

**Radiotron Circuits
for Experimenters**

Radiotron Circuits for Experimenters

In the design of transmitting circuits for experimenters there are many factors to be considered. Low cost of construction is of vital importance, but unless it can be combined with efficiency the performance will not be satisfying to a keen experimenter. The choice of valves is the first step towards a complete transmitter and only the best choice is able to lead to the best transmitter. There are 29 types of Radiotron Transmitting Valves available, but of these there are certain types such as the 6P6, 807, 808 which can be used most efficiently in suitable combinations and which provide excellent performance at low cost.

The circuits given in this leaflet are intended rather as illustrating suitable valve combinations for various types of transmitters than as providing complete information on transmitter design. Such items as key-click filters and antenna couplers are not specified but are left to individual choice.

This leaflet contains five transmitting circuits for experimental use which can be used either for cw or phone.

CIRCUITS No. 1 & 2, are low-power (12 and 25 watts input respectively) transmitters using suppressor-grid modulation. While operating at low plate-efficiency under modulated conditions, these transmitters have the advantage of being simple to adjust and require relatively inexpensive audio equipment. Type 6P6 is used throughout the R.F. stages of these two circuits. They can be operated on the 80, 40 and 20 metre wavebands.

CIRCUITS No. 3 & 4, are 3-stage transmitters using input powers up to 29 and 120 watts respectively, and having their final stages plate-modulated. They therefore operate at maximum plate efficiency in the final valve under modulated conditions, and audio power amplifiers are required. Suitable modulator circuits using push-pull 6L6's are shown, including winding details of modulation transformers.

CIRCUIT No. 5 shows a two-stage crystal controlled five-metre transmitter using two type 807's. This is the simplest valve combination for obtaining crystal controlled output on five metres. It should be noted that due to the high gain, extreme care should be taken in shielding the input and output circuits of the 807's, and in keeping the length of leads to the absolute minimum.

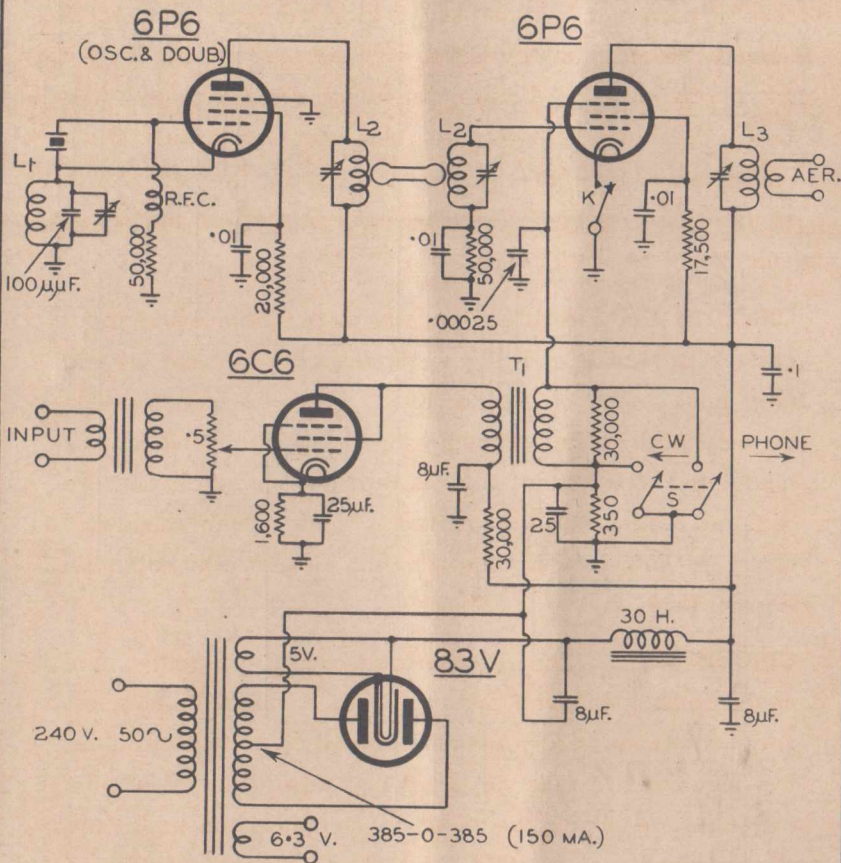
The power inputs given on the circuit diagrams refer to the final stage in each case. Reference should be made to page 12 for coil details on all circuits.

RADIOTRON

No. 1

2-STAGE TRANSMITTER

(SUPPRESSOR MODULATED)



FREQUENCIES — 3.5 & 7.0 MC. (3.5 MC. CRYSTAL)
7.0 & 14 MC. (7 MC. CRYSTAL)

POWER INPUT — 23 W. (C.W.), 12 W. (PHONE).

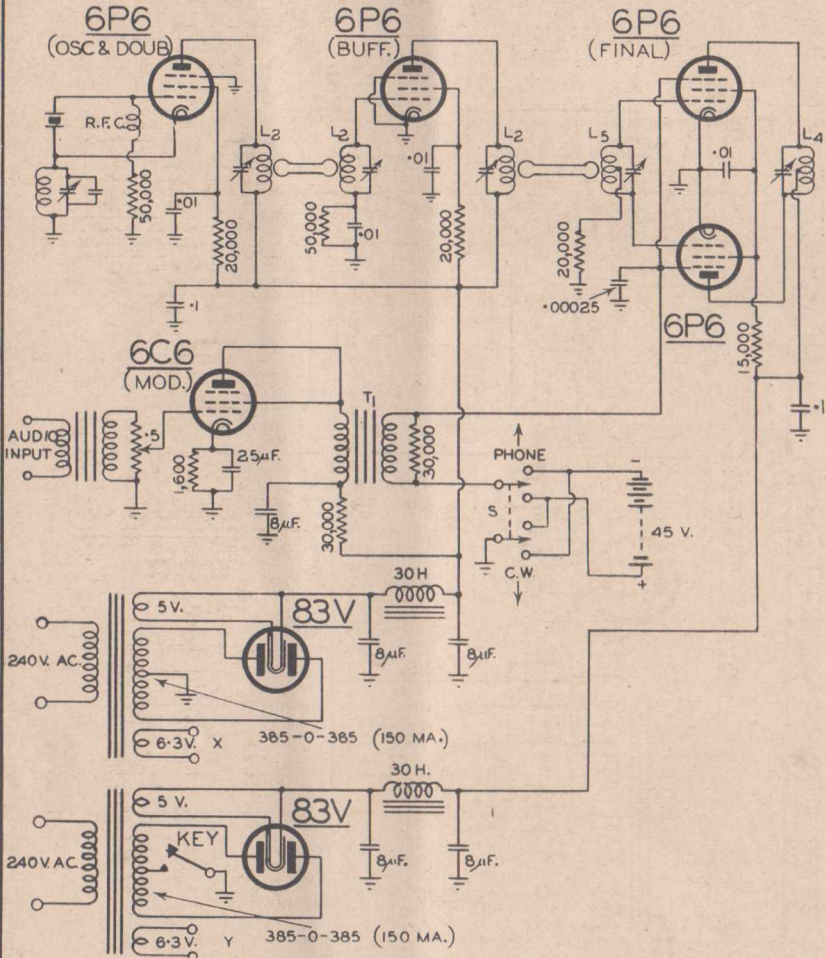
POWER OUTPUT — 12 W. (C.W.), 3 W. (PHONE)

RADIOTRON

No. 2

3 STAGE TRANSMITTER

(SUPPRESSOR MODULATED)



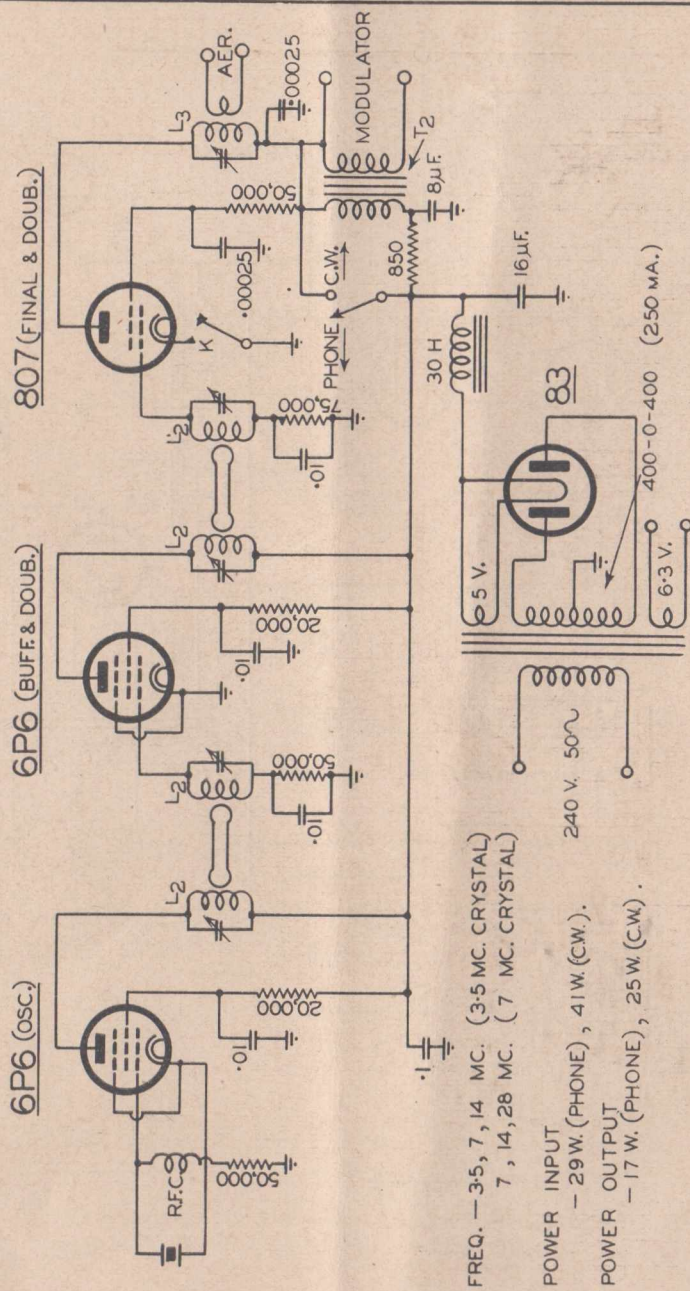
FREQUENCIES - 3.5, 7 MC. (3.5 MC. CRYSTAL)
7, 14 MC. (7 MC. CRYSTAL)

POWER INPUT - 24 W. (PHONE), 46 W. (C.W.)

POWER OUTPUT - 6 W. (PHONE), 24 W. (C.W.)

RADIOTRON

No. 3 3-STAGE TRANSMITTER (PLATE MODULATION)



FREQ. — 3.5, 7, 14 MC. (3.5 MC. CRYSTAL)
 7, 14, 28 MC. (7 MC. CRYSTAL)

POWER INPUT

— 29 W. (PHONE), 41 W. (C.W.).

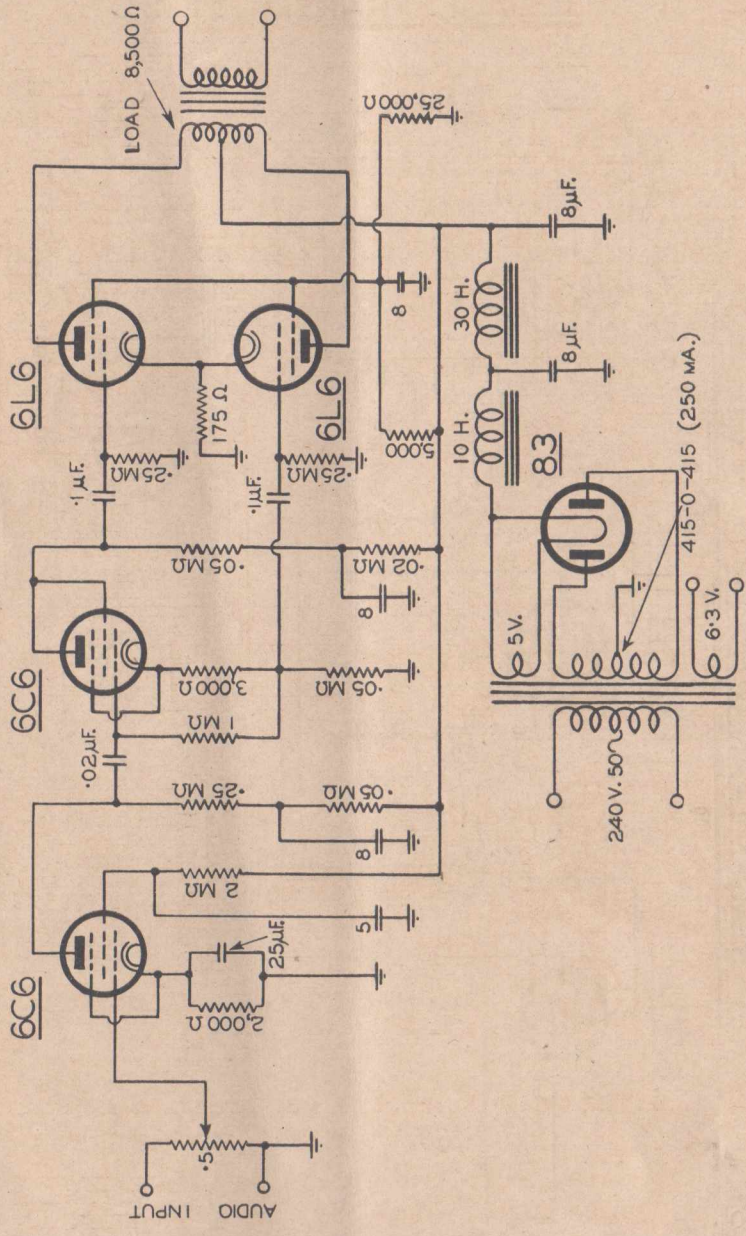
POWER OUTPUT

— 17 W. (PHONE), 25 W. (C.W.).

RADIOTRON

25 WATT MODULATOR UNIT

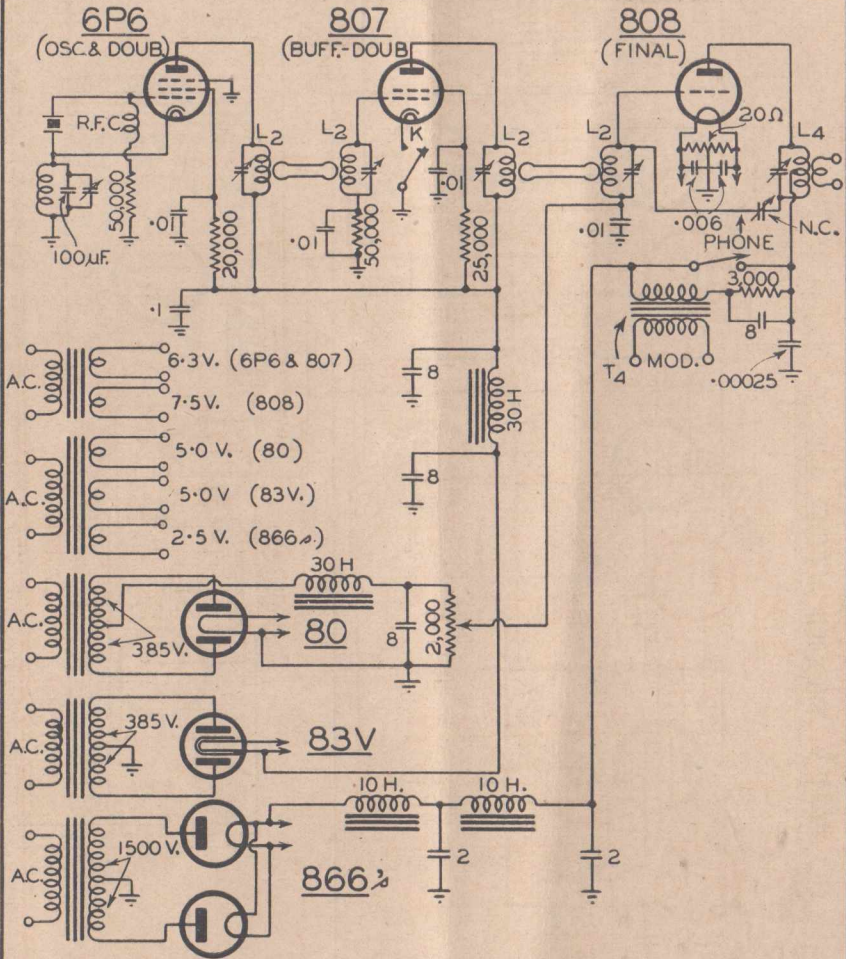
No. 3A



RADIOTRON

No. 4

3 STAGE TRANSMITTER



FREQUENCIES - 3.5, 7, 14 MC. (3.5 MC. CRYSTAL).
7, 14, 28 MC. (7 MC. CRYSTAL).

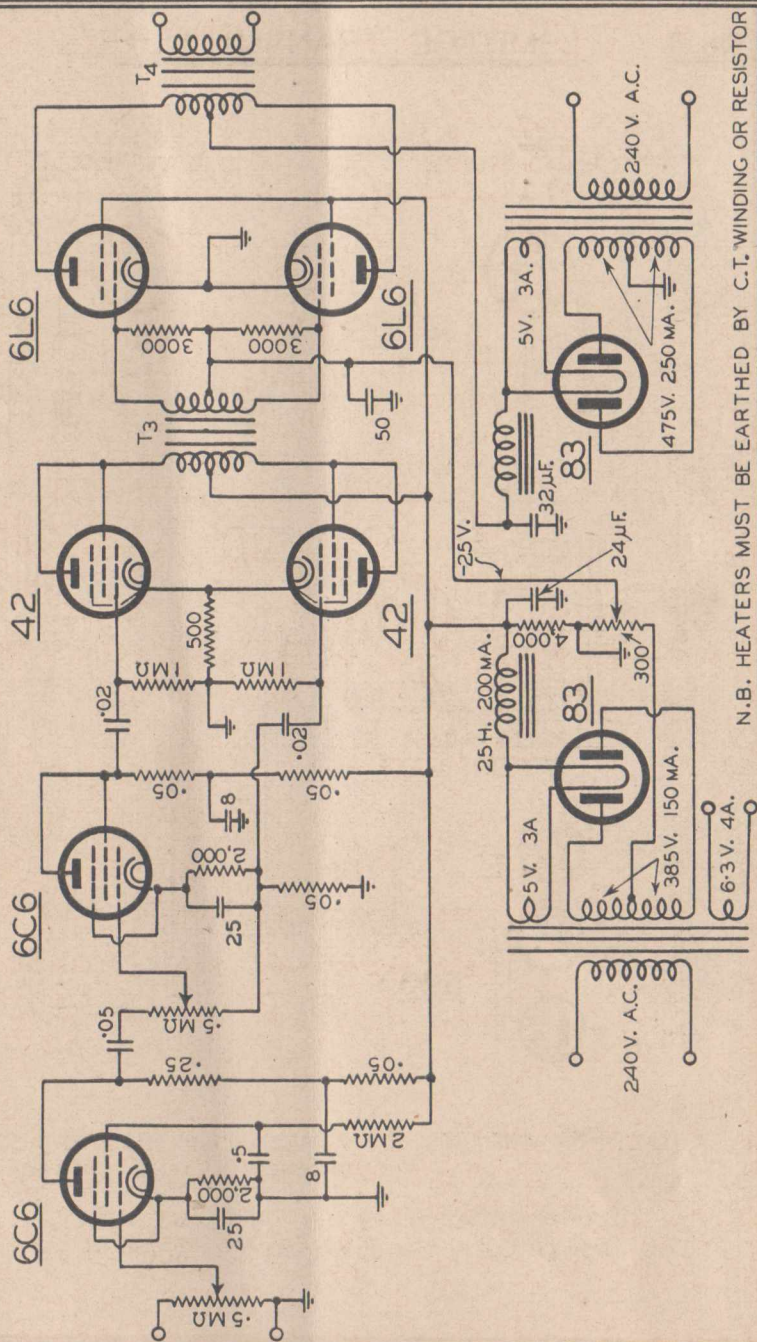
POWER INPUT - 140 W. (C.W.) 120 W. (PHONE)

POWER OUTPUT - 100 W. (C.W.) 85 W. (PHONE)

RADIOTRON

No. 4A

60 WATT MODULATOR UNIT

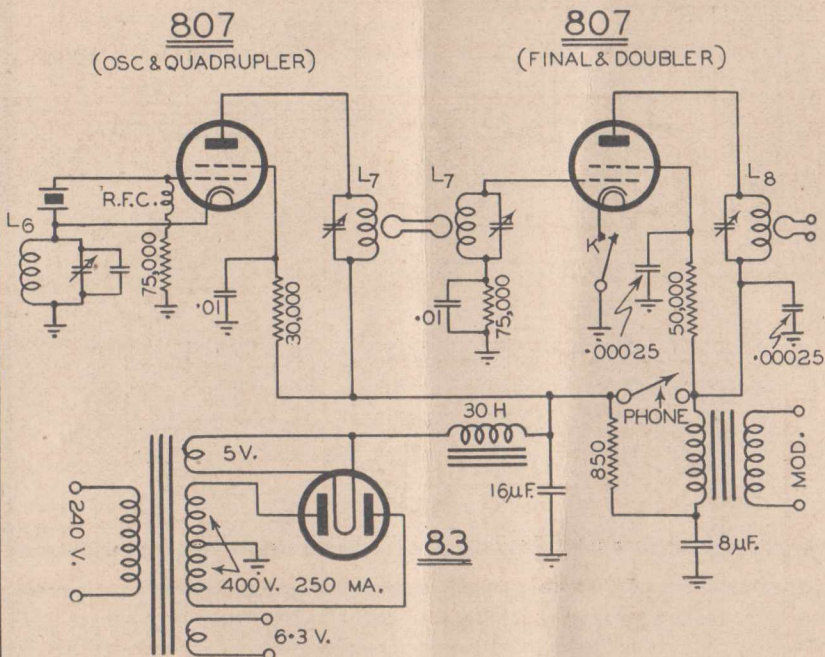


N.B. HEATERS MUST BE EARTHED BY C.T. WINDING OR RESISTOR

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No. 5

5 METRE TRANSMITTER



COIL DATA

L ₆	10 TURNS	24 SWG. ENAM.	DIAM. 1 1/4"	DOUBLE SPACED
L ₇	6 TURNS	16 SWG ENAM	DIAM 1 1/2"	LENGTH 1 1/2"
L ₈	4 TURNS	14 SWG ENAM	DIAM 3/4"	LENGTH 5/8"

POWER INPUT

29 W. (PHONE) 41 W. (C.W.)

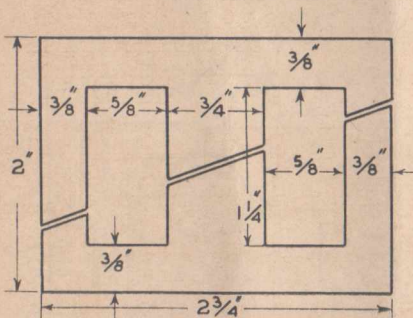
CRYSTAL FREQUENCY

7 MC. (40 METRES).

RADIOTRON

T₁

SUPPRESSOR MODULATION TRANS.



MATERIAL

BALDWIN'S NO. 4 IRON

LAMINATIONS

AS SHOWN

STACK

3/4", WITH 5 MIL. BUTT JOINT

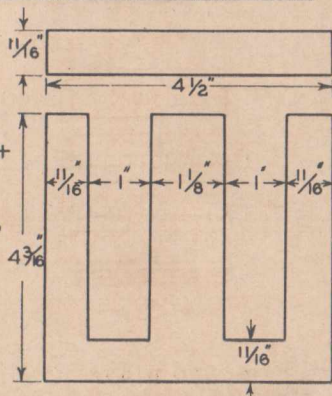
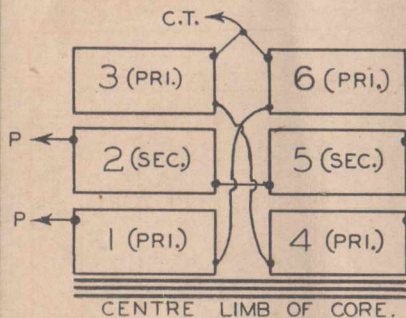
WINDINGS

PRIMARY — 2,500 TURNS 34 B & S.
 SECONDARY 3000 TURNS 36 B & S.
 INSULATION — 2 MIL. PAPER BETWEEN LAYERS.

N.W.

T₂

30 W. PLATE MODULATION TRANS.



WINDINGS

CORE — BALDWIN'S NO 4
LAMINATIONS — AS SHOWN
STACK — 1.5 INCHES
BUTT JOINT — 15 MIL. GAP
INSULATION — 2 MIL. E.P. (LAYERS)
 — 5 MIL. E.C. (WINDINGS)

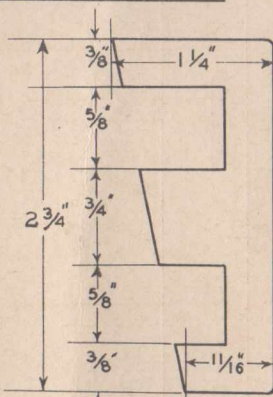
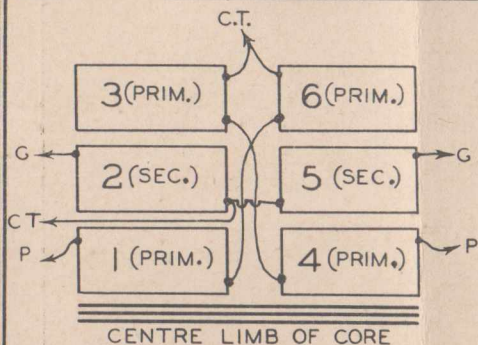
1 — 28 B&S. — 1470 T.
 2 — 27 " — 1800 T.
 3 — 28 " — 1470 T.
 4 — 28 " — 1470 T.
 5 — 27 " — 1800 T.
 6 — 28 " — 1470 T.

NB. WINDINGS 6,5,4, WOUND IN OPPOSITE DIRECTION TO 3,2,1.

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T3

INTER-STAGE TRANSFORMER



CORE — BALDWIN'S NO. 4
LAMINATIONS — AS SHOWN
STACK — 1.5" INTERLEAVED.
INSULATION — 2 MIL E.P. (LAYERS)
5 MIL E.C. (WINDINGS)

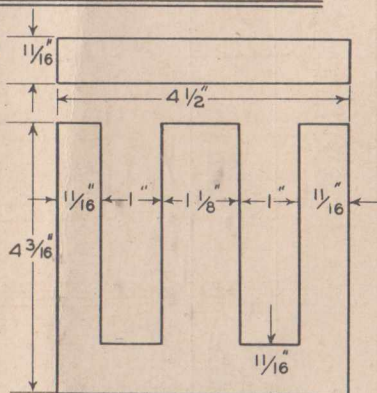
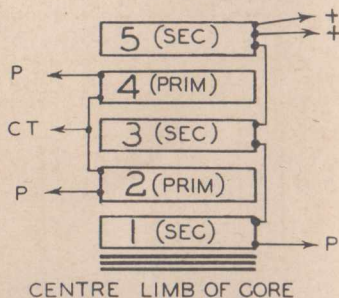
WINDINGS

N.B. WINDINGS 6,5,4 WOUND IN OPPOSITE
DIRECTION TO 3,2,1.

1 — 33 B&S. — 375 T.
2 — 31 B&S. — 430 T.
3 — 33 B&S. — 375 T.
4 — 33 B&S. — 375 T.
5 — 31 B&S. — 430 T.
6 — 33 B&S. — 375 T.

T4

60W. PLATE MODULATION TRANS.



CORE — BALDWIN'S NO. 4
LAMINATIONS — AS SHOWN
STACK — 1.125"
BUTT JOINT — 10 MIL. GAP.
INSULATION — 2 MIL. E.P. (LAYERS)
5 MIL. E.C. (WINDINGS)

WINDINGS

1 — 30 S.W.G. — 1250 T.
2 — 30 S.W.G. — 1000 T.
3 — 30 S.W.G. — 1200 T.
4 — 30 S.W.G. — 1000 T.
5 — 30 S.W.G. — 1250 T.
TAP AT 550 T.

RADIOTRON

APPROXIMATE COIL DATA

Coil	Band MC.	Inside Diam.	Turns	S.W.G. Gauge	Details
L1	3.5	1 1/4"	24	24 D.C.C.	Double Spaced
	7	1 1/4"	10	24 D.C.C.	Double Spaced
L2	3.5	2"	36	18 enam.	Length 3"
	7	2"	21	18 enam.	Length 3"
	14	1 1/2"	12	16 enam.	Length 2"
	28	1 1/2"	6	16 enam.	Length 1 1/2"
L3	3.5	3"	25	14 enam.	Length 3"
	7	3"	15	12 enam.	Length 3"
	14	3"	8	1/4" tube	Length 3"
	28	2"	6	1/4" tube	Length 3"
L4	AS FOR L3 WITH CENTRE TAP.				
L5	AS FOR L2 WITH CENTRE TAP.				

