HYTRONIC LABORATORIES

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Engineering Bulletin

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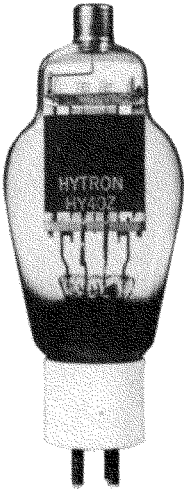
Type HY40Z



PHYSICAL DATA

Plate	Processed Graphite
Grid	Molybdenum-Nickel
Filament	Thoriated Tungsten
Insulation	Processed Lava
Base	4 Pin UX Ceramic
Plate Lead	Large Metal Cap
Max. Overall Length	6-9/16"
Max. Diameter	2-7/16"
Bulb	ST-19
Net Weight	3 oz.

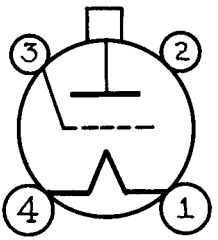
ELECTRICAL DATA

Filament Voltage	7.5	volts
Filament Current	2.5	amperes
D.C. Plate Voltage	1000.	volts max.
Plate Dissipation	40.	watts max.
Max. Plate Current	115.	ma.
Max. Grid Current	30.	ma.
Average Amp. Factor	80	
Mutual Conductance	4200	umhos
Plate Resistance	19000	ohms

INTERELECTRODE CAPACITANCE

Grid to Plate	6.3 uuf
Grid to Filament	5.8 uuf
Plate to Filament	1.8 uuf

PLATE
TOP CAP



TOP VIEW

BASE PIN CONNECTIONS

1 - Filament
2 - No Connection
3 - Control Grid
4 - Filament

ZERO-BIAS CLASS "B" MODULATOR, R. F. POWER AMPLIFIER, HIGH EFFICIENCY TRIODE

The Hytron HY40Z tube is a high efficiency triode of rugged construction. Because of its high value of transconductance it operates at high efficiency as an R. F. Amplifier requiring low driving power. The internal structure permits operation at maximum rating at frequencies up to 60 megacycles. As an audio power amplifier, two type HY40Z's may be operated at zero-bias up to full ratings.

GENERAL DESCRIPTION

The construction of the HY40Z is similar to that of higher priced tubes. A large, sturdy graphite anode with plate lead at top of bulb isolates the plate from all stem wires. All insulating material is of specially processed lava.

The materials and workmanship in this product have been carefully prepared and are the result of lengthy research into the problems surrounding Amateur Radio. The quality and performance of this and other Hytron tubes is definitely assured by 18 years of successful manufacturing experience in the radio tube field.

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

A.F. Power Amplifier and Modulator Class "B"

D.C. Plate Voltage	1000 max. volts
Maximum Signal D.C. Plate Current*	115 max. ma.
Maximum Signal Plate Input*	115 max. watts
Plate Dissipation*	40 max. watts

* Averaged over any Audio Frequency Cycle.

Typical Operation Two Tubes:
(Unless otherwise specified, values are for 2 tubes)

D.C. Plate Voltage	800	1000	volts
D.C. Grid Voltage	0	0	volts
Static Plate Current	36	48	ma.
Peak A.F. grid to grid voltage	150	175 approx.	volts
Maximum Signal D.C. Plate Current	280	280	ma.
Load Resistance per Tube	1375	1725	ohms
Effective Load Resis. Pl.-Pl.	5500	6900	ohms
Maximum Signal Driving Power	2.5	3 approx.	watts
Maximum Signal Power Output	140	180 approx.	watts

R. F. POWER AMPLIFIER - CLASS "B" TELEPHONY

(Carrier conditions per tube for use with a max. modulation factor of 1.0)

D.C. Plate Voltage	1000 max. volts
D.C. Plate Current	75 max. ma.
Plate Input	75 max. watts
Plate Dissipation	40 max. watts

Typical Operation:

D.C. Plate Voltage	800	1000	volts
D.C. Grid Voltage	-10	-12	volts
Peak R.F. Grid Voltage	40	50	volts
D.C. Plate Current	75	65	ma.
D.C. Grid Current**	12	10 approx.	ma.
Driving Power Required**	8	6 approx.	watts
Power Output	19	22 approx.	watts

PLATE MODULATED R. F. POWER AMPLIFIER - CLASS "C" TELEPHONY
(Carrier conditions per tube for use with a max. modulation factor of 1.0)

D.C. Plate Voltage	850 max. volts
D.C. Grid Voltage	-90 max. volts
D.C. Plate Current	90 max. ma.
D.C. Grid Current	30 max. ma.
Plate Input	77 max. watts
Plate Dissipation	40 max. watts

Typical Operation:

D.C. Plate Voltage	600	850	volts
D.C. Grid Voltage	-25½	-30	volts
Peak R.F. Grid Voltage	160	170	volts
D.C. Plate Current	115	90	ma.
D.C. Grid Current**	30	30 approx.	ma.
Driving Power Required**	7.0	7.0 approx.	watts
Power Output	45	52 approx.	watts
Grid Leak Bias Resistor#	750	900 approx.	ohms

R. F. POWER AMPLIFIER AND OSCILLATOR-CLASS "C" TELEGRAPHY
(Key down conditions per tube without modulation)

D.C. Plate Voltage	1000 max. volts
D.C. Grid Voltage	-150 max. volts
D.C. Plate Current	115 max. ma.
D.C. Grid Current	25 max. ma.
Plate Input	115 max. watts
Plate Dissipation	40 max. watts

Typical Operation:

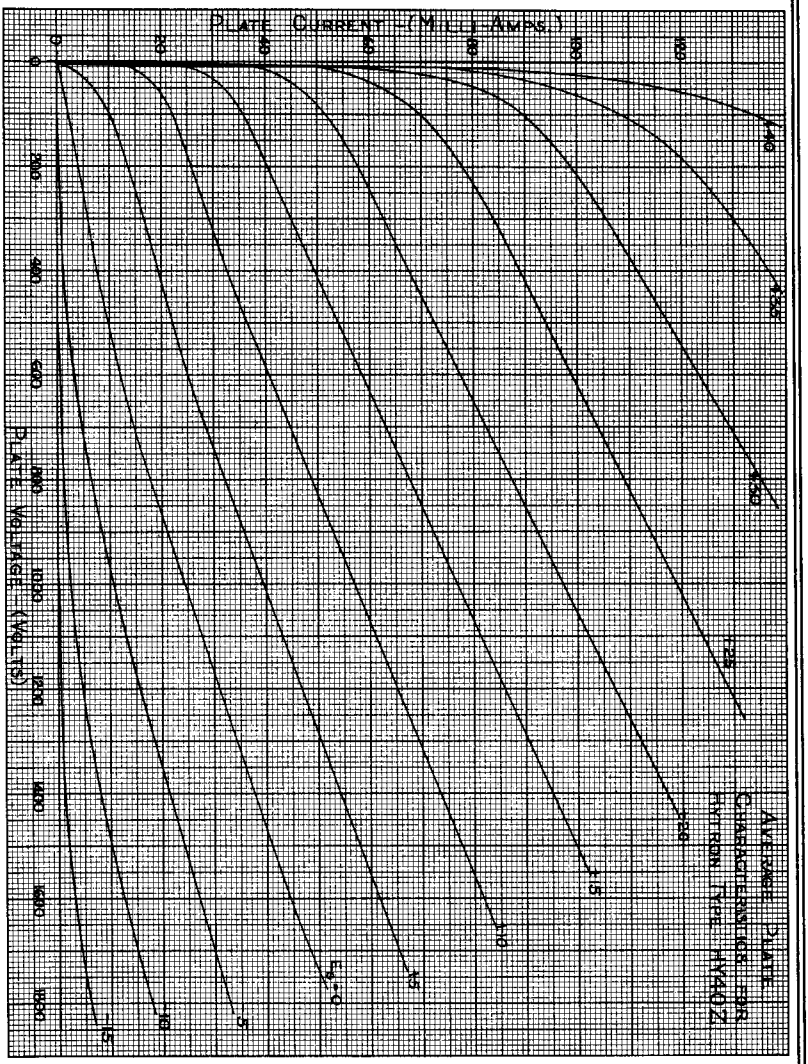
D.C. Plate Voltage	600	800	1000	volts
D.C. Grid Voltage	-22½	-25½	-27½	volts
Peak R.F. Grid Voltage	165	170	175	volts
D.C. Plate Current	115	115	115	ma.
D.C. Grid Current**	25	25	25 approx.	ma.
Driving Power Required**	5	5	5 approx.	watts
Power Output	48	67	86 approx.	watts
Grid Leak Bias Resistor#	800	925	1000 approx.	ohms

**Subject to wide variations controlled by circuit constants and operating characteristics of associated input and output circuits.

#The HY40Z may be used as a power frequency-doubler. Efficient doubler operation requires grid bias voltages approximately four times that required for Class "C" Telephony operation. Accordingly, grid leak bias resistor values will be four times that specified under Class "C" Telephony conditions.

AVERAGE PLATE CHARACTERISTICS

WITH E_{c1} AS VARIABLE



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DIVISION OF

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