

# —Standard Valves—

4009-B  
Valve

## 4009-B VALVE

(Replaces the 4009-A Valve which has now been abandoned.)

SINGLE ENDED WATER COOLED TRIODE.

### Cathode. SPECIFICATION.

Pure Tungsten filament.  
Constant voltage type.

### Water Jacket.

Type MS.1362 Grp. 1 for anode dissipation up to 6 Kw.  
Type MS.1362 Grp. 20 used up to 6 Kw. anode dissipation for below panel connection.  
Type 223 LU.1A for anode dissipation from 6-15 Kw.  
Type PL.122.011/A for anode dissipation over 15 Kw.

### Water Flow.

12 gallons per minute.

### Dimensions.

Max. overall length  $21\frac{1}{4}"$  (54 cms.)  
Max. bulb diameter  $3\frac{9}{16}"$  (9.05 cms.)  
Net weight  $3\frac{3}{4}$  lbs. (1,700 gms.)

### Constants.

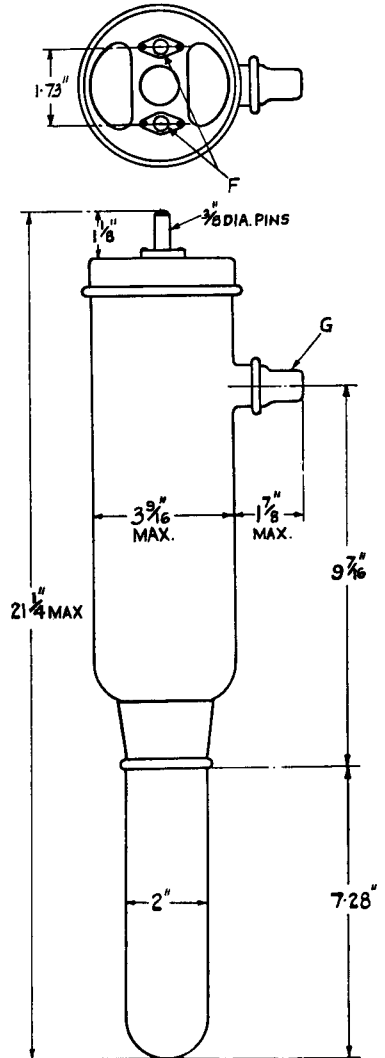
Filament voltage	20 volts
(exact filament voltage marked on bulb)	
Nominal filament current	61 amps.
Total emission	10 amps.
*Impedance	6,000 ohms
*Amplification factor	40
*Mutual Conductance	6.7 mA per volt
Grid-anode capacity	24 $\mu\mu\text{F}$ .
Anode-filament capacity	1.8 $\mu\mu\text{F}$ .
Grid-filament capacity	17 $\mu\mu\text{F}$ .

\* at anode current of 1.0 amp.

### LIMITING CONDITIONS FOR SAFE OPERATION.

Maximum direct anode voltage	17,500 volts
Maximum direct anode voltage for anode modulation	14,000 volts
Maximum direct anode current	2.5 amps.
Maximum anode dissipation	20 Kw.
Maximum grid dissipation	300 watts
Maximum frequency for above rating	3 Mc.
Maximum anode voltage for frequency of 6 Mc.	10,000 volts

NOTE.—The characteristics of this valve are identical with those of the 4009-A, but the grid lead has been brought out through the side of the bulb. When the 4009-B is used to replace the 4009-A new grid connectors will be required. These connectors type ES.5706-1 should be ordered with the valve.



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## TYPICAL OPERATING CONDITIONS.

	Class B A.F. Amp. For balanced 2 valve circuit.
Direct anode voltage	15,000 volts
Grid bias	—200 to —250 volts
Direct anode current per valve—zero signal	0.4 amps.
Direct anode current per valve—maximum signal	2.0 amps.
Load resistance—anode to anode	6,700 ohms
Maximum signal output—2 valves	33 Kw.
Anode dissipation	13.5 Kw.

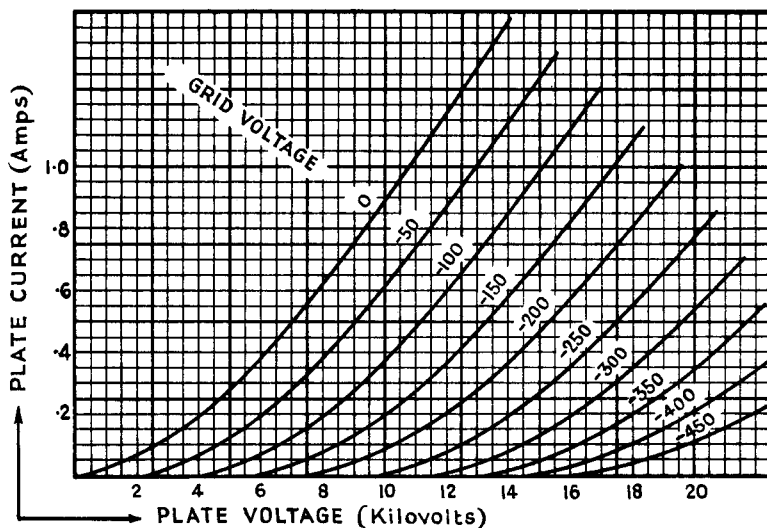
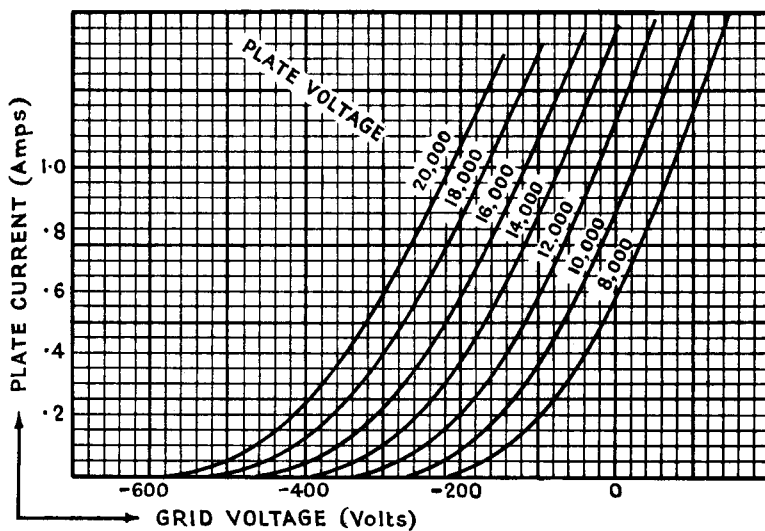
## RADIO FREQUENCY OPERATION.

	Class B Telephony	Class C Telephony	Class C Telegraphy
	Modulated Carrier applied to grid	Subject to anode modulation	Unmodulated
Direct anode voltage	15,000	10,000	15,000 volts
Direct anode current	1.25	1.25	2.5 amps.
Grid bias	—300	—500	—800 to —1,200 volts
Anode dissipation	12.5	4.17	12.5 Kw.
Carrier output	6.25	8.33	25 Kw.

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These curves are taken with A.C. filament heating, grid and anode voltages being referred to the centre point of the filament.



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