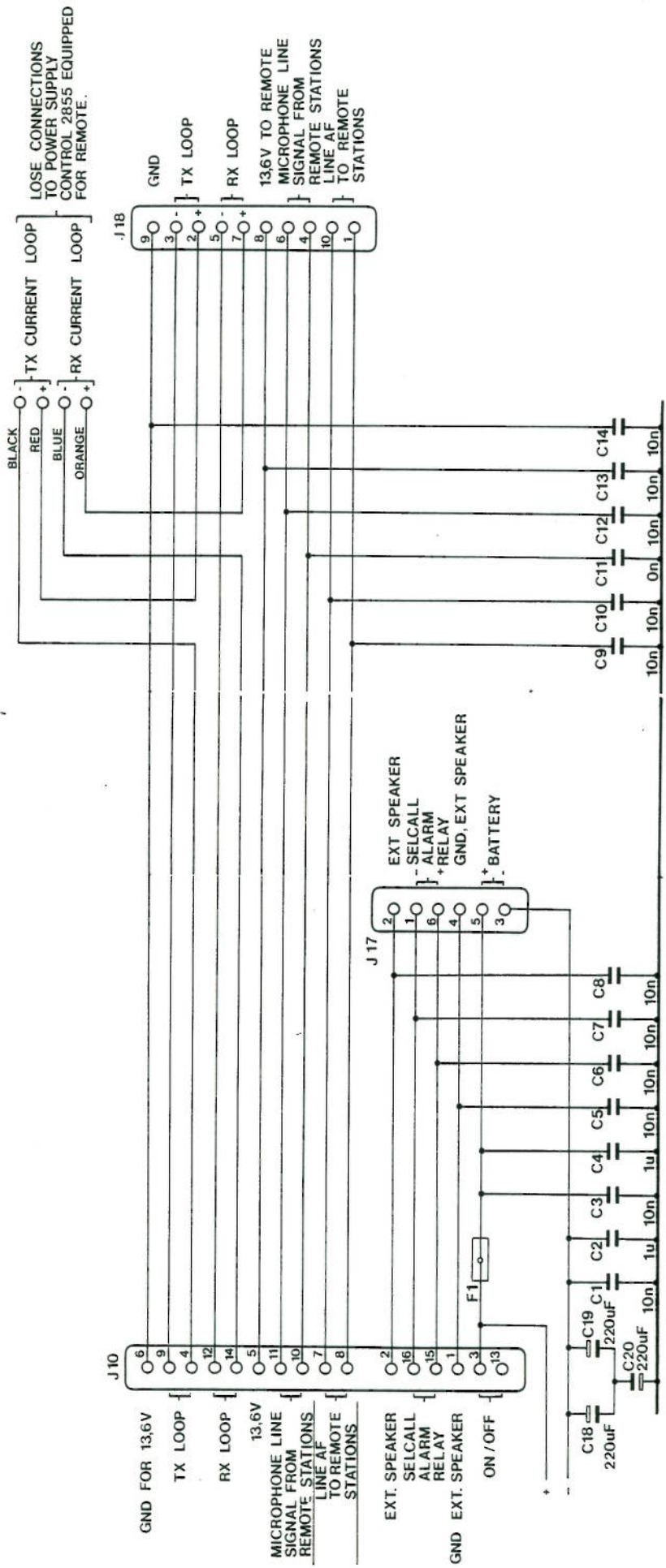
POWER CONVERTER CONTROL 2855B
 DRAWING Nr. : 80.2855B
 840302



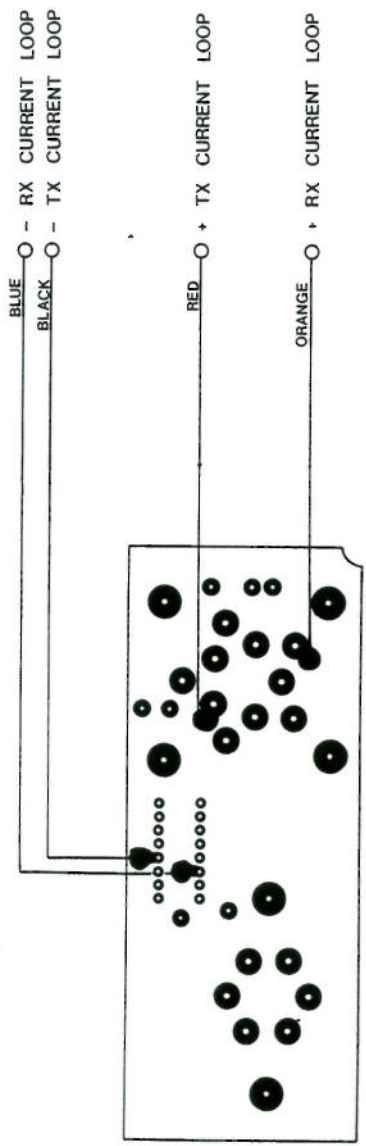
POWER CONVERTER CONTROL 2855B
 DIAGRAM No. 92.7065
 840302

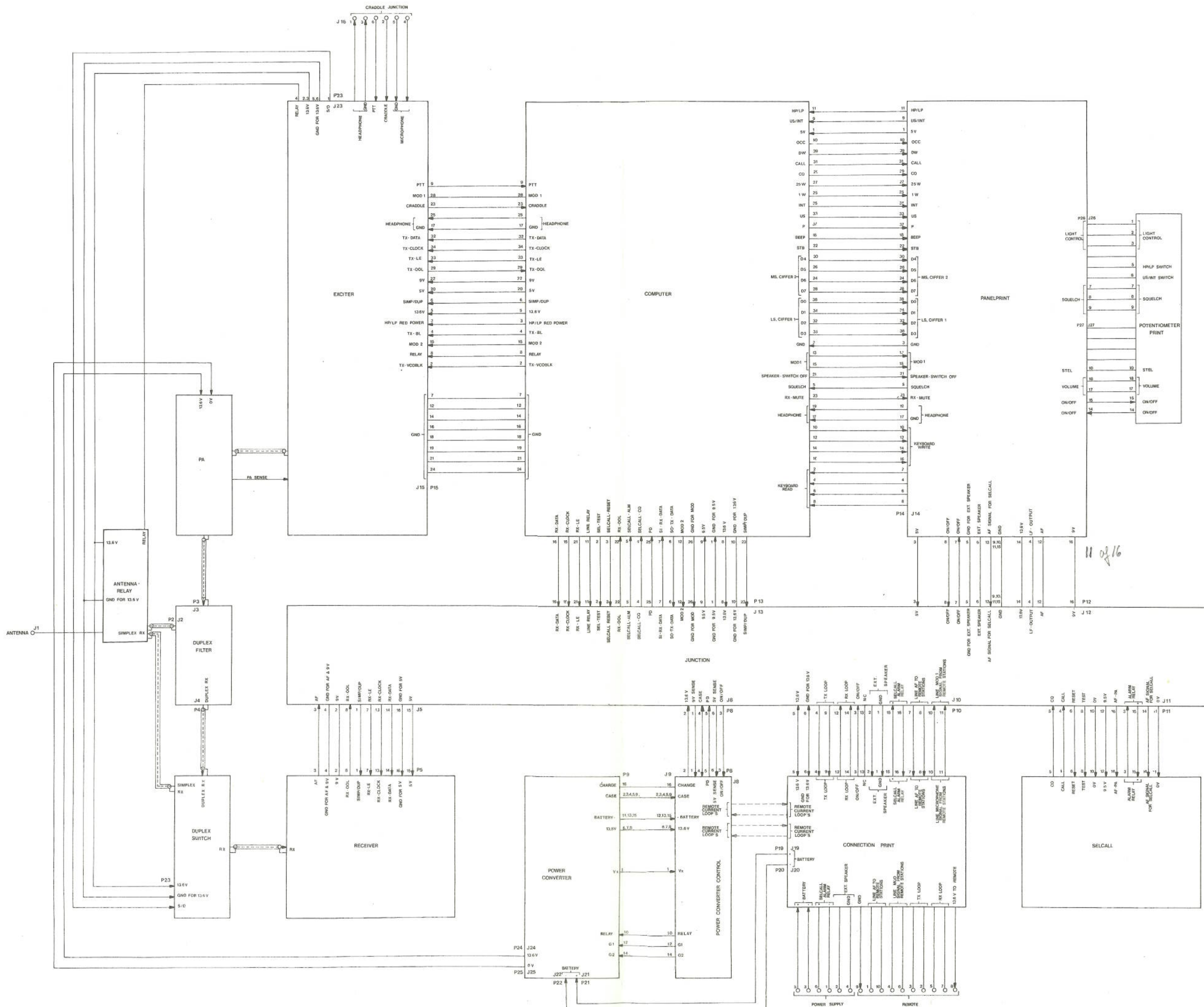


CONNECTION 2832 B
DRAWING No. 80.2832 B
840302



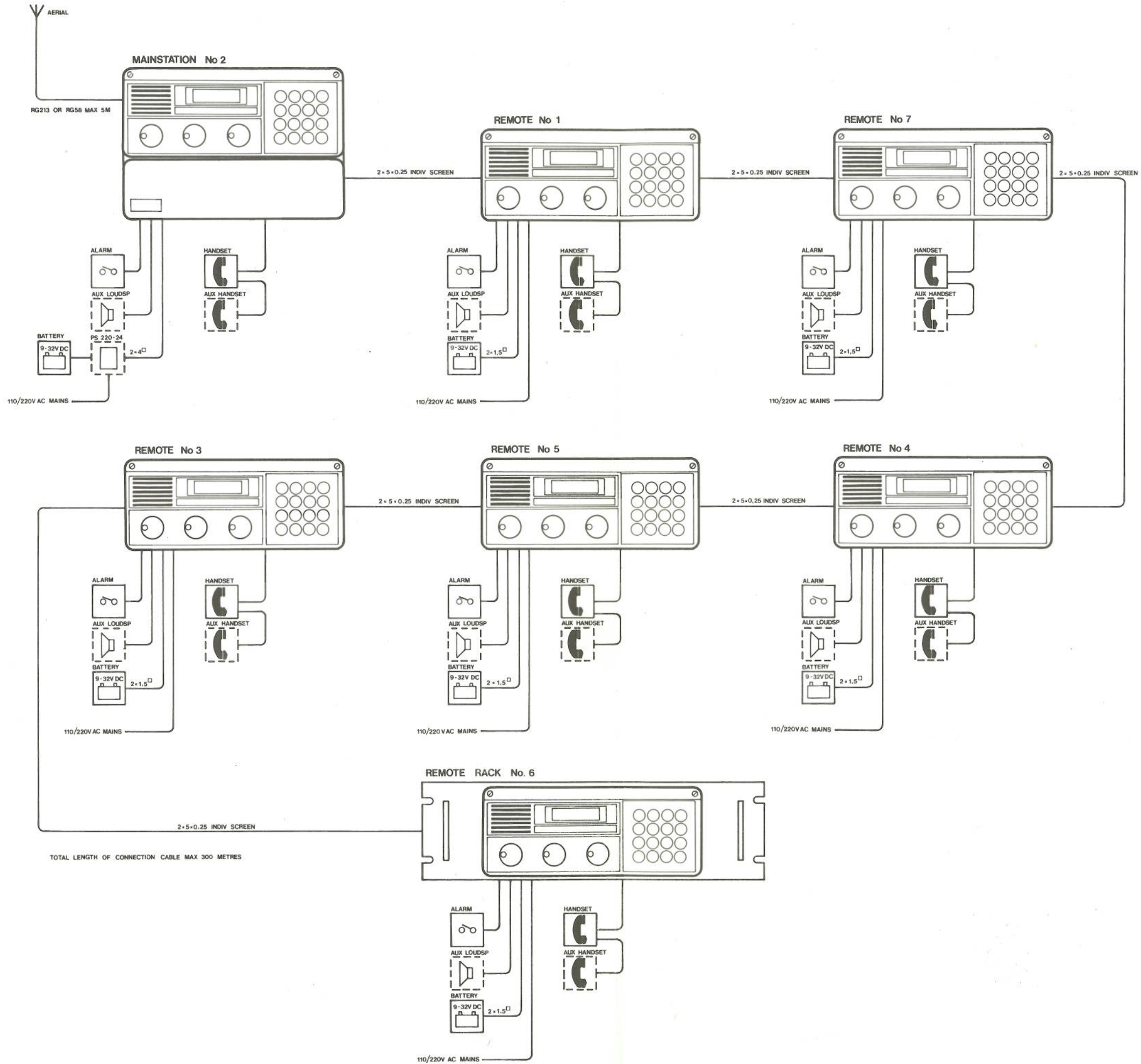
CONNECTION 2832 B
 DIAGRAM No. 92.7080
 840302





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SYSTEM OVERVIEW AND NUMBERING EXAMPLE



ABBREVIATIONS

SIE : SIEMENS
FERRO : FERROPERM
UC : UNION CARBIDE
CO : COPAX
MULTI : MULTI COMPONENT
R&S : RAUFF & SØRENSEN
RADIOP : RADIOPART
FAIR : FAIRCHILD
PP : PEDER PEDERSEN

R1	resistor	10 k	232221113102	Phillips
R2	resistor	220 k	232221113224	Phillips
R3	resistor	15 ohm	232221113159	Phillips
R4	resistor	2R7/5W	230633002278	Phillips
R5	resistor	220	232221113221	Phillips
C1	capacitor cer	K15P	400V 9/0121,9	FERRO
C2	capacitor cer	K33P	400V 3015103	FERRO
C3	capacitor cer	K33P	400V 3015103	FERRO
C4	capacitor cer	K15P	400V 9/0121,9	FERRO
C5	capacitor cer	K470P	400V 9/129,9	FERRO
C6	capacitor cer	K470P	400V 9/129,9	FERRO
C7	capacitor trim	trim 5-60P	22228090 8003	Phillips
C8	capacitor cer	K82P	400V 9/0121,9	FERRO
C9	capacitor cer	gen.f. 1N	250V 9/0138,58	FERRO
C10	capacitor cer	IN 20/80	IN40 20/80 9/0129,8	FERRO
C11	capacitor tan	ta 10uF/25	10/25V	UC
C12	capacitor cer	K470P	400V 9/0121,9	FERRO
C13	capacitor cer	gen.f. 1N	250V 9/0138,58	FERRO
C14	capacitor cer	K82P	9/0121,9	FERRO
C15	capacitor cer	K82P	9/0121,9	FERRO
C16	capacitor cer	K82P	9/0121,9	FERRO
C17	capacitor trim	trim 5-60P	22228090 8003	Phillips
C18	capacitor trim	trim 5-60P	22228090 8003	Phillips
C19	capacitor cer	K82P	9/0121,9	FERRO
C21	capacitor tan	ta 10uF/25	10/25V	UC
C22	capacitor cer	K22P	9/0116,9	FERRO
C23	capacitor cer	K33P	9/0121,9	FERRO

L1	coil	o44729	R&S
L2	coil	o44729	R&S
L3	coil	o44729	R&S
L6	coil	o44729	R&S
L7	coil	1583	FERRO
L13	coil	o44729	R&S
^z L14	coil	o44724	R&S
D1		1N4148	Texas
T1		MRF239	MOT
T2		MRF237	MOT
FP1	ferrit pearl	PX 563,7 1.3	FERRO
FP2	ferrit pearl	PX 563,7 1.3	FERRO

2825D EXCITER

R0	resistor	1 kohm	PHILLIPS	232221113102
R1	resistor			
R2	resistor	10 kohm	PHILLIPS	232221113103
R3	resistor	180 ohm	PHILLIPS	232221113181
R4	resistor		PHILLIPS	232221113
R5	resistor	1 mohm	PHILLIPS	232221113105
R6	resistor	1 kohm	PHILLIPS	232221113102
R7	resistor	1,5 kohm	PHILLIPS	232221113152
R8	resistor	15 kohm	PHILLIPS	232221113153
R9	resistor	3,3 kohm	PHILLIPS	232221113332
R10	resistor	10 kohm	PHILLIPS	232221113103
R11	resistor	1 kohm	PHILLIPS	232221113102
R12	resistor	2,2 kohm	PHILLIPS	232221113222
R13	resistor	47 kohm	PHILLIPS	232221113473
R14	resistor	47 kohm	PHILLIPS	232221113473
R15	resistor	47 kohm	PHILLIPS	232221113473
R16	resistor	100 ohm	PHILLIPS	232221113101
R17	resistor	330 ohm	PHILLIPS	232221113331
R18	resistor	22 ohm	PHILLIPS	232221113229
R19	resistor	10 kohm	PHILLIPS	232221113103
R20	resistor	10 kohm	PHILLIPS	232221113103
R21	resistor	1 kohm	PHILLIPS	232221113102
R22	resistor	47 ohm	PHILLIPS	232221113479
R23	resistor	100 ohm	PHILLIPS	232221113101
R24	resistor	47 ohm	PHILLIPS	232221113479
R25	resistor	47 ohm	PHILLIPS	232221113479
R26	resistor	100 ohm	PHILLIPS	232221113101
R27	resistor	150 ohm	PHILLIPS	232221113159
R28	resistor	10 kohm	PHILLIPS	232221113103
R29	resistor		PHILLIPS	232221113
R30	resistor	47 ohm	PHILLIPS	232221113479
R31	resistor	3,3 kohm	PHILLIPS	232221113332
R32	resistor	470 ohm	PHILLIPS	232221113471
R33	resistor	47 ohm	PHILLIPS	232221113479
R34	resistor	150 ohm	PHILLIPS	232221113151
R35	resistor	3,3 kohm	PHILLIPS	232221113332
R36	resistor	100 ohm	PHILLIPS	232221113101
R37	resistor	0 ohm	PHILLIPS	232221113
R38	resistor			
R39	resistor	390 ohm	PHILLIPS	232221113391

2825D EXCITER

R40	resistor	470 kohm	PHILLIPS	232221113474
R41	resistor	4,7 kohm	PHILLIPS	232221113472
R42	resistor	10 kohm	PHILLIPS	232221113102
R43	resistor	10 kohm	PHILLIPS	232221113102
R44	resistor	33 kohm	PHILLIPS	232221113332
R45	resistor	10 kohm	PHILLIPS	232221113102
R46	resistor	1 mohm	PHILLIPS	232221113105
R47	resistor	10 kohm	PHILLIPS	232221113102
R48	resistor	10 kohm	PHILLIPS	232221113103
R49	resistor		PHILLIPS	232221113181
R50	resistor	100 ohm	PHILLIPS	232221113101
R51	resistor	47 ohm	PHILLIPS	232221113479
R52	resistor	100 ohm	PHILLIPS	232221113101
R53	resistor	1 kohm	PHILLIPS	232221113102
R54	resistor	1 kohm	PHILLIPS	232221113102
R55	resistor	1 kohm	PHILLIPS	232221113102
R56	resistor	6,8 kohm	PHILLIPS	232221113682
R57	resistor	22 kohm	PHILLIPS	232221113223
R58	resistor	33 kohm	PHILLIPS	232221113333
R59	resistor	100 kohm	PHILLIPS	232221113104
R60	resistor	1,8 kohm	PHILLIPS	232221113182
R61	resistor	1 kohm	PHILLIPS	232221113102
R62	resistor	1,8 kohm	PHILLIPS	232221113182
R63	resistor	220 ohm	PHILLIPS	232221113229
R64	resistor	1,5 kohm	PHILLIPS	232221113152
R65	resistor	3,9 kohm	PHILLIPS	232221113392
R66	resistor	1 kohm	PHILLIPS	232221113102
P1	potentiom.	4,7 kohm	PHILLIPS	2322 410 03356
P2	potentiom.	4,7 kohm	PHILLIPS	2322 410 03356
P3	potentiom.	4,7 kohm	PHILLIPS	2322 410 03356

2825D EXCITER

C0	capacitor cer	1N/63	CO	2222 630 06102
C1	capacitor cer	1N/63	CO	2222 630 06102
C2	capacitor cer	1N763	CO	2222 630 06102
C3	capacitor cer	1N763	CO	2222 630 06102
C4	capacitor cer	1N763	CO	2222 630 06102
C5	capacitor cer	1N763	CO	2222 630 06102
C6	capacitor sib	100N	SIE	B37499 F6104 S8
C7	capacitor ellyt	1u/50	MULTI	200 370 ESM
C8	capacitor sib	100N	SIE	B37499 F6104 S8
C9	capacitor sib	100N	SIE	B37499F6104 S8
C10	capacitor tan	47u	UC	T399 E106 MO16 BC
C11	capacitor poly	470N	SIE	B32511 D1474 K
C12	capacitor poly	47N	CO	2222 3444 1472
C13	capacitor sty	820P	CO	2222 426 48201
C14	capacitor ellyt	10u/35	MULTI	200 170 ESM
C15	capacitor ellyt	1μ/50	MULTI	
C16	capacitor sib	10N	SIE	B37449 F6103 S8
C17	capacitor cer	1P	CO	2222 683 03108
C18	capacitor cer	8,2P	CO	2222 683 23828
C19	capacitor cer	22P	CO	2222 642 34229
C20	capacitor trim	2-10P	CO	2222 809 05002
C21	capacitor cer	82P	CO	2222 642 34829
C22	capacitor cer	1P	CO	2222 683 03108
C23	capacitor cer	1N/63	CO	2222 630 06102
C24	capacitor cer	1N/63	CO	2222 630 06102
C25	capacitor sib	10N	SIE	B37449 F6103 S8
C26	capacitor tan	10u/25	UC	1o/25V
C27	capacitor			
C28	capacitor tan	10u/25	UC	10/25V
C29	capacitor cer	1N/63	CO	2222 630 06102
C30	capacitor cer	1P	CO	2222 683 03108
C31	capacitor sib	100N	SIE	B37499 F6104 S8
C32	capacitor sib	100N	SIE	B37499 F6104 S8
C33	capacitor cer	1P	CO	2222 683 03108
C34	capacitor cer	6,8P	CO	2222 642 34688
C35	capacitor			
C36	capacitor cer	1N/63	CO	2222 630 06102
C37	capacitor cer	15P	CO	2222 642 34159
C38	capacitor trim	2-22P	CO	2222 808 11229
C39	capacitor sib	10N	SIE	B37449 F6103 S8
C40	capacitor ellyt	10u/35	MULTI	200 170 ESM

2825D EXCITER

C41	capacitor cer	1N	CO	2222 630 06102
C42	capacitor cer	8,2P	CO	2222 683 33828
C43	capacitor cer	6,8P	CO	2222 642 33688
C44	capacitor cer	5,6P	CO	2222 683 33568
C45	capacitor			
C46	capacitor cer	47P	CO	2222 638 10479 NPO
C47	capacitor sib	100N	SIE	B37449 F6104 S8
C48	capacitor sty	470P	CO	2222 427 44701
C49	capacitor			
C50	capacitor sib	100N	SIE	B37449 F6104 S8
C51	capacitor			
C52	capacitor sib	10N	SIE	B37449 F6103 S8
C53	capacitor sib	10N	SIE	B37449 F6103 S8
C54	capacitor			
C55	capacitor sib	100N	SIE	B37449 F6104 S8
C56	capacitor			
C57	capacitor cer	1N/63	CO	2222 630 06102
C58	capacitor cer	1N/63	CO	2222 630 06102
C59	capacitor			
C60	capacitor sib	100N	SIE	V37449 F6104 S8
C61	capacitor trim	2-22P	CO	2222 808 11229
C62	capacitor cer	33P	CO	2222 642 34339
C63	capacitor cer	22P	CO	2222 683 09338 NPO
C64	capacitor sib	100N	SIE	B37449 F6104 S8
C65	capacitor sib	100N	SIE	B37449 F6104 S8
C66	capacitor sib	100N	SIE	B37449 F6104 S8
C67	capacitor			
C68	capacitor cer	1N/63	CO	2222 630 06102
C69	capacitor cer	1N/63	CO	2222 630 06102
C70	capacitor ellyt	10u/35	MULTI	200 170 ESM
C71	capacitor ellyt	4,7u/50	MULTI	2000 450 ESM
C72	capacitor ellyt	47u/25	MULTI	200 130 ESM
C73	capacitor sib	10N	SIE	B37449 F6103 S8
C74	capacitor sib	10N	SIE	B37449 F6103 S8
C75	capacitor sib	10N	SIE	B37449 F6103 S8
C76	capacitor sib	10N	SIE	B37449 F6103 S8
C77	capacitor sib	10N	SIE	B37449 F6103 S8
C78	capacitor cer	1N/63	CO	2222 630 06102

X1	x-tal		NDK	6,4MHz
J15	connector		AMP	3 0826941/4
J16	connector		HIRCH	MEB 60H
J23	connector		AMP	826375/6
L1	coil		R&S	044712
L2	coil		MITSUMI	L2M7DKW 20285
L3	coil		MITSUMI	L2M7DKW 20285
L4	coil		MITSUMI	L2M7DKW 20285
L5	coil	0,1 uH	JEFF	004416 001K
L6	coil	0,1 uH	JEFF	004416 001K
L7	coil		R&S	044724
L8	coil		MITSUMI	L2M7DKW 20285
T1	transistor		SIE	BC237
T2	transistor		SIE	BC237
T3	transistor		TEXAS	BF256LA
T4	transistor		SILI	J310
T5	transistor		SILI	J310
T6	transistor		SIE	BC237
T7	transistor		SIE	BF689
T8	transistor		SIE	BC237
T9	transistor		SIE	BC237
T10	transistor		SIE	BD139
T11	transistor		SIE	2N4427
T12	transistor		SIE	BC237
T13	transistor		SIE	BC237
T14	transistor		SILI	J310
T15	transistor		SIE	BC237

2825 D EXCITER

IC1	integrated cct	PLESS	SL6270
IC2	integrated cct	MOTO	MC741
IC3	integrated cct	SIE	TAB1453A
IC4	integrated cct	SIE	S89
IC5	integrated cct	MOTO	MC145158
D1	diode	SIE	BA2435
D2	diode	SIE	BB 505G
D3	diode	SIE	1N4148
J5	connector	AMP	3 0826941 4
J23	connector	AMP	826 375 6
J16	connector	HIRCH	MEB60H
	VCO	R&S	46268

JUNCTION 2830 B

R3	resistor	0 ohm	PHILLIPS	SFR25
R4	resistor	0 ohm	PHILLIPS	SFR25
R6	resistor	0 ohm	PHILLIPS	SFR25
R7	resistor	560 ohm	PHILLIPS	2322 211 13561
N10	socket	16 ben	GAMB	703 5316 01 04 12
N11	socket	16 ben	GAMB	703 5316 01 04 12
N12	socket	16 ben	GAMB	703 5316 01 04 12
N13	connector	26 ben	AMP	
N 6	connector	6 ben	AMP	826375 6
N 5	connector	16 ben	AMP	1 0163 681 5

CONNECTION 2832B

C1	capacitor	sib	10N	SIE	B37987	s11o3	K3
C2	capacitor	pm	1 uf	SIE	B32511	d11o5	K
C3	capacitor	sib	10N	SIE	B37986	s11o3	K3
C4	capacitor	pm	1 uf	SIE	B 32511	d11o5	K
C5	capacitor	sib	10N	SIE	B37987	s11o3	K3
C6	capacitor	sib	10N	SIE	B37987	s11o3	K3
C7	capacitor	sib	10N	SIE	B37987	s11o3	K3
C8	capacitor	sib	10N	SIE	B37987	s11o3	K3
C9	capacitor	sib	10N	SIE	B37987	s11o3	k3
C10	capacitor	sib	10N	SIE	B37987	s11o3	K3
C11	capacitor	sib	10N	SIE	B37987	s11o3	K3
C12	capacitor	sib	10N	SIE	B37987	s11o3	K3
C13	capcitor	sib	10N	SIE	B37987	s11o3	K3
C14	capcitor	sib	10N	SIE	B37987	s11o3	K3

C18	capacitor		220 μ F/50				
C19	capacitor		220 μ F/50				
C20	capacitor		220 μ F/50				

F1	fuse socket			R&S		19589	
F1	fuse holder					19585III	
F1	fuse	F15A		HIRC			
J10	cable			HIRC		RS-3-15o	
++	pin			SES		GST O BGS	

DUPLEX FILTER 2815A

C1	capacitor trim	2-18P	PHILLIPS	2222 809 05003
C2	capacitor cer	15P	FERRO	9/0116,9
C3	capacitor cer	15P	FERRO	9/0116,9
C4	capacitor cer	15P	FERRO	9/0116,9
C5	capacitor trim	2-18P	PHILLIPS	2222 809 05003
C8	capacitor cer	15P	FERRO	9/0116,9
C9	capacitor trim	2-18P	PHILLIPS	2222 809 05003
C10	capacitor cer	15P	FERRO	9/0116,9
C11	capacitor cer	15P	FERRO	9/0116,9
C12	capacitor cer	15P	FERRO	9/0116,9
C13	capacitor trim	2-18P	PHILLIPS	2222 809 05003
C14	capacitor trim	2-18P	PHILLIPS	2222 809 05003
C15	capacitor trim	2-18P	PHILLIPS	2222 809 05003
C16	capacitor trim	2-18P	PHILLIPS	2222 809 05003
C17	capacitor cer	68P	DRAL	EDRU
J2	SMB plug			
J3	SMB plug			
J4	SMB plug			
L1	coil		R&S	
L2	coil		R&S	
L3	coil		R&S	
L4	coil		R&S	
L5	coil		R&S	
L6	coil		R&S	
L7	coil		R&S	
HE1	coil		R&S	
HE2	coil		R&S	
HE3	coil		R&S	
HE4	coil		R&S	
HE5	coil		R&S	

2828.C RECEIVER

R1	resistor	47 ohm	PHILLIPS	232221113479
R2	resistor	5,6 kohm	PHILLIPS	232221113562
R3	resistor	1 kohm	PHILLIPS	232221113102
R4	resistor	100 ohm	PHILLIPS	232221113101
R5	resistor	10 kohm	PHILLIPS	232221113103
R6	resistor	2,2 kohm	PHILLIPS	232221113222
R7	resistor	2,2 kohm	PHILLIPS	232221113222
R8	resistor	22 kohm	PHILLIPS	232221113223
R9	resistor	6,8 kohm	PHILLIPS	232221113682
R10	resistor	100 ohm	PHILLIPS	232221113101
R11	resistor	1,5 kohm	PHILLIPS	232221113152
R12	resistor	560 ohm	PHILLIPS	232221113561
R13	resistor	47 ohm	PHILLIPS	232221113479
R14	resistor	0 ohm	PHILLIPS	232221113
R15	resistor	0 ohm	PHILLIPS	232221113
R16	resistor	0 ohm	PHILLIPS	232221113
R17	resistor	56 kohm	PHILLIPS	232221113563
R18	resistor	150 ohm	PHILLIPS	232221113151
R19	resistor	56 ohm	PHILLIPS	232221113569
R20	resistor	10 kohm	PHILLIPS	232221113103
R21	resistor	47 ohm	PHILLIPS	232221113479
R22	resistor	10 kohm	PHILLIPS	232221113103
R23	resistor	56 kohm	PHILLIPS	232221113563
R24	resistor	150 ohm	PHILLIPS	232221113151
R25	resistor	0 ohm	PHILLIPS	232221113
R26	resistor	100 ohm	PHILLIPS	232221113101
R27	resistor	56 kohm	PHILLIPS	232221113563
R28	resistor	2,2 kohm	PHILLIPS	232221113222
R29	resistor	0 ohm	PHILLIPS	232221113
R30	resistor	100 ohm	PHILLIPS	232221113101
R31	resistor	4,7 kohm	PHILLIPS	232221113472
R32	resistor	10 kohm	PHILLIPS	232221113103
R33	resistor	1,8 kohm	PHILLIPS	232221113182
R34	resistor	10 kohm	PHILLIPS	232221113103
R35	resistor	10 kohm	PHILLIPS	232221113103
R36	resistor	0 ohm	PHILLIPS	232221113
R37	resistor	47 ohm	PHILLIPS	232221113479

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R38	resistor	10 kohm	PHILLIPS	232221113103
R39	resistor	10 kohm	PHILLIPS	232221113103
R40	resistor	0 ohm	PHILLIPS	232221113
R41	resistor	100 ohm	PHILLIPS	232221113101
R42	resistor	22 ohm	PHILLIPS	232221113229
R43	resistor	100 ohm	PHILLIPS	232221113101
R44	resistor	330 ohm	PHILLIPS	232221113331
R45	resistor	10 kohm	PHILLIPS	232221113103
R46	resistor	10 kohm	PHILLIPS	232221113103
R47	resistor	100 ohm	PHILLIPS	232221113101
R48	resistor	6,8 kohm	PHILLIPS	232221113682
R49	resistor	100 ohm	PHILLIPS	232221113101
R50	resistor	100 ohm	PHILLIPS	232221113101
R51	resistor	180 ohm	PHILLIPS	232221113181
R52	reistor	100 ohm	PHILLIPS	232221113101
R53	resistor	10 kohm	PHILLIPS	232221113103
R54	resistor	10 kohm	PHILLIPS	232221113103
R55	resistor	10 kohm	PHILLIPS	232221113103
R56	resistor	100 ohm	PHILLIPS	232221113101
R57	resistor	100 kohm	PHILLIPS	232221113104
R58	resistor	10 kohm	PHILLIPS	232221113103
R59	resistor	2,2 kohm	PHILLIPS	232221113222
R60	resistor	22 kohm	PHILLIPS	232221113223

C1	capacitor cer	27 P	CO	2222 642 34229
C2	capacitor cer	1N/63	CO	2222 630 06102
C3	capacitor sib	10N	SIE	B37449 F6103 S8
C4	capacitor cer	5,6 P	CO	2222 683 33568
C5	capacitor cer	33 P	CO	2222 642 34339
C6	capacitor sib	10N	SE	B37449 F6103 S8
C7	capacitor sty	1,8 N	CP	22222 425 41802
C8	capacitor cer	33 P	CP	2222 642 34339
C9	capacitor sib	100 N	SIE	B37449 F6104 S8
C10	capacitor sty	1,8 N	CO	2222 425 41802

C11	capacitor sib	1u	SIE	B32511 D1105 K
C12	capacitor sib	47N	SIE	B37449 F6473 S8
C13	capacitor cer	47N	SIE	B37449 F6473 S8
C14	capacitor cer	2,2P	CO	2222 683 09228 NPO
C15	capacitor cer	5P6	CO	2222 683 33568
C16	capacitor cer	6,8P	CO	2222 642 33688
C17	capacitor cer	0,47P	FERRO	250V 9/01109 P100
C18	capacitor cer	1N/63	CO	2222 630 06102
C19	capacitor cer	12P	CO	2222 683 34129
C20	capacitor cer	5,6P	CO	2222 683 33568
C21	capacitor cer	1N/63	CO	2222 630 06102
C22	capacitor sib	10N	SIE	B37449 F6103 S8
C23	capacitor cer	1N/63	CO	2222 630 06102
C24	capacitor cer	3,9P	CO	2222 68
C25	capacitor sib	10N	SIE	B37449 F6103 S8
C26	capacitor sib	10N	SIE	B37449 F6103 S8
C27	capacitor cer	1N/63	CO	2222 6830 3478
C28	capacitor sib	10N	SIE	B37449 F6103 S8
C29	capacitor sib	100N	SIE	B37449 F6104 S8
C30	capacitor cer	5P6	CO	2222 638 33568
C31	capacitor cer	10P	CO	2222 683 34109
C32	capacitor cer	1N/63	CO	2222 630 06102
C33	capacitor cer	1N/63	CO	2222 630 06102
C34	capacitor cer	1P5	CO	2222 638 03158
C35	capacitor sib	100N	SIE	B37449 F6104 S8
C36	capacitor sib	100N	SIE	B37449 F6104 S8
C37	capacitor tan	22u/16	UC	T399 G266 MO16 BC
C38	capacitor sib	10N	SIE	B37449 F6103 S8
C39	capacitor tan	22U/16	UC	T399 G266 MO16 BC
C40	capacitor cer	1P5	CO	2222 638 03158
C41	capacitor cer	1N/63	CO	2222 630 06102
C42	capacitor cer	1N/63	CO	2222 630 06102
C43				
C44	capacitor cer	82P	CO	2222 642 34829
C45	capacitor cer	1N/63	CO	2222 630 06102
C46	capacitor tan	10u/25	UC	10/25V
C47	capacitor tan	10U/25	UC	10/25V
C48	capacitor cer	22P	CO	2222 642 34229

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C49	capacitor cer	5P6	CO	2222 638 33568
C50	capacitor cer	2,2P	CO	2222 683 09228 NPO
C51	capacitor trim	2-10N	CO	2222 809 05002
C52	capacitor cer	1N/63	CO	2222 630 06102
C53	capacitor cer	5,6P	CO	2222 683 33568
C54	capacitor cer	1N/63	CO	2222 630 06102
C55	capacitor cer	1P5	CO	2222 638 03158
C56	capacitor cer	1N/63	CO	2222 630 06102
C57	capacitor cer	1N/63	CO	2222 630 06102
C58	capacitor cer	33P	CO	2222 642 34339
C59	capacitor cer	22P	CO	2222 642 34339
C60	capacitor trim	2-22P	CO	2222 808 11229
C61	capacitor sib	100N	SIE	B37449 F6104 S8
C62	capacitor sib	100N	SIE	B37449 F6104 S8
C63	capacitor cer	1N/63	CO	2222 630 06102
C64	capacitor sib	100N	SIE	B37449 F6104 S8
C65	capacitor cer	1N/63	CO	2222 630 06102
C66	capacitor tan	22u/16	UC	T399 G226 M016 BC
C67	capacitor sib	10N	SIE	B37449 F6103 S8
C68	capacitor tan	10u/25	UC	10/25V
C69	capacitor ellyt	47u/25	MULTI	100 130 ESM
C70	capacitor ellyt	47u/25	MULTI	200 130 ESM
C71	capacitor sib	100N	SIE	B37449 F6104 S8
C72	capacitor tan	10u/16	UC	T399 G226 M016 BC
C73	capacitor ellyt	47U/25	MULTI	200 130 ESM
C74	capacitor sib	100N		B37449 F6104 SP
L1	coil		NDK	1013 30YK
L2	coil		NDK	BB 5170
L3	coil			5961
L4	coil			5961
L5	coil		RS	
L6	coil		RS	
L7	coil		RS	
L8	coil		RS	
L9	coil			1014 30XK
L10	coil			2615

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L11	coil	100 uH	SIE	B78108 S 1104 J
L12	coil	100 uH	SIE	B78108 S 1104 J
L13	coil	3,3 mH	SIE	B78108 S 1335 J
L14	coil			2615
L15	coil		RS	
L16	coil			2615
L17	coil	0,1 uH	JEFF	004416 001K
L18	coil	100 uH	SIE	B78108 S 1335 J
X1	x-tal fil.	10.245 MHz	NDK	10.245 MHz
X2	x-tal fil.	6,4 MHz	NDK	6,4 MHz
FL1	filter	35210	NDK	10F 15D H
FL2	filter	35210		CFU 455
IC1	integrated cct		MOT	MC 1469A
IC2	integrated cct		SIE	S89
IC3	inetrated cct		MOT	MC 145158
T1	transistor		SILI	J310
T2	transistor		SIE	BC237
T3	transistor		SILI	J310
T4	transistor		SILI	J310
T5	transistor		SILI	J310
T6	transistor		SIE	BC237
T7	transistor		SIE	BC237
T8	transistor		SIL	J310
T9	transistor		TEXAS	BF256 L
T10	transistor		SIE	BC237
T11	transistor		SIE	BC237
T12	transistor		SILI	J310
T13	transistor		SILI	J310
T14	transistor		SIE	BC237

2828C RECEIVER

D1	diode		SIE	BB 505G
D2	diode		SIE	BB 505G
D3	diode		SIE	BB 505G
D4	diode		SIE	BB 505G
D5	diode		SIE	BB 505G
D6	diode		SIE	BA 243S
PL1	connector	55440	AMP	163 683 7
PL2	connector	55440	AMP	163 683 7
ANT	antenna plug	55524	RADIAL	114.426
	VCO	46.268	R&S	46.268

R0	resistor	2 μ 2		232221113228
R1	resistor	47 kohm	Phillips	232221113473
R2	resistor	6,8 kohm	Phillips	232221113682
R3	resistor	100 kohm	Phillips	232221113104
R4	resistor	6,8 kohm	Phillips	232221113682
R5	resistor	8,2 kohm	Phillips	232221113822
R6	resistor	6,8 kohm	Phillips	232221113682
R7	resistor	6,8 kohm	Phillips	232221113682
R8	resistor	10 kohm	Phillips	232221113103
R9	resistor	470 ohm	Phillips	232221114701
R10	resistor	18 kohm	Phillips	232221113183
R11	resistor	150 ohm	Phillips	232221113151
R12	resistor	6,8 kohm	Phillips	232221113682
R13	resistor	1 kohm	Phillips	232221113102
R14	resistor		Phillips	232221113
R15	resistor	27 kohm	Phillips	232221113273
R16	resistor	470 kohm	Phillips	232221113474
R17	resistor	1,2 kohm	Phillips	232221113122
R18	resistor	1,2 kohm	Phillips	232221113122
R19	resistor	100 kohm	Phillips	232221113104
R20	resistor	100 kohm	Phillips	232221113104
R21	resistor	2,2 kohm	Phillips	232221113222
R22	resistor	10 kohm	Phillips	232221113103
R23	resistor	10 kohm	Phillips	232221113103
R24	resistor		Phillips	232221113
R25	resistor		Phillips	232221113
R26	resistor	820 kohm	Phillips	232221113824
R27	resistor	100 kohm	Phillips	232221113104
R28	resistor	1 kohm	Phillips	232221113102
R29	resistor	1,8 kohm	Phillips	232221113182
R30	resistor	1,8 kohm	Phillips	232221113182
R31	resistor		Phillips	232221113
R32	resistor	180 ohm	Phillips	232221113181
R33	resistor	39 kohm	Phillips	232221113393
R34	resistor	3,3 kohm	Phillips	232221113332
R35	resistor	56 kohm	Phillips	232221113563
R36	resistor	56 kohm	Phillips	232221113563
R37	resistor	150 kohm	Phillips	232221113154

R 38	resistor	1 kohm	Phillips	232221113102
R 39	resistor	10 kohm	Phillips	232221113103
R 40	resistor	4,7 kohm	Phillips	232221113472
R 41	resistor	8,2 kohm	Phillips	232221113822
R 42	resistor	10,0 kohm	Phillips	232221113103
R 43	resistor	10 kohm	Phillips	232221113103
R 44	resistor		Phillips	232221113
R 45	resistor		Phillips	232221113
R 46	resistor		Phillips	232221113
R 47	resistor		Phillips	232221113
R 48	resistor		Phillips	232221113
R 49	resistor	4,7 kohm	Phillips	232221113472
R 50	resistor	1 kohm	Phillips	232221113102
R 51	resistor		Phillips	232221113
R 52	resistor	15 ohm	Phillips	232221113159
R 53	resistor	10 kohm	Phillips	232221113103
R 54	resistor	220 kohm	Phillips	232221113
R 55	resistor			232221113
R 56	resistor	270 ohm	Phillips	232221113271
R 57	resistor		Phillips	232221113
R 58	resistor	100 ohm	Phillips	232221113101
R 59	resistor		Phillips	232221113
R 60	resistor	2,2 kohm	Phillips	232221113222
R 61	resistor		Phillips	232221113
R 62	resistor		Phillips	232221113
R 63	resistor		Phillips	232221113
R 64	resistor	1 kohm	Phillips	232221113101
R 65	resistor	1 kohm	Phillips	232221113101
R 66	resistor	150 kohm	Phillips	232221113154
R 67	resistor	150 kohm	Phillips	232221113154
R 68	resistor		Phillips	232221113
R 69	resistor	10 kohm	Phillips	232221113103
R 70	resistor	10 kohm	Phillips	232221113103
R 71	resistor		Phillips	232221113
R 72	resistor	47 ohm	Phillips	232221113479
R 73	resistor	47 ohm	Phillips	232221113479
R 74	resistor	220 ohm	Phillips	232221113229
R 75	resistor	220 ohm	Phillips	232221113229
R 76	resistor	3,3 kohm	Phillips	232221113332
R 77	resistor	2,7 kohm	Phillips	232221113272
R 78	resistor	2,7 kohm	Phillips	232221113272

RM1	resistor	10 kohm	ROHM	RMA 5A 103 J
RM2	resistor	10 kohm	ROHM	RMA 5B 104 J
RM3	resistor	10 kohm	ROHM	RMA 6 103 J
P4	potentiom. preset	470 ohm	Phillips	2322 410 03353
P5	potentiom. preset	10 kohm	Phillips	2322 410 03357
C1	capacitor	sib 10N	SIE	B37449 F6103 S8
C2	capacitor	sty 1000P	CO	2222 425 41002
C3	capacitor	sty 1000P	CO	2222 425 41002
C4	capacitor	sib 100N	SIE	B37449 F6104 S8
C5	capacitor	sty 1000P	CO	2222 425 41002
C6	capacitor	sty 1000P	CO	2222 425 41002
C7	capacitor	sib 100N	SIE	B37449 F6104 S8
C8	capacitor	sib 100N	SIE	B37449 F6104 S8
C9	capacitor	pm 470N	SIE	B32511 D1474 K
C10	capacitor	ellyt10uF	MULTI	200 170 ESM
C11	capacitor	sty 3,3N	SIE	B31063 B1332 H
C12	capacitor	pm 150N	SIE	B32509 C1154K
C13	capacitor	ellyt47u/25V	MULTI	200 130 ESM
C14	capacitor	poly 47N	CO	2222 3444 1473
C15	capacitor	sty 4,7N	SIE	B31063 B1472 H
C16	capacitor	ellyt2200u/16		
C17	capacitor	sib 100N	SIE	B37449 F6104 S8
C18	capacitor	tan 10u/25	UC	10/25V
C19	capacitor	ellyt47u/25	MULTI	200 130 ESM
C20	capacitor			
C21	capacitor			
C22	capacitor	pm 330N	SIE	B32510 D1334 K
C23	capacitor	ellyt47u/25	MULTI	200 130 ESM
C24	capacitor	sib 10N	SIE	B37449 F6103 S8
C25	capacitor	ellyt 22u/25	MULTI	200 110 ESM
C26	capacitor	cer 1N/63	PHILLIPS	2222 630 06102
C27	capacitor	ellyt100u/40	SIE	B41283 07107 T
C28	capacitor	sty 4,7N	SIE	B31063 B1472 H
C29	capacitor		SIE	B37449 F6104 S8

C30	capacitor sty	470P	PHILLIPS	2222 427 44701
C31	capacitor ellyt	470u/10	PHILLIPS	2222 016 14471
C32	capacitor ellyt	22u/25	MULTI	200 110 ESM
C33	capacitor ellyt	220u/40	PHILLIPS	2222 017 17221
C34	capacitor cer	1N/63	PHILLIPS	222 630 06102
C35	capacitor sib	100N	SIE	B37449 F6104 S8
C36	capacitor sib	100N	SIE	B37449 F6104 S8
C37	capacitor sty	4,7N	SIE	B31063 B1472 H
C38	capacitor sib	10N	SIE	B37449 F6103 S8
C39	capacitor sib	10N	SIE	B37449 F6103 S8
C40	capacitor poly	100N	PHILLIPS	B32511 D1103 K
C41	capacitor sib	100N	SIE	B37449 F6104 S8
C42	capacitor sib	100N	SIE	B37449 E6104 S8
C43	capacitor			
C44	capacitor			
C45	capacitor tan	10u/25	UC	10/25V
C46	capacitor cer	1N/63	PHILLIPS	2222 630 06102
C47	capacitor			
C48	capacitor poly	22N	SIE	N32511 D6223 K
C49	capacitor ellyt	220u/16	FAB	EKM
L1	coil	10uH	SIE	B78108 S1103K
T1	transistor		SIE	BC237
T2	transistor		SIE	BC237
T3	transistor		SIE	BC237
T4	transistor		SIE	BC237
T5	transistor		SIE	BD139
T6	transistor		SIE	BC237
T7	transistor		SIE	BC237
T8	transistor		SIE	BD139
T9	transistor		SIE	BC237

D1	diode	SIE	1N4148
D2	diode	SIE	1N4148
D3	diode	SIE	AA119
D4	diode	SIE	AA119
D5	diode	SIE	
D6	diode	SIE	1N4148
D7	diode	SIE	1N4148
D8	diode	SIE	1N4148
Z1	diode zener	SIE	BXZ 83/12V
Z2	diode zener	SIE	BXY 97/6,8V
IC1	integrated cct	MOTO	MC741
IC2	integrated cct	MOTO	MC1458
IC3	integrated cct	MOTO	MC4066
IC4	integrated cct	SIE	TDA 1037
IC5	integrated cct	MOTO	LM358
IC6	integrated cct	MOTO	MC4070
IC7	integrated cct	INTERSIL	NE556
IC8	integrated cct	MOTO	7805
IC9	integrated cct	MOTO	MC4543
IC10	integrated cct	MOTO	MC4543
IC11	integrated cct	MOTO	MC4070
IC12	integrated cct	MOTO	MC4070
P12	IC connector	AMP	641 600-3
J14	connector	AMP	2-0826632-0
P26		AMP	163683-7
P27		AMP	163683-7
P28		AMP	825437-B
J28		AMP	825437-B
J29		ROB NU	PN SB 25 T
J30		ROB NU	PN SB 25 T
HT	laudspeaker	VIFA	S6FB 8 ohm

2831 Computer

R1	resistor		22 kohm	Phillips	232221113223
R2	resistor		.1o kohm	Phillips	2322211131o3
R3	resistor		1oo ohm	Phillips	2322211131o1
R4	resistor		1oo ohm	Phillips	2322211131o1
R5	resistor		22 kohm	Phillips	232221113223
R6	resistor		1o kohm	Phillips	2322211131o3
R7	resistor		1 kohm	Phillips	2322211131o2
R8	resistor		1o ohm	Phillips	2322211131o9
R9	resistor		1 kohm	Phillips	2322211131o2
R10	resistor		12o kohm	Phillips	232221113124
R11	resistor		1o kohm	Phillips	2322211131o3
R12	resistor		1 kohm	Phillips	2322211131o2
R13	resistor		1 kohm	Phillips	2322211131o2
R14	resistor		1 kohm	Phillips	2322211131o2
R15	resistor		1o kohm	Phillips	2322211131o3
R16	resistor		1K8 kohm	Phillips	232221113182
R17	resistor		330 ohm	Phillips	232221113331
R18	resistor		10 kohm	Phillips	2322211131o3
R19	resistor		100 ohm	Phillips	2322211131o1
R20	resistor		1oo ohm	Phillips	2322211131o1
R21	resistor		1 kohm	Phillips	2322211131o2
R22	resistor		1oo ohm	Phillips	2322211131o1
P1	potentiom. preset		2o k	SPEC	63X-2o3-To1
C1	capasitor	sib	10N	SIE	B37449 F61o3 S8
C2	capasitor	tan	10uf/25	UC	1o/25V
C3	capasitor	po	47oN	SIE	B32511 D 1474 K
C4	capasitor	sib	10N	SIE	B37449 F61o3 S8
C5	capasitor	sty	4,7N	SIE	B 31o63 B1472 H
C6	capasitor	sib	47N	SIE	B37449 F6473 S8
C7	capasitor	sib	47N	SIE	B37449 F6473 S8
C8	capasitor	sib	47N	SIE	B37449 F6473 S8
C9	capasitor	sib	47N	SIE	B37449 F6473 S8
C10	capasitor	sib	47N	SIE	B37449 F6473 S8
C11	capasitor	tan	1uf/35	UC	T399A1o5M035BS
C12	capasitor	sib	100N	SIE	B37449 F61o4 S8
C13	capasitor	ellyt	47ouF/25	SIE	B41588B5477 T
C15	capasitor	sib	100N	SIE	B37499 F61o4 S8

2831 Computer

D1	diode		HP	HSCH 1001
D2	diode		SIE	1N4148
D3	diode		SIE	Aa119
D4	diode		SIE	AA119
D5	diode		SIE	1N4148
D6	diode		SIE	1N4148
D7	diode		SIE	1N4148
X1	x-tal filter	6,4 MHz	R&S	34.115
Q1	transistor		SIE	BC307
Q2	transistor		SIE	BC307
Q3	transistor		SIE	BC237
Q4	transistor		SIE	BC237
IC1	integrated cct		NEC M	UDP 8085
IC2	integrated cct		FAIR	74LS373
IC3	integrated cct		FAIR	2764
IC4	integrated cct		HARRIS	6116
IC5	integrated cct			
IC6	integrated cct		FAIR	74LS42
IC7	integrated cct		FAIR	74LS03
IC8	integrated cct		FAIR	7407
IC9	integrated cct		FAIR	74LS02
IC10	integrated cct		FAIR	74LS259
IC11	integrated cct		FAIR	74LS259
IC12	integrated cct		FAIR	74LS259
IC13	integrated cct		FAIR	74LS244
IC14	integrated cct		FAIR	74LS244
IC15	integrated cct		FAIR	74LS244
IC16	integrated cct		FAIR	74LS259
IC17	integrated cct		FAIR	74LS32
IC18	integrated cct		FAIR	74LS32
IC19	integrated cct		INTERSIL	NE555
IC20	integrated cct		FAIR	7407
IC21	integrated cct		AMP	2732

2831 COMPUTER

B1	battery lithium	3V	VARTA	CR2NP-SLF
RM1	resistor		ROHM	RM 8-103J
RM2	resistor		ROHM	RM 8-103J
RM3	resistor		ROHM	RM 8-103J
P15	cable		R&S	52071
P13	cable		R&S	52072
P14	cable		R&S	52073

2822D Antenne

RL1	Relay			
D1	Diode	SIE		1N4002
C1	capacitor cer	1N/63	Phillips	2222 630 06102
C2	capacitor cer	1N/63	Phillips	2222 630 06102
R1	resistor	100 K	Phillips	2322 211 13104

2845A potmetermodul

P1	potentiom	ROWIDI	o8o31328
P2	potentiom	ROWIDI	o8131342
P3	potentiom	ROWIDI	o8131342
	connector	AMP	163749-7
	connector	AMP	163749-7

2820C POWERCONVERTER

C1	capacitor mkt	2,2u	SIE	B32512 D 1225K
C2	capacitor mkt	2,2u	SIE	B32512 D 1225K
C3	capacitor ellyt	220u/50	MULTI	HF
C4	capacitor mkt	2,2u	SIE	B32512 D 1225K
C5	capacitor mkt	2,2u	SIE	B32512 D 1225K
C6	capacitor ellyt	220u/50	MULTI	HF
C7	capacitor ellyt	220u/50	MULTI	HF
C8	capacitor ellyt	220u/50	MULTI	HF
C9	capacitor ellyt	220u/50	MULTI	HF
C10	capacitor mkt	2,2u	SIE	B32512 D 1225K
C11	capacitor			
C12	capacitor mkt	2,2u	SIE	B32512 D 1225K
C13	capacitor ellyt	220u/50	MULTI	HF
C14	capacitor ellyt	220u/50	MULTI	HF
D1	diode		SIE	1N4002
D2	diode		SIE	MUR 1516
Z1	diode zener		SIE	BZY 970/43V
Z2	diode zener		SIE	1N6292A
Z3	diode zener		SIE	1N6292A
T1	transistor		SIE	BUZ 24
T2	transistor		SIE	BUZ 24
L1	coil		R&S	044929
L2	coil		R&S	
L3	coil	330uH	R&S	044863
TR1	transformer		R&S	044862
RL1	relay	12V/6A	SIE	V2305 A0102 A101

2820C POWERCONVERTER

J21	connector	RADIOP	304740
J22	connector	RADIOP	304740
J24	connector	RADIOP	304740
J25	connector	RADIOP	304740
J9	multicable	3M	RS1-120 mm

2823A Duplex Switch

R1	resistor	2,2 kohm	PHILLIPS	232221113222
R2	resistor	2,2 kohm	PHILLIPS	232221113222
R3	resistor	2,2 kohm	PHILLIPS	232221113222
R4	resistor	2,2 kohm	PHILLIPS	232221113222
R5	resistor	2,2 kohm	PHILLIPS	232221113222
R6	resistor	1o kohm	PHILLIPS	2322211131o3
R7	resistor	2,2 kohm	PHILLIPS	232221113222
R8	resistor	1o kohm	PHILLIPS	2322211131o3
R9	resistor	1o ohm	PHILLIPS	2322211131o3
R10	resistor	39o ohm	PHILLIPS	222221113391
C1	capacitor tan	1,2N/8o	FERRO	1NF/4o 2o/8o 9/o129,8
C2	capacitor tan	1,2N/8o	FERRO	1NF/4o 2o/8o 9/o129,8
C3	capacitor tan	1,2N/8o	FERRO	1NF/4o 2o/8o 9/o129,8
C4	capacitor tan	1,2N/8o	FERRO	1NF/4o 2o/8o 9/o129,8
C5	capacitor cer	1N/63	CO	2222 63o o61o2
C6	capacitor sib	1oN	SIE	B37449 F61o3 S8
C7	capacitor tan	4,7u/25	UC	T399 E1o6 MO16 BC
C8	capacitor cer	1N/63	CO	2222 63o o61o2
C9	capacitor cer	1N/63	CO	2222 63o o61o2
Q1	transistor		SIE	BC237
Q2	transistor		SIE	BC237
D1	diode		SIE	BA243S
D2	diode		SIE	BA243S
D3	diode		SIE	BA243S
Z1	diode zener		SIE	BZX83 8V2
RX	cable	5ocm	R&S	521o2
DF	cable	13cm	R&S	521o1
RELAY	cable	13cm	R&S	

R1	Resistor	10 Kohm Philips	2322 211 13103
R2	Resistor	10 Kohm Philips	2322 211 13103
R3	Selected in final test		
R4	Selected in final test		
R5	Resistor	4,7 Kohm Philips	2322 211 13472
R6	Resistor	10 Kohm Philips	2322 211 13103
R7	Resistor	10 Kohm Philips	2322 211 13103
R8	Selected in final test		
R9	Resistor	10 Kohm Philips	2322 211 13103
R10	Resistor	10 Kohm Philips	2322 211 13103
R11	Resistor	10 Kohm Philips	2322 211 13103
R12	Resistor	10 Kohm Philips	2322 211 13103
R13	Resistor	10 Kohm Philips	2322 211 13103
R14	Resistor	10 Kohm Philips	2322 211 13103
R15	Resistor	1 Kohm Philips	2322 211 13102
R16	Resistor	10 Kohm Philips	2322 211 13103
R17	Resistor	10 Kohm Philips	2322 211 13103
R18	Resistor	10 Kohm Philips	2322 211 13103
R19	Resistor	470 Kohm Philips	2322 211 13474
R20	Resistor	56 Kohm Philips	2322 211 13563
R21	Resistor	56 Kohm Philips	2322 211 13563
R30	Resistor	2,2 Kohm Philips	2322 211 13222
R31	Resistor	5,6 Kohm Philips	2322 211 13562
R32	Resistor	10 Kohm Philips	2322 211 13103
R33	Resistor	15 Kohm Philips	2322 211 13153
R34	Resistor	33 Kohm Philips	2322 211 13333
R35	Resistor	3,3 Kohm Philips	2322 211 13332
R36	Selected in final test		
R37	Resistor	10 Kohm	2322 211 13103
R38	Resistor	330 Kohm	2322 211 13331
R39	Resistor	100 Kohm	2322 211 13104
R40	Resistor	100 Kohm	2322 211 13104
R41	Resistor	100 Kohm	2322 211 13104
R42	Resistor	22 Kohm	2322 211 13223
R43	Resistor	330 Kohm	2322 211 13331
R44	Resistor	220 Kohm	2322 211 13224
R45	Resistor	1 Kohm	2322 211 13102

R46	Resistor	1 Kohm	Philips	2322 211 13102
C1	Capacitor poly.	0,1u	Philips	2222 344 21104
C2	Capacitor poly	0,1u	Philips	2222 344 21104
C3	Capacitor ellyt.	4,7u	ITT	45 40 20 199
C4	Capacitor poly	0,1u	Philips	2222 344 21104
C5	Capacitor tan.	4,7u	ITT	TAG 4R7M25 SP
C6	Capacitor cer.	10n	Draloric	EDRU 5
C7	Capacitor cer.	10n	Draloric	EDRU 5
C20	Capacitor sty.	100n	Rifa	PFE 216 00610F
C21	Capacitor sty.	1,5n	Philips	2222 425 41502
C22	Capacitor ellyt.	4,7u	ITT	45 40 20 199
C23	Capacitor sieb.	0,1u	Siemens	B37449 S2
C24	Capacitor tan.	10u	ITT	TAG 10M25 SP F6104 S2
C25	Capacitor tan.	10u	ITT	TAG 10M25 SP
C26	Capacitor cer.	10n	Draloric	EDRU 5
C27	Capacitor cer.	10n	Draloric	EDRU 5
C28	Capacitor sieb.	0,1u	Siemens	B37449 F6109 S2
D1	Diode		Siemens	1N4148
D2	Diode		Siemens	1N4148
D3	Diode		Siemens	1N4148
D4	Diode		Siemens	1N4148
T1	Transistor		Siemens	BC 238 C
T2	Transistor		Siemens	BC 238C
T3	Transistor		Siemens	BC 238 C
T4	Transistor		Siemens	BC 238 C
T5	Transistor		Siemens	BC 238 C
T6	Transistor		Siemens	BC 307
T7	Transistor		Siemens	BC 237
T8	Transistor		Siemens	BC 237
T9	Transistor		Texas	BC 256 LA
T10	Transistor		Siemens	BC 237

T11	Transistor	Siemens	BC 237
T12	Transistor	Siemens	BC 307
T13	Transistor	Siemens	BC 237
L1	Tonecoil	R&S	
IC1	Integrated cct.	Mototola	MC 14017
IC2	Integrated cct.	Motorola	MC 14093
IC3	Integrated cct.	Motorola	MC 14013
IC4	Integrated cct.	Texas	TDB 555
RL1	Relay		
P11	16 PIN PLUG		

POWER CONVERTER CONTROL 2855 B

R0	resistor	10 kohm	PHILLIPS	232221113103
R1	resistor	1 kohm	PHILLIPS	232221113102
R2	resistor	10 kohm	PHILLIPS	232221113103
R3	resistor	150 ohm/1W	PHILLIPS	232221113154
R4	resistor	1 kohm/1W	PHILLIPS	232221113102
R5	resistor	2,2 kohm	PHILLIPS	232221113222
R6	resistor	2,7 kohm	PHILLIPS	232221113272
R7	resistor	100 kohm	PHILLIPS	232221113104
R8	resistor	150 kohm	PHILLIPS	232221113154
R9	resistor	22 kohm	PHILLIPS	232221113223
R10	resistor	4,7 kohm	PHILLIPS	232221113472
R11	resistor	100 kohm	PHILLIPS	232221113104
R12	resistor	82 kohm	PHILLIPS	232221113823
R13	resistor	56 kohm	PHILLIPS	232221113563
R14	resistor	220 kohm	PHILLIPS	232221113224
R15	resistor	47 kohm	PHILLIPS	232221113473
R16	resistor	82 kohm	PHILLIPS	232221113823
R17	resistor	1 kohm	PHILLIPS	232221113102
R18	resistor	1 kohm	PHILLIPS	232221113102
R19	resistor	3,3 kohm	PHILLIPS	232221113332
R20	resistor	2,2 kohm	PHILLIPS	232221113222
R21	resistor	33 kohm	PHILLIPS	232221113333
R22	resistor	68 kohm	PHILLIPS	232221113683
R23	resistor	6,8 ohm	PHILLIPS	232221113688
R24	resistor	1 kohm	PHILLIPS	232221113102
R25	resistor	22 kohm	PHILLIPS	232221113223
R26	resistor	8,2 kohm	PHILLIPS	232221113822
R27	resistor	39 kohm	PHILLIPS	232221113393
R28	resistor	470 kohm	PHILLIPS	232221113474
R29	resistor	33 kohm	PHILLIPS	232221113333
R30	resistor	47 kohm	PHILLIPS	232221113473
R31	resistor	1 mohm	PHILLIPS	232221113105
R32	resistor	680 kohm	PHILLIPS	232221113684
R33	resistor	10 kohm	PHILLIPS	232221113103
R34	resistor	220 ohm	PHILLIPS	232221113221
R35	resistor	330 ohm	PHILLIPS	232221113331
R36	resistor	10 kohm	PHILLIPS	232221113103

R37	resistor	100 kohm	PHILLIPS	232221113104
R38	resistor	10 kohm	PHILLIPS	232221113103
R39	resistor	10 kohm	PHILLIPS	232221113103
R40	resistor	100 kohm	PHILLIPS	232221113104
R41	resistor	100 kohm	PHILLIPS	232221113104
R42	resistor	100 kohm	PHILLIPS	232221113104
R43	resistor	100 kohm	PHILLIPS	232221113104
R44	resistor	10 kohm	PHILLIPS	232221113103
R45	resistor	47 kohm	PHILLIPS	232221113473
R46	resistor	4,7 kohm	PHILLIPS	232221113472
R47	resistor	4,7 kohm	PHILLIPS	232221113472
R48	resistor	10 kohm	PHILLIPS	232221113103
R49	resistor	27 ohm	PHILLIPS	232221113279
R50	resistor	10 kohm	PHILLIPS	232221113103
R51	resistor	27 ohm	PHILLIPS	232221113279
R52	resistor	10 kohm	PHILLIPS	232221113103
R53	resistor	18 kohm	PHILLIPS	232221113183
R54	resistor	18 kohm	PHILLIPS	232221113183
R55	resistor	2,2 kohm	PHILLIPS	232221113222
R56	resistor	2,2 kohm	PHILLIPS	232221113222
R57	resistor	12 ohm	PHILLIPS	232221113129
R58	resistor	100 kohm	PHILLIPS	232221113104
R59	resistor	2,2 kohm	PHILLIPS	232221113222
R60	resistor	150 ohm	PHILLIPS	232221113151
R61	resistor	1,5 kohm	PHILLIPS	232221113152
R62	resistor	2,2 kohm	PHILLIPS	232221113222
R63	resistor	1 kohm	PHILLIPS	232221113102
R64	resistor	47 kohm	PHILLIPS	232221113473
R65	resistor	47 kohm	PHILLIPS	232221113473
R66	resistor	22 kohm	PHILLIPS	232221113223
R67	resistor	4,7 kohm	PHILLIPS	232221113472
R68	resistor	15 kohm	PHILLIPS	232221113153
R69	resistor	10 ohm	PHILLIPS	232221113109
R70	resistor	10 ohm	PHILLIPS	232221113109
R71	resistor	100 kohm	PHILLIPS	232221113104

RMA1	resistor	1o kohm	ROHM	RMA5-1o3-J
RMA2	resistor	1o kohm	ROHM	RM6-1o3-J
RMA3	resistor	1oo kohm	ROHM	RMA5-1o3-J
RMA4	resistor	1o kohm	ROHM	RMA5-1o4-J
RMA5	resistor		ROHM	
RMA6	resistor	1o kohm	ROHM	RMA-1o4-J
RMA7	resistor	1o kohm	ROHM	RM6-1o3-J

Co	capacitor ly	22ouf/4oV	PHILLIPS	2222 o355 7221
C1	capacitor ly	47uf/25V	MULTI	2oo 13o ESM
C2	capacitor sib	1oN	SIE	B37449 F61o3 s8
C3	capacitor sib	1oN	SIE	B37449 F61o3 s8
C4	capacitor po	47N	PHILLIPS	2222 3444 1473
C5	capacitor sib	1ooN	SIE	B37449 F61o4 s2
C6	capacitor sib	1oN	SIE	B37447 F61o3 s8
C7	capacitor sib	1ooN	SIE	B37449 F61o4 s2
C8	capacitor sib	1ooN	SIE	B37449 F61o4 s2
C9	capacitor sib	1ooN	SIE	B37449 F61o4 s2
C1o	capacitor pm	1uf	SIE	B32511 D11o5 K
C11	capacitor sty	2,2nf	PHILLIPS	2222 425 422o2
C12	capacitor sty	4,7nf	PHILLIPS	2222 414 447o2
C13	capacitor sib	1ooN	SIE	B37449 F61o4 s8
C14	capacitor cer	1N	PHILLIPS	2222 63o o61o2
C15	capacitor ly	47uf/25V	MULTI	2oo 13o ESM
C16	capacitor cer	33p	PHILLIPS	2222 642 34339
C17	capacitor ly	68uf/64V	PHILLIPS	o31
C18	capacitor ly	68uf/63V	PHILLIPS	o31
C19	capacitor ly	47uf/25V	MULTI	2oo 13o ESM
C2o	capacitor ly	1uf/5oV	MULTI	2oo 13o ESM
C21	capacitor ly	1uf/5oV	MULTI	2oo 13o ESM

T1	transistor	SIE	BC237
T2	transistor	SIE	BD139-6
T3	transistor	SIE	BD139-6
T4	transistor	SIE	BD139-6
T5	transistor	SIE	BC237B
T6	transistor	SIE	BC237B
T7	transistor	SIE	BC237B
T8	transistor	SIE	BC337
T9	transistor	SIE	BC337
T10	transistor	SIE	BD139-6
T11	transistor	SIE	BC237B
T12	transistor	SIE	BD139-6
T13	transistor	SIE	BC237B
IC2	integrated cct	SIE	TCA871
IC3	integrated cct	PP	LM324
IC4	integrated cct	MULTI	74C221N
IC5	integrated cct	SIE	OPTO ILD 74
IC6	integrated cct	PP	TL 494 CN
IC7	integrated cct	MULTI	MC 4049 CN
IC8	integrated cct	SIE	OPTO SFH 600-2
IC9	integrated cct	MULTI	LM358N
IC10	integrated cct	PP	LM339
D1	diode	SIE	BYS 21
D2	diode	SIE	1N4002
D3	diode	SIE	1N4148
D4	diode	SIE	1N4148
D5	diode	SIE	1N4148
D6	diode	SIE	1N4148
D7	diode	DISTRI	1N4935
D8	diode	DISTRI	1N4935
D9	diode	SIE	1N4148
D10	diode	SIE	1N4148

J8	Junction			
J9	16 pin plug			
L1	dross coil	100uH	SIE	B78 1o8 S11o4
Z1	diode, zener		SIE	BZX83/5,1V
Z2	diode, zener		SIE	BZX83/C15V
Z3	diode, zener		SIE	BZX83/C6,2V
Z4	diode, zener		SIE	BZX83/8,2V
Z5	diode, zener		SIE	BZX83/8,2V
Z6	diode, zener		SIE	BZX83/C6,2V
Z7	diode, zener		SIE	BZX83/C33V
Z8	diode, zener		SIE	BZX83/C33V
Z9	diode, zener		SIE	BZX83/C3,3V
Z1o	diode, zener		SIE	BZX83/C3,3V
Z11	diode, zener		SIE	BZX83/1oV
Z12	diode, zener		SIE	BZX83/5,1V

