4-VOLT A.C. VALVES WITH PIN BASES (POWER STAGES)

Type Number	Valve type	Maximum dimensions [1] mm	Base (Connection reference in brackets)	Application (see p. 2)	Filament data: Heating	Filament data: Voltage Volts	Filament data: Current Amps.	Anode voltage Va Volts	Anode current Ia mA	Neg. grid bias Vg_1 Volts	Screen-grid voltage Vg_2 Volts	Screen-grid current Ig_2 mA	Voltage on grids 3 (and 5) $Vg_3(_5)$ Volts	Voltage on grid 4 Vg_4 Volts	Mutual conduct. S mA/V	Amplification factor μ	Internal resistance Ri Ohms	External anode resist. or optimum matching imped. Ra Ohm	Output at 10 % distortion Wo Watts	Grid A.C. voltage at the indicated output Vi $V_{R.M.S.}$	Max. anode dissipation Wa_{max} Watts	Grid anode capacity Cag_1 μμF	Type Number
E453	Pentode	105×51	B35 (8)	12	indir.	4,0	1,1	250	24	—15	250	—	—	—	2,5	175	70.000	15.000	2,8	8	6	—	**E453**
E463	Pentode	119×55	B35 (8)	12	indir.	4,0	1,35	250	36	—22	250	—	—	—	2,7	100	37.000	8.000	4,1	12,3	9	—	**E463**
B409	Triode	91×46	A32 (1)	12	dir.	4,0	0,15	250	12	—18	—	—	—	—	1,8	9	5.000	12.000	0,65 [2]	12	3	—	**B409**
B443	Pentode	92×51	O35 (19)	12	dir.	4,0	0,15	250	12	—19	150	—	—	—	1,3	60	45.000	20.000	1,35	12,1	3	—	**B443**
B443S	Pentode	92×51	O35 (19)	12	dir.	4,0	0,15	250	12	—12	80	—	—	—	1,6	100	60.000	22.000	1,12	6,8	3	—	**B443S**
C443	Pentode	92×51	O35 (19)	12	dir.	4,0	0,25	300	20	—25	200	—	—	—	1,7	60	35.000	15.000	2,8	16	6	—	**C443**
C443N	Pentode	89×51	O35 (19)	12	dir.	4,0	0,25	300	20	—42	200	—	—	—	1 5	37	25.000	15.000	3,0	20	6	—	**C443N**
E443H	Pentode	123×55	O35 (19)	12	dir.	4,0	1,1	250	36	—15	250	—	—	—	2,8	120	43.000	7.000	3.1	9,7	9	—	**E443H**

[1]) Without pins. [2]) At 5 % distortion.

180-MA D.C. VALVES

Type Number	Valve type	Maximum dimensions [1] mm	Base (Connection reference in brackets)	Application (see p. 2)	Filament data: Heating	Filament data: Voltage Volts	Filament data: Current Amps.	Anode voltage Va Volts	Anode current Ia mA	Neg. grid bias Vg_1 Volts	Screen-grid voltage Vg_2 Volts	Screen-grid current Ig_2 mA	Voltage on grids 3 (and 5) $Vg_3(_5)$ Volts	Voltage on grid 4 Vg_4 Volts	Mutual conduct. S mA/V	Amplification factor μ	Internal resistance Ri Ohms	External anode resist. or optimum matching imped. Ra Ohm	Output at 10 % distortion Wo Watts	Grid A.C. voltage at the indicated output Vi $V_{R.M.S.}$	Max. anode dissipation Wa_{max} Watts	Grid anode capacity Cag_1 μμF	Type Number
B2046	H.F. Pentode	138×51	O35 (23)	1, 2, 5, 7. 8, 11	indir.	20	0,180	200	3.0	—2,0	100	1,1	—	—	3,5	2,2	5000	$2{,}2.10^6$	—	—	—	<0,006	**B2046**
B2047	Variable-Mu Pentode	138×51	O35 (23)	1, 2, 5	indir.	20	0,180	200	4,0	—2,0 —50	100	1,8	—	—	3,0	2.0 <0,002	2200	$1{,}1.10^6$ $>10^7$	—	—	—	<0,006	**B2047**
B2048	Hexode (oscillator modulator	130×50	C35 (11)	4	indir.	20	0,180	200	3,0	—1,5	120	8,5 [2])	200	—4 [3])	—	0,58 [4])	—	$>0{,}15.10^6$	—	—	—	—	**B2048**
B2049	Variable-Mu Hexode	130×50	C35 (11)	1, 2	indir.	20	0,180	200	3	—1,5 —8	80	—	—1,5 —8	80	3	1,8 <0,002	—	$0{,}45.10^6$ $>50.10^6$	—	—	—	<0,002	**B2049**
B2052T	Tetrode	127×51	O35 (22)	1, 2, 5, 7, 8, 11	indir.	20	0,180	200	3,0	—2,0	100	0,2	—	—	3,0	2,0	900	$0{,}45.10^6$	—	—	—	0,003	**B2052T**
B2045	Variable-Mu Tetrode	120×51	O35 (22)	1, 2, 5	indir.	20	0,180	200	4,0 0.01	—2,0 —40	60	0,9	—	—	1,2	1,0 0.005	400	$0{,}4.10^6$ $>10^7$	—	—	—	0,004	**B2045**
B2044	Binode (Diode-Tetrode)	130×51	B35 (7)	9	indir.	20	0,180	200	0.29 0.76	—3,2 —4,0	40 60	—	—	—	2,8	—	700 600	$2{,}4.10^6$ $1{,}2.10^6$	$0{,}32.10^6$ $0.1.10^6$	—	—	0,003	**B2044**
B2044S	Binode (Diode-Triode)	108×46	O35 (20)	9	indir.	20	0,180	200	6,0	—3,0	—	—	—	—	2,0	1,8	30	16.000	—	—	—	—	**B2044S**
B2038	Triode	105×51	O35 (17)	3, 6, 7, 10, 11	indir.	20	0,180	200	6,0	—3,0	—	—	—	—	3,5	2,3	33	14.000	—	—	—	—	**B2038**
B2099	High-Mu Triode	101×46	O35 (17)	11	indir.	20	0,180	200	0.08 0,2	—1,6 —1,6	—	—	—	—	3,0	—	99	330.000 100.000	$0{,}32.10^6$ 1.10^6	—	—	1,5	**B2099**
B2006	Power Triode	105×51	O35 (16)	12	indir.	20	0,180	200	15	—18	—	—	—	—	2,5	1,6	6	4.000	16.000	0,21 [5])	5	—	**B2006**
B2043	Power Pentode	105×51	B35 (8)	12	indir.	20	0,180	200	20	—18	200	8	—	—	2,5	1,7	70	40.000	10.000	1,7	5	—	**B2043**

[1]) Without pins. [2]) Current of the third grid. [3]) $V_{osc} = 6{\cdot}3\ V_{R.M.S.}$ [4]) Conversion conductance at $V_{osc} = 6{\cdot}3\ V_{R.M.S.}$ [5]) At 5 % distortion.

BATTERY VALVES WITH PIN BASES

Type Number	Valve type	Maximum dimensions mm	Base (Connection reference in brackets)	Application (see p. 2)	Filament data: Heating	Filament data: Voltage Volts	Filament data: Current Amps.	Anode voltage Va Volts	Anode current Ia mA	Neg. grid bias Vg_1 Volts	Screen-grid voltage Vg_2 Volts	Screen-grid current Ig_2 mA	Voltage on grids 3 (and 5) $Vg_3(_5)$ Volts	Voltage on grid 4 Vg_4 Volts	Mutual conduct. S mA/V	Amplification factor μ	Internal resistance Ri Ohms	External anode resist. or most fav. matching imped. Ra Ohms	Output at 10 % distortion Wo Watts	Grid A.C. voltage at the indicated output Vi $V_{R.M.S.}$	Max. anode dissipation Wa_{max} Watts	Grid anode capacity Cag_1 μμF	Type Number
KF2	Variable-Mu Pentode	118×47	C35 (10)	1,2	dir.	2,0	0,2	135	3,0 appr 0,01	0 —16	135	1,0	0	—	1,3	1.3 <0,002	1400	$1,1.10^6$ $>10^7$	—	—	—	<0,01	**KF2**
								90	1,4 appr 0,01	0 —11	90	—	0	—	—	0,8 <0.002	1500	$1,9.10^6$ $>10^7$					
KF1	H.F. Pentode	118×47	C35 (10)	1, 2, 7, 8, 11	dir.	2,0	0,2	135	3,0	0	135	1,0	0	—	1,8	1,8	1600	$0,9.10^6$	—	—	—	<0,01	**KF1**
								90	1,1	0	90	—	0	—	—	1,0	1500	$1,5.10^6$					
B228	Triode	81×41	A32 (1)	7, 11	dir.	2,0	0,1	150	2,0	—2,0	—	—	—	—	1,3	1,2	28	23.000	—	—	—	5,5	**B228**
B217	Triode	81×41	A32 (1)	3, 6, 10	dir.	2,0	0,1	150	4,5	—3,0	—	—	—	—	1,4	1,3	17	13.000	—	—	—	5,5	**B217**
C243N	Power Pentode	89×51	O35 (19)	12	dir.	2,0	0,2	150	9,5	—4,5	150	—	—	—	—	2,4	—	75.000	15.000	0,58	1,5	—	**C243N**
B240	Double Triode	96×47	C35 (9)	16	dir.	2,0	0,2	150	2×1,5[1])	0	—	—	—	—	—	—	—	—	14.000[2])	1,0[9])	—	—	**B240**
B442	Tetrode	108×46	A35 (3)	1, 2	dir.	4,0	0,100	200	4,5	—1,0	100	—	—	—	0,9	0,9	350	$0,4.10^6$	—	—	—	0,005	**B442**
A442	Tetrode	105×46	A35 (3)	1, 2, 5, 7, 8, 11	dir.	4,0	0,06	200	4,0	—1,0	100	—	—	—	0,8	0,7	280	$0,4.10^6$	—	—	—	0,01	**A442**
B424	Triode	92×46	A35 (1)	3. 6, 10	dir.	4,0	0,100	200	6,0	—0,3	—	—	—	—	3,0	2,5	24	9.000	—	—	—	4	**B424**
B438	Triode	78×38	A35 (1)	7, 8, 11	dir.	4,0	0,100	200	0.2 0.05	—2,5 —2,5	—	—	—	—	2,0	—	38	170.000 400.000	$0,32.10^6$ $1,0.10^6$	—	—	4	**B438**
A415	Triode	83×42	A32 (1)	3, 6, 10	dir.	4,0	0,085	150	4,0	—4,0	—	—	—	—	2,0	1,5	15	10.000	—	—	—	4,5	**A415**
A425	Triode	83×42	A32 (1)	7, 8, 11	dir.	4,0	0,065	200	0,25 0,1	—2,5 —2,5	—	—	—	—	1,2	—	25	80.000 250.000	$0,32.10^6$ $1,0.10^6$	—	—	3	**A425**
A409	Triode	83×42	A32 (1)	3, 6, 10	dir.	4,0	0,065	150	3,5	—9,0	—	—	—	—	1,2	0,9	9	10.000	—	—	—	4	**A409**
A441N	Double-grid valve	92×46	A35b (4)	4	dir.	4,0	0.08	100	4,0	0[4])	4,0[5])	—	—	—	—	0,3[6]) 1,0[7])	—	—	—	—	—	—	**A441N**
B405	Triode	91×46	A32 (1)	12	dir.	4,0	0,15	150	11	—18	—	—	—	—	2,0	1,6	5	3.000	—	—	—	—	**B405**
B406	Triode	91×46	A32 (1)	12	dir.	4,0	0,1	150	8	—15	—	—	—	—	1,4	1,3	6	4.500	—	—	—	—	**B406**
B409	Triode	91×46	A32 (1)	12	dir.	4,0	0,15	250	12	—16	—	—	—	—	2.0	1,8	9	5.000	12.000	0,65[9])	3	—	**B409**
B443	Power Pentode	92×51	O35 (19)	12	dir.	4,0	0,150	250	12	—17	150	—	—	—	—	1,3	—	45.000	20.000	1,35	3	—	**B443**

[1]) Quiescent anode current for both anodes.
[2]) From anode to anode.
[3]) At Va = 120 volts.
[4]) Voltage of the control grid.
[5]) Voltage of the space charge grid.
[6]) Conductance of control grid.
[7]) Conductance of space charge grid.
[8]) Without pins.
[9]) At 5 % distortion.

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