from JETEC release #1504, Aug. 15, 1955
sponsor: Rogers Majestic Electronics Ltd.

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DOUBLE TRIODE particularly designed for use as R.F. cascode amplifier in tuners for television receivers up to 220 Mc

PHYSICAL SPECIFICATIONS

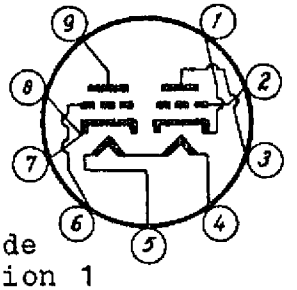
Cathode	Coated unipotential
Base	Small button Noval 9-pin
Bulb	T6½
Maximum diameter	7/8"
Maximum overall length	2 3/16"
Maximum seated height	1 15/16"
Bulb length excluding tip	1 9/16" ± 3/32"
Mounting position	Any

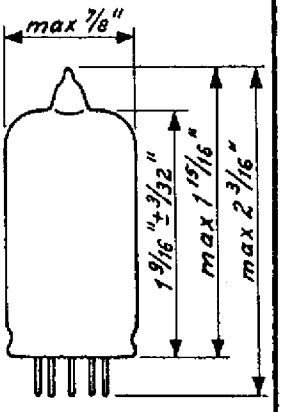
BASING CONNECTIONS- JETEC basing designation 9DD

Pin 1 - Cathode
Pin 2 - Grid and internal shield
Pin 3 - Plate
} Triode section 2

Pin 4 - Heater
Pin 5 - Heater

Pin 6 - Grid
Pin 7 - Cathode input lead
Pin 8 - Cathode output lead
Pin 9 - Plate
} Triode section 1





In a cascode amplifier the triode section No.1 should be used as the grounded cathode amplifier and triode section No.2 as the grounded grid amplifier.

GENERAL ELECTRICAL DATA

Heater voltage	7 volts
Heater current	0.3 amp

7 AN 7

DIRECT INTERELECTRODE CAPACITANCES (without external shield)

TRIODE SECTION 1 (grounded cathode section)

Input capacitance		2.3 μμF
Output capacitance		0.45 μμF
Between plate and grid		1.2 μμF
Between grid and filament	max.	0.25 μμF

TRIODE SECTION 2 (grounded grid section)

Cathode to grid + heater	4.7 μμF
Plate to grid + heater	2.5 μμF
Plate to cathode	0.16 μμF
Cathode to heater	2.7 μμF
Plate to grid	2.3 μμF

BETWEEN TRIODE SECTIONS 1 and 2

Plate section 1 to cathode section 1 + heater + grid section 2		1.2 μμF
Plate section 1 to plate section 2	max.	0.035 μμF
Grid section 1 to plate section 2	max.	0.006 μμF

MAXIMUM RATINGS (Design Center Values)

Plate voltage (each section)	180 volts
Supply voltage without current	550 volts
Plate dissipation (each section)	2 watts
Cathode current (each section)	18 mamps
Negative grid bias (each section)	50 volts
Grid circuit resistance section 1	0.5 megohm°)
Grid circuit resistance section 2	+)
Voltage between cathode and heater, section 1	90 volts
Peak voltage between cathode and heater section 2 (heater negative with respect to cathode)	250 volts*)
Voltage between cathode and heater, section 2 (heater positive with respect to cathode)	90 volts
Circuit resistance between cathode and heater	20 000 ohms

°)In the case of parallel supply of the heater the maximum value is 1.5 megohm

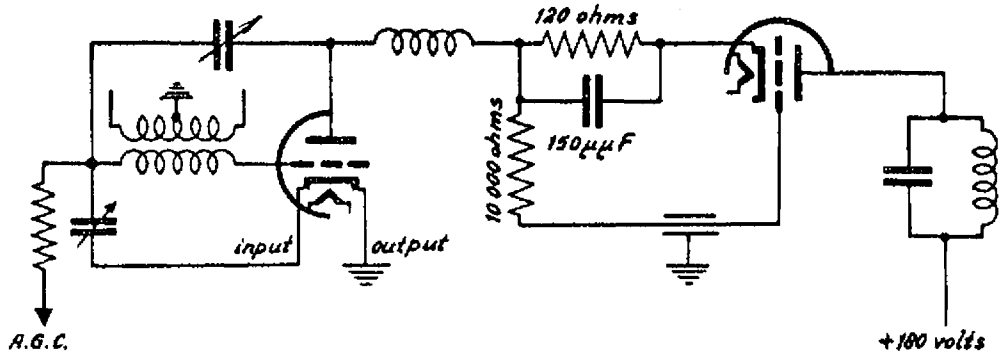
+)See note page 3

*)D.C. component max. 180 volts

TYPICAL CHARACTERISTICS (each section)

Plate voltage	90 volts
Grid bias	-1.5 volts
Plate current	12 mamps
Transconductance	6000 micromhos
Amplification factor	24

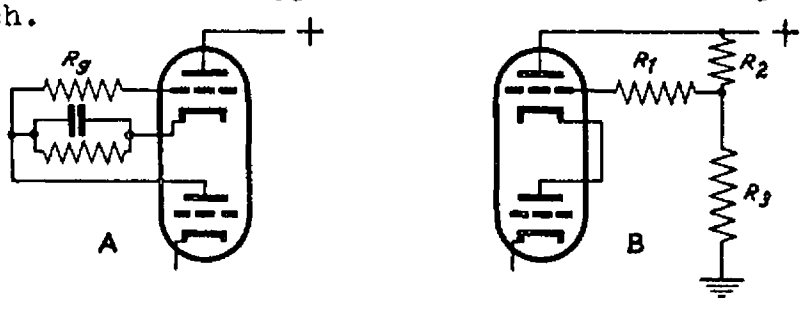
OPERATING CONDITIONS



Noise figure (bandwidth of input circuit 7-8 Mc)	6.5
Input conductance at 200 Mc	250 micromhos

These values of the noise figure and the input conductance are valid in the case that the cathode input lead is connected to the input circuit and the cathode output lead to the chassis. A noise figure of about 5 can be obtained in the case that the two cathode leads are connected in parallel. The value of the input conductance at 200 Mc, however, will than increase to about 700micromhos

The grid bias of the grounded grid section can be achieved by means of a decoupled cathode resistor, a typical value of which is 120 ohms (fig.A), or by means of a potentiometer (fig.B). Typical values of R2 and R3 are 0.1 MΩ each.



*) If the grid leak of section 2 is connected according to fig.A, the maximum value of the grid leak is 20 000 ohms. In the case of circuit B the maximum value of $R_1 + \frac{R_2 \times R_3}{R_2 + R_3} =$ 0.5 megohm.

7AN7

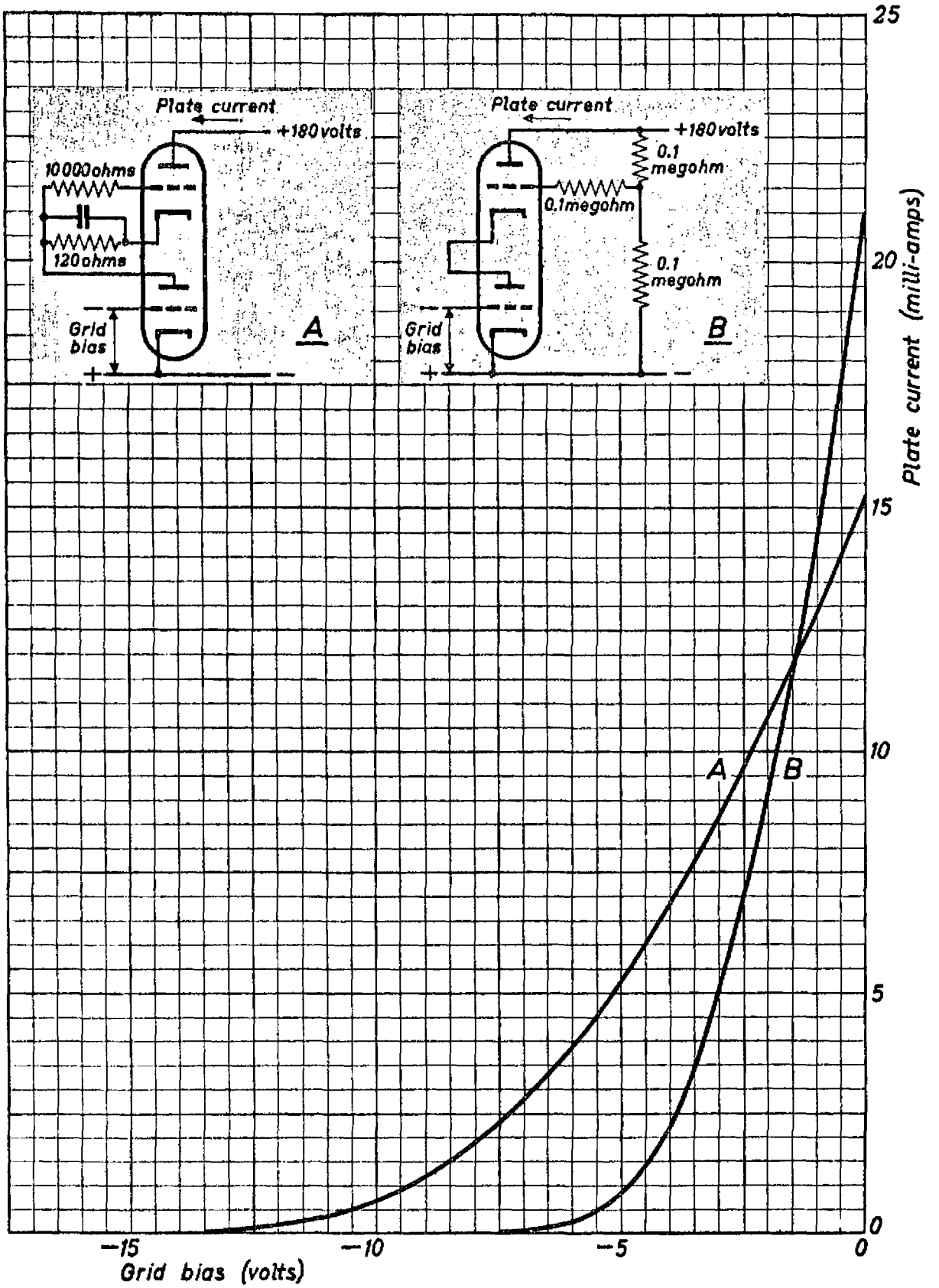


Plate current
+180 volts
10000 ohms
120 ohms
Grid bias
A
Plate current
+180 volts
0.1 megohm
0.1 megohm
0.1 megohm
Grid bias
B
25
20
15
10
5
0
Plate current (milli-amps)
A
B
−15
−10
−5
0
Grid bias (volts)

7AN7

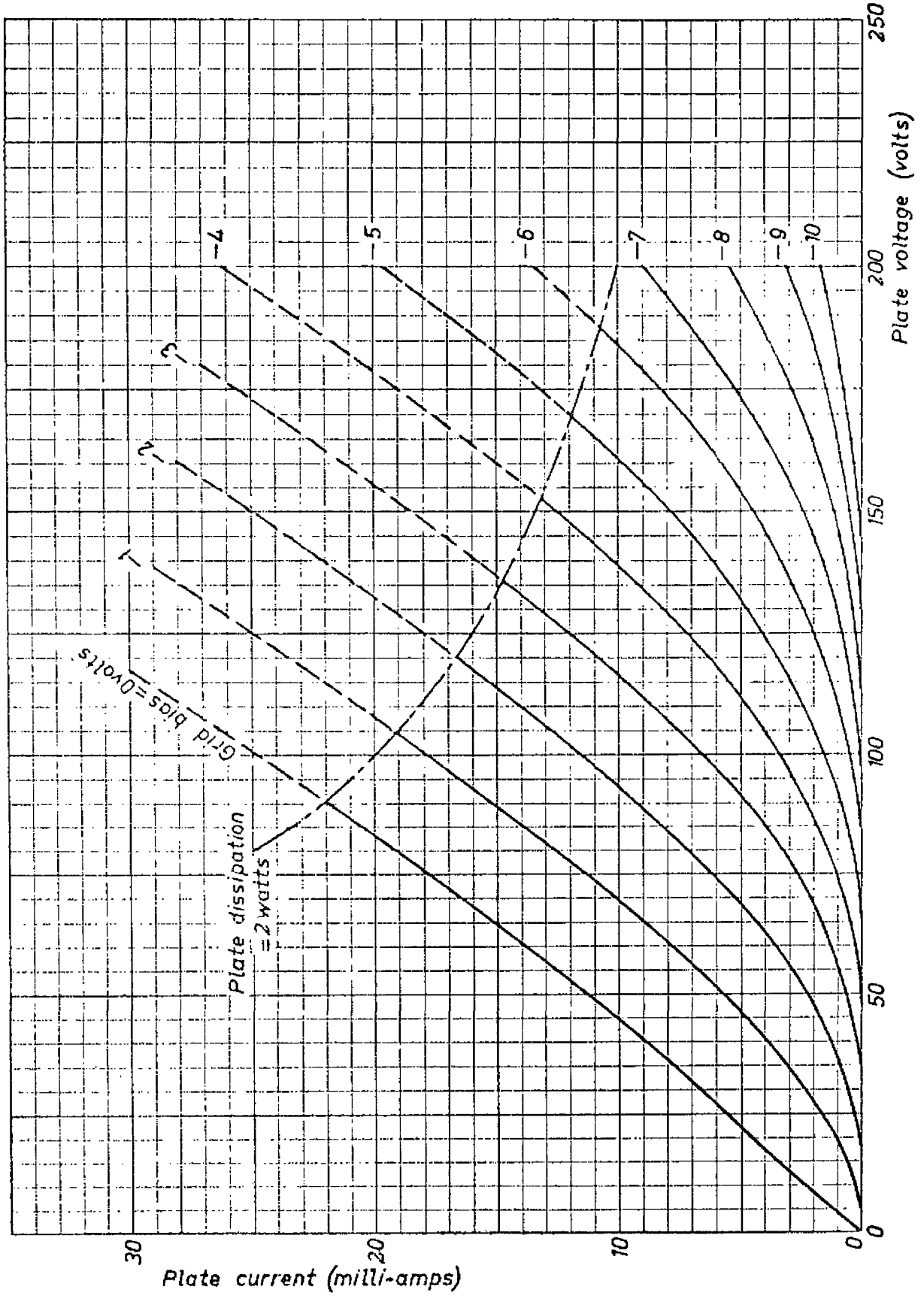


Plate current (milli-amps)
30
20
10
0
Plate voltage (volts)
0
50
100
150
200
250
Grid bias = 0 volts
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
Plate dissipation
= 2 watts

7AN7

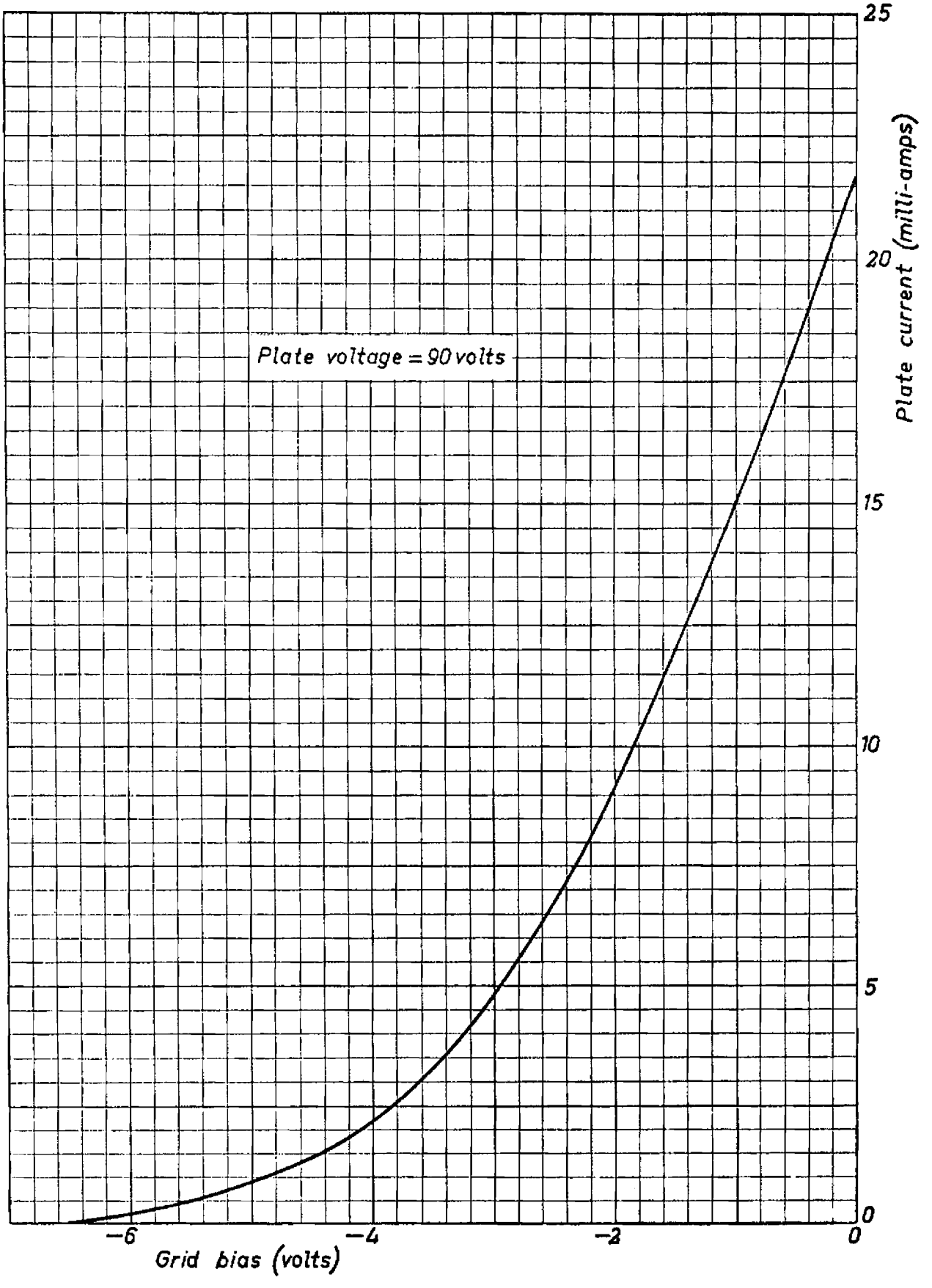


Plate voltage = 90 volts
25
20
15
10
5
0
Plate current (milli-amps)
−6
−4
−2
0
Grid bias (volts)

7AN7

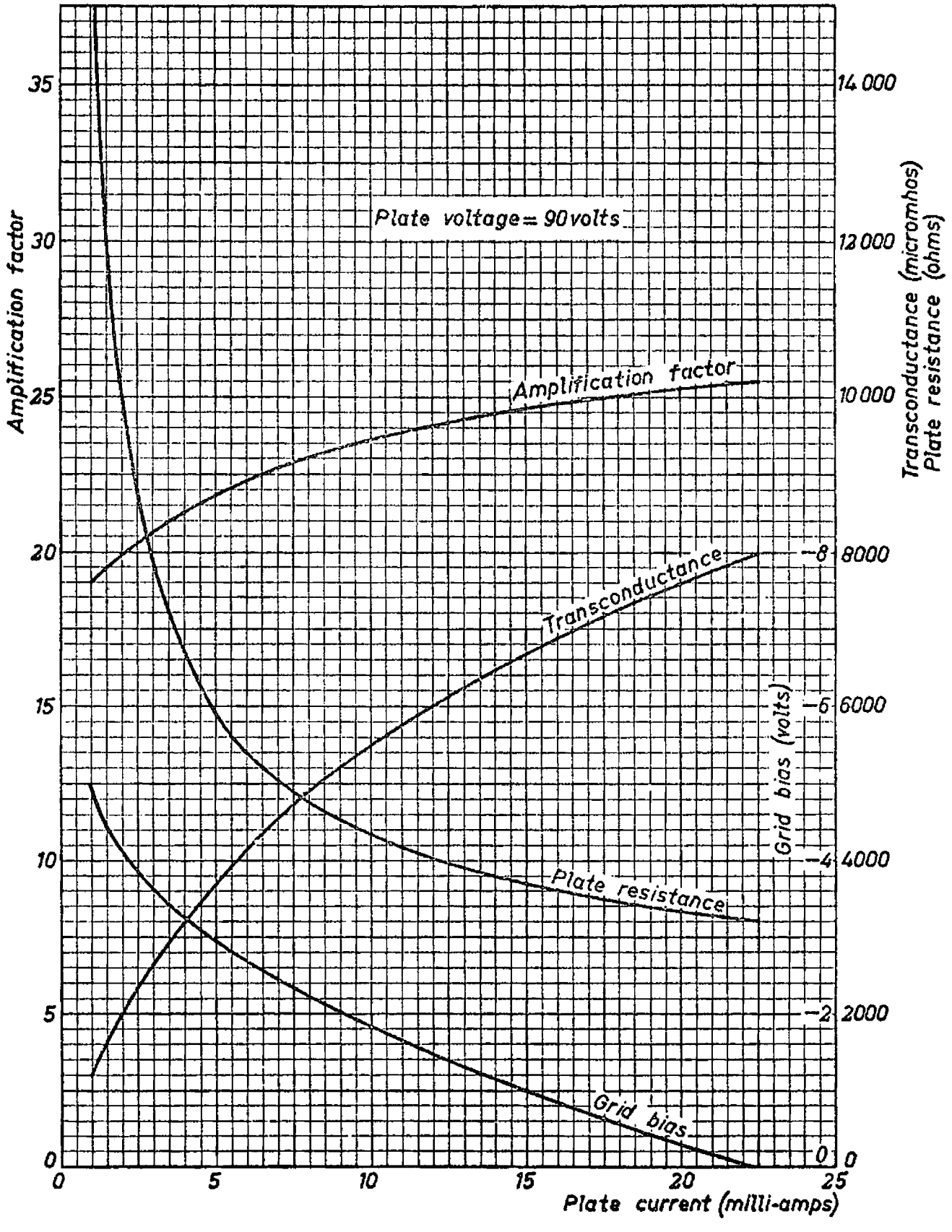


Plate voltage = 90 volts
Amplification factor
Transconductance
Plate resistance
Grid bias
Amplification factor
Transconductance (micromhos)
Plate resistance (ohms)
Grid bias (volts)
Plate current (milli-amps)
0
5
10
15
20
25
30
35
14 000
12 000
10 000
8000
6000
4000
2000
0
−8
−6
−4
−2
0

7AN7

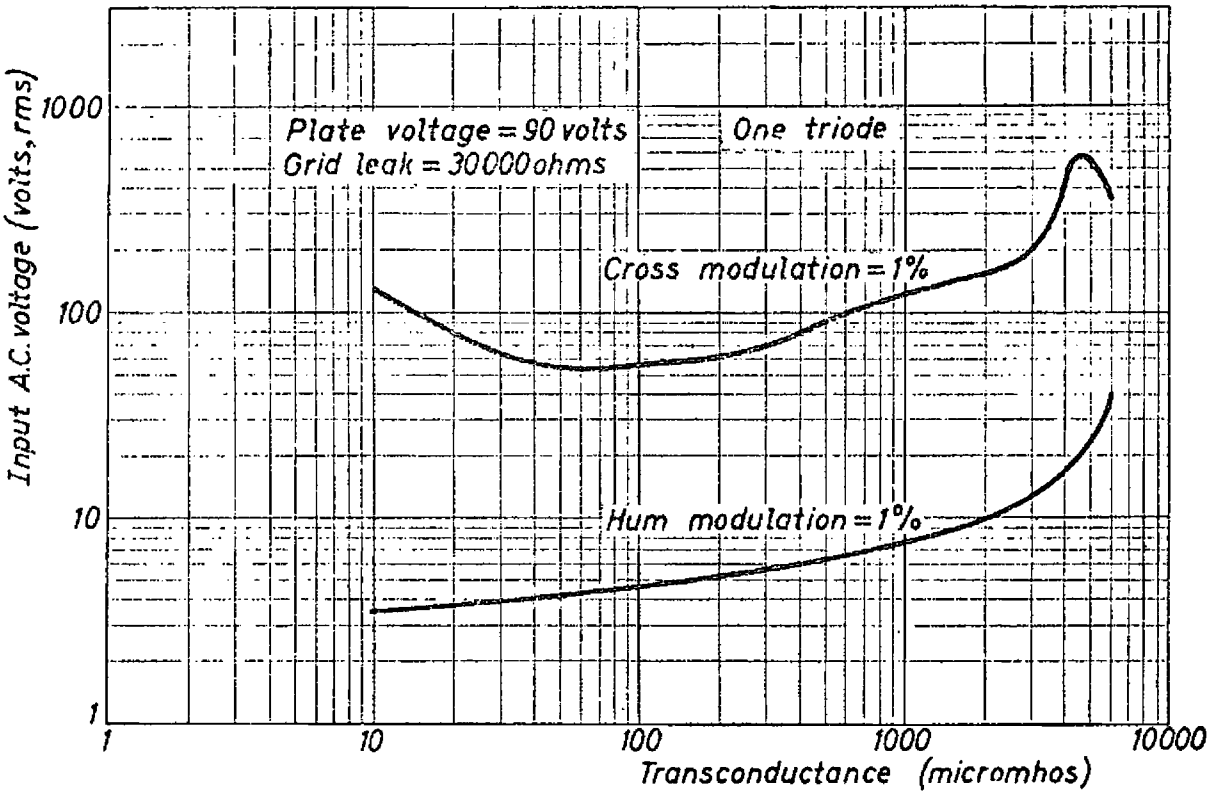
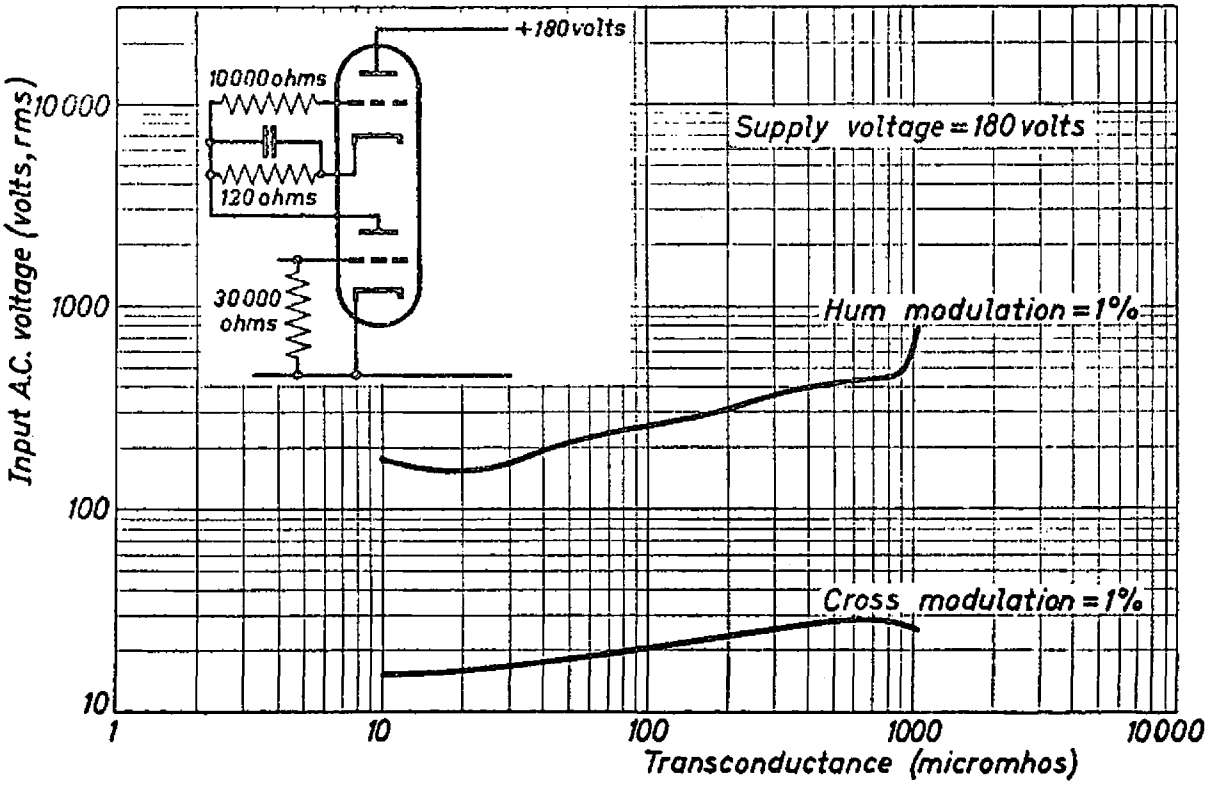


Plate voltage = 90 volts
Grid leak = 30000 ohms
One triode
Cross modulation = 1%
Hum modulation = 1%
Input A.C. voltage (volts, rms)
1000
100
10
1
1
10
100
1000
10000
Transconductance (micromhos)


+180 volts
10000 ohms
120 ohms
30000 ohms
Supply voltage = 180 volts
Hum modulation = 1%
Cross modulation = 1%
Input A.C. voltage (volts, rms)
10000
1000
100
10
1
10
100
1000
10000
Transconductance (micromhos)