D G S 1

DIGITAL FREQUENCY SYNTHESIZER
INSTRUCTION MANUAL

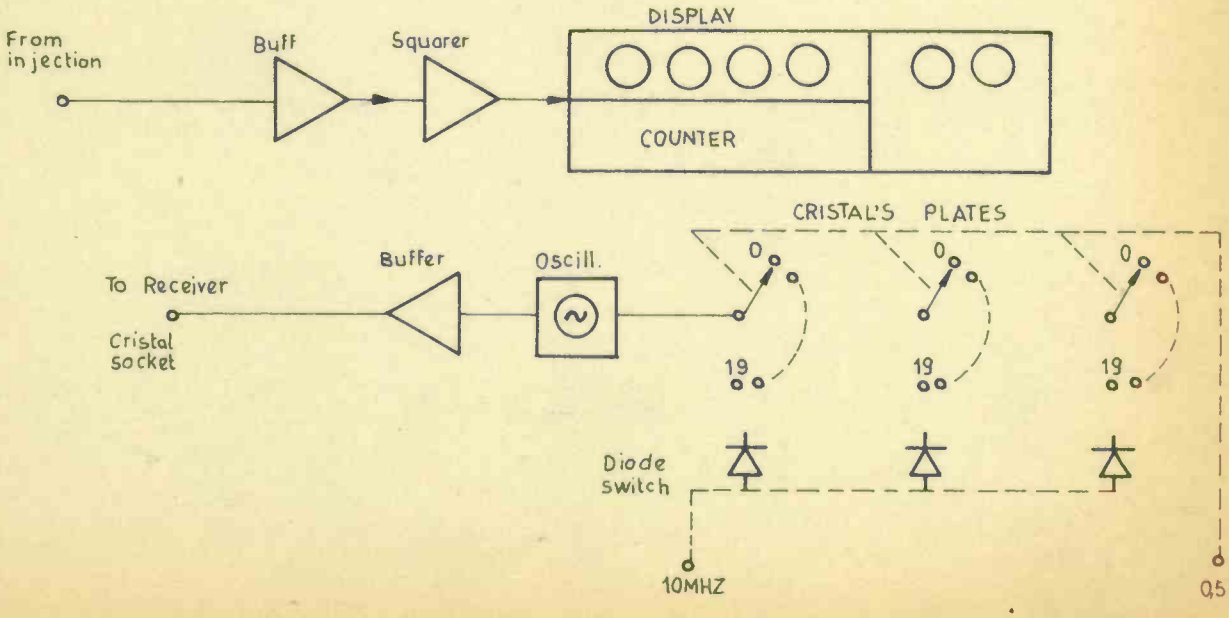
TABLE OF CONTENTS

SERIAL NUMBER 566 .....

SECTION 1

GENERAL DESCRIPTION

The set is made with 2 main subsystems: a 0,5 MHz step crystal oscillator and a programmed counter.
A more detailed description is given by the block diagram of Figure 1.
The signal from injection is buffered and squared, before going to the counter's input gate.
The over range system of the counter is programmed in two different ways, depending if the 1st band starts with 0,0 MHz or 0,5 MHz.
The display is a 6 digits one, The last 4 nixies (on the right) are driven by the counter, while the first 2 (on the left) are connected with the 10 MHz and the 0,5 MHz selectors.
The oscillator gives a signal which is used instead of the receiver's first conversion crystal oscillator,and which can be changed in 0,5 MHz steps, so that coverage of the whole 0,5-30 MHz HF range is acheived.
The counter gives the exact frequency readout, in each 0,5 MHz sub-range, with 100 Hz resoluction.



SECTION 2

CONNECTIONS TO R4B/R4C RECEIVER

1) Connect the oscillator plug to the 1st accessory crystal socket trough the HC6 adapter; ground connection must be fastened to the screw on the right the socket itself. (See Fig. 2)

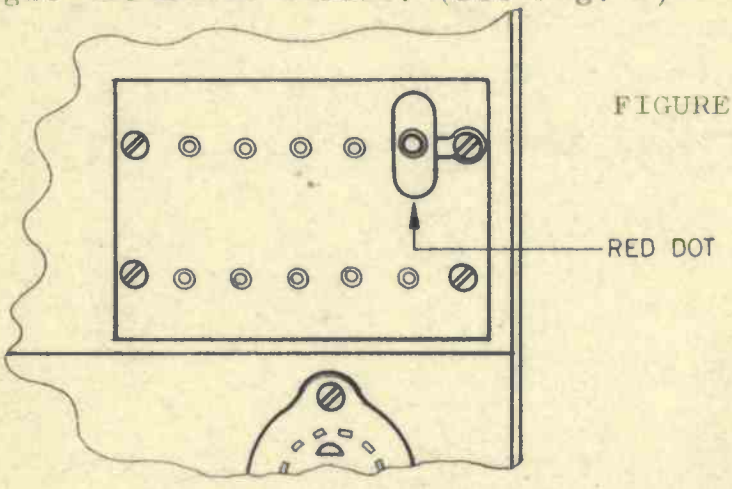


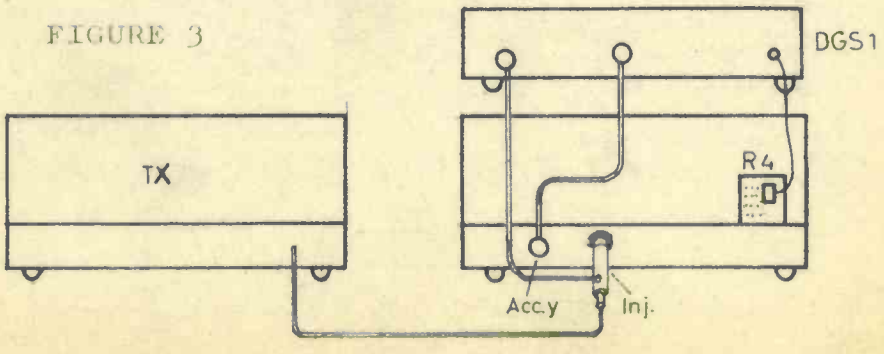
FIGURE 2

2) Connect the injection adapter cable to the injection socket of the receiver.

If the receiver must be used in transceiver mode, the injection signal for the trasmitter must be taken from the femalesocket of this adapter wich is internally connected to the plug;(See Fig.3)

3) Connect the ACC.Y socket of DGS1 to the ACC.Y socket of the receiver, trough the remote switch cable.

FIGURE 3



CONNECTION TO SPR4 RECEIVERS

1) Remove receiver's cabinet and connect HC25 adapter to the crystal socket N°1: red dot must be upside (See Fig.4) ground connection must be made to the screw on the side of crystals board.
Let coaxial cable go out of the cabinet through central hole in the upper side, or through the same hole than speaker cable.

2) Connect DGS1 injection adapter plug to injection soket: of course model TA-4 transceiver adaptor must be installed, in order to get this injection signal available.
If the receiver must be used in transceiver mode the injection signal for the transmitter, must be taken from the female socket of this adapter.

3) For DGS1 remote switch-on, a female Jack must be installed in the hole under mute jack, and its contact must be connected to the pin of S-12 (dial lamp switch) connected to power transformer T7 (See Fig.5).
The proper remote-switch cable must be used to connect the ACC.Y socket of DGS1, to this jack (See Fig.6).

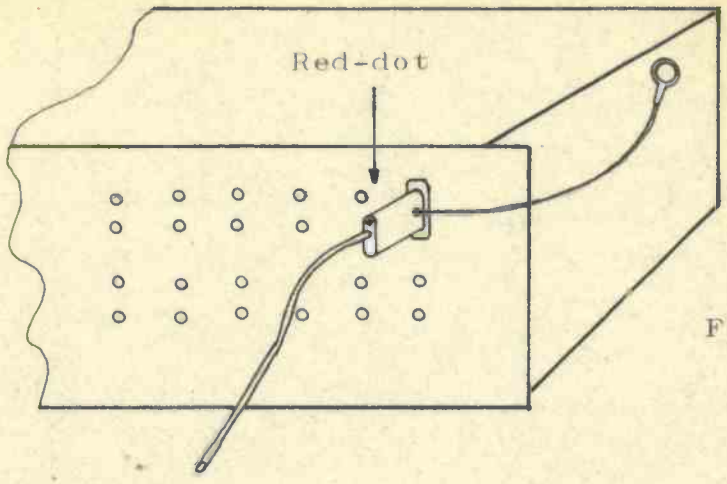


FIGURE 4

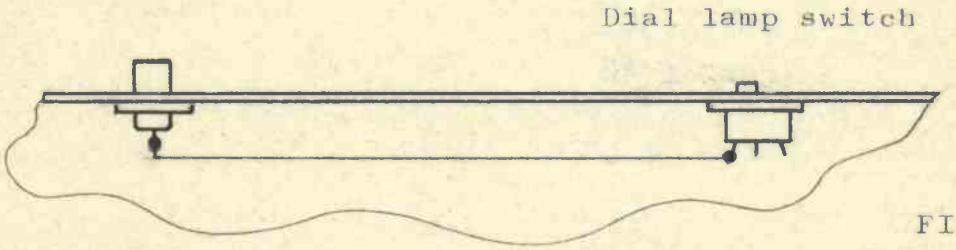


FIGURE 5

SPR4 bottom view

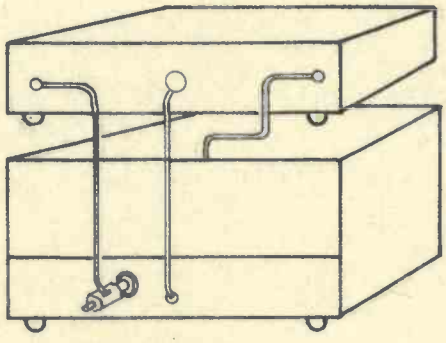


FIGURE 6

SECTION 3

OPERATION

1) Set the receiver's crystal-switch, in the 1st position.

2) Tune the band switch in accordance with the accessory operation instruction of the receiver's instruction manual.

3) Switch the 0,5 MHz and 10 MHz selectors of DGS1, in accordance with the beginning of the wanted band.
(NOTE : the number given by the 0,5 MHz knob, gives the lower frequency of the range).

4) Tune the preselector control for the best sensitivity: be sure that the preselector is not tuned on image or other spurions signals, or the counter will not operate properly, and the receiver will not give the required sensitivy.
It is advisable to make a table, with exact preselector tunnig, for any 500 KHz-wide band.

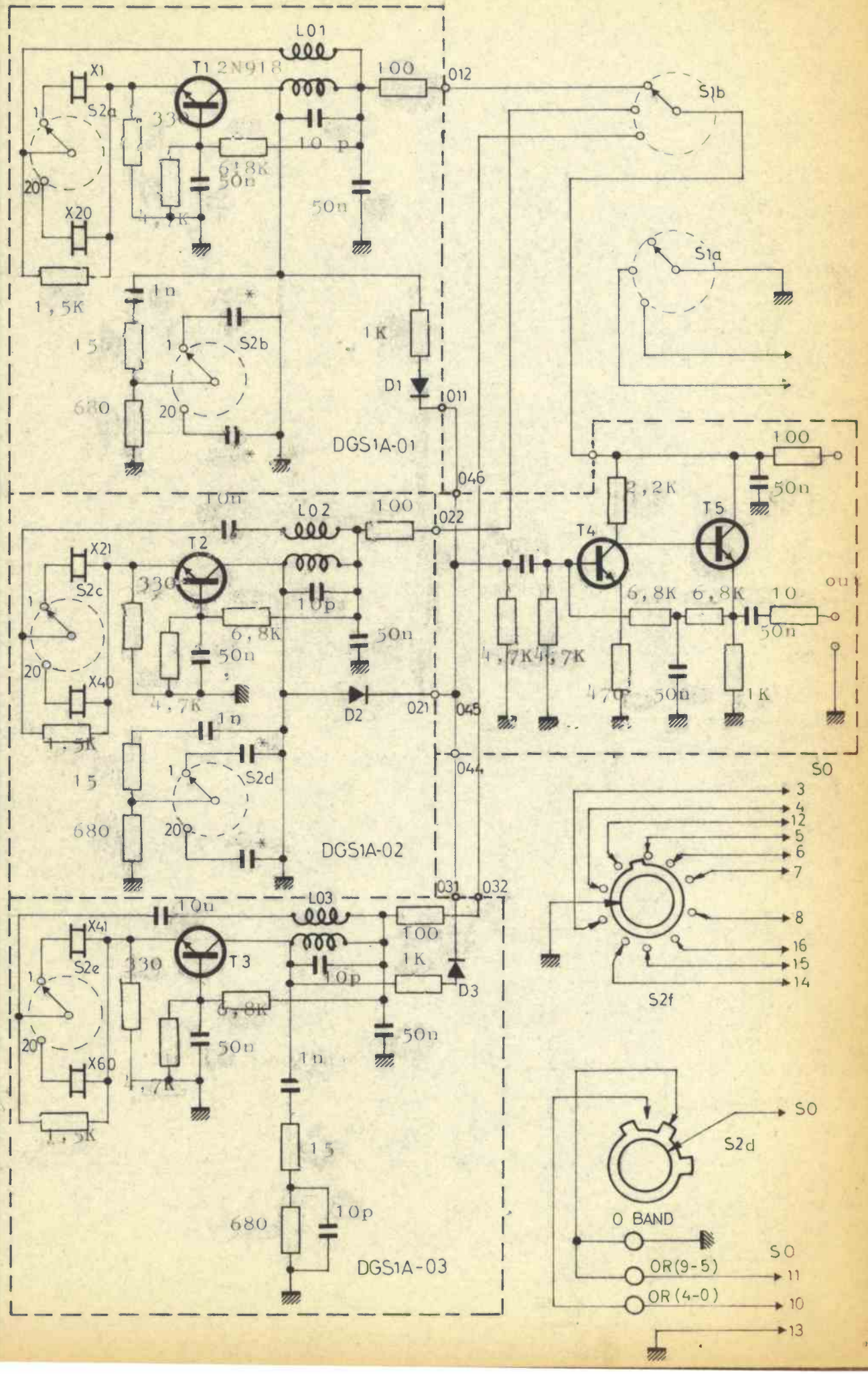
CAUTION

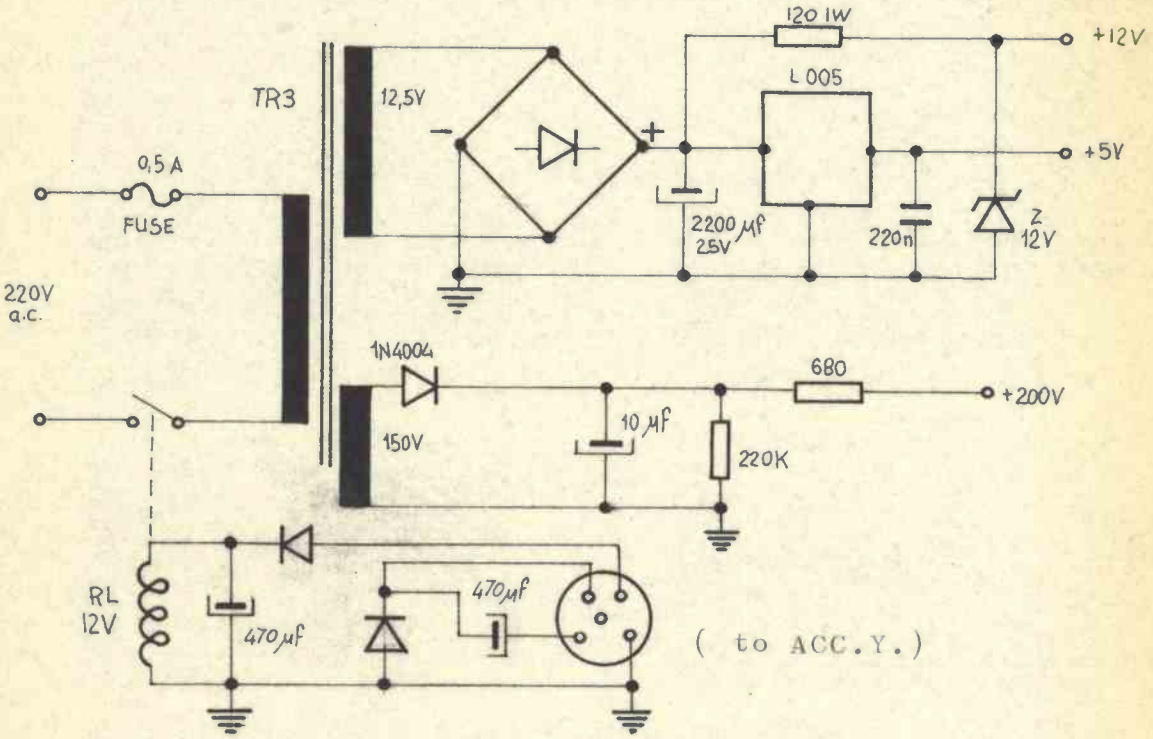
Due to the frequency tolerance of receiver's second conversion crystal oscillator, it will be necessary to adjust time base oscillator of DGS1, to get the best readout accuracy.
To adjust time base oscillator tune a good standard signal (W.W.V. or a well known broadcast) and make zero beat on its carrier (it is preferable to monitor the beat with an oscilloscope on audio output):adjust T.B. trimmer on rear panel of DGS1 untill the extact frequency is read.
If it is not possible to get the wrigh reading, remove the upper cabinet cover,and adjust the coarse T.B. tuning through the hole on the internal box, cover.

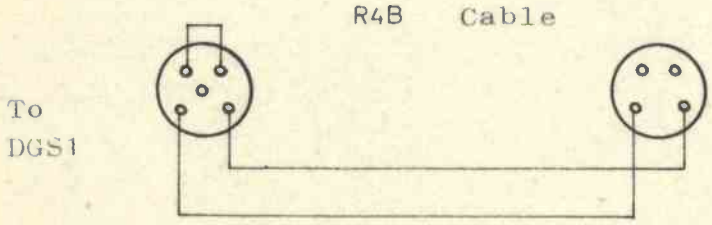
COUNTER BOARD DGS1A

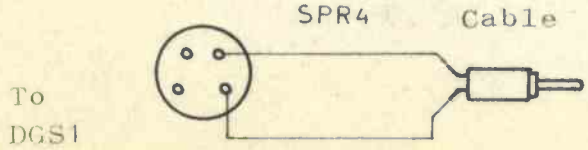
PREAMPLIFIER BOARD DGS1A-P

INJECTION ADAPTER


L01
X1
T1 2N918
100
012
S1b
S2a
330
10 p
6,8K
50n
50n
X20
4,7K
1,5K
1n
S1a
15
S2b
1K
D1
680
20
011
DGS1A-01
046
100
2,2K
50n
T5
T4
10n
L02
100
022
X21
T2
S2c
330
10p
6,8K
50n
50n
6,8K
6,8K
10
50n
X40
4,7K
4,7K
4,7K
1n
D2
021
045
1,5K
15
S2d
044
680
20
DGS1A-02
S0
3
4
12
5
6
7
8
16
15
14
S2f
031
032
10u
L03
X41
T3
100
S2e
330
10p
1K
D3
6,8K
50n
50n
X60
4,7K
1n
1,5K
15
10p
680
DGS1A-03
S0
S2d
0 BAND
S0
OR(9-5)
11
OR(4-0)
10
13

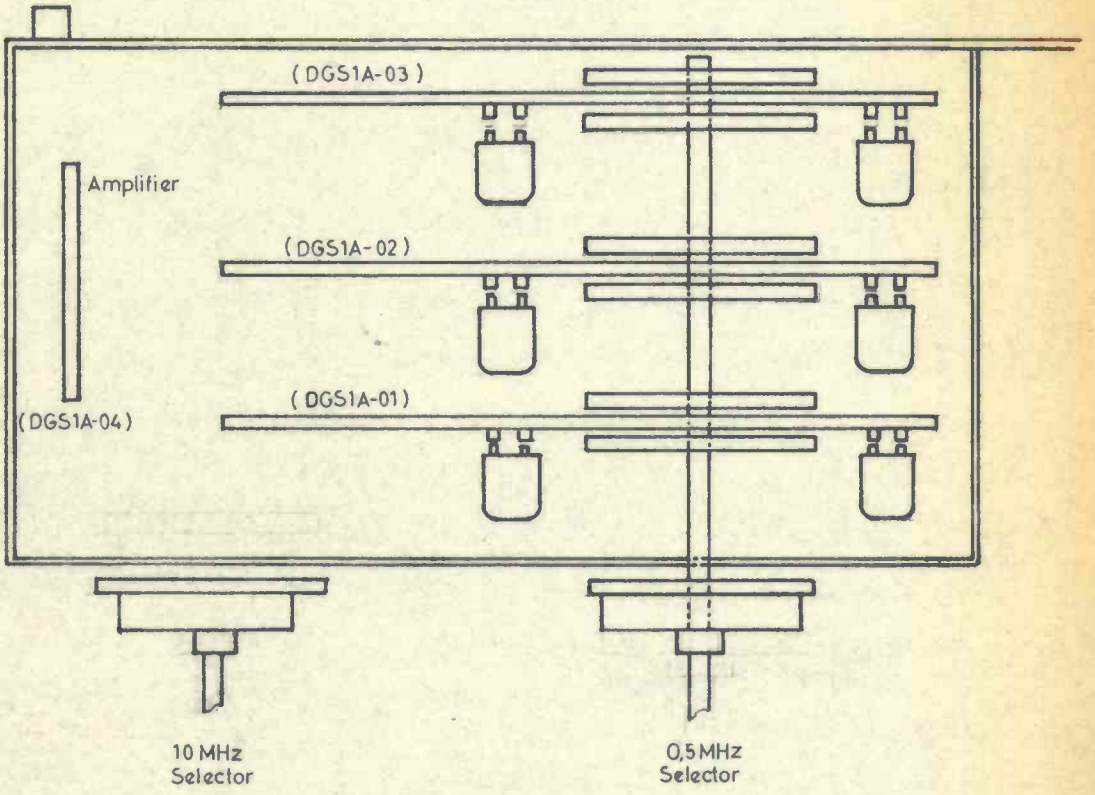






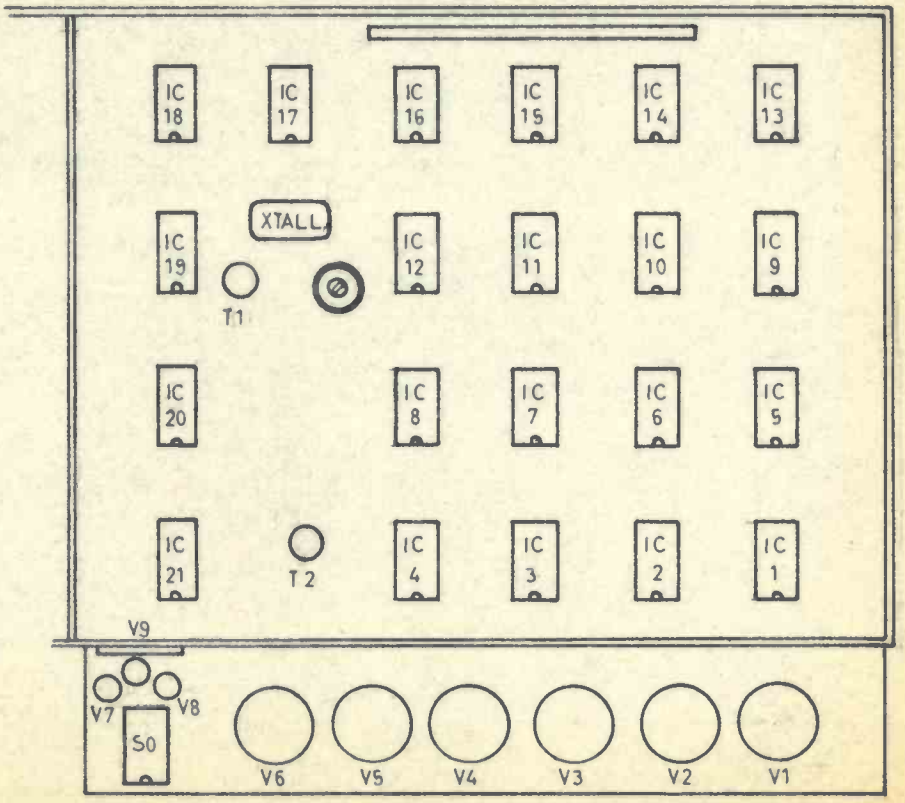
OSCILLATOR SECTION
TOP VIEW

FIGURE 7



COUNTER SECTION
TOP VIEW

FIGURE 8



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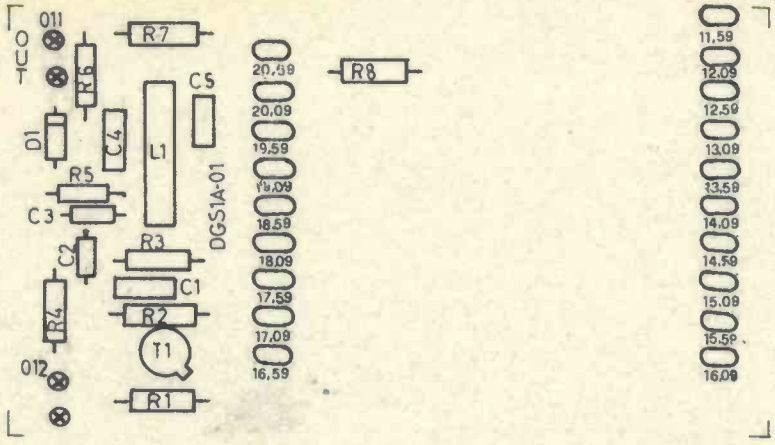
011
012
R7
R6
R5
R4
R3
R2
R1
R8
C5
C4
C3
C2
C1
D1
L1
T1
DGS1A-01
20.59
20.09
19.59
19.09
18.59
18.09
17.59
17.09
16.59
11.59
12.09
12.59
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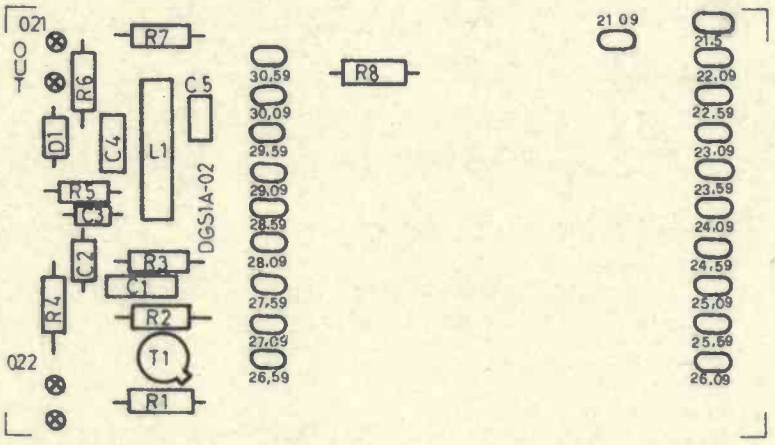
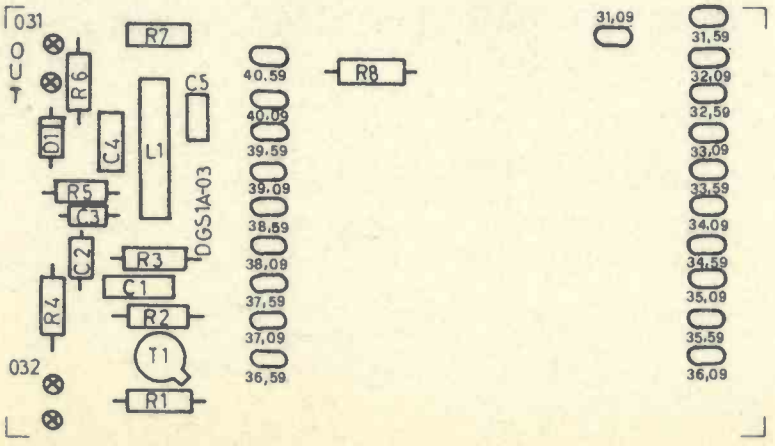
14.09
14.59
15.09
15.59
16.09

- 02


021
022
R7
R6
R5
R4
R3
R2
R1
R8
C5
C4
C3
C2
C1
D1
L1
T1
DGS1A-02
30.59
30.09
29.59
29.09
28.59
28.09
27.59
27.09
26.59
21.09
21.5
22.09
22.59
23.09
23.59
24.09
24.59
25.09
25.59
26.09

- 03


031
032
R7
R6
R5
R4
R3
R2
R1
R8
C5
C4
C3
C2
C1
D11
L1
T1
DGS1A-03
40.59
40.09
39.59
39.09
38.59
38.09
37.59
37.09
36.59
31.09
31.59
32.09
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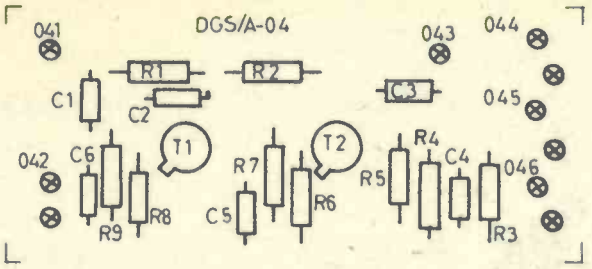
34.09
34.59
35.09
35.59
36.09

- 04



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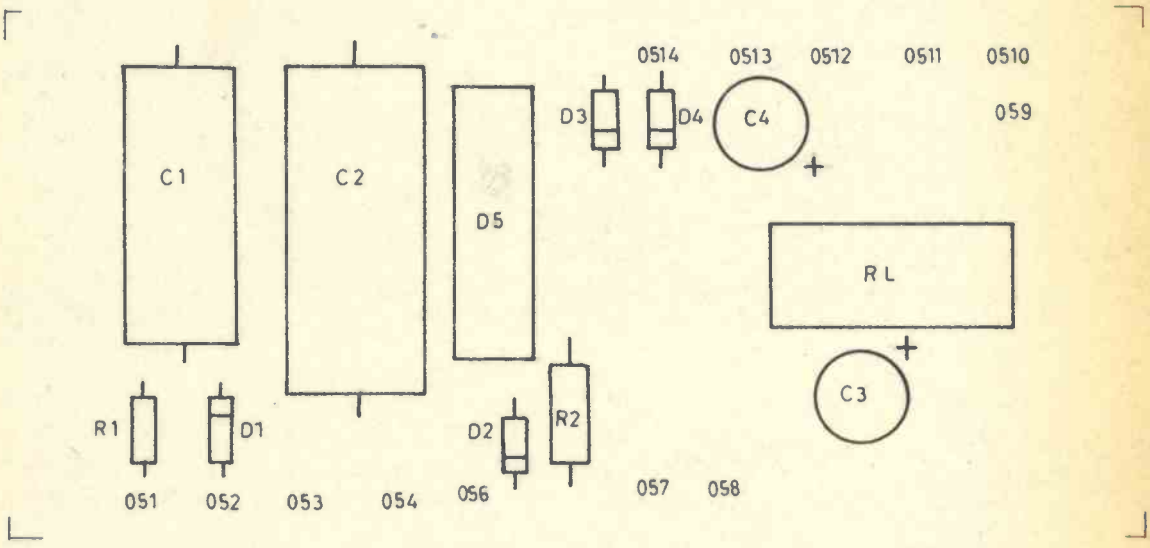

MOUNTING INSTRUCTION

1) Remove the top cover of the cabinet.

2) Remove the cover of internal box and the box itself (through 3 screws on the bottom of the cabinet).

3) Turn the 0,5 MHz band-switch, fully counterclockwise; than remove the fixing screws and draw out the shaft.

4) Put the Crystal Pack in position (see figure below), and fix it with the long screws wich are supplied with: caution do not change the place of the spacers between the oscillator's boards; draw the shaft in.

5) Solder the wires to the feed-through capacitors towards the front panel, with the same colors as the wires on the swich-side.

6) Solder the 12V power wire on the feed-through on the rear panel and the shielded cable to the oscillator-plug.

7) Solder the ground ribbon to the ground terminal of each oscillator board.

8) Solder the ground connection at the input and output of the amplifier.

CAUTION

Before placing the shaft in position (point 4) be sure that all the wafers of the switch, are properly aligned: the color dots on the mobile and on the fixed parts, must clash.