

Refer to type 6MF8.

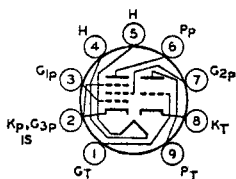
15MF8

Refer to chart at end of section.
For replacement use type 16A8/PCL82.

16A8

**16A8/
PCL82**
8B8

**HIGH-MU TRIODE—
POWER PENTODE**



9EX

Miniature type used in television receiver applications. The triode unit is used as a vertical oscillator or as an af amplifier, and the pentode unit is used as a vertical output tube or as an audio output tube. Outlines section, 6G; requires miniature 9-contact socket. Type 8B8 is identical with type 16A8/PCL82 except for heater ratings.

Heater Voltage	8B8	16A8/PCL82	
Heater Current	8	16	volts
Heater-Cathode Voltage	0.6	0.3	ampere
	±200	±200	volts

Class A₁ Amplifier

MAXIMUM RATINGS (Design-Maximum Values)

	Triode Unit	Pentode Unit	
Plate Supply Voltage	550	550	volts
Peak Plate Voltage*	600	2500	volts
Plate Voltage	250	250	volts
Peak Inverse Plate Voltage	—	500	volts
Grid-No.2 (Screen-Grid) Supply Voltage	—	550	volts
Grid-No.2 Voltage	—	250	volts
Cathode Current	15	50	mA
Plate Dissipation (Frame Output)	—	5	watts
Plate Dissipation (Audio Output)	—	7	watts
Grid-No.2 Input	—	1.8	watts
Peak Grid-No.2 Input	—	3.2	watts

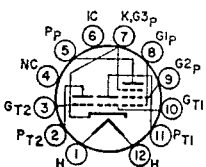
CHARACTERISTICS

	Triode Unit	Pentode Unit				
Plate Voltage	100	100	170	200	200	volts
Grid-No.2 Voltage	—	100	170	200	200	volts
Grid-No.1 Voltage	0	—6	—11.5	—12.5	—16	volts
Amplification Factor	70	—	—	—	—	
Mu Factor, Grid No.2 to Grid No.1	—	10	9.5	9.5	9.5	
Plate Resistance	—	15000	16000	20500	20000	ohms
Transconductance	2500	6800	7500	6800	6400	μmhos
Plate Current	3.5	26	41	35	7	mA
Grid-No.2 Current	—	5	8	6.5	35	mA

MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance:			
For fixed-bias operation	1	1	megohm
For cathode-bias operation	3	2	megohms

* With a maximum duty factor of 0.04 and maximum pulse duration of 0.8 milliseconds.



12GZ

**DUAL TRIODE—
BEAM POWER TUBE**

16AK9

Duodecax type used in vertical-deflection-amplifier, vertical oscillator and sync-clipper applications, in color television receivers. Outlines section, 15A; requires duodecax 12-contact socket. Heater: volts (ac/dc), 16.4; amperes, 0.6; average warm-up time, 11 seconds; maximum heater-cathode volts, ±200 peak, 100 average.

Class A₁ Amplifier

CHARACTERISTICS	Triode		Beam Power		
	Unit No. 1	Unit No. 2	Unit		
Plate Voltage	150	150	60	150	volts
Grid-No.2 (Screen-Grid) Voltage	—	—	125	150	volts
Grid-No.1 (Control-Grid) Voltage	-2	-5	0	-14	volts
Plate Resistance (Approx.)	11000	8500	—	16400	ohms
Transconductance	3900	2350	—	6200	μmhos
Plate Current	5.4	5.5	140	49	mA
Grid-No.2 Current	—	—	18	3.5	mA
Grid-No.1 Voltage (Approx.) for plate current of 100 μA	-5.7	-11	—	-33	volts
Amplification Factor	43	20	—	—	

Vertical-Deflection Oscillator and Amplifier

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

MAXIMUM RATINGS (Design-Maximum Values)	Triode		Beam Power		
	Unit No. 1 Amplifier	Unit No. 2 Oscillator	Unit Amplifier		
Plate Voltage	330	330	350	2500	volts
Peak Positive-Pulse Plate Voltage#	—	—	—	250	volts
Grid-No.2 Voltage	—	—	400	150	volts
Peak Negative-Pulse Grid-No.1 Voltage	0	—	—	—	volt
Grid Voltage, Positive-bias value	1.25	1	—	10	watts
Plate Dissipation	—	—	—	2	watts
Grid-No.2 Input	—	—	70	245	mA
Peak Plate Current	—	—	20	80	mA
Average Plate Current	—	—	—	245	mA
Peak Grid-No.2 Current	—	—	—	80	mA
Average Grid-No.2 Current	—	—	—	—	mA

MAXIMUM CIRCUIT VALUES

Grid-No.1 Circuit Resistance:					
For fixed-bias operation	0.5	1	1		megohm
For degenerative-bias operation*	—	2.2	2.2		megohms

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

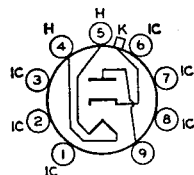
* A cathode resistor or any feedback system which achieves an equivalent reduction in gain.

16AQ3

Refer to chart at end of section.
For replacement use type 16AQ3/XY88.16AQ3/
XY88

20AQ3/LY88

DIODE



9CB

Miniature type used as booster diodes in line-time-base circuits of transformerless television receivers.

Outlines section, 7D; requires miniature 9-contact socket. Type 20AQ3/LY88 is identical with type 16AQ3/XY88 except for heater ratings.

	16AQ3/ XY88	20AQ3/ LY88	
Heater Voltage (ac/dc)	16.4	20.2	volts
Heater Current	0.6	0.45	ampere
Peak Heater-Cathode Voltage	6600	6600	volts

MAXIMUM RATINGS (Design-Center Values)

Supply Voltage at zero current	550	volts
Supply Voltage	250	volts
Peak Plate Current	550	mA
Average Plate Current	220	mA
Plate Dissipation	5	watts
Peak Negative-Pulse Plate Voltage*	6000#	volts

* Under no conditions should an absolute maximum value of 7500 volts be exceeded.

The pulse duration must not exceed 22 per cent of a cycle, or a maximum of 18 microseconds

16BQ11

Refer to type 8BQ11.

Refer to chart at end of section.	16BX11
Refer to type 6GK6.	16GK6
Refer to type 6GY5.	16GY5
Refer to chart at end of section.	16KA6
Refer to type 6LU8.	16LU8A
Refer to chart at end of section.	17AB10
	17AB10/17X10
Refer to type 6AX3.	17AX3
Refer to chart at end of section.	17AX4GT
Refer to type 6AX4GTB.	17AX4GTA
Refer to chart at end of section.	17AY3
Refer to type 6AY3B.	17AY3A
Refer to chart at end of section.	17BB14
Refer to type 6BE3.	17BE3
Refer to type 6BE3.	17BE3/17BZ3
Refer to type 6BF11.	17BF11
Refer to chart at end of section.	17BH3
	17BH3A
Refer to chart at end of section.	17BQ6GTB
Refer to chart at end of section.	17BR3
Refer to type 6BR3/6RK19.	17BR3/17RK19
Refer to chart at end of section.	17BS3
Refer to type 6BS3A.	17BS3A
	17BS3A/17DW4A
Refer to type 22BW3.	17BW3
Refer to chart at end of section.	17BZ3
For replacement use type 17BE3/17BZ3.	
Refer to chart at end of section.	17C5
For replacement use type 17CU5/17C5.	
Refer to type 6C9.	17C9
Refer to chart at end of section.	17CK3
Refer to chart at end of section.	17CL3
Refer to type 12CT3.	17CT3