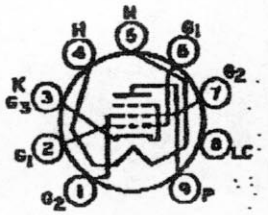
7868 POWER PENTODE

Novar type used in output stages of high-fidelity audio amplifiers and radio receivers. Outlines section, 11C or 30D; requires novar 9-contact socket. This tube, like other power-handling tubes, should be adequately ventilated.



9RW

Heater Voltage (ac/dc)	6.3	volts
Heater Current	0.8	ampere
Heater-Cathode Voltage:		
Peak value	±200 max	volts
Average value	100 max	volts
Direct Interelectrode Capacitances (Approx.):		
Grid No.1 to Plate	0.15	pF
Grid No.1 to Cathode, Heater, Grid No.2, and Grid No.3	11	pF
Plate to Cathode, Heater, Grid No.2, and Grid No.3	4.4	pF

Class A_1 Amplifier

MAXIMUM RATINGS (Design-Maximum Values)

Plate Voltage	550	volts
Grid-No.2 (Screen-Grid) Voltage	440	volts
Average Cathode Current	90	mA
Plate Dissipation	19	watts
Grid-No.2 Input	3.3*	watts
Bulb Temperature (At hottest point)	240	°C

RCA RECEIVING TUBE MANUAL

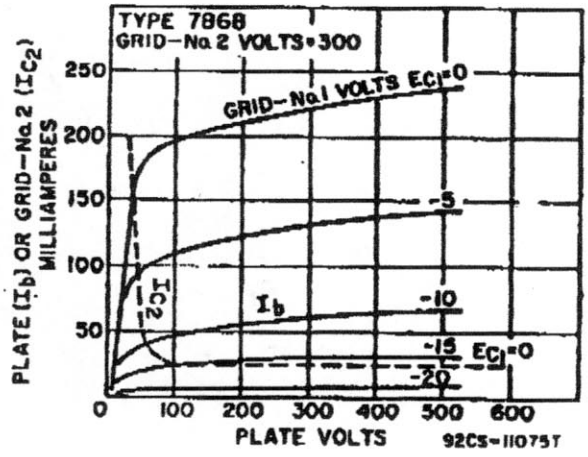
Peak AF Grid-No.1-to-Grid-No.1 Voltage	41	42	volts
Zero-Signal Plate Current	60	88	mA
Maximum-Signal Plate Current	115	100	mA
Zero-Signal Grid-No.2 Current	8	12	mA
Maximum-Signal Grid-No.2 Current	18	16	mA
Effective Load Resistance (Plate-to-plate)	6600	6600	ohms
Total Harmonic Distortion	2.5	3.5	per cent
Maximum-Signal Power Output	23	21	watts

* Grid No.2 supply voltage is obtained from taps on the primary winding of the output transformer. The taps are located on each side of the center tap (B+) so as to apply 50 per cent of the plate signal voltage to the grid No.2 of each output tube.

TECHNICAL DATA

TYPICAL OPERATION AND CHARACTERISTICS

Plate Supply Voltage	300	volts
Grid-No.2 Voltage	300	volts
Grid-No.1 (Control-Grid) Voltage	—10	volts
Peak AF Grid-No.1 Voltage	10	volts
Zero-Signal Plate Current	60	mA
Maximum-Signal Plate Current	75	mA
Zero-Signal Grid-No.2 Current	8	mA
Maximum-Signal Grid-No.2 Current	15	mA
Plate Resistance (Approx.)	20000	ohms
Transconductance	10200	μmhos
Effective Load Resistance	3000	ohms
Total Harmonic Distortion	13	per cent
Maximum-Signal Power Output	11	watts



MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance:

For fixed-bias operation	0.5	megohm
For cathode-bias operation	1	megohm

• In push-pull circuits where the grid No.2 of each tube is connected to a tap on the plate winding of the output transformer, this maximum rating is 110 volts.

••Grid No.2 input may reach 6 watts during peak levels of speech and music signals.

Push-Pull Class AB$_1$ Amplifier

MAXIMUM RATINGS (Same as for class A$_1$ amplifier)

TYPICAL OPERATION (Values are for two tubes)

	Fixed Bias					Cathode Bias	
Plate Supply Voltage	300	350	400	450	150	150	volts
Grid-No.2 Supply Voltage	300	350	350	350	400	400	volts
Grid-No.1 Voltage	-17.5	-15.5	-16	-16.5	-21	-	volts
Cathode-Bias Resistor (Common to both cathodes)	-	-	-	-	-	170	ohms
Peak AF Grid-No.1-to-Grid-No.1 Voltage	35	31	32	33	42	31	volts
Zero-Signal Plate Current	64	72	64	60	40	56	mA
Maximum-Signal Plate Current	116	130	135	142	145	94	mA
Zero-Signal Grid-No.2 Current	10	9.5	8	7.2	5	10	mA
Maximum-Signal Grid-No.2 Current	28	32	28	26	30	20	mA
Effective Load Resistance (Plate-to-plate)	6600	6600	6600	6600	6600	10000	ohms
Total Harmonic Distortion	5	2.5	2	2.5	5	2	per cent
Maximum-Signal Power Output	24	30	34	38	44	28	watts

Push-Pull Class AB$_1$ Amplifier

Grid No.2 of Each Tube Connected to Tap on Plate Winding of Output Transformer•

MAXIMUM RATINGS (Same as for class A$_1$ amplifier)

TYPICAL OPERATION (Values are for two tubes)

	Fixed Bias	Cathode Bias	
Plate Supply Voltage	400	425	volts
Grid-No.2 Supply Voltage	•	•	volts
Grid-No.1 Voltage	-20.5	—	volts
Cathode-Bias Resistor (Common to both cathodes)	—	185	ohms

Heizung		
Heizart		ind.
U_f	6,3	V
I_f	0,8	A

Maximalwerte		
$U_{a\,max}$	550	V
$P_{a\,max}$	19	W
$U_{g2\,max}$	440	V
$P_{g2\,max}$	3,3	W
$R_{g1\,max}$ ($-U_g$ durch Katodenwiderstand)	1	MΩ
$R_{g1\,max}$ ($-U_{g1}$ bei fester Vorspannung)	0,3	MΩ
I_k		mA
$U_{f\text{-}k\,max}$	±200	V

Röhrenkonstanten		
S	10,2	mA/V
$\mu_{g2/g1}$		
R_i	29	kΩ

Betriebswerte Eintakt-A		
Verwendung	Endpentode	
U_a	300	V
I_a	60	mA
$-U_{g1}$	10	V
U_{g2}	300	V
I_{g2}	8	mA
U_{g3}	0	V
R_a	3	kΩ
P_a	11	W
k	13	%
U_{g1} ~	10	V

Betriebswerte Gegentakt-AB		
Verwendung	Endpentode, feste Gittervorspannung	
U_a	300	V
I_a	74	mA
$I_{a\,max\,sig}$	116	mA
$-U_{g1}$	12,5	V
U_{g2}	300	V
I_{g2}	10	mA
$I_{g2\,max\,sig}$	28	mA
$R_{a/a}$	6,6	kΩ
R_k		kΩ
U_{g3}	0	V
P_a	24	W
P_{g2}		
k	5	%
IM		%
U_{g1} ~	25	V

Betriebswerte Gegentakt-AB		
Verwendung	Endpentode, feste Gittervorspannung	
U_a	400	V
I_a	64	mA
$I_{a\,max\,sig}$	135	mA
$-U_{g1}$	16	V
U_{g2}	350	V
I_{g2}	8	mA
$I_{g2\,max\,sig}$	28	mA
$R_{a/a}$	6,6	kΩ
R_k		kΩ
U_{g3}	0	V
P_a	34	W
P_{g2}		
k	2	%
IM		%
U_{g1} ~	32	V

Betriebswerte Gegentakt-AB

Verwendung	Endpentode, feste Gittervorspannung	
U_a	450	V
I_a	40	mA
$I_{a\ max\ sig}$	145	mA
$-U_{g1}$	21	V
U_{g2}	400	V
I_{g2}	5	mA
$I_{g2\ max\ sig}$	30	mA
$R_{a/a}$	6,6	kΩ
R_k		kΩ
U_{g3}	0	V
P_a	44	W
P_{g2}		
k	5	%
IM		%
U_{g1} ~	33	V

Betriebswerte Gegentakt-AB; Ultralinearbetrieb

Verwendung	Endpentode, feste Gittervorspannung	
U_a	400	V
I_a	60	mA
$I_{a\ max\ sig}$	115	mA
$-U_{g1}$	20,5	V
U_{g2}	#)	V
I_{g2}	8	mA
$I_{g2\ max\ sig}$	18	mA
$R_{a/a}$	6,6	kΩ
R_k		kΩ
U_{g3}	0	V
P_a	23	W
P_{g2}		
k	2,5	%
IM		%
U_{g1} ~	41	V

Betriebswerte Gegentakt-AB;

Verwendung	Endpentode, Gittervorspannung durch Katodenwiderstand	
U_a	450	V
I_a	86	mA
$I_{a\ max\ sig}$	94	mA
$-U_{g1}$		V
U_{g2}	400	V
I_{g2}	10	mA
$I_{g2\ max\ sig}$	20	mA
$R_{a/a}$	10	kΩ
R_k	0,17	kΩ
U_{g3}	0	V
P_a	28	W
P_{g2}		
k	2	%
IM		%
U_{g1} ~	31	V

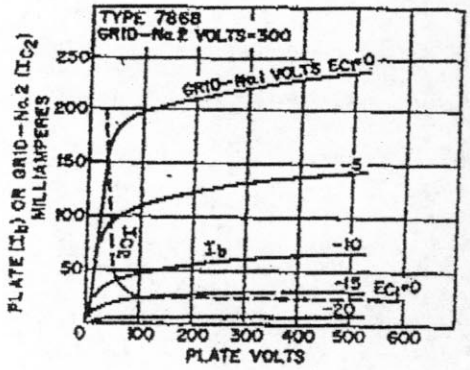
Betriebswerte Gegentakt-AB; Ultralinearbetrieb

Verwendung	Endpentode, Gittervorspannung durch Katodenwiderstand	
U_a	425	V
I_a	88	mA
$I_{a\ max\ sig}$	100	mA
$-U_{g1}$		V
U_{g2}	#)	V
I_{g2}	12	mA
$I_{g2\ max\ sig}$	16	mA
$R_{a/a}$	6,6	kΩ
R_k	0,185	kΩ
U_{g3}	0	V
P_a	21	W
P_{g2}		
k	3,5	%
IM		%
U_{g1} ~	42	V

Bemerkung zu Ultralinearbetrieb:

#) Die Anzapfung für das Schirmgitter auf der Primärseite des Ausgangsübertragers wird so gewählt, daß 50% der Anoden–Signalspannung an g_2 liegen.

Kennlinien



Ausgangskennlinienfeld

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Sockelschaltung