

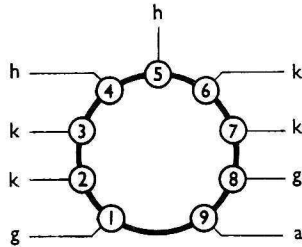
S.E.C.

VALVES

**LOW NOISE
VHF TRIODE****A2599**

ISSUE 2

The A2599 is a low noise v.h.f. triode for grounded-cathode use. It is a commercial version of the CV5242.

BASE CONNECTIONS AND VALVE DIMENSIONS

Base: B9A
 Bulb: Tubular.
 Max. overall length: 56 mm.
 Max. seated length: 49 mm.
 Max. diameter: 22.2 mm.

Viewed from underside of base.

HEATER

V_h	6.3	V
I_h	0.3 (approx)	A

MAXIMUM RATINGS (Absolute)

V_a	250	V
p_a	2.5	W
I_k	20	mA
$-V_g$	20	V
$v_{h-k(pk)}$	100	V
T_{bulb}	200	°C

CAPACITANCES (Measured on a cold screened valve)

$C_{g-all, less a}$: 3.5pF; $C_{a-all, less g}$: 0.7pF; C_{g-a} : 1.1pF.

CHARACTERISTICS

V_a	130	V
I_a	16	mA
V_g	-1 (approx)	V
g_m	15	mA/V
μ	60	—
* $C_{in(w)}$	6 (approx)	pF
* $r_{in(w)}$	30 (approx)	k Ω

*Measured hot at 45Mc/s with anode decoupled to cathode.

THE M-O VALVE CO. LTD. · BROOK GREEN · LONDON · W.6

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A2599

TYPICAL OPERATION

Class A. Low Noise Amplifier. Grounded Cathode Connection.

Used in the first stage of a cascode amplifier, followed by an A2521 triode, operated in grounded-grid connection, as shown in figs. 1, 2 and 3.

$V_{a(b)}$	180	250	V
R_a	3.3	—	$k\Omega$
R_k	68	68	Ω
I_a	15.5	14.5	mA
Frequency	45	200	Mc/s
*Noise factor (average)	1.5	6.8	dB
†Noise factor (average)	1.3	4.7	dB
‡Power gain (approx)	30	20	dB
Optimum source resistance (approx)	1300	290	Ω

*Input circuit tuned.

†Input circuit adjusted for lowest noise factor.

‡For the cascode amplifier.

INSTALLATION

The valve may be mounted in any position. The use of a retaining device is recommended.

If a screening can is used it should be blackened inside and out.

Free air circulation around the bulb or the outside of the screening can should be provided.

Provision of circuit information in this publication does not imply a right to use any invention which may be involved and which is the subject of patents by whomsoever owned.

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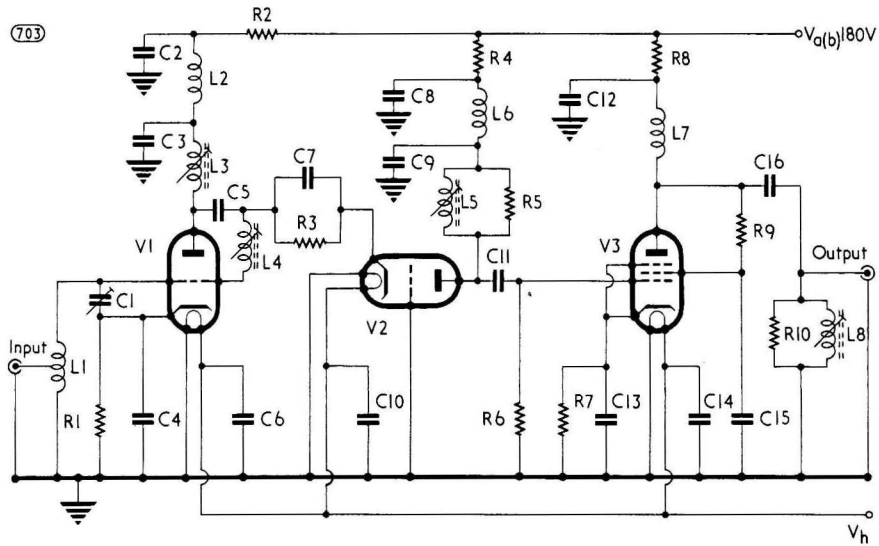


Fig. 1. Circuit of 45Mc/s cascode amplifier.

COMPONENT VALUES FOR FIG. 1.

Valves		Resistors	
V1	A2599	R1, R3	68Ω 0.25W
V2	A2521	R2, R4, R8	3.3kΩ 1W
V3	Z77	R5	4.7kΩ 0.25W
Capacitors		R6	1.0MΩ 0.25W
C1	2.8pF	R7	150Ω 0.25W
C2 to C14, C 16	1000pF	R9	22kΩ 0.25W
C15	470pF	R10	100Ω 0.25W

Inductances

All coils of enamelled copper wire wound on $\frac{1}{4}$ in. dia. former.

	Turns	s.w.g.
L1	9	18
L2, L6, L7	80	34
*L3	12	20
*L4	35	30
*L5	10	20
*L8	12	20

*Core is of the type recommended for use up to 100 Mc/s.

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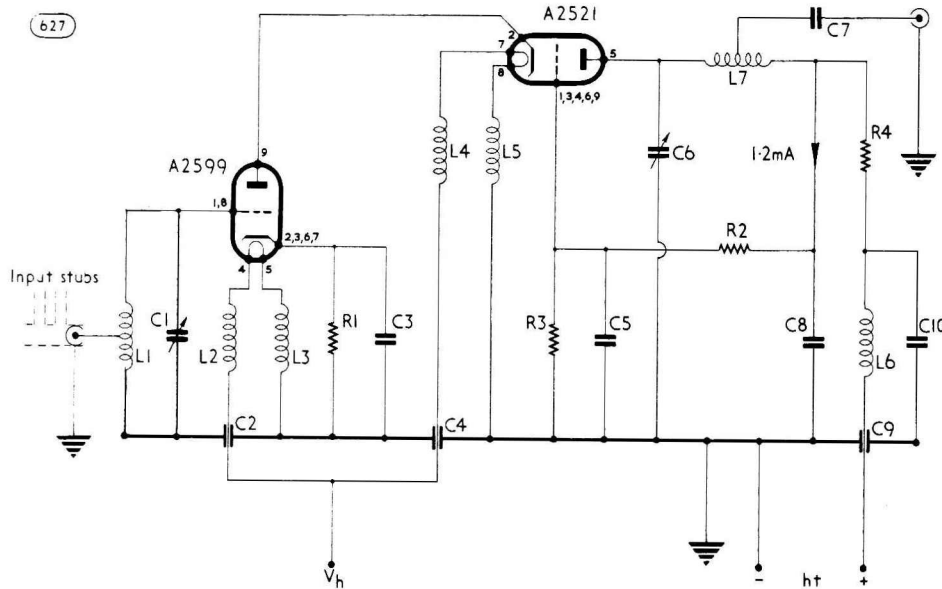


Fig. 2. Circuit of 200Mc/s cascode amplifier.

COMPONENT VALUES FOR FIGS. 2 AND 3

Resistors

R1	68Ω.
R2-R3	100kΩ.
R4	1kΩ.

Capacitors

C1, C6	3-30pF ceramic trimmer.
C2, C4, C9	4700pF feedthrough.
C3, C7, C10	1000pF.
C5, C8	2000pF.

Inductances

L1	1½ turns 14 s.w.g. copper wire ⅜in. i.d. tapped at 1 turn from earthy end.
L2 to L6	20½in. of 26 s.w.g. enamelled copper wire close-wound ⅜in. i.d. air-cored coil.
L7	1½ turns 14 s.w.g. copper wire ½in. i.d. tapped at ½ turn from earthy end.

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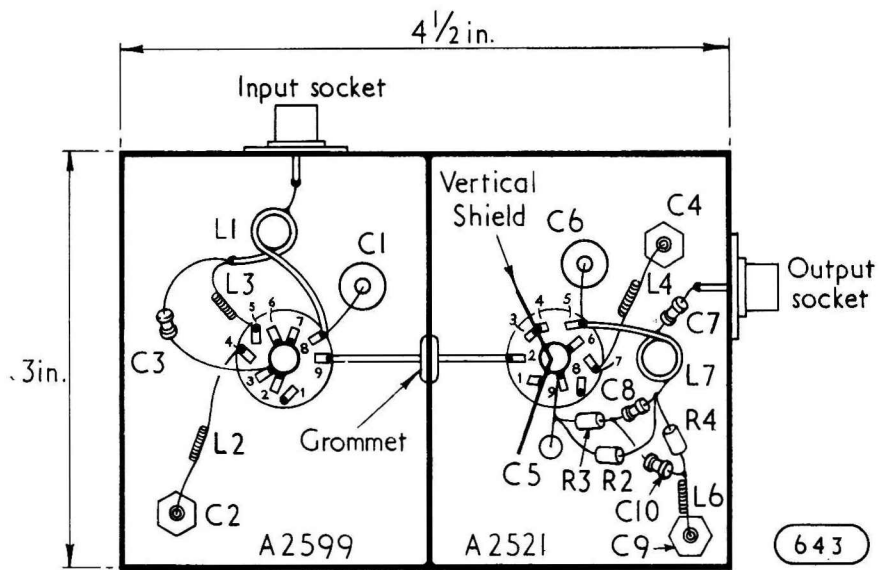


Fig. 3. Layout of 200Mc/s cascode amplifier.

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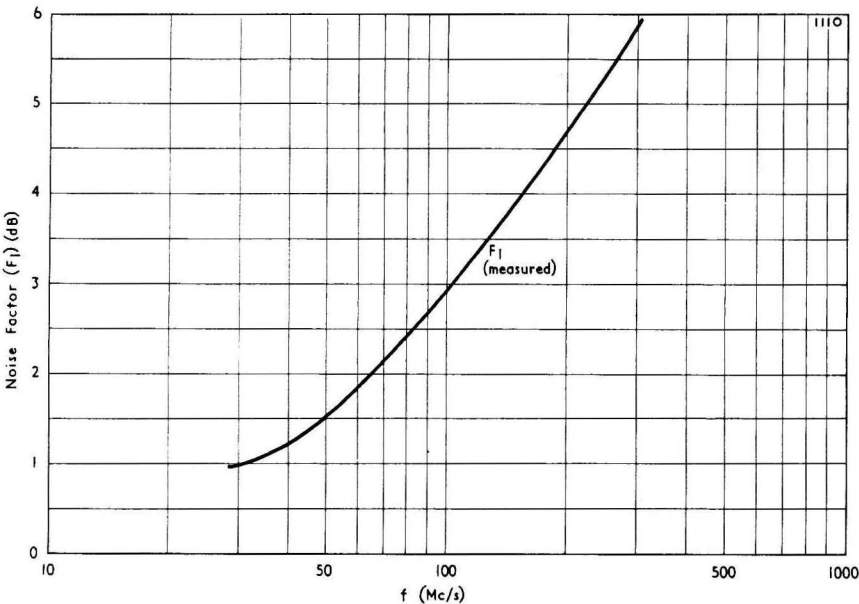


Fig. 4. Variation in average minimum noise factor against frequency for A2599-A2521 cascode amplifiers. (F_1 measured using a noise diode).

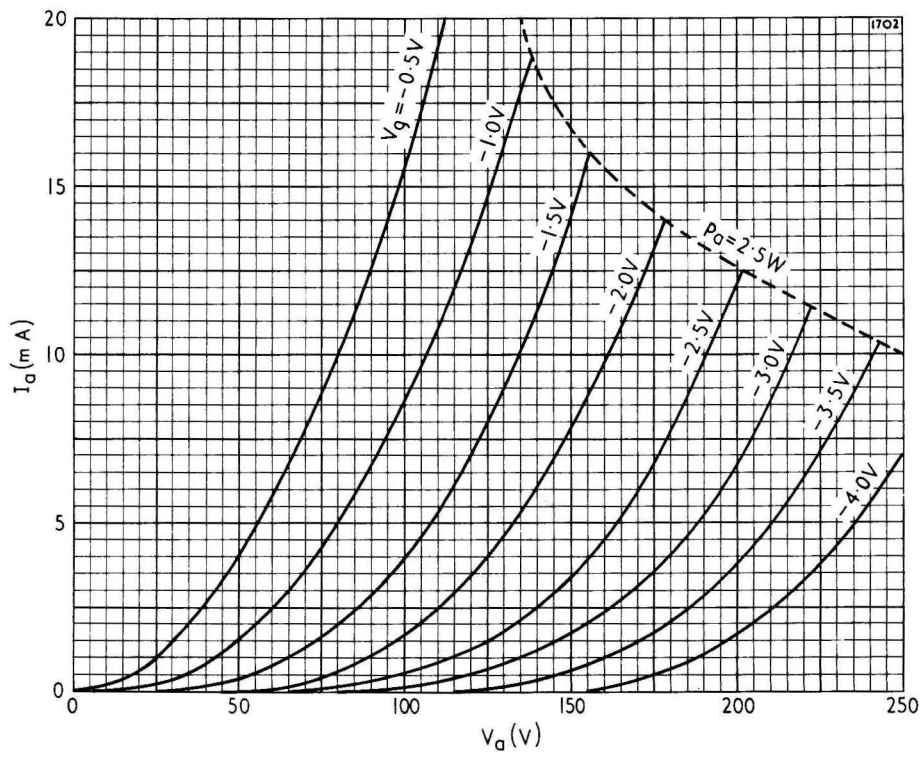


Fig 5.

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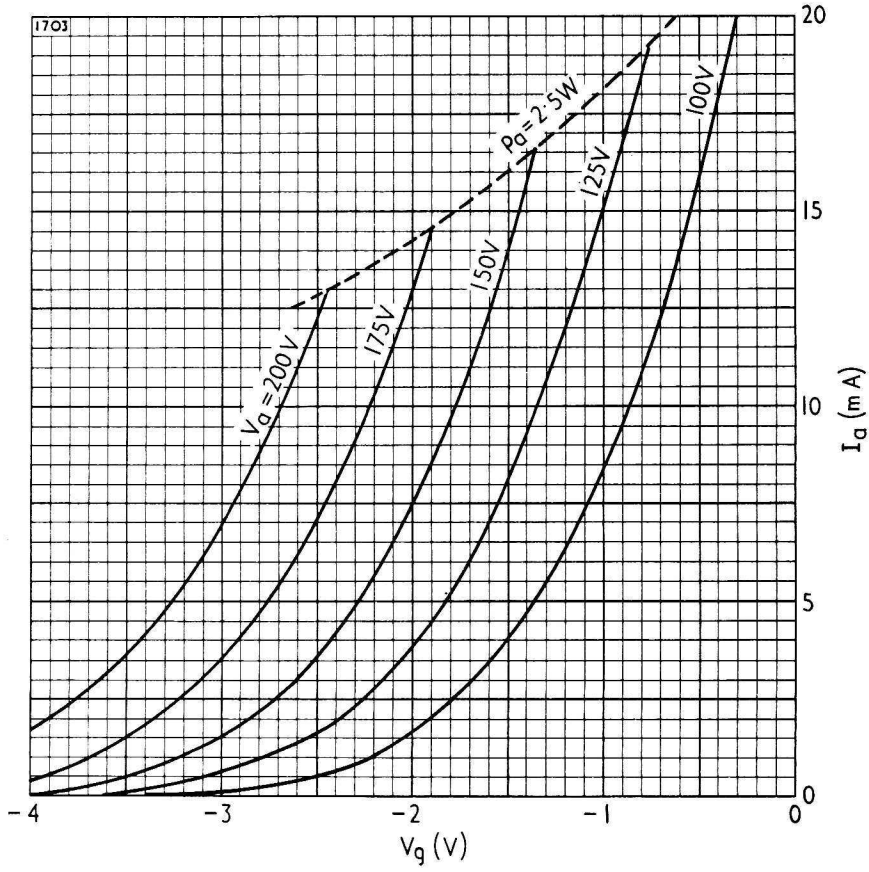


Fig. 6.