Private and Confidential *For Trade Use Only*

"His Master's Voice"

SERVICE MANUAL

for

A.C. ELECTROGRAM

TABLE MODEL EG48

TECHNICAL SPECIFICATION

VOLTAGE RANGE:

200 to 250 volts. 50 c.p.s.

CONSUMPTION:

38 watts.

VALVES:

6B6G A.F. Amplifier.
6V6GT Power.
6X5GT Rectifier.

PILOT LAMP:

6.3 volts 0.15 to 0.3 amp.

PICK-UP:

H.M.V. Type 13.

TURNTABLE MOTOR:

Rim-drive synchronous A.C. Motor.

LOUDSPEAKER:

6-inch Permagnetic.
Voice coil impedance at 400 c.p.s., 3.7 ohms.

DIMENSIONS:

Width	15"
Height	10"
Depth	14"

WEIGHT:

Gross	26 lbs.
Net	22 lbs.

CIRCUIT DESCRIPTION

This model incorporates a 3-valve mains-operated audio frequency amplifier together with a pick-up and turntable motor equipped with automatic brake.

The pick-up, which is of a low impedance type, is fed through a step-up transformer into the grid of the 6B6G audio amplifier. Connected across the grid input are the volume control, tone control and equaliser circuit. The output of the amplifier is resistance-capacity coupled to a beam power output valve. This valve is in turn coupled to the speaker voice coil through a step-down transformer T3. The 2-pin socket connected across the speaker voice coil provides for the use of an extension speaker.

Negative feedback voltage is taken from the secondary of the output transformer and fed into the cathode circuit of the input valve. A phasing network consisting of R10-C11 is connected across the output transformer primary.

The high-tension circuit employs an indirectly heated high vacuum rectifier, the output of which is filtered by means of the iron-cored choke CK1 and associated electrolytic condensers, C5-C6.

PICK-UP

The pick-up is a low impedance constant velocity device, having a DC resistance of 1.3 ohms. Ordinary needles should not be used with this pick-up; "His Master's Voice" "Silent Stylus" or Columbia "99," which are a new miniature type, should be used. The needle should be inserted and pushed fully home without using undue pressure; it is normal for the needle to feel loose when correctly inserted; it should also protrude $\frac{1}{4}$inch and be vertical to the pick-up face.

MOTOR

For transit purposes the motor pulley is disengaged from the turntable rim by means of a transit screw. This screw, which is located on top of the motor board, should be unscrewed sufficiently to allow the motor pulley to fully bear on the turntable rim; the locknut should then be retightened.

The motor bearings are lubricated for many years' service. It is advised that no further lubrication be added.

THE AUTO-BRAKE

PRINCIPLE OF OPERATION

To switch "On," the pick-up arm is swung away from the turntable until lever L1 pushes the right fork of L2 in the same direction. This movement of L2 moves L4 to the left and this lever in turn moves L5. At the end of its travel L5 switches on the motor switch (under the motor board) and releases the brake HB.

During playing, the pick-up arm travels across the record until L1 commences to push the left fork of L2. This slight movement is transmitted to the trip lever L3 by the friction bearing BR. As long as the needle progresses over the record at the normal rate (obtained only by the actual playing of a record) the movement of the pick-up arm is not enough to move L3 sufficiently for the upper, or semi-circular portion of the pawl CW to engage fully with the tooth D on the frictional collar round the turntable bush. The cam A engages the lower portion, circular rubber bush, of CW, thus pushing the pawl away at each revolution.

When, however, the end of the record is reached and the spiral quick "run-in" groove gives the pick-up arm a more rapid movement, the increase in speed of movement is sufficient to cause the pawl to move far enough towards the turntable spindle for the tooth D to strike the face B, thus actuating the brake and operating the motor switch.

For hand operation the "Auto-brake on off" lever is moved to the "Off" position, thereby holding lever L3 away from the frictional collar on the turntable bush. Hand brake lever HB is then used for stopping the turntable.

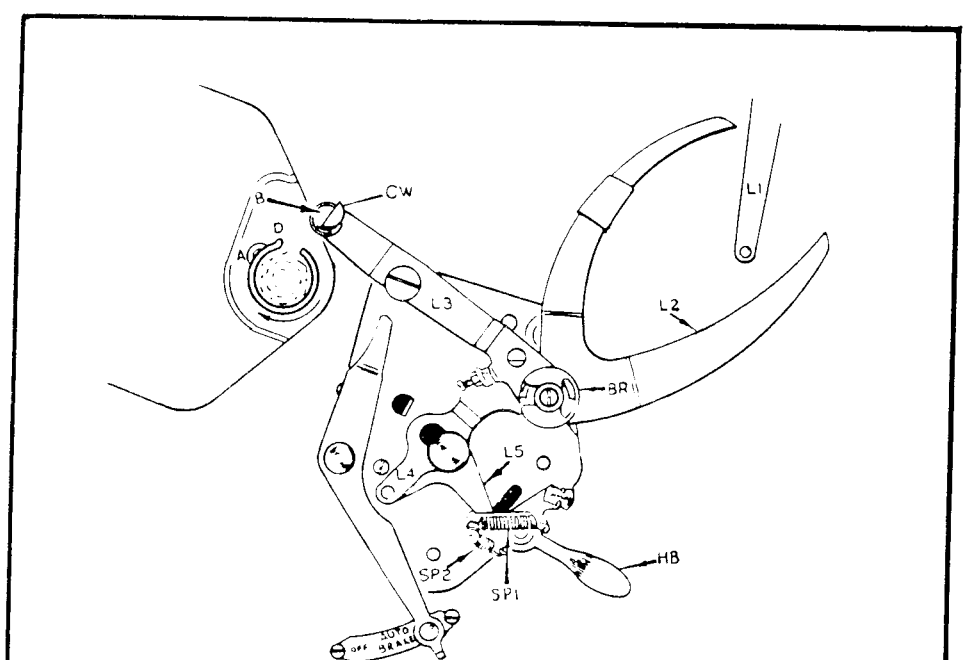
Switching "On" is the same for both "Hand" and "Auto" operation.

ADJUSTMENT OF BRAKE

If at any time the spring SP1 in the hand brake is renewed or replaced, make sure that the axis of the spring lies as far distant as possible from the centre of the pivot of the HB lever, otherwise the friction brake may fail to operate in conjunction with the automatic stop.

If the auto-brake does not function, increase the friction at BR by removing the Isle-o'-Man washer and bending the arms in order to increase the effective thickness. Too much friction at BR may cause a hollow knocking sound to be transmitted to the pick-up and may also cause undue record wear. If a knocking sound is heard, decrease slightly the friction of BR, but do not apply oil.

The only parts which may need lubrication are the pivots of all levers, and a smearing of grease should be applied between the frictional collar and the turntable bush. Under no circumstances apply lubrication to the frictional bearing BR. As the pivot at the centre of L3 has to be loose for satisfactory operation, any noise from this pivot can be reduced by applying a smearing of grease.



AUTO. BRAKE MECHANISM

DISMANTLING

CHASSIS

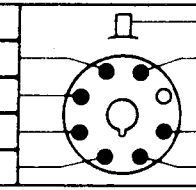
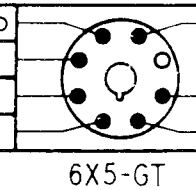
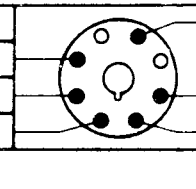
1. Disconnect power plug from supply mains.
2. Unscrew motor board fixing screws and after securing pick-up to rest arm, tilt board backwards so that it rests against the cabinet lid.
3. Unsolder leads connecting chassis to motor board.
4. Remove motor board.
5. Disconnect speaker plug, pilot lamp holder and valve grid lead.
6. Unscrew two chassis fixing nuts.
7. Withdraw chassis.

ADDITIONAL DATA

Any further service information desired may be obtained by addressing an enquiry to "Service Department, The Gramophone Co. Ltd., 2 Parramatta Road, Homebush, N.S.W."

— VOLTAGE TABLE —

- VOLTAGE AND CURRENT READINGS ARE WITHIN ± 15% WITH THE INSTRUMENT OPERATING ON AVERAGE MAINS VOLTAGE.
- VOLTAGE READINGS TAKEN WITH METER RESISTANCE OF 1,000 OHMS PER VOLT.
- RESISTANCE READINGS ARE APPROXIMATE.

VOLTS TO CHASSIS	CURRENT MA.	RESISTANCE TO CHASSIS	VALVE ELECTRODE	BOTTOM VIEW OF VALVE SOCKET	VALVE ELECTRODE	VOLTS TO CHASSIS	CURRENT MA.	RESISTANCE TO CHASSIS
				6B6-G	A.F. AMPLIFIER			
					GRID	—	—	2·2 KΩ *
—	—	NIL	DIODE # 2		DIODE # 1	—	—	NIL
108	0·35	INFIN.	PLATE					
NIL	—	NIL	HEATER		HEATER	6·3 A.C.	300	—
			NO CONN.		CATHODE	1·1	0·35	4·5 KΩ
				6V6-GT	OUTPUT			
248	5·0	INFIN.	SCREEN GRID		GRID	—	—	600 KΩ
222	41	INFIN.	PLATE					
6·3 A.C.	450	—	HEATER		HEATER	NIL	—	NIL
			NO CONN.		CATHODE	11	46	250 Ω
				6X5-GT	RECTIFIER			
					PLATE # 1	237 A.C.		500 Ω
237 A.C.	—	520 Ω	PLATE # 2					
NIL	—	NIL	HEATER		HEATER	NIL	—	NIL
			NO CONN.		CATHODE	263	—	INFIN.

REMARKS :-

UNFILTERED H.T. VOLTAGE	=	263	VOLTS
FILTERED H.T. VOLTAGE	=	248	VOLTS
TOTAL H.T. CURRENT	=	46	MA.
RECTIFIER HEATER VOLTAGE	=	6·3	VOLTS

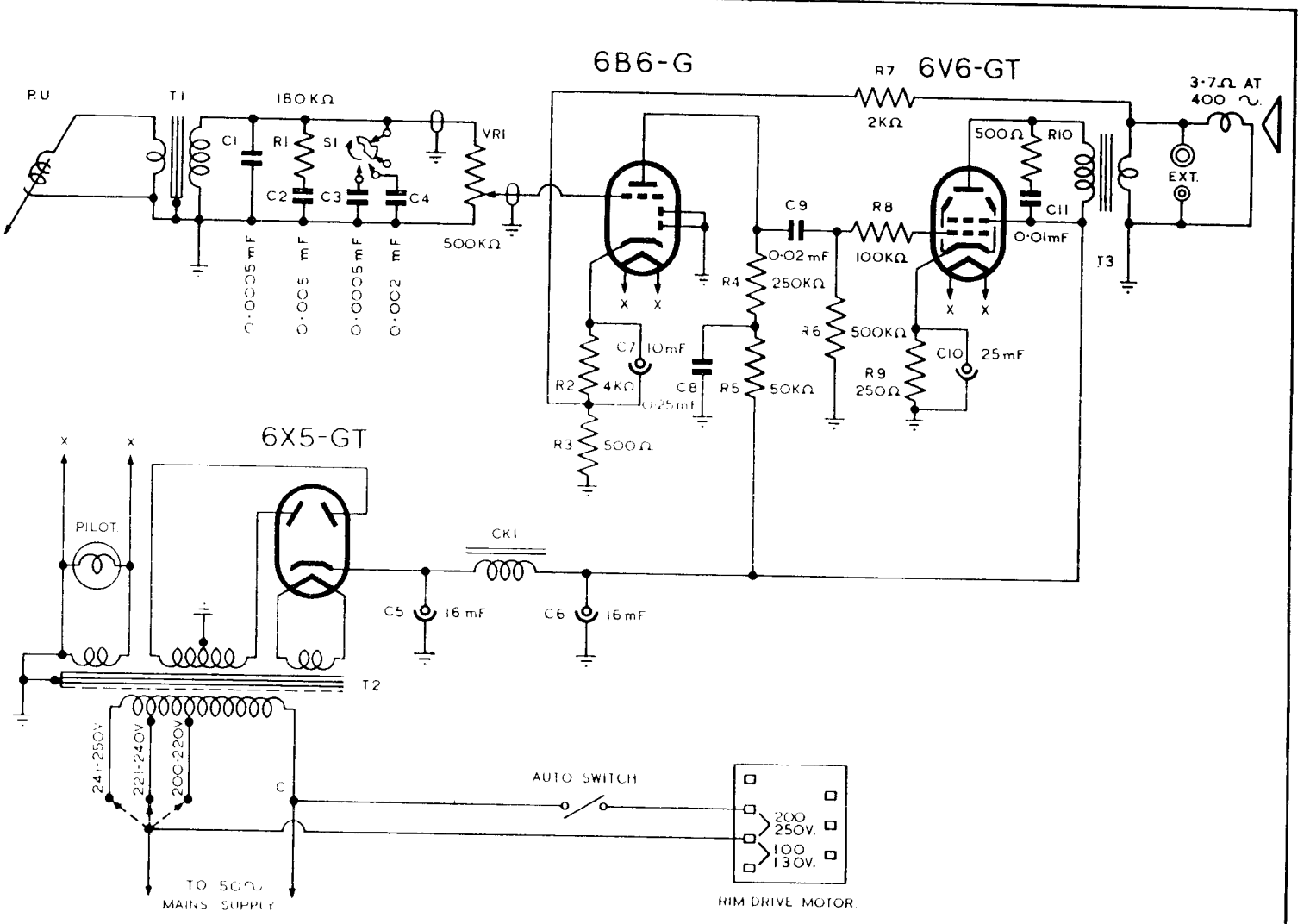
* VOLUME CONTROL FULLY CLOCKWISE.

PARTS LIST

REF.	PART No.	DESCRIPTION
		RESISTORS
R1	33368PX	180,000 ohms ½ watt ± 10%
R2	E2X	4,000 ohms ½ watt ± 10%
R3	B2X	500 ohms ½ watt ± 10%
R4	N3X	250,000 ohms 1 watt ± 10%
R5	H3X	50,000 ohms 1 watt ± 10%
R6	O2X	500,000 ohms ½ watt ± 10%
R7	AJ2X	2,000 ohms ½ watt ± 10%
R8	J2X	100,000 ohms ½ watt ± 10%
R9	ZW3X	250 ohms 1 watt ± 10%
R10	B2X	500 ohms ½ watt ± 10%

REF	PART No.	DESCRIPTION
		CONDENSERS
C1	D0243 L	0.0005 mF. ± 10%
C2	36355C	0.005 mF. ± 10%
C3	D0243 L	0.0005 mF. ± 10%
C4	D0243 H	0.002 mF. ± 10%
C5	C0014 CB	16 mF. 525 P.V.
C6	C0014 CB	16 mF. 525 P.V.
C7	C0014 BY	10 mF. 40 P.V.
C8	C0013/C	0.25 mF. 400 V.
C9	C0013/S	0.02 mF. 600 V.
C10	C0014/CF	25 mF. 40 P.V.
C11	C0013/N	0.01 mF. 600 V.

REF.	PART No.	DESCRIPTION
		MISCELLANEOUS
VR1	D2421/A	500,000 ohms Potentiometer
S.1	D2437	1-Pole 3-Position Switch
T.1	34720E	P.U. Input Transformer
T.2	D2464	Mains Transformer
T.3	D2236	Output Transformer
CK.1	D2237	H.T. Filter Choke
Spkr.	D2435	6in. Speaker Assembly
		Dial Lamp 6.3V. 0.25A. S.C.
P.U.	35218B	No. 13 Pick-Up
	32370M	Rim-Drive Motor (Turntable type 30874G)



CIRCUIT DIAGRAM OF MODEL EG48