

Capacity of Antenna Condenser $C = 140 \mu\text{mf.}$

Plate spacing $d = \frac{1}{10}'' = .25 \text{ cm.}$

Required plate area $A = 11.3 \cdot C = 395 \text{ sq. cm.}$

Two plates each of 198 sq cm required.

Each plate radius is 7.99 cm or $3\frac{1}{8}''$

and Diode line

Max. Capacity of Grid line Condenser = $2.0 \mu\text{mf.}$

Two halves on cylinder in series give required capacity

Total capacity of both halves to cylinder $8.0 \mu\text{mf.}$

Spacing $d = \frac{1}{16}'' = .16 \text{ cm.}$

Total area $A = 11.3 \cdot C = 14.5 \text{ sq. cm.}$

Let cylinder be $\frac{3}{4}'' = 1.91 \text{ cm diameter}$

Required length of cylinder then $2.42 \text{ cm, say } 1'' \text{ long.}$

Antenna line requires 15.5 ohms or diameter ratio 1.30:1

Coupling lines require 14.7 ohms or diameter ratio 1.28:1

Let Antenna line be $1\frac{1}{8}'' \text{ I.D.} + 1\frac{1}{2}'' \text{ O.D.}$, giving 17.2 ohms

Let Coupling lines be $1\frac{5}{8}'' \text{ I.D.} + 2'' \text{ O.D.}$ giving 12.5 ohms

Use small amount of fixed capacity from plate-plate 6J6
if necessary to gain band width. Adjust tuning
with second grid end condenser.

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Interstage couplers have impedance of 2140 ohms

G_m of A5588A = .015 mho.

Two stages will each have gain of 32 times or 30 DB

Geometric mean to diode stage = 3080 ohms

This stage will have gain of 46 times or 33 DB

These three stages will total 93 DB

Geometric mean from 6J6 = 2900 ohms

G_m of 6J6 each half is .32 and $R_p = 6000$

Gain of this stage therefore is 10.4 times = 20 DB.

Total gain of system therefore 113 DB max
which is more than adequate or 990,000 times

Only 20 microvolts input necessary to give 10 volts output.

Date