

222
MULTIPLE-ACCESS TELEPHONE EQUIPMENT (MATE)

62-TYPE

Description

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1 SCOPE This Instruction describes the multiple-access telephone equipment (MATE) used for the termination of speaker circuits and exchange lines in telephone exchanges and repeater stations, and supersedes the earlier version described in A3 A5011.

Details covering the installation of MATE are given in Specification RE 95118.

2 BRIEF DETAILS AND FACILITIES The main part of the equipment will normally be centrally mounted and is housed in a 62-type rack of 2,743 mm height to suit repeater station installation. A rack-top extension is available to raise the height to 3,200 mm when the rack is mounted in Strowger telephone exchanges. The incoming lines may be accessed using shelf-mounted key-and-lamp units on the rack, besides which, a number of further key-and-lamp units may be distributed around the building - see para 3.2 (Shelf 48) and para 5. The equipment will allow for the termination of up to 40 exchange lines, PWs and speaker circuits with a range of signalling facilities. A loudspeaker system can, if required, form part of the equipment for paging purposes and audible incoming call ringing indication by means of tones. Thus an incoming call can be answered at the nearest key-and-lamp-unit and if necessary the required party can be called over the loudspeaker system via the adjacent microphone.

A standard MATE rack (an Equipment, Telephone No. 1000A) is being stocked in Supplies Division partly wired and equipped with certain shelves and some basic items to aid installation. Further cards and units must be ordered separately to suit local requirements and to allow for growth.

To avoid superfluous provision a MATE should not be installed where only a loudspeaker system is required.

3 DETAILS OF A TYPICAL INSTALLATION

3.1 The requirements in terms of quantity and types of equipment will of course vary from installation to installation depending on eg:-

(a) The physical size of the building. This will influence the number of loudspeaker amplifiers and associated power units required.

(b) The number of speaker circuits and exchange lines terminated; each line requires a signalling unit, 8 of which can be accommodated on a shelf. A shelf-mounted key-and-lamp-unit gives access to up to 10 lines. Above this number further unit(s) will be required.

(c) The number of remote key-and-lamp-units distributed about the building. Above 400 lamps an additional Power-unit No. 1014A will be required (see 'Shelf 48').

3.2 Figure 1 shows in a simplified form, interconnexions of a typical MATE installation.

Figure 2 shows the rack layout of a typical installation for a station catering for 10 incoming lines. The Equipment, Telephone, No. 1000A as supplied comprises a rack together with the shelves shown, unequipped except for the items, dummy cards and covers indicated thus Ø which are provided. Other items should be ordered separately as required. At installation all unequipped positions should be fitted with dummy cards. Those indicated in figure 2 thus eg (1) are identified in Table 1.

TABLE 1

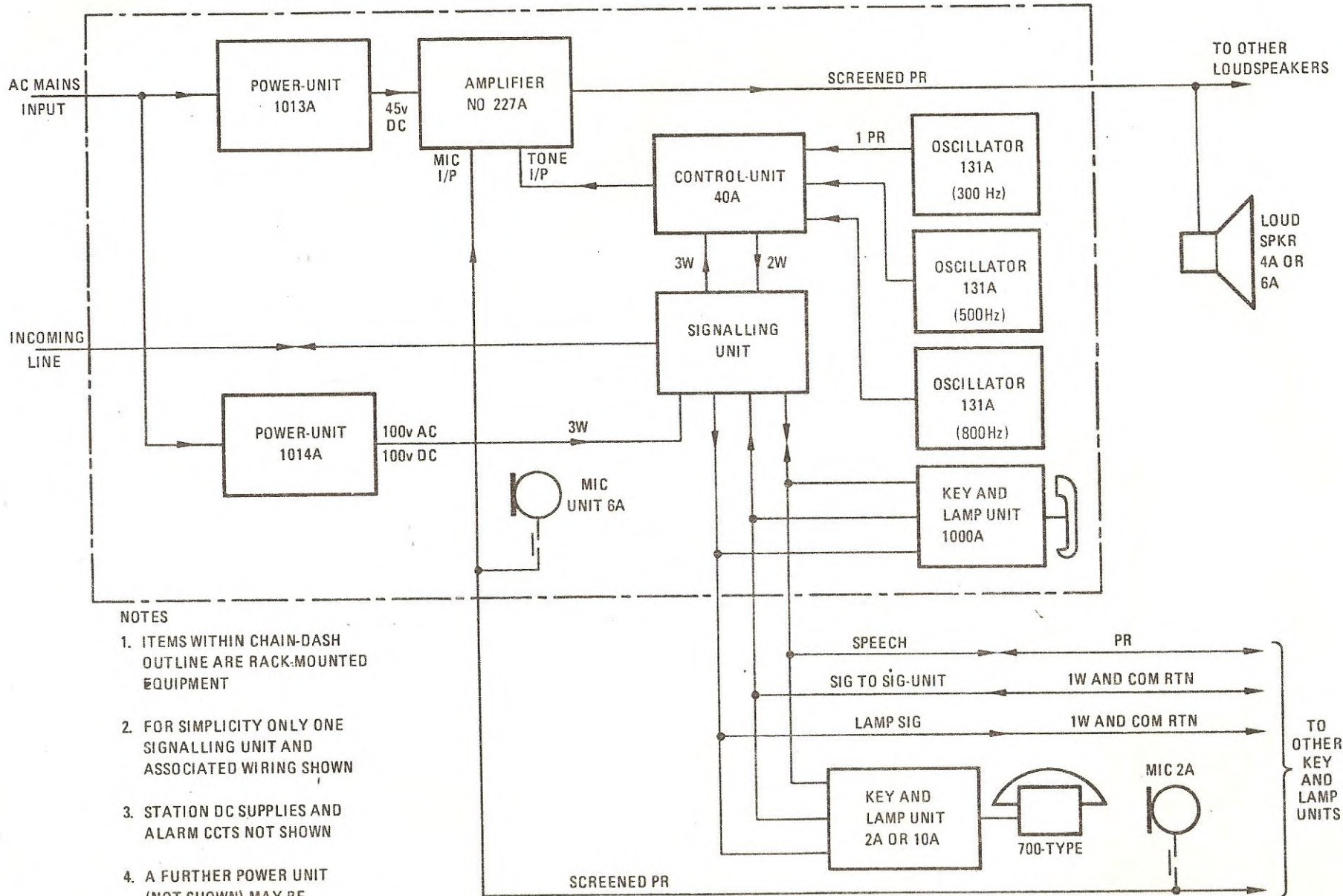
ITEM	EQUIPMENT, 62-TYPE PARTS,
1	Cover 2/D67412
2	Cover 3/D67412
3	Card, Dummy, 10/D67411
4	Card, Dummy, 12/D67411
5	Card, Dummy, 22/D67411
6	Card, Dummy, 24/D67411
7	Cover D67394

Where loudspeaker facilities are not required the units shown fitted in Shelf positions 45 and 42 are replaced with 1 Card, Dummy, 12/D67411 and 4 Card, Dummy, 24/D67411. Also, the 3 Oscillators No. 131A (Shelf 30) are each replaced with Card, Dummy, 8/D67411 and the associated Control-unit No. 40A is replaced with a Card, Dummy, 12/D67411, as is the Microphone-unit No. 6A (Shelf 27).

The Power-unit No. 1013A (for the loudspeaker amplifiers) and the Power-unit No. 1014A (the lamp flashing units) are ac mains operated. Other equipment on the rack is powered from the repeater station or exchange battery. The dc supply is taken via a Panel, Fuse, No. 8G in the normal way, which will require ordering separately.

Shelf 51:- An auxiliary shelf (Equipment, Power, No. 1004B) fitted with Power-units No. 104B in 50V stations only, to supply Oscillators No. 131A and Control-unit No. 40A (see 'Shelf 30').

Figure 1 follows



NOTES

1. ITEMS WITHIN CHAIN-DASH OUTLINE ARE RACK-MOUNTED EQUIPMENT
2. FOR SIMPLICITY ONLY ONE SIGNALLING UNIT AND ASSOCIATED WIRING SHOWN
3. STATION DC SUPPLIES AND ALARM CCTS NOT SHOWN
4. A FURTHER POWER UNIT (NOT SHOWN) MAY BE REQUIRED IN 50v INSTALLATIONS

FIGURE 1
TYPICAL MATE INSTALLATION
(SIMPLIFIED)

R77027

PANEL, FUSE, No. 8G											
51	(1) ϕ	(3) ϕ or PU 104B	(3) ϕ or PU 104B	(3) ϕ	(3) ϕ	(3) ϕ	FUSE UNIT 1A ϕ	FUSE UNIT 1A ϕ	ALM UNIT 33..	(1) ϕ	Eqmt, Power, No. 1004B
48	POWER UNIT No. 1014A		(5) ϕ		POWER UNIT No. 1014A		FUSE UNIT 1A ϕ	ALM UNIT 47A	ALM UNIT 48A		Eqmt, Power, No. 1012A or (3)
45	POWER UNIT No. 1013A		(6) ϕ		POWER UNIT No. 1013A		(2) ϕ		ALARM UNIT 46A		Eqmt, Power, No. 1013A
42	AMPLIFIER No. 227A		- (6) ϕ		AMPLIFIER No. 227A		(4) ϕ		(4) ϕ		Eqmt, Ampl, No. 1011A
39	(7) ϕ										
36	(7) ϕ										
33	(7) ϕ										
30	OSC 131A	OSC 131A	OSC 131A	CONT UNIT 40A	ALARM UNIT 49A	(2) ϕ		COVER 2/DCO/775 ϕ			Eqmt, Misc, No. 1002A
27	TELEPHONE UNIT D79652		TELEPHONE UNIT DT1101		MIC UNIT 6A		KEY & LAMP UNIT No. 1000A				Eqmt, Spker, No. 1004A
24	COVER 1/DCO/775 ϕ (INTERCONNEXION AREA)					COVER 2/DCO/775 ϕ					Eqmt, Misc, No. 1003A
21	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT		Eqmt, Sig, No. 1004A
18	SIG. UNIT	SIG. UNIT	(4)	(4)	(4)	(4)	(4)	(4)	(4)		Eqmt, Sig, No. 1004A
15	(7) ϕ										Note 1 - Not to scale
12	(7) ϕ										Note 2 - ϕ indicates items provided with Equipment, Telephone No. 1000A
9	(7) ϕ										Note 3 - Covers and dummy cards are indicated thus eg (1) and are identified in Table 1.
6	(7) ϕ										
3	(7) ϕ										
	FOOTPLATE										

FIG 2 TYPICAL MATE INSTALLATION FOR STATION CATERING FOR TEN INCOMING LINES

An Alarm-unit 33B may be fitted in stations where monitoring of 17 Hz supply is required. Otherwise an Alarm-unit 33A should be fitted.

Shelf 48:- The Equipment, Power, No. 1012A provides the continuous and flashing power to the switchboard lamps. The key-and-lamp-units distributed around the building (see para 5) and the units on the main rack are arranged to accommodate neon lamps instead of the usual filament lamps. A Power-unit No. 1014A provides a supply of 90 volts dc (nominal) for powering up to a maximum of 400 lamps. The second power unit acts as a spare. For powering from 401 up to a maximum of 800 lamps a third power unit is required. The Alarm-unit No. 47A monitors the outputs of 2 or 3 Power-units No. 1014A; it also provides fuse failure alarms.

The ac supply to the rack will preferably be a protected or short-break type. The Alarm-unit No. 48A is only fitted where the rack is operated from a long-break ac supply, which it monitors, and operation of a key on the front panel of the Alarm-unit No. 49A (see 'Shelf 30') cancels alarms caused by failure of the mains supply.

Shelf 45:- The Equipment, Power, No. 1013A mounts Power-units No. 1013A which provide power for the loudspeaker amplifiers (see Shelf 42). The Alarm-unit No. 46A monitors up to 3 power units.

Shelf 42:- Equipment, Amplifying, No. 1011A mounts Amplifiers No. 227A which serve as loudspeaker amplifiers.

Space exists on the shelf for Amplifying-units No. 3B/A if required (see para 4).

Shelf 30:- The Equipment, Misc, No. 1002A houses the audible tone equipment (Oscillators 131A/300 Hz, 131A/500 Hz and 131A/800 Hz) and a Control-unit No. 40A, which switches the tones applied to the inputs to a common output, either singly or in combination, for broadcasting over the loudspeaker system, to facilitate identification of the calling line (or called duty). Space is available on the shelf for a further key-and-lamp-unit if required.

Where a loudspeaker system is not provided line calling is audibly indicated by a buzzer on the Alarm-unit No. 49A, which may be supplemented by an extension to a local bell or in-station alarm.

The Alarm-unit No. 49A has 3 functions:-

(a) it incorporates a buzzer which operates in addition to the tone alarm when 'line calling' condition exists

(b) it has a 'station staffed'/'unstaffed' key which locks or unlocks the 'line calling' alarm. Also it extends an appropriate condition to a lamp over the station door.

(c) it has a 'mains alarm cut-off' non-locking key for cancelling the station alarm condition from the Alarm-unit No. 48A upon ac mains failure.

Shelf 27:- On the Equipment, Speaker, No. 1004A shelf the two Telephone-units D 79652 and DT 1101 constitute the handset and dial unit respectively of the telephone. The Microphone-unit No. 6A gives paging access to the loud-speaker network and the Key-and-lamp-unit No. 1000A give access to 10 lines. To fit the key-and-lamp-unit to the shelf, Brackets 1 and 2/DBR/728 are already

provided (the brackets are also provided on Shelves 30 and 24 for the same purpose).

Shelf 24:- The Equipment, Misc, No. 1003A provides space for an inter-connexion field for terminating rack wiring and distribution cables. Mounting space for an additional key-and-lamp-unit if required, is available.

Shelves 21 and 18:- An Equipment, Signalling, No. 1004A can accommodate up to 8 signalling units, the types being fitted as required.

(a) Signalling-unit No. 39A This unit detects incoming calls from an exchange line. A detected call initiates audible and visible alarms which are cancelled when the call is answered. Indication of a busy line is given.

(b) Signalling-unit No. 40A This unit, designed for private circuits, covers most circuit terminations which are other than exchange lines. It can work with either balanced battery or 17 Hz signalling in either or both directions and also with CB signalling. It gives a calling alarm and circuit busy indication.

(c) Signalling-unit No. 41A This unit is designed to terminate an extension of a 4-wire speaker circuit, eg it would be appropriate where CEL 4000 speakers are extended to the MATE.

(d) Signalling-unit No. 42A This unit provides local speaker circuits, eg it would suit inter-floor tie lines.

Shelves 15, 12 and 9. Available for further Equipment, Signalling, No. 1004A when up to 24, 32 or 40 units respectively are required to be accommodated.

3.3 Figure 3 shows the layout of a typical MATE installation for a station catering for 40 incoming lines and providing loudspeaker facilities. 1 each of Brackets 1 and 2/DBR/728 and 4 screws M4x8 Rec Pan Hd, MS NP will be required to fit the key-and-lamp-unit to Shelf 33.

4 LOUDSPEAKER NETWORK

4.1 One Amplifier No. 227A with its Power-unit No. 1013A provide a maximum audio output of 20 watts which should be adequate for a 2 or 3 floor repeater station. A second amplifier and power unit act as spares (see Figure 2).

4.2 For a demand in excess of 20 watts, further amplifiers will be required. An additional but separate 20-watt distribution can be achieved by fitting another Amplifier 227A and Power-unit No. 1013A in the spaces provided. This might be satisfactory for two work areas sharing the same MATE rack which nevertheless require separate loudspeaker networks, eg exchange and repeater station in same building. If a common 40 watts distribution is required then a branching amplifier (a modified Amplifying-unit 3B/A) would be needed to feed two Amplifiers 227A together and spaces for these exist at the end of Equipment, Amplifying, No. 1011A shelf. For a demand in excess of 40 watts clearly a second Equipment, Power, 1013A and Equipment, Amplifying, No. 1011A must be installed and the process repeated.

4.3 Loudspeaker No. 4A This is a standard loudspeaker which can be hung from the ceiling or from the end of a rack. Its maximum output power is 3 watts.

4.4 Loudspeaker No. 6A This is a standard loudspeaker which may be shelf or wall-mounted. Its maximum output power is 2 watts.

5 **DISTRIBUTED KEY-AND-LAMP-UNITS** These are standard key-and-lamp-units No. 2A (for 10 lines) and No. 10A (for 20 lines) but requiring modification to Specification RE 95127 so that they can accommodate neon lamps (Lamps No. 36A) instead of filament lamps (Lamp No. 2). See para 3.2 (Shelf 48) regarding the loading of Power-unit No. 1014A.

These units, together with their associated 700-type Telephones and Microphone, Hand, No. 2A for the loudspeaker system, would normally be strategically placed around the building eg on desks or wall-mounted on shelves - see drawing RPA 7708 and specification RE 95118.

Figure 3 follows

PANEL, FUSE, No. 8G										
51	PU 104B	PU 104B				FUSE UNIT 1A	FUSE UNIT 1A	ALARM UNIT 33...	Eqmt, Power, No. 1004B	
48	POWER UNIT No. 1014A		POWER UNIT No. 1014A		POWER UNIT No. 1014A		FUSE UNIT 1A	ALM UNIT 47A	ALM UNIT 48A	Eqmt, Power, No. 1012A
45	POWER UNIT No. 1013A		POWER UNIT No. 1013A		POWER UNIT No. 1013A			ALARM UNIT 46A		Eqmt, Power, No. 1013A
42	AMPLIFIER No. 227A		AMPLIFIER No. 227A		AMPLIFIER No. 227A		AMPL UNIT 3B/A	AMPL UNIT 3B/A		Eqmt, Ampl, No. 1011A
39	POWER UNIT No. 1013A		POWER UNIT No. 1013A		POWER UNIT No. 1013A			ALARM UNIT 46A		Eqmt, Power, No. 1013A
36	AMPLIFIER No. 227A		AMPLIFIER No. 227A		AMPLIFIER No. 227A		AMPL UNIT 3B/A	AMPL UNIT 3B/A		Eqmt, Ampl, No. 1011A
33							KEY & LAMP UNIT No. 1000A			Eqmt, 62-type parts, Shelf, D67382
30	OSC 131A	OSC 131A	OSC 131A	CONT UNIT 40A	ALARM UNIT 49A	KEY & LAMP UNIT No. 1000A			Eqmt, Misc, No. 1002A	
27	TELEPHONE UNIT D79652		TELEPHONE UNIT DT1101		MIC UNIT 6A	KEY & LAMP UNIT No. 1000A			Eqmt, Spker, No. 1004A	
24	INTERCONNECTION AREA					KEY & LAMP UNIT No. 1000A			Eqmt, Misc, No. 1003A	
21	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	Eqmt, Sig, No. 1004A	
18	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	Eqmt, Sig, No. 1004A	
15	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	Eqmt, Sig, No. 1004A	
12	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	Eqmt, Sig, No. 1004A	
9	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	Eqmt, Sig, No. 1004A	
6	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	SIG. UNIT	Eqmt, Sig, No. 1004A	
3									Note 1 - Not to scale Note 2 - Covers are fitted in unoccupied positions. For identification see Figure 2.	
	FOOTPLATE									

FIG 3 TYPICAL MATE INSTALLATION FOR STATION CATERING FOR FORTY INCOMING LINES

6 DOCUMENTATION

ITEM	DRAWING	DIAGRAM	SPEC'N
Eqmt, Amplifying, No. 1011A	79968	RP/RPW 7453	RC 6323
Eqmt, Miscellaneous, No. 1002A	79973	RP/RPW 7455	RC 6325
Eqmt, Miscellaneous, No. 1003A			
- Assy	80030	RP/RPW 7500	RC 6330
- Details	80040		
Eqmt, Power, No. 1004B	79521	RPW 7184	RC 5498
Eqmt, Power, No. 1012A	79959	RP/RPW 7449	RC 6316
Eqmt, Power, No. 1013A	79964	RP/RPW 7451	RC 6320
Eqmt, Signalling, No. 1004A	79980	RP/RPW 7460	RC 6331
Eqmt, Speaker, No. 1004A	79976	RP/RPW 7457	RC 6328
Eqmt, Telephone, No. 1000A	80029	RP/RPW 7499	RC 6315
Eqmt, 62-type parts, Rack Extension 1/D79753	79753		
	79756		
	RPA 5741		
	Sht 10		
Alarm-unit No. 33A	79515	RP/RPW 7173	RC 5503
Alarm-unit No. 33B	79495	RP/RPW 7173	RC 5503
	79515		
	79516		
Alarm-unit No. 46A - Assy	79989	RP/RPW 7465	
- PWB Assy	79990		
	R61131		
Alarm-unit No. 47A - Assy	79991	RP/RPW 7466	RC 6318
- PWB Assy	79992		
	R61132		
Alarm-unit No. 48A - Assy	79993	RP/RPW 7467	RC 6319
- PWB Assy	79994		
	R61133		
Alarm-unit No. 49A - Assy	79995	RP/RPW 7468	RC 6327
- PWB Assy	79996		
	R61134		
Amplifier No. 227A - Assy	79969	RP/RPW 7454	RC 6324
- Details	79970		
- PWB Assy	79971		
	R61125		
Amplifying-unit No. 3B/A	79824	RP/RPW 7376	RC 6268
Control-unit No. 40A - Assy	79974	RP/RPW 7456	RC 6326
- PWB Assy	79975		
	R61126		
Fuse-unit No. 1A			RC 5071
Key-and-lamp-unit No. 2A (modified to ...)	91612		S 754
Key-and-lamp-unit No. 10A (modified to ...)	93041	RP/RPW 7589	RE 95127
		SA/SAW 9154	
		RP/RPW 7589	RE 95127
Key-and-lamp-unit shelving	RPA 7708		

6 DOCUMENTATION (Cont'd)

ITEM	DRAWING	DIAGRAM	SPEC'N
Key-and-lamp-unit No. 1000A - Assy - Details	79977 79978	RP/RPW 7458	RC 6329
Loudspeaker No. 4A (Mk 2) Loudspeaker No. 6A	CD 4537 79110	RP/RPW 6985	RC 5761 RC 5555
Microphone, Hand, No. 2A Microphone-unit No. 6A	90636 79979	RP/RPW 7459	RC 5850 RC 6328
Oscillator No. 131A/300 Hz " " /500 Hz " " /800 Hz	78531/1 " "	RP 6536/1 " "	RC 5463 " "
Panel, Fuse, No. 8G	67843/2	RP/RPW 6492	
Power-unit No. 104B Power-unit No. 1013A - Assy - Details Power-unit No. 1014A - Assy - Details - PWB Assy	80373 79965 79966 79960 79961 79962 R61124	RP/RPW 7666 RP/RPW 7452 RP/RPW 7450	RC 5574 RC 6321 RC 6317
Signalling-unit No. 39A - Assy - PWB Assy	79981 79982 R61127	RP/RPW 7461	RC 6332
Signalling-unit No. 40A - Assy - PWB Assy	79983 79984 R61128	RP/RPW 7462	RC 6333
Signalling-unit No. 41A - Assy - PWB Assy	79985 79986 R61129	RP/RPW 7463	RC 6334
Signalling-unit No. 42A - Assy - PWB Assy	79987 79988 R61130	RP/RPW 7464	RC 6335
Telephone-unit D 79652 " " DT 1101	79652 78811	DT/DTW 1101	

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