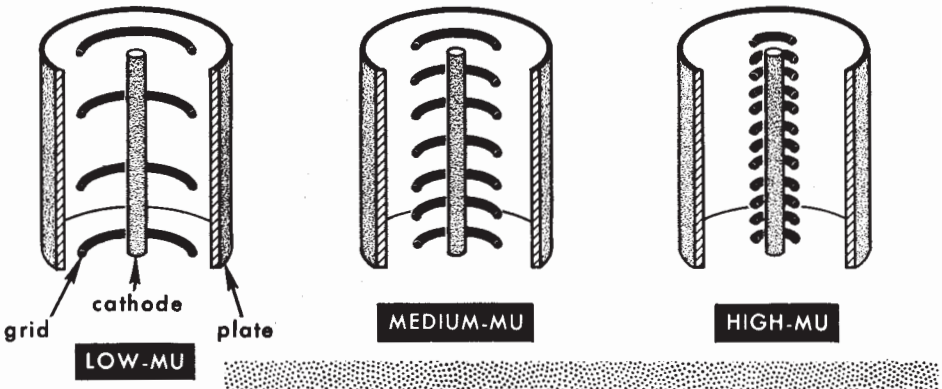
Different Types of Triodes

A great variety of tubes can be made by varying the structure of the grid and the position that it occupies relative to the cathode and plate. If the tube manufacturer winds the grid wires closer together and also puts them closer to the cathode, he will have a tube with both higher plate resistance and higher amplification factor.

Variations in structure change tube parameters



CHARACTERISTICS OF TUBES

Type	Transconductance (milliamps per volt)	Plate Resistance (ohms)	Amplification Factor
12AT7	5.5	10,900	60
12AV7	2.2	7,700	17
12AV7	8.5	4,800	41
12AX7	1.6	62,500	100
12AY7	1.75	22,800	40
12BH7	3.1	5,300	16.5
ECC81	6.7	10,500	70

One-half of a 12AX7 double triode, for example, has a transconductance of 1.6 milliamps per volt, with a plate resistance of 62,500 ohms, which gives an amplification factor of 100. The transconductance is lower than that in the 12AU7 because the structure of the tube reduces the possible plate current. Tubes with a high transconductance usually have a lower plate resistance and vice versa. This fact sets a limit to the amplification that can be obtained from a single triode. What we need, to get still more amplification from a single stage, is a tube with a high transconductance and also a high plate resistance.