

ELECTRONIC TUBE REFERENCE

TB52500

Power - Triode (over 1000V 100W) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Directly heated Philips industrial RF-generator power triode designed primarily for oscillator service. Rated for approximately 800 W plate dissipation and 7 kV plate voltage for substantial industrial high-frequency power generation.

GENERAL CHARACTERISTICS

|                     |                   |                      |               |
|---------------------|-------------------|----------------------|---------------|
| BASE DESIGNATION    | —                 | BASE PINS            | —             |
| NOMINAL HEATER      | 6.3 V / 32.5 A    | PARALLEL HEATER      | — / —         |
| HEATING             | Direct            | SERIES OPERATION     | Not specified |
| CATHODE ARRANGEMENT | Separate cathodes | SECTION CONSTRUCTION | Similar       |

SECTION RATINGS

|                                                                                                                                                  |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| SECTION1 Triode                                                                                                                                  |                         |
| TRANSCONDUCTANCE                                                                                                                                 | 0.0050999999999999995 S |
| AMPLIFICATION FACTOR                                                                                                                             | 22                      |
| MAXIMUM PLATE VOLTAGE                                                                                                                            | 7000 V                  |
| MAXIMUM PLATE DISSIPATION                                                                                                                        | 800 W                   |
| Maximum ratings kept separate from typical operating characteristics; fixed fields use published maximum-rating values where clearly applicable. |                         |

TB52500 is a Philips industrial RF-generator oscillator triode. The supplied datasheet provides direct-filament data, RF/AF ratings, capacitances and high-power operating conditions.



## SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

# 1963 Philips Electron Tubes Handbook V4

Published test conditions and operating points. Values on this page are preserved as reported by this source.

## 1963 PHILIPS ELECTRON TUBES HANDBOOK V4

## Section 1 · Triode

| CHARACTERISTIC   |                 |                  |
|------------------|-----------------|------------------|
| PARAMETER        | PUBLISHED VALUE | CONDITION / NOTE |
| Filament voltage | 6.3 V           | DirectlyHeated   |
| Filament current | 32.5 A          | DirectlyHeated   |
| Transconductance | 5100 $\mu$ S    | Published        |

| OTHER                 |                 |                  |
|-----------------------|-----------------|------------------|
| PARAMETER             | PUBLISHED VALUE | CONDITION / NOTE |
| Maximum plate voltage | 4000 V          | Published limit  |

| CAPACITANCE               |                 |                  |
|---------------------------|-----------------|------------------|
| PARAMETER                 | PUBLISHED VALUE | CONDITION / NOTE |
| Plate capacitance         | 0.25 pF         | Published        |
| Grid capacitance          | 10.5 pF         | Published        |
| Grid-to-plate capacitance | 6.2 pF          | Published        |



## SOURCE OPERATING CONDITIONS

# 1963 Siemens

Published test conditions and operating points. Values on this page are preserved as reported by this source.

## 1963 SIEMENS

| CAPACITANCE |                 |                  |
|-------------|-----------------|------------------|
| PARAMETER   | PUBLISHED VALUE | CONDITION / NOTE |
| Cgk         | 9.1 pF          | —                |
| Cak         | 0.25 pF         | —                |
| Cga         | 6.2 pF          | —                |



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

SOURCE PDF

# 1999 Philips E-Z

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1999 PHILIPS E-Z  
Section 1 · Triode

| OTHER                                                            |                 |                                                                 |
|------------------------------------------------------------------|-----------------|-----------------------------------------------------------------|
| PARAMETER                                                        | PUBLISHED VALUE | CONDITION / NOTE                                                |
| Oscillator output power (Wo- Wi qp)s typical Wosc 2.73 kW        | 2.73 s          | Oscillator output power (Wo- Wi qp)s typical Wosc 2.73 kW       |
| Frequency for full ratings f max. 50 MHz                         | 50 a            | Frequency for full ratings f max. 50 MHz                        |
| Oscillator output power (Wo- Wteedb) Wosc 2.73 2.61 2.04 1.44 kW | 1.44 s          | Oscillator output power (Wo-Wteedb) Wosc 2.73 2.61 2.04 1.44 kW |
| Anode output power Wo 2840 2720 2160 1560 W                      | 1560 A          | Anode output power Wo 2840 2720 2160 1560 W                     |
| Anode efficiency ny 79 78 77 74 %                                | 74 A            | Anode efficiency ny 79 78 77 74 %                               |
| Oscillator efficiency Nosc 76 75 73 69 %                         | 69 s            | Oscillator efficiency Nosc 76 75 73 69 %                        |
| Anode current Iy max. 750 mA                                     | 750 A           | Anode current Iy max. 750 mA                                    |
| Anode input power Wia max. 4000                                  | 4000 A          | Anode input power Wia max. 4000                                 |
| Anode dissipation W, max. 800                                    | 800 A           | Anode dissipation W, max. 800                                   |
| Grid voltage -Vg max. 1250                                       | 1250 v          | Grid voltage -Vg max. 1250                                      |
|                                                                  |                 |                                                                 |

| PARAMETER                                                              | PUBLISHED VALUE | CONDITION / NOTE                                                       |
|------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------|
| Grid current, on load $I_g$ max. 300                                   | <b>300 a</b>    | Grid current, on load $I_g$ max. 300                                   |
| Grid dissipation $W_g$ max. 150                                        | <b>150 s</b>    | Grid dissipation $W_g$ max. 150                                        |
| Grid circuit resistance $R_g$ max. 10                                  | <b>10 s</b>     | Grid circuit resistance $R_g$ max. 10                                  |
| Cathode current, mean $I_y$ max. 1.2                                   | <b>1.2 a</b>    | Cathode current, mean $I_y$ max. 1.2                                   |
| Envelope temperature $T_{env}$ max. 350                                | <b>350 v</b>    | Envelope temperature $T_{env}$ max. 350                                |
| Seal temperature $t$ max. 220                                          | <b>220 S</b>    | Seal temperature $t$ max. 220                                          |
| Oscillator output power ( $W_o$ — $W_{iooqn}$ ) $W_{osc}$ 4.25 3.24 kW | <b>3.24 s</b>   | Oscillator output power ( $W_o$ — $W_{iooqn}$ ) $W_{osc}$ 4.25 3.24 kW |
| Anode output power $W_o$ 4400 3375 W                                   | <b>3375 A</b>   | Anode output power $W_o$ 4400 3375 W                                   |
| Anode efficiency $N_4$ 77 75 %                                         | <b>75 A</b>     | Anode efficiency $N_4$ 77 75 %                                         |
| Oscillator efficiency $N_{osc}$ 74 72 %                                | <b>72 s</b>     | Oscillator efficiency $N_{osc}$ 74 72 %                                |
| Anode voltage $V_g$ max. 7 kv                                          | <b>7 A</b>      | Anode voltage $V_g$ max. 7 kv                                          |
| Anode current $I_y$ max. 1000 mA                                       | <b>1000 A</b>   | Anode current $I_y$ max. 1000 mA                                       |
| Anode -input power $W_{ia}$ max. 7000 W                                | <b>7000 A</b>   | Anode -input power $W_{ia}$ max. 7000 W                                |
| Anode dissipation $W_a$ max. See Fig. 2                                | <b>2 A</b>      | Anode dissipation $W_a$ max. See Fig. 2                                |
| Grid voltage $-V_g$ max. 1250 V                                        | <b>1250 v</b>   | Grid voltage $-V_g$ max. 1250 V                                        |
| Grid current, on load $I_g$ max. 300 mA                                | <b>300 a</b>    | Grid current, on load $I_g$ max. 300 mA                                |
| Grid dissipation $W_g$ max. 150 W                                      | <b>150 s</b>    | Grid dissipation $W_g$ max. 150 W                                      |
| Grid circuit resistance $R_g$ max. 10 k@                               | <b>10 s</b>     | Grid circuit resistance $R_g$ max. 10 k@                               |
| Cathode current, mean $I_x$ max. 1.4 A                                 | <b>1.4 a</b>    | Cathode current, mean $I_x$ max. 1.4 A                                 |
| Envelope temperature $T_{eny}$ max. 350 °C                             | <b>350 v</b>    | Envelope temperature $T_{eny}$ max. 350 °C                             |
| Seal temperature $t$ max. 220 °C                                       | <b>220 S</b>    | Seal temperature $t$ max. 220 °C                                       |
| Oscillator output power ( $W_o$ — $W_{seedb}$ ) $W_{ose}$ 2655 2451    | <b>2451 s</b>   | Oscillator output power ( $W_o$ — $W_{seedb}$ ) $W_{ose}$ 2655 2451    |

| PARAMETER                        | PUBLISHED VALUE | CONDITION / NOTE                 |
|----------------------------------|-----------------|----------------------------------|
| Anode output power W, 2750 2550  | <b>2550 A</b>   | Anode output power W, 2750 2550  |
| Oscillator efficiency Nosc 75 74 | <b>74 s</b>     | Oscillator efficiency Nosc 75 74 |
| Anode voltage Va max. 6.3        | <b>6.3 A</b>    | Anode voltage Va max. 6.3        |
| Anode current Iy max. 670        | <b>670 A</b>    | Anode current Iy max. 670        |

| CHARACTERISTICS                                                      |                 |                                                                      |
|----------------------------------------------------------------------|-----------------|----------------------------------------------------------------------|
| PARAMETER                                                            | PUBLISHED VALUE | CONDITION / NOTE                                                     |
| Frequency f 30 50 50 50 MHz                                          | <b>50 MHz</b>   | Frequency f 30 50 50 50 MHz                                          |
| Anode voltage Va 6 5 4 3 kv                                          | <b>3 A</b>      | Anode voltage Va 6 5 4 3 kv                                          |
| Anode current Iy 600 700 700 700 mA                                  | <b>700 A</b>    | Anode current Iy 600 700 700 700 mA                                  |
| Anode input power Wia 3600 3500 2800 2100 W                          | <b>2100 A</b>   | Anode input power Wia 3600 3500 2800 2100 W                          |
| Anode dissipation W, 760 780 640 540 W                               | <b>540 A</b>    | Anode dissipation W, 760 780 640 540 W                               |
| Grid resistor Rg 3 2.5 2 1.5 k@                                      | <b>1.5 s</b>    | Grid resistor Rg 3 2.5 2 1.5 k@                                      |
| Grid current, on load Ig 150 160 180 200 mA                          | <b>200 a</b>    | Grid current, on load Ig 150 160 180 200 mA                          |
| Grid voltage, negative -Vg 450 400 360 300 Vv                        | <b>300 v</b>    | Grid voltage, negative -Vg 450 400 360 300 Vv                        |
| Grid dissipation Wg 43 46 55 60 W                                    | <b>60 s</b>     | Grid dissipation Wg 43 46 55 60 W                                    |
| Grid resistor dissipation WRg 67 64 65 60 W                          | <b>60 s</b>     | Grid resistor dissipation WRg 67 64 65 60 W                          |
| Recommended grid blocking capacitor at high frequencies about 100 pF | <b>100 k</b>    | Recommended grid blocking capacitor at high frequencies about 100 pF |
| Frequency for full ratings f up to 50 MHz                            | <b>50 a</b>     | Frequency for full ratings f up to 50 MHz                            |
| RF power triode TBS/2500                                             | <b>2500 w</b>   | RF power triode TBS/2500                                             |
| Frequency f 50 50 MHz                                                | <b>50 MHz</b>   | Frequency f 50 50 MHz                                                |
| Anode voltage Va 6 5 kv                                              | <b>5 A</b>      | Anode voltage Va 6 5 kv                                              |
| Anode current I, 950 900 mA                                          | <b>900 A</b>    | Anode current I, 950 900 mA                                          |
| Anode input power Wia 5700 4500 W                                    | <b>4500 A</b>   | Anode input power Wia 5700 4500 W                                    |
|                                                                      |                 |                                                                      |

| PARAMETER                                  | PUBLISHED VALUE | CONDITION / NOTE                           |
|--------------------------------------------|-----------------|--------------------------------------------|
| Anode dissipation $W_a$ 1300 1125 W        | <b>1125 A</b>   | Anode dissipation $W_a$ 1300 1125 W        |
| Grid resistor R 2.5 2 k $\Omega$           | <b>2 s</b>      | Grid resistor R 2.5 2 k $\Omega$           |
| Grid current, on load $I_y$ 190 190 mA     | <b>190 a</b>    | Grid current, on load $I_y$ 190 190 mA     |
| Grid voltage, negative $V_g$ 475 380 V     | <b>380 v</b>    | Grid voltage, negative $V_g$ 475 380 V     |
| Grid dissipation $W_o$ 63 63 W             | <b>63 s</b>     | Grid dissipation $W_o$ 63 63 W             |
| Grid resistor dissipation $W_{Rg}$ 90 72 W | <b>72 s</b>     | Grid resistor dissipation $W_{Rg}$ 90 72 W |
| Anode voltage $V_a$ 5.4 4.5 kV             | <b>4.5 A</b>    | Anode voltage $V_a$ 5.4 4.5 kV             |
| Anode current $I$ , 530 600 mA             | <b>600 A</b>    | Anode current $I$ , 530 600 mA             |
| Anode input power $W_{ia}$ 3520 3320       | <b>3320 A</b>   | Anode input power $W_{ia}$ 3520 3320       |
| Anode dissipation $W_y$ 770 770            | <b>770 A</b>    | Anode dissipation $W_y$ 770 770            |
| Anode efficiency $\eta_y$ 78 77            | <b>77 A</b>     | Anode efficiency $\eta_y$ 78 77            |
| Grid resistor $R_g$ 3 2.5                  | <b>2.5 s</b>    | Grid resistor $R_g$ 3 2.5                  |
| Grid current, on load $I$ 140 150          | <b>150 a</b>    | Grid current, on load $I$ 140 150          |
| Grid voltage, negative ' $V_g$ ' 420 375   | <b>375 v</b>    | Grid voltage, negative ' $V_g$ ' 420 375   |
| Grid dissipation $W_g$ 36 43               | <b>43 s</b>     | Grid dissipation $W_g$ 36 43               |
| Grid resistor dissipation $W_{Rg}$ 59 56   | <b>56 s</b>     | Grid resistor dissipation $W_{Rg}$ 59 56   |
| Frequency for full ratings $f$ up to 50    | <b>50 a</b>     | Frequency for full ratings $f$ up to 50    |

## TUBE TINKER

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