

## S.Q. TUBE

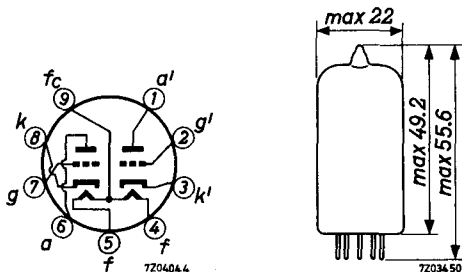
Special quality double triode designed for use as A.F. amplifier.

| QUICK REFERENCE DATA |                                           |               |
|----------------------|-------------------------------------------|---------------|
| Life test            | 1000 hours                                |               |
| Mechanical quality   | Shock and vibration resistant             |               |
| Base                 | Noval                                     |               |
| Heating              | Indirect<br>A.C. or D.C.; Parallel supply |               |
| Heater voltage       | $V_f$                                     | 6.3 or 12.6 V |
| Heater current       | $I_f$                                     | 300 or 150 mA |
| Anode current        | $I_a$                                     | 11.8 mA       |
| Mutual conductance   | S                                         | 3.2 mA/V      |

### DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval



**CHARACTERISTICS** (Both sections if applicable)

Column I Nominal values or setting of the tube

II Range values for equipment design: Initial spread

III Range values for equipment design: End of life

|                                |          | I    | II        | III      |            |
|--------------------------------|----------|------|-----------|----------|------------|
| Heater voltage (pin 9 and 4+5) | $V_f$    | 6.3  |           |          | V          |
| Heater current                 | $I_f$    | 300  | 276- 324  |          | mA         |
| Heater voltage (pin 4 and 5)   | $V_f$    | 12.6 |           |          | V          |
| Heater current                 | $I_f$    | 150  |           |          | mA         |
| Anode voltage                  | $V_a$    | 100  |           |          | V          |
| Grid voltage                   | $-V_g$   | 0    |           |          | V          |
| Anode current                  | $I_a$    | 11.8 |           |          | mA         |
| Mutual conductance             | $S$      | 3.2  | 2.5- 4.0  |          | mA/V       |
| Amplification factor           | $\mu$    | 19.5 |           |          |            |
| Internal resistance            | $R_i$    | 6.25 |           |          | k $\Omega$ |
| Anode voltage                  | $V_a$    | 250  |           |          | V          |
| Grid voltage                   | $-V_g$   | 8.5  |           |          | V          |
| Anode current                  | $I_a$    | 10.5 | 6.5-14.5  |          | mA         |
| Mutual conductance             | $S$      | 2.2  | 1.8- 2.6  | min. 1.5 | mA/V       |
| Amplification factor           | $\mu$    | 17   | 15.5-18.5 |          |            |
| Internal resistance            | $R_i$    | 7.7  |           |          | k $\Omega$ |
| <u>Negative grid current</u>   | $-I_g$   |      | max. 0.5  | max. 0.5 | $\mu$ A    |
| <u>Cathode peak current</u>    | $I_{kp}$ |      | min. 400  |          | mA         |
| Anode voltage                  | $V_a$    | 250  |           |          | V          |
| Grid voltage                   | $V_g$    | 55   |           |          | V          |
| <u>Cut-off voltage</u>         | $-V_g$   | 25   |           |          | V          |
| Anode voltage                  | $V_a$    | 250  |           |          | V          |
| Anode current                  | $I_a$    |      | max. 20   |          | $\mu$ A    |

**CHARACTERISTICS (continued)**

|                                                     |              | I   | II        | III    |            |
|-----------------------------------------------------|--------------|-----|-----------|--------|------------|
| <u>Leakage current between cathode and heater</u>   | $I_{kf}$     |     | max. 5    | max. 5 | $\mu A$    |
| Voltage between cathode and heater $V_{kf} = 100$ V |              |     |           |        |            |
| <u>Vibrational noise output</u>                     | $V_o$        |     | max. 100  |        | $mV_{RMS}$ |
| Anode voltage $V_a = 250$ V                         |              |     |           |        |            |
| Grid voltage $-V_g = 8.5$ V                         |              |     |           |        |            |
| Anode resistor $R_a = 2$ k $\Omega$                 |              |     |           |        |            |
| Grid resistor $R_g = 0.1$ M $\Omega$                |              |     |           |        |            |
| Vibration frequency = 50 Hz                         |              |     |           |        |            |
| Acceleration = 10 g                                 |              |     |           |        |            |
| <b>CAPACITANCES</b>                                 |              |     |           |        |            |
| Anode to cathode and heater                         | $C_{a/kf}$   | 0.5 | 0.3- 0.7  |        | pF         |
|                                                     | $C_{a'/k'f}$ | 0.4 | 0.2- 0.6  |        | pF         |
| Grid to cathode and heater                          | $C_{g/kf}$   | 1.6 | 1.25-1.95 |        | pF         |
| Anode to grid                                       | $C_{ag}$     | 1.5 | 1.2- 1.8  |        | pF         |

**SHOCK AND VIBRATION RESISTANCE**

The following test conditions are applied to assess the mechanical quality of the tube. These conditions are not intended to be used as normal operating conditions.

Shock

The tube is subjected 5 times in each of 4 positions to an acceleration of 500 g supplied by an NRL shock machine with the hammer lifted over an angle of 30°.

Vibration

The tube is subjected during 32 hours in each of 3 positions to a vibration frequency of 50 Hz with an acceleration of 2.5 g.

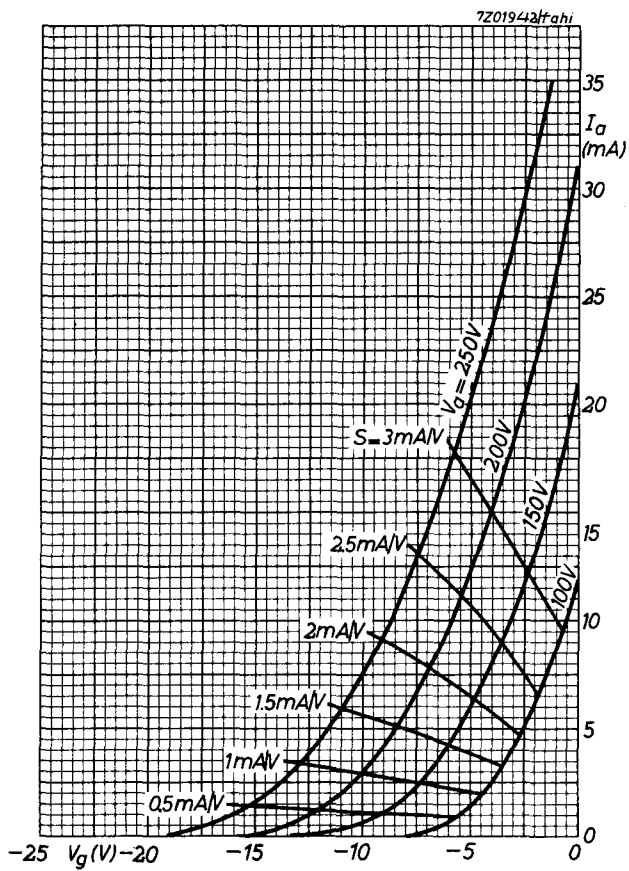
**LIFE**

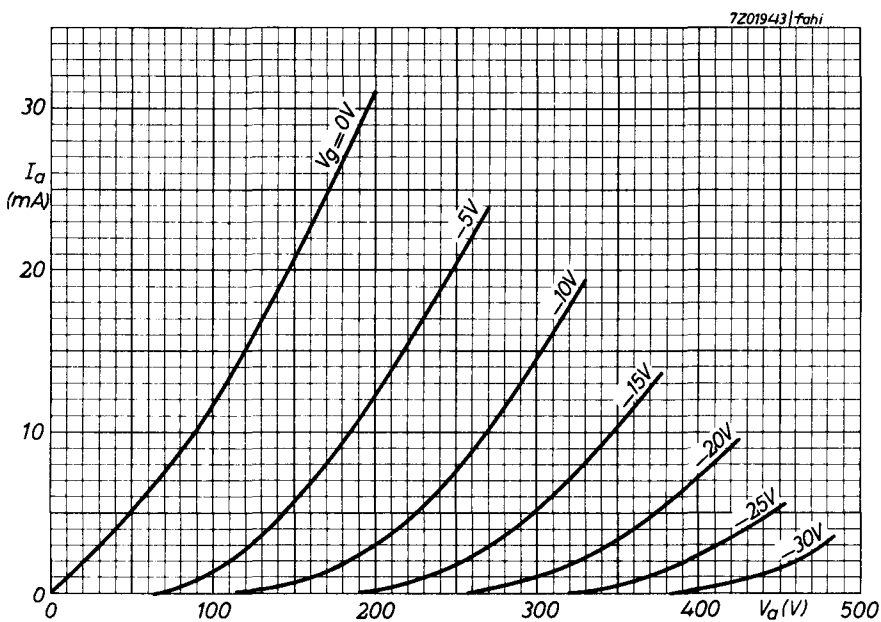
Production samples are tested to be within the end of life values (column III) under the following conditions during 1000 hours.

|               |        |     |   |
|---------------|--------|-----|---|
| Anode voltage | $V_a$  | 250 | V |
| Grid voltage  | $-V_g$ | 8.5 | V |

**LIMITING VALUES** (Absolute max. rating system)

|                                    |            |      |     |             |
|------------------------------------|------------|------|-----|-------------|
| Anode voltage                      | $V_a$      | max. | 330 | V           |
| Anode dissipation                  | $W_a$      | max. | 3   | W           |
| Cathode current                    | $I_k$      | max. | 22  | mA          |
| Grid resistor: fixed bias          | $R_{g1}$   | max. | 0.5 | $M\Omega$   |
| automatic bias                     | $R_{g1}$   | max. | 1.0 | $M\Omega$   |
| Voltage between cathode and heater | $V_{kf}$   | max. | 110 | V           |
| Bulb temperature                   | $t_{bulb}$ | max. | 165 | $^{\circ}C$ |





# PHILIPS

## Data handbook



**Electronic  
components  
and materials**

**6189**

| <b>page</b> | <b>sheet</b> | <b>date</b> |
|-------------|--------------|-------------|
| 1           | 1            | 1968.12     |
| 2           | 2            | 1968.12     |
| 3           | 3            | 1968.12     |
| 4           | 4            | 1968.12     |
| 5           | 5            | 1968.12     |
| 6           | 6            | 1968.12     |
| 7           | FP           | 2001.05.13  |