

R.F. DOUBLE TRIODE

Variable- μ frame grid double triode primarily intended for use as a cascade amplifier at frequencies up to 220Mc/s in television receivers with series connected heaters.

PCC89

HEATER

Suitable for series operation a.c. or d.c.

I_h	300	mA
V_h	7.5	V ←

CAPACITANCES (measured with an external shield)

$C_{a'-a''}$	< 15	mpF
$C_{g'-a''}$	< 5	mpF

Grounded cathode section

$C_{a'-g'}$	1.9	pF
$C_{g'-k'+h+g''+s}$	3.8	pF
$C_{a'-k'+h+g''+s}$	2.5	pF
$C_{g'-h}$	< 300	mpF

Grounded grid section

$C_{a''-g''}$	4.1	pF
$C_{a''-k''}$	< 200	mpF
$C_{k''-g''+h+s}$	6.3	pF
$C_{a''-g''+h+s}$	4.5	pF
$C_{k''-h}$	2.9	pF

CHARACTERISTICS (each section)

V_a	90	V
I_a	15	mA
V_g	-1.2	V
g_m	12.3	mA/V
r_{ia}	2.9	k Ω
μ	36	

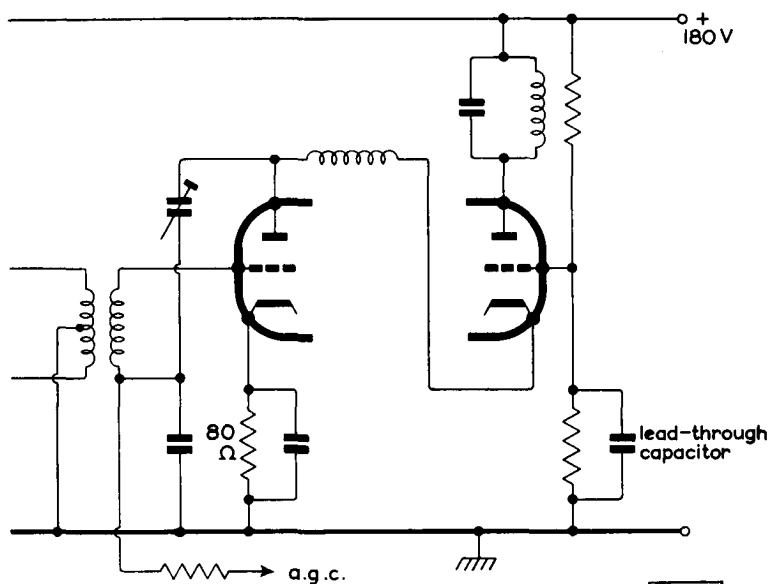


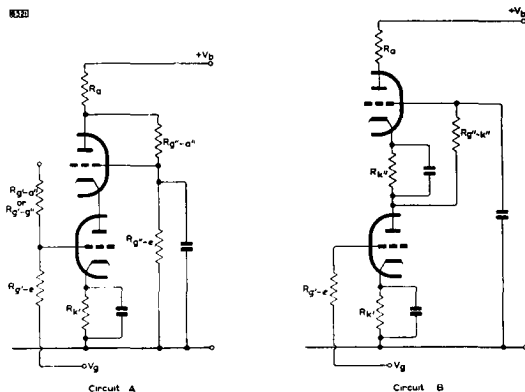
Fig.1

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CHARACTERISTICS (cascode—see Fig. 1)

V_b	180	V
I_a	15	mA
g_m	12	mA/V
$*V_{g'}$	-9.0	V
Noise factor	5.5	dB

*For 100 : 1 reduction in cascode slope.



OPERATING CONDITIONS

Condition	1	2	3	4	
Circuit	A	A	A	A	
V_b	190	190	190	190	V
R_{a^*}	1.5	3.3	3.9	3.9	k Ω
$R_{g^*-a^*}$	100	100	100	100	k Ω
R_{g^*-e}	100	100	100	100	k Ω
R_{g^*-e}	—	470	470	470	k Ω
$R_{g^*-g^*}$	—	—	22	15	M Ω
$R_{k'}$	68	0	0	0	Ω
I_a	15	14.8	14.7	14.9	mA
g_m	13	14.4	14.7	14.8	mA/V
V_g for 100 : 1 reduction in g_m	-9.3	-9.0	-11	-12	V

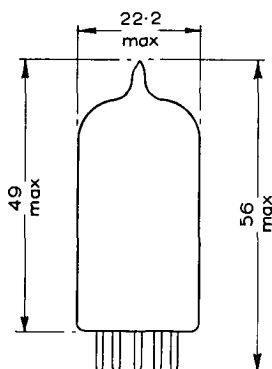
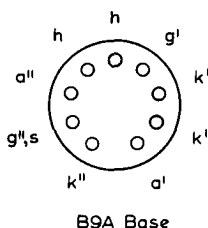
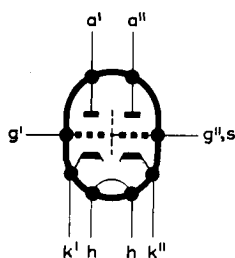
Condition	5	6	7	8	9	
Circuit	A	A	A	B	B	
V_b	190	190	190	190	190	V
R_{a^*}	3.9	3.9	4.7	1.5	3.3	k Ω
$R_{g^*-a^*}$	100	100	100	—	—	k Ω
R_{g^*-e}	100	100	100	—	—	k Ω
$R_{g^*-k^*}$	—	—	—	—	470	k Ω
$R_{k'}$	0	0	0	68	0	Ω
R_{g^*-e}	470	470	470	470	470	k Ω
$R_{g^*-g^*}$	—	10	—	—	—	M Ω
$R_{g^*-a^*}$	22	—	15	—	—	M Ω
$R_{k'}$	0	0	0	68	0	Ω
I_a	15	15.1	14	15	14.4	mA
g_m	14.9	15	14.7	13	14.3	mA/V
V_g for 100 : 1 reduction in g_m	-12.5	-13.5	-15	-16.5	-16	V

The gain/slope ratio depends upon the circuit and will differ at high and low frequencies.

LIMITING VALUES (each section, unless otherwise stated)

V_a max.	130	V
p_a max.	1.8	W
I_k max.	18	mA ←
$-V_g$ max.	50	V
$R_{g'-k'}$ max.	1.0	MΩ
$R_{g''-k''}$ max.	500	kΩ
$V_{h-k'}$ max. (cathode positive)	200	V ←
R_{h-k} max.	20	kΩ

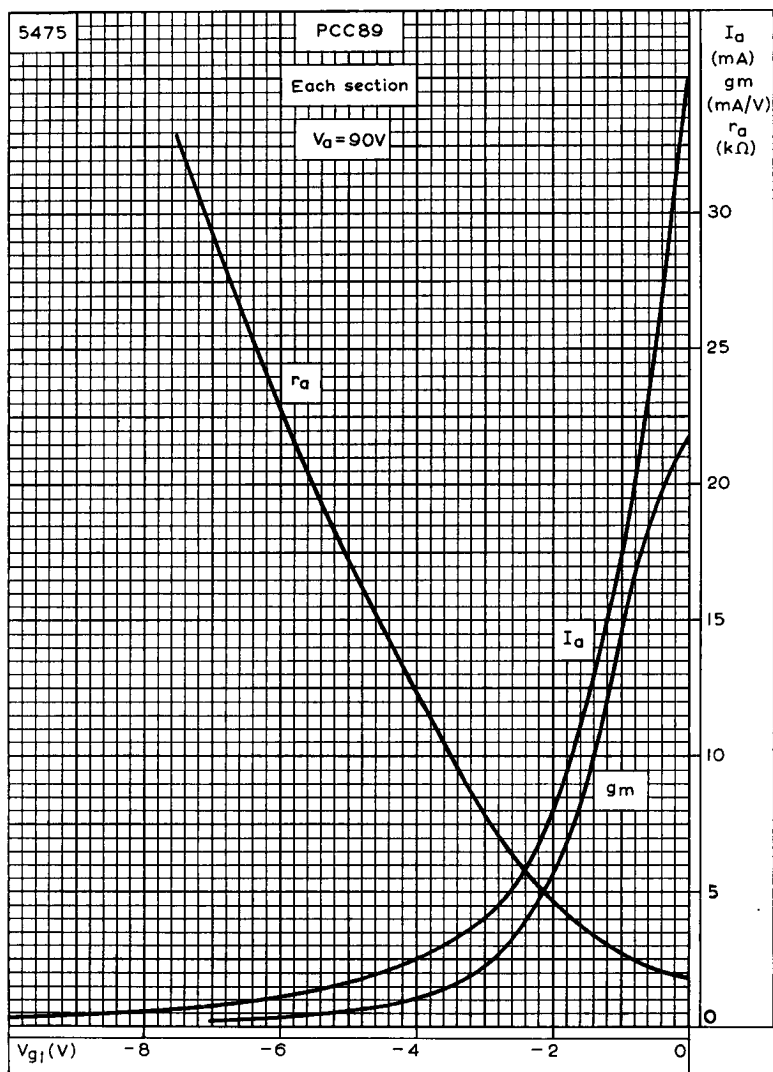
To fulfil hum requirements, $V_{h-k'}$ must be less than $50V_{r.m.s.}$



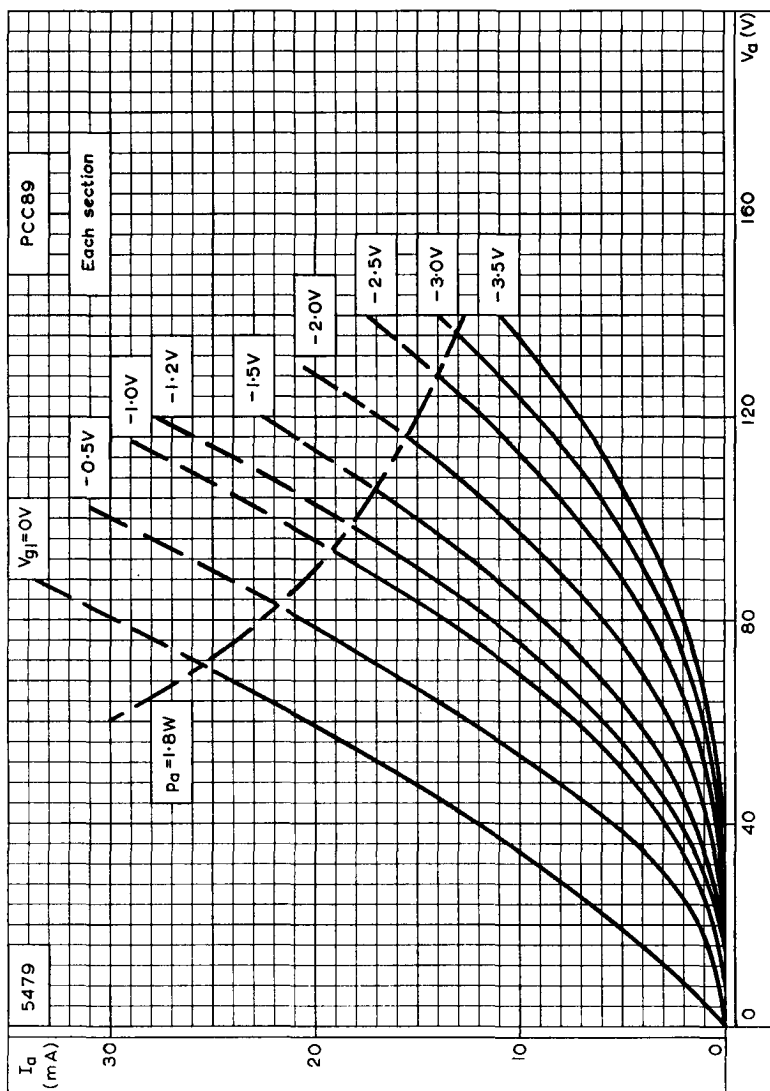
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All dimensions in mm

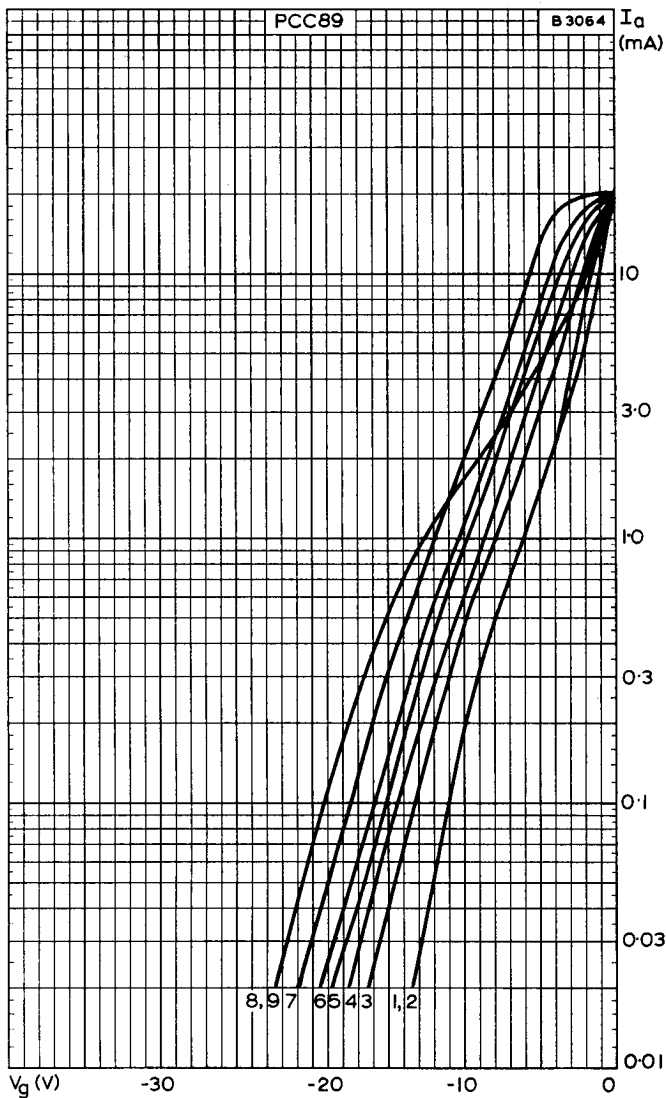
The triode on pins 6, 7, 8 and 9 should have the grounded cathode connection, and that on pins 1, 2 and 3 should have the grounded grid connection. It is recommended that pins 7 and 8 be strapped.



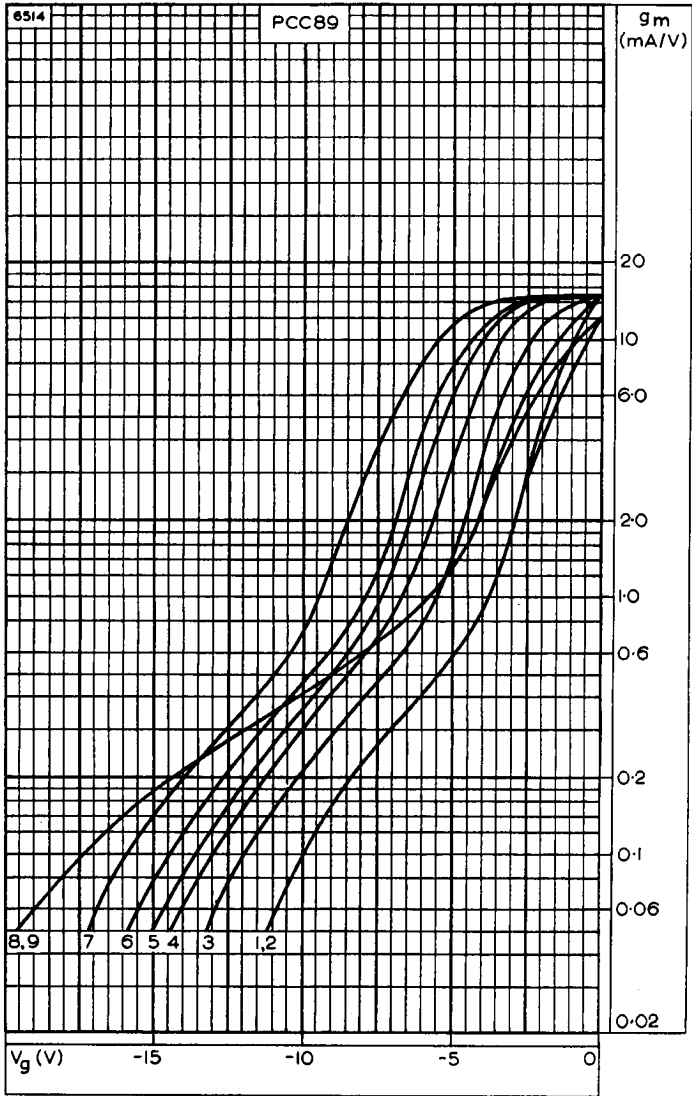
ANODE CURRENT, MUTUAL CONDUCTANCE AND ANODE IMPEDANCE
PLOTTED AGAINST GRID VOLTAGE



ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH GRID VOLTAGE AS PARAMETER



ANODE CURRENT PLOTTED AGAINST CONTROL-GRID VOLTAGE
UNDER CONDITIONS 1 to 9 (See page D3)



MUTUAL CONDUCTANCE PLOTTED AGAINST CONTROL-GRID VOLTAGE
UNDER CONDITIONS 1 to 9 (See page D3)