TUNG-SOL

CATHODE RAY TUBE DATA

TUNG-SOL ELECTRIC INC., ELECTRON TUBE DIVISION, BLOOMFIELD, NEW JERSEY, U.S.A.. APRIL 1, 1961 PLATE #6134

CATHODE RAY PICTURE TUBES

ELECTRICAL CHARACTERISTICS

All tubes in this section are for use in television receivers.

All tubes listed here use P4 Phosphor having White Fluorescence and Phosphorescence and Medium Persistence.

M denotes Magnetic deflection or focus. E denotes Electrostatic deflection or focus.

TYPE	DESCRIPTION	HEATER										RATINGS		TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS						TYPE
		VOLTS	AMPERES	ION-TRAP MAGNET	EXTERNAL MAG. MEDIUM COIL	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE (DEGREES)	EXTERNAL CONDUCTIVE COATING	MAX. ANODE VOLTS	MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #2 OR ANODE VOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET MA.	PERMANENT MAGNET FIELD ADJUSTMENT	
7ABP4	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	NO	M	E[B]	50	NO	10	1.5	7	0 to 250	300	−55	−15 to +15μa				7ABP4
7AP4	ROUND GLASS—DIRECT VIEW	2.5	2.1	NONE	NO	NO	M	E	55	NO	3.5	2	3.5	675		−67.5					7AP4
7CP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	NO	M	E	57	NO	8	1.5	6	1140	250	−45					7CP4
7DP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	NO	NO	M	E	50	YES	8	1.5	6	1645	250	−45		70			7DP4
7EP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	NO	E	E	[J]	NO	3.3	1.5	2.5	650		−60					7EP4
7GP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	NO	E	E	[K]	NO	4	1.5	3	1200		−60					7GP4
7HP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	NO	M	M	50	YES	8.8	1.5	6		250	−55					7HP4
7JP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	NO	E	E	[L]	NO	6	1.5	6	2400		−120					7JP4
7NP4	ROUND GLASS—PROJECTION TYPE (ALUMINIZED SCREEN)	6.6	0.62	NONE	NO	NO	M	E	35	YES	80	1.5	75		600	−155					7NP4
7QP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO	M	M	52	NO	10	1.5	8		300	−55	80		35		7QP4
7RP4	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	YES	NO	M	M	50	YES	12	1.5	9		250	−45	120				7RP4
7TP4	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	NO	M	E	50	NO	12	1.5	10		200	−33					7TP4
7WP4	ROUND GLASS—PROJECTION TYPE (ALUMINIZED SCREEN)	6.6	0.62	NONE	NO	NO	M	E	35	YES	80	1.5	75		600	−155					7WP4
8AP4	METAL CONE—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	54	NO	9	1.5	7			−45	115				8AP4
8AP4A	METAL CONE—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	54	NO	9	1.5	7			−45	115		45		8AP4A
8BP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	NO	E	E	[O]	NO	6.6	1.5	6	2400		−120					8BP4
8DP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	[B] .85 D .90	YES	8	1.5	6	+15[W] to +450	150						8DP4

* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

[B] Self-focusing.

[C] Grid # 4 Voltage.

[D] Diagonal.

[H] Horizontal.

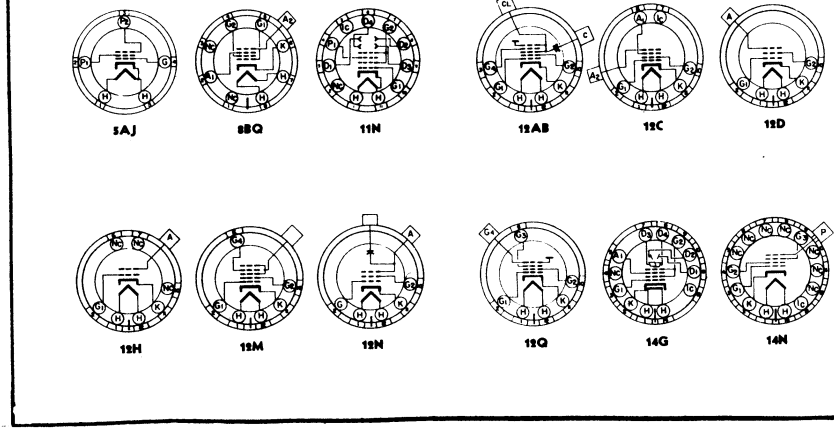
[J] Deflection Factor:
D_1D_3 : 110 V. dc/in.
D_2D_4 : 95 V. dc/in.

[K] Deflection Factor:
D_1D_3 : 108 V. dc/in.
D_2D_4 : 89 V. dc/in.

[L] Deflection Factor:
D_1D_3 : 216 V. dc/in.
D_2D_4 : 177 V. dc/in.

[O] Deflection Factor:
D_1D_3 : 172 V. dc/in.
D_2D_4 : 146 V. dc/in.

[W] Grid # 4 to Grid # 1 Voltage.



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CATHODE RAY SUPPLEMENTAL CONTENTS

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CATHODE RAY TUBE COMPARISON CHART

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TUNG-SOL ELECTRIC INC., ELECTRON TUBE DIVISION, BLOOMFIELD, NEW JERSEY, U.S.A., JUNE 1, 1961 PLATE #6175

TUBE COMPARISON CHART

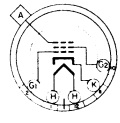
7CP4-10FP4A

TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVERALL LENGTH	DIAMETER OR WIDTH × HEIGHT OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE VOLTAGE (KV)	TYPE
ROUND GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 50° TO 57° DEFLECTION ANGLE	**7CP4**	20	CLEAR	8BQ	13 3/16	7	7 1/16	5 1/2 x 4	NONE	BALL	NONE	8	**7CP4**
	7DP4	24	CLEAR	12C	14 1/16	7 5/16	8 3/16	5 1/2 x 4	400-1500	CAVITY	DOUBLE	8	**7DP4**
ROUND GLASS — MAGNETIC FOCUS & DEFLECTION 50° TO 52° DEFLECTION ANGLE	**7HP4**	24	CLEAR	12N	13	7 5/16	7 1/16	5 1/4 x 4	500	BALL	NONE	8.8	**7HP4**
	7QP4	24	CLEAR	12D	12 7/16	7 5/16	6 15/16	5 3/16 x 4	NONE	CAVITY	SINGLE	10	**7QP4**
ROUND GLASS — PROJECTION TYPE — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 35° DEFLECTION ANGLE	**7NP4**	15.315	CLEAR	14N	19 1/2	7	10 5/16	5 x 3 3/4	—	METAL CAP	NONE	80	**7NP4**
	7WP4	20.3	CLEAR	14N	19 1/2	7	10 5/16	5 x 3 3/4	—	METAL CAP	NONE	80	**7WP4**
ROUND METAL — MAGNETIC FOCUS & DEFLECTION 54° DEFLECTION ANGLE	**8AP4**	27	CLEAR	12H	14 1/4	8 1/2	7	7 x 5 1/4	NONE	METAL CONE LIP	SINGLE	9	**8AP4**
	8AP4A	27	GRAY	12H	14 1/4	8 1/2	7	7 x 5 1/4	NONE	METAL CONE LIP	SINGLE	9	**8AP4A**
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 85° DEFLECTION ANGLE	**10ABP4**	17 1/2	CLEAR	12L	11 7/8	9 3/4 x 7 1/2	6 1/2	8 3/8 x 6 5/8	400-850	CAVITY	SINGLE	12	**10ABP4**
	10ABP4A	17 1/2	CLEAR (ALUMINIZED)	12L	11 7/8	9 3/4 x 7 1/2	6 1/2	8 3/8 x 6 5/8	400-850	CAVITY	SINGLE	12	**10ABP4A**
	10ABP4B	17 1/2	GRAY	12L	11 7/8	9 3/4 x 7 1/2	6 1/2	8 3/8 x 6 5/8	400-850	CAVITY	SINGLE	12	**10ABP4B**
	10ABP4C	17 1/2	CLEAR (ALUMINIZED)	12L	11 7/8	9 3/4 x 7 1/2	6 1/2	8 3/8 x 6 5/8	400-850	CAVITY	SINGLE	12	**10ABP4C**
	10ADP4†	17 1/2	GRAY	12L	11 7/8	9 3/4 x 7 1/2	6 1/2	9 1/16 x 6 5/8	400-850	CAVITY	SINGLE	12	**10ADP4†**
	10AEP4*	17 1/2	GRAY (ALUMINIZED)	12L	11 7/8	9 3/4 x 7 1/2	6 1/2	8 3/8 x 6 5/8	400-850	CAVITY	SINGLE	12	**10AEP4***
ROUND GLASS — MAGNETIC FOCUS & DEFLECTION 50° DEFLECTION ANGLE	**10BP4**	42	CLEAR	12N	17 5/8	10 1/2	8 3/16	8 x 6	500-2500	CAVITY	SINGLE	10	**10BP4**
	10BP4A	42	GRAY	12N	17 5/8	10 1/2	8 3/16	8 x 6	500-2500	CAVITY	SINGLE	10	**10BP4A**
	10BP4C	42	CLEAR (ALUMINIZED)	12N	17 5/8	10 1/2	8 3/16	8 x 6	500-2500	CAVITY	SINGLE	10	**10BP4C**
	10BP4D	42	GRAY (ALUMINIZED)	12N	17 5/8	10 1/2	8 3/16	8 x 6	500-2500	CAVITY	SINGLE	10	**10BP4D**
	10CP4	42	CLEAR	12N	16 5/8	10 1/2	7 1/16	8 x 6	500	BALL	NONE	12	**10CP4**
	10EP4	42	CLEAR	12N	17 5/8	10 1/2	8 3/16	8 x 6	—	BALL	DOUBLE	12	**10EP4**
	10FP4	42	CLEAR (ALUMINIZED)	12N	17 5/8	10 1/2	8 3/16	8 x 6	500-2500	CAVITY	NONE	12	**10FP4**
	10FP4A	42	GRAY (ALUMINIZED)	12N	17 5/8	10 1/2	8 3/16	8 x 6	500-2500	CAVITY	NONE	12	**10FP4A**

* Heater: 6.3 Volts, 450 Ma. † Heater: 8.4 Volts, 450 Ma.

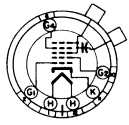
8BQ

12C



12D

12H



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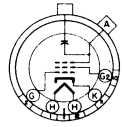


12N

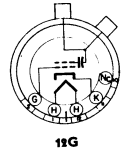
14N

TUBE COMPARISON CHART

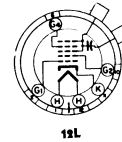
10MP4-14UP4

TUBE DESCRIPTION BY GROUPS	TYPE	RAD'VS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVERALL LENGTH	DIAMETER OR WIDTH & HEIGHT OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE VOLTAGE (KV)	TYPE
ROUND GLASS — MAGNETIC FOCUS & DEFLECTION 52° DEFLECTION ANGLE	10MP4	42	CLEAR	12G	17	10½	7⅝	8 x 6	500-2500	CAVITY	DOUBLE	10	10MP4
	10MP4A	42	GRAY	12G	17	10½	7⅝	8 x 6	500-2500	CAVITY	DOUBLE	10	10MP4A
	10RP4	42	CLEAR (ALUMINIZED)	12L	16¾	10½	7⅛	9¼ (DIAMETER)	750-1500	CAVITY	SINGLE	16	10RP4
ROUND GLASS — MAGNETIC FOCUS & DEFLECTION 50° TO 56° DEFLECTION ANGLE	12JP4	20	CLEAR	12D	17½	12	7	10 x 7½	NONE	BALL	NONE	12	12JP4
	12KP4	40	CLEAR (ALUMINIZED)	12N	17⅝	12⅛	7⅛	10½ x 7¾	500-2500	CAVITY	NONE	12	12KP4
	12KP4A	40	GRAY (ALUMINIZED)	12N	17⅝	12⅛	7⅛	10½ x 7¾	500-2500	CAVITY	NONE	12	12KP4A
	12LP4	40	CLEAR	12N	18¾	12⅛	8¼	10 x 7½	750-3000	CAVITY	DOUBLE	12	12LP4
	12LP4A	40	GRAY	12N	18¾	12⅛	8¼	10 x 7½	750-3000	CAVITY	DOUBLE	12	12LP4A
	12LP4C	40	GRAY (ALUMINIZED)	12N	18¾	12⅛	8¼	10 x 7½	750-3000	CAVITY	DOUBLE	12	12LP4C
	12QP4	40	CLEAR	12D	17½	12⅛	7	10 x 7½	NONE	BALL	SINGLE	12	12QP4
	12QP4A	40	GRAY	12D	17½	12⅛	7	10 x 7½	NONE	BALL	SINGLE	12	12QP4A
	12RP4	20	CLEAR	12D	17½	12⅛	7	10 x 7½	NONE	BALL	SINGLE	12	12RP4
	12TP4	40	CLEAR	12D	18¾	12⅛	8¼	10 x 7½	NONE	CAVITY	DOUBLE	12	12TP4
	12ZP4	40	CLEAR	12N	17⅝	12⅛	7⅛	10¾ x 7½	500-2500	CAVITY	SINGLE	12	12ZP4
	12ZP4A	40	GRAY (ALUMINIZED)	12N	17⅝	12⅛	7⅛	10¾ x 7½	500-2500	CAVITY	SINGLE	12	12ZP4A
ROUND METAL — MAGNETIC FOCUS & DEFLECTION 54° DEFLECTION ANGLE	12UP4	27	CLEAR	12D	18⅝	12⅛	8	10½ x 7¾	NONE	METAL CONE LIP	DOUBLE	12	12UP4
	12UP4A	27	GRAY	12D	18⅝	12⅛	8	10½ x 7¾	NONE	METAL CONE LIP	DOUBLE	12	12UP4A
	12UP4B	27	GRAY (FROSTED)	12D	18⅝	12⅛	8	10½ x 7¾	NONE	METAL CONE LIP	SINGLE	12	12UP4B
ROUND GLASS — MAGNETIC FOCUS & DEFLECTION 55° DEFLECTION ANGLE	12VP4	40	CLEAR	12G	18	12⅛	7½	10 x 7½	750-3000	CAVITY	DOUBLE	12	12VP4
	12VP4A	40	GRAY	12G	18	12⅛	7½	10 x 7½	750-3000	CAVITY	DOUBLE	12	12VP4A
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 65° DEFLECTION ANGLE	14BP4	27	GRAY	12N	16 13/16	12½ x 9 11/16	7 11/32	11 5/16 x 8 31/32	500-2000	CAVITY	SINGLE	12	14BP4
	14BP4A	27	GRAY (FROSTED)	12N	16 13/16	12½ x 9 11/16	7 11/32	11 5/16 x 8 31/32	500-2000	CAVITY	SINGLE	12	14BP4A
	14CP4	27	GRAY	12N	16¾	12 13/32 x 9 23/32	7 11/32	11½ x 8⅝	750-2000	CAVITY	SINGLE	14	14CP4
	14CP4A	27	GRAY (ALUMINIZED)	12N	16¾	12 13/32 x 9 23/32	7 11/32	11½ x 8⅝	750-2000	CAVITY	SINGLE	14	14CP4A
	14DP4	27	GRAY	12D	16¾	12 13/32 x 9 23/32	7 11/32	11 5/16 x 8 31/32	NONE	CAVITY	DOUBLE	14	14DP4
	14EP4	27	GRAY	12N	16½	12 13/32 x 9 23/32	6⅜	11⅜ x 8½	1250	CAVITY	SINGLE	14	14EP4
	14UP4	27	GRAY (ALUMINIZED)	12D	16 25/32	12 5/16 x 9¾	7½	11½ x 8⅝	NONE	CAVITY	SINGLE	14	14UP4

12D



12G



12L

12N

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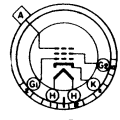
TUBE COMPARISON CHART

14ACP4-15DP4A

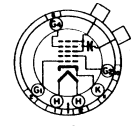
TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVERALL LENGTH	DIAMETER OR WIDTH AND HEIGHT OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE VOLTAGE (KV)	TYPE
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 85° DEFLECTION ANGLE	**14ACP4**	24	GRAY (ALUMINIZED)	12L	14⅜	13¹⁄₁₆ x 10⅝	6½	12⅛ x 9½	800-1200	CAVITY	SINGLE	14	**14ACP4**
	14AEP4	24	GRAY (ALUMINIZED)	12L	13⅜	13¹⁄₁₆ x 10⅝	5½	12⅛ x 9½	800-1200	CAVITY	NONE	14	**14AEP4**
	14ARP4	24	CLEAR (ALUMINIZED)	12L	13⅜	13 x 10⅝	5½	12⅛ x 9½	800-1200	CAVITY	NONE	14	**14ARP4**
	14ATP4*	24	GRAY (ALUMINIZED)	12L	13⅜	13¹⁄₁₆ x 10⅝	5½	12⅛ x 9½	500-1000	CAVITY	NONE	14	**14ATP4***
	14AUP4*	24	GRAY (ALUMINIZED)	12L	13⅜	13¹⁄₁₆ x 10⅝	5½	12⅛ x 9½	1000-1500	CAVITY	NONE	16.5	**14AUP4***
	14AWP4*	24	GRAY (ALUMINIZED)	12L	13⅜	13¹⁄₁₆ x 10⅝	5½	12⅛ x 9½	800-1200	CAVITY	NONE	14	**14AWP4***
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 110° DEFLECTION ANGLE	**14AJP4**	16½	GRAY (ALUMINIZED)	8HR	11⅞	13⅜ x 10¾	5½	12⅜ x 9⅜	500-850	CAVITY	SINGLE	11	**14AJP4**
	14ASP4	16½	GRAY (ALUMINIZED)	8HR	11⅜	13⅜ x 10⅜	5⅞	12⅜ x 9⅜	500-850	CAVITY	NONE	14	**14ASP4**
	14AVP4	16½	GRAY (ALUMINIZED)	8HR	11⅜	13⅜ x 10⅜	5⅞	12⅜ x 9⅜	450-700	CAVITY	NONE	14	**14AVP4**
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 80° DEFLECTION ANGLE	**14NP4**	24	GRAY	12L	14¼	13¹⁄₁₆ x 10⅝	6⅜	12⅛ x 9⅜	800-1200	CAVITY	SINGLE	14	**14NP4**
	14NP4A	24	GRAY (ALUMINIZED)	12L	14¼	13¹⁄₁₆ x 10⅝	6⅜	12⅛ x 9⅜	800-1200	CAVITY	SINGLE	14	**14NP4A**
	14RP4	24	GRAY	12L	14⅜	13¹⁄₁₆ x 10⅝	6½	12⅛ x 9½	800-1200	CAVITY	SINGLE	14	**14RP4**
	14RP4A	24	GRAY (ALUMINIZED)	12L	14⅜	13¹⁄₁₆ x 10⅝	6½	12⅛ x 9½	800-1200	CAVITY	SINGLE	14	**14RP4A**
	14WP4	24	GRAY (ALUMINIZED)	12L	13⅜	13¹⁄₁₆ x 10⅝	5½	12⅛ x 9½	800-1200	CAVITY	NONE	14	**14WP4**
	14ZP4	24	GRAY (ALUMINIZED)	12L	13⅜	13¹⁄₁₆ x 10⅝	5½	12⅛ x 9½	800-1200	CAVITY	NONE	15.4	**14ZP4**
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 65° DEFLECTION ANGLE	**14QP4**	27	GRAY	12L	16½	12⅝ x 9¾	6¾	11½ x 8⅝	600-1000	CAVITY	SINGLE	11	**14QP4**
	14QP4A	27	GRAY (ALUMINIZED)	12L	16½	12⅝ x 9¾	6¾	11½ x 8⅝	600-1000	CAVITY	SINGLE	11	**14QP4A**
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 79° DEFLECTION ANGLE	**14SP4**	24	GRAY (ALUMINIZED)	12L	14⅜	13¹⁄₁₆ x 10⅝	6½	12⅛ x 9½	900-1200	CAVITY	SINGLE	15.4	**14SP4**
	14XP4*	24	GRAY	12L	14⅜	13¹⁄₁₆ x 10⅝	6½	12⅛ x 9½	1100-1500	CAVITY	SINGLE	16.5	**14XP4***
	14XP4A*	24	GRAY (ALUMINIZED)	12L	14⅜	13¹⁄₁₆ x 10⅝	6½	12⅛ x 9½	1100-1500	CAVITY	SINGLE	16.5	**14XP4A***
ROUND GLASS — MAGNETIC FOCUS & DEFLECTION 50° TO 57° DEFLECTION ANGLE	**15AP4**	45	CLEAR	12D	20½	15½	6¹⁵⁄₁₆	12¾ x 9½	NONE	BALL	NONE	15	**15AP4**
	15CP4	45	CLEAR	12D	21½	15½	8	12¾ x 9½	NONE	CAVITY	DOUBLE	15	**15CP4**
	15DP4	45	CLEAR	12D	20½	15½	6¹⁵⁄₁₆	12¾ x 9½	NONE	BALL	SINGLE	15	**15DP4**
	15DP4A	45	GRAY	12D	20½	15½	6¹⁵⁄₁₆	12¾ x 9½	NONE	BALL	SINGLE	15	**15DP4A**

* Heater: 6.3 Volts, 450 Ma.

8HR



12D



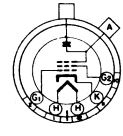
12L

TUBE COMPARISON CHART

16CP4-16XP4

TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVERALL LENGTH	DIAMETER OR WIDTH + HEIGHT OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE VOLTAGE (KV)	TYPE
ROUND GLASS — MAGNETIC FOCUS & DEFLECTION 50° TO 57° DEFLECTION ANGLE	**16CP4**	56⅜	CLEAR	12D	21⅛	15⅜	6⅝	14½ x 10¼	NONE	CAVITY	DOUBLE	15	**16CP4**
	16LP4	56⅜	CLEAR	12N	22¼	15⅜	7⅜	13¼ x 10¼	750-2000	CAVITY	DOUBLE	14	**16LP4**
	16LP4A	56⅜	GRAY	12N	22¼	15⅜	7⅜	13¼ x 10¼	750-2000	CAVITY	DOUBLE	14	**16LP4A**
	16ZP4	56⅜	GRAY	12N	22¼	15⅜	7⅜	13½ x 10½	750-1500	CAVITY	DOUBLE	16	**16ZP4**
ROUND GLASS — MAGNETIC FOCUS & DEFLECTION 60° TO 62° DEFLECTION ANGLE	**16DP4**	60	CLEAR	12D	20¾	15⅜	7⅜	13¼ x 10	NONE	CAVITY	DOUBLE	15	**16DP4**
	16DP4A	56⅜	GRAY	12D	20¾	15⅜	7⅜	13¼ x 10	NONE	CAVITY	DOUBLE	15	**16DP4A**
	16FP4	27	CLEAR	12D	20¼	16⅛	7	13¼ x 10	NONE	BALL	SINGLE	16	**16FP4**
	16HP4	40	CLEAR	12N	21¼	15⅜	8⅜	13¼ x 10¼	1500-3500	CAVITY	DOUBLE	14	**16HP4**
	16HP4A	56⅜	GRAY	12N	21¼	15⅜	8⅜	13¼ x 10¼	1500-3500	CAVITY	DOUBLE	14	**16HP4A**
	16JP4	27	CLEAR	12N	20¾	16⅜	7½	13¼ x 10¼	750-2000	CAVITY	DOUBLE	14	**16JP4**
	16JP4A	27	GRAY	12N	20¾	16⅜	7½	13¼ x 10¼	750-2000	CAVITY	DOUBLE	14	**16JP4A**
	16MP4	27	CLEAR	12N	21¾	16⅜	8½	13¼ x 10¼	750-2000	CAVITY	DOUBLE	14	**16MP4**
	16MP4A	27	GRAY	12N	21¾	16⅜	8½	13¼ x 10¼	750-2000	CAVITY	DOUBLE	14	**16MP4A**
ROUND METAL — MAGNETIC FOCUS & DEFLECTION 53° TO 60° DEFLECTION ANGLE	**16AP4**	27	CLEAR	12D	22⅜	15⅜	7⅝	13¼ x 10	NONE	METAL CONE LIP	DOUBLE	14	**16AP4**
	16AP4A	27	GRAY (FROSTED)	12D	22¼	15⅜	7⅝	13¼ x 10	NONE	METAL CONE LIP	DOUBLE	14	**16AP4A**
	16EP4	40	CLEAR	12D	19⅝	15⅜	6⅜	13¼ x 10	NONE	METAL CONE LIP	DOUBLE	14	**16EP4**
	16EP4A	40	GRAY (FROSTED)	12D	19⅝	15⅜	6⅜	13¼ x 10	NONE	METAL CONE LIP	DOUBLE	14	**16EP4A**
	16EP4B	40	GRAY	12D	19⅝	15⅜	6⅜	13¼ x 10	NONE	METAL CONE LIP	SINGLE	14	**16EP4B**
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 65° DEFLECTION ANGLE	**16KP4**	27	GRAY	12N	18¾	14¾ x 11⅛	7⅛	13½ x 10⅛	750-1500	CAVITY	SINGLE	16	**16KP4**
	16KP4A	27	GRAY (ALUMINIZED)	12N	18¾	14¾ x 11⅛	7⅛	13½ x 10⅛	750-1500	CAVITY	SINGLE	16	**16KP4A**
	16QP4	27	GRAY	12D	19⅛	14¾ x 11⅛	8⅛	13½ x 10⅛	NONE	CAVITY	DOUBLE	16	**16QP4**
	16RP4	27	GRAY	12N	18¾	14¾ x 11⅛	7⅛	13½ x 10⅛	750-1500	CAVITY	SINGLE	16	**16RP4**
	16RP4A	27	GRAY (ALUMINIZED)	12N	18¾	14¾ x 11⅛	7⅛	13½ x 10⅛	750-1500	CAVITY	SINGLE	16	**16RP4A**
	16TP4	27	GRAY	12N	18⅛	14¾ x 11⅛	6⅞	13½ x 10⅛	750-2000	CAVITY	SINGLE	14	**16TP4**
	16UP4	27	GRAY	12D	18⅛	14¾ x 11⅛	6⅞	13½ x 10⅛	NONE	CAVITY	SINGLE	15	**16UP4**
	16XP4	27	GRAY	12D	18¾	14¾ x 11⅛	7⅛	13½ x 10⅛	NONE	CAVITY	DOUBLE	15	**16XP4**

12D



12N

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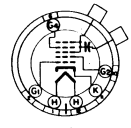
TUBE COMPARISON CHART

16SP4-17DKP4

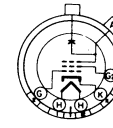
TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVER-ALL LENGTH	DIAMETER OR WIDTH + DEPTH OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE VOLTAGE (KV)	TYPE
ROUND GLASS — MAGNETIC FOCUS & DEFLECTION 70° DEFLECTION ANGLE	**16SP4**	56 5/16	CLEAR	12N	17 5/16	15 7/8	7	13 1/4 x 10	1500-3500	CAVITY	DOUBLE	14	**16SP4**
	16SP4A	56 5/16	GRAY	12N	17 5/16	15 7/8	7	13 1/4 x 10	1500-3500	CAVITY	DOUBLE	14	**16SP4A**
	16VP4	56 5/16	GRAY	12D	17 5/16	15 7/8	6 7/8	13 1/4 x 10	NONE	CAVITY	SINGLE	15	**16VP4**
	16WP4	56 5/16	GRAY	12D	17 3/4	15 7/8	7 1/16	14 1/2 x 10 1/4	NONE	CAVITY	DOUBLE	15	**16WP4**
	16WP4A	56 5/16	GRAY	12N	17 3/4	15 7/8	7 1/16	14 1/2 x 10 1/4	750-1500	CAVITY	DOUBLE	16	**16WP4A**
	16YP4	56 5/16	GRAY	12N	17 3/4	15 7/8	7	14 1/2 x 10 1/4	750-2000	CAVITY	SINGLE	14	**16YP4**
ROUND METAL — MAGNETIC FOCUS & DEFLECTION 70° DEFLECTION ANGLE	**16GP4**	40	GRAY	12D	17 11/16	15 7/8	7 5/8	13 1/4 x 10	NONE	METAL CONE LIP	SINGLE	14	**16GP4**
	16GP4A	40	CLEAR	12D	17 11/16	15 7/8	7 5/8	13 1/4 x 10	NONE	METAL CONE LIP	SINGLE	14	**16GP4A**
	16GP4B	40	GRAY (FROSTED)	12D	17 11/16	15 7/8	7 5/8	13 1/4 x 10	NONE	METAL CONE LIP	SINGLE	14	**16GP4B**
	16GP4C	40	GRAY (CLEAR)	12D	17 11/16	15 7/8	7 5/8	13 1/4 x 10	NONE	METAL CONE LIP	SINGLE	14	**16GP4C**
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 65° DEFLECTION ANGLE	**17AP4**	27	GRAY	12N	18 3/8	15 3/8 x 12 1/4	6 3/8	14 1/4 x 10 3/4	750-2000	CAVITY	SINGLE	16	**17AP4**
	17BP4	27	GRAY	12D	19 1/4	15 3/8 x 12 1/4	7 1/2	14 1/4 x 10 3/4	NONE	CAVITY	SINGLE	16	**17BP4**
	17BP4A	27	GRAY	12N	19 1/4	15 3/8 x 12 1/4	7 1/2	14 13/16 x 11 1/8	750-1500	CAVITY	SINGLE	16	**17BP4A**
	17BP4B	27	GRAY (ALUMINIZED)	12N	19 1/4	15 3/8 x 12 1/4	7 1/2	14 13/16 x 11 1/8	750-1500	CAVITY	SINGLE	16	**17BP4B**
	17BP4C	27	GRAY (FROSTED)	12N	19 1/4	15 3/8 x 12 1/4	7 1/2	14 1/4 x 10 3/4	750-1500	CAVITY	SINGLE	16	**17BP4C**
	17JP4	27	GRAY	12N	19 1/4	15 3/8 x 12 1/4	7 1/2	14 1/4 x 10 3/4	500-750	CAVITY	SINGLE	16	**17JP4**
RECTANGULAR METAL — MAGNETIC FOCUS & DEFLECTION — 66° DEFLECTION ANGLE	**17CP4**	30	GRAY (FROSTED)	12D	18 1/2	16 13/16 x 12 1/4	7 5/8	14 5/8 x 11	NONE	METAL CONE LIP	SINGLE	16	**17CP4**
	17CP4A	30	GRAY	12D	18 1/2	16 13/16 x 12 1/4	7 5/8	14 5/8 x 11	NONE	METAL CONE LIP	SINGLE	16	**17CP4A**
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 90° DEFLECTION ANGLE SERIES STRING OPERATION	**17BKP4***	27	GRAY	12L	15 3/8	15 3/8 x 12 5/8	6 1/2	14 3/16 x 11 1/8	1200-1500	CAVITY	SINGLE	17.6	**17BKP4***
	17BKP4A*	27	GRAY (ALUMINIZED)	12L	15 3/8	15 3/8 x 12 5/8	6 1/2	14 3/16 x 11 1/8	1200-1500	CAVITY	SINGLE	17.6	**17BKP4A***
	17CMP4	27	GRAY (ALUMINIZED)	12L	14 3/8	15 3/8 x 12 1/4	5 1/2	14 3/16 x 11 1/8	1000-1500	CAVITY	NONE	17.6	**17CMP4**
	17CNP4	20 3/4	GRAY (ALUMINIZED)	12L	15	15 3/8 x 12 3/4	5 1/2	14 3/4 x 11 15/16	1000-1500	CAVITY	NONE	17.6	**17CNP4**
	17CRP4	27	GRAY (ALUMINIZED)	12L	14 3/8	15 3/8 x 12 5/8	5 1/2	14 3/16 x 11 1/8	1800-2300	CAVITY	NONE	17.6	**17CRP4**
	17CUP4 ø	20 3/4	GRAY (ALUMINIZED)	12L	15 3/16	15 3/8 x 12 3/4	5 1/2	14 3/4 x 11 15/16	1200-1500	CAVITY	NONE	17.6	**17CUP4** ø
	17CYP4	20 3/4	GRAY (ALUMINIZED)	12L	14	15 3/8 x 12 3/4	4 1/2	14 3/4 x 11 15/16	1000-1500	CAVITY	NONE	16.0	**17CYP4**
	17CZP4	27	GRAY (ALUMINIZED)	12L	13 3/8	15 3/8 x 12 3/4	4 1/2	14 5/8 x 11 3/8	1000-1500	CAVITY	NONE	16.0	**17CZP4**
	17DKP4 ø	27	GRAY (ALUMINIZED)	12L	15 3/8	15 3/8 x 12 5/8	6 1/2	14 3/16 x 11 3/8	900-1400	CAVITY	SINGLE	17.6	**17DKP4** ø

* Heater: 6.3 Volts, 450 Ma. ø 6.3 Volts, 300 Ma.

12D



12L



12N

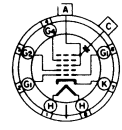
TUBE COMPARISON CHART

17ATP4-17RP4C

TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVERALL LENGTH	DIAMETER OR WIDTH + DEPTH OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE (EHV) VOLTAGE (KV)	TYPE
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 90° DEFLECTION ANGLE	17ATP4	27	GRAY	12L	16	15 3/8 x 12 1/4	6 1/2	14 1/4 x 10 3/4	750-1500	CAVITY	SINGLE	16	17ATP4
	17ATP4A	27	GRAY (ALUMINIZED)	12L	16	15 3/8 x 12 1/4	6 1/2	14 1/4 x 10 3/4	750-1500	CAVITY	SINGLE	16	17ATP4A
	17AVP4	27	GRAY	12L	15 5/8	15 3/8 x 12 5/8	6 1/2	14 15/16 x 11 1/4	1200-1500	CAVITY	SINGLE	16	17AVP4
	17AVP4A	27	GRAY (ALUMINIZED)	12L	15 5/8	15 3/8 x 12 5/8	6 1/2	14 15/16 x 11 1/8	1200-1500	CAVITY	SINGLE	16	17AVP4A
	17BJP4	27	GRAY* (ALUMINIZED)	12L	14 9/16	15 3/8 x 12 1/4	5 1/2	14 5/16 x 11 1/8	1200-1500	CAVITY	NONE	16	17BJP4
	17BMP4	27	GRAY (ALUMINIZED)	12L	15 5/8	15 3/8 x 12 5/8	6 1/2	14 5/16 x 11 1/8	750-1500	CAVITY	SINGLE	18	17BMP4
	17BNP4	27	GRAY (ALUMINIZED)	12L	14 5/8	15 3/8 x 12 5/8	5 1/2	14 5/16 x 11 1/8	750-1500	CAVITY	NONE	18	17BNP4
	17BSP4†	27	GRAY (ALUMINIZED)	12L	14 9/16	15 3/8 x 12 5/8	5 1/2	14 5/16 x 11 1/8	1200-1500	CAVITY	NONE	16	17BSP4†
	17BUP4	27	GRAY (ALUMINIZED)	12L	15 1/4	15 3/8 x 12 3/4	6 1/8	14 5/16 x 11 1/8	1000-1500	CAVITY	SINGLE	18	17BUP4
	17CBP4	27	GRAY	12L	15 1/4	15 3/8 x 12 5/8	6 1/8	14 5/16 x 11 1/8	1000-1500	CAVITY	SINGLE	18	17CBP4
	17CEP4†	20 3/4	GRAY (ALUMINIZED)	12L	15	15 3/8 x 12 3/4	5 1/2	14 3/4 x 11 11/16	1200-1500	CAVITY	NONE	16	17CEP4†
	17CFP4	20 3/4	GRAY (ALUMINIZED)	12L	15	15 3/8 x 12 3/4	5 1/2	14 3/4 x 11 11/16	1200-1500	CAVITY	NONE	16	17CFP4
	17CLP4	27	GRAY (ALUMINIZED)	12L	15 5/8	15 3/8 x 12 5/8	6 1/2	14 5/16 x 11 1/8	1800-2300	CAVITY	SINGLE	17.6	17CLP4
	17CXP4†	27	GRAY (ALUMINIZED)	12L	14 5/8	15 3/8 x 12 3/4	5 1/2	14 5/16 x 11 1/8	1000-1500	CAVITY	NONE	16	17CXP4†
	17DCP4ø	27	GRAY (ALUMINIZED)	12L	14 5/8	15 3/8 x 12 5/8	5 1/2	14 5/16 x 11 1/8	1000-1500	CAVITY	NONE	17.6	17DCP4ø
	17DLP4	20 3/4	GRAY (ALUMINIZED)	8JS	11 3/16	15 3/8 x 12 3/4	4 1/16	14 3/4 x 11 11/16	1000-1500	CAVITY	NONE	18.0	17DLP4
	17DQP4†	20 3/4	GRAY (ALUMINIZED)	7FA	12 3/8	15 3/8 x 12 3/4	5	14 3/4 x 11 11/16	1200-1700	CAVITY	NONE	17.6	17DQP4†
	17DSP4	20 3/4	GRAY (ALUMINIZED)	8HR	11 3/4	15 3/8 x 12 3/4	4 1/8	14 3/4 x 11 11/16	1000-1500	CAVITY	NONE	18.0	17DSP4
	17DXP4†	20 3/4	GRAY (ALUMINIZED)	8JR	10 11/16	15 3/8 x 12 3/4	3 7/8	14 3/4 x 11 11/16	1000-1500	CAVITY	NONE	17.6	17DXP4†
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 65° DEFLECTION ANGLE	17CGP4	27	GRAY	12L	17 5/16	15 13/16 x 12 9/16	5 1/2	14 5/16 x 11 1/8	500-750	CAVITY	NONE	14	17CGP4
	17FP4	27	GRAY (TREATED)	12L	19 1/4	15 3/8 x 12 3/4	7 3/8	14 1/4 x 10 3/4	500-1500	CAVITY	SINGLE	18	17FP4
	17FP4A	27	GRAY	12L	19 1/4	15 3/8 x 12 3/4	7 3/8	14 1/4 x 10 3/4	500-1500	CAVITY	SINGLE	18	17FP4A
	17HP4	27	GRAY	12L	19 5/16	15 3/8 x 12 1/4	7 3/8	14 15/16 x 11 1/8	750-1500	CAVITY	SINGLE	16	17HP4
	17HP4A	27	GRAY (TREATED)	12L	19 5/16	15 3/8 x 12 1/4	7 3/8	14 15/16 x 11 1/8	750-1500	CAVITY	SINGLE	16	17HP4A
	17HP4B	27	GRAY (ALUMINIZED)	12L	19 5/16	15 3/8 x 12 3/4	7 3/8	14 15/16 x 11 1/8	750-1500	CAVITY	SINGLE	16	17HP4B
	17KP4*	27	GRAY	12P	19 1/4	15 3/8 x 12 1/4	7 3/8	14 1/4 x 10 3/4	750-1500	CAVITY	SINGLE	16	17KP4*
	17KP4A*	27	GRAY (ALUMINIZED)	12P	19 1/4	15 3/8 x 12 1/4	7 1/2	14 1/4 x 10 3/4	750-1500	CAVITY	SINGLE	16	17KP4A*
	17RP4	27	GRAY	12L	19 1/4	15 3/8 x 12 1/4	7 3/8	14 1/4 x 10 3/4	750-1500	CAVITY	SINGLE	16	17RP4
	17RP4C	27	GRAY (ALUMINIZED)	12L	19 1/4	15 3/8 x 12 3/4	7 3/8	14 1/4 x 10 3/4	750-1500	CAVITY	SINGLE	16	17RP4C

* Automatic focus. † Heater: 6.3 Volts, 450 Ma. ø 6.3 Volts, 300 Ma.

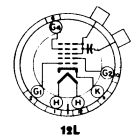
7FA



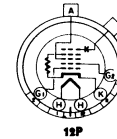
8HR

8JR

8JS



12L



12P

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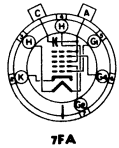
TUBE COMPARISON CHART

17BRP4-19AP4D

TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVERALL LENGTH	DIAMETER OR WIDTH × HEIGHT OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTION	TYPE OF ION TRAP	MAXIMUM ANODE (G5) VOLTAGE	TYPE
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 110° DEFLECTION ANGLE SERIES STRING OPERATION	**17BRP4**	20¾	GRAY (ALUMINIZED)	8HR	12⅝	15⅝ x 12¾	5⅞	143/4 x 111/16	1000-1500	CAVITY	SINGLE	15	**17BRP4**
	17BVP4	20¾	GRAY (ALUMINIZED)	7FA	13¼	15⅝ x 12¾	6½	143/4 x 111/16	1000-1500	CAVITY	SINGLE	17.6	**17BVP4**
	17BWP4	20¾	GRAY (ALUMINIZED)	7FA	12⅝	15⅝ x 12¾	5⅜	143/4 x 111/16	1000-1500	CAVITY	NONE	17.6	**17BWP4**
	17BYP4†	20¾	GRAY (ALUMINIZED)	7FA	12⅝	15⅝ x 12¾	5⅜	143/4 x 111/16	1000-1500	CAVITY	NONE	17.6	**17BYP4†**
	17CAP4	20¾	GRAY (ALUMINIZED)	8HR	12⅝	15⅝ x 12¾	5⅞	143/4 x 111/16	1000-1500	CAVITY	NONE	17.6	**17CAP4**
	17CDP4†	20¾	GRAY (ALUMINIZED)	8HR	12⅞	15⅝ x 12¾	5⅞	143/4 x 111/16	800-1500	CAVITY	NONE	16	**17CDP4†**
	17CKP4	20¾	GRAY (ALUMINIZED)	8HR	12⅝	15⅝ x 12¾	5⅞	143/4 x 111/16	1000-1500	CAVITY	SINGLE	15	**17CKP4**
	17CSP4	20¾	GRAY (ALUMINIZED)	7FA	12⅝	15⅝ x 12¾	5⅜	143/4 x 111/16	1000-1500	CAVITY	NONE	17.6	**17CSP4**
	17CTP4†	20¾	GRAY (ALUMINIZED)	8HR	12⅝	15⅝ x 12¾	5⅞	143/4 x 111/16	1000-1500	CAVITY	NONE	17.6	**17CTP4†**
	17CVP4§	20¾	GRAY (ALUMINIZED)	8HR	12⅝	15⅝ x 12¾	5⅞	143/4 x 111/16	1000-1500	CAVITY	NONE	17.6	**17CVP4§**
	17DEP4♂	20¾	GRAY (ALUMINIZED)	8JN	10⅝	15⅝ x 12¾	3⅜	143/4 x 111/16	900-1400	CAVITY	NONE	17.6	**17DEP4♂**
	17DHP4†	20¾	GRAY (ALUMINIZED)	8HR	11¾	15⅝ x 12¾	4⅛	143/4 x 111/16	1000-1500	CAVITY	NONE	16.0	**17DHP4†**
RECTANGULAR GLASS — CYLINDRICAL FACEPLATE — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 65° TO 66° DEFLECTION ANGLE	**17LP4**	27	GRAY	12L	19⅜	15⅜ x 12¾	7⅛	143/4 x 103/4	750-1500	CAVITY	SINGLE	16	**17LP4**
	17LP4A	27	GRAY (ALUMINIZED)	12L	19⅜	15⅜ x 12¾	7⅛	143/4 x 103/4	750-1500	CAVITY	SINGLE	16	**17LP4A**
	17SP4*	27	GRAY	12N	19⅛	15⅜ x 12¾	7⅛	143/8 x 103/8	500-750	CAVITY	SINGLE	14	**17SP4***
	17VP4	27	GRAY	12L	19⅜	15⅜ x 12¾	7⅛	143/8 x 103/8	750-1500	CAVITY	SINGLE	16	**17VP4**
	17VP4B	27	GRAY (ALUMINIZED)	12L	19⅜	15⅜ x 12¾	7⅛	143/8 x 103/8	750-1500	CAVITY	SINGLE	16	**17VP4B**
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — CYLINDRICAL FACEPLATE — 65° DEFLECTION ANGLE	**17QP4**	27	GRAY	12N	19⅜	15⅜ x 12¾	7⅛	143/4 x 103/4	750-1500	CAVITY	SINGLE	16	**17QP4**
	17QP4A	27	GRAY (ALUMINIZED)	12N	19⅜	15⅜ x 12¾	7⅛	143/4 x 103/4	750-1500	CAVITY	SINGLE	18	**17QP4A**
	17UP4	27	GRAY	12N	19⅜	15⅜ x 12¾	7⅛	143/4 x 103/4	750-1500	CAVITY	SINGLE	14	**17UP4**
	17YP4	27	GRAY	12N	19⅛	15⅜ x 12¾	7⅛	143/4 x 103/4	500-1500	CAVITY	SINGLE	16	**17YP4**
ROUND METAL — MAGNETIC FOCUS & DEFLECTION 66° DEFLECTION ANGLE (All types in this group are directly interchangeable)	**19AP4**	28	CLEAR	12D	21½	18⅝	7⅛	153/4 x 113/4	NONE	METAL CONE LIP	SINGLE	19	**19AP4**
	19AP4A	28	GRAY	12D	21½	18⅝	7⅛	153/4 x 113/4	NONE	METAL CONE LIP	SINGLE	19	**19AP4A**
	19AP4B	28	GRAY (FROSTED)	12D	21½	18⅝	7⅛	153/4 x 113/4	NONE	METAL CONE LIP	SINGLE	19	**19AP4B**
	19AP4C	28	GRAY (ALUMINIZED)	12D	21½	18⅝	7⅛	153/4 x 113/4	NONE	METAL CONE LIP	SINGLE	19	**19AP4C**
	19AP4D	28	CLEAR (FROSTED)	12D	21½	18⅝	7⅛	153/4 x 113/4	NONE	METAL CONE LIP	SINGLE	19	**19AP4D**

* Automatic Focus. † Heater: 6.3 Volts, 450 Ma. § Heater: 6.3 Volts, 300 Ma. ♂ 2.35 Volts, 600 Ma.



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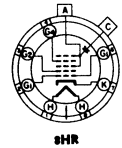

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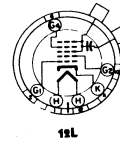


12L

12N

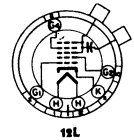
TUBE COMPARISON CHART

19QP4-21DWP4

TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVERALL LENGTH	DIAMETER OR WIDTH × HEIGHT OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE (EHT) VOLTAGE (KV)	TYPE
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 65° TO 66° DEFLECTION ANGLE	19QP4	27	GRAY	12L	21⅜	17⅛ x 13⅜	7⅛	16 x 12	500-750	CAVITY	SINGLE	18	19QP4
	20FP4	40	GRAY	12M	21⅜	18⅛ x 14⅛	7⅛	17 x 12¾	NONE	CAVITY	SINGLE	18	20FP4
	20GP4	40	GRAY	12L	21⅜	18⅛ x 14⅛	7⅛	17 x 12¾	500-750	CAVITY	SINGLE	18	20GP4
	20HP4	40	GRAY	12M	21⅜	18⅛ x 14⅛	7⅛	17 x 12¾	NONE	CAVITY	SINGLE	16	20HP4
	20HP4A	40	GRAY	12L	21⅜	18⅛ x 14⅛	7⅛	17 x 12¾	750-1500	CAVITY	SINGLE	16	20HP4A
	20HP4B	40	GRAY (TREATED)	12M	21⅜	18⅛ x 14⅛	7⅛	17 x 12¾	NONE	CAVITY	SINGLE	16	20HP4B
	20HP4C	40	GRAY (ALUMINIZED)	12M	21⅜	18⅛ x 14⅛	7⅛	17 x 12¾	NONE	CAVITY	SINGLE	16	20HP4C
	20HP4D	40	GRAY (ALUMINIZED)	12L	21⅜	18⅛ x 14⅛	7⅛	17 x 12¾	750-1500	CAVITY	SINGLE	16	20HP4D
	20LP4	40	GRAY	12L	21⅜	18⅛ x 14⅛	7⅛	17 x 13¼	750-1500	CAVITY	SINGLE	16	20LP4
	20MP4	40	GRAY	12L	21⅜	18⅛ x 14⅛	7⅛	17⅛ x 13¼	500-1500	CAVITY	SINGLE	16	20MP4
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 65° TO 66° DEFLECTION ANGLE	19EP4	27	GRAY	12D	21⅜	17 x 13⅜	7⅛	16 x 12	NONE	CAVITY	DOUBLE	19	19EP4
	19JP4	27	GRAY	12D	20¹³⁄₁₆	17⅛ x 13⅜	7⅛	16 x 12	NONE	CAVITY	SINGLE	18	19JP4
ROUND GLASS — MAGNETIC FOCUS & DEFLECTION 66° DEFLECTION ANGLE	19DP4	60	CLEAR	12N	21⅜	18⅞	7⅛	15¾ x 11¾	750-2500	CAVITY	DOUBLE	17	19DP4
	19DP4A	60	GRAY	12N	21⅜	18⅞	7⅛	15¾ x 11¾	750-2500	CAVITY	DOUBLE	17	19DP4A
	19FP4	60	GRAY	12D	22	18⅞	7⅝	15¾ x 11¾	NONE	CAVITY	DOUBLE	19	19FP4
	19GP4	60	GRAY	12D	21¾	18⅞	6⅞	15¾ x 11¾	NONE	CAVITY	SINGLE	19	19GP4
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 65° TO 66° DEFLECTION ANGLE	20CP4	40	GRAY	12D	21⅜	18¹³⁄₁₆ x 14¹³⁄₁₆	7⅝	17 x 12¾	NONE	CAVITY	SINGLE	18	20CP4
	20CP4A	40	GRAY	12N	21⅜	18¹³⁄₁₆ x 14¹³⁄₁₆	7⅝	17 x 12¾	500-750	CAVITY	SINGLE	18	20CP4A
	20CP4B	40	GRAY (ALUMINIZED)	12D	21⅜	18¹³⁄₁₆ x 14¹³⁄₁₆	7⅝	17 x 12¾	NONE	CAVITY	SINGLE	18	20CP4B
	20CP4C	40	GRAY (TREATED)	12D	21⅜	18¹³⁄₁₆ x 14¹³⁄₁₆	7⅝	17 x 12¾	NONE	CAVITY	SINGLE	18	20CP4C
	20CP4D	40	GRAY (ALUMINIZED)	12N	21⅜	18¹³⁄₁₆ x 14¹³⁄₁₆	7⅝	17 x 12¾	500-750	CAVITY	SINGLE	18	20CP4D
	20DP4	40	GRAY	12D	21¾	18¹³⁄₁₆ x 14¹³⁄₁₆	7⅜	17 x 12¾	NONE	CAVITY	SINGLE	18	20DP4
	20DP4A	40	GRAY	12N	21¾	18¹³⁄₁₆ x 14¹³⁄₁₆	7⅜	17 x 12¾	500-750	CAVITY	SINGLE	18	20DP4A
	20DP4B	40	GRAY (ALUMINIZED)	12D	21¾	18¹³⁄₁₆ x 14¹³⁄₁₆	7⅜	17 x 12¾	NONE	CAVITY	SINGLE	18	20DP4B
	20DP4C	40	GRAY (ALUMINIZED)	12N	21¾	18¹³⁄₁₆ x 14¹³⁄₁₆	7⅜	17 x 12¾	500-750	CAVITY	SINGLE	18	20DP4C
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 110° DEFLECTION ANGLE	21DMP4	28½	GRAY (ALUMINIZED)	8HR	13¾	20¼ x 16⅜	4½	20¼ x 15⅛	2000-2500	CAVITY	NONE	16.0	21DMP4
	21DWP4	33	GRAY (ALUMINIZED)	8HR	14⅝	20¾ x 16⅜	5⅛	19⅛ x 15⅛	2000-2500	CAVITY	NONE	18.00	21DWP4

8HR

12D



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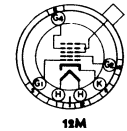

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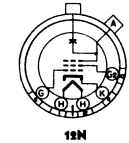

12N

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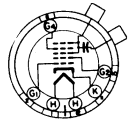
TUBE COMPARISON CHART

21ALP4-21DSP4

TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVERALL LENGTH	DIAMETER OR WIDTH + HEIGHT OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE VOLTAGE (KV)	TYPE
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 85° DEFLECTION ANGLE	**21ALP4**	33	GRAY	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15	2000-2500	CAVITY	SINGLE	18	**21ALP4**
	21ALP4A	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15	2000-2900	CAVITY	SINGLE	18	**21ALP4A**
	21ALP4B	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15	2000-2900	CAVITY	SINGLE	20	**21ALP4B**
	21ANP4	33	GRAY	12M	20	20¾ x 16⅜	7⅛	19⅛ x 15	NONE	CAVITY	SINGLE	18	**21ANP4**
	21ANP4A	33	GRAY (ALUMINIZED)	12M	20	20¾ x 16⅜	7⅛	19⅛ x 15	NONE	CAVITY	SINGLE	18	**21ANP4A**
	21ATP4	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15⅛	2200-2900	CAVITY	SINGLE	18	**21ATP4**
	21ATP4A	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15⅛	2200-2900	CAVITY	SINGLE	20	**21ATP4A**
	21ATP4B	33	GRAY	12L	20	20¾ x 16⅜	7⅛	19⅜ x 15	850-1500	CAVITY	SINGLE	18	**21ATP4B**
	21BAP4	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15	2000-2900	CAVITY	NONE	18	**21BAP4**
	21BNP4	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15	2000-2900	CAVITY	NONE	18	**21BNP4**
	21BTP4	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	22	**21BTP4**
	21CBP4	33	GRAY (ALUMINIZED)	12L	18	20¾ x 16⅜	5⅛	19⅛ x 15⅛	2000-2500	CAVITY	NONE	18	**21CBP4**
	21CBP4A	33	GRAY (ALUMINIZED)	12L	18	20¾ x 16⅜	5⅛	19⅛ x 15⅛	2000-2500	CAVITY	NONE	22	**21CBP4A**
	21CDP4	33	GRAY	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	22	**21CDP4**
	21CDP4A	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	22	**21CDP4A**
	21CGP4	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	20	**21CGP4**
	21CHP4	33	GRAY (ALUMINIZED)	12L	18	20¾ x 16⅜	5⅛	19⅛ x 15⅛	2000-2500	CAVITY	NONE	20	**21CHP4**
	21CKP4	33	GRAY (ALUMINIZED)	12L	18	20¾ x 16⅜	5⅛	19⅛ x 15⅛	2000-2500	CAVITY	NONE	20	**21CKP4**
	21CMP4	33	GRAY (ALUMINIZED)	12L	19	20¾ x 16⅜	6⅛	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	22	**21CMP4**
	21CVP4	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15⅛	2000-2500	CAVITY	NONE	22	**21CVP4**
	21CWP4	33	GRAY (ALUMINIZED)	12L	20	20¾ x 16⅜	7⅛	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	22	**21CWP4**
	21CXP4	33	GRAY (ALUMINIZED)	12L	18	20¾ x 16⅜	5⅛	19⅛ x 15⅛	2000-2500	CAVITY	NONE	22	**21CXP4**
	21DLP4	33	GRAY (ALUMINIZED)	12L	17	20¾ x 16⅜	4⅛	19⅛ x 15⅛	2000-2500	CAVITY	NONE	20	**21DLP4**
	21DRP4	28½	GRAY (ALUMINIZED)	12L	18¼	20¾ x 16⅜	5⅛	19⅛ x 15⅛	2000-2500	CAVITY	NONE	20	**21DRP4**
	21DSP4	33	GRAY (ALUMINIZED)	12L	18	20¾ x 16⅜	5⅛	19⅛ x 15⅛	2000-2500	CAVITY	NONE	20	**21DSP4**



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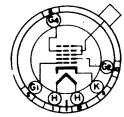


12M

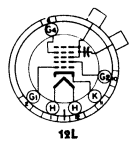
TUBE COMPARISON CHART

21DNP4-21AVP4

TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF F. CPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVER-ALL LENGTH	DIAMETER OR WIDTH * HEIGHT OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE (EHV) VOLTAGE	TYPE
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 85° DEFLECTION ANGLE SERIES STRING OPERATION	21DNP4	33	GRAY (ALUMINIZED)	12L	19	20¼ x 16⅜	6½	19⅛ x 15⅛	1200-1500	CAVITY	SINGLE	22	21DNP4
	21DQP4	33	GRAY (ALUMINIZED)	12L	17½	20¼ x 16⅜	5	19⅛ x 15⅛	2000-2500	CAVITY	NONE	20	21DQP4
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 90° DEFLECTION ANGLE	21ELP4	33	GRAY (ALUMINIZED)	12L	19	20¼ x 16⅜	6½	19⅛ x 15⅛	2000-2500	CAVITY	NONE	20.0	21ELP4
	21DVP4‡	33	GRAY (ALUMINIZED)	12L	20	21⅜ x 16⅜	7½	19⅛ x 15⅛	500-750	CAVITY	SINGLE	20.0	21DVP4‡
	21ENP4‡	33	GRAY (ALUMINIZED)	12L	19	20¼ x 16⅜	6½	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	22.0	21ENP4‡
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 85° DEFLECTION ANGLE	21ACP4	33	GRAY	12N	20	20¼ x 16⅜	7½	19⅛ x 15⅛	2000-2900	CAVITY	SINGLE	20	21ACP4
	21ACP4A	33	GRAY (ALUMINIZED)	12N	20	20¼ x 16⅜	7½	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	20	21ACP4A
	21AMP4	33	GRAY	12N	20	20¼ x 16⅜	7½	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	18	21AMP4
	21AMP4A	33	GRAY (ALUMINIZED)	12N	20	20¼ x 16⅜	7½	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	18	21AMP4A
	21AQP4	33	GRAY	12D	20	20¼ x 16⅜	7½	19⅛ x 15	NONE	CAVITY	SINGLE	18	21AQP4
	21AQP4A	33	GRAY (ALUMINIZED)	12D	20	20¼ x 16⅜	7½	19⅛ x 15	NONE	CAVITY	SINGLE	18	21AQP4A
	21BSP4	33	GRAY (ALUMINIZED)	12N	20	20¼ x 16⅜	7½	19⅛ x 15⅛	2000-2500	CAVITY	SINGLE	22	21BSP4
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — CYLINDRICAL FACEPLATE — 65° DEFLECTION ANGLE	21EP4	35	GRAY	12D	23	20¼ x 15⅜	7½	19⅛ x 13⅜	NONE	CAVITY	SINGLE	18	21EP4
	21EP4A	35	GRAY	12N	23	20¼ x 15⅜	7½	19⅛ x 13⅜	500-750	CAVITY	SINGLE	18	21EP4A
	21EP4B	35	GRAY (ALUMINIZED)	12N	23	20¼ x 15¾	7½	19⅛ x 13⅜	500-750	CAVITY	SINGLE	18	21EP4B
	21JP4*	35	GRAY	12N	23⅛	20¼ x 15⅜	7½	19⅛ x 13⅜	1200-1500	CAVITY	INTERNAL	20	21JP4*
	21JP4A*	35	GRAY (ALUMINIZED)	12N	23⅛	20¼ x 15⅜	7½	19⅛ x 13⅜	500-750	CAVITY	INTERNAL	20	21JP4A*
RECTANGULAR GLASS—CYLINDRICAL FACEPLATE—MAGNETIC DEFLECTION—ELECTROSTATIC FOCUS—65° TO 70° DEFLECTION ANGLE	21FP4	35	GRAY	12D	23	20¼ x 15⅜	7½	19⅛ x 13⅜	NONE	CAVITY	SINGLE	18	21FP4
	21FP4A	35	GRAY	12L	23	20¼ x 15⅜	7½	19⅛ x 13⅜	500-750	CAVITY	SINGLE	18	21FP4A
	21FP4C	35	GRAY (ALUMINIZED)	12L	23	20¼ x 15⅜	7½	19⅛ x 13⅜	500-750	CAVITY	SINGLE	18	21FP4C
	21KP4†	35	GRAY	12D	23	20¼ x 15⅜	7½	19⅛ x 13⅜	NONE	CAVITY	SINGLE	18	21KP4†
	21KP4A†	35	GRAY	12P	23	20¼ x 15⅜	7½	19⅛ x 13⅜	500-750	CAVITY	SINGLE	18	21KP4A†
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 65° TO 66° DEFLECTION ANGLE	21AFP4	40	GRAY	12M	23	20¼ x 15⅜	7½	19⅛ x 13⅜	NONE	CAVITY	SINGLE	18	21AFP4
	21ASP4	40	GRAY	12L	22¾	18 11/16 x 14 11/16	7½	17⅝ x 13⅜	NONE	CAVITY	SINGLE	18	21ASP4
	21AUP4	33	GRAY	12L	23½	20¼ x 16⅜	7½	19⅛ x 15⅛	500-750	CAVITY	SINGLE	18	21AUP4
	21AUP4A	33	GRAY (ALUMINIZED)	12L	23½	20¼ x 16⅜	7½	19⅛ x 15⅛	2000-2900	CAVITY	SINGLE	18	21AUP4A
(Section Continued On Following Page)	21AUP4B	33	GRAY (ALUMINIZED)	12L	23½	20¼ x 16⅜	7½	19⅛ x 15⅛	2000-2900	CAVITY	SINGLE	20	21AUP4B
	21AVP4	33	GRAY	12L	23½	20¼ x 16⅜	7½	19⅛ x 15⅛	1200-1500	CAVITY	SINGLE	18	21AVP4

* Internal magnetic focusing unit. † Automatic focus. ‡ 6.3 Volts, 300 Ma.

12D



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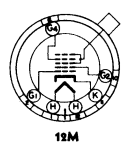

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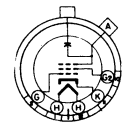

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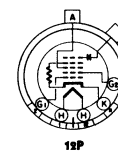

12P

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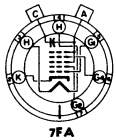
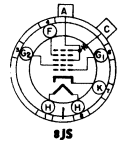
TUBE COMPARISON CHART

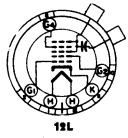
21AVP4A-21ZP4

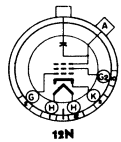
TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVER-ALL LENGTH	DIAMETER OR WIDTH × HEIGHT OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE VOLTAGE (KV)	TYPE
(Continued From Preceding Page)	21AVP4A	33	GRAY (ALUMINIZED)	12L	23 1/16	20 1/4 x 16 3/8	7 1/8	19 1/16 x 15 1/16	2000-2500	CAVITY	SINGLE	18	21AVP4A
	21AVP4B	33	GRAY (ALUMINIZED)	12L	23 1/16	20 1/4 x 16 3/8	7 1/8	19 1/16 x 15 1/16	2000-2900	CAVITY	SINGLE	20	21AVP4B
	21AYP4	40	GRAY	12L	22 1/16	18 11/16 x 14 13/16	7 1/8	17 5/8 x 13 5/8	2000-2500	CAVITY	SINGLE	18	21AYP4
RECTANGULAR GLASS—MAGNETIC DEFLECTION—ELECTROSTATIC FOCUS—65° TO 66° DEFLECTION ANGLE	21XP4	40	GRAY	12L	22 1/16	18 11/16 x 14 13/16	7 1/8	17 5/8 x 13 5/8	2000-2500	CAVITY	SINGLE	18	21XP4
	21XP4A	40	GRAY	12L	22 1/16	18 11/16 x 14 13/16	7 1/8	17 5/8 x 13 5/8	2000-2500	CAVITY	SINGLE	18	21XP4A
	21YP4	40	GRAY	12L	23	20 1/4 x 15 5/16	7 1/8	19 1/16 x 14 3/16	500-750	CAVITY	SINGLE	18	21YP4
	21YP4A	40	GRAY (ALUMINIZED)	12L	23	20 1/4 x 15 5/16	7 1/8	19 1/16 x 14 3/16	500-750	CAVITY	SINGLE	18	21YP4A
	21CEP4	28 1/2	GRAY (ALUMINIZED)	8HR	14 7/16	20 1/4 x 16 3/8	5 1/16	19 1/16 x 15 1/16	2000-2500	CAVITY	NONE	19.8	21CEP4
	21CEP4A	28 1/2	GRAY (ALUMINIZED)	8HR	14 1/16	20 1/4 x 16 3/8	5 1/16	19 1/16 x 15 1/16	2000-2500	CAVITY	NONE	22	21CEP4A
	21CQP4	28 1/2	GRAY (ALUMINIZED)	7FA	14 1/16	20 1/4 x 16 3/8	5 3/16	19 1/16 x 16 3/8	2000-2500	CAVITY	NONE	19.8	21CQP4
	21CSP4†	28 1/2	GRAY (ALUMINIZED)	7FA	14 7/16	20 1/4 x 16 3/8	5 3/16	19 1/16 x 15 1/16	2000-2500	CAVITY	NONE	19.8	21CSP4†
	21CZP4	28 1/2	GRAY (ALUMINIZED)	8HR	14 1/16	20 1/4 x 16 3/8	5 1/16	19 1/16 x 15 1/16	2000-2500	CAVITY	SINGLE	18	21CZP4
	21DAP4	28 1/2	GRAY (ALUMINIZED)	8HR	14 1/16	20 1/4 x 16 3/8	5 1/16	19 1/16 x 15 1/16	2000-2500	CAVITY	NONE	18	21DAP4
	21DEP4	28 1/2	GRAY (ALUMINIZED)	8HR	14 1/16	20 1/4 x 16 3/8	5 1/16	19 1/16 x 15 1/16	2000-2500	CAVITY	SINGLE	18	21DEP4
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 110° DEFLECTION ANGLE SERIES STRING OPERATION	21DEP4A	28 1/2	GRAY (ALUMINIZED)	8HR	14 1/16	20 1/4 x 16 3/8	5 1/16	19 1/16 x 15 1/16	2000-2500	CAVITY	SINGLE	20	21DEP4A
	21DHP4†	28 1/2	GRAY (ALUMINIZED)	8HR	14 1/16	20 1/4 x 16 3/8	5 1/16	19 1/16 x 15 1/16	1700-2500	CAVITY	NONE	19.8	21DHP4†
	21DKP4	28 1/2	GRAY (ALUMINIZED)	8HR	14 1/16	20 1/4 x 16 3/8	5 1/16	19 1/16 x 15 1/16	1700-2500	CAVITY	NONE	19.8	21DKP4
	21EAP4	28 1/2	CLEAR	8JK	12 13/16	20 1/4 x 16 3/8	3 11/16	19 1/16 x 15 1/16	2000-2500	CAVITY	NONE	16.0	21EAP4
	21EMP4	33	GRAY (ALUMINIZED)	8HR	13 3/16	20 1/4 x 16 3/8	4 3/16	19 1/16 x 15 1/16	2000-2500	CAVITY	NONE	18.0	21EMP4
	21EQP4*	33	GRAY (ALUMINIZED)	8JR	12 5/16	20 1/4 x 16 3/8	3 5/16	19 1/16 x 15 1/16	1500-2000	CAVITY	NONE	20.0	21EQP4*
	21ERP4*	33	GRAY (ALUMINIZED)	8JR	12 13/16	20 1/4 x 16 3/8	3 5/16	19 1/16 x 15 1/16	1500-2000	CAVITY	NONE	20.0	21ERP4*
	21ESP4	28	GRAY (ALUMINIZED)	8JS	13	20 1/4 x 16 3/8	4 1/16	19 1/16 x 15 1/16	2000-2500	CAVITY	NONE	18.0	21ESP4
	21EXP4▲	33	GRAY (ALUMINIZED)	8JR	12 5/16	20 1/4 x 16 3/8	3 5/16	19 1/16 x 15 1/16	2000-2500	CAVITY	NONE	20.0	21EXP4▲
	21ARP4*	40	GRAY	12N	23 1/16	20 1/4 x 15 5/16	7 1/16	19 1/16 x 14 3/16	500-750	CAVITY	INTERNAL	20	21ARP4*
	21ARP4A*	40	GRAY (ALUMINIZED)	12N	23 1/16	20 1/4 x 15 5/16	7 1/16	19 1/16 x 14 3/16	500-750	CAVITY	INTERNAL	20	21ARP4A*
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 65° TO 66° DEFLECTION ANGLE	21AWP4	40	GRAY* (ALUMINIZED)	12N	23 1/16	20 1/4 x 16 3/8	7 1/16	19 1/16 x 15 1/16	2000-2500	CAVITY	SINGLE	18	21AWP4
	21WP4	40	GRAY	12N	22 1/16	18 11/16 x 14 13/16	7 1/16	17 5/8 x 13 5/8	500-750	CAVITY	SINGLE	18	21WP4
	21WP4A	40	GRAY (ALUMINIZED)	12N	22 1/16	18 11/16 x 14 13/16	7 1/16	17 5/8 x 13 5/8	500-750	CAVITY	SINGLE	18	21WP4A
(Section Continued On Following Page)	21ZP4	40	GRAY	12D	23 1/16	20 1/4 x 15 5/16	7 1/16	19 1/16 x 14 3/16	NONE	CAVITY	SINGLE	18	21ZP4

* Internal magnetic focusing unit. † Heater: 6.3 Volts, 450 Ma. ■ Tri-Potential Focus. ▲ Tri-Potential Focus, 6.3 Volts, 300 Ma.







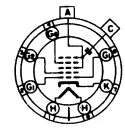


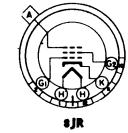
TUBE COMPARISON CHART

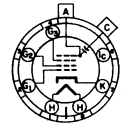
21ZP4A-24XP4

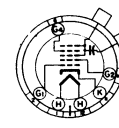
TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVERALL LENGTH	DIAMETER OR WIDTH × DEPTH OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTOR	TYPE OF ION TRAP	MAXIMUM ANODE VOLTAGE (kV)	TYPE
(Continued From Preceding Page) RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 65° TO 66° DEFLECTION ANGLE	21ZP4A	40	GRAY	12N	23⅛	20¾ x 15⅜	7½	19⅛ x 14⅜	500-750	CAVITY	SINGLE	18	21ZP4A
	21ZP4B	40	GRAY (ALUMINIZED)	12N	23⅛	20¾ x 15⅜	7½	19⅛ x 14⅜	500-750	CAVITY	SINGLE	18	21ZP4B
RECTANGULAR GLASS — MAGNETIC DEFLECTION ELECTROSTATIC FOCUS — 70°-72° DEFLECTION ANGLE	21BCP4	40	GRAY (ALUMINIZED)	12L	23⅛	20¼ x 16⅛	7½	19¼ x 14	500-750	CAVITY	NONE	18	21BCP4
	21BDP4	33	GRAY (ALUMINIZED)	12L	23⅛	20¼ x 16⅜	7½	19⅛ x 15	500-750	CAVITY	NONE	18	21BDP4
ROUND METAL — MAGNETIC FOCUS & DEFLECTION — 70° DEFLECTION ANGLE	22AP4	27	CLEAR	12D	22⅜	21¹¹⁄₁₆	7¾	18 x 13⅜	NONE	METAL CONE LIP	SINGLE	19	22AP4
	22AP4A	27	GRAY	12D	22⅜	21¹¹⁄₁₆	7¾	18 x 13⅜	NONE	METAL CONE LIP	SINGLE	19	22AP4A
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 90° DEFLECTION ANGLE	23ACP4*	50¼	GRAY (ALUMINIZED)	12L	19¹¹⁄₁₆	21⅝ x 17⅝	5½	19⅝ x 15¼	2000-2500	CAVITY	NONE	18.0	23ACP4*
	23TP4	50¹³⁄₁₆	GRAY (ALUMINIZED)	12L	19¹¹⁄₁₆	21⅝ x 17⅝	5½	19⅝ x 15¼	1700-2500	CAVITY	NONE	22.0	23TP4
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 110° DEFLECTION ANGLE	23BP4*	50¼	GRAY (ALUMINIZED)	8HR	14⅜	21⅝ x 17⅝	4⅜	19⅝ x 15¼	1700-2500	CAVITY	NONE	18.0	23BP4*
	23CP4*	50¾	GRAY (ALUMINIZED)	8HR	15⅜	21⅝ x 17⅝	5⅜	19⅝ x 15¼	2000-2500	CAVITY	NONE	22.0	23CP4*
	23DP4*	50¾	GRAY (ALUMINIZED)	8JR	13⅜	21⅝ x 17⅝	3⅝	19⅝ x 15¼	2000-2500	CAVITY	NONE	22.0	23DP4*
	23GP4*	50¹³⁄₁₆	CLEAR	8HR	15⅜	21⅝ x 17⅝	5⅜	19⅝ x 15¼	2000-2500	CAVITY	NONE	20.0	23GP4*
	23JP4*°	50⅝	GRAY (ALUMINIZED)	7FA	15⅛	21⅝ x 17⅝	5⅜	19⅝ x 15¼	2000-2500	CAVITY	NONE	22.0	23JP4*°
	23RP4*▪▲	50¼	GRAY (ALUMINIZED)	8JR	15¼	21⅝ x 17⅝	3⅝	19⅝ x 15¼	2000-2500	CAVITY	NONE	22.0	23RP4*▪▲
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 114° DEFLECTION ANGLE	23FP4	50	GRAY (ALUMINIZED)	8HR	13¾	20½ x 16½	4½	19¼ x 15⅜	2000-2500	CAVITY	NONE	22.0	23FP4
	23VP4	50	GRAY (ALUMINIZED)	8HR	13¾	20½ x 16½	4½	19¼ x 15⅜	2000-2500	CAVITY	NONE	22.0	23VP4
ROUND METAL — MAGNETIC FOCUS & DEFLECTION — 70° DEFLECTION ANGLE	24AP4	40	GRAY	12D	23¹³⁄₁₆	24	6¹⁵⁄₁₆	22⅛ x 16⅜	NONE	METAL CONE LIP	SINGLE	16	24AP4
	24AP4A	40	GRAY (ALUMINIZED)	12D	23¹³⁄₁₆	24	6¹⁵⁄₁₆	22⅛ x 16⅜	NONE	METAL CONE LIP	SINGLE	16	24AP4A
	24AP4B	40	GRAY (TREATED)	12D	23¹³⁄₁₆	24	6¹⁵⁄₁₆	22⅛ x 16⅜	NONE	METAL CONE LIP	SINGLE	16	24AP4B
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 85° TO 87° DEFLECTION ANGLE	24CP4	40	GRAY	12N	21⅜	22¹¹⁄₁₆ x 18¹⁄₁₆	7⅛	21⅛ x 16⅜	2000-2500	CAVITY	SINGLE	20	24CP4
	24CP4A	40	GRAY (ALUMINIZED)	12N	21⅜	22¹¹⁄₁₆ x 18¹⁄₁₆	7⅛	21⅛ x 16⅜	2000-2900	CAVITY	SINGLE	20	24CP4A
	24QP4	40	GRAY	12N	21⅜	22¹¹⁄₁₆ x 18¹⁄₁₆	7⅛	21¼ x 16¾	500-750	CAVITY	SINGLE	18	24QP4
	24TP4	40	GRAY (ALUMINIZED)	12N	21⅜	22¹¹⁄₁₆ x 18¹⁄₁₆	7⅛	21¼ x 16¾	250-750	CAVITY	SINGLE	18	24TP4
	24VP4	40	GRAY	12N	21⅜	22¹¹⁄₁₆ x 18¹⁄₁₆	7⅛	21⅜ x 16¾	2000-2500	CAVITY	SINGLE	22	24VP4
	24VP4A	40	GRAY (ALUMINIZED)	12N	21⅜	22¹¹⁄₁₆ x 18¹⁄₁₆	7⅛	21⅜ x 16¾	2000-2500	CAVITY	SINGLE	22	24VP4A
	24XP4	40	GRAY	12D	21⅜	22¹¹⁄₁₆ x 18¹⁄₁₆	7⅛	21¼ x 16¾	NONE	CAVITY	SINGLE	20	24XP4

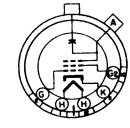
* Laminated. ° 6.3 Volts, 450 Ma. ▪ 6.3 Volts, 300 Ma. ▲ Tri-Potential, 6.3 Volts, 300 Ma.











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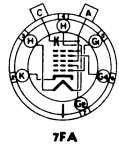
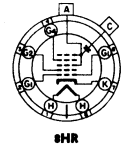
TUBE COMPARISON CHART

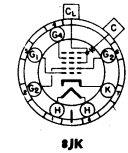
24AEP4-27VP4

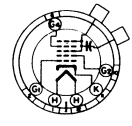
TUBE DESCRIPTION BY GROUPS	TYPE	RADIUS OF FACEPLATE CURVATURE (INCHES)	FACEPLATE DESCRIPTION	EIA BASE NUMBER	TUBE DIMENSIONS IN INCHES: OVERALL LENGTH	DIAMETER OR WIDTH × HEIGHT OF BULB	NECK LENGTH	USEFUL SCREEN AREA	EXTERNAL CONDUCTIVE COATING	ANODE CONNECTION	TYPE OF ION TRAP	MAXIMUM ANODE (EHV) VOLTAGE (KV)	TYPE
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 85° DEFLECTION ANGLE SERIES STRING OPERATION	24AEP4	40	GRAY (ALUMINIZED)	12L	19 1/8	22 11/16 x 18 7/16	5 1/2	21 7/16 x 16 7/8	2000-2500	CAVITY	NONE	20	24AEP4
	24ANP4	40	GRAY (ALUMINIZED)	12L	20 1/8	22 9/16 x 18 7/16	6 1/2	21 7/16 x 16 7/8	1700-2500	CAVITY	SINGLE	22	24ANP4
	24ASP4	40	GRAY (ALUMINIZED)	12L	19 1/8	22 9/16 x 18 7/16	5 1/2	21 7/16 x 16 7/8	1700-2500	CAVITY	NONE	22	24ASP4
	24ATP4	40	GRAY (ALUMINIZED)	12L	19 3/8	22 1/16 x 18 7/16	5 1/2	21 3/8 x 16 31/32	2000-2500	CAVITY	NONE	20	24ATP4
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 85° DEFLECTION ANGLE	24ADP4	40	GRAY (ALUMINIZED)	12N	21 1/8	22 11/16 x 18 7/16	7 1/2	21 7/16 x 16 7/8	2000-2500	CAVITY	SINGLE	24.2	24ADP4
	24DP4	40	GRAY	12L	21 1/8	22 11/16 x 18 7/16	7 1/2	21 7/16 x 16 7/8	2000-2500	CAVITY	SINGLE	20	24DP4
	24DP4A	40	GRAY (ALUMINIZED)	12L	21 1/8	22 11/16 x 18 7/16	7 1/2	21 7/16 x 16 7/8	2000-2900	CAVITY	SINGLE	20	24DP4A
	24YP4	40	GRAY (ALUMINIZED)	12L	21 1/8	22 11/16 x 18 7/16	7 1/2	21 7/16 x 16 7/8	2000-2500	CAVITY	SINGLE	20	24YP4
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 110° DEFLECTION ANGLE SERIES STRING OPERATION	24ALP4	32	GRAY (ALUMINIZED)	8HR	15 7/8	22 11/16 x 18 1/2	5 7/8	21 7/16 x 16 7/8	2000-2500	CAVITY	NONE	20	24ALP4
	24AMP4	32	GRAY (ALUMINIZED)	7FA	15 5/8	22 11/16 x 18 1/2	5 3/8	21 7/16 x 16 7/8	2000-2500	CAVITY	NONE	22	24AMP4
	24AQP4*	32	GRAY (ALUMINIZED)	8HR	15 7/8	22 11/16 x 18 1/2	5 7/8	21 7/16 x 16 7/8	1700-2500	CAVITY	NONE	22	24AQP4*
	24AVP4§	32	GRAY (ALUMINIZED)	8JK	14 15/16	22 11/16 x 18 1/2	4 3/8	21 7/16 x 16 7/8	1700-2500	CAVITY	NONE	20	24AVP4§
	24AXP4†	32	GRAY (ALUMINIZED)	8HR	15 7/8	22 11/16 x 18 1/2	5 7/8	21 7/16 x 16 7/8	1700-2500	CAVITY	NONE	22	24AXP4†
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 110° DEFLECTION ANGLE	24AHP4	32	GRAY (ALUMINIZED)	8HR	15 7/8	22 11/16 x 18 1/2	5 7/8	21 7/16 x 16 7/8	2000-2500	CAVITY	NONE	20	24AHP4
	24AWP4	32	GRAY (ALUMINIZED)	8HR	14 7/8	22 11/16 x 18 1/2	4 7/8	21 7/16 x 16 7/8	2000-2500	CAVITY	NONE	20	24AWP4
	24BAP4	32	GRAY (ALUMINIZED)	8HR	15 7/8	22 11/16 x 18 1/2	5 7/8	21 7/16 x 16 7/8	2000-2500	CAVITY	NONE	20.0	24BAP4
RECTANGULAR GLASS — MAGNETIC FOCUS & DEFLECTION — 85° TO 90° DEFLECTION ANGLE	27EP4	40	GRAY (ALUMINIZED)	12D	23 1/16	25 3/16 x 20 1/16	7 1/2	24 1/4 x 18 3/16	NONE	CAVITY	SINGLE	20	27EP4
	27GP4	40	GRAY	12D	23 1/16	25 3/16 x 20 1/16	7 1/2	24 1/4 x 18 3/16	NONE	CAVITY	SINGLE	22.5	27GP4
	27LP4	40	GRAY (ALUMINIZED)	12N	24 13/16	25 3/16 x 20 1/16	9 13/16	23 1/4 x 18 3/16	250-400	CAVITY	SINGLE	22	27LP4
	27NP4	40	GRAY	12N	23	25 3/16 x 20 1/16	7 1/2	24 1/4 x 18 3/16	500-750	CAVITY	SINGLE	18	27NP4
	27RP4	40	GRAY (ALUMINIZED)	12N	23 1/16	25 3/16 x 20 1/16	7 1/2	24 1/4 x 18 3/16	500-750	CAVITY	SINGLE	20	27RP4
RECTANGULAR GLASS — MAGNETIC DEFLECTION — ELECTROSTATIC FOCUS — 85° DEFLECTION ANGLE	27SP4	40	GRAY (ALUMINIZED)	12L	23 1/16	25 3/16 x 20 1/16	7 1/2	24 1/4 x 18 3/16	500-750	CAVITY	SINGLE	20	27SP4
	27UP4	40	GRAY	12L	23 1/16	25 3/16 x 20 1/16	7 1/2	24 x 18 1/2	500-750	CAVITY	SINGLE	20	27UP4
	27VP4	40	GRAY (ALUMINIZED)	12L	21 1/16	25 3/16 x 20 1/16	5 1/2	24 1/4 x 18 3/16	2000-2500	CAVITY	NONE	18	27VP4

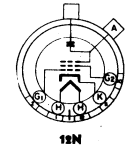
* Heater: 6.3 Volts, 450 Ma. † Heater: 6.3 Volts, 300 Ma. § Heater: 2.35 Volts, 600 Ma.









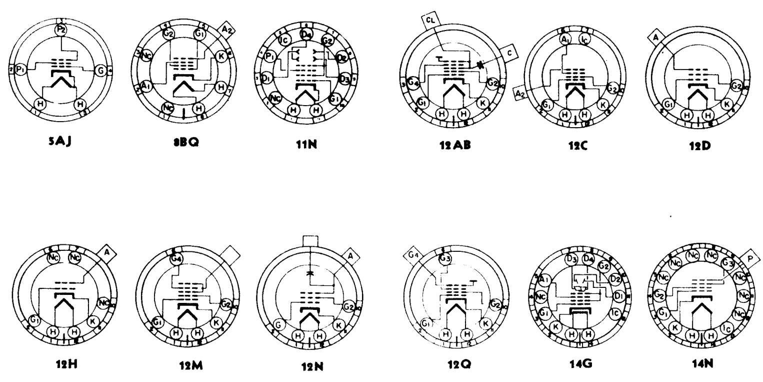


CATHODE RAY PICTURE TUBES

PHYSICAL DIMENSIONS

			OVERALL DIMENSIONS						RASTER SIZE					
TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
7ABP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	13 1/4	7 5/16	1 7/16	7 3/16	5 15/16	6					7ABP4
7AP4	NONE	MEDIUM 5-PIN	5AJ	13 1/2	7 3/8	1 7/16	7 1/8	6 1/8	6 5/8	6	4 1/2			7AP4
7CP4	RECESSED SMALL BALL CAP	LONG MEDIUM SHELL OCTAL 8-PIN	8BQ	13 7/16	7 1/16	1 3/8	7	6	6 1/2	5 1/2	4			7CP4
7DP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12C	14 1/16	8 1/8	1 7/16	7 3/16	5 15/16	6	5 1/2	4		4 1/4	7DP4
7EP4	NONE	MEDIUM MAGNAL 11-PIN	11N	15 1/2	6 1/2	1 5/8	7	9						7EP4
7GP4	NONE	MEDIUM SHELL DIHEPTAL 12-PIN	14G	14 1/2	5 3/8	2	7	9 1/8	6	5 1/2	4			7GP4
7HP4	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 7-PIN	12N	13	7 1/8	1 7/16	7 3/16	5 15/16		5 1/4	4			7HP4
7JP4	NONE	MEDIUM SHELL DIHEPTAL 12-PIN	14G	14 1/2	5 3/8	2	7	9 1/8	6	5 1/2	4			7JP4
7NP4	MEDIUM METAL CAP	PLASTIC FILLED SMALL SHELL DIHEPTAL 14-PIN	14N	19 1/2	10 5/16	2	7	9 5/16		5	3 3/4		2 13/16	7NP4
7QP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	12 7/8	6 13/16	1 7/16	7 3/16	5 15/16	6	5 3/8	4		3 11/16	7QP4
7RP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	14 1/16	8 1/8	1 7/16	7 3/16	5 15/16	6	5 1/2	4			7RP4
7TP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12Q	13 1/8	7 3/16	1 7/16	7 3/16	5 15/16	6	5 3/8	4			7TP4
7WP4	MEDIUM METAL CAP	PLASTIC FILLED SMALL SHELL DIHEPTAL 14-PIN	14N	19 7/16	10 3/16	2	7	9 1/4		5	3 3/4		2 13/16	7WP4
8AP4	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12H	14 1/4	7	1 7/16	8 1/2	7 1/4	7 3/4	7	5 1/4			8AP4
8AP4A	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12H	14 1/4	7	1 7/16	8 1/2	7 1/4	7 3/4	7	5 1/4			8AP4A
8BP4	NONE	MEDIUM SHELL DIHEPTAL 12-PIN	14G	16 1/2	5 3/4	2	8 3/8	10 3/4	8	6 1/2	4 3/4			8BP4
8DP4	RECESSED SMALL CAVITY CAP	DWARF-SHELL DUODECAL 6-PIN	12AB	10 7/16	6 1/2	1 7/16	8 7/16 D	3 15/16	7 13/16 D	7 3/16	5 3/8			8DP4

D Diagonal.



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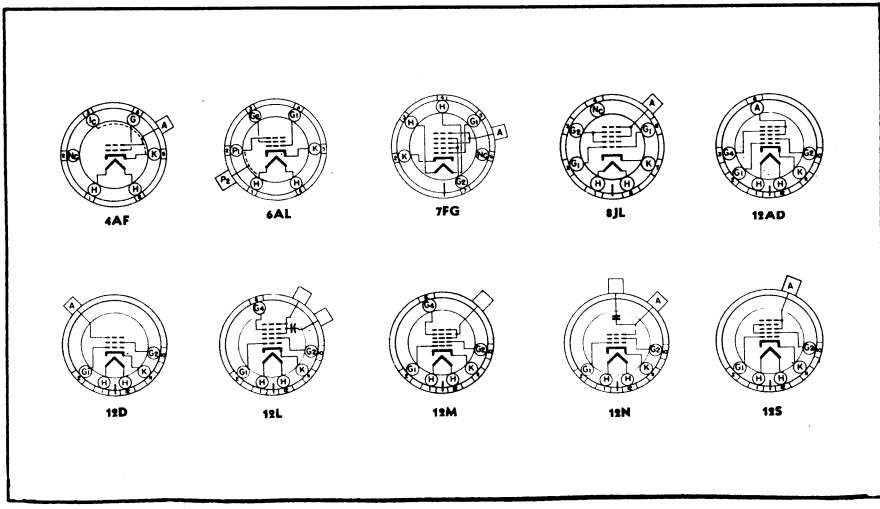
8FP4-10DP4

TYPE	DESCRIPTION	HEATER VOLTS	HEATER AMPERES	ION TRAP MAGNET	EXTERNAL MAG. SHIELD REQUIRED	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE DEGREES	EXTERNAL CONDUCTIVE COATING	RATINGS: MAX. ANODE VOLTS	RATINGS: MAX. GRID #1 RESISTANCE OHMS	RATINGS: MAX. CATHODE OR ANODE #2 VOLTS	TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS: ANODE #1 VOLTS	GRID #1 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION TRAP MAGNET CURRENT MA.	ION TRAP MAGNET FIELD STRENGTH GAUSS	TYPE
8FP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3[A]	0.6	SINGLE	YES	YES	M	M	85[H] 90[D]	NO	19.8	1.5	16		300	−53	125	30	33	8FP4
8HP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6 ±10%	NONE	NO	YES	M	E	85[H] 90[D]	YES	14	1.5	11	0[C] to 300	300	−50				8HP4
8JP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6 ±5%	NONE	NO	YES	M	E	105[H] 110[D]	NO	20	1.5	16		300	−53.5				8JP4
8XP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	YES	M	E[B]	[H].85 D.90	NO	22	1.5	16	0[C] to 400	300	−50				8XP4
8YP4	RECTANGULAR GLASS—DIRECT VIEW	6.3[A]	0.6	NONE	NO	YES	M	E[B]	105-[H] 110-D	NO	22	1.5	16		300	−53				8YP4
9AP4	ROUND GLASS—DIRECT VIEW	2.5	2.1	NONE	NO	NO	M	E	40	NO	7	1.5	7	1425	250	−87.5				9AP4
9CP4	ROUND GLASS—DIRECT VIEW	2.5	2.1	NONE	NO	NO	M	M		NO	7	1.5	7			−100				9CP4
9QP4	RECTANGULAR GLASS—DIRECT VIEW	4.7	0.3*	SINGLE	NO	NO	M	E	[H].61 D.70	NO	6.8	1.5	5.5		200	−40			22	9QP4
9QP4A	RECTANGULAR GLASS—DIRECT VIEW	4.7 ±10%	0.3*	SINGLE	NO	NO	M	E	61[H] 70[D]	NO	6.8	1.5	5.5		200	−40			22	9QP4A
10ABP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	NO	M	E	[H].85 D.90	YES	12	1.5	7.5	0[C] to 500	300	−50			32	10ABP4
10ABP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	NO	M	E	[H].85 D.90	YES	12	1.5	7.5	0[C] to 500	300	−50			32	10ABP4A
10ABP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	[H].85 D.90	YES	12	1.5	7.5	0[C] to 500	300	−50			32	10ABP4B
10ABP4C	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	NO	M	E	[H].85 D.90	YES	12	1.5	7.5	0[C] to 500	300	−50			32	10ABP4C
10ADP4	RECTANGULAR GLASS—DIRECT VIEW	8.4	0.45	SINGLE	NO	YES	M	E	[H].85 D.90	YES	12	1.5	7.5	0[C] to 500	300	−50			32	10ADP4
10AEP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45	SINGLE	NO	YES	M	E	[H].85 D.90	YES	12	1.5	7.5	0[C] to 500	300	−50			32	10AEP4
10BP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	50	YES	10	1.5	9		250	−45	100	109		10BP4
10BP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	50	YES	10	1.5	9		250	−45	110	120		10BP4A
10BP4C	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	NO	M	M	50	YES	10	1.5	9		250	−45	110	85		10BP4C
10BP4D	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	50	YES	10	1.5	9		250	−45	110	85		10BP4D
10CP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	NO	M	M	50	YES	12	1.5	9		250	−48				10CP4
10DP4	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	NO	M	E	50	NO	10	1.5	9	3250	250	−60				10DP4

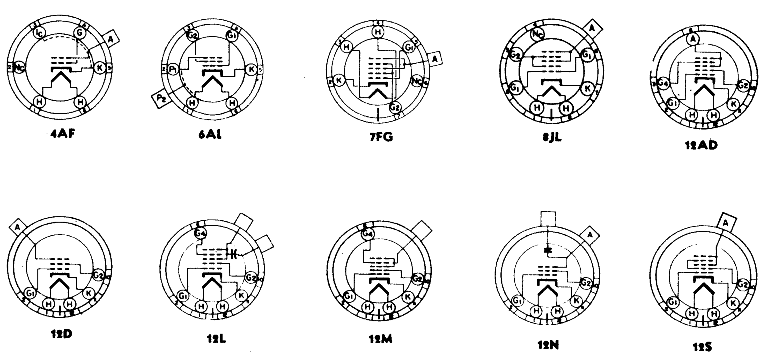
* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

[A] Receiver Check Tube. [H] Horizontal. [D] Diagonal. [C] Grid # 4 Voltage. [F] Deflection Factor: D_1D_3 : 145 V. dc/in. D_2D_4 : 118 V. dc/in.



TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL DIMENSIONS: OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	RASTER SIZE: USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
8FP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	11 7/16	7 1/2	1 7/16	8 7/16^{D}	3 5/16	7 3/4^{D}	7 3/16	5 3/8			8FP4
8HP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	9 5/16	6	1 7/16	7 13/16^{D}	3 15/16	7 13/16	7 3/16	5 3/8			8HP4
8JP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	8JL	8 15/16	5 7/16	1 1/8	8 7/16^{D}	3 1/2	7 7/8^{D}	7 1/2	5 7/8			8JP4
8XP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12S	11 7/16	7 1/2	1 7/16	8 7/16^{D}	3 15/16	7 3/4^{D}	7 3/16	5 3/8			8XP4
8YP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	7FG	8 11/16	5 3/16	1 1/8	8 7/16^{D}	3 1/2		7 1/2	5 5/8			8YP4
9AP4	MEDIUM METAL CAP	MEDIUM 6-PIN	6AL	21	9 7/8	1 3/8	9		7 7/8	7 1/4	5 3/8		3 3/16	9AP4
9CP4	MEDIUM METAL CAP	MEDIUM 6-PIN	4AF	15 7/8	8 3/8	1 7/16	9 1/16	7 1/2					3 5/8	9CP4
9QP4	NONE	SMALL SHELL DUODECAL 7-PIN	12AD	12 3/4	6 1/2	1 7/16	8 5/8^{D}	6 1/4	8 1/4^{D}	7 11/16	6 1/8		4 1/2	9QP4
9QP4A	NONE	SMALL SHELL DUODECAL 7-PIN	12AD	12 3/4	6 1/2	1 7/16	8 5/8^{D}	6 1/4	8 1/4^{D}	7 11/16	6 1/8		4 1/2	9QP4A
10ABP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	11 7/8	6 1/2	1 7/16	10 3/8^{D}	5 3/8	9 9/16^{D}	8 7/8	6 9/16		4	10ABP4
10ABP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	11 7/8	6 1/2	1 7/16	10 3/8^{D}	5 3/8	9 9/16^{D}	8 7/8	6 9/16		4	10ABP4A
10ABP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	11 7/8	6 1/2	1 7/16	10 3/8^{D}	5 3/8	9 9/16^{D}	8 7/8	6 9/16		4	10ABP4B
10ABP4C	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	11 7/8	6 1/2	1 7/16	10 3/8^{D}	5 3/8	9 9/16^{D}	8 7/8	6 9/16		4	10ABP4C
10ADP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	11 7/8	6 1/2	1 7/16	10 3/8^{D}	5 3/8	9 9/16^{D}	9 1/16	6 5/8			10ADP4
10AEP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	11 7/8	6 1/2	1 7/16	10 3/8^{D}	5 3/8	9 9/16^{D}	8 7/8	6 9/16		4	10AEP4
10BP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12N	17 5/8	8 3/16	1 7/16	10 1/2	9 7/16	9 1/8	8	6		4 5/8	10BP4
10BP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12N	17 5/8	8 3/16	1 7/16	10 1/2	9 7/16	9	8	6		4 5/8	10BP4A
10BP4C	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	17 5/8	8 3/16	1 7/16	10 1/2	9 7/16	9	8	6		4 5/8	10BP4C
10BP4D	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	17 5/8	8 3/16	1 7/16	10 1/2	9 7/16	9	8	6		4 5/8	10BP4D
10CP4	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 7-PIN	12N	16 5/8	7 3/16	1 7/16	10 1/2	9 7/16	9	8	6			10CP4
10DP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12M	17 5/8	8 3/16	1 7/16	10 1/2	9 7/16	9	8	6			10DP4

^{D} Diagonal.



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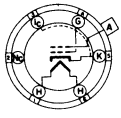
10EP4-12UP4

TYPE	DESCRIPTION	HEATER VOLTS	HEATER AMPERES	ION-TRAP MAGNET	EXTERNAL MAG. MU-METAL SHIELD	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE (DEGREES)	EXTERNAL CONDUCTIVE COATING	RATINGS MAX. ANODE VOLTS	RATINGS MAX. GRID #1 RESISTANCE MEGOHMS	RATINGS ANODE #2 OR ANODE VOLTS	TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET CURRENT MA.	TOLERANCE MAGNET FIELD STRENGTH GAUSS	TYPE
10EP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	50	YES	12			8000	250	−45	132			10EP4
10FP4	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	YES	NO	M	M	50	YES	12	1.5	9		250	−45	110			10FP4
10FP4A	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	YES	YES	M	M	50	YES	12	1.5	11		250	−45	110			10FP4A
10GP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	NO	E	E	[P]	NO	5	1.5	5	1850		−100				10GP4
10HP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	NO	E	E	[Q]	NO	5	1.5	5	1800		−100				10HP4
10MP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	52	YES	10	1.5	9			−45				10MP4
10MP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	52	YES	10	1.5	9			−45				10MP4A
10RP4	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	NO	M	E	50	YES	16	1.5	14	−55° to +300	300	−50				10RP4
10SP4	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES[X]	M	E	50	NO	14	1.5	14	2225	200	−33				10SP4
12AP4	ROUND GLASS—DIRECT VIEW	2.5	2.1	NONE	NO	NO	M	E	35	NO	7	5	7	1460	250	−75				12AP4
12CP4	ROUND GLASS—DIRECT VIEW	2.5	2.1	NONE	NO	NO	M	M		NO	7		7			−110				12CP4
12JP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	YES	NO	M	M	56	NO	12	1.5	10		250	−45	146			12JP4
12KP4	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	YES	NO	M	M	52	YES	12	1.5	10		250	−45	135			12KP4
12KP4A	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	YES	YES	M	M	54	YES	12	1.5	11		250	−45	135			12KP4A
12LP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	54	YES	12	1.5	11		250	−45	110	120		12LP4
12LP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	54	YES	12	1.5	11		250	−45	110	120		12LP4A
12LP4C	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	DOUBLE	YES	YES	M	M	54	YES	12	1.5	11		250	−45	110		35	12LP4C
12QP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO	M	M	55	NO	12	1.5	10		250	−45	135	80	52	12QP4
12QP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	55	NO	12	1.5	10		250	−45	135	80	52	12QP4A
12RP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO	M	M	56	NO	12	1.5	10		250	−45	135	80	52	12PR4
12TP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	54	NO	12	1.5	11		250	−45	110	120		12TP4
12UP4	ROUND METAL—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	54	NO	12	1.5	11		250	−45	110			12UP4

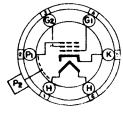
* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

[D] Diagonal. [H] Horizontal. [A] Grid # 4 Voltage. [X] Spherical Faceplate.

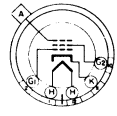
[Q] Deflection Factor:
D_1D_2 : 130 V. dc/in.
D_3D_4 : 100 V. dc/in.



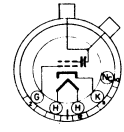
4AF



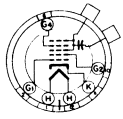
6AL



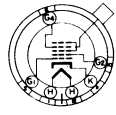
12D



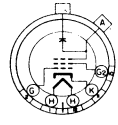
12G



12L



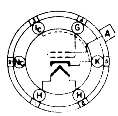
12M



12N

14G

			OVERALL DIMENSIONS							RASTER SIZE				
TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
10EP4	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 5-PIN	12N	17⅝	8 3/16	1 7/16	10½	9 7/16	9⅛					**10EP4**
10FP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12N	17⅝	8 3/16	1 7/16	10½	9 7/16	9	8	6			**10FP4**
10FP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	17⅝	8 3/16	1 7/16	10½	9 7/16	9⅛	8	6			**10FP4A**
10GP4	NONE	MEDIUM SHELL DIHEPTAL 12-PIN	14G	18½	5¾	2	10	12¾	9	8	6			**10GP4**
10HP4	NONE	MEDIUM SHELL DIHEPTAL 12-PIN	14G	19¼	6¼	2	10	13	8¾	8	6			**10HP4**
10MP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12G	17	7 3/16	1 7/16	10½	9 7/16	9⅛	8	6			**10MP4**
10MP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12G	17	7 3/16	1 7/16	10½	9 7/16	9⅛	8	6			**10MP4A**
10RP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	16½	7 1/16	1 7/16	10½	9 7/16	9⅛					**10RP4**
10SP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	16⅝	7 3/16	1 7/16	10½	9 7/16	9⅛	8	6			**10SP4**
12AP4	MEDIUM METAL CAP	MEDIUM 6-PIN	6AL	25	9 9/16	1 7/16	12 3/16	15 7/16	10¾	9¾	7⅜		3 3/16	**12AP4**
12CP4	MEDIUM METAL CAP	MEDIUM 6-PIN	4AF	18⅝	8	1 7/16	12 1/16	10⅝		10¼	7¾		3⅝	**12CP4**
12JP4	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 7-PIN	12D	17½	7	1 7/16	12	10½	11	10	7½			**12JP4**
12KP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12N	17⅝	7⅛	1 7/16	12 7/16	10½	11¼	10½	7¾			**12KP4**
12KP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12N	17⅝	7⅛	1 7/16	12 7/16	10½	11¼	10½	7¾			**12KP4A**
12LP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18¾	8¼	1 7/16	12 7/16	10½	11	10	7½		4¼	**12LP4**
12LP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18¾	8¼	1 7/16	12 7/16	10½	11	10	7½		4¼	**12LP4A**
12LP4C	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18¾	8¼	1 7/16	12 7/16	10½	11	10	7½			**12LP4C**
12QP4	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 7-PIN	12D	17½	7	1 7/16	12 7/16	10½	11	10	7½		4¼	**12QP4**
12QP4A	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 7-PIN	12D	17½	7	1 7/16	12 7/16	10½	11	10	7½		4¼	**12QP4A**
12RP4	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 5-PIN	12D	17½	7	1 7/16	12	10½	11	10	7½		4¼	**12RP4**
12TP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12D	18¾	8¼	1 7/16	12 7/16	10½	11	10	7½		4¼	**12TP4**
12UP4	METAL CONE LIP	SMALL SHELL DUODECAL 7-PIN	12D	18⅝	8	1 7/16	12 7/16	10⅝	11⅜	10½	7¾		4¼	**12UP4**



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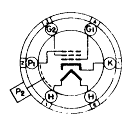

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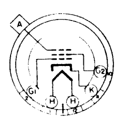

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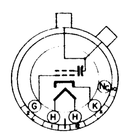

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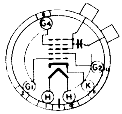

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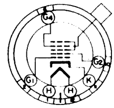

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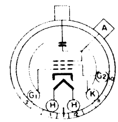

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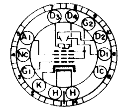


14G

TUNG-SOL ELECTRIC INC., ELECTRON TUBE DIVISION, BLOOMFIELD, NEW JERSEY, U.S.A., APRIL 1, 1961 PLATE #6137

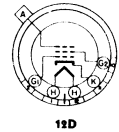
12UP4A-14DP4

TYPE	DESCRIPTION	HEATER									RATINGS			TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS						TYPE
		VOLTS	AMPERES	ION TRAP MAGNET	EXTERNAL MAGNETIC SHIELDING	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE DEGREES	EXTERNAL CONDUCTIVE COATING	MAX. ANODE MEGAVOLTS	MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #2 OR G#4 MEGAVOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE CUTOFF	FOCUSING COIL CURRENT MA.	ION TRAP MAGNET TORK	IONIZED MAGNET FIELD INTENSITY GAUSS	
12UP4A	ROUND METAL—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	54	NO	12	1.5	11		250	−45	110			12UP4A
12UP4B	ROUND METAL—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES*	M	M	54	NO	12	1.5	11		250	−45	130		35	12UP4B
12VP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	55	YES	12	1.5	11			−55				12VP4
12VP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	55	YES	12	1.5	11			−55				12VP4A
12WP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	55	YES	12	1.5	10			−45			95	12WP4
12YP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	NO	M	E	54	YES	12	1.5	11			−55		120	40	12YP4
12ZP4	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	NO	M	M	54	YES	12	1.5	11		250	−45	135	85		12ZP4
12ZP4A	ROUND GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	54	YES	12	1.5	11		250	−45	135	85		12ZP4A
14ACP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	E	H. 85 D. 90	YES	14	1.5	10	−50[A] to +350	125	−60			36	14ACP4
14AEP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H. 85 D. 90	YES	14	1.5	12	−50[A] to +350	110	−41				14AEP4
14AJP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	SINGLE	YES	YES	M	E	H. 105 D. 110	YES	11	1.5	9	−100[A] to +400	250	−44	−15 to +25μa		29	14AJP4
14ARP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	NO	M	E	H. 85 D. 90	YES	14	1.5	10	−50[A] to +350	50	0				14ARP4
14ASP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H. 105 D. 110	YES	14	1.5	12	−50[A] to +350	300	−50				14ASP4
14ATP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	NONE	NO	YES	M	E	H. 85 D. 90	YES	14	1.5	10	0[A] to 400	300	−47				14ATP4
14AUP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	NONE	NO	YES	M	E	H. 85 D. 90	YES	16.5	1.5	12	0[A] to 350	50	−40				14AUP4
14AVP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H. 105 D. 110	YES	14	1.5	12	−50[A] to +350	300	−50				14AVP4
14AWP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45	NONE	NO	YES	M	E	H. 85 D. 90	YES	14	1.5	12	−50[A] to +350	50	−39.5				14AWP4
14BP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H. 65 D. 70	YES	12	1.5	11		250	−45	110	120		14BP4
14CP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H. 65 D. 70	YES	14	1.5	12		300	−55	115		23	14CP4
14CP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H. 65 D. 70	YES	14	1.5	12		300	−55				14CP4A
14DP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	H. 65 D. 70	NO	14	1.5	11		250	−45	100	120		14DP4

* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

[D] Diagonal. [H] Horizontal. [A] Grid # 4 Voltage.

8HR



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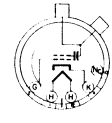

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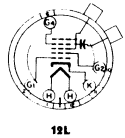

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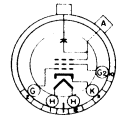
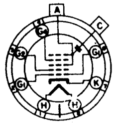


12N

12WP4

				OVERALL DIMENSIONS					RASTER SIZE			
TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES	NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
12UP4A	METAL CONE LIP	SMALL SHELL DUODECAL 7-PIN	12D	18 5/8	8	1 7/16	12 7/16	10 5/8	11 3/8	10 1/2	7 3/4	4 1/4	12UP4A
12UP4B	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	18 5/8	8	1 7/16	12 7/16	10 5/8	11 3/8	10 1/2	7 3/4	4 1/4	12UP4B
12VP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12G	18 3/8	7 7/8	1 7/16	12 7/16	10 1/2	11	10	7 1/2		12VP4
12VP4A	RECESSED SMALL CAVITY	SMALL SHELL DUODECAL 5-PIN	12G	18	7 1/2	1 7/16	12 7/16	10 1/2	11	10	7 1/2		12VP4A
12WP4	SPECIAL	MINIATURE 9-PIN	12WP4	17 3/4	5 23/32	7/8	12 7/16	12 1/32	11 1/4	8	6	4	12WP4
12YP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18 3/4	8 1/4	1 7/16	12 7/16	10 1/2	11 1/4			4 1/2	12YP4
12ZP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	17 5/8	7 1/8	1 7/16	12 7/16	10 1/2	11 1/4	7 3/4	10 1/2	3 1/2	12ZP4
12ZP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	17 5/8	7 1/8	1 7/16	12 7/16	10 1/2	11 1/4	7 3/4	10 1/2	3 1/2	12ZP4A
14ACP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 3/16	6 1/2	1 7/16	14D	7 11/16	13D	12 1/16	9 1/2		14ACP4
14AEP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	13 3/16	5 1/2	1 7/16	14D	7 11/16	13D	12 1/16	9 1/2		14AEP4
14AJP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	11 7/16	5 1/2	1 1/8	13 7/8D	5 15/16	13 1/8D	12 3/8	9 7/8	4 1/4	14AJP4
14ARP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	13 3/16	5 1/2	1 7/16	14D	7 11/16	13D	12 1/16	9 1/2		14ARP4
14ASP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	11 3/8	5 7/16	1 1/8	13 7/8D	5 15/16	13 1/8D	12 5/16	9 7/8		14ASP4
14ATP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	13 3/16	5 1/2	1 7/16	14D	7 11/16	13D	12 1/16	9 1/2		14ATP4
14AUP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	13 3/16	5 1/2	1 7/16	14D	7 11/16	13D	12 1/16	9 1/2		14AUP4
14AVP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	11 3/8	5 7/16	1 1/8	13 7/8D	5 15/16	13 1/8D	12 5/16	9 7/8		14AVP4
14AWP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	13 3/16	5 1/2	1 7/16	14D	7 11/16	13D	12 1/16	9 1/2		14AWP4
14BP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	16 13/16	7 11/32	1 7/16	13 11/16D	9 9/32	12 3/4D	11 9/16	8 21/32	3 5/8	14BP4
14CP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	16 3/4	7 15/32	1 7/16	13 11/16D	9 9/32	12 3/4D	11 1/2	8 5/8	4 5/16	14CP4
14CP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	16 3/4	7 15/32	1 7/16	13 11/16D	9 9/32	12 3/4D	11 1/2	8 5/8	4 5/16	14CP4A
14DP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	16 3/4	7 15/32	1 7/16	13 11/16D	9 9/32	12 3/4D	11 9/16	8 21/32	5 1/4	14DP4

D Diagonal.



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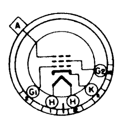

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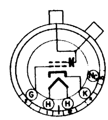

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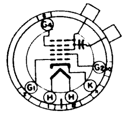

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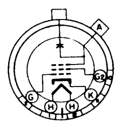

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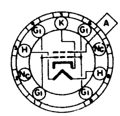


12WP4

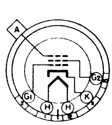
PRINTED IN U. S. A.

14EP4-16AEP4

TYPE	DESCRIPTION	HEATER: VOLTS	HEATER: AMPERES	ION-TRAP MAGNET	EXTERNAL MAGNETIC FOCUS COIL	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE DEGREES	EXTERNAL CONDUCTIVE COATING	RATINGS: MAX. ANODE KILOVOLTS	RATINGS: MAX. GRID #1 RESISTANCE MEGOHMS	TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS: ANODE #2 OR ANODE KILOVOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET CURRENT MA.	ION-TRAP MAGNET FIELD INTENSITY GAUSS	TYPE
14EP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H.65 D.70	YES	14	1.5	12		300	−55	110	110		**14EP4**
14GP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H.65 D.70	YES	14	1.5	12	2940A	300	−55		70	35	**14GP4**
14HP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H.65 D.70	YES	14	1.5	12	50 to 200	300	−55		70		**14HP4**
14NP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H.80 D.90	YES	14	1.5	12	−50A to +350	300	−50			30	**14NP4**
14NP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H.80 D.90	YES	14	1.5	12	−50A to +350	300	−50			30	**14NP4A**
14QP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H.65 D.70	YES	11	1.5	9	−50A to +250	250	−44		24	27	**14QP4**
14QP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H.65 D.70	YES	11	1.5	9	−50W to +250	250	−44			27	**14QP4A**
14RP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H.85 D.90	YES	14	1.5	10	−50W to +350	300	−48			36	**14RP4**
14RP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H.85 D.90	YES	14	1.5	10	−50W to +350	300	−48			36	**14RP4A**
14SP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H.85 D.90	YES	15.4	1.5	12	−48W to +264	300	−50		26	28	**14SP4**
14UP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H.65 D.70	NO	14	1.5	12		300	−50	105			**14UP4**
14WP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H.85 D.90	YES	14	1.5	12	−50W to +350	300	−50				**14WP4**
14XP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.45*	SINGLE	NO	YES	M	E	H.79 D.85	YES	16.5	1.5	12	−50W to +350	300	−50		28	30	**14XP4**
14XP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	SINGLE	NO	YES	M	E	H.79 D.85	YES	16.5	1.5	12	−50W to +350	300	−50		28	30	**14XP4A**
14ZP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H.85 D.90	YES	15.4	1.5	12	0W to +450	300	−50				**14ZP4**
15AP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	NONE	YES	NO	M	M	57	NO	15	1.5	12		250	−45	159			**15AP4**
15CP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	50	NO	15	1.5	15		250	−45	115	109		**15CP4**
15DP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO	M	M	57	NO	15	1.5	12		250	−45	140	90	58	**15DP4**
15DP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	57	NO	15	1.5	12		250	−45	140	90	58	**15DP4A**
16ABP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	D.70	YES	16	1.5	14		300	−55		75		**16ABP4**
16ACP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	NO	M	E	60	YES	14	1.5	13		250	−55		120		**16ACP4**
16AEP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	D.70	YES	16	1.5	14		300	−55		75		**16AEP4**

* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

W Grid # 4 Voltage. D Diagonal. H Horizontal. A Frosted.



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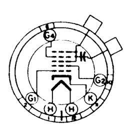

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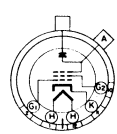
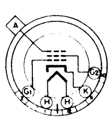


12N

TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL DIMENSIONS: OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	RASTER SIZE: USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
14EP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	16 5/32	6 7/8	1 7/16	13 11/16 D	9 9/32	12 1/2 D	11 3/8	8 1/2		2 3/4	**14EP4**
14GP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	16 13/16	7 1/2	1 7/16	13 11/16 D	9 5/16	12 3/8 D	11 3/8	8 1/2			**14GP4**
14HP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	16 13/16	7 1/2	1 7/16	13 11/16 D	9 5/16	12 3/4 D	11 1/2	8 5/8			**14HP4**
14NP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 1/4	6 9/16	1 7/16	14 D	7 11/16	13 1/16 D	13 1/16	12 1/8			**14NP4**
14NP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 1/4	6 9/16	1 7/16	14 D	7 11/16	13 1/16 D	13 1/16	12 1/8			**14NP4A**
14QP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	16 5/32	6 7/8	1 7/16	13 11/16 D	9 9/32	12 3/4 D	11 1/2	8 5/8		4 7/8	**14QP4**
14QP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	16 5/32	6 7/8	1 7/16	13 11/16 D	9 9/32	12 3/4 D	11 1/2	8 5/8		4 7/8	**14QP4A**
14RP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 3/16	6 1/2	1 7/16	14 D	7 11/16	13 D	12 1/16	9 1/2			**14RP4**
14RP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 3/16	6 1/2	1 7/16	14 D	7 11/16	13 D	12 1/16	9 1/2			**14RP4A**
14SP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 3/16	6 1/2	1 7/16	14 D	7 11/16	12 15/16 D	12 1/16	9 1/2			**14SP4**
14UP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	16 25/32	7 1/2	1 7/16	13 11/16 D	9 9/32	12 3/4 D	11 1/2	8 5/8			**14UP4**
14WP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	13 3/16	5 1/2	1 7/16	14 D	7 11/16	13 D	12 1/16	9 1/2			**14WP4**
14XP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 3/16	6 1/2	1 7/16	14 D	7 11/16	12 15/16 D	12 1/16	9 1/2			**14XP4**
14XP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 3/16	6 1/2	1 7/16	14 D	7 11/16	12 15/16 D	12 1/16	9 1/2			**14XP4A**
14ZP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	13 3/16	5 1/2	1 7/16	14 D	7 11/16	13 D	12 1/16	9 1/2			**14ZP4**
15AP4	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 7-PIN	12D	20 1/2	6 15/16	1 7/16	15 1/2	13 9/16	14	12 3/4	9 1/2			**15AP4**
15CP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12D	21 1/2	8	1 7/16	15 1/2	13 1/2	14	12 3/4	9 1/2			**15CP4**
15DP4	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 5-PIN	12D	20 1/2	6 15/16	1 7/16	15 1/2	13 9/16	14	12 3/4	9 1/2		4 1/4	**15DP4**
15DP4A	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 5-PIN	12D	20 1/2	6 15/16	1 7/16	15 1/2	13 9/16	14	12 3/4	9 1/2			**15DP4A**
16ABP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18 3/4	7 1/2	1 7/16	16 1/8 D	11 1/4	14 7/8 D	13 1/2	10 1/2		3 5/8	**16ABP4**
16ACP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	20 7/8	8	1 7/16	16 1/8	11 1/4	14 7/8	13 1/2	10 1/2		4 1/4	**16ACP4**
16AEP4	RECESSED SMALL CAVITY CAP	SMALL SHEL DUODECAL 6-PIN	12L	18 3/4	7 1/2	1 7/16	16 1/8 D	11 1/4	14 7/8 D	13 1/2	10 1/2		3 5/8	**16AEP4**

D Diagonal.



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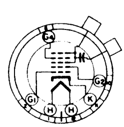

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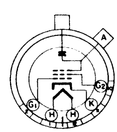


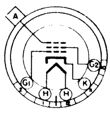
12N

TUNG-SOL ELECTRIC INC., ELECTRON TUBE DIVISION, BLOOMFIELD, NEW JERSEY, U.S.A., APRIL 1, 1961 PLATE #6139

16AP4-16RP4A

		HEATER									RATINGS			TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS						
TYPE	DESCRIPTION	VOLTS	AMPERES	ION-TRAP MAGNET	EXTERNAL MAGNETIC FOCUS COIL	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE DEGREES	EXTERNAL CONDUCTIVE COATING	MAX. ANODE KILOVOLTS	MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #2 OR ANODE KILOVOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET CURRENT MA.	ION-TRAP MAGNET FIELD INTENSITY GAUSS	TYPE
16AP4	ROUND METAL—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	53	NO	14	1.5	12		300	−55				**16AP4**
16AP4A	ROUND METAL—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	53	NO	14	1.5	12		300	−55	80			**16AP4A**
16CP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	52	NO	15	1.5	12		250	−45	110	120		**16CP4**
16DP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	60	NO	15	1.5	12		250	−45	115	109		**16DP4**
16DP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	60	NO	15	1.5	12		250	−45	115	110		**16DP4A**
16EP4	ROUND METAL—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	60	NO	14	1.5	12		300	−55	105			**16EP4**
16EP4A	ROUND METAL—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	60	NO	14	1.5	12		300	−55	105			**16EP4A**
16EP4B	ROUND METAL—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES[8]	M	M	60	NO	14	1.5	12		300	−55	105			**16EP4B**
16FP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO	M	M	62	NO	16	1.5	13		250	−45	146	105	58	**16FP4**
16GP4	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	70	NO	14	1.5	12		300	−55	100		23	**16GP4**
16GP4A	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO	M	M	70	NO	14	1.5	12		300	−55	100		35	**16GP4A**
16GP4B	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[8]	M	M	70	NO	14	1.5	12		300	−55	100		35	**16GP4B**
16GP4C	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO[8]	M	M	70	NO	14	1.5	12		300	−55	100		45	**16GP4C**
16HP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	60	YES	14	1.5	12		300	−55	110	120		**16HP4**
16HP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	60	YES	14	1.5	12		300	−55	110	120		**16HP4A**
16JP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	60	YES	14	1.5	11		250	−45	115	120		**16JP4**
16JP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	60	YES	14	1.5	11		250	−45	115	120		**16JP4A**
16KP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H.65 D.70	YES	16	1.5	14		300	−55	90		30	**16KP4**
16KP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H.65 D.70	YES	16	1.5	14		300	−55	90		30	**16KP4A**
16LP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	52	YES	14	1.5	12		300	−55	110	120		**16LP4**
16LP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	52	YES	14	1.5	12		300	−55	110	120		**16LP4A**
16MP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	60	YES	14	1.5	12		300	−55	110	120		**16MP4**
16MP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	60	YES	14	1.5	12		300	−55	110	120		**16MP4A**
16QP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	H.54.5 D.70	NO	16	1.5	14		250	−45	150	120		**16QP4**
16RP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H.65 D.70	YES	14	1.5	12		300	−55	100	120		**16RP4**
16RP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H.65 D.70	YES	14	1.5	12		300	−55	100	120		**16RP4A**

D Diagonal. H Horizontal. [8] Frosted.



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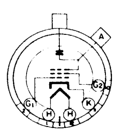
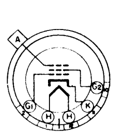


12N

			OVERALL DIMENSIONS							RASTER SIZE				
TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
16AP4	METAL CONE LIP	SMALL SHELL DUODECAL 7-PIN	12D	22 1/4	7 9/16	1 7/16	15 7/8	14 11/16	14 3/8	13 1/4	10		4	16AP4
16AP4A	METAL CONE LIP	SMALL SHELL DUODECAL 7-PIN	12D	22 1/4	7 9/16	1 7/16	15 7/8	14 11/16	14 3/8	13 1/4	10		4	16AP4A
16CP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12D	21 1/2	6 5/8	1 7/16	15 7/8	14 7/8	15	14 1/2	10 1/4		4 1/4	16CP4
16DP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12D	20 3/4	7 1/8	1 7/16	15 7/8	12 7/8	14 1/2	13 1/4	10		3 5/8	16DP4
16DP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12D	20 3/4	7 1/8	1 7/16	15 7/8	12 7/8	14 1/2	13 1/4	10		3 5/8	16DP4A
16EP4	METAL CONE LIP	SMALL SHELL DUODECAL 7-PIN	12D	19 5/16	6 1/8	1 7/16	15 7/8	12 7/16	14 3/8	13 1/4	10		3 3/4	16EP4
16EP4A	METAL CONE LIP	SMALL SHELL DUODECAL 7-PIN	12D	19 5/16	6 1/8	1 7/16	15 7/8	12 7/16	14 3/8	13 1/4	10		3 3/4	16EP4A
16EP4B	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	19 5/16	6 1/8	1 7/16	15 7/8	12 7/16	14 3/8	13 1/4	10		3 3/4	16EP4B
16FP4	RECESSED SMALL BALL CAP	SMALL SHELL DUODECAL 5-PIN	12D	20 1/4	7	1 7/16	16 1/8	13 1/4	15	13 1/4	10 1/4		4 1/4	16FP4
16GP4	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	17 11/16	7 5/16	1 7/16	15 7/8	10 3/8	14 3/8	13 1/4	10		4	16GP4
16GP4A	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	17 11/16	7 5/16	1 7/16	15 7/8	10 3/8	14 3/8	13 1/4	10		4	16GP4A
16GP4B	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	17 11/16	7 5/16	1 7/16	15 7/8	10 3/8	14 3/8	13 1/4	10		4	16GP4B
16GP4C	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	17 11/16	7 5/16	1 7/16	15 7/8	10 3/8	14 3/8	13 1/4	10		4	16GP4C
16HP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/4	8 3/8	1 7/16	15 7/8	12 7/8	14 1/2	13 1/4	10 1/4		4 5/8	16HP4
16HP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/4	8 3/8	1 7/16	15 7/8	12 7/8	14 1/2	13 1/2	10 1/4		4 5/8	16HP4A
16JP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	20 3/4	7 1/2	1 7/16	16 1/8	13 1/4	15	13 1/4	10 1/4			16JP4
16JP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	20 3/4	7 1/2	1 7/16	16 1/8	13 1/4	15	13 1/4	10 1/4			16JP4A
16KP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18 3/4	7 1/2	1 7/16	16 1/8 D	11 1/4	14 7/8 D	13 1/2	10 1/8		3 3/4	16KP4
16KP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18 3/4	7 1/2	1 7/16	16 1/8 D	11 1/4	14 7/8 D	13 1/2	10 1/8		3 3/4	16KP4A
16LP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	22 1/4	7 3/8	1 7/16	15 7/8	14 7/8	14 1/2	13 1/4	10 1/4		3 5/8	16LP4
16LP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	22 1/4	7 3/8	1 7/16	15 7/8	14 7/8	14 1/2	13 1/4	10 1/4		3 5/8	16LP4A
16MP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 3/4	8 1/2	1 7/16	16 1/8	13 1/4	14 3/4	13 1/4	10 1/4		4 5/8	16MP4
16MP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 3/4	8 1/2	1 7/16	16 1/8	13 1/4	14 3/4	13 1/4	10 1/4		4 5/8	16MP4A
16QP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 7-PIN	12D	19 1/8	8 1/8	1 7/16	16 1/8 D	11	15 D	13 1/2	10 1/8		5 1/4	16QP4
16RP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18 3/4	7 1/2	1 7/16	16 1/8 D	11 1/4	14 7/8 D	13 1/2	10 1/8		4 1/4	16RP4
16RP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18 3/4	7 1/2	1 7/16	16 1/8 D	11 1/4	14 7/8 D	13 1/2	10 1/8		4 1/4	16RP4A

D Diagonal.



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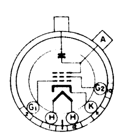


12N

PRINTED IN U. S. A.

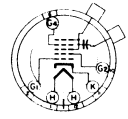
16SP4-17BP4A

TYPE	DESCRIPTION	HEATER									RATINGS			TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS						TYPE
		VOLTS	AMPERES	ION TRAP MAGNET	EXTERNAL MAG. NECESSARY FOR	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE DEGREES	EXTERNAL CONDUCTIVE COATING	MAX. ANODE #1 KILOVOLTS	MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #3 OR ANODE #2 KILOVOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION TRAP MAGNET FIELD STRENGTH GAUSS	SHIELD MAGNET FIELD INTENSITY GAUSS	
16SP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	NO	M	M	70	YES	14	1.5	12		300	−55	110	120		16SP4
16SP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	70	YES	14	1.5	12		300	−55	110	120		16SP4A
16TP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-65 D-70	YES	14	1.5	12		300	−55	115		45	16TP4
16UP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-65 D-70	NO	15	1.5	12		300	−45	100		23	16UP4
16VP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	70	NO	15	1.5	12		250	−45	110	120	23	16VP4
16WP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	70	NO	15	1.5	12		250	−45	110	120		16WP4
16WP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	70	YES	16	1.5	12		250	−45	110	120		16WP4A
16XP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	H-65 D-70	NO	15	1.5	12		250	−45	100	120		16XP4
16YP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	70	YES	14	1.5	12		300	−55	100		23	16YP4
16ZP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	52	YES	16	1.5	12		300	−55	110	120		16ZP4
17AP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-65 D-70	YES	16	1.5	12		300	−55	100	75		17AP4
17ATP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-80 D-90	YES	16	1.5	14	−55W to +300	300	−55			37	17ATP4
17ATP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-80 D-90	YES	16	1.5	14	−55W to +300	300	−55			37	17ATP4A
17AVP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	16	1.5	12	−48W to +264	300	−55	−25 to +25 μa	30		17AVP4
17AVP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	16	1.5	12	−48W to +264	300	−55	−25 to +25μa	30		17AVP4A
17BJP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	16	1.5	14	−55W to +300	300	−50				17BJP4
17BKP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.45*	SINGLE	YES	YES	M	E	H-85 D-90	YES	17.6	1.5	14	−56W to +310	300	−50		28	31	17BKP4
17BKP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	SINGLE	YES	YES	M	E	H-85 D-90	YES	17.6	1.5	14	−56W to +310	300	−50		28	31	17BKP4A
17BMP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	E	H-85 D-90	YES	18	1.5	14	−55W to +300	110	−41			37	17BMP4
17BNP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	18	1.5	14	−50W to +350	110	−41				17BNP4
17BP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-65 D-70	NO	16	1.5	12		300	−55	100		35	17BP4
17BP4A	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-65 D-70	YES	16	1.5	12		300	−55	100		35	17BP4A

H Horizontal. D Diagonal. W Grid # 4 Voltage. S Frosted.

* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

12D



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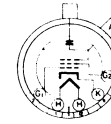
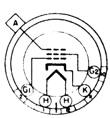


12N

TYPE	BULB CONTACT	BASE	OVERALL DIMENSIONS: EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	RASTER SIZE: USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
16SP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	17 5/16	7	1 7/16	15 7/8	10 5/16	14 1/2	13 1/4	10		3 5/8	16SP4
16SP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	17 5/16	7	1 7/16	15 7/8	10 5/16	14 1/2	13 1/4	10		3 5/8	16SP4A
16TP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18 1/8	6 7/8	1 7/16	16 1/8[D]	11 1/4	14 7/8[D]	13 1/2	10 1/8		4 1/2	16TP4
16UP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	18 1/8	6 7/8	1 7/16	16 1/8[D]	11 1/4	15[D]	13 1/2	10 1/8		4 7/8	16UP4
16VP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	17 3/16	6 7/8	1 7/16	15 7/8	10 5/16	14 1/2	13 1/2	10		4 5/8	16VP4
16WP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	17 3/4			15 7/8		14 1/2	13 1/2	10			16WP4
16WP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	17 3/4	7 1/16	1 7/16	15 7/8	10 5/16	14 1/2	13 1/2	10 1/2		4 5/16	16WP4A
16XP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	18 3/4	7 1/2	1 7/16	16 1/8[D]	11 1/4	15[D]	13 1/2	10 1/8		5 1/4	16XP4
16YP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	17 5/16	7	1 7/16	15 7/8	10 5/16	14 1/2	13 1/2	10		3 7/8	16YP4
16ZP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	22 1/4	7 3/8	1 7/16	15 7/8	14 7/8	14 1/2	13 1/2	10 1/2		3 5/8	16ZP4
17AP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	18 5/8	6 7/8	1 7/16	16 5/8[D]	11 3/4	16[D]	14 1/4	10 3/4		4 11/16	17AP4
17ATP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	16	6 15/16	1 7/16	16 5/8[D]	9 1/16	15 1/2[D]	14 3/8	11 1/16			17ATP4
17ATP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	16	6 15/16	1 7/16	16 5/8[D]	9 1/16	15 1/2[D]	14 3/8	11 1/16			17ATP4A
17AVP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15 5/8	6 1/2	1 7/16	16 5/8[D]	9 1/8	15 9/16[D]	14 15/16	11 1/8			17AVP4
17AVP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15 5/8	6 1/2	1 7/16	16 5/8[D]	9 1/8	15 9/16[D]	14 15/16	11 1/8			17AVP4A
17BJP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 5/8	5 1/2	1 7/16	16 5/8[D]	9 1/8	15 9/16[D]	14 5/16	11 1/8			17BJP4
17BKP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15 5/8	6 1/2	1 7/16	16 5/8[D]	9 1/8		14 5/16	11 1/8			17BKP4
17BKP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15 5/8	6 1/2	1 7/16	16 5/8[D]	9 1/8		14 5/16	11 1/8			17BKP4A
17BMP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15 5/8	6 1/2	1 7/16	16 5/8[D]	9 1/8	15 9/16[D]	14 5/16	11 1/8			17BMP4
17BNP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 5/8	5 1/2	1 7/16	16 5/8[D]	9 1/8	15 9/16[D]	14 5/16	11 1/8			17BNP4
17BP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	19 1/4	7 1/2	1 7/16	16 5/8[D]	11 3/4	15 3/8[D]	14 1/4	10 3/4		4 1/2	17BP4
17BP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	19 5/8	7 1/2	1 7/16	16 5/8[D]	11 3/4	15 9/16[D]	14 15/16	11 1/8			17BP4A

[D] Diagonal.



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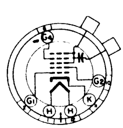

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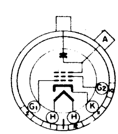


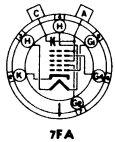
12N

17BP4B-17CP4

TYPE	DESCRIPTION	HEATER									RATINGS			TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS						
		VOLTS	AMPERES	ION-TRAP MAGNET	EXTERNAL MAG. FOCUS COIL	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE DEGREES	EXTERNAL CONDUCTIVE COATING	MAX. ANODE #1 VOLTS	MAX. GRID #1 RESISTANCE MEGOHMS	MAX. ANODE #2 OR GRID #2 VOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET CURRENT MA.	HORIZ. MAGNET FIELD STRENGTH GAUSS	TYPE
17BP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-65 D-70	YES	16	1.5	12		300	−55	100		35	**17BP4B**
17BP4C	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[B]	M	M	H-65 D-70	YES	16	1.5	12		300	−55	100		35	**17BP4C**
17BRP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	SINGLE	YES	YES	M	E	H-105 D-110	YES	15	1.5	14	0[W] to +500	300	−50	−15 to +25 μa		37	**17BRP4**
17BSP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45	NONE	NO	YES	M	E	H-85 D-90	YES	16	1.5	14	−50[W] to +350	300	−50				**17BSP4**
17BUP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	E	H-85 D-90	YES	18	1.5	12	−48[W] to +264	300	−55		30		**17BUP4**
17BVP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	SINGLE	YES	YES	M	E	H-105 D-110	YES	17.6	1.5	14	−50[W] to +350	300	−53.5			33	**17BVP4**
17BWP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	H-105 D-110	YES	17.6	1.5	14	−50[W] to +350	300	−53.5				**17BWP4**
17BYP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	NONE	NO	YES	M	E	H-105 D-110	YES	17.6	1.5	14	0[W] to +400	300	−53.5				**17BYP4**
17BZP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-105 D-110	YES	16	1.5	14	0[W] to +400	300	−50				**17BZP4**
17CAP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	H-105 D-110	YES	17.6	1.5	14	−50[W] to +350	300	−53.5				**17CAP4**
17CBP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	E	H-85 D-90	YES	18	1.5	12	−50[W] to +350	300	−50			32	**17CBP4**
17CDP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	8.4	0.45*	NONE	NO	YES	M	E	H-105 D-110	YES	16	1.5	12	0[W] to +400	200		−25 to +25 μamp		0 to 8	**17CDP4**
17CEP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45	NONE	NO	YES	M	E	H-85 D-90	YES	16	1.5	14	−50[W] to +350	300	−50				**17CEP4**
17CFP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	16	1.5	14	−50[W] to +350	300	−50				**17CFP4**
17CGP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	YES	M	E	H-65 D-70	YES	14	1.5	11	−56[W] to +310	300	−50				**17CGP4**
17CKP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	SINGLE	YES	YES	M	E	H-105 D-110	YES	15	1.5	14	0[W] to +500	300	−50	−15 to +25 μamp			**17CKP4**
17CLP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	E	H-85 D-90	YES	17.6	1.5	14	−48[W] to +264	300	−53.5			35	**17CLP4**
17CMP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	H-85 D-90	YES	17.6	1.5	14	0[W] to +400	50	−40				**17CMP4**
17CNP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	H-85 D-90	YES	17.6	1.5	14	0[W] to +400	50	−42.5				**17CNP4**
17CP4	RECTANGULAR METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[B]	M	M	H-66 D-70	NO	16	1.5	14		300	−55	104		50	**17CP4**

* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

[B] Frosted. [D] Diagonal. [H] Horizontal. [W] Grid # 4 Voltage.



7FA

8HR

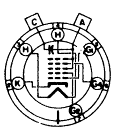
12D

12L

12N

			OVERALL DIMENSIONS						RASTER SIZE					
TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK-LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
17BP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	19 1/4	7 1/2	1 7/16	16 5/8[D]	11 3/4	15 9/16[D]	14 15/16	11 1/8		3 3/4	17BP4B
17BP4C	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	19 1/4	7 1/2	1 7/16	16 5/8[D]	11 3/4	15 1/2[D]	14 1/4	10 3/4			17BP4C
17BRP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	12 9/16	5 7/16	1 1/8	16 9/16[D]	7 1/8	15 3/4[D]	14 3/4	11 11/16			17BRP4
17BSP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 5/8	5 1/2	1 7/16	16 5/8[D]	9 1/8		14 5/16	11 1/8			17BSP4
17BUP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15 1/4	6 1/8	1 7/16	16 5/8[D]	9 1/8	15 9/16[D]	14 5/16	11 1/8			17BUP4
17BVP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	7FA	13 1/4	6 1/8	1 1/8	16 9/16[D]	7 1/8	15 3/4[D]	14 3/4	11 11/16			17BVP4
17BWP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	7FA	12 5/16	5 3/16	1 1/8	16 9/16[D]	7 1/8	15 3/4[D]	14 3/4	11 11/16			17BWP4
17BYP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	7FA	12 5/16	5 3/16	1 1/8	16 9/16[D]	7 1/8	15 3/4[D]	14 3/4	11 11/16			17BYP4
17BZP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	12 9/16	5 7/16	1 1/8	16 9/16[D]	7 1/8	15 3/4[D]	14 3/4	11 11/16			17BZP4
17CAP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	12 9/16	5 7/16	1 1/8	16 9/16[D]	7 1/8	15 3/4[D]	14 3/4	11 11/16			17CAP4
17CBP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15 1/4	6 1/8	1 7/16	16 5/8[D]	9 1/8	15 9/16[D]	14 5/16	11 1/8			17CBP4
17CDP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	12 9/16	5 7/16	1 1/8	16 9/16[D]	7 1/8	15 3/4[D]	14 3/4	11 11/16			17CDP4
17CEP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15	5 1/2	1 7/16	16 9/16[D]	9 1/2		14 3/4	11 11/16			17CEP4
17CFP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15	5 1/2	1 7/16	16 9/16[D]	9 1/2		14 3/4	11 11/16			17CFP4
17CGP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	17 3/16	5 1/2	1 7/16	16 5/8[D]	11 11/16	15 9/16[D]	14 5/16	11 1/8			17CGP4
17CKP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	12 9/16	5 7/16	1 1/8	16 9/16[D]	7 1/8	15 3/4[D]	14 3/4	11 11/16		2	17CKP4
17CLP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15 5/8	6 1/2	1 7/16	16 5/8[D]	9 1/8	15 9/16[D]	14 5/16	11 1/8			17CLP4
17CMP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 5/8	5 1/2	1 7/16	16 5/8[D]	9 1/8		14 5/16	11 1/8			17CMP4
17CNP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15	5 1/2	1 7/16	16 9/16[D]	9 1/2		14 3/4	11 11/16			17CNP4
17CP4	METAL SHELL LIP	SMALL SHELL DUODECAL 5-PIN	12D	18 1/2	7 3/16	1 7/16	16 13/16[D]	11 5/16	15 1/2[D]	14 5/8	11		4 3/4	17CP4

[D] Diagonal.



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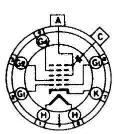

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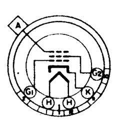

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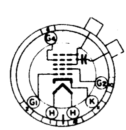

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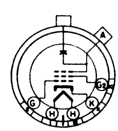


12N

17CP4A-17DSP4

TYPE	DESCRIPTION	HEATER VOLTS	HEATER AMPERES	ION-TRAP MAGNET	EXTERNAL MAG. RETICULOSE	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE, DEGREES	EXTERNAL CONDUCTIVE COATING	RATINGS: MAX. ANODE #4 VOLTS	RATINGS: MAX. GRID #4 RESISTANCE MEGOHMS	RATINGS: ANODE #4 OR #3 CURRENT MA.	TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS: ANODE #1 VOLTS	GRID #1 VOLTS	GRID #1 FOR VOLTS CUT-OFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET CURRENT MA.	ION-TRAP MAGNET FIELD STRENGTH GAUSS	TYPE
17CP4A	RECTANGULAR METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	R-66 D-70	NO	16	1.5	14		300	−55	104		50	17CP4A
17CRP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	R-85 D-90	YES	17.6	1.5	14	0[W] to +350	50	−40				17CRP4
17CSP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	R-105 D-110	YES	17.6	1.5	14	0[W] to +350	300	−53.5				17CSP4
17CTP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	NONE	NO	YES	M	E	R-105 D-110	YES	17.6	1.5	14	0[W] to +400	300	−53.5				17CTP4
17CUP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3* ±5%	NONE	NO	YES	M	E	85[R] 90[D]	YES	17.6	1.5	14	−50[W] to +350	300	−43.5				17CUP4
17CVP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3*	NO	NO	YES	M	E	R-105 D-110	YES	17.6	1.5	14	0[W] to +400	300	−53.5				17CVP4
17CWP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	NONE	NO	YES	M	E	105[R] 110[D]	YES	16	1.5	14	−50[W] to +350	400	−64				17CWP4
17CXP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45	NONE	NO	YES	M	E	R-85 D-90	YES	16	1.5	14	−50[W] to +350	50	−39.5				17CXP4
17CYP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZE SCREEN)	6.3	0.6	NONE	NO	YES	M	E	85[R] 90[D]	YES	16	1.5	14	−50[W] to +350	450	−72				17CYP4
17CZP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	85[R] 90[D]	YES	16	1.5	14	−50[W] to +350	450	−72				17CZP4
17DAP4	RECTANGULAR GLASS—DIRECT VIEW	2.68 ±10%	0.45*	NONE	NO	YES	M	E	105[R] 110[D]	YES	17.6	1.5	14	100[W] to 500	300	−53.5				17DAP4
17DBP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3* ±5%	SINGLE	NO	YES	M	E	65[R] 70[D]	YES	17.6	1.5	14	−50[W] to +300	300	−53.5		30		17DBP4
17DCP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3* ±5%	NONE	NO	YES	M	E	85[R] 90[D]	YES	17.6	1.5	14	−50[W] to +300	300	−53.5				17DCP4
17DEP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	2.35	0.6*	NONE	NO	YES[X]	M	E	105[R] 110[D]	YES	17.6	1.5	14	0[Y] to +400	500	−57.5				17DEP4
17DHP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	NONE	NO	NO[X]	M	E	105[R] 110[D]	YES	16	1.5	14	0[W] to +400	500	−57.5				17DHP4
17DJP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3*	SINGLE	NO	YES[X]	M	E	85[R] 90[D]	YES	17.6	1.5	14	−50[W] to +300	300	−53.5		31		17DJP4
17DKP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6* ±5%	NONE	NO	YES[X]	M	E	105[R] 110[D]	YES	17.6	1.5	14	0[Y] to +400	500	−60.5				17DKP4
17DLP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6* ±10%	NONE	NO	NO[X]	M	E	105[R] 110[D]	YES	18	1.5	17	0 to +500	450	−50				17DLP4
17DQP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45* ±5%	NONE	NO	YES[X]	M	E	105[R] 110[D]	YES	17.6	1.5	14.5	−200[W] to +350	50	−42.5				17DQP4
17DSP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	NO	M	E	105[R] 110[D]	YES	18	1.5	14	0[W] to 400	450	−62.5				17DSP4

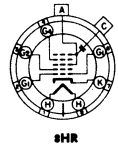
[D] Diagonal. [R] Horizontal. [E] Frosted. [X] Cylindrical Face Plate. [W] Grid # 4 Voltage. [Y] Special "Filter" Glass Face Plate

[X] Spherical Face Plate.

* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

[W] Grid # 3.

7FA



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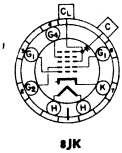

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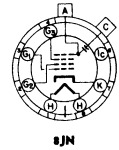

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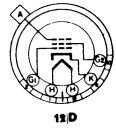

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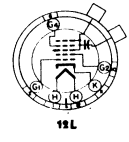
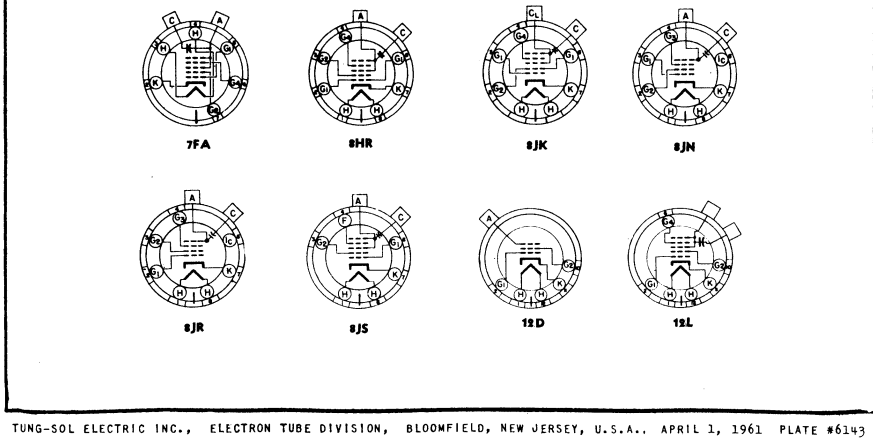


12L

TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL DIMENSIONS: OVERALL LENGTH INCHES	OVERALL DIMENSIONS: NECK LENGTH INCHES	OVERALL DIMENSIONS: NECK DIAMETER INCHES	OVERALL DIMENSIONS: BULB DIAMETER INCHES	OVERALL DIMENSIONS: PROJECTION OF BULB BEYOND MOUNTING PLANE INCHES	RASTER SIZE: USEFUL SCREEN DIAMETER INCHES	RASTER SIZE: USEFUL SCREEN WIDTH INCHES	RASTER SIZE: USEFUL SCREEN HEIGHT INCHES		NECK LENGTH REFERENCED TO SEATING PLANE INCHES	TYPE
17CP4A	METAL SHELL LIP	SMALL SHELL DUODECAL 5-PIN	12D	18 1/2	7 3/4	1 3/4	16 11/16 D	11 3/4	15 1/2 D	14 3/8	11		4 3/4	**17CP4A**
17CRP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 3/8	5 1/2	1 3/4	16 3/8 D	9 3/8	15 3/8 D	14 3/8	11 1/8			**17CRP4**
17CSP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	7FA	12 5/8	5 3/8	1 3/8	16 3/8 D	7 3/8	15 3/4 D	14 3/4	11 11/16			**17CSP4**
17CTP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	12 5/8	5 3/8	1 1/8	16 3/4 D	7 1/8	15 3/4 D	14 3/4	11 11/16			**17CTP4**
17CUP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15	5 1/2	1 1/8	16 3/8 D	9 1/2	15 3/8 D	14 3/4	11 11/16			**17CUP4**
17CVP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	12 5/8	5 3/8	1 1/8	16 3/4 D	7 1/8	15 3/4 D	14 3/4	11 11/16			**17CVP4**
17CWP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	11 3/8	4 1/2	1 1/8	16 3/4 D	7 3/8	15 3/8 D	14 3/4	11 11/16			**17CWP4**
17CXP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 5/8	5 1/2	1 3/8	16 3/8 D	9 1/8	15 3/8 D	14 3/8	11 1/8			**17CXP4**
17CYP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14	4 1/2	1 1/8	16 3/8 D	9 1/2	15 3/8 D	14 3/4	11 11/16			**17CYP4**
17CZP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	13 3/8	4 1/2	1 3/8	16 3/8 D	9 3/8	15 3/8 D	14 3/8	11 1/8			**17CZP4**
17DAP4	RECESSED SMALL CAVITY CAP	SHORT GLASS BUTTON 7-PIN	8JK	10 11/16	3 9/16	1 1/8	16 3/8 D	7 3/8	15 3/4 D	14 3/4	11 11/16			**17DAP4**
17DBP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 3/16	7 1/2	1 7/16	16 3/8 D	11 11/16	15 3/8 D	14 3/8	11 1/8		5 1/2	**17DBP4**
17DCP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	14 5/8	5 1/2	1 7/16	16 3/8 D	9 3/8	15 3/8 D	14 3/8	11 1/8			**17DCP4**
17DEP4	RECESSED SMALL CAVITY CAP	SMALL SHELL 8-PIN	8JN	10 7/16	3 5/8	1 1/8	16 3/8 D	7 3/8	15 3/4 D	14 3/4	11 11/16			**17DEP4**
17DHP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	11 1/4	4 1/8	1 1/8	16 3/8 D	7 1/8	15 3/4 D	14 3/4	11 11/16			**17DHP4**
17DJP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	15 3/8	6 1/2	1 7/16	16 3/8 D	9 3/8	15 3/8 D	14 3/8	11 1/8			**17DJP4**
17DKP4	RECESSED SMALL CAVITY CAP	SMALL SHELL 8-PIN	8JR	10 11/16	3 5/8	1 1/8	16 3/8 D	7 3/8	15 3/4 D	14 3/4	11 11/16			**17DKP4**
17DLP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 6-PIN	8TS	11 1/16	3 11/16	1 1/8	16 3/8 D	7 3/8	15 3/4 D	14 3/4	11 11/16			**17DLP4**
17DQP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	7FA	12 3/8	5	1 1/8	16 3/8 D	7 3/8	15 3/4 D	14 3/4	11 11/16			**17DQP4**
17DSP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	11 3/4	4 3/8	1 1/8	16 3/8 D	7 3/8	15 3/4 D	14 3/4	11 11/16			**17DSP4**

D Diagonal.



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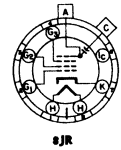
17DTP4-17YP4

TYPE	DESCRIPTION	HEATER										RATINGS			TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS						
		VOLTS	AMPERES	ION-TRAP MAGNET	EXTERNAL MAG. SHIELD	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE (DEGREES)	EXTERNAL CONDUCTIVE COATING	MAX. ANODE VOLTS	MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #2 OR ANODE #3 VOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET CURRENT MA.	ION-TRAP MAGNET FIELD STRENGTH GAUSS	TYPE
17DTP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6 ±5%	NONE	NO	NO	M	E	105[H] 110[D]	YES	17.6	1.5	14	0[W] to 400	300	−50				17DTP4
17DXP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	NONE	NO	YES	M	E	105[H] 110[D]	YES	17.6	1.5	14	0[V] to 400	500	−60.5				17DXP4
17FP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	85 D.70	YES	18	1.5	12	2300 to 3100[W]	300	−55			35	17FP4
17FP4A	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[Y]	M	E	85 D.70	YES	18	1.5	12	2170 to 2940[W]	300	−55		70	35	17FP4A
17GP4	RECTANGULAR METAL—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[S]	M	E	86 D.70	NO	16	1.5	14	2400[W] to 3200	300	−55			40	17GP4
17HP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	85 D.70	YES	16	1.5	14	−56[W] to +310	300	−55		85		17HP4
17HP4A	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[Y]	M	E	85 D.70	YES	16	1.5	14	55[W] to 300	300	−55		85		17HP4A
17HP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	85 D.70	YES	16	1.5	14	−56[W] to +310	300	−50			30	17HP4B
17JP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	85 D.70	YES	18	1.5	16		300	−55	100		45	17JP4
17KP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	85 D.70	YES	16	1.5	12		300	−55		50		17KP4
17KP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	85 D.70	YES	16	1.5	12		300	−55		50		17KP4A
17LP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[X]	M	E	85 D.70	YES	16	1.5	12	0-400[W]	300	−55		70	35	17LP4
17LP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES[X]	M	E	85 D.70	YES	16	1.5	14	−56[W] to +310	300	−55	−15 to +25 μa	85		17LP4A
17QP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[X]	M	M	85 D.70	YES	16	1.5	12		300	−55	100		35	17QP4
17QP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES[X]	M	M	85 D.70	YES	18	1.5	14		300	−50	95		30	17QP4A
17RP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	86 D.70	YES	16	1.5	12	0[W]	300	−55		75	35	17RP4
17RP4C	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	85 D.70	YES	16	1.5	12	0[W]	300	−55		75	35	17RP4C
17SP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[X]	M	E	70	YES	14	1.5	13		250	−50		120	40	17SP4
17TP4	RECTANGULAR METAL—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[S]	M	E	86 D.70	NO	16	1.5	14	55 to 300	300	−55			35	17TP4
17UP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[X]	M	M	70	YES	14	1.5	13		250	−50	110	120	40	17UP4
17VP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[X]	M	E	86 D.70	YES	16	1.5	14	0	300	−55			35	17VP4
17VP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES[X]	M	E	86 D.70	YES	16	1.5	14	0	300	−55			35	17VP4B
17YP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[X]	M	M	85 D.70	YES	18	1.5	16		300	−55	100		45	17YP4

[W] Grid #4 Voltage. [V] Grid #3. * Thermal Characteristics, etc. [H] Horizontal [D] Diagonal.

8HR



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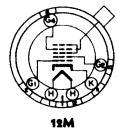

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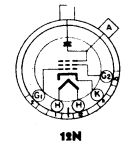

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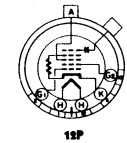
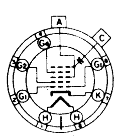


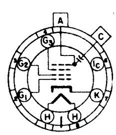
12P

TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
			OVERALL DIMENSIONS							RASTER SIZE				
17DTP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	10 3/4	3 5/8	1 1/8	16 9/16 D	7 1/8	15 3/4 D	14 3/4	11 11/16			**17DTP4**
17DXP4	RECESSED SMALL CAVITY CAP	SMALL SHELL 8-PIN	8JR	10 11/16	3 9/16	1 1/8	16 9/16 D	7 1/8	15 3/4 D	14 3/4	11 11/16			**17DXP4**
17FP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4	15 1/2 D	14 1/4	10 3/4			**17FP4**
17FP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4	15 1/2 D	14 1/4	10 3/4			**17FP4A**
17GP4	METAL CONE LIP	SMALL SHELL DUODECAL 6-PIN	12M	19 5/16	7 1/2	1 7/16	16 13/16 D	11 13/16	15 3/8 D	14 1/2	10 13/16			**17GP4**
17HP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 3/16	7 1/2	1 7/16	16 5/8 D	11 11/16	15 9/16 D	14 15/16	11 1/8		4 1/4	**17HP4**
17HP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 3/16	7 1/2	1 7/16	16 5/8 D	11 11/16	15 3/8 D	14 1/4	10 3/4		4 1/4	**17HP4A**
17HP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 3/16	7 1/2	1 7/16	16 5/8 D	11 11/16	15 9/16 D	14 15/16	11 1/8			**17HP4B**
17JP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4		14 1/4	11 1/8			**17JP4**
17KP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12P	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4	15 3/8 D	14 1/4	10 3/4			**17KP4**
17KP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12P	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4	15 3/8 D	14 1/4	10 3/4			**17KP4A**
17LP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4	15 1/2 D	14 1/4	10 3/4			**17LP4**
17LP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4	15 1/2 D	14 1/4	10 3/4			**17LP4A**
17QP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4	16 D	14 1/4	10 3/4			**17QP4**
17QP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4	16 D	14 1/4	10 3/4			**17QP4A**
17RP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4	15 1/2 D	14 1/4	10 3/4		5 1/2	**17RP4**
17RP4C	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 1/4	7 1/2	1 7/16	16 5/8 D	11 3/4	15 1/2 D	14 1/4	10 3/4		5 1/2	**17RP4C**
17SP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	19 3/16	7 1/2	1 7/16	16 5/8 D	11 11/16	15 13/16 D	14 1/2	10 7/8		3 5/8	**17SP4**
17TP4	METAL CONE LIP	SMALL SHELL DUODECAL 6-PIN	12M	19 5/16	7 1/2	1 7/16	16 13/16 D	11 13/16	15 3/8 D	14 1/2	10 13/16			**17TP4**
17UP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	19 3/16	7 1/2	1 7/16	16 5/8 D	11 11/16	15 11/16 D	14 1/2	10 7/8		3 5/8	**17UP4**
17VP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 3/16	7 1/2	1 7/16	16 5/8 D	11 11/16	15 3/4 D	14 1/2	10 7/8			**17VP4**
17VP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 3/16	7 1/2	1 7/16	16 5/8 D	11 11/16	15 3/4 D	14 1/2	10 7/8			**17VP4B**
17YP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	19 3/16	7 1/2	1 7/16	16 5/8 D	11 11/16	15 3/8 D	14 1/4	10 3/4			**17YP4**

D Diagonal.



8HR



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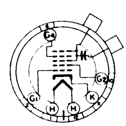

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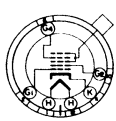
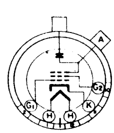


12M



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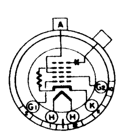

12P

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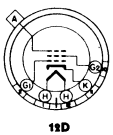
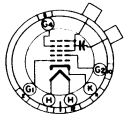
19AP4-20HP4

TYPE	DESCRIPTION	HEATER										RATINGS		TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS						
		VOLTS	AMPERES	ION-TRAP MAGNET	EXTERNAL MAG. SHIELD-DEGAUSS.	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE-DEGREES	EXTERNAL CONDUCTIVE COATING	MAX. ANODE #2 VOLTS	MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #1 OR ANODE #2 VOLTS	ANODE #1 VOLTS	GRID #1 VOLTS	GRID #1 FOR CUTOFF VOLTAGE	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET STRENGTH	TYPE
19AP4	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO	M	M	66	NO	19	1.5	12		300	−55	75	105		19AP4
19AP4A	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	66	NO	19	1.5	12		300	−55	140	75		19AP4A
19AP4B	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[8]	M	M	66	NO	19	1.5	12		300	−55	140	75		19AP4B
19AP4C	ROUND METAL—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	66	NO	19	1.5	12		300	−55	140		32	19AP4C
19AP4D	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO[8]	M	M	66	NO	19	1.5	12		300	−55	140	75		19AP4D
19DP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO	M	M	66	YES	19	1.5	13		250	−45	146	105		19DP4
19DP4A	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	66	YES	19	1.5	13		250	−45	146	105		19DP4A
19EP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	H-65 D-70	NO	19	1.5	13		250	−45	146	105		19EP4
19FP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	DOUBLE	YES	YES	M	M	66	NO	19	1.5	13		250	−45	120	110		19FP4
19GP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	66	NO	19	1.5	13		250	−45	120	105	23	19GP4
19JP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-66 D-70	NO	18	1.5	12		300	−55	95	75		19JP4
19QP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	YES	18	1.5	12	−50[W] to 350	300	−55		75		19QP4
20BP4	ROUND GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO	M	M	54	NO	20	1.5	15		250	−45	135			20BP4
20CP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-66 D-70	NO	18	1.5	12		300	−55	95	75		20CP4
20CP4A	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-66 D-70	YES	18	1.5	12		300	−55	95	75		20CP4A
20CP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-66 D-70	NO	18	1.5	12		300	−55	95	75		20CP4B
20CP4C	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[Y]	M	M	H-66 D-70	NO	18	1.5	12		300	−55	95	75		20CP4C
20CP4D	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-66 D-70	YES	18	1.5	12		300	−55	95	75		20CP4D
20DP4A	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-65 D-70	YES	18	1.5	12		300	−55	95	75		20DP4A
20DP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-66 D-70	NO	18	1.5	16		300	−50	95		35	20DP4B
20DP4C	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-66 D-70	YES	18	1.5	16		300	−50	95		35	20DP4C
20FP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	NO	18	1.5	12		300	−55		75		20FP4
20GP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	YES	18	1.5	14		300	−55		75	40	20GP4
20HP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	NO	16	1.5	14		300	−55				20HP4

[Y] Special "Filter" Glass Face Plate. [D] Diagonal. [H] Horizontal. [8] Frosted. [W] Grid # 4 Voltage.



12D



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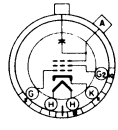
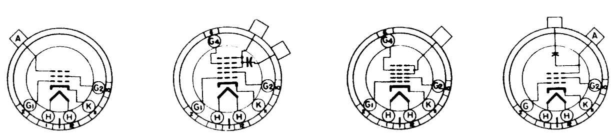
12M



12N

				OVERALL DIMENSIONS						RASTER SIZE				
TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
19AP4	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	21 1/2	7 1/8	1 7/16	18 5/8	14 3/8	17 3/8	15 3/4	11 3/4		4 1/4	**19AP4**
19AP4A	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	21 1/2	7 1/8	1 7/16	18 5/8	14 3/8	17 3/8	15 3/4	11 3/4		4 1/4	**19AP4A**
19AP4B	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	21 1/2	7 1/8	1 7/16	18 5/8	14 3/8	17 3/8	15 3/4	11 3/4		4 1/4	**19AP4B**
19AP4C	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	21 1/2	7 1/8	1 7/16	18 5/8	14 3/8	17 3/8	15 3/4	11 3/4		3 3/8	**19AP4C**
19AP4D	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	21 1/2	7 1/8	1 7/16	18 5/8	14 3/8	17 3/8	15 3/4	11 3/4		4 1/4	**19AP4D**
19DP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/2	7 1/8	1 7/16	18 7/8	14 3/8	17 3/8	15 3/4	11 3/4		3 5/8	**19DP4**
19DP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/2	7 1/8	1 7/16	18 7/8	14 3/8	17 3/8	15 3/4	11 3/4		3 5/8	**19DP4A**
19EP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	21 1/8	7 1/2	1 7/16	18 5/8 [D]	13 5/8	17 21/32 [D]	16	12		3 5/8	**19EP4**
19FP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	22	7 5/8	1 7/16	18 7/8	14 3/8	17 3/8	15 3/4	11 3/4		5	**19FP4**
19GP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	21 1/4	6 7/8	1 7/16	18 7/8	14 3/8	17 3/8	15 3/4	11 3/4		4 5/8	**19GP4**
19JP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	20 13/16	7 3/16	1 7/16	18 5/8 [D]	13 5/8	17 21/32 [D]	16	12		4 1/4	**19JP4**
19QP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 1/8	7 1/2	1 7/16	18 5/8 [D]	13 5/8	17 21/32 [D]	16	12		4 1/4	**19QP4**
20BP4	MEDIUM METAL CAP	SMALL SHELL DUODECAL 5-PIN	12D	28	8	1 7/16	20	20	18 3/4	17	12 3/4			**20BP4**
20CP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	21 7/16	7 3/16	1 7/16	20 3/32 [D]	14 1/4	18 3/4 [D]	17	12 3/4		4 1/4	**20CP4**
20CP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 7/16	7 3/16	1 7/16	20 3/32 [D]	14 1/4	18 3/4 [D]	17	12 3/4		4 1/4	**20CP4A**
20CP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	21 7/16	7 3/16	1 7/16	20 3/32 [D]	14 1/4	18 3/4 [D]	17	12 3/4		4 1/4	**20CP4B**
20CP4C	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	21 7/16	7 3/16	1 7/16	20 3/32 [D]	14 1/4	18 3/4 [D]	17	12 3/4		4 1/4	**20CP4C**
20CP4D	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	21 7/16	7 3/16	1 7/16	20 3/32 [D]	14 1/4	18 3/4 [D]	17	12 3/4		4 1/4	**20CP4D**
20DP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 3/4	7 3/16	1 7/16	20 3/32 [D]	14 1/4	18 3/4 [D]	17	12 3/4		4 5/16	**20DP4A**
20DP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	21 3/4	7 1/2	1 7/16	20 3/32 [D]	14 1/4		17	12 3/4			**20DP4B**
20DP4C	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 3/4	7 1/2	1 7/16	20 3/32 [D]	14 1/4		17	12 3/4			**20DP4C**
20FP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	21 3/4	7 1/2	1 7/16	20 3/32 [D]	14 1/4	18 3/8 [D]	17	12 3/4		4 1/4	**20FP4**
20GP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 3/4	7 1/2	1 7/16	20 3/32 [D]	14 1/4	18 1/2 [D]	17	12 3/4			**20GP4**
20HP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	21 3/4	7 1/2	1 7/16	20 3/32 [D]	14 1/4	18 11/16 [D]	17	12 3/4		4 1/4	**20HP4**

[D] Diagonal.



12D 12L 12M 12N

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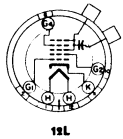
20HP4A-21ATP4A

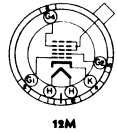
TYPE	DESCRIPTION	HEATER		ION-TRAP MAGNET	EXTERNAL MAGNETIC FOCUS COIL	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE DEGREES	EXTERNAL CONDUCTIVE COATING	RATINGS			TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS						TYPE
		VOLTS	AMPERES								MAX. ANODE VOLTS	MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #2 OR ANODE #3 VOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTS FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAG. CURR. MA.	PERM. MAGNET FIELD GAUSS	
20HP4A	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	YES	16	1.5	14		300	−55				20HP4A
20HP4B	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[Y]	M	E	H-66 D-70	NO	16	1.5	14		300	−55				20HP4B
20HP4C	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	NO	16	1.5	14		300	−50			30	20HP4C
20HP4D	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	YES	16	1.5	14		300	−50			30	20HP4D
20JP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	D-70	YES	18	1.5	12		500	−55		50	0 to 8	20JP4
20LP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-65 D-70	YES	16	1.5	14	0	300	−55			35	20LP4
20MP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	YES	16	1.5	16		300	−55			50	20MP4
21AP4	RECTANGULAR METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[S]	M	M	H-66 D-70	NO	18	1.5	16		300	−55	110		50	21AP4
21ACP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	YES	20	1.5	16		300	−50	117		40	21ACP4
21ACP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	YES	20	1.5	16		300	−50	117		40	21ACP4A
21AFP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-65 D-70	NO	18	1.5	16	−64[W] to +350	300	−55		80	45	21AFP4
21ALP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	18	1.5	14	−55[W] to +300	300	−50			40	21ALP4
21ALP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	18	1.5	14	−55[W] to +300	300	−50			40	21ALP4A
21ALP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	20	1.5	14	−55[W] to +300	300	−50			40	21ALP4B
21AMP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	YES	18	1.5	16		300	−50	102	95	45	21AMP4
21AMP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	YES	18	1.5	16		300	−50	102	95	45	21AMP4A
21ANP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	NO	18	1.5	14	−55[W] to +300	300	−50			40	21ANP4
21ANP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	NO	18	1.5	14	−55[W] to +300	300	−50			40	21ANP4A
21AQP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	NO	18	1.5	16		300	−50	102	95	45	21AQP4
21AQP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	NO	18	1.5	16		300	−50	102	95	45	21AQP4A
21ARP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	INTERNAL	NO	YES	M	M	H-65 D-70	YES	20	1.5	16		300	−50				21ARP4
21ARP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	INTERNAL	NO	YES	M	M	H-65 D-70	YES	20	1.5	16		300	−50				21ARP4A
21ASP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	NO	18	1.5	16	−64[W] to +352	300	−50		75		21ASP4
21ATP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	18	1.5	16	−64[W] to +350	300	−50			35	21ATP4
21ATP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16	−64[W] to +350	300	−50			35	21ATP4A

[A] Capacitance Range: 500 to 750 μμf. [D] Diagonal. [H] Horizontal. [W] Grid # 4 Voltage. [S] Frosted.

12D

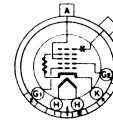


12L



12M

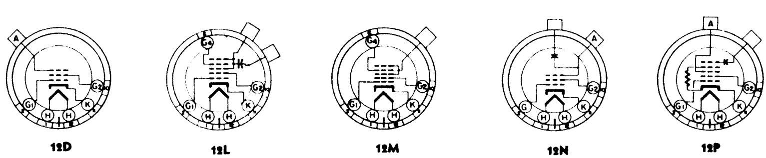
12N



12P

			OVERALL DIMENSIONS						RASTER SIZE					
TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
20HP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 3/4	7 1/2	1 7/16	20 3/32^{D}	14 1/4	18 11/16^{D}	17	12 3/4		4 1/4	**20HP4A**
20HP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	21 3/4	7 1/2	1 7/16	20 3/32^{D}	14 1/4	18 11/16^{D}	17	12 3/4		4 1/4	**20HP4B**
20HP4C	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	21 3/4	7 1/2	1 7/16	20 3/32^{D}	14 1/4		17	12 3/4			**20HP4C**
20HP4D	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 3/4	7 1/2	1 7/16	20 3/32^{D}	14 1/4		17	12 3/4			**20HP4D**
20JP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12P	21 3/4	7 1/2	1 7/16	20 3/32	14 1/4	18 11/16	17	12 3/4			**20JP4**
20LP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 3/4	7 1/2	1 7/16	20 3/32^{D}	14 1/4	18 5/8	17	13 1/4		5 1/2	**20LP4**
20MP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 3/4	7 1/2	1 7/16	20 3/32^{D}	14 1/4	18 1/2^{D}	17 1/8	13 1/4			**20MP4**
21AP4	METAL SHELL LIP	SMALL SHELL DUODECAL 5-PIN	12D	21 7/8	7 3/16	1 7/16	20 3/4^{D}	14 11/16	19 3/8^{D}	18 3/8	13 15/16		4 3/4	**21AP4**
21ACP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	20	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/16	15 1/16		3 3/4	**21ACP4**
21ACP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	20	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/16	15 1/16		3 3/4	**21ACP4A**
21AFP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	23	7 1/2	1 7/16	21 7/32^{D}	15 1/2		19 1/8	13 7/8		3 7/8	**21AFP4**
21ALP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20 7/16	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/16	15 1/16			**21ALP4**
21ALP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20 7/16	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/16	15 1/16			**21ALP4A**
21ALP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20 7/16	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/16	15 1/16			**21ALP4B**
21AMP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	20 7/16	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/16	15 1/16			**21AMP4**
21AMP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	20 7/16	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/16	15 1/16			**21AMP4A**
21ANP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	20 7/16	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/8	15			**21ANP4**
21ANP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	20 7/16	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/8	15			**21ANP4A**
21AQP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	20 7/16	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/8	15			**21AQP4**
21AQP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	20 7/16	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/8	15			**21AQP4A**
21ARP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	23 1/32	7 1/2	1 7/16	21 7/32^{D}	15 17/32	20 1/8^{D}	19 1/8	14 3/16			**21ARP4**
21ARP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	23 1/32	7 1/2	1 7/16	21 7/32^{D}	15 17/32	20 1/8^{D}	19 1/8	14 3/16			**21ARP4A**
21ASP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	22 7/16	7 1/2	1 7/16	20 5/8^{D}	14 13/16	19 1/2^{D}	17 3/8	13 5/8		3	**21ASP4**
21ATP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4^{D}	19 1/16	15 1/16			**21ATP4**
21ATP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 7/16	21 3/8^{D}	12 1/2	20 1/4	19 1/16	15 1/16			**21ATP4A**

^{D} Diagonal.



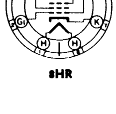
12D 12L 12M 12N 12P

21ATP4B-21CEP4

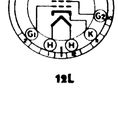
TYPE	DESCRIPTION	HEATER: VOLTS	HEATER: AMPERES	ION-TRAP MAGNET	EXTERNAL MAGNETIC FOCUS COIL	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE DEGREES	EXTERNAL CONDUCTIVE COATING	RATINGS: MAX. ANODE KILOVOLTS	RATINGS: MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #2 OR ANODE KILOVOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET CURRENT MA.	ION-TRAP MAGNET FIELD INTENSITY GAUSS	TYPE
21ATP4B	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	18	1.5	16	−64[W] to +350	300	−50			35	21ATP4B
21AUP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-67 D-72	YES[A]	18	1.5	14	−55[W] to +300	300	−50			40	21AUP4
21AUP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-67 D-72	YES[A]	18	1.5	14	−55[W] to +300	300	−50			40	21AUP4A
21AUP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-67 D-72	YES[A]	20	1.5	14	−55[W] to +300	300	−50			40	21AUP4B
21AVP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-67 D-72	YES[B]	18	1.5	14	−55[W] to +300	300	−50			40	21AVP4
21AVP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-67 D-72	YES[B]	18	1.5	14	−55[W] to +300	300	−50			40	21AVP4A
21AVP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-67 D-72	YES[B]	20	1.5	14	−55[W] to +300	300	−50			40	21AVP4B
21AWP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-67 D-72	YES	18	1.5	16		300	−50	108		35	21AWP4
21AYP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	YES	18	1.5	16	−64[W] to +352	300	−50		75		21AYP4
21BAP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16	0[W] to 500	300	−50				21BAP4
21BCP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-65 D-70	YES	20	1.5	16	+50[W] to +550	300	−50				21BCP4
21BDP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-67 D-72	YES	20	1.5	16	50[W] to +550	300	−55				21BDP4
21BNP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16	+0[W] to +500	300	−50				21BNP4
21BSP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	YES	22	1.5	16		300	−50	116	30	33	21BSP4
21BTP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	22	1.5	16	−64[W] to +352	300	−50		30	33	21BTP4
21CBP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	18	1.5	14	−55[W] to +300	300	−50				21CBP4
21CBP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	22	1.5	16	0[W] to +450	300	−50				21CBP4A
21CDP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.45*	SINGLE	YES	YES	M	E	H-85 D-90	YES	22	1.5	16	−64[W] to +352	300	−50		30	33	21CDP4
21CDP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	SINGLE	YES	YES	M	E	H-85 D-90	YES	22	1.5	16	−64[W] to +352	300	−50		30	33	21CDP4A
21CEP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	H-105 D-110	YES	19.8	1.5	16	0[W] to +400	300	−53.2				21CEP4

* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

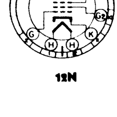
[B] Frosted. [D] Diagonal. [H] Horizontal. [X] Cylindrical Face Plate. [W] Grid # 4 Voltage. [B] Capacitance Range: 750 to 1500 μμf. [A] Capacitance range 500 to 750 μμf.



8HR



12L

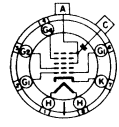


12N

21ATP4B-21CEP4

TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL DIMENSIONS: OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO NECK SEAL INCHES	RASTER SIZE: USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES			TYPE
21ATP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 5/8	1 3/8	2 1 3/4 D	1 2 1/2	2 0 3/4 D	1 9 1/16	1 5 1/16			21ATP4B
21AUP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23 1/16	7 5/8	1 3/8	2 1 3/4 D	1 5 17/32	2 0 3/4 D	1 9 1/16	1 5 1/16			21AUP4
21AUP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23 1/16	7 5/8	1 3/8	2 1 3/4 D	1 5 17/32	2 0 3/4 D	1 9 1/16	1 5 1/16			21AUP4A
21AUP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23 1/16	7 5/8	1 3/8	2 1 3/4 D	1 5 13/32	2 0 3/4 D	1 9 1/16	1 5 1/16			21AUP4B
21AVP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23 1/16	7 5/8	1 3/8	2 1 3/4 D	1 5 13/32	2 0 3/4 D	1 9 1/16	1 5 1/16			21AVP4
21AVP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23 1/16	7 5/8	1 3/8	2 1 3/4 D	1 5 17/32	2 0 3/4 D	1 9 1/16	1 5 1/16			21AVP4A
21AVP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23 1/16	7 5/8	1 3/8	2 1 3/4 D	1 5 17/32	2 0 3/4 D	1 9 1/16	1 5 1/16		4 1/4	21AVP4B
21AWP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	23 1/16	7 5/8	1 3/8	2 1 3/4 D	1 5 13/32	2 0 3/4 D	1 9 1/16	1 5 1/16			21AWP4
21AYP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	22 5/16	7 1/2	1 5/8	2 0 5/8 D	1 4 13/16	1 9 1/2 D	1 7 3/4	1 3 5/8		3	21AYP4
21BAP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 3/8	2 1 3/4 D	1 2 1/2	2 0 3/4 D	1 9 3/8	15			21BAP4
21BCP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 1/16	7 1/2	1 1/4	2 1 7/16 D	1 5 17/32	2 0 3/4 D	1 9 1/2	1 4 3/8			21BCP4
21BDP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 1/16	7 1/2	1 3/8	2 1 3/4 D	1 5 17/32	2 0 3/4 D	1 9 1/2	15			21BDP4
21BNP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 3/8	2 1 3/4 D	1 2 1/2	2 0 3/4 D	1 9 1/2	15			21BNP4
21BSP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	20	7 1/2	1 3/8	2 1 3/4 D	1 2 1/2	2 0 3/4 D	1 9 1/16	1 5 1/16			21BSP4
21BTP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 3/8	2 1 3/4 D	1 2 1/2	2 0 3/4 D	1 9 1/16	1 5 1/16			21BTP4
21CBP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	18	5 1/2	1 3/8	2 1 3/4 D	1 2 1/2	2 0 3/4 D	1 9 1/2	15			21CBP4
21CBP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL* DUODECAL 6-PIN	12L	18	5 1/2	1 3/8	2 1 3/4 D	1 2 1/2	2 0 3/4 D	1 9 1/16	1 5 1/16			21CBP4A
21CDP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 3/8	2 1 3/4 D	1 2 1/2	2 0 3/4 D	1 9 1/16	1 5 1/16			21CDP4
21CDP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 3/8	2 1 3/4 D	1 2 1/2	2 0 3/4 D	1 9 1/16	1 5 1/16			21CDP4A
21CEP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON LIGHTAR 7-PIN	8HR	1 4 7/16	5 7/16	1 1/4	2 1 3/4 D	9	2 0 3/4 D	1 9 1/16	1 5 1/16			21CEP4

D Diagonal.



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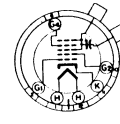

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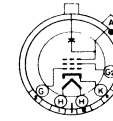

12N

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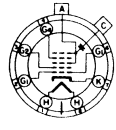
21CEP4A-21DLP4

TYPE	DESCRIPTION	HEATER									RATINGS		TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS						TYPE
		VOLTS	AMPERES	ION-TRAP MAGNET	EXTERNAL MAG. FOCUS COIL	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE (DEGREES)	EXTERNAL CONDUCTIVE COATING	MAX. ANODE MEGOHMS	MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #2 OR ANODE #3 VOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET MOMENT	CENTER MAGNET FIELD STRENGTH	
21CEP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	F	H-105 D-110	YES	20	1.5	13.5	0[W] to +40	300	−53.2					21CEP4A
21CGP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	E	H-85 D-90	YES	20	1.5	18	−72[W] to +396	110	−41				46	21CGP4
21CHP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	20	1.5	18	−50[W] to +350	110	−41					21CHP4
21CKP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45	NONE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16	−50[W] to +350	300	−50					21CKP4
21CMP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	E	H-85 D-90	YES	22	1.5	16	−64[W] to +352	300	−50		30	33		21CMP4
21CQP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	H-105 D-110	YES	19.8	1.5	16	−50[W] to +350	300	−53.5					21CQP4
21CSP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	NONE	NO	YES	M	E	H-105 D-110	YES	19.8	1.5	16	0[W] to +400	300	−53.5					21CSP4
21CUP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	YES	22	1.5	16		300	−50	117		40		21CUP4
21CVP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	22	1.5	16	−64[W] to +352	300	−50					21CVP4
21CWP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	E	H-85 D-90	YES	22	1.5	16	−64[W] to +352	300	−50			40		21CWP4
21CXP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	22	1.5	18	0[W] to +350	50	−42.5					21CXP4
21CZP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	SINGLE	YES	YES	M	E	H-105 D-110	YES	18	1.5	17	0[W] to +500	300	−50	−15 to +25 μamp		37		21CZP4
21DP4	RECTANGULAR METAL—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[R]	M	E	H-66 D-70	NO	18	1.5	16		300	−55			40		21DP4
21DAP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	H-105 D-110	YES	18	1.5	16	0[W] to +400	400	−65					21DAP4
21DEP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	SINGLE	YES	YES	M	E	H-105 D-110	YES	18	1.5	17	0[W] to +500	300	−50	−15 to +25 μamp				21DEP4
21DEP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	SINGLE	YES	YES	M	E	H-105 D-110	YES	20	1.5	17	0[W] to +500	300	−50	−15 to +25 μamp				21DEP4A
21DFP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-105 D-110	YES	18	1.5	16	0[W] to +400	400	−65					21DFP4
21DHP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	NONE	NO	YES	M	E	H-105 D-110	YES	19.8	1.5	16	0[W] to +400	300	−53.5					21DHP4
21DKP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3*	NONE	NO	YES	M	E	H-105 D-110	YES	19.8	1.5	16	0[W] to +400	300	−53.5					21DKP4
21DLP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16	0[W] to +400	300	−50					21DLP4

* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

[R] Frosted. [D] Diagonal. [H] Horizontal. [W] Grid # 4 Voltage.

7FA



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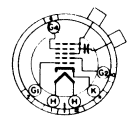

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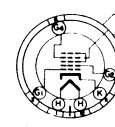

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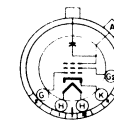

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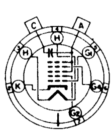
21CEP4A-21DLP4

TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL DIMENSIONS: OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	RASTER SIZE: USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
21CEP4A	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 7/16	5 7/16	1 1/8	21 3/8 [D]	9	20 1/4 [D]	19 1/16	15 1/16			**21CEP4A**
21CGP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 7/16	21 3/8 [D]	12 1/2	20 1/4 [D]	19 1/16	15 1/16			**21CGP4**
21CHP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	18	5 1/2	1 7/16	21 3/8 [D]	12 1/2	20 1/4 [D]	19 1/16	15 1/16			**21CHP4**
21CKP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	18	5 1/2	1 7/16	21 3/8 [D]	12 1/2		19 1/16	15 1/16			**21CKP4**
21CMP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19	6 1/2	1 7/16	21 3/8 [D]	12 1/2	20 1/4 [D]	19 1/16	15 1/16			**21CMP4**
21CQP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	7FA	14 7/16	5 3/16	1 1/8	21 3/8 [D]	9 1/4	20 1/4 [D]	19 1/16	15 1/16			**21CQP4**
21CSP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	7FA	14 7/16	5 3/16	1 1/8	21 3/8 [D]	9 1/4	20 1/4 [D]	19 1/16	15 1/16			**21CSP4**
21CUP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	20	7 1/2	1 7/16	21 3/8 [D]	12 1/2	20 1/4 [D]	19 1/16	15 1/16			**21CUP4**
21CVP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 7/16	21 3/8 [D]	12 1/2	20 1/4 [D]	19 1/16	15 1/16			**21CVP4**
21CWP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 7/16	21 3/8 [D]	12 1/2	20 1/4 [D]	19 1/16	15 1/16			**21CWP4**
21CXP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	18	5 1/2	1 7/16	21 3/8 [D]	12 1/2	20 1/4 [D]	19 1/16	15 1/16			**21CXP4**
21CZP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 11/16	5 7/16	1 1/8	21 3/8 [D]	9 1/4	20 1/4 [D]	19 1/16	15 1/16		4 1/4	**21CZP4**
21DP4	METAL CONE LIP	SMALL SHELL DUODECAL 6-PIN	12M	22 5/8	7 1/2	1 7/16	20 3/4 [D]	14 5/8	19 1/4 [D]	18 1/4	13 11/16			**21DP4**
21DAP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 11/16	5 7/16	1 1/8	21 3/8 [D]	9 1/4	20 1/4 [D]	19 1/16	15 1/16			**21DAP4**
21DEP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 11/16	5 7/16	1 1/8	21 3/8 [D]	9 1/4	20 1/4 [D]	19 1/16	15 1/16			**21DEP4**
21DEP4A	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 11/16	5 7/16	1 1/8	21 3/8 [D]	9 1/4	20 1/4 [D]	19 1/16	15 1/16			**21DEP4A**
21DFP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 7/16	5 7/16	1 1/8	21 3/8 [D]	9	20 1/4	19 1/16	15 1/16			**21DFP4**
21DHP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 11/16	5 7/16	1 1/8	21 3/8 [D]	9 1/4	20 1/4 [D]	19 1/16	15 1/16			**21DHP4**
21DKP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 11/16	5 7/16	1 1/8	21 3/8 [D]	9 1/4	20 1/4 [D]	19 1/16	15 1/16			**21DKP4**
21DLP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	17	4 1/2	1 7/16	21 3/8 [D]	12 1/2	20 1/4 [D]	19 1/16	15 1/16			**21DLP4**

[D] Diagonal.



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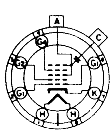

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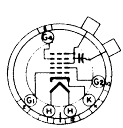

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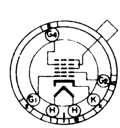

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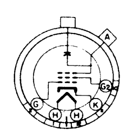

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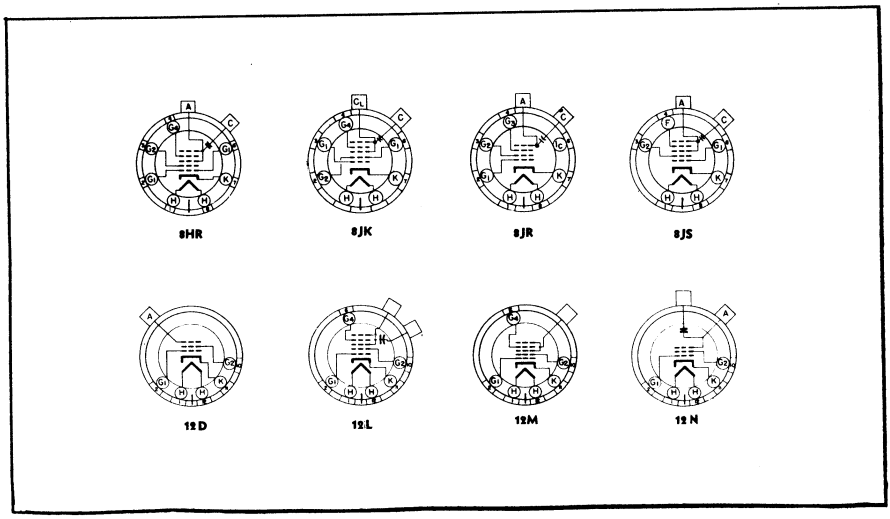
21DMP4-21FP4C

TYPE	DESCRIPTION	HEATER VOLTS	HEATER AMPERES	ION TRAP MAGNET	EXTERNAL MAGNETIC SHIELD FOR	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE DEGREES	EXTERNAL CONDUCTIVE COATING	RATINGS MAX. ANODE #2 VOLTS	RATINGS MAX. GRID #1 RESISTANCE MEGOHMS	RATINGS ANODE #2 OR ANODE #3 MEGOHMS	TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION TRAP MAGNET MMF	ION TRAP MAGNET FIELD STRENGTH GAUSS	TYPE
21DMP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6 ±5%	NONE	NO	YES[Y]	M	E	105[H] 110[D]	YES	20	1.5	16	−50[W] to +350	400	−64				21DMP4
21DNP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	SINGLE	YES	YES	M	E	H-85 D-90	YES	22	1.5	16	−64[W] to +352	300	53.5		30	33	21DNP4
21DQP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16	−50[W] to +350	300	−53.5				21DQP4
21DRP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16	0[W] to +450	300	−50				21DRP4
21DSP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16	0[W] to +400	50	−39.5				21DSP4
21DVP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3*	SINGLE	NO	NO[Y]	M	E	85[H] 90[D]	YES	20	1.5	14	−50[W] to +300	300	−50			40	21DVP4
21DWP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	NO	M	E	105[H] 110[D]	YES	18	1.5	14	−50[W] to +350	450	−50				21DWP4
21EAP4	RECTANGULAR GLASS—DIRECT VIEW	2.34	0.6*	NONE	NO	NO	M	E	105[H] 110[D]	YES	20	1.5	16	100[W] to 500	300	−52.5				21EAP4
21ELP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3	NONE	NO	YES[Y]	M	E	85[H] 90[D]	YES	20	1.5	14	−50[W] to +350	450	−75				21ELP4
21EMP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	NO	M	E	105[H] 110[D]	YES	18	1.5	16	0[W] to +400	450	−75				21EMP4
21ENP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3* ±5%	SINGLE	NO	YES[Y]	M	E	85[H] 90[D]	YES	22	1.5	16	−64[W] to +352	300	−53.5		30	33	21ENP4
21EP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[X]	M	M	H-65 D-70	NO	18	1.5	12		300	−55	95	70		21EP4
21EP4A	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[X]	M	M	H-65 D-70	YES	18	1.5	12		300	−55	95	70		21EP4A
21EP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	NO[X]	M	M	H-65 D-70	YES	18	1.5	16		300	−55	116		35	21EP4B
21EQP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6* ±5%	NONE	NO	YES[Y]	M	E	105[H] 110[D]	YES	20	1.5	16	0[V] to +400	500	−57.5				21EQP4
21ERP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6* ±5%	NONE	NO	YES[Y][S]	M	E	105[H] 110[D]	YES	20	1.5	16	0[V] to +400	500	−57.5				21ERP4
21ESP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6* ±10%	NONE	NO	NO[Y]	M	E	105[H] 110[D]	YES	18	1.5	17	0[W] to +500	450	−50				21ESP4
21EXP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3* ±5%	NONE	NO	YES[Y]	M	E	105[H] 110[D]	YES	20	1.5	16	0[V] to +400	500	−60.5				21EXP4
21FP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[X]	M	E	H-65 D-70	NO	18	1.5	14	−56[W] to +310	300	−55			35	21FP4
21FP4A	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[X]	M	E	H-65 D-70	YES	18	1.5	14		300	−55		75	40	21FP4A
21FP4C	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES[X]	M	E	H-65 D-70	YES	18	1.5	14	−56[W] to +310	300	−50		75		21FP4C

[Y] Spherical Face Plate.

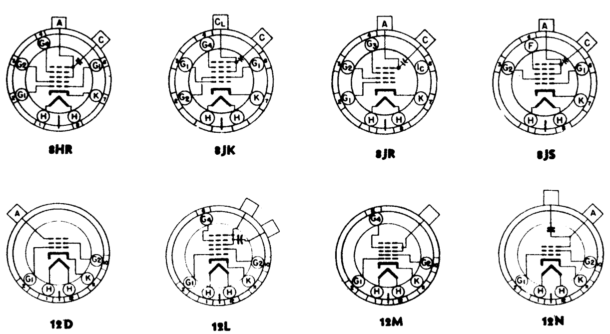
* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

[H] Horizontal. [D] Diagonal. [X] Cylindrical Face Plate. [S] Frosted. [W] Grid # 4 Voltage. [V] Grid # 3 Voltage.



				OVERALL DIMENSIONS						RASTER SIZE				
TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
21DMP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	13 3/4	4 1/2	1 1/8	21 3/8 D	9 1/4	20 1/4 D	19 1/16	15 1/16			**21DMP4**
21DNP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19	6 1/2	1 7/16	21 3/8 D	12 1/2	20 1/4 D	19 1/16	15 1/16			**21DNP4**
21DQP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	17 1/2	5	1 7/16	21 3/8 D	12 1/2	20 1/4 D	19 1/16	15 1/16			**21DQP4**
21DRP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	18 1/4	5 1/2	1 7/16	21 3/8 D	12 3/4	20 1/4 D	19 1/16	15 1/16			**21DRP4**
21DSP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	18	5 1/2	1 7/16	21 3/8 D	12 1/2	20 1/4 D	19 1/16	15 1/16			**21DSP4**
21DVP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	20	7 1/2	1 7/16	21 3/8 D	12 1/2	20 1/4 D	19 1/16	15 1/16			**21DVP4**
21DWP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 7/16	5 7/16	1 1/8	21 3/8 D	9	20 1/4 D	19 1/16	15 1/16			**21DWP4**
21EAP4	RECESSED SMALL CAVITY CAP	SHORT GLASS BUTTON 7-PIN	8JK	12 15/16	3 11/16	1 1/8	21 3/8 D	9 1/4	20 1/4 D	19 1/16	15 1/16			**21EAP4**
21ELP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19	6 1/2	1 7/16	21 3/8 D	12 1/2	20 1/4 D	19 1/16	15 1/16			**21ELP4**
21EMP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	13 3/16	4 3/16	1 1/8	21 3/8 D	9	20 1/4 D	19 1/16	15 1/16			**21EMP4**
21ENP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19	6 1/2	1 7/16	21 3/8 D	12 1/2	20 1/4 D	19 1/16	15 1/16			**21ENP4**
21EP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	23	7 1/2	1 7/16	21 7/32 D	15 1/2		19 1/8	13 7/8			**21EP4**
21EP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	23	7 1/2	1 7/16	21 7/32 D	15 1/2		19 1/8	13 7/8			**21EP4A**
21EP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	23	7 27/32	1 7/16	21 7/32 D	15 17/32		19 1/8	13 7/8		5 1/2	**21EP4B**
21EQP4	RECESSED SMALL CAVITY CAP	SMALL SHELL 8-PIN	8JR	12 9/16	3 9/16	1 1/8	21 3/8 D	9	20 1/4 D	19 1/16	15 1/16			**21EQP4**
21ERP4	RECESSED SMALL CAVITY CAP	SMALL SHELL 8-PIN	8JR	12 13/16	3 9/16	1 1/8	21 3/8 D	9 1/4	20 1/4 D	19 1/16	15 1/16			**21ERP4**
21ESP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 6-PIN	8JS	13 3/16	3 15/16	1 1/8	21 3/8 D	9 1/4	20 1/4 D	19 1/16	15 1/16			**21ESP4**
21EXP4	RECESSED SMALL CAVITY CAP	SMALL SHELL 8-PIN	8JR	12 9/16	3 9/16	1 1/8	21 3/8 D	9	20 1/4 D	19 1/16	15 1/16			**21EXP4**
21FP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12M	23	7 1/2	1 7/16	21 1/4 D	15 1/2	20 1/8 D	19 1/8	13 7/8			**21FP4**
21FP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23	7 1/2	1 7/16	21 7/32 D	15 1/2	20 1/4 D	19 1/8	13 7/8		3 5/8	**21FP4A**
21FP4C	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23	7 1/2	1 7/16	21 3/16 D	15 1/2		19 1/8	13 7/8		3 1/4	**21FP4C**

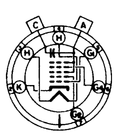
D Diagonal.



21JP4-23JP4

TYPE	DESCRIPTION	HEATER VOLTS	HEATER AMPERES	ION-TRAP MAGNET	EXTERNAL MAGNETIC FOCUS COIL	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE DEGREES	EXTERNAL CONDUCTIVE COATING	RATINGS: MAX. ANODE KILOVOLTS	RATINGS: MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #2 OR ANODE KILOVOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET CURRENT MA.	ION-TRAP MAGNET FIELD INTENSITY GAUSS	TYPE
21JP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	INTERNAL	NO	YES^P	M	M	H-67 D-70	YES	20	1.5	16		300	−55				**21JP4**
21JP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	INTERNAL	NO	YES^P	M	M	H-65 D-70	YES	20	1.5	16		300	−50				**21JP4A**
21KP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES^P	M	E	H-70	NO	18	1.5	13		300	−57		120	40	**21KP4**
21KP4A	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES^P	M	E	H-65 D-70	YES	18	1.5	12		300	−55		50		**21KP4A**
21MP4	RECTANGULAR METAL—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES^S	M	E	H-65 D-70	NO	16	1.5								**21MP4**
21WP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-66 D-70	YES	18	1.5	16		300	−50	100	75	45	**21WP4**
21WP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-66 D-70	YES	18	1.5	16		300	−50	100	30	35	**21WP4A**
21XP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	YES	18	1.5	16	−64^W to +352	300	−50		75		**21XP4**
21XP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-66 D-70	YES	18	1.5	16	−64^W to +352	300	−50		30	35	**21XP4A**
21YP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.3	SINGLE	NO	YES	M	E	H-65 D-70	YES	18	1.5	14		300	−55	95	40		**21YP4**
21YP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-65 D-70	YES	18	1.5	16	−64^W to +350	300	−50	−15 to +25 μa	58	0 to 8	**21YP4A**
21ZP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-65 D-70	NO	18	1.5	12		300	−55	95	75		**21ZP4**
21ZP4A	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	D-70	YES	18	1.5	16		300	−55	100	95	45	**21ZP4A**
21ZP4B	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-67 D-70	YES	18	1.5	16		300	−55	118		40	**21ZP4B**
22AP4	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	NO	M	M	70	NO	19	1.5	14		300	−55	117		35	**22AP4**
22AP4A	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	70	NO	19	1.5	14		300	−55	117		35	**22AP4A**
23ACP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6* ±5%	NONE	NO	YES^Y	M	E	76^H 87^D	YES	18	1.5	16	0^W to 400	300	−52.5				**23ACP4**
23BP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	99^H 110^D	YES	20	1.5	14	0^W to 400	450	−75				**23BP4**
23CP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6* ±5%	NONE	NO	YES^Y	M	E	99^H 110^D	YES	20	1.5	16	0^W to +400	300	−53.5				**23CP4**
23DP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6* ±5%	NONE	NO	YES^Y	M	E	99^H 110^D	YES	22	1.5	16	0^V to +400	500	−60.5				**23DP4**
23FP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6 ±10%	NONE	NO	YES^X	M	E	102^H 114^D	YES	22	1.5	14	200^W	450	−75				**23FP4**
23GP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6 ±5%	NONE	NO	NO	M	E	99^H 110^D	YES	20	1.5	16	0^W to +400	300	−50				**23GP4**
23JP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45* ±5%	NONE	NO	YES^Y	M	E	99^H 110^D	YES	22	1.5	16	+250	50	−42.5				**23JP4**

Y Spherical Face Plate—Bonded Shield.
* Thermal Characteristics, etc.
H Horizontal.
D Diagonal.
P Cylindrical Face Plate.
S Frosted Face Plate.
X Spherical Face Plate.
W Grid # 4 Voltage.
V Grid # 3 Voltage.



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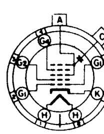

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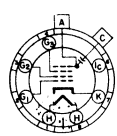

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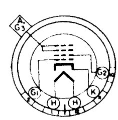

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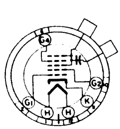

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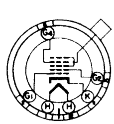

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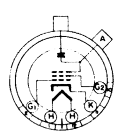

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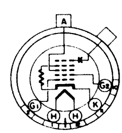
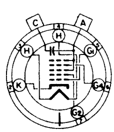


12P

TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL DIMENSIONS: OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	RASTER SIZE: USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
21JP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	23 1/32	7 1/2	1 7/16	21 7/32[D]	15 11/32	20 1/8[D]	19 1/8	13 7/8			21JP4
21JP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	23 1/32	7 1/2	1 7/16	21 7/32[D]	15 17/32	20 1/8[D]	19 1/8	13 7/8			21JP4A
21KP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	22 7/8	7 1/2	1 7/16	21 5/8[D]		20 1/8[D]	19 1/8	13 7/8		3 5/8	21KP4
21KP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12P	23	7 1/2	1 7/16	21 7/32[D]	15 1/2	20 1/4[D]	19 1/8	13 7/8			21KP4A
21MP4	METAL CONE LIP	SMALL SHELL DUODECAL 6-PIN	12M	22 5/8	7 1/2	1 7/16	20 3/4[D]	14 11/16	19 1/4[D]	18 1/4	13 13/16			21MP4
21WP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	22 7/16	7 1/2	1 7/16	20 5/8[D]	14 3/4	19 1/2[D]	17 3/8	13 5/8		4 3/4	21WP4
21WP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	22 7/16	7 1/2	1 7/16	20 5/8[D]	14 15/16	19 1/2[D]	17 3/8	13 5/8			21WP4A
21XP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	22 7/16	7 1/2	1 7/16	20 5/8[D]	14 15/16	19 1/2[D]	17 3/8	13 5/8		3	21XP4
21XP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	22 7/16	7 1/2	1 7/16	20 5/8[D]	14 15/16	19 1/2[D]	17 3/8	13 5/8			21XP4A
21YP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23	7 1/2	1 7/16	21 3/8[D]	15 1/2	20[D]	19 1/16	14 3/16			21YP4
21YP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23	7 1/2	1 7/16	21 7/32[D]	15 1/2	20[D]	19 1/16	14 3/16			21YP4A
21ZP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	22 29/32	7 1/2	1 7/16	21 7/32[D]	15 13/32		19 1/8	14 3/16		4 1/4	21ZP4
21ZP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	23	7 1/2	1 7/16	21 7/32[D]	15 1/2	20[D]	19 1/16	14 3/16			21ZP4A
21ZP4B	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	23 1/32	7 1/2	1 7/16	21 7/32[D]	15 17/32	20[D]	19 1/16	14 3/16		3 3/4	21ZP4B
22AP4	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	22 7/8	7 1/4	1 7/16	21 11/16	16 25/32	20 1/4	18	13 1/2		3 3/4	22AP4
22AP4A	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	22 7/8	7 1/4	1 7/16	21 11/16	16 25/32	20 1/4	18	13 1/2		3 3/4	22AP4A
23ACP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 11/32	5 1/2	1 7/16	24 45/64[D]	13 27/32	22 5/16[D]	19 5/16	15 1/4			23ACP4
23BP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 3/8	4 3/8	1 1/8	24 45/64[D]	10	22 5/16[D]	19 5/16	15 1/4			23BP4
23CP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	15 3/16	5 1/8	1 1/8	24 45/64[D]	10 1/16	22 5/16[D]	19 5/16	15 1/4			23CP4
23DP4	RECESSED SMALL CAVITY CAP	SMALL SHELL 8-PIN	8JR	13 5/8	3 9/16	1 1/8	24 45/64[D]	10 1/16	22 5/16[D]	19 5/16	15 1/4			23DP4
23FP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	13 3/4	4 1/2	1 1/8	23 23/64[D]	9 1/4	22 5/16[D]	19 1/4	15 3/16			23FP4
23GP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	15 3/16	5 1/8	1 1/8	24 45/64[D]	9 3/4	22 5/16[D]	19 5/16	15 1/4			23GP4
23JP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	7FA	15 7/16	5 3/8	1 1/8	24 45/64[D]	10 1/16	22 5/16[D]	19 5/16	15 1/4			23JP4

[D] Diagonal.



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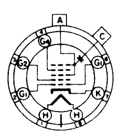

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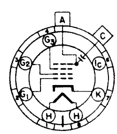

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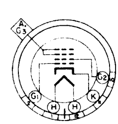

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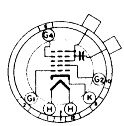

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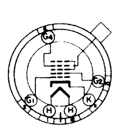

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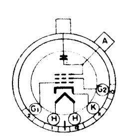

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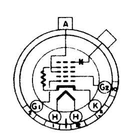

12P

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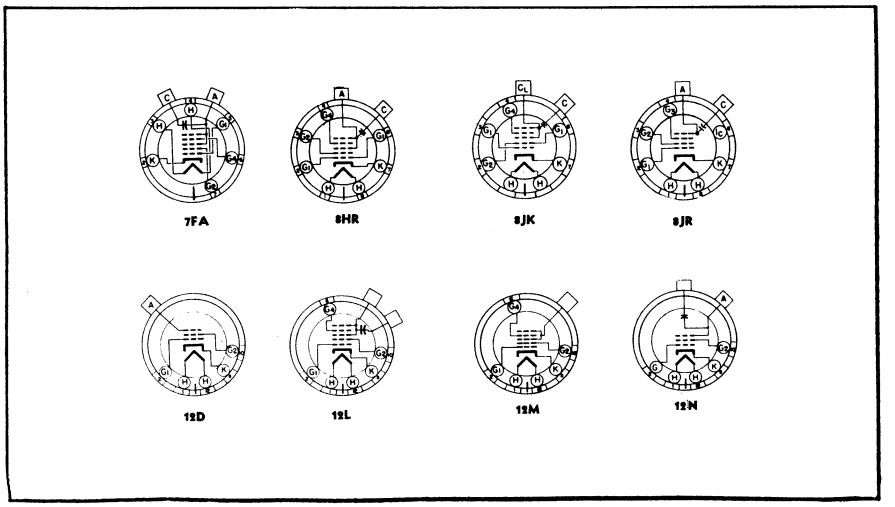
TUNG-SOL ELECTRIC INC., ELECTRON TUBE DIVISION, BLOOMFIELD, NEW JERSEY, U.S.A., APRIL 1, 1961 PLATE #6150

23RP4-24DP4

TYPE	DESCRIPTION	HEATER		ION-TRAP MAGNET	EXTERNAL MAG. FOCUS COIL	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE (DEGREES)	EXTERNAL CONDUCTIVE COATING	RATINGS			TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS						TYPE
		VOLTS	AMPERES								MAX. GRID #1 RESISTANCE MEGOHMS	MAX. ANODE #2 VOLTAGE	ANODE #2 CURRENT MILLIAMPS	ANODE #1 VOLTS	GRID #1 VOLTS	GRID #2 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION-TRAP MAGNET FIELD STRENGTH GAUSS	ION-TRAP MAGNET FIELD STRENGTH GAUSS	
23RP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3* ±5%	NONE	NO	YES[Y]	M	E	99[H] 110[D]	YES	22	1.5	16	0[W] to +400	500	−60.5				23RP4
23VP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3*	NONE	NO	YES[F]	M	E	102[H] 114[D]	YES	22	1.5	14	200[W]	450	−75				23VP4
24ADP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	SINGLE	YES	YES	M	M	85[H] 90[D]	YES	24.2	1.5	18		300	−50	125	32	36	24ADP4
24AEP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	85[H] 90[D]	YES	20	1.5	18	−50[W] to +350	300	−50				24AEP4
24AHP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	105[H] 110[D]	YES	20	1.5	16	−50[W] to +350	300	−50				24AHP4
24AJP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	85[H] 90[D]	YES	22	1.5	18	0[W] to +350	50	−42.5				24AJP4
24ALP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	105[H] 110[D]	YES	20	1.5	17	0[W] to +500	300	−50	−15 to +25 μamp			24ALP4
24AMP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	105[H] 110[D]	YES	22	1.5	16	0[W] to +400	300	−53.5				24AMP4
24ANP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	SINGLE	YES	YES	M	E	85[H] 90[D]	YES	22	1.5	18	−72[W] to +396	300	−53.5		33	37	24ANP4
24AQP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.45*	NONE	NO	YES	M	E	105[H] 110[D]	YES	22	1.5	16	0[W] to +400	300	−53.5				24AQP4
24ASP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3	NONE	NO	YES	M	E	85[H] 90[D]	YES	22	1.5	18	0[W] to +400	300	−53.5				24ASP4
24ATP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6*	NONE	NO	YES	M	E	85[H] 90[D]	YES	20	1.5	18	0[W] to +400	50	−41.5				24ATP4
24AP4	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	70	NO	16	1.5	15		300	−55	114	75	36	24AP4
24AP4A	ROUND METAL—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	70	NO	16	1.5	15		300	−55	114		36	24AP4A
24AP4B	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[X]	M	M	70	NO	16	1.5	15		300	−55	114			24AP4B
24AVP4	RECTAMGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	2.35	0.6* ±5%	NONE	NO	YES[F]	M	E	105[H] 110[D]	YES	20	1.5	16	−100[W] to +300	300	−53.5				24AVP4
24AWP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	NO	M	E	105[H] 110[D]	YES	20	1.5	16	0[W] to +400	300	−50				24AWP4
24AXP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.3* ±5%	NONE	NO	YES[F]	M	E	105[H] 110[D]	YES	22	1.5	16	0[W] to +400	300	−53.5				24AXP4
24BAP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	NO[F]	M	E	105[H] 110[D]	YES	20	1.5	16	0[W] to +400	50	−39.5				24BAP4
24BP4	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	70	NO	16	1.5	14		300	−55		85		24BP4
24CP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	85[H] 90[D]	YES	20	1.5	18		300	−55	115	100	40	24CP4
24CP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	85[H] 90[D]	YES	20	1.5	16		300	−55	105	85		24CP4A
24DP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	85[H] 90[D]	YES	20	1.5	18		300	−55		100	40	24DP4

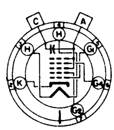
* Thermal characteristics of the heater are controlled such that heater voltage surges during the warm-up cycle are minimized provided it is used with other types which are similarly controlled. Heater warm-up time: 11.0 seconds.

[D] Diagonal. [H] Horizontal. [M] Frosted. [X] Cylindrical Face Plate.
[W] Grid # 4 Voltage. [F] Spherical Face Plate. [Y] Spherical Face Plate—Bonded Shield.



TYPE	BULB CONTACT	BASE	OVERALL DIMENSIONS: EIA BASE NO.	OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	DISTANCE FROM FACE TO JUNCTION OF NECK AND BULB INCHES	USEFUL SCREEN DIAMETER INCHES	RASTER SIZE: USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH ALLOTTED TO DEFLECTION SYSTEM INCHES	TYPE
23RP4	RECESSED SMALL CAVITY CAP	SMALL SHELL 8-PIN	8JR	13 5/8	3 9/16	1 1/8	24 43/64[D]	10 1/16	22 5/16	19 5/16	15 1/4			23RP4
23VP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	13 3/4	4 1/2	1 1/8	23 25/64[D]	9 1/4	22 5/16[D]	19 1/4	15 3/16			23VP4
24ADP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/8	7 1/2	1 7/16	24[D]	13 5/8	22 13/16[D]	21 7/16	16 7/8			24ADP4
24AEP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 1/8	5 1/2	1 7/16	24[D]	13 5/8	22 13/16[D]	21 7/16	16 7/8			24AEP4
24AHP4	RECESSED SMALL CAVITY CAP	SMALL SHELL EIGHTAR 7-PIN	8HR	15 1/2	5 7/16	1 1/8	24[D]	10 7/16	22 13/16[D]	21 7/16	16 7/8			24AHP4
24AJP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	19 1/8	5 1/2	1 7/16	24[D]	13 5/8	22 13/16[D]	21 7/16	16 7/8			24AJP4
24ALP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	15 7/8	5 7/16	1 1/8	24[D]	10 7/16	22 13/16[D]	21 7/16	16 7/8			24ALP4
24AMP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	7FA	15 5/8	5 3/16	1 1/8	24[D]	10 7/16	22 13/16[D]	21 7/16	16 7/8			24AMP4
24ANP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6 PIN	12L	20 1/8	6 1/2	1 7/16	24[D]	13 5/8		21 7/16	16 7/8			24ANP4
24AQP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7 PIN	8HR	15 7/8	5 7/16	1 1/8	24[D]	10 7/16	22 13/16[D]	21 7/16	16 7/8			24AQP4
24ASP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6 PIN	12L	19 1/8	5 1/2	1 7/16	24[D]	13 5/8		21 7/16	16 7/8			24ASP4
24ATP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6 PIN	12L	19 1/8	5 1/2	1 7/16	24[D]	13 5/8	22 13/16[D]	21 1/2	16 31/32			24ATP4
24AP4	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	23 15/16	6 27/32	1 7/16	24	16 25/32	22 3/8	22 1/8	16 9/16		3 1/8	24AP4
24AP4A	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	23 15/16	6 27/32	1 7/16	24	16 25/32	22 3/8	22 1/8	16 9/16		3 1/8	24AP4A
24AP4B	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	23 15/16	6 27/32	1 7/16	24	16 25/32	23 1/16	22 1/8	16 9/16			24AP4B
24AVP4	RECESSED SMALL CAVITY CAP	SMALL GLASS BUTTON 7-PIN	8JK	14 13/16	4 3/8	1 1/8	24[D]	10 7/16	22 13/16[D]	21 7/16	16 7/8			24AVP4
24AWP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	14 7/8	4 7/16	1 1/8	24[D]	10 7/16	22 13/16[D]	21 7/16	16 7/8			24AWP4
24AXP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	15 7/8	5 7/16	1 1/8	24[D]	10 7/16	22 13/16[D]	21 7/16	16 7/8			24AXP4
24BAP4	RECESSED SMALL CAVITY CAP	SMALL BUTTON EIGHTAR 7-PIN	8HR	15 7/8	5 7/16	1 1/8	24[D]	10 7/16	22 13/16[D]	21 7/16	16 7/8			24BAP4
24BP4	METAL CONE LIP	SMALL SHELL DUODECAL 6-PIN	12M	24 1/4	7 1/2	1 7/16	24	16 3/4	22 1/4				4 1/2	24BP4
24CP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/8	7 1/2	1 7/16	24[D]	13 5/8	22 13/16[D]	21 7/16	16 7/8		3 5/8	24CP4
24CP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/8	7 1/2	1 7/16	24[D]	13 5/8	22 13/16[D]	21 7/16	16 7/8			24CP4A
24DP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 1/8	7 1/2	1 7/16	24[D]	13 5/8	22 13/16[D]	21 7/16	16 7/8		3 5/8	24DP4

[D] Diagonal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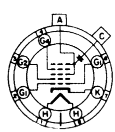
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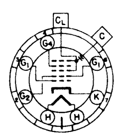
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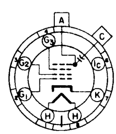
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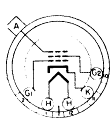
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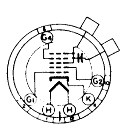
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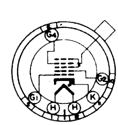
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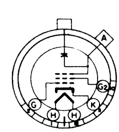
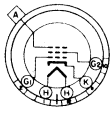

12N

24DP4A-30BP4

TYPE	DESCRIPTION	HEATER								RATINGS			TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS							TYPE
		VOLTS	AMPERES	ION-TRAP MAGNET	EXTERNAL MAG. NEUTRALIZING COIL	FILTER FACE PLATE	DEFLECTION	FOCUS	DEFLECTION ANGLE, DEGREES	EXTERNAL CONDUCTIVE COATING	MAX. ANODE #1 VOLTS	MAX. GRID #1 RESISTANCE MEGOHMS	ANODE #2 OR FOCUS KILOVOLTS	ANODE #1 VOLTS	GRID #2 VOLTS	GRID #1 VOLTAGE FOR CUTOFF	FOCUSING COIL CURRENT MA.	ION TRAP MAGNET CURRENT MAX.	TOROID MAGNET FIELD STRENGTH GAUSS	
24DP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	85-H 90-D	YES	20	1.5	16		300	−50		58		24DP4A
24QP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	85-H 90-D	YES	18	1.5	16		300	−50	100	100		24QP4
24TP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	D-90	YES	20	1.5	14		300	−55	110	85		24TP4
24VP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	87-H 90-D	YES	22	1.5	20		300	−55	125	135		24VP4
24VP4A	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	87-H 90-D	YES	22	1.5	20		300	−55	125	135		24VP4A
24XP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	NO	20	1.5	18		300	−50	125	35	40	24XP4
24YP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16		300	−50		58		24YP4
24ZP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16	0[W] to +500	300	−50				24ZP4
27AP4	RECTANGULAR METAL—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES[S]	M	E	H-85 D-90	NO	18	1.5	12		300	−55		85		27AP4
27EP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-85	NO	20	1.5	16		300	−55	118			27EP4
27GP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	85-H 90-D	NO	22.5	1.5	16		300	−55	95	100	45	27GP4
27LP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	YES	22	1.5	20		300	−55	148		45	27LP4
27MP4	RECTANGULAR METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES[S]	M	M	85-H 90-D	NO	18	1.5	16		300	−55	110		50	27MP4
27NP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	H-85 D-90	YES	18	1.5	16		300	−50	93	100		27NP4
27RP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	YES	YES	M	M	85-H 90-D	YES	20	1.5	16		300	−55	105	85		27RP4
27SP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	20	1.5	18	−72[W] to +396	300	−50			40	27SP4
27UP4	RECTANGULAR GLASS—DIRECT VIEW	6.3	0.6	SINGLE	NO	YES	M	E	H-85 D-90	YES	20	1.5	16	0[W] to +396	300	−50			40	27UP4
27VP4	RECTANGULAR GLASS—DIRECT VIEW (ALUMINIZED SCREEN)	6.3	0.6	NONE	NO	YES	M	E	H-85 D-90	YES	18	1.5	16	−72[X] to +496	300	−50				27VP4
30BP4	ROUND METAL—DIRECT VIEW	6.3	0.6	SINGLE	YES	YES	M	M	90	NO	30	1.5	12		300	−55	95	75		30BP4

[H] Horizontal. [D] Diagonal. [S] Frosted. [W] Grid & 4 Voltage.



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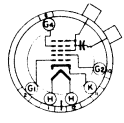

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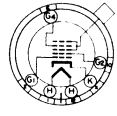

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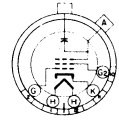
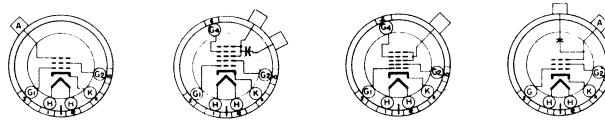


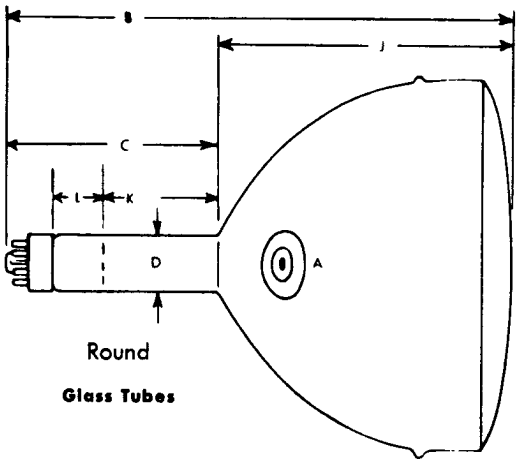
12N

TYPE	BULB CONTACT	BASE	EIA BASE NO.	OVERALL DIMENSIONS: OVERALL LENGTH INCHES	NECK LENGTH INCHES	NECK DIAMETER INCHES	BULB DIAMETER INCHES	FACEPLATE RADIUS OF CURVATURE INCHES	RASTER SIZE: USEFUL SCREEN DIAMETER INCHES	USEFUL SCREEN WIDTH INCHES	USEFUL SCREEN HEIGHT INCHES		NECK LENGTH AFTER SEALING INCHES	TYPE
24DP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 1/8	7 1/2	1 5/8	24[D]	135/8	22 13/16[D]	21 7/8	16 7/8			24DP4A
24QP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/8	7 1/2	1 5/8	24[D]	135/8	22 13/16[D]	21 7/8	16 7/8		4 3/4	24QP4
24TP4	RECKSSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/4	7 1/2	1 5/8	24[D]	135/8	22 13/16[D]	21 5/8	17 3/8			24TP4
24VP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/8	7 1/2	1 7/8	24[D]	135/8	22 13/16[D]	21 7/8	16 7/8			24VP4
24VP4A	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	21 1/8	7 1/2	1 5/8	24[D]	135/8	22 13/16[D]	21 7/8	16 7/8			24VP4A
24XP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	21 1/8	7 1/2	1 7/8	24[D]	135/8	22 13/16[D]	21 3/4	16 3/4			24XP4
24YP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 1/8	7 1/2	1 5/8	24[D]	135/8	22 13/16[D]	21 5/8	16 3/8			24YP4
24ZP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 3/8	7 3/4	1 7/8	24[D]	135/8	22 13/16[D]	21 3/4	16 3/4			24ZP4
27AP4	METAL CONE LIP	SMALL SHELL DUODECAL 6-PIN	12M	21 5/8	7 1/2	1 5/8	26 7/8[D]			23 5/8	18 1/4		4 1/8	27AP4
27EP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	23 1/16	7 5/8	1 7/8	26 13/16[D]	15 13/16	25 3/4[D]	24 3/4	18 3/8		5 1/4	27EP4
27GP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12D	23 1/16	7 1/2	1 7/8	26 13/16[D]	133/8	25 3/4[D]	24 1/4	18 5/8			27GP4
27LP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	24 13/64	9 45/64	1 7/8	26 13/16[D]	14 11/32	25 3/4[D]	24 3/4	18 7/8			27LP4
27MP4	METAL SHELL LIP	SMALL SHELL DUODECAL 5-PIN	12D	22 5/16	7 1/2	1 7/8	26 7/8[D]	14 1/2	25 1/4[D]	23 7/8	18 1/8			27MP4
27NP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	23	7 1/2	1 7/8	26 13/16[D]	15 1/2	25 3/4[D]	24 1/4	18 5/8		4 3/4	27NP4
27RP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 5-PIN	12N	22 5/16	7 1/2	1 7/8	26 13/16[D]	15 5/16	25 3/4[D]	24 1/4	18 5/8			27RP4
27SP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23 1/16	7 1/2	1 7/8	26 13/16[D]	15 5/16	25 3/4[D]	24 1/4	18 5/8			27SP4
27UP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	23 1/16	7 1/2	1 7/8	26 13/16[D]	15 5/16		24	18 1/2		4 3/4	27UP4
27VP4	RECESSED SMALL CAVITY CAP	SMALL SHELL DUODECAL 6-PIN	12L	21 15/16	5 1/2	1 7/8	26 13/16[D]	15 5/16	25 3/4[D]	24 1/4	18 5/8		4 3/4	27VP4
30BP4	METAL CONE LIP	SMALL SHELL DUODECAL 5-PIN	12D	23 5/16	7 5/8	1 7/8	30 1/8	16 3/8	28 3/4	25 5/16	19 1/4			30BP4

[D] Diagonal.

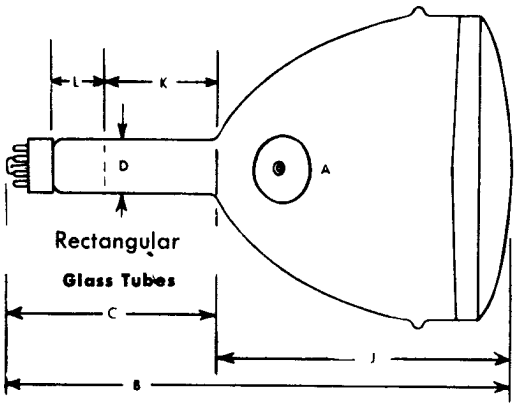


PRINTED IN U. S. A.



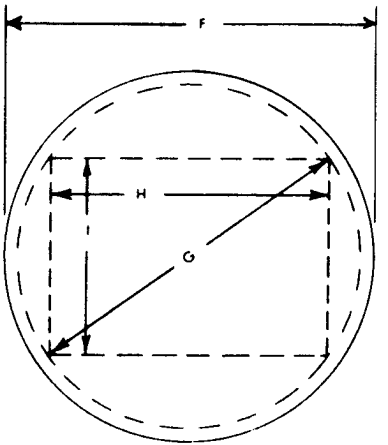
Round

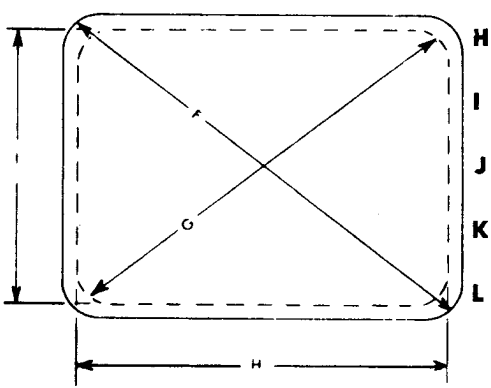
Glass Tubes



Rectangular

Glass Tubes





KEY

A — Bulb Contact

B — Overall Length

C — Neck Length

D — Neck Diameter

F — Outside Bulb Diameter (or Diagonal for rectangular bulb)

G — Useful Screen Diameter (or Diagonal for rectangular bulb)

H — Useful Screen Width For rectangular raster

I — Useful Screen Height For rectangular raster

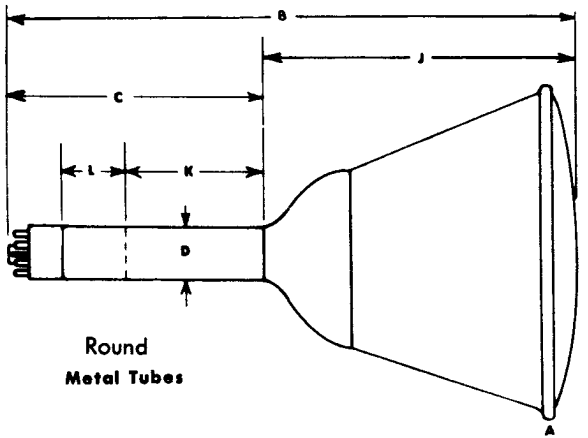
J — Distance from face to junction of neck and bulb

K — Neck Length allotted to deflection system

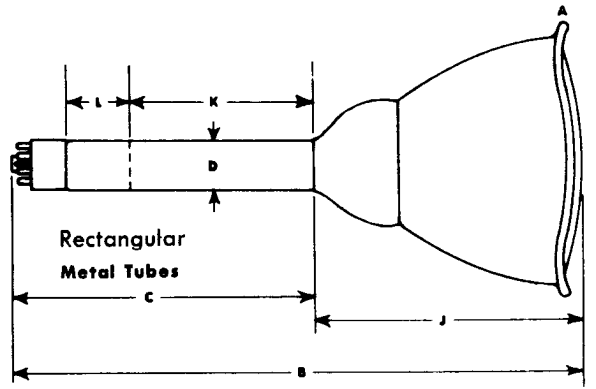
L — Space allotted to ion trap magnet

KEY DRAWINGS

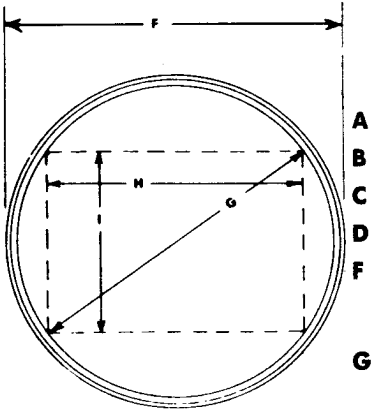
TUNG-SOL ELECTRIC INC. ELECTRON TUBE DIVISION BLOOMFIELD, NEW JERSEY U.S.A. APRIL 1, 1961 PLATE #153

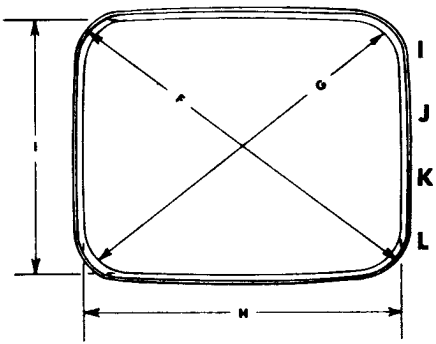


Round
Metal Tubes



Rectangular
Metal Tubes





KEY

A — Metal-Shell Lip

B — Overall Length

C — Neck Length

D — Neck Diameter

F — Outside Bulb Diameter (or Diagonal for rectangular bulb)

G — Useful Screen Diameter (or Diagonal for rectangular bulb)

H — Useful Screen Width For rectangular raster

I — Useful Screen Height For rectangular raster

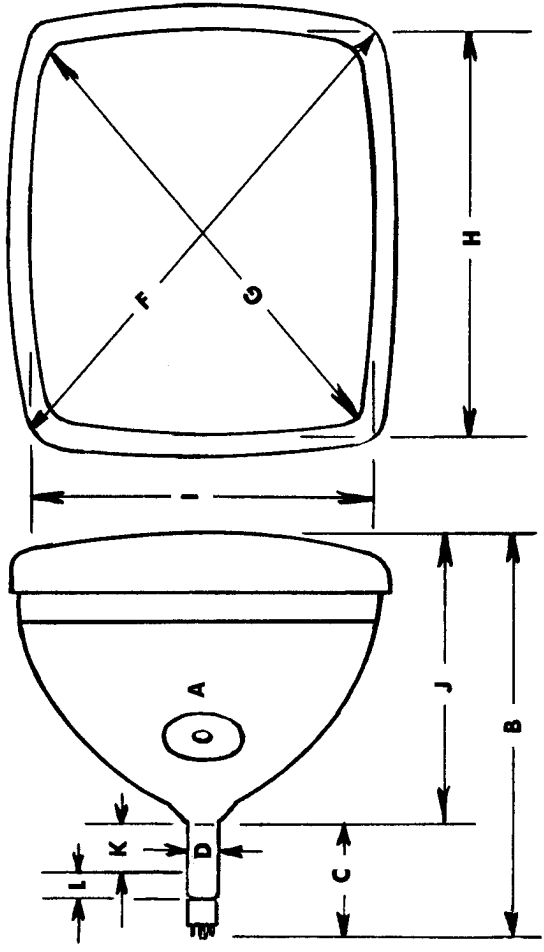
J — Distance from face to junction of neck and bulb

K — Neck Length allotted to deflection system

L — Space allotted to ion trap magnet

KEY

A — Bulb Contact
B — Overall Length
C — Neck Length
D — Neck Diameter
F — Outside Bulb Diameter (or Diagonal for rectangular bulb)
G — Useful Screen Diameter (or Diagonal for rectangular bulb)
H — Useful Screen Width For rectangular raster
I — Useful Screen Height For rectangular raster
J — Distance from face to junction of neck and bulb
K — Neck Length allotted to deflection system
L — Space allotted to ion trap magnet



Bonded
Rectangular
Glass Tube

TUNG-SOL

CATHODE RAY - SUPPLEMENTAL CONTENTS

* INDICATES AN ADDITION.

→ INDICATES A CHANGE.

DESCRIPTIONS OF PHOSPHORS BY COLOR AND PERSISTENCE

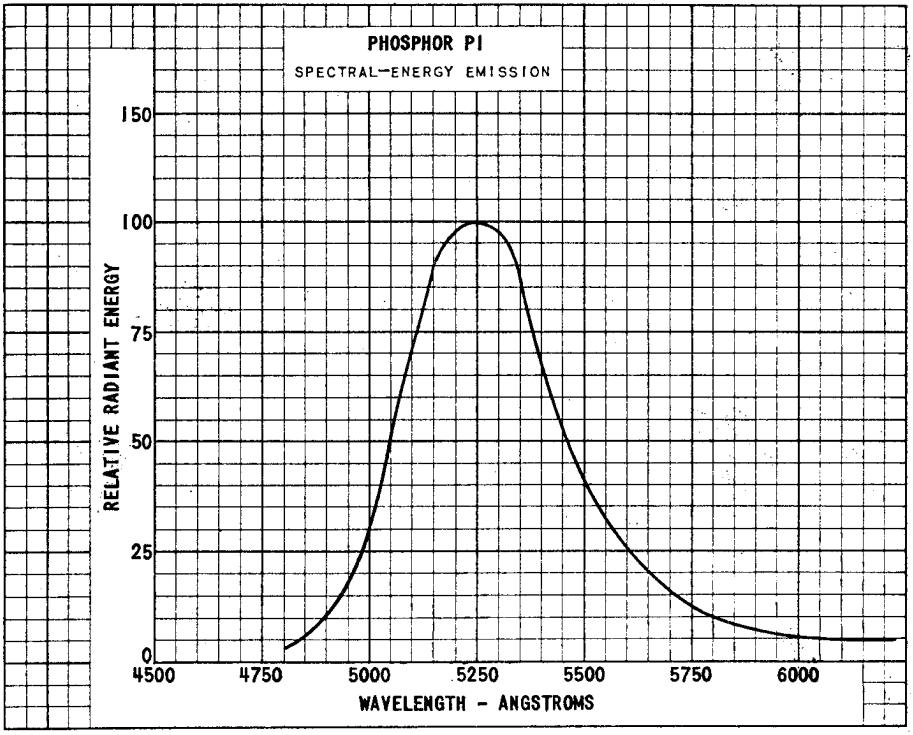
Phosphors, as used for the screens of cathode-ray tubes, have two important characteristics: COLOR and PERSISTENCE. These characteristics can be used to define the phosphor. Descriptions of phosphors which have been used in the manufacture of cathode-ray tubes are listed in the index table below, and are each described in the following pages. These phosphors are identified by the designation P1, P2, etc., as assigned by the RETMA Data Bureau.

Color may be specified by a Spectral-Energy Emission Characteristic Curve, or by the coordinates x and y on the ICI Color Chart.

Persistence may be specified by a Persistence Characteristic Curve, or by numerical limit values.

In the following table, B_0 = Initial Brightness, and B = Brightness at Time T

PHOSPHOR DESIGNATION	COLOR			PERSISTENCE	
	FLUORESCENT	PHOSPHORESCENT	SPECIFIED BY	DURATION	SPECIFIED BY
P1	GREEN	GREEN	CURVE PAGE 1	MEDIUM	CURVE PAGE 1
P2	BLUE-GREEN	GREEN	CURVE PAGE 2	LONG	CURVE PAGE 2 $B = B_0/T^n$, $n = 1.0$ TO 1.2
P3	YELLOW	YELLOW	CURVE PAGE 3	MEDIUM	CURVE PAGE 3
P4 SULFIDE	WHITE	WHITE	ICI COLOR COORDINATES $x = 0.313$, $y = 0.324$ CURVE PAGE 4	SHORT	BRIGHTNESS NOT OVER 7% OF PEAK VALUE IN 33 MILLISECONDS AFTER CESSATION OF EXCITATION
P4 SILICATE	WHITE	BLUE	ICI COLOR COORDINATES $x = 0.313$, $y = 0.324$ CURVE PAGE 5	MEDIUM	BRIGHTNESS NOT OVER 7% OF PEAK VALUE IN 33 MILLISECONDS AFTER CESSATION OF EXCITATION
P4 SILICATE-SULFIDE	WHITE	YELLOW	ICI COLOR COORDINATES $x = 0.313$, $y = 0.324$ CURVE PAGE 4	MEDIUM	BRIGHTNESS NOT OVER 7% OF PEAK VALUE IN 33 MILLISECONDS AFTER CESSATION OF EXCITATION
P5	BLUE	BLUE	CURVE PAGE 5	VERY SHORT	CURVE PAGE 6 TIME CONSTANT = 6 TO 10 μSEC.
P6	WHITE	WHITE	CURVE PAGE 6	SHORT	CURVE PAGE 7 $B = B_0/T^n$, $n = 1.6$ TO 2.0
P7	BLUE-WHITE	YELLOW	CURVE PAGE 7	LONG	CURVE PAGE 8 $B = B_0/T^n$, $n = 0.7$ TO 1.2
P10	DARK TRACE: COLOR DEPENDS ON ABSORPTION CHARACTERISTICS AND TYPE OF ILLUMINATION			VERY LONG	LONG VARIABLE PERSISTENCE DEPENDENT ON TEMPERATURE, AMOUNT OF ILLUMINATION, AND ELECTRON-ENERGY DENSITY OF BOMBARDMENT
P11	BLUE	BLUE	CURVE PAGE 8	SHORT	CURVE PAGE 9
P12	ORANGE	ORANGE	CURVE PAGE 9	MEDIUM LONG	CURVE PAGE 10 TIME CONSTANT = 100 TO 130 MILLISEC
P14	PURPLE	ORANGE	CURVE PAGE 10	MEDIUM LONG	CURVE PAGE 11 $B = B_0/T^n$, $n = 0.9$ TO 1.4
P15	BLUE-GREEN	BLUE-GREEN	CURVE PAGE 11	EXTREMELY SHORT	VISIBLE DECAY: HYPERBOLIC TO 30% IN 1.5 μSEC. ULTRAVIOLET DECAY: EXPONENTIAL, TIME CONSTANT = 0.1 μSEC.
P16	VIOLET AND NEAR-ULTRAVIOLET	VIOLET AND NEAR-ULTRAVIOLET	CURVE PAGE 12	EXTREMELY SHORT	CURVE PAGE 12
P17	GREENISH-YELLOW	YELLOW	CURVE PAGE 13	ONE COMP'T: EXTREMELY SHORT OTHER COMP'T: LONG	SHORT COMPONENT: HYPERBOLIC TO 30% IN 1.5 μSEC. LONG COMPONENT: CURVE PAGE 13 $B = B_0/T^n$, $n = 0.7$ TO 1.2
P18	---	---	CURVE PAGE 14	---	CURVE PAGE 14
P19	---	---	CURVE PAGE 15	---	CURVE PAGE 15
P20	---	---	CURVE PAGE 16	---	CURVE PAGE 16



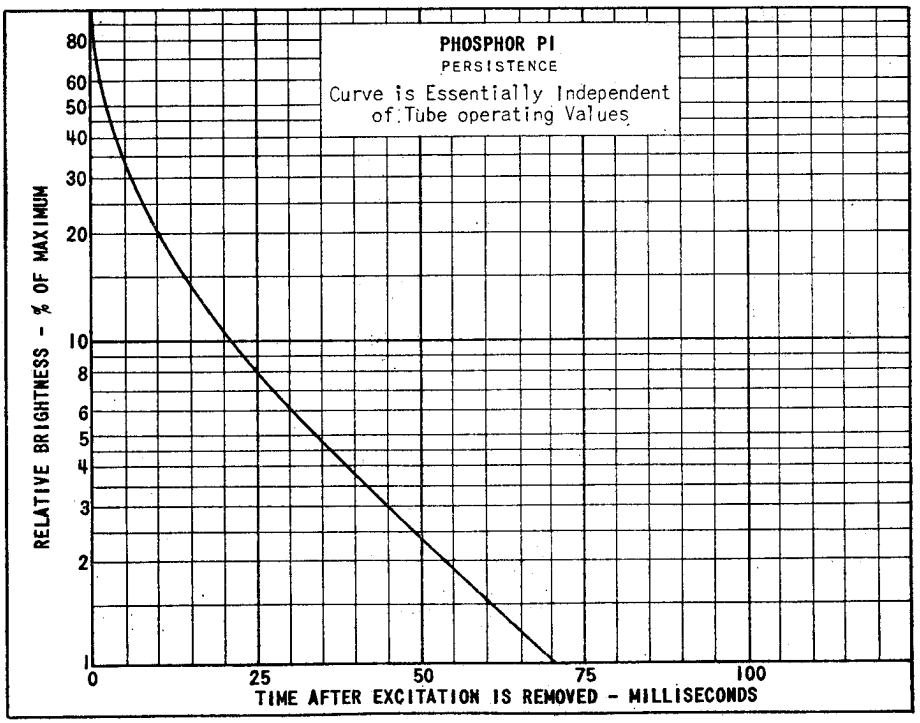
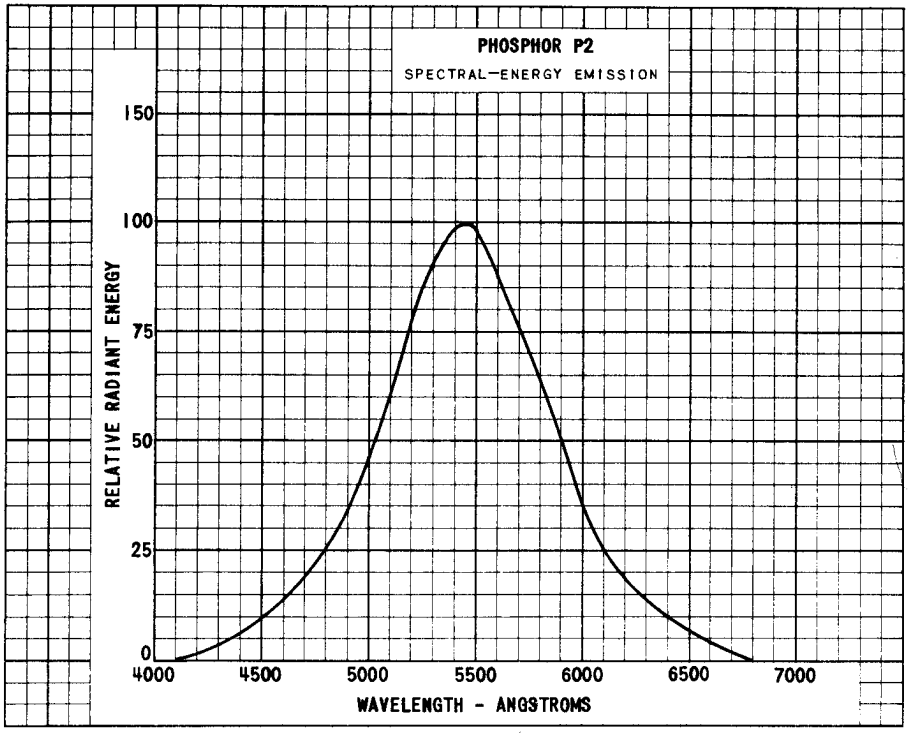
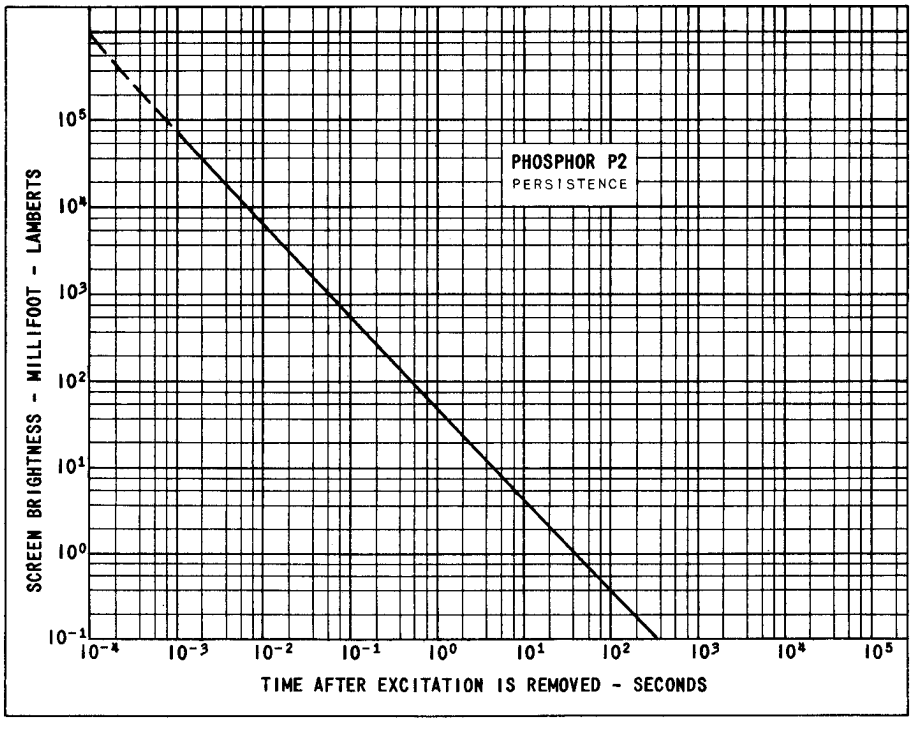
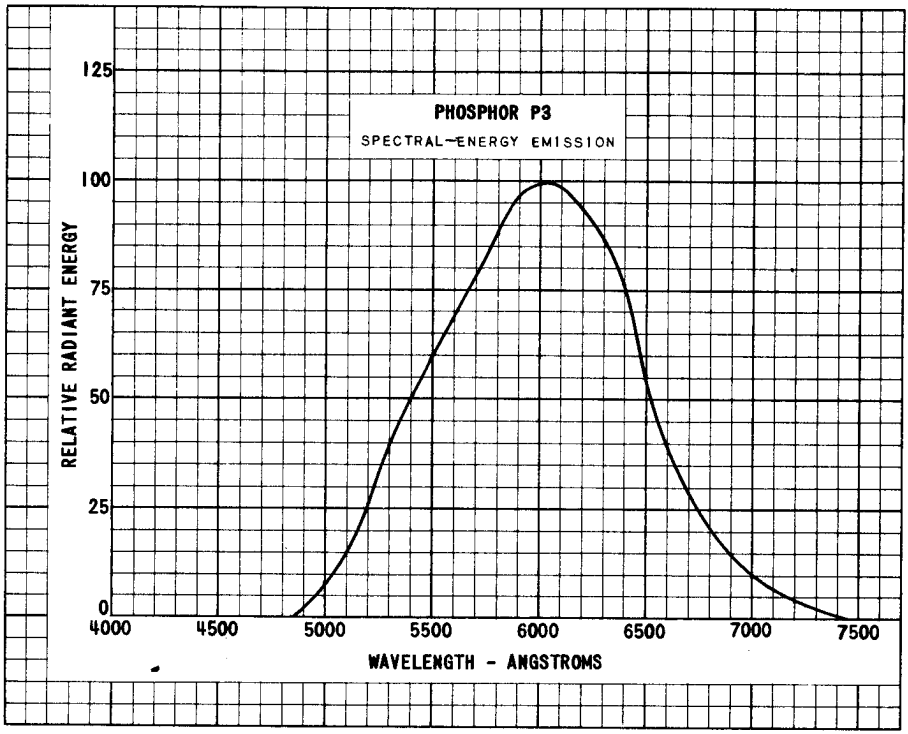


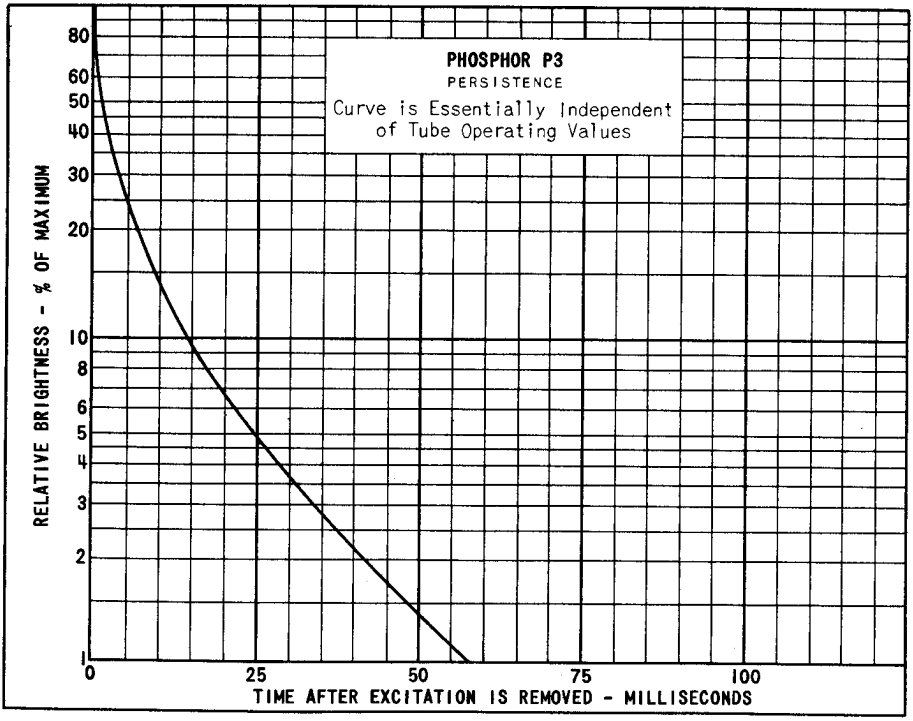
PLATE #3480 DECEMBER 1, 1953 TUNG-SOL ELECTRIC INC. ELECTRON TUBE DIVISION NEWARK, NEW JERSEY, U.S.A.

PHOSPHOR CURVES

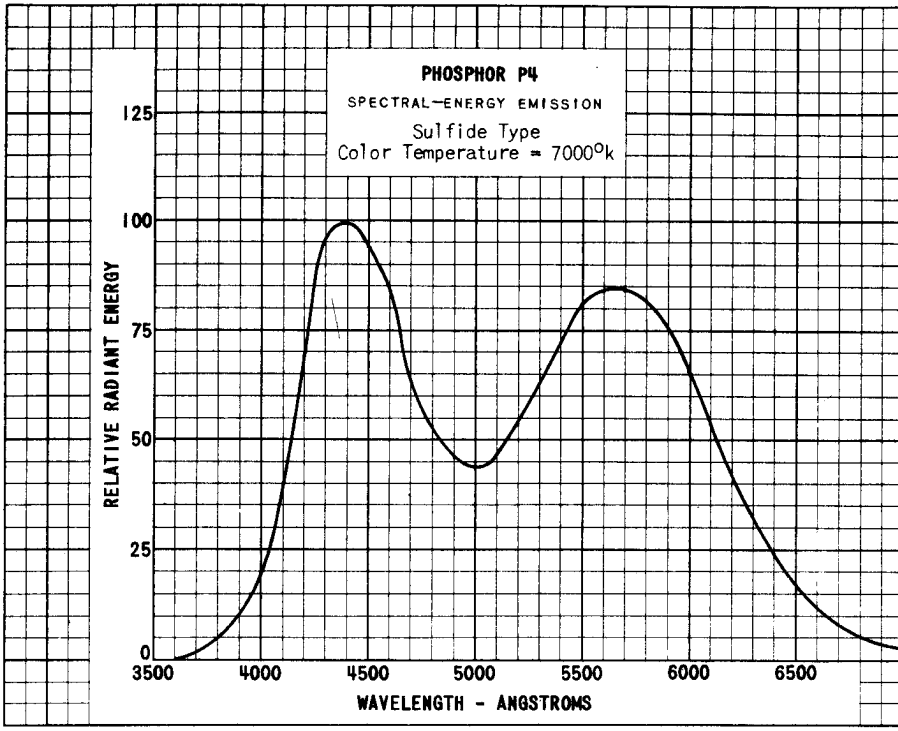


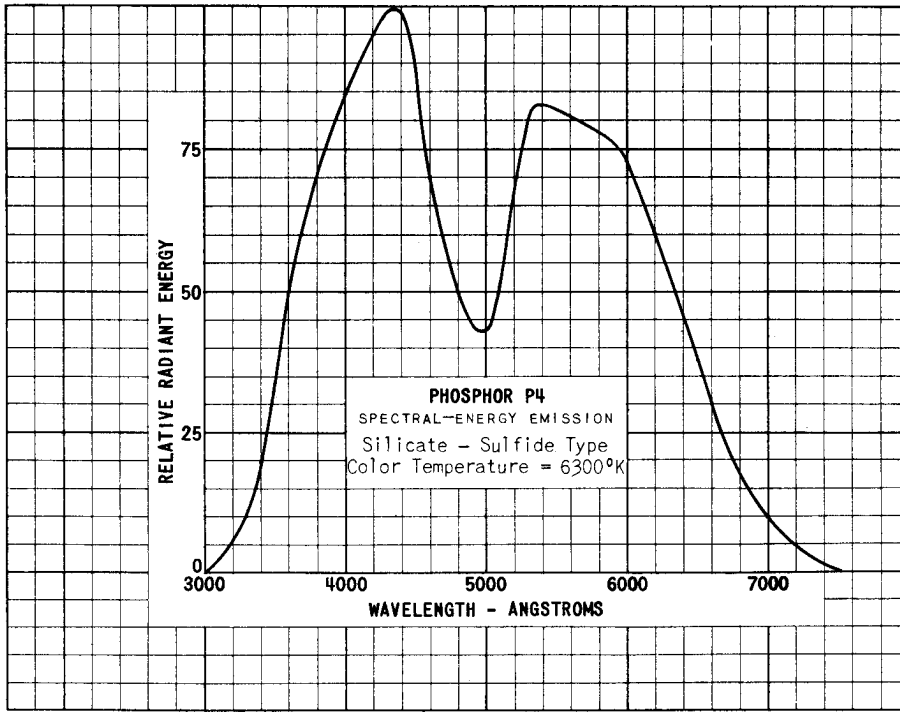


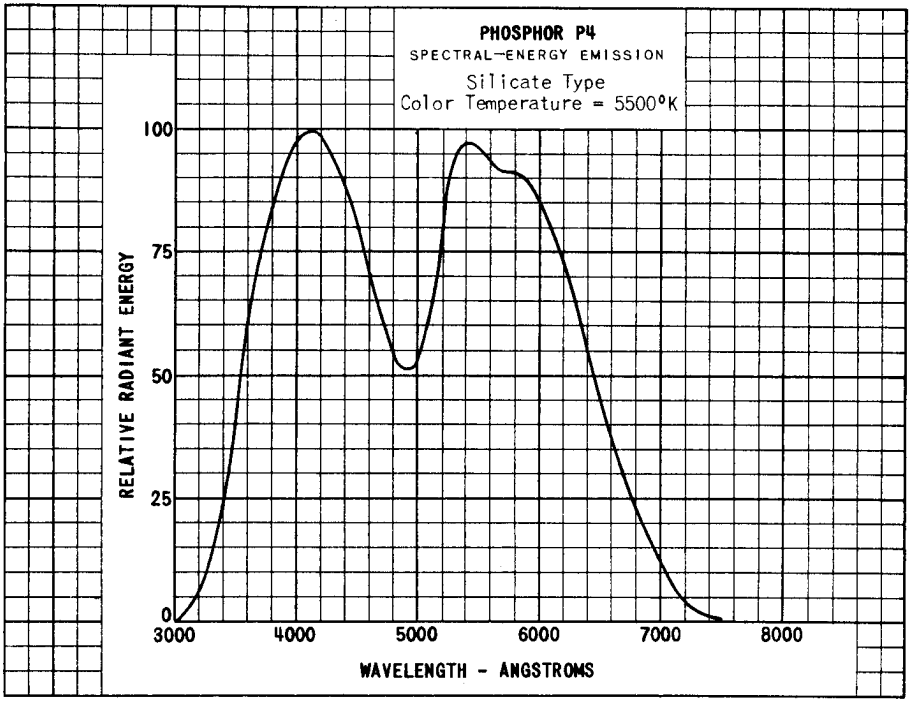

PHOSPHOR P3
SPECTRAL-ENERGY EMISSION
RELATIVE RADIANT ENERGY
125
100
75
50
25
0
4000
4500
5000
5500
6000
6500
7000
7500
WAVELENGTH - ANGSTROMS

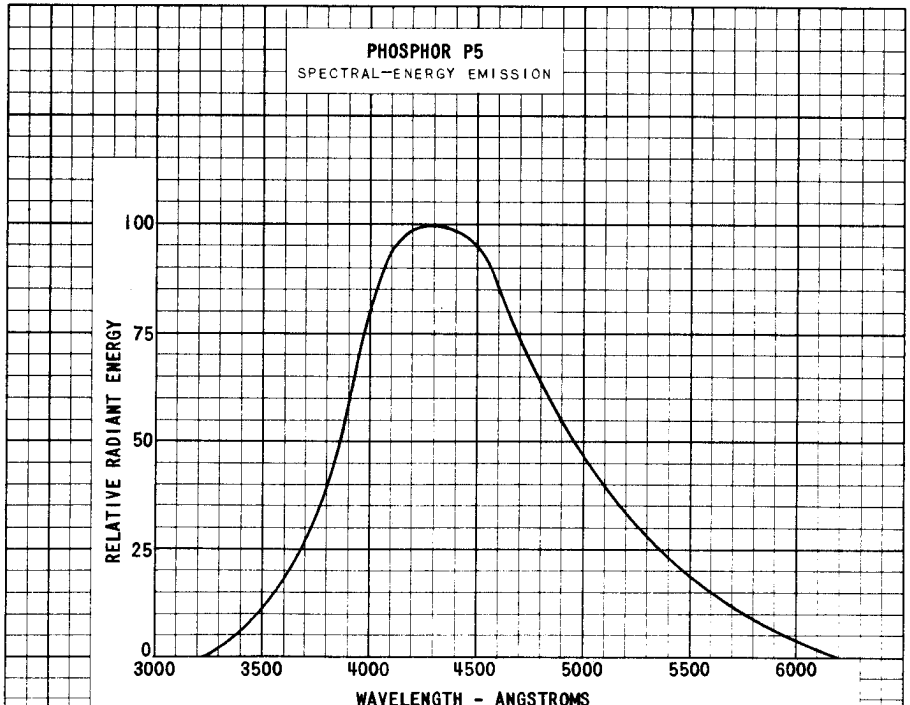

PHOSPHOR P3
PERSISTENCE
Curve is Essentially Independent
of Tube Operating Values
RELATIVE BRIGHTNESS - % OF MAXIMUM
80
60
50
40
30
20
10
8
6
5
4
3
2
1
0
25
50
75
100
TIME AFTER EXCITATION IS REMOVED - MILLISECONDS

PHOSPHOR CURVES

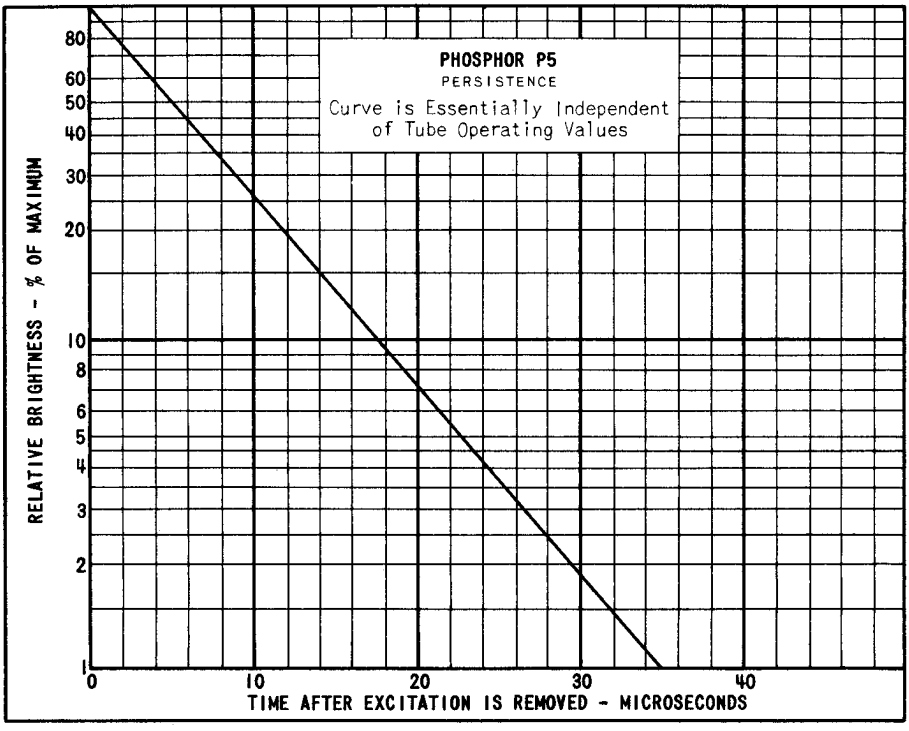


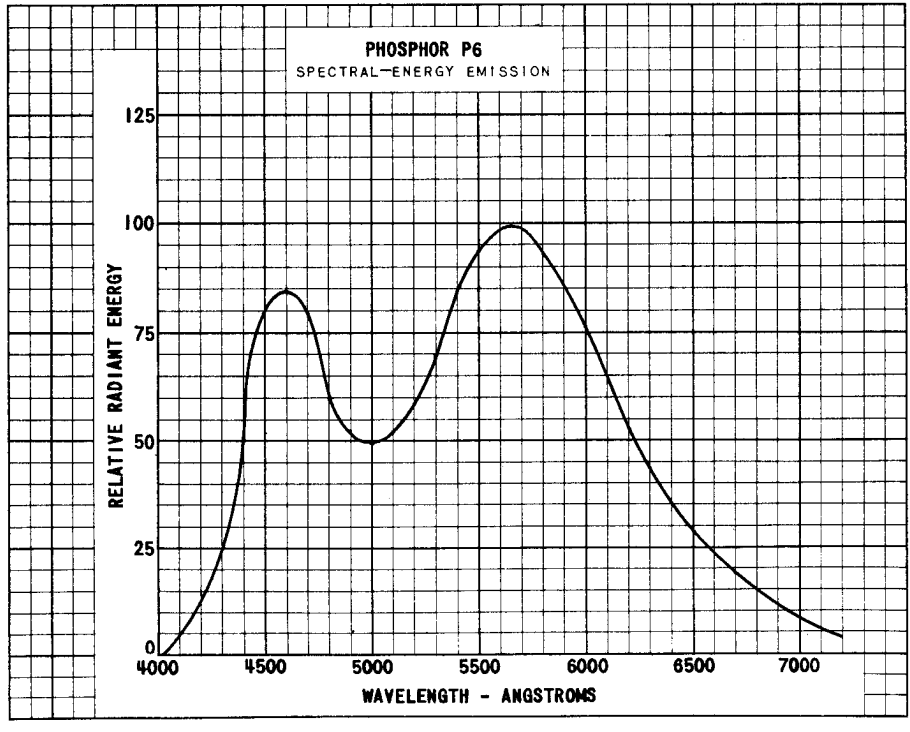


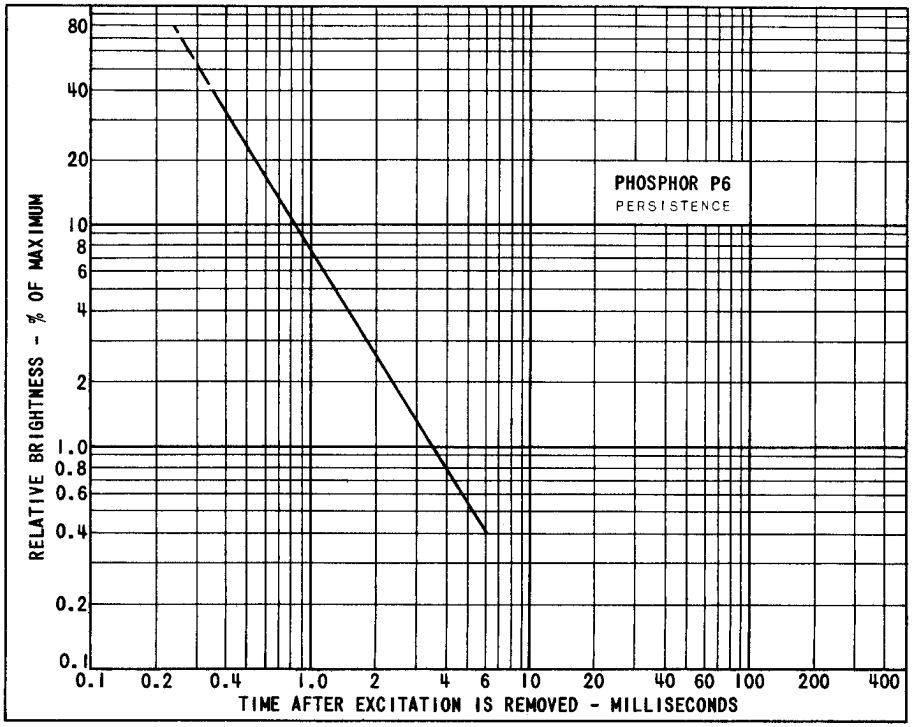

PHOSPHOR P4
SPECTRAL-ENERGY EMISSION
Silicate Type
Color Temperature = 5500°K
RELATIVE RADIANT ENERGY
100
75
50
25
0
3000
4000
5000
6000
7000
8000
WAVELENGTH - ANGSTROMS


PHOSPHOR P5
SPECTRAL-ENERGY EMISSION
RELATIVE RADIANT ENERGY
100
75
50
25
0
3000
3500
4000
4500
5000
5500
6000
WAVELENGTH - ANGSTROMS

PHOSPHOR CURVES







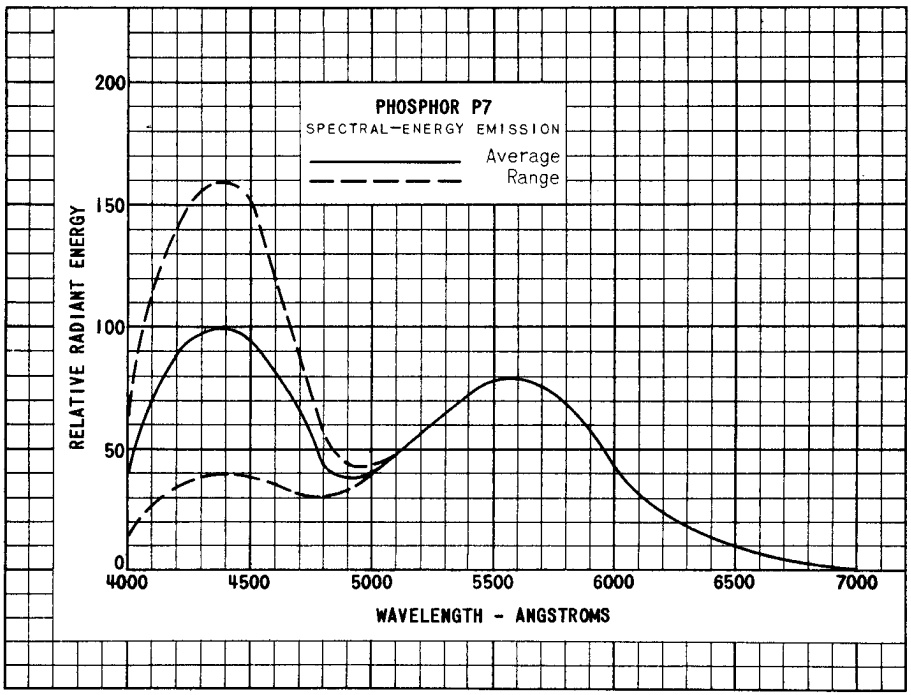
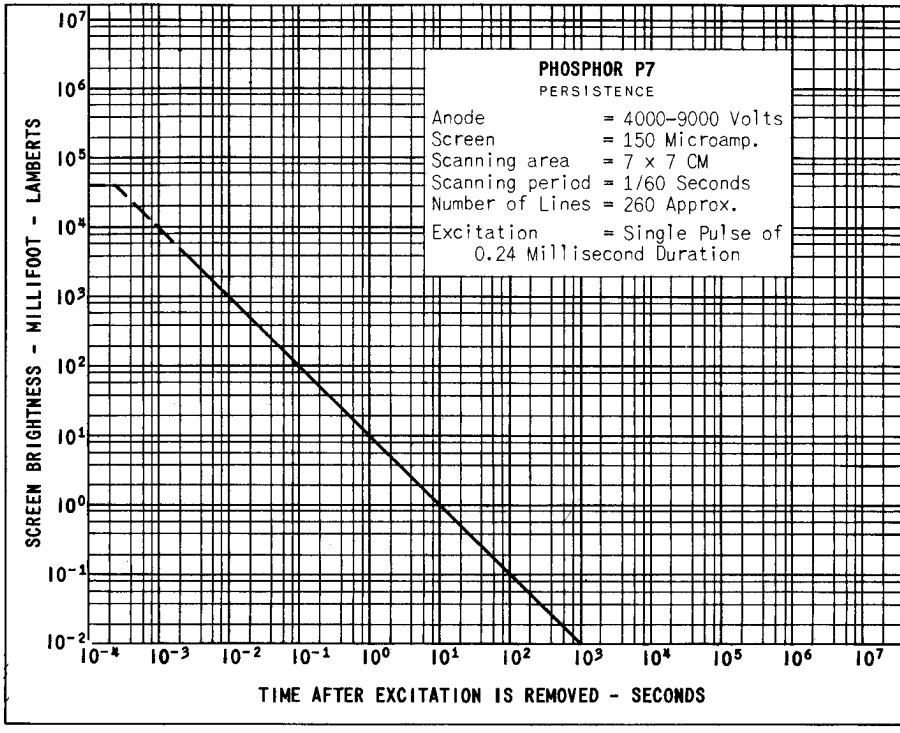
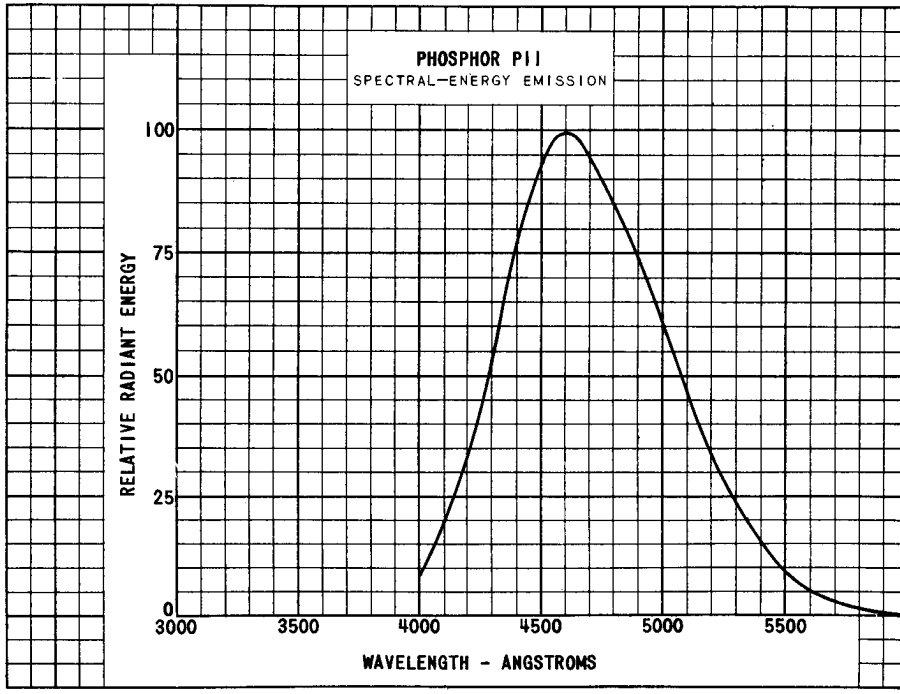
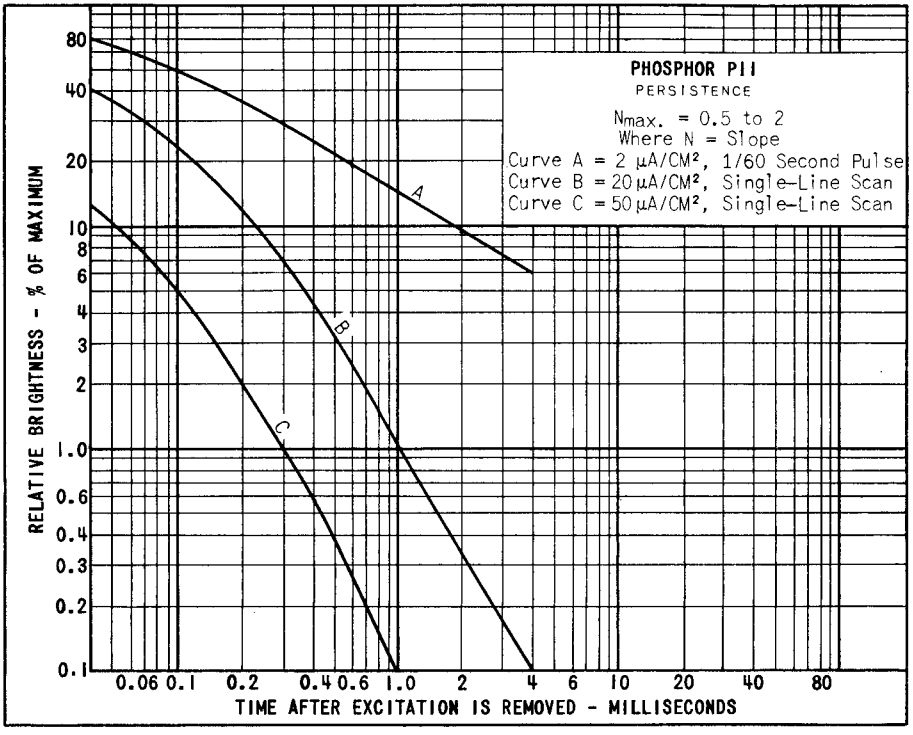


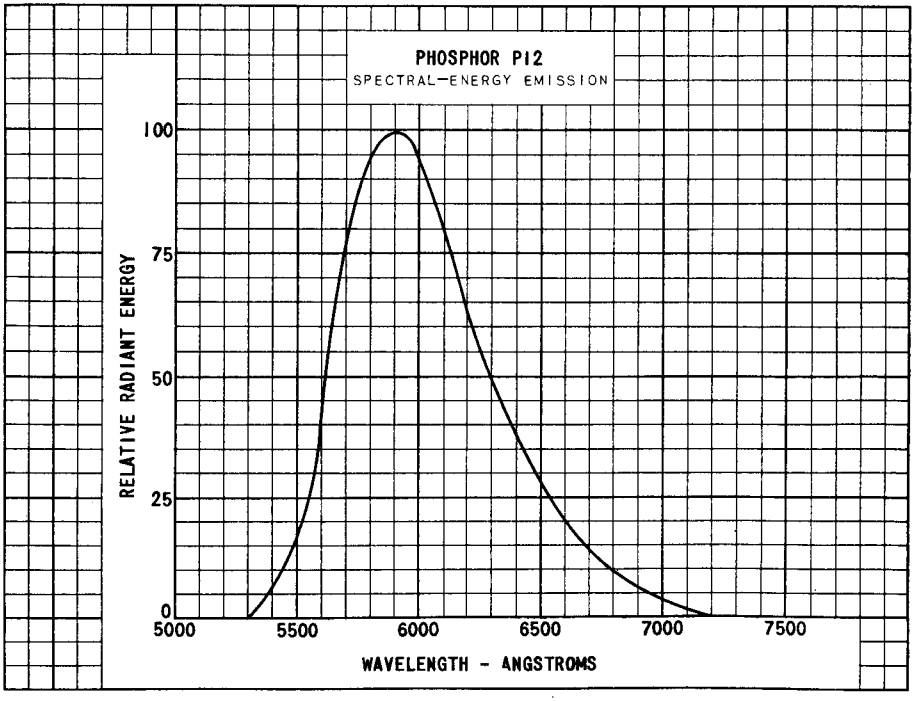
PLATE #3486 DECEMBER 1, 1953 TUNG-SOL ELECTRIC INC. ELECTRON TUBE DIVISION NEWARK, NEW JERSEY, U.S.A.

PHOSPHOR CURVES

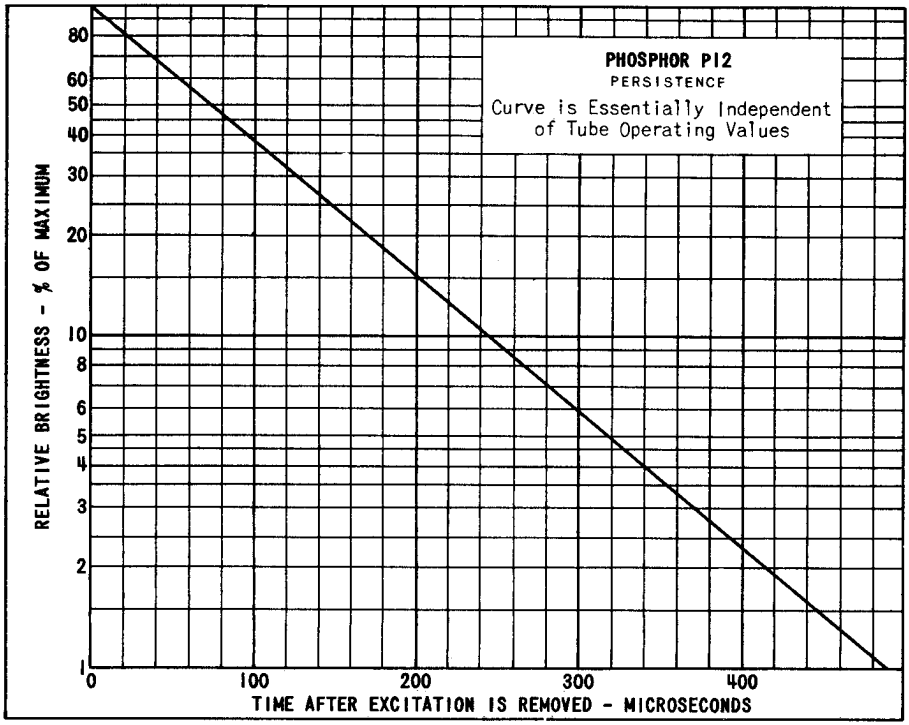


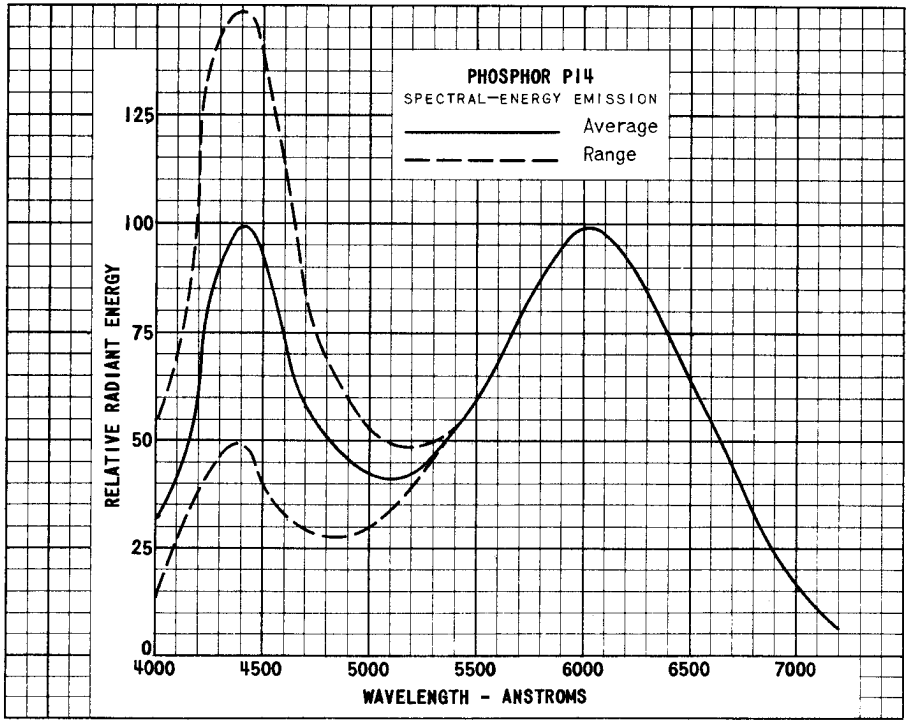


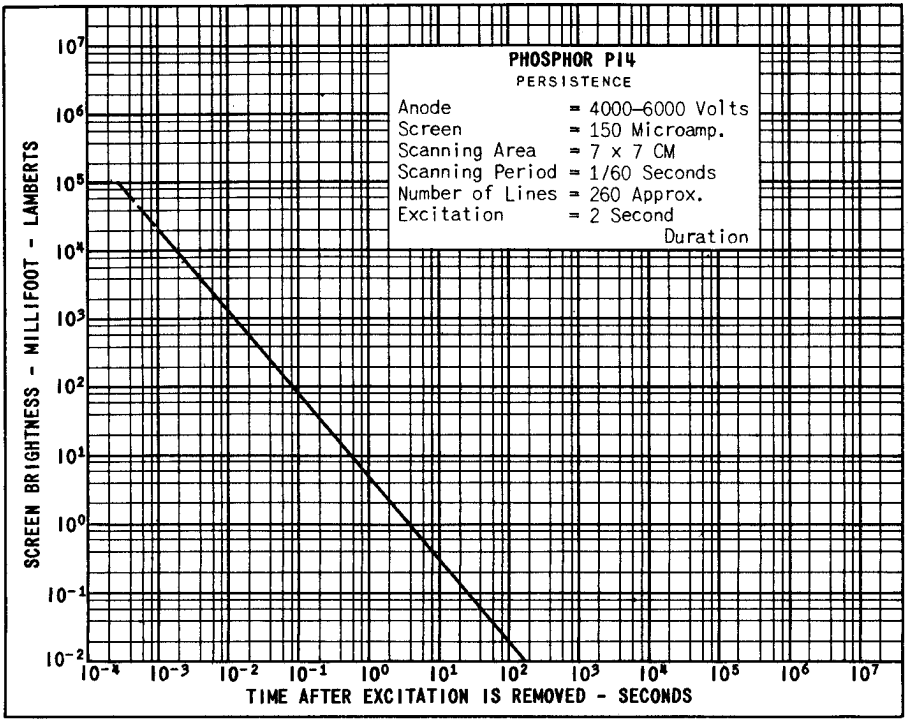

PHOSPHOR P11
PERSISTENCE
Nmax. = 0.5 to 2
Where N = Slope
Curve A = 2 μA/CM², 1/60 Second Pulse
Curve B = 20 μA/CM², Single-Line Scan
Curve C = 50 μA/CM², Single-Line Scan
RELATIVE BRIGHTNESS - % OF MAXIMUM
80
40
20
10
8
6
4
3
2
1.0
0.6
0.4
0.3
0.2
0.1
A
B
C
0.06 0.1 0.2 0.4 0.6 1.0 2 4 6 10 20 40 80
TIME AFTER EXCITATION IS REMOVED - MILLISECONDS

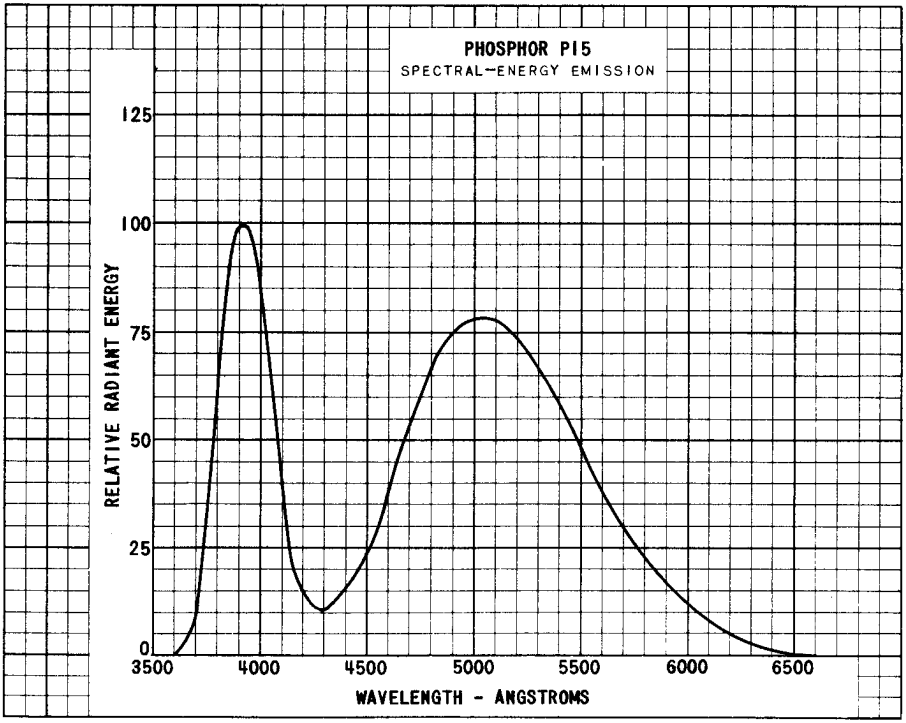

PHOSPHOR P12
SPECTRAL-ENERGY EMISSION
RELATIVE RADIANT ENERGY
100
75
50
25
0
5000 5500 6000 6500 7000 7500
WAVELENGTH - ANGSTROMS

PHOSPHOR CURVES

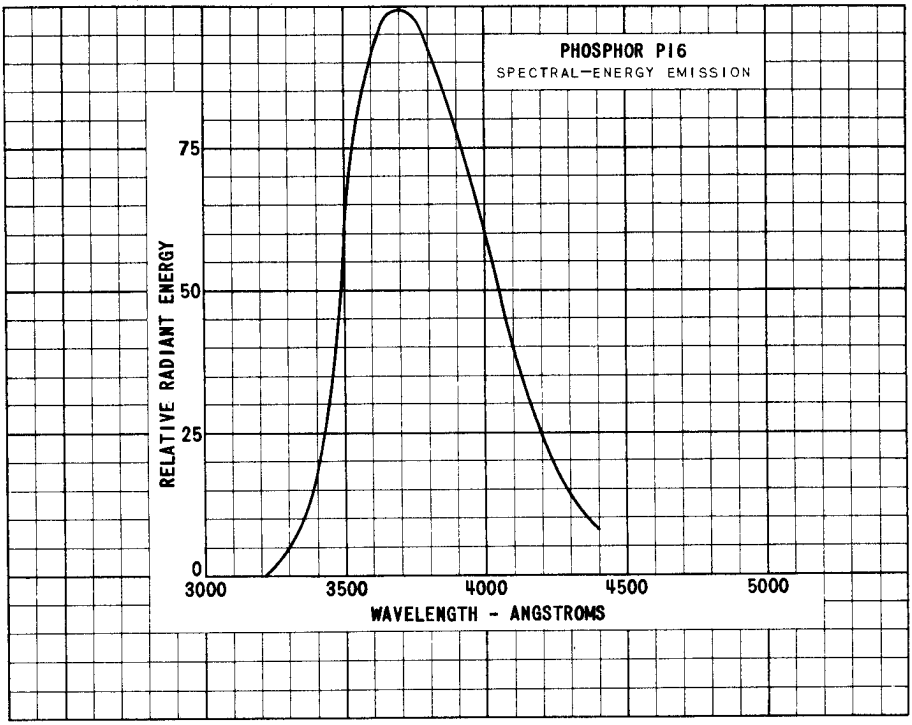


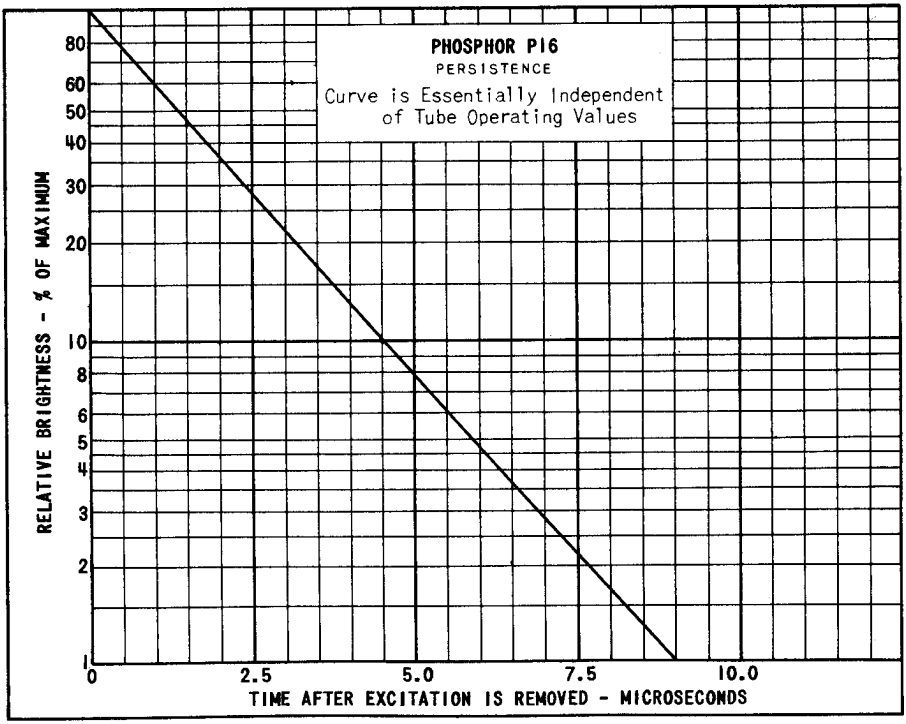


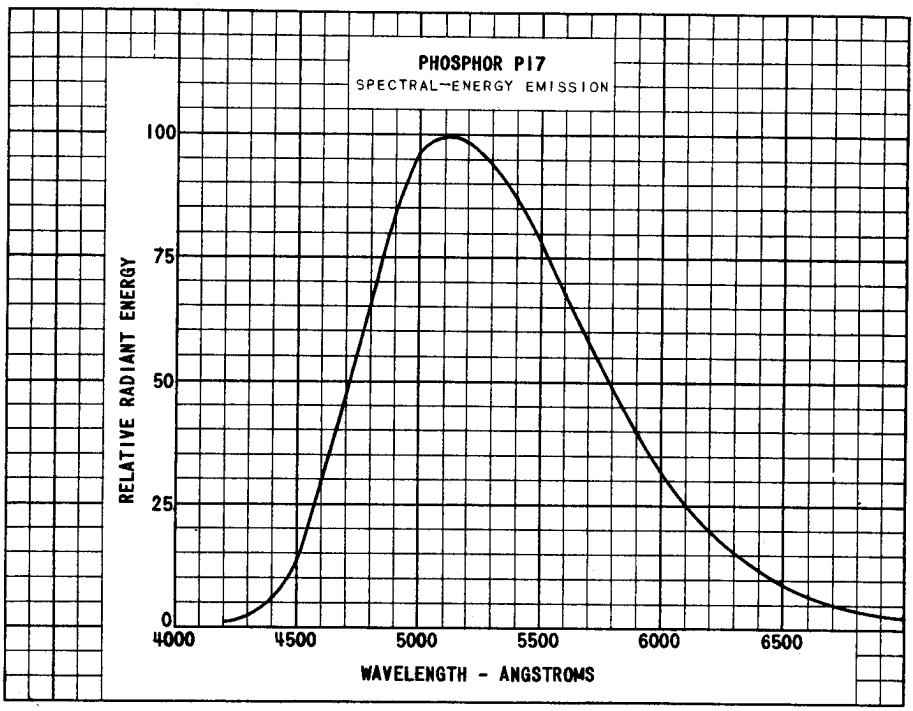

PHOSPHOR P14
PERSISTENCE
Anode = 4000–6000 Volts
Screen = 150 Microamp.
Scanning Area = 7 x 7 CM
Scanning Period = 1/60 Seconds
Number of Lines = 260 Approx.
Excitation = 2 Second Duration
SCREEN BRIGHTNESS - MILLIFOOT - LAMBERTS
TIME AFTER EXCITATION IS REMOVED - SECONDS

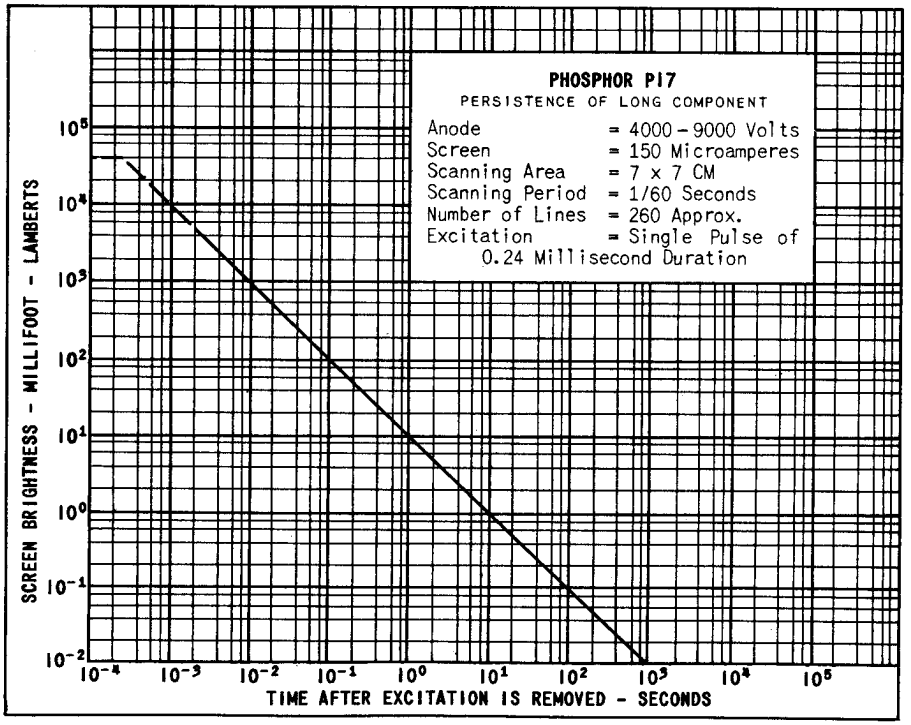

PHOSPHOR P15
SPECTRAL-ENERGY EMISSION
RELATIVE RADIANT ENERGY
WAVELENGTH - ANGSTROMS

PHOSPHOR CURVES

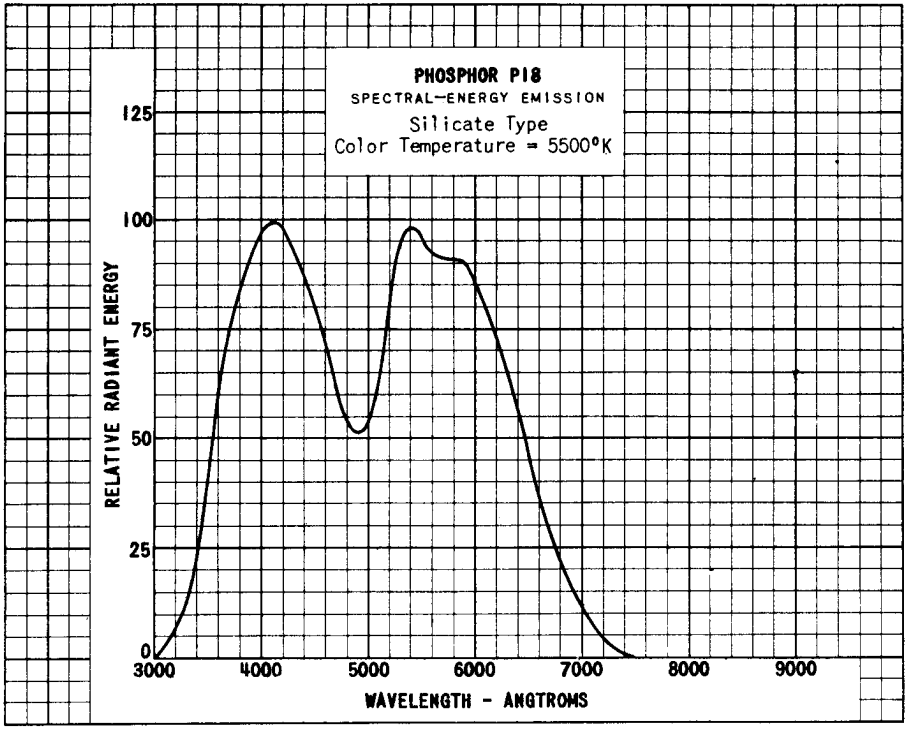


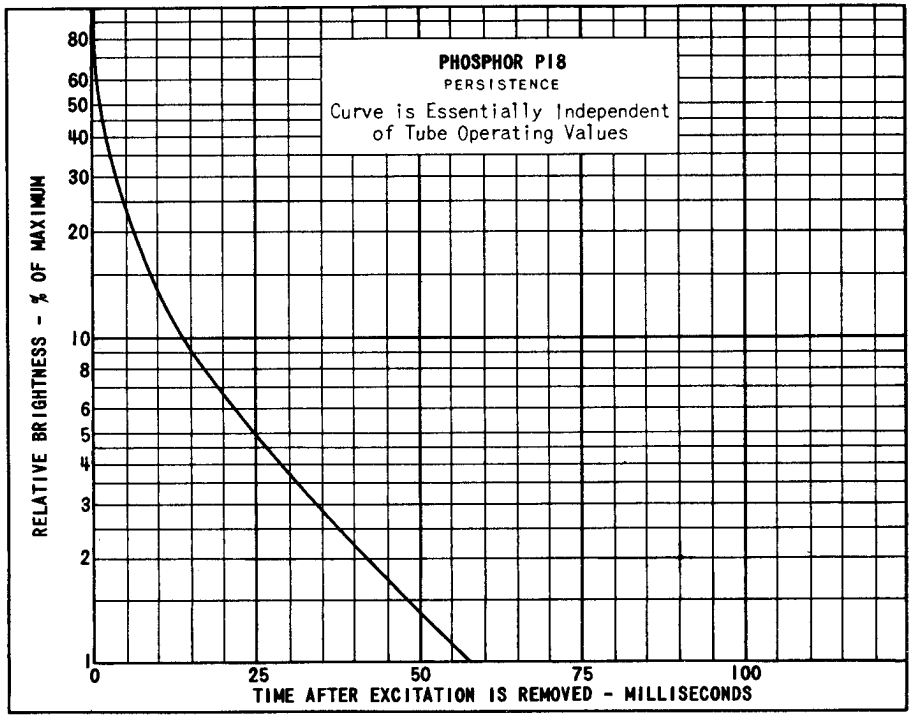


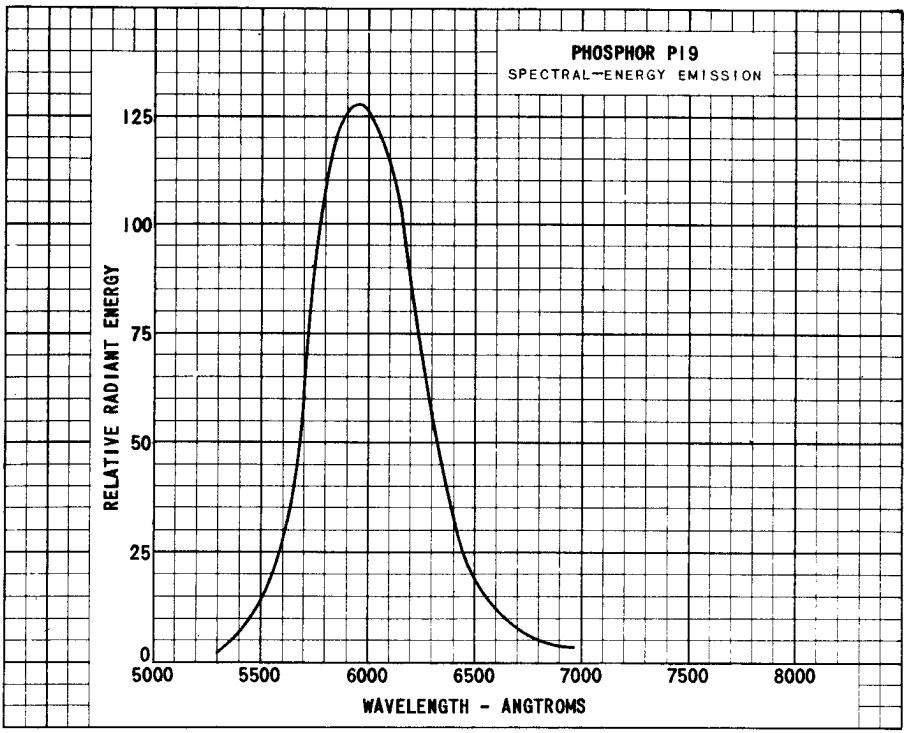

PHOSPHOR P17
SPECTRAL—ENERGY EMISSION
RELATIVE RADIANT ENERGY
100
75
50
25
0
4000
4500
5000
5500
6000
6500
WAVELENGTH - ANGSTROMS

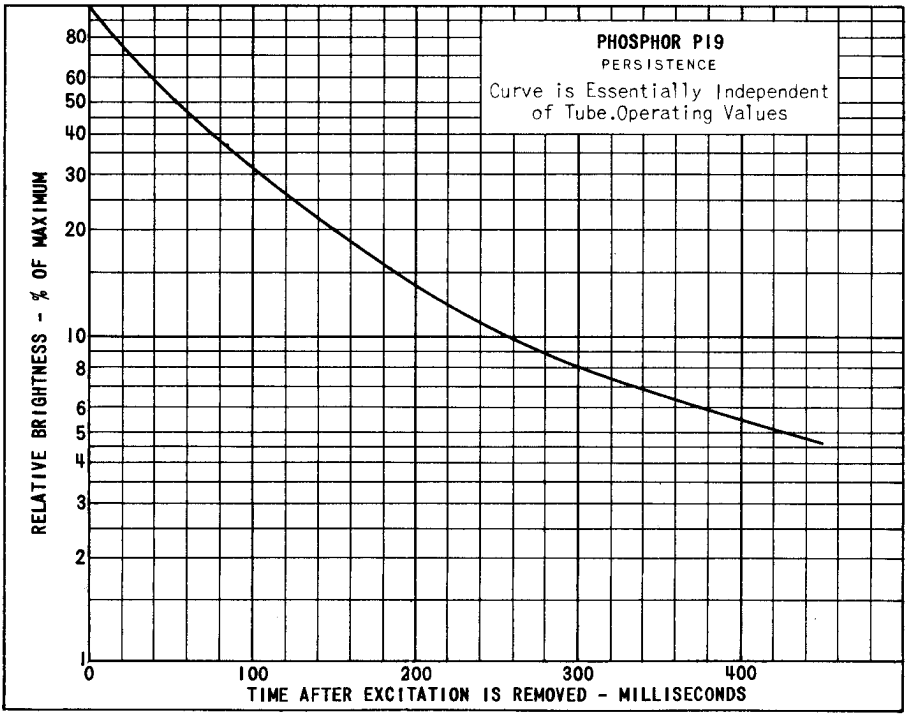

PHOSPHOR P17
PERSISTENCE OF LONG COMPONENT
Anode = 4000 - 9000 Volts
Screen = 150 Microamperes
Scanning Area = 7 x 7 CM
Scanning Period = 1/60 Seconds
Number of Lines = 260 Approx.
Excitation = Single Pulse of 0.24 Millisecond Duration
SCREEN BRIGHTNESS - MILLIFOOT - LAMBERTS
10^5
10^4
10^3
10^2
10^1
10^0
10^{-1}
10^{-2}
10^{-4}
10^{-3}
10^{-2}
10^{-1}
10^0
10^1
10^2
10^3
10^4
10^5
TIME AFTER EXCITATION IS REMOVED - SECONDS

PHOSPHOR CURVES






PHOSPHOR P19
SPECTRAL-ENERGY EMISSION
RELATIVE RADIANT ENERGY
125
100
75
50
25
0
5000
5500
6000
6500
7000
7500
8000
WAVELENGTH - ANGTROMS


PHOSPHOR P19
PERSISTENCE
Curve is Essentially Independent of Tube.Operating Values
RELATIVE BRIGHTNESS - % OF MAXIMUM
80
60
50
40
30
20
10
8
6
5
4
3
2
1
0
100
200
300
400
TIME AFTER EXCITATION IS REMOVED - MILLISECONDS

PHOSPHOR CURVES