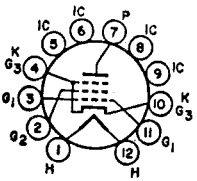
Refer to type 12FX5.	**19FX5**
Refer to chart at end of section.	**19GQ7**
Refer to chart at end of section.	**19HR6**
Refer to chart at end of section.	**19HS6**
Refer to chart at end of section.	**19HV8**
Refer to chart at end of section.	**19J6**
Refer to chart at end of section.	**19JN8**
Refer to type 6JN8.	**19JN8/19CL8A**
Refer to chart at end of section.	**19KG8**
For replacement use type 18GD6A.	**19MR9**
For replacement use type 18FW6A.	**19MR19**
Refer to chart at end of section.	**19Q9**
Refer to type 6X8A.	**19X8**
Refer to chart at end of section.	**20**
Refer to type 16AQ3/XY88.	**20AQ3/LY88**
Refer to chart at end of section.	**20EQ7**
Refer to chart at end of section.	**20EZ7**
Refer to type 6LF6/6LX6.	**20LF6**
Refer to chart at end of section.	**21EX6**
Refer to type 6GY5.	**21GY5**
Refer to chart at end of section.	**21HB5**



12BJ

BEAM POWER TUBE **21HB5A**

Duodecar type used as horizontal-deflection amplifier in television receivers. **Outlines section,** 15B; requires duodecar 12-contact socket. For maximum ratings, refer to type 6HB5. **Heater:** volts (ac/dc), 21; amperes, 0.45; warm-up time (average), 11 seconds; maximum heater-cathode volts, ±200 peak, 100 average.

Class A_1 Amplifier

CHARACTERISTICS	Pentode Connection			Triode* Connection	
Plate Voltage	5000	50	130	130	volts
Grid-No.2 (Screen-Grid) Voltage	130	130	130	130	volts
Grid-No.1 (Control-Grid) Voltage	—	0	—20	—20	volts
Amplification Factor	—	—	—	4.8	
Plate Resistance (Approx.)	—	—	9900	—	ohms
Transconductance	—	—	9000	—	μmhos

Plate Current	—	450▪	46	—	mA
Grid-No.2 Current	—	29▪	1.8	—	mA
Grid-No.1 Voltage (Approx.) for plate current of 1 mA	—64	—	—32	—	volts

* Grid-No.2 tied to plate

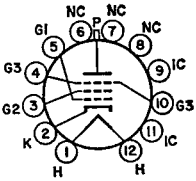
▪ This value can be measured by a method involving a recurrent waveform such that the maximum ratings of the tube will not be exceeded.

21HJ5 Refer to chart at end of section.

21JS6A For replacement use type 23JS6A.

21JV6 Refer to chart at end of section.

21JZ6 BEAM POWER TUBE



12GD

Duodecar type used as horizontal-deflection amplifier in television receivers. **Outlines section,** 39A; requires duodecar 12-contact socket. **Heater:** volts (ac/dc), 21; amperes, 0.45; average warm-up time, 11 seconds; maximum heater-cathode volts, ±200 peak, 100 average.

Class A_1 Amplifier

CHARACTERISTICS	Triode▲ Connection	Pentode Connection			
Plate Voltage	130	5000	50	130	volts
Grid No.3 (Suppressor Grid)		Connected to cathode		at socket	
Grid-No.2 (Screen-Grid) Voltage	—	130	130	130	volts
Grid-No.1 (Control-Grid) Voltage	—20	—	0	—20	volts
Amplification Factor	4.8	—	—	—	
Plate Resistance (Approx.)	—	—	—	9900	ohms
Transconductance	—	—	—	9000	μmhos
Plate Current	—	—	450	46	mA
Grid-No.2 Current	—	—	29	1.8	mA
Grid-No.1 Voltage (Approx.) for plate current of 1.0 mA	—	—64	—	—32	volts

▲ Grid No.2 connected to plate.

Horizontal-Deflection Amplifier

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

MAXIMUM RATINGS (Design-Maximum Values)		
Plate Supply Voltage	770	volts
Peak Positive-Pulse Plate Voltage#	6500	volts
Peak Negative-Pulse Plate Voltage	1500	volts
DC Grid-No.3 Voltage, Positive-bias value	70	volts
Grid-No.2 Voltage	220	volts
DC Grid-No.1 Voltage, Negative-bias value	55	volts
Peak Negative-Pulse Grid-No.1 Voltage	330	volts
Peak Cathode Current	800	mA
Average Cathode Current	230	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

▪ A bias resistor or other means is required to protect the tube in absence of excitation.
Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).