

# CUNNINGHAM

## DETECTOR—AMPLIFIER

### TYPE C-299

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#### RATING

Filament Volts	-	-	-	3.0
Filament Amperes	-	-	-	.06
Plate Volts (Maximum)	-	-	-	90

#### GENERAL

The filament of Cunningham C-299 is designed for operation from three No. 6 dry cells in series. Smaller dry cells may be used, but are not so economical. A filament rheostat of at least 30 ohms should be employed with one tube, a rheostat of 20 ohms for two tubes operated in parallel, and a rheostat of 10 ohms for three or more tubes in parallel.

**THE FILAMENT SHOULD ALWAYS BE OPERATED AT THE LOWEST VOLTAGE WHICH WILL GIVE SATISFACTORY RESULTS. CARE SHOULD BE TAKEN TO PREVENT THE PLATE VOLTAGE FROM BEING ACCIDENTALLY APPLIED TO THE FILAMENT. REMOVE TUBES FROM SOCKETS WHEN CONNECTIONS ARE CHANGED.**

If by accident excessive filament or plate voltage is applied to the tube it may be damaged temporarily. Its normal action may be restored by lighting the filament at rated voltage for 20 minutes or longer with the plate battery disconnected.

Failure of the tube to function is seldom due to burnout unless a very high voltage has been accidentally applied. The end of the useful life of the tube is indicated by a decrease in its operating efficiency which cannot be explained by other causes.

Tubes should be mounted on cushion or spring supports to prevent noise from vibration. It is preferable to mount tubes vertically.

#### AS AN AMPLIFIER

When Cunningham C-299 is used as an amplifier, it is important that the filament rheostat should be placed in the negative filament lead, (as shown in Fig. 2), and the return lead from the grid circuit should be connected to the negative side of the battery. This places a negative bias on the grid. For plate voltages above 45, a negative grid biasing battery ("C" Battery) should always be used as follows:

#### PLATE VOLTAGE

67.5 Volts  
90.0 Volts

#### NEG. GRID BIAS

1.5—3.0 Volts  
4.5 Volts

## AS A DETECTOR

When the tube is used as a detector, it is usually preferable to connect the grid return to the positive side of the filament, (as shown in Fig. 1). A grid leak resistance between 2 and 5 megohms is usually satisfactory, but for very weak signals a resistance between 5 and 9 megohms is somewhat better. It is preferable to use not more than 45 volts on the plate. Critical adjustment of the plate voltage is not necessary. Leads to the grid should be as short as possible.

## RETURN OF DEFECTIVE APPARATUS

ANY TUBE WHICH HAS PROVED DEFECTIVE SHOULD BE RETURNED TO THE DEALER OR DISTRIBUTOR FROM WHOM IT WAS PURCHASED, WHO HAS COMPLETE INSTRUCTIONS FOR HANDLING SUCH CASES.

## PATENT NOTICE

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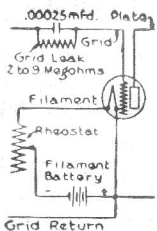
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San Francisco, California

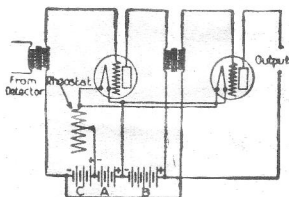
**CAUTION!**

**DO NOT USE EXCESSIVE  
FILAMENT OR PLATE  
VOLTAGE.**

**HANDLE TUBE CAREFULLY.**



Detector  
Fig. 1



Two Stage Audio Amplifier  
Fig. 2

