



## Reference Guide for TELEVISION PICTURE TUBES

This CBS Reference Guide for Television Picture Tubes lists, to the best of our knowledge, all magnetically deflected picture tubes to date — monochrome or color — regardless of make. Basing diagrams and pertinent data for 258 tubes are presented in easy-to-use form. As an additional aid to the television serviceman, bold-face type highlights the important characteristics that differ among similar tube types having different suffix letters, such as 20DP4, A, B, and C.

### MONOCHROME SECTION

Type No.	Face-plate Description (See Notes)	Envelope	Screen	Deflection Angle (Approx.)	Focusing	Basing	Max. Over-all Length (in.)	Max. Diameter or Ht. x Wd. (in.)	Min. Useful Screen Diam. or Ht. x Wd. (in.)	Max. Neck Length	Capacitance (μF) between Bulb Coating and Anode Min. Max.	Bulb Contact	Ion Trap	Max. Ratings†		Typical Operation and Characteristics					Type No.
														Applied Voltages		Applied Voltages			Grid No. 1 (Visual Cut-off)	Focusing Cell Current (ma.) (approx.)	
														Anode	Grid No. 2	Anode	Focusing Electrode	Grid No. 2			
3NP4	C, S, Ro	Glass	Alum.	42°	Magnetic	5BV	10 3/4	2 1/2	Projection Type	7 1/2	275-375	Ball	None	25,000	—	24,000	—	—	-60	120	3NP4
5ACP4	C, S, Ro	Glass	Alum.	53°	Electro.	8EQ	11 1/2	5 1/2	12S	7 3/4	No Coating	Ball	None	18,000	410	12,000	0	250	-27 to -63	—	5ACP4
5AXP4	C, S, Ro	Glass	Alum.	53°	Auto-Electro.	12S	11	5 1/2	12A	7 1/4	No Coating	Cavity	None	18,000	500	14,000	—	300	-28 to -72	—	5AXP4
5AZP4	C, S, Ro	Glass	Alum.	50°	Electro.	12AA	12 9/16	5 1/2	Projection Type	8 3/4	No Coating	Cable	None	40,000	400	35,000	6650 to 8100	200	-55	—	5AZP4
5FP4A	C, S, Ro	Glass	Alum.	53°	Magnetic	5AN	11 1/2	5 1/2	5AN	4 1/4	No Coating	Ball	None	8,000	410	6,000	—	250	-25 to -70	122	5FP4A
5OP4	C, S, Ro	Glass	Alum.	53°	Magnetic	5AN	11 1/2	5 1/2	5AN	4 1/4	No Coating	Ball	None	12,000	410	10,000	—	300	-28 to -72	137	5OP4
5QF4A	C, S, Ro	Glass	Alum.	53°	Magnetic	5AN	11 1/2	5 1/2	5AN	4 1/2	No Coating	Ball	None	12,000	700	10,000	—	300	-28 to 72	137	5QF4A
5TF4	C, S, Ro	Glass	Alum.	50°	Electro.	12C	12 1/2	5 1/2	Projection Type	7 1/2	100-500	Cavity	None	27,000	350	27,000	—	4900	-42 to -48	—	5TF4
7AP4	C, S, Ro	Glass	Alum.	55°	Electro.	5AJ	13 1/2	7 1/2	5AJ	6	No Coating	None	None	3,500	No Grid	3,500	—	675	-67	—	7AP4
7CP4	C, S, Ro	Glass	Alum.	57°	Electro.	BBQ	13 1/2	7 1/2	BBQ	6 1/2	No Coating	Ball	None	8,000	410	6,000	1140	250	-25 to -70	—	7CP4
7DP4	C, S, Ro	Glass	Alum.	50°	Electro.	12F	14 1/2	7 1/2	12F	6	400-1300	Cavity	Double	6,000	410	6,000	1200 to 1650	250	-27 to -63	—	7DP4
7HP4	C, S, Ro	Glass	Alum.	50°	Magnetic	12N	13 3/4	7 1/2	12N	5 1/2	500	Ball	Double	8,800	450	6,000	—	250	-33 to -77	80	7HP4
7NP4	C, S, Ro	Glass	Alum.	35°	Electro.	14N	20 1/2	7 3/4	Projection Type	10 3/4	No Coating	Cap	None	80,000	600	75,000	16K to 18K	400-600	-155	—	7NP4
7OP4	C, S, Ro	Glass	Alum.	52°	Magnetic	12D	13 1/2	7 1/2	12D	6 1/4	No Coating	Cavity	Single	10,000	410	8,000	—	300	-33 to -77	80	7OP4
7RP4	C, S, Ro	Glass	Alum.	50°	Magnetic	12D	14 7/8	7 1/2	12D	6	No Coating	Cavity	None	12,000	410	9,000	—	250	-27 to -63	120	7RP4
7TP4	C, S, Ro	Glass	Alum.	50°	Electro.	12Q	13 1/2	7 1/2	12Q	6	No Coating	Cavity	None	12,000	410	10,000	1170 to 1590	200	-18 to -48	—	7TP4
7WP4	C, S, Ro	Glass	Alum.	35°	Electro.	14N	20 1/2	7 3/4	Projection Type	10 3/4	Has Coating	Cap	None	80,000	600	75,000	16K to 18K	400-600	-155	—	7WP4
8AP4	C, S, Ro	Metal	Alum.	54°	Magnetic	12H	14 5/8	8 1/2	12H	7 3/4	—	Rim	Single	9,000	No Grid	7,000	—	—	-27 to -63	115	8AP4
8AP4A	C, S, Ro	Metal	Alum.	54°	Magnetic	12H	14 5/8	8 1/2	12H	7 3/4	—	Rim	Single	9,000	No Grid	7,000	—	—	-27 to -63	115	8AP4A
9AP4	C, S, Ro	Glass	Alum.	40°	Electro.	6AL	21 3/8	9 1/2	6AL	7 7/8	No Coating	Cap	None	7,000	250	7,000	1190 to 1790	250	-20 to -60	—	9AP4
9CP4	C, S, Ro	Glass	Alum.	50°	Magnetic	4AF	13 5/8	9	4AF	8 3/8	No Coating	Cap	None	7,000	No Grid	7,000	—	—	-100	90 to 110	9CP4
10BP4	C, S, Ro	Glass	Alum.	50°	Magnetic	12N	18	10 3/4	12N	9	500-2500	Cavity	Double	10,000	410	9,000	—	250	-27 to -63	115	10BP4
10BP4A*	C, S, Ro	Glass	Alum.	50°	Magnetic	12N	18	10 3/4	12N	9	500-2500	Cavity	Double	10,000	410	9,000	—	250	-27 to -63	115	10BP4A*
10BP4C	C, S, Ro	Glass	Alum.	50°	Magnetic	12N	18	10 3/4	12N	9	500-2500	Cavity	Single	10,000	410	9,000	—	250	-27 to -63	110	10BP4C
10BP4D	C, S, Ro	Glass	Alum.	50°	Magnetic	12N	18	10 3/4	12N	9	500-2500	Cavity	Single	10,000	410	9,000	—	250	-27 to -63	110	10BP4D
10CP4	C, S, Ro	Glass	Alum.	50°	Magnetic	12N	17	10 3/8	12N	7 7/8	500	Ball	Double	12,000	450	9,000	—	250	-27 to -63	115	10CP4
10DP4	C, S, Ro	Glass	Alum.	50°	Electro.	12M	18	10 3/4	12M	9	No Coating	Cavity	None	10,000	410	9,000	2900	250	-36 to -84	—	10DP4
10EP4	C, S, Ro	Glass	Alum.	50°	Magnetic	12N	18	10 3/4	12N	9	Has Coating	Ball	Double	12,000	410	8,000	—	250	-33 to -77	132	10EP4
10FP4	C, S, Ro	Glass	Alum.	50°	Magnetic	12N	18	10 3/4	12N	9	500-2500	Cavity	None	12,000	410	9,000	—	250	-27 to -63	110	10FP4
10FP4A	C, S, Ro	Glass	Alum.	54°	Magnetic	12N	18	10 3/4	12N	9	500-2500	Cavity	None	12,000	410	9,000	—	250	-27 to -63	115	10FP4A
10MP4	C, S, Ro	Glass	Alum.	52°	Magnetic	12G	17 3/4	10 3/8	12G	9 1/2	500-2500	Cavity	Double	10,000	No Grid	9,000	—	—	-27 to -63	150	10MP4
10MP4A	C, S, Ro	Glass	Alum.	52°	Magnetic	12G	17 3/4	10 3/8	12G	9 1/2	500-2500	Cavity	Double	10,000	No Grid	9,000	—	—	-27 to -63	150	10MP4A
10RP4	C, S, Ro	Glass	Alum.	50°	Electro.	12L	16 3/4	10 3/4	12L	9 1/2	750-1500	Cavity	None	16,000	500	12,000	-48 to +260	300	-28 to -72	—	10RP4
10SP4	C, S, Ro	Glass	Alum.	50°	Electro.	12M	17	10 3/4	12M	9 1/2	No Coating	Cavity	None	14,000	410	12,000	-55 to +300	300	-28 to -72	—	10SP4
12AP4	C, S, Ro	Glass	Alum.	40°	Electro.	6AL	25 3/8	12 3/8	6AL	10	No Coating	Cap	None	7,000	300	7,000	1190 to 1790	250	-18 to -48	—	12AP4
12CP4	C, S, Ro	Glass	Alum.	50°	Magnetic	4AF	18 5/8	12 1/8	4AF	8	No Coating	Cap	None	7,000	No Grid	7,000	—	—	-110	—	12CP4
12JP4	C, S, Ro	Glass	Alum.	50°	Magnetic	12D	18	12 1/8	12D	10	No Coating	Ball	None	12,000	410	10,000	—	250	-27 to -63	146	12JP4
12KP4	C, S, Ro	Glass	Alum.	54°	Magnetic	12N	18	12 1/8	12N	11 1/4	500-2500	Cavity	None	12,000	410	11,000	—	250	-27 to -63	135	12KP4
12KP4A	C, S, Ro	Glass	Alum.	54°	Magnetic	12N	18	12 1/8	12N	11 1/4	500-2500	Cavity	None	12,000	410	11,000	—	250	-27 to -63	135	12KP4A
12LP4	C, S, Ro	Glass	Alum.	54°	Magnetic	12N	19 1/2	12 1/2	12N	11	700-3000	Cavity	Double	12,000	410	11,000	—	250	-27 to -63	110	12LP4

Type No.	Face-plate Description (See Notes)	Envelope	Screen	Deflection Angle (Approx.)	Focusing	Basing	Max. Over-all Length (in.)	Max. Diameter or Hx.Wd. (in.)	Min. Useful Screen Diam. or Hx.Wd. (in.)	Max. Neck Length	Capacitance (µF) between Bulb Coating and Anode Min. Max.	Bulb Contact	Ion Trap	Max. Ratings		Typical Operation and Characteristics					Type No.
														Anode	Grid No. 2	Anode	Focusing Electrode	Grid No. 2	Grid No. 1 (Visual Cut-off)	Focusing Coil Current (ma.) (approx.)	
121P4*	G, S, Ro	Glass	Alum.	54°	Magnetic	12N	19 1/2	12 1/2	11	8 7/16	750-3000	Cavity	Double	12,000	410	11,000	—	250	-27 to -63	110	121P4*
121P4C	C, S, Ro	Glass	—	55°	Magnetic	12N	19 1/2	12 1/2	11	8 7/16	750-3000	Cavity	Double	12,000	410	11,000	—	250	-27 to -63	100	121P4C
121P4A	C, S, Ro	Glass	—	55°	Magnetic	12D	17 1/2	12 1/2	11	7 1/2	No Coating	Ball	Single	12,000	410	10,000	—	250	-33 to -77	135	121P4A
122P4	C, S, Ro	Glass	—	56°	Magnetic	12D	18	12 1/2	11	7 1/4	No Coating	Ball	Single	12,000	410	10,000	—	250	-27 to -63	135	122P4
122P4A	C, S, Ro	Glass	—	54°	Magnetic	12D	19 1/2	12 1/2	11	8 7/16	No Coating	Cavity	Double	12,000	410	11,000	—	250	-27 to -63	110	122P4A
122P4B	C, S, Ro	Metal	—	54°	Magnetic	12D	19	12 1/2	11 3/8	8 1/16	—	Rim	Double	12,000	410	11,000	—	250	-27 to -63	110	122P4B
122P4C	C, S, Ro	Metal	—	54°	Magnetic	12D	19	12 1/2	11 3/8	8 1/16	—	Rim	Double	12,000	410	11,000	—	250	-27 to -63	110	122P4C
122P4D	C, S, Ro	Metal	—	54°	Magnetic	12D	19	12 1/2	11 3/8	8 1/16	—	Rim	Double	12,000	410	11,000	—	250	-27 to -63	110	122P4D
122P4E	C, S, Ro	Glass	—	55°	Magnetic	12G	18 3/4	12 1/2	11	7 1/16	750-3000	Cavity	Double	12,000	No Grid	11,000	—	—	-33 to -77	150	122P4E
122P4F	C, S, Ro	Glass	—	55°	Magnetic	9CH	18	12 1/2	11 1/4	7 3/32	750-2000	Special	Single	12,000	No Grid	10,000	—	—	-27 to -63	Not Spec.	122P4F
122P4G	G, S, Ro	Glass	—	55°	Magnetic	—	18 1/2	12 1/2	8 1/4	7 1/2	2000	Cavity	Not Ind.	9000	350	8000	—	250	30v. change	Not Ind.	122P4G
122P4H	C, S, Ro	Glass	—	54°	Auto-Electro.	12N	19 1/2	12 1/2	11 1/4	8 1/16	750-3000	Cavity	Single	12,000	410	11,000	—	250	-33 to -77	—	122P4H
122P4I	C, S, Ro	Glass	Alum.	54°	Magnetic	12N	18	12 1/2	11 1/4	7 1/2	500-2000	Cavity	Single	12,000	410	11,000	—	250	-27 to -63	135	122P4I
122P4J	C, S, Ro	Glass	Alum.	54°	Magnetic	12N	18	12 1/2	11 1/4	7 1/2	500-2000	Cavity	Single	12,000	410	11,000	—	250	-27 to -63	135	122P4J
122P4K	G, S, Re	Glass	—	65°	Magnetic	12N	17 1/2	12 1/2	8 1/8	7 1/2	500-2000	Cavity	Single	14,000	410	11,000	—	250	-27 to -63	110	122P4K
122P4L	G, S, Re	Glass	—	65°	Magnetic	12N	17 1/2	12 1/2	8 1/8	7 1/2	500-2000	Cavity	Single	14,000	410	11,000	—	250	-27 to -63	110	122P4L
122P4M	G, S, Re	Glass	—	65°	Magnetic	12D	17 1/2	12 1/2	8 1/8	7 1/2	500-2000	Cavity	Double	14,000	410	11,000	—	250	-33 to -77	115	122P4M
122P4N	G, S, Re	Glass	—	65°	Magnetic	12D	17 1/2	12 1/2	8 1/8	7 1/2	No Coating	Cavity	Double	14,000	410	11,000	—	250	-27 to -63	100	122P4N
14EP4	G, S, Ro	Glass	—	65°	Magnetic	12D	16 1/2	9 7/8 x 12 1/2	8 5/8 x 11 1/8	7 1/8	750-2000	Cavity	Single	14,000	410	12,000	—	300	-33 to -77	110	14EP4
14EP4A	G, S, Ro	Glass	—	65°	Magnetic	12D	16 1/2	9 7/8 x 12 1/2	8 5/8 x 11 1/8	7 1/8	No Coating	Cavity	Single	14,000	410	12,000	—	300	-33 to -77	115	14EP4A
14EP4B	F, G, S, Ro	Glass	—	65°	Electro.	12L	17 1/2	9 7/8 x 12 1/2	8 5/8 x 11 1/8	7 1/8	750-2000	Cavity	Single	14,000	500	12,000	2170 to 2940	300	-33 to -77	—	14EP4B
14EP4C	G, S, Ro	Glass	—	65°	Electro.	12L	17 1/2	9 7/8 x 12 1/2	8 5/8 x 11 1/8	7 1/8	750-2000	Cavity	Single	14,000	410	12,000	-48 to +204	300	-33 to -77	—	14EP4C
14EP4D	C, S, Ro	Glass	—	65°	Magnetic	12N	16 1/2	9 7/8 x 12 1/2	8 5/8 x 11 1/8	7 1/8	500-2000	Cap	Single	10,000	380	9000	—	250	-20 to -60	—	14EP4D
14EP4E	C, S, Ro	Glass	—	65°	Magnetic	12N	16 1/2	9 7/8 x 12 1/2	8 5/8 x 11 1/8	7 1/8	1200	Cap	Single	14,000	410	12,000	—	250	30v. change	—	14EP4E
14EP4F	G, S, Ro	Glass	—	65°	Electro.	12L	16 1/2	9 7/8 x 12 1/2	8 5/8 x 11 1/8	7 1/8	600-900	Cavity	Single	14,000	500	12,000	-150 to +350	250	-26 to -72	—	14EP4F
15AP4	C, S, Ro	Glass	—	52°	Magnetic	12D	20 1/2	15 3/4	13 1/2	7 1/2	No Coating	Ball	None	15,000	410	12,000	—	250	-27 to -63	159	15AP4
15CP4	C, S, Ro	Glass	—	50°	Magnetic	12D	21 1/2	15 3/4	14	8 1/2	No Coating	Ball	Single	15,000	410	9000-15,000	—	250	-27 to -63	115	15CP4
15DP4	C, S, Ro	Glass	—	57°	Magnetic	12D	20 1/2	15 3/4	14	8 1/2	No Coating	Ball	Single	15,000	410	13,000	—	250	-27 to -63	146	15DP4
15EP4	C, S, Ro	Glass	—	52°	Magnetic	—	22 3/4	15 1/2	10 1/2	8 3/4	500-2000	Ball	Not Ind.	10,000	380	9000	—	250	30v. change	Not Ind.	15EP4
16AP4	G, S, Ro	Glass	—	60°	Auto-Electro.	12N	19 1/2	11 1/2 x 14 3/8	10 1/2 x 13 1/2	7 1/16	750-1500	Cavity	Single	16,000	500	12,000-14,000	—	300	-33 to -77	—	16AP4
16AP4A	C, S, Ro	Glass	—	60°	Auto-Electro.	12N	21 1/2	16	15 1/4	8 1/4	2000	Cavity	Single	14,000	410	12,000-13,000	—	250	-33 to -68	—	16AP4A
16AP4B	G, S, Re	Glass	—	65°	Electro.	12L	19 1/2	11 1/2 x 14 3/8	10 1/2 x 13 1/2	7 1/16	750-1500	Cavity	Single	16,000	410	12,000-14,000	-64 to +350	250	-33 to -77	—	16AP4B
16AP4C	C, S, Ro	Glass	Alum.	65°	Electro.	12L	19 1/2	11 1/2 x 14 3/8	10 1/2 x 13 1/2	8 1/64	Has Coating	Cavity	None	16,000	410	12,000	0	300	-33 to -77	—	16AP4C
16AP4D	C, S, Ro	Metal	—	53°	Magnetic	12D	22 1/2	16	14 3/8	7 3/8	—	Rim	Double	14,000	410	9000-12,000	—	300	-33 to -77	89	16AP4D
16AP4E	C, S, Ro	Metal	—	53°	Magnetic	12D	22 1/2	16	14 3/8	7 3/8	—	Rim	Double	14,000	410	12,000	—	300	-33 to -77	89	16AP4E
16AP4F	G, F, S, Ro	Metal	—	53°	Magnetic	12D	22 1/2	16	14 3/8	7 3/8	—	Rim	Double	14,000	410	12,000	—	300	-33 to -77	89	16AP4F
16AP4G	C, S, Ro	Glass	—	52°	Magnetic	12D	21 1/2	15 1/2	15	6 1/2	No Coating	Cavity	Double	15,000	410	12,000	—	250	-27 to -63	110	16AP4G
16AP4H	C, S, Ro	Glass	—	60°	Magnetic	12D	21	16	14 1/2	8 1/2	No Coating	Cavity	Double	15,000	410	9000-12,000	—	250	-33 to -77	115	16AP4H
16AP4I	C, S, Ro	Glass	—	60°	Magnetic	12D	21	16	14 1/2	7 1/2	No Coating	Cavity	Double	15,000	410	9000-12,000	—	250	-27 to -63	115	16AP4I
16EP4	C, S, Ro	Metal	—	60°	Magnetic	12D	20	16	14 3/8	6 1/2	—	Rim	Double	14,000	410	12,000	—	300	-33 to -77	105	16EP4
16EP4A	G, S, Ro	Metal	—	60°	Magnetic	12D	20	16	14 3/8	6 1/2	—	Rim	Double	14,000	410	12,000	—	300	-33 to -77	105	16EP4A
16EP4B	G, T, S, Ro	Metal	—	60°	Magnetic	12D	20	16	14 3/8	6 1/2	—	Rim	Double	14,000	410	12,000	—	300	-33 to -77	105	16EP4B
16EP4C	C, S, Ro	Glass	—	62°	Magnetic	12D	20 1/2	16 1/2	15	7 1/2	No Coating	Ball	Single	16,000	410	12,000	—	300	-33 to -77	140	16EP4C
16EP4D	C, S, Ro	Metal	—	70°	Magnetic	12D	17 1/2	16	14 3/8	7	—	Rim	Single	14,000	410	12,000	—	300	-33 to -77	100	16EP4D
16EP4E	C, S, Ro	Metal	—	70°	Magnetic	12D	17 1/2	16	14 3/8	7	—	Rim	Single	14,000	410	12,000	—	300	-33 to -77	100	16EP4E
16EP4F	C, F, S, Ro	Metal	—	70°	Magnetic	12D	17 1/2	16	14 3/8	7	—	Rim	Single	14,000	410	12,000	—	300	-33 to -77	100	16EP4F
16EP4G	C, S, Ro	Glass	—	60°	Magnetic	12D	21 1/2	16	14 1/2	8 1/2	1500-3500	Cavity	Double	14,000	410	12,000	—	300	-33 to -77	110	16EP4G
16HP4	C, S, Ro	Glass	—	60°	Magnetic	12N	21 1/2	16	14 1/2	8 1/2	1500-3500	Cavity	Double	14,000	410	12,000	—	300	-33 to -77	110	16HP4
16HP4A	G, S, Ro	Glass	—	60°	Magnetic	12N	21 1/2	16	14 1/2	8 1/2	1500-3500	Cavity	Double	14,000	410	12,000	—	300	-33 to -77	110	16HP4A
16JP4	C, S, Ro	Glass	—	60°	Magnetic	12N	21 1/2	16 1/2	15	7 1/16	750-2000	Cavity	Double	14,000	410	11,000	—	250	-27 to -63	115	16JP4
16JP4A	G, S, Ro	Glass	—	60°	Magnetic	12N	21 1/2	16 1/2	15	7 1/16	750-2000	Cavity	Double	14,000	410	11,000	—	250	-27 to -63	115	16JP4A
16KP4*	G, S, Ro	Glass	—	65°	Magnetic	12N	19 1/2	11 1/2 x 14 3/8	10 1/2 x 13 1/2	7 1/16	750-1500	Cavity	Single	16,000	410	12,000-16,000	—	300	-33 to -77	108	16KP4*
16KP4A	G, S, Ro	Glass	Alum.	65°	Magnetic	12N	19 1/2	11 1/2 x 14 3/8	10 1/2 x 13 1/2	7 1/16	750-1500	Cavity	Single	16,000	410	14,000	—	300	-33 to -77	108	16KP4A
16LP4	C, S, Ro	Glass	—	52°	Magnetic	12N	22 1/2	16	14 1/2	7 1/2	1500-3500	Cavity	Double	14,000	410	12,000	—	300	-33 to -		



Type No.	Face-plate Description (See Notes)	Envelope	Screen	Deflection Angle (Approx.)	Focusing	Basing	Max. Over-all Length (in.)	Max. Diameter or Ht. x Wd. (in.)	Min. Useful Screen Diam. or Ht. x Wd. (in.)	Max. Neck Length	Capacitance (µF) between Bulb Cooling and Anode Min. Max.	Bulb Contact	Ion Trap	Max. Ratings†		Typical Operation and Characteristics					Type No.
														Applied Voltages		Applied Voltages			Grid No. 1 (Visual Cut-off)	Focusing Coil Current (ma.) (approx.)	
														Anode	Grid No. 2	Anode	Focusing Electrode	Grid No. 2			
20CP4D*	G, S, Re	Glass	Alum.	66°	Magnetic	12N	21 1/16	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	500-750	Cavity	Single	18,000	410	12,000	—	300	-33 to -77	95	20CP4D*
20DP4	G, S, Re	Glass	—	65°	Magnetic	12D	21 1/4	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	No Coating	Cavity	Single	18,000	410	12,000	—	300	-33 to -77	95	20DP4
20DP4A*	G, S, Re	Glass	Alum.	65°	Magnetic	12D	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	500-750	Cavity	Single	18,000	410	12,000	—	300	-33 to -77	95	20DP4A*
20DP4C*	G, S, Re	Glass	Alum.	66°	Magnetic	12N	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	500-750	Cavity	Single	18,000	410	16,000	—	300	-28 to -72	95	20DP4C*
20FP4	G, S, Re	Glass	—	66°	Electro.	12M	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	No Coating	Cavity	Single	18,000	410	12,000	2300 to 3200	300	-33 to -77	—	20FP4
20GP4	G, S, Re	Glass	—	65°	Electro.	12L	22 1/8	15 1/16 x 18 1/16	13 1/4 x 17 1/4	7 1/16	500-750	Cavity	Single	18,000	500	14,000	2750 to 3740	300	-33 to -77	—	20GP4
20HP4	G, S, Re	Glass	—	66°	Electro.	12M	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	No Coating	Cavity	Single	18,000	500	14,000	-56 to +310	300	-33 to -77	—	20HP4
20HP4A*	G, S, Re	Glass	—	66°	Electro.	12L	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	750-1500	Cavity	Single	16,000	500	14,000	-56 to +310	300	-33 to -77	—	20HP4A*
20HP4B	G, T, S, Ro	Glass	—	66°	Electro.	12M	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	No Coating	Cavity	Single	16,000	500	14,000	-56 to +310	300	-33 to -77	—	20HP4B
20HP4C*	G, S, Re	Glass	Alum.	66°	Electro.	12M	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	No Coating	Cavity	Single	16,000	500	14,000	-56 to +310	300	-28 to -72	—	20HP4C*
20HP4D*	G, S, Re	Glass	Alum.	66°	Electro.	12L	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	500-750	Cavity	Single	16,000	500	14,000	-56 to +310	300	-28 to -72	—	20HP4D*
20JP4	G, S, Re	Glass	—	65°	Auto-Electro.	12P	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	500-750	Cavity	Single	18,000	500	12,000	—	300	-33 to -77	—	20JP4
20LP4	G, S, Re	Glass	—	66°	Electro.	12L	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	750-1500	Cavity	Single	16,000	500	14,000	—	300	-33 to -77	—	20LP4
20MP4	G, S, Re	Glass	—	66°	Electro.	12L	22 1/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	500-750	Cavity	Single	16,000	500	14,000	-55 to +300	300	-33 to -77	—	20MP4
21ACP4	G, S, Re	Glass	—	85°	Magnetic	12N	20 3/8	16 1/2 x 20 3/8	14 1/8 x 18 1/8	7 1/16	500-750	Cavity	Single	20,000	500	16,000	—	300	-28 to -72	117	21ACP4
21ACP4A	G, S, Re	Glass	Alum.	85°	Magnetic	12N	20 3/8	16 1/2 x 20 3/8	14 1/8 x 18 1/8	7 1/16	500-750	Cavity	Single	20,000	500	16,000	—	300	-28 to -72	117	21ACP4A
21AFP4	G, S, Re	Glass	—	65°	Electro.	12M	23 3/8	15 1/16 x 20 3/8	14 1/8 x 19 1/8	7 1/16	No Coating	Cavity	Single	18,000	500	16,000	-64 to +350	300	-28 to -72	—	21AFP4
21AFP4A*	G, S, Re	Glass	Alum.	85°	Electro.	12L	20 7/16	16 1/16 x 20 7/16	15 x 19 1/16	7 1/16	500-750	Cavity	Single	18,000	500	14,000	-55 to +300	300	-28 to -72	—	21AFP4A*
21ALP4A*	G, S, Re	Glass	Alum.	85°	Electro.	12L	20 7/16	16 1/16 x 20 7/16	15 x 19 1/16	7 1/16	500-750	Cavity	Single	18,000	500	14,000	-55 to +300	300	-28 to -72	—	21ALP4A*
21ALP4B	G, S, Re	Glass	Alum.	85°	Electro.	12L	20 7/16	16 1/16 x 20 7/16	15 x 19 1/16	7 1/16	500-750	Cavity	Single	20,000	500	14,000	-55 to +300	300	-28 to -72	—	21ALP4B
21AMP4	G, S, Re	Glass	—	85°	Magnetic	12N	20 7/16	16 1/16 x 20 7/16	15 x 19 1/16	7 1/16	500-750	Cavity	Single	18,000	500	16,000	—	300	-28 to -72	102	21AMP4
21AMP4A*	G, S, Re	Glass	Alum.	85°	Magnetic	12N	20 7/16	16 1/16 x 20 7/16	15 x 19 1/16	7 1/16	500-750	Cavity	Single	18,000	500	16,000	—	300	-28 to -72	102	21AMP4A*
21AMP23A	G, S, Re	Glass	—	85°	Magnetic	12N	20 7/16	16 1/16 x 20 7/16	15 x 19 1/16	7 1/16	500-750	Cavity	Single	18,000	500	16,000	-55 to +300	300	-28 to -72	102	21AMP23A
21ANP4	G, S, Re	Glass	—	85°	Electro.	12M	20 7/16	16 1/16 x 20 7/16	15 x 19 1/16	7 1/16	No Coating	Cavity	Single	18,000	500	14,000	-55 to +300	300	-28 to -72	—	21ANP4
21ANP4A*	G, S, Re	Glass	Alum.	85°	Electro.	12M	20 7/16	16 1/16 x 20 7/16	15 x 19 1/16	7 1/16	No Coating	Cavity	Single	18,000	500	14,000	-55 to +300	300	-28 to -72	—	21ANP4A*
21AP4*	G, F, S, Re	Metal	—	66°	Magnetic	12D	22 3/8	15 1/16 x 19 3/8	13 1/16 x 18 3/8	7 1/16	500-750	Rim	Single	18,000	500	14,000-18,000	—	300	-33 to -77	104	21AP4*
21AQP4	G, S, Re	Glass	—	85°	Magnetic	12D	20 7/16	16 1/16 x 20 7/16	15 x 19 1/16	7 1/16	No Coating	Cavity	Single	18,000	500	16,000	—	300	-28 to -72	102	21AQP4
21ARP4	G, S, Re	Glass	—	85°	Magnetic	12D	20 7/16	16 1/16 x 20 7/16	15 x 19 1/16	7 1/16	No Coating	Cavity	Single	18,000	500	16,000	—	300	-28 to -72	102	21ARP4
21R4P4	G, S, Re	Glass	—	65°	Int. Magnetic	12N	23 1/2	15 1/16 x 20 3/8	14 1/8 x 19 1/8	7 1/16	500-750	Cavity	Internal	20,000	500	16,000	—	300	-28 to -72	—	21R4P4
21R4P4A	G, S, Re	Glass	Alum.	65°	Int. Magnetic	12N	23 1/2	15 1/16 x 20 3/8	14 1/8 x 19 1/8	7 1/16	500-750	Cavity	None	20,000	500	16,000	—	300	-28 to -72	—	21R4P4A
21ASP4	G, S, Re	Glass	—	66°	Electro.	12M	22 3/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	No Coating	Cavity	Single	18,000	410	16,000	-64 to +352	300	-28 to -72	—	21ASP4
21ATP4*	G, S, Re	Glass	Alum.	85°	Electro.	12L	20 3/8	16 1/16 x 20 3/8	15 x 19 1/16	7 1/16	1200-1500	Cavity	Single	18,000	500	16,000	-64 to +350	300	-28 to -72	—	21ATP4*
21ATP4A	G, S, Re	Glass	—	85°	Electro.	12L	20 3/8	16 1/16 x 20 3/8	15 x 19 1/16	7 1/16	1200-1500	Cavity	Single	18,000	500	16,000	-64 to +350	300	-28 to -72	—	21ATP4A
21AUP4	G, S, Re	Glass	—	67°	Electro.	12L	23 1/2	16 1/2 x 20 3/8	15 x 19 1/16	7 1/16	500-750	Cavity	Single	18,000	500	18,000	-72 to +396	300	-28 to -72	—	21AUP4
21AUP4A*	G, S, Re	Glass	Alum.	67°	Electro.	12L	23 1/2	16 1/2 x 20 3/8	15 x 19 1/16	7 1/16	500-750	Cavity	Single	18,000	500	18,000	-72 to +396	300	-28 to -72	—	21AUP4A*
21AUF4	G, S, Re	Glass	—	67°	Electro.	12L	23 1/2	16 1/2 x 20 3/8	15 x 19 1/16	7 1/16	500-750	Cavity	Single	20,000	500	18,000	-72 to +396	300	-28 to -72	—	21AUF4
21AVP4	G, S, Re	Glass	—	67°	Electro.	12L	23 1/2	16 1/2 x 20 3/8	15 x 19 1/16	7 1/16	1200-1500	Cavity	Single	18,000	500	18,000	-72 to +396	300	-28 to -72	—	21AVP4
21AVP4A*	G, S, Re	Glass	Alum.	67°	Electro.	12L	23 1/2	16 1/2 x 20 3/8	15 x 19 1/16	7 1/16	1200-1500	Cavity	Single	18,000	500	18,000	-72 to +396	300	-28 to -72	—	21AVP4A*
21AVP4B	G, S, Re	Glass	Alum.	67°	Electro.	12L	23 1/2	16 1/2 x 20 3/8	15 x 19 1/16	7 1/16	1200-1500	Cavity	Single	20,000	500	18,000	-72 to +396	300	-28 to -72	—	21AVP4B
21AWP4*	G, S, Re	Glass	Alum.	67°	Magnetic	12N	23 1/2	16 1/2 x 20 3/8	15 x 19 1/16	7 1/16	750-1500	Cavity	Single	18,000	500	16,000	—	300	-28 to -72	95	21AWP4*
21AYP4	G, S, Re	Glass	—	66°	Electro.	12L	22 3/8	15 1/16 x 18 1/16	12 3/4 x 17	7 1/16	750-1500	Cavity	Single	18,000	410	16,000	-64 to +352	300	-28 to -72	—	21AYP4
21BAP4	G, S, Re	Glass	—	85°	Electro.	12L	20 3/8	16 1/2 x 20 3/8	15 x 19 1/16	7 1/16	500-750	Cavity	None	20,000	500	16,000	0 to 500	300	-28 to -72	—	21BAP4
21BCP4	G, S, Re	Glass	Alum.	65°	Electro.	12L	23 1/2	15 1/16 x 20 3/8	14 1/8 x 20 3/8	7 1/16	500-750	Cavity	None	20,000	500	16,000	+50 to +550	300	-28 to -72	—	21BCP4
21BDP4	G, S, Re	Glass	Alum.	67°	Electro.	12L	23 1/2	16 1/2 x 20 3/8	15 x 19 1/16	7 1/16	500-750	Cavity	None	20,000	500	16,000	+50 to +550	300	-28 to -72	—	21BDP4
21BNP4	G, S, Re	Glass	—	85°	Electro.	12L	20 3/8	16 1/2 x 20 3/8	15 x 19 1/16	7 1/16	1200-1500	Cavity	None	20,000	500	16,000	0 to 500	300	-28 to -72	—	21BNP4
21DP4	G, F, S, Re	Metal	—	66°	Electro.	12M	22 3/8	15 1/16 x 19 3/8	13 1/16 x 18 3/8	7 1/16	—	Rim	Single	18,000	500	14,000-18,000	2750 to 3740	300	-33 to -77	—	21DP4
21EP4	G, Cy, Re	Glass	—	65°	Magnetic	12D	23 3/8	15 3/8 x 20 7/16	13 7/8 x 19 1/8	7 1/16	No Coating	Cavity	Single	18,000	500	16,000	—	300	-33 to -77	95	21EP4
21FP4A*	G, Cy, Re	Glass	—	65°	Magnetic	12N	23 3/8	15 3/8 x 20 7/16	13 7/8 x 19 1/8	7 1/16	500-750	Cavity	Single	18,000	500	16,000	—	300	-33 to -77	95	21FP4A*
21FP4B*	G, Cy, Re	Glass	—	65°	Magnetic	12N	23 3/8	15 3/8 x 20 7/16	13 7/8 x 19 1/8	7 1/16	500-750	Cavity	Single	18,000	500	16,000	—	300	-33 to -77	116	21FP4B*
21FP4	G, Cy, Re	Glass	—	65°	Electro.	12M	23 3/8	15 3/8 x 20 7/16	13 7/8 x 19 1/8	7 1/16	No Coating	Cavity	Single	18,000	500						



# TELEVISION PICTURE TUBES

## MONOCHROME SECTION

Type No.	Face-plate Description (See Notes)	Envelope	Screen	Deflection Angle (Approx.) §	Focusing	Basing	Max. Over-all Length (in.)	Max. Diameter or Ht. x Wd. (in.)	Min. Useful Screen Diam. or Ht. x Wd. (in.)	Max. Neck Length (in.)	Capacitance (µµf) between Bulb Coating and Anode Min. Max.	Bulb Contact	Ion Trap	Max. Ratings †		Typical Operation and Characteristics						Type No.
														Anode	Grid No. 2	Applied Voltages				Grid No. 1 (Visual Cut-off)	Focusing Coil Current (ma.) (approx.)	
																Anode	Focusing Electrode	Grid No. 2	Grid No. 2			
22AP4A	G. S. Ro	Metal	—	70°	Magnetic	12D	23 3/8	21 1/8	20 1/4	7 1/2	—	Rim	Single	19,000	410	14,000	—	300	—33 to -77	117	22AP4A	
24AP4	G. S. Ro	Metal	—	70°	Magnetic	12D	24 1/8	24 1/4	22 1/2	7 1/2	—	Rim	Single	16,000	410	15,000	—	300	—33 to -77	114	24AP4	
24AP4B	G. T. S. Ro	Metal	Alum.	70°	Magnetic	12D	24 1/8	24 1/4	22 1/2	7 1/2	—	Rim	Single	16,000	410	15,000	—	300	—33 to -77	114	24AP4B	
24BP4	G. S. Ro	Metal	—	70°	Electro.	12M	24 3/8	24 1/2	22 1/2	7 1/2	—	Rim	Single	16,000	500	14,000	—56 to +310	300	—33 to -77	—	24BP4	
24CP4	G. S. Ro	Glass	—	85°	Magnetic	12N	21 1/2	18 9/16	16 3/4 x 21 1/2	7 1/2	500-750	Cavity	Single	20,000	500	18,000	—	300	—33 to -77	115	24CP4	
24CP4A*	G. S. Re	Glass	Alum.	85°	Magnetic	12N	21 1/2	18 9/16	16 3/4 x 21 1/2	7 1/2	500-750	Cavity	Single	20,000	500	16,000	—	300	—33 to -77	105	24CP4A*	
24DP4	G. S. Ro	Glass	—	85°	Electro.	12L	21 1/2	18 9/16	16 3/4 x 21 1/2	7 1/2	500-750	Cavity	Single	20,000	500	18,000	-72 to +400	300	—33 to -77	—	24DP4	
24DP4A*	G. S. Ro	Glass	Alum.	85°	Electro.	12L	21 1/2	18 9/16	16 3/4 x 21 1/2	7 1/2	500-750	Cavity	Single	20,000	500	16,000	-64 to +350	300	—28 to -72	—	24DP4A*	
24QP4	G. S. Re	Glass	—	85°	Magnetic	12N	21 1/2	18 9/16	16 3/4 x 21 1/2	7 1/2	500-750	Cavity	Single	18,000	500	16,000	—	300	—28 to -72	100	24QP4	
24VP4*	G. S. Re	Glass	Alum.	85°	Magnetic	12N	21 1/2	18 9/16	17 1/2 x 21 1/2	7 1/2	250-750	Cavity	Single	20,000	500	14,000	—	300	—33 to -77	110	24VP4*	
24VP4	G. S. Re	Glass	—	87°	Magnetic	12N	21 1/2	18 9/16	16 1/2 x 21 3/8	7 1/2	750-1500	Cavity	Single	22,000	600	20,000	—	300	—33 to -77	125	24VP4	
24VP4A*	G. S. Re	Glass	Alum.	87°	Magnetic	12N	21 1/2	18 9/16	16 1/2 x 21 3/8	7 1/2	750-1500	Cavity	Single	22,000	600	20,000	—	300	—33 to -77	125	24VP4A*	
24XP4	G. S. Re	Glass	—	85°	Magnetic	12D	21 1/2	18 9/16	16 3/4 x 21 1/2	7 1/2	No Coating	Cavity	Single	20,000	500	18,000	—	300	—28 to -72	125	24XP4	
24YP4	G. S. Re	Glass	Alum.	85°	Electro.	12L	21 1/2	18 9/16	16 3/4 x 21 1/2	7 1/2	1200-1500	Cavity	Single	20,000	500	16,000	-64 to +350	300	—28 to -72	—	24YP4	
24ZP4	G. S. Re	Glass	Alum.	85°	Electro.	12L	21 1/2	18 9/16	16 3/4 x 21 1/2	7 1/2	500-750	Cavity	None	20,000	500	16,000	0 to 500	300	—28 to -72	—	24ZP4	
27AP4	G. T. S. Ro	Metal	—	85°	Electro.	12M	22 3/8	20 1/2	18 9/16 x 23 1/2	7 1/2	—	Rim	Single	18,000	500	15,000	-60 to +300	300	—33 to -77	—	27AP4	
27EP4*	G. S. Re	Glass	Alum.	85°	Magnetic	12D	23 7/8	20 1/2 x 25 1/2	18 1/2 x 24	7 1/2	No Coating	Cavity	Single	20,000	500	16,000	—	300	—33 to -77	118	27EP4*	
27GP4	G. S. Re	Glass	—	85°	Magnetic	12D	23 7/8	20 1/2 x 25 1/2	18 1/2 x 24	7 1/2	No Coating	Cavity	Single	22,500	500	16,000	—	300	—33 to -77	95	27GP4	
27IP4	G. S. Ro	Glass	Alum.	85°	Magnetic	12N	24 7/8	20 1/2 x 25 1/2	18 1/2 x 23 1/2	9 5/8	250-400	Cavity	Single	22,000	600	20,000	—	300	—33 to -77	148	27IP4	
27MP4	G. F. S. Ho	Metal	—	85°	Magnetic	12D	22 3/8	20 1/2 x 25 7/8	18 1/2 x 23 1/2	7 1/2	—	Rim	Single	18,000	500	16,000-18,000	—	300	—33 to -77	—	27MP4	
27NP4	G. S. Ro	Glass	—	85°	Magnetic	12N	23 3/8	20 1/2 x 25 1/2	18 1/2 x 24 1/2	7 1/2	500-750	Cavity	Single	18,000	500	16,000	—	300	—28 to -72	95	27NP4	
27RP4*	G. S. Re	Glass	Alum.	85°	Magnetic	12D	23 7/8	20 1/2 x 25 1/2	18 1/2 x 24	7 1/2	500-750	Cavity	Single	20,000	500	18,000	-72 to +396	300	—28 to -72	—	27RP4*	
27SP4	G. S. Re	Glass	—	85°	Electro.	12L	23 7/8	20 1/2 x 25 1/2	18 1/2 x 24	7 1/2	500-750	Cavity	Single	20,000	500	16,000	0 to 396	300	—28 to -72	—	27SP4	
30BP4	G. S. Ro	Metal	—	90°	Magnetic	12D	24 1/8	30 3/8	28 1/4	7 3/8	—	Rim	Single	30,000	410	12,000	—	300	—33 to -77	95	30BP4	

Bold-face type highlights the important characteristics that differ among similar Tube Types having different suffix letters.

### NOTES:

All tubes in this section have heater ratings of 6.3 volts and 0.6 ampere. Only tubes that are magnetically deflected are included.

Face-Plate Code: C — clear, Cy — cylindrical, F — frosted, G — gray, Re — rectangular, Ro — round, S — spherical, T — treated.

† Design-center values.

\* Most commonly used types.

‡ Internal magnetic unit to be used with external tubular magnetic shield.

§ For rectangular tubes, the horizontal deflection angle is given.

## COLOR SECTION

Type No.	Face-Plate Description (See Notes)	Envelope	Screen	Deflection Angle (Approx.) §	Focusing	Convergence	Basing	Max. Over-all Length (in.)	Max. Diameter or Ht. x Wd. (in.)	Min. Useful Screen Diam. or Ht. x Wd. (in.)	Max. Neck Length (in.)	Capacitance (µµf) between Bulb Coating and Anode Min. Max.	Bulb Contact	Max. Ratings †		Typical Operations and Characteristics						Type No.
														Anode	Grid No. 2	Applied Voltages				Grid No. 1* (Visual Cut-off)		
																Anode	Focusing Electrode*	Convergence Electrode†	Grid No. 2			
15GP22	C, S, Ro	Glass	Flat, Alum.	45°	Electro.	Electro.	15GP22	26 1/8	15 3/4	8 5/8 x 11 1/2	10 5/8	1500-3000	Metal-flange	20,000	500	20,000	2400 to 3800	8500 to 10,200	140 to 315	—45 to -100	15GP22	
15HP22	C, S, Ro	Glass	Sph. 1, Alum.	45°	Electro.	Electro.	15HP22	26 1/8	15 3/4	12	10 1/2	1500-2500	Metal-flange	20,000	500	20,000	3100	9300	240	—45 to -100	15HP22	
19P22	G, S, Ro	Glass	Sph. 1, Alum.	60°	Electro.	Electro.	19P22	24 3/4	20 1/2	12 1/2 x 16 9/16	9 3/4	1500-3000	Metal-flange	22,000	500	20,000	1950 to 3250	8500 to 10,200	200	—42 to -78	19P22	
19VP22*	G, S, Ro	Glass	Sph. 1, Alum.	62°	Electro.	Magnetic	14W	26 7/8	20 7/8	13 1/2 x 17 1/2	10 2/8	1500-3000	Metal-flange	27,000	500	25,000	6500 to 8000	—	150 to 330	—45 to -100	19VP22*	
21AXP22	G, S, Ro	Metal	Sph. 1, Alum.	70°	Electro.	Magnetic	14W	25 1/2	21 1/4	15 1/4 x 19 1/2	9 2/8	—	Metal-shell lip	25,000	800	25,000	3800 to 5000	—	140 to 310	—45 to -100	21AXP22	

### NOTES:

All tubes in this section contain three electron-beam sources with heater ratings of 6.3 volts and 1.8 amperes total current (heaters electrically paralleled within the tube). The screens of the tubes in this section are of the tri-color (red, green, and blue), phosphor-dot type with an associated shadow mask containing uniformly spaced perforations (one for each triad).

All tubes in this section are magnetically deflected.

Face-Plate Code: C — clear, G — gray, Ro — round, S — spherical.

\* For each of the three electron-beam sources.

† Most commonly used type.

‡ Horizontal deflection angle is given.

§ Design-center values.

¶ Does not include the dynamic convergence component.

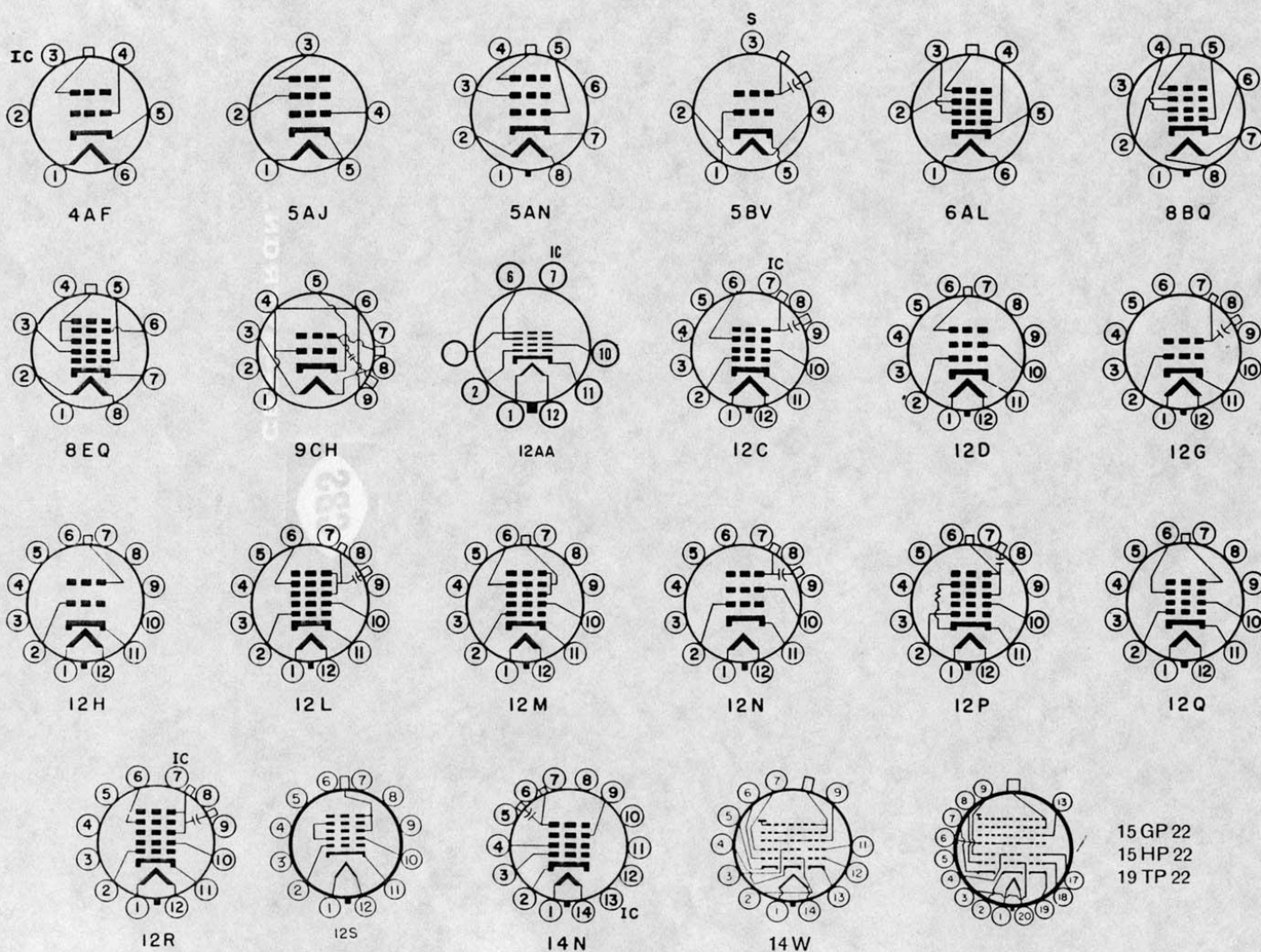
§ Screen on inner surface of face-plate.

The data in this reference guide have been compiled with the utmost care as to technical accuracy from sources we believe to be authoritative and reliable.

CBS-Hytron, however, cannot assume any liability or obligation for the use or application of these data.

# BASING DIAGRAMS

## Bottom Views of Socket Connections



Courtesy of John Folsom