



THE METALIX VALVE

Many of the drawbacks associated with the glass bulb thermionic Valve, are avoided with the "METALIX" hollow anode type, see fig. 7.

This type, like its predecessor, relies entirely upon electronic emission for the passage of current, but differs from the glass bulb type in that the anode actually forms the discharge chamber (see fig. 8) and encloses the filament in all directions except in that of the insulating stem which supports the filament.

The "METALIX" Valve has several important merits. Firstly, the "space charge" effect is reduced and in consequence the drop in potential across the Valve is small ; secondly, the emission of the Valve is higher (see curves fig. 9) ; thirdly,



Figure 7.—
"METALIX" Valve
type M.125.

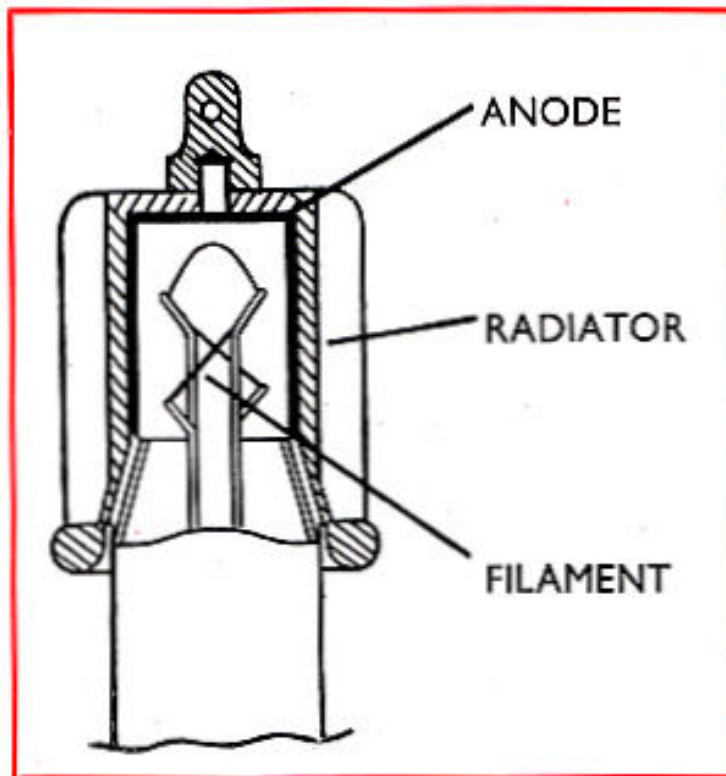


Figure 8.—
"METALIX" Valve
—sectional diagram.

the exterior of the anode is exposed to the outer air and may, therefore, be fitted directly with a radiator for cooling purposes and finally, owing to the metal wall of the discharge chamber being at the same time the anode, a negative charge cannot possibly be formed. The improvement in the latter respect is clearly indicated in fig. 10, which shows the characteristic curve of a "METALIX" Valve as compared with a Valve of the glass bulb type.



EMISSION CHARACTERISTICS

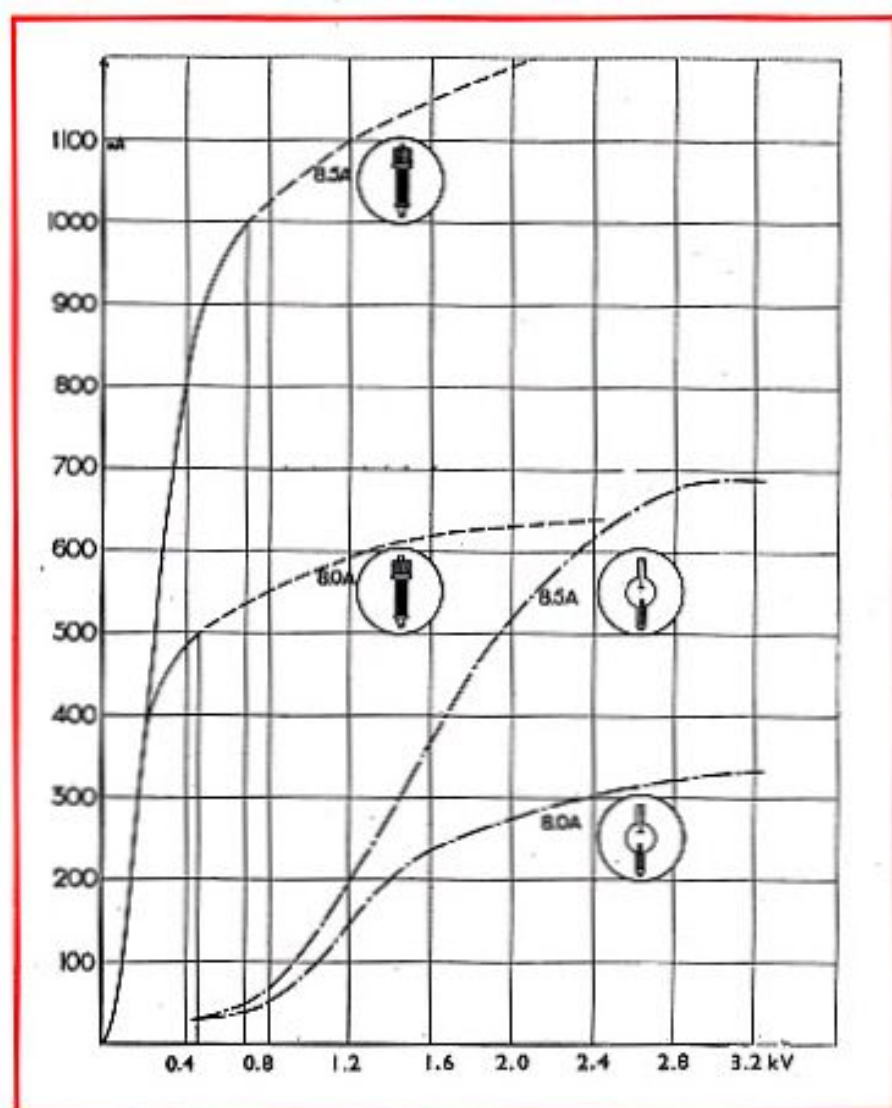


Figure 9.—These curves show the characteristics of "METALIX" Valve type M.125/1000 as compared with a glass valve for the same filament current. The measurements were made on D.C. As a valve must always be operated below "saturation" current, the increase in efficiency which follows the use of the "METALIX" valve will at once be apparent.



GLASS WALL EFFECT

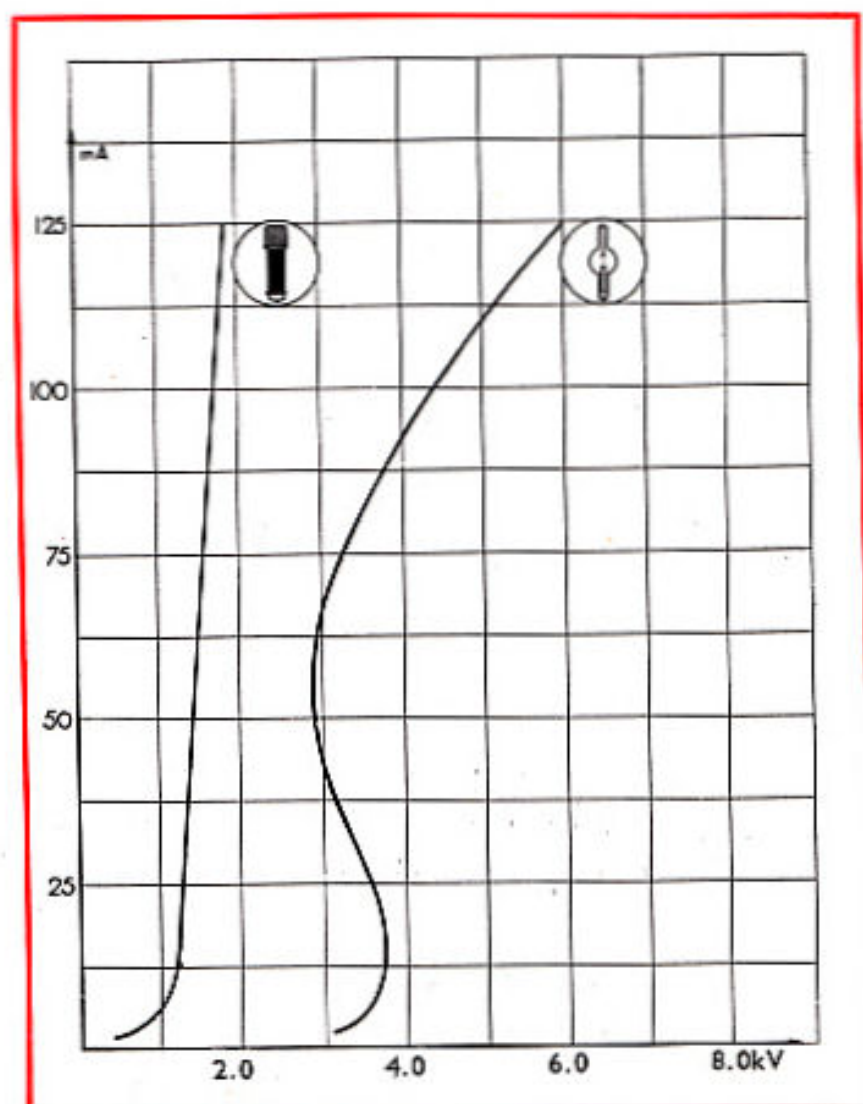


Figure 10.—In the above curves the current-voltage characteristic of "METALIX" Valves equipped with metal discharge chamber and glass valves (diagnostic) are again effectively compared. Note in the case of the glass valve the effect of the negative charge on the interior of the bulb.

The measurements were made under X-ray load conditions and with both valves in series. Each valve was designed to withstand the same tension. It will be seen, that with increasing anode current the volt-drop across the glass valve becomes extremely detrimental.