RMA Release No. 653

April 30, 1948

TYPE 3B4**
Miniature Instant-Heating Beam Pentode

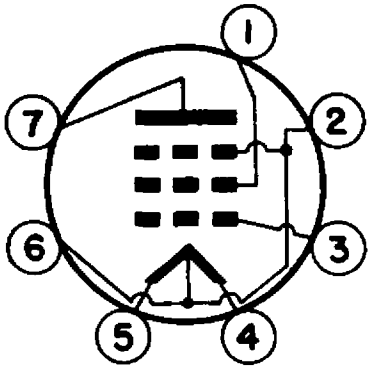
The Hytron type 3B4 is a filamentary-type radio-frequency beam-power amplifier for use in very-high-frequency portable-mobile equipment as a Class C oscillator, frequency multiplier, and r-f amplifier in those applications where it is desired to eliminate filament drain during standby periods. It utilizes 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 ± 15%	volts
Current	330 or 165	milliamperes
Transconductance for Ib=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)	1½±3/32	inches
Maximum diameter	3/4	inches
Bulb	T-5½	
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



BOTTOM VIEW

7CY

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.

**HD30

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
D-c control grid potential# (a	-18	-38	volts
(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 on 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.