PHILIPS INTRODUCE "INNOVAL" SERIES

Working in collaboration, Australian and Dutch engineers have evolved an important new technique in valve manufacture, which is claimed to be the most efficient system yet evolved. It is the basis of the miniaturised "Innoval" series, announced recently by Philips, and already available on the market.

OBJECT of the new technique has been to provide miniature valves with a sufficient number of pins to accommodate complex types and, in addition, to achieve greater accuracy and rigidity in the positioning of those pins. The high sealing temperatures previously necessary with other all-glass valves has made this difficult to achieve.

The "Innoval" series uses the standard American 9-pin "Noval" base, which forms the basis of the trade name. However, the pins are sealed into the base assembly in special jigs and the glass thereafter is not heated again sufficiently to become plastic.

The electrode structure is welded to the inner ends of the base pins, the multiplicity of support wires holding the whole structure very firmly. Low microphonic content is claimed as a result and, in point of fact, the manufacturers have published ratings for microphony under typical operating conditions.

The glass bulb slips down over the electrode structure to seat over a ridge on the base assembly, which is filled with a special cement. This becomes plastic under a moderate temperature and cements the bulb in place. The bulb is exhausted and sealed at the top in the usual manner for miniature valves.

The "Innoval" series is suitable for all normal broadcast applications and, also at frequencies involved by FM and television services. Prices are similar to those ruling for comparable full-sized valves.

Unlimited stocks are available immediately of the 6AN7, a triode-hexode with full frequency ratings to 100Mc. Also available is the 6M5, a miniature power pentode with ratings similar to those of the well-known EL3-NG.

Other types scheduled for early production include a diode-triode, a diode pentode, an R.F. pentode, two VHF triodes and a special telephone repeater tube. The range will be extended to include all types of valve, including a rectifier as manufacturing facilities permit. The valves are being manufactured both in Eindhoven and in the Hendon (SA) factory of the Philips organisation.

Since the miniature 7-pin base is inadequate for certain types of valve, the adoption of the standard 9-pin Noval base for the complete range appears to be a very logical step. This feature, combined with the special sealing technique should make the valves a very attractive proposition for designers in the coming season.

KEY TO ILLUSTRATION

1. Sealed off exhaust tube.
2. Glass bulb.
3. Getter holder.
4. Connection between triode grid and hexode grid No. 1 (injection grid).
5. Connection between triode plate and base pin.
6. Top mica.
7. Common cathode for triode and hexode sections.
8. Triode grid.
9. Triode plate.
10. Connection between hexode grids Nos. 2 and 4.
11. Centre mica.
12. Hexode grid No. 1 (Signal grid).
13. Hexode grid No. 2.
14. Hexode grid No. 3.
15. Hexode grid No. 4.
16. Hexode plate.
17. Bottom mica.
18. Connection between hexode grids Nos. 2 and 4 and base pin.
19. Connection between hexode grid No. 3 and base pin.
20. Connection between hexode grid No. 1 and base pin.
21. Heater.
22. Connections between heater and base pin.
23. Connection between hexode plate and base pin.
24. Internal shield.
25. Connection between internal shield and base pin.
26. Glaze seal between bulb and pressed glass base.
27. Frosted glass base.
28. Silver-plated chrome iron base pin.

These two valves are available immediately from stock, likewise the sockets.