**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 A₁ 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

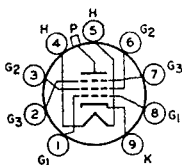
MAXIMUM RATINGS (Design-Maximum Values)

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	65	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
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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	± 240	± 240	volts
Average value	± 240	± 240	volts

Class A₁ 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 μ 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).

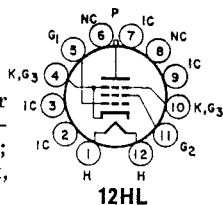
21LG6

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, ± 200 peak, 100 average.



12HL

Class A₁ Amplifier

CHARACTERISTICS

	Triode* 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

Grid-No.2 Voltage	250	volts
Grid-No.1 Voltage, Negative-bias value	300	volts
Plate Dissipation ■	28	watts
Grid-No.2 Input	5	watts
Average Cathode Current	315	mA
Peak Cathode Current	1100	mA
Bulb Temperature	250	°C

MAXIMUM CIRCUIT VALUES

Grid-No.1 Circuit Resistance:		
With feedback type high voltage regulation	1.8	megohms
With shunt-type high voltage regulation (switching mode)	2.2	megohms

* Grid-No. 2 tied to plate.

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

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

Refer to type 6LR8.

21LR8

Refer to type 6LU8.

21LU8

Refer to chart at end of section.

21MY8

Refer to chart at end of section.

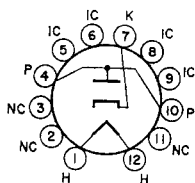
22

Refer to chart at end of section.

22BH3

Refer to chart at end of section.

22BH3A



12FX

HALF-WAVE VACUUM RECTIFIER

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.

Heater Voltage (ac/dc)	17BW3 16.8	22BW3 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	6.6	watts

Heater-Cathode Voltage:

Peak value	+300	—5000	volts
Average value	+100	—900	volts

CHARACTERISTICS, Instantaneous Value

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

Refer to type 6DE4/6CQ4.

22DE4

Refer to type 6JF6.

22JF6

Refer to chart at end of section.

22JG6

Refer to type 6JG6A.

22JG6A