QUICK HEATING DOUBLE TETRODE for use as output tube, frequency multiplier or modulator. The tube has been designed for intermittent filament service in transistorized mobile equipment

FILAMENT: oxide coated

HEATING: direct; parallel supply

Filament voltage	V_f = 3.15 V ± 10 %
Filament current	I_f = 1.65 A

Cathode heating time for obtaining an output power of more than 70 % of the ultimate power T_h = max. 1 sec.
It is recommended that the filament be fed from a D.C.-A.C. converter

TYPICAL CHARACTERISTICS

Anode voltage	V_a	= 200 V
Grid No.2 voltage	V_{g_2}	= 200 V
Anode current	I_a	= 30 mA
Mutual conductance	S	= 3.2 mA/V
Amplification factor of grid No.1 with respect to grid No.2	$\mu_{g_2g_1}$	= 7.5

INTERMITTENT SERVICE

Freq.	C telegr. [1] FM teleph.		Tripler - doubler	
(Mc/s)	V_a(V)	W_l(W) [2]	V_a(V)	W_l(W) [3]
200	250	11		
	200	9.5		
27.5/165			250	1.25
			200	1.0

[1]) Two systems in push-pull

[2]) Output power in the load according to circuit diagram page 3

[3]) Output power in the load according to circuit diagram page 4

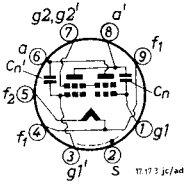
PHILIPS

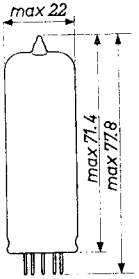
CAPACITANCES (without external shield)

Anode to all other elements except grid No.1	C_a	$= C_a'$	= 3.2 pF
Grid No.1 to all other elements except anode	C_{g_1}	$= C_{g_1}'$	= 6.8 pF
Grid No.1 to anode	C_{ag_1}	$= C_{ag_1}'$	< 0.1 pF
Anode of one system to grid No.1 of the other system	C_{ag_1}'	$= C_{ag_1}'$	< 0.13 pF
Between the grids No.1	$C_{g_1g_1}'$		= 1.9 pF
Between the anodes	C_{aa}'		= 0.09 pF

The tube has been internally neutralized up to 200 Mc/s

Dimensions in mm





Base: NOVAL

ACCESSORIES

Socket	B8 700 19
Tube retainer	40647

MOUNTING POSITION

If the tube is mounted with its main axis deviating from the vertical, it is recommended that the pins 2 and 7 be placed in a vertical plane

COOLING: radiation and convection

The use of a closed tube shield is not allowed

TEMPERATURE LIMITS (Absolute limits)

Bulb temperature = max. 225 °C

Pin temperature = max. 120 °C

NET WEIGHT: 16 g Shipping weight: 23 g

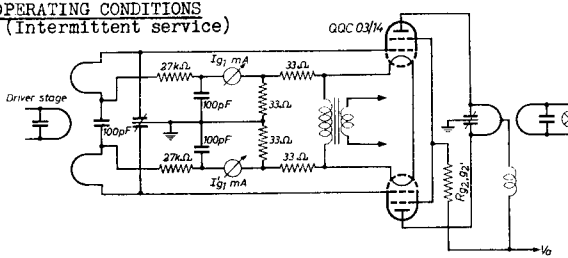
REMARK. The filament voltage should be switched on during the whole conversation period. Interrupting the filament voltage during this period is not recommended.

H.F. class C telegraphy or F.M. telephony; two systems in push-pull

LIMITING VALUES (Intermittent service; absolute limits)

		f up to 200 Mc/s
Frequency		
Anode voltage	$V_a = V_a'$ = max.	300 V
Anode dissipation	$W_a = W_a'$ = max.	7 W
Anode current	$I_a = I_a'$ = max.	55 mA
Grids No.2 voltage	$V_{g_2,g_2'}$ = max.	200 V
Grids No.2 dissipation	$W_{g_2,g_2'}$ = max.	2x1 W
Negative grid No.1 voltage	$-V_{g_1}=-V_{g_1'}$ = max.	150 V
Grid No.1 dissipation	$W_{g_1}= W_{g_1'}$ = max.	0.2 W
Grid No.1 current	$I_{g_1}= I_{g_1'}$ = max.	4 mA
Grid No.1 circuit resistance	$R_{g_1}= R_{g_1'}$ = max.	100 kΩ
Cathode current	I_k = max.	2x65 mA
Peak cathode current	I_{kp} = max.	2x300 mA

OPERATING CONDITIONS
(Intermittent service)



Frequency	f =	200	200	Mc/s
Anode voltage	$V_a = V_a'$ =	250	200	V
Grids No.2 supply voltage	$V_{bg_2,g_2'}$ =	250	200	V
Grids No.2 resistor	$R_{g_2,g_2'}$ =	22	6.8	kΩ
Anode current	$I_a = I_a'$ =	45	45	mA
Grids No.2 current	$I_{g_2,g_2'}$ =	4.2	5.1	mA
Grid No.1 current	$I_{g_1}=I_{g_1'}$ =	1.5	1.5	mA
Anode input power	$W_{i_a}=W_{i_a'}$ =	11.2	9.0	W
Anode dissipation	$W_a = W_a'$ =	4.5	3.5	W
Grids No.2 dissipation	$W_{g_2,g_2'}$ =	0.65	0.85	W
Output power	W_ℓ =	11	9.5	W [1]

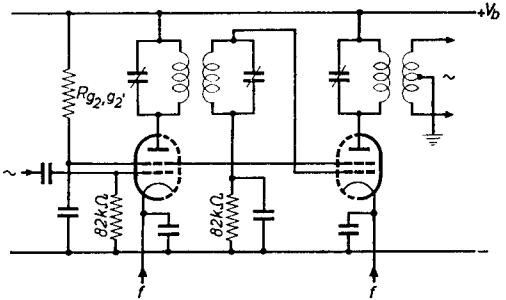
[1]) Useful power in the load

H.F. class C frequency tripler and doubler (one system as tripler and one system as doubler)

LIMITING VALUES (Intermittent service; absolute limits)

		f up to 200 Mc/s	
Frequency			
Anode voltage	$V_a = V_a'$	= max.	300 V
Anode dissipation	$W_a = W_a'$	= max.	7 W
Anode current	$I_a = I_a'$	= max.	45 mA
Grids No.2 voltage	$V_{g_2,g_2'}$	= max.	200 V
Grids No.2 dissipation	$W_{g_2,g_2'}$	= max.	2x1 W
Grid No.1 current	$I_{g_1} = I_{g_1'}$	= max.	3 mA
Grid No.1 circuit resistance	$R_{g_1} = R_{g_1'}$	= max.	100 kΩ
Cathode current	I_k	= max.	2x50 mA
Peak cathode current	I_{kp}	= max.	2x300 mA

OPERATING CONDITIONS (Intermittent service)



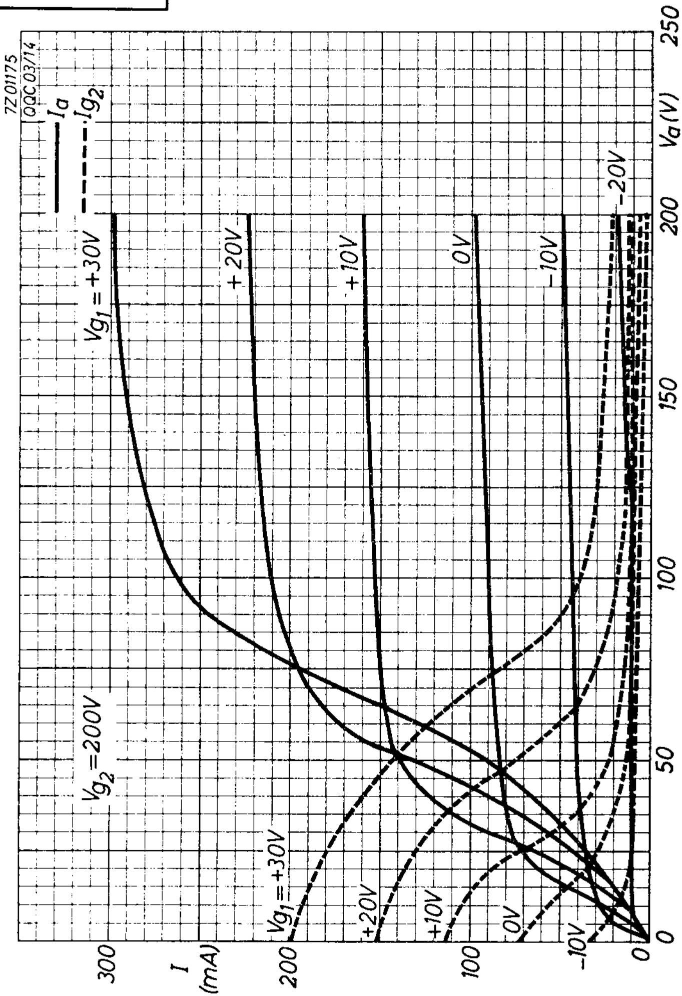
For data see page 5.

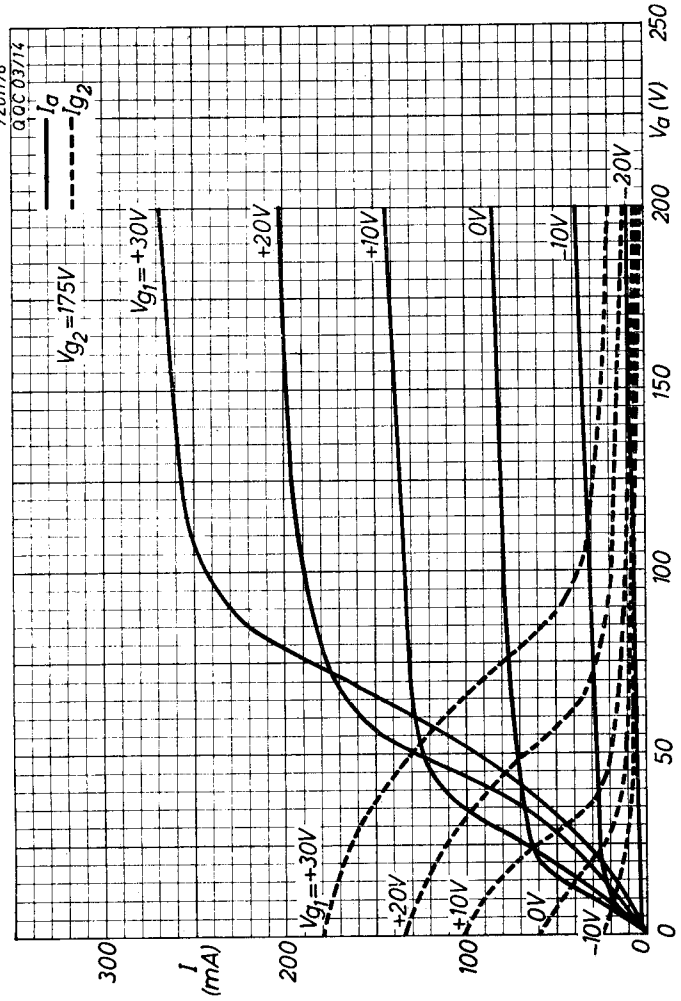
OPERATING CONDITIONS as frequency tripler and doubler; intermittent service (continued)

			Tripler		Doubler	
Frequency	f	=	27.5/82.5		82.5/165	Mc/s
Anode voltage	$V_a = V_a'$	=	250		250	V
Grids No.2 supply voltage	$V_{bg_2,g_2'}$	=		250		V
Grids No.2 resistor	$R_{g_2,g_2'}$	=		39		kΩ
Anode current	$I_a = I_a'$	=	20		20	mA
Grids No.2 current	$I_{g_2,g_2'}$	=		4.0		mA
Grid No.1 current	$I_{g_1} = I_{g_1'}$	=	0.75		1.25	mA
Anode input power	$W_{ia} = W_{ia'}$	=	5.0		5.0	W
Anode dissipation	$W_a = W_a'$	=	3.5		3.0	W
Grids No.2 dissipation	$W_{g_2,g_2'}$	=		0.38		W
Output power	W_o	=	1.5		2.0	W
Efficiency	η	=	30		40	%
Output power	W_ℓ	=	1.25		1.25	W [1]

			Tripler		Doubler	
Frequency	f	=	27.5/82.5		82.5/165	Mc/s
Anode voltage	$V_a = V_a'$	=	200		200	V
Grids No.2 supply voltage	$V_{bg_2,g_2'}$	=		200		V
Grids No.2 resistor	$R_{g_2,g_2'}$	=		22		kΩ
Anode current	$I_a = I_a'$	=	20		20	mA
Grids No.2 current	$I_{g_2,g_2'}$	=		4.0		mA
Grid No.1 current	$I_{g_1} = I_{g_1'}$	=	0.75		1.25	mA
Anode input power	$W_{ia} = W_{ia'}$	=	4.0		4.0	W
Anode dissipation	$W_a = W_a'$	=	2.8		2.4	W
Grids No.2 dissipation	$W_{g_2,g_2'}$			0.45		W
Output power	W_o	=	1.2		1.6	W
Efficiency	η	=	30		40	%
Output power	W_ℓ	=	1.0		1.0	W [1]

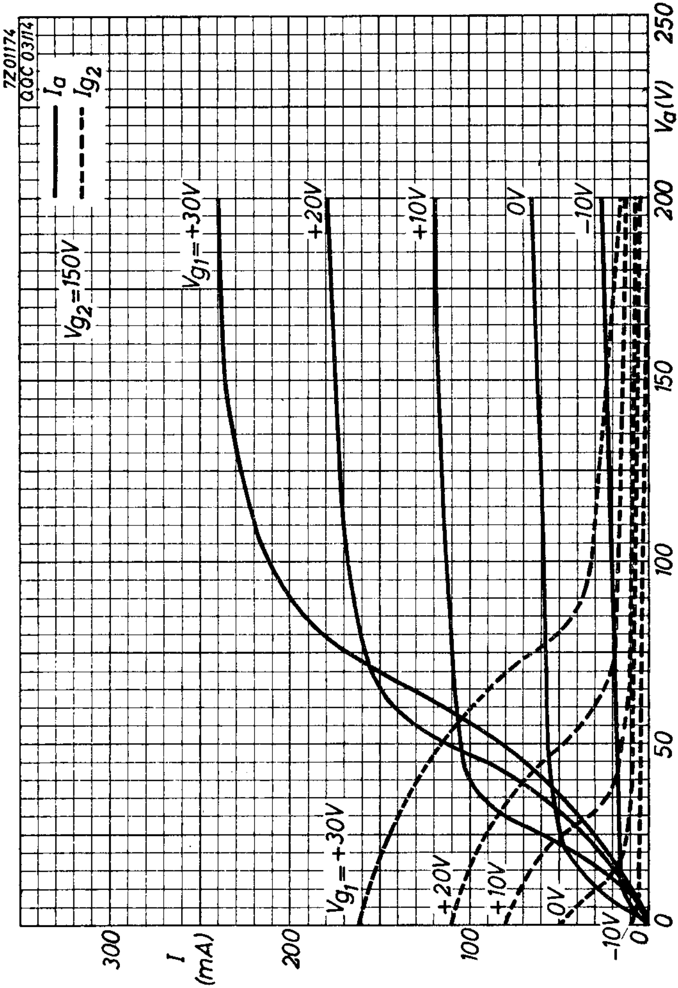
[1]) Useful power in the load


7Z01175
QQC03/14
Ia
Ig2
Vg1 = +30V
+20V
+10V
0V
-10V
-20V
Vg2 = 200V
Vg1 = +30V
+20V
+10V
0V
-10V
I (mA)
300
200
100
0
Va (V)
0
50
100
150
200
250


7Z01176
QQC03/14
I_a
I_{g_2}
V_{g_2}=175V
V_{g_1}=+30V
+20V
+10V
0V
-10V
-20V
V_a (V)
I (mA)
300
200
100
0
50
100
150
200
250

QQC03/14

PHILIPS



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PHILIPS

Electronic Tube

HANDBOOK

QQC03/14

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5	5	1962.12.12
6	A	1962.12.12
7	B	1962.12.12
8	C	1962.12.12
9	FP	2000.01.15