MAINTENANCE

TEST SET, MOTOROLA S1056 -
MODIFICATION FOR GENERAL ELECTRIC METERING 8289.60

Purpose:

This modification will permit the Motorola S1056 Test Set to perform all necessary functions of the General Electric 4EX8K10 for tuning General Electric solid state mobile and base station equipment. It will, additionally, add a time-saving feature towards tuning Motorola equipment. Anytime that the meter is plugged into a receiver, pressing the Discriminator Monitor Switch, S8, will indicate the discriminator reading without turning switch S1 to position 4. This should be a real help when aligning a receiver.

Materials Needed:

1 - Switchcraft 4009, 3PDT pushbutton switch
1 - Switchcraft 4001, SPST-NO pushbutton switch
1 - Clarostat 44-500W, 500 Ohm .2 Watt potentiometer
1 - Birnbach 1382B, Terminal strip
1 - 390 Ohm, 1/2 Watt, 10% resistor
1 - 39K, 5%, 1/2 Watt resistor
1 - General Electric 19C303568-P1, Metering cable with plug
1 - Motorola 9B855266, Connector plug
1 - Metal transfer label set

Materials should be ordered on a separate requisition specifically labeled "Parts for Motorola Test Set Modification".

Procedure:

In general, the Motorola switch positions will be directly related to the General Electric, i.e., limiter, discriminator, etc., although the numbering will be different, 1-B, 2-C, 4-A, etc. (see Table 1) and some of the functions available on the Motorola have no counterpart on the General Electric. The only major difference is the use of switch position 15 for the transmitter driver

current on the G.E. instead of position 6 as for the Motorola. Some special labels for marking the face of the test set are supplied and should overcome these differences.

The modification should be made as follows: (Refer to drawings and pictures attached.)

1. Remove panel hinge and panel from case. Disconnect wires at battery holder.

2. Unsolder the Org, Brn-Wht, Red-Blu, Brn, Red, Blk-Wht, Grn, Blk, Org, Wht-Grn, Gry wires; two bare wires; R2 (20 Megohm); and the sleeved wire from the P.C. board.

3. Remove the two brass nuts and washers which secure the P.C. board to the meter and lift the P.C. board clear. Lay it back over J2 and S3 temporarily.

4. Remove Meter Jack, J-3.

5. Install 3PDT switch, S8. (Switchcraft 4009 or equivalent.)

6. Connect meter leads (removed from J3) to center arms of S8, S8-2 and S8-5.

7. Connect leads from S2 (removed from J3) to N.C. arms of S8, S8-1 and S8-4.

8. Add a wire from S8-6 to S8-9.

9. Add a wire from S8-3 to S1A-4.

10. Add a wire from S8-6 to S1B-4.

11. Add a wire from S8-8 to S1D-4.

12. To mount S9, drill a 3/8" hole 3/4" from the right edge of the speaker opening and 1-1/16" from the panel edge nearest the hinge looking at the front.

13. Install S9, SPST-NO switch (Switchcraft 4001 or equivalent).

14. To mount R30, drill a 1/4" hole in the under chassis bracket mounted beside the metering input jack, J2, 5/16" from the free edge and centered laterally.

15. Mount R30, a 500 Ohm potentiometer (Clarostat 44-500W or equivalent) in this hole with the shaft extending over the jack, J2.

16. Mount a single solder terminal on the brass meter mounting screw nearest S8.

17. Add R31, a 390 Ohm resistor, between this terminal and S9-2.

18. Add a wire from this terminal to the center lead of the potentiometer.

19. Add a wire from the left lead of the potentiometer to switch S2A-3.

20. Add a wire from switch S9-1 to switch S1B-7.

21. Adjust potentiometer per attached calibration set up.

22. Wire G.E. cable into Motorola plug, P2, using Table 2.

23. Place special marking labels provided in place on the front panel.

Attachments

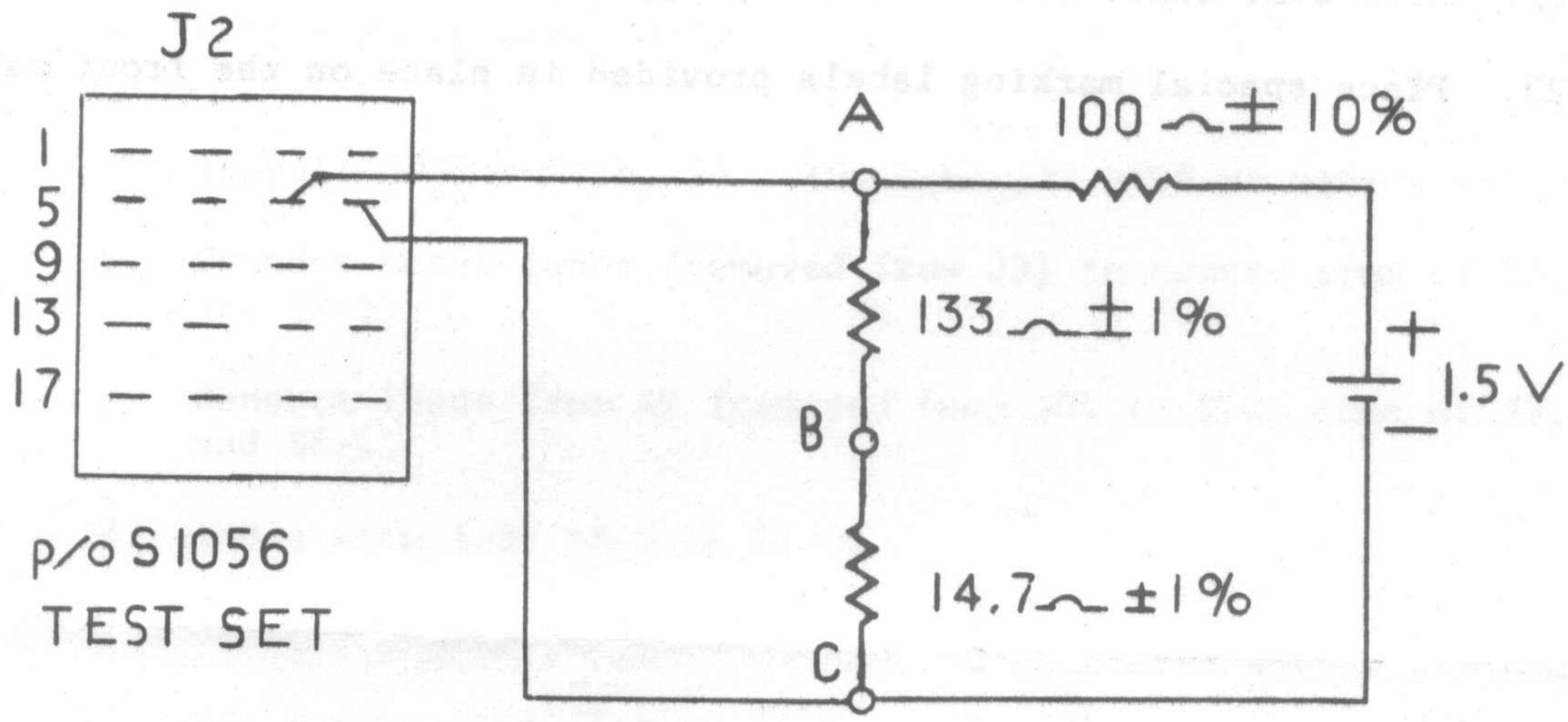
RVE

CALIBRATION PROCEDURE

1. Place Position Selector Switch (S1) in position 7. Place Function Selector Switch (S2) in transmit position.

2. Connect negative lead of test resistor set-up to pin 8 of J2. Connect Point "A" of test set-up to J2-7. Note the exact meter reading. (Should be approximately 45 uA.)

3. Move positive lead from "A" to "B". Depress the high sensitivity switch and the XMTR ON switch and adjust potentiometer R30 for the exact reading in Step 2. Repeat Steps 2 and 3 until both meter readings are identical.



Attach. 1

TABLE 1

General Electric			Motorola
Receiver Function	Transmitter Function	Switch Position	Switch Position
Low IF	Mult. 2	B	1 & 8
1st Limiter		C	2
Mult. 1 (Osc.)	Mult. 3	D	3
Mult. 2 (Osc.)		E	5
	PA Grid, -	F	15
	PA - I, -	G	7
Disc.	Mult. 1	A	4
Noise Blanker		H	6
	-20 V	I	12
+10 V	Fil.	J	10
Aud, high	Mic. high		11
	PA - E, +		9

Meter readings in the G.E. manual are given on a full-scale reading of 100 while Motorola meters indicate 50. For this reason, G.E. recommended values must be divided by 2 when using the Motorola Test Set.

TABLE 2

G.E. Plug P1 Pin No.	Wire Color	Motorola Plug P2 Pin No.
1	Red	7
2	Wht-Brn	1
3	Wht-Grn	2
4	Wht-Blu	3
5	Wht-Org-Blk	5
6	Wht-Org-Brn	15
7	Shield	10
8	Wht-Org-Blu	11
9	Blu	8
10	Wht-Org	4
11	Wht-Org-Red	6
12	Wht-Org-Grn	NC
13	Wht-Blk-Brn	NC
14	Wht-Blk-Grn	14
15	Grey shielded	9
16 — 2 wires	Wht-Blk	11
17	Wht-Blk-Blu	NC
18	Wht-Brn-Red	16

Add Resistor 39K, 1/2 W between P2-14 and P2-18.

3 wires on 11

2 - wht/Blk, 1 - wht/orange/Blue

Attach. 3

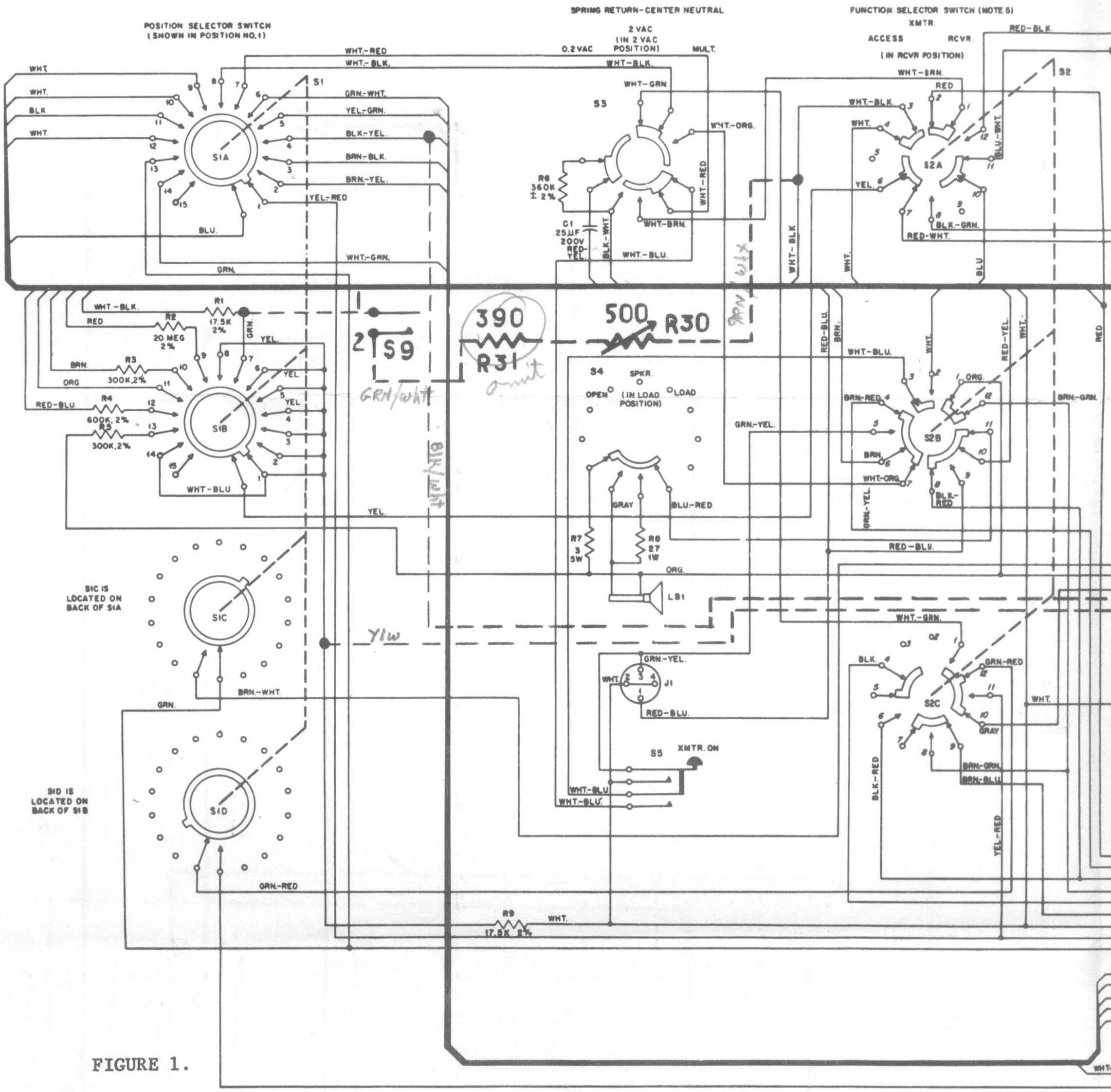
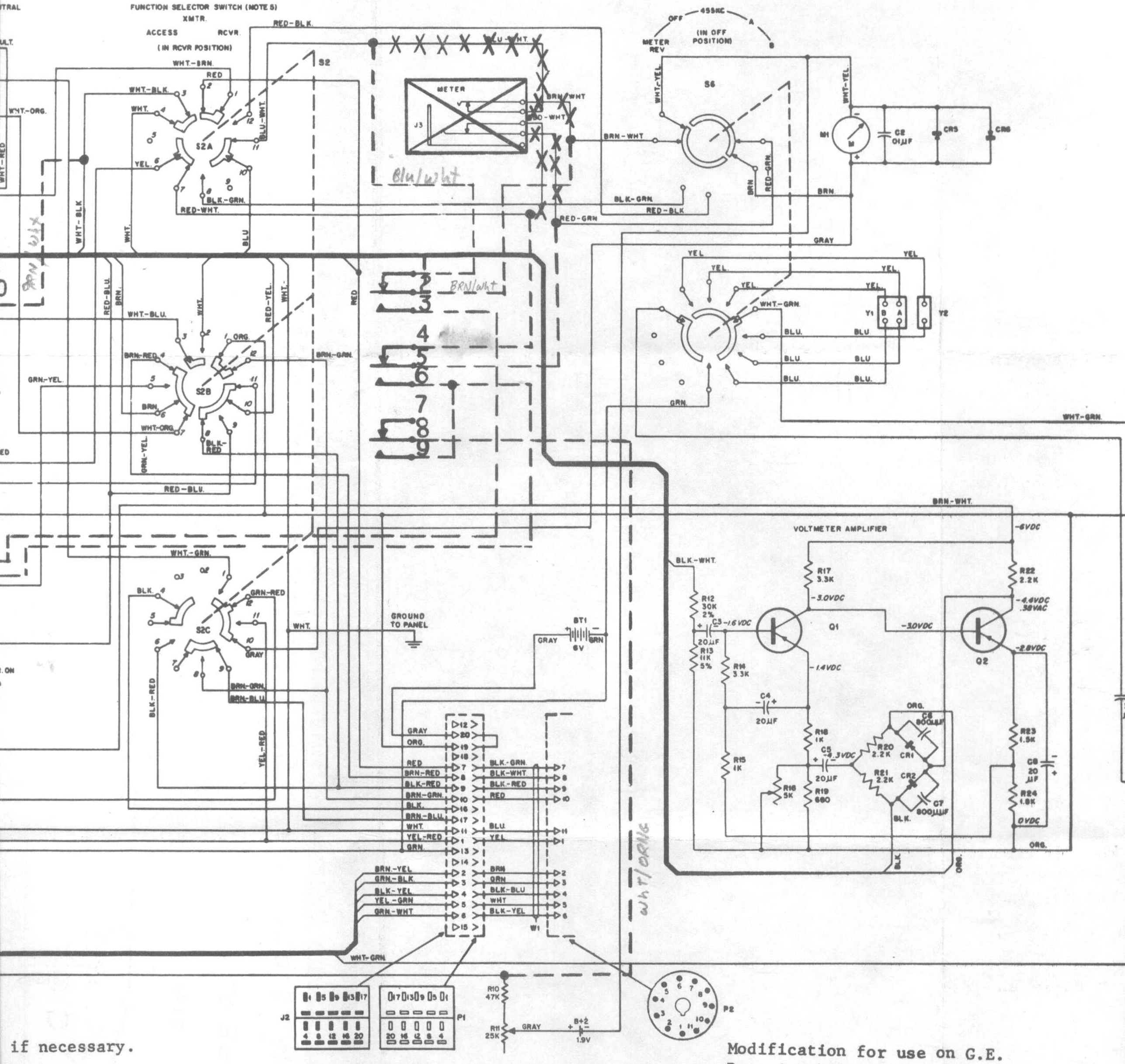


FIGURE 1.

Remove J3.
Add S8, Disc. Mon. Sw. Wire as shown.
Add S9, R30, R31, High Sens. Wire as shown.
Add wire from J2-18 to S1B-15. Disconnect other wires, if necessary.
Add wire from J2-15 to S1A-15, if necessary.

~~X X X X X~~ Delete wiring.
- - - - - - - - Add wiring.



if necessary.

Modification for use on G.E.
Base & Mobile Equipment
Portable Test Set
Schematic Diagram
Motorola No. 63E81011A03-02
12/18/62-UM

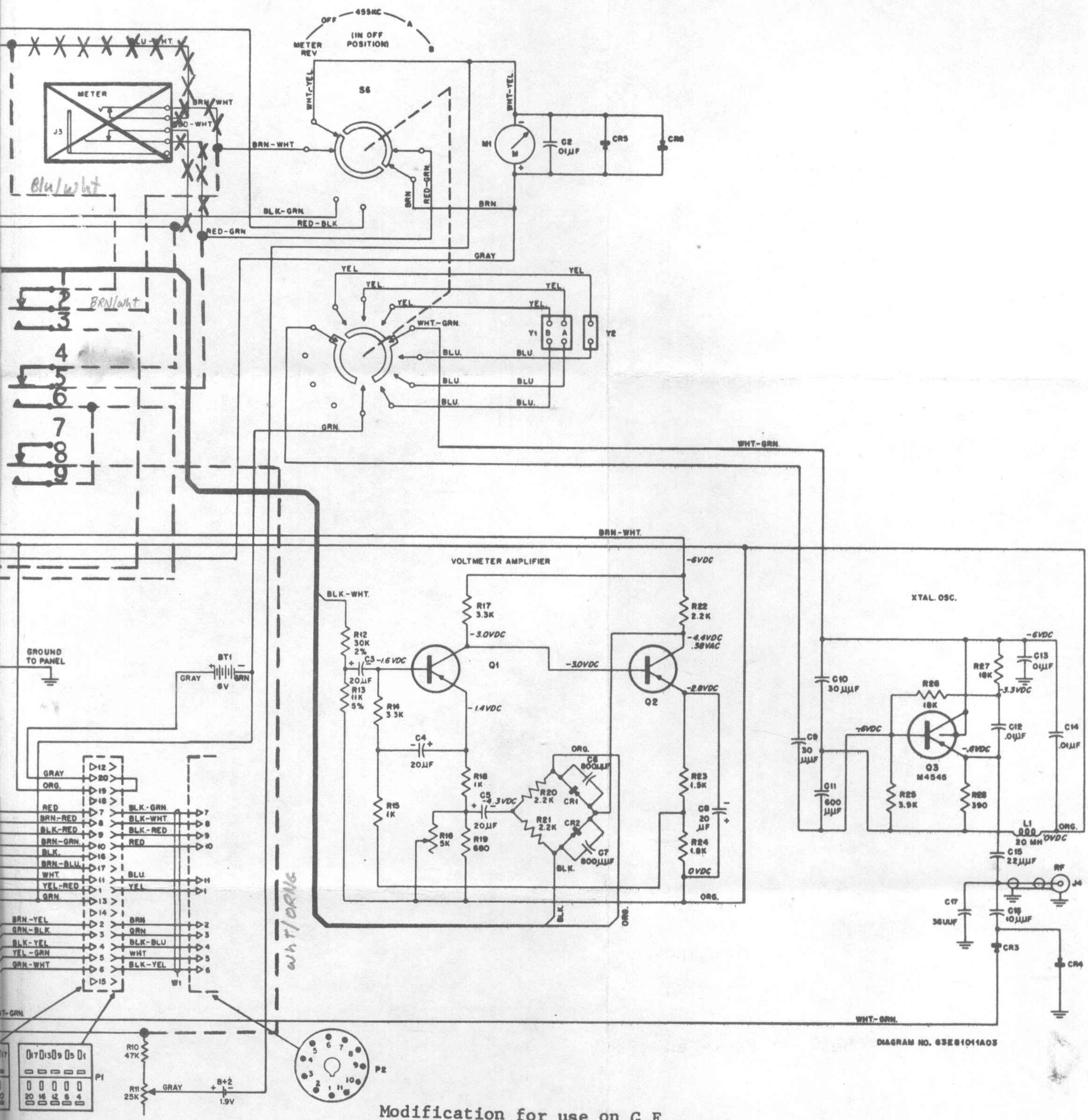
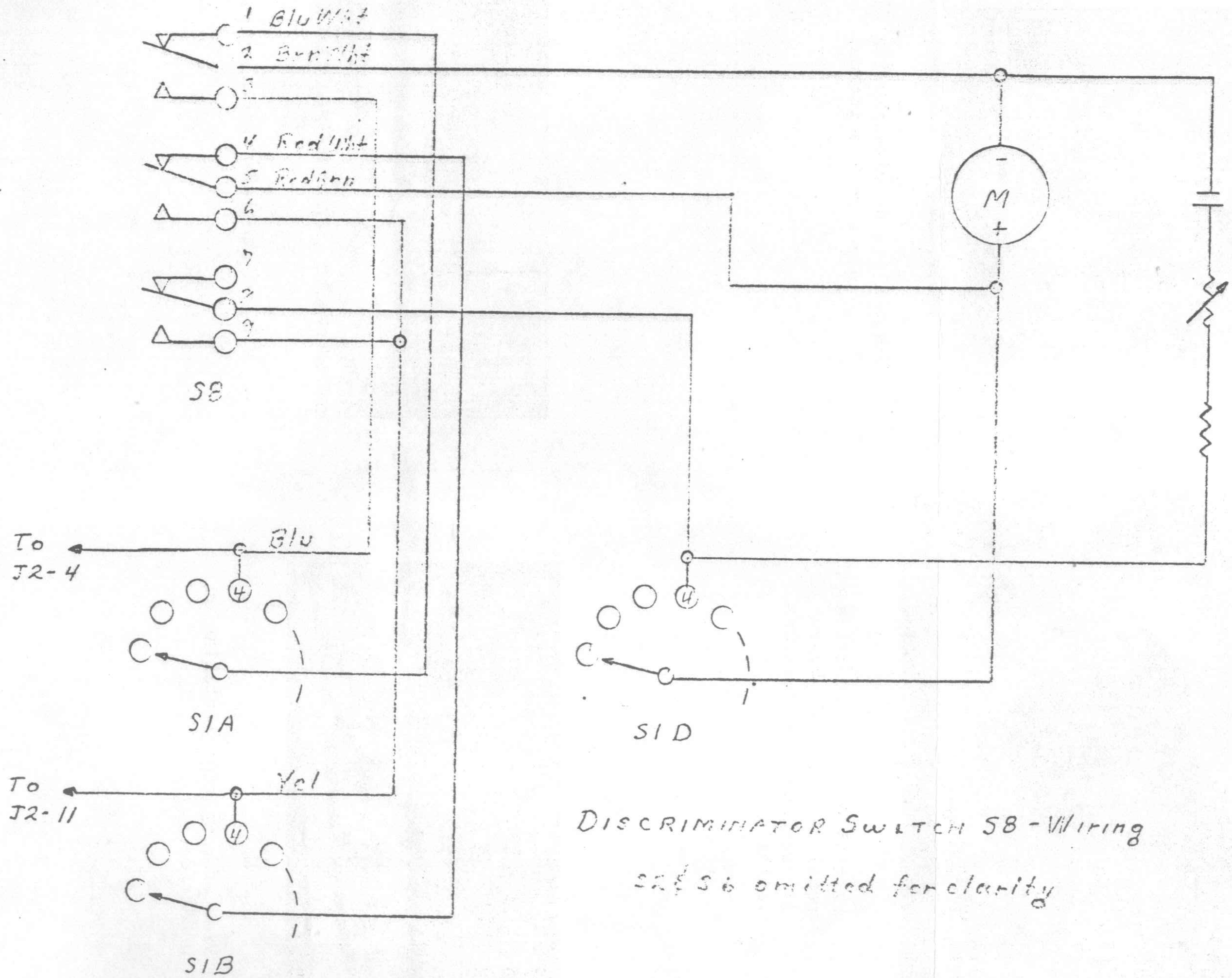


DIAGRAM NO. 63E81011A03

Modification for use on G.E.
Base & Mobile Equipment
Portable Test Set
Schematic Diagram
Motorola No. 63E81011A03-02
12/18/62-UM

Attach. 4



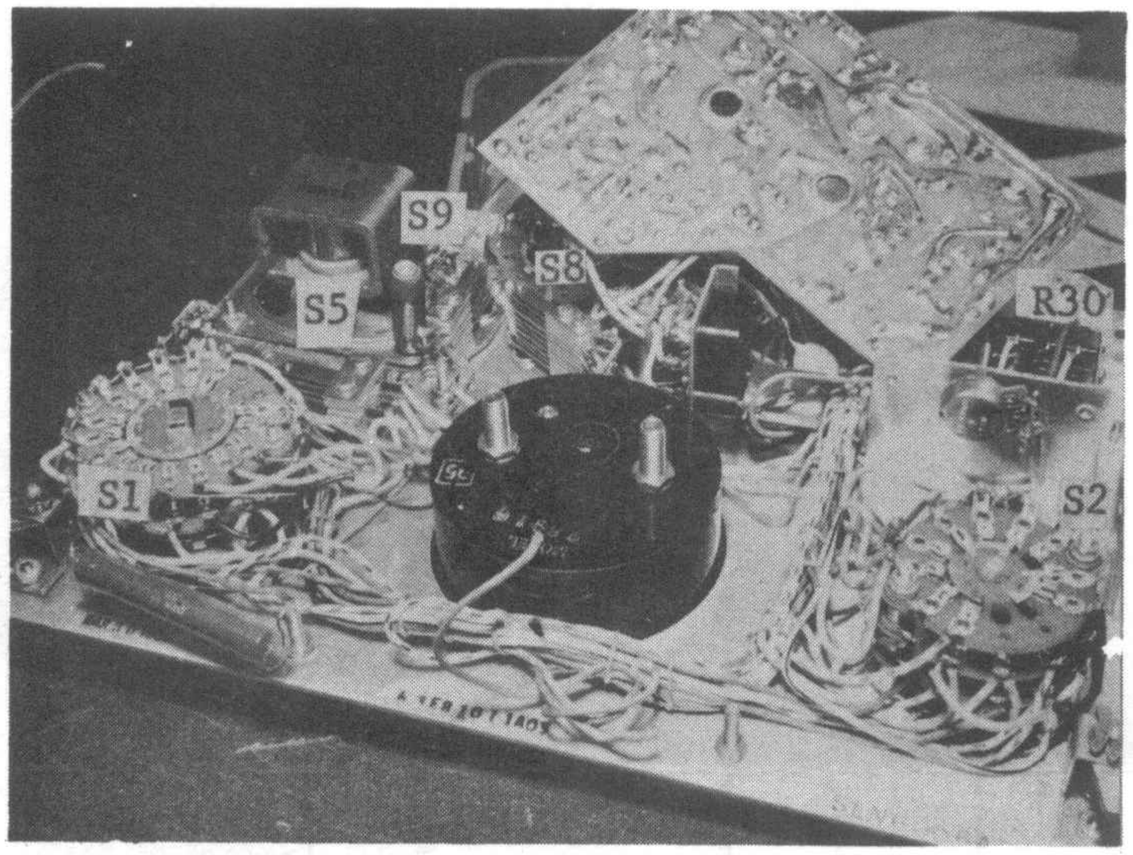
DISCRIMINATOR SWITCH S8 - WIRING

S2 & S3 omitted for clarity

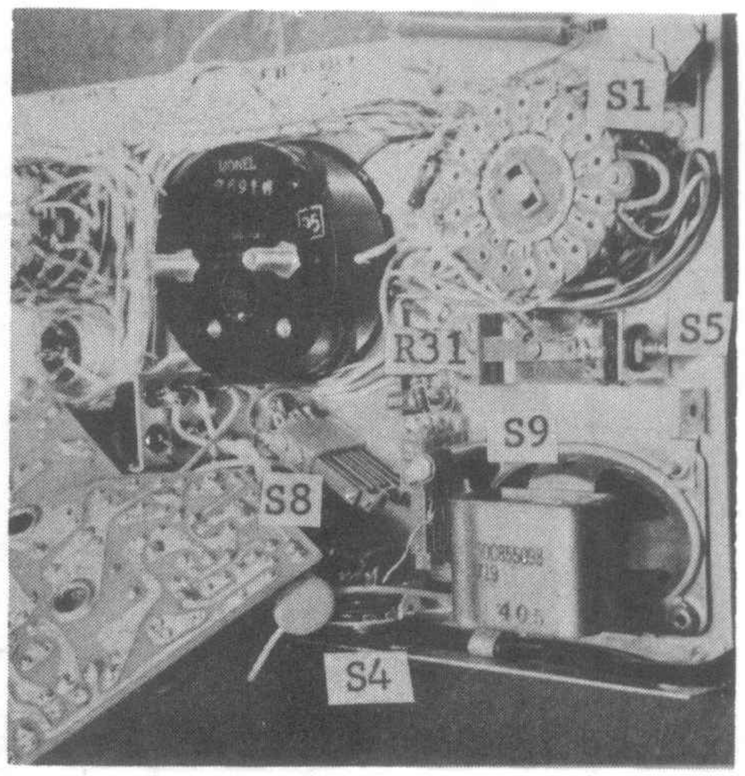
FIGURE 2.

Test Set M1A S1056 - Mod for Discriminator

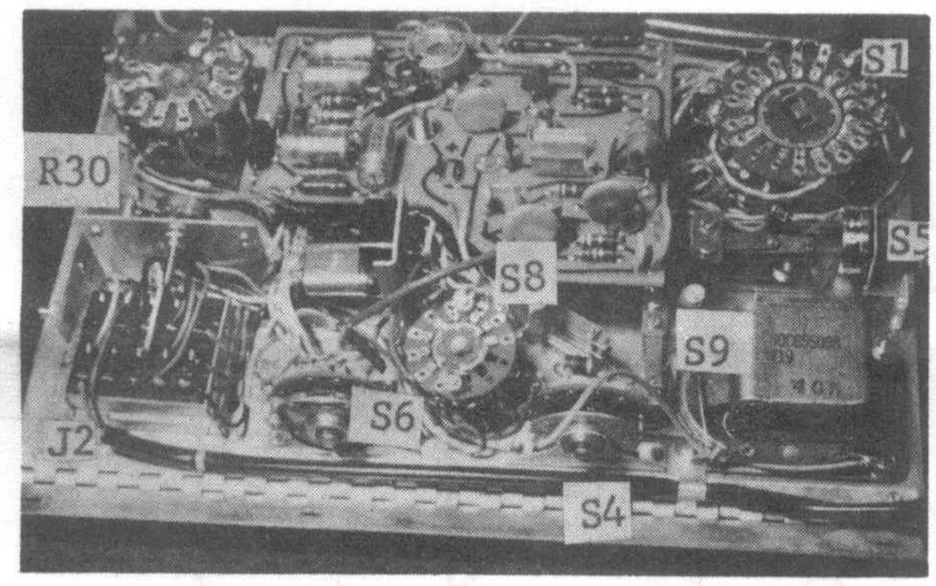
Figure 3. Motorola S1056A Modified.
For use with G.E. equipment.



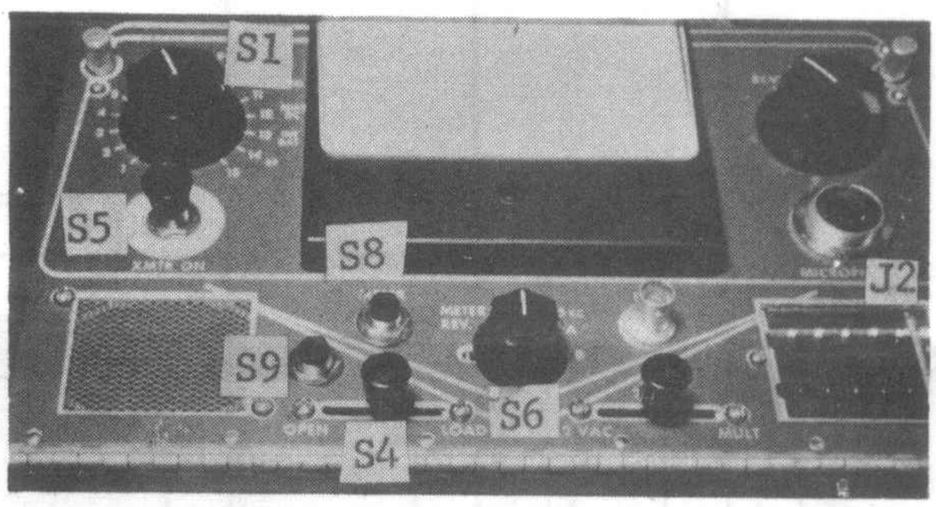
a. Partial view of underside of panel showing P.C. board lifted clear and switches installed.



b. Close-up view showing location of switches.



c. View of completed installation, underside.



d. View of completed installation, face.