

GENERAL DESCRIPTION AND GUIDE
FOR
ERECTION, MAINTENANCE AND SERVICE
OF
THE COMPTON MELOTONE

F O R E W O R D

This booklet is issued as a guide to the maintainance and service of the MELOTONE, and in order to serve its purpose it necessarily comprises a very detailed technical and practical description. It is therefore in the interest of the company to restrict any form of circulation and to limit its use only to the purchaser and any bona fide engineer directly concerned with the actual service work.

The MELOTONE is covered by numerous British and Foreign patents, a list of which is appended, but nevertheless this booklet is only issued upon the understanding that its contents are otherwise strictly confidential.

M E L O T O N E

GENERAL DESCRIPTION

This instrument is designed for light secular music, and is not intended for religious use. The stop specification is such that all the required tones are instantly available in the same manner as that of a theatre organ employing pipes as tone sources. A detailed description of the use of the stops, manuals, pedals etc. is therefore unnecessary as it corresponds exactly with normal organ practice in every way. As with a theatre organ, the three departments are the "Accompaniment" organ (lower keyboard), "solo" organ (upper keyboard), and "Pedal" organ. The stops are divided into these three groups in the usual manner.

The "Accompaniment" is expressive by means of the left-hand swell pedal and the "solo" by means of the right-hand pedal.

The instrument may be placed in any convenient position. Like most musical instruments damp situations must be avoided even though the normal finish and treatment is suitable, and is as recommended, for tropical use. The keys are ivory and not plastic, and should, if possible, be kept so that daylight can reduce discolouration to a minimum. The pedal-board should be removed by withdrawing it clear of the console. It is important that the floor should be level otherwise certain notes may not speak or may cypher.

The loudspeaker cabinet is connected by means of a standard lead terminated by suitable non-interchangeable plugs and/or sockets. The mains connection is made in similar manner. The arrangement of these leads and terminations is such that it is not possible to connect wrongly. It is, however, important that the instrument should not be switched on until the loudspeaker connection has been made.

An additional loudspeaker cabinet may be used when desired, and as connected by means of a loudspeaker extension lead which bridges one speaker to the other. This, although not increasing the total volume of sound will give greater distribution where require

One, or several additional amplifiers may be added where more power is required. These may be placed in any suitable position external to the console and are also connected by non-interchangeable leads. Each amplifier must, naturally, have at least one loudspeaker cabinet, but each permits of two or more speakers being connected, as previously mentioned.

Four sockets and one plug are situated on the lower rear member of the instrument chassis, the central three being visible through an aperture in the back of the console. Of these three the plug to the left is the mains input connection and the socket on the right is for the loudspeakers. The central socket is for connection to additional amplifiers if these are required. The outer sockets (not normally visible) are for the power unit (left) and amplifier (right). All leads for the various functions are 15ft. long unless otherwise specified. The general arrangement is shown in the diagram.

The pitch of the instruments depends largely upon the condition of the electricity supply. Slight adjustment may be made to the pitch and the method of doing so will be described later.

The current supply must be 'Alternating' and upon no account must connection be made to a 'Direct' current supply. In this case a rotary converter must be employed. Provision in the instrument is made for use with either 50 or 60 cycle supplies of voltages between 200 and 250 volts; also between 100 and 120 volts but in this latter case an auto-transformer is incorporated, and this must be specified when ordering.

The switch to the right of the stops switches the whole instrument on, including additional amplifiers, if any. The switch to the left of the stops switches only the additional amplifiers. It is, therefore, possible to play with the normal power of the instrument only or plus any additional power.

The tremulant is set at the factory to produce an average degree of variation of tone. This, however, may be altered if desired.

The Meletone is delivered, set for 240 volts, 50 cycles, unless specific instructions to the contrary have been received. A label is attached to the "on-off" switch stating the supply for which the instrument has been adjusted, if different from the above.

The power consumed with one amplifier is approximately 500 watts.

INSTALLATION

Before any connection is made to the mains supply it must first be ascertained that the various adjustments have been made to suit the voltage and frequency.

The rear panel of the console must be removed and on the underside of the power unit will be found the five terminals of the mains transformer. The Green and Blue leads must be reconnected if necessary.

For 50 cycle mains, adjustments are made as follows:

The mains leads (Red and White) are inserted in terminals thus:-

FOR 200 Volts	TERMINALS 0 and 200
210 Volts	TERMINALS 10 and 200
220 Volts	TERMINALS 0 and 220
230 Volts	TERMINALS 10 and 220
240 Volts	TERMINALS 0 and 240
250 Volts	TERMINALS 10 and 240

The motor leads are inserted in terminals 0 and 200 for all the above mains voltages and never need to be altered so long as the frequency is 50 cycles. When the instrument is new and before the bearings of various moving parts are properly run in and if the motor is sluggish in starting, the motor voltage may be increased by using terminals 0 and 220, but this should not be done unless absolutely necessary.

For 60 cycle working the mains voltage adjustments are the same as for 50 cycles. The motor leads, however, must be inserted in the 0 and 240 volt terminals. The 10 and 240 terminals may be used should starting be sluggish, as mentioned above.

For mains of the 100-120 voltages range, an auto-transformer must be used. This is fitted at the factory when specified but may be fitted later, instructions for so doing are given below. This transformer multiplies the main volts. by 2, hence the voltage adjustments for 110 volt mains will be as for 220 volts and so forth.

Check that the two braided flex leads from the underside of the generator frame are connected to the input sockets on the amplifier and ensure that the union rings are screwed home firmly.

Insert valves in order shown in the diagram and make sure that the grid caps on valves 1 and 2 are connected to their respective valves. Check also that the leads and plugs from both amplifier and power unit are inserted in their respective sockets.

Remove generator cover and check that the main belt is in the grooves of the pulleys and runs over them as shown. The arm supporting the jockey pulley (right-hand and) should be inclined towards the C pulley (largest). Belts stretch slightly, and in some cases it may be found that the jockey arm extends too far to the right. Should this be so the belt may be taken over the pulleys in a more zig-zag fashion, but it is important that it runs as shown OVER the C and jockey pulleys and also over the B, and main motor pulleys and under the tremulant pulleys. Ensure that the lower return part of the belt does not foul the central cover fixing pillar. The tension (see further notes regarding this). All bearings are packed with oil and no lubrication should be required for some months (see "maintenance").

If additional amplifiers are used the same valve checking procedure, as described later, should be carried out. These amplifiers may well be left switched off until it is ensured that the instrument with the internal amplifier is functioning correctly and carry out these additional tests later.

Fuses mounted near the two switches, on the right of the stops, protect all internal apparatus and those on the left, the external amplifier or amplifiers.

Try through all keys and stops as it is possible that, due to transportation, some dislodgement may have taken place. All actions are easily accessible, and possible faults should be obvious and easy to put right.

The volume setting may be altered to suit individual taste. This should be done with due regard to the swell pedals, and it is most important that, with all stops drawn and swell pedals fully open, a full chord will not cause overloading or distortion. A further point must be noticed, viz., the balance between base and treble. Two volume controls labelled "base" and "treble" are situated on the edge of the amplifier, and may be turned anti-clockwise to reduce, or clockwise to increase. It is best to play successive notes covering middle C with the 8 ft. tibia stop drawn and balance the two controls to give an even loudness between notes lower than middle C and those above it.

The tremulant may be adjusted for depth and also to some extent, speed. The "depth" or "violence" is adjusted as follows:-

By firmly holding the movable part of the tremulant assembly, centre pivot screw may be loosened and removed. This will reveal several optional positions arranged in

spiral form on the mounting plate behind it. The pivot screw is then replaced in whichever position gives the required result.

The tremulant speed may be altered by slipping the springbelts into either set of grooves. It is most important that both belts are in grooves of like diameter. The larger of the two pulleys is intended for 50 cycles and the smaller for 60 cycles mains. Belts may be easily changed by slipping them over the main pulley and also over the smaller driving pulley.

TECHNICAL DESCRIPTION

Generator: This consists of 12 generator units, all of which are identical in construction but are run at speeds corresponding to the 12 semi-tones of the octave. Each unit produces 7 notes at intervals of one octave apart, and hence a total of 84 notes, a semi-tone apart. The lowest three notes on each unit, (e.g., 16ft. C, 8ft. C and Tenor C on the C disc) are situated on the side of the unit away from the pulley, and the top four octaves on the pulley side of the unit. Two corresponding rotating members are mounted on the shaft and between them are two stationary pick-up plates which are electrostatically screened from each other and are connected with the eleven other similar plates and to the bass and treble inputs of the amplifier. The stationary outside stat or plates carry the waveform electrodes each of which is connected to the time-constant networks situated within the main chassis number. Normally, all electrodes are held at ground potential, as also are the rotating members, and, due to zero potential differences existing between the two relatively moving electrodes no signal voltage is generated, in spite of the fact that rotation takes all the time.

It will be noted that the A.C. or signal circuit is uninterrupted by any feyngcircuits and that the generator units are quiescent. When a key is depressed a D.C. potential is applied to one or more electrodes, and a note will sound proportional in strength to the D.C. voltage applied.

The basic circuit diagram shows key and stop circuits associated with one speaker note. The pick-up plate 1 is directly connected to the input of the amplifier. The rotating member 2 is of serrated form, made in bakelite, rendering completely conductive by metalisation insulated from the shaft and held at zero potential by its inherent leakage to the latter. The waveform electrode 3 is normally

held at zero potential through resistors 4,5 and 6. A 400 volt polarising supply, obtaining from the power unit, is firstly varied by the function of the swell pedal rheostat 7 and shunt resistor 8. This variable voltage is connected to a set of silver contact bars 9 (situated in the lower part of the stop-action, and which are common to all stop contacts in any one department, e.g. "solo". When a stop is drawn contact 10 closes and current flows through the voicing resistor 11 and bus bar resistor 12. The resulting potential, dependent upon the choices of valve for resistor 11, is conveyed to the key 'bus bar 13. When now a key is depressed contact 14 closes and current flows through the leak resistor 6 and also through 5 to other pairs of resistors identical with 5 and 6 and which are connected effectively at the function point 15. The resulting potential at this junction is conveyed, via resistor 4 to the electrode 3. The rate of potential build-up is a function mainly of resistor 5 and capacitor 16 and also resistor 4 and capacitor 17. The circuit has been divided up to show in which sections the various components lie. In practice these circuits are multiple but each is identical with that shown. The two small pedals are fed from the same 400 volt supply and are then connected to the stop 'bus bars. The resistor 8 is actually composite, consisting of six 250K resistors in parallel, giving good heat radiation for some 3 watts disaipation. The accompaniment swell pedal (left-hand from front) feeds the bars for the accompaniment stops and also those for the pedal stops. The latter section, however, is separately wired to the swell pedal and by changing a lead from on terminal to another the pedal stops may be rendered non-expensive.

It is considered at no one stop will require more components than eight harmonies and hendes each stop operates eight contacts which are terminated with springs. The springs may be seen beneath the upper most bars of the stop action, and their object is to form a compact and reliable method of mounting any combination of resistors in any of the many possible positions. The wire leads of normal standard resistors are bent to form hooks and which pliers are passed between the upper bars and hooked on the spring, pulled upwards and the top end then hooked on the required harmonies 'bus bar. Owing to the high voltages involved at this point there is no fear of bad contact due to unsoldered joints. Resistors may be interchanged without fear of shock provided the stop being altered is "off". It should be noted, however, that the contact bars to which the contacts make i.e. on the underside of the action, are at high voltage but this may be reduced by closing the swell pedals. Small and thin flat-nosed pliers with insukated handles are recommended for this purpose. The uppermost bars or rails correspond to the different harmonies and form the portion 18 in fig. 6. of which there are then to each department.

The actual harmonic order is given in tabular form. The resistor 12 is actually two resistors in parallel each of 250K, and connected at each end of the rail.

Voicing is carried out by placing resistors of pre-selected value so as to raise the potential of the desired harmonic bars by a prescribed amount. This matter will be treated in greater detail under the heading of "Voicing".

Each of the rails is repeated in contact bar form in the key actions, and the portion 18 is representative of one of these. There are ten, and these are connected in the same order as in the stop-action. Each key makes one contact on each bar, and the partial tones will sound at strength according to the degree to which the potential of each has been raised.

The pairs of resistors 5 and 6 are situated at the base of each key contact, resistors 6 being grounded along the length of each support piece and resistors 5 connected by means of a diagonal cross-wiring joining together all those associated with one speaking note or tone. Connection is then made in cable form, from point 15 to the time-constant units, i.e., resistor 4 in the generator section. At first sight the use of these pairs of resistors may seem unduly complex. This network as a whole is designed (a) to minimise unwanted voltages building-up on 'bus bars which should be at zero volts, (b) to minimise "robbing", i.e., the reduction of strength of a note when other interwired keys are operated on zero volts, and (c) to produce a natural additive effect when keys are held simultaneously when, if held singly, would sound at about equal level.

At the point 15 in the time-constant unit, there are only three wires, one from each department, viz., Pedal, Accompaniment and solo.

Also at point 15 a resistor 19 is generally inserted and is used to regulate the strength of each individual note. A spring connector is used, and resistors bent with hooks provide easy inter-changeability. (See notes on Regulation)

Resistors 4 are normally 2.2 megaohms but vary in different parts of the compass. Capacitors 16 and 17 are 0.01 mfd and 0.001 mfd respectively.

The vibraphone circuit is connected at point 20 and components 21, 23 and 25 being 10 megaohms, 2 megaohms and 75 kohms respectively and capacitor 22, 0.5uf. Resistor 25 is situated at the base of the key contact and bar 27 connected to the stop bars in identical manner to the others.

Above the generator units the bass (inner) and treble (outer) connections will be seen. At the point where the flexible leads are connected to these, a shunt resistor will be seen. This is virtually in parallel with the amplifier input and, as the generators are capacitative, loading at this point reduces the low frequency and of the response. The base channel is usually loaded with 1 megaohm and the treble with half megaohm.

AMPLIFICATION

There are in fact two amplifiers on a common chassis, one handles the bass and the other the treble. This is made necessary by the large amplitudes required for adequate 32 cycle basses and the consequent danger of inter-modulation. The cross-over frequency takes place at middle C, approximately 260 c/s.

The low frequency signal is fed from the generators via a screened lead to P2 (see diagram) and amplified by pentode V2. The optional capacitor C2 provides means of increasing the gain when the generator output is insufficient to fully drive the amplifier.

V2 is fed through a low pass filter consisting of R5 and C3 to the Cathode-follower V4a. From then go to the gain control VR1 and on to the power amplifier section. Cathode-follower output is also taken to pin 10 of plug CP5 which provides a connection so that the additional amplifiers may be connected in cases where more power is required.

The poweramplifier section comprises V4b, a voltage amplifier V6a and b, connected as a "see-saw" phase-splitter and two KT66 valves, V8 and V10, working in class AB1 push-pull. Approximately 10db negative feedback is provided from the secondary of the output transformer T1 to the Cathode of V6a. The output screens are fed from a stabilizer valve V11.

In the treble section C33 and R35 form a high pass filter, and an additional filter is formed by C37 and R41, otherwise the two sections are similar.

In order to avoid hum loops the negative rail, sections A and B are earthed at the generator via P1 and P2 respectively. It is necessary to provide a temporary earth return at these points when testing on the bench.

This type of power amplifier may be used as an additional amplifier by making certain minor modifications to the circuit.

The pre-amplifier stages must be isolated at the points marked X and Y in the diagram. The negative rails A and D referred to above must be earthed. The method of doing this may be seen by referring to the under chassis view diagram. Inserting links 2 and 4 will earth B and A respectively, and removing links 1 and 3 will isolate the pre-amplifier.

Loud speaker output impedances available are 6 ohms and 15 ohms. They can be altered above the chassis by adjusting the green leads only on the output transformer secondaries T1 and T2.

VOICING

Resistors within the range from 10k ohms to 10m ohms are used. 1 watt ratings should be used and of a type not exceeding half diameter. It is not essential, however, to use 1 watt types for ohmic values greater than 1m ohm. The following values in approximately equal db stops are normally used:-

1 - 10m (ppp)	8 - 2.2m	15 - 330k
2 - 8.2m	9 - 1.5m	16 - 220k
3 - 6.8m	10 - 1.3m	17 - 180K
4 - 5.6m	11 - 1.0H	18 - 120k
5 - 4.3m	12 - 750k	19 - 74k
6 - 3.3m	13 - 620k	20 - 40k
7 - 2.7m	14 - 470k	21 - 10k (fff)

The resistor wires should be cut and bent to form a small hook at one end and a larger one at the other, the latter being more suitable for hooking over the voicing rail. It is desirable that this larger hook be made on the end at which the colour coding starts as its value can then be more readily discerned, when in its final position.

Owing to the inexhaustable variations of tonal qualities possible, it is useless to attempt to enumerate any of them except to quote the values used in the voicing according to the stop specification supplied. The following table gives the harmonic and bar number, and the value of resistors in meagohms or thousands of ohms. It will be noted that the harmonic range extends into the 16ft registers so that at 8 ft pitch the harmonics do not always lie adjacent to one

another. This also applies to the other registrar.

The harmonics are coded in feet corresponding to pipe lengths on the note at C is also given as a guide thus:

TOPS		1	2	3	4	5	6	7	8	9	10
<u>Pedal</u>		(16)	(8)	(51/3)	(4)	(31/5)	(22/3)	(2)	(13/5)	(11/3)	(1)
Contra Bass	16	21	15	15	9	-	-	-	-	-	-
Scardon	16	18	-	10	-	9	-	-	-	-	-
Echo Bass	16	15	-	10	-	-	-	-	-	-	-
Octave	8	-	18	-	17	-	-	15	10	7	-
Plate	8	-	19	-	-	-	-	-	-	-	-
Plate	4	-	-	-	18	-	-	-	-	-	-
Caryphone	16	21	21	18	-	10	6	8	-	-	-
Caryphone	8	-	21	-	21	-	14	18	15	14	-
<u>Accompaniment</u>		(16)	(8)	(51/3)	(4)	(31/5)	(22/3)	(2)	(13/5)	(11/3)	(1)
Alto Flute	16	18	15	11	-	-	-	-	-	-	-
Alto	8	-	21	-	-	-	10	-	-	-	-
Alto Flute	8	-	20	-	20	-	-	12	-	-	-
Alto	8	-	10	-	17	-	9	10	13	"	8
Alto	4	-	-	-	20	-	-	12	-	-	-
Alto	4	-	-	-	21	-	-	-	-	10	-
Piccolo	2	-	-	-	-	-	-	19	-	-	-
Tuba Horn	8	-	21	-	19	-	13	11	-	-	-
<u>Alto</u>		(16)	(8)	(51/3)	(4)	(22/3)	(2)	(13/5)	(11/3)	(1)	(1)
Alto	16	21	-	10	-	-	-	-	-	-	-
Alto	8	-	21	-	-	10	-	-	-	-	-
Concert Flute	8	-	18	-	15	11	-	-	-	-	-
Clarinet	8	-	20	-	-	19	-	12	-	-	-
Clarinet	8	-	12	-	15	16	10	13	7	-	-
Alto	4	-	-	-	20	-	-	-	15	-	-
Clarinet	22/3	-	-	-	-	13	-	-	-	-	-
Piccolo	2	-	-	-	-	-	12	-	-	-	-
Contra Tuba	16	21	21	21	18	12	-	-	-	-	-
Tuba	8	-	21	-	21	20	-	11	-	-	-
Clarinet	4	-	-	-	21	-	21	20	15	11	-
Clarinet	8	-	-	-	-	-	-	-	-	-	17

Bar 1 nearest keys; Nos. refer to assist and values given previously.

COMPTON MELOTONE... SCHEMATIC OF MAIN WIRING AND PLUGS.

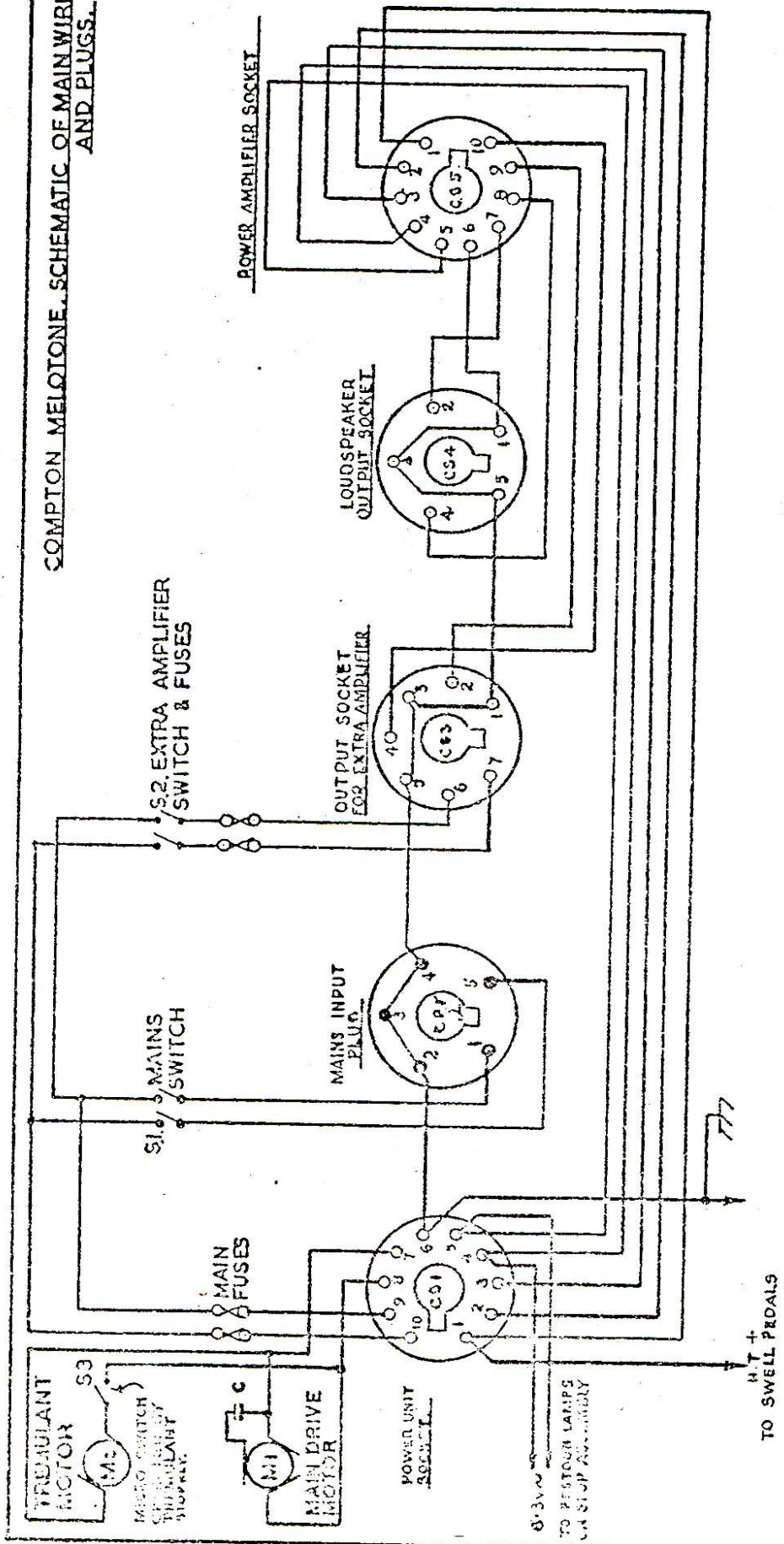
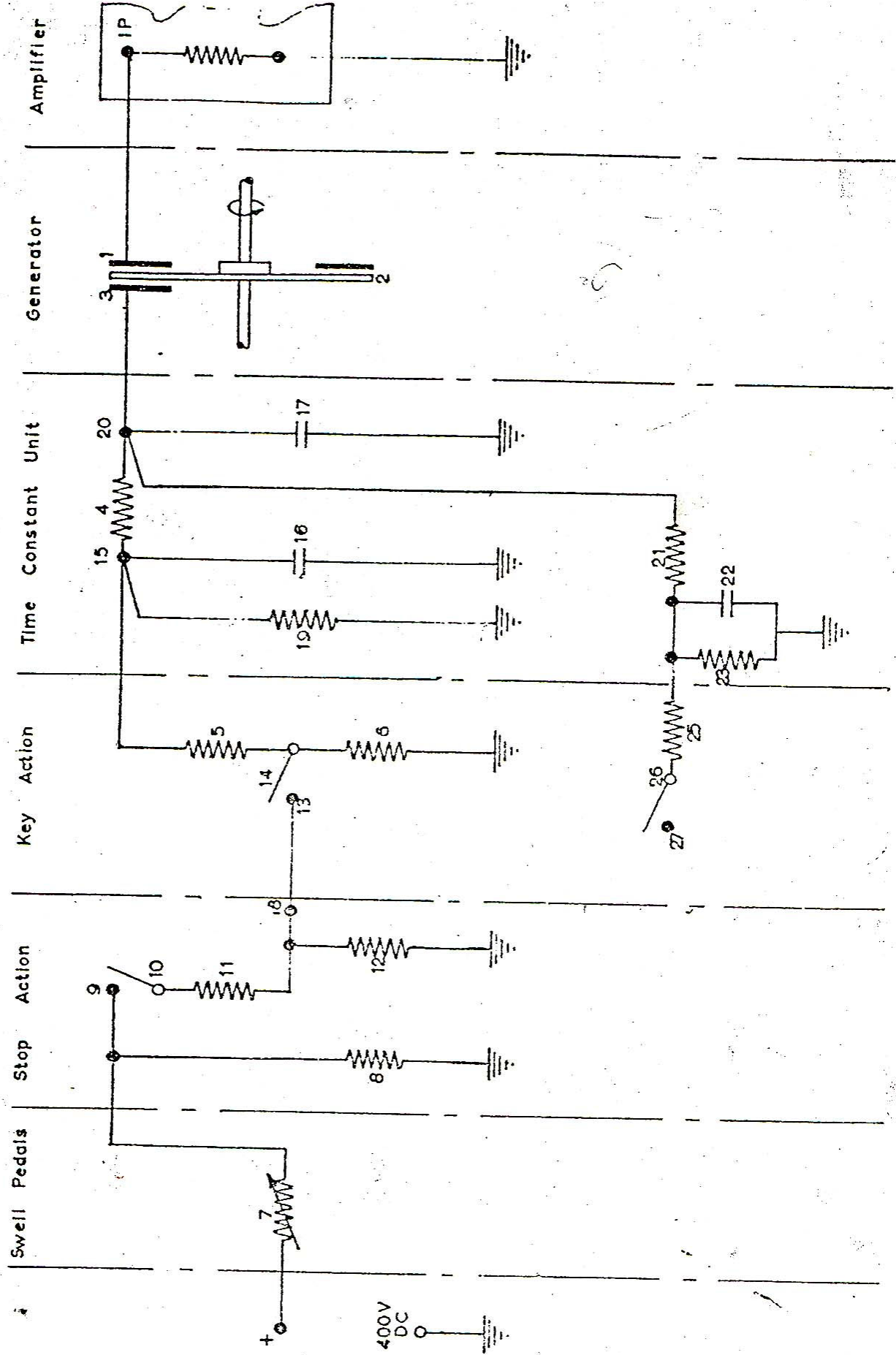


TABLE OF PLUG CONNECTIONS

	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10
CS1 POWER UNIT	H.T. 1	H.T. 2	H.T. 3	H.T.R	H.T.R	EARTH	MOTOR	MOTOR	MAINS	MAINS
CS2 MAINS INPUT	MAINS	EARTH	EARTH	EARTH	MAINS	—	—	—	—	—
CS3 EXTRA AMP	EARTH	TREBLE	EARTH	BASS	EARTH	MAINS	—	—	—	—
CS4 L.S. OUTPUT	EARTH	TREBLE	EARTH	BASS	EARTH	—	—	—	—	—
CS5 POWER AMP	H.T. 1	H.T. 2	H.T. 3	H.T.R	H.T.R	EARTH	TREBLE	BASS	EXTRA AMP	EXTRA AMP

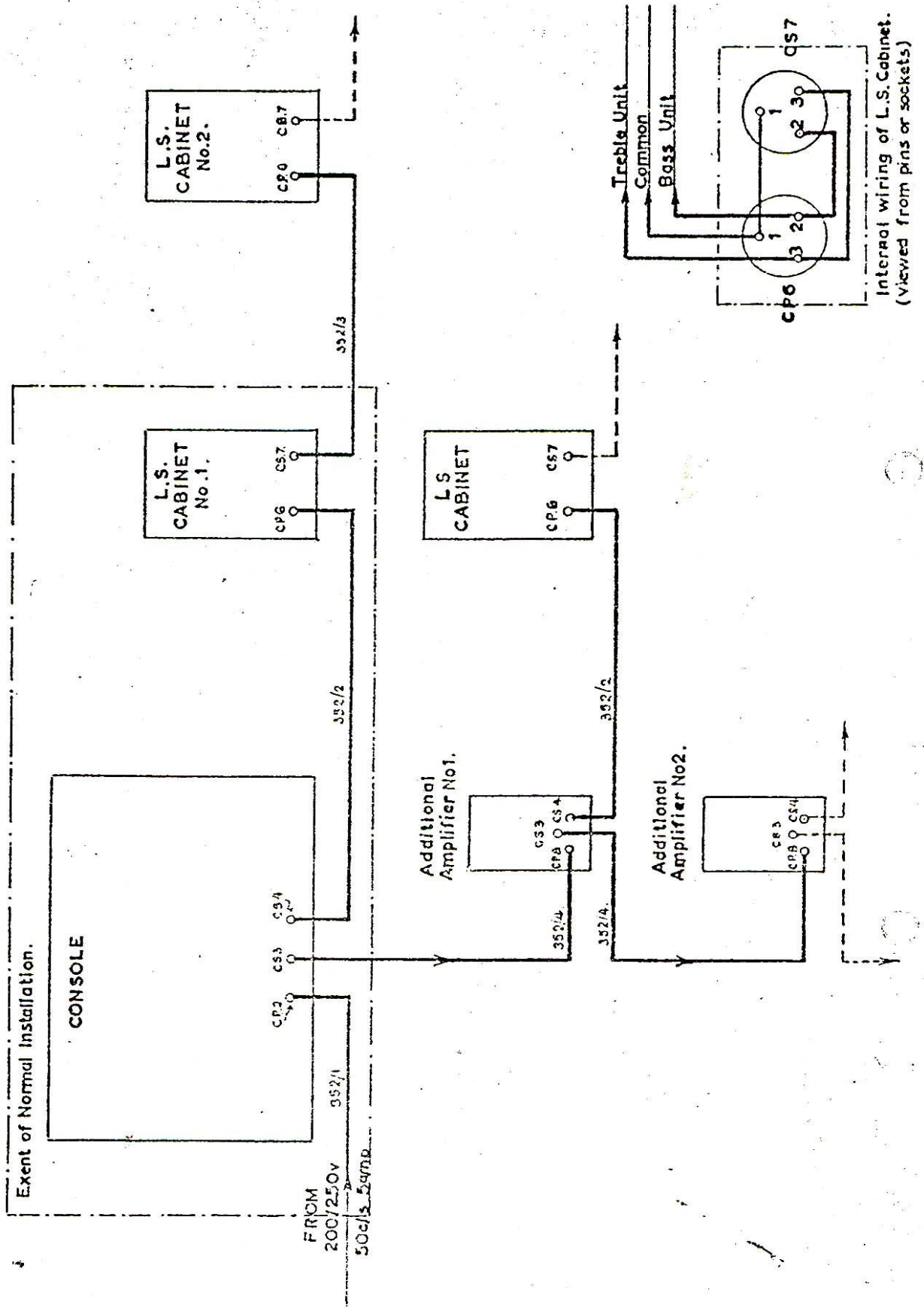
- NOTE:-**
1. PLUGS VIEWED FROM FRONT.
 2. IGNORE ANY NUMBERING IN PLUG MOULDINGS.

MELOTONE BASIC CIRCUIT DIAGRAM



MELOTONE INSTALLATION

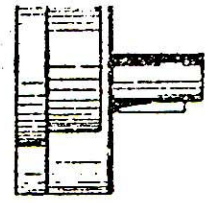
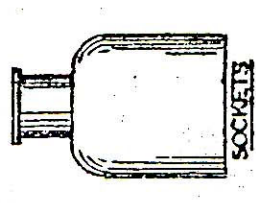
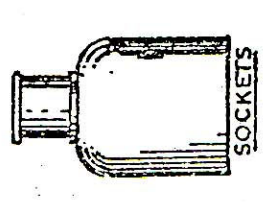
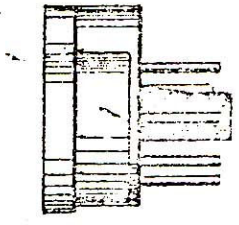
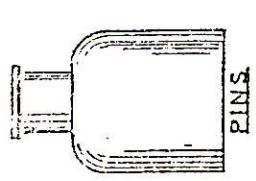
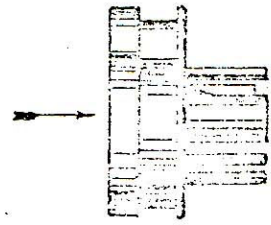
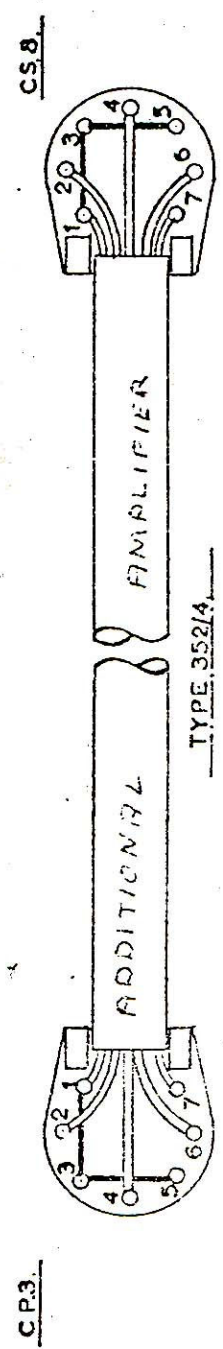
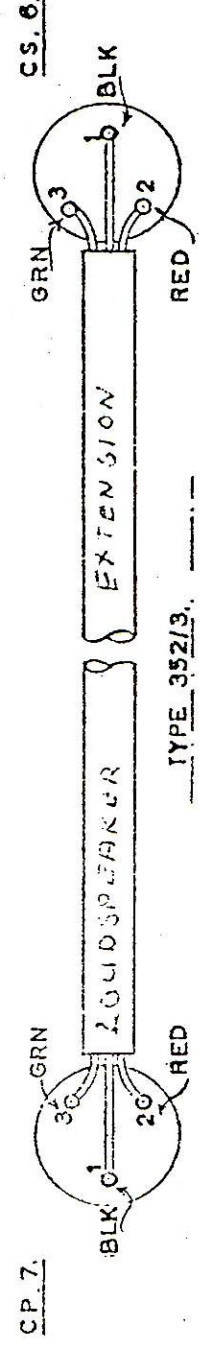
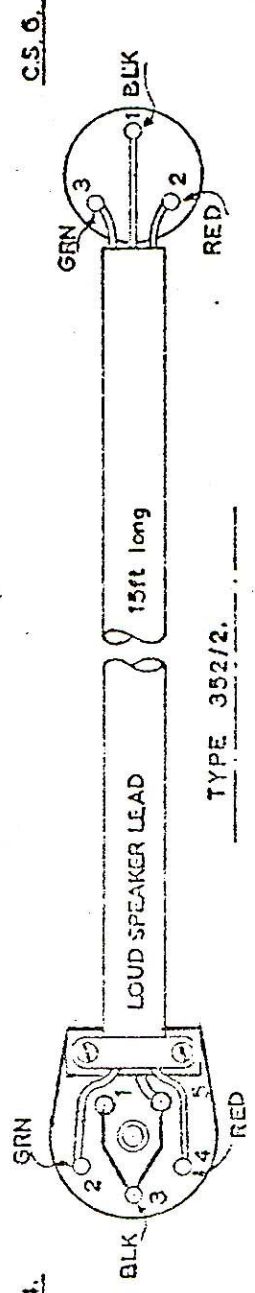
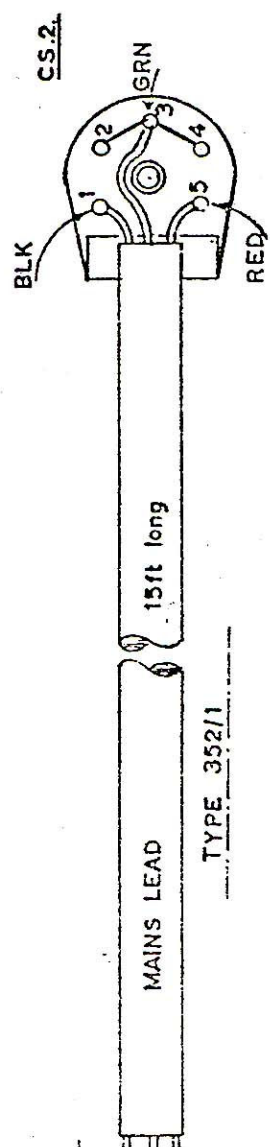
Showing complete arrangement including extra L.S. Cabinets and Additional Amplifiers.



STANDARD CONNECTOR LEADS.

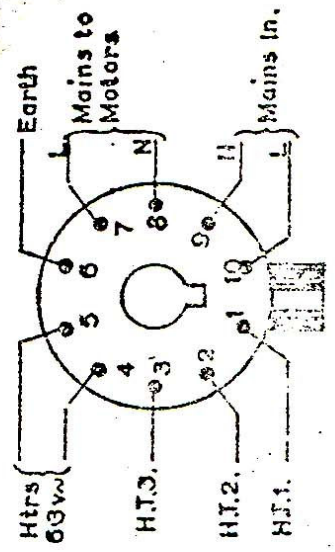
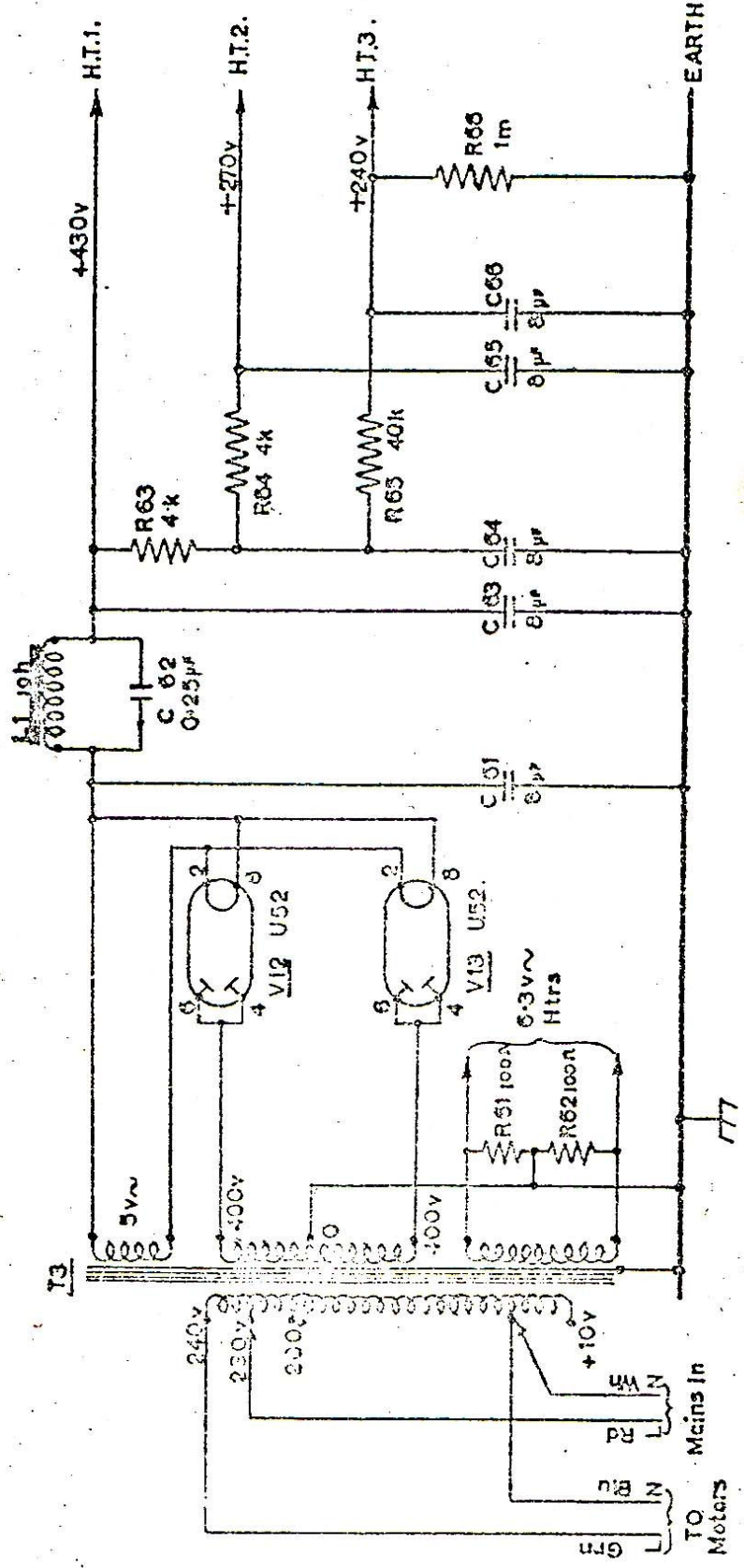
Wire Ends For Customers Plug

BLK neutral...
GRN earth.....
RED line.....

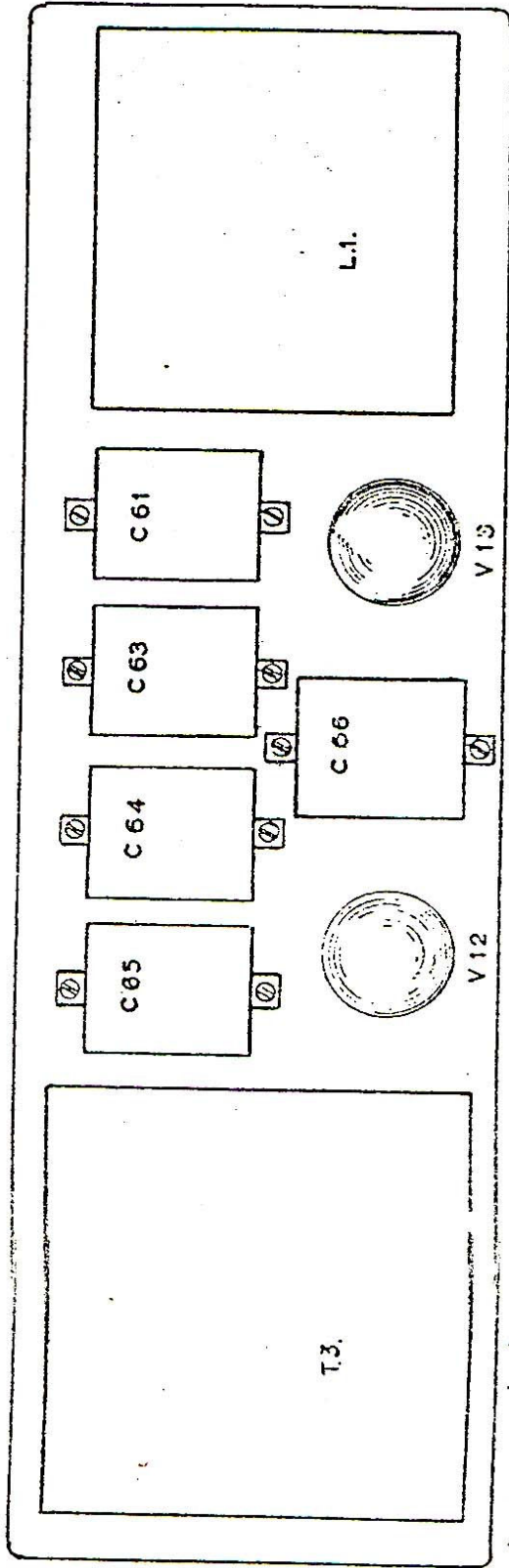


View of all Plugs and Sockets showing connections in direction of Arrows with covers removed

COMPTON MELOPHONE POWER UNIT, SCHEMATIC.

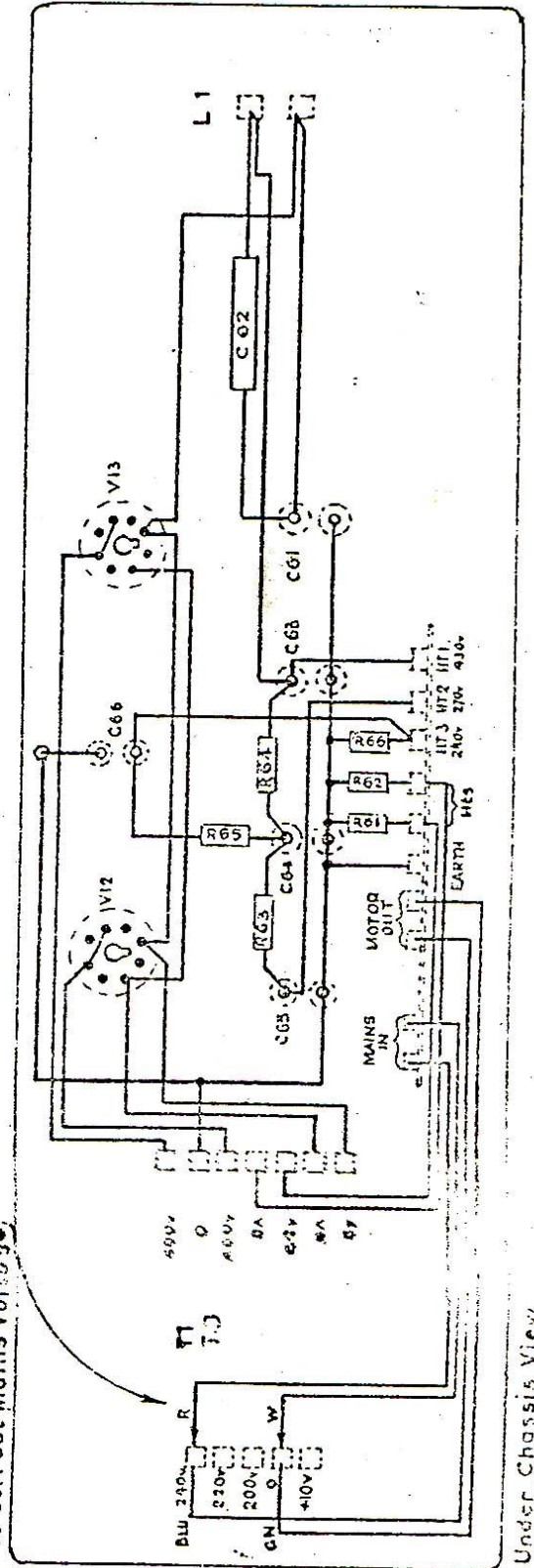


MELOTONE POWER SUPPLY UNIT, TYPE PU.352.

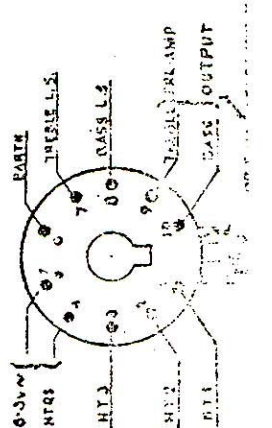
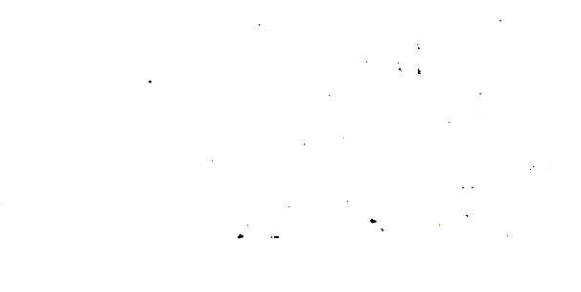
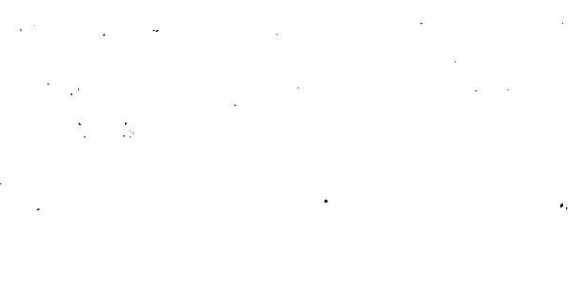
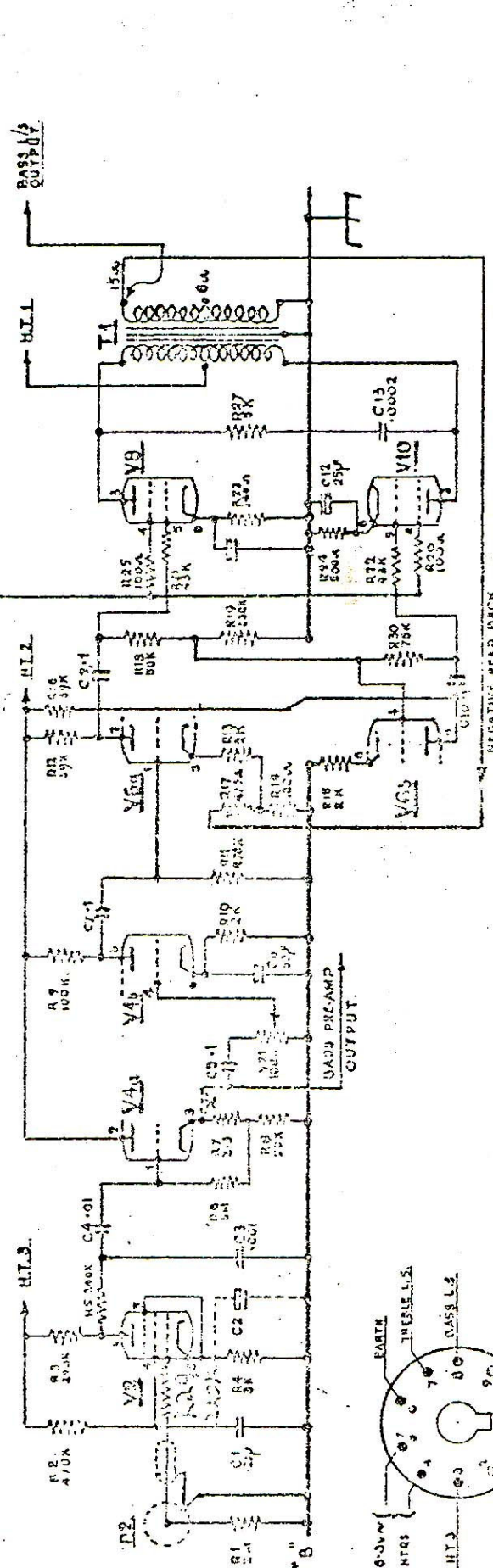
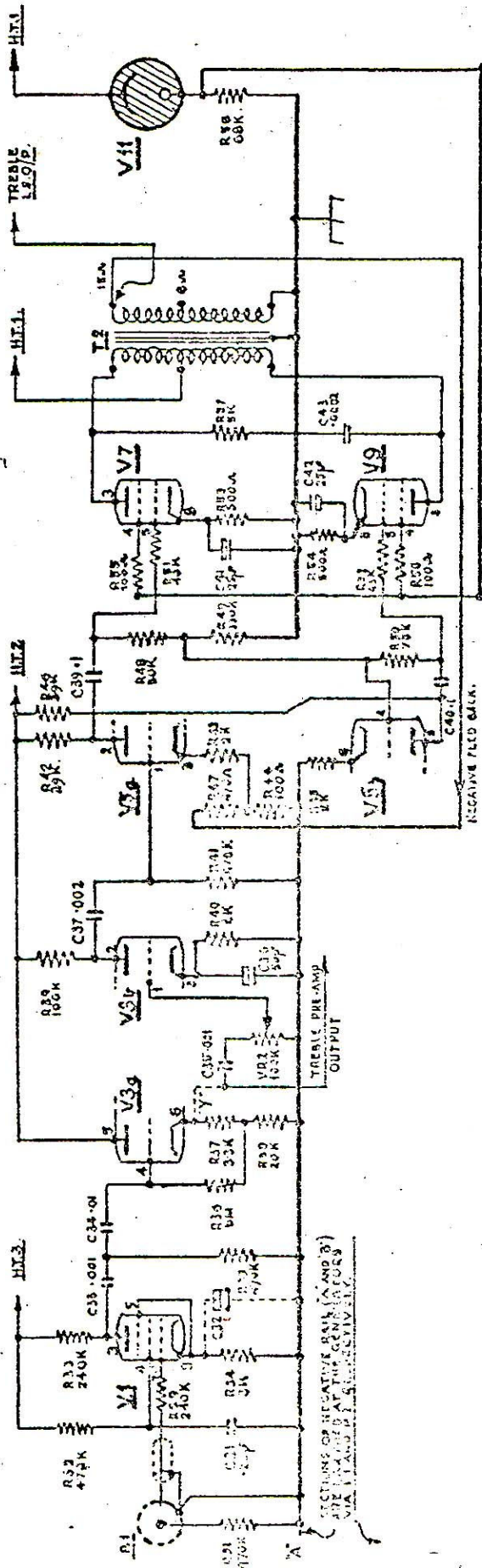


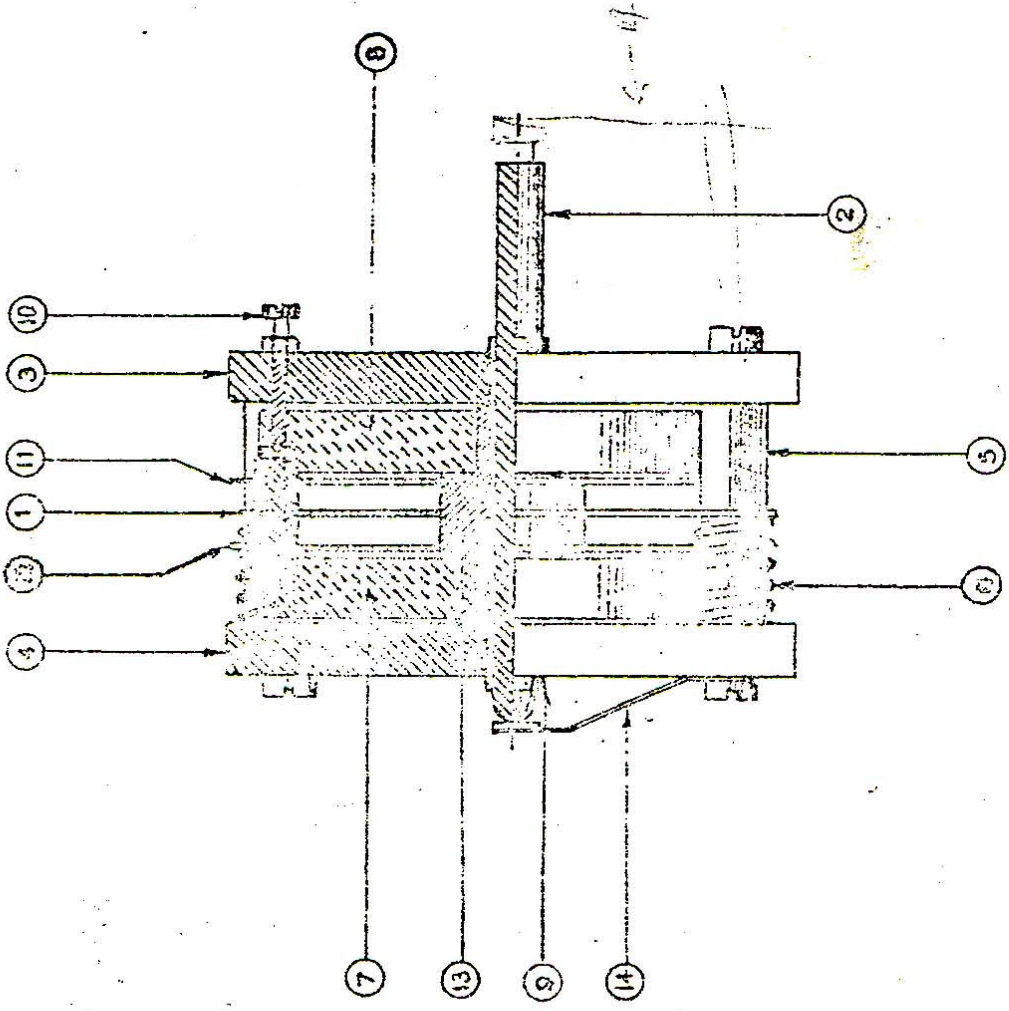
Above Chassis View

Set Red and White Leads on T.1.
To Correct Mains Voltage.



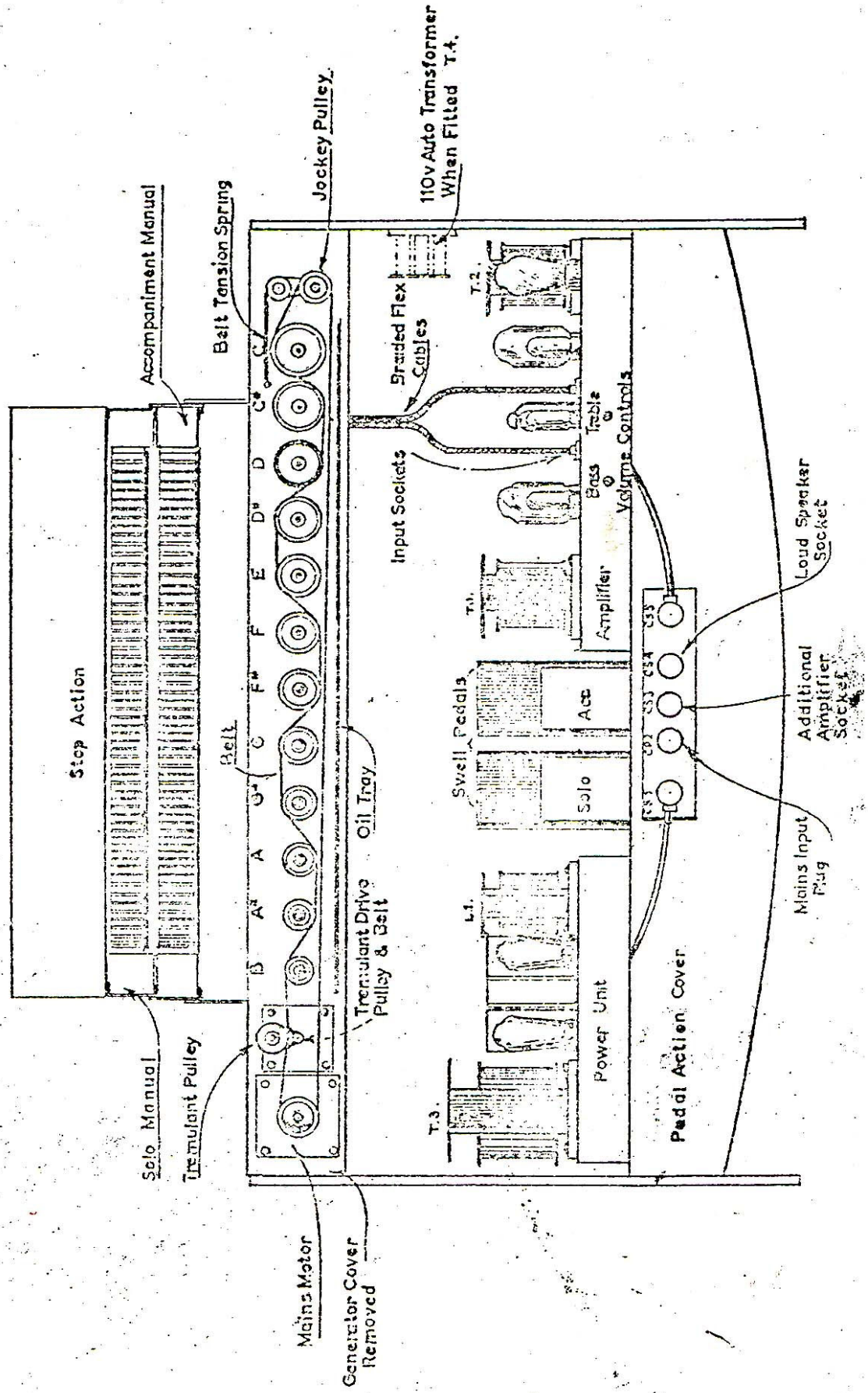
Under Chassis View





MELCORNE GENERATOR UNIT

MELOTONE VIEWED FROM BACK.



PA 352 & PU 352
COMPONENTS LIST.

RESISTORS.

Nos.	Value	%	Type	Position in Amp. Panel					Power Unit.	Total.
				A.	B.	C.	D.	Misc.		
R6, R36	5M		1/2w	1	1			2		2
R1	2M		1/2w	1				1		1
R11, R31,										
R35, R41	470K		"	1	3			4		4
R19, R49	330K		"	1			1	2		2
R5, R29										
R59.	240K		"		1			2	3	3
R20, R50	75K	5	"	1			1	2		2
R18, R48	50K	5	"	1			1	2		2
R21, R22,										
R51, R52	43K		"					4	4	4
R17, R47	470	10	"	1	1			2		2
R14, R44	100	10	"	1	1			2		2
R61, R62	100		"						2	
									1	1
R66	1M		1/2w							
R2, R32	470K		"	1	1			2		2
R3, R33	340K		"	1	1			2		2
R9, R39	100K		"	1	1			2		2
R12, R16,										
R42, R46	39K		"	2			2	4		4
R8, R38	20K		"	1	1			2		2
R27, R57	4.7K		"	1			1	2		2
R1, R7,										
R54, R37	3.5K		"	2	2			4		4
R10, R13,										
R15, R40	2K		"	1	2	2	1	6		6
R43, R45										
R26, R28,										
R55, R56	100		"	2			2	4		4
R23, R24,										
R53, R54	500		4w	2			2	4		4
R53, R54	4K		A/A1						2	2
R65	40K		2w						1	1
R58	68K		4w				1		1	1

Potentiometers.

V1, V2	- II	Tropical- ised.	1/2"	Slotted spindle	2	2	2
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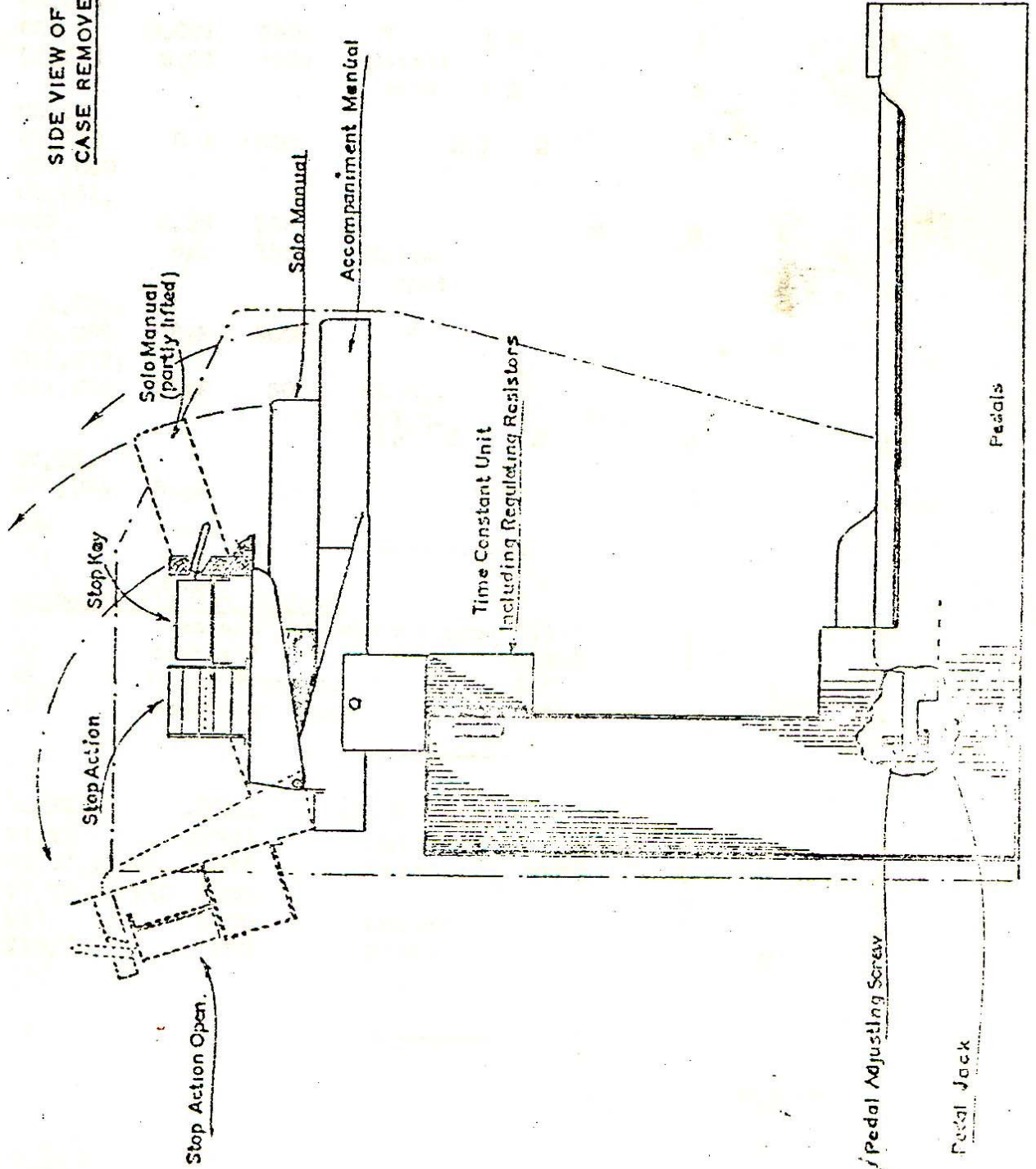
x In V1 & V2 valve caps

xx On V7, V8, V9 and V10 valve bases.

N.B. All resistors are plus or minus 5% except where otherwise stated.

Small pedal resistor is 39K 5watt

SIDE VIEW OF MELOTONE, CONSOLE
CASE REMOVED



PA 352 & PU 352
Components List.

Nos.	Value	WKG.V.	Type	POSITION IN AMP.				Power		Total
				Panel	A.	B.	C.D.	Misc.	Amp.	
C13, C13	0.0002	1000v	Funt	1		1			2	2
C37	0.002	500v	Mica			1			1	1
C3, C33										
C35	0.001	350v	"		1	2			3	3
C4, C34	0.01	500v	Metal-nite		1	2			3	3
C5, C7, C9, C10	0.1	500v			2	2	2		6	6
C39, C40										
C1, C31, C62.	0.25	350v						2	2	1
C66	8pF	350v	Nitr-ogol						2	1
C61, C63, C64, C65	8pF	600v	"						4	4
C11, C12, C41, C42	25pF	50v	Electrolytic		2	2			4	4
C2, C6, C32, C36	50pF	25v	"		2	2			4	4
C16	0.01pF									
C17	0.001pF									
C12	0.5pF									

Transformers and Chokes.

T1	Bass o/p Transformer type	646A1		1					1
T2	Treble " "	" 646A3		1					1
T3	Mains Transformer	" 646B						1	1
L3	Smoothing Choke...	" 646C						1	1

Valves. Type. Manufacturer.

V1, V2	EP37A	Phillard		2					2
V3, V4, V5, V6	B65	Osram	6SN7	4					4
V7, V8, V9, V10	KT66	"		4					4
V11	S150	Coscor		1					1
V12, V13	U52	Osram					2		2