

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.

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-

tacts 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.

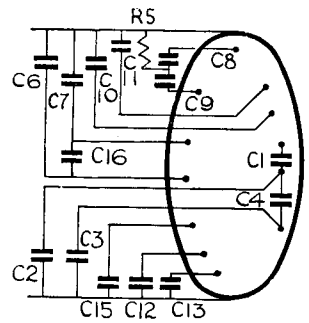
The vibrator unit, 7934, cannot be repaired, and if defective must be replaced. It is important that all leads should be returned to their original positions after any repairs.

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.)

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,



Details of the condenser block in the Philips converter.

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.	Mfds.	C.	Mfds.
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		

When Tone Changes

WHEN a set comes in for overhaul because of defective tonal response what are the most probable causes? Such a defect usually takes the form of too little or too much bass.

First points to check are the speaker cone centring, and, if power is also lacking, the resistance of the speaker transformer windings.

An open circuit bias decoupling condenser causes an overall loss of amplification. If the capacity is merely reduced, however, this will discriminate against the lower frequencies.

An open L.F. coupling condenser will cause a big loss in amplification and complete loss of the lower frequencies.

An open anode decoupling condenser can also modify tone by introducing feed-back. It may increase or decrease bass according to the feed-back phase.

The shape of the tuning circuits also affects tonal response. Very selective tuning reduces the high notes. If a set is too boomy it is worth while to try "staggering" the L.F. circuits to flatten the peak.

Where tone control circuits are fitted, faults in these or the associated switching should be looked for.—C. S. R.

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WINDINGS

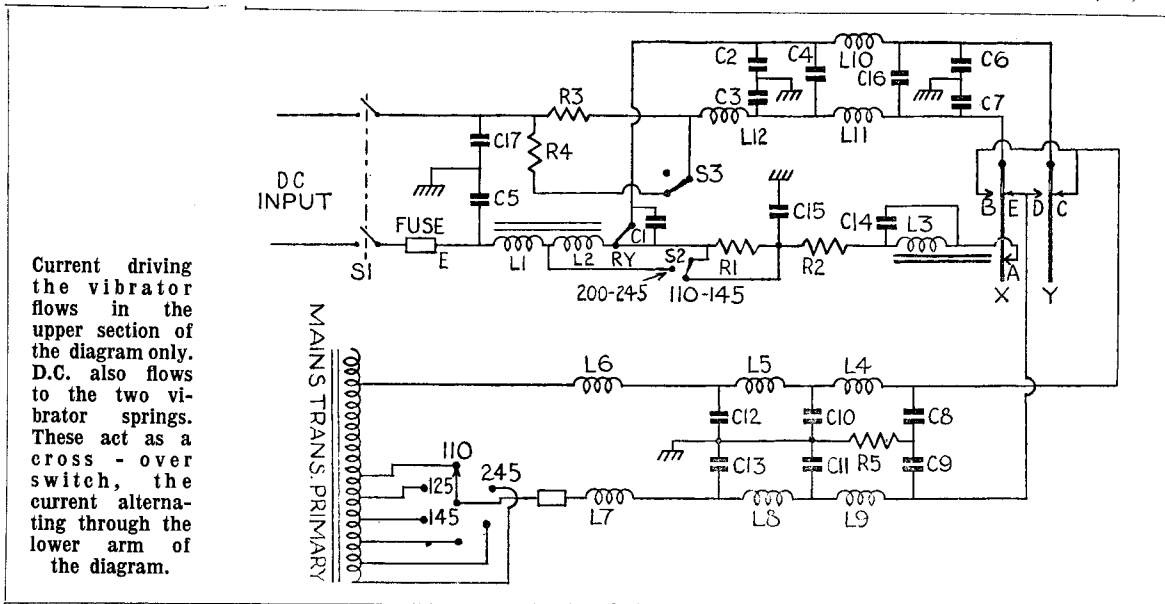
L.	Ohms.	L.	Ohms.
2	2X915	17	382
3	14	18	10
4	2X11	19	5
5	242	20	77
6	790	21	24
7	157	22	207
8	401	23	45
9	7	24	291
10	7	25	2X167
11	23	26	8.5
12	14	27	1,154
14	10	27	134
15	14	28	200
	154	29	167
		30	167

CONDENSERS

C.	Mfds.	C.	Mfds.
1	50	38	103 mmfds.
2	50	39	113 "
6	39 mmfds.	40	.047 "
7	10 "	41	18 mmfds.
8	15 "	42	39 "
10	.012 "	43	.056 "
11	.039 "	44	.033 "
13	100 mmfds.	45	.18 "
14	.047 "	46	150 mmfds.
15	.047 "	47	2,200 "
18	3.9 mmfds.	48	.068 "
20	180 "	51	.22 "
21	.047 "	52	.0022 "
22	.047 "	54	.056 "
23	47 mmfds.	57	.18 "
24	470 "	58	.18 "
28	4,200 "	59	1,600 mmfds.
30	330 "	60	180 "
31	33 "	61	180 "
33	94 "	62	.033 "
34	97 "	63	.068 "
35	.047 "	64	.15 "
37	.068 "	65	.027 "
		66	390 mmfds.

RESISTANCES

R.	Ohms.	R.	Ohms.
1	1,200	23	50,000
2	.82 meg.	24	.33 meg.
3	680	25	.18 "
4	6,800	26	39,000
5	.82 meg.	27	.12 meg.
6	470	28	.47 "
7	22,000	29	1,000
8	47,000	31	.82 meg.
9	220	32	4,700
10	34,000	34	1,500
11	27,000	36	100
12	330	38	47,000
13	82,000	39	6,800
14	82,000	40	9.4 meg.
15	.33 meg.	41	1.2 "
16	.27 "	42	1.8 "
17	.27 "	43	.22 "
18	.82 "	44	680 "
19	.65 "	45	.33 meg.
19a	.2 "	58	1,500
20	1 "	59	.47 meg.
21	22,000	60	47 "
22	1,000		



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.