

12GH

BEAM POWER TUBE

21KA6

Duodecar type used as horizontal-deflection amplifier in television receivers. Outlines section, 16A; requires duodecar 12-contact socket. A separate connection is provided for grid No.3 to minimize "snivets."

|                           |          |         |
|---------------------------|----------|---------|
| Heater Voltage .....      | 21       | volts   |
| Heater Current .....      | 0.45     | ampere  |
| Heater Warm-up Time ..... | 11       | seconds |
| Heater-Cathode Voltage:   |          |         |
| Peak value .....          | ±200 max | volts   |
| Average value .....       | 100 max  | volts   |

Class A<sub>1</sub> Amplifier

CHARACTERISTICS

|                                                             |      |      |      |       |       |
|-------------------------------------------------------------|------|------|------|-------|-------|
| Plate Voltage .....                                         | 5000 | 60   | 60   | 130   | volts |
| Grid-No.3 (Suppressor-Grid) Voltage .....                   | 0    | 0    | 25   | 0     | volts |
| Grid-No.2 (Screen-Grid) Voltage .....                       | 130  | 130  | 130  | 130   | volts |
| Grid-No.1 (Control-Grid) Voltage .....                      | —    | 0    | 0    | —20   | volts |
| Plate Resistance (Approx.) .....                            | —    | —    | —    | 11000 | ohms  |
| Transconductance .....                                      | —    | —    | —    | 9100  | μmhos |
| Plate Current .....                                         | —    | 410* | 410* | 50    | mA    |
| Grid-No.3 Current .....                                     | —    | —    | 2    | —     | mA    |
| Grid-No.2 Current .....                                     | —    | 24*  | 23*  | 1.75  | mA    |
| Grid-No.1 Voltage (Approx.) for plate current of 1 mA ..... | —66  | —    | —    | —33   | volts |
| Triode Amplification Factor .....                           | —    | —    | —    | 4.7   |       |

\* This value may be measured by a method involving a recurrent waveform such that the maximum ratings of the tube will not be exceeded.

Horizontal-Deflection Amplifier

For operation in a 525-line, 30-frame system

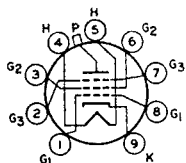
MAXIMUM RATINGS (Design-Maximum Values)

|                                              |      |       |
|----------------------------------------------|------|-------|
| DC Plate Supply Voltage .....                | 770  | volts |
| Peak Positive-Pulse Plate Voltage# .....     | 6500 | volts |
| Peak Negative-Pulse Plate Voltage .....      | 1500 | volts |
| Grid-No.3 Voltage, Positive-bias value ..... | 70   | volts |
| Grid-No.2 Voltage .....                      | 220  | volts |
| Grid-No.1 Voltage, Negative-bias value ..... | 55   | volts |
| Peak Negative-Pulse Grid-No.1 Voltage .....  | 330  | volts |
| Average Cathode Current .....                | 230  | mA    |
| Peak Cathode Current .....                   | 800  | mA    |
| Plate Dissipation .....                      | 18   | watts |
| Grid-No.2 Input .....                        | 3.5  | watts |
| Bulb Temperature (At hottest point) .....    | 220  | °C    |

MAXIMUM CIRCUIT VALUE

|                                    |   |        |
|------------------------------------|---|--------|
| Grid-No.1-Circuit Resistance ..... | 1 | megohm |
|------------------------------------|---|--------|

# Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).



9RJ

BEAM POWER TUBE

21KQ6

29KQ6/PL521

Magnoval type used as horizontal-deflection amplifier in television receivers. Outlines section, 40A; requires magnoval 9-contact socket. Type 29KQ6/PL521 is identical with type 21KQ6 except for heater ratings.

|                      |       |             |        |
|----------------------|-------|-------------|--------|
| Heater Voltage ..... | 21KQ6 | 29KQ6/PL521 | volts  |
| Heater Current ..... | 21.5  | 29          | ampere |
|                      | 0.45  | 0.3         |        |

## Heater-Cathode Voltage:

|               |           |           |       |
|---------------|-----------|-----------|-------|
| Peak value    | $\pm 240$ | $\pm 240$ | volts |
| Average value | $\pm 240$ | $\pm 240$ | volts |

Class A<sub>1</sub> Amplifier

## CHARACTERISTICS

|                                                   |          |      |       |
|---------------------------------------------------|----------|------|-------|
| Plate Voltage                                     | 40       | 50   | volts |
| Grid-No.3 (Suppressor-Grid) Voltage               | 0        | 0    | volts |
| Grid-No.2 (Screen-Grid) Voltage                   | 135      | 200  | volts |
| Grid-No.1 (Control-Grid) Voltage                  | 0        | -12  | volts |
| Plate Current                                     | 450      | 550† | mA    |
| Grid-No.2 Current                                 | 35       | 50†  | mA    |
| Grid-No.1 Voltage for plate current of 50 $\mu$ A | -55 max. | —    | volts |

† This value can be measured by a method involving a recurrent waveform such that the maximum ratings of the tube will not be exceeded.

## Horizontal-Deflection Amplifier

For operation in a 525-line, 30-frame system

## MAXIMUM RATINGS (Design-Maximum Values)

|                                       |      |       |
|---------------------------------------|------|-------|
| Plate Voltage                         | 275  | volts |
| Peak Positive-Pulse Plate Voltage#    | 6500 | volts |
| Peak Negative-Pulse Plate Voltage#    | 1650 | volts |
| Grid-No.3 Voltage                     | 70   | volts |
| Grid-No.2 Voltage                     | 275  | volts |
| Peak Negative-Pulse Grid-No.1 Voltage | 330  | volts |
| Average Cathode Current               | 275  | mA    |

## MAXIMUM CIRCUIT VALUES

|                                                                 |     |         |
|-----------------------------------------------------------------|-----|---------|
| Grid-No.1-Circuit Resistance                                    | 0.5 | megohm  |
| Grid-No.1-Circuit Resistance, for horizontal-deflection circuit | 2.2 | megohms |

# Pulse duration must not exceed 22% of a horizontal scanning cycle (18 microseconds).

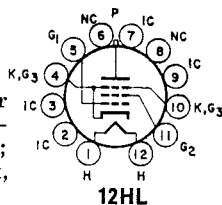
21LG6

Refer to chart at end of section.

## 21LG6A

## BEAM POWER TUBE

Duodecar type used as horizontal-deflection amplifier in color television receivers. Outlines section, 16B; requires duodecar 12-contact socket. Heater: volts, 21; ampere, 0.6; maximum heater-cathode volts,  $\pm 200$  peak, 100 average.

Class A<sub>1</sub> Amplifier

## CHARACTERISTICS

|                                                       | Triode*<br>Connection | Pentode Connection |       |
|-------------------------------------------------------|-----------------------|--------------------|-------|
| Plate Voltage                                         | 125                   | 50                 | 175   |
| Grid-No.2 (Screen-Grid) Voltage                       | 125                   | 125                | 125   |
| Grid-No.1 (Control-Grid) Voltage                      | -25                   | 0                  | -23   |
| Plate Resistance (Approx.)                            | —                     | —                  | 7500  |
| Transconductance                                      | —                     | —                  | 11500 |
| Plate Current                                         | —                     | 600                | 90    |
| Grid-No.2 Current                                     | —                     | 42                 | 1.7   |
| Grid-No.1 Voltage (Approx.) for plate current of 1 mA | —                     | -115               | -45   |
| Amplification Factor                                  | 3.6                   | —                  | —     |

## Horizontal-Deflection Amplifier

For operation in a 525-line, 30-frame system

## MAXIMUM RATINGS (Design-Maximum Values)

|                                    |      |       |
|------------------------------------|------|-------|
| DC Plate Supply Voltage            | 900  | volts |
| Peak Positive-Pulse Plate Voltage# | 7500 | volts |
| Peak Negative-Pulse Plate Voltage  | 100  | volts |

### MAXIMUM CIRCUIT VALUES

- A bias resistor or other means is required to protect the tube in absence of excitation.

**21LR8**

**21LU8**

**21MY8**

22

**22BH3**

**22BH3A**



**22BW3**

**17BW3**

Duodecar type used as damper tube in horizontal-deflection circuits of television receivers. **Outlines section, 8D;** requires duodecar 12-contact socket. Type 17BW3 is identical with type 22BW3 except for heater ratings.

|                                     | 17BW3 | 22BW3 |         |
|-------------------------------------|-------|-------|---------|
| Heater Voltage (ac/dc)              | 16.8  | 22.4  | volts   |
| Heater Current                      | 0.6   | 0.45  | ampere  |
| Heater Warm-up Time                 | 11    | 11    | seconds |
| Direct Interelectrode Capacitances: |       |       |         |
| Cathode to Heater and Plate         |       | 8.5   | pF      |
| Plate to Cathode and Heater         |       | 6     | pF      |
| Heater to Cathode                   |       | 3.8   | pF      |

## Damper Service

**For operation in a 525-line, 30-frame system**

**MAXIMUM RATINGS** (Design-Maximum Values)

|                             |      |       |
|-----------------------------|------|-------|
| Peak Inverse Plate Voltage# | 5000 | volts |
| Peak Plate Current          | 1100 | mA    |
| Average Plate Current       | 175  | mA    |
| Plate Dissipation           | 6.5  | watts |
| Heater-Cathode Voltage:     |      |       |
| Peak value                  | +300 | —5000 |
| Average value               | +100 | —900  |
|                             |      | volts |

### CHARACTERISTICS, Instantaneous Value

|                                                                                          |    |       |
|------------------------------------------------------------------------------------------|----|-------|
| Tube Voltage Drop for plate current of 350 mA .....                                      | 32 | volts |
| # Pulse duration must not exceed 15% of one horizontal scanning cycle (10 microseconds). |    |       |

22DE4

**22JF6**

**22JG6**

**22JG6A**