

PHILIPS 7882C

D.C.-A.C. VIBRATOR CONVERTER

Vibrator converter unit for operating A.C. mains receivers from 110-145 or 200-245 volt D.C. supplies. Made by Philips Lamps, Ltd., Century House, Shaftesbury Avenue, London, W.C.2.

Circuit.—The circuit is easier to follow if it is remembered that it falls into two sections. One path is solely D.C. and drives the vibrator. The other path is D.C. up to the vibrator, which acts as a "cross-over" switch, and from there on is A.C.

The principal items in the circuit are: the vibrator with energising coil L3, springs X and Y, and contacts A, B, C, D, E; an overload protection relay comprising L1, L2, and circuit breaker, RY, shunted by C1; and a mains voltage adjustment consisting of S2 and S3, which are operated together. The other components are mostly filters to prevent "noise," being fed into either the D.C. input or the A.C. output.

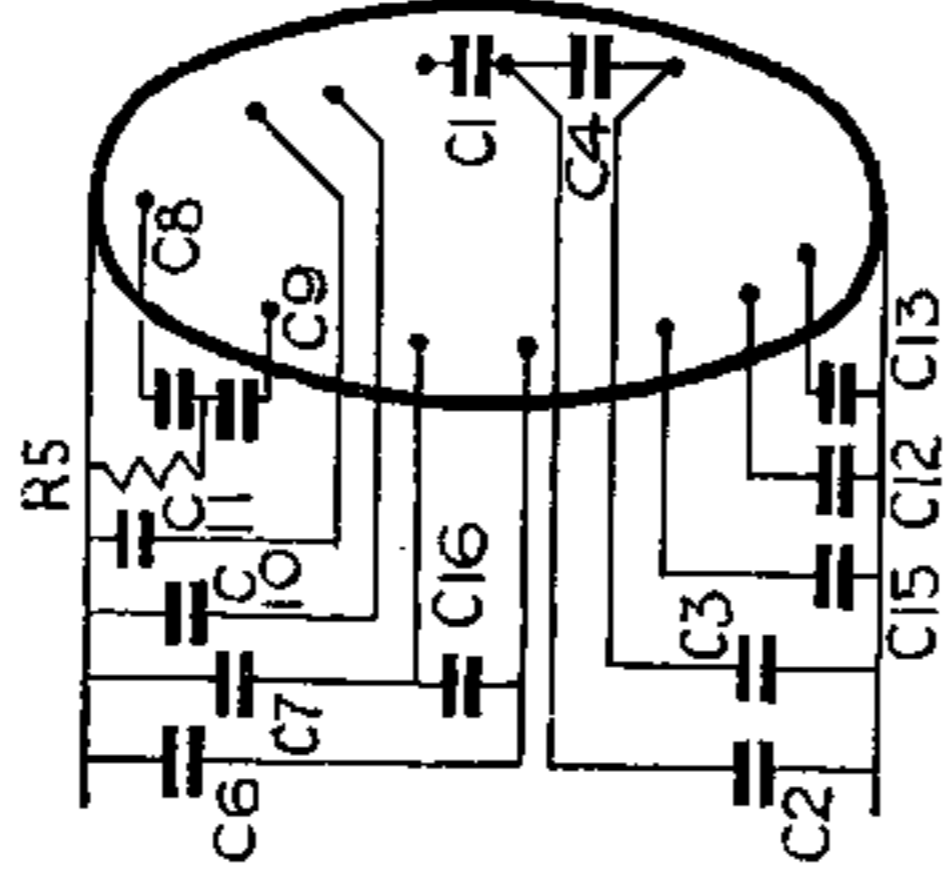
Current driving the vibrator flows in the upper section of the diagram only. D.C. also flows to the two vibrator springs. These act as a cross-over switch, the current alternating through the lower arm of the diagram.

As shown the circuit is set for operation at 110-145 volts. In this position the first of the paths mentioned above, that is, the current driving the vibrator, flows through: S1 (mains switch), fuse, L1, L2, R2, L3, contact A, spring X, L11, L12, R3 and R4 in parallel, mains switch.

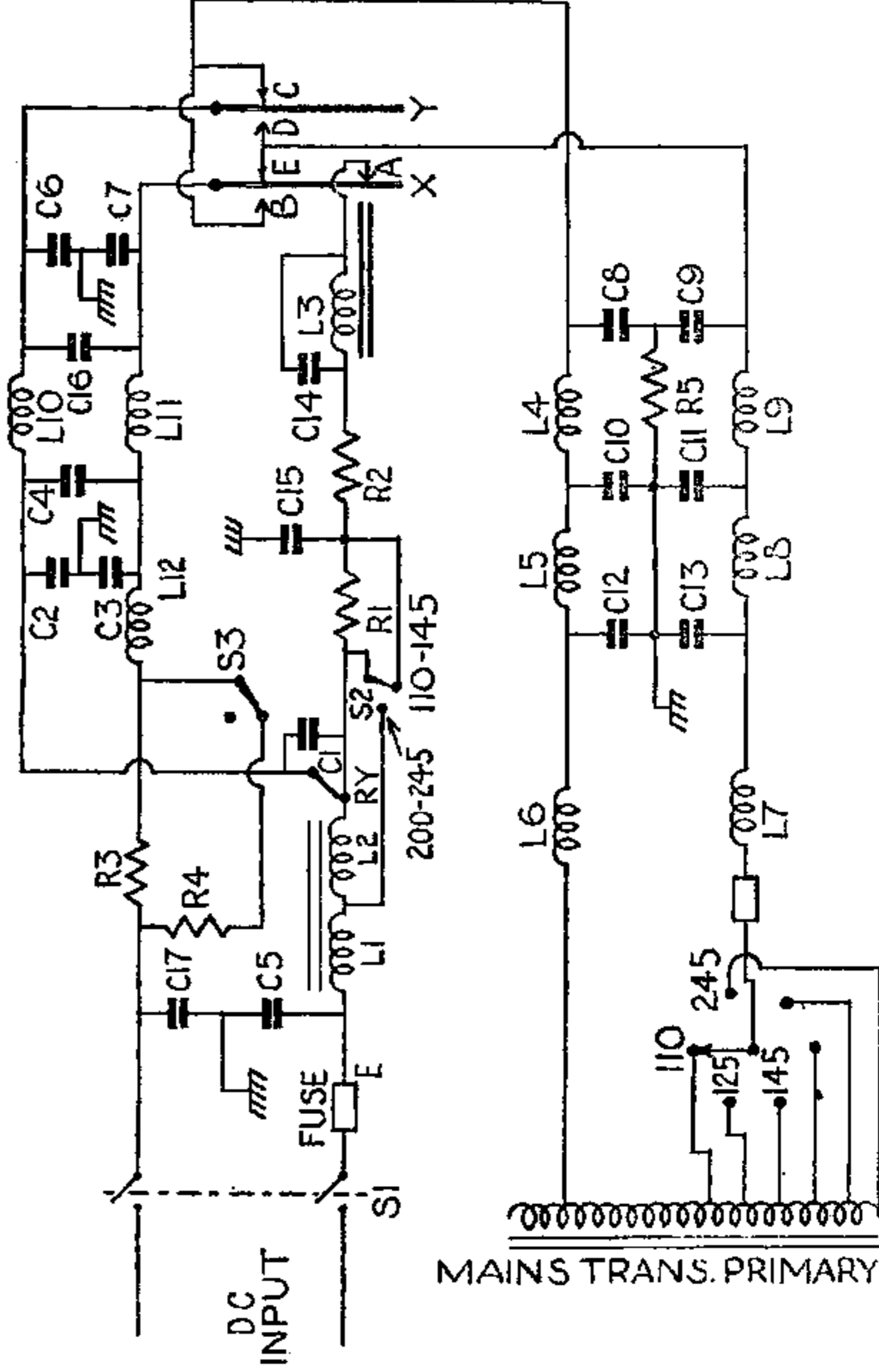
When the current passes through L3, the spring X is attracted to the magnetised core (Y also moves, being coupled to X). The movement of X breaks the contact A, the current ceases, the core of L3 demagnetises and X springs back. The contact A is remade and the whole process is repeated continuously.

The second or combined D.C.-A.C. path can now be followed. With the springs in the position shown, the current flows through S1, L1, L2, relay switch, L10, Y, C, L4, L5, L6. Passing through the mains transformer primary it returns via, fuse, L7, L8, L9, E, X, L11, L12, R3 and R4 in parallel, mains switch.

As this pulse of current flows, the springs are attracted towards L3 core. This breaks con-



Details of the condenser block in the Philips converter.



To change the filter coils, condenser box or R1, R2, heat the three soldered joints and remove the condenser box from the screen box. Do not bend condenser box seams.

The order of the filter coils is: R2, R1, L11,

facts C, E, and makes contacts B, D. The current then flows through S1, fuse, L1, L2, RY and L10 as before, and then through Y, D, L9, L8, L7, fuse, transformer, L6, L5, L4, B, X, L11, L12, R3 and R4, mains switch.

With each swing of the springs, therefore, the current changes its direction through the transformer primary.

When operating from 200-245 volt mains S2, S3 are switched over. This reduces the relay field by shorting out L2, and increases the circuit resistance by depriving R3 of its shunt, R4, and by putting R1 in series with R2.

The filter C5, C17, L1, L2, L12, C2, C3, C4, L10, L11, C16, C6 and C7 prevents interference from the vibrator from entering the mains.

The filter C8, C9, L4, L9, C10, C11, L5, L8, C12, C13, L6, L7 prevents interference from the vibrator from entering the receiver.

The relay L1, L2, RY temporarily breaks the current on small overloads and prevents the fuse blowing unnecessarily.

PRACTICAL

The change-over from A.C. to D.C. operation is effected simply by rotating the safety contact on the backplate half a turn. The safety contact, not involving circuit features, is not shown in our theoretical diagram.

The vibrator unit, 7934, cannot be repaired, and if defective must be replaced. It is important that all leads should be returned to their original positions after any repairs.

The vibrator is replaced by demounting the two boxes. To replace other components:—

1. Slacken off the screw in outer box.
2. Take off nuts on voltage switch plate.
3. Withdraw inner box from outer box. (Remember the lead.)

L10, L8, L5, L4, L9, L6 and L7 are wound round C5 and C17.

INTERFERENCE

If interference is experienced, the leads to the anodes of the receiver rectifier valve should be screened and one or two ripple condensers fitted.

RESISTANCES

R.	Ohms.	R.	Ohms.
1	3,500	4	20
2	2,500	5	47
3	20		

CONDENSERS

C.	Mfd.s.	C.	Mfd.s.
1	.9	10	.1
2	.1	11	.1
3	.1	12	.1
4	.2	13	.1
5	.022	14	.2
6	.2	15	.05
7	.2	16	.1
8	.02	17	.022
9	.02		

WINDINGS

L.	Ohms.	L.	Ohms.
1	1	8	1.5
2	1	9	1
4	1	10	1.5
5	1.5	11	1.5
6	1	12	1
7	1		