



PLIOTRON

DESCRIPTION

The GL-5691 is a high-mu twin triode, high-vacuum tube for industrial use. It is designed particularly for use as a voltage amplifier in industrial applications where uniformity and stability of characteristic and resistance to shock and vibra-

tion are required. In addition to these features the 5691 has its heaters for the two triode units connected in series with the result that failure of either heater in bridge circuits makes both units inoperative.

TECHNICAL INFORMATION

These data are for reference only. For design information refer to specifications.

GENERAL

Electrical Data

Cathode—Indirectly heated			
Heater voltage (A-C or D-C)	6.3	$\pm 5\%$	volts
Heater current			0.6 ampere
Direct interelectrode capacitances with no external shield			
Triode Unit No. 1—	Minimum	Average	Maximum
Grid to plate	3.1	3.6	4.1 uuf
Grid to cathode	1.9	2.4	2.9 uuf
Plate to cathode	1.8	2.3	2.8 uuf
Triode Unit No. 2—			
Grid to plate	3.1	3.6	4.1 uuf
Grid to cathode	2.2	2.7	3.2 uuf
Plate to cathode	2.1	2.6	3.1 uuf
Plate of Triode Unit No. 1 to			
Plate of Triode Unit No. 2—	2.7	3.2	3.7 uuf


Electronic
TUBE

GENERAL  ELECTRIC

TECHNICAL INFORMATION (CONT'D)

Mechanical Data

Mounting position—any

Net weight, approximate.....3 ounces

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

Values are for each Unit

Maximum ratings, absolute values

D-c plate voltage.....	275 max	volts
D-c plate supply voltage.....	330 max	volts
Grid voltage		
Negative bias range.....	—1** min to —100 max	volts
Negative peak value.....	—200 max	volts
D-c grid current.....	2 max	milliamperes
D-c cathode current.....	10 max	milliamperes
Plate dissipation.....	1 max	watt
Peak heater—Cathode voltage		
Heater negative with respect to cathode.....	100 max	volts
Heater positive with respect to cathode.....	100 max	volts
Ambient temperature range.....	55— to +90	C

Maximum circuit value (for any operating condition)

Grid-circuit resistance.....	2 max	megohms
------------------------------	-------	---------

Characteristics and range values

Heater voltage.....	6.3	volts
Plate voltage.....	250	volts
Grid voltage.....	—2	volts

	Minimum	Average	Maximum	
Heater current.....	0.55	0.6	0.65	amperes
Heater-cathode current with heater-cathode voltage of ≈ 100 volts	.....	.....	5	microamperes
Plate current.....	1.7	2.3	2.9	milliamperes
Plate current for grid voltage of —5.5 volts	.....	.....	15	microamperes
Difference in plate current between triode units	.....	.....	0.9	milliampere
Reverse grid current	.....	.....	0.2	microampere
Amplification factor.....	60	70	80	
Plate resistance.....	.....	44000	.....	ohms
Transconductance	1300	1600	1900	micromhos

Typical operation—resistance-coupled amplifier (each triode unit)

	90			180			300			volts
Plate-supply voltage	0.1	0.22	0.47	0.1	0.22	0.47	0.1	0.22	0.47	megohms
Plate load resistor	0.22	0.47	1.0	0.22	0.47	1.0	0.22	0.47	1.0	megohms
Grid resistor (of following stage)	4700	7400	14400	2600	4600	9000	2180	3970	7550	ohms
Cathode resistor	2.1	1.3	0.7	2.8	1.6	0.9	3.1	1.8	1	uf
Cathode bypass capacitor***	0.014	0.0065	0.0035	0.014	0.0065	0.0035	0.014	0.0065	0.0035	uf
Blocking capacitor***	9	13	17	30	37	44	59	76	88	volts
Peak output voltage****	27†	35‡	40‡	33¶	42¶	46¶	36¶	45¶	50¶	
Voltage gain										

*May deviate ≈ 10 per cent from rated value provided such deviation occurs for less than 2 per cent of the operating time.

**For resistance-coupled amplifier applications, the negative bias may be as low as —0.5 volt.

***The cathode by-pass capacitors and blocking capacitors have been chosen to give output voltages at 100 cycles per second (f_1) which are equal to 0.8 of the mid-frequency value. For any other value of (f_1), multiply the values of cathode by-pass and blocking capacitors by $100/f_1$.

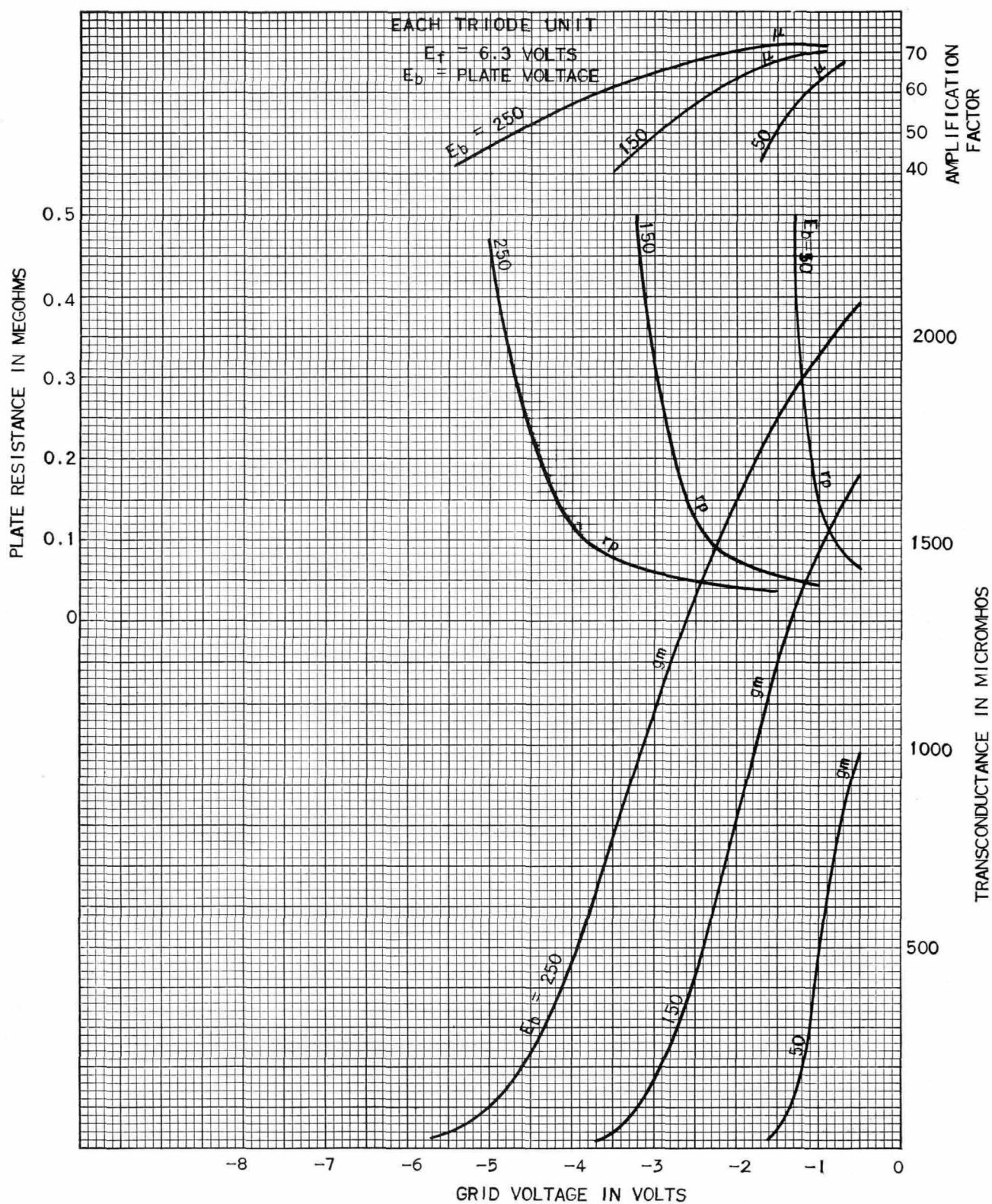
****This peak output voltage is obtained across the grid resistor of the following stage at any frequency within the flat region of the output vs frequency curve, and is for the condition where the signal level is adequate to swing the grid of the resistance-coupled amplifier tube to the point where its grid starts to draw current.

†At an output voltage of 3 volts rms.

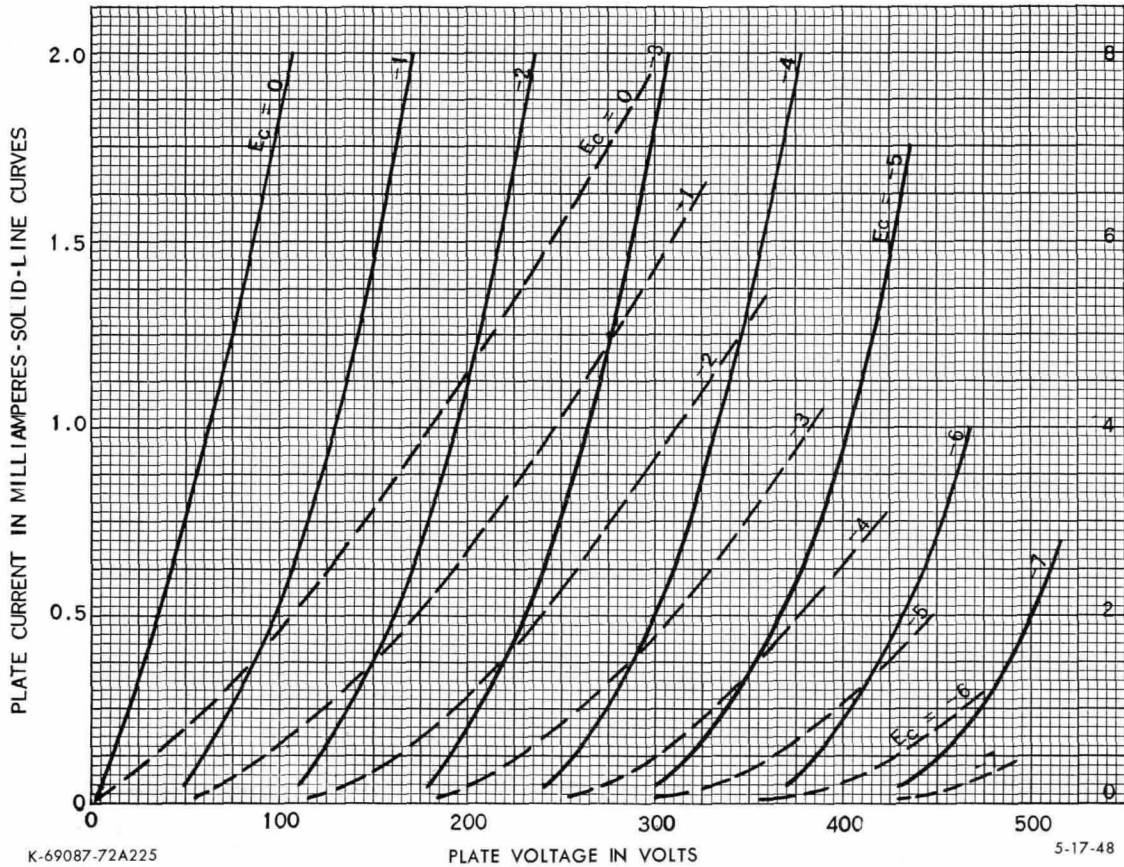
‡At an output voltage of 4 volts rms.

¶At an output voltage of 5 volts rms.

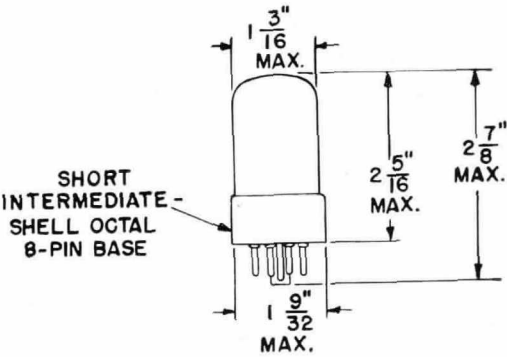
GL-5691
AVERAGE CHARACTERISTICS



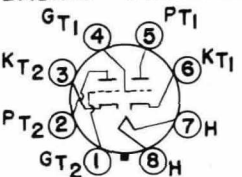
GL-5691 AVERAGE PLATE CHARACTERISTICS
EACH TRIODE UNIT $E_i = 6.3$ VOLTS



OUTLINE GL-5691 PIOTRON



BASING DIAGRAM



- PIN 1: GRID OF TRIODE UNIT NO. 2
- PIN 2: PLATE OF TRIODE UNIT NO. 2
- PIN 3: CATHODE OF TRIODE UNIT NO. 2
- PIN 4: GRID OF TRIODE UNIT NO. 1
- PIN 5: PLATE OF TRIODE UNIT NO. 1
- PIN 6: CATHODE OF TRIODE UNIT NO. 1
- PIN 7: HEATER
- PIN 8: HEATER

N-15120AZ

8BD

5-17-48

Electronics Department

GENERAL ELECTRIC

Schenectady, N. Y.