

April 30, 1948

TYPE 3B4**
Miniature Instant-Heating Beam Pentode

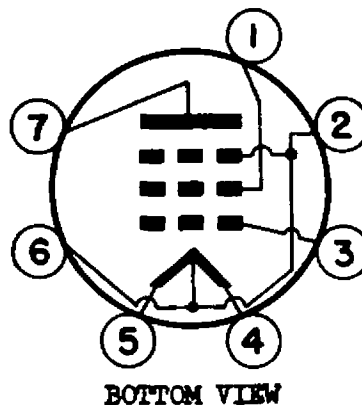
The Hytron type 3B4 is a filamentary-type radio-frequency beam-power amplifier for use in very-high-frequency portable-mobile equipment as a Class C oscillator, frequency multiplier, and r-f amplifier in those applications where it is desired to eliminate filament drain during standby periods. It utilizes a 1.25/2.5 volt filament which is essentially instantaneous in heating. The 3B4 may be used at full ratings to 100 megacycles.

GENERAL CHARACTERISTICS

Filament *			oxide coated
Potential a-c or d-c	1.25 or 2.5 $\pm$ 15%		volts
Current	330 or 165		milliamperes
Transconductance for $I_b=19mA$	1700		umhos
Amplification factor			
G_1 to G_2	4.1		
Direct interelectrode capacitances			
(without external shield)			
Grid to plate (maximum)	0.16		uuf
Input	4.6		uuf
Output	7.6		uuf
Maximum overall length	2-1/8		inches
Effective bulb length (hold-down height)	1 1/2 $\pm$ 3/32		inches
Maximum diameter	3/4		inches
Bulb	T-5 1/2		
Base			miniature button 7-pin
Mounting position			any

TERMINAL CONNECTIONS

- Pin 1. Screen grid
Pin 2. Filament center tap, beam plates and internal shielding.
Pin 3. Control grid
Pin 4. Filament
Pin 5. Filament
Pin 6. Same as pin 2
Pin 7. Plate



In v-h-f circuits it may be desirable to by-pass the filament center taps or ground them to a common point to provide lowest effective cathode inductance.

7CY

**HD30

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R.F. POWER AMPLIFIER AND OSCILLATOR
CLASS C TELEGRAPHY AND FREQUENCY MODULATION

Key down conditions per tube without amplitude modulation

Maximum Ratings, Absolute Values

D-c plate potential	150 max	volts
D-c screen grid potential	135 max	volts
D-c control grid potential	-75 max	volts
Control grid resistor	100,000 max	ohms
D-c plate current	25 max	ma
D-c control grid current	1.5 max	ma
D-c plate input power	3.75 max	watts
D-c screen grid input power	1.1 max	watts
Plate dissipation	3 max	watts

Typical Operation and Average Characteristics, Class C Oscillation and Amplifier 100 mc.

Filament potential	2.5	2.5	volts
D-c plate potential	90	150	volts
D-c screen grid potential	90	135	volts
(a) -18		-38	volts
D-c control grid potential#(b) 45,000		70,000	ohms
Peak r-f control grid potential	35	63	volts
D-c plate current	15	25	ma
D-c screen grid current	4.8	6.2	ma
D-c control grid current	0.4	0.55	ma
Total grid driving power(approx.)	0.03	0.07	watts
Useful power output (approx.)	0.45	1.25	watts

- * When the filament sections are series connected, the low section of the filament should be shunted by a resistor to by-pass the cathode current of the upper section of the filament (equal to one half of the sum of plate and screen currents).

Note: When the 3B4 is operated from usual dry cells (carbon-zinc) a filament dropping resistor is necessary to prevent over voltage when new batteries are used.

- # Obtained from (a) fixed supply, (b) control grid resistor, (c) cathode resistor, or by combination of methods.