

## SECTION 16

### MAINS UNITS

The MUE/1 is described in Section 10, the MU/3 and MU/7 in Section 13 and the MU/51 in Section 21.

#### Mains Unit MU/1

This mains unit is used in conjunction with TD/7 desks to supply the PFL/4 amplifier. It has a valve rectifier. (See Fig. 33.)

#### Mains Unit MU/3

This mains unit is used with the OBA/8 equipment and is described in Section 13.

#### Mains Unit MU/5

This mains unit is used with TD/3702 desks. It has a metal rectifier. (See Fig. 33.)

#### Mains Unit MU/7

This mains unit forms part of the loudspeaker unit LSU/1. (See Section 13.)

#### Mains Unit MU/8

The Mains Unit MU/8 was originally designed for use in emergency control rooms. The unit comprises two separate supply units which are identical, each providing h.t. supply of 300 V 40 mA, or 250 V 25 mA (according to the connections made on the smoothing choke C9A), and l.t. supply of 4 V 4 A.

The unit is adequately screened, and may be placed in close proximity to a high-gain amplifier without causing excessive mains hum.

#### Circuit Description (Fig. 40)

The mains supply is fed to the transformer primary through a double-pole switch and a pair of 750-mA fuses mounted on the front panel. The transformer primary is tapped for supply voltages between 200 and 250 volts, in steps of 10 volts. A neon indicator is connected across the mains unit side of the mains switch.

The l.t. secondary winding is tapped for voltages of 4.25 or 4.6, the latter tapping being used where the filament consumption is heavy, or where the supply leads are sufficiently long to cause excessive voltage drop.

H.T. supply is obtained from a full-wave valve rectifier of the UU/4 type.

Control over the output voltage is effected by the tapped smoothing choke. For an output of 250

volts at 25 mA the two sections of the choke are connected in series, and for 300 volts at 40 mA the two sections are used in parallel.

The arrangement of the smoothing chokeappings to meet the required conditions is shown on the circuit diagram, Fig. 40.

The mains input connector takes the form of a five-pin plug and socket, and is located at the back of the unit. The output connectors from each half of the unit are also terminated on plugs and sockets.

The back of the unit is fitted with a dust cover which cannot be removed until the mains and output plugs have been disconnected.

Facilities are provided at the back of the unit for emergency battery supplies. These consist of two l.t. and two h.t. terminals to which the batteries can be connected, and a three-pole, double-throw switch for quick change-over from mains to battery supply, the arrangement being duplicated to cater for each half-section.

#### Mains Unit MU/8A. (Fig. 41)

This unit is similar to the Mains Unit MU/8 but has no provision for changing over to battery supply.

In some cases, where the unit is used to feed two amplifiers, the supply to each amplifier is taken from subsidiary plugs and sockets, so that either amplifier can be isolated from the mains unit.

#### Mains Unit MU/16

The Mains Unit MU/16 is designed to provide rectified h.t. and a.c. l.t. supplies for amplifiers having total feeds of 80 mA or less, and filament consumption of 6 A or less. The no-load h.t. voltage is 385.

This unit is not screened and may not therefore be installed close to an amplifier.

#### Circuit Description (Fig. 42)

The a.c. mains supply is fed to the transformer primary through a pair of 500-mA fuses and a single-pole switch. The transformer primary is tapped for mains supplies of 200-240 volts in steps of 20 volts. Alternative tappings giving either 4.3

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or 5 volts are provided on the l.t. secondary winding, the 5 volt tapping being used where a heavy l.t. load is required, or where the supply lead to the amplifier is sufficiently long to cause excessive voltage drop.

H.T. supply is obtained from a full-wave valve rectifier of the UU/4 type. The smoothing choke is tapped so that the two sections may be used in series for an h.t. load not exceeding 40 mA, or in parallel for loads between 40 and 80 mA. The connections for these adjustments are clearly shown on the circuit diagram, Fig. 42.

In cases where the total feed required is small, a suitable voltage-dropping resistor should be inserted in place of the strap connecting the positive terminals of the 16- $\mu$ F electrolytic smoothing capacitors.

#### Mains Unit MU/20

This mains unit is used in conjunction with the Type D recorder and supplies h.t. and l.t. to the LSM/7, two AMC/2A amplifiers and two LFA/1 amplifiers. The unit is constructed on a chassis and is not intended for rack-mounting. Full details of the circuit, etc., are given in Instruction R.1.

#### Mains Unit MU/21

This mains unit is used in conjunction with the Type D Recorder and supplies h.t. and g.b. for the DRA/4 amplifier. The unit is constructed on a chassis and is not intended for rack-mounting. Full details of the circuit, etc., are given in Instruction R.1.

#### Mains Unit MU/29

The mains unit MU/29 is designed to supply the following alternative d.c. outputs:

- (a) 30 volts at 50 mA with minimum ripple for wiping and biasing in Marconi-Stille recorders.

- (b) 24 volts at 250 mA for operation of 24-volt relays.  
 (c) 30 volts at 250 mA.  
 (d) 48 volts at 250 mA for operation of 48-volt relays.

Output (c) has been found useful for continuous charging of a 30-volt clock battery.

The unit is constructed on a 4½-inch panel and the fuses, on/off switch and indicator lamp are mounted on the front. The lamp is connected in series with a variable resistor which is accessible on removing the cover.

#### Circuit Description (Fig. 43)

The mains input is connected to the appropriate tapping points on the primary of the mains transformer by flexible leads, and a two-pole switch and a pair of 750-mA fuses are included in the circuit. The secondary of the mains transformer is also tapped and the appropriate voltage is applied to the full-wave copper-oxide bridge-type rectifier by flexible leads. To give good voltage regulation, the pulsating d.c. output of the rectifier is smoothed by a choke-input filter and this part of the circuit includes a 500-mA fuse for protection. The smoothing choke includes two identical windings which are connected in parallel to give outputs (b) (c) and (d), and in series (to give better smoothing) for output (a). The 24-volt indicator lamp is connected across the smoothed d.c. output and the variable series resistor is included to reduce the voltage applied to the lamp when the d.c. output of the unit exceeds 24 volts.

#### Test Data

The performance of the unit is illustrated in the following table, which applies when the lamp resistor is adjusted to give 24 volts across the lamp for all tests.

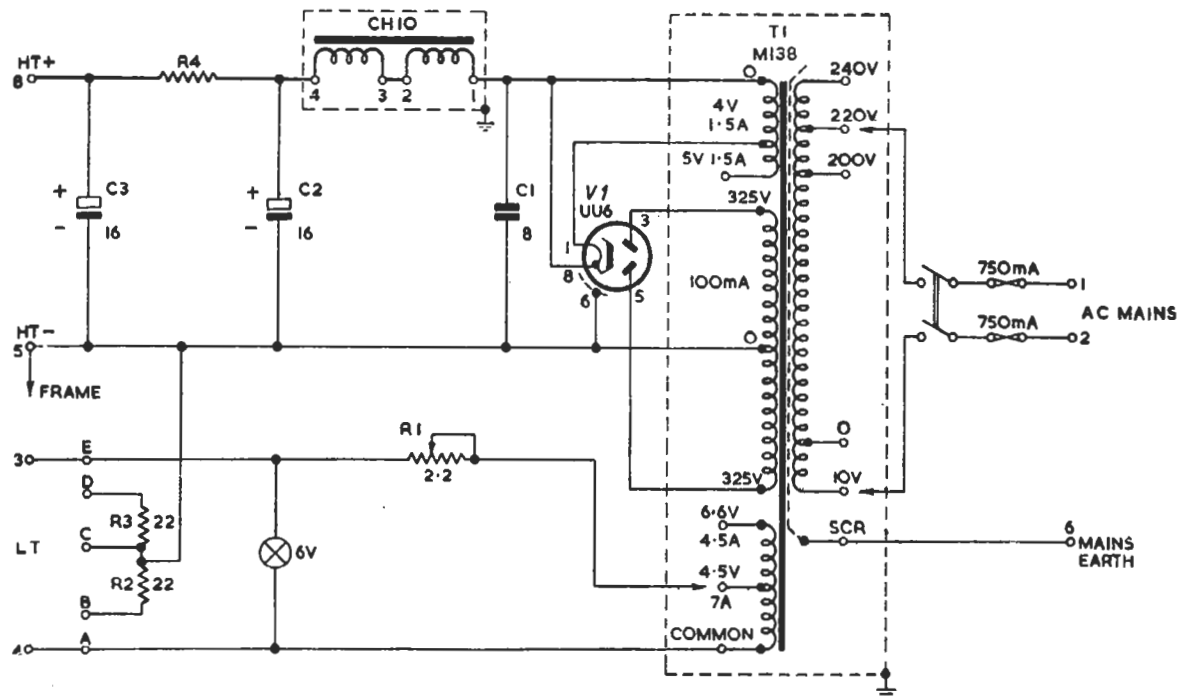
Test	NOMINAL			TEST VALUES					
	Volts	Maximum output mA	Ripple	Transformer output tap	Choke connections	Load, mA	Output volts		Ripple dB.
							Min.	Max.	
(a)	24	250	normal	36	parallel	0		29	- 6
(b)	30	50	low	36	parallel	250	23		
				36+5	series	0		32	-20
(c)	30	250	normal	36+5	series	50	29		
				36+5	parallel	0		33	- 6
(d)	48	250	normal	60	parallel	250	28		
				60	parallel	0		52	- 4
				60	parallel	250	45		

**Mains Unit, MU/31**

**General**

The MU/31 is a twin power-supply unit of panel construction designed for general use with post-war amplifiers. For each half of the unit the maximum h.t. output is 100 mA at 300 volts and maximum l.t. output 7 amps at 4.1 volts or 4.5 amps at 6.3 volts. The total output, however, should not exceed 50 watts for each half unit.

winding supplies 325 volts to the anodes of the full-wave rectifier V1 (type UU6) and the series arms of the  $\pi$ -section smoothing circuit contains a choke L1 and a resistor R4. The choke has two similar windings which are connected in series when an output current of 60 mA or less is required and in parallel for greater outputs. The value of the resistor R4 is adjusted on installation, dependent on the current required, to maintain the h.t. voltage at about 300 volts. Typical values and



- Notes 1. When LT centre tap required strap A to B & D to E  
2. When parallel operation of choke is required strap choke tags 1 to 3 & 2 to 4

Fig. 16.1 Mains Unit MU/31, Circuit Drawing

**Circuit Description**

The MU/31 contains two identical power packs the circuit of which is shown in the diagram. The a.c. mains input includes a two-pole on/off switch and two 750-mA fuses and the primary winding of the mains transformer is tapped for supplies between 200 and 250 volts. The h.t. secondary

dissipation ratings are given in the table overleaf.

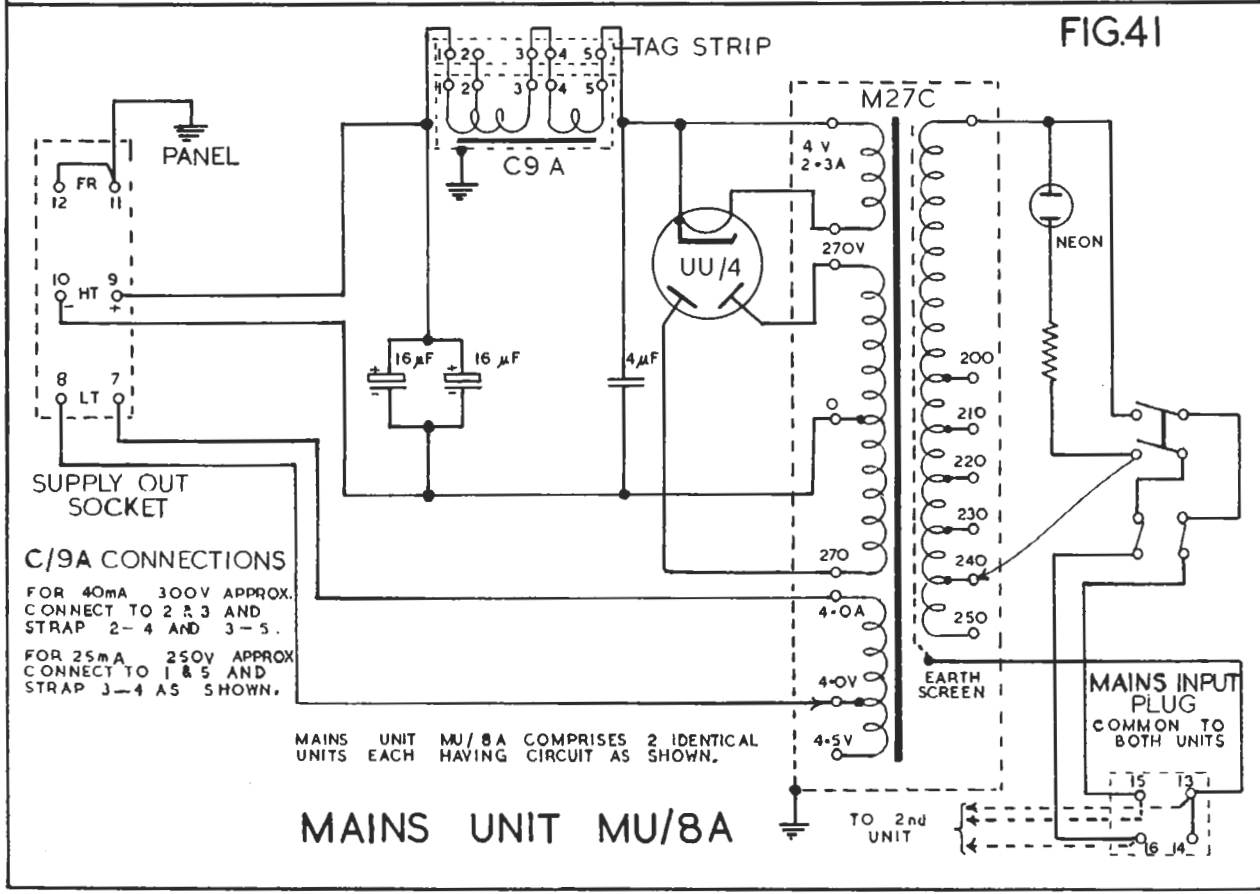
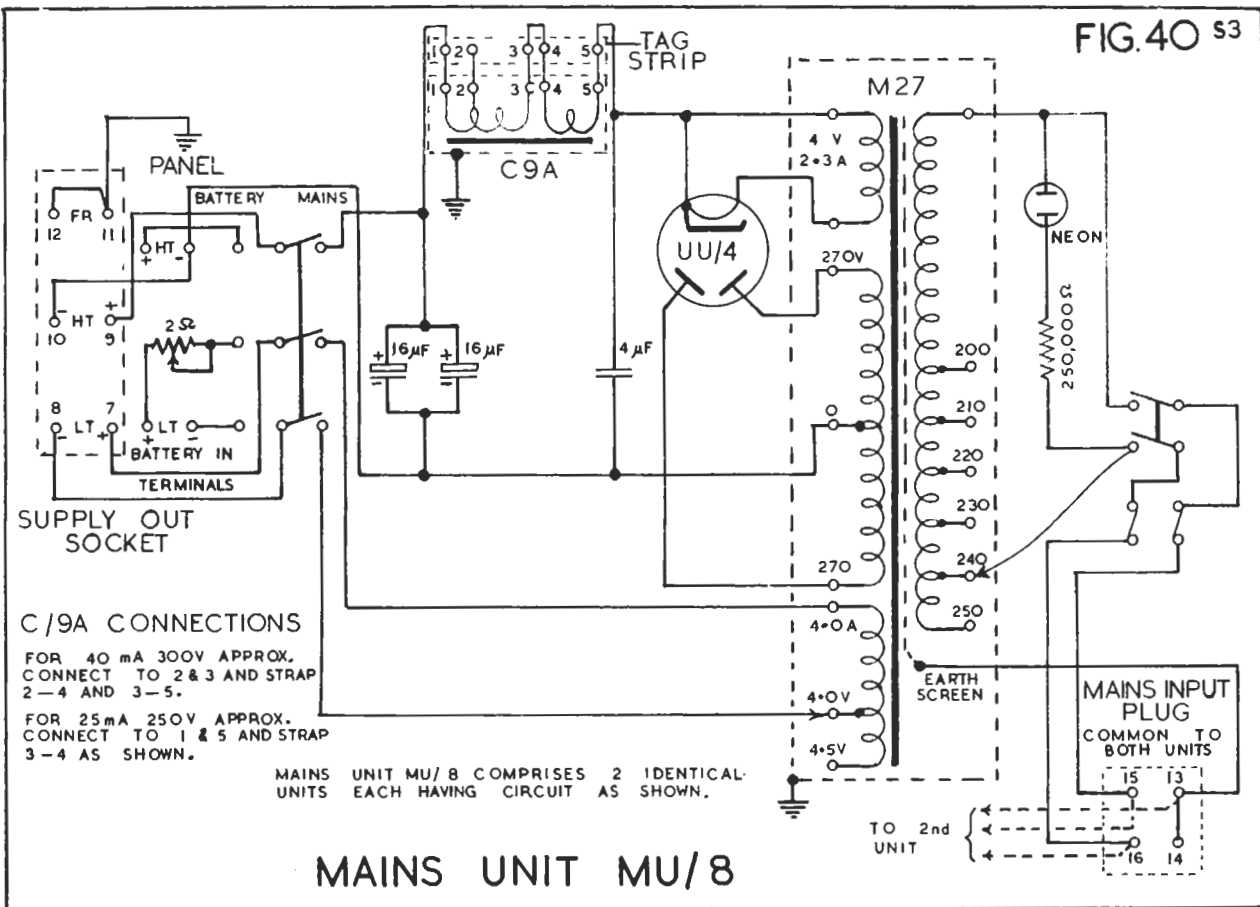
The l.t. secondary is tapped to give 6.6 or 4.5 volts and a variable series resistor R1 is adjusted to give the required 6.3 or 4.0 volts for heater supplies. The resistors R2 and R3 provide an earthed artificial centre tap of the l.t. supply by strapping A to B and D to E.

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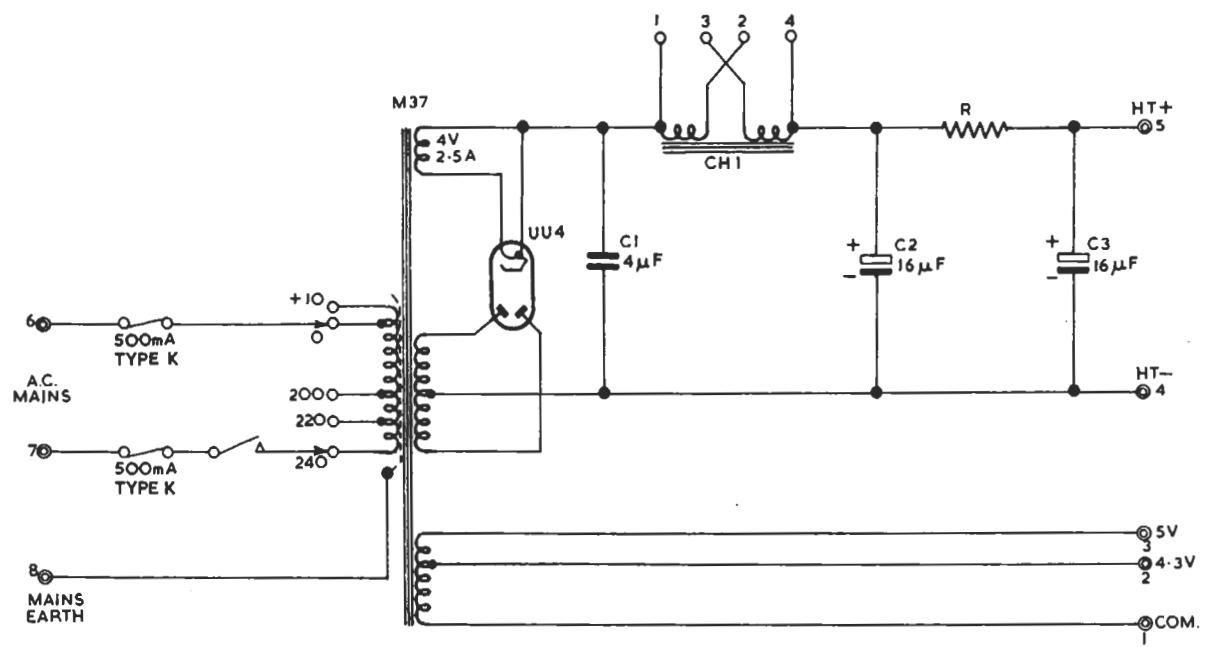
**Test Specification**

<i>Output Current (mA)</i>	<i>R4</i>		<i>Choke Connections</i>	<i>D.C Output, volts</i>		<i>Ripple dB below 0.775 volts</i>
	<i>Resistance</i>	<i>Watts</i>		<i>Min.</i>	<i>Max.</i>	
8	15k $\Omega$	2	Series	297	357	60
16	6.8k $\Omega$	2	„	293	359	58
24	3.9k $\Omega$	3	„	291	352	52
32	2.2k $\Omega$	3	„	298	353	50
40	1.5k $\Omega$	3	„	295	345	49
50	680 $\Omega$	2	„	306	330	43
60	390 $\Omega$	2	„	305	344	38
80	270 $\Omega$	2	Parallel	314	355	27
100	0	—	„	314	346	13

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ISS	CHANGE
2	FUSES WERE 750mA



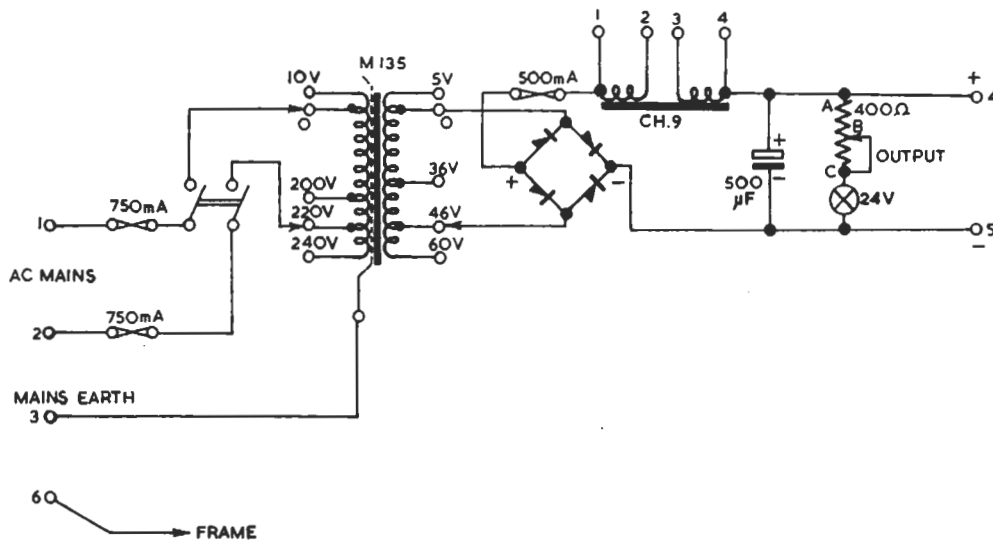
NOTE: -VOLTAGE DROPPING RES. 'R'  
TO BE INSERTED AS SHOWN  
WHEN NECESSARY

CHOKE SECTIONS	CHOKE CONNECTIONS	MAX. H.T. LOAD
SERIES	STRAP TAG 2 TO 3	40mA
PARALLEL	STRAP TAGS } 1 TO 3 2 TO 4	80mA

MAINS UNIT MU/16

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ISSUE	AMENDMENT
3	TAG 3 ADDED M135 SCREEN RE-CONNECTED TO TAG 3



CHOKE SECTIONS	CHOKE CONNECTIONS	MAX. H.T.LOAD
SERIES	STRAP TAG 2 TO 3	50mA
PARALLEL	STRAP   1 TO 3 TAGS   2 TO 4	250mA

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