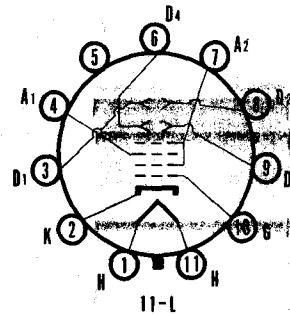
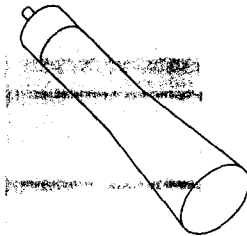


SYLVANIA TYPE 2AP1A 2AP-A*

OSCILLOSCOPE TUBE

2" Direct Viewed
Round Glass Type

Electrostatic Deflection
Electrostatic Focus



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflecting Method.....	Electrostatic
Phosphor.....	P1
Fluorescence.....	Green
Persistence.....	Medium
Faceplate.....	Clear

*In addition to the Type shown, the 2AP-A can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current.....	0.6 Amperes
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	5.5 μf
Grid to All Other Electrodes.....	8.0 μf
Between Deflecting Plates 1-2 ¹	0.6 μf
Between Deflecting Plates 3-4 ¹	1.1 μf
Deflecting Plate 1 ² to All Other Electrodes.....	8.5 μf
Deflecting Plate 3 ² to All Other Electrodes.....	9.0 μf
Deflecting Plate 1 to All Other Electrodes	
Except D2.....	8.0 μf
Deflecting Plate 2 ² to All Other Electrodes	
Except D1.....	4.6 μf
Deflecting Plate 3 to All Other Electrodes	
Except D4.....	7.5 μf
Deflecting Plate 4 ² to All Other Electrodes	
Except D3.....	6.0 μf

MECHANICAL DATA

Minimum Useful Screen Diameter.....	1 $\frac{3}{4}$ Inches
Nominal Overall Length.....	7 $\frac{1}{8}$ Inches
Base.....	Small Shell Magnal 11-Pin
Basing.....	11L

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 2 Voltage.....	1100 Volts d c
Anode No. 1 Voltage.....	550 Volts d c
Grid Voltage	
Negative Value.....	125 Volts d c
Positive Value.....	0 Volts d c
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode.....	125 Volts
Heater Positive with Respect to Cathode.....	10 Volts
Peak Voltage Between Anode No. 2 and	
Any Deflection Plate.....	660 Volts

SYLVANIA TYPE 2AP1A, 2AP-A* (Cont'd)

TYPICAL OPERATING CONDITIONS

Anode No. 2 Voltage ³	1000 Volts d c
Anode No. 1 Voltage for Focus.....	137 to 300 Volts d c
Grid Voltage Required for Cutoff ⁴	-30 to -90 Volts d c
Deflection Factor	
Deflecting Plates 1-2 ⁵	204 to 256 Volts d c/Inch
Deflecting Plates 3-4 ⁶	157 to 235 Volts d c/Inch

CIRCUIT VALUES

Grid Circuit Resistance.....	1.5 Megohms Max.
Deflection Circuit Resistance.....	5.0 Megohms Max.

NOTES:

1. Deflecting Plate 1 is Pin No. 3.
Deflecting Plate 2 is Pin No. 8.
Deflecting Plate 3 is Pin No. 9.
Deflecting Plate 4 is Pin No. 6.
2. With D1 Positive with Respect to D2, the spot is deflected toward Pin No. 4;
with D3 Positive with Respect to D4, the spot is deflected toward Pin No. 1.
3. Brilliance and definition decrease with decreasing Anode No. 2 Voltage. In general, Anode No. 2 Voltage should not be less than 500 volts.
4. Visual extinction of undeflected focused spot.
5. Deflecting Plates 1-2 are nearer the screen.
6. Deflecting Plates 3-4 are nearer the base.

2AP1

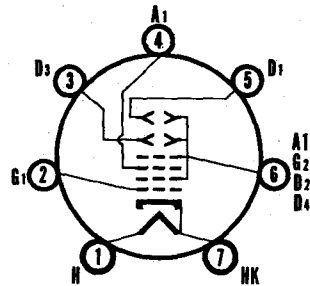
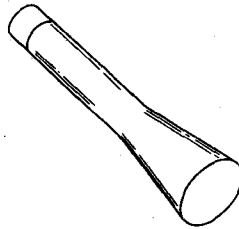
Sylvania Type 2AP1A replaces Type 2AP1.

SYLVANIA TYPE 3AP1A 3AP-A*

OSCILLOSCOPE TUBE

3" Direct Viewed
Round Glass Type

Electrostatic Deflection
Electrostatic Focus



7-CE

CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflecting Method.....	Electrostatic
Phosphor.....	P1
Fluorescence.....	Green
Persistence.....	Medium
Faceplate.....	Clear

*In addition to the type shown, the 3AP-A can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	2.5 Volts
Heater Current (approx.).....	2.1 Ampere
Direct Interelectrode Capacitances (approx.)	
Grid No. 1 to All Other Electrodes.....	9 μ f
Deflecting Plate 1 ¹ to All Other Electrodes.....	8.5 μ f
Deflecting Plate 3 ¹ to All Other Electrodes.....	6.5 μ f

MECHANICAL DATA

Minimum Useful Screen Diameter.....	2 $\frac{3}{4}$ Inches
Nominal Overall Length.....	11 $\frac{1}{2}$ Inches
Base.....	Medium 7-Pin
Basing.....	7CE

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 2 Voltage.....	1650 Volts d c
Anode No. 1 Voltage.....	1100 Volts d c
Grid No. 1 Voltage	
Negative Bias Value.....	140 Volts d c
Positive Bias Value.....	0 Volts d c
Peak Voltage Between Anode No. 2 and Any Deflecting Plate.....	550 Volts

TYPICAL OPERATING CONDITIONS

Anode No. 2 Voltage ¹	1500 Volts d c
Anode No. 1 Voltage.....	240 to 560 Volts d c
Grid No. 1 Voltage Required for Cutoff ²	-25 to -75 Volts d c
Deflection Factor ^{4,5}	
Deflecting Plates 1-2 ³	90 to 137 Volts d c/Inch
Deflecting Plates 3-4 ⁷	88 to 130 Volts d c/Inch

CIRCUIT VALUES

Grid No. 1 Circuit Resistance.....	1.5 Megohms Max.
Deflection Circuit Resistance.....	5.0 Megohms Max.

SYLVANIA TYPE 3AP1A, 3AP-A* (Cont'd)

NOTES:

1. With D2 positive with respect to D1, the spot is deflected toward Pin No. 1.
With D4 positive with respect to D3, the spot is deflected toward Pin No. 5.
Brightness and definition decrease with decrease in Anode No. 2 Voltage.
In general, Anode No. 2 Voltage should not be less than 1000 Volts.
Total extinction of undeflected focused spot.
The plane through the tube axis and Pin 5 may vary from the trace produced by Deflecting Plates 3-4 by an angular tolerance measured about the tube axis; of 10 degrees.
Angle between D1-D2 trace and D3-D4 trace is $90^\circ \pm 3^\circ$.
Deflecting Plates 1-2 are nearer the screen.
Deflecting Plates 3-4 are nearer the base.

3AP1

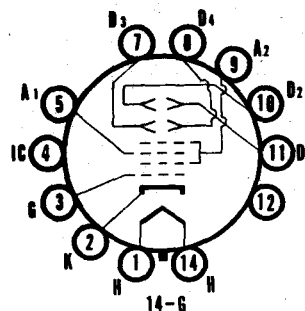
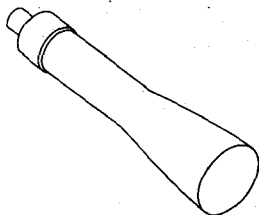
Sylvania Type 3AP1A replaces Type 3AP1.

SYLVANIA TYPE 3BP1A 3BP-A*

OSCILLOSCOPE TUBE

3" Direct Viewed
Round Glass Type

Electrostatic Deflection
Electrostatic Focus



CHARACTERISTICS

GENERAL DATA

Focusing Method	Electrostatic
Deflection Method	Electrostatic
Phosphor	P1
Fluorescence	Green
Persistence	Medium
Faceplate	Clear

*In addition to the type shown, the 3BP-A can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage	6.3 Volts
Heater Current	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes	8.0 μmf
Grid to All Other Electrodes	8.5 μmf
Between Deflecting Plates 1-2 ¹	2.0 μmf
Between Deflecting Plates 3-4 ¹	2.0 μmf
Deflecting Plate 1 ² to All Other Electrodes	8.0 μmf
Deflecting Plate 3 ² to All Other Electrodes	6.0 μmf
Deflecting Plate 1 to All Other Electrodes Except D2	6.0 μmf
Deflecting Plate 2 ² to All Other Electrodes Except D1	5.0 μmf
Deflecting Plate 3 to All Other Electrodes Except D4	4.0 μmf
Deflecting Plate 4 ² to All Other Electrodes Except D3	6.0 μmf

MECHANICAL DATA

Minimum Useful Screen Diameter	2 3/4 Inches
Nominal Overall Length	10 Inches
Base	Medium Shell Diheptal 12-Pin
Basing	14G

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 2 Voltage	2200 Volts d c
Anode No. 1 Voltage	1100 Volts d c
Grid Voltage	
Negative Value	200 Volts d c
Positive Value	0 Volts d c
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	125 Volts
Heater Positive with Respect to Cathode	10 Volts
Peak Voltage Between Anode No. 2 and Any Deflection Plate	550 Volts

SYLVANIA TYPE 3BP1A, 3BP-A* (Cont'd)

TYPICAL OPERATING CONDITIONS

Anode No. 2 Voltage	2600 Volts d.c.
Anode No. 1 Voltage	400 to 690 Volts d.c.
Grid Voltage Required for Outline	-30 to -90 Volts d.c.
Deflection Factor	
Deflecting Plates 1-2	178 to 222 Volts d.c./Inch
Deflecting Plates 3-4	118 to 178 Volts d.c./Inch

CIRCUIT VALUES

Grid Circuit Resistance	1.5 Megohms Max.
Deflection Circuit Resistance	5.0 Megohms Max.

NOTES:

1. Deflecting Plate 1 is Pin No. 11.
Deflecting Plate 2 is Pin No. 10.
Deflecting Plate 3 is Pin No. 7.
Deflecting Plate 4 is Pin No. 8.
2. With D1 Positive with Respect to D2, the spot is deflected toward Pin No. 5.
With D3 Positive with Respect to D4, the spot is deflected toward Pin No. 2.
3. Brilliance and definition decrease with decreasing Anode No. 2 Voltage. In general, Anode No. 2 Voltage should not be less than 1500 volts.
4. Visual extinction of undeflected focused spot.
5. Deflecting Plates 1-2 are nearer the screen.
6. Deflecting Plates 3-4 are nearer the base.

3BP1

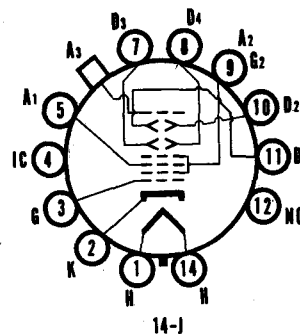
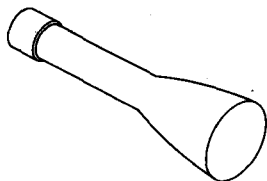
Sylvania Type 3BP1A replaces Type 3BP1.

SYLVANIA TYPE 3JP1 3JP*

TELEVISION PICTURE TUBE

Special Purpose Tube
3" Direct Viewed
Round Glass Type

Electrostatic Deflection
Electrostatic Focus
Post Deflection Accelerator



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic			
Deflecting Method.....	Electrostatic			
Types*	3JP1	3JP2	3JP7	3JP12
Fluorescence.....	Green	Green	Blue-White	Orange
Phosphorescence.....			Yellow	Medium-Long
Persistence.....	Medium	Long	Long	Clear
Faceplate.....				

*In addition to the types shown, the 3JP can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current (approx.).....	0.6 ± 10% Amperes
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	8 μf
Grid No. 1 to All Other Electrodes.....	8 μf
Between Deflecting Plates 1-2 ¹	2.5 μf
Between Deflecting Plates 3-4 ¹	2 μf
Deflecting Plate 1 ¹ to All Other Electrodes.....	8 μf
Deflecting Plate 2 ¹ to All Other Electrodes.....	7 μf
Deflecting Plate 3 ¹ to All Other Electrodes.....	7 μf
Deflecting Plate 4 ¹ to All Other Electrodes.....	8 μf

MECHANICAL DATA

Minimum Useful Screen Diameter.....	2 3/4 Inches
Nominal Overall Length.....	10 Inches
Bulb Contact (Recessed Small Ball Cap).....	J1-22
Base (Medium Shell Diheptal 12-Pin).....	B12-37
Basing.....	14J

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 3 Voltage.....	4400 Volts d c
Anode No. 2 Voltage.....	2200 Volts d c
Anode No. 1 Voltage.....	1100 Volts d c
Grid No. 1 Voltage.....	
Negative Bias Value.....	220 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage.....	
Heater Negative with Respect to Cathode.....	140 Volts
Heater Positive with Respect to Cathode.....	140 Volts
Peak Voltage Between Anode No. 2 and Any Deflecting Plate.....	550 Volts

TYPICAL OPERATING CONDITIONS

Anode No. 3 Voltage ³	3000 Volts d c
Anode No. 2 Voltage ³	1500 Volts d c
Anode No. 1 Voltage.....	300 to 515 Volts d c
Grid No. 1 Voltage Required for Cutoff ⁴	-22.5 to 67.5 Volts d c
Deflection Factor ^{10,6}	
Deflecting Plates 1-2 ¹	127-173 Volts d c/Inch
Deflecting Plates 3-4 ²	94-128 Volts d c/Inch

SYLVANIA PICTURE TUBES

SYLVANIA TYPE 3JP1, 3JP* (Cont'd)

CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Megohms Max.
Deflection Circuit Resistance	5.0 Megohms Max.

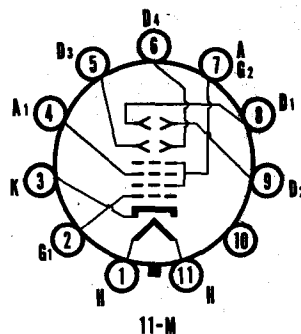
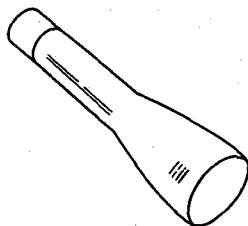
NOTES:

1. Positive voltage on Pin No. 1 will deflect spot approximately toward Pin No. 5. Positive voltage on Pin No. 7 will deflect spot approximately toward Pin No. 2.
2. Anode No. 3 voltage should not be less than 3000 volts for high speed scanning.
3. Recommended minimum value of Anode No. 2 Voltage.
4. Visual extinction of undeflected focused spot.
5. The plane through the tube axis and each of the following items may vary from the trace produced by Deflecting Plates 1-2 by the following angular tolerances measured about the tube axis; Pin 5, 10 degrees; cap (on same side of tube as Pin 5) 10 degrees.
6. Angle between D1-D2 trace and D3-D4 trace is $90^\circ \pm 3^\circ$.
7. Deflecting Plates 1-2 are nearer the screen.
8. Deflecting Plates 3-4 are nearer the base.

SYLVANIA TYPE 3KP1 3KP*

Oscilloscope Tube
3" Direct Viewed

Round Glass Type
Electrostatic Deflection
Electrostatic Focus



CHARACTERISTICS

GENERAL DATA

Focusing Method.....			Electrostatic	
Deflecting Method.....			Electrostatic	
Types*	3KP1	3KP4	3KP7	3KP11
Fluorescence.....	Green	White	Blue	Blue
Phosphorescence.....			Yellow	
Persistence.....	Medium	Short	Long	Short
Faceplate.....			Clear	

*In addition to the types shown, the 3KP-can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current (approx.).....	0.6 ± 5% Ampere
Direct Interelectrode Capacitances (approx.)	
Grid No. 1 to All Other Electrodes.....	8 μf
Between Deflecting Plates 1-2 ¹	2.5 μf
Between Deflecting Plates 3-4 ¹	2.5 μf
Deflecting Plate 1 ¹ to All Other Electrodes.....	11 μf
Deflecting Plate 2 ¹ to All Other Electrodes.....	8 μf
Deflecting Plate 3 ¹ to All Other Electrodes.....	7 μf
Deflecting Plate 4 ¹ to All Other Electrodes.....	8 μf

MECHANICAL DATA

Minimum Useful Screen Diameter.....	2 3/4 Inches
Nominal Overall Length.....	11 1/2 Inches
Bulb Contact (Recessed Small Ball Cap).....	J1-22
Base (Medium Shell Magnal 11-Pin).....	B11-66
Basing.....	11M
Mounting Position.....	Any

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 2 Voltage ³	2750 Volts d c
Anode No. 1 Voltage.....	1100 Volts d c
Grid No. 1 Voltage	
Negative Bias Value.....	220 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode.....	140 Volts
Heater Positive with Respect to Cathode.....	140 Volts
Peak Voltage Between Anode No. 2 and Any Deflecting Plate.....	550 Volts

TYPICAL OPERATING CONDITIONS

Anode No. 2 Voltage ³	2000 Volts d c
Anode No. 1 Voltage.....	320 to 600 Volts d c
Grid No. 1 Voltage Required for Cutoff ⁴	-38 to -90 Volts d c
Deflection Factor ^{3,4}	
Deflecting Plates 1-2 ¹	100 to 136 Volts d c/Inch
Deflecting Plates 3-4 ¹	76 to 104 Volts d c/Inch

SYLVANIA PICTURE TUBES

SYLVANIA TYPE 3KP1, 3KP* (Cont'd)

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms Max.
Resistance in any Deflecting Electrode Circuit.... 5.0 Megohms Max.

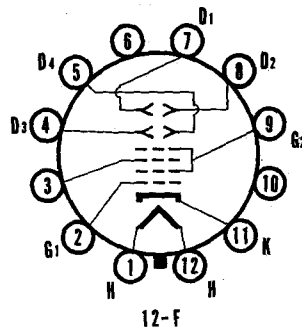
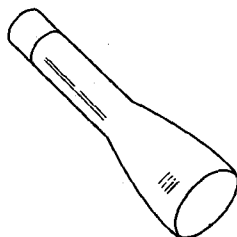
NOTES:

1. With D1 Positive with Respect to D2, the spot is deflected toward Pin 4.
With D3 Positive with Respect to D4, the spot is deflected toward Pin 1.
2. Anode No. 2 power input should be limited to 6 watts.
3. Recommended minimum value of Anode No. 2 Voltage is 1000 volts for Type 3KP1. Recommended minimum value of Anode No. 2 Voltage is 1500 volts for Types 3KP4 and 3KP11.
4. Visual extinction of undeflected focused spot.
5. The angle between the trace produced by D3 and D4 and its intersection with the plane through the tube axis and Pin 1 does not exceed 10%.
6. Angle between D1-D2 trace and D3-D4 trace is $90^\circ \pm 3^\circ$.
7. Deflecting Plates 1-2 are nearer the screen.
8. Deflecting Plates 3-4 are nearer the base.

SYLVANIA TYPE 3MP1 3MP*

Oscilloscope Tube
3" Direct Viewed

Round Glass Type
Electrostatic Focus
Electrostatic Deflection



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflecting Method.....	Electrostatic
Phosphor.....	P1
Fluorescence.....	Green
Persistence.....	Medium
Faceplate.....	Clear

*In addition to the type shown, the 3MP-can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current (approx.).....	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	2.2 μmf
Grid to All Other Electrodes.....	10.3 μmf
Between Deflecting Plates 1-2 ¹	1.3 μmf
Between Deflecting Plates 3-4 ¹	1.2 μmf
Deflecting Plate 1 ² to All Other Electrodes	
Except D2.....	4.4 μmf
Deflecting Plate 2 ² to All Other Electrodes	
Except D1.....	5.6 μmf
Deflecting Plate 3 ² to All Other Electrodes	
Except D4.....	5.0 μmf
Deflecting Plate 4 ² to All Other Electrodes	
Except D3.....	4.5 μmf

MECHANICAL DATA

Minimum Useful Screen Diameter.....	2 $\frac{3}{4}$ Inches
Nominal Overall Length.....	8 Inches
Base.....	Small Shell Duodecal 12-Pin
Basing.....	12F

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 2 Voltage.....	2750 Volts d c
Anode No. 1 Voltage.....	1100 Volts d c
Grid Voltage	
Negative Value.....	220 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode.....	140 Volts
Heater Positive with Respect to Cathode.....	140 Volts
Peak Voltage Between Anode No. 2 and	
Any Deflection Plate.....	550 Volts

TYPICAL OPERATING CONDITIONS

Anode No. 2 Voltage ³	2000 Volts d c
Anode No. 1 Voltage for Focus.....	400 to 700 Volts d c
Grid Voltage Required for Cutoff ⁴	0 to -126 Volts d c
Deflection Factor	
Deflecting Plates 1-2 ⁵	230 to 290 Volts d c/Inch
Deflecting Plates 3-4 ⁶	220 to 280 Volts d c/Inch

SYLVANIA PICTURE TUBES

SYLVANIA TYPE 3MP1, 3MP* (Cont'd)

CIRCUIT VALUES

Grid Circuit Resistance	1.5 Megohms Max.
Deflection Circuit Resistance	5.0 Megohms Max.

NOTES:

1. Deflecting Plate 1 is Pin No. 7.
Deflecting Plate 2 is Pin No. 8.
Deflecting Plate 3 is Pin No. 4.
Deflecting Plate 4 is Pin No. 5.
2. D1-D2 trace aligns with Pin No. 4 and tube axis $\pm 10^\circ$.
Positive voltage on D1 deflects beam approximately toward Pin No. 4.
Positive voltage on D3 deflects beam approximately toward Pin No. 1.
3. Brilliance and definition decreases with decreasing Anode No. 2 Voltage.
In general, Anode No. 2 Voltage should not be less than 1500 Volts.
4. Visual extinction of undeflected focused spot.
5. Deflecting Plates 1-2 are nearer the screen.
6. Deflecting Plates 3-4 are nearer the base.

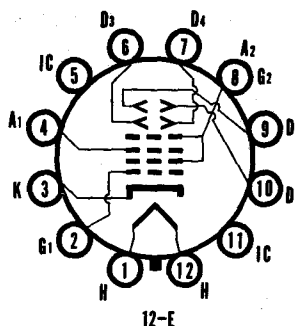
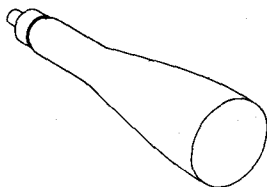
SYLVANIA TYPE 3RP1 3RP*

TELEVISION PICTURE TUBE

Special Purpose Tube
3" Direct Viewed

Electrostatic Deflection
Electrostatic Focus

Round Glass Type



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflection Method.....	Electrostatic
Types*	3RP1 3RP4
Fluorescence.....	Green White
Phosphorescence.....	
Persistence.....	Medium Short-Medium
Faceplate.....	Clear

*In addition to the types shown, the 3RP can be supplied with several other phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current.....	0.6 ± 10% Ampere
Direct Interelectrode Capacitances (approx.)	
Grid to All Other Electrodes.....	8.5 μf
Between Deflecting Plates 1-2.....	2.0 μf
Between Deflecting Plates 3-4.....	2.0 μf
Deflecting Plate 1 ¹ to All Other Electrodes.....	11.0 μf
Deflecting Plate 2 ¹ to All Other Electrodes.....	8.0 μf
Deflecting Plate 3 ¹ to All Other Electrodes.....	7.0 μf
Deflecting Plate 4 ¹ to All Other Electrodes.....	8.0 μf

MECHANICAL DATA

Minimum Useful Screen Diameter.....	2 3/4 Inches
Nominal Overall Length.....	9 1/8 Inches
Base (Small-Shell Duodecal 10-Pin)	B10-75
or (Small-Shell Duodecal 12-Pin)	B12-43
Basing.....	12E

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 2 Voltage.....	2750 Volts d c
Anode No. 1 Voltage.....	1100 Volts d c
Grid Voltage	
Negative Bias Value.....	220 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode.....	140 Volts
Heater Positive with Respect to Cathode.....	140 Volts
Peak Voltage Between Anode No. 2 and Any Deflection Plate.....	550 Volts

TYPICAL OPERATING CONDITIONS

Anode No. 2 Voltage ²	2000 Volts d c
Anode No. 1 Voltage for Focus.....	330 to 620 Volts d c
Maximum Grid Voltage Required for Cutoff ³	-135 Volts d c
Deflection Factor ⁴ 6-5	
Deflecting Plates 1-2 ⁵	146 to 198 Volts d c/Inch
Deflecting Plates 3-4 ⁷	104 to 140 Volts d c/Inch

SYLVANIA TYPE 3RP1, 3RP* (Cont'd)

CIRCUIT VALUES

Grid Circuit Resistance.....	1.5 Megohms Max.
Deflection Circuit Resistance.....	5.0 Megohms Max.

NOTES:

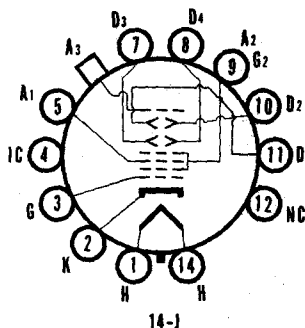
1. Positive voltage on Pin No. 10 will move spot approximately in direction of Pin No. 4. Positive voltage on Pin No. 6 will move spot approximately in direction of Pin No. 1.
2. Brilliance and definition decrease with decreasing Anode No. 2 Voltage. In general, Anode No. 2 Voltage should not be less than 1500 volts.
3. Visual extinction of undeflected focused spot.
4. Angle between trace produced by plates D1-D2 and the plane through the tube axis and Pin No. 4 does not exceed 10°.
5. Angle between D1-D2 trace and D3-D4 trace is $90^\circ \pm 30^\circ$.
6. Deflecting Plates 1-2 are nearer the screen.
7. Deflecting Plates 3-4 are nearer the base.

SYLVANIA TYPE 5ADP1 5ADP*

OSCILLOSCOPE TUBE

5" Direct Viewed
Round Glass Type
Flat Faceplate

Clear Faceplate
Electrostatic Focus
Electrostatic Deflection



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic			
Deflection Method.....	Electrostatic			
Types*	5ADP1	5ADP2	5ADP7	5ADP11
Fluorescence.....	Green	Blue-Green	Blue	Blue
Phosphorescence.....	Green	Green	Yellow	Blue
Persistence.....	Medium	Long	Long	Short
Faceplate.....	Clear			

*In addition to the types shown, the 5ADP— can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts	
Heater Current.....	0.6 ± 10% Amperes	
Direct Interelectrode Capacitances		
	Min.	Max.
Cathode to All Other Electrodes.....	3.1	5.8 μf
Grid No. 1 to All Other Electrodes.....	4.2	7.9 μf
Between Deflecting Plates 1-2.....	1.7	3.1 μf
Between Deflecting Plates 3-4.....	0.7	1.3 μf
Deflecting Plate 1 ¹ to All Other Electrodes Except D2.....	2.7	6.1 μf
Deflecting Plate 2 ¹ to All Other Electrodes Except D1.....	2.7	6.1 μf
Deflecting Plate 3 ¹ to All Other Electrodes Except D4.....	2.1	4.0 μf
Deflecting Plate 4 ¹ to All Other Electrodes Except D3.....	2.1	5.0 μf

MECHANICAL DATA

Minimum Useful Screen Diameter.....	4 1/2 Inches
Nominal Overall Length.....	16 3/4 Inches
Bulb Contact (Recessed Small Cavity Cap).....	J1-22
Base (Medium Shell Diheptal 12-Pin).....	B12-37
Basing.....	14J
Base Alignment	
D1-D2 trace aligns with Pin No. 5 and Tube Axis.....	± 10 Degrees
Positive Voltage on D1 deflects beam approx. toward Pin No. 5	
Positive Voltage on D3 deflects beam approx. toward Pin No. 2	
Angle Between traces D1-D2 and D3-D4.....	90 ± 1 Degrees
Bulb Contact Alignment	
J1-22 contact aligns with D1-D2.....	± 10 Degrees
J1-22 contact on same side as Pin No. 5	

SYLVANIA TYPE 5ADP1, 5ADP* (Cont'd)

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 3 Voltage.....	6600 Volts d c
Anode No. 2 Voltage ¹	2860 Volts d c
Ratio of Anode No. 3 Voltage to Anode No. 2 Voltage.....	2.3 : 1
Anode No. 1 Voltage for Focus.....	1100 Volts d c
Grid No. 1 Voltage	
Negative Bias Value.....	220 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode.....	200 Volts d c
Heater Positive with Respect to Cathode.....	200 Volts d c
Peak Voltage Between Anode No. 2 and Any Deflection Plate.....	550 Volts

TYPICAL OPERATING CONDITIONS

Anode No. 3 Voltage.....	3000 Volts
Anode No. 2 Voltage.....	1500 Volts
Anode No. 1 Voltage for Focus.....	300 to 515 Volts
Grid No. 1 Voltage Required for Cutoff ³	-34 to -56 Volts
Deflection Factor	
Deflecting Plates 1-2 ⁴	40 to 50 Volts d c/Inch
Deflecting Plates 3-4 ⁵	30.5 to 37.5 Volts d c/Inch
Modulation ⁶	
with Anode No. 3 Current = 25 μ a.....	45 Volts Max.
Line Width ⁶	
with Anode No. 3 Current = 25 μ a.....	.030 Inches Max.
P1 Light Output ⁶	
with Anode No. 3 Current = 25 μ a.....	15 Ft. L. Min.
Deflection Factor Uniformity ⁶	2 Percent Max.
Pattern Distortion with 75% Useful Scan ⁷	2 1/2 Percent Max.
Undelected Spot Position ⁸	Within a 5/16 Inch Radius Circle
Useful Scan.....	\pm 2 Inches From Tube Face Center or a Total 4 Inches Min.

CIRCUIT VALUES

Grid No. 1 Circuit Resistance.....	1.5 Megohms Max.
Deflection Circuit Resistance ⁹	5 Megohms Max.

NOTES:

1. Deflecting Plate 1 is Pin No. 11.
Deflecting Plate 2 is Pin No. 10.
Deflecting Plate 3 is Pin No. 7.
Deflecting Plate 4 is Pin No. 8.
2. The product of the Anode No. 2 Voltage and the Average Anode No.2 Current should be limited to 6 watts.
3. Visual extinction of undeflected focused spot.
4. Deflecting Plates 1-2 are nearer the screen.
5. Deflecting Plates 3-4 are nearer the base.
6. Measured in accordance with MIL-E-1C.
7. All edges of a raster, pattern adjusted so its widest points just touch the sides of a 3.075 inch square, will fall within the area bounded by the 3.075 inch square and an inscribed 2.925 inch square.
8. Centered on tube face with the tube shielded and with all deflection plates connected to Anode No. 2.
9. It is recommended that the deflecting electrode circuit resistances be approximately equal.

WARNING:

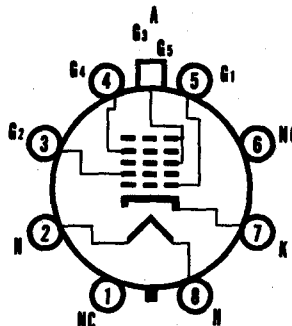
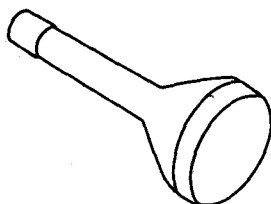
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 5AHP4A 5AHP*

SPECIAL PURPOSE TUBE

5" Direct Viewed
Round Glass Type
Magnetic Deflection

Electrostatic Focus
High Resolution
"A" Types Aluminized



8EF

CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflecting Method.....	Magnetic
Deflection Angle (approx.).....	53 Degrees
Types*	5AHP4A 5AHP7A 5AHP14A 5AHP19A 5AHP4 5AHP7 5AHP14 5AHP19
Fluorescence.....	White Blue Blue Orange
Phosphorescence.....	White Yellow Orange Orange
Persistence.....	Short-Med. Long Med.-Long Long
Faceplate.....	Clear

Types 5AHP4A, 5AHP7A, 5AHP14A and 5AHP19A have aluminized screens.
*In addition to the types shown, the 7ABP can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current (approx.).....	0.6 Amperes
Direct Interelectrode Capacitance (approx.).....	
Cathode to All Other Electrodes.....	5 μ f
Grid No. 1 to All Other Electrodes.....	6 μ f

MECHANICAL DATA

Minimum Useful Screen Diameter.....	4 $\frac{1}{4}$ Inches
Nominal Overall Length.....	11 $\frac{1}{8}$ Inches
Bulb Contact (Recessed Small Ball Cap).....	J1-22
Base (Medium Shell Octal 8-Pin).....	B8-11 or B8-65
Basing.....	8EF
Bulb Contact Aligns with Pin No. 5.....	± 10 Degrees

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode Voltage.....	11,000 Volts d c
Grid No. 4 (Focusing Electrode) Voltage.....	-550 to +1100 Volts d c
Grid No. 2 Voltage.....	770 Volts d c
Grid No. 1 Voltage.....	
Negative Bias Value.....	200 Volts d c
Positive Bias Value ¹	0 Volts d c
Positive Peak Value.....	0 Volts
Peak Heater-Cathode Voltage.....	
Heater Negative with Respect to Cathode.....	200 Volts
Heater Positive with Respect to Cathode.....	200 Volts

TYPICAL OPERATING CONDITIONS

Anode Voltage ²	7000 Volts d c
Grid No. 4 Voltage for Focus ⁴	0 to +250 Volts d c
Grid No. 2 Voltage.....	300 Volts d c
Grid No. 1 Voltage ³	-33 to -77 Volts d c
Line Width ⁴	0.40 MM Max.

CIRCUIT VALUES

Grid No. 1 Circuit Resistance.....	1.5 Megohms Max.
------------------------------------	------------------

SYLVANIA PICTURE TUBES

SYLVANIA TYPE 5AHP4A, 5AHP* (Cont'd)

NOTES:

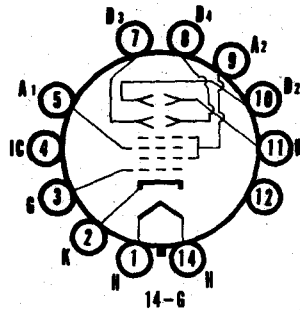
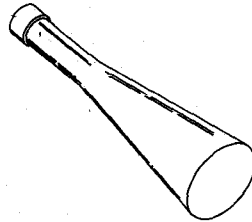
1. At or near this rating, the effective resistance of the anode supply should be adequate to limit the anode input power to 6 watts. The screen of the 5AHP19 and 5AHP19A can be permanently damaged should the current density be permitted to rise too high. To prevent burning, minimum beam current densities should be employed.
2. Brilliance and definition decrease with decreasing anode voltage. In general, anode voltage should not be less than 4000 volts, except for the 5AHP19 and 5AHP19A. For these types the anode voltage should not be less than 7000 volts.
3. Visual extinction of undeflected focused spot.
4. With E_{g1} adjusted for $I_b = 100 \mu\text{a}$ and beam focused for minimum width of individual lines at center of screen.
5. Measured by compressed raster method, using a 35 to 105 line pattern.

SYLVANIA TYPE 5AQP1 5AQP*

OSCILLOSCOPE TUBE

5" Direct Viewed
Round Glass Type
Electrostatic Deflection

Electrostatic Focus
Flat Face
Clear Faceplate



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic			
Deflection Method.....	Electrostatic			
Types*	5AQP1	5AQP2	5AQP7	5AQP11
Fluorescence.....	Green	Blue-Green	Blue	Blue
Phosphorescence.....	Green	Green	Yellow	Short
Persistence.....	Medium	Long	Long	Short
Faceplate.....	Clear			

*In addition to the types shown, the 5AQP— can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts	
Heater Current.....	0.6 ± 10% Ampere	
Direct Interelectrode Capacitances		
	Min.	Max.
Cathode to All Other Electrodes.....	2.7	5.0 μf
Grid No. 1 to All Other Electrodes.....	3.7	6.9 μf
Between Deflecting Plates 1-2 ¹	2.4	4.5 μf
Between Deflecting Plates 3-4 ¹	0.8	1.6 μf
Deflecting Plate 1 ¹ to All Other Electrodes.....	5.0	9.3 μf
Deflecting Plate 2 ¹ to All Other Electrodes.....	5.0	9.3 μf
Deflecting Plate 3 ¹ to All Other Electrodes.....	3.3	6.3 μf
Deflecting Plate 4 ¹ to All Other Electrodes.....	3.3	6.3 μf

MECHANICAL DATA

Minimum Useful Screen Dimensions (Diameter)...	4½ Inches
Nominal Overall Length.....	16¾ Inches
Base (Medium Shell Diheptal 12-Pin).....	B12-37
Basing.....	14G
Base Alignment	
D1-D2 trace aligns with Pin No. 5 and Tube Axis.....	± 10 Degrees
Angle Between D1-D2 and D3-D4 Traces.....	90 ± 1 Degree

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 2 Voltage ²	4400 Volts d c
Anode No. 1 Voltage for Focus.....	1650 Volts d c
Grid No. 1 Voltage	
Negative Bias Value.....	220 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater Cathode Voltage	
Heater Negative with Respect to Cathode.....	200 Volts
Heater Positive with Respect to Cathode.....	200 Volts
Peak Voltage Between Anode No. 2 and Any Deflecting Plate.....	1320 Volts

SYLVANIA PICTURE TUBES

SYLVANIA TYPE 5AQPI, 5AQP* (Cont'd)

TYPICAL OPERATING CONDITIONS

Anode No. 2 Voltage	2500 Volts d c
Anode No. 1 Voltage for Focus	0 to 300 Volts d c
Grid No. 1 Voltage Required for Cutoff ³	-34 to -56 Volts d c
Deflection Factor ⁴	
Deflecting Plates 1-2	40 to 50 Volts d c/Inch
Deflecting Plates 3-4	31.5 to 38.5 Volts d c/Inch
P1 Light Output ⁵	15 Ft. L. Min.
Modulation ⁶	40 Volts d c Max.
Line Width A ⁶	.030 Inches Max.
Anode No. 2 Current ⁸	400 μ a d c Max.
Deflection Factor Uniformity ⁶	1 Percent Max.
Pattern Distortion ⁷	2 Percent Max.
Spot Position ⁹	Within a $\frac{5}{16}$ inch Radius Circle
Useful Scan	± 2 Inches From Tube Face Center—Total 4 x 4 Inches

CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Megohms Max.
Deflection Circuit Resistance ⁹	1.0 Megohms Max.

NOTES:

1. Deflecting Plate 1 is Pin No. 11.
Deflecting Plate 2 is Pin No. 10.
Deflecting Plate 3 is Pin No. 7.
Deflecting Plate 4 is Pin No. 8.
2. The product of acceleration voltage and average acceleration current should be limited to 6.0 watts.
3. Visual extinction of undeflected focused spot.
4. Positive voltage on D1 deflects beam approximately toward Pin No. 5.
Positive voltage on D3 deflects beam approximately toward Pin No. 2.
5. At a grid drive to produce 15 Ft. L. on a raster size of 2 x 2 inches on P1 screen.
6. The deflection factors of 75% of useful scan and at 25% of useful scan shall not differ by more than the indicated value.
7. All edges of a raster pattern, adjusted so its widest points just touch the sides of a 3.075 inch square, will fall within the area bounded by the 3.075 inch square and an inscribed 2.925 inch square.
8. Centered on the tube face with the tube shielded and with all deflection plates connected to anode No. 2.
9. It is recommended that the deflecting electrode circuit resistances be approximately equal.

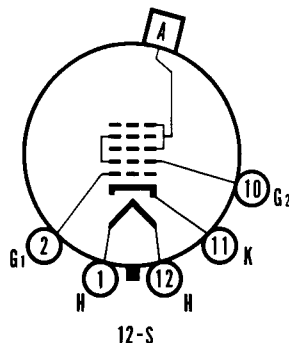
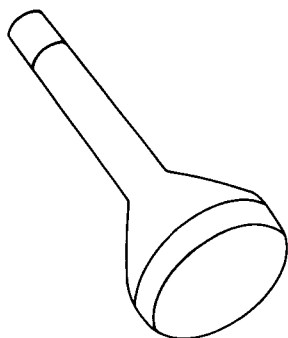
SYLVANIA

TELEVISION PICTURE TUBES

SYLVANIA TYPE 5AXP4

TELEVISION RECEIVER CHECK TUBE

5" Direct Viewed Magnetic Deflection
 Round, Glass Type Self Focusing (Electrostatic)
 No Ion Trap Required



CHARACTERISTICS

GENERAL DATA

Focusing Method	Self Focusing (Electrostatic)
Deflecting Method	Magnetic
Deflecting Angle (approx.)	53 Degrees
Phosphor	P4
Fluorescence	White
Persistence	Medium
Faceplate	Clear Glass

ELECTRICAL DATA

Heater Voltage	6.3 Volts
Heater Current	0.6 Ampere
Direct Interelectrode Capacitances	
Cathode to All Other Electrodes	5 μ mf
Grid No. 1 to All Other Electrodes	6 μ mf

MECHANICAL DATA

Overall Length	10 $\frac{3}{8}$ \pm $\frac{3}{8}$ Inches
Maximum Diameter	4 $\frac{15}{16}$ \pm $\frac{3}{32}$ Inches
Minimum Useful Screen Diameter	4 $\frac{1}{4}$ Inches
Bulb Contact (Recessed Small Cavity Cap)	J1-21
Base (Small Shell Duodecal 5-Pin)	B5-57
Basing	12S

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage	18,000 Volts d c
Grid No. 2 (and Grid No. 4) Voltage	500 Volts d c
Grid No. 1 Voltage	
Negative Bias Value	125 Volts d c
Positive Bias Value	0 Volts d c
Positive Peak Value	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Not to Exceed 15 Seconds	410 Volts
After Equipment Warm-up	180 Volts
Heater Positive with Respect to Cathode	180 Volts

TYPICAL OPERATING CONDITIONS

Anode Voltage	14,000 Volts d c
Grid No. 2 (and Grid No. 4) Voltage	300 Volts d c
Grid No. 1 Voltage for Cutoff	-28 to -72 Volts d c

CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Megohms Max.
-------------------------------	------------------

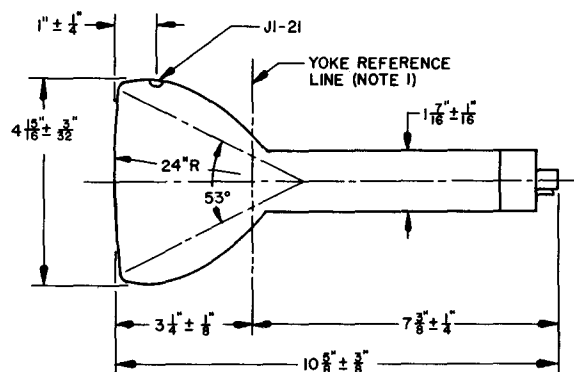
5AXP4 (Cont'd)

NOTE:

1. Visual extinction of raster.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.



S52032B

DIAGRAM NOTES:

1. The yoke reference line is determined by the plane C-C' of JETEC gauge 116 with the gauge resting against the bulb cone.
2. Anode contact (J1-21) aligns with vacant base pin position No. 6 ± 30 degrees.

APPLICATION NOTES

The 5AXP4 is a universal test picture tube which may be used in almost any electromagnetically deflected receiver, regardless of the deflection angle of the tube used in the set. When the Check Tube is used in a 90 degree deflection set, the picture will probably extend over the edges of the tube, but the visible portion of the picture will still enable checks to be made.

To save the serviceman's time and make the 5AXP4 a versatile "service tool" the following additional features are incorporated:

1. Automatic self focusing
Convenient in servicing.
2. No ion trap necessary
Saves time in servicing.
3. No external conductive coating
Safety in repeated installation and removal.

FINAL TOUCH-UP ADJUSTMENTS SHOULD ALWAYS BE MADE WITH THE REGULAR PICTURE TUBE INSTALLED IN THE TV SET.

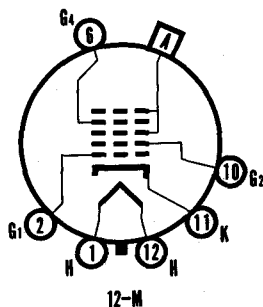
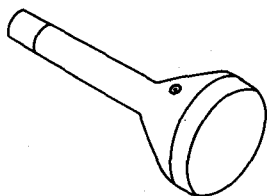
Additional application information on Type 5AXP4 was published in SYLVANIA NEWS, Technical Section, February, 1955. Copies may be obtained from Sylvania Electric Products Inc., 1100 Main St., Buffalo 9, New York.

SYLVANIA TYPE 5BNP16

TELEVISION PICTURE TUBE

Flying Spot Scanner Tube
5" Round Glass Type
Spherical Faceplate
Clear Faceplate

Magnetic Deflection
Electrostatic Focus
No Ion Trap
Aluminized Screen



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflecting Method.....	Magnetic
Deflection Angle (approx.).....	53 degrees
Phosphor.....	Aluminized P16
Fluorescence.....	Violet and near Ultra-Violet
Persistence.....	Extremely Short
Faceplate.....	Clear

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current.....	0.6 Amperes
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	5 μ fd
Grid No. 1 to All Other Electrodes.....	6 μ fd
Ion Trap.....	No Ion Trap Required

MECHANICAL DATA

Minimum Useful Screen Diameter (Max. Assured).....	4 $\frac{1}{4}$ Inches
Nominal Overall Length.....	10 $\frac{3}{8}$ Inches
Bulb Contact (Recessed Small Ball Cap).....	J1-22
Base (Small Shell Duo Decal 6 Pin).....	B6-63
Basing.....	12M
Bulb.....	J39 $\frac{1}{2}$ L

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode Voltage.....	19,800 Volts d c
Grid No. 4 Voltage (Focusing Electrode).....	-550 to +1100 Volts d c
Grid No. 2 Voltage.....	550 Volts d c
Grid No. 1 Voltage	
Negative Bias Value.....	155 Volts d c
Negative Peak Value.....	220 Volts
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Period Not to	
Exceed 15 Seconds.....	450 Volts
After Equipment Warm-up Period.....	200 Volts
Heater Positive with Respect to Cathode.....	200 Volts

TYPICAL OPERATING CONDITIONS

Anode Voltage.....	14,000 Volts d c
Grid No. 4 Voltage for Focus.....	-50 to +350 Volts d c
Grid No. 2 Voltage.....	300 Volts d c
Grid No. 1 Voltage for Cutoff ¹	-28 to -72 Volts d c

CIRCUIT VALUES

Grid No. 1 Circuit Resistance.....	1.5 Megohms Max.
------------------------------------	------------------

SYLVANIA TYPE 5BNP16 (Cont'd)

NOTE:

1. Visual Extinction of Raster.

WARNING:

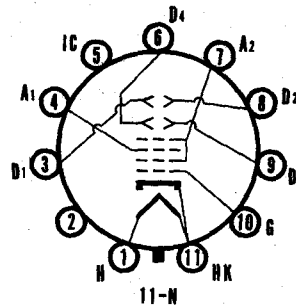
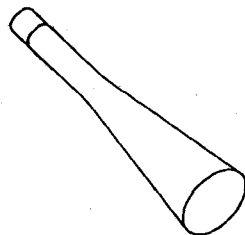
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 5BP1A 5BP-A*

OSCILLOSCOPE TUBE

5" Direct Viewed
Round Glass Type

Electrostatic Deflection
Electrostatic Focus



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflecting Method.....	Electrostatic
Phosphor.....	P1
Fluorescence.....	Green
Persistence.....	Medium
Faceplate.....	Clear

*In addition to the type shown, the 5BP-A can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current (approx.).....	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Grid No. 1 to All Other Electrodes.....	8.0 μ f
Between Deflecting Plates 1-2 ¹	1.3 μ f
Between Deflecting Plates 3-4 ¹	1.2 μ f
Deflecting Plate 1 to All Other Electrodes.....	9.5 μ f
Deflecting Plate 3 to All Other Electrodes.....	12 μ f
Deflecting Plate 1 ² to All Other Electrodes	
Except D2.....	8.0 μ f
Deflecting Plate 2 ² to All Other Electrodes	
Except D1.....	7.5 μ f
Deflecting Plate 3 ² to All Other Electrodes	
Except D4.....	10 μ f
Deflecting Plate 4 ² to All Other Electrodes	
Except D3.....	7.5 μ f

MECHANICAL DATA

Minimum Useful Screen Diameter.....	4 $\frac{1}{2}$ Inches
Nominal Overall Length.....	16 $\frac{3}{4}$ Inches
Base.....	Medium Shell Magnal 11 Pin
Basing.....	11N

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 2 Voltage.....	2200 Volts d c
Anode No. 1 Voltage.....	1100 Volts d c
Grid Voltage	
Negative Value.....	125 Volts
Positive Value.....	0 Volts
Peak Voltage Between Anode No. 2 and	
Any Deflection Plate.....	550 Volts

TYPICAL OPERATING CONDITIONS

Anode No. 2 Voltage ³	2000 Volts d c
Anode No. 1 Voltage for Focus.....	315 to 562 Volts d c
Grid Voltage Required for Cutoff ⁴	-20 to -60 Volts d c
Deflection Factor	
Deflecting Plates 1-2 ¹	70 to 98 Volts d c/Inch
Deflecting Plates 3-4 ¹	63 to 90 Volts d c/Inch

SYLVANIA PICTURE TUBES

SYLVANIA TYPE 5BP1A, 5BP-A* (Cont'd)

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms Max.
Deflection Circuit Resistance..... 5.0 Megohms Max.

NOTES:

1. Deflecting Plate 1 is Pin No. 3.
Deflecting Plate 2 is Pin No. 8.
Deflecting Plate 3 is Pin No. 9.
Deflecting Plate 4 is Pin No. 6.
2. With D1 positive with respect to D2, the spot is deflected toward Pin No. 4;
with D3 positive with respect to D4, the spot is deflected toward Pin No. 1.
3. Brilliance and definition decrease with decreasing Anode No. 2 Voltage. In
general, Anode No. 2 Voltage should not be less than 1500 volts.
4. Visual extinction of undeflected focused spot.
5. Deflecting Plates 1-2 are nearer the screen.
6. Deflecting Plates 3-4 are nearer the base.

5BP1

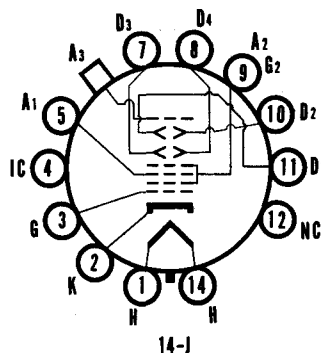
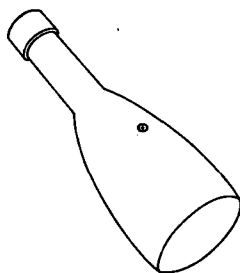
Sylvania Type 5BP1A replaces Type 5BP1.

SYLVANIA TYPE 5CP1A 5CP7A 5CP11A 5CP12

SPECIAL PURPOSE TUBE

5" Direct Viewed
Round Glass Type
Electrostatic Deflection

Electrostatic Focus
Post Deflection Accelerator
Clear Faceplate



CHARACTERISTICS

GENERAL DATA

Focusing Method	Electrostatic
Deflecting Method	Electrostatic
Phosphor	P1
Fluorescence	Green
Persistence	Medium
Faceplate	Clear

ELECTRICAL DATA

Heater Voltage	6.3 Volts
Heater Current (approx.)	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes	9 μf
Grid No. 1 to All Other Electrodes	8 μf
Between Vertical Deflecting Plates	2 μf
Between Horizontal Deflecting Plates	2 μf
Deflecting Plate 1 to All Other Electrodes	9 μf
Deflecting Plate 2 to All Other Electrodes	9 μf
Deflecting Plate 3 to All Other Electrodes	7 μf
Deflecting Plate 4 to All Other Electrodes	8 μf

MECHANICAL DATA

Minimum Useful Screen Dimension (Diameter)	4 1/2 Inches
Bulb Contact (Recessed Small Ball Cap)	J1-22
Base (Medium Shell Diheptal 12-Pin)	B12-37
Basing	14J

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode No. 3 Voltage	4000 Volts d c
Anode No. 2 Voltage	2000 Volts d c
Anode No. 1 Voltage	1000 Volts d c
Grid No. 1 Voltage	
Negative Bias Value	200 Volts d c
Positive Bias Value	0 Volts d c
Positive Peak Value	2 Volts
Peak Heater Cathode Voltage	
Heater Negative with Respect to Cathode	125 Volts
Heater Positive with Respect to Cathode	125 Volts
Peak Voltage Between Anode No. 2 And Any Deflecting Plate	500 Volts

SYLVANIA PICTURE TUBES

SYLVANIA TYPE 5CP1A (Cont'd)

5CP7A

5CP11A

5CP12

RECOMMENDED OPERATING CONDITIONS

Anode No. 3 Voltage.....	4000 Volts d c
Anode No. 2 Voltage.....	2000 Volts d c
Anode No. 1 Voltage.....	375 to 690 Volts d c
Grid No. 1 Voltage Required for Cutoff ¹	-30 to -90 Volts d c
Deflection Factor	
Vertical Plates ²	92 Volts d c/Inch
Horizontal Plates ³	78 Volts d c/Inch

CIRCUIT VALUES

Grid No. 1 Circuit Resistance.....	1.5 Megohms Max.
Deflection Circuit Resistance.....	5.0 Megohms Max.

NOTES:

1. Visual extinction of undeflected focused spot.
2. Pins 10 and 11.
3. Pins 7 and 8.

5CP1

The Sylvania Type 5CP1A is a direct replacement for the Type 5CP1.

5CP7

The Sylvania Type 5CP7A is a direct replacement for the Type 5CP7.

5CP7A

The Sylvania Type 5CP7A is identical to the Type 5CP1A except it has a blue-white fluorescence, yellow phosphorescence, long persistence phosphor.

5CP11A

The Sylvania Type 5CP11A is identical to the Type 5CP1A except it has blue phosphor and a short persistence.

5CP12

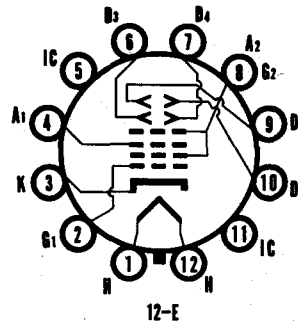
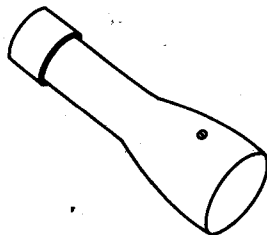
The Sylvania Type 5CP12 is identical to the Type 5CP1A except it has an orange phosphor and a medium long persistence.

SYLVANIA TYPE 5UP1 5UP*

TELEVISION PICTURE TUBE

Special Purpose Tube
5" Direct Viewed

Round Glass Type
Electrostatic Deflection
Electrostatic Focus



12-E

CHARACTERISTICS

GENERAL DATA

Focusing Method.....		Electrostatic	
Deflection Method.....		Electrostatic	
Types*	5UP1	5UP7	5UP11
Fluorescence.....	Green	Blue-White	Blue
Phosphorescence.....		Yellow	
Persistence.....	Medium	Long	Short
Faceplate.....		Clear	

*In addition to the types shown, the 5UP can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current.....	0.6 ± 10% Ampere
Direct Interelectrode Capacitances (approx.)	
Grid to All Other Electrodes.....	8.0 μmf
Between Deflecting Plates 1-2.....	2.5 μmf
Between Deflecting Plates 3-4.....	2.5 μmf
Deflecting Plate 1 ¹ to All Other Electrodes.....	11.0 μmf
Deflecting Plate 2 ¹ to All Other Electrodes.....	8.0 μmf
Deflecting Plate 3 ¹ to All Other Electrodes.....	7.0 μmf
Deflecting Plate 4 ¹ to All Other Electrodes.....	8.0 μmf

MECHANICAL DATA

Minimum Useful Screen Diameter.....	4 1/2 Inches
Nominal Overall Length.....	14 3/4 Inches
Base (Small-Shell Duodecal 10-Pin).....	B10-75
or (Small-Shell Duodecal 12-Pin).....	B12-43
Basing.....	12E

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 2 Voltage.....	2750 Volts d c
Anode No. 1 Voltage.....	1100 Volts d c
Grid Voltage.....	
Negative Bias Value.....	220 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage.....	
Heater Negative with Respect to Cathode.....	140 Volts
Heater Positive with Respect to Cathode.....	140 Volts
Peak Voltage Between Anode No. 2 and Any Deflection Plate.....	550 Volts

TYPICAL OPERATING CONDITIONS

Anode No. 2 Voltage ¹	2000 Volts d c
Anode No. 1 Voltage for Focus.....	340 to 640 Volts d c
Maximum Grid Voltage Required for Cutoff ²	-90 Volts d c
Deflection Factor ^{3,4,5}	
Deflecting Plates 1-2 ⁶	56 to 77 Volts d c/inch
Deflecting Plates 3-4 ⁷	46 to 62 Volts d c/inch

SYLVANIA PICTURE TUBES

SYLVANIA TYPE 5UP1, 5UP* (Cont'd)

CIRCUIT VALUES

Grid Circuit Resistance.....	1.5 Megohms Max.
Deflection Circuit Resistance.....	5.0 Megohms Max.

NOTES:

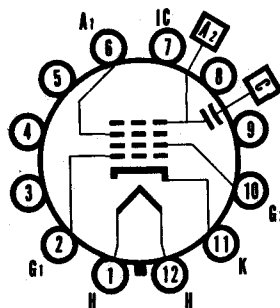
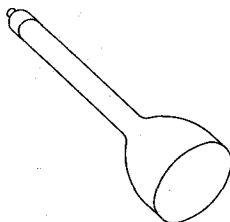
1. Positive voltage on Pin No. 10 will move spot approximately in direction of Pin No. 4. Positive voltage on Pin No. 6 will move spot approximately in direction of Pin No. 1.
2. Brilliance and definition decrease with decreasing Anode No. 2 Voltage. In general, Anode No. 2 Voltage should not be less than 1000 volts for the Type 5UP1 and not less than 1500 volts for the Types 5UP7 and 5UP11.
3. Visual extinction of undeflected focused spot.
4. Angle between trace produced by plates D1-D2 and the plane through the tube axis and Pin No. 4 does not exceed 10° .
5. Angle between D1-D2 trace and D3-D4 trace is $90^{\circ} \pm 30^{\circ}$.
6. Deflecting Plates 1-2 are nearer the screen.
7. Deflecting Plates 3-4 are nearer the base.

SYLVANIA TYPE 5ZP15

5ZP*

FLYING SPOT SCANNER TUBE

5" Round Glass Type	Acceleration Type Electrostatic Focus
Flat Faceplate	Clear, Non-Browning Faceplate
No Ion Trap	External Conductive Coating on Neck
Magnetic Deflection	External Insulating Coating on Bulb
	Aluminized Screen



12-C

CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflection Method.....	Magnetic
Deflection Angle (approx.).....	40 Degrees
Types*	5ZP15 5ZP16 5ZP24
Fluorescence.....	Blue Green Violet and Near Ultraviolet Blue Green
Persistence.....	Extremely Short Extremely Short Extremely Short
Screen.....	Aluminized
Faceplate.....	Clear, Non-Browning

* In addition to the types shown, the 5ZP— can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current.....	0.6 ± 10% Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	5 μmf
Grid No. 1 to All Other Electrodes.....	8 μmf
External Conductive Neck Coating to Anode ¹	500 μmf Max. 100 μmf Min.

MECHANICAL DATA

Minimum Useful Screen Diameter.....	4 1/4 Inches
Nominal Overall Length.....	14 3/8 Inches
Bulb Contact (Recessed Small Cavity Cap).....	J1-21
Base (Small Shell Duodecal 7-Pin).....	B7-51
Basing.....	12C
Bulb Contact Aligns with Vacant Pin Position No. 3.....	± 10 Degrees

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode No. 2 Voltage.....	30,000 Volts d c
Anode No. 1 Voltage (Focusing Electrode).....	7700 Volts d c
Grid No. 2 Voltage.....	385 Volts d c
Grid No. 1 Voltage	
Negative Bias Value.....	165 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Period Not to Exceed	
15 Seconds.....	450 Volts
After Equipment Warm-up Period.....	165 Volts
Heater Positive with Respect to Cathode.....	165 Volts

SYLVANIA TYPE 5ZP15, 5ZP* (Cont'd)

TYPICAL OPERATING CONDITIONS

Anode Voltage [†]	27,000 Volts d c
Anode No. 1 Voltage for Focus at $I_b = 15 \mu a$	5550 to 7050 Volts d c
Grid No. 2 Voltage	200 Volts d c
Grid No. 1 Voltage Required for Cutoff [‡]	-42 to -98 Volts d c
Anode Current	15 μa d c
Maximum Anode No. 1 Current at $I_b = 15 \mu a$	25 μa d c
Grid No. 2 Current	-15 to +15 μa d c

CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Megohms Max.
-------------------------------------	------------------

NOTES:

1. External conductive neck coating must be grounded.
2. Brilliance and definition decrease with decreasing anode voltage. In general, the anode voltage should not be less than 20,000 volts.
3. Visual extinction of undeflected focused spot.

WARNING:

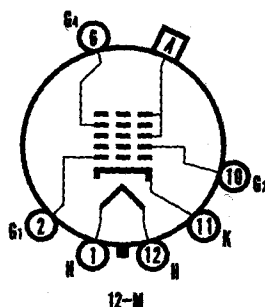
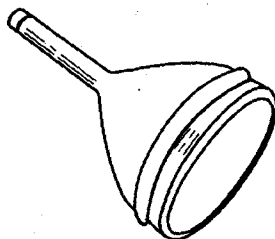
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 7ABP4 7ABP*

Special Purpose Tube

7" Direct Viewed
Round Glass Type
Electrostatic Focus

Magnetic Deflection
High Resolution
"A" Types Aluminized



CHARACTERISTICS

GENERAL DATA

Focusing Method..... Self Focusing (Electrostatic)
Deflection Method..... Magnetic
Deflection Angle (approx.)..... 50 Degrees

Types*	7ABP4	7ABP7A 7ABP7	7ABP14A 7ABP14	7ABP19A 7ABP19
Fluorescence.....	White	Blue-White	Purple	Orange
Phosphorescence.....	White	Yellow	Orange	Yellow
Persistence.....	Short-Med.	Long	Med.-Long	Long

Faceplate..... Clear

Types 7ABP4A, 7ABP14A and 7ABP19A have aluminized screens.
*In addition to the types shown, the 7ABP can be supplied with several other screen phosphors.

ELECTRICAL DATA

Heater Voltage..... 6.3 Volts
Heater Current..... 0.6 ± 5% Amperes
Direct Interelectrode Capacitances (approx.)
Cathode to All Other Electrodes..... 5 μf
Grid No. 1 to All Other Electrodes..... 6 μf

MECHANICAL DATA

Minimum Useful Screen Diameter..... 6 Inches
Nominal Overall Length..... 13 1/4 Inches
Bulb Contact (Recessed Small Cavity Cap)..... J1-21
Base (Small Shell Duodecal 6-Pin)..... B6-63
Basing..... 12M
Bulb Contact Aligns with Pin No. 3..... ± 10 Degrees

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode Voltage..... 11,000 Volts d c
Grid No. 4 (Focusing Electrode) Voltage..... -550 to +1100 Volts d c
Grid No. 2 Voltage..... 770 Volts d c
Grid No. 1 Voltage
Negative Bias Value..... 200 Volts d c
Positive Bias Value¹..... 0 Volts d c
Positive Peak Value..... 0 Volts
Peak Heater-Cathode Voltage
Heater Negative with Respect to Cathode..... 200 Volts
Heater Positive with Respect to Cathode..... 200 Volts

TYPICAL OPERATING CONDITIONS

Anode Voltage²..... 7000 Volts d c
Grid No. 4 Voltage for Focus³..... 0 to 250 Volts d c
Grid No. 2 Voltage..... 300 Volts d c
Grid No. 1 Voltage⁴..... -28 to -72 Volts d c

CIRCUIT VALUES

Grid No. 1 Circuit Resistance..... 1.5 Megohms Max.

SYLVANIA TYPE 7ABP4, 7ABP* (Cont'd)

NOTES:

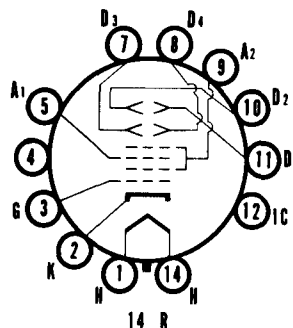
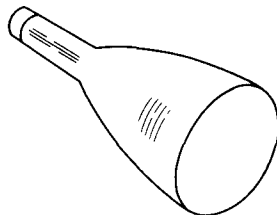
1. At or near this rating, the effective resistance of the anode supply should be adequate to limit the anode input power to 6 watts. The screen of the 7ABP19 and 7ABP19A can be permanently damaged should the current density be permitted to rise too high. To prevent burning, minimum beam current densities should be employed.
2. Brilliance and definition decrease with decreasing anode voltage. In general, anode voltage should not be less than 5000 volts, except for the 7ABP19 and 7ABP19A. For these types the anode voltage should not be less than 7000 volts.
3. With E_{g1} adjusted for $I_b = 100 \mu\text{a}$ and beam focused for minimum width of individual lines at center of screen.
4. Visual extinction of undeflected focused spot.

**SYLVANIA TYPE 7JP1
7JP4
7JP7**

TELEVISION PICTURE TUBE

7" Direct Viewed
Round Glass Type
Clear Faceplate

Electrostatic Deflection
Electrostatic Focus
Spherical Faceplate



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflecting Method.....	Electrostatic
Phosphor.....	P4
Fluorescence.....	White
Persistence.....	Medium
Faceplate.....	Clear

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current (approx.).....	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	5.0 μf
Grid No. 1 to All Other Electrodes.....	6.0 μf
Between Vertical Deflecting Plates.....	3.0 μf
Between Horizontal Deflecting Plates.....	2.0 μf
Either Vertical Deflecting Plate to All Other Electrodes Except Other Vertical Plate.....	6.0 μf
Either Horizontal Deflecting Plate to All Other Electrodes Except Other Horizontal Plate.....	5.0 μf

MECHANICAL DATA

Minimum Useful Screen Diameter.....	6 Inches
Base (Medium Shell Diheptal 12-Pin).....	B12-37
Basing.....	14R

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage.....	6,000 Volts d c
Focusing Anode Voltage.....	2,800 Volts d c
Grid No. 1 Voltage	
Negative Bias Value.....	200 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode During Warm-up Period Not to Exceed 15 Seconds.....	410 Volts
After Equipment Warm-up Period.....	125 Volts
Heater Positive with Respect to Cathode.....	125 Volts
Peak Voltage Between High Voltage Anode and Any Deflecting Plates.....	750 Volts

RECOMMENDED OPERATING CONDITIONS

Anode Voltage.....	6,000 Volts d c
Focusing Anode Voltage.....	1,620-2,400 Volts d c
Grid No. 1 Voltage Required for Cutoff ¹	-72 to -168 Volts d c
Deflection Factor	
Vertical Plates ²	216 Volts d c/Inch
Horizontal Plates ³	177 Volts d c/Inch

7JP1, 7JP4, 7JP7 (Cont'd)

CIRCUIT VALUES

Grid No. 1 Circuit Resistance.....	1.5 Megohms Max
Deflection Circuit Resistance.....	5.0 Megohms Max

NOTES:

1. Visual extinction of undeflected focused spot.
2. Pins 10 and 11.
3. Pins 7 and 8.

The Type 7JP4 may be used as a direct replacement for Type 7GP4 provided no connections are made to the socket connections for Pins 4 and 12.

7JP1

The Type 7JP1 is identical to the Type 7JP4 except it has a green phosphor.

7JP7

The Type 7JP7 is identical to the Type 7JP4 except it has a blue-white, long persistence phosphor and a screen diameter of 5½ inches.

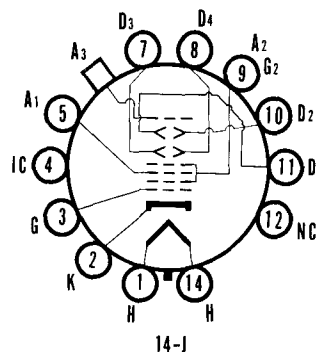
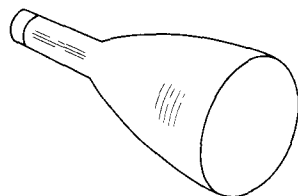
WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 Volts, whichever is less.

SYLVANIA TYPE 8CP1 8CP4

8" Direct Viewed
Round Glass Type
Clear Faceplate

Electrostatic Deflection
Electrostatic Focus
Spherical Faceplate
Post Deflection Acceleration



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflecting Method.....	Electrostatic
Phosphor.....	P4
Fluorescence.....	White
Persistence.....	Medium
Faceplate.....	Clear

8CP1 (Cont'd)

8CP4

ELECTRICAL DATA

Heater Voltage	6.3 Volts
Heater Current (approx.)	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes	10 μmf
Grid No. 1 to All Other Electrodes	8 μmf
Between Vertical Deflecting Plates	4 μmf
Between Horizontal Deflecting Plates	2 μmf
Either Vertical Deflecting Plate to All Other Electrodes Except Other Vertical Plate	8 μmf
Either Horizontal Deflecting Plate to All Other Electrodes Except Other Horizontal Plate	6 μmf

MECHANICAL DATA

Bulb Contact (Recessed Small Ball)	J1-22
Base (Medium Shell Diheptal 12-Fin)	B12-37
Basing	14J
Bulb Contact Aligns on Same Side as Pin No. 5	

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode No. 3 Voltage	6000 Volts d c
Anode No. 2 Voltage	6000 Volts d c
Anode No. 1 Voltage	2500 Volts d c
Grid No. 1 Voltage	
Negative Bias Value	200 Volts d c
Positive Bias Value	0 Volts d c
Positive Peak Value	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	125 Volts
Heater Positive with Respect to Cathode	125 Volts
Peak Voltage Between Anode No. 2 and Any Deflecting Plates	500 Volts

RECOMMENDED OPERATING CONDITIONS

Anode No. 3 Voltage	4000 Volts d c
Anode No. 2 Voltage	2000 Volts d c
Anode No. 1 Voltage	540 to 800 Volts d c
Grid No. 1 Voltage Required for Cutoff ¹	24 to 56 Volts d c
Deflection Factor	
Vertical Plates ²	58 to 81 Volts d c/Inch
Horizontal Plates ³	49 to 68 Volts d c/Inch

CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Megohms Max.
Deflection Circuit Resistance	5.0 Megohms Max.

NOTES:

1. Visual extinction of undeflected focused spot.
2. Pins 10 and 11.
3. Pins 7 and 8.

8CP1

The Type 8CP1 is identical to the Type 8CP4 except that it has a green phosphor.

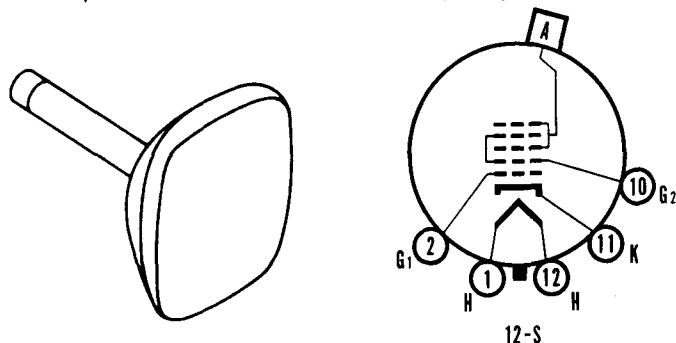
WARNING:

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 8XP4

TELEVISION RECEIVER CHECK TUBE

8" Direct Viewed Magnetic Deflection
 Rectangular Glass Type Self Focusing (Electrostatic)
 Gray Filter Glass No Ion Trap Required



CHARACTERISTICS

GENERAL DATA

Focusing Method	Self Focusing (Electrostatic)
Deflecting Method	Magnetic
Deflecting Angle (approx.)	
Vertical	68 Degrees
Horizontal	85 Degrees
Diagonal	90 Degrees
Phosphor	P4
Fluorescence	White
Persistence	Short to Medium
Faceplate	Gray Filter Glass
Light Transmittance (approx.)	80 Percent

ELECTRICAL DATA

Heater Voltage	6.3 Volts
Heater Current	0.6 Ampero
Direct Interelectrode Capacitances	
Cathode to All Other Electrodes	5 μ f
Grid No. 1 to All Other Electrodes	6 μ f

MECHANICAL DATA

Overall Length	11 $\frac{1}{16}$ \pm $\frac{3}{16}$ Inches
Minimum Useful Screen Dimensions	7 $\frac{3}{16}$ x 5 $\frac{3}{16}$ Inches
Bulb Contact (Recessed Small Cavity Cap.)	J1-21
Base (Small Shell Duodecal 5-Pin)	B5-57
Basing	12S

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode Voltage	22,000 Volts d c
Grid No. 2 (and Grid No. 4) Voltage	550 Volts d c
Grid No. 1 Voltage	
Negative Bias Value	155 Volts d c
Negative Peak Value	220 Volts
Positive Bias Value	0 Volts d c
Positive Peak Value	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Not to Exceed 15 Seconds	450 Volts
After Equipment Warm-up	200 Volts
Heater Positive with Respect to Cathode	200 Volts

TYPICAL OPERATING CONDITIONS

Anode Voltage	16,000 Volts d c
Grid No. 2 (and Grid No. 4) Voltage	300 Volts d c
Grid No. 1 Voltage Required for Cutoff	-28 to -72 Volts d c

CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Megohms Max.
-------------------------------	------------------

NOTES:

1. Visual extinction of raster.

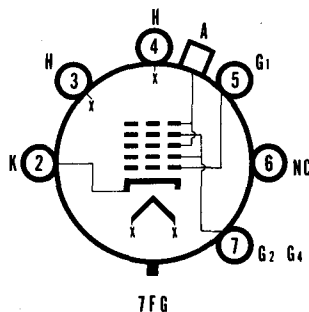
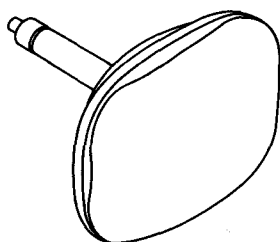
WARNING:

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 8YP4

TELEVISION RECEIVER CHECK TUBE

8" Rectangular, All Glass No Ion Trap
 Self Focusing (Electrostatic) 110° Magnetic Deflection
 Gray Filter Glass



CHARACTERISTICS

GENERAL DATA

Focusing Method	Self Focusing (Electrostatic)
Deflecting Method	Magnetic
Deflection Angles (approx.)	
Vertical	87 Degrees
Horizontal	105 Degrees
Diagonal	110 Degrees
Phosphor	P4
Fluorescence	White
Persistence	Short to Medium
Faceplate	Gray Filter Glass
Light Transmittance (approx.)	80 Percent

ELECTRICAL DATA

Heater Voltage	6.3 Volts
Heater Current (approx.)	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes	4 μ f
Grid No. 1 to All Other Electrodes	6 μ f

MECHANICAL DATA

Minimum Useful Screen Dimensions	7½ x 5⅞ Inches
Nominal Overall Length	8½ Inches
Bulb Contact (Recessed Small Cavity Cap)	J1-21
Base	B6-185
Basing	7FG
Weight (approx.)	2 Pounds

RATINGS

MAXIMUM RATINGS (Absolute Maximum Values)

Anode Voltage	22,000 Volts d c
Grid No. 2 (and Grid No. 4) Voltage	550 Volts d c
Grid No. 1 Voltage	
Negative Bias Value	155 Volts d c
Negative Peak Value	220 Volts
Positive Bias Value	0 Volts d c
Positive Peak Value	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Period Not to Exceed 15 Seconds	450 Volts
After Equipment Warm-up Period	200 Volts
Heater Positive with Respect to Cathode	200 Volts

TYPICAL OPERATING CONDITIONS

Anode Voltage	16,000 Volts d c
Grid No. 2 (and Grid No. 4) Voltage	300 Volts d c
Grid No. 1 Voltage Required for Cutoff ¹	-35 to -72 Volts d c

CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Megohms Max.
-------------------------------	------------------

SYLVANIA PICTURE TUBES

Issued as a supplement to the manual in Sylvania News for March, 1958

SYLVANIA TYPE 8YP4 (Cont'd)

NOTE:

1. Visual extinction of raster.

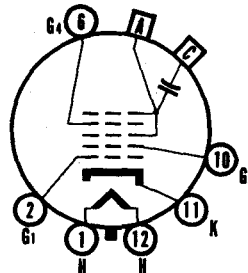
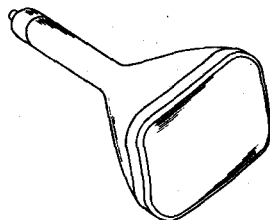
WARNING: *

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

**SYLVANIA TYPE 10ABP4
10ABP4A
10ABP4B
10ABP4C**

TELEVISION PICTURE TUBE

10" Direct Viewed Magnetic Deflection
 Rectangular Glass Type Electrostatic Focus
 Spherical Face Plate Single Field Ion Trap
 External Conductive Coating



12-L

CHARACTERISTICS

GENERAL DATA

Focusing Method.....		Electrostatic
Deflection Method.....		Magnetic
Deflection Angle (approx.)		
Horizontal.....		85 Degrees
Diagonal.....		90 Degrees
	10ABP4A*	10ABP4C*
	10ABP4	10ABP4B
Phosphor.....	P4	P4
Fluorescence.....	White	White
Persistence.....	Medium	Medium
Faceplate.....	Clear	Gray Filter
Light Transmittance (approx.).....	91	81 Percent

*Types 10ABP4A and 10ABP4C have aluminized screens.

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current.....	0.6 ± 5% Amperes
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	5 μf
Grid No. 1 to All Other Electrodes.....	6 μf
External Conductive Coating to Anode.....	850 μf Max. 400 μf Min.

MECHANICAL DATA

Minimum Useful Screen Dimensions (Maximum Assured).....	8 7/8 x 6 9/16 Inches
Nominal Overall Length.....	11 3/8 Inches
Minimum Useful Screen Area.....	53 3/8 Square Inches
Bulb Contact.....	J1-21
Base.....	B6-63
Basing.....	12L
Bulb Contact Alignment	
J1-21 Contact Aligns with Pin Position No. 6.....	± 30 Degrees
Weight.....	4.5 Pounds

MAXIMUM RATINGS (Absolute Maximum Values)

Anode Voltage.....	13,200 Volts d c
Grid No. 4 Voltage ¹	-550 to +1100 Volts d c
Grid No. 2 Voltage.....	550 Volts d c
Grid No. 1 Voltage	
Negative Peak Value.....	220 Volts
Negative Bias Value.....	154 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Period Not to Exceed	
15 Seconds.....	450 Volts
After Equipment Warm-up.....	200 Volts
Heater Positive with Respect to Cathode.....	200 Volts

SYLVANIA PICTURE TUBES

SYLVANIA TYPE 10ABP4, 10ABP4A, 10ABP4B, 10ABP4C (Cont'd)

TYPICAL OPERATING CONDITIONS

Anode Voltage.....	7500 Volts d c
Grid No. 4 Voltage ²	0 to 500 Volts d c
Grid No. 2 Voltage.....	300 Volts d c
Grid No. 1 Voltage ⁴	-38 to -62 Volts d c
Field Strength of PM Ion Trap Magnet ⁴	32 Gausses Min.

CIRCUIT VALUES

Grid No. 1 Circuit Resistance.....	1.5 Megohms Max.
------------------------------------	------------------

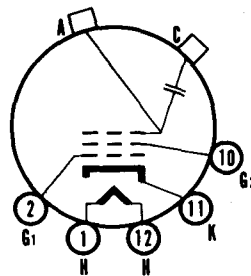
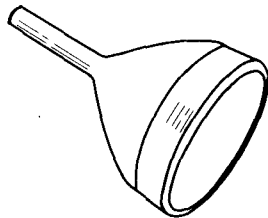
NOTES:

1. Grid No. 4 in this tube is the focus control electrode.
2. With the combined Grid No. 1 bias voltage and video signal adjusted to produce an anode current of 100 μ a on a 8 $\frac{1}{8}$ x 6 $\frac{1}{8}$ inch picture adjusted for best overall focus. For other anode voltages, the focus voltage will be from 0 percent to 5.5 percent.
3. Visual extinction of focused raster.
4. For the specimen PM ion trap magnet such as the Heppner Model No. E437 or equivalent, positioned to give maximum brightness for a given equipment application, the tolerance range for the strength of the PM ion magnet should be added to the minimum value. The maximum strength of the magnet should not exceed the specified minimum value by more than 6 gaussses. This procedure will insure use of the PM ion trap magnet allowing adequate adjustment to permit satisfactory performance without loss of highlight brightness.

SYLVANIA TYPE 10BP4 10BP4A

TELEVISION PICTURE TUBE

10" Direct Viewed Magnetic Deflection
 Round Glass Type Magnetic Focus
 Clear Faceplate Spherical Faceplate
 External Conductive Coating Double Field Ion Trap
 10BP4A has Gray Filter Glass Faceplate



12-N

CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Magnetic
Deflecting Method.....	Magnetic
Deflecting Angle.....	50 Degrees
Phosphor.....	P4
Fluorescence.....	White
Persistence.....	Medium
Faceplate.....	Clear

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current (approx.).....	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	5.0 μ f
Grid No. 1 to All Other Electrodes.....	6.0 μ f
External Conductive Coating to Anode ¹	2500 μ f Max
	500 μ f Min
Ion Trap Magnet.....	External, Double Field Type

MECHANICAL DATA

Minimum Useful Screen Diameter.....	9 1/4 Inches
Bulb Contact (Recessed Small Cavity Cap).....	J1-21
Base (Small Shell Duodecal 5-Pin).....	B5-57
Basing.....	12N
Bulb Contact Aligns with Vacant Pin	
Position No. 3.....	± 10 Degrees

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage.....	10000 Volts d c
Grid No. 2 Voltage.....	410 Volts d c
Grid No. 1 Voltage	
Negative Bias Value.....	125 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Period Not to Exceed 15 Seconds.....	410 Volts
After Equipment Warm-up Period.....	140 Volts
Heater Positive with Respect to Cathode.....	140 Volts

RECOMMENDED OPERATING CONDITIONS

Anode Voltage.....	9000 Volts d c
Grid No. 2 Voltage.....	250 Volts d c
Grid No. 1 Voltage Required for Cutoff ²	-27 to -63 Volts d c
Focusing Coil Current (approx.) ³	100 Ma d c
Ion Trap Magnet Strength (approx.).....	35 Gauss

10BP4, 10BP4A (Cont'd)

NOTES:

1. External conductive coating must be grounded.
2. Visual extinction of undeflected focused spot.
3. For JETEC focusing coil 106 or equivalent three and one quarter inches from reference line.

10BP4A

Sylvania 10BP4A is identical to Type 10BP4 except for having the gray filter glass faceplate.

WARNING

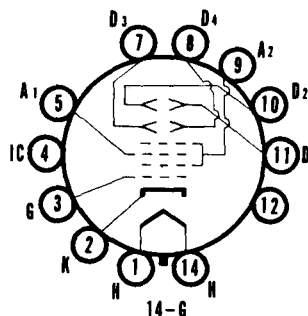
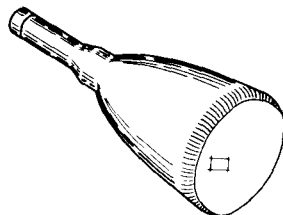
X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 10HP4

TELEVISION PICTURE TUBE

10'' Direct Viewed
Round Glass Type
Clear Faceplate

Electrostatic Deflection
Electrostatic Focus
Spherical Faceplate



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Electrostatic
Deflecting Method.....	Electrostatic
Phosphor.....	P4
Fluorescence.....	White
Persistence.....	Medium
Faceplate.....	Clear

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current (approx.).....	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	9.5 μf
Grid No. 1 to All Other Electrodes.....	8.5 μf
Between Vertical Deflecting Plates.....	3.5 μf
Between Horizontal Deflecting Plates.....	2.0 μf
Either Vertical Deflecting Plate to All Other Electrodes Except Other Vertical Plate.....	7.5 μf
Either Horizontal Deflecting Plate to All Other Electrodes Except Other Horizontal Plate.....	6.0 μf

10HP4 (Cont'd)

MECHANICAL DATA

Minimum Useful Screen Diameter.....	8¾ Inches
Base (Medium Shell Diheptal 12-Pin).....	B12-37
Basing.....	14G

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage.....	5000 Volts d c
Focusing Anode Voltage.....	2000 Volts d c
Grid No. 1 Voltage	
Negative Bias Value.....	200 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Period Not to	
Exceed 15 Seconds.....	410 Volts
After Equipment Warm-up Period.....	125 Volts
Heater Positive with Respect to Cathode.....	125 Volts
Peak Voltage Between High Voltage Anode and	
Any Deflecting Plates.....	600 Volts

RECOMMENDED OPERATING CONDITIONS

Anode Voltage.....	5000 Volts d c
Focusing Anode Voltage.....	1200 to 1800 Volts d c
Grid No. 1 Voltage Required for Cutoff ¹	-60 to -140 Volts d c
Deflection Factor	
Vertical Plates ²	130 Volts d c/Inch
Horizontal Plates ³	100 Volts d c/Inch

CIRCUIT VALUES

Grid No. 1 Circuit Resistance.....	1.5 Megohms Max
Deflection Circuit Resistance.....	5.0 Megohms Max

NOTES:

1. Visual extinction of undeflected focused spot.
2. Pins 10 and 11.
3. Pins 7 and 8.

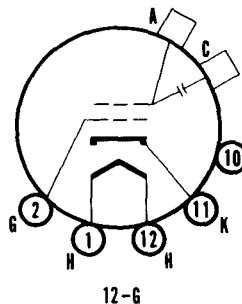
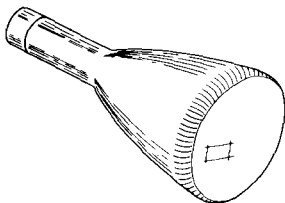
WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 10MP4 10MP4A

TELEVISION PICTURE TUBE

10" Direct Viewed Magnetic Deflection
 Round Glass Type Magnetic Focus
 Clear Faceplate Spherical Faceplate
 External Conductive Coating Double Field Ion Trap
 10MP4A has a Gray Filter Glass Faceplate



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Magnetic
Deflecting Method.....	Magnetic
Deflecting Angle (approx.).....	52 Degrees
Phosphor.....	P4
Fluorescence.....	White
Persistence.....	Medium
Faceplate.....	Clear
Light Transmittance (approx.).....	66 Percent

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current (approx.).....	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	5 μ f
Grid to All Other Electrodes.....	6 μ f
External Conductive Coating to Anode ¹	2500 μ f Max
	500 μ f Min
Ion Trap Magnet.....	External, Double Field Type

MECHANICAL DATA

Minimum Useful Screen Diameter.....	9 1/4 Inches
Bulb Contact (Recessed Small Cavity Cap).....	J1-21
Base (Small Shell Duodecal 5-Pin).....	B5-57
Basing.....	12G

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage.....	10000 Volts	d c
Grid Voltage		
Negative Bias Value.....	125 Volts	d c
Positive Bias Value.....	0 Volts	d c
Positive Peak Value.....	2 Volts	
Peak Heater-Cathode Voltage		
Heater Negative with Respect to Cathode		
During Warm-up Period Not to Exceed 15 Seconds.....	410 Volts	
After Equipment Warm-up Period.....	125 Volts	
Heater Positive with Respect to Cathode.....	125 Volts	

RECOMMENDED OPERATING CONDITIONS

Anode Voltage.....	9000 Volts	d c
Grid Voltage Required for Cutoff ²	-27 to -63 Volts	d c
Ion Trap Magnet Strength (approx.).....	35 Gauss	

10MP4, 10MP4A (Cont'd)

CIRCUIT VALUES

Grid Circuit Resistance..... 1.5 Megohms
Max

NOTES:

1. External conductive coating must be grounded.
2. Visual extinction of undeflected focused spot.

10MP4A

The Sylvania Type 10MP4A is identical to Type 10MP4 except for having the gray filter glass faceplate.

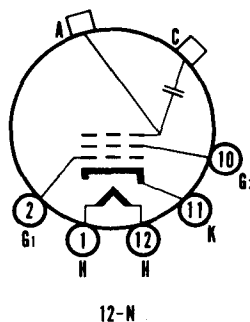
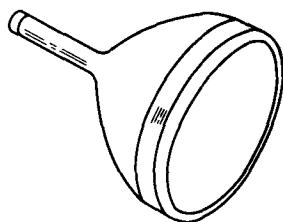
WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

SYLVANIA TYPE 12KP4 Silver Screen "85" → 12KP4A

TELEVISION PICTURE TUBE

12" Direct Viewed	Magnetic Deflection
Round Glass Type	Magnetic Focus
Clear Faceplate	Spherical Faceplate
External Conductive Coating	Aluminized Screen
No Ion Trap Magnet Required	
12KP4A has a Gray Filter Glass Faceplate	



CHARACTERISTICS

GENERAL DATA

Focusing Method.....	Magnetic
Deflecting Method.....	Magnetic
Deflecting Angle (approx.).....	54 Degrees
Phosphor.....	Aluminized, P4
Fluorescence.....	White
Persistence.....	Medium
Faceplate.....	Gray Filter Glass
Light Transmittance (approx.).....	72 Percent

12KP4, 12KP4A (Cont'd)

ELECTRICAL DATA

Heater Voltage.....	6.3 Volts
Heater Current (approx.).....	0.6 Ampere
Direct Interelectrode Capacitances (approx.)	
Cathode to All Other Electrodes.....	5 $\mu\mu\text{f}$
Grid No. 1 to All Other Electrodes.....	6 $\mu\mu\text{f}$
External Conductive Coating to Anode ¹	2500 $\mu\mu\text{f}$ Max 500 $\mu\mu\text{f}$ Min

MECHANICAL DATA

Minimum Useful Screen Diameter.....	11¼ Inches
Bulb Contact (Recessed Small Cavity Cap).....	J1-21
Base (Small Shell Duodecal 5-Pin).....	B5-57
Basing.....	12N

RATINGS

MAXIMUM RATINGS (Design Center Values)

Anode Voltage.....	12000 Volts d c
Grid No. 2 Voltage.....	410 Volts d c
Grid No. 1 Voltage	
Negative Bias Value.....	125 Volts d c
Positive Bias Value.....	0 Volts d c
Positive Peak Value.....	2 Volts
Peak Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Period Not to Exceed 15 Seconds....	410 Volts
After Equipment Warm-up Period.....	140 Volts
Heater Positive with Respect to Cathode.....	140 Volts

RECOMMENDED OPERATING CONDITIONS

Anode Voltage.....	11000 Volts d c
Grid No. 2 Voltage.....	250 Volts d c
Grid No. 1 Voltage Required for Cutoff ²	-27 to -63 Volts d c
Focusing Coil Current (approx.) ³	135 Ma d c

CIRCUIT VALUES

Grid No. 1 Circuit Resistance.....	1.5 Megohms Max
------------------------------------	--------------------

NOTES:

1. External conductive coating must be grounded.
2. Visual extinction of undeflected focused spot.
3. For JETEC focusing coil 106 or equivalent three and one quarter inches from reference line, bias adjusted to 35 foot lamberts on a 7½ x 10 inch picture area.

12KP4A

The Sylvania Type 12KP4A is identical to Type 12KP4 except for having the gray filter glass faceplate.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.