

TENTATIVE DATA

QUICK REFERENCE DATA

Beam power tetrodes intended for use as r.f. power amplifiers in transmitters, oscillators and frequency multipliers at frequencies up to 2000Mc/s.

YL1101 is similar to YL1100 except for heater ratings.

YL1102 and YL1103 are conduction-cooled versions of YL1100 and YL1101 respectively.

	Linear Amplifier for Television Service, Class 'AB ₁ '	Telephony, Anode and Screen Grid Modulation Class 'C'	Telegraphy or F.M. Telephony, Class 'C'		
f	790	400	400	1200	Mc/s
P _{load}	13	45	80	40	W
f max.	1200	1200	1200		Mc/s
V _a max.	1000	800	1000		V
p _a max.	115	75	115		W

Unless otherwise shown, data is applicable to all types

To be read in conjunction with

GENERAL OPERATIONAL RECOMMENDATIONS - TRANSMITTING VALVES

TELEGRAPHY OR F.M. TELEPHONY, CLASS 'C'

OPERATING CONDITIONS

	Grid Drive		Cathode Drive	
f	400	1200	1200	Mc/s
P _{out}	90	45	45	W
P _{load}	80	40	42*	W
η_a	68	29	29	%
V _a	900	900	900	V
I _a	170	170	170	mA
V _{g2}	300**	300**	300	V
I _{g2}	1.0	1.0	3.2	mA
-V _{g1}	30	22	31	V
I _{g1}	10	4.0	3.4	mA
P _{load(driver)}	3.0	5.0	8.0	W
P _a	43	108	108	W
P _{g2}	0.3	0.3	1.0	W

*Includes power transferred from driver stage.

**Fixed supply or supply derived from the anode supply by means of a voltage divider.

TELEPHONY, ANODE AND SCREEN-GRID MODULATION, CLASS 'C'

OPERATING CONDITIONS (Carrier conditions for 100% modulation)

f	400	Mc/s
P _{out}	50	W
P _{load}	45	W
η_a	54	%
V _a	700	V
I _a	130	mA
V _{g2}	250	V
I _{g2}	10	mA
-V _{g1}	50	V
I _{g1}	10	mA
P _{load(driver)}	3.0	W
P _a	41	W
P _{g2}	2.5	W

For 100% modulation

P _{mod}	93	W
v _{g2(pk)}	150	V

LINEAR AMPLIFIER FOR TELEVISION SERVICE, CLASS 'AB₁'

Sound and vision

OPERATING CONDITIONS for valve in common grid circuit

f	790	Mc/s
Bandwidth (-1dB)	8.0	Mc/s
$P_{load(pk)}$	13	W
*Intermodulation products	-52	dB
V_{a-g1}	800	V
V_{g2-g1}	365	V
** V_{k-g1}	+15	V
$I_{a(o)}$	125	mA
$I_{a(max.sig.)}$	152	mA
I_{g2}	7.0	mA
I_{g1}	0	mA
$\dagger P_{load(driver)pk}$	1.3	W

*The intermodulation product in the passband of the output signal is measured with reference to peak envelope output.

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

$\dagger$ The driver signal consists of three independent r.f. signal voltages.

i.e. Picture carrier	- 8dB	} with respect to the sum signal amplitude of the composite signal.
Sideband signal	- 17dB	
Sound carrier	- 7dB	

CATHODE

Indirectly heated, a.c. or d.c., oxide coated.

	YL1100 YL1102	YL1101 YL1103	
V_h	26.5	6.3	V
I_h	0.52	2.1	A
$t_{h-k} \text{ min.}$	60	60	s

The heater voltage must be reduced depending on the operating conditions and the frequency

RATINGS (ABSOLUTE MAXIMUM SYSTEM)

	Television Class 'AB ₁ '	Telegraphy Class 'C'	Telephony Class 'C'	
f max.	1200	1200	1200	Mc/s
V _a max.	1000	1000	800	V
V _{g2} max.	300	300	300	V
-V _{g1} max.	100	100	100	V
I _a max.	180	180	150	mA
p _a max.	115	115	75	W
p _{g2} max.	4.5	4.5	3.0	W
I _{g1} max.	-	30	30	mA
R _{g1-k} max.	30	30	30	kΩ

CAPACITANCES

^c _{a-g1}	<0.065	pF
^c _{g1-k+h}	14	pF
^c _{a-k+h}	<0.015	pF
^c _{g2-g1}	19	pF
^c _{a-g2}	4.4	pF
^c _{g2-k+h}	<0.4	pF

CHARACTERISTICS (measured at V_a = 1.0kV, V_{g2} = 250V, I_a = 100mA)

g _m	16	mA/V
μ _{g1-g2}	18	

MOUNTING POSITION

Any

COOLING

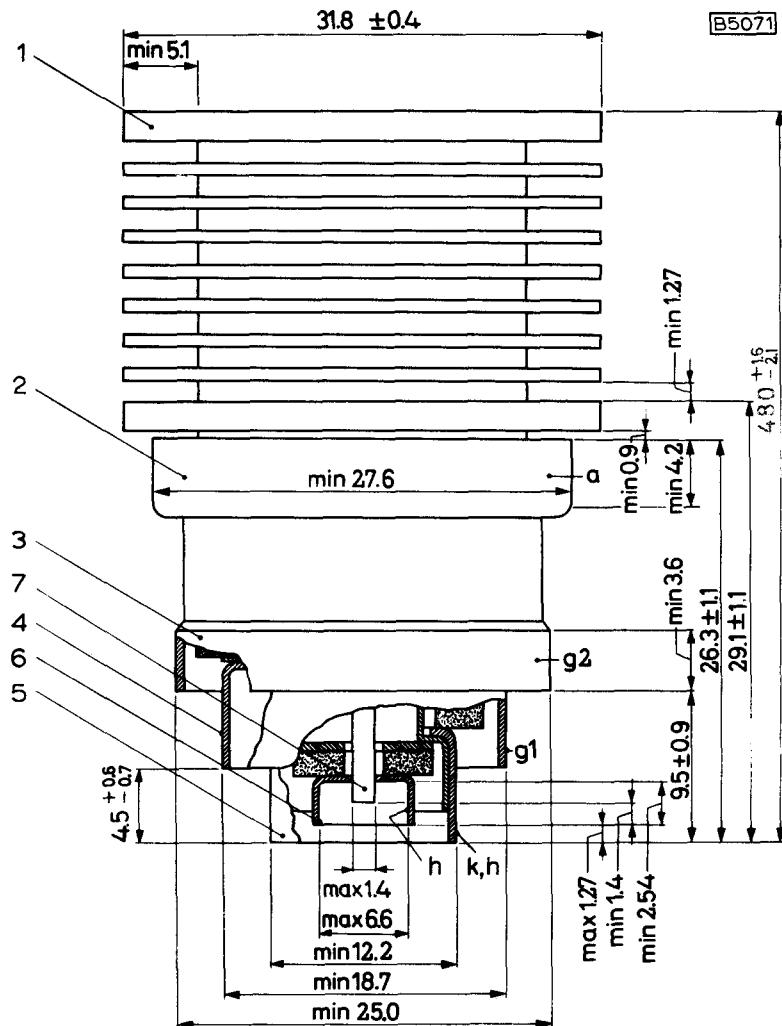
YL1100 and YL1101 - Forced-air cooling for radiator and seals.
YL1102 and YL1103 - Heat sink cooling.

Maximum temperature of anode and all seals	250	°C
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PHYSICAL DATA

	oz	g
Weight of valve	2.0	60

OUTLINE DRAWING OF YL1100 AND YL1101

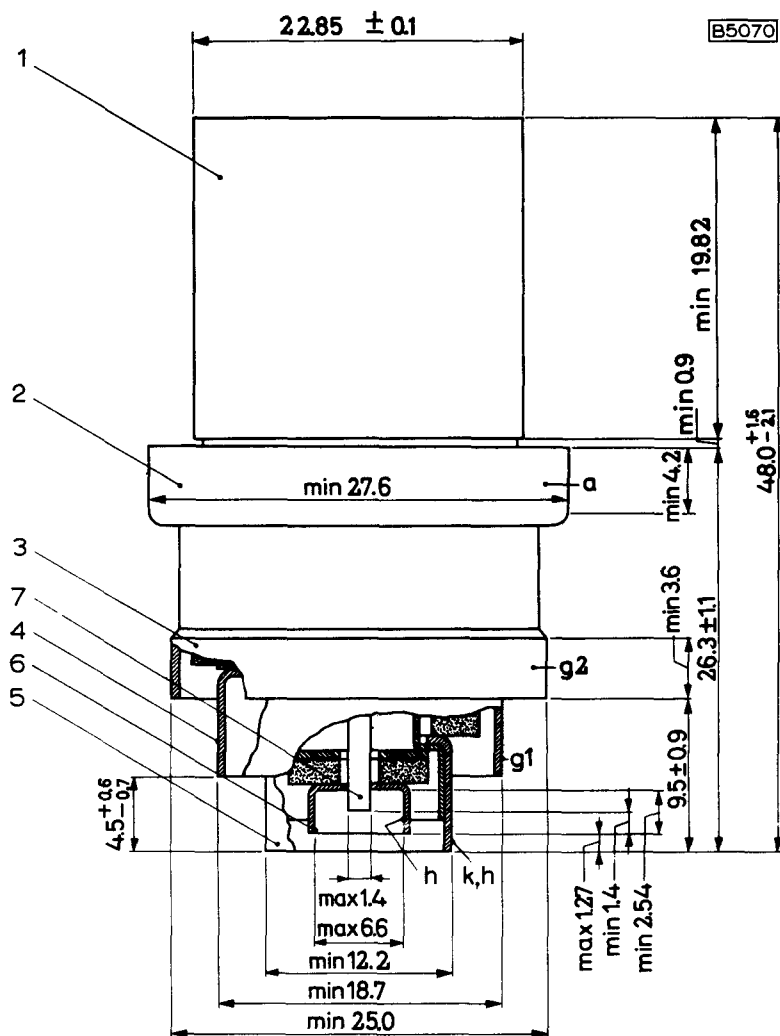


Radiator and terminals lie inside or outside concentric cylinders:

- | | | | |
|----------------------------|--------------|---------------------|--------------|
| 1. Radiator | i.d. 33.40mm | 5. Cathode terminal | i.d. 13.16mm |
| 2. Anode terminal | i.d. 28.40mm | 6. Heater terminals | o.d. 6.07mm |
| 3. g ₂ terminal | i.d. 25.86mm | 7. Heater terminals | i.d. 1.78mm |
| 4. g ₁ terminal | i.d. 19.38mm | | |

All dimensions in mm

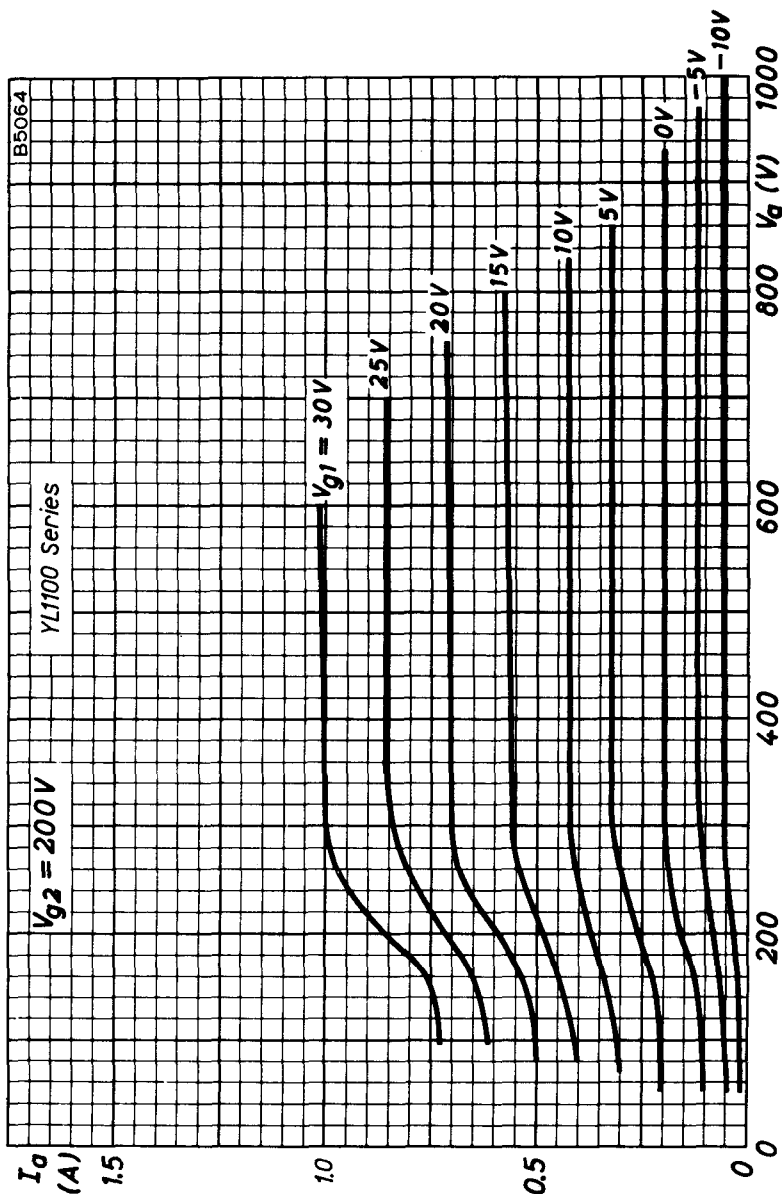
OUTLINE DRAWING OF YL1102 AND YL1103



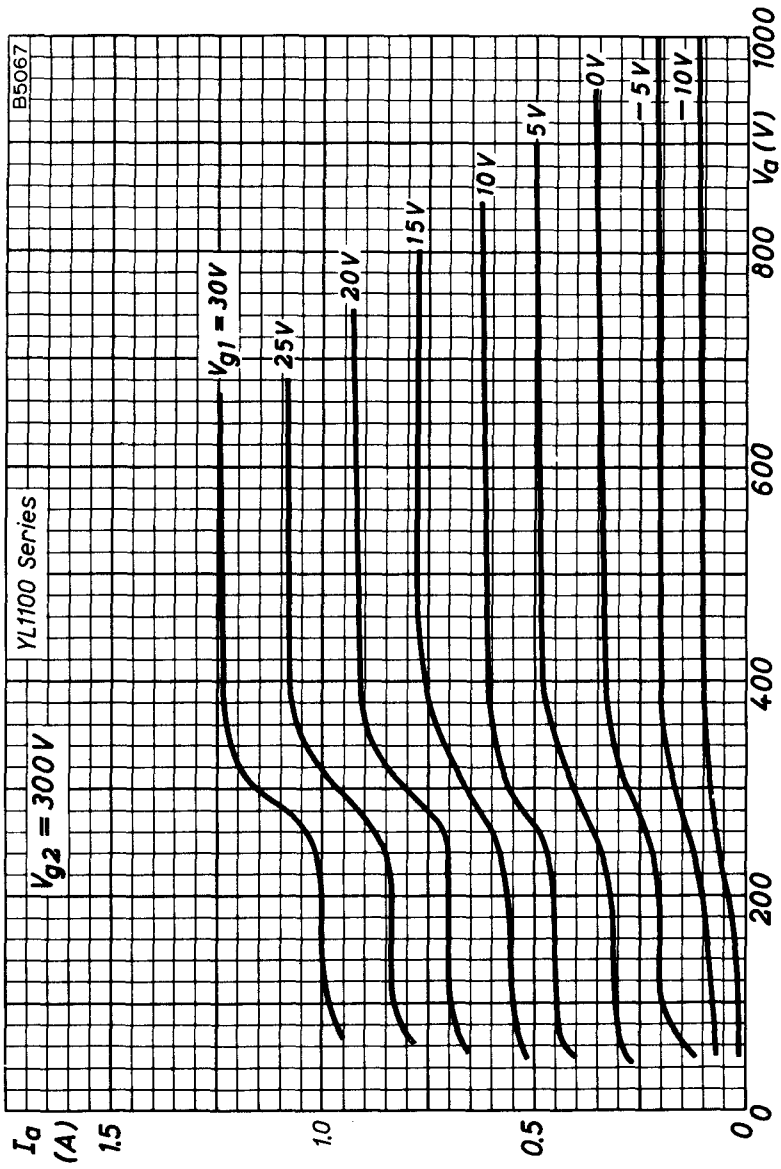
Cooling cylinder and terminals lie inside or outside concentric cylinders:

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|---------------------|--------------|---------------------|--------------|
| 1. Cooling cylinder | i.d. 24.15mm | 5. Cathode terminal | i.d. 13.16mm |
| 2. Anode terminal | i.d. 28.40mm | 6. Heater terminals | o.d. 6.07mm |
| 3. g_2 terminal | i.d. 25.86mm | 7. Heater terminals | i.d. 1.78mm |
| 4. g_1 terminal | i.d. 19.38mm | | |

All dimensions in mm



ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH
CONTROL-GRID VOLTAGE AS PARAMETER. $V_{g2} = 200V$

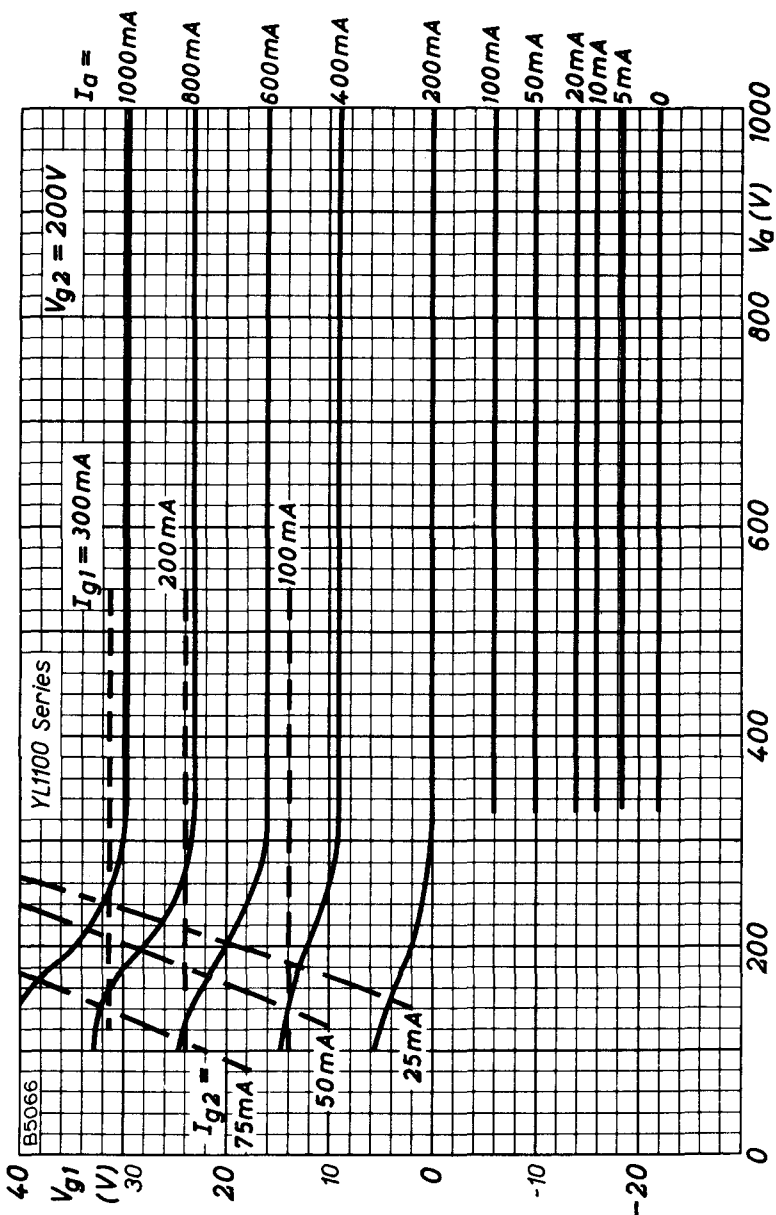


ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH
CONTROL-GRID VOLTAGE AS PARAMETER, $V_{g2} = 300V$



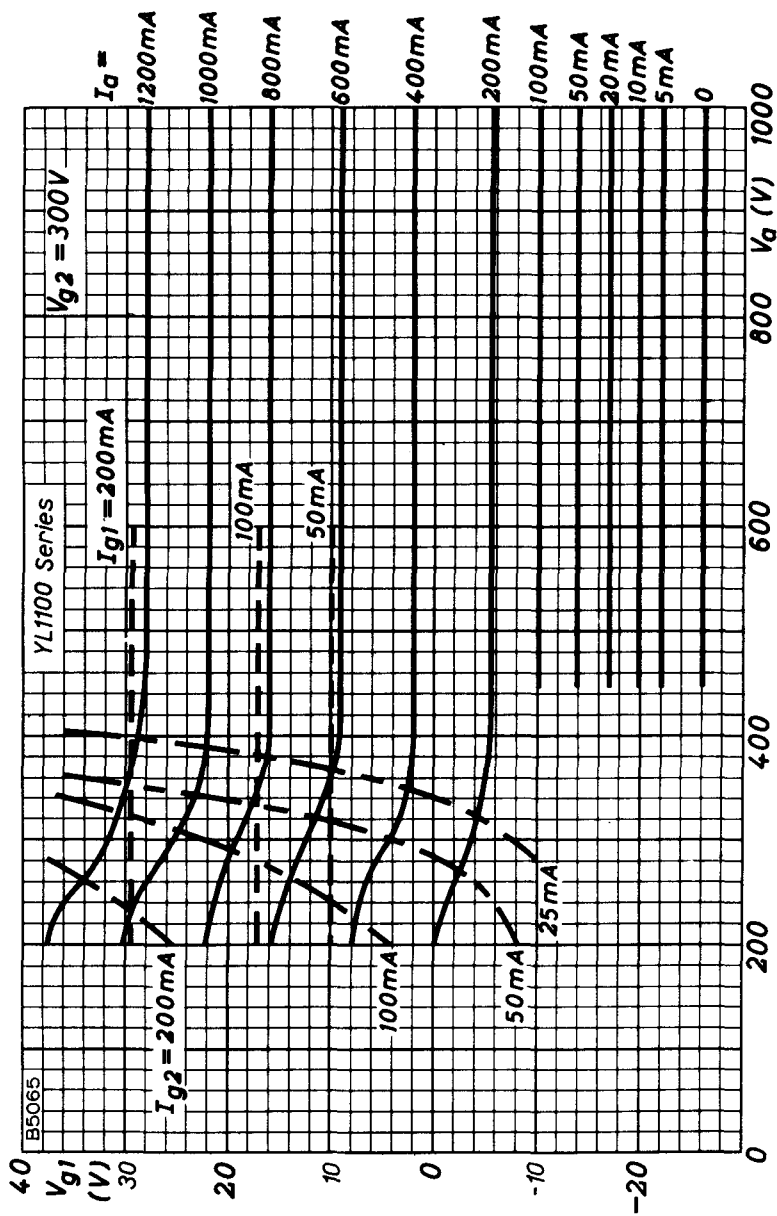
U.H.F. BEAM
POWER TETRODES

YL1100 YL1102
YL1101 YL1103



CONSTANT CURRENT CHARACTERISTICS. $V_{g2} = 200V$

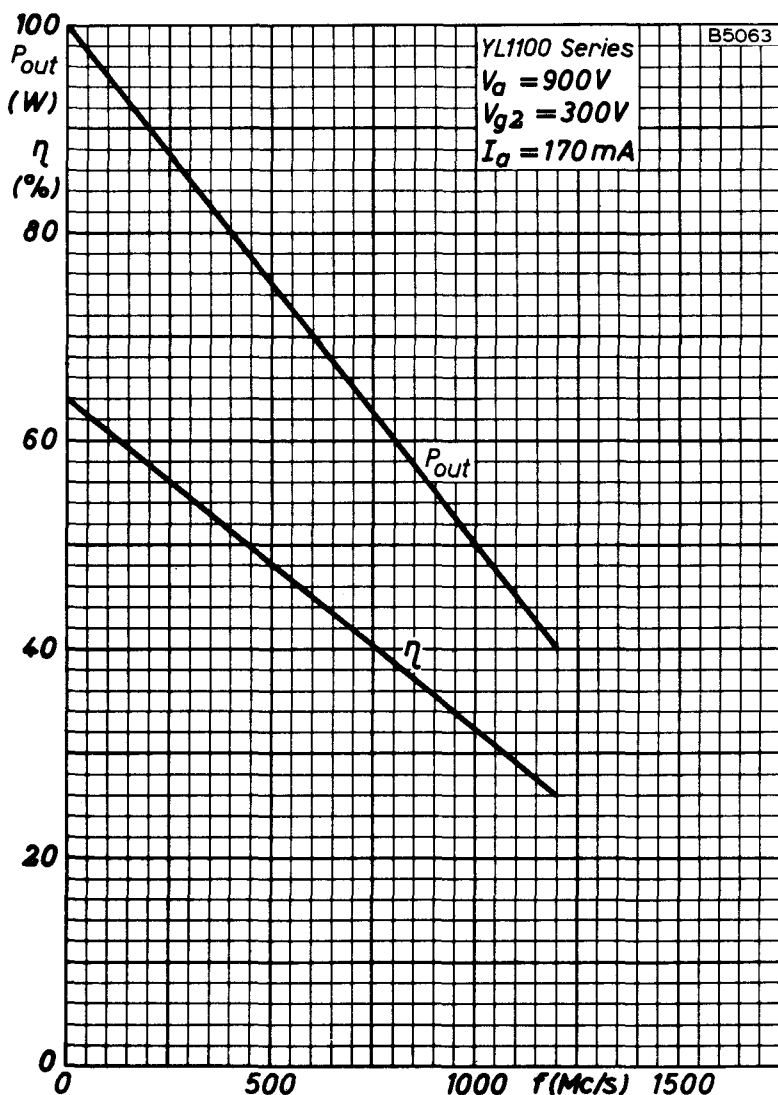




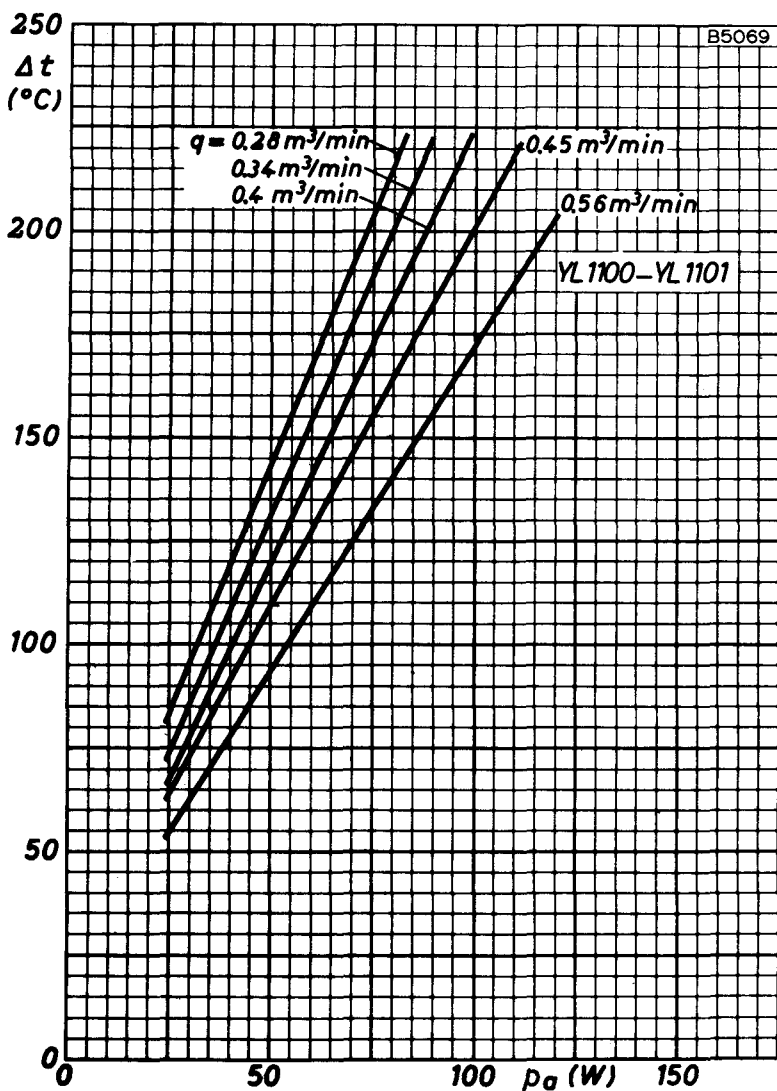
CONSTANT CURRENT CHARACTERISTICS, $V_{g2} = 300V$

U.H.F. BEAM POWER TETRODES

YL1100 YL1102
YL1101 YL1103

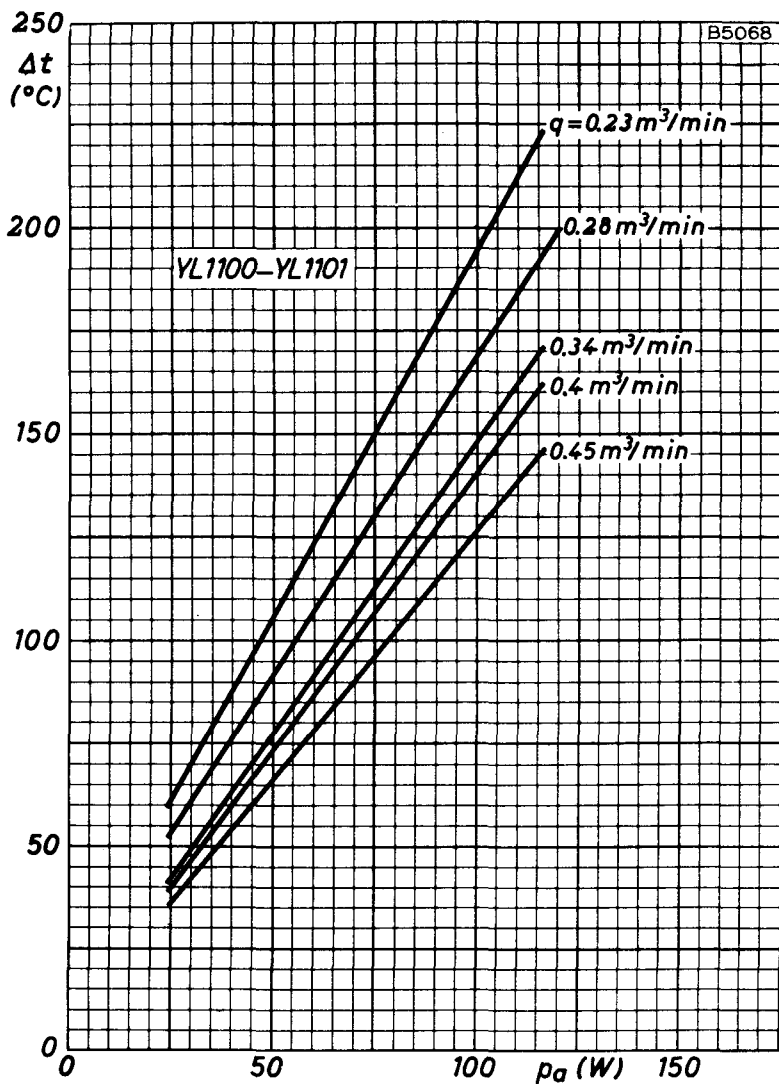


FREQUENCY CHARACTERISTICS FOR CLASS 'C' TELEGRAPHY
 OPERATING CONDITIONS $V_a = 900V$, $V_{g2} = 300V$, $I_a = 170mA$



Difference of temperature ($\Delta t = t_{\text{anode terminal}} - t_{\text{incoming air}}$) plotted against anode dissipation with rate of air flow as parameter. Air duct of 25 x 38mm. Distance between air duct opening and radiator is 32mm.

(To convert cubic metres to cubic feet multiply by 35.31)



Difference of temperature ($\Delta t = t_{\text{anode terminal}} - t_{\text{incoming air}}$) plotted against anode dissipation with rate of air flow as parameter. Radiator in air duct of 25 x 38mm.

(To convert cubic metres to cubic feet multiply by 35.31)