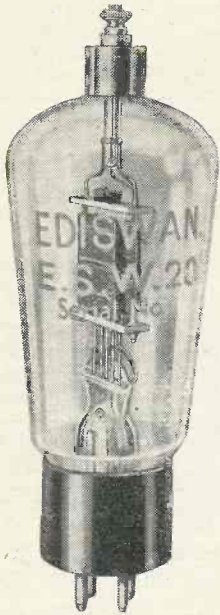


1938 Valve Designs

Some interesting valve designs have appeared in the last few weeks in types suitable for amateur use. A number of these are described in this article.



This Ediswan triode the ESW-20 is of the low capacity type suitable for high-frequency operation.

HERE appears to be quite an original note in the valve designs produced for amateurs by the British manufacturers. The Ediswan Company are now supplying a valve which is perhaps one of the first of British design to be produced specifically for amateurs at a really competitive price. This valve, the ESW-20, is a small oscillator with a UX base, suitable for a maximum anode dissipation of 20 watts. It has an impedance of 12,500 ohms and an amplification factor of 22. It is, therefore, an ideal doubler or power amplifier.

The ESW-20 also has a 7.5 volt heater, a carbonised anode and tests show that in class-B audio circuits it will provide a speech output of between 65 and 70 watts per pair of valves. This valve is priced at 17s. 6d., and of course has the top cap anode connection as is now usual with modern low-capacity triodes.

Most amateurs know of the internationally famous T-20 valve which has been very popular during the past twelve months. A slightly larger version of this valve has now been produced and appears to be ideally suitable for amateur use. T-40 has a carbon anode Isolantite base and an extremely low inter-electrode capacity. The A.C. resistance of the valve is 8,700 ohms with an amplification factor of 25. As a class-C amplifier it is possible to obtain an efficiency of 75 per cent. giving an R.F. output of 86 watts with a grid driving power of less than 10 watts. The price of this valve is approximately 24s.

A very similar valve to the T-40 is the TZ-40 with a 40 watt anode dissipation has been designed for zero bias class-B amplification or frequency doubler. A pair of these valves in class-B would provide a speech output of 175 watts with 1,000 volts H.T. supply.

A valve which we have used in many of our designs is the old Mullard T-25D.

This, of course, was superseded by the TZ05-20 which is a triode valve suitable for 20 watt anode dissipation. It is now priced at 17s. 6d., and at this figure becomes one of the most economical British valves for transmitting use. It has a 6 volt heater and is suitable for an anode voltage of 400 at 20 metres and is very conservatively rated.

Mullard, incidentally, have now a very complete range of valves suitable for amateur use. There is, for example, the TV05-15, which is very similar to the RK-23 and is priced at 27s. 6d. It has a 12 volt heater and can be used down to 5 metres. Another valve at a similar price is the TZ05-15, which has



The T-40 and TZ-40 both of which have carbon anodes and are suitable for an anode dissipation of 40-watts, are very small in dimensions, being only 2-ins. in diameter: It is, however, possible to obtain an audio output of 170-watts from a pair of TZ-40's and 85-watts carrier power from one T-40.

a 4 volt heater suitable for a minimum wavelength of 15 metres. This pentode valve has a maximum anode dissipation of 15 watts.

The popular RK-20A now has an equivalent in the Mullard range in the TV-135, the price being £4 15s. od. There is also a TZ-135, priced at £4 10s., which is equivalent of the RK-20. It is possible to obtain an efficiency of 78 per cent. with a carrier power of 21 watts when used as a class-C anode modulated radio-frequency amplifier.

We have been conducting some tests on a most interesting Mullard triode valve type TY1-50. This valve has a carbon anode, a 7.5 volt heater, an impedance of 5,250 ohms and a slope of 2 mA./V. The minimum wavelength is .85 metres, while the anode voltage at 2 metres is 1,000 volts. The maximum

anode dissipation is 50 watts. This valve is priced at £3 10s., and as a class-C R.F. amplifier will provide an efficiency of 67 per cent.

We were interested to notice that the Radio Corporation of America had produced a special tetrode valve of extremely high slope for use in television amplifiers.

This valve type 1851 is the first American valve to have more or less typical British characteristics. It is also interesting to note that the General Electric Company have had for some time a valve of this type designated the KTZ41. It has a working slope of 7.5 mA./V measured with a grid voltage of -2.5.

This tetrode has a 7-pin base with the control grid to the top cap and is priced at 15s. Another interesting valve in the Osram range is a rectifier type U52, which is a full-wave vacuum valve with a 5.0 volt heater supplying 250 mA. rectified current with 500 volts R.M.S. on each anode. It is fitted with an octal based so that it is interchangeable with the American valve of similar characteristics.

The KT32 power output tetrode is also available from the General Electric Company, and this is designed for D.C./A.C. operation having a 26.0 volt heater. It requires only 135 volts on both anode and screen, and at this voltage will provide up to 7.5 watts output in class-AB₁ push-pull.

Two absolutely original designs have been produced by Eimac in the KY21 and RX21 valves. KY21 is a mercury vapour grid control rectifier, particularly suitable for use in keying circuits. The RX21 is suitable for a peak anode

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As the maximum grid driving power of this Tungram valve OS12-500 pentode is only 1/10th-watt, it is possible to construct a multi-band transmitter with one of these valves driven by a 6L6 tri-tet oscillator.