

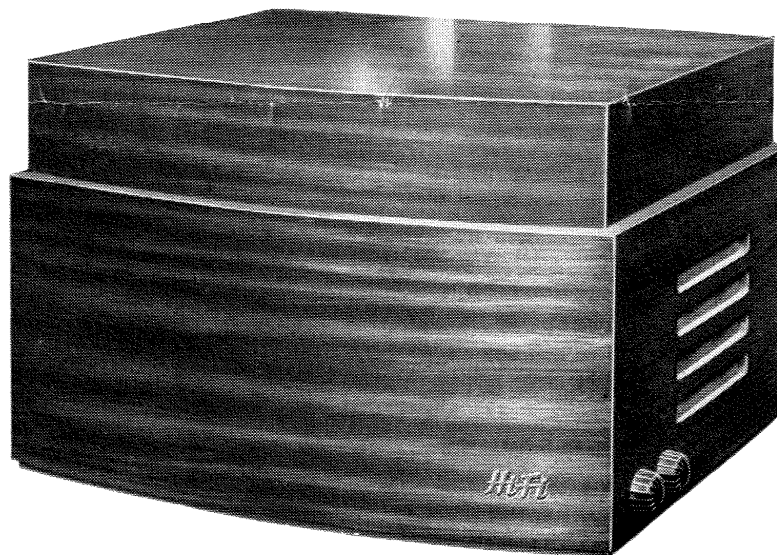


Service Data

www.radio-workshop.co.uk
for

THE BLACK BOX

HIGH FIDELITY RECORD REPRODUCER



CIRCUIT ANALYSIS

Mains Consumption 25 watts.

A.F. Output 4 watts.

	Valve	Mullard	Ea	Ia	Ek	Ik
V1A	Pre-Amplifier	ECC.83	140	0.5	1.35	0.5
V1B	Phase-Inverter	ECC.83	236	0.4	26.0	0.4
V2	Output	EL.42	270	16.0	17.6	16.0
V3	Output	EL.42	270	16.0	17.6	16.0
V4	Rectifier	EZ.41	Anode to Anode 500 v. A.C.		280	37.0

Note.—Mains input 235 volts into 225-250 volt tap. Measurements taken with an Avometer Model 8 instrument which has a resistance of 20,000 ohms per volt.

MARK 2

TYPES B.B.H., B.B.H.C., B.B.H.S. & B.B.H.C.S. (HOME)

FOR OPERATION OFF
200-250 VOLTS 50 CYCLES A.C. MAINS

PART No. 705852

Notes

1 GRAM. MOTOR VOLTAGE

Before leaving the factory, the Gram motor voltage is set for use on 200–250 volts, 50 cycles, A.C. mains, and no adjustment is necessary.

If the nominal frequency is other than 50 cycles, the three-speed pulley must be changed as detailed below.

2 TO CHANGE THREE-SPEED PULLEY OF AUTO CHANGER

- (1) Remove circlip at base of centre spindle and lift off turntable.
- (2) Set the three-speed knob at the 45 r.p.m. position.
- (3) Ensure that the three-speed slide is engaged on the centre step of the three-speed lever, see Fig. 4.
- (4) Slacken the two grub screws on the three-speed pulley, move jockey pulley wheel to the left and slide off the three-speed pulley, see Fig. 4.
- (5) Replace with new pulley for the required frequency and adjust until the jockey pulley is engaged mid-way on the centre step but clear of the pulley cam.
- (6) Tighten grub screws, replace turntable and circlip.

3 TO CHANGE THREE-SPEED PULLEY OF SINGLE PLAYER

- (1) Remove turntable by easing off against centre spindle friction.
- (2) Switch machine off by setting three-speed knob in neutral position, i.e. half-way between two of the speed positions.
- (3) Lift off three-speed pulley with pulley retaining spring (these should come off together).
- (4) Fit spring to new pulley of required frequency and push well down on the spindle, turning pulley at the same time.
- (5) Replace the turntable.

4 MAINS SUPPLY

Make sure that the Amplifier Mains Voltage Adjuster is in the correct position for the mains supply on which it is to be used.

5 TO REMOVE CHASSIS

- (1) Remove the Record Changer and pull out all plugs from Amplifier Chassis.
- (2) Pull off knobs.
- (3) Tilt cabinet on one side.
- (4) Unscrew the four screws from the bottom of cabinet.
- (5) Lift out chassis.

6 REPLACEMENT OF STYLI FITTED TO TYPES B.B.H. & B.B.H.C.

Replacement sapphire styli for use with this instrument can be obtained from your nearest U.T.M. Depot. The procedure for changing styli is given below. Lift the pick-up arm vertically from its rest to the fullest extent, taking care not to strain the arm in any way, and having first made sure that the stylus to be renewed has been correctly selected.

Before attempting to remove the stylus see Fig. 6. With the forefinger ease the stylus up free of the plastic front locating groove; grip the stylus between thumb and forefinger, and gently pull with an upward and outward movement. Do not use force to free it from the plastic anchoring pad at the rear, otherwise the centre hole will be enlarged.

Insert the new stylus through the hole in the rear pad, taking care to ensure that the stylus is seated well down in both the rear pad and the front locating groove.

No attempt should be made to interfere with the crystal cartridge.

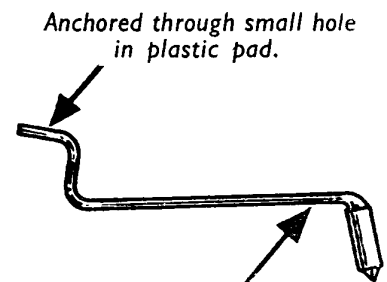


Fig. 6.

7 REPLACEMENT OF STYLI FITTED TO TYPES B.B.H.S. & B.B.H.C.S.

Replacement sapphire styli for use with this instrument can be obtained from your nearest U.T.M. Depot. The procedure for changing styli is given below.

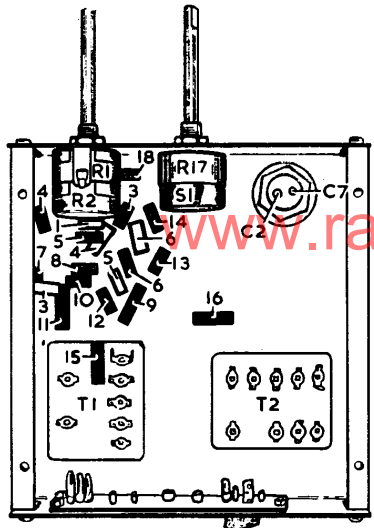
Select the stylus to be renewed and detach the Collaro pick-up head, which is the plug-in type. It should be borne in mind that L represents L.P. records (33 $\frac{1}{3}$ and 45 r.p.m.) and N Normal or Standard records (78 r.p.m.).

The stylus is secured to the crystal cartridge by a small screw, and this should be removed with a suitable screw-driver.

Hold the pick-up head firmly between thumb and forefinger (with the selector knob pointing outwards) and place the thumbnail under the head of the stylus. Lever up the stylus so that it is free of the plastic support and with a steady pull in an outward direction release the square tail of the stylus. Care must be taken to avoid applying any undue pressure to the plastic support.

Insert the new stylus so that the head rests centrally on the plastic support. It is most important that the two claws close over each side of the plastic support. The tail should now be gently pressed downwards into the cavity provided and the screw replaced.

No attempt should be made to interfere with the crystal cartridge.



NOTE:- RESISTORS SHOWN SOLID BLACK

FIG. 1

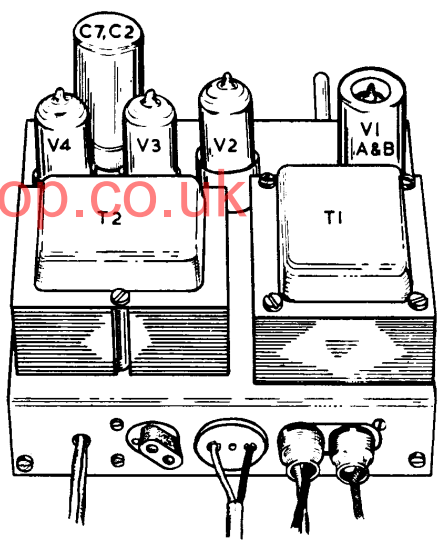


FIG. 2

VALVE BASE CONNECTIONS

	1	2	3	4	5	6	7	8	9
V1	A"	G"	K"	H	H	A'	G'	K'	HCT
V2	H	A	KG3	—	G2	G1	KG3	H	
V3	H	A	KG3	—	G2	G1	KG3	H	
V4	H	A1	—	—	—	A2	K	H	

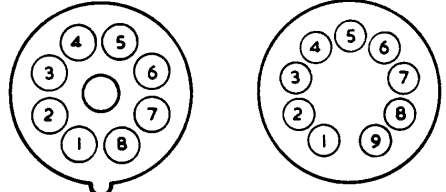


FIG. 3

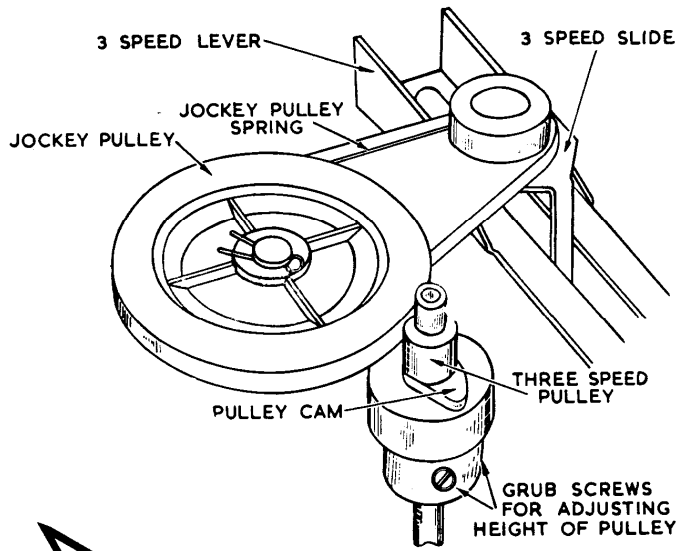


FIG. 4

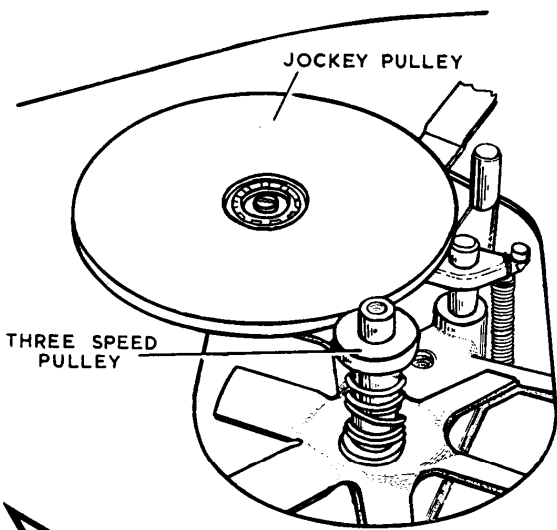
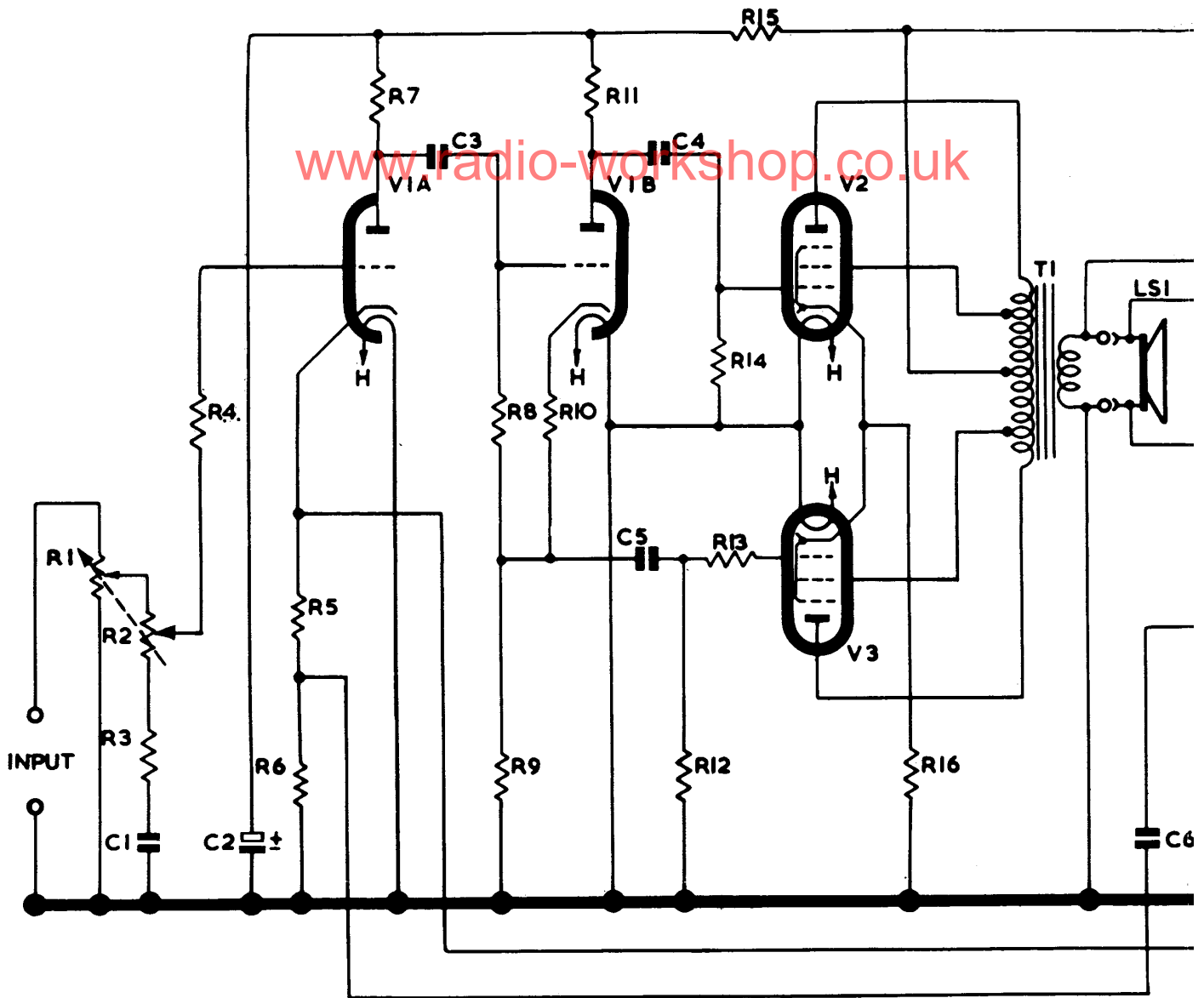


FIG. 5



CONDENSERS

	Specification	Volts	Fig.	No.
C1	0.002 μ F Miniature Tubular ..	350	1	669093
C2*	12 μ F Electrolytic ..	350	1 & 2	667656
C3	0.01 μ F Miniature Tubular ..	350	1	669096
C4	0.005 μ F Miniature Tubular ..	350	1	669095
C5	0.005 μ F Miniature Tubular ..	150	1	669081
C6	0.04 μ F Miniature Tubular ..	150	1	669106
C7*	25 μ F Electrolytic ..	350	1 & 2	667656

RESISTORS

	Ohms	Watts
R1	1 meg. } Loudness	..
R2	1 meg. } Control	
R3	39,000	1/4
R4	100,000	1/4
R5	1,800	1/4
R6	1,800	1/4
R7	220,000	1/4
R8	2.2 meg.	1/4
R9	47,000-68,000 High Stability	1/4
R10	4,700	1/4
R11	47,000-68,000 High Stability	1/4
R12	1 meg.	1/4
R13	100,000	1/4
R14	1 meg.	1/4
R15	27,000	1/2
R16	470	1/2
R17	1,000 Tone Control
R18	10,000	1/4

Note.—* Incorporated in one can.

CIRCUIT DIAGRAM of t

