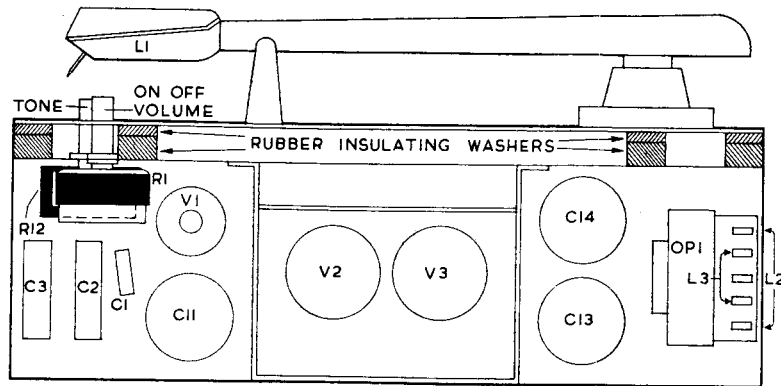


# COLLARO MICROGRAM



Portable electric gramophone fitted with Collaro induction motor, 12-in. turntable, magnetic pick-up and automatic stop mechanism. Pick-up feeds into two-stage, three-valve amplifier fitted with 5-in. PM speaker. Designed to operate on 50/60 cycle AC mains supplies of 100-125, 200-250V. Housed in light brown rexine covered carrying case fitted with handle. Manufactured by Collaro Ltd., Barking, Essex.



**A**mplifier circuit consists of a high-gain RF pentode V1 resistance-capacity coupled to a pentode output valve V2. Output is fed into a 5-in. PM speaker. HT is provided by an indirectly heated half-wave rectifier V3.

**Pick-up** is of high-resistance magnetic type and is coupled by means of isolating capacitors C2, C3 across the volume control R1 and thence to grid V1. Screened lead of the pick-up is earthed through capacitor C1. Cathode bias for V1 is developed across R4 and decoupled by C10. Screen voltage is obtained from R2 and is decoupled by capacitor C4. R3 is the anode load.

**Output Stage.** C5 feeds signal at anode V1 to grid V2, via R7 and grid stopper R8. R5 shunted by R6 is the grid resistor of V2. R7, R6, C6 constitute a bass boost circuit to compensate for recording characteristic. However, after the amplifier had been in production for a time, it was found that on certain recordings the bass lift appeared to be excessive. To overcome this, C6

was shorted out. If so desired, the original bass lift may be restored by removing the short across C6.

Cathode bias for V2 is provided by R11, decoupled by C12. Screen voltage is obtained from R9, which also supplies HT to anode and screen of V1. C11 is screen decoupling and HT-line smoothing capacitor.

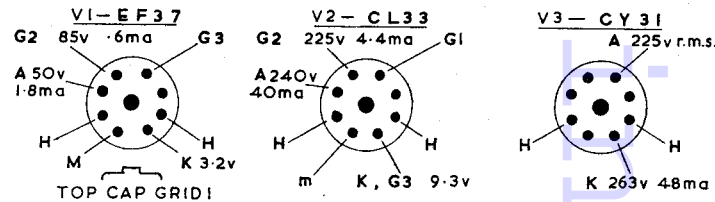
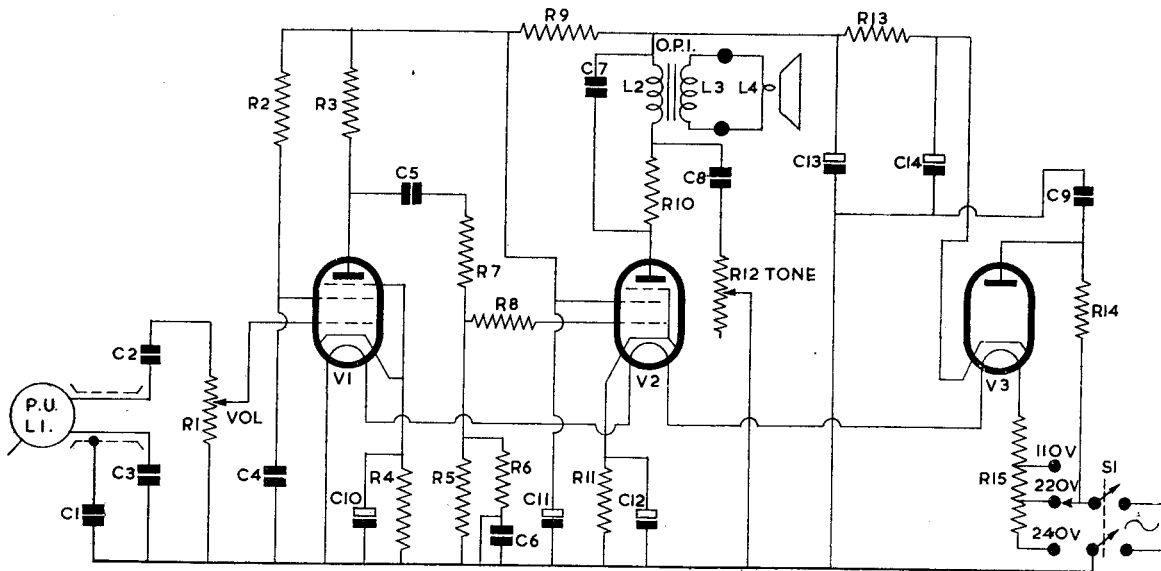
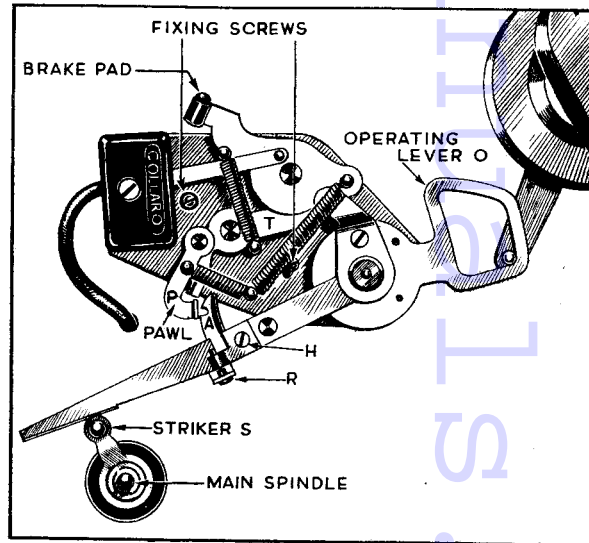
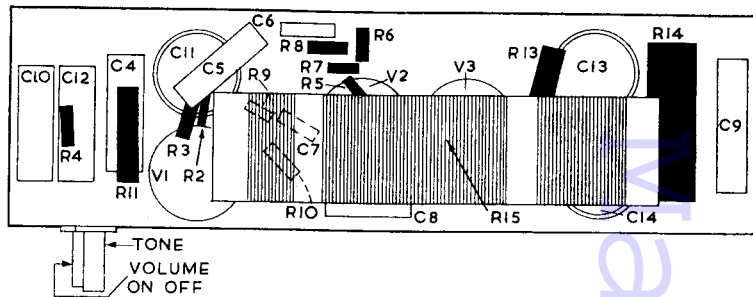
L2, the primary of OPI, the output matching transformer, is in the anode circuit of V2. R10 is anode stopper resistor and C7 offsets rise in impedance of L2 at the higher frequencies.

R12, C8 provide variable top cut and will be found useful in reducing record surface noise on old or worn records.

L3, the secondary of OPI, feeds into a 5-in. PM speaker L4, which is mounted at the side of the case.

**High tension** is supplied by an indirectly heated half-wave rectifier V3. Its anode voltage is obtained from the mains, through limiter resistor

(continued overleaf)



## RESISTORS

R	Ohms	Watts	R	Ohms	Watts
1	250 K	Potentiometer with DP Switch	13	200	1 W
2	220 K	W	14	100	3 W
3	100 K	W	15	887	36 W, Tapped 262 and 762
4	1.5 K	W			
5	680 K	W			
6	22 K	W			
7	220 K	W			
8	10 K	W			
9	4.7 K	W			
10	68	W	1	2.2 K	
11	200	1 W	2	240	
12	50 K	Potentiometer	3	4	
			4	2.5	

## INDUCTORS

L	Ohms
1	50 Electrolytic, 12 V
2	32 Electrolytic, 350 V
3	50 Electrolytic, 12 V
4	32 Electrolytic, 350 V

## CAPACITORS

C	Mfd's	Type
1	.01 Tubular, 350 V	
2	.1 Tubular, 350 V	
3	.1 Tubular, 350 V	
4	.25 Tubular, 350 V	
5	.1 Tubular, 350 V	
6	.01 Tubular, 350 V	
7	.001 Tubular, 350 V	
8	.05 Tubular, 350 V	
9	.1 Tubular, 350 V	
10	50 Electrolytic, 12 V	
11	32 Electrolytic, 350 V	
12	50 Electrolytic, 12 V	
13	32 Electrolytic, 350 V	
14	32 Electrolytic, 350 V	

## COLLARO MICROGRAM

—Continued

R14, R13, C13, C14 provide resistance-capacitance smoothing of the HT supply and C9 is fitted to eliminate modulation hum.

Heaters of V1 to V3 are series connected and obtain their current from the mains through tapped voltage dropper resistor R15. R15 is tapped for input mains voltage of 100-125 and 200-250V AC. S1, which is ganged to the volume control R1, is the amplifier on/off switch.

**Removal of motorboard and amplifier.** Secure tone arm of pick-up to its rest arm by means of a piece of wire or string. Remove spring collar from retaining groove on turntable and carefully remove turntable.

Remove the eight roundhead wood screws along sides of motorboard. Gently ease up one edge of motorboard and then lift sufficiently clear of case to be able to unplug the lead to the loudspeaker situated on the left-hand side of case. Motorboard can now be removed.

**Automatic stop mechanism.** The pick-up, while travelling across the record, moves the operating lever O, which in turn makes lever L approach the main spindle. Striker S checks this movement by knocking lever L back at every revolution, until the run-off groove is reached, when the greater movement of lever L causes pawl P to drop off slide A. The next revolution of the striker actuates the stop by operating trigger T.

If the stop operates before the end of a record adjust screw R so that pawl P has a greater overlap.

**Adjustment of stop.** Load the stop by pulling the brake pad towards centre until trigger T snaps in. Turn striker S to the position shown in the diagram and place the lever L in contact with it.

Loosen the locking screw H, push the pawl P to the left with the left hand and adjust the slide A by means of its adjusting screw R so that the pawl P, when again released, rests on the edge of the slide and overlaps it by about 1/64 in., as shown in the drawing. Finally, tighten the locking screw H.

## AMBASSADOR 4756

—Continued from page vi

Cathode bias is from R9, C21 and screen voltage for V2 and V1 is obtained from R8, C6. L27, C17, the primary of IFT2, is in V2 anode circuit.

**Signal rectifier.** L28, C18, IFT2 secondary, apply signal to one diode of V3. Volume control R15 is load resistor. R14, C22, C23 form an IF filter. S7 switches volume control from radio input to PU socket.

**Automatic volume control.** C19 feeds signal from anode V2 to second diode V3. R11, R13 form the load. Full AVC, decoupled by R10, C8, is applied to grid V1. Approximately two-thirds of the AVC voltage decoupled by R12, C20, is fed to grid of V2. Delay voltage is developed across cathode bias resistor R19.

**AF amplifier.** C24 feeds signal from volume control R15, through grid stopper R17, to grid of triode section V3. R18 is grid resistor and cathode bias for triode is developed by R19, C34. R16 is anode load resistor and C27 is HF bypass.

**Output stage.** Signal is fed by C26 to grid V4, pentode output valve. R25, R26 form the grid resistor. Cathode bias developed across R27 is decoupled by C35. Screen voltage comes from R20, C36.

L30, primary of OP1, the output matching transformer, is in the anode circuit of V4 with R22 as anode stopper.

L31, the OP1 secondary, is provided with two sets of output sockets; one set for the internal loudspeaker and the other for an external loudspeaker of low-impedance type.

**Negative feedback and tone control.** R21, C25 introduce negative feedback from the anode of V4 to its grid, via the coupling capacitor C26. Position 1 of S7-8-9 connects capacitor C28 between grids of V3 and V4, and at the same time shunts R29 across R24. This gives treble attenuation at about 3,000 c/s.

In position 2, R29 is still shunted across R24, but C28 is now connected across the grid resistors R25, R26 to earth. This gives a nicely balanced response for normal listening.

In position 3, C28 is connected across R24 and R29 is disconnected from across R24. The effect of this is to give both bass and treble lift, the bass lift being to compensate for transformer and baffle losses, and the treble lift to overcome the dip in the overall selectivity curve of the receiver.

A secondary feedback network consisting of R23, C29 is used to counteract phase shift introduced by the main feedback circuit. When S7 and S8 are in the gram position, conditions are the same as in position 2.

**High tension** is supplied by an indirectly heated full-wave rectifier V5. L33, the HT secondary of MT1, the mains input transformer, provides the anode voltages for the rectifier. C32, C33 are fitted to eliminate modulation hum. L32 supplies V5 heater voltage.

In latest models of this receiver an EZ35 rectifier is fitted. This valve has an isolated cathode and a 6.3 volt heater. The heater voltage is obtained from the same secondary as that supplying heaters of V1 to V4. L29, C37, C38 provide choke-capacity smoothing of the HT supply. In addition, R20, C36 provide further smoothing of the HT supply to anodes V1, V3 and screens V1, V2. V2 anode is supplied from main HT line. C31 provides HF decoupling for HT supply.

**Heaters of V1 to V4 and dial lamps** are supplied by L34. In some models L34 also supplies heater voltage to the rectifier (EZ35).

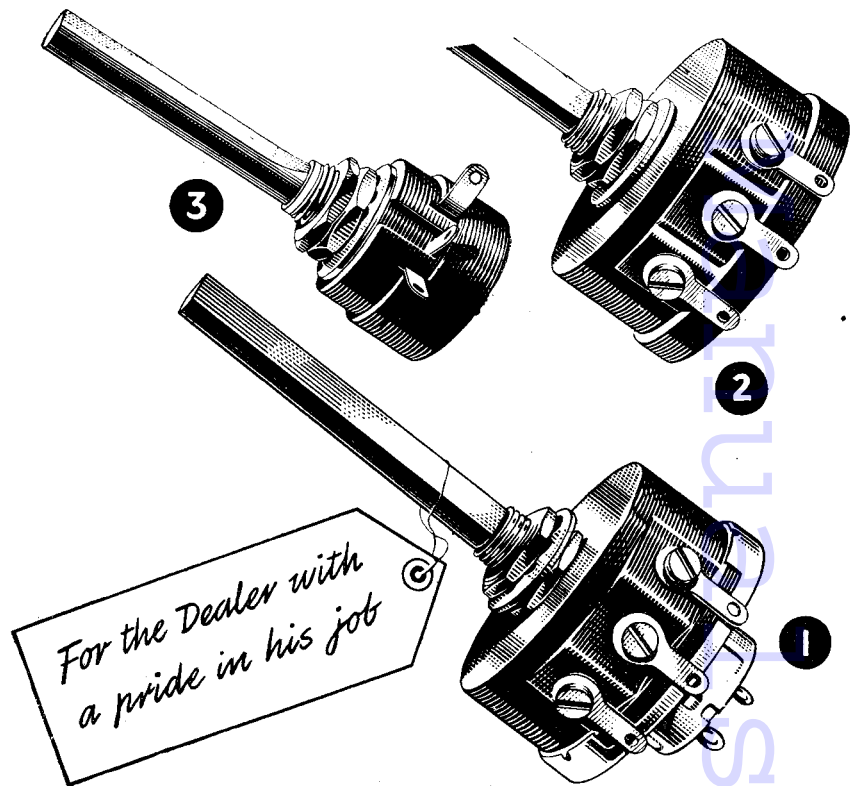
The primary L35 of MT1 is tapped for 100 to 250 volts, 50 c/s. S10, ganged to the volume control, is on/off switch.

**Removal of chassis.** Remove the four control knobs and back panel of cabinet. Unplug LS from sockets at left hand side of chassis. Unfasten and remove four chassis retaining bolts on underside of cabinet. Chassis can be withdrawn.

**Replacement of cord drive.** The glass station name plate must be removed. It is held in place by four corner clips, which, when unfastened, allow the dial plate to be removed. If necessary, the metal cover plate over the condenser drive wheel may be removed by unfastening the two screws at the top edge.

## COSSOR 470AC

A. C. Cossor, Ltd., state that certain figures relating to production models of their 470AC receiver differ from those published in February SERVICE CHARTS. The anode current of OM10 is 3mA, the resistance of L8 is 8 ohms, and of L12 is 26 ohms. The pilot lamp rating is, of course, 0.3A, not 3A as printed, and the resistance of the HT secondary is 125 ohms.



### RADIOSPARES WIRE-WOUND VOLUME CONTROLS

Fitted with SPST switch, 3 watt type, fitted 1/4" flat spindle of 2" free length—illustrated (1) above. Available in following values: 250Ω 500Ω 1,000Ω 2,500Ω 5,000Ω 10,000Ω 15,000Ω 20,000Ω 25,000Ω 35,000Ω 50,000Ω. All at a nett trade price of 5/3 each.

Identical control, less switch, 3 watt type, fitted 1/4" flat spindle of 2" free length—illustrated (2) above (one-quarter enlarged). Available in following values:— 1,000Ω 2,500Ω 5,000Ω 10,000Ω 15,000Ω 20,000Ω 25,000Ω 35,000Ω 50,000Ω. All at a nett trade price of 4/- each.

### RADIOSPARES EXTENSION LOUDSPEAKER VOLUME CONTROLS

Wire-wound, fitted 1/4" flat spindles of 1 1/2" free length—illustrated (3) above.

Available in the following values:  
25Ω 50Ω

All at a nett trade price of 3/6 each.

These goods are available as and when listed in our current bulletin only. All these guaranteed quality components are obtainable only direct from

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