KOLSTER-BRANDES LIMITED

FOOTSCRAY SIDCUP KENT

MODEL

ORP 10

SERVICE DATA

ISSUED DEC., 1957

SPECIFICATION

The ORP 10 is a one-valve transportable record player suitable for A.C. mains operation. A B.S.R. four-speed record changer, type UA8, is fitted.

VOLTAGE RATING : 200–250 volts, 50 c/s.

POWER CONSUMPTION : Amplifier 18 watts.
Motor 15 watts.

CONTROLS : Off/On and Tone.
Volume.

VALVE COMPLEMENT :
Brimar ECL82 Audio Amplifier and Output.

RECTIFIER :
S.T.C. C3B. Full wave metal rectifier.

DIMENSIONS :
Width : 15 inches (38 cms.)
Height : 9 inches (22·9 cms.)
Depth : 15·5 inches (39·4 cms.)

WEIGHT : 19 lbs. 5 ozs. (8·75 kilos.).

GENERAL INFORMATION

The amplifier is based on a printed circuit design and the components excluding the loudspeaker and two resistors are mounted on a single flat printed board which in turn is attached to the loudspeaker baffle board. The two resistors not on the printed board are mounted inside a small metal shield on the record changer.

SETTING UP PROCEDURE

1. Remove the two screws holding the cover plate in position and move it towards the back of the player. The mains tapping panel will then be exposed to view.
2. Set the mains voltage adjustment pin to the correct position.
3. Check that the valve is firmly pressed into its socket.
4. Replace cover plate and screws.

CIRCUIT DESCRIPTION

The ECL82 is a triode-pentode valve. The triode section is used in a voltage amplifying circuit and is resistance-capacity coupled to the pentode which is used in the power output circuit. Bias for the pentode is obtained from the by-passed resistor R8 (470Ω) in its cathode circuit. Grid current bias is obtained from the triode by means of R3 (10 MΩ) and the blocking condenser C3 (·01 μF.) in its grid circuit.

Negative voltage feedback of middle and high frequencies is obtained from the secondary of the output transformer and is fed via R11 (4·7 KΩ) and C9 (0·1 μF.) into the bottom of the volume controls so that the amount of negative feedback is increased as volume is reduced.

The feedback is also used to boost the bass response as bass frequencies are not fed back.

The mains transformer is of the completely isolated type and supplies the full-wave metal rectifier and reservoir capacitor C8 (30 μF.). A tapped output transformer is used giving hum bucking in conjunction with R6 (680Ω) and C1 (10 μF.), a further stage of smoothing follows R5 (8·2 KΩ) and C2 (20 μF.).

Tone control is by means of an inverse log law potentiometer (500 KΩ) and condenser C7 (·003 μF.) in the grid circuit of the pentode.

The negative rail of the amplifier is connected to the loudspeaker chassis and also to a metal foil on the cabinet bottom, to reduce hum.

Two resistors R12 (220 KΩ) and R13 (470 KΩ) are mounted on a small tag strip on the changer and also screened.

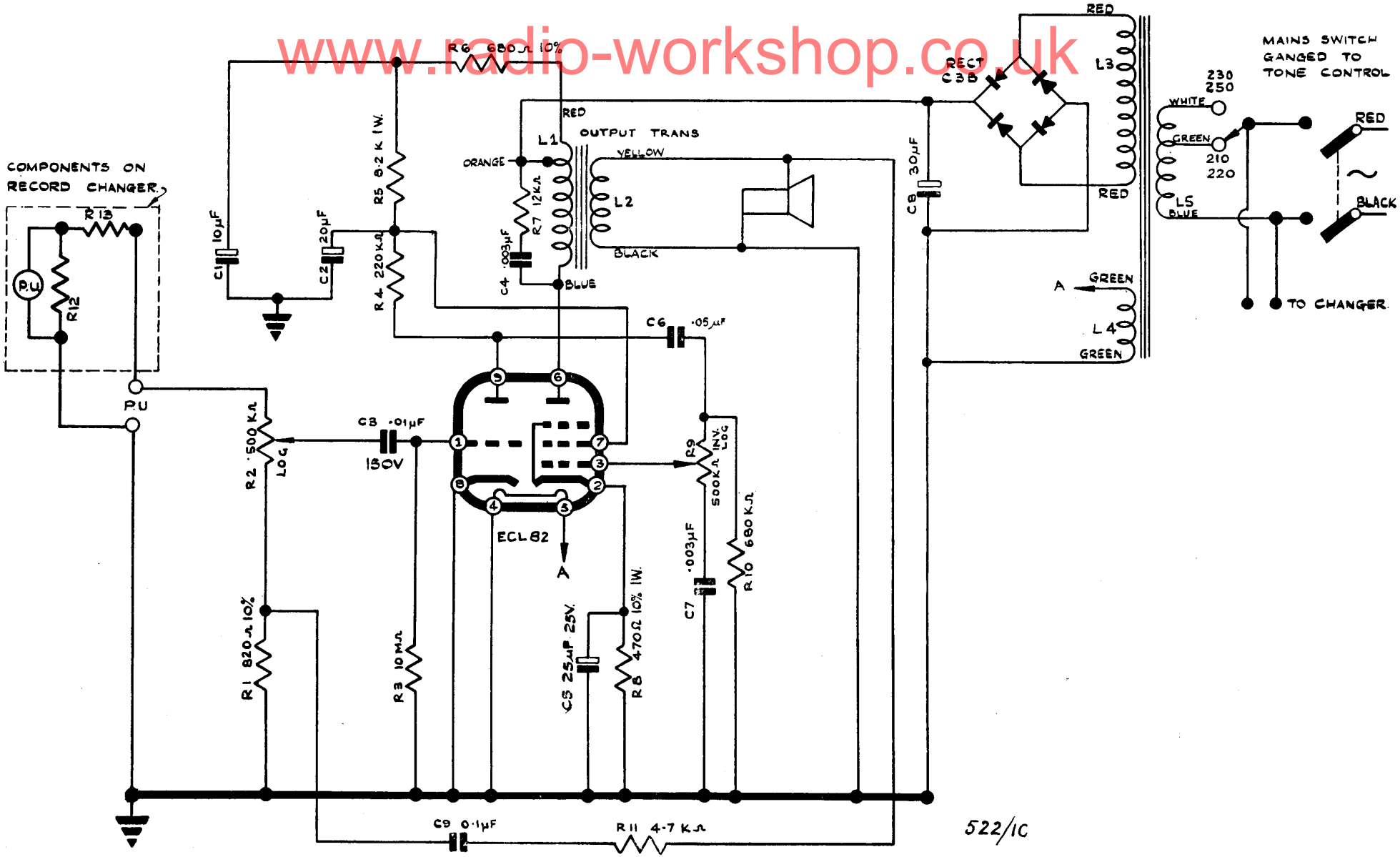
REMOVAL OF PRINTED CIRCUIT ASSEMBLY FROM CABINET

1. Remove the two screws holding the cover plate in position.
2. Remove the five screws holding the motor board in position.
3. Remove the control knobs (grub screws).
4. The cover plate can then be disengaged from the motor board and the record changer and motor board lifted out and placed on the left-hand side of the cabinet.
5. Remove the cleat securing the mains lead to the cabinet. Unsolder the wire from the loud-speaker chassis to the metal foil on the bottom of the cabinet.
6. Remove the two 4BA nuts holding the front panel to the cabinet.
7. The front panel and plastic grill assembly can then be eased backwards and separated.
8. The printed board can then be detached from the front panel by undoing the two 4BA nuts. This leaves the amplifier connected to the loudspeaker and record changer.
9. The pickup lead can then be unsoldered at the volume control, the mains supply to the record changer at the On/Off switch, and the leads can be disconnected from the speaker leaving the printed board completely free.

COIL AND TRANSFORMER DATA

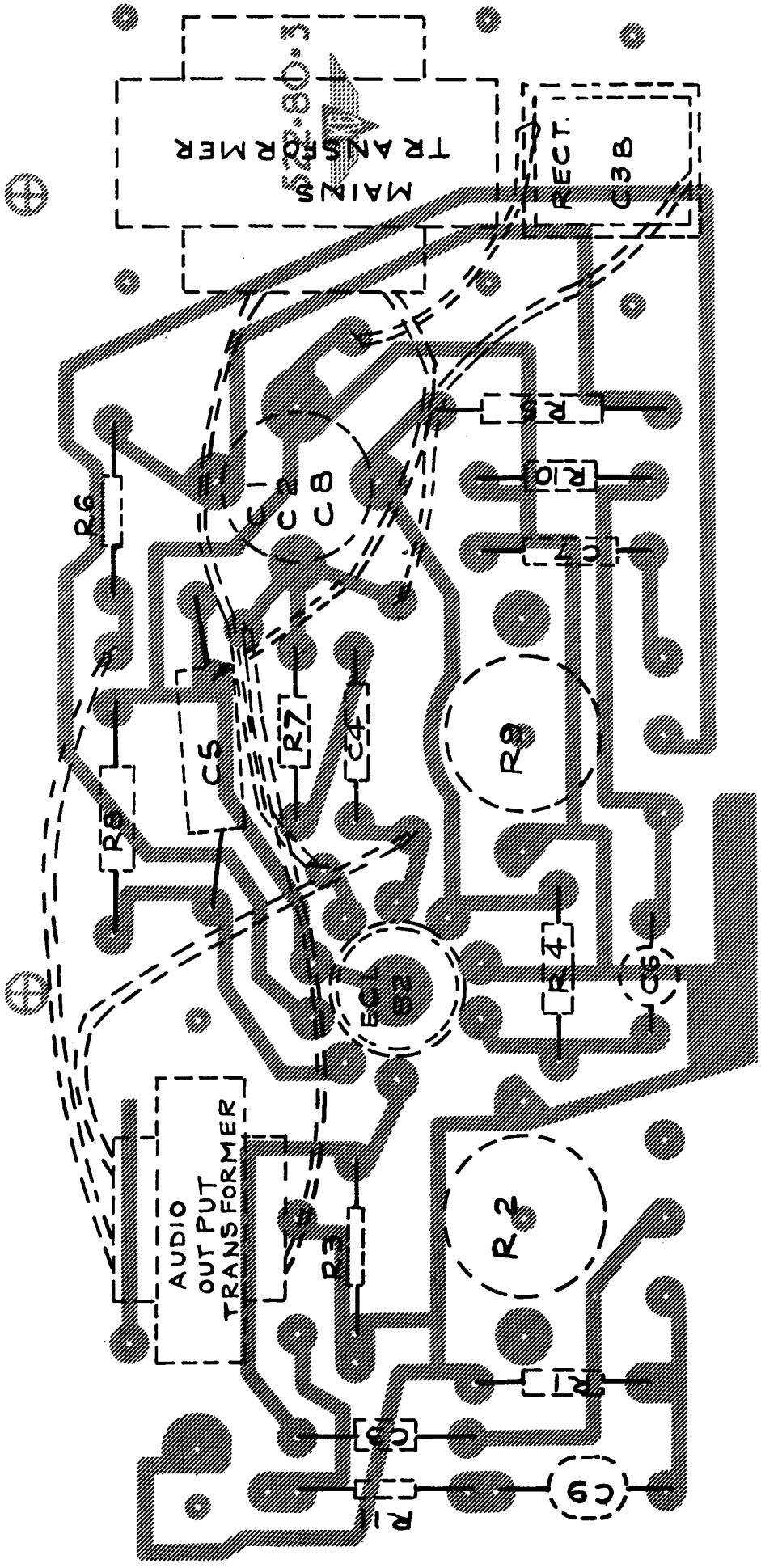
Circuit Ref. No.	Function	Approximate Resistance in ohms
L.3, 4, 5	**Mains Transformer**	
	Primary	190Ω
	Secondary H.T.	298Ω
	Secondary L.T.	Less than 1Ω
L.1, 2	**Output Transformer**	
	Primary Start to tap	700Ω
	Tap to finish	20Ω
	Secondary	0·5Ω

CIRCUIT DIAGRAM

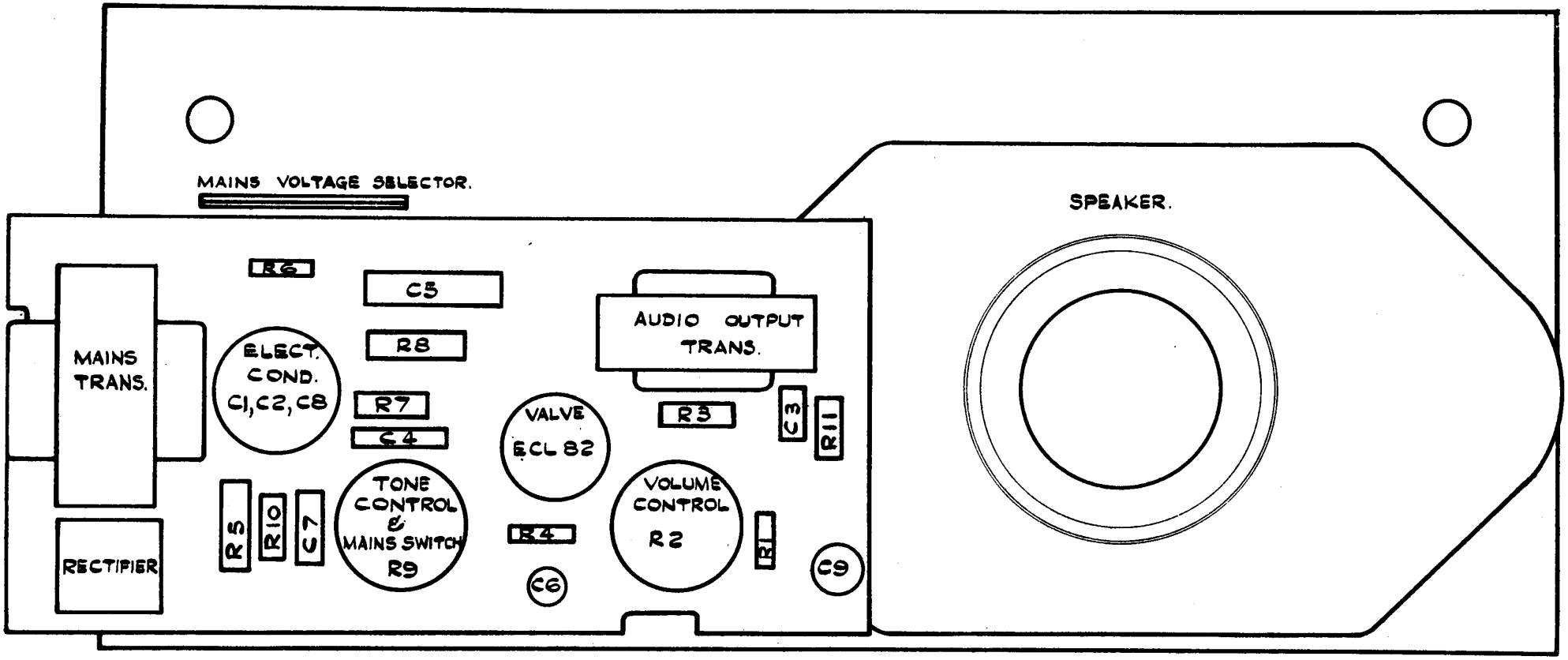


R12 VALUE 220KΩ FOR "B.S.R." CHANGER
R12 VALUE 470KΩ FOR "COLLARO" CHANGER.
R13 VALUE 470KΩ FOR "B.S.R." CHANGER
R13 NOT USED ON "COLLARO" CHANGER.

ALL RESISTORS ± 20% ½ WATT UNLESS OTHERWISE STATED
ALL CONDENSERS ± 20% 350V UNLESS OTHERWISE STATED.



UNDER VIEW OF CHASSIS



VOLTAGE CHART

Valve Pin Voltages measured with a voltmeter having 1,000 ohms/volt impedance.

VALVE	1	2	3	4	5	6	7	8	9
ECL82	0	15	0	E	6·3 A.C.	225	205	E	50
Metal Rectifier		A.C. Input 220				D.C. Output 255			

E—Denotes Chassis connection. S.N.—Denotes Slightly Negative.

All measurements taken with controls set for minimum gain and no applied signal.

Power Input 240V. A.C. Mains Input Current 70 mA.

Smoothing Electrolytics	C 8, 30 mF.	C 2, 20 mF.	C 1, 10 mF.
D.C. Voltage	255	205	250
Hum Voltage	2·0	—	—
Smoothing Resistors ...	R 5, 8·2 K.	R 6, 680 Ω	R
Voltage Drop	45	5	—

Total H.T. Current 33 mA.
Filament Current —
Power Output 2 Watts forced
Power Supply Range 210–240 V.
Power Consumption 18 Watts.

SPARES LIST

Prices are subject to alteration without notice.

Component	Colour Code	Circuit Ref.	Part No.	Price
Cabinet	... ...	... ...	522/220	140/–
CONDENSERS				
Elec. 30+20+10 μF.	... ...	C1, 2, 8	KEM 116	7/6
Elec. 25 μF. ... ... 25V.	... ...	C5	KEM 103/B	2/–
·01 μF. ... ... 150V.	... ...	C3	KPM 19 ...	1/–
·05 μF. ... ... 350V.	... ...	C6	KT 47/A ...	1/–
·003 μF. ... ... 350V.	... ...	C7, C4 ...	KC 93 ...	1/–
·1 μF. ... ... ±350V.	... ...	C9	KT 46/A ...	1/–
Knobs	... ...	... ...	511/151 ...	2/–
POTENTIOMETERS				
500 KΩ, Log ... ... ½W.	... ...	R9	P504T24F ...	4/–
500 KΩ INV, Log ... ½W. with D.P.S.T. Switch	... ...	R2	P504U24F ...	7/–
Record Changer	... ...	... ...	522/215 ...	180/–
Collaro Challenger	... ...	... ...	(Less pickup)	+ 70/– P.T.
RESISTORS				
470 KΩ ... ... ½W.	... ...	... ...	R474HE ...	1/–
220 KΩ ... ... ½W.	... ...	... ...	R224HE ...	1/–
RESISTORS				
470 Ω ±10% ... ... 1W.	... ...	R8	R471FF ...	1/–
680 Ω ±10% ... ... ½W.	... ...	R6	R681FE ...	1/–
820 Ω ±10% ... ... ½W.	... ...	R1	R821FE ...	1/–
4·7 KΩ ... ... ½W.	... ...	R11 ...	R472HEM ...	1/–
12 KΩ ... ... ½W.	... ...	R7	R123HE ...	1/–
220 KΩ ... ... ½W.	... ...	R4	R224HE ...	1/–
680 KΩ ... ... ½W.	... ...	R10 ...	R684HE ...	1/–
10 MΩ ... ... ½W.	... ...	R3	R106HE ...	1/–
Speaker	... ...	... ...	230/250 ...	25/9
TRANSFORMERS				
Output	... ...	L1, L2 ...	522/95 ...	9/–
Mains	... ...	L3, L4, L5	522/85 ...	22/6
Grille	... ...	... ...	522/196 ...	4/–