

Acorn-Type Pentode Announced

Type 954, R.F. Amplifier Companion of 955, Now Available

THE development work on r.f. amplifiers for the ultra-high frequencies has now reached the point where practical tubes are ready for distribution, with the result that a new acorn pentode, designated as the 954, has been announced by the Radiotron Division of RCA Manufacturing Company. The 954 is of the same type of con-

Typical Operation as Class-A Pentode Amplifier

Plate voltage.....	90	250 volts
Screen voltage.....	90	100 volts
Control-grid voltage.....	-3	-3 volts
Suppressor.....	Connected to cathode at socket	
Amplification factor.....	1100	More than 2000
Plate resistance.....	1.0	More than 1.5 megohms
Mutual conductance.....	1100	1400 micromhos
Plate current.....	1.2	2.0 milliamperes
Screen current.....	0.5	0.7 milliamperes

As a Biased Detector

Plate-supply voltage.....	250 volts max
Screen voltage.....	100 volts
Control-grid voltage.....	-6 volts approx.
Suppressor.....	Connected to cathode at socket
Plate load.....	250,000 ohms or equivalent impedance
Plate current.....	Adjusted to 0.1 ma. with no input signal

The tube can be mounted in the same type of socket as that employed for the 955, with the short end projecting through the hole in the socket. Of the five terminals arranged around the circumference of the tube, the group of three consists of the two heater and the cathode connections, with the cathode in the center. The group of two on the opposite side are the screen and suppressor terminals. The terminal on the short end of the tube is the control grid, while that on the long end is the plate. Connections should never be soldered directly to the tube terminals, since the heat is almost certain to crack the seal.

The heater of the 954 may be operated on either a.c. or d.c., but series operation of heaters is not recommended. If on a.c., the cathode pref-

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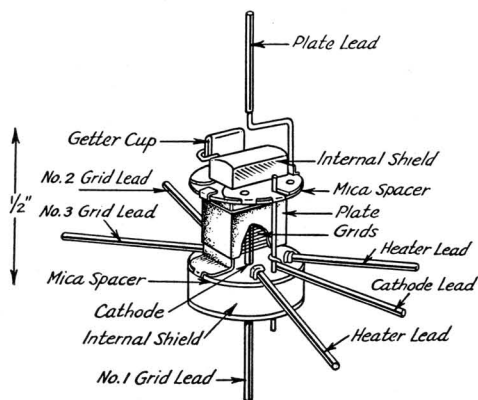


FIG. 1—INTERNAL CONSTRUCTION OF THE 954

struction as the 955 triode and is very similar to the latter tube in external appearance, the chief distinguishing feature being the fact that the 954 has its plate and grid leads brought out the top and bottom. The new tube is a heater-cathode type of pentode designed for wavelengths as short as 0.7 meter, and is capable of gains of three or more in conventional circuits at one meter, with higher gains at longer wavelengths.

Internally, the tube is considerably more complicated than the 955, having in addition to the two extra grids a considerable amount of internal shielding. The enlarged drawing of Fig. 1 shows the element construction. In appearance it is like a greatly reduced version of the 802. Some idea of the minuteness of the elements can be obtained from the fact that the cathode sleeve is about half the length and approximately the same thickness as the common pin.

The tentative ratings and characteristics of the 954 are as follows:

Heater voltage.....	6.3 volts a.c. or d.c.
Heater current.....	0.15 amp.
Direct interelectrode capacitances (pentode connection):	
Control grid to plate (with shield baffle).....	0.007 μ fd. max.
Input.....	3 μ fd.
Output.....	3 μ fd.
D.c. plate voltage.....	250 volts max.
D.c. suppressor voltage.....	100 volts max.
D.c. screen voltage.....	100 volts max.

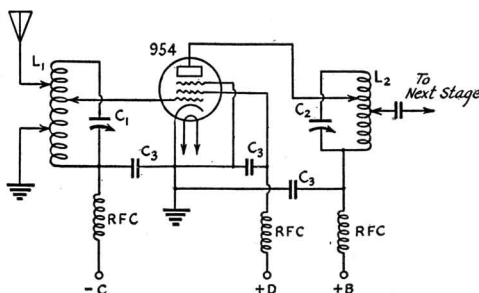


FIG. 2—TYPICAL CIRCUIT DIAGRAM FOR R.F. AMPLIFICATION

C_3 —100 to 500 μ fd. fixed mica condensers.
RFC—15 turns No. 30 wire, outside diameter one-quarter inch.
Other circuit constants depend upon wavelength, as follows:

	2.75 to 5.3 meters	1 to 3 meters	0.8 meter
L_1 turns.....	10	4	5
L_1 wire.....	No. 16	No. 16	No. 30
and dia.....	3/8"	3/8"	1/8"
L_2 length.....	3 3/4"	5 1/2"	1 1/2"
C_1, C_2 μ fd.....	3 to 25	3 to 25	3 to 4

L_1 and L_2 are wound with bare copper wire. Diameters given are outside.