Spare Parts Catalogue

GAUMONT-KALEE

30/60-WATT AMPLIFIER EQUIPMENT

Technical Data

Contents

GAUMONT-KALEE 21
EQUIPMENT

The amplifier system of the Gaumont-Kalee 21 is a completely new concept. Reliability, accessibility and simplicity have motivated the design. It has an undistorted speech output of 30 watts. A three-stage pre-amplifier accepts the cell output, and an imposing cabinet type rack houses the power amplifier, power supply unit, dividing network and exciter supply units. All these items, pre-amplifier, power amplifier, power supply unit, dividing network, exciter supply units, are assembled on flat panels of uniform width and these panels are mounted in the vertical plane. All components, valves, transformers, chokes, condensers, etc., are mounted on the front face of a panel with connecting terminals projecting through the panel. All the wiring is in one plane behind the panel. There are no shelves or box formations. Every component can be identified, inspected, removed if necessary without disturbing other components, and all the wiring can be traced as it is confined to one side only of the panel.

With a minimum number of different basic panel assemblies, a very large number of different complete amplifier channels can be made up. The simplest version is a single channel comprising pre-amplifier, power amplifier, power supply unit, dividing network and exciter supply units. These are accommodated in two units only, a wall mounting case, incorporating fader and changeover switch, for the pre-amplifier, and a cabinet rack containing all the other items. A more elaborate installation has a separate pre-amplifier for each soundhead, and power amplifier and power supply unit are duplicated.

There is complete provision for coping with mains periodicities and voltages other than the British standard of 230-volts, 50-cycles, without necessity of using conversion gear. The standard 50-cycle equipment will operate off 60-cycle supplies. For 25, 30 or 40 cycles, it is only necessary to change the power supply panel.

Remote control of the fader changeover switch is a normal provision which can be omitted if an exhibitor desired high quality equipment without frills at the lowest price.

The Duosonic speaker which accompanies Gaumont-Kalee 21 equipment is of a new type wherein back emanation from the bass bin has been eliminated. The bass unit is a permanent magnet type of the same sensitivity and performance as the earlier energised type. Three sizes of Duosonic speaker assembly are standardised, the type accompanying an installation being determined by the seating capacity of the cinema.

Each major unit of a complete installation has an allotted specification number ending in three noughts. The soundhead, for example, is to specification 83,000, and for convenience is known as the Soundhead type 83. Every component part of the soundhead is identified by a 5-figure number in the " 83 thousand " series. The main drive helical gear wheel is part 83,027, the objective lens is part 83,175, the hold back sprocket is part 83,006, its key washer part 83,007 and the retaining screw part 83,097. Every other large or small piece of the equipment has the same clear cut numerical identification.

Owing to the flexibility of design of Gaumont-Kalee 21 equipment, which permits basically the same type of equipment to be installed in small, medium, or large theatres, one range of spares will cover a large number of installations. In one town there may be a small cinema with a single-channel 21 equipment, and a large de luxe cinema with three machines, a duplicated amplifier channel,

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and extra equipment such as deaf aid and monitor amplifiers, but the essential constituent parts will be identical. The two widely different cinemas will use the same type of pre-amplifier, power amplifier, and power supply unit. Spare and replacement parts will be the same for the two theatres.

An amplifier with an output of less than 30 watts would serve for the smaller cinema, but most small cinemas require the same high standard of quality and dependability as their larger competitors. The difference in production costs between a 15 and 30-watt amplifier is not great. and any saving would be offset by having two production types. The combined Home and Export demand for high grade equipment is so large that by concentrating on a minimum number of types it is possible to tool up for large scale production, with consequent production economy. The small cinema benefits by being able to instal the same equipment, if in less elaborate form than the large cinema.

VOLTAGE AMPLIFIER TYPE 52

The type 52 voltage amplifier is assembled on a 20-in. x 9-in. panel. All valves and components are on the front face, with connecting terminals projecting through to the back, on which side, in one plane, is all the wiring. Every component is rated for continuous tropical use.

Schematically, and in total number of components for a complete amplifier, it is extremely simple, comprising nothing more than three valves, resistance capacity coupled. There is no input or output transformer, and apart from the three valves and valve holders there are only the requisite coupling and decoupling resistances and condensers. H.T. and heater supplies are obtained from the main rack.

The first two valves are pentodes, 6J7G or equivalent. The third valve is a triode, 6J5G, or equivalent. The disc input is taken to the second stage. The tone control unit is electrically in the grid circuit of the third stage. Degenerative feed-back is applied to the last two stages.

The tone control, type 113, gives independent control of bass and treble response, and is a self-contained unit, which is readily detachable from the panel. As a secondary function. it provides two different degrees of overall gain, one 12dB more than the other.

The 52 amplifier is housed in a wall mounting case which is carried on a hinged frame. Access to the valves is obtained by removing the detachable cover. Access to the back of the panel is instantaneous by undoing a catch and swinging the panel door open on its hinges.

The opening portion is hinged to a rigid frame fixed solidly to the wall, and this fixed frame is of sufficient length to accommodate, under a detachable cover. a small control panel which carries equipment closely associated with the 52 amplifier.

The complete unit measures 26-in. high by 10-in. wide by 6-in. deep. It is always mounted with the long dimension vertical, but there is provision to mount the unit either with the control panel at the top or bottom, and conduits can be brought into either top or bottom with equal facility. This flexibility is provided so that irrespective of any natural disadvantages of the operating box, the control panel can be placed at the best operating height, and conduits can be run in conveniently.

The 52 amplifier is used in two different ways. With a single channel amplifier system. one only is mounted between the two projectors. With a duplicated amplified channel, a 52 amplifier is mounted on the wall adjacent to each of the two, or three soundheads.

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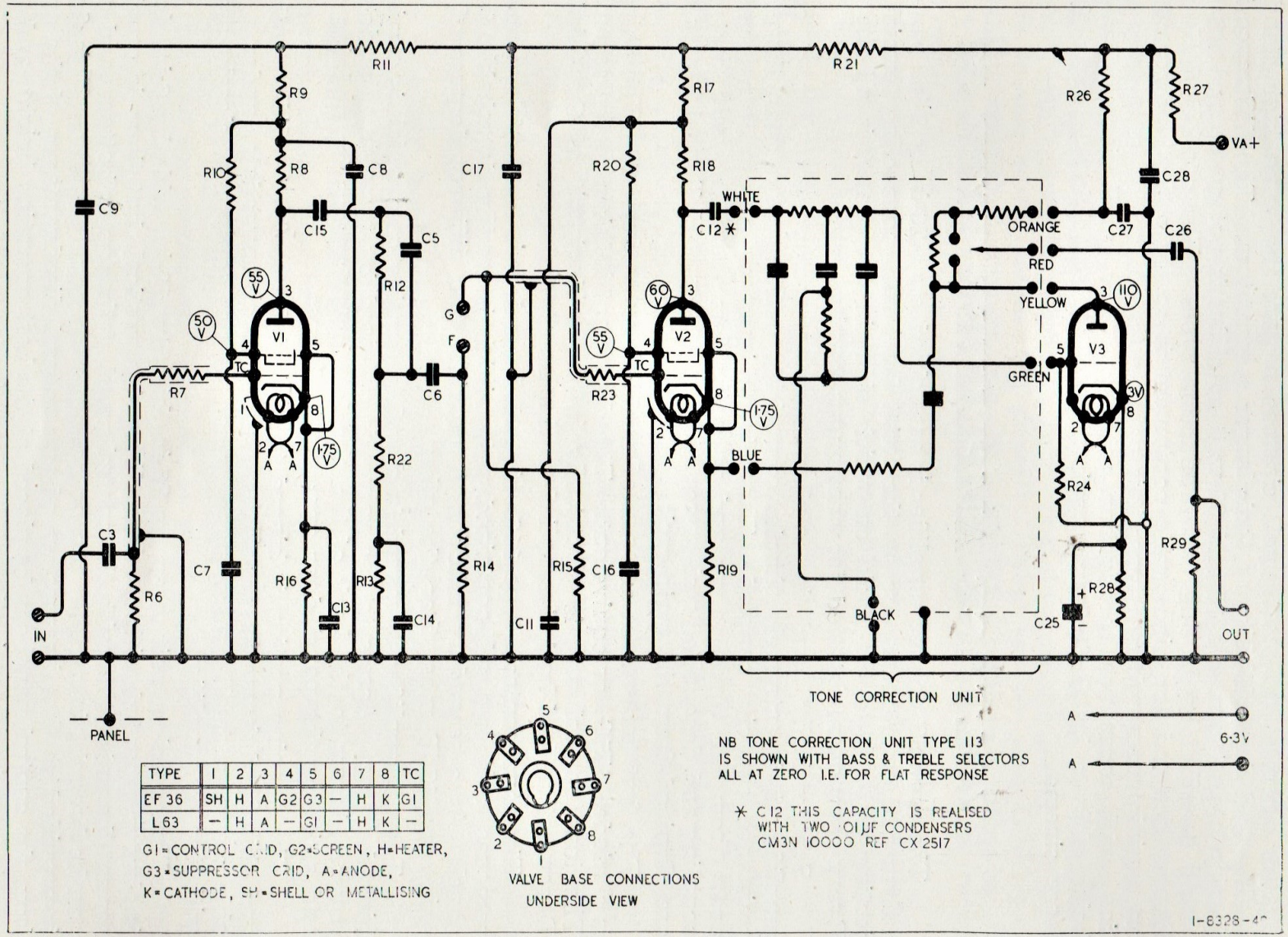
PLATE No. 8328

TYPE 52 VOLTAGE AMPLIFIER



TYPE	1	2	3	4	5	6	7	8	TC
EF 36	SH	H	A	G2	G3	—	H	K	G1
L63	—	H	A	—	G1	—	H	K	—

G1 = CONTROL GRID, G2 = SCREEN, H = HEATER,
G3 = SUPPRESSOR GRID, A = ANODE,
K = CATHODE, SH = SHELL OR METALLISING

VALVE BASE CONNECTIONS
UNDERSIDE VIEW

NB TONE CORRECTION UNIT TYPE 113
IS SHOWN WITH BASS & TREBLE SELECTORS
ALL AT ZERO I.E. FOR FLAT RESPONSE

* C12 THIS CAPACITY IS REALISED
WITH TWO ·01 µF CONDENSERS
CM3N 10000 REF CX 2517

I-8328-4

COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
52000	Type 52 Voltage Amplifier	—
113000	Tone Control Unit	113
CX1.1422	Condenser .1 MFD Inverted Mounting	C15
CX1.1424	Condenser .5 MFD Inverted Mounting	C26
CX1.1426	Condenser 2 MFD Inverted Mounting	C7, C8, C9, C16, C17, C27, C28
CV.1820	Condenser 300 micro MFDS	C5
CS.2481	Condenser 50 MFD	C25

RESISTANCE AND CONDENSER VALUES

Drawing Reference	Value	Drawing Reference	Value
R 6	2.2 Megohms plus/minus 10%	C 3	.01 MFD
R 7	47,000 Ohms plus/minus 10%	C 5	300 Micro MFDS
R 8	22,000 Ohms plus/minus 5%	C 6	.01 MFD
R 9	47,000 Ohms plus/minus 10%	C 7	2 MFD
R10	82,000 Ohms plus/minus 10%	C 8	2 MFD
R11	22,000 Ohms plus/minus 10%	C 9	2 MFD
R12	68,000 Ohms plus/minus 5%	C11	2 MFD
R13	33,000 Ohms plus/minus 5%	C12	.02 MFD
R14	2.2 Megohms plus/minus 10%	C13	.05 MFD
R15	2.2 Megohms plus/minus 10%	C14	.1 MFD
R16	1,000 Ohms plus/minus 10%	C15	.1 MFD
R17	47,000 Ohms plus/minus 10%	C16	2 MFD
R18	47,000 Ohms plus/minus 5%	C17	2 MFD
R19	1,000 Ohms plus/minus 5%	C25	50 MFD
R20	150,000 Ohms plus/minus 10%	C26	.5 MFD
R21	22,000 Ohms plus/minus 10%	C27	2 MFD
R22	33,000 Ohms plus/minus 5%	C28	2 MFD
R23	47,000 Ohms plus/minus 10%		
R24	2.2 Megohms plus/minus 10%		
R26	10,000 Ohms plus/minus 10%		VALVES
R27	10,000 Ohms plus/minus 10%	V1	= EF36, EF37, 6J7G
R28	1,000 Ohms plus/minus 10%	V2	= EF36, EF37, 6J7G
R29	2.2 Megohms plus/minus 10%	V3	= L63, 6J5G

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VOLTAGE AMPLIFIER TYPE 372 & SUPPLY PANEL TYPE 91

When two, or three, 52 amplifiers are used, as is the case with dual channel or 60-watt installations, the type 55 volume control panel is replaced by a type 107 control panel. The 107 panel, carries a step down to 500 ohm line transformer, a " Film, Disc, Microphone, Spare " switch, and an " Off, Normal, Emergency " switch.

The type 52 three-stage amplifier, and the frame assembly type 69 are identical and inter-changeable as between high impedance and low impedance type voltage amplifiers. The complete unit, comprising 52 amplifier, 69 frame, and 107 control panel is identified as voltage amplifier type 372.

The volume control, which carries also the change-over switch, is a separate unit; type 106 for two machine equipments; type 120 for three machine equipments.

All external inputs and outputs to and from the voltage amplifier are terminated at the terminal blocks on the fixed portion of the frame which carries the complete unit. The coaxial photo cell lead from each soundhead is terminated at C1 and E on the frame of the adjacent voltage amplifier, and the coaxial cable goes in one uncut length, via conduit where necessary, from soundhead to terminal block. Other signal inputs from non-synchronous attachment, and from microphone and radio if fitted, are connected to the appropriate terminals on the frame of whichever voltage amplifier is nearer. Each voltage amplifier is independently fed from the main rack with high tension and heater current. The terminating points on the voltage amplifier are VA Plus and E, and 6.3V at the top of the frame.

The outputs comprise two regulable cell potentials for a dual or push pull photo cell, and SP Plus and SP minus, to which are connected the two conductors of the 500 ohm line to the volume control unit. With a normal soundhead having only a single photo cell, one of the available cell potential terminals is left unused. Several points in connection with the method used for conveying the signal output of the cell to the voltage amplifier, and for applying the necessary positive potential to the cell, should be noted. The coaxial cell lead does not carry the cell anode potential, but only the signal. Cell potential is carried on a separate, unscreened cable which originates at the terminal C Plus 1 on the voltage amplifier frame and finishes at the terminal 90V on the soundhead. Removal of the 60 mA fuse in the top left-hand corner of the frame cuts H.T. to the 52 amplifier only, but does not interfere with positive potential to the cell. Although two cell potential conductors are needed for a dual or push-pull cell, only one single cored coaxial cable is needed to link the output of a dual or push-pull cell to the voltage amplifier.

All inter-connections between terminals on the frame, on the 52 amplifier, and on the 107 control panel are factory made.

Four wires couple one voltage amplifier with the other. These inter-couplings are necessary to duplicate completely the amplifier channel. In the event of failure of either voltage amplifier, the programme can be continued indefinitely on the other.

The four inter-coupling cables are respectively a two core screened cable joining the two " C2 " terminals on the frames, and three single core cables joining the " Disc," " Mic " and spare (blank) terminals on the two frames. Only one core of the two-core screened cable is used, but two core is specified because two core cable is employed for the connections between voltage amplifiers and volume control, and thence to the rack. Using the same cable for joining the " C2 " terminals obviates the necessity of supplying or stocking two sorts of cable.

The " Spare " position of the switch on the control panel is provision for accepting a radio or other input to the voltage amplifier, and although initially

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neither a radio nor a microphone input may be called for, the inter-connecting leads should always be run at the time of the installation so that subsequently added inputs can operate through either voltage amplifier.

In normal film reproduction, with both voltage amplifiers in use, the right-hand switch of each voltage amplifier (S2) is put "to Normal," and the left-hand switches (S1) are put to "Film." Changeover from one machine to the other is effected by the two position key on the volume control unit.

With switch S2 in the "Normal" position the photo cell of the adjacent soundhead is connected through to the grid of the input pentode of the 52 amplifier, and with S1 on "Film" the signal output of the input pentode is connected to the grid of the second pentode.

At any time during the projection of the last reel prior to an interlude when gramophone records are to be played, the "Disc" input can be pre-selected on whichever voltage amplifier is not handling the film programme. From one control position, which can be either the main volume control itself or its remote extension, the end of the reel can be faded out and the non-sync faded in. Similarly, the other inputs, "Mic" and "Spare," can be pre-selected in the same way.

If a voltage amplifier fails, it is only necessary to put switch S2 on the amplifier that has failed to "Off," which transfers the signal output of the photo cell in the adjacent soundhead to the "Emergency" contacts of switch S2 in the other voltage amplifier. From then on a continuous film programme is maintained by effecting changeover from one machine to the other on switch S2 of the voltage amplifier remaining in service. When on "Normal," film reproduction will be from the soundhead adjacent to the voltage amplifier. On "Emergency," reproduction will be from the further soundhead. Non-sync and other auxiliary inputs are still available by operation of the switch S1. Note that when one voltage amplifier is out of order, the change-over key on the main volume control must be left permanently set to the voltage amplifier which is still working.

With switch S2 in the "Off" position, a 52 amplifier that has failed can be disconnected electrically and mechanically, after taking out the 60 mA fuse in the top left-hand corner of the fixed portion of the mounting frame, and removed bodily to the repair bench for attention.

Heater current and high tension for two, or three voltage amplifiers type 372 is obtained from a type 91 voltage amplifier supply panel mounted on the main rack. This supply panel, carries three 6.3-volt heater transformers, a switch, S2, to select high tension from whichever of the main power supply units is in use, and another switch, S1, to permit of checking the H.T. consumption of any voltage amplifier.

H.T. is always obtained from one of the power supply units, and the switch S2 permits an instantaneous change to be made from one to the other. In the event of failure of one of the 6.3-volt heater transformers, the external leads can be taken off the terminals of the defective transformer and transferred to the third transformer. In the case of three machine equipment, where all three transformers are normally in simultaneous use, a transformer failure can be countered by operating the heaters of two 52 amplifiers off one transformer. The windings have an adequate safety margin to carry the double load.

Note that when H.T. is obtained from a 91 panel, which carries its own meter, no reading of voltage amplifier consumption will be registered by the meter panel type 58 or 147.

The transformers on the 91 panel are designed for operation from a supply of any periodicity between 25 and 100-cycles, and have dual primary windings. For connection to a 115-volt supply the windings are connected in parallel, and for connection to a 230-volt supply the windings are connected in series.

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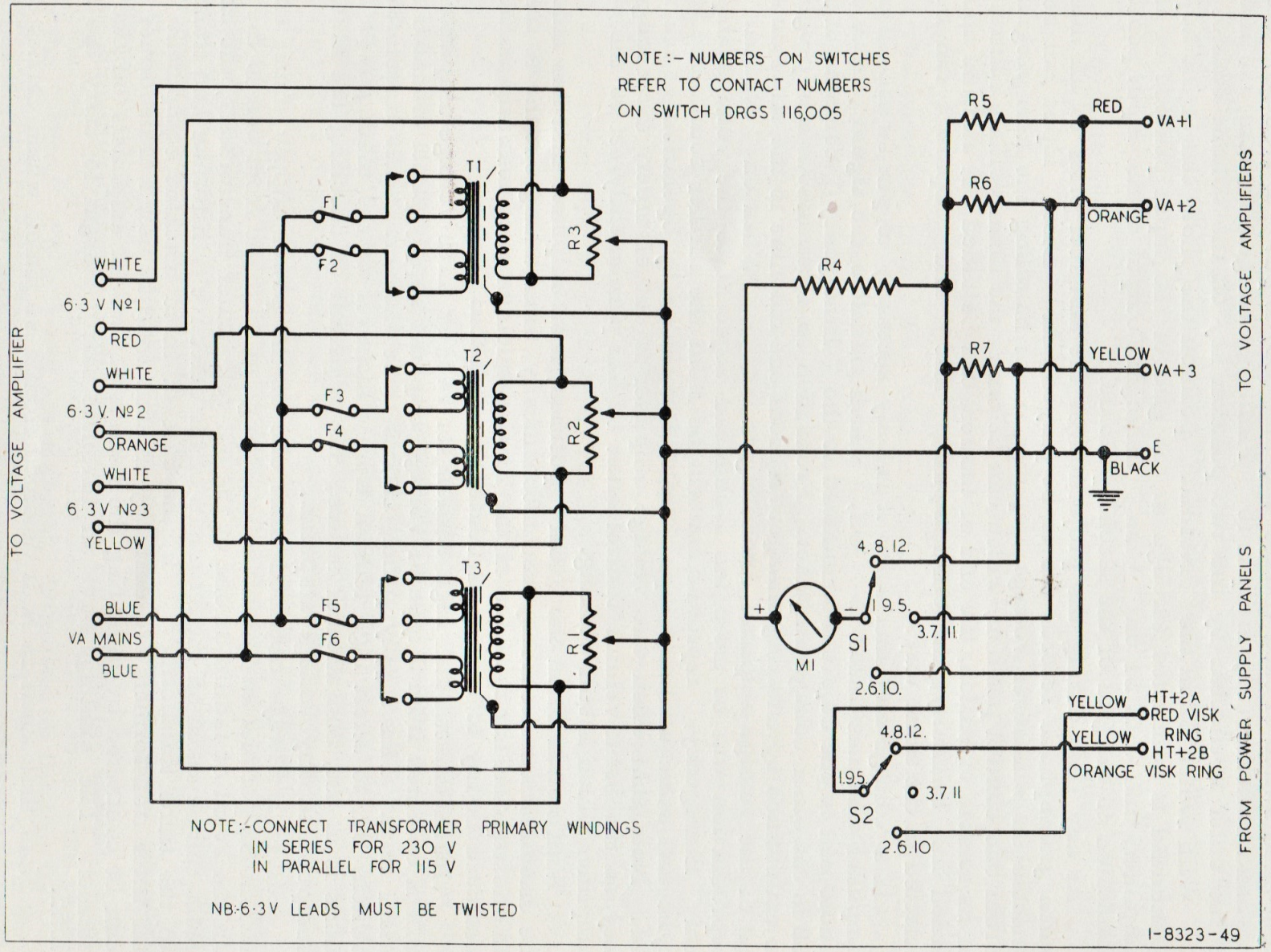
PLATE No. 8323

TYPE 91 VOLTAGE AMPLIFIER SUPPLY UNIT



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
91007	Transformer, Dual Voltage Primary, 115 & 230 Volts 25 to 60 Cycles. Secondary 6.3 volts	T1 T2 and T3
91020	Switch, Meter, also H.T. Selector	S1 and S2
REC.5500/S	Potentiometer 50 Ohms	R1 R2 and R3
MTM.1S	Meter 0-1 milliamp	M1
FCA.0100	Fuse 1 amp	F1 to F6

RESISTANCE VALUES

Drawing Reference	Value
R1	50 Ohms
R2	50 Ohms
R3	50 Ohms
R4	3,900 Ohms plus/minus 5%
R5	220 Ohms plus/minus 5%
R6	220 Ohms plus/minus 5%
R7	220 Ohms plus/minus 5%

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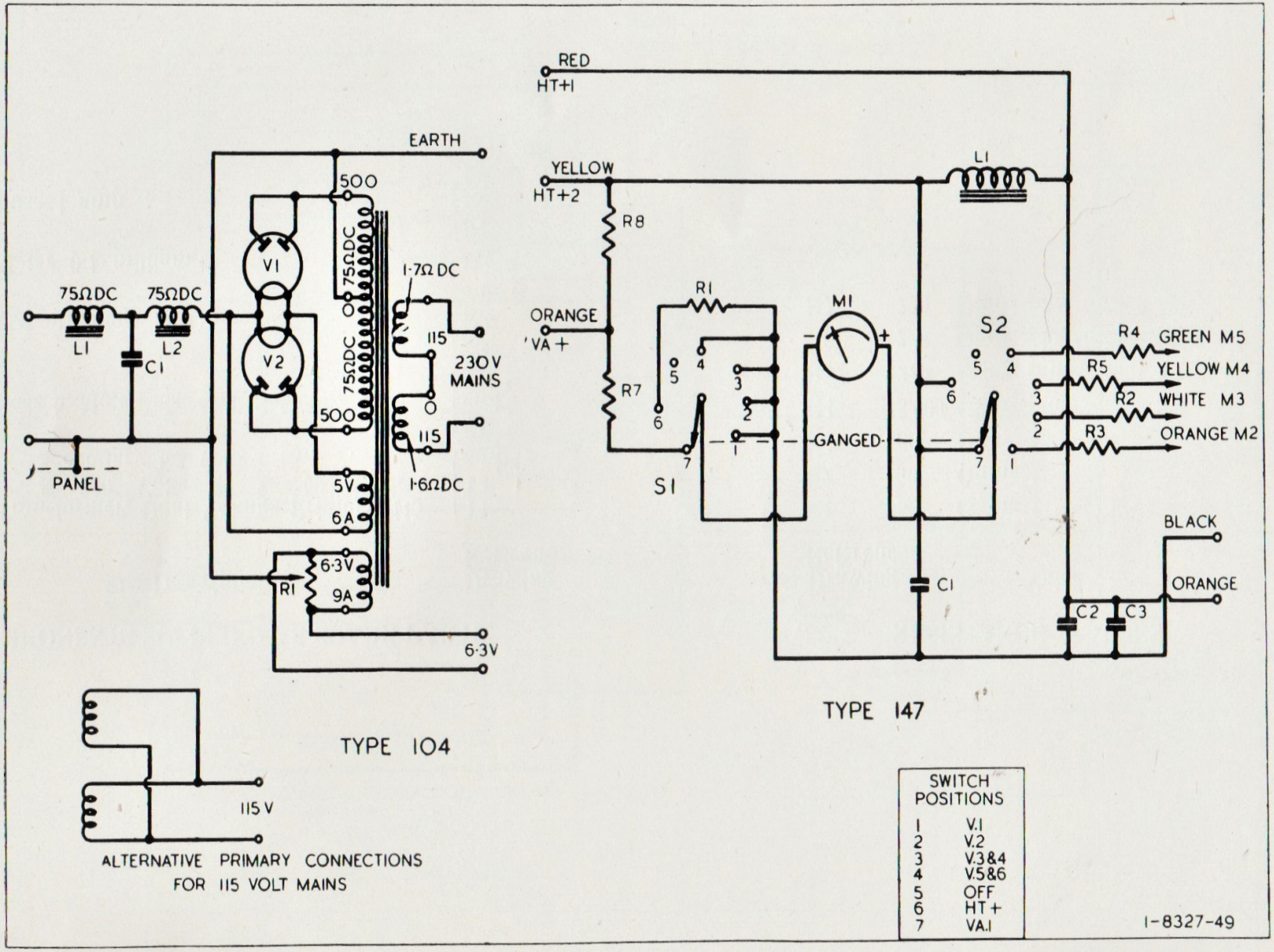
PLATE No. 8327

TYPES 104 & 147 POWER SUPPLY PANELS



COMPONENTS SUPPLIED AS SPARE PARTS

Type 104—Transformer Section

Part No.	Description	Drawing Reference
68000	Choke 7 Henries	L1 and L2
104003	Transformer Mains Dual Voltage Primary 115 and 230 Volts 25 to 60 Cycles	T1
PBF.4500	Potentiometer 50 Ohms	R1
CX1.1448	Condenser 8 MFD (Inverted Mounting)	C1

Type 147—Meter Section

126000	Choke 30 Henries	L1
147005	Switch, Meter 7 way	S1 and S2
MTM.1S	Meter 0-1 Milliamp	M1

RESISTANCE AND CONDENSER VALUES

Type 104

Drawing Reference	Value
R1	50 Ohms
C1	8 MFD

Valves

V1 = 5U4G, 5V4G, U52, or 5X4G

V2 = 5U4G, 5V4G, U52, or 5X4G

Type 147

Drawing Ref.	Value
R1	820,000 Ohms plus/minus 5%
R2	750 Ohms plus/minus 5%
R3	91 Ohms plus/minus 5%
R4	47,000 Ohms plus/minus 5%
R5	47,000 Ohms plus/minus 5%
R7	3,900 Ohms
R8	220 Ohms
C1	8 MFD
C2	8 MFD
C3	8 MFD

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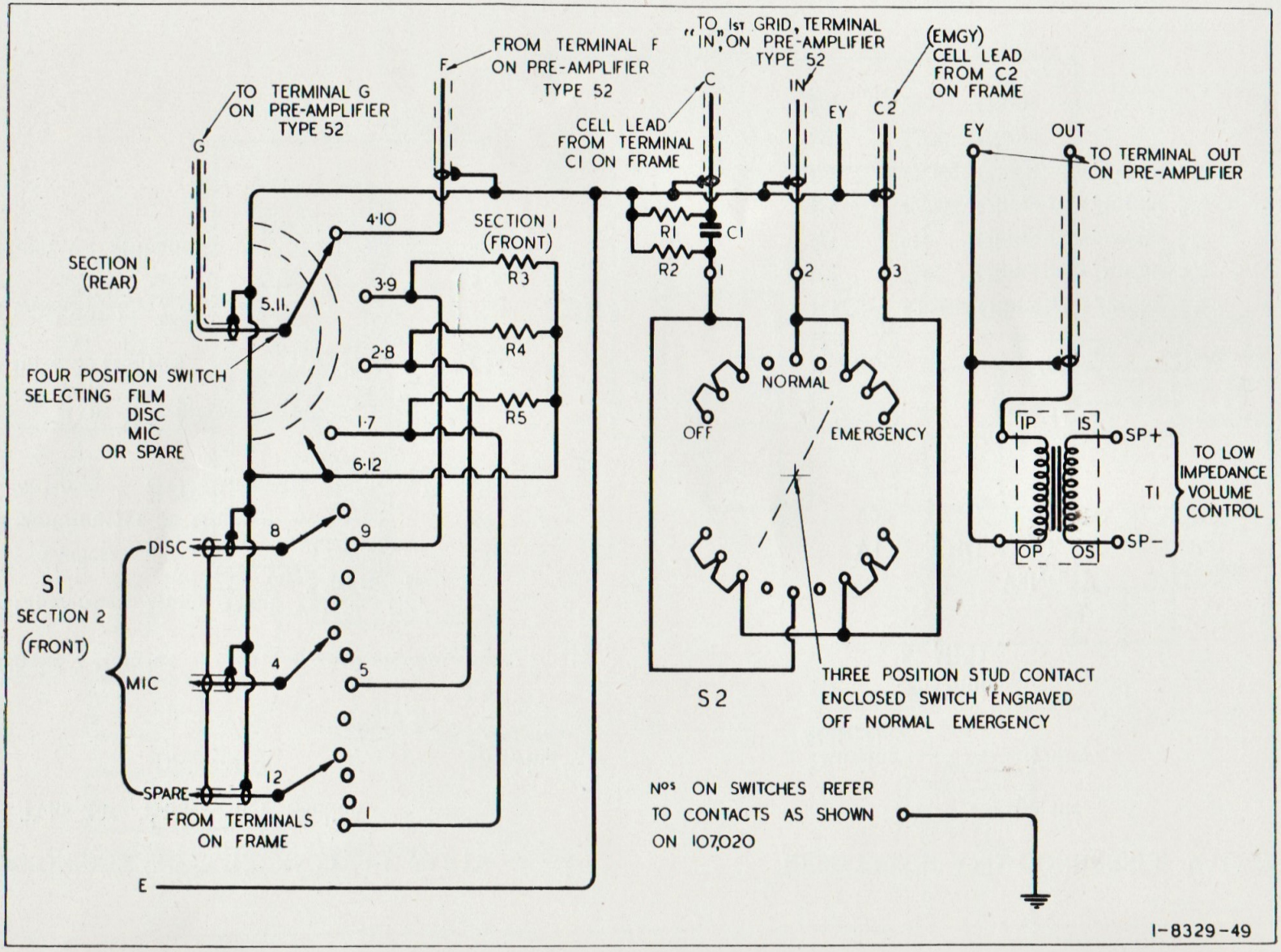
PLATE No. 8329

TYPE 107 VOLTAGE AMPLIFIER TRANSFORMER PANEL



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
107000	Complete Unit Type 107	——
107004	Engraved Escutcheon Plate. For use when 107 Panel Mounted below Voltage Amplifier	——
107021	Engraved Escutcheon Plate. For use when 107 Panel Mounted above Voltage amplifier	——
107022	Switch, Normal Emergency Off, Stud Contact. In Cylindrical Metal Protective Can	S2
107025	Switch, Film, Disc, Microphone, Spare	S1
127000	Transformer	T1

RESISTANCE AND CONDENSER VALUES

Resistances

Drawing Reference	Value
R1	150,000 Ohms plus/minus 5%
R2	2.2 Megohms plus/minus 20%
R3	220,000 Ohms plus/minus 20%
R4	220,000 Ohms plus/minus 20%
R5	220,000 Ohms plus/minus 20%

Condensers

C1	.01 MFD

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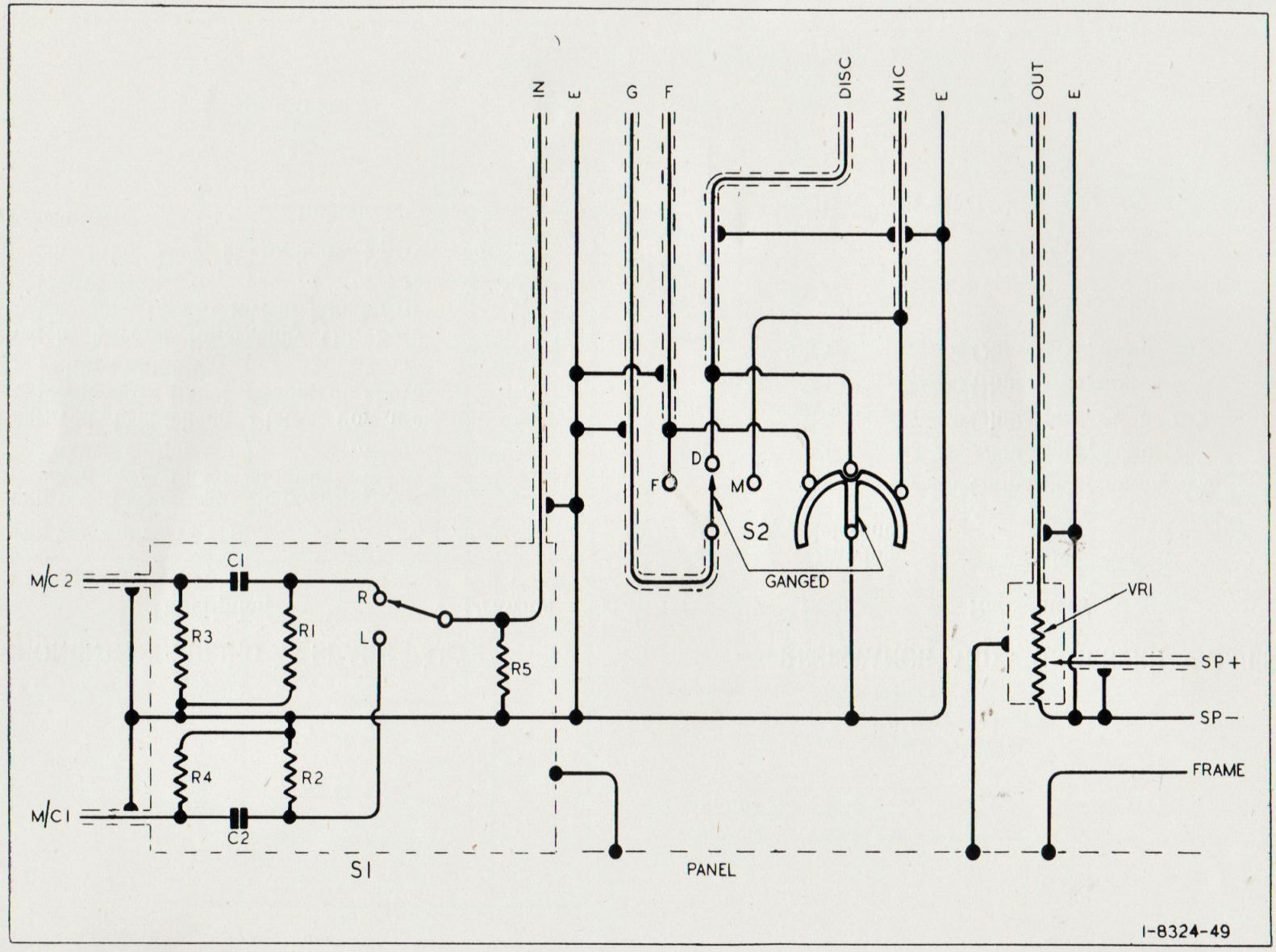
PLATE No. 8324

TYPE 55 VOLUME CONTROL UNIT



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
55000	Complete Panel Type 55	——
55006	Volume Control, Stud Contact, 50,000 Ohms	VR1
55011	Film Disc, Microphone Switch	S2
55014	Change-over Switch Complete, with Resistances R1, R2, R3, and R4, and Condensers C1 and C2	S1

RESISTANCE AND CONDENSER VALUES

Drawing Reference	Value
R1	2.2 Megohms plus/minus 20%
R2	2.2 Megohms plus/minus 20%
R3	150,000 Ohms plus/minus 5%
R4	150,000 Ohms plus/minus 5%
R5	2.2 Megohms

Condensers

C1	.01 MFD plus/minus 15%
C2	.01 MFD plus/minus 15%

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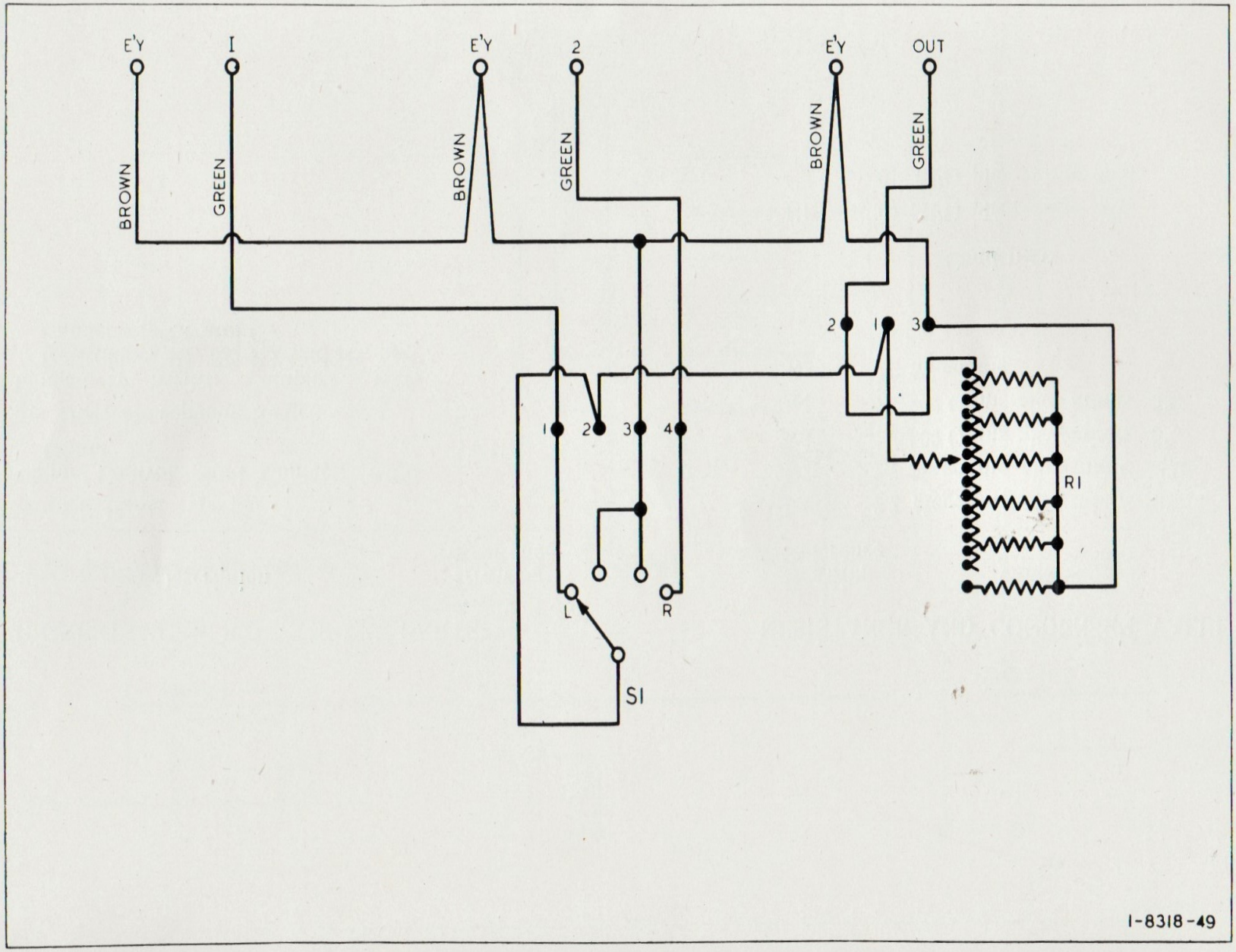
PLATE No. 8318

TYPE 106 LOW IMPEDANCE VOLUME CONTROL & CHANGEOVER UNIT (FOR 2 MACHINES)



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
106000	Complete Unit Type 106	——
120004	500 Ohm. Stud Contact Volume Control in Cylindrical Metal Protective Can	R1
120020	Change-over Switch, in Cylindrical Metal Protective Can	S1

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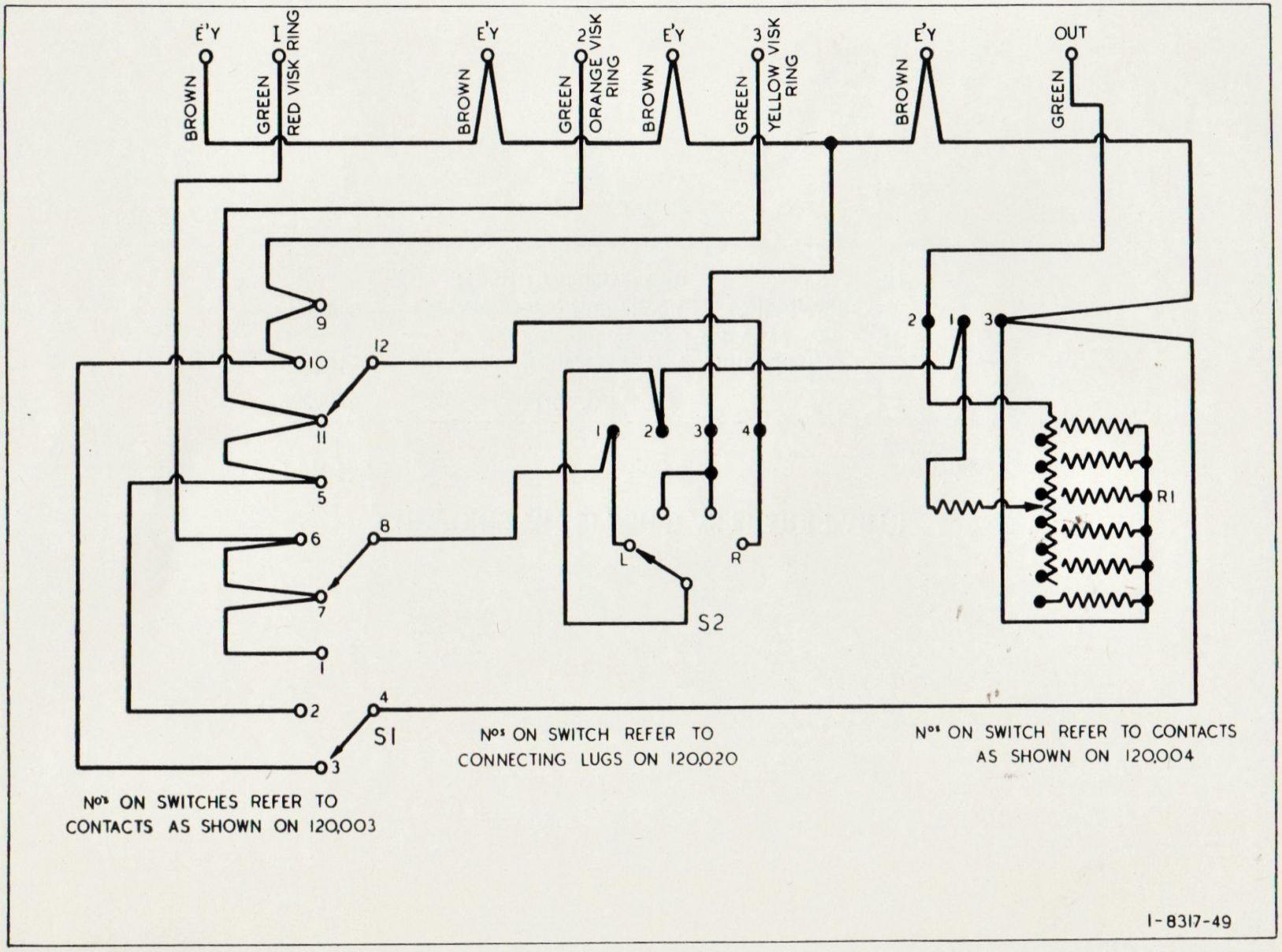
PLATE No. 8317

TYPE 120 LOW IMPEDANCE VOLUME CONTROL & CHANGEOVER UNIT (FOR 3 MACHINES)



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
120000	Complete Unit Type 120	——
120003	Switch 3 Position, Machine Selector ...	S1
120004	500 Ohm. Stud Contact Volume Control in Cylindrical Metal Protective Can	R1
120020	Change-over Switch in Cylindrical Metal Protective Can	S2

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POWER AMPLIFIER TYPE 51

The type 51 power amplifier is mounted on a standard 20-in. wide panel which is carried on the rack in the vertical plane. Its height is 9-in. All major items, valves, condensers, transformer, are mounted on the front face. All the wiring is at the back of the panel. Every component is visible and identifiable, and can be detached or replaced without disturbing any other component. Every inch of the wiring can be inspected, and every wire can be traced from origin to destination. All the components are rated for continuous tropical use.

The amplifier comprises three stages, the power output of 30 watts being obtained from four 6L6G tetrodes in parallel push-pull. Degenerative feed back is applied over the complete amplifier, from output to input.

The first stage is a pentode, 6J7G or equivalent. This is resistance capacity coupled to the second stage, a triode, 6J5G, or equivalent, working as a phase inverter. This phase inverter valve has fixed values of anode and cathode resistance, the circuit employed being one that eliminates the undesirable feature of manual balancing. The inverter stage is in turn resistance capacity coupled to the generous output stage. Thirty speech watts output is obtained from valves which are under run-in comparison with makers permissible rating. On full output there is less than 1½% of total harmonic distortion.

Bias to all stages is obtained in the most straightforward and trouble-free way, by the voltage drop across resistances in the cathode circuits of the individual valves. Except for the output transformer, there is no iron cored component on the panel.

H.T. and heater current are obtained from a power supply unit mounted on a separate panel.

POWER SUPPLY PANELS TYPES 54 & 104

So as to cope with all mains frequencies from 25 to 100 cycles, two different types of power supply unit are produced. One covers from 50 to 100 cycles, the other covers from 25 to 100 cycles. The cost of the 25-100 cycle type is considerably greater than that of the other because of the increased size and number of iron-cored components.

Irrespective of type, the power supply unit is always mounted in the cabinet rack below the power amplifier, but interposed between power amplifier and power supply unit is a meter panel. For supplies of from 50 to 100 cycles the power supply unit is type 54, mounted on a 12-in. high panel, and the associated meter unit is type 58, mounted on a 3-in. high panel. The total height for two panels, power supply and meter, is 15-in.

For supplies of from 25 to 100 cycles the power supply unit is type 104, mounted on a 9-in. high panel, but the associated meter unit, type 147, is mounted on a 6-in. high panel. The total height for the two panels is therefore the same, 15-in., as for the two panels used on 50 to 100 cycle supplies.

On both the 25 and 50 cycle types, all components are mounted on the front face of the panel, with all the wiring in one plane on the back face. Either unit, under the most severe tropical conditions, has a safe output for continuous service of 250 milliamperes at 380-volts. All condensers used are of the paper dielectric type with a working voltage of 750 at a temperature of 140 degrees Fahenheit (60 degrees Centigrade).

Two hard thermionic rectifiers of the 5U4G type are employed, but the valve holders are so wired that when a valve is inserted its anodes are strapped together. Each valve therefore behaves as a half wave rectifier, the two together working as a full wave rectifier. Provided pairs of the same type

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are used, it is permissible to use either 5U4G, U52, 5X4G, or 5V4G valves. The first three are directly heated types, and the permissible output of a pair by maker's rating is 450 milliamperes at 500-volts.

Whatever type is used will have a long life because much less than its possible output is taken. Incidentally, there is some variation between these four rectifiers in the valve base pin numbers to which the internal elements are brought out, but the valve holders on the 54 and 104 are so wired that any type of rectifier can be used without the necessity of altering the wiring.

POWER SUPPLY PANEL, TYPE 54, WITH METER PANEL, TYPE 58.

The 54 power supply panel, for 50 to 100 cycle supplies, is always accompanied by a 58 meter panel. The 54 panel carries three transformers (one for high tension, one for rectifier filaments, and one for heaters of amplifier tubes), two smoothing chokes, four smoothing condensers, and the two rectifier tubes. Irrespective of the mains voltage, which may be of any value between 95 and 130 volts, or between 190 and 260 volts, a 230 volt supply is made available by adjustment of the transformer contained in the separate Switch Fuse Distribution Unit.

Very generous smoothing is provided by a two-section choke input filter circuit. The choke input circuit gives much better regulation of the smoothed D.C. output, against varying load, than could be obtained with a condenser input circuit. Two heavy duty 7 henry chokes are employed, and each choke is followed by a capacity of 16 microfarads, formed of two 8 microfarad blocks in parallel.

There are three high tension positive output terminals, of which H.T.1 and H.T.2 feed the 51 power amplifier, and V.A. Plus feeds the voltage amplifier. Actually, on a 54 power supply unit, H.T.1 and H.T.2 could be strapped together, and one line only run to H.T.1 and H.T.2 on the power amplifier, but for the sake of uniformity with the 104 power supply unit, which requires two H.T. connections to the power amplifier, two are provided on the 54 as well.

The 58 meter panel carries only a meter and its attendant selector switch.

POWER SUPPLY PANEL, TYPE 104, WITH METER PANEL, TYPE 147.

The 104 power supply panel, for 25 to 100 cycle supplies, is always accompanied by a 147 meter panel. The 104 panel carries only one transformer, two smoothing chokes, a single smoothing condenser, and the two rectifier tubes. The transformer has three secondaries, for high tension, rectifier filaments, and tube heaters. The primary is in two sections, which are put in parallel for connection to 115 volts, and in series for connection to 230-volts. Irrespective of the actual voltage of the mains, a 115 or 230-volt supply is made available by adjustment of the transformer contained in the Switch Fuse Distribution Unit.

To obtain the same generous degree of smoothing on 25 cycles as the type 54 obtains on 50 cycles, the total filter circuit is of the three section type. Two of the chokes are on the 104 panel, and a third choke, of 30 henries, is on the 147 meter panel, together with three smoothing condensers. The current through the third choke does not include that taken by the anodes of the power output stage, which are fed from a point immediately following the second choke. The extra smoothing of the third section of the filter benefits the screens of the output tubes, and anodes and screens of all other tubes in the chain back to and including the tubes in the voltage amplifiers.

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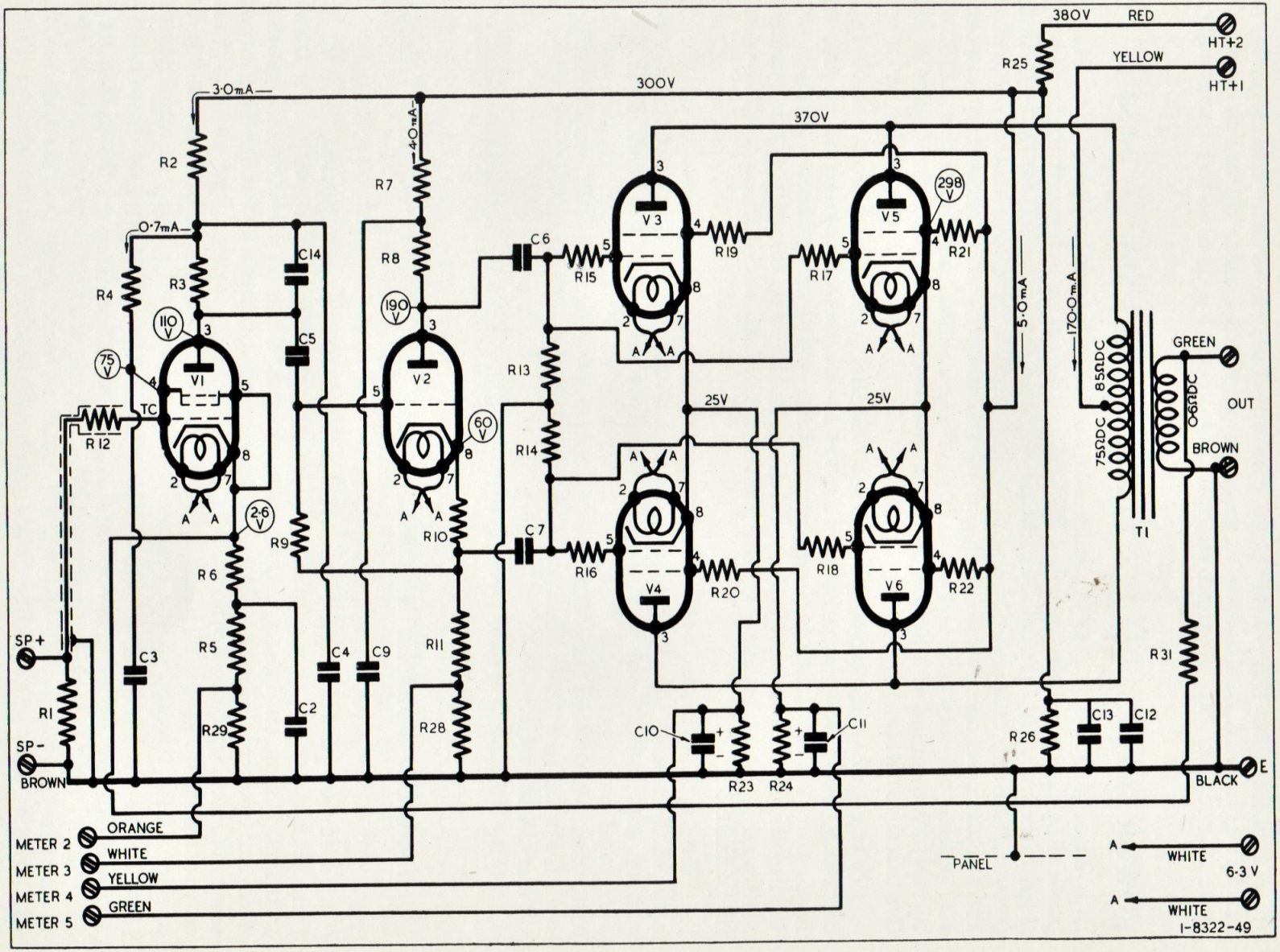
PLATE No. 8322

TYPE 51 POWER AMPLIFIER PANEL (30 WATT AMPLIFIER)



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
51000	Complete Amplifier Panel Type 51 ...	——
57000	Transformer, Output	T1
CX1.1422	Condenser .1 MFD Inverted Mounting	C6, C7
CX1.1426	Condenser 2 MFD Inverted Mounting	C3, C4, C9, C12, C13
CX.1452	Condenser 50 MFD 12V.	C2
CS.2497	Condenser 50 MFD 50V.	C10, C11
CS.2510	Condenser .001 MFD	C14
CX.2517	Condenser .01 MFD	C5

RESISTANCE AND CONDENSER VALUES

Drawing Reference	Value	Drawing Reference	Value
R 1	2.2 Megohms plus/minus 20%	R26	15,000 Ohms plus/minus 5%
R 2	33,000 Ohms plus/minus 20%	R28	100 Ohms plus/minus 5%
R 3	33,000 Ohms plus/minus 20%	R29	33 Ohms plus/minus 5%
R 4	150,000 Ohms plus/minus 20%	R31	33,000 Ohms plus/minus 5%
R 5	1,000 Ohms plus/minus 20%		
R 6	100 Ohms plus/minus 5%	C 2	50 MFD 12V
R 7	10,000 Ohms plus/minus 20%	C 3	2 MFD
R 8	15,000 Ohms plus/minus 20%	C 4	2 MFD
R 9	1 Megohm plus/minus 20%	C 5	.01 MFD
R10	1,000 Ohms plus/minus 20%	C 6	.01 MFD
R11	15,000 Ohms plus/minus 20%	C 7	.01 MFD
R12	47,000 Ohms plus/minus 20%	C 9	2 MFD
R13	150,000 Ohms plus/minus 20%	C10	50 MFD 50V
R14	150,000 Ohms plus/minus 20%	C11	50 MFD 50V
R15	47,000 Ohms plus/minus 20%	C12	2 MFD
R16	47,000 Ohms plus/minus 20%	C13	2 MFD
R17	47,000 Ohms plus/minus 20%	C14	.001 MFD
R18	47,000 Ohms plus/minus 20%		
R19	100 Ohms plus/minus 20%		
R20	100 Ohms plus/minus 20%		
R21	100 Ohms plus/minus 20%		
R22	100 Ohms plus/minus 20%		
R23	250 Ohms plus/minus 20%		
R24	250 Ohms plus/minus 20%		
R25	2,500 Ohms plus/minus 20%		

VALVES

V1 = EF37, EF38, 6J7G

V2 = 6J5G, L63

V3, V4, V5, V6 = KT66, 6L6G

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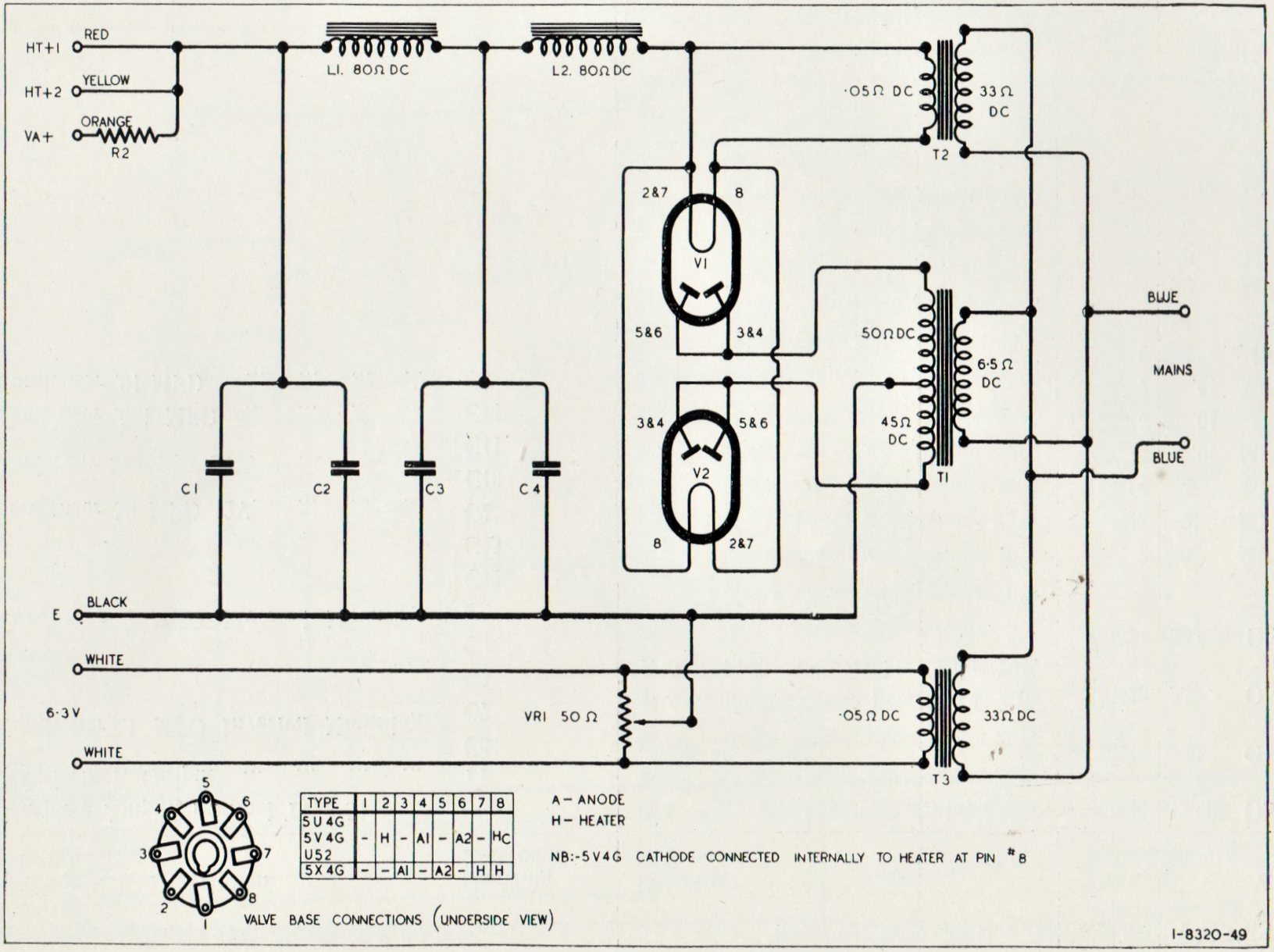
PLATE No. 8320

TYPE 54 POWER SUPPLY PANEL



TYPE	1	2	3	4	5	6	7	8
5U4G 5V4G U52	-	H	-	A1	-	A2	-	Hc
5X4G	-	-	A1	-	A2	-	H	H

COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
54000	Complete Panel Type 54	——
65000	Transformer High Tension	T1
66000	Transformer 5 Volt Heater Winding ...	T2
67000	Transformer 6-3 Volt Heater Winding ...	T3
68000	Choke 7 Henries	L1 and L2
CX1.1448	Condenser 8 MFD Inverted Mounting	C1 C2 C3 and C4
REC.5500/S	Potentiometer 50 Ohms	VR1

RESISTANCE AND CONDENSER VALUES

Drawing Reference	Value
R2	220 Ohms plus/minus 5%
C1	8 MFD
C2	8 MFD
C3	8 MFD
C4	8 MFD

Valves

V1 = 5U4G, 5V4G, U52, or 5X4G
V2 = 5U4G, 5V4G, U52, or 5X4G

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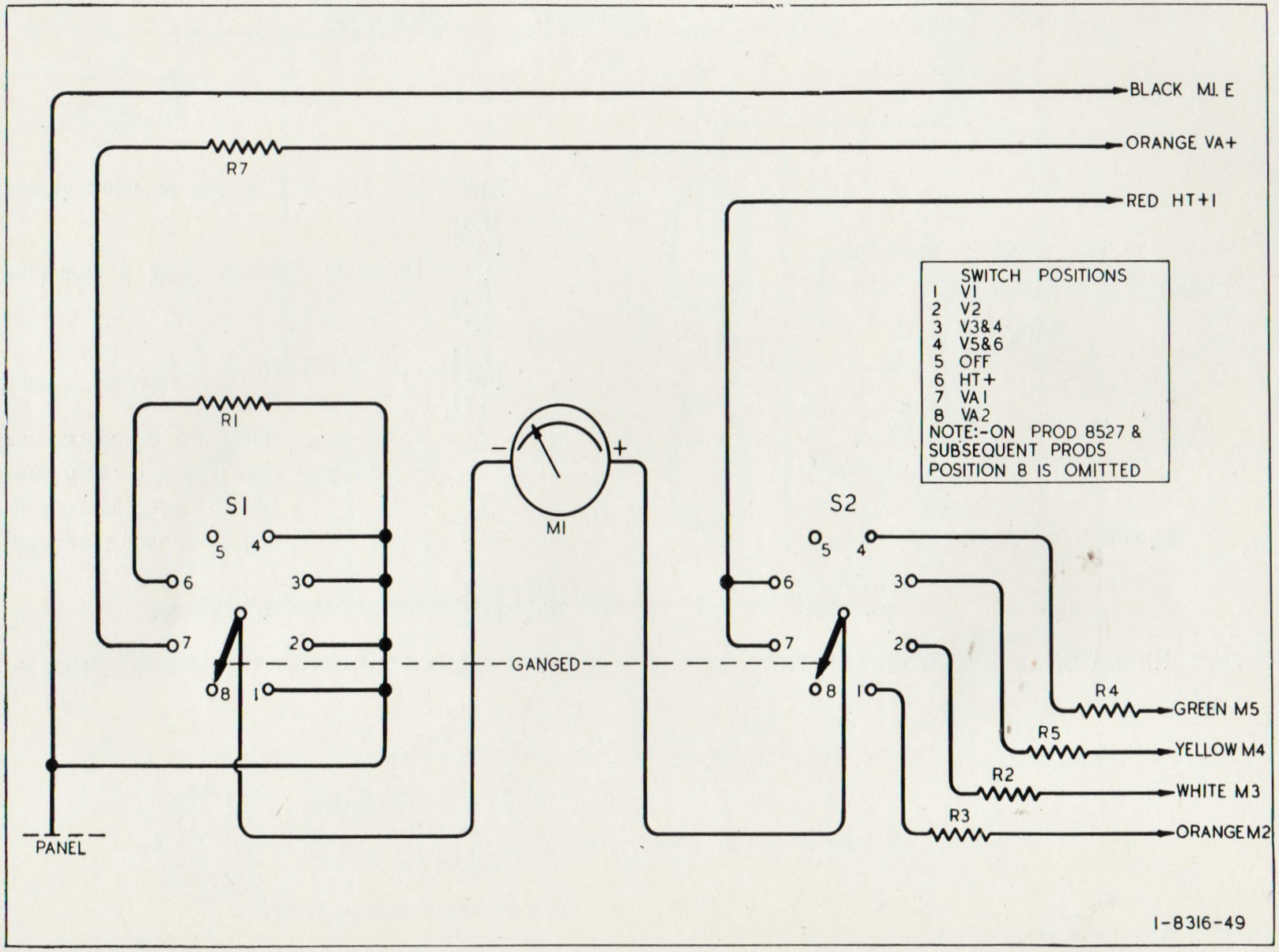
PLATE No. 8316

TYPE 58 METERING PANEL



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
58002	Meter Switch 8-way	S1 and S2
MTM.IS	Meter 0-1 milliampères...	M1

RESISTANCE AND CONDENSER VALUES

Drawing Reference	Resistances Value
R1	820,000 Ohms plus/minus 5%
R2	750 Ohms plus/minus 5%
R3	91 Ohms plus/minus 5%
R4	47,000 Ohms plus/minus 5%
R5	47,000 Ohms plus/minus 5%
R7	3,900 Ohms plus/minus 5%

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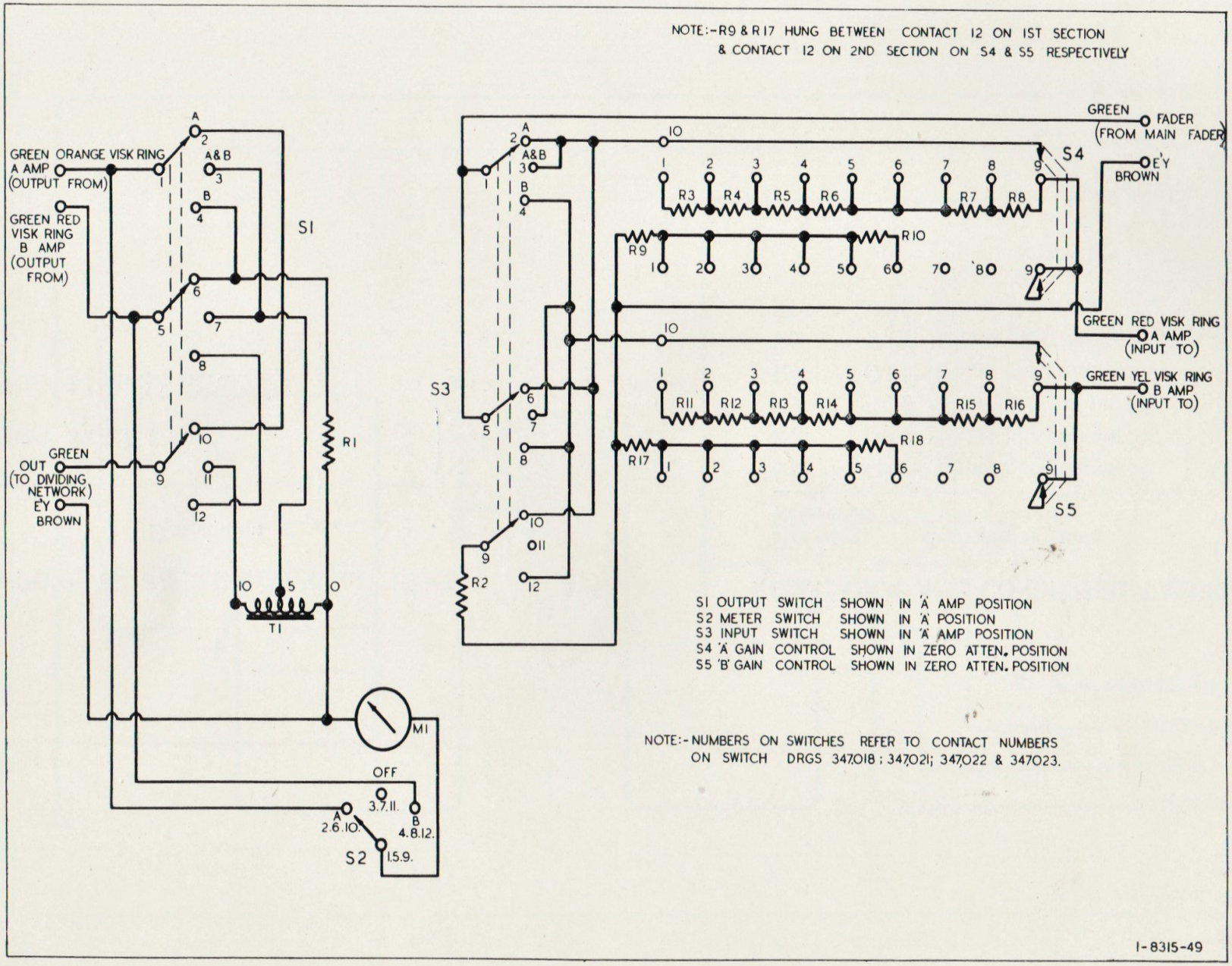
PLATE No. 8315

TYPE 347 SWITCH CONTROL PANEL FOR 60 WATT EQUIPMENT



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
347000	Complete Panel Type 347	——
347009	Gain Control. 9 Position—Switch Complete with Attendant Resistances ...	S4 and S5
347021	Output Switch	S1
347022	Meter Switch	S2
347023	Input Switch	S3
347020	Output Meter	M1
348000	Matching Transformer	T1
RED.4100	Resistance 100 ohm. Vitreous	R1

TABLE OF RESISTANCE AND CONDENSER VALUES

Drawing Reference	Resistances Value
R 1	10 Ohms plus/minus 10%
R 2	1,000 Ohms plus/minus 10%
R 3	120 Ohms plus/minus 10%
R 4	120 Ohms plus/minus 10%
R 5	120 Ohms plus/minus 10%
R 6	120 Ohms plus/minus 10%
R 7	150 Ohms plus/minus 10%
R 8	120 Ohms plus/minus 10%
R 9	1,000 Ohms plus/minus 10%
R10	1,000 Ohms plus/minus 10%
R11	120 Ohms plus/minus 10%
R12	120 Ohms plus/minus 10%
R13	120 Ohms plus/minus 10%
R14	120 Ohms plus/minus 10%
R15	150 Ohms plus/minus 10%
R16	120 Ohms plus/minus 10%
R17	1,000 Ohms plus/minus 10%
R18	1,000 Ohms plus/minus 10%

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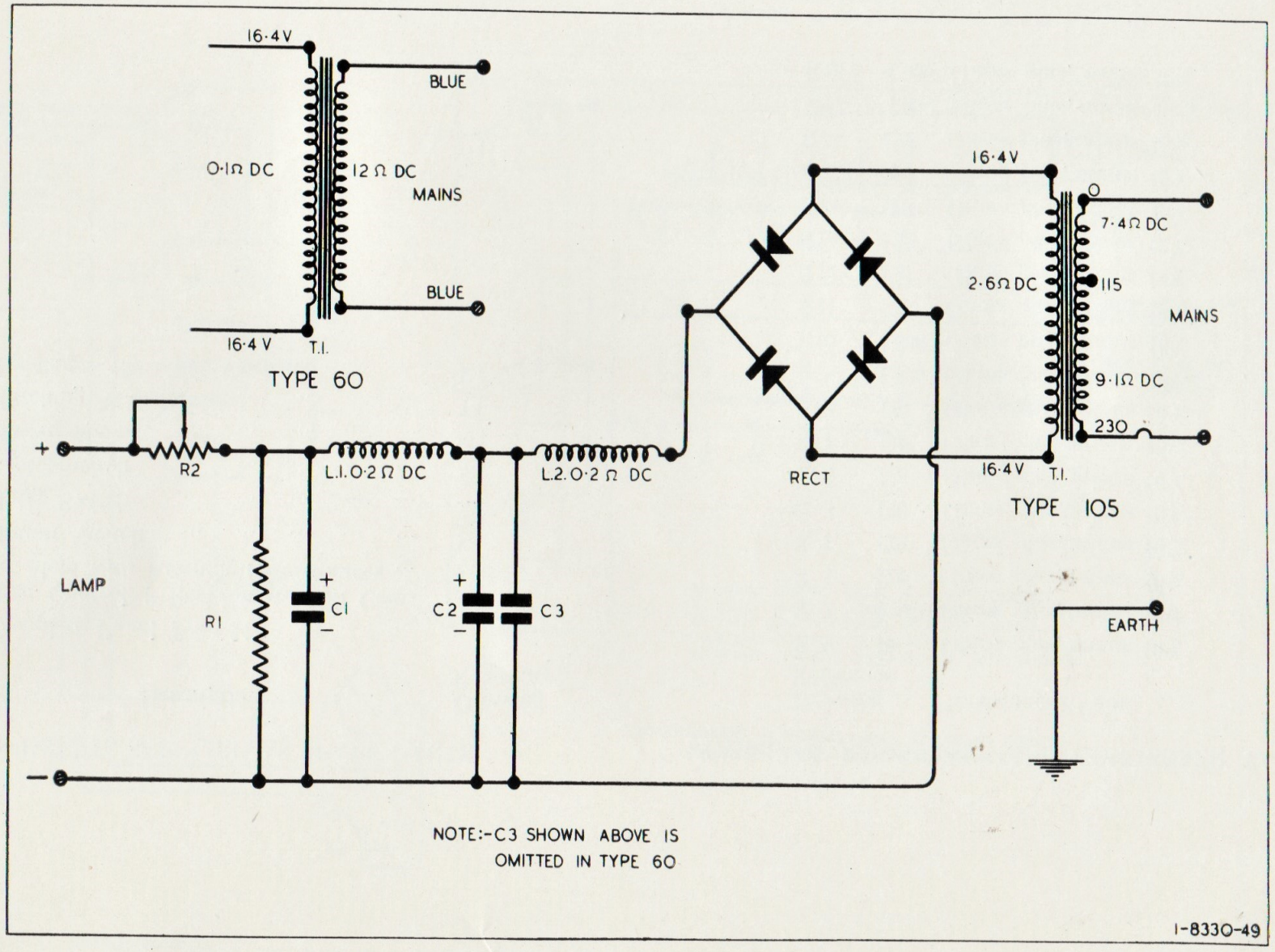
PLATE No. 8330

TYPES 60 & 105 EXCITER LAMP SUPPLY PANEL



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
61000	Transformer 16.4 Volt Secondary for Type 60	T1
125000	Transformer. Primary 115/230V Secondary 16.4 Volt for Type 105	T1
128000	Choke 20 Millihenries	L1 and L2
CS1.1476	Condenser 2000 MFD .25 Volt Working. Inverted Mounting	C1, C2 and C3
RWZ.2A20	Selenium Rectifier	—
REF.61.P3	Resistance 1.3 Ohms Variable	R2

TABLE OF RESISTANCE AND CONDENSER VALUES

Drawing Reference	Value
R1	47 Ohms
R2	1.3 Ohms
C1	2,000 MFD
C2	2,000 MFD
C3	2,000 MFD

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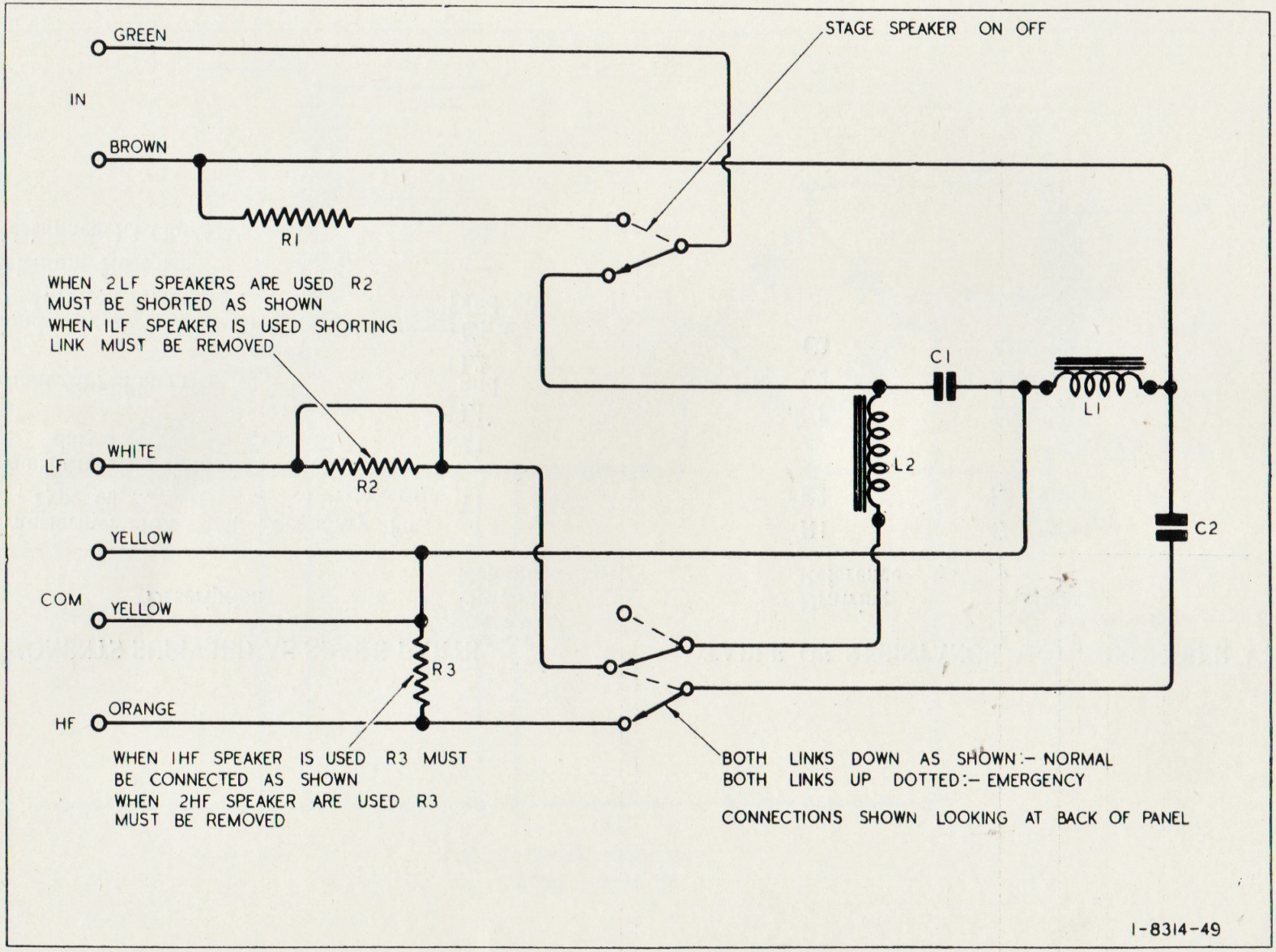
PLATE No. 8314

TYPE 79 DIVIDING NETWORK



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
79002	Choke 5.1 Millihenries in Protective Can	L2
79003	Choke 3.2 Millihenries in Protective Can	L1
CXS.6112	Condenser 60 MFD	C1
CXS.6112	Condenser 30 MFD	C2

RESISTANCE AND CONDENSER VALUES

Drawing Reference	Resistances Value
R1	12 Ohms
R2	5 Ohms
R3	20 Ohms

Condensers

C1	60 MFD
C2	38 MFD

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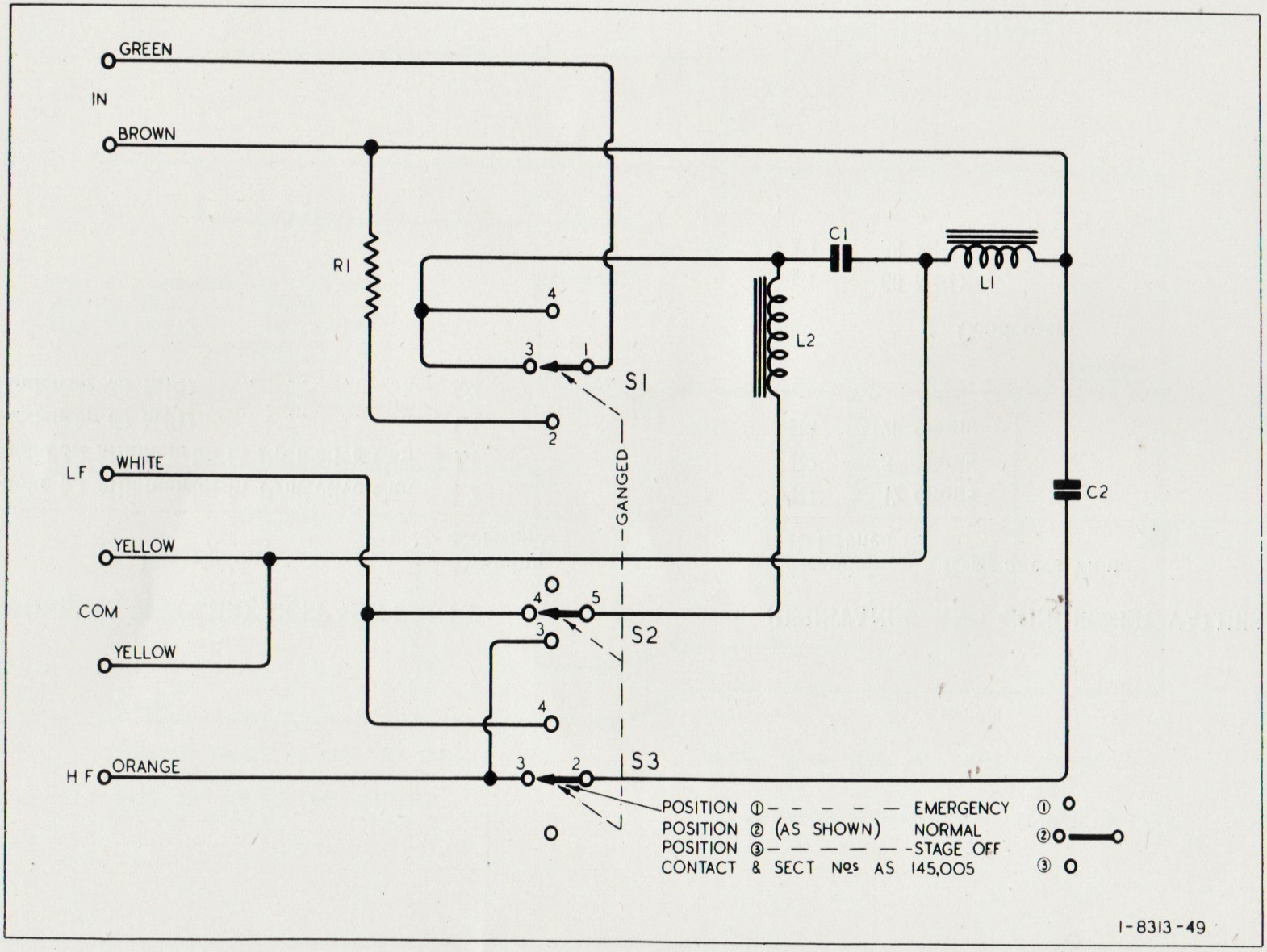
PLATE No. 8313

TYPE 145 DIVIDING NETWORK



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
79002	Choke 5.1 Millihenries in Protective Can	L2
79003	Choke 3.2 Millihenries in Protective Can	L1
145004	Switch, Special 3-way	S1, S2 and S3

TABLE OF RESISTANCE AND CONDENSER VALUES

Drawing Reference	Resistances Value
R1	12 Ohm
	Condensers
C1	60 MFD
C2	38 MFD

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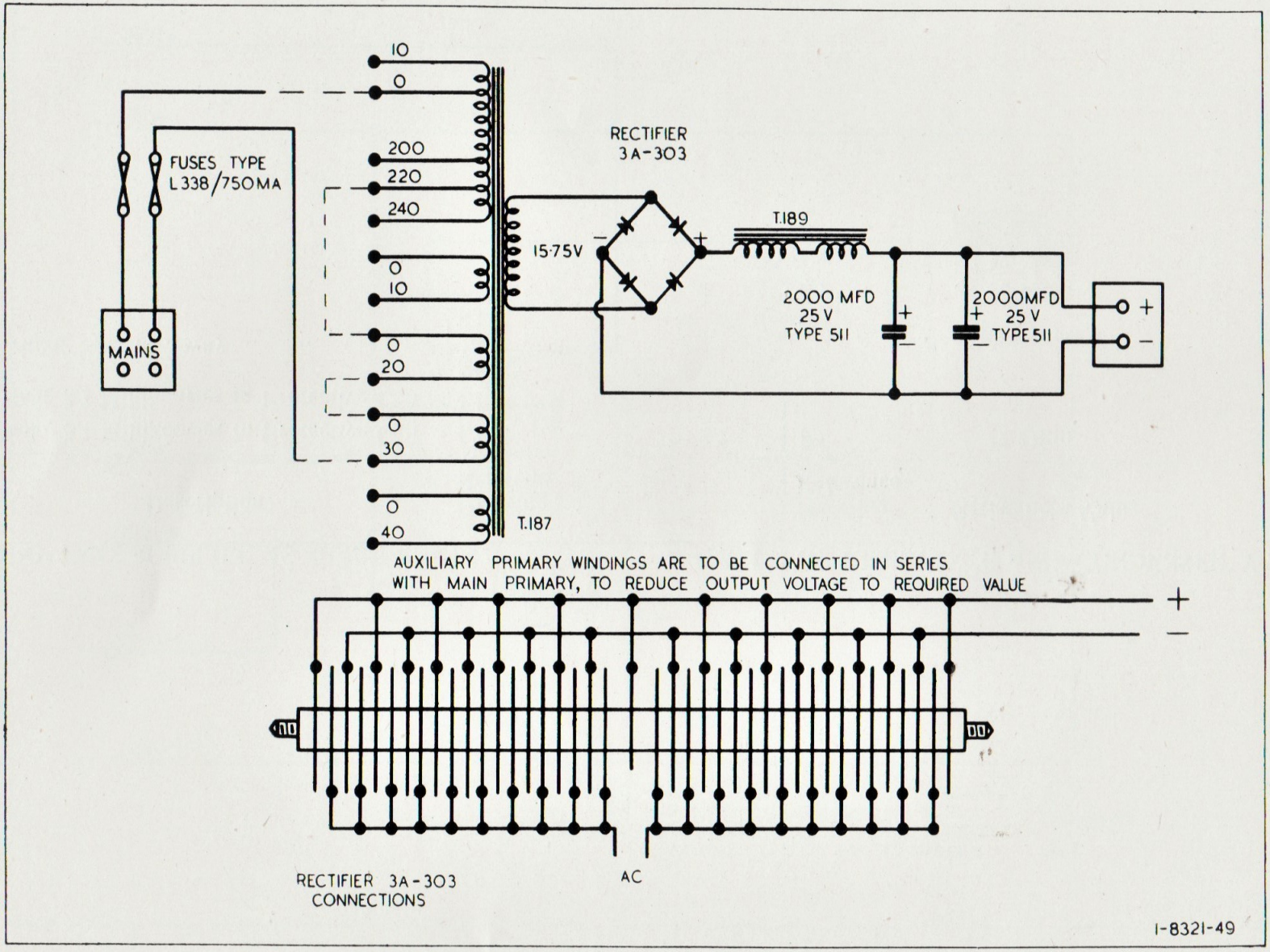
PLATE No. 8321

FIELD CURRENT SUPPLY UNIT No. 1 8 AMPERES D.C. DY4933



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
T187	Transformer 0/250 Volts Input 15-75 Volts Output	——
T189	Choke	——
3A-303	Metal Rectifier	——
L338	Fuses 750 Milliamperes	——
511	Condensers Electrolytic 2,000 MFD 25 Volts	——

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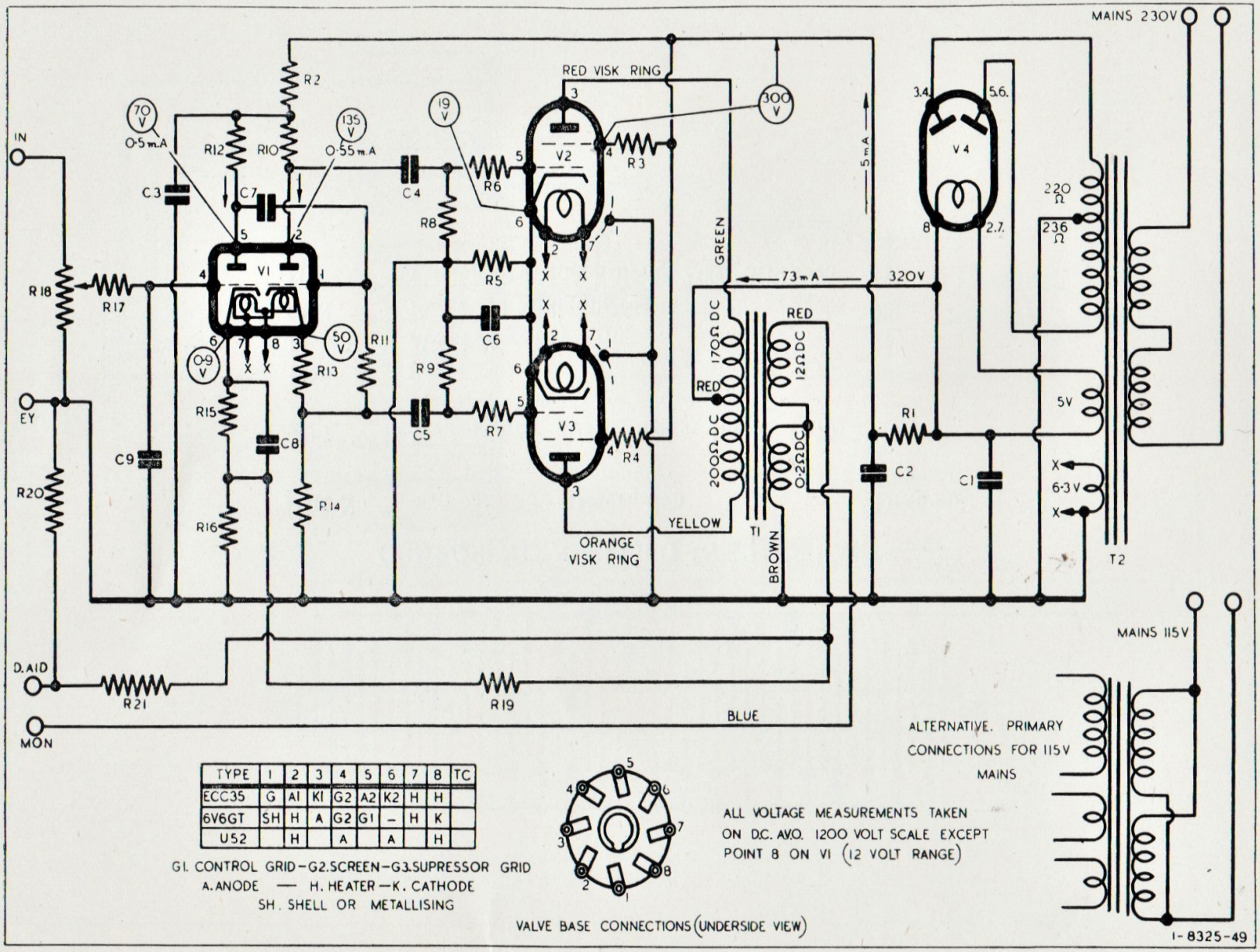
PLATE No. 8325

TYPE 103 MONITOR & DEAF AID PANEL



TYPE	1	2	3	4	5	6	7	8	TC
ECC35	G	A1	K1	G2	A2	K2	H	H	
6V6GT	SH	H	A	G2	G1	–	H	K	
U52		H		A		A		H	

G1. CONTROL GRID – G2. SCREEN – G3. SUPRESSOR GRID
A. ANODE — H. HEATER – K. CATHODE
SH. SHELL OR METALLISING

VALVE BASE CONNECTIONS (UNDERSIDE VIEW)

ALL VOLTAGE MEASUREMENTS TAKEN ON D.C. AVO. 1200 VOLT SCALE EXCEPT POINT 8 ON V1 (12 VOLT RANGE)

I-8325-49

COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
103006	Transformer, Mains, Dual Voltage Primary 115 and 230 Volts. 25 to 60 Cycles	T2
103007	Transformer, Output	T1
REC.5102/S	Potentiometer 1,000 Ohms	R18
CX1.1448	Condenser 8 MFD Inverted Mounting	C1
CX1.1445	Condenser 4 MFD Inverted Mounting	C2
CX1.1442	Condenser 0.5 MFD Inverted Mounting	C3
CS.2481	Condenser 50 MFD 12 Volts working	C8
CS.2484	Condesers 25 MFD 25 Volts working	C6

TABLE OF RESISTANCE AND CONDENSER VALUES

Drawing Reference	Value	Drawing Reference	Value
R 1	4,700 Ohms plus/minus 10%	C1	8 MFD
R 2	47,000 Ohms plus/minus 10%	C2	4 MFD
R 3	1,000 Ohms plus/minus 10%	C3	.5 MFD
R 4	1,000 Ohms plus/minus 10%	C4	.01 MFD
R 5	270 Ohms plus/minus 5%	C5	.01 MFD
R 6	47,000 Ohms plus/minus 10%	C6	25 MFD
R 7	47,000 Ohms plus/minus 10%	C7	.005 MFD
R 8	47,000 Ohms plus/minus 10%	C8	50 MFD
R 9	47,000 Ohms plus/minus 10%	C9	50 Micro MFD
R10	100,000 Ohms plus/minus 5%		
R11	2.2 Megohms plus/minus 10%		
R12	270,000 Ohms plus/minus 10%		
R13	3,300 Ohms plus/minus 10%		VALVES
R14	100,000 Ohms plus/minus 5%		
R15	2,200 Ohms plus/minus 10%	V1 =	ECC35, 6SL7, GT
R16	1,000 Ohms plus/minus 5%	V2 =	6V6GT, 6V6, 6V6G
R17	100,000 Ohms plus/minus 10%	V3 =	6V6GT, 6V6, 6V6G
R18	1,000 Ohms plus/minus 10%	V4 =	U52 5U4G
R19	36,000 Ohms plus/minus 5%		5V4G, 5W4,
R20	1,000 Ohms plus/minus 10%		5Y3G/GT
R21	100 Ohms plus/minus 20%		5Y4G

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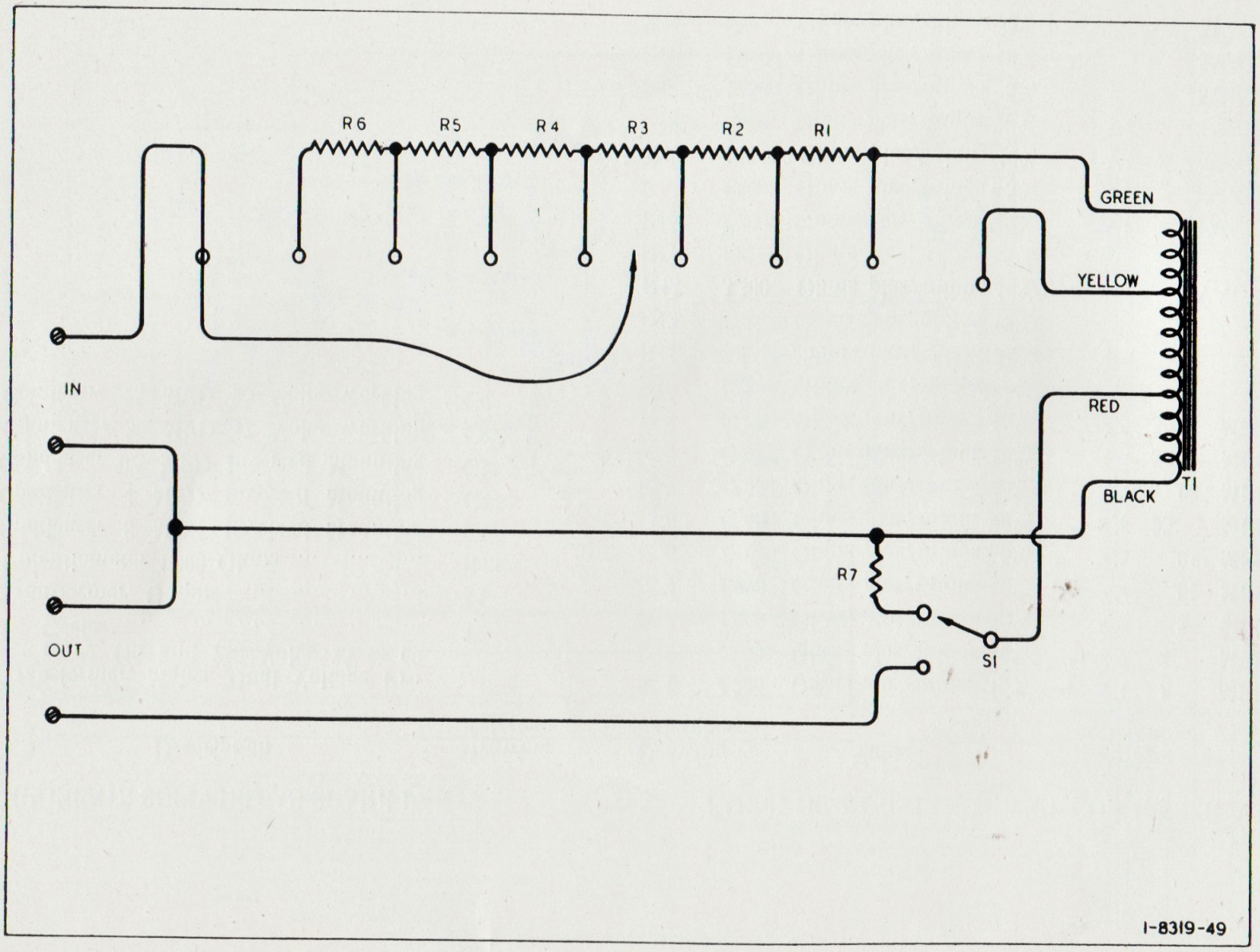
PLATE No. 8319

TYPE 89 MONITOR CONTROL BOX



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
89000	Complete Unit Type 89	—
900000	Auto Transformer	T1
	Switch Single Pole Double Throw ...	S1

RESISTANCE VALUES

Drawing Reference	Value of Resistance
R1	22 Ohms — 20%
R2	33 Ohms — 20%
R3	47 Ohms — 20%
R4	68 Ohms — 20%
R5	100 Ohms — 20%
R6	150 Ohms — 20%
R7	10 Ohms — 20%

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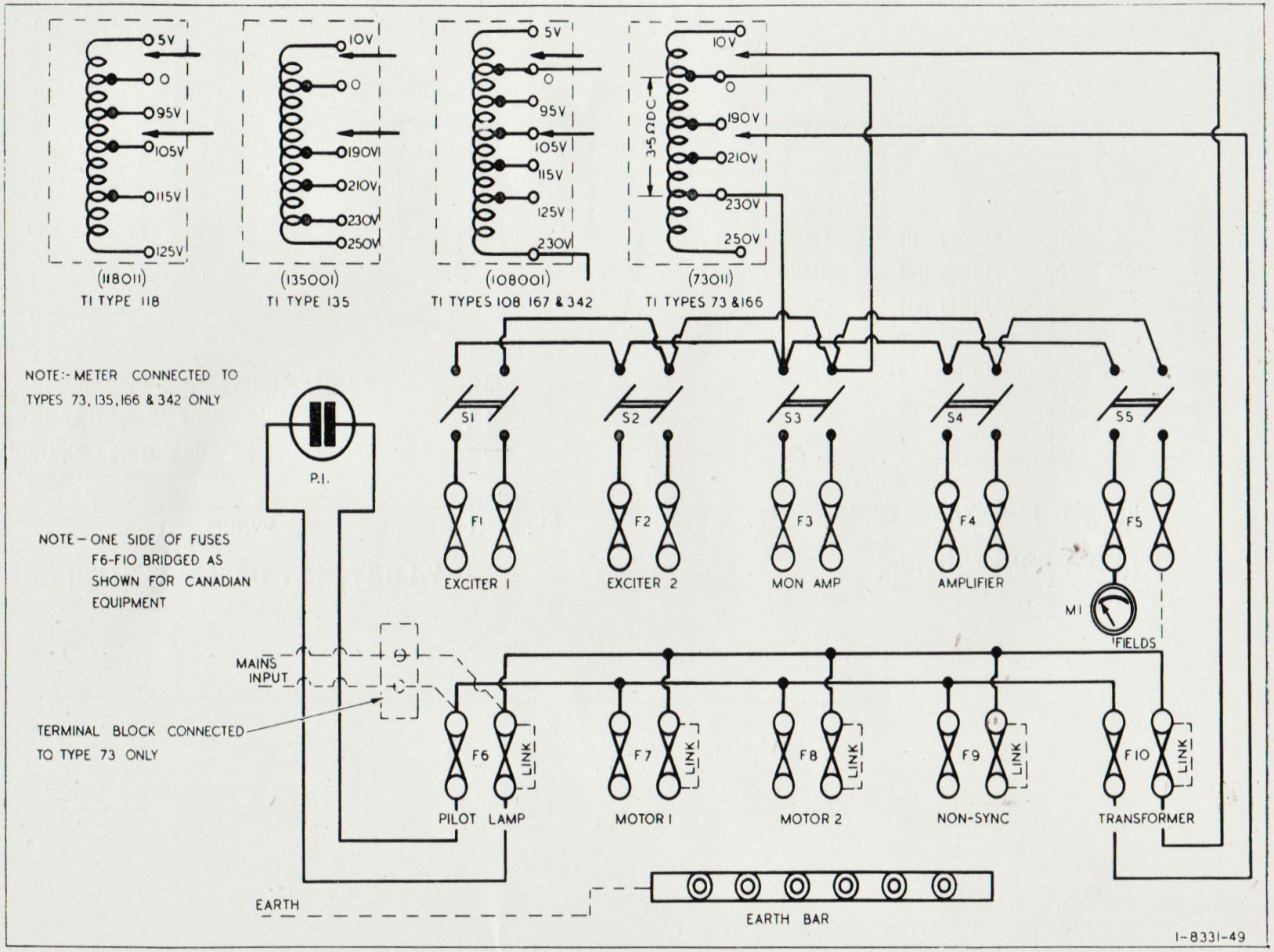
PLATE No. 8331

TYPES 73, 108, 118, 135, 166, 167 & 342 SWITCH FUSE DISTRIBUTION UNITS



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COMPONENTS

Part No.	Drawing Reference	Description	Unit Type
73011	T1	Transformer 1 KVA Auto ... 190-260 Volts Input ... ... 230 Volts Output 50-60 Cycles	73 and 166
108001	T1	Transformer 1 KVA Auto ... 95-130 Volts Input ... . 230 Volts Output 50-60 Cycles	108 167 342
118001	T1	Transformer 1 KVA Auto .. 95-130 Volts Input 230 Volts Output 25-60 Cycles	118
135001	T1	Transformer 1 KVA Auto ... 190-260 Volts Input ... ... 230 Volts Output 25-60 Cycles	135
MSA.P5A	M1	Meter 0-5 Ampere ... ... Moving Coil SIFAM	73 135 166 342
LIN.1110	P1	Pilot Lamp Neon 90-130 Volts Small Bayonet Contact ... ... Twin Contact	118 167 342
LIN.1230	P1	Pilot Lamp Neon 190-260 Volts Small Bayonet Contact ... ... Twin Contact	73 108 135 166
SWD.2T	S1 to S5	Switch Double Pole ... ... Single Throw. Diamond ...	All Units

Part No.	Drawing Reference	Description	Unit Type
FCAO.200	F 1 to F 6	Fuse 2 Ampere ... Glass Cartridge ...	73 108
See Note	F 1 to F 6	Fuse 5 Ampere ...	118, 135 166. 167,342
FCA.1000	F 7	Fuse 10 Ampere ...	73, 108
See Note	F 7	Fuse 15 Ampere ...	135, 166
	F 7	Fuse 20 Ampere	118, 167, 342
FCA.1000	F 8	Fuse 10 Ampere ...	73, 108
See Note	F 8	Fuse 15 Ampere ...	135, 166
	F 8	Fuse 20 Ampere ...	118, 167, 342
FCAO.200	F 9	Fuse 2 Ampere ...	73, 108
See Note	F 9	Fuse 5 Ampere ...	118, 135, 166 167, 342
FCA.1000	F10	Fuse 10 Ampere ...	73, 108
See Note	F10	Fuse 15 Ampere ...	135, 166
	F10	Fuse 20 Ampere ...	118, 167, 342

NOTE:	Slydlock Fuse Holder (Long Stud)	166101
	Slydlock Fuse Holder (Short Stud)	166102
	5 Amp Slydlock Wire Carrier ...	FBA.1500
	Dennis Fuse Holder (Long Stud)	117013
	Dennis Fuse Holder (Short Stud)	117014
	5 Amp Dennis Fuse Wire Carrier	FBB.1500
Fuse Wire Carriers used in circuits rated above 5 Amps indicated by Red Spot		Slydlock 166103 Dennis 117015

2 Amp and 10 Amp Glass Cartridge Fuses used in 73 and 108 Units only ... ...

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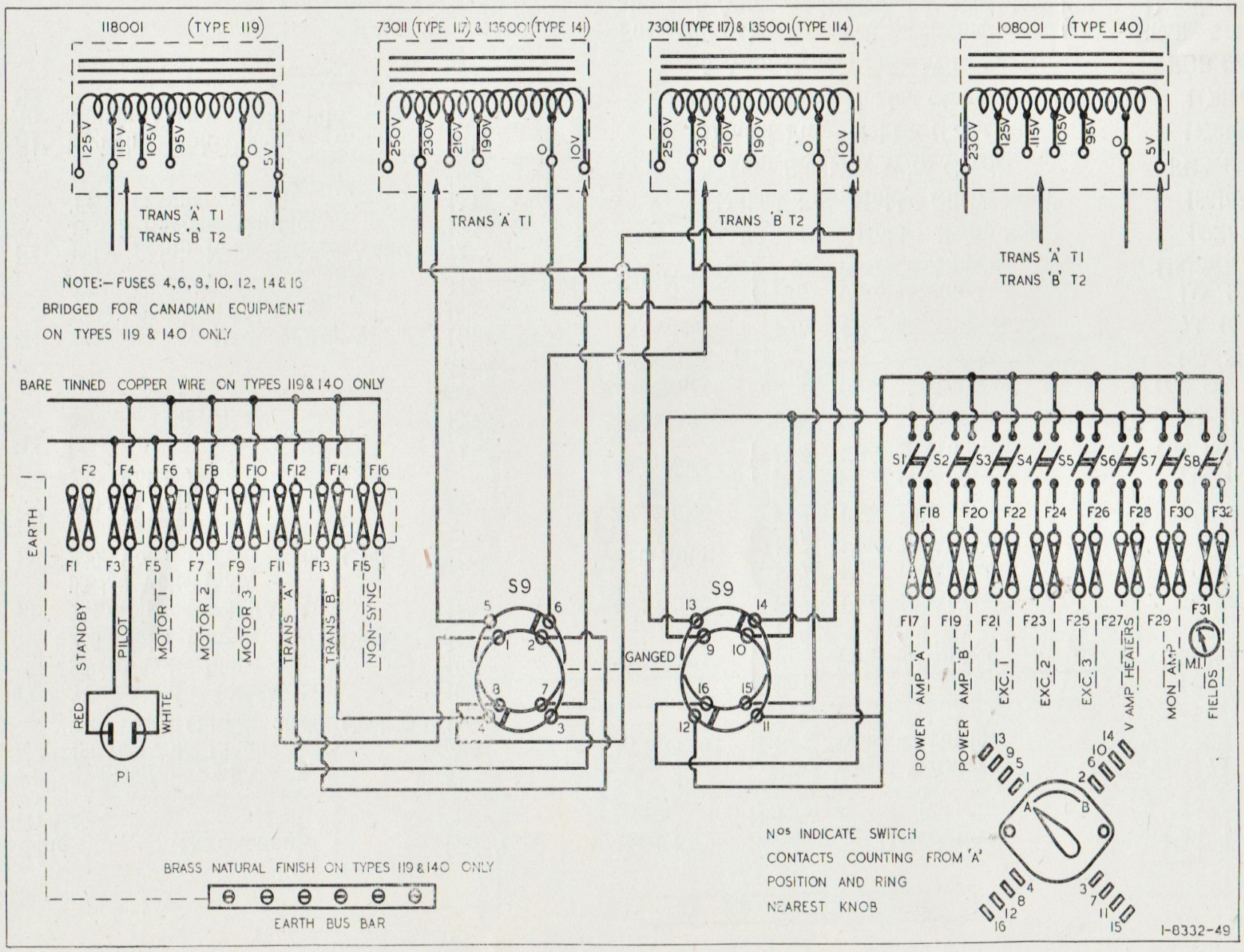
PLATE No. 8332

TYPES 117, 119, 140, 141, 430 & 472 SWITCH FUSE DISTRIBUTION UNITS



COMPONENTS

Part No.	Drawing Reference	Description	Unit Type
73011	T1 T2	Transformer 1 KVA Auto 190-260 Volts Input ... ... 230 Volts Output 50-60 Cycles	117 430
108001	T1 T2	Transformer 1 KVA Auto 95-130 Volts Input ... ... 230 Volts Output 50-60 Cycles	140 472
118001	T1 T2	Transformer 1 KVA Auto 95-130 Volts Input ... ... 115 Volts Output 25-60 Cycles ...	119
135001	T1 T2	Transformer 1 KVA Auto 190-260 Volts Input ... ... 230 Volts Output 25-60 Cycles	141
MSA.P5A	M1	Meter 0-5 Amp. Moving Iron ...	117
MSA.1A	M1	Meter 0-1 Amp. Moving Iron ...	141
MSA.2A	M1	Meter 0-2 Amp. Moving Iron ...	472
SWD.2T	S1 to S8	Switch Double Pole ... ... Single Throw. Diamond	All Units
SWA.C1C1	S	Switch, Mains Changeover ...	All Units
LIN.1110	P1	Pilot Lamp Neon ... ... 90-130 Volts	119 140 472
LIN.1230	P1	Pilot Lamp Neon ... ... 190-260 Volts	117 430, 141

Part No.	Drawing Reference	Description	Unit Type
See Note	F 1	Fuse 5 Ampere ...	All Units
See Note	F 2	Fuse 15 Ampere ...	117, 141, 430
See Note	F 2	Fuse 20 Ampere ...	119, 140, 472
See Note	F 3	Fuse 5 Ampere ...	All Units
See Note	F 4	Fuse 5 Ampere ...	
See Note	F 5 to F14	Fuse 15 Ampere ...	117, 141
See Note	F 5 to F14	Fuse 20 Ampere ...	119, 140
See Note	F15 to F32	Fuse 5 Ampere ...	All Units

NOTE: Slydlock Fuse Holder (Long Stud)	166101
Slydlock Fuse Holder (Short Stud)	166102
5 Amp Slydlock Wire Carrier ...	FBA.1500
Dennis Fuse Holder (Long Stud)	117013
Dennis Fuse Holder (Short Stud)	117014
5 Amp Dennis Fuse Wire Carrier	FBA.1500
Fuse Wire Carriers used in circuits rated above 5 Amps indicated by Red Spot	Slydlock 166103 Dennis 117015

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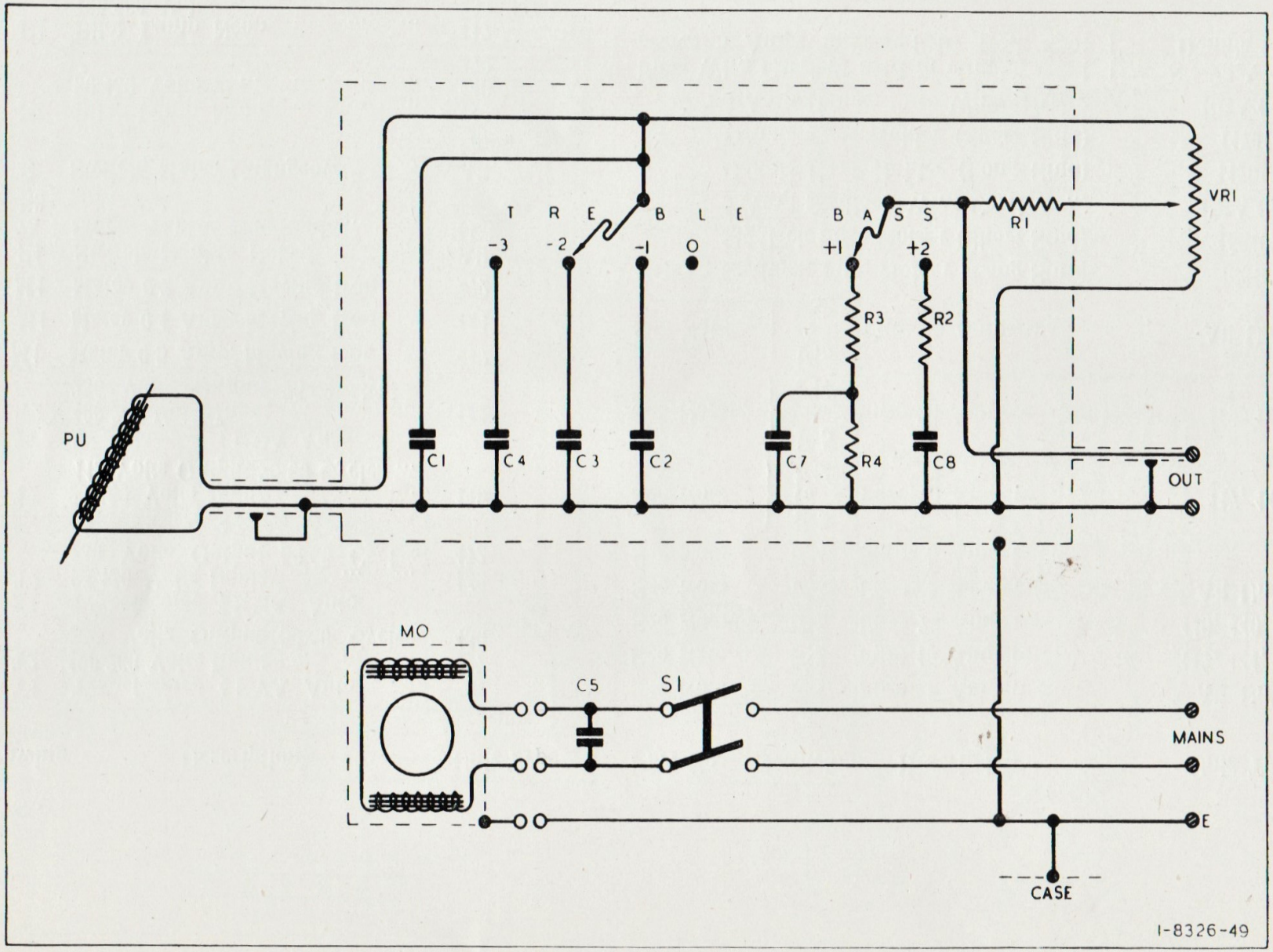
PLATE No. 8326

TYPE 84 NON. SYNC.



COMPONENTS SUPPLIED AS SPARE PARTS

Part No.	Description	Drawing Reference
TAC.7A	Motor Garrard	MO
PUG.20	Pick-up Garrard	PU
SWA.80058	Switch (Arrow) Double-pole Single Throw	S1
POD.7503	Potentiometer 50,000 Ohms	VR1

RESISTANCE AND CONDENSER VALUES

Drawing Reference	Value
R1	22,000 Ohms
R2	2,200 Ohms
R3	3,300 Ohms
R4	15,000 Ohms
C1	.002 MFD
C2	.002 MFD
C3	.005 MFD
C4	.01 MFD
C5	.10 MFD
C7	.25 MFD
C8	.25 MFD

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A

GAUMONT-KALEE

PRODUCT

by

GB-KALEE

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37 - 41 MORTIMER STREET
LONDON, W.1

TELEPHONE : MUSEUM 5432
TELEGRAMS : GEBEKAY, WESDO, LONDON