Radio, Television, Industrial Tube, Transistor and Diode Equivalents Handbook

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C. M. S.

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INTRODUCTION

Due to the introduction of many hundreds of new types of receiving valves during the last two years, it has been decided to adopt in this latest edition an entirely new method of presentation, otherwise the book would become unwieldy in use. At the same time, because of many requests we have included in addition all industrial and transmitting valves with their equivalents and all diodes and transistors with their equivalents, therefore there are some 8,000 more types included in this book than in any other previous book either published by ourselves or any other publisher.

To use the table of commercial equivalents, find the valve or semi-conductor to be replaced in the index. Against the type there is shown a number denoting the section in the equivalents portion of the book in which this type appears; every other type in this section is a directly interchangeable equivalent.

When replacing a valve in the high frequency stages of a receiver it should be remembered that re-alignment is desirable to ensure peak performance.

Attention is drawn to the industrial types quoted in the Equivalent Tables. These have been developed to meet the stringent demands of modern industry where reliability is of the utmost importance, electrically they have standard equivalents. An example is type 6058, for normal working this may be replaced with a 6AL5 or an EB91, but if the equipment is intended for continuous working conditions an industrial long life type should be selected.

Certain valves are suitable for use with either parallel or series heater circuits, that is AC or AC/DC equipment. Equivalents of a given valve are not necessarily suitable for both applications. An example is the 0M10. Types 6K8, X147, 6C31, ECH35, X61M, 6E8, and 6TH8 are equivalents when used with parallel heater circuits because they all have 6.3 volt heaters. Equivalent types ECH3G and ECH33 have the same heater voltage and current rating as the 0M10 (6.3v. 0.2A) and are equally suitable for series or parallel circuits. The CCH35 has a heater rating of 7.0v. 0.2A and is intended for series circuits only.

In view of the fact that many of the early Octal based valves are now becoming obsolete, and in many cases rather rare equivalents have been shown which are not necessarily identical electrical equivalents, it has been felt that this was necessary so as to enable

effective substitution to take place, and it is suggested that with these early types reference should be made to the four radio valve characteristic manuals published by this Company, so that a check can be effected on the actual operating characteristics and this will enable any minor changing of biasing etc., to be corrected. The four books in question are:

Comprehensive Radio Valve Guide Book 1. (Bernards Radio Manual No. 100). Price 5/-.

Comprehensive Radio Valve Guide Book 2. (Bernards Radio Manual No. 121). Price 5/-.

Comprehensive Radio Valve Guide Book 3. (Bernards Radio Manual No. 143). Price 5/-.

Comprehensive Radio Valve Guide Book 4. (Bernards Radio Manual No. 157). Price 5/-.

In using the book for transistor or diode equivalents, rather more caution must be exercised than with the valve equivalents because of the greater range of variation in parameters, tolerated by the Manufacturers. Where one transistor or diode is shown as an equivalent to another it may be replaced in any circuit without physical damage to either the transistor itself or any other components of the circuit. However, in certain circumstances, minor component changes may be necessary for optimum operation. This will occur particularly when the original transistor or diode is operated near to or at its maximum capabilities.

In the special case of high frequency transistor circuitry, it will usually be necessary to make slight alignment changes after replacing the transistor. In extreme cases neutralization may have to be provided where it was unnecessary in the original circuit. This is due to the comparatively large range of intra-electrode capacitances, found in transistors. Because there has, as well, been no recognised international agreement on the form of the transistor or diode encapsulation the transistors or diodes listed as equivalents to another may not have the same physical shape. This will not affect the performance of the circuit but in certain very compact types of assembly, such as printed circuit construction, may make installation difficult. This should be taken into consideration when choosing a replacement.

Because manufacturers tend to alter the form of construction of their semi-conductors, from time to time, it has not been possible to include any indication of physical size. In case of difficulty the manufacturer concerned should be consulted.

The C.V. and Armed Forces sections will be found particularly useful when attempting to identify valves obtained from ex-Government sources.

A complete section is devoted to Television Picture Tubes, this feature is unique in its conception.

Not only have equivalents been shown, but also near equivalents. The necessary electrical changes are outlined in the remarks column. It should be noted that the changes relate only to the electrical characteristics of the various tubes and that differences in physical measurements have not been considered. This may necessitate slight structural alterations in certain cases.

When substituting ordinary tubes by ion trap models care should be taken to see that there is sufficient room on the tube neck after the scanning and focus components have been mounted, to position the ion trap magnet.

It is sometimes difficult to centre the picture with these tubes without modifying the focus mounting brackets, in cases of doubt or difficulty, the ion trap tube manufacturer should be consulted regarding its suitability.

Tubes with an external coating (aquadag) can be used to replace plain glass tubes, but arrangements should be made to connect the coating to chassis potential.

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