

V.H.F. BEAM POWER TETRODE

YLI 150

TENTATIVE DATA

QUICK REFERENCE DATA

Radiation and convection cooled beam power tetrode intended for use as a linear v.h.f. amplifier for s.s.b., Class 'C' v.h.f. amplifier or l.f. Class 'AB' amplifier or modulator.

	Class 'AB' Amplifier or Modulator	Class 'B' Linear Amplifier for S.S.B.	Class 'C' Telegraphy or F.M. Telephony	
f	-	30 60	30	Mc/s
P _{out}	2 x 100	*120 *109	150	W
f max.	-	60	60	Mc/s
V _a max.	750	750	750	V
p _a max.	75	75	75	W

*P.E. P_{out}

To be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS - TRANSMITTING VALVES.

CLASS 'B' LINEAR AMPLIFIER FOR SINGLE SIDEBAND OPERATION

Maximum operating conditions

f	30	Mc/s	
P. E. P _{out}	120	W	
P. E. P _{load}	110	W	
**d ₃	30	dB	
**d ₅	40	dB	
V _a	600	V	
V _{g2}	250	V	
***-V _{g1}	55	V	
I _{a(o)}	100	mA	
I _{g2(o)}	3.0	mA	
	Single tone	Double tone	
I _a	328	221	mA
I _{g2}	27.5	15	mA
I _{g1}	0	0	mA
v _{in(pk)}	40	40	V
P _{load (driver)}	1.0	1.0	W
P _a	77	73	W
η_a	61	45	%

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f	60	Mc/s	
P. E. P _{out}	109	W	
P. E. P _{load}	100	W	
**d ₃	30	dB	
**d ₅	40	dB	
V _a	600	V	
V _{g2}	250	V	
***-V _{g1}	50	V	
I _{a(o)}	100	mA	
I _{g2(o)}	3.0	mA	
	Single tone	Double tone	
I _a	325	220	mA
I _{g2}	28	14	mA
I _{g1}	0.5	0.1	mA
v _{in(pk)}	50	50	V
P _{load(driver)}	1.0	1.0	W
p _a	75	72	W
η _a	51	38	%

**Maximum values encountered at any level of drive voltage referred to the amplitude of either of the two tones at that level. Third and fifth order intermodulation products.

***Adjust to give stated value of I_{a(o)}

CLASS 'C' TELEGRAPHY OR F.M. TELEPHONY

Maximum operating conditions

f	30	Mc/s
P_{out}	150	W
P_{load}	120	W
η_a	76	%
V_a	600	V
I_a	330	mA
V_{g2}	250	V
I_{g2}	28	mA
$-V_{g1}$	90	V
I_{g1}	0	mA
$P_{load(driver)}$	1.0	W
p_a	48	W
p_{g2}	7.0	W

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CLASS 'AB' AUDIO AMPLIFIER OR MODULATOR

Maximum operating conditions for two valves in push-pull

P_{out}	200	W
$\dagger D_{tot}$	≤ 2	%
R_{a-a}	2.8	k Ω
V_a	600	V
V_{g2}	250	V
$\dagger\dagger -V_{g1}$	50	V
$I_{a(o)}$	2×100	mA
$I_{g2(o)}$	2×3.0	mA
I_a (max. sig.)	2×260	mA
I_{g2} (max. sig.)	2×24	mA
I_{g1}	0	mA
$V_{in(g1-g1)}$ r. m. s.	100	V
P_a	2×56	W
η_a	64	%

\dagger Total distortion encountered at maximum output.

$\dagger\dagger$ Adjust to give the stated value of $I_{a(o)}$.

ABSOLUTE MAXIMUM RATINGS

V_a max.	750	V
V_{g2} max.	300	V
$-V_{g1}$ max.	100	V
I_k max.	360	mA
p_a max.	75	W
p_{g2} max.	7.5	W
I_{g1} max.	10	mA
R_{g1-k} max.	10	k Ω
V_{h-k} max.	100	V

CATHODE

Indirectly heated, oxide coated

	Parallel	Series	
V_h	6.3	12.6	V
I_h	2.6	1.3	A

CAPACITANCES

c_{out}	10.7	pF
c_{in}	22	pF
c_{a-g1}	0.2	pF

CHARACTERISTICS (measured at $V_a = 600V$, $V_{g2} = 250V$ and $I_a = 100mA$)

g_m	35	mA/V
μ_{g1-g2}	4.7	

MOUNTING POSITION

Vertical or horizontal with plane of anodes vertical.

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COOLING

Radiation and convection

Maximum temperatures

Bulb	350	°C
Anode seal	220	°C
Base pin seals	180	°C

PHYSICAL DATA

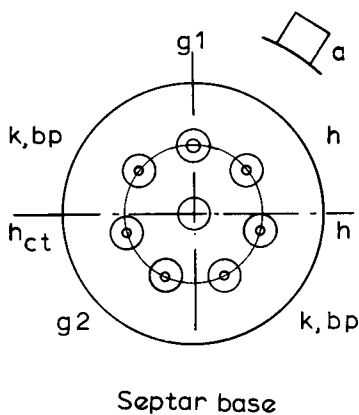
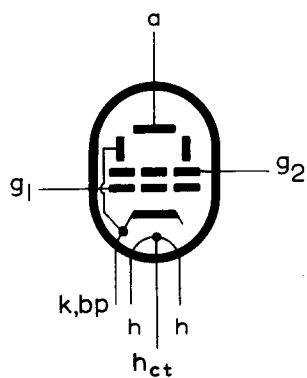
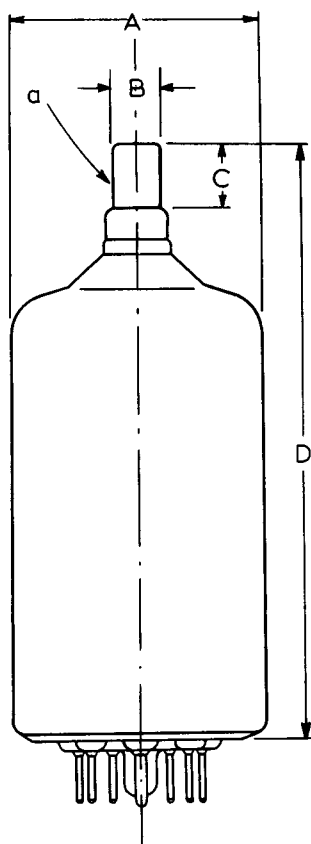
Weight of valve	oz	g
	3.9	110

ACCESSORIES

Socket	40202
Anode connector	40624

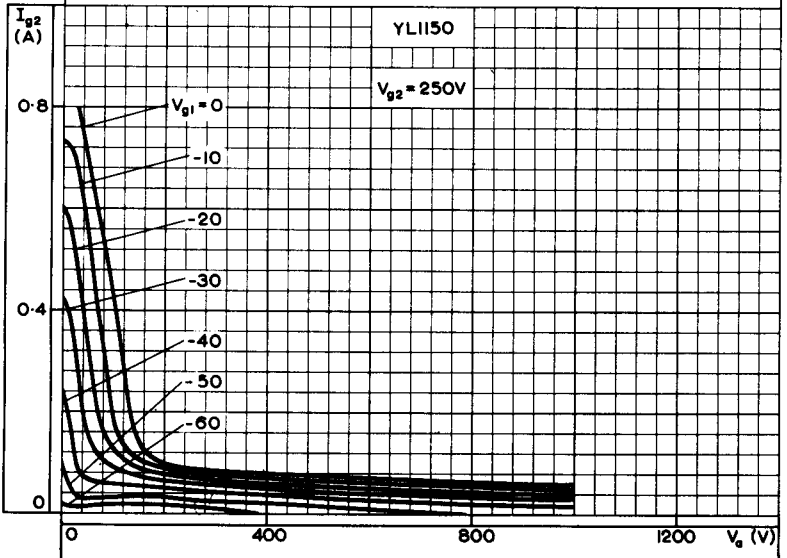
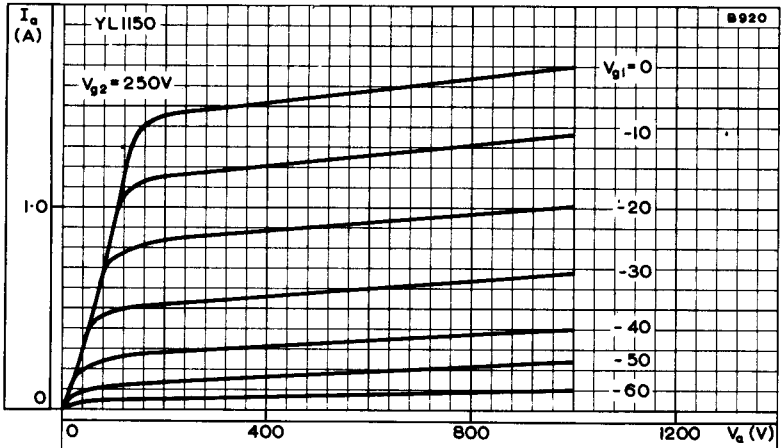
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Dimensions		
	Inches	Millimetres
A	2.047	52 max
B	0.358	9.1
C	0.472	12 min
D	4.646	120



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ANODE AND SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER $V_{g2} = 250V$

TENTATIVE DATA

QUICK REFERENCE DATA			
Beam power tetrode primarily intended for use as a linear v.h.f. amplifier in single sideband transmitters.			
	Linear Amplifier for S.S.B. Operation, Class 'AB'	A.F. Amplifier and Modulator, Class 'AB'	
f	30	-	Mc/s
P_{out}	124 (P.E.P.)	2 x 100	W
$f_{max.}$	60	-	Mc/s
$V_a_{max.}$	750	750	V
$p_a_{max.}$	75	75	W

To be read in conjunction with
GENERAL OPERATIONAL RECOMMENDATIONS - TRANSMITTING VALVES

AUDIO AMPLIFIER AND MODULATOR, CLASS 'AB' (Two valves in push-pull)

OPERATING CONDITIONS

P_{out}	200	W
* D_{tot}	≤ 2	%
R_{a-a}	2.8	kΩ
V_a	600	V
V_{g2}	250	V
** $-V_{g1}$	50	V
$I_{a(o)}$	2 x 100	mA
$I_{g2(o)}$	2 x 3.0	mA
$I_a(max. sig.)$	2 x 260	mA
$I_{g2(max. sig.)}$	2 x 24	mA
I_{g1}	0	mA
$V_{in(g1-g1)r.m.s.}$	71	V ←
P_a	2 x 56	W
P_{g2}	2 x 6.0	W ←
η_a	64	%

*Total distortion encountered at maximum output.

**Adjust to give the desired value of $I_{a(o)}$.

LINEAR AMPLIFIER FOR SINGLE SIDEBAND OPERATION, CLASS 'AB'

OPERATING CONDITIONS

f	30	Mc/s	
P. E. P _{out}	124	W	
P. E. P _{load}	110	W	
*d ₃	33	dB	
*d ₅	40	dB	
V _a	600	V	
V _{g2}	250	V	
** -V _{g1}	50	V	
I _{a(o)}	100	mA	
I _{g2(o)}	3.0	mA	
	Single Tone	Double Tone	
I _a	325	220	mA
I _{g2}	22	12	mA
I _{g1}	0	0	mA
v _{in(pk)}	50	50	V
P _{load(driver)}	2.0	2.0	W
P _g	71	70	W
P _{g2}	7.0	3.5	W
η _a	57	42	%

*Third and fifth order intermodulation products. Maximum values encountered at any level of drive voltage referred to the amplitude of either of the two tones at that level.

Relative to the peak envelope power these figures will be increased by 6dB.

**Adjust to give the desired value of I_{a(o)}.

CATHODE

Indirectly heated, oxide coated

	Parallel	Series	
V _h	6.3	12.6	V
I _h	1.62	0.81	A ←
t _{h-k} min.	30		s ←

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RATINGS (ABSOLUTE MAXIMUM SYSTEM)

	S.S.B. Class 'AB'	A.F. Amplifier Class 'AB'	
f max.	60	-	Mc/s
V _a max.	750	750	V
V _{g2} max.	300	300	V
-V _{g1} max.	100	100	V
I _a max.	350	350	mA
p _a max.	75	75	W
p _{g2} max.	7.5	7.5	W
I _{g1} max.	10	10	mA
p _{g1} max.	0.5	0.5	W
R _{g1-k} max.	10	10	kΩ

CAPACITANCES

c _{a-g1}	0.2	pF
c _{out}	10.7	pF
c _{in}	22	pF

CHARACTERISTICS

g _m (at V _a = 600V, V _{g2} = 250V, I _a = 100mA)	10	mA/V ←
μ _{g1-g2} (at V _a = 600V, V _{g2} = 250V, I _a = 0.1A)	4.7	

MOUNTING POSITION

Any

COOLING

Radiation and convection cooling

Maximum temperatures

Bulb	350	°C
Base pin seal	180	°C
Anode seal	220	°C

PHYSICAL DATA

	oz	g
Weight of valve	3.9	110

ACCESSORIES

Socket

40202

Anode connector

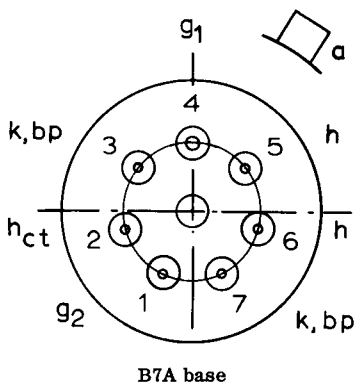
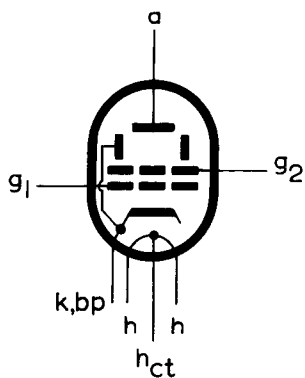
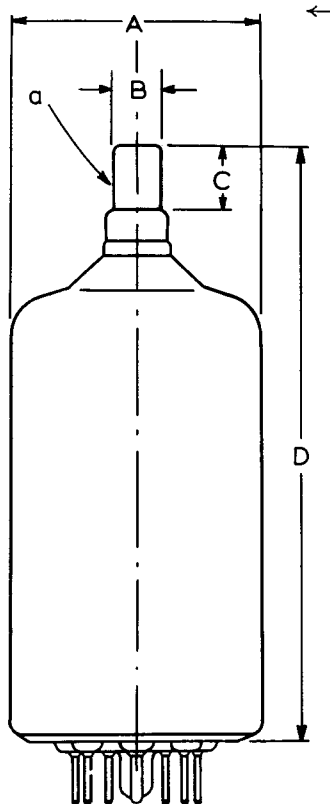
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DIMENSIONS

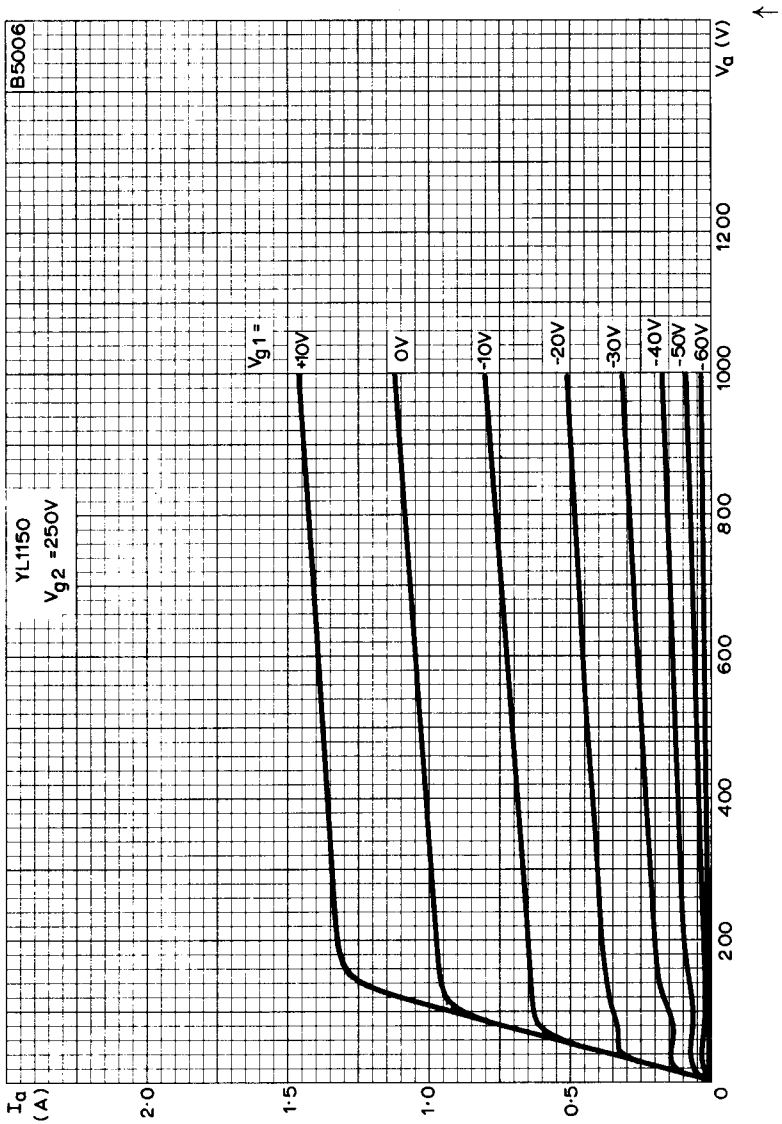
	Inches	Millimetres
A	1.97	50
B	0.358	9.1
C	0.51	13
D	4.65	120

Inch dimensions derived from original millimetre dimensions.

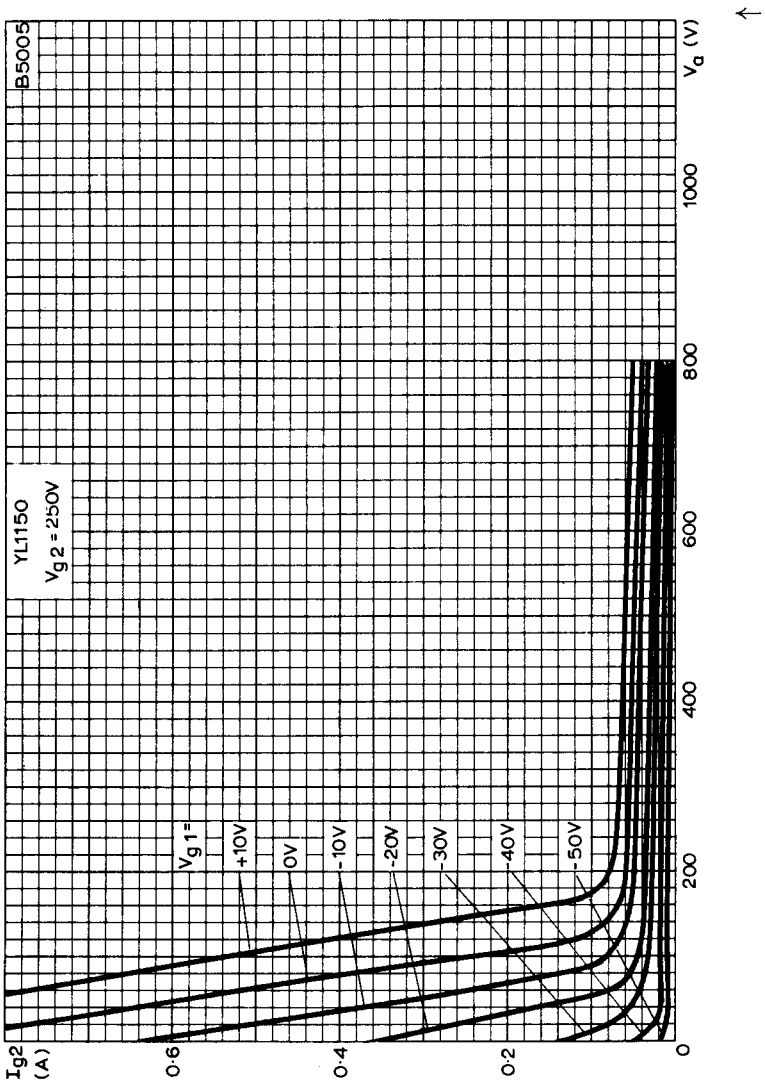


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ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH
CONTROL-GRID VOLTAGE AS PARAMETER. $V_{g2} = 250V$



SCREEN-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. $V_{g2} = 250V$