# Osram Valves

*Made in England.*


*Approx. Dimensions :*
*Overall length (including pins) 120 m/m.*
*Maximum Diameter of bulb 51 m/m.*

# TYPE QP21

## QUIESCENT PUSH-PULL DOUBLE PENTODE VALVE

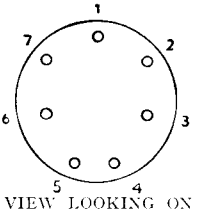
**(For use with a 2-volt accumulator).**

The OSRAM QP21 comprises two electrode systems in the one envelope and is designed for the output stage of 2-volt battery receivers in which this stage directly follows the Detector. In the method of use recommended, the standing anode current is restricted to a very small value and the actual high tension current is proportional to the strength of signal applied to the grids. By this means a considerable increase in power output becomes possible and at the same time an economy in average H.T. current is obtained.

### CHARACTERISTICS.

| | |
|---|---|
| Filament Volts .. .. .. .. .. .. .. | 2.0 max. |
| Filament Current (total) .. .. .. .. .. .. | 0.4 amp. |
| Anode Volts .. .. .. .. .. .. .. .. | 150 max. |
| Screen Volts .. .. .. .. .. .. .. .. | 150 max. |
| Mutual Conductance of each half .. .. .. .. .. | 2.3 ma/volt measured at Ea = 150, Esg = 150, Eg = -4.5. |

**For prices see pages 126-129.**




VIEW LOOKING ON UNDERSIDE OF BASE

**BASE, 7-PIN.**

Pin 1 : Grid 1
2 : Grid 2
3 : Anode 2
4 : Filament and anti-secondary grid
5 : Filament
6 : Common Screen Grid
7 : Anode 1

### OPERATING CONDITIONS.

To ensure absence of distortion it is important that an output transformer of good design with low leakage inductance and self-capacity should be employed.

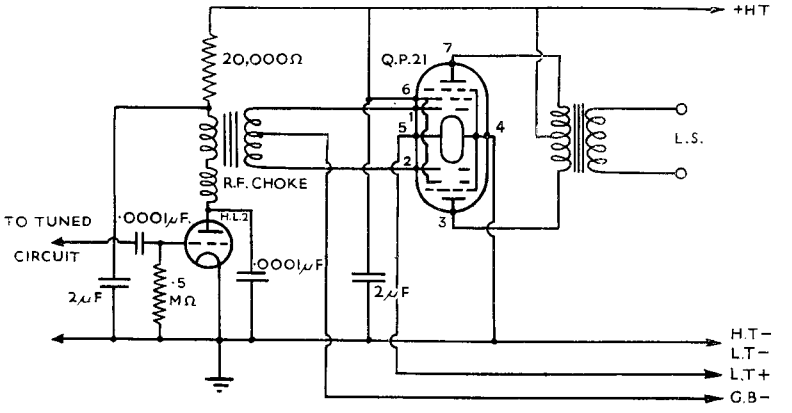
Type QP21 is supplied in three groups each with a code letter, which is marked on the top of the bulb, indicating the recommended screen voltage to use with each class for a fixed grid bias or, alternatively, the recommended grid bias to use for a fixed screen voltage. It is not recommended that H.T. voltages lower than 120 should be attempted. Type QP21 should not be operated under Positive Grid Current Class "B" conditions.

Operating data covering the three codes are given opposite.

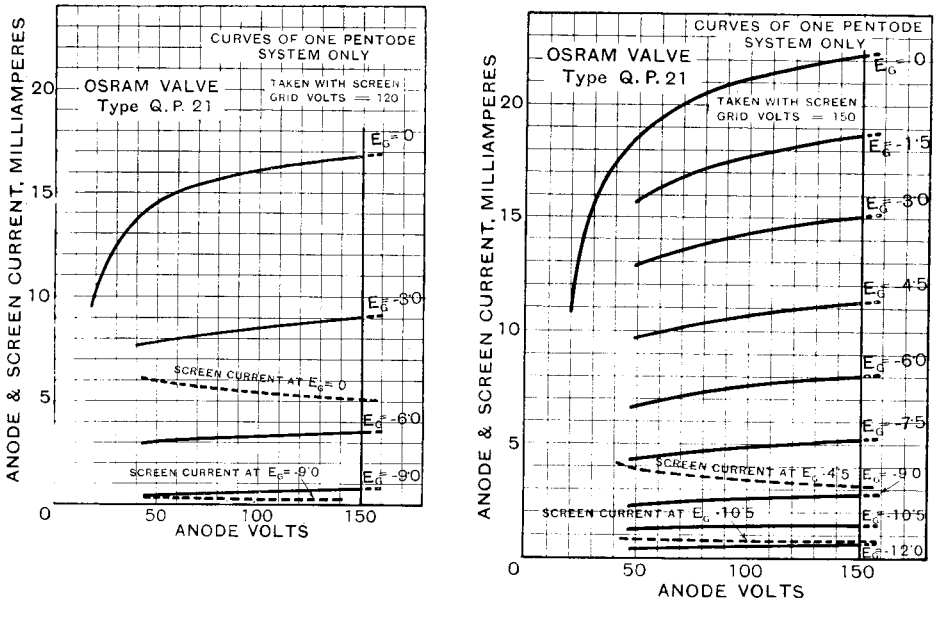
Automatic bias may be employed if the maximum undistorted output is not required.

# TYPE QP21

| | | | | | | |
|---|---|---|---|---|---|---|
| Anode Voltage | 150 | | | 120 | | |
| | Code Letter | | | Code Letter | | |
| | V | W | X | V | W | X |
| Screen Voltage (for fixed bias conditions) | 140 | 146 | 150 | 99 | 105 | 111·5 |
| | (grid bias −9v.) | | | (grid bias −6v.) | | |
| Grid Bias (for fixed screen voltage conditions) | −9.8 | −9.5 | −8.8 | −7.8 | −7.6 | −7.1 |
| | (screen voltage 150) | | | (screen voltage 120) | | |
| Average Quiescent Anode Current (ma.) | 3.5 | | | 2.8 | | |
| Average Quiescent Screen Current (ma.) | 0.9 | | | 0.7 | | |
| Output Load Resistance (Anode to Anode) | 25,000 ohms | | | 35,000 ohms | | |
| Average Full Load Anode Current (ma.) | 12.5 | | | 8 | | |
| Average Full Load Screen Current (ma.) | 6 | | | 3 | | |




Circuit of QP21 with grid bias battery, and preceded by Leaky Grid Detector.




CHARACTERISTIC CURVES OF AVERAGE VALVE.