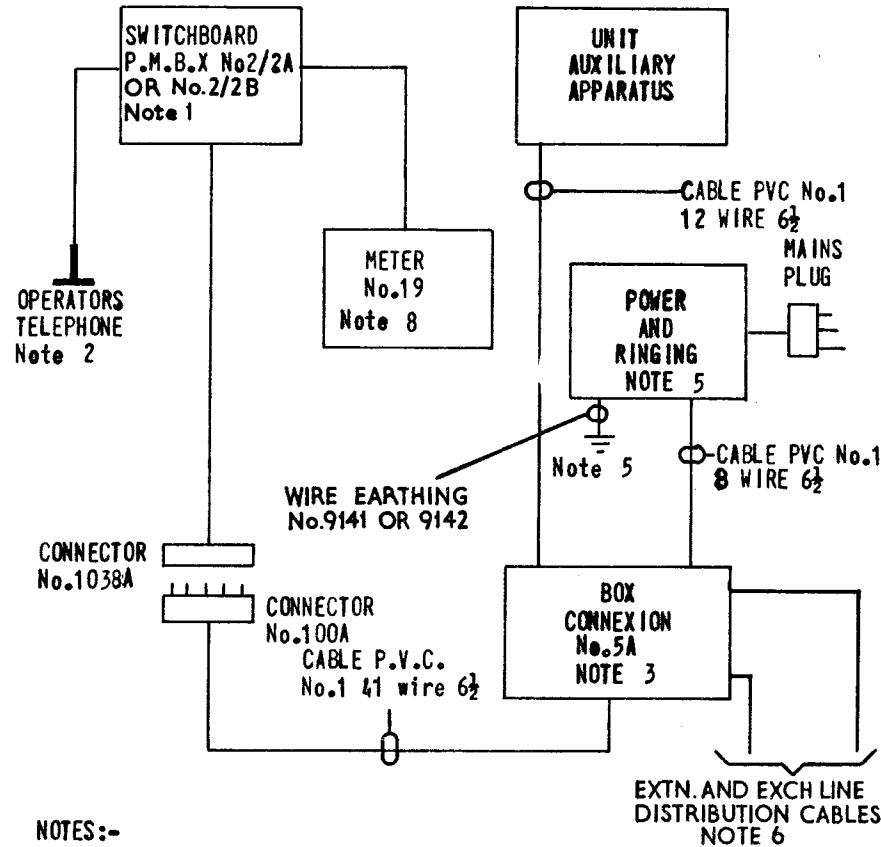


# SWITCHBOARD P.M.B.X.No.2/2A AND No.2/2B

FIG.1. TYPICAL INSTALLATION AND CABLING.



NOTES:-

On initial supplies of the switchboard the Conn. No. 1038A and Conn. No. 100A were not available and the switchboard was cabled direct to the Box. Conn. No. 5A with Cable, P.V.C. No.1-41 Wire 6½ lb. At some of these installations the cable pair colours were reversed.

P.O. TELEWORKS. UNDER CIRCUIT GENERAL	ISSUE	E	No.2/2B ADDED TO TITLE. STORES SCHEDULE ADDED. TABLES RE-NUMBERED AND AMENDED. FIGS. 2 & 3 AMENDED. OTHER MINOR AMENDMENTS. <i>Amra</i>	14.10.69
		D	NEW FORMAT. <i>W.S. D.J.</i>	4-7-66
		B	2 PANELS TRANSFERRED AS 6A 7163 <i>R.B.</i>	2-7-64
			MINOR AMENDMENTS. <i>C.M.H.</i>	6-12-61
			T.C.C. STEVENS 52/2 TD 2.4.1.	29-9-60

ISSUE			
	F	CHANGES TO OPERATORS TELE. CIRCUIT, MINOR AMENDMENTS, PAGES 9 & 10 MADE YELLOW. MADE 12 PAGES. <i>S.L.R.</i>	11-2-71

TABLE 1.

STORES SCHEDULE

ITEM	REFERENCE	PROVISION	REMARKS
Switchboard P.M.B.X. No. 2/2A or 2/2B	SAW 71631	PER INSTALLATION	
Telephone No. 746...Grey. Cord Instrument No. 8/13AT Grey, 36" or 54" Rectifier Element No. 205. Switch No. 19B-1	N846  N848  N840	} PER INSTALLATION IF REQUIRED	} OPERATOR'S TELEPHONE WITHOUT HEADSET. SEE FIGS. 2 & 3 PROVIDED IF U.A.A.96A IS FITTED. SEE FIGS. 2 & 3
Telephone No. 740...Grey. Headset No. 1 Grey. Plug No. 420 Grey with Cord 4/77AB 54". Jack No. 84C Grey. Cord Instrument No. 11/05 AT Grey 36" or 54"		} PER INSTALLATION IF REQUIRED	} OPERATOR'S TELEPHONE WITH HEADSET. SEE FIGS. 4 & 5 AND WORKS SPECIFICATION S(W)2064
Cover Switchboard No. 1A Grey. Rectifier Element No. 205.			
Part 1/DBR/433.                      Part 1/DSP/1243 Part 2/DST/836.                      Part 23/DBU/372 Part 1/DBR/434.                      Part 13/DBU/372 Screw 4 B A x 1/4" CH HD.              Part 1/DST/26 Screw 6 B A x 5/16" CH HD.	N848 N849		
Dial Automatic No. 25FA Clear. Cord Instrument No. 2/148E 8 1/2".		} PER INSTALLATION IF REQUIRED	} PROVIDED IF INTER-PBX DIALLING CIRCUIT IS FITTED. SEE FIGS. 3 AND 5.
Power Unit No. 100A/1	N700	} PER INSTALLATION WITHOUT STANDBY POWER	SEE NOTE 5
Power Equipment for standby arrangements.	N2332	PER INSTALLATION WITH STANDBY POWER	SEE NOTE 5. FOR SCHEDULE OF EQUIPMENT SEE DGM N2332.
Box Connexion No. 5A. Connector No. 100A.		} PER INSTALLATION	
Equipment for Subscribers Private Metering.	N1003 N1004	} AS REQUIRED	SEE NOTE 8. FOR SCHEDULE OF EQUIPMENT SEE DGMS N1003 & N 1004.
Unit Auxiliary Apparatus No. 96A.	N1113 N1126	} PER 2 WIRE EXTENSION	FOR TERMINATING 2 WIRE EXTENSION CIRCUITS
Unit Auxiliary Apparatus No. 97.	N1116 N1130-N1133 N1137	} PER INTER-PBX CIRCUIT AS REQUIRED	FOR TERMINATING INTER-PBX AND PRIVATE CIRCUITS A/WE AND GENR. SIG.

TABLE 1.

STORES SCHEDULE (CONTD)

ITEM	REFERENCE	PROVISION	REMARKS
Unit Auxiliary Apparatus No. 98.	N1117 N1134-N1136	PER INTER-PBX CIRCUIT AS REQUIRED	FOR TERMINATING PRIVATE AND LONG EXTENSION CIRCUITS G/AC AND G/BB SIG.
Unit Auxiliary Apparatus No. 99.	N1118 N1138		FOR TERMINATING INTER-PBX EARTH AND LOOP DIALLING CIRCUITS.
Unit Auxiliary Apparatus No. 99A.	N1120 N1138		AS U.A.A.99 WITH ADDITIONAL LOOP DIALLING OUT G/AC IN FACILITY.
Unit Auxiliary Apparatus No. 100.	N1119 N1139		FOR TERMINATING INTER-PBX CIRCUITS SCDC SIGNALLING.
Relay Set 1/SA7572. Relay Set 1/SA8299 and 2/SA8299	SAW75721 SAW82990 N762		FOR TERMINATING INTER-PBX CIRCUITS 1VF SIGNALLING (SSACT3).
'Equipment Signalling No.24/...			Rack for Mounting 1VF Signalling (SSAC13)

**INSTALLATION NOTES (SEE FIG.1)**

**1. SWITCHBOARD P.M.B.X. No.2/2A AND No.2/2B.**

The switchboard is supplied complete with the connector No.1038A attached.

Connect as shown in Dgm. SAW 71631 the terminations on the switchboard connector are identified in Table 3

Check all relays to ensure that the armatures are correctly positioned on their knife edges before connecting power supply.  
For circuit operation refer to Dgm. SA7163 together with Diagram Notes SA7163.

The rate book description for replaceable items are given in Table 1.

**2. OPERATORS TELEPHONE**

The apparatus to be provided is shown in Table 1

Use Fig. 3 for installations where headset is not required.

Use Fig. 5 for installations where headset No. 1 is required.

**N.B.** At installations where operator's headset is used, the subscriber should be advised that clearing on operator to exchange calls requires the restoration of exchange key.

**3. BOX CONNEXION No. 5A**

The box connexion is mounted on the brackets provided with it.  
The power unit is mounted above the box connexion and coupled thereto.

U.A.A.s, if any, are mounted in a similar manner above the power unit.

For details see E.I. POWER, General, S 1051.

Select a position for mounting this assembly of units which is suited to local arrangements and maintenance access and which least detracts from the neat appearance of the installation.

The units should be fixed directly to the wall, without the aid of wall-boards unless the surface or construction of the wall makes this necessary.

Where the standard mounting arrangement cannot be followed, the power ventilation and chassis bonding requirements must be met.

The length of the cabling between the box connexion and the switchboard must not exceed 100 ft.

Dgms. SA 7163 and SAW 71631 should be requisitioned and stored under the clip fitting in the cover of the box connexion.

**4. CABLING FROM BOX CONN. TO CONNECTOR**

The conductors should be terminated on connector No.100A by the method shown in Drg. SD113 and in accordance with the allocation given in Table 3. At the box connexion the conductors should be terminated on the soldered connexion points in accordance with Table 2.

**5. POWER AND RINGING SUPPLIES**

Power Units No. 100A/1 shall be ordered for all installations without stand by batteries. Requisitions for P.U.s No. 100A/1 will first be met by the provision of P.U.s No. 51A with separate Convertors Ringing No. 7, then later by the provision of P.U.s No. 51B, and finally by either P.U.s No. 51B or P.U.s No. 100A/1. Power Units No. 51B (Dgm.N699) consist of P.U.s No. 51A with Convertors Ringing No. 7 already fitted. Power Units 100A/1 include ringing convertors and are smaller than P.U.s 51B. From September 1971 requisitions may be marked P.U.s No.100A/1 'ONLY' in circumstances where the smaller size is essential.

For installations requiring stand by batteries, provide equipment in accordance with EI, POWER, General S3351 and Dgm. N2332.

Ringing and battery leads are connected to the Box Connexion as indicated in Fig. 12.

It is important that an independent P.O. Earth be connected directly to the Power Unit or Rectifier using Wire Earthing No.9141 or 9142.

**6. TERMINATION OF CIRCUITS**

- (i) Exchange lines, ensure that the 'A' wire and 'B' wire are not reversed.
- (ii) Extension positions 1-6 may be used for the termination of 4 wire extns. and to be provided with 4 wire cables from box connexion.  
For 4 wire extns. see explanatory circuit Fig. 5.  
" 2 " " " " Fig. 7.
- (iii) Extension positions 4-6 to be used for the termination of 4 wire extns., 2 wire extns. with U.A.A.s, Inter-P.B.X. ccts., private ccts. etc.  
Connexions of extn. telephones for 4 wire and 2 wire working are shown on Dgm. N806.

**7.** Additional audible alarm can be provided by connecting a bell or buzzer Dgm. N655 or 656 between terminal 'NA' and the battery terminal in the box connexions.

**8. SUBSCRIBERS PRIVATE METERING**

For installations requiring subscribers private S.T.O. metering facility:-

See Dgm. N1003 for Scheme D

" " N1004 " " C1 (b)

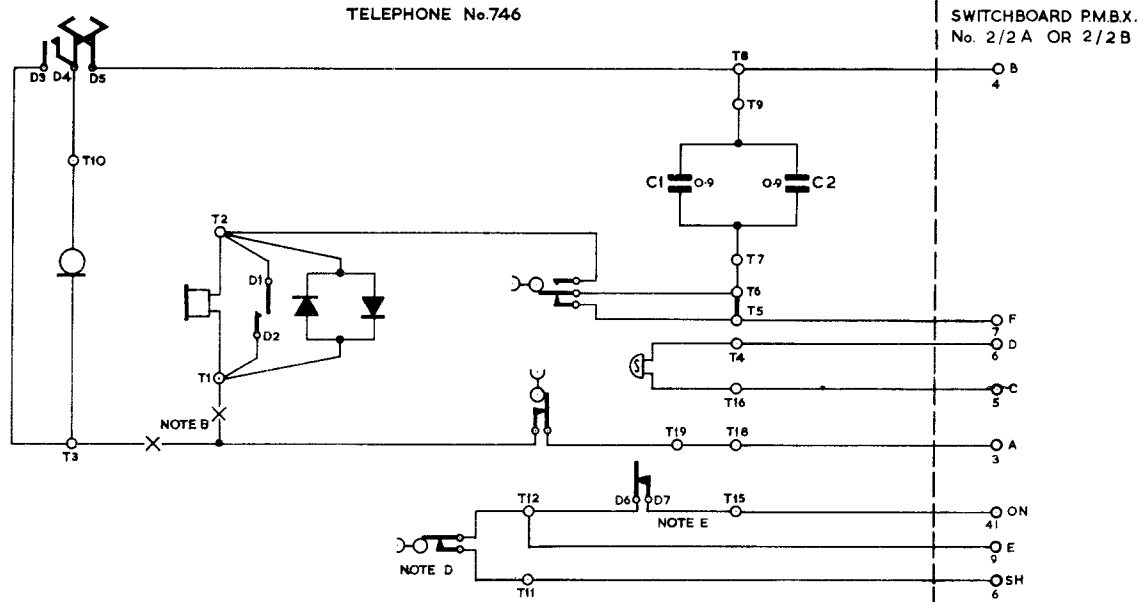
TABLE 2 SWITCHBOARD APPARATUS  
SCHEDULE

See Dgm. SA 7163 for circuit  
code reference

ITEM	RATE BOOK TITLE
<p>LA LB LC P 1AC 2AC MF 1RA 2RA Exch Line Circuit Key Extn Line Circuit Key Operators and Misc. Circuit Key C1 C2 C3 1C4 2C4 1C6 2C6 C5 1R5 2R5 R2(PMBX No. 2/2B) 1R4 2R4 R1 R2 (PMBX No. 2/2A) R3 1R6 2R6 1RX1 2RX1 1MRA 2MRA Designation Strip (Complete) Designation Label Cover Designation Label Lamp Jack (Complete) Lamp Cover Strip Lamp Lens (Clear) Call and Hold Lamps Buzzer (PMBX No.2/2A) Buzzer (PMBX No.2/2B) Keyhandle Ivory Keyhandle Ivory with Black Insert Cover.</p>	<p>Relay No.14451 Relay No.712 Relay No.713 Relay No.714 Coil, Bridging No.7E Key No.1701 Key No.1601 Key No.1702 Capacitor, No. 8004 Capacitor, Paper No.7725 Capacitor Electrolytic No. 3184 Resistor, Coil No. 35A 51Ω Resistor, Coil No.35A 430Ω Resistor, Coil No.36 150Ω Resistor, Coil No.36 680Ω Resistor, Coil No.35A 680Ω Resistor, Carbon No.26KC 1MΩ Resistor, Non Linear No.9 Rectifier Elements No.1/12AZ Strip, Designation No.32 Strip, Flexible No.21 Clear LABEL No.397A Jack, Lamp No.55/9B Cover, Lamp No.1A Cap, Lamp No. 76A Clear Lamp No.2 15V Buzzer No.2B-1 Buzzer No.33A Handle Key No.18/16 Handle Key No.18/16A Cover, Swbd. No.1 Grey.</p>

**SPARE**

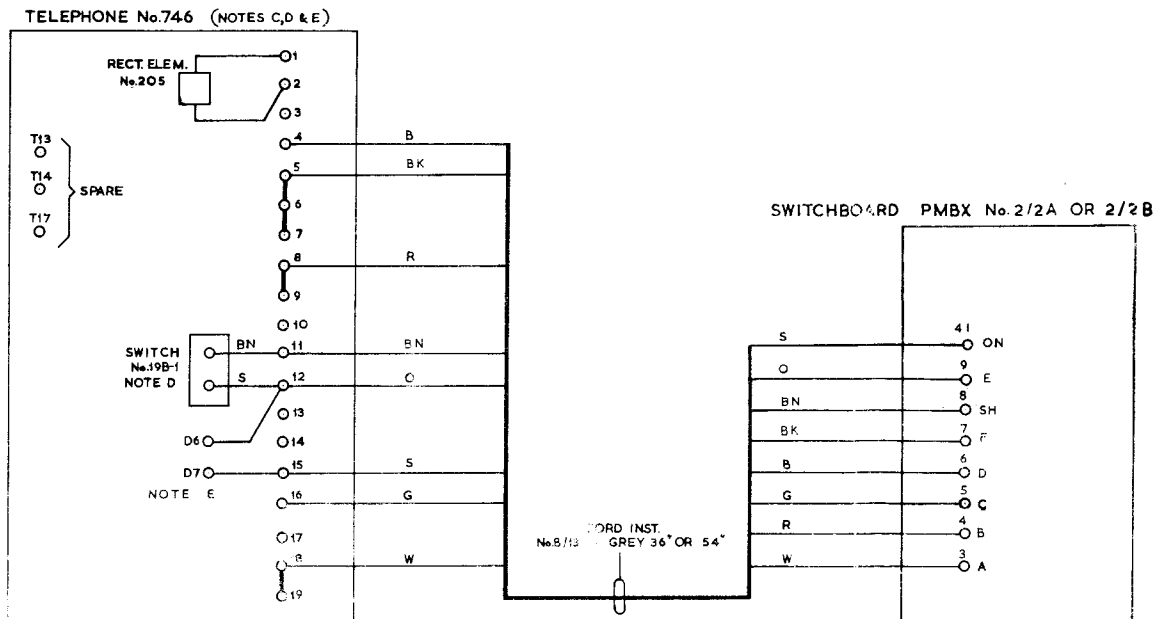
FIG.2. OPERATORS TELEPHONE WITHOUT HEADSET



NOTES:-

- A. For apparatus required see table 1.
- B. Internal connexions of telephone No.746 not shown (see N846).
- C. Telephone No.746:-  
Remove straps T4-T5 & T16-T17.  
Provide Rectifier Element No.205 and connect as shown.
- D. When U.A.A. No.96 or 96A is fitted provide Switch No.19B-1 and connect as shown.
- E. When Inter-PBX dialling circuits are fitted change dial to Dial Auto No.25 FA Clear and provide Cord Inst.2/148E 8 1/2" and connect additional contacts D6-D7 as shown.

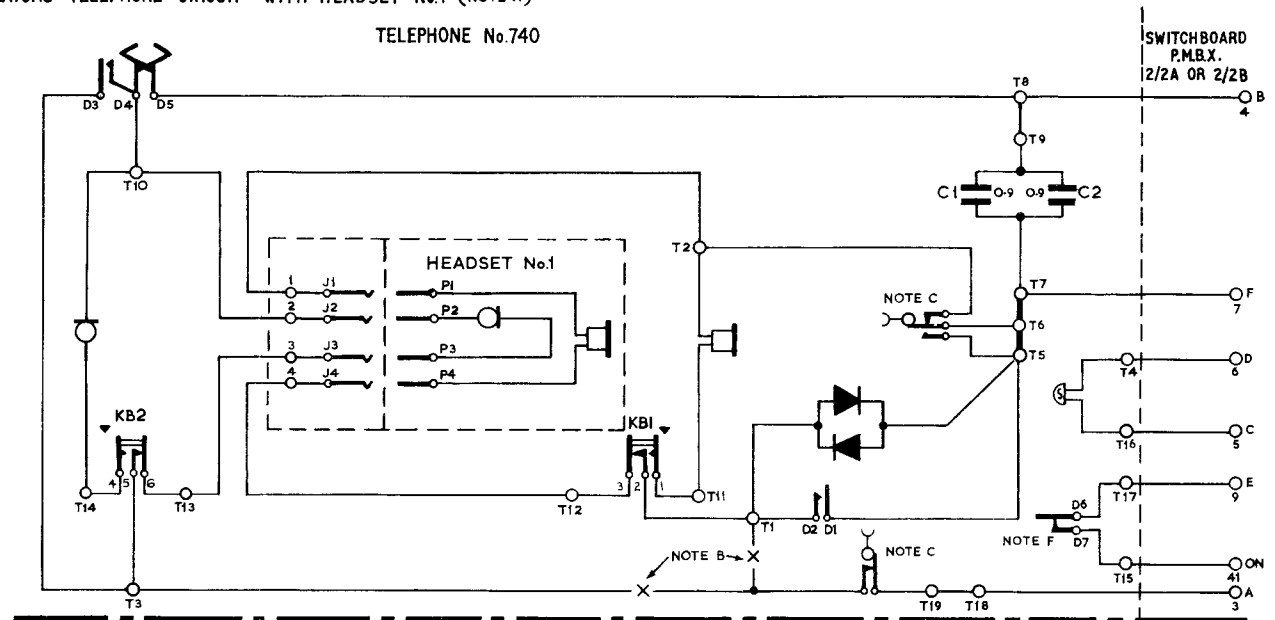
FIG.3. OPERATORS TELEPHONE WITHOUT HEADSET (NOTE A)



SUPERSEDES PAGE 10  
FOR NEW WORK

FIG.4. OPERATORS TELEPHONE CIRCUIT—WITH HEADSET No.1 (NOTE A)

TELEPHONE No.740

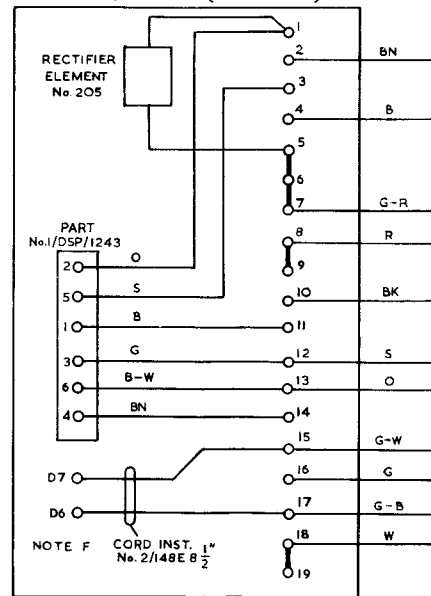


NOTES:—

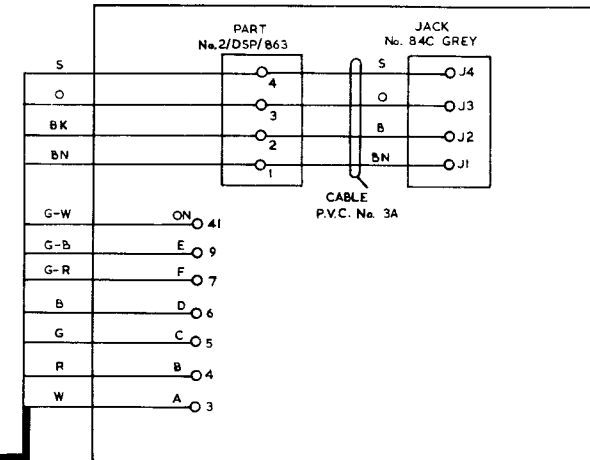
- A. For apparatus required see Table 1.
- B. Internal connexions of Telephone No.740 not shown (see N840).
- C. Remove the gravity switch operating lever and restoring spring to make gravity springs permanently operated.
- D. Switchboard:—  
For mounting arrangements see Works Spec. S (W) 2064., Issue B or later.
- E. Telephone No.740:—  
See diagrams N840-848-849.  
Fit Part 1/DSP/1243 and Part 13/DBU/372 in position B.  
Fit Part 1/DST/26 and Part 23/DBU/372 in position C.  
Set latches B & C to setting 1.  
Set latches X & Y to setting 5.  
Remove straps T4-T5, T16-T17 & T17-T18.  
Connect Part 1/DSP/1243 as shown.  
Transfer red conductor of receiver from T1-T11.  
" blue " " Trans. " T3-T14.  
" " " " dial " T2-T5.  
Provide and fit Rectifier Element No.205, connect as shown.
- F. When Inter-PBX dialling circuits are fitted change dial to Dial Auto No.25 FA Clear and provide Cord Inst.No.2/148E 8 1/2". Connect additional contacts D6-D7 as shown.

FIG.5. OPERATORS TELEPHONE CIRCUIT—WITH HEADSET No.1 (NOTE A)

TELEPHONE No. 740 (NOTES C & E)



SWITCHBOARD P.M.B.X. 2/2A OR 2/2B (NOTE D)



CORD INST.  
No. 11/05 AT GREY 36" OR 54"

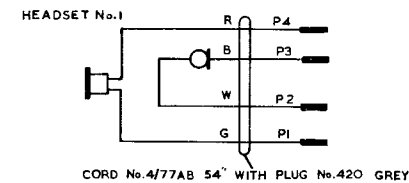
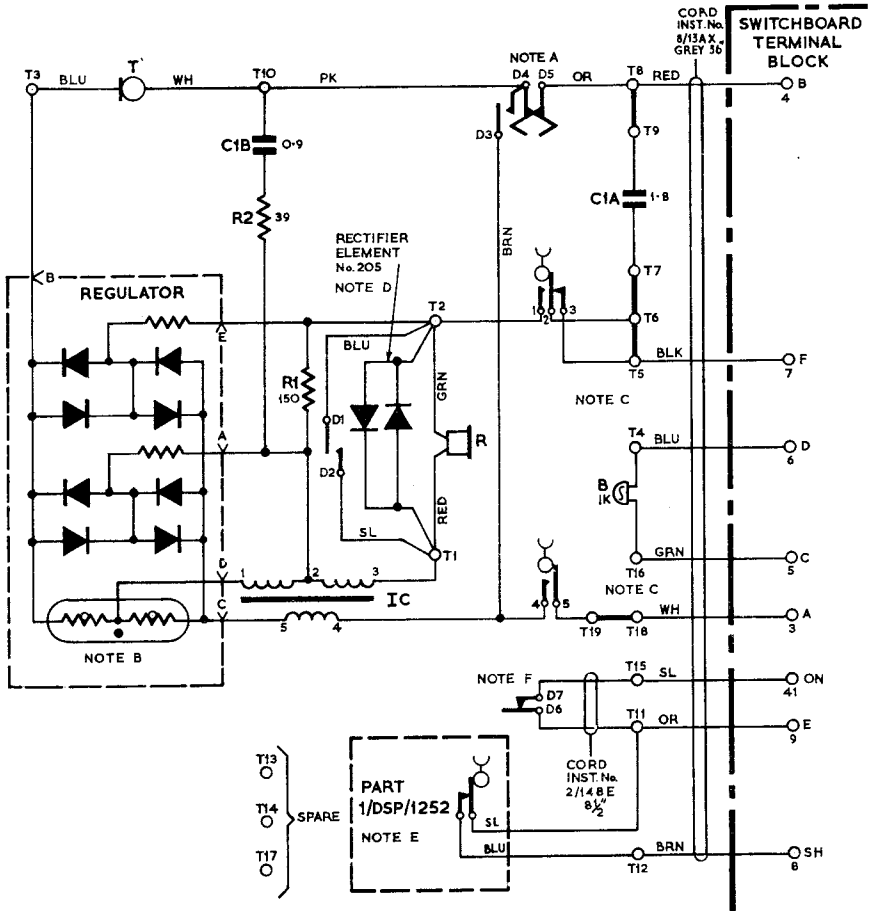




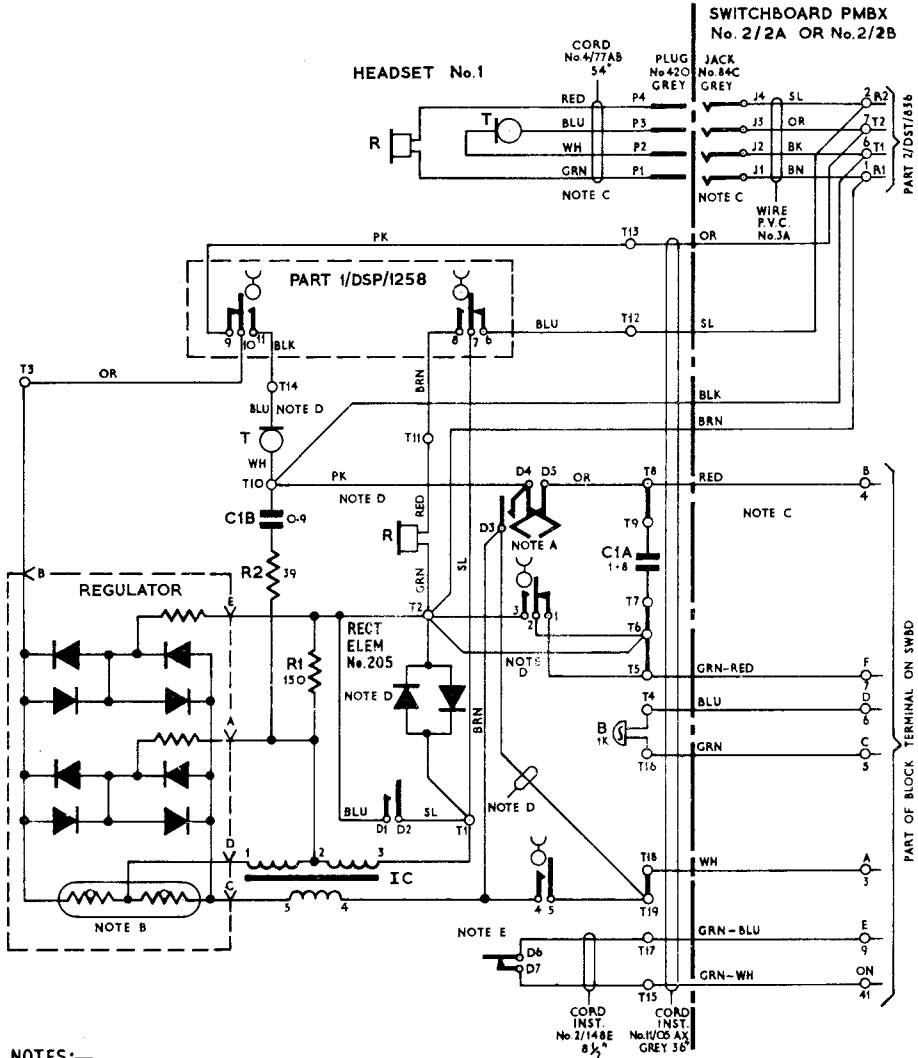
FIG.6. OPERATOR'S TELEPHONE CIRCUIT WITHOUT HEADSET.



## NOTES:—

- A. CB Tele. has no dial. The pink and orange conductors are joined.
- B. When reversed in Jack the Regulator connects 'B', 'C' and 'D' together and is rendered inoperative.
- C. Remove Straps T5-T4, T17-T18 & T16-T17.
- D. Provide Rectifier Element No.205 between Terminals T1 & T2.
- E. When U.A.A. No.96 or 96A is fitted provide Part 1/DSP/1252 and connect as shown.
- F. When Inter-P.B.X. Dialling circuit is fitted change Dial to Dial Auto No.25 FA Clear and provide Cord Inst. No.2/148E 8½" between D6-T11 and D7-T15.

FIG.7. OPERATORS TELEPHONE CIRCUIT—WITH HEADSET No.1.



NOTES:—

- A. CB Tele. has no Dial. The pink and orange conductors are joined together.
- B. When reversed in Jack the Regulator connects B, C & D together and is rendered inoperative.
- C. Switchboard:—  
For mounting and wiring arrangements see Works Spec. S(W)2064.
- D. Transfer Red Conductor of Rec. from T1 to T11.  
Transfer Blue Conductor of Trans. from T3 to T14.  
Provide Strap T2-6.  
Remove Straps T4-5, T16-17 and T17-18.  
Connect Terminals D3 and T19 using Cord Inst. No. 1/42E Brn. 10½  
Provide and fit Rect. Element No. 205 across T1 & T2.
- E. When Inter-PBX Dialling Circuit is fitted change Dial to Dial-Auto No. 25FA Clear and provide Cord Inst. No. 2/148E 8½' between D6-T17 and D7-T15.

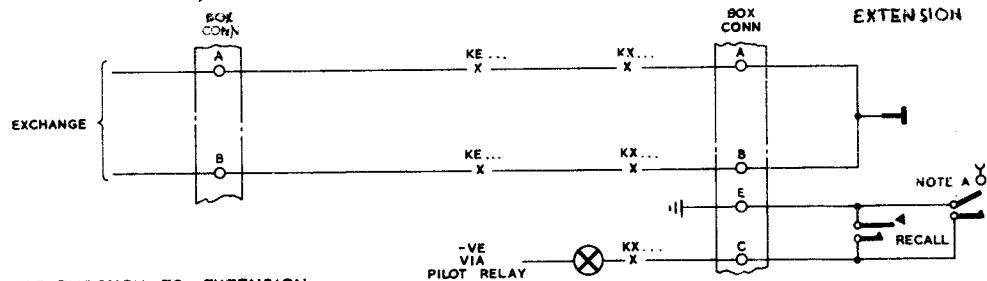


FIG. 8. EXCHANGE THROUGH TO EXTENSION

NOTES

- A SPRINGSET AUXILIARY GRAVITY SWITCH SHOWN WITH HANDSET OFF.
- B RELAY D IS DIFFERENTIALLY CONNECTED
- C CONTACTS OF RELAYS LL, LS & S ARE SHOWN IN OPERATED CONDITION

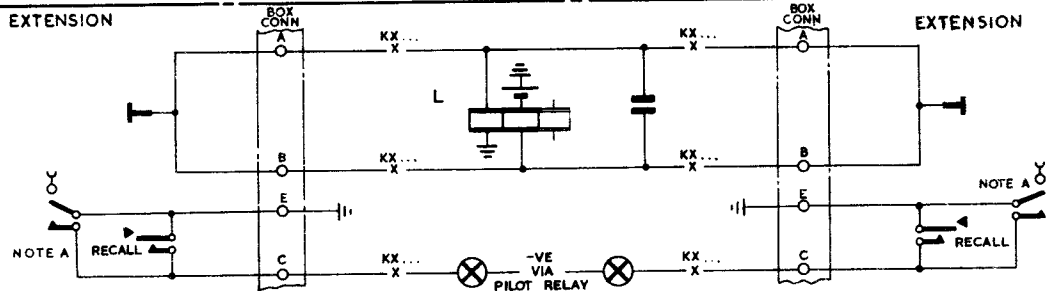


FIG. 9. EXTENSION THROUGH TO EXTENSION

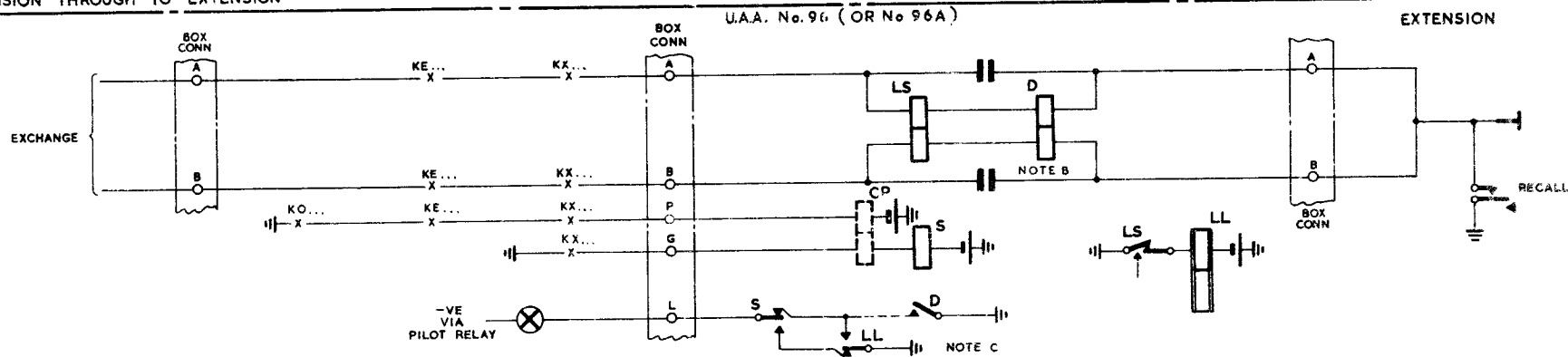


FIG. 10. EXCHANGE THROUGH TO EXTENSION WITH U.A.A.

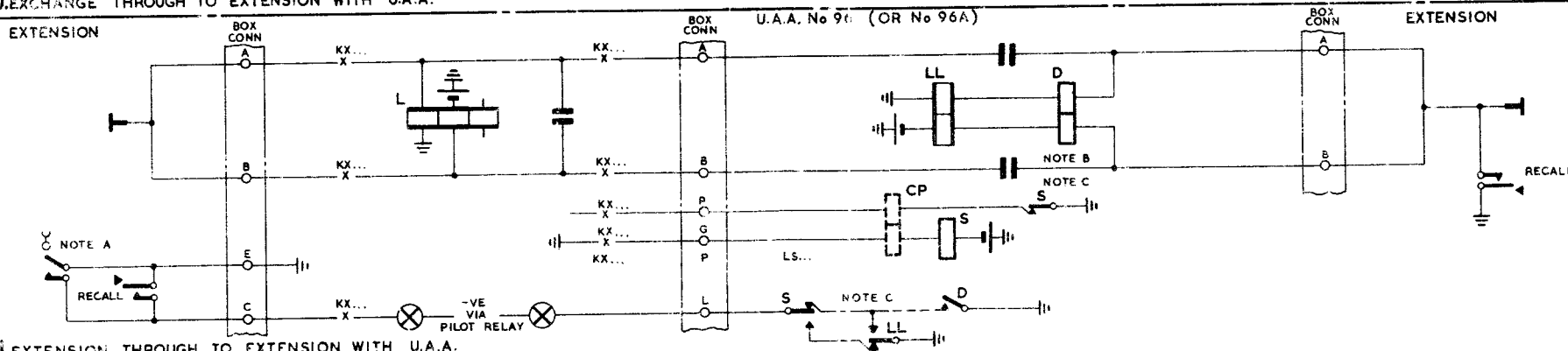


FIG. 11. EXTENSION THROUGH TO EXTENSION WITH U.A.A.

TABLE 3  
TERMINATION OF 41 WIRE CABLE  
IN BOX, CONNEXION No.5A (NOTE A)

WIRE	COLOUR	TERMINAL
1	W	A1
2	B	A2
3	W	A3
4	O	A4
5	W	A7
6	G	A8
7	W	A10
8	BN	A11
9	W	A13
10	S	A14
11	W	A16
12	B-W	A17
13	W	A21
14	B-O	A22
15	W	A25
16	B-G	A27
17	W	A9
18	B-BN	A12
19	W	A15
20	B-S	A16
21	W	A19
22	O-W	A20
23	W	A23
24	O-C	A24
25	W	A25
26	O-BN	A28
27	W	A29
28	O-S	A30
29	W	D24
30	G-W	D25
31	W	D25
32	G-BN	D27
33	W	A5
34	G-S	A6
35	W	D28
36	BN-W	D29
37	W	D30
38	BN-S	D15
39	W	SPARE
40	S-W	
41	BK	

A. LOOSE TIES SHOULD BE USED AND NOT A CABLE FORM AS THE WIRES ARE NOT TERMINATED IN A COLOUR CODE SEQUENCE THROUGHOUT

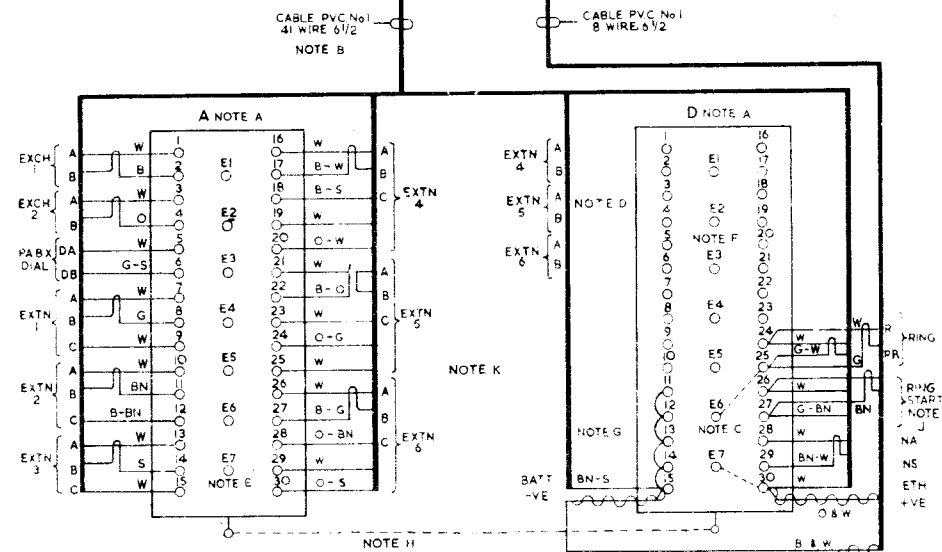
TABLE 4  
TERMINATION OF CORD AND/OR CABLE  
ON SWITCHBOARD CONNECTORS.

CONNECTOR POINT	SWBD TERMINAL NUMBER	CABLE AND/OR CORD COLOUR (NOTE A)	USED FOR
1	58	W	A EXCH
2	59	B	B LINE 1
3	60	W	A EXCH
4	61	O	B LINE 2
5	62	W	A EXTN. 1
6	63	G	B
7	65	W	A EXTN. 2
8	66	BN	B
9	68	W	A EXTN. 3
10	69	S	B
11	18	W	A EXTN. 4
12	19	B-W	B
13	24	W	A EXTN. 5
14	25	B-O	B
15	30	W	A EXTN. 6
16	31	B-G	B
17	64	W	C EXTN. 1
18	67	B-BN	C EXTN. 2
19	70	W	C EXTN. 3
20	20	B-S	C EXTN. 4
21	23	W	CONTROL EXTN. 4 NOTE B
22	31	O-W	C EXTN. 5
23	26	W	C EXTN. 5
24	29	O-G	CONTROL EXTN. 5 NOTE B
25	47	W	C EXTN. 6
26	32	O-BN	C EXTN. 6
27	35	W	CONTROL EXTN. 6 NOTE B
28	53	O-S	C EXTN. 6
29	14	W	RINGING
30	15	G-W	RINGING
31	16	W	START
32	17	G-BN	START
33	56	W	DA PA B X
34	57	G-S	DB DIAL
35	1	W	N.A
36	2	BN-W	N.S.
37	54	W	EARTH
38	55	BN-S	BATTERY
39	W		NOTE C
40	S-W		

NOTES-

- A. CORD PAIRS ARE SLEEVED TO ASSIST IDENTIFICATION.
- B. THESE CONDUCTORS ARE PROVIDED FOR USE WITH U.A.A. AND ARE CONNECTED TO SPARE TERMINALS AS SHOWN.
- C. CONDUCTORS NOT PROVIDED IN CORD AND NOT USED IN CABLES.

FIG.12. CABLING BOX CONNEXION No.5A



NOTES

- A. TO ASSIST INSTALLATION THE TERMINAL BLOCKS IN BOX CONN No.5A HAVE BEEN DESIGNATED 'A' AND 'D'
- B. TERMINATED ON THE SOLDERED CONNECTIONS OF THE BOX CONN No.5A
- C. STRAP TERMINAL D30 - E7 AND D25 - E6
- D. TERMINALS ON BLOCK 'D' 1-6 TO BE USED FOR CONNEXION OF INCOMING LINES WHEN U.A.A.'S ARE FITTED
- E. EXTN SIGNALLING EARTHS ON BLOCK 'A' ALLOCATED AS FOLLOWS - EXTN 1-E4, EXTN 2-E5, EXTN 3-E7, EXTN 4-E1, EXTN 5-E3, EXTN 6-E6
- F. ON ALL SPARE EXTN. CTS. THE 'C' TERMINAL SHOULD BE CONNECTED TO THE EARTH TERMINALS AS SHOWN IN NOTE E
- G. TERMINALS D11-14 AND ETH. TERMINALS D-E1-4 USED FOR THE CONNEXION OF BATT & ETH. TO U.A.A.
- H. BEFORE MOUNTING, STRAPS TO BE PROVIDED AT THE REAR BETWEEN THE ETH TAGS OF BLOCKS 'A' & 'D' IF NOT ALREADY PROVIDED.
- J. ONLY USED WHEN CONVERTOR RINGING No.10 A IS FITTED.
- K. EXTN. C WIRES USE SPLIT PAIRS