

POST OFFICE ENGINEERING DEPARTMENT

SPECIFICATION FOR
SECTIONS, SWITCH, B.E., C.B.,
MULTIPLE, NO. 9 (MARK 5)
CABLE TURNING SECTION FOR DITTO
END PANELS FOR DITTO

LIST OF DRAWINGS

Framework Drawing	No. 7500
Keyboard Framework	" 7501
Details 25 to 28	" 60987
Cable Turning Section and End Panel	" 7504

CIRCUIT DIAGRAMS

Operators Telephone Circuit	N 947 sheet 2.
Exchange Line Circuit	N 980
Extension " "	N 943
Cord Circuit	N 1094
Night Alarm Circuit & Ringing Circuit	N 946 Figs.1 & 2.
Cord Test Circuit	N 961 Fig.1

WIRING DIAGRAM

All Circuits	LD 42.
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Note: Specification No.D 1000 shall be taken as forming part of this specification.

I. APPARATUS

The equipment to be supplied includes the following items covered by separate drawings or specifications, or by patterns which will be placed at the disposal of contractors:-

Items	Drg. No.	Spec. No.	Quantities per Section	
			Equipment	Capacity
Bracket, Mounting, BH	61129	-	1	1
Clips, No.20, $\frac{1}{2}$ in.	60735	-	2	2
Clips, No.44, 2 in.	60735	-	2	2
Coil, Bridging, No.1P	1565	D 177	1	1
" " " 6 C	1565	D 177	12	17
" Induction, No.3/16	-	-	1	1
" Retardation, No.39 A	(9563 9564	D 747	12	17
" " " 12 A	Pattern	-	1	1
Condenser, M.C., No.101	9208	D 742	1	1
Condensers, M.C., No.102	9208	D 741	15	40
Condensers, M.C., No.103	9208	D 741	-	2
Cords, Switchboard, No.335, Black	62332	D 1440	6	10
Cords, Switchboard, No.335 Red	"	"	6	8
Cords, Switchboard, No.335 Green	"	"	6	8
Cords, Switchboard, No.335 Neutral	"	"	6	8
Fasteners, Cord, No.1	62960	-	102	102
" Jack, No.17	62969	-	21	21
Fuses, No.35/1	9987	-	24	24

Items	Drg. No.	Spec. No.	Quantities per Section	
			Equipment	Capacity
Fuse-Mountings, No.2435A	9562	-	2	2
Generator, No.26A with Handle, Generator No.15)	-	-	1	1
Hooks, No.8	62981	-	34	34
Indicator, No.3110AN	63711	D 168	-	2
" " 400K	-	-	-	1
" " 420BP	(8086 (8087	D 168	-	10
" " 2800B, Dummy	8450	-	10	-
" " 3300B	9609	D 627	24	34
Jack, No.20	62314	D 195	1	1
" No.301 BN	1335	-	1	1
" No.910 BN	-	-	-	8
" No.710 BN	-	-	-	20
or	-	-	-	-
" No.720 BN	-	-	-	20
Jack, Lamp, No.12	Pattern	-	1	1
Key, No.68, Grey	60123	D 484	1	-
" No.68, Green	60123	D 484	-	1
" No.172, Black	60127	"	3	5
" No.172, Red	60127	D 484	3	4
" No.172, Green	"	"	3	4
" No.172, Grey	"	"	3	4
" No.207, Yellow	60134	"	1	1
" No.293, Black	60172	"	3	5
" No.293, Red	"	"	3	4
" No.293, Green	"	"	3	4
" No.293, Grey	"	"	3	4
Key-dummies, No.1	62411	-	11	11
Key-Mtgs., V.	62416	D 658	37	38
" " V., Dummy	"	"	1	-
Labels, No.44, White, Engraved	-	-	17	17
Labels, No.105, White	62541	-	-	80
" No.112, White	7515	-	6	6
" No.120, White, Engraved	-	-	11	11
Part, No.6/SLO/17	SLO/17	-	1	1
Mounting, No.2/6A	8154	-	1	1
" " 17/1A	-	-	1	1
" " 84/24A	8129	-	1	1
" " 127/2A	8450	-	17	17
" " " Dummy	"	-	2	2
" " 146/22A	9627	-	1	1
" " 146/48A	9627	-	1	1
" " 151/2B	8154	-	1	1
Part, No.10/SST/60	SST/60	-	1	1
Plate, Indicator front, No.3	-	-	1	1
Plate, Escutcheon, No.1	62646	-	1	1
Plugs, No.316, Red	60183	D 571	24	34
Pulley weights, No.16	62652	-	24	34
Rectifier-Element, No.2/2A	CD 81	D 1195	1	1
Relay, No.500E	-	-	-	20
" No.502A	9989	D 1356	12	24
" No.503E	-	-	-	2
" No.508E	9989	D 1372	12	24
Relay-Covers, AK	62068	-	24	70
Resistor, Spool, No.1-100 ohms	62204	D 181	1	1
Resistor, Spool, No.1-200 ohms	"	"	4	5
Resistor, Spool, No.6-200 ohms	62200	D 1230	1	1
Seats, Plug, No.3	62615	-	34	35
Strip, Connection, No.24A	62453	D 528	1	1
" " No.28	62468	D 528	-	20
" " No.29A	62455	D 528	1	2
" " No.39	62470	D 528	-	4
" " No.41A	8214	D 528	1	1
" " No.102K	62473	-	1	1

2. CONSTRUCTION

The Section shall be constructed in accordance with Drawing Nos. 7500, 7501 and 60987.

The framework where not exposed to view shall be of ash. All woodwork where exposed to view from the front shall be of well seasoned mahogany free from shakes and other blemishes and shall conform in colour and finish to the standard samples agreed for Telephone Switchboards.

Each section shall be closed in at the rear and in front below the keyboard, with removable panel doors. The rear door shall be of whitewood, stained, and varnished to match the mahogany.

All ironwork shall be thoroughly enamelled to Colour No.31, glossy, of British Standard Specification No.381.

The plug-shelf and the panel between the plug-shelf and jack field shall be covered with red fibre semi-matt finished.

A fibre fillet 1/8 in. thick, projecting 1/16 in. above the surface of the keyboard shall be fitted on the right side of each keyboard.

The keyboard of each section shall be fitted with a Part, No.6/SLO/17.

One brass footrail with brackets shall be supplied with each section.

All unequipped spaces in the jack field shall be filled in with ebonised blanks 11/16 in. wide.

All unequipped spaces in the indicator panel shall be filled in with mahogany blanks, each of the same dimensions as a strip of indicators.

All unequipped drillings on the plug shelf and the hole for the dial cord shall be plugged up with polished wood plugs.

Wiring for the unequipped circuits shall be made up in the cable forms and carried to the distribution points, the ends laced out and taped, and left in a convenient position for attachment to the apparatus when fitted.

A strip of S.R.B.P. to British Standard Specification No.547 to be fitted between the cord rail and cord fasteners as indicated on Drawing No.60987.

The hole for Indicator No.400K shall be covered by Details 31 and 33 Drawing No.7500 screwed together.

3. CAPACITY AND EQUIPMENT OF SECTION*(a) Jack Field**

Each panel of the jack field shall provide capacity for:-

10 strips of Jacks No.720 BN or their equivalent for extension lines

4 strips of Jacks, No.910 BN or their equivalent for exchange lines

A cord testing jack (No.301 BN) shall be fitted on the left stile in the position shown on the drawing.

(b) Indicator Panel

The indicator panel shall provide capacity for:-

10 strips of Indicators, No.420 BP for extension lines

2 strips of Indicators, No.3110 AN for exchange lines

(c) Keyboard and Plugshelf

The keyboard and plugshelf shall provide capacity for 17 cord circuits, 1 Hand Generator Key, 1 Dial Emergency Key, and 1 Position Coupling Key and shall be equipped with Cord Circuits 1 - 12 inclusive the Hand Generator Key, and the Position Coupling Key.

The cord colour scheme shall be black, red, green and neutral commencing with cord circuit No.1.

The answering and calling cords and the two key handles associated with each cord circuit shall be of the same colour, grey key handles corresponding to neutral cords.

4. NUMBERING

The cord circuits shall be numbered from 1 - 17 by means of Labels, No.44, white, sunk flush with a keyshelf. The numbers shall be engraved and coloured black.

Three Stile Casings shall be fitted to each section. The first and second casings shall be fitted with Labels, No.112, white, to indicate the groups of one hundred extension jacks and the tens of exchange jacks. The third casing shall be of similar appearance and dimensions to the first and shall be tapped for, but unfitted with labels. The centre stile casing shall be $\frac{1}{8}$ in. wide, the two outside casings shall be $\frac{5}{8}$ in. wide.

The circuit designations of the various pieces of apparatus shall be clearly marked where and as indicated on Drawing No.7500.

All fuses shall be plainly marked to show their respective circuits. The tags on the strips connection which form the connecting rack shall be numbered as shown in Drawing No.7500.

5. CIRCUITS

The Sections shall be wired in accordance with Diagram LD 42. Wiring shall be provided as follows:-

Exch. Lines	20 circuits
Extensions	100 "
Cord Ccts.	17 "
Operators Ccts.	1 "
Ringling "	1 "
Cord Test "	1 "
Night Alarm "	Wiring shall be provided from the Indicator position to the Power Tag on Connecting Rack only.

The arrangements of the fuses shall be as follows:-

1st Panel Fuses Nos.1 - 17	For cord circuits 1 - 17
" " 18	8 μ F (2 Condensers, M.C., No.103)
" " 19	Transmitter
" " 20	Night Alarm
" " 21	K.S. Relay
" " 22, 23, 24	Spare
2nd Panel Fuse No.1	Pilot Indicator
" 2	Exch. 'A' relays
" Nos.3 - 23	Spare
" No.24	Extension Line Indicators

The allocation of the 18 Power Tags shall be as follows:-

- 1 Ringing Current through Lamp Resistance
- 2 " Return
- 3 Earth for Night Alarm Bell
- 4 Night Alarm Bell
- 5 Battery for N.A. Bell Used on end section only
- 6 Coupling key R to previous position
- 7 " " R " " "
- 8 " " T " " "
- 9 " " R " next "
- 10 " " R " " "
- 11 " " T " " "
- 12 To contact of Relay No.500E(S) Exch. Line cct.
- 13 To coil of Relay No.503E(A) " " "
- 14 Spare
- 15 "
- 16 "
- 17 "
- 18 "

*6. WIRING

Wiring shall be in accordance with Diagram LD 42 and Specification T 5241. Wires laced in the cable form shall be Wire PVC No. 3, 1 Wire/ $\frac{1}{8}$ or 1 Pair/ $\frac{1}{8}$ to Specification No. CW 109. Wires which cannot be included in the cable form shall be Wire PVC No. 3, 1 Wire/ $\frac{1}{2}$ to Specification CW 109.

Where contact with ironwork may occur, the ironwork shall be covered with an approved insulating material or treated with insulating enamel. Cleats shall be of webbing or PVC. No adhesive tape shall be used.

The speaking circuits and generator leads shall be made up of twisted pairs, and where made up in cable form shall be laced and formed in a workmanlike manner. Sufficient slack shall be allowed to permit the removal of any strip or single piece of apparatus. No flux other than resin shall be used in soldering connections.

The Switchboard wiring to the Strips Connection which form the connecting rack shall be terminated on the tags facing the front of the board. The tags having the double wiring slots shall face the rear.

The wiring for the keysender shall be so provided as to enable a Key No.68, green, and a Relay No.509A shall be inserted and wired in the positions indicated on Drawing No.7500.

A diagram approved by the Engineer-in-Chief, showing the electrical connections of the switchboard and bearing the stock list title, 'mark' number, and a reference to Diag. LD 42 with suffix letter (if any) to which the Section is wired, shall be securely fixed with glue to the inner side of the rear door and varnished.

7. INSULATION RESISTANCE

The insulation resistance between the power terminals with the fuses in position or between any two points that are not required to be electrically connected shall be not less than one megohm when tested with 500 volts D.C.

8. CABLE TURNING SECTION AND END PANELS

The construction of the Cable Turning Section, End Panel and Keyboard End Panel is shown on Drawing No.7504. They shall be constructed of well seasoned mahogany free from shakes and other blemishes and shall conform in colour and finish to the standard samples agreed for telephone switchboards. The side of the Cable Turning Section shall be removable. The Keyboard End Panel shall be polished on both sides and on the front edge. All of these items shall be suitable for fitting on either side of a section, the cornice fittings shall make an accurate fit in either position. The stock designations "Cable Turning Section" and the "End Panel" include the Keyboard End Panel.

9. MARKINGS

Typical markings:- FH61/5 shall appear on the inside of the top of the switchboard, as indicated on Drawing No.7500, and in accordance with Specification D 1000. (The letters FH are typical and shall be substituted by the contractor's approved code letters).

In addition a brass label engraved with the stock list description of the switchboard and the numbers and suffixes (if any) of the circuit diagrams thus:-

B.E.C.B. Mult. No.9

Diags. N943..... 946..... 947..... 961..... 980 1094.... shall be fitted on the centre of the upper back rail of the section.

Cable Turning Section and End Panel

Typical markings:- FH61 shall appear on inside of the top.

In addition a brass label engraved:-

CABLE TURNING SECTION (OR END PANEL)

B.E.C.B. MULT No.9

shall be fitted on the centre of the top rail.

10. SCHEDULE OF DRAWINGS, DIAGRAMS AND SPECIFICATIONS REFERRED TO IN THIS SPECIFICATION

Drawing Number		Diagram Number	Specification Number
1335	60987	LD 42	D 168
1565	61129	N 943	D 177
7500	62068	N 946	D 181
7501	62200	N 947	D 195
7504	62204	N 961	D 484
7515	62314	N 980	D 528
8086	62332	N 1094	D 571
8087	62411		D 627
8129	62418		D 658
8154	62453		D 741
8214	62455		D 742
8450	62468		D 747
9208	62470		

*10. SCHEDULE OF DRAWINGS, DIAGRAMS AND SPECIFICATIONS REFERRED TO IN THIS SPECIFICATION (Contd.)

Drawing Number		Diagram Number	Specification Number
9562	62473		D 1000
9563	62541		D 1195
9564	62615		D 1230
9609	62646		D 1356
9627	62652		U 1372
9987	62960		D 1440
9989	62969		B.S.S. 381
60123	62981		B.S.S. 547
60127	63711		CW 109
60134	CD 81		T 5241
60172	SLO/17		
60183	SST/60		
60735			

*11. HISTORY.

Open Issue to Issue C - no record.

Issue D - PVC covering of Wire to CW 109 specified in lieu of DS and CC to CW 39 and in lieu of DS and CB to CW 65. Ref. to Specification T 5241 added.

END OF SPECIFICATION

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