



6SB7-Y

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PENTAGRID CONVERTER

SINGLE-ENDED METAL TYPE

GENERAL DATA**Electrical:**

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. 0.3 amp.

Direct Interelectrode Capacitances:

Grid No.3 to All Other Electrodes
(RF Input)▲. 9.6 . . . μfPlate to All Other Electrodes
(Mixer Output)▲. 9.2 . . . μfGrid No.1 to All Other Electrodes
(Osc. Input)▲. 7.3 . . . μf

Grid No.3 to Plate▲. 0.13 max. μf

Grid No.3 to Grid No.1▲ 0.16 max. μf

Grid No.1 to Plate▲ 0.06 max. μf

Grid No.1 to All Other Electrodes and
Shell, Except Cathode 3.8 . . . μf

Grid No.1 to Cathode 3.4 . . . μf

Cathode to All Other Electrodes and
Shell Except Grid No.1 4.5 . . . μf**Mechanical:**

Mounting Position. Any

Maximum Overall Length 2-5/8"

Maximum Seated Length. 2-1/16"

Maximum Diameter 1-5/16"

Bulb MT-8G

Base Small Wafer Octal 8-Pin, Micanol

Basing Designation for BOTTOM VIEW 8R

Pin 1-Shell, Pin 5-Grid No.1

Grid No.5 Pin 6-Cathode

Pin 2-Heater Pin 7-Heater

Pin 3-Plate Pin 8-Grid No.3

Pin 4-Grids

No.2 & No.4

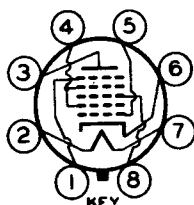
CONVERTER SERVICE**Maximum Ratings, Design-Center Values:**

PLATE VOLTAGE. 300 max. volts

GRIDS-No.2 & No.4 VOLTAGE 100 max. volts

GRIDS-No.2 & No.4 SUPPLY VOLTAGE. 300 max. volts

PLATE DISSIPATION. 2.0 max. watts

GRIDS-No.2 & No.4 DISSIPATION 1.5 max. watts

TOTAL CATHODE CURRENT. 22 max. ma.

GRID-No.3 VOLTAGE:

Negative Bias Voltage. 100 max. volts

Positive Bias Voltage. 0 max. volts

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

▲ with shell connected to cathode.

APRIL 1, 1946

RCA VICTOR DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 1



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PENTAGRID CONVERTER

Characteristics - - Separate Excitation:*

Plate Voltage.	100	250	. . volts
Grids-No.2 & No.4 (Screen)			
Voltage	100	100	. . volts
Grid-No.3 (Control)			
Grid) Voltage	-1.0	-1.0	. . volt
Grid-No.1 (Oscillator)			
Grid) Resistor	20000	20000	. . ohms
Plate Resistance (Approx.) . .	0.5	1.0	. . Megohm
Conversion Transconductance. .	900	950	. . μ mhos
Conversion Transconductance**	3.5	3.5	. . μ mhos
Plate Current.	3.6	3.8	. . ma.
Grids-No.2 & No.4 Current . . .	10.2	10	. . ma.
Grid-No.1 Current	0.35	0.35	. . ma.
Total Cathode Current.	14.2	14.2	. . ma.

Typical Operation in FM Band (88-108 Mc):

(See circuit on following page)

Plate Voltage.	250	. . volts
Grids-No.2 & No.4 (Screen)		
Supply Voltage	250	. . volts
Grids-No.2 & No.4 Resistor	12000	. . ohms
Grid-No.1 Resistor	22000	. . ohms
Signal Frequency	88	108 Mc
Oscillation Frequency.	98.7	118.7 Mc
Plate Current.	6.8	6.5 ma.
Grids-No.2 & No.4 Current.	12.6	12.5 ma.
Grid-No.1 Current	0.130	0.140 ma.

NOTE: The transconductance between grid No.1 and grids No.2 & No.4 connected to plate (not oscillating) is approximately 8000 micromhos under the following conditions: signal applied to grid No.1 at zero-bias; grids-No.2 and No.4 and plate at 100 volts; grid No.3 grounded. Under the same conditions, the plate current is 32 milliamperes and the amplification factor is 16.5.

* The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

** With grid-No.3 bias of -20 volts.



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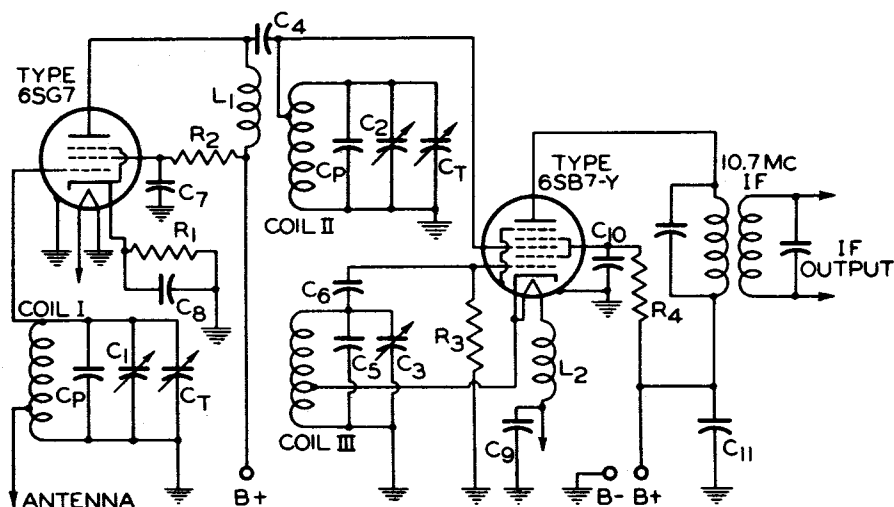
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PENTAGRID CONVERTER

TYPICAL SELF-EXCITED CONVERTER CIRCUIT
FOR TYPE 6SB7-Y WITH RF STAGE

88-108Mc

(SEE TYPICAL OPERATION)

C1 C2 C3 = GANGED TUNING CONDENSERS: 7-23 μf C4 C5 C6 = 22 μf

C7 C8 C9 C10 C11 = BY-PASS CONDENSERS

Cp = PADDING CONDENSERS

Ct = TRIMMER CONDENSERS

L1 L2 = RF CHOKES

R1 = 68 OHMS

R2 = 33000 OHMS

R3 = 22000 OHMS

R4 = 12000 OHMS

COIL I = ANTENNA COIL*: 2 TURNS No.14 WIRE + 1-1/4"
LEAD No.20 WIRE. COIL TAPPED AT 1 TURN.

COIL II = INTERSTAGE COIL*: 2 TURNS No.14 WIRE + 1-1/4"

LEAD No.20 WIRE. COIL TAPPED AT 1-1/4 TURN.

COIL III = OSCILLATOR COIL*: 1-7/8 TURNS No.14 WIRE, NO
ADDED LEAD. COIL TAPPED AT 5/8 TURN.

* All coils 5/8" long, approx.

NOTE 1: All tap positions are approximate and should be
adjusted to give stable operation.NOTE 2: Insertion of a small non-inductive resistor of
about 3 ohms in the circuit at grid-No.3 terminal
of the 6SB7-Y is helpful in preventing oscil-
lation at the signal frequency.

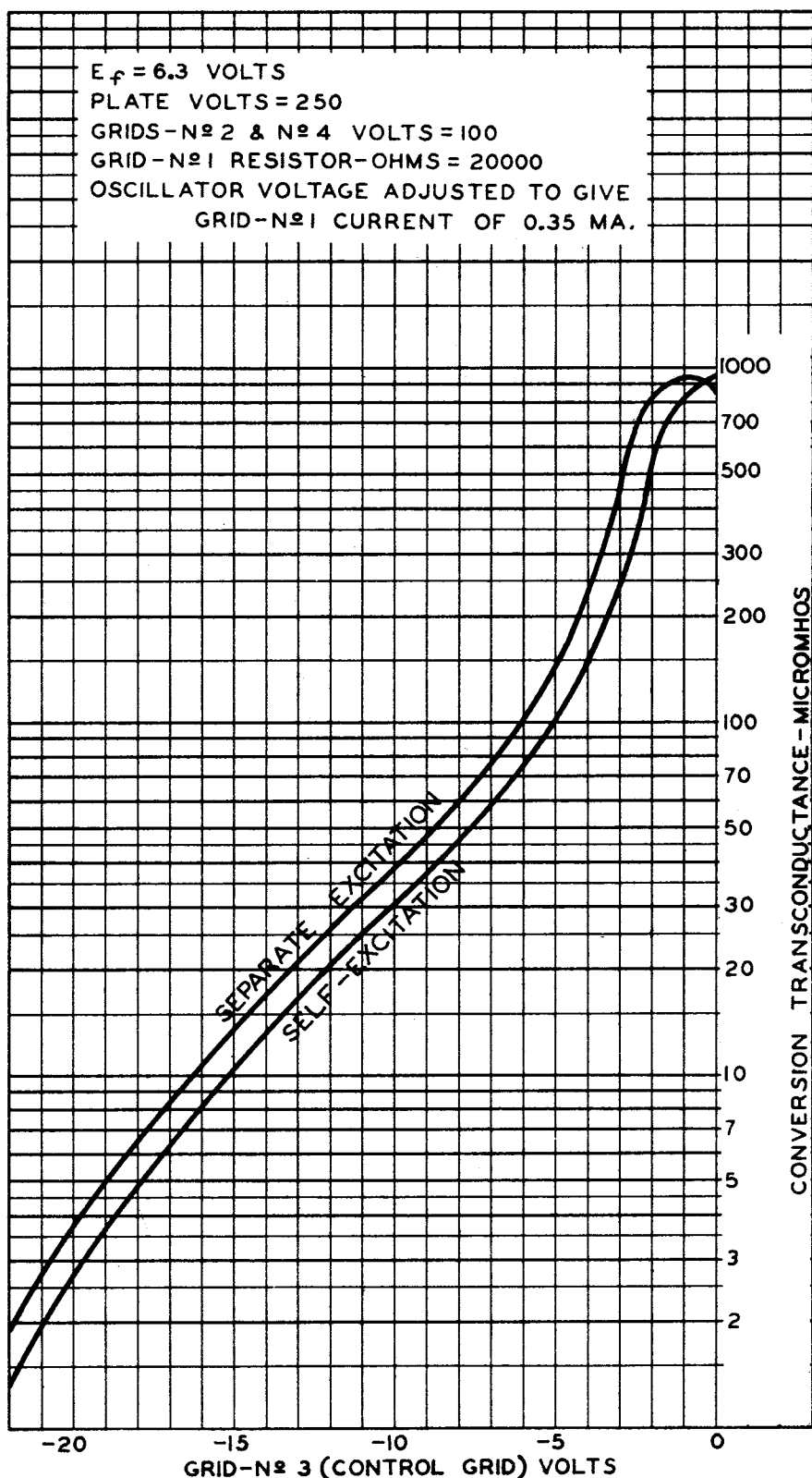
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OPERATION CHARACTERISTICS



NOV. 8, 1945

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OPERATION CHARACTERISTICS WITH SELF-EXCITATION

$E_f = 6.3$ VOLTS

PLATE VOLTS = 250

GRIDS-Nº 2 & Nº 4 VOLTS = 100

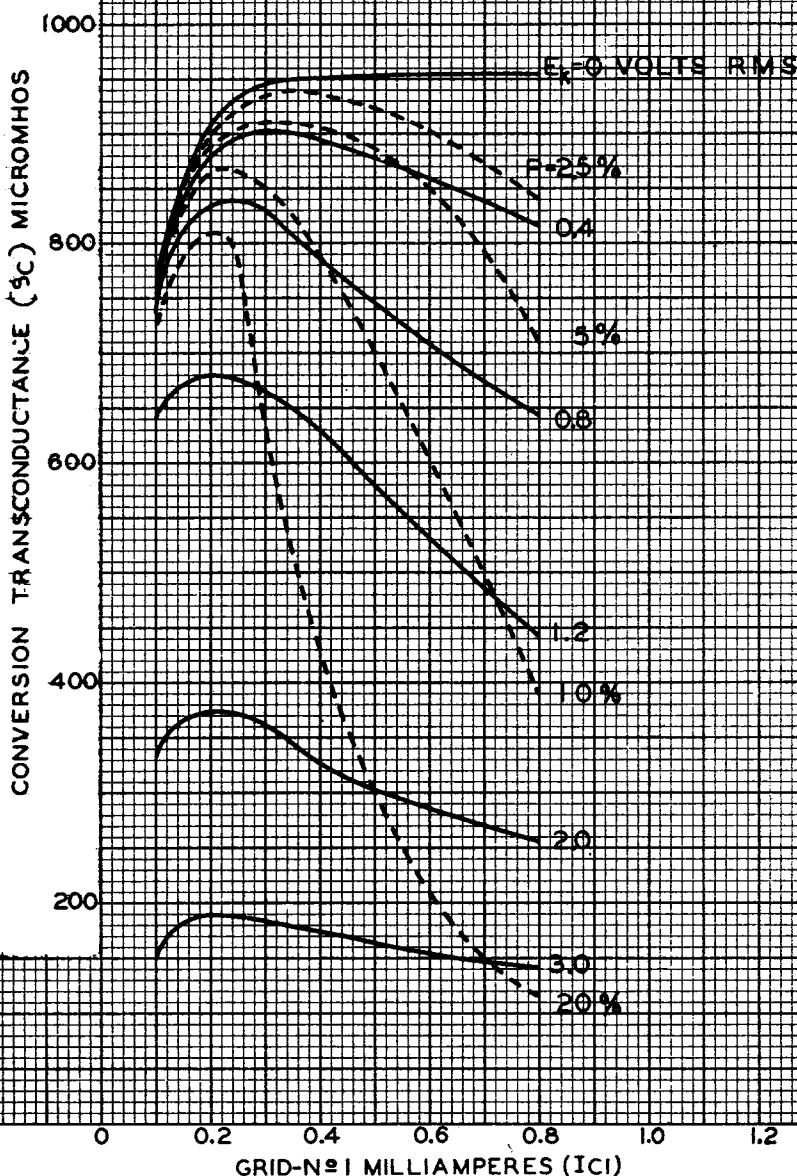
GRID-Nº 3 (CONTROL GRID) VOLTS = -1

GRID-Nº 1 RESISTOR - OHMS = 20000

P - PERCENTAGE RATIO OF E_k TO $E_k + E_g$, WHERE

E_k = VOLTAGE ACROSS OSCILLATOR-COIL SECTION
BETWEEN GROUND AND CATHODE, AND

E_g = OSCILLATOR VOLTAGE BETWEEN CATHODE
AND GRID



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OPERATION CHARACTERISTICS WITH SEPARATE OSCILLATOR EXCITATION

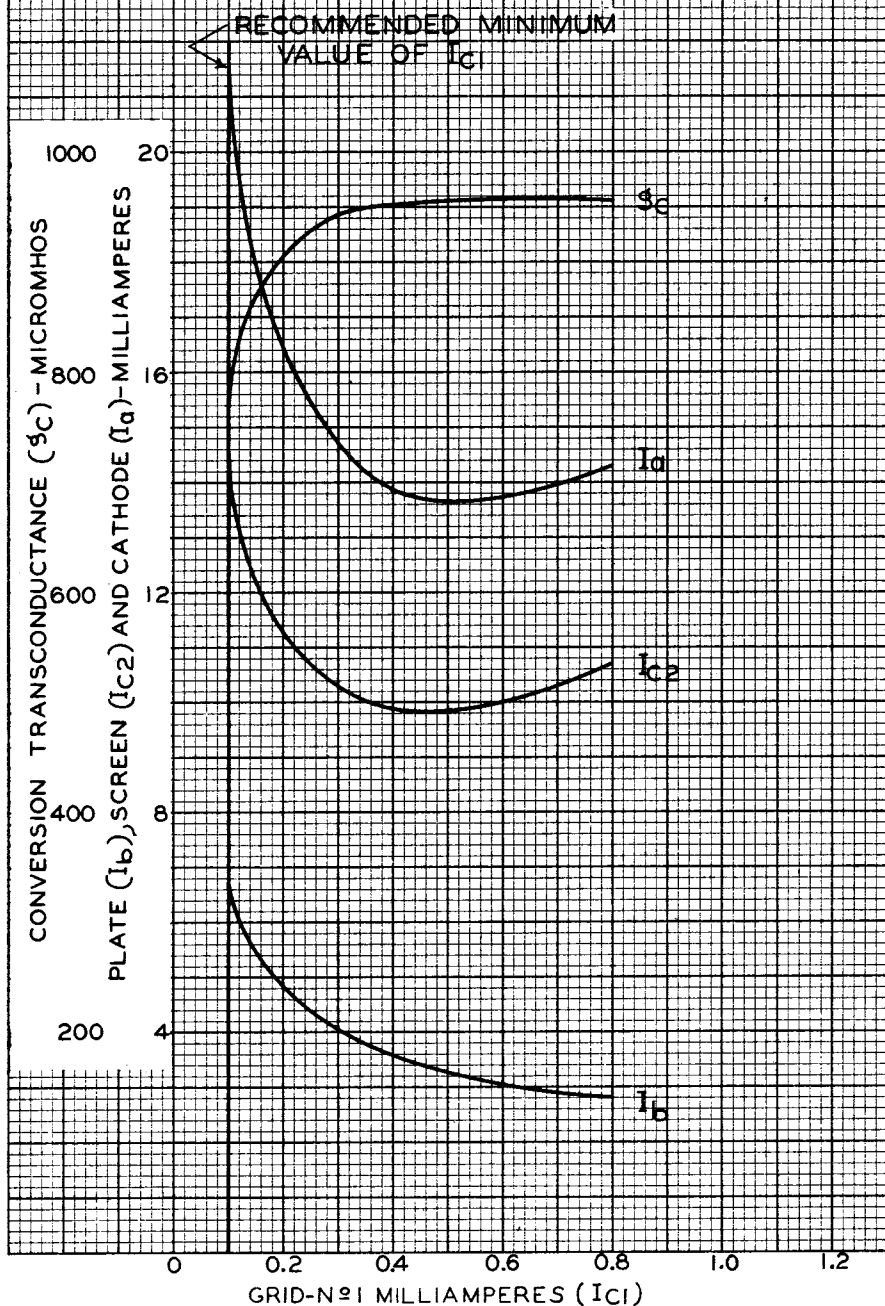
 $E_f = 6.3$ VOLTS

PLATE VOLTS = 250

GRIDS-Nº 2 & Nº 4 VOLTS = 100

GRID-Nº 3 (CONTROL GRID) VOLTS = -1

GRID-Nº 1 RESISTOR-OHMS = 20000

GRID-Nº 1 CURRENT VARIED BY ADJUSTMENT
OF OSCILLATOR VOLTAGE.

NOV. 20, 1945

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