BRITISH NATIONAL RADIO AND ELECTRONICS SCHOOL

PRACTICAL ELECTRONICS

COMPONENTS LIST AND STUDY INSTRUCTIONS FOR STEP NO. 8

INSTRUCTIONAL MATERIAL

1. Practical Work Instructions for this Step.
2. Circuit Diagram for Step No. 8.
3. Diagrams Figs. 21, 25 & 26.

COMPONENTS

1 4ft. (120cm) length of moulded twin flexible cable.

STUDY INSTRUCTIONS

1. Carry out all practical work given (instructions 1 - 40)
2. Complete green circuit diagram and compare with yellow copy No. 8. Transfer the information to the white master copy.

NEXT STEP

Complete interconnections between Circuit Board and Front Panel Components.

IMPORTANT NOTE

Students taking this Course step by step are advised that a large proportion of their Step fees from this Step onwards are being credited towards the high cost of the Mullard/ Telefunken cathode ray tube which is used at Step 12. when the oscilloscope is finally completed.

PRACTICAL WORK INSTRUCTIONS FOR STEP NO. 8

The first part of this Step is concerned with providing interconnections between the Circuit Board and the components mounted on the Front Panel (See Fig. 21).

At this stage all the interconnections are to be made on the back of the Circuit Board.

In order to keep the wiring neat and easy to identify, the wiring will often be dealt with in groups of wires each group being associated with a given control or component on the Front Panel.

It will be helpful, if you label each group of wires as you deal with it in this Step, by means of a small piece of self adhesive tape carrying the appropriate group number. However, the labels may prove a nuisance at a later stage, when the wires are passed through grommets in the chassis, so keep the labels as close as possible to the Circuit Board.

ALL WIRES IN A GROUP SHOULD BE TIGHTLY TWISTED OR TIED TOGETHER UNLESS OTHERWISE STATED.

The lengths of the wires given in the following instructions include 0.2" (5mm) at each end for jointing, to be dealt with in the usual way.

Wire Group No. 6

The following 3 wires will form the connections to the "Sync" control (RV3).

NOTE: In order to avoid excessive capacitance across this control, this particular group of wires should not be twisted or tied together.

Instruction No.

12. Connect a 200 mm length of grey wire to T26 ( )
13. Connect a 200 mm length of yellow wire to T80 ( )
14. Connect a 200 mm length of white wire to T25 ( ).

Wire Group No. 7.

The following 3 wires will form connections to the Stability Control (RV8).

This particular group of wires should not be twisted or tied together.

15. Connect a 114mm length of white wire to T94 ( )
16. Connect a 140 mm length of yellow wire to T112 ( )
17. Connect a 89 mm length of orange wire to T50 ( ).

Wire Group No. 8

The following 2 wires will form the connections to the calibration sockets on the front panel marked 'IV 50 Hz' and '10V 50 Hz'.

18. Connect a 241 mm length of yellow wire to T28 ( )

19. Connect a 230mm length of grey wire to T27 ( )

Wire Group No. 9

The following single wire will provide the connection to the 'T/B' out socket

20. Connect a 127mm length of yellow wire to T93 ( ).

The next set of instructions refer to wires on the Circuit Board which will eventually connect with the Timebase Range SWITCH (S1).

it is particularly important not to twist or tie these two wires together. The capacitance between these leads must be kept as low as possible, otherwise the high frequency performance of the Oscilloscope will be impaired.

Wire Group No. 14 (single wire)

31. Connect a 305mm length of yellow wire to T11. ( ). This will provide the G2/G4 connection to the C.R.T. (usually referred to as the 'final anode' connection).

Wire Group No. 15 (single wire)

32. Connect a 178mm length of blue wire to T114. This gives the connection to G1 of the C.R.T. (usually referred to as 'the grid' of the tube.) ( ).

Wire Group No. 18 (single wire)

33. Prepare and connect a 140mm length of white wire to T.108. This will provide the connection to terminal B.O. of the Timebase Range Switch. ( ).

This completes the wiring to the back of the Circuit Board. Make a very careful check to ensure that all wires are properly soldered and in their correct positions. Also ensure that the entire area of the back of the board is free from solder fragments, pieces of wires, or other foreign matter which could cause short-circuits between terminals. It will be as well to spend some time over this check since after this point in the assembly, considerable effort may be wasted in removing the Circuit Board from the equipment if a fault in this area requires it at a later stage. When you are completely satisfied, proceed to the next paragraph.

We now continue by fitting the C.R.T. retaining hood to the Front Panel, and mounting the panel on the end of the chassis assembly (See Fig. 25).

Instruction No.

34. Fit the second hood to the inside of the Front Panel, as shown in Fig. 25 using four 6 BA screws, nuts and washers on the existing screws fitted at Step No. 3. ( ).

(d) Connect the remaining wire of the second pair to TS1/9. ( )

NOTE: Refer to Fig. 26 for these connections and be very careful to select the right wires from the flexes, or you may apply a short circuit to the mains supply which will probably damage the switch as well as blow the mains fuse.

As a double check, with the switch turned ON (clockwise rotation of the Brilliance control) use the bulb and battery test to ensure that a short-circuit does not exist across terminals TS1/3 and TS1/8.

Wire Group No. 16

38. Connect a 380mm length of blue wire to Tag No. 2 of the Focus Control (RV4) ( ).

39. Connect a 15" (380mm) length of white wire to tag No. 3 of RV4. ( ).

Having twisted this pair of wires tightly together tie this group to the two flexible pairs dealt with in instruction 37, so that all six wires neatly follow the panel and chassis contours, up to a point roughly in line with the rear edge of the C.R.T. Mounting Bracket. At this point bend Group No. 16 sharply upward. These two wires will later be connected to the C.R.T.

40. Connect the longer of the two green wires already attached to Tag No. 1 of the Y Gain Control (RV1) to the earth tag fitted at instruction No. 35. ( ).

CHECK your work as usual, before going on to Step No. 9.

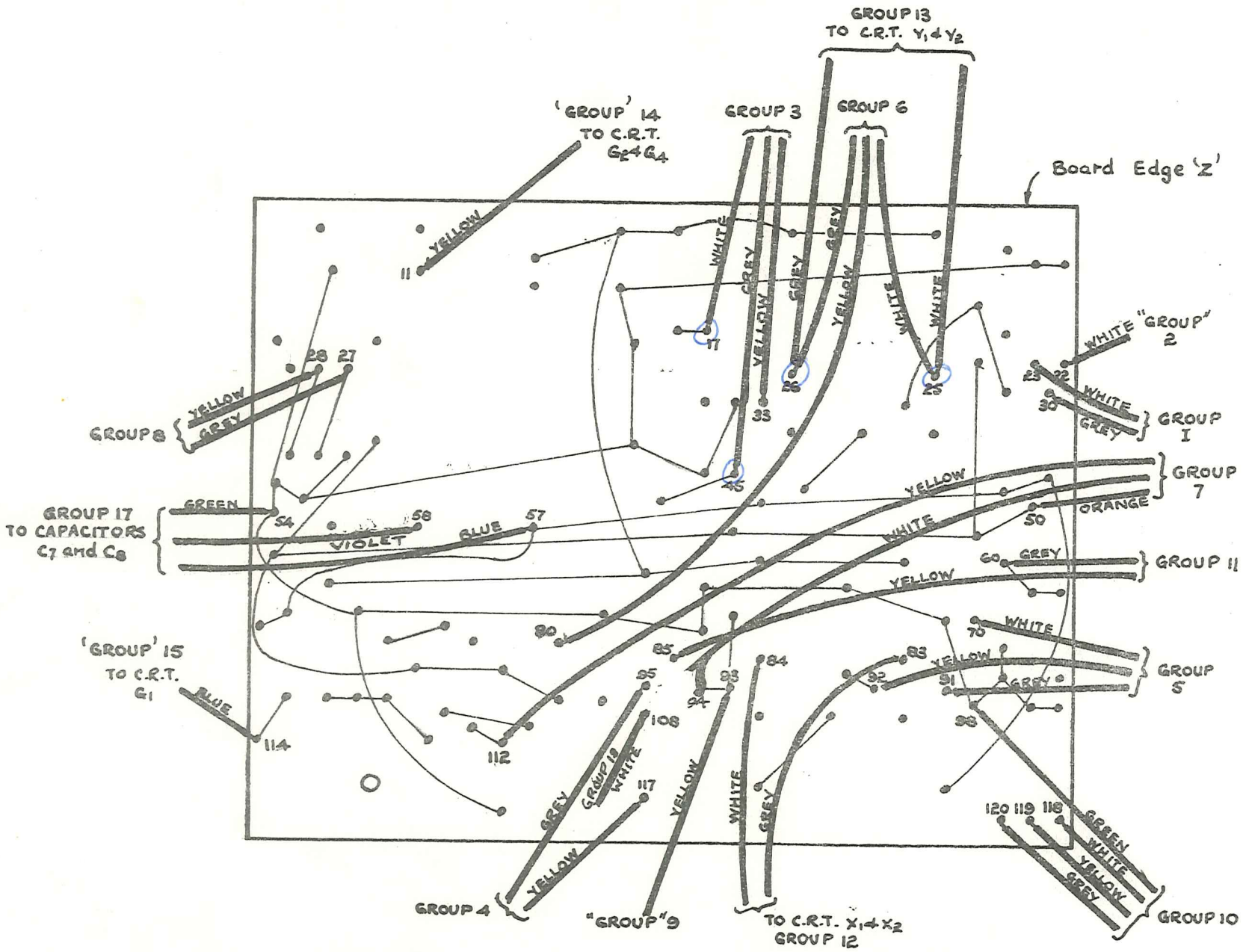

FIG. 21 INTERCONNECTIONS ON BACK OF BOARD.

SC 134

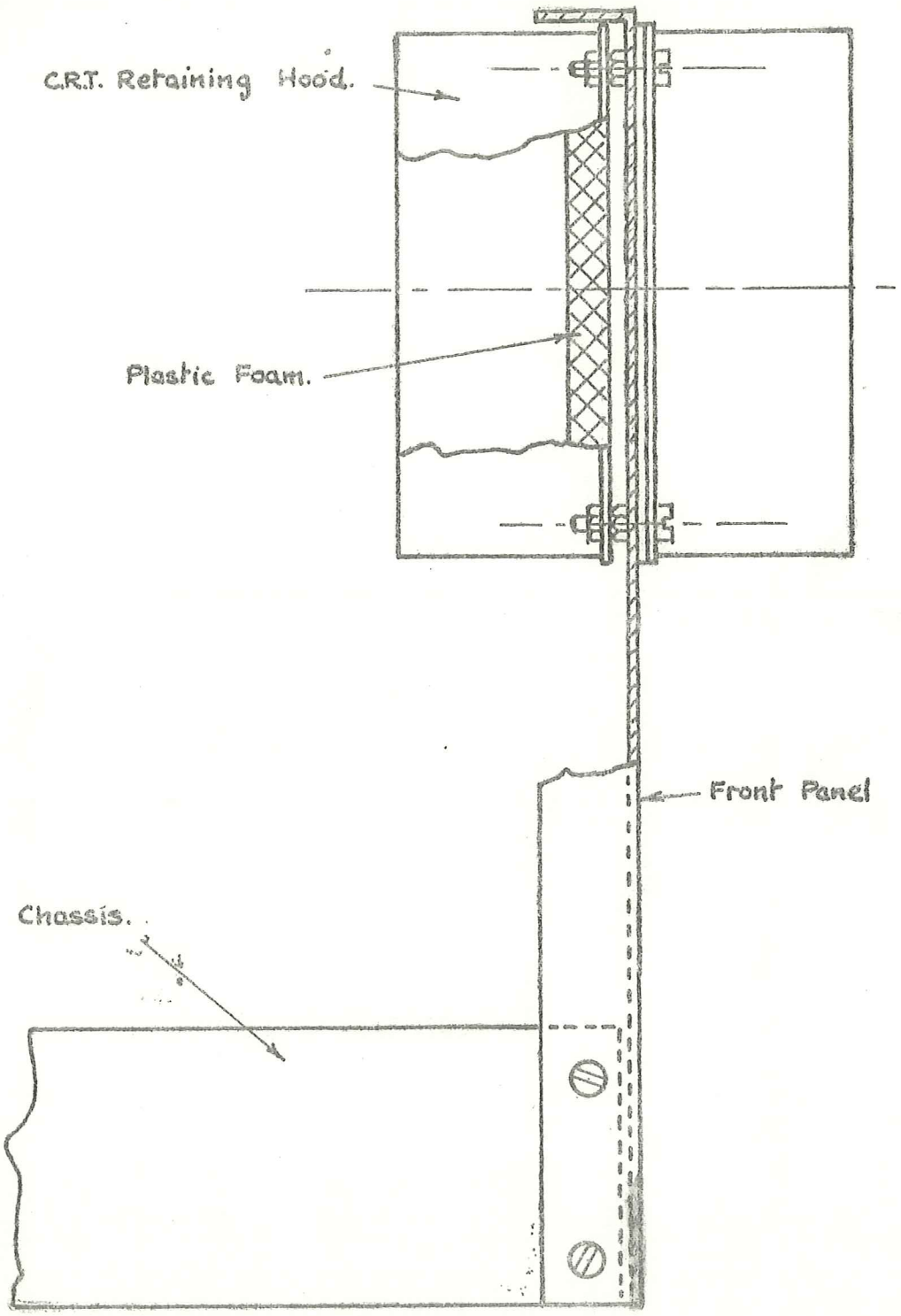

FIG. 25. ASSEMBLY OF PANEL, CHASSIS AND C.R.T. RETAINING HOOD.

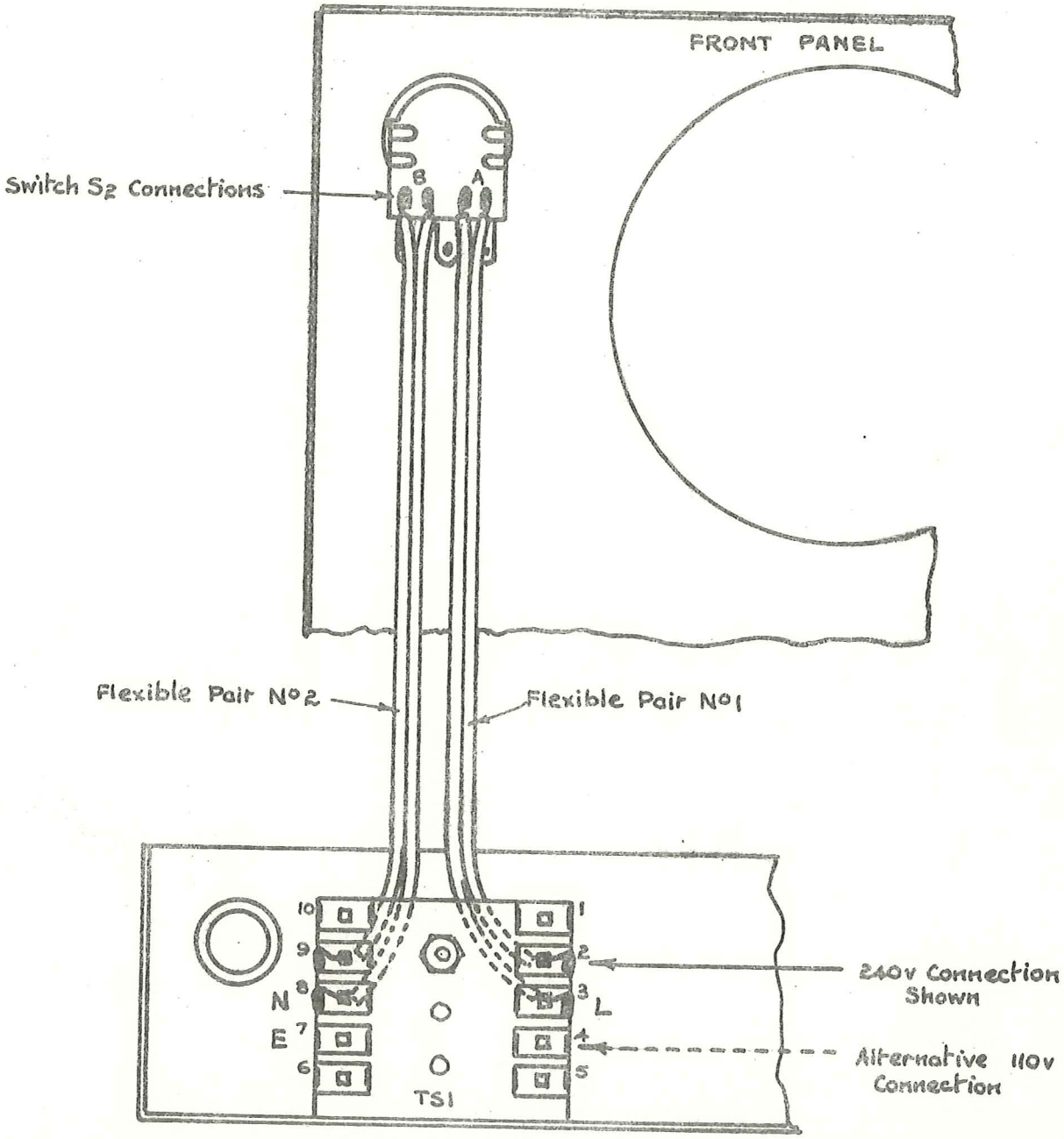

FIG.26. TS1 WIRING TO ON/OFF SWITCH.
(DIAGRAMMATIC ONLY)