



## Use Of UHF Miniature Tube Sockets For UHF Television Applications

This Note discusses the advantages and disadvantages resulting from the use of special uhf sockets for seven- and nine-pin miniature tubes in uhf television tuners and converters, and gives recommendations as to when such sockets should be used. These special uhf sockets are designed to make contact with the tube base pins in a region very close to the glass button, usually within 1/16 inch from the bottom of the seated tube. Because these sockets, compared with conventional miniature sockets, provide appreciable reduction in lead lengths and lead inductances, they can be used to advantage in uhf television equipment for applications such as rf amplifiers and mixers, which must operate satisfactorily at frequencies up to 890 megacycles, and oscillators, which may be required to operate at frequencies as much as 40 megacycles higher.

The use of these sockets, however, presents disadvantages along with the advantages. The design specifications for sockets for miniature tubes, as given in the General Section of the RCA Tube Handbook HB-3, were intended to insure a minimum of difficulty from glass strains, which may cause cracks in the glass base, and from poor contact between tube and socket resulting from oxidation of the base pins in the vicinity of the glass button during tube processing. The specifications follow:

"The socket design should be such that circuit wiring can not impress lateral strain through the socket contacts on the base pins. The point of bearing of the contacts on the base pins should not be closer than 1/8 inch from the bottom of a seated tube."\*

Because the region of contact between the special uhf socket and the tube base pins is so close to the glass button, the pressure of the socket contacts on the pins places additional lateral strain on the glass and may cause cracks in the tube base. In addition to problems of glass strain, there may also be problems resulting from poor rf contact. Because of the heat used in the tube manufacturing process to seal the tube base pins into the glass button stem, the base pins may exhibit discolorations, which appear as stem burns, close to the stem



of the tube but in the area which makes contact with the special uhf sockets. When these discolorations are due to actual burning-off of the silver plating on the base pins, it may be difficult to obtain satisfactory high-frequency contact.

Because of the problems of glass strain and poor rf contact, the use of the special uhf sockets should be restricted to those applications in which good uhf performance is the paramount consideration. When they are used, it is further recommended that wiring plugs\* be inserted in each socket before it is wired to minimize the possibility of lateral strain which could be transmitted through the socket contacts and cause glass breakage.

\* BASES, 7-pin types (Dec. 1, 1942); BASES, 9-pin types (Dec. 20, 1946).

# Similar to those manufactured by Star Expansion Products Company, New York, N.Y.